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## **1.0 General**

### **1.1 Project Description**

The Project consists of the replacement of seventeen (17) rural bridges on essential highway corridors in southeastern and central Colorado. The key corridors (US 350, US 24, CO 239 and CO 9) provide rural mobility, intra- and interstate commerce, movement of agricultural products and supplies, and access to tourist destinations.

The Work will be comprised of a Basic Configuration that replaces structures at the following locations:

- Structure G-12-C on CO 9 at mile marker 71.445
- Structure J-14-C on CO 9 at mile marker 20.107
- Structure J-15-G on CO 9 at mile marker 15.97
- Structure I-13-G on US 24 at mile marker 227.095
- Structure I-13-H on US 24 at mile marker 229.468
- Structure H-13-N on US 24 at mile marker 240.686
- Structure I-15-AO on US 24 at mile marker 271.90
- Structure I-15-T on US 24 at mile marker 271.691
- Structure O-19-D on US 350 at mile marker 10.289
- Structure N-21-C on US 350 at mile marker 47.131
- Structure N-21-F on US 350 at mile marker 48.744
- Structure M-21-C on US 350 at mile marker 50.582
- Structure M-21-B on US 350 at mile marker 51.682
- Structure M-21-I on US 350 at mile marker 56.454
- Structure M-21-J on US 350 at mile marker 57.069
- Structure M-22-Y on US 350 at mile marker 57.474
- Structure M-22-U on US 350 at mile marker 69.817

Each segment of work is as shown in Exhibit 1-A – Project Segment Map.

### **1.2 Project Values**

CDOT holds values for all of its projects and this Project has values that drive its execution. The values should be maintained throughout the project in decision-making. CDOT has determined that the following values are critical for the successful completion of the Project:

1. Safety – Work together to achieve a high-performing safety culture on the Project.
2. Quality – Accountability of design and construction that ensures Work is completed to the highest standard.
3. Integrity – The Project team is held to the highest moral and ethical standards.
4. Communication/Teamwork – Good communication, the key to teamwork.

### **1.3 Project Goals**

The Project goals are the basis for evaluation of the Technical Proposal. CDOT has established the following goals for the Project:

1. **Maximize project scope and improvements within the project budget and schedule**
  - A. Provide solutions to complete the Project's Basic Configuration and AREs.
  - B. Maximize the integration of the Project Goals and Values
2. **Minimize project delivery time**
  - A. Ensure that obligation and completion dates meet or beat the statutory requirements.
  - B. Balance the cost and time, while delivering the project within budget.
3. **Minimize inconvenience to the traveling public during construction**
  - A. No full-closures of highways.
  - B. Develop an approach to managing traffic that minimizes travel times
4. **Maximize new structure service life**
  - A. Provide design and construction strategies that will be used to extend the service life of the replaced structures.

#### 1.4 Environmental Compliance

US 350, US 24, and CO 9 within the Project limits of each structure site (2000 feet upstream and downstream of each structure approach and departure within CDOT ROW limits) have been evaluated through categorical exclusion (CATEX) that supports a decision not to conduct additional environmental review, and satisfies the requirements of NEPA.

This Project and Work shall be conformance with NEPA documents in addition the Project and Work shall not preclude anything required as part of these documents. Mitigation measures identified in Book 2 and the NEPA documents needed in response to Project impacts, shall be implemented within the Project and Work. No Project mitigation measure resultant of the Project or Work shall be deferred to a future project.

#### 1.5 Basic Configuration

The following describes the Basic Configuration for each segment of the Work for this Project within the Right-of-Way and established Temporary Easements.

##### 1.5.1 CO 9 Structure G-12-C

- Reconstruction of CO 9 Roadway and Structure G-12-C
- As a two-lane arterial with 12-foot lanes and 8-foot outside shoulders
- Roadway transition to the structure including roadway widening, new bridge railing, and guardrail
- Construction of additional items including but not limited to: retaining walls, signing, striping, landscaping, utility relocations
- The Contractor shall raise, remove, and dispose of all structures and obstructions at this location

##### 1.5.2 CO 9 Structure J-14-C

- Reconstruction of CO 9 Roadway and Structure J-14-C

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- As a two-lane arterial with 12-foot lanes and 6-foot outside shoulders with a paved 2-foot guardrail offset
  - Roadway transition to the structure including roadway widening, new bridge railing, and guardrail
  - Construction of additional items including but not limited to: retaining walls, signing, striping, landscaping, utility relocations
  - The Contractor shall raise, remove, and dispose of all structures and obstructions at this location

**1.5.3 CO 9 Structure J-15-G**

- Reconstruction of CO 9 Roadway and Structure J-15-G
- As a two-lane arterial with 12-foot lanes and 6-foot outside shoulders with a paved 2-foot guardrail offset
- Roadway transition to the structure including roadway widening, new bridge railing, and guardrail
- Construction of additional items including but not limited to: retaining walls, signing, striping, landscaping, utility relocations
- The Contractor shall raise, remove, and dispose of all structures and obstructions at this location

**1.5.4 US 24 Structure I-13-G**

- Reconstruction of US 24 Roadway and Structure I-13-G
- As a two-lane arterial with 12-foot lanes and 8-foot outside shoulders
- Roadway transition to the structure including roadway widening, new bridge railing, and guardrail
- Construction of additional items including but not limited to: retaining walls, signing, striping, landscaping, utility relocations
- The Contractor shall raise, remove, and dispose of all structures and obstructions at this location

**1.5.5 US 24 Structure I-13-H**

- Reconstruction of US 24 Roadway and Structure I-13-H
- As a two-lane arterial with 12-foot lanes and 6-foot outside shoulders with a paved 2-foot guardrail offset
- Roadway transition to the structure including roadway widening, new bridge railing, and guardrail
- Construction of additional items including but not limited to: retaining walls, signing, striping, landscaping, utility relocations
- The Contractor shall raise, remove, and dispose of all structures and obstructions at this location

**1.5.6 US 24 Structure H-13-N**

- Reconstruction of US 24 Roadway and Structure H-13-N
- As a two-lane arterial with 12-foot lanes and 8-foot outside shoulders
- Roadway transition to the structure including roadway widening, new bridge railing, and guardrail
- Construction of additional items including but not limited to: retaining walls, signing, striping, landscaping, utility relocations

- The Contractor shall raise, remove, and dispose of all structures and obstructions at this location

**1.5.7 US 24 Structure I-15-AO**

- Reconstruction of US 24 Roadway and Structure I-15-AO
- As a two-lane arterial with 12-foot lanes and 8-foot outside shoulders
- Roadway transition to the structure including roadway widening, new bridge railing, and guardrail
- Construction of additional items including but not limited to: retaining walls, signing, striping, landscaping, utility relocations
- The Contractor shall raise, remove, and dispose of all structures and obstructions at this location

**1.5.8 US 24 Structure I-15-T**

- Reconstruction of US 24 Roadway and Structure I-15-T
- As a two-lane arterial with 12-foot lanes and 8-foot outside shoulders
- Roadway transition to the structure including roadway widening, new bridge railing, and guardrail
- Construction of additional items including but not limited to: retaining walls, signing, striping, landscaping, utility relocations
- The Contractor shall raise, remove, and dispose of all structures and obstructions at this location

**1.5.9 US 350 Structure O-19-D**

- Reconstruction of US 350 Roadway and Structure O-19-D
- As a two-lane arterial with 12-foot lanes and 6-foot outside shoulders with a paved 2-foot guardrail offset
- Roadway transition to the structure including roadway widening, new bridge railing, and guardrail
- Construction of additional items including but not limited to: retaining walls, signing, striping, landscaping, utility relocations
- The Contractor shall raise, remove, and dispose of all structures and obstructions at this location

**1.5.10 US 350 Structure N-21-C**

- Reconstruction of US 350 Roadway and Structure N-21-C
- As a two-lane arterial with 12-foot lanes and 6-foot outside shoulders with a paved 2-foot guardrail offset
- Roadway transition to the structure including roadway widening, new bridge railing, and guardrail
- Construction of additional items including but not limited to: retaining walls, signing, striping, landscaping, utility relocations
- The Contractor shall raise, remove, and dispose of all structures and obstructions at this location

**1.5.11 US 350 Structure N-21-F**

- Reconstruction of US 350 Roadway and Structure N-21-F

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- As a two-lane arterial with 12-foot lanes and 6-foot outside shoulders with a paved 2-foot guardrail offset
  - Roadway transition to the structure including roadway widening, new bridge railing, and guardrail
  - Construction of additional items including but not limited to: retaining walls, signing, striping, landscaping, utility relocations
  - The Contractor shall raise, remove, and dispose of all structures and obstructions at this location

**1.5.12 US 350 Structure M-21-C**

- Reconstruction of US 350 Roadway and Structure M-21-C
- As a two-lane arterial with 12-foot lanes and 6-foot outside shoulders with a paved 2-foot guardrail offset
- Roadway transition to the structure including roadway widening, new bridge railing, and guardrail
- Construction of additional items including but not limited to: retaining walls, signing, striping, landscaping, utility relocations
- The Contractor shall raise, remove, and dispose of all structures and obstructions at this location

**1.5.13 US 350 Structure M-21-B**

- Reconstruction of US 350 Roadway and Structure M-21-B
- As a two-lane arterial with 12-foot lanes and 6-foot outside shoulders with a paved 2-foot guardrail offset
- Roadway transition to the structure including roadway widening, new bridge railing, and guardrail
- Construction of additional items including but not limited to: retaining walls, signing, striping, landscaping, utility relocations
- The Contractor shall raise, remove, and dispose of all structures and obstructions at this location

**1.5.14 US 350 Structure M-21-I**

- Reconstruction of US 350 Roadway and Structure M-21-I
- As a two-lane arterial with 12-foot lanes and 6-foot outside shoulders with a paved 2-foot guardrail offset
- Roadway transition to the structure including roadway widening, new bridge railing, and guardrail
- Construction of additional items including but not limited to: retaining walls, signing, striping, landscaping, utility relocations
- The Contractor shall raise, remove, and dispose of all structures and obstructions at this location

**1.5.15 US 350 Structure M-21-J**

- Reconstruction of US 350 Roadway and Structure M-21-J
- As a two-lane arterial with 12-foot lanes and 6-foot outside shoulders with a paved 2-foot guardrail offset
- Roadway transition to the structure including roadway widening, new bridge railing, and guardrail

- Construction of additional items including but not limited to: retaining walls, signing, striping, landscaping, utility relocations
- The Contractor shall raise, remove, and dispose of all structures and obstructions at this location

**1.5.16 US 350 Structure M-22-Y**

- Reconstruction of US 350 Roadway and Structure M-22-Y
- As a two-lane arterial with 12-foot lanes and 6-foot outside shoulders with a paved 2-foot guardrail offset
- Roadway transition to the structure including roadway widening, new bridge railing, and guardrail
- Construction of additional items including but not limited to: retaining walls, signing, striping, landscaping, utility relocations
- The Contractor shall raise, remove, and dispose of all structures and obstructions at this location

**1.5.17 US 350 Structure M-22-U**

- Reconstruction of US 350 Roadway and Structure M-22-U
- As a two-lane arterial with 12-foot lanes and 6-foot outside shoulders with a paved 2-foot guardrail offset
- Roadway transition to the structure including roadway widening, new bridge railing, and guardrail
- Construction of additional items including but not limited to: retaining walls, signing, striping, landscaping, utility relocations
- The Contractor shall raise, remove, and dispose of all structures and obstructions at this location

Reference Documents illustrate the Basic Configuration as well as the AREs and are provided solely for the Contractor's reference and are without representation or warranty by CDOT. Regardless of the level of completion or suitability of any portion of Reference Documents, the Contractor shall be solely responsible for all Project design and construction elements. CDOT shall have no liability or obligation as a result of design work contained in the Reference Documents. Reference Documents are provided solely for Proposers' reference and are without representation or warranty by CDOT, unless specifically stated otherwise in Book 1.

Reference Documents may represent differing levels of completion throughout the limits of the Project. The Contractor shall be obligated to revise this information accordingly in order to meet the requirements of the Contract Documents.

**1.6 Additional Requested Elements**

The following AREs are identified as elements of the Project that may be incorporated into the Basic Configuration as part of the Contractor's Proposal.

**1.6.1 US 24 Structure I-17-X**

- Reconstruction of US 25 Roadway and Structure I-17-X
- As a two-lane crossover with 12-foot lanes and 8-foot outside shoulders
- Roadway transition to the structure including roadway widening, new bridge railing, and guardrail

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- Construction of additional items including but not limited to: retaining walls, signing, striping, landscaping, utility relocations
  - The Contractor shall raise, remove, and dispose of all structures and obstructions at this location

**1.6.2 CO 239 Structure P-19-G Minor**

- Reconstruction of CO 239 Roadway and Structure P-19-G Minor
- As a two-lane arterial with 12-foot lanes and 6-foot outside shoulders with a paved 2-foot guardrail offset
- Roadway transition to the structure including roadway widening, new bridge railing, and guardrail
- Construction of additional items including but not limited to: retaining walls, signing, striping, landscaping, utility relocations
- The Contractor shall raise, remove, and dispose of all structures and obstructions at this location

Project limits of each ARE structure site (2000 feet upstream and downstream of each structure approach and departure within CDOT ROW limits) have been evaluated through categorical exclusion (CATEX) that supports a decision not to conduct additional environmental review, and satisfies the requirements of NEPA. The Contractor shall be responsible for assessing ROW issues, hazardous materials, utility conflicts, third-party agreements, and any other additional permits or requirements to design and construct the AREs. AREs shall conform to all other requirements of the Contract Documents.

**1.7 Exhibits**

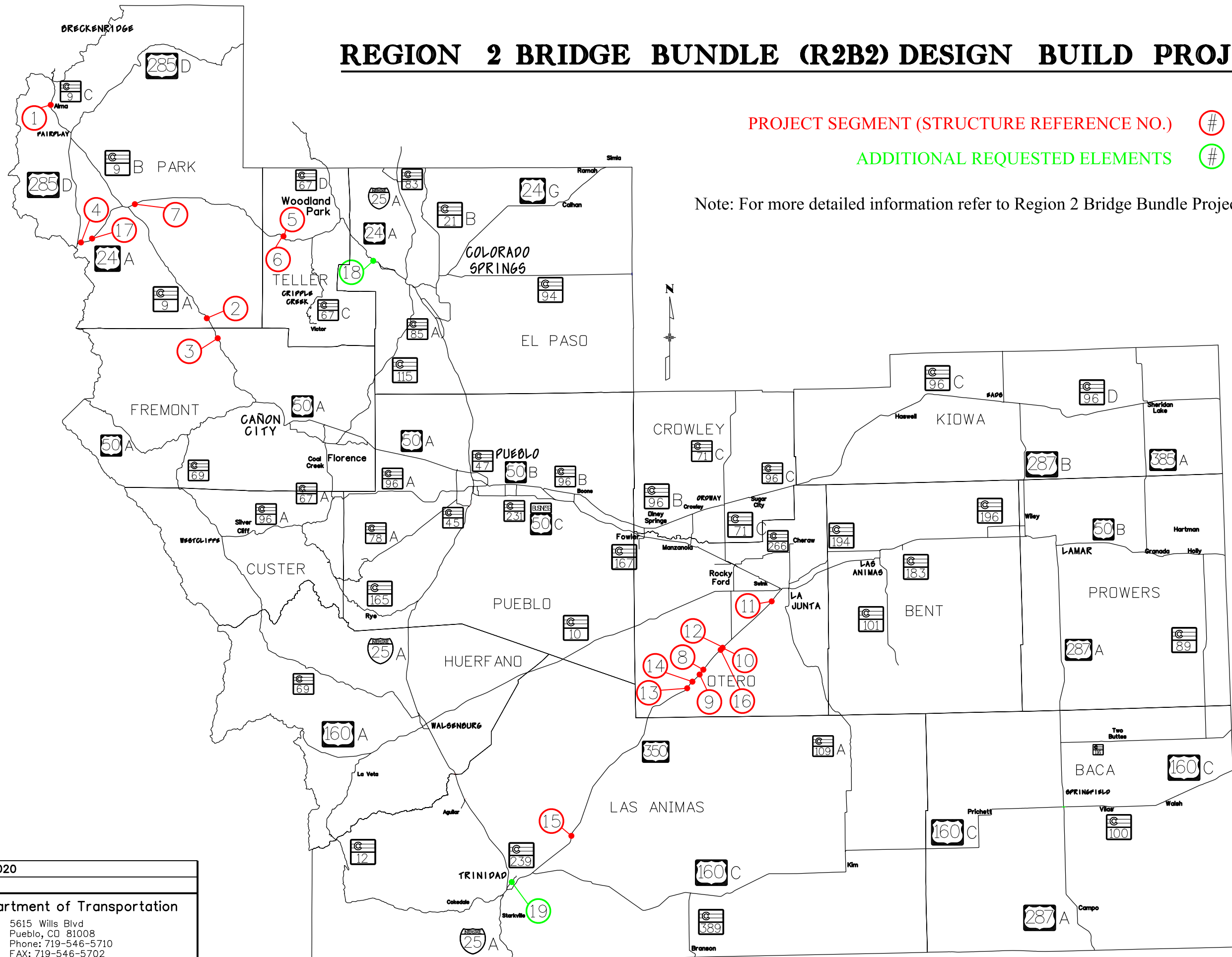
Exhibit 1-A – CO 9, US 24, and US 350 Basic Configuration and Additional Requested Elements Road and Bridge Segments

# REGION 2 BRIDGE BUNDLE (R2B2) DESIGN BUILD PROJECT MAP

PROJECT SEGMENT (STRUCTURE REFERENCE NO.) #

ADDITIONAL REQUESTED ELEMENTS #

Note: For more detailed information refer to Region 2 Bridge Bundle Project Spreadsheet



PLAN DATE: 1/9/2020  
R2B2 PROJECT MAP

Colorado Department of Transportation  
5615 Wills Blvd  
Pueblo, CO 81008  
Phone: 719-546-5710  
FAX: 719-546-5702

Region 2 JLB



## REGION 2 BRIDGE BUNDLE (R2B2) PROJECT

Map Ref. #	STRUCTURE NAME	HIGHWAY	Mile Post	YEAR BUILT	CURRENT BRIDGE TYPE
1	G-12-C	CO 9	71.445	1938	CBC
2	J-14-C	CO 9	20.107	1934	TTS
3	J-15-G	CO 9	15.97	1971	CMP
4	I-13-G	US 24	227.095	1937	TTS
5	I-15-AO	US 24	271.9	1937	CBC
6	I-15-T	US 24	271.691	1937	CBC
7	H-13-N	US 24	240.686	1937	TTS
8	M-21-B	US 350	51.682	1937	CI
9	M-21-C	US 350	50.582	1937	CI
10	M-21-J	US 350	57.069	1935	TTS
11	M-22-U	US 350	69.817	1935	CI
12	M-22-Y	US 350	57.474	1935	TTS
13	N-21-C	US 350	47.131	1936	TTS
14	N-21-F	US 350	48.744	1937	CI
15	O-19-D	US 350	10.289	1937	TTS
16	M-21-I	US 350	56.454	1935	TTS
17	I-13-H	US 24	229.468	1937	TTS
18	I-17-X	US 24	295.45	1965	CBC
19	P-19-G Minor	CO 239	1.74	1932	SSM



**COLORADO**  
 Department of  
 Transportation

## **2.0 PROJECT MANAGEMENT**

### **2.1 Administration**

The Contractor shall be responsible for the management and performance of the Work. The Colorado Department of Transportation (CDOT) shall have the right to visit the Site, inspect the Work for quality, and observe the Work to determine that the Work is proceeding in conformance with the requirements of the Contract Documents.

### **2.2 Key Personnel**

The Contractor shall provide Key Personnel on the Project. Key Personnel shall include the Design Build Project Manager, Design Manager, Construction Manager(s), Quality Control Administrator, Design Quality Manager, Construction Quality Manager, Environmental Compliance Manager, Civil Rights Compliance Manager, Structural Engineer in Responsible Charge, and Document Control Manager. The Contractor shall not replace any Key Personnel without prior Approval from CDOT. Personnel replacements must have equal to or better than qualifications as the original personnel, as determined by CDOT.

The Key Personnel shall have, at a minimum, the qualifications outlined in the following sections:

#### **2.2.1 Design Build Project Manager**

1. The Design-Build Project Manager shall be in direct charge of the design, construction, quality management, and is responsible for the administration and satisfactory completion of the Project under the contract. This person shall be assigned to the Project full time and will be required to be onsite for the duration of the Project.
2. Shall have a minimum five (5) years of experience managing major projects involving highway construction/reconstruction, bridge/structure construction, and traffic phasing.
3. Shall have experience managing and scheduling work that occurs at multiple locations simultaneously.
4. Shall have the authority to stop Work if and when he/she knows or has reason to believe that any Work does not meet the standards, specifications, or criteria established for the Project.
5. Shall not be assigned any other Key Personnel duties or responsibilities on the Project.
6. Must work under the direct supervision of the Design-Builder's Executive Management Team (EMT). The Design-Build Project Manager will report to the EMT.

#### **2.2.2 Design Manager**

1. The Design Manager shall be responsible for ensuring that the overall Project design is completed and design criteria requirements are met. This person shall be assigned to the Project full time during the design phase and will be required to be onsite and

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available to the Project as necessary to facilitate design Work and to address design issues for the duration of the Project.

2. Shall work under the direct supervision of the Design-Build Project Manager.
3. Shall be a registered Professional Engineer in the State of Colorado prior to the commencement of any design Work on the Project.
4. Shall have a minimum of five (5) years of design experience including experience managing projects involving major highway construction/reconstruction, bridge/structure construction, and traffic phasing.
5. Shall have the authority and obligation to stop Work if and when he/she knows, or has reason to believe, that any Work does not meet the standards, specifications, or criteria established for the Project.
6. Design-Build experience is preferred.
7. Shall not be assigned any other Key Personnel duties or responsibilities on the Project.

### **2.2.3 Construction Manager(s)**

1. The Construction Manager(s) shall be assigned to the Project full time and will be required to be onsite for the duration of the construction Work.
2. Shall have a minimum of five (5) years of construction experience including managing the construction of projects involving major highway construction/reconstruction, bridge/structure construction, and traffic phasing.
3. Shall work under the direct supervision of the Design-Build Project Manager.
4. Shall not be assigned any other Key Personnel duties or responsibilities on the Project.
5. Shall have the authority and obligation to stop Work if and when he/she knows, or has reason to believe, that any Work does not meet the standards, specification, or criteria established for the Project.
6. Is in direct charge of all Project Superintendent(s).

### **2.2.4 Quality Control Administrator (QCA)**

1. The Quality Control Administrator (QCA) shall work under the direct supervision of the Design-Builder's Executive Management Team (to whom the Design-Build Project Manager also reports). This person shall be assigned to the Project full time and will be required to be on Site as required for the Work to fulfill their responsibilities.
2. Shall be responsible for the Design-Builder's quality program.
3. Shall be responsible for certifying on the monthly invoice that the Work has been completed in conformance to the contract, the Approved Released for Construction Documents (or revisions), and the execution of the Design-Builder's Quality Management Plan.
4. Shall have the independent authority and obligation to stop any and all Work that does not meet the standards, specifications, or criteria established for the Project.
5. Shall have recent experience developing, implementing, and overseeing quality programs on Design-Build projects.

### **2.2.5 Design Quality Manager (DQM)**

1. The Design Quality Manager shall be responsible for the Contractor design quality

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program, quality personnel, quality planning, assurance activities independent of production, quality system procedures enforcement, development and implementation of the quality program objectives, total system quality and management, quality records and documentation, and review and approval of the Design Quality Management Plan (DQMP) and the Quality Management Plan prior to submittal to CDOT.

2. Shall be responsible for certifying on the monthly invoice that the Work has been completed in conformance to the Contract, the Approved Released for Construction Drawings (or revisions), and Design-Builder's Quality Management Plan.
3. Shall be responsible for verifying and providing confidence that the design work meets or will meet the contractual requirements.
4. Must be available during design and construction for the duration of the Project.
5. Must be a registered professional engineer in the State of Colorado.
6. Shall have at least five (5) years of recent experience overseeing the design of major highways.
7. Must work under the direct supervision of the Design-Builder's Quality Control Administrator (QCA). The Design Quality Manager will report to the QCA.

#### **2.2.6 Construction Quality Manager (CQM)**

1. The Construction Quality Manager shall be responsible for verifying and providing confidence that the construction work meets or will meet the contractual requirements, managing the Contractor's workmanship, implementing quality planning, overseeing quality control testing and inspections, and coordinating with CDOT's verification testing, inspections, and construction independent assurance.
2. Shall be responsible for certifying on the monthly invoice that the Work has been completed in conformance to the contract, the Approved Released for Construction Drawings (or revisions), and the Design-Builder's Quality Management Plan.
3. Shall be responsible for the Contractor quality program, quality personnel, quality planning, assurance activities independent of production, quality system procedures enforcement, development and implementation of the quality program objectives, total system quality and management, quality records and documentation, and review and approval of the Quality Management Plan prior to submittal to CDOT.
4. Must be available on site as necessary during construction of the Project.
5. Shall have at least five (5) years of recent experience overseeing the inspection and materials testing on major highway construction projects.
6. Must work under the direct supervision of the Design-Builder's Quality Control Administrator (QCA). The Design-Build Construction Quality Manager will report to the QCA.

#### **2.2.7 Environmental Compliance Manager**

1. The Environmental Compliance Manager shall work under the direct supervision of the Design- Build Project Manager. This person shall be assigned to the Project full time and will be required to be onsite as required for the Work to fulfill their responsibilities.
2. Shall ensure compliance of all applicable permits (i.e. Noise, NPDES, SB 40, 404).

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3. Shall be responsible to ensure the Contractor develops, implements, maintains, and documents control measures for the Project and is in compliance with permit application requirements.
  4. Shall have recent experience in construction monitoring, water quality, environmental documentation, and obtaining environmental permits.
  5. Shall have experience with Regulatory Agencies.
  6. Certification as a Transportation Erosion Control Supervisor is preferred

### **2.2.8 Civil Rights Compliance Manager**

1. The Civil Rights Compliance Manager shall be responsible for the day-to-day operational components of, and serve as the primary contact to CDOT for all matters and requirements concerning Davis-Bacon and related Acts, equal employment opportunity, Title VI of the Civil Rights Act, Compliance with FHWA-1273, DBE Program, ESB Program, and OJT Program and will be required to be on Site as necessary to ensure compliance for the duration of the Project.
2. Shall have at least three (3) years professional experience in managing, leading and implementing all of the requirements of the Civil Rights Plan (for USDOT funded transportation construction projects of similar magnitude.
3. Shall have demonstrable knowledge of small business and/or workforce development programs.
4. Shall work under the direct supervision of the Design-Build Project Manager.

### **2.2.9 Structural Engineer in Responsible Charge**

1. The Structural Engineer in Responsible Charge shall ensure the design and construction of the bridges and major structures meet design and construction criteria. This person shall be assigned to the Project for the duration of the Project and will be required to be onsite as required to oversee safety critical components of the Work.
2. Shall work under the direct supervision of the Design-Build Project Manager.
3. Shall be a registered Professional Engineer in the State of Colorado.
4. Shall have a minimum of five (5) years of recent experience in construction of bridges and major structures on projects involving highway reconstruction and bridge structure replacement under traffic.
5. Shall have the authority and obligation to stop Work if and when he/she knows, or has reason to believe that any Work does not meet the standards, specification, or criteria established for the Project.

### **2.2.10 Document Control Manager**

1. The Document Control Manager shall have experience managing documents and how the documents are approved, organized, updated, amended, transmitted, and how changes are tracked.
2. Must be proficient with computer software and document control systems (i.e. ProjectWise, Aconex, Share Point).
3. Shall work under the direct supervision of the Design-Build Project Manager.

### **2.3 Work Breakdown Structure**

The Contractor shall submit to CDOT a detailed Work Breakdown Structure (WBS), including proposed Work segments for Acceptance prior to the First Notice to Proceed (NTP1). The WBS shall include a detailed, organized hierarchical division to complete each element of the Work. The Accepted WBS shall be the basis for organizing all Work under the Contract Documents, and shall be used as a basis for the Contract Schedules and other cost control systems. The Contractor's WBS shall conform to Table 2-1 and Exhibit 2-A, Work Breakdown Structure.

All cost and schedule information shall roll up to Level I through Level VI, as identified in Exhibit 2-A. Further detail shall be provided by the Contractor for Level IV, Level V, and Level VI to ensure a clear understanding of the Contract and the execution of the Work.

#### **2.3.1 WBS Activities Modifications**

When it becomes necessary to add, combine, eliminate, or modify Contract-specified WBS Level IV, V, or VI Activities to reflect modifications to the Work, such changes shall be made through a Change Order that has been Approved by CDOT in accordance with the Contract. These changes to the WBS Level IV, V, or VI Activities shall consequently be reflected in subsequent Schedule submittals, as defined in this Section 2. Alternately, if a proposed addition, combination, elimination, or modification of WBS Level IV, V, or VI Activities would not be the subject of a Change Order, then the consequent realignment of funds between Level IV Schedule Activities must be Approved by CDOT in accordance with the Contract and thereafter reflected in the required Contract Schedule submittals.

Table 2-1 WBS Levels

<b>Level I:</b>	<b>R2B2 DESIGN BUILD</b>
<u>Program Level</u> —CDOT use only: The summary of all Design-Build Contract components	
<b>Level II:</b>	<b>MAJOR PROGRAM ELEMENTS</b>
<u>Major Program Elements:</u>	
<input type="checkbox"/> Activities of the Contractor. This is the Contractor’s highest level. * Basis for Price Proposal to be submitted as identified on Form J.	
<b>Level III:</b>	<b>CONTRACT COMPONENTS</b>
<u>Design-Build Contract Components:</u>	
<input type="checkbox"/> Breakdown of all subcomponents as shown on Exhibit 2-A. * Basis for Price Proposal to be submitted as identified on Form J.	
<b>Level IV:</b>	<b>CONTRACT SUBCOMPONENTS</b>
<u>Design-Build Contract Subcomponents:</u>	
<input type="checkbox"/> Breakdown of all major subcomponents of the Contract as shown on Exhibit 2-A. <input type="checkbox"/> The Contractor to define certain Activities at this level (Work areas). See Exhibit 2-A for Contract-specified Level IV Activities and other detail. <input type="checkbox"/> Additional Requested Elements (ARE)* * Basis for Price Proposal to be submitted as identified on Form J.	
<b>Level V:</b>	<b>CONTRACT SUBCOMPONENTS AND WORK ACTIVITIES</b>
<u>Breakdown of the Contract Subcomponents and Work Activities defined by the Contractor:</u>	
<input type="checkbox"/> Minor subcomponents (by phase, etc.). <input type="checkbox"/> Contractor to define certain Activities at this level (Work areas, phases, etc.). <input type="checkbox"/> See Exhibit 2-A for Contract-specified Level V Activities and other detail. <input type="checkbox"/> Basis for all progress payments.	
<b>Level VI:</b>	<b>WORK SUB-ACTIVITIES</b>
<u>Breakdown defined by the Contractor:</u>	
<input type="checkbox"/> The Contractor to define all Activities at this level.	
<u>Schedules</u> —The following Critical Path Method (CPM) schedules shall be cost-loaded and resource-loaded to this level:	
<input type="checkbox"/> Preliminary Baseline Schedule <input checked="" type="checkbox"/> Original Baseline Schedule (or Revised Baseline Schedule, if applicable) <input type="checkbox"/> Current Baseline Schedule Monthly Progress Schedule <input type="checkbox"/> Recovery Schedule <input type="checkbox"/> As-Constructed Schedule	

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## 2.4 Schedule Management

### 2.4.1 General

The Work related to Schedule management includes preparing, progressing, revising, and submitting Contract Schedules.

The Contract Schedules shall represent a practical plan to complete the Work within the Completion Deadlines and convey the intent of the execution and progress of the Work.

The Contract Schedules shall include the planned execution of the Work in accordance with the Contract Documents. The Contract Schedules shall include seasonal and weather constraints; involvement and coordination with other Contractors, Utility Owners, Governmental Persons, Engineers, Architects, Subcontractors, and Suppliers; environmental constraints, Right-of-Way (ROW) restrictions, and traffic constraints. All other constraints shall be considered in the development of the Original Baseline Schedule, Revised Baseline Schedule, and updating of subsequent Monthly Progress Schedules. The Contract Schedules shall include delivery dates for critical materials, submittal and review periods, and dates for no-Work periods. No ambiguous Activities shall be permitted.

All Contract Schedule submittals are subject to Review, Acceptance, and/or Approval by CDOT. The Contract Schedules shall represent the requirements of the Contract Documents, and the Work shall be executed in the sequence and duration indicated in the Contract Schedules.

All Contract Schedules shall be developed consistently with the Accepted WBS and the Completion Deadlines. All Contract Schedules shall be cost-loaded and resource-loaded to WBS Level VI.

All Work and Activities of the Contractor shall be scheduled and monitored by use of a CPM schedule developed and maintained using a scheduling software Approved by CDOT. The Contractor shall submit the proposed scheduling software for CDOT Approval prior to NTP1. The Contractor shall provide CDOT with one license of the scheduling software for use on the Project. All scheduling software settings within the scheduling/ leveling dialog box shall remain default settings unless otherwise Approved by CDOT. In addition, any changes to the scheduling software settings that alter the scheduling calculations shall be clearly identified and provided as part of the Contract Schedule submittals.

The Contractor shall designate a Contractor's Scheduler for the duration of the Project. The Contractor's Scheduler must have at least 5 years of previous scheduling experience on similarly sized projects in both scope and complexity (with references to be provided to CDOT, upon request). If the Contractor's Scheduler is found incapable of performing the schedule management in accordance with this Section 2, CDOT may remove the Contractor's Scheduler from the Project at CDOT's discretion. Upon removal or voluntary termination of the Contractor's Scheduler from the Project, the Contractor shall provide a qualified replacement within 30 Days.

The Contractor shall conduct a schedule development meeting with CDOT within 10 Days



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after Contract Execution. At this meeting, participants shall discuss details and requirements of the submittals for both the Preliminary Baseline Schedule and the Original Baseline Schedule.

### **2.4.2 Contract Schedule, Term Definitions, and Execution**

Contract Schedules shall include the Preliminary Baseline Schedule, Original Baseline Schedule, Current Baseline Schedule, Revised Progress Schedule, Monthly Progress Schedule, Recovery Schedule, and the As-Constructed Schedule.

#### **2.4.2.1 Preliminary Baseline Schedule**

The Preliminary Baseline Schedule is defined as the initial schedule for the purpose of initiating Work on the Project. It shall be a CPM schedule with Activities following NTP1 and prior to NTP2. The Preliminary Baseline Schedule shall be in accordance with the Contract requirements; shall conform to the Accepted WBS; shall be cost-loaded and resource-loaded to WBS Level VI; shall include all Contractor-defined WBS Level V and VI Activities; and shall include Contractor-defined detail necessary to provide measurable schedule progress. The Preliminary Baseline Schedule shall provide an intermediate schedule during the production of the Original Baseline Schedule and shall establish a payment/drawdown schedule for the duration between NTP1 and NTP2.

The Contractor shall submit the Preliminary Baseline Schedule to CDOT for Acceptance prior to NTP1.

#### **2.4.2.2 Original Baseline Schedule**

The Original Baseline Schedule is defined as the Contractor's original plan for the Project from NTP1 through Final Acceptance. It shall be a detailed CPM Schedule with Work Activities and Completion Deadlines included for the full term of the Project. The Original Baseline Schedule shall be developed from the Accepted Preliminary Baseline Schedule and shall conform to the Accepted WBS and include all Contractor-defined WBS Level VI Activities.

The Contractor shall submit to CDOT for Approval the final Original Baseline Schedule no later than 45 Days prior to issuance of Second Notice to Proceed (NTP2). Once Approved, this schedule shall become the Original Baseline Schedule against which all progress and revisions shall be measured. The Original Baseline Schedule shall not change after Approval.

Upon Approval by CDOT, the Original Baseline Schedule shall be the basis for the Monthly Progress Schedule used by the Contractor in scheduling and performance of the Work.

The Original Baseline Schedule shall be cost-loaded and resource-loaded to WBS Level VI and summarized for the aggregate costs equal to the WBS Level V prices set forth in the Proposal Documents.

The Original Baseline Schedule shall show the sequence and interdependence of Activities required for complete performance of the Work, beginning with the date of the NTP1 and concluding with the date of Final Acceptance, and shall comply with the following:

1. The actual number of Activities in the schedule shall be sufficient to ensure adequate

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planning of the Work and to permit monitoring and evaluation of progress and the analysis of time impacts. Activity durations shall be expressed in full days of Work. The Work calendar shall clearly identify Holidays and other non-Working Days.

2. The Contractor shall schedule deliverable review times by CDOT and Governmental Approvals as separate tasks logically tied to the appropriate Activity. Concurrent review of multiple deliverables by one discipline must be agreed to by CDOT prior to inclusion in the Original Baseline Schedule. The Contractor shall provide a new Activity for review time in the schedule for every resubmittal required due to the Contractor providing incomplete or nonconforming submittals to CDOT or for Governmental Approvals.
3. A graphic representation of all Activities necessary to complete the Work shall be provided.
4. All Completion Deadlines set forth in the Contract shall be identified.
5. All required constraints and sequences defined in the Contract shall be included in the Original Baseline Schedule. If the Original Baseline Schedule or any schedule update does not include these constraints and sequences, Acceptance or Approval of the schedule will not waive such requirements.

The Original Baseline Schedule will be Reviewed by CDOT for purposes of determining:

1. Compliance with applicable provisions of the Contract Documents.
2. That the logic of the proposed CPM schedule is sound and consistently developed and demonstrates a logical sequencing and interdependence of Activities required for the timely and orderly achievement of all Work Activities and milestones, including completion of the Work within the Completion Deadlines.

A methods statement shall be prepared for each of the Level VI WBS Activities listed in the Original Baseline Schedule for all Critical Path items, and for any Activity not listed that the Contractor considers a controlling factor for timely completion. The methods statements shall include:

1. Salient feature name
2. Responsibility for the salient feature work
3. Planned work procedures
4. Planned quantity of work per day for each salient feature
5. Anticipated labor force by labor type
6. Number, types, and capacities of equipment planned for the work
7. Planned time for the work including the number of work days per week, number of shifts per day, and the number of hours per shift

The methods statements shall be submitted for CDOT's Acceptance prior to NTP2.

#### **2.4.2.3 Current Baseline Schedule**

The Current Baseline Schedule is defined as the Original Baseline Schedule with cost and schedule changes from Approved Change Orders incorporated. It shall be updated monthly

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with only Approved cost and schedule changes. The Current Baseline Schedule shall not show progress, but shall maintain the dates from the Original Baseline Schedule. The Current Baseline Schedule shall include a late start cost curve.

The Current Baseline Schedule shall be cost-loaded and resource-loaded to WBS Level VI and summarized for the aggregate costs equal to the WBS Level V prices set forth in the Proposal Documents as adjusted for Approved Change Orders.

The Current Baseline Schedule shall be submitted to CDOT for Acceptance concurrent with each Monthly Invoice.

#### **2.4.2.4 Revised Progress Schedule**

The Revised Progress Schedule is defined as the Contractor's plan for the Project, which is current with progress to date. This Schedule shall reflect the planned execution of the Work for the remainder of the Project, along with a reallocation of the remaining resources and quantities to represent the estimate to complete the Work, as adjusted for Approved Change Orders. A Revised Progress Schedule must be Approved by CDOT. CDOT Approval will only apply to the scheduled Work that is planned after the Revised Progress Schedule's Approval date.

The Revised Progress Schedule shall be cost-loaded and resource-loaded to WBS Level VI and summarized for the aggregate costs equal to the WBS Level V prices set forth in the Proposal Documents, as adjusted for Approved Change Orders.

The Revised Progress Schedule shall be prepared by the Contractor when requested by CDOT. The Contractor may request that CDOT review a Revised Progress Schedule at any time. However, this review will be undertaken only if CDOT agrees with the need for it.

#### **2.4.2.5 Monthly Progress Schedule**

The Approved Original Baseline Schedule, Current Baseline Schedule, or Revised Progress Schedule shall be used as the basis to establish the Monthly Progress Schedule, which shall be updated every month to show the actual progress of Work and the earned value of Work accomplished, including Approved Change Orders.

The Monthly Progress Schedule shall be cost-loaded and resource-loaded to WBS Level VI and summarized for the aggregate costs equal to the WBS Level V prices set forth in the Proposal Documents, as adjusted for Approved Change Orders. In addition, the Monthly Progress Schedule shall include WBS Level VI detail for the upcoming 3 months of design and construction on the Project, except that cost loading to WBS Level VI is not required for the 3-month look-ahead.

The Monthly Progress Schedule shall be submitted each month to CDOT for Acceptance, concurrent with the Monthly Invoice submittal. The Monthly Progress Schedule shall include all current information as of the status date.

For the 3-month look-ahead portion of the Monthly Progress Schedule that establishes the WBS Level VI Activities, the Contractor shall provide sufficient detail to convey a schedule

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that provides weekly schedule control and shall specifically identify:

1. Completion Deadlines, if any.
2. Phasing of design, construction, testing, and staging of the Work, as specified, giving particular attention to release for construction dates, Site availability, construction staging, public involvement notifications, and maintenance and protection of traffic requirements of the Contract.
3. Procurement, fabrication, preparation of mock-ups, preparation of prototypes, delivery, installation, and testing of Materials and Equipment, including factory testing and demonstration testing, and any orders for Materials and Equipment with long lead times (more than 30 Days).
4. Interface coordination and dependencies with preceding, concurrent, and follow-on Contractors, and Work to be performed by other Contractors and agencies that may affect the schedule. Prior to the progress status meeting, the Contractor shall obtain from the design team, Subcontractors, Suppliers, and field staff the information required to accurately reflect progress to date.

#### **2.4.2.6 Recovery Schedule**

The Recovery Schedule is defined as the Contractor's program and proposed plan for the recapture of lost schedule progress and to achieve Project Completion or Final Acceptance by the applicable Completion Deadlines. The Recovery Schedule shall be based on the latest Accepted Monthly Progress Schedule and shall include equivalent detail. The Recovery Schedule shall show the proposed changes to the Schedule, include cost loading and additional detail to substantiate the recovery plan, and shall reflect all proposed changes to WBS Level VI Activities through Project Completion.

The Recovery Schedule shall be cost-loaded and resource-loaded to WBS Level VI and summarized for the aggregate costs equal to the WBS Level V prices set forth in the Proposal Documents, as adjusted for Approved Change Orders.

If the Work is lagging behind the late start cost curve in the Current Baseline Schedule for a period that exceeds the greater of: (a) 15 Days in the aggregate, or (b) that number of Days in the aggregate that equals 5% of the Days remaining until the Project Completion Deadline, the Contractor shall prepare and submit to CDOT for Approval a Recovery Schedule within 14 Days after the Contractor first becomes aware of this schedule delay.

The Recovery Schedule shall demonstrate the Contractor's program and proposed plan to regain lost schedule progress, as well as demonstrate how Project Completion and Final Acceptance of the Project shall be achieved by the deadlines specified in Book 1, Exhibit B.

CDOT will notify the Contractor within 14 Days after receipt of the Recovery Schedule whether the Recovery Schedule is Approved, or will describe changes that CDOT believes should be made to the Recovery Schedule. The Contractor shall incorporate and fully include the Recovery Schedule (including CDOT's comments) into the next scheduled Monthly Progress Schedule (or, if the next scheduled Monthly Progress Schedule is due within seven (7) Days of Approval of the Recovery Schedule, then the Recovery Schedule shall be incorporated into the subsequent Monthly Progress Schedule), and shall concurrently provide to CDOT a Revised

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Progress Schedule.

#### **2.4.2.7 As-Constructed Schedule**

The last Monthly Progress Schedule submitted shall be identified by the Contractor as the As-Constructed Schedule. The As-Constructed Schedule shall reflect the exact manner in which the Contractor executed the Work (including start and completion dates, Activities, actual durations, sequences, and logic), and shall be signed and certified by the Contractor's Engineer and Scheduler as being a true reflection of the way in which the Work was executed through Final Acceptance. This certified As-Constructed Schedule must be Accepted by CDOT before the final Retainage is released.

#### **2.4.2.8 Float**

Float is defined as the amount of time between the early start date and the late start date, or the early finish date and the late finish date, for each and every Activity in the Schedule. Float shall not be for the exclusive use or benefit of either CDOT or the Contractor, but shall be a jointly owned expiring resource available to both parties, as needed, to meet Contract Deadlines. Suppression or consumption of Float by extended Activity duration, dummy Activities, or preferential sequencing will not be allowed.

#### **2.4.2.9 Near Critical Activities**

Near critical activities shall be defined as Activities with a total Float of less than 10 Days.

### **2.4.3 Schedule Requirements**

#### **2.4.3.1 General Scheduling Constraints**

1. All Contract Schedules shall be in the same master data file, including design, submittals, procurement, and construction Schedules. These Work Activity Schedules shall all tie together logically to present a total Critical Path analysis in the same master data file.
2. The only constraints allowed to be included in the Schedule are the Contract Deadlines. No intermediate completion constraints or start constraints shall be allowed unless they are included in the Contract. The Contractor shall submit, for CDOT Review, a list of any Contractual constraints, including Contract section references, with the Contract Schedules. Unless Approved by CDOT, all Activities must have at least one predecessor and one successor, except for the NTP1 (no predecessor) and Final Acceptance (no successor). No lead or lag relationships shall be permitted.
3. All Activities that start or complete out of sequence shall be rescheduled (logic corrected) to reflect the actual sequence of events.
4. Actual start and completion dates shall be accurately entered. The Contractor shall submit to CDOT for Approval a narrative describing any changes or corrections of any previous actual dates or dates required in the Contract prior to any changes or corrections to the schedule dates.
5. If any logic is changed after the Approval of the Original Baseline Schedule or

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Revised Progress Schedule, a narrative by Activity identification code (ID) shall accompany the Monthly Progress Schedule stating the reason the logic changed and the benefit to CDOT. If CDOT does not agree with the reason for the logic change, the Monthly Progress Schedule will not be Accepted.

6. All Activity ID codes for a specific Activity description created in any Contract Schedule shall remain unchanged and connected to its original Activity description through Final Acceptance. An Activity description may be changed only to clarify an Activity's original scope.

#### **2.4.3.2 CPM Requirements**

1. The Critical Path shall be determined according to CPM principles and shall be highlighted in red on all Schedules to distinguish the critical path from other Activities.
2. A diamond, flag, or other symbol shall highlight milestones.
3. The CPM shall have all major procurement Activities identified for any item with more than 30 Days lead time for delivery. This includes Shop Drawing submittal and approval, lead times for the fabrication and delivery of Materials and Equipment, and installation of Materials and Equipment.
4. The CPM shall be sufficiently detailed to accurately depict all the Work. Activity durations shall be an estimate in Days of the time required to perform each Activity. No individual Activity will have a duration exceeding 15 Days without prior approval from the Project Director. Activities with durations of less than 5 Days shall be held to the absolute minimum. For an Equipment or Material fabrication item whose duration exceeds 30 Days, several Activities, none exceeding 30 Days, shall be used. Each Activity shall have a detailed description.
5. Contract Completion Deadline dates shall be shown on the CPM. These dates shall be input as finish constraint dates and shall agree with the dates specified in the Contract.

#### **2.4.3.3 Schedule Output Format**

The Contractor shall submit the electronic output files of the Schedule (e.g., XER for Primavera). Schedule charts and graphs shall be submitted in a format compatible with Adobe Acrobat Reader .PDF, and Microsoft® Excel. These files shall be submitted with the Monthly Progress Schedule.

### **2.4.4 Cost Management**

#### **2.4.4.1 Progress Payment and Calculations**

CDOT will base progress payments on a mutually agreed estimate of percent of the Work that is complete, not on measured quantities. The Contractor shall progress the Activities identified on the Approved Original Baseline Schedule, the Current Baseline Schedule, or the Approved Revised Progress Schedule (if applicable) for determining the Monthly Progress Schedule. The Accepted Monthly Progress Schedule will determine the amount of the Contractor's progress payments. Percent complete shall be calculated using scheduling software that meet the requirements of this Section 2, where progress is measured based on percent complete/Days remaining.

Partial payment for stored Materials shall be made only as allowed in the Contract. The Contractor's Monthly Invoice shall not include a request for payment for Nonconforming Work documented by the Contractor's Quality Control Administrator or CDOT. The payment to the Contractor will be in the amount shown on the Contractor's Approved invoice less Retainage and any deductions.

#### **2.4.4.2 Monthly Invoice Submittals**

The Contractor shall submit invoices to CDOT each month. Each Monthly Invoice shall be submitted in draft form to CDOT for Review within 10 Days following the prior month's end, concurrent with progress status meetings. Draft Monthly Invoice submittals shall be made electronically in a format compatible with Microsoft® Excel.

The Contractor shall submit to CDOT for Approval each final Monthly Invoice in accordance with this Section. Final invoice submittals shall be made electronically in an uneditable format, such as Adobe Acrobat Reader .PDF.

#### **2.4.4.3 Invoice Document Content**

The Contractor shall consult with CDOT on the requirements for the supporting documents to be included with the invoice form. The Contractor shall submit the invoice format requirements to CDOT for Approval prior to NTP1. The Contractor shall submit variations to the Approved invoice format to CDOT for Approval at least 15 Days prior to the submittal of the first invoice and prior to NTP2. Once the invoice format has been Approved by CDOT, the format shall not change unless subsequently Approved by CDOT.

The invoice documents shall include:

##### **2.4.4.3.1 Invoice Cover Sheet**

1. Project number and title.
2. Invoice number (numbered consecutively starting with "1").
3. Period covered by the invoice (specific calendar dates).
4. Total earned to date for the Project.
5. Nonconforming Work and amount withheld identified.
6. Authorized signature and title of signatory.
7. Date that invoice was signed.

##### **2.4.4.3.2 Monthly Progress Report**

1. Brief narrative description of Level VI Activity and progress for the Project as a whole, with maintenance, design, and construction start dates and completion dates identified.
2. Update of progress with respect to Utilities, ditches, and Railroads (if any).
3. Identify whether any Completion and Final Acceptance Deadlines are achieved or revised during the period.

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4. Quality Status Report
  5. Summary of Process Control (PC) efforts, including result of design reviews.
  6. Problems/issues that arose during the period and remaining issues to be resolved along with proposed resolution and timetable for completion.
  7. Summary of resolution of problems/issues raised in previous Monthly Progress Reports or resolved during the period.
  8. Summary of nonconformance correction status.
  9. Summary of Project accidents (frequency and severity) and corrective actions taken.
  10. Critical schedule issues and proposed resolution.
  11. Discussion of schedule variations from Completion Deadlines that have slipped or improved.
  12. Summary of public outreach during the period.
  13. Summary of any required Permits during the period.
  14. Summary of Environmental Compliance Work Plan (ECWP) Activities during the period.
  15. Progress photographs, as further described in this Section.
  16. 3-month look-ahead portion of the Monthly Progress Schedule, as further defined in this Section.
  17. A predecessor and successor report defining all schedule logic and clearly indicating all logical relationships and constraints (submitted with each CPM schedule).
  18. An early start report listing all Activities, sorted by actual/early start (submitted with each CPM schedule).
  19. A total float report listing all Activities, sorted in ascending order of total float (submitted with each CPM schedule).
  20. A no-Work Days report listing all legal Holidays and no-work Days that were accounted for in the preparation of the schedule (submitted with each CPM schedule).
  21. A list of all executed and pending Change Orders.
  22. A narrative report listing all changes to the CPM schedule since the last submittal.
  23. Payment Schedule Update as further defined in this Section.
  24. Summary of Subcontractor payments sent during the period, including identification of the source CDOT payment for each Subcontractor payment.

The format and detail level required for submittal of the Monthly Progress Report shall be developed by the Contractor and submitted to CDOT for Acceptance within 10 Days after NTP1. The Monthly Progress Report shall be on Contractor 8.5 x 11 letterhead.

#### **2.4.4.3.3 Updated Monthly Progress Schedule**

No invoice will be Approved for payment if there is not a current Accepted Monthly Progress Schedule and Current Baseline Schedule in place. The status date of the Monthly Progress



Schedule, coinciding with the payment invoice date, is the last day of each month. The data date for use in calculating the Monthly Progress Schedule shall be the first Working Day of the following month.

The Contractor shall submit all changes to the logic, calendar, durations, actual starts, actual finishes, constraints, or Activities in the Monthly Progress Schedule or Current Baseline Schedule to CDOT for Approval.

The Contractor shall make all corrections to the Monthly Progress Schedule requested by CDOT and resubmit the Monthly Progress Schedule. If the Contractor does not agree with CDOT's comments, the Contractor shall provide written notice of disagreement within seven (7) Days from the receipt of the comments. The items in disagreement shall be resolved in a meeting held for that purpose, if necessary.

#### **2.4.4.3.4 Certification by Contractor's Quality Control Administrator**

The Contractor shall submit to CDOT for Review a certification signed by its Quality Control Administrator accompanying each Monthly Invoice request certifying that:

1. All Contract Work—including that of designers, Subcontractors, Suppliers, and fabricators— has been checked and/or inspected by the Contractor's quality program staff, and that all Work, except as specifically noted in the certification, conforms to the requirements of the Contract Documents.
2. The Quality Management Plan (QMP), and all of the measures and procedures provided therein, are functioning properly and are being followed.
3. In conformance with the Project Safety Management Plan (PSMP) as further described in CDOT *Standard Specifications*, all safety-critical Work, has been reviewed and sealed by the Professional Engineer of responsible charge before construction begins.

No invoice will be Approved (payment made) without completion and implementation of the QMP, as outlined in Book 2, Section 3.

#### **2.4.4.3.5 Monthly Maintenance Progress Report**

The Contractor shall submit to CDOT for Review the current Monthly Maintenance Progress Report with each Monthly Invoice, as required in Book 2, Section 18.

No invoice will be reviewed or processed until all invoice documents and certifications, as identified in this Section, are received by CDOT.

#### **2.4.5 Progress Status Meetings**

The Contractor shall schedule and conduct a Progress Status Meeting 3 Days following draft Monthly Invoice submittals. The meeting shall be used to verify, address, and finalize the following:

1. Actual start dates.
2. Actual and planned Project Completion Deadlines.

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3. Earned value of Work that has been Accepted and reported in-place, based on installed quantities and Material on hand (stockpiled Materials).
  4. Activity percent complete.
  5. Incorporation of Approved Change Orders.
  6. Verification of unit-price items, if any.
  7. Status of outstanding Nonconforming Work.
  8. Completion of Value Engineering Change Proposals, if any.
  9. Work performance.
  10. Monthly Progress Schedule, including changes from previous month's Monthly Progress Schedule.
  11. Critical Path(s).

Following the Progress Status Meeting, CDOT will have up to seven (7) Days to review and comment on the draft Monthly Invoice submittal. After reviewing, CDOT will return the draft for the Contractor to revise and correct. The Contractor shall then submit a corrected and final Monthly Invoice to CDOT for Approval.

Approval of the final Monthly Invoice will be issued within seven (7) Days, contingent upon the Contractor's satisfactory resolution of CDOT's comments of the draft Monthly Invoice submittal.

#### **2.4.6 Drawdown Plan**

This is a multiyear construction Contract. Therefore, CDOT *Standard Specifications*, Section 108 and Section 109 specify the monthly payment schedule requirements. Section 108 and Section 109 also discuss projected year of expenditure by the Contract as compared to year of expenditure encumbrance. The Contractor shall coordinate with CDOT to assure that the monthly payment schedule minimizes differences between the annual expenditure versus encumbrance.

The Contractor shall submit to CDOT for Review a drawdown plan showing the estimated monthly payments to be made from CDOT to the Contractor for the duration of the Project based on the Contract Price listed on Form J in Book 1 (including any executed Change Orders). The drawdown plan shall be submitted to CDOT within 10 Days of CDOT Acceptance of the Preliminary Baseline Schedule and within 10 Days of CDOT Approval of the Original Baseline Schedule. The Contractor shall submit to CDOT for Review revised drawdown plans within 10 Days of CDOT Approval of each Revised Progress Schedule and/or each executed Change Order

The drawdown plan shall conform to the following requirements:

1. Shall demonstrate successfully meeting the encumbrance funding milestones set forth by the Bridge Enterprise in Book 1, Section 11.1.1
  - Initial encumbrance of \$27,765,993.00
  - Second encumbrance of \$9,531,840.00 starting July 1, 2022 for a total of

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\$37,297,833.00

- Third encumbrance of \$6,102,167.00 starting July 1, 2023 for a final total of \$43,400,000.00

2. Provide an estimate of monthly expenditures based on the early finish dates for all Activities in the Preliminary Baseline Schedule, Original Baseline Schedule, or Revised Progress Schedule, as applicable.
3. Provide an estimate of monthly expenditures based on the late finish dates for all Activities in the Preliminary Baseline Schedule, Original Baseline Schedule, or Revised Progress Schedule, as applicable.

### **2.4.7 Meetings**

#### **2.4.7.1 Task Force Meetings**

At a minimum, the Contractor shall conduct task force meetings for disciplines to facilitate “Over the Shoulder” review of the project development. At a minimum, the following discipline reviews shall be undertaken:

1. Drainage
2. Roadway/Pavement/Earthwork
3. Structures/Geotechnical
4. Traffic
5. Utilities
6. Environmental
7. Public Involvement
8. Civil Rights – No later than seven (7) days after NTP1, then weekly until 6 months after NTP2; no less than every other week thereafter.
9. Design Changes to Released for Construction (RFC) Documents and applicable RFIs

The Contractor shall include appropriate Stakeholders in task force meetings, such as the appropriate local Traffic Engineers, and Engineers; impacted Utilities; and others.

#### **2.4.7.2 Weekly Status Meetings**

The Contractor shall hold weekly status meetings that include appropriate Stakeholders. At a minimum, the following topics shall be addressed:

1. Three-week look-ahead schedule
2. Issues matrix/Change Orders
3. Quality
4. Transportation Management Plan (TMP)/Maintenance of Traffic (MOT)
5. Environmental compliance

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6. Public involvement
  7. Civil Rights

## **2.5 Video and Photographs**

### **2.5.1 Pre-Construction Videos and Photographs**

Immediately after NTP1, the Contractor shall take and label a sufficient number of pre-construction photographs and a high-quality video of each Site in high definition (HD) format that can be used to resolve any disputes that may arise regarding the conditions prior to and subsequent to construction. The photograph and video survey shall show roadways, structures, drainage, existing landscape, and all areas necessary and/or anticipated to be impacted by the Work, including haul and detour routes. This pre-construction photograph and video survey shall be submitted to CDOT for Acceptance prior to NTP2. If a dispute arises where no or insufficient photographic or video evidence of an existing condition is available, the disputed area shall be restored to the extent directed by CDOT at no additional cost to CDOT. Photos shall be sequentially taken. Files shall be individually labeled to describe Project location. File dates should show a date prior to construction.

### **2.5.2 Progress Videos and Photographs**

The Contractor shall provide progress photos on a monthly basis for Review in a similar file structure as required for pre-construction photographs. Photos shall document Work as it progresses, capturing before, during, and after conditions. File dates shall show the actual date that the photo was taken.

The Contractor shall provide interior and exterior photographs of each buried Structure just prior to burial. These shall include a minimum of 4 internal views (as applicable) and 4 external views of each Structure. The following information shall be provided for each digital photograph:

1. Date photograph was taken
2. Title of Project.
3. Description and location of Structure and Structure number, if available
4. Description of view shown in photograph
5. Identification of photographer
6. Sequential number of photograph

## **2.6 Office Facilities and Options**

The Contractor shall provide a minimum of three office spaces. One space shall be used a central office and the other spaces shall be satellite office space compounds located centrally to the Project Site.

### **2.6.1 Central Office**

The Contractor and CDOT shall be co-located for the duration of the Project construction. Co-location of the design team is not required. The Contractor and CDOT offices within the co-located office space shall not be intermingled. The Contractor may consult with CDOT about availability of suitable local sites and office facilities.

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The Contractor shall provide office space (the CDOT office) and equipment for 10 CDOT personnel, including at least 4 private offices.

The Contractor shall make available its proposed facilities for inspection and Approval by CDOT prior to CDOT occupying any Contractor-provided facilities not later than 30 Days after NTP1. The Contractor shall furnish CDOT's staff with offices that are in good and serviceable condition (condition comparable to the Contractor's office space). The central office space shall be located within one and a half miles of the intersection of I-25 and US50 at the north end of Pueblo, CO. Both parties shall participate in a facility condition inspection prior to and at the completion of occupancy.

CDOT will return possession of Contractor-provided facilities to the Contractor in essentially the same condition as when CDOT initially occupied the facilities, except for reasonable wear and tear.

The Contractor shall secure the Site; obtain all Site permits; install, set up, and provide Utility services; and maintain the facilities as part of the Work.

In the event that office spaces or appurtenant facilities are stolen, destroyed, or damaged during the Work, except by fault of CDOT, the Contractor shall at its expense repair or replace those items provided to their original condition within 5 Working Days. If loss or damage is caused by CDOT personnel, the Contractor shall replace the facilities within 5 Days, except CDOT will be responsible for costs incurred.

The Contractor shall maintain the CDOT Offices until at least 90 Days following the Final Acceptance of the Project unless otherwise agreed to by CDOT. CDOT may, at its option, vary the number of its staff throughout the duration of the Project. However, the Contractor shall maintain the initial number and size of the CDOT Offices, conference rooms, reception area, break room and filing area (the CDOT Office Facilities) until 90 Days following the Final Acceptance of the Project.

The Contractor shall be responsible for disposal or removal of all CDOT Office facilities and any Site restoration Work required.

The Contractor shall provide:

1. Telephones and telephone service with at least 2 lines for CDOT Offices, conference rooms, and break room.
2. High-speed Internet connection (30 megabits per second [Mbps] download and upload speed or greater) for all CDOT staff workstations within the CDOT Office. CDOT will provide router and switch for all CDOT staff offices.
3. Networking for all CDOT workstations within the CDOT Office.
4. For CDOT staff, 2 networked color laser printer/copiers, with additional 11- x 17-inch paper tray, including paper, toner, parts, service, and repairs. The printer shall be capable of scanning documents to 11- x 17-inch size and transmitting the scanned file to multiple email addresses.

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5. Overhead lighting meeting Occupational Health & Safety Administration (OSHA) and code requirements for office space.
  6. Office space not less than the size indicated below:
    - A. Private offices: 150 square feet of enclosed office space (with door) for 4 of the offices.
    - B. Partitioned offices: minimum 36 square feet enclosed office space per office (cubicles/partitions are acceptable, and comparable to Contractor staff space).
    - C. One enclosed conference room with doors capable of accommodating a 30-person meeting, with at least 50% of seating capacity at the conference table. This can be a shared conference room between the Contractor and CDOT.
    - D. One enclosed conference room with doors for CDOT's exclusive use capable of accommodating a 20-person meeting, with 12-person seating capacity at the conference table. The conference room shall be in an adjacent space to the CDOT Offices.
    - E. Break room: 150 square feet with sink, counter, table with chairs, microwave, and 20-cubic-foot refrigerator, and drinking water with dispenser.
    - F. One reception area with common access to the CDOT Office.
    - G. Storage room: 150 square feet with file cabinets and book shelves, enclosed with lockable door.
  7. Furnishings, as follows:
    - A. Conference Rooms
      - i. Conference table and chairs.
      - ii. Wastebasket.
      - iii. Hanging, erasable white board (6 foot minimum width).
      - iv. Projector with compatibility to all CDOT computers.
    - B. Offices
      - i. Desk that is minimum size 76 x 36 inches with locking drawers.
      - ii. Computer workstation desk capable of holding a desktop printer, monitors, keyboard, and any accessories.
      - iii. Worktable (private offices only).
      - iv. Ergonomically correct, OSHA-approved chairs.
      - v. Extra office chair.
      - vi. Hanging, erasable white board, 4 feet wide, minimum (private offices only).
      - vii. Bookshelf.
  8. Indoor restrooms suitable for the office space.
  9. All-weather parking, 1 space per employee, plus 5 visitor spaces (20 total).

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10. Weekly janitorial service.
  11. Maintenance of the exterior area of office, including access to parking and snow removal.
  12. Facilities that meet American with Disabilities Act (ADA) access requirements and meet all local code requirements for office space.
  13. Heating, ventilation and air conditioning/cooling systems adequate for office use.
  14. 24 hours a day, 7 days a week secure access after normal working hours.

### **2.6.2 Satellite Office Compounds; East Corridor and West Corridor**

The contractor shall provide at a minimum two Satellite Office Compounds for CDOT's use. There shall be at a minimum one satellite office compound for the East Corridor and one satellite compound for the West Corridor, each centrally located to their respective Corridor. The locations of the satellite offices must be Approved by CDOT.

Each Satellite Office Compound shall include office space equivalent to two Field Office Class 2 trailers, one Field Laboratory Class 2, and two Sanitary Facilities for use by CDOT and its Consultants. The Field Offices and Field Laboratory's shall be per CDOT M&S Standard requirements and Book 2, Section 20 - Project Special Provisions. Each Satellite Office Compound shall include a dumpster equipped with lids, a parking area to accommodate all satellite office staffs as well as visitors, and at least weekly sanitary facility cleaning and trash removal.

The Contractor shall make available and provide a floor plan (including walls, partitions, and furniture) of the proposed facilities for inspection and Approval by CDOT prior to CDOT occupying the facilities at least 30 Days prior to the NTP2 effective date. The Contractor shall be required to furnish CDOT's staff with offices that are in good and serviceable condition (condition comparable to the Contractor's satellite office space).

### **2.6.3 Design-Build Field Laboratory (CDOT Quality Control and Owner Verification Testing)**

The Contractor shall provide a minimum of one Class 2 Field Laboratory for CDOT use at each Satellite Office Compound and other locations, if needed, as agreed upon by CDOT and the Contractor.

The field laboratories shall have a minimum of five parking spaces, all contained within a security fence. The field laboratories shall be provided to CDOT at least 20 Working Days prior to commencement of any field Activities involving earthwork of any type, analysis of mix designs, or planned placement of Hot Mix Asphalt (HMA) and shall have a forced air oven and high-speed Internet connection.

The field laboratory shall be provided with a networked printer, a microwave and bottled water. If additional field laboratories are added away from the Satellite Office Compounds, there shall also be additional Sanitary Facilities at the additional sites.

### **2.6.4 Project Vehicles**

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### **2.6.5 Project Directory**

The Contractor shall maintain and furnish to CDOT a Project directory listing the names, addresses, and telephone numbers (e.g., office, cellular) of the Key Personnel and critical support staff of the Contractor and each Subcontractor. The Project directory shall be submitted to CDOT for Acceptance prior to issuance of NTP2. The Contractor shall update the Project directory quarterly and when requested by CDOT for the duration of the Work.

## **2.7 Safety Management**

### **2.7.1 Project Safety Management Plan**

The Contractor's Project Safety Management Plan (PSMP), per CDOT *Standard Specifications*, Section 107.06, shall be submitted for Acceptance prior to NTP2.

The PSMP is a living document and shall be updated when a process, method, chemical, or other Work criterion changes that affects the safety of a person or property. The Contractor shall submit to CDOT for Review any updated portions of the PSMP.

#### **2.7.1.1 Project Safety Management Plan Criteria**

The PSMP must answer the "who, what, and how" questions based upon the Technical Criteria contained within Book 2 and the 12 elements identified in the CDOT *Standard Specifications*, Section 107.06.

#### **2.7.1.2 Project Safety Management Plan Training and Communication**

All Project staff, including CDOT, Contractors, and Subcontractors, must be trained on the elements of the Contractor's Accepted PSMP submittal.

#### **2.7.1.3 Safety Meetings**

The Contractor shall conduct regularly scheduled Project Safety Meetings, tool box talks, etc., as specified in the PSMP and per CDOT's *Standard Specifications*.

## **2.8 Document Management**

The Contractor shall establish and maintain its own Document Control System (DCS) to store and record all correspondence, drawings, progress reports, technical reports, specifications, Contract Documents, deliverables, calculations, and administrative documents generated under the Contract. Document Control, storage, and retrieval methods shall include the use of both hard copies and electronic records. The Contractor's DCS shall handle all of the Contractor's Project documents.

All correspondence shall include the Project name and Contract name and number, along with the specific subject of the letter. All replies shall refer specifically to prior correspondence to which they relate.

The Contractor shall make available within 24 hours through a single point of contact (Document Control Manager), when requested by CDOT, copies of its logs indicating CDOT's outstanding



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items and a copy of any document requested.

Document Management and Control also must conform to the requirements of Book 2, Section 3.

The Contractor shall use LCPTracker as the designated software and repository for payroll records required for the Project pursuant to Section 2.5 of this Section 2.

The Contractor shall use B2GNow as the designated software and repository for Subcontractor and supplier payment records required for the Project pursuant to Section 2.5 of this Section 2.

### **2.8.1 Document Management System (DMS)**

The Contractor shall transmit all required deliverables and other documents to CDOT via CDOT's DMS (to be determined).

## **2.9 Civil Rights and Contractor Compliance**

### **2.9.1. Civil Rights Plan Requirements**

The Contractor shall prepare and submit to CDOT a Civil Rights Plan (CRP) for Approval no later than 3 weeks prior to NTP2. Submission requirements for the Civil Rights Plan are contained in Book 1, Section 7.1.2. The CRP shall include, at a minimum, the following elements:

1. General Plan Requirements

- A. A description of the purpose of the Civil Rights Plan to include how it will be used to document procedures established for both process and quality control to ensure compliance with the Civil Rights related requirements of the Contract Documents.
- B. A description of the scope of the Civil Rights Plan to include the programmatic compliance areas that will be addressed and implemented by the plan.
- C. A list of Definitions and Acronyms that will be used throughout the Civil Rights Plan including but not limited to: (1) reports, checklists, spreadsheets and logs that will be used to evidence compliance with the CRP requirements and (2) IT systems and/or programs that will be used to implement the Civil Rights Plan and provide reporting to CDOT on compliance statuses.
- D. An organizational chart of the roles of the civil rights team members that will implement the Civil Rights Plan and their reporting hierarchy.
- E. A list of roles and defined responsibilities of the Civil Rights Compliance Manager and other civil rights team members responsible for implementing the CRP, including the name of each team member and a description of the roles' responsibilities on the Project.
- F. An overall strategy and approach by the Contractor to establish and implement the CRP across the Contractor's management team and Subcontractors on the Project to ensure compliance at all Project participant levels, including but not limited to: (1) organization of the management team, including integration of subconsultants (if utilized) as a part of that management team, and coordination to ensure a cohesive approach (2) approach to indoctrinating Subcontractors and providing training to

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ensure a cohesive understanding of requirements and reporting (3) establishment and implementation of a culture of civil rights compliance across the Contractor's team (4) utilization of lines of communication and authority across process and quality controls to implement the CRP (5) and escalation of issues in a timely manner, when required.

- G. A description of how the CRP will be incorporated into the Contractor's process - management and quality management programs and the reporting and coordination across the two groups.
2. Management of Subcontractors. The FHWA-1273 states that the Contractor shall be responsible for the compliance of any Subcontractor, lower-tier Subcontractor, or service provider on the Project.
- A. A description of the training events and processes that will be established to train Subcontractors on the civil rights requirements for the Project to ensure compliance and Subcontractor success for meeting those compliance requirements, including, but not limited to:
- i. Planned communication and training events (including calendars and timing relative to construction start dates), to include mandatory attendance of each subcontractors' personnel, responsible for implementing and reporting on civil rights requirements, to a compliance training event prior to beginning Work on the Project. Additionally, describe the processes to be used by the Contractor to monitor and ensure attendance prior to the Subcontractor beginning Work on the Project.
  - ii. The technical components of the Civil Rights Plan compliance requirements that will be discussed including, but not limited to
    1. Lower Tier Subcontractor reporting
      - a. The requirements for incorporation and attachment of FHWA 1273 to all subcontracts.
      - b. The required approval by CDOT of all Subcontractors and Suppliers in B2GNow prior to beginning Work.
      - c. The process and timeline for reporting of lower tier Subcontractors to the Contractor for timely and accurate reporting into B2GNow.
    2. Subcontract requirements
      - a. A list of all federal provisions to be included in subcontracts (all tiers) as per Book 1, Exhibit C.
      - b. The process for executing change orders to correct Subcontract language upon identification of non-compliance issues.
    3. Davis Bacon and Related Act requirements
      - a. DBRA reporting requirements and frequencies (including timeliness, wage classifications, fringe benefits, USDOL approved deductions, requesting USDOL deduction approval,

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- Owner Affidavit, wage restitution).
  - b. The processes for using LCPtracker for DBRA reporting.
  - c. Identification of the need for additional wage classifications and how to submit a request. (USDOL Form 1444)
    - i. In cases where a project spans multiple counties and where a job classification is not offered for all of the applicable counties, an Additional Wage Conformance shall be requested by the Contractor for any missing applicable county to determine the higher minimum wages and fringe benefits that shall apply.
4. EEO/Affirmative Action
- a. Implementation by the Subcontractor of requirements set forth in FHWA 1273, Parts II and III and how to document compliance with those provisions, including:
    - i. EEO/Affirmative Action Plan.
    - ii. EEO Officer identification.
    - iii. Dissemination of EEO/AA Plan to supervisory and project personnel.
    - iv. Nondiscrimination.
    - v. Training and opportunities for upgrade and promotion.
    - vi. A periodic analysis of spread of raises.
    - vii. DBE subcontracting.
5. Prompt Payment
- a. The timeline requirements for payments to Subcontractors.
  - b. The Contractor's process to establish and communicate payment request requirements to Subcontractors (including when and where to submit payment requests, a list of documents to be included to constitute a satisfactorily complete payment package, applicable cut off dates for submission of payment requests for processing).
  - c. B2GNow
    - i. The processes for reporting payments in B2GNow.
6. Release of Retainage
- a. The requirements for payment and reporting of release of retainage.
7. OJT
- a. OJT participation and reporting requirements, for those participating Subcontractors.

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- iii. Training that will be provided by the Contractor on the use of the systems and software programs that Subcontractors will be required to utilize during the Project for reporting requirements (including but not limited to LCPTracker and B2GNow).
  - iv. Training agendas and/or presentations shall be submitted to CDOT as a part of this Civil Rights Plan.
- B. A description of the Contractor's processes and example checklists (or spreadsheet) that will be used to ensure all training, reporting and submissions, as required, have been completed prior to the Subcontractor beginning Work.
- C. A description of how the Contractor will report Subcontractors into B2GNow and submit CDOT Forms 205 and CDOT Form 1425, as appropriate, for approval within B2GNow by CDOT prior to Subcontractors beginning Work on the Project.
- D. A description of the Contractor's process and documentation of that process that will be used to ensure that all federal requirements (including, but not limited to, Required Federal Provisions, Federal-Aid Construction Contracts, for FHWA 1273 and Prevailing Wage Decisions) shall be included in all subcontracts (all tiers) prior to Subcontractor beginning Work on the project. A Nonconformance Report (NCR) shall be issued by the Contractor for any non-conforming work identified that requires a Subcontract amendment to correct any nonconforming subcontract language.
- E. The processes and documentation that will be used to prevent Subcontractors that have been debarred or suspended from governmental contracting from participating in the Project, prior to submitting a CDOT Form 205 or CDOT Form 1425. Debarred or suspended contractors can be found on SAM.gov:  
<https://sam.gov/SAM/pages/public/searchRecords/search.jsf>
- F. A description of the monitoring, tracking and reporting mechanisms that will be used to identify and document Subcontractor daily field activity on the Project (to include the specific subcontractors on site daily) to (1) ensure Subcontractors (all tiers) that have begun Work on the project and identified on site have been approved by CDOT in B2GNow, (2) compare field data to submission of certified payrolls to ensure completeness and timeliness of DBRA compliance reporting, (3) compare to on site trucking operations to ensure compliant reporting with DBRA, (4) compare to bona fide owner operator reporting to ensure compliant reporting with DBRA, (5) compare to DBE CUF monitoring to ensure CUF observations have been performed for all DBE's at least annually for construction, 35%-50% of completion for design and (6) provide a reporting of this Subcontractor field activity to CDOT on a weekly basis.
- G. Civil Rights Quality Control (CRQC) Subcontractor Audits
- i. A description of the risk-based auditing approach to be used that identifies the population (and data source of that population), sample quantity (or percentage), sample methodology to select sample items, testing frequency and audit criteria to be applied to sample items, to test:
    - 1. All Subcontractors Working on the Project Site:
      - a. have been CDOT Approved in B2G.

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- b. have received the required training prior to beginning Work on the Project.
      - c. have an executed Subcontract that include all required Federal provisions.
    - ii. An NCR will be issued by Quality Control for any sample items determined to not be in compliance by risk-based auditing methods applied.
  - 3. Davis-Bacon and related acts (DBRA)
    - A. A description of how the Contractor will monitor timely and accurately compliance with DBRA by the Contractor and all Subcontractors, including:
      - i. Timely and accurate payment by the Contractor and Subcontractors, to employees covered by DBRA, within seven (7) days after the payroll period end.
      - ii. Timely submission of certified payrolls to CDOT in LCPtracker within seven (7) days after the Contractor and Subcontractor’s regular payment date for the payroll period end.
      - iii. Review process and action to be taken (Approval or Rejection) of all certified payrolls by the Contractor’s designated Prime Approver within seven (7) days after submission into LCPtracker
      - iv. A communication process, including an escalation matrix with a timeline, for notifying Subcontractors that certified payrolls are late and/or in non-compliance with regulatory requirements and methods for remedying such late submissions and/or non-compliant payrolls that escalates to the Contractor’s issuance of an NCR if the noncompliance issue is not rectified within seven (7) days after notification by the Contractor to the Subcontractor.
      - v. A description and example of the monitoring document/tool that will be used to track (1) payroll submissions (timely and late) in accordance with payroll submission requirements (within seven (7) days after the Contractor’s regular pay date), (2) implementation of the escalation and communication processes including process control and quality control, (3) status of certified payrolls that require correction and or wage restitution, and (4) issuance of an NCR, as necessary. See example included with Reference Documents.
      - vi. A description of the Contractor’s process to issue late payroll notices for all payrolls determined to be late on submission and the communication platform (i.e. email) to be used. Late payroll notices issued shall be uploaded into LCPtracker eDocuments (with the subject week ending field appropriately selected) and include: (1) the subject payroll week ending date, (2) a description of the non-compliance issue (i.e., late payroll), (3) actions to be taken (i.e., submit payroll) to correct the issue, and (4) a deadline for response of seven (7) days from issuance.
      - vii. A description of the Contractor’s process to issue Administrative Notices within LCPtracker in response to a Rejection of a certified payroll determined to be in noncompliance, including: (1) subject week ending date, (2) initials or name of the person issuing the Administrative Notice, (3) a description of the

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- noncompliance issue, (4) actions to be taken to correct the payroll, and (5) a deadline for response of seven (7) days from issuance of the notice.
- viii. A list of audit requirements not audited by the LCPtracker system that will be utilized by the Contractor's Prime Approver and Quality Control representative when reviewing each certified payroll submitted to ensure compliance with all requirements. See example included with Reference Documents.
  - ix. A description of the Contractor's process to ensure compliance with the Copeland Act to ensure employee payroll deductions are within those allowed by the U.S. Department of Labor (USDOL), or otherwise contractors have obtained USDOL approval as documented in a USDOL Approval Letter.
  - x. A description of the Contractor's processes to ensure supporting documents (including but not limited to, wage garnishment orders, child support court orders, loan documentation, etc., as detailed in CDOT Certified Payroll Memo (issued June 12, 2018) available online at <https://www.codot.gov/business/civilrights/compliance/labor/payroll> are uploaded to LCPtracker e-Documents and available upon review of the subject certified payroll.
  - xi. A description of the process to be used to identify the need to request non-standard classification wages (USDOL Form 1444, Request For Authorization of Additional Classification and Rate) in a timely manner (i.e., prior to submission of the applicable contractors certified payroll that requires an additional classification request for accurate DBRA reporting).
  - xii. A description of the Contractor's processes to ensure that the Contractor and all Subcontractors have a certified payroll marked as Final in LCPtracker upon completion of their respective Work.
- B. CRQC DBRA Audits. A description of the processes that will be used to implement the following quality control components.
- i. Within LCPtracker, Quality Control will be responsible for reviewing (and issuing an Acceptance or Rejection) 100% of all certified payrolls submitted within seven (7) days after the Contractor has issued Prime Approval.
  - ii. Quality Control will apply the same requirements criteria as the Contractor's Process Control to ensure the certified payroll is in compliance with DBRA requirements.
  - iii. An NCR will be issued by Quality Control for any certified payrolls determined to not be in compliance and rejected in LCPtracker.
4. Equal Employment Opportunity
- A. A description of how Subcontractors will be monitored, mentored and trained (prior to beginning Work on the Project) on compliance with the Equal Employment Opportunity (EEO) requirements contained in FHWA 1273 Parts II and III, to ensure compliance and responsiveness to subject Contractor compliance reviews conducted by CDOT, including but not limited to:

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- i. EEO/Affirmative Action Plan.
    - ii. EEO Officer identification.
    - iii. Dissemination of EEO Plan to supervisory and project personnel
    - iv. Nondiscrimination.
    - v. Training and opportunities for upgrade and promotion.
    - vi. Periodic analysis of spread of wages.
    - vii. DBE subcontracting.
  - B. A description of the Contractor's processes for establishing and continually monitoring a jobsite bulletin board(s) within the Project limits that is accessible to the public and potential employment applicants, including but not limited to: (1) a checklist that will be used to ensure that all required posters are posted and readable at all times, to including pictures of the board and posters during inspection, (2) an inspection schedule for the board(s) no less frequently than quarterly (or as needed to ensure current and updated compliance information or to replace damaged or unreadable posters), and (3) the manner in which these inspections will be provided to CDOT within 14 Days after the inspection is conducted.
  - C. A description of how both the Contractor's Project personnel and Subcontractors Project personnel will be made aware of the jobsite bulletin board location, the information contained on the board, the prevailing wage decisions applicable to the Project, and EEO Officer information within 30 days of starting Work on the Project and subsequently at least twice a calendar year thereafter.
  - D. CRQC EEO Audits
    - i. A description of the risk-based auditing approach to be used that identifies the population (and data source of that population), sample quantity (or percentage), sample method to select sample items, testing frequency and audit criteria to be applied to sample items, to test:
      1. The Jobsite Bulletin Board has been timely and accurately inspected and appropriate actions were taken upon identification of any instances of non-compliance.
      2. Periodic meetings were held with project personnel to inform them of EEO requirements and jobsite bulletin board information.
      3. An NCR will be issued by Quality Control for any sample items determined to be in non-compliance by risk-based auditing methods applied.
5. Prompt Payment and Release of Retainage
- A. A description of the Contractor's process to establish and communicate payment request requirements to Subcontractors (including when and where to submit payment requests and a list of documents that must be included to be considered a satisfactorily complete payment request) prior to beginning Work.
  - B. A description and example of the Contractor's tracking and documentation

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mechanism to monitor the life cycle of a payment request(s) that includes: (1) the Contractor's date of receipt of the payment request(s), (2) payment request date, (3) date Contractor deemed payment request approved for payment, (4) date(s) of Contractor's communication to Subcontractor or Supplier of payment request issues noted requiring resolution, (5) date Contractor received payment from CDOT that includes Subcontractor or Supplier payment request, and (6) date payment was made to Subcontractor or Supplier. See example included with Reference Documents.

- C. A description of the Contractor's process to monitor prompt payment reporting within B2GNow of all Subcontractor and Supplier payors. The process shall include an escalation matrix for tracking and communicating to lower tier Subcontractors and Suppliers that have not reported payments by the 15th day of the month for the audit period. Subcontractors and Supplier payors shall be given seven (7) days after the 15th day of the month to respond to the Contractor's communication and report payments accordingly. The Contractor shall issue an NCR for those Subcontractors and suppliers that remain in non-compliance with prompt payment reporting requirements as of the 24th day of the month for the audit period.
  - D. A description of the Contractor's process to monitor, document, and ensure the timely release of retainage to Subcontractors for satisfactorily complete Work.
  - E. CRQC Prompt Payment Audits
    - i. A description of the CRQC risk-based auditing approach to be used that identifies the population (and data source of that population), sample quantity (or percentage), sample method to select sample items, testing frequency and audit criteria to be applied to sample items, to ensure that all Subcontractors and Suppliers were promptly and accurately paid for each audit period in B2GNow.
    - ii. An NCR will be issued by CRQC for any sample items determined to be in non-compliance based on risk-based auditing methods applied.
6. Disadvantaged Business Enterprise (DBE) and Emerging Small Business (ESB)
- A. A description of the Contractor's monitoring processes and example of the monitoring tool to be used to track compliance with completion of DBE CUFs within the required timeframes as per Book 2, Section 2.5.2.6.H. as compared to start of Work based on daily field activity monitoring and certified payroll reporting.
  - B. CRQC DBE Audits
    - i. A description of the CRQC risk-based auditing approach to be used that identifies the population (and data source of that population), sample quantity (or percentage), sample method to select sample items, testing frequency and audit criteria to be applied to sample items, to ensure that CUF's were completed for all Subcontractors and Suppliers timely and accurately.
    - ii. An NCR will be issued by CRQC for any sample items determined to be in non-compliance based on risk-based auditing methods applied.

7. Trucking

- A. A description of how the Contractor will monitor and document daily trucking



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operations (performing construction onsite) using a unique identifier for each truck to ensure the reporting of Contractor (or Subcontractor) relationships (all tiers) in B2GNow, compliance with DBRA reporting for certified payrolls, identification of Owner Operators (including submission of Owner Affidavit, with active drivers' license and vehicle registration(s)). Daily field reports for trucking operations shall be provided to CDOT no less than weekly.

- B. For workers of a material supply company (including a driver) who performs actual construction work on the site of work (such as warranty or repair work), a description of how that work will be identified for compliance with DBRA reporting.
- C. For Contractors who perform both Subcontractor and Supplier activities, a description of how those activities will be monitored to ensure accurate and timely DBRA reporting, for those activities subject to DBRA reporting.
- D. CRQC Prompt Payment Audits:
  - i. A description of the CRQC risk-based auditing approach to be used that identifies the population (and data source of that population), sample quantity (or percentage), sample method to select sample items, testing frequency and audit criteria to be applied to sample items, to ensure that DBRA reporting requirements were timely and accurately complied with for all trucking contractors, as required.
  - ii. An NCR will be issued by CRQC for any sample items determined to be in non-compliance based on risk-based auditing methods applied.

#### 8. On-the-Job Training (OJT)

- A. Identification of the number and description of the skilled craft areas where trainees and apprentices will be used during the Project. The Contractor shall provide a description of the type of training that will be provided for each position.
- B. A description of how the Contractor will monitor hours completed, training provided, and how the Contractor will alleviate barriers to employment, graduation, and successful permanent placement.
- C. A description of the Contractor's approach to graduating participants. The Contractor shall identify a target number of graduates to maximize participant graduation rates on the Project.
- D. A description of the Contractor's approach to utilize Subcontractors to achieve the OJT goal.
- E. A quarterly schedule indicating the expected distribution of training hours for the duration of the Project to achieve the goal. The quarterly schedule shall indicate specific areas of Work that will be used for training hours.
- F. A description of actions the Contractor will take should actual achievements be less than projected achievements per the Contractor's quarterly schedule of forecasted training hours per the OJT schedule.

### 2.9.2 Disadvantaged Business Enterprise (DBE) and Emerging Small Business (ESB) Requirements

#### 1. Contract Participation Calculations

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- A. The dollar value of each DBE and ESB goal shall be calculated as follows:
- i. For purposes of this section 2.9.2, the Work to be performed shall be separated (i) into design-related activities (“Design Services”) (as further defined below) and (ii) construction-related activities (“Construction Services”).
  - ii. “Design Services” shall be comprised of all program management, construction management, feasibility study, preliminary engineering, design, engineering, surveying, mapping, and architectural related services; provided, however, that, (i) the following (or equivalent) Design Services performed by the Contractor or its Subcontractors such as construction surveying, erosion control consulting, health and safety plans, and public involvement may, at the Contractor’s reasonable discretion, be considered Construction Services and (ii) the Contractor may request that any other design-related activities be included in Design Services subject to the Department’s consent (excluding Process Control for Construction Services). The Contractor must identify and establish what activities will be considered Design Services or Construction Services and make any other requests for modifications to these categories in its SDBPP. The Department may request additional data to verify the value of the Design Services. For purposes of this section, the total value of Design Services and Construction Services shall equal the total contract value.
- B. DBE Design Goal. The dollar value of the DBE Design Goal shall be determined by multiplying the percentage of the goal set out in Book 1, Section 7.6 by the total value of the Design Services as calculated in this Book 2, Section 2.9.2. DBEs at any tier performing Work of Design Services as defined by this Book 2, Section 2.9.2, shall count toward achieving the DBE Design Goal. Participation in the performance of those Design Services by a firm that is certified as both a DBE and an ESB shall count towards the achievement of both goals.
- C. DBE Construction Goal. The dollar value of the DBE Construction Goal shall be determined by multiplying the percentage of the goal set out in Book 1, Section 7.6 by the total value of the Construction Services as calculated in this Book 2, Section 2.9.2. DBEs at any tier performing Work of Construction Services as defined by this Book 2, Section 2.9.2 shall count toward achieving the DBE Construction Goal. Participation in the performance of those Construction Services by a firm that is certified as both a DBE and an ESB shall count towards the achievement of both goals.
- D. ESB Goal. The dollar value of the ESB Goal shall be determined by multiplying the percentage of the goal set out in Book 1, Section 7.7 by the total contract value, including both Design Services and Construction Services, as calculated in this Book 2, Section 2.9.2. ESBs at any tier performing Work, shall count towards the achievement of the ESB Goal. The participation in performance of Work by a firm that is certified as both a DBE and an ESB shall count towards the achievement of both goals.

**2. Small and Disadvantaged Business Performance Plan (SDBPP)**

- A. The Contractor shall submit its SDBPP no later than 30 Calendar Days prior to

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issuance of NTP1. CDOT will not issue NTP1 until CDOT has Approved the SDBPP and Accepted the Contractor's DBE Design Goal Utilization Plan and ESB Goal Utilization Plan for Contract Year 1, along with corresponding Commitment Confirmations (CDOT Design Build Form 1415). For Contract Years thereafter, the SDBPP shall be updated with current achievements of the DBE and ESB Goal and submitted to CDOT no later than 30 Calendar Days prior to the start of each Contract Year (July 1) and concurrently with each DBE and ESB Utilization Plan for the upcoming Contract Year.

- B. The SDBPP shall establish an Annual Participation Target for each DBE and ESB Goal by Contract Year sufficient to meet or exceed each DBE and ESB Goal and that is at least reflective of the Contractor's commitment included in the Proposal to achieve those DBE and ESB Goals. The Annual Participation Targets shall set the framework for achieving the DBE and ESB Goals across the Project by Contract Year and shall be further detailed by scope of work and anticipated dollar value. The Annual Participation Targets for each DBE and ESB Goal by Contract Year must reflect a reasonable approach to meeting the goals with ready, willing and able DBEs and ESBs to perform the applicable Work. The Contractor shall consult the respective directories at [www.coloradodbe.org](http://www.coloradodbe.org) and [www.coloradoesb.org](http://www.coloradoesb.org) to ensure availability of DBEs and ESBs to meet the goals.
- C. Modification of an Annual Participation Target for each DBE or ESB Goal. The Contractor's request to modify an Annual Participation Target for a particular DBE or ESB Goal and Contract Year shall be made by submitting CDOT Design Build Form 1420, Participation Plan Modification Request, and shall be submitted no later than 30 Calendar Days prior to the start of the affected Contract Year and concurrently with the SDBPP update for the affected Contract Year. The Contractor's anticipation of a modification request to an Annual Participation Target should be discussed in the Quarterly Civil Rights Progress Report prior to the submission of the modification request. The modification request should include supporting information that shows the impact to the overall achievement of the DBE and ESB Goals by Contract Year and for all Contract Years, the reasoning for the modification request, and a description of good faith efforts put forth by the Contractor, as appropriate, for any requests to reduce annual participation targets.
- D. The Contractor shall submit, a Final SDBPP for Approval by the Department no later than 30 Calendar Days prior to the Substantial Completion Date. The final report shall include all of the information as required in this Book 2, Section 2 for the annual submission of the SDBPP, as well as an additional section entitled Final Report to include a detailed description of the Contractor's DBE and ESB Goal achievements and implementation of the strategies described in the SDBPP to achieve the DBE and ESB Goals. In the event that Contractor failed to achieve any of the DBE and ESB Goals, as of the Substantial Completion Date, the Contractor shall submit, for Approval by the Department, an updated report no later than 30 Calendar Days prior to the Final Acceptance Date and to include final payments and release of retainage to all Subcontractors and Suppliers.
- E. The Contractor's SDBPP shall include, at a minimum, the following:
  - i. Table of Contents. A list of the sections of the SDBPP as organized, including the page number reference that each section begins on within the

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SDBPP.

- ii. **Definitions and Acronyms.** A list of definitions of terms and acronyms that may be used throughout the SDBPP, including but not limited to: entity names, reports, documents, terms, systems, meetings, etc.
- iii. **Roles and Responsibilities.**
  1. Identification of the Civil Rights Compliance Manager (CRCM) and the other Contractor team members responsible for achievement of the DBE and ESB Goals, including names of the team members and each team members' experience working with the DBE program on similar projects.
  2. The roles and responsibilities of the team members, including: (1) descriptions of their activities, (2) delegated authority, (3) integration with Key Personnel on the Project, and (4) identification of meetings they will be in attendance to.
- iv. **DBE Plan Policy Statement.** A description of the DBE program requirements to be met and the Contractor's commitment to achieving those requirements and Contract Goals, including the name and signature of Contractor's authorized person to make that commitment statement.
- v. **Strategic Approach for Meeting the DBE and ESB Goals during the Project, including:**
  1. **DBE and ESB Goals.** Identification and acknowledgement of the contract DBE and ESB goals.
  2. **Calculation of Contract Values for each DBE and ESB Goal.** Details of the Contractor's proposed calculation of design-related activities ("Design Services") and construction-related activities ("Construction Services"), in accordance with this Book 2, Section 2.9.2, and associated contract values for which the DBE Design Goal, DBE Construction Goal and ESB Goal percentages shall be multiplied by to determine the dollar value of the goals, respectively, including individual scopes of Work and associated dollar values that comprise the proposed contract values for Design Services and Construction Services.
  3. **Schedule for DBE and ESB Participation by Goal and Contract Year.** A schedule of the Contractor's Annual Participation Target for each DBE and ESB Goal by Contract Year and further detailed by scope of work and associated dollar value across Contract Years that is sufficient to meet or exceed the DBE and ESB Goals. For annual updates of the SDBPP, the schedule should be expanded to include a comparison of actual DBE and ESB Goal achievements by Contract Year to Annual Participation Targets, similar to the format described in this Book 2, Section 2.9.3 for the Quarterly Civil Rights Progress Report and as included in Reference Documents. Actual DBE and ESB participation amounts should be based on data available at the time of report submission.

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- F. Reporting and Compliance.
- i. A description of how participation will be monitored and tracked on a real-time basis, including the methods and reports that will be used to collect and confirm data to validate eligible participation.
  - ii. Describe the internal procedures through which the Contractor will ensure the DBE and ESB Goals are met. This will include distribution of the goal responsibilities to Subcontractors, collecting data on Subcontractor participation and performance, ensuring only valid performance is counted, etc.
  - iii. Describe the processes to be used by the Contractor to monitor CUF, including conducting CUF's in accordance with Book 2, Section 2.5.2.6.H.
  - iv. A description of Contractor processes and checklists to be used, at such time as each DBE or ESB completes their Work, to ensure all required and final documentation is complete and documented in project record for the required retention period, including, subcontracts, change orders, commitment confirmations, payments and CUFs.
- G. Procurement Process. The Contractors strategic approach to integrating achievement of DBE and ESB participation into the overall approach to subcontracting, including discussion of how the Contractor will identify and develop opportunities, communicate opportunities, create a transparent bidding process, and unbundling of work to establish opportunities for small businesses, or take other actions to secure DBE and ESB participation.
- H. Bonding and Insurance. A description of any measures to be implemented by the Contractor or its team members to assist DBEs and ESBs with bonding and insurance while maintaining compliance with the applicable provisions of this Agreement and the requirements of Law. This may include any of the following: adding DBEs and ESBs to insurance plans; waiving bond requirements; phased bonding; and limitations on bond and insurance requirements imposed by Subcontractors.
- I. Outreach and Training Efforts. A description of the Contractor's planned DBE and ESB outreach, training, and development, including at a minimum a description of how Contractor will:
- i. conduct a mandatory outreach event directed at DBE and ESB firms after the agreement Date, prior to the issuance of NTP2 and at least quarterly thereafter;
  - ii. collaborate with and utilize CDOT's established Connect2DOT Program ([www.connect2dot.org](http://www.connect2dot.org));
  - iii. on a monthly basis, provide a list of upcoming subcontracting opportunities and events for distribution via the Connect2DOT newsletter;
  - iv. conduct any other measures of outreach, training and development and the resources dedicated to such measures which may include small business orientation meetings, advertisement of project opportunities, email notifications of upcoming and specific project opportunities, website postings, attendance at small business organization events, one on one meetings with

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- DBEs and ESBs, vendor database, identification of new DBE and ESB eligible firms; and
- v. conduct any other activities or efforts not included in the above related to achievement of the DBE and ESB Goals.
- J. Good Faith Efforts. A description of the Good Faith Effort (GFE) activities the Contractor will perform over the course of the Contract to achieve the DBE and ESB Goals, including, the type of activity, a detailed description of the activity and persons conducting the activity, the frequency of the activity, the audience that will be targeted, and how GFE will be documented. GFE may include pre-bid meetings, unbundling of work, maintaining a bidders list, technical assistance and support, negotiating in good faith, alignment of scopes with available DBE and ESB participation, and debriefings with non-awarded firms.
- K. Prompt Payment. Methods for ensuring prompt payment to all Subcontractors (for certainty, not only DBE or ESB Subcontractors), including a description as to whether and how the Contractor will implement any additional prompt payment requirements, beyond those mandated in Book 2, Section 2.9.5, as well as the process by which the Contractor will track and monitor the following: invoicing by Subcontractors; prompt payment to Subcontractors; and release of retainage. This portion of the plan shall include any efforts that the Contractor and Subcontractors that are not themselves DBEs or ESBs will make to assist with mobilization efforts and early purchase of materials, or any other payment measures that will aid the viability of DBE and ESB participation in the Work.
- L. Mentor-Protégé program. A plan for encouraging mentor-protégé relationships between contractors on the Project, including an approach for encouraging firms to apply for CDOT's ESB Mentor-Protégé Program (<http://crbrc.org/mp>).
- M. Final Report. This section shall be included in the final submission of the SBDPP as further described in this Book 2, Section 2.9.2.2.D.
3. DBE and ESB Utilization Plans
- A. DBE Design Goal Utilization Plan
    - i. The Contractor shall submit its DBE Design Goal commitments in a Utilization Plan for Acceptance in B2GNow for each Contract Year. For Contract Year 1, the DBE Design Goal Utilization Plan shall be submitted concurrently with the SDBPP and no later than 30 Calendar Days prior to the issuance of NTP1. For Contract Years thereafter, the DBE Design Goal Utilization Plan shall be submitted no later than 30 Calendar Days prior to the start of each Contract Year (July 1) and concurrently with the SDBPP. Each DBE Design Goal Utilization Plan shall be sufficient to meet or exceed the annual participation target established for the Goal and Contract Year by the Contractor in its SDBPP, as Approved by CDOT.
    - ii. CDOT will not issue NTP1 until CDOT has Accepted DBE Commitments from the Contractor sufficient to achieve the DBE Design Goal for Contract Year 1 as Approved by CDOT in the SDBPP for Contract Year 1, or the Contractor has demonstrated sufficient good faith efforts to meet the DBE Design Goal for Contract Year 1.

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- iii. In order to complete the Contractor's submission of the DBE Design Goal Utilization Plan for each Contract Year, the Contractor shall submit Commitment Confirmations (CDOT Design Build Form 1415) for Acceptance in B2GNow for each DBE that the Contractor intends to make a commitment to use and as reported in the DBE Design Goal Utilization Plan for that Contract Year. Each CDOT Design Build Form 1415 must at least equal the Contractor's commitment in the DBE Design Goal Utilization Plan for that DBE. The Contractor shall complete Section 1 of the CDOT Design Build Form 1415 and the DBE shall complete Section 2 of the CDOT Design Build Form 1415.

**B. DBE Construction Goal Utilization Plan**

- i. The Contractor shall submit its DBE Construction Goal commitments in a Utilization Plan for Acceptance in B2GNow for each Contract Year. For Contract Year 1, the DBE Construction Goal Utilization Plan shall be submitted no later than 30 Calendar Days prior to issuance of NTP2. For Contract Years thereafter, the DBE Construction Goal Utilization Plan shall be submitted no later than 30 Calendar Days prior to the start of each Contract Year (July 1) and concurrently with the SDBPP. Each DBE Construction Goal Utilization Plan shall be sufficient to meet or exceed the annual participation target established for the Goal and Contract Year by the Contractor in its SDBPP, as Approved by CDOT.
- ii. CDOT will not issue NTP2 until CDOT has Accepted DBE Commitments from the Contractor sufficient to achieve the DBE Construction Goal for Contract Year 1 as Approved by CDOT in the SDBPP for Contract Year 1, or the Contractor has demonstrated sufficient good faith efforts to meet the DBE Construction Goal for Contract Year 1.
- iii. In order to complete the Contractor's submission of the DBE Construction Goal Utilization Plan for each Contract Year, the Contractor shall submit Commitment Confirmations (CDOT Design Build Form 1415) for Acceptance in B2GNow for each DBE that the Contractor intends to make a commitment to use and as reported in the DBE Construction Goal Utilization Plan for that Contract Year. Each CDOT Design Build Form 1415 must at least equal the Contractor's commitment in the DBE Construction Goal Utilization Plan for that DBE. The Contractor shall complete Section 1 of the CDOT Design Build Form 1415 and the DBE shall complete Section 2 of the CDOT Design Build Form 1415.

**C. ESB Goal Utilization Plan**

- i. The Contractor shall submit its ESB Goal commitments in a Utilization Plan for Acceptance in B2GNow for each Contract Year. For Contract Year 1, the ESB Goal Utilization Plan shall be submitted concurrently with the SDBPP and no later than 30 Calendar Days prior to the issuance of NTP1. For Contract Years thereafter, the ESB Goal Utilization Plan shall be submitted no later than 30 Calendar Days prior to the start of each Contract Year (July 1) and concurrently with the SDBPP. Each ESB Construction Goal Utilization Plan shall be sufficient to meet or exceed the annual participation target established for the Goal and Contract Year by the Contractor in its SDBPP,

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as Approved by CDOT.

- ii. CDOT will not issue NTP1 until CDOT has Accepted ESB Commitments from the Contractor sufficient to achieve the ESB Goal for Contract Year 1 as Approved by CDOT in the SDBPP for Contract Year 1, or the Contractor has demonstrated sufficient good faith efforts to meet the ESB Goal for Contract Year 1.
- iii. In order to complete the Contractor's submission of the ESB Goal Utilization Plan for each Contract Year, the Contractor shall submit Commitment Confirmations (CDOT Design Build Form 1415) for Acceptance in B2GNow for each ESB that the Contractor intends to make a commitment to use and as reported in the ESB Goal Utilization Plan for that Contract Year. Each CDOT Design Build Form 1415 must at least equal the Contractor's commitment in the ESB Goal Utilization Plan for that ESB. The Contractor shall complete Section 1 of the CDOT Design Build Form 1415 and the ESB shall complete Section 2 of the CDOT Design Build Form 1415.

D. DBE and ESB Utilization Plan Modifications by Contract Year

- i. The Contractor shall utilize the specific DBE or ESB listed on the Accepted Utilization Plans by Contract Year to perform the Work and supply the Materials for which it is listed unless the Contractor obtains CDOT's written consent to terminate, reduce, or modify the commitment. The Contractor shall use CDOT Design Build Form 1420, Participation Plan Modification Request to communicate all requests for termination, reduction, substitution, and waivers to CDOT. One CDOT Design Build Form 1420 may include multiple requests and must be submitted at the time of the occurrence or, if that is not possible, within a reasonable time of the occurrence requiring termination, reduction, substitution or waiver. Failure to carry out the requirements of this section is a material breach of the Contract and may result in the termination of the Contract or other remedies established by CDOT.
- ii. Terminations and Reductions. A termination occurs when a Contractor no longer intends to use a DBE or ESB for fulfillment of a commitment. A reduction occurs when the scope of the commitment changes and constitutes a partial termination. Terminations and reductions include, but are not limited to, instances in which a Contractor seeks to perform the Work originally designated for a DBE or ESB Subcontractor with its own forces, those of an affiliate, a non- DBE or ESB firm or with another DBE or ESB firm.
  - 1. CDOT cannot accept a termination or reduction unless the Contractor has good cause to terminate or reduce the commitment. Good cause includes: the DBE or ESB fails or refuses to execute a written contract; the DBE or ESB fails or refuses to perform the Work of its Subcontract consistent with normal industry standards, provided that such failure is not the result of bad faith or discriminatory actions of the Contractor or one of its Subcontractors; the DBE or ESB fails to meet reasonable, nondiscriminatory bond requirements; the DBE or ESB becomes bankrupt, insolvent, or exhibits credit unworthiness;



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the DBE or ESB is ineligible to work because of suspension or debarment proceedings or other state law; the DBE or ESB is not a responsible contractor; the DBE or ESB voluntarily withdraws from the Project and provides written notice to CDOT, the DBE or ESB is ineligible to receive DBE or ESB credit for the Work required; the DBE or ESB owner dies or becomes disabled and is unable to complete the Work; the DBE or ESB ceases business operations or otherwise dissolves; or other documented good cause that compels termination. Good cause does not exist if the Contractor seeks to terminate a DBE or ESB it relied upon to obtain the Contract so that the Contractor can self-perform the Work for which the DBE or ESB was engaged or so that the Contractor can substitute another DBE or ESB or non-DBE or ESB contractor after Contract award.

- iii. The Contractor shall provide the DBE or ESB notice of the Contractor's intent to terminate or reduce the commitment and the reason for such termination or reduction, with a copy to CDOT. In the notice of intent, the Contractor shall provide the DBE or ESB at least 5 Calendar Days to respond to the notice and inform CDOT and the Contractor of the reasons, if any, why it objects to the proposed termination or reduction and any reasons that it shall not be approved. The Contractor is not required to provide the DBE or ESB 5 Days' written notice in cases where the DBE or ESB in question has provided written notice that it is withdrawing from the Subcontract or purchase order, but is still required to notify CDOT. The notice period may be reduced by CDOT if required by public necessity.
  - iv. Following the notice period, the Contractor shall submit a CDOT Design Build Form 1420 for Acceptance. If the Contractor does not obtain Acceptance, the Contractor shall make additional good faith efforts with the DBE or ESB.
- E. Substitutions: When a commitment is terminated or reduced (including when a DBE or ESB withdraws), the Contractor shall make good faith efforts to find another DBE or ESB to substitute for the original DBE or ESB. These good faith efforts shall be directed at finding another DBE or ESB to perform at least the same amount, but not necessarily the same type of Work under the Contract as the participation that was terminated or reduced up to the Contract goal. To make a substitution, the Contractor shall request the addition of a new DBE or ESB using CDOT Design Build Form 1420 and provide a Commitment Confirmation (CDOT Design Build Form 1415) with the request. If the Contractor has not obtained substitute participation, the Contractor shall submit evidence of good faith efforts to substitute. The Contractor shall have seven (7) Days to submit such information prior to work being performed.
- F. Increases in Commitments: If the Contractor seeks to increase the Work to be performed under a DBE or ESB commitment, it shall submit a revised CDOT Design Build Form 1415 with the request for the modification.
- G. Change Orders. The Contractor shall be required to meet the goals based on the total earnings amount of the applicable Work. Therefore, if a change increases or adds scope to the Design/Build Contract, the Contractor shall ensure that it has

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obtained sufficient DBE or ESB participation, as appropriate for the subject Goal, to meet the applicable goal on the increased amount. If the Contractor is unable to meet the goal it will be required to demonstrate a good faith effort to do so. If the Contractor determines that additional DBE or ESB participation cannot be obtained, the Contractor shall request a waiver of the participation using CDOT Design Build Form 1420, within 14 Calendar Days prior to the execution of the change order. The Contractor shall include its justification for not obtaining additional participation and, at its discretion, CDOT may require additional information regarding the efforts of the Contractor.

4. Commitments. A commitment is a portion of the Contract, identified by dollar amount, designated by the Contractor for participation by a particular DBE or ESB. A commitment may be made to a firm at any tier. A commitment is not a subcontract; however, the Contractor must have received a quote from the DBE in order to claim a commitment to the DBE.
5. Good Faith Efforts
  - A. The Contractor is required to make good faith efforts to achieve the DBE and ESB Goals. Good faith efforts mean all necessary and reasonable steps to achieve the relevant goal which, by their scope, intensity, and appropriateness to the objective, could reasonably be expected to achieve the goal, even if not fully successful. Good faith efforts of the Contractor should include, but are not limited to, reaching out to DBEs or ESBs that could perform subcontracting opportunities on the Project, unbundling Work the prime would self-perform to create opportunities for DBEs or ESBs, negotiating in good faith with DBEs and ESBs and not refusing to utilize a DBE or ESB for price alone, and other efforts to obtain DBE or ESB participation on the Contract. For additional guidance on how the Department will determine whether or not it considers that the Contractor has made good faith efforts, see 49 CFR Part 26.
  - B. The Contractor's good faith efforts toward achieving the DBE and ESB Goals shall be evaluated annually at a minimum, with a final determination by the Department as to whether the Contractor has complied with its obligation to make good faith efforts to be made at Substantial Completion. The Department may issue a written non-compliance warning as it deems necessary if it believes the Contractor is not making good faith efforts at any time during the Project.
  - C. If the Contractor cannot meet the DBE or ESB Contract goals by Project Completion, it may seek a waiver to amend the goals by submitting CDOT Design Build Form 1416 and other supporting documentation. The burden is on the Contractor to demonstrate it utilized good faith efforts in its attempts to achieve the goals.

6. Counting Eligible DBE Participation

In order for Work performed by a DBE to count as DBE credit toward any of the DBE Goals, the following criteria must be met:

- A. DBE Certified to Perform the Work.
  - i. The DBE must be certified by the Colorado Unified Certification Program (UCP) in the Work to be performed. DBEs are certified in particular areas of Work which are designated by a six digit North American Industry

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Classifications System code plus a descriptor. Each DBE's work codes can be found in its profile on the Colorado UCP DBE Directory at [www.coloradodbe.org](http://www.coloradodbe.org).

- ii. The DBE must be certified to perform the Work, and not under suspension, upon submission of the commitment and upon execution of the DBE's Subcontract. When a commitment has been made, but upon review of the sublet request the DBE is no longer certified in the work code which covers the Work to be performed, the Contractor may not use the DBE's participation toward the Contract goal. The Contractor shall terminate the DBE commitment and seek substitute DBE participation. However, a DBE's Work will continue to count as eligible participation if the DBE was certified upon approval of the sublet request but the certification status changes during the performance of the Work. Suppliers must be certified upon execution of the purchase order.

B. Work Included in Commitment

- i. The Work performed by the DBE must be reasonably construed by CDOT to be included in the Work area and work code identified by the Contractor in an Accepted commitment.
- ii. If the Contractor intends to use a DBE for Work that was not listed in the original commitment, the Contractor shall submit a request for modification. Unapproved Work will not count toward the Contract goals. A DBE commitment cannot be modified to include Work for which the DBE was not certified at the time of the Acceptance of the original commitment unless such Work is in addition to the original commitment.

C. Work Performed by DBE

- i. The Work must be actually performed by the DBE with its own forces. For purposes of this specification, Work performed by the DBE with its own forces includes work by temporary employees, provided such employees are under the control of the DBE, the cost of supplies and Materials obtained by the DBE for its Work on the Contract, provided that such supplies are not purchased or leased from the Contractor or a Subcontractor that is subletting to the DBE, the cost any equipment leased by the DBE, provided that such equipment is not leased from the Contractor or a Subcontractor that is subletting to the DBE.
- ii. When a DBE subcontracts part of the Work, the value of the subcontracted Work shall be counted toward the goal only if the lower-tiered Subcontractor is a DBE and meets the criteria of this standard special provision. Performance by non-DBE Subcontractors, including non-DBE trucking firms and owner-operators, shall be deducted from the DBE's participation.

D. Payment Received for Work. The DBE must receive payment, including the release of its retainage, in order for the Work to count toward the goal.

E. Special Calculations for Suppliers. When a DBE supplies goods or materials for a project, the DBE may be classified as a manufacturer, dealer or broker. The DBE's status as a manufacturer, dealer or broker is determined on a contract-by-contract basis by CDOT, based upon the actual Work performed, in accordance with 49 CFR

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Part 26.53I. When a DBE is deemed to be acting as a manufacturer, 100% of the commitment will count as eligible participation. When a DBE is deemed to be acting as a regular dealer (i.e., non-manufacturer supplier), only 60% of the commitment will count as eligible participation. When a DBE is deemed to be acting as a broker, only the reasonable brokerage fee will count as eligible participation.

- F. Reasonable Service Fees. For a DBE firm for providing a bona fide service, such as professional, technical, consultant, or managerial services, or for providing bonds or insurance specifically required for the performance of a DOT-assisted contract, the fees and commissions charged by the DBE shall count toward the Contract goal, provided CDOT determines the fees to be reasonable and not excessive as compared with fees customarily allowed for similar services. In the case of DBE temporary employment placement agencies, only the placement fee for a temporary employee that will be specifically and exclusively used for Work on the Contract shall count as DBE credit; the hourly fee does not count toward the Contract goal unless the firm is also certified in the Work to be performed.
- G. Joint Venture Calculation. When a DBE is a participant in a joint venture, the DBE must apply to CDOT to determine how much of the Work performed by the joint venture will count toward the Contract goal. The DBE shall complete CDOT Form 893, Information for Determining DBE Participation when a Joint Venture Includes a DBE. To ensure sufficient time for CDOT review and Acceptance, CDOT Form 893 shall be submitted to CDOT no less than 10 Calendar Days before the DBE will begin Work.
- H. Commercially Useful Function.
- i. All DBEs must perform a commercially useful function as defined by 49 CFR § 26.55.
  - ii. If CDOT determines that a DBE has not performed a commercially useful function (CUF) on the Project, no participation by such DBE shall count toward the Contract goal. CUF means responsibility for the execution of the Work and carrying out such responsibilities by actually performing, managing and supervising the Work. CDOT will monitor performance during the Contract to ensure each DBE is performing a CUF. If CDOT determines that a DBE is not performing a CUF, no Work performed by such DBE shall be counted as eligible participation. The DBE, Contractor, and any other involved Third Parties may also be subject to additional enforcement actions.
  - iii. When determining whether a DBE is performing a CUF, CDOT will consider the amount of Work subcontracted, industry practices, the amount the firm is to be paid compared to the Work performed and eligible participation claimed, and any other relevant factors. With respect to Material and supplies used on the Contract, in order to perform a CUF the DBE must be responsible for negotiating price, determining quality and quantity, ordering the Material, installing the Material, if applicable, and paying for the Material itself.
  - iv. With respect to trucking, in order to perform a CUF, the DBE trucking firm must own and operate at least one fully licensed, insured and operational truck used on the Contract. Additionally, the DBE trucking firm must be

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responsible for the management and supervision of the entire trucking operation for which it is responsible on the Contract. CDOT only permits a DBE trucking firm to count the Work performed with trucks it owns, insures and operates using drivers it employs or with trucks it leases from another DBE firm, including owner operators who are certified DBEs. The DBE who leases trucks from another DBE receives credit for the transportation services the lessee DBE provides on the contract.

- v. A DBE does not perform a CUF when its role is limited to that of an extra participant in a transaction, contract or project through which funds are passed in order to obtain the appearance of DBE participation. CDOT will evaluate similar transactions involving non-DBEs in order to determine whether a DBE is an extra participant. If a DBE does not perform or exercise responsibility for at least 30 percent of the total cost of its Contract with its own work force, or the DBE subcontracts a greater portion of the Work than would be expected on the basis of normal industry practice for the type of Work involved, CDOT will presume that the DBE is not performing a CUF. The DBE may present evidence to rebut this presumption.
- I. CDOT Design Build Form 1432, Commercially Useful Function Questionnaire.
    - i. The Contractor shall monitor all DBE firms whose participation counts toward the goal to ensure those firms are performing a CUF and complete a CDOT Design Build Form 1432 for each DBE (for each subcontract) to be submitted to CDOT. For DBEs performing construction activities on the site of Work, a Commercially Useful Function (CUF) Questionnaire (CDOT Design Build Form 1432) shall be completed by the Contractor within 10 Calendar Days of the DBE commencing Work. For DBEs performing services off the site of Work (including but not limited to professional services, suppliers, manufacturers, brokers, and other services), CDOT Design Build Form 1432 shall be completed by the Contractor no later than within 35-50% of the DBEs completion of Work. All CUF Questionnaires (CDOT Design Build Form 1432) shall be submitted to CDOT no later than 14 Calendar Days after completion of CDOT Design Build Form 1432 by both the Contractor and the DBE.
    - ii. Based on CDOT's review of CDOT Design Build Form 1432 and any requested supporting documentation, as deemed necessary, CDOT shall determine whether a DBE firm has performed a CUF on the Project and document its determination on CDOT Design Build Form 1432. If CDOT determines that a DBE firm is not performing a CUF pursuant to 49 CFR § 26.55, no work performed by such firm shall count toward achieving the DBE Goal.

#### 7. Counting Eligible ESB Participation

The following criteria must be met for Work performed by an ESB to count as credit toward the ESB Contract Goal:

- A. The ESB firm must perform a bona-fide service in furtherance of the Work pursuant to the Contract.
- B. The ESB's Work must be actually performed by the ESB with its own forces under

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its direct control.

- C. The ESB must self-perform at least 30% of its Subcontract.
  - D. When the ESB subcontracts part of its Work, the value of the subcontracted Work shall be counted toward the goal only if the Subcontractor is a certified ESB. Performance by non-ESB Subcontractors shall be deducted from the ESB's participation.
  - E. The ESB must receive payment, including the release of its retainage, in order for the Work to count.
  - F. When an ESB is acting as a broker, only the reasonable brokerage fee will count as eligible participation.
  - G. Reasonable Service Fees: For an ESB firm providing a bona fide service, such as professional, technical, consultant, or managerial services, or for providing bonds or insurance specifically required for the performance of a DOT-assisted contract, the fees and commissions charged by the ESB shall count toward the ESB Contract goal, provided CDOT determines the fees to be reasonable and not excessive as compared with fees customarily allowed for similar services. In the case of ESB temporary employment placement agencies, only the placement fee for a temporary employee that will be specifically and exclusively used for Work on the Contract shall count as ESB credit; the hourly fee does not count toward the ESB Contract goal unless the firm is also certified in the Work to be performed.
  - H. Joint Venture Calculation: When an ESB is a participant in a joint venture, the ESB must apply to CDOT to determine how much of the Work performed by the joint venture will count toward the ESB Contract goal. The ESB shall complete CDOT Form 893, Information for Determining ESB Participation when a Joint Venture includes an ESB. To ensure sufficient time for review, CDOT Form 893 shall be submitted to CDOT no less than 10 Calendar Days before the ESB will begin work.
  - I. An ESB's Work will not count toward the goal when its role is limited to that of an extra participant in a transaction, contract or project through which funds are passed in order to obtain the appearance of ESB participation.
8. Joint Checks. The use of joint checks to DBEs and ESBs must be Approved by the Department before used to make a payment. The Contractor shall request Approval for the use of a joint check in a written letter signed by the DBE or ESB and the Contractor, stating the reason for the joint checks and the approximate number of checks that will be needed.
9. Payment Reduction. The Contractor's retainage amount will not be released until CDOT has determined whether the Contractor will be subject to a payment reduction. The Contractor will be subject to a payment reduction for any commitment termination or reduction, which was not Approved, for the same dollar amount in the commitment that was not honored. Additionally, the Contractor will be subject to a payment reduction for the portion of the DBE or ESB Contract Goal that was not met and not waived. The Contractor will not be subject to duplicate reduction for the same offense.
10. Other Enforcement
- A. As it determines necessary, CDOT may conduct reviews or investigations of participants. All participants, including, but not limited to, DBE or ESB firms and applicants for DBE and ESB certification, complainants, and contractors using DBE

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or ESB firms to meet DBE or ESB Contract goals, are required to cooperate fully and promptly with compliance reviews, certification reviews, investigations, and other requests for information.

- B. Participants shall not intimidate, threaten, coerce, or discriminate against any individual or firm for the purpose of interfering with any right or privilege secured by the DBE or ESB program or because the individual or firm has made a complaint, testified, assisted, or participated in any manner in an investigation, proceeding, or hearing under the DBE or ESB program. Failure to comply with this paragraph shall be a ground for appropriate action against the party involved (e.g., with respect to recipients, a finding of noncompliance; with respect to DBE or ESB firms, denial of certification or removal of eligibility and/or suspension and debarment; with respect to a complainant or appellant, dismissal of the complaint or appeal; with respect to a contractor which uses DBE or ESB firms to meet goals, findings of non-responsibility for future contracts and/or suspension and debarment)
- C. If CDOT determines that a Contractor or Subcontractor was a knowing and willing participant in any intended or actual subcontracting arrangement contrived to artificially inflate DBE or ESB participation or any other business arrangement determined by CDOT to be unallowable, or if the Contractor engages in repeated violations, falsification or misrepresentation, CDOT may refuse to count any fraudulent or misrepresented DBE or ESB participation; withhold progress payments to the Contractor commensurate with the violation; suspend or reduce the Contractor's prequalification status; or seek any other available contractual remedy.

#### 11. Reporting Requirements

- A. Disclosure of information: In order for the Department to monitor and enforce the requirements of this Book 2, Section 2.5.2, the Contractor shall accurately track and disclose to CDOT the cumulative value of the Design Services and Construction Services and the value of all individual Subcontracts (and, for certainty, this requirement shall apply to all Subcontracts and not just DBE or ESB Subcontracts). The Department may verify this information by reviewing contracts and payment documents which shall be provided upon request.
- B. SDBPP. The Contractor shall submit a SDBPP prior to issuance of NTP1 and annually thereafter as described in Book 2, Section 2.
- C. Quarterly Civil Rights Progress Report. The Contractor shall submit a Quarterly Civil Rights Progress Report as further described in detail in Book 2, Section 2.9.3, that includes an assessment of the Contractor's achievement of the DBE and ESB Goals for the reporting quarter, Contract Year to Date and All Contract Years.
- D. DBE and ESB Goal Utilization Plans by Contract Year. The Contractor shall submit DBE and ESB Goal Utilization Plans by Contract Year as described in Book 2, Section 2.
- E. Department Annual DBE and ESB Assessment. Within 30 Calendar Days after CDOT Approval of each annual update to the SDBPP, CDOT shall provide a written determination on the Contractor's progress toward achieving the DBE and ESB Goals. Progress will be based on (1) the Contractor's demonstrated good faith efforts, (2) compliance with its SDBPP by achieving the schedules, annual targets, and outreach described in the plan, and (3) the Contractor's efforts put forth and as

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described in the Quarterly Civil Rights Progress Reports towards the DBE and ESB Goals throughout the Contract Year.

- F. Final SDBPP. The Contractor shall submit, for Approval by the Department, a final SDBPP on DBE and ESB Goal achievement during the Project no later than 30 Calendar Days prior to Substantial Completion. The final report shall include all of the information as required in Book 2, Section 2.5.2.2., as well as an additional Final Report section to include a final summary report of total DBE and ESB participation toward achieving each of the DBE and ESB Goals. The report shall include an updated Schedule with the most current participation achievement information available as of the date of submission and a detailed description of the Contractor's achievements and implementation of the strategies described in the SDBPP for the Contractor's achievement of the DBE and ESB Goals. In the event that Contractor failed to achieve any of the DBE and ESB Goals, as of the Substantial Completion Date, the Contractor shall submit, for Approval by the Department, an updated report, as needed, no later than 30 Calendar Days prior to Final Acceptance and to include final payments and release of retainage to all Subcontractors and Suppliers.
- G. Department Final DBE and ESB Assessment. Within 30 Calendar Days following Approval of the Contractor's Final SBDPP, the Department will evaluate the data to determine, and issue a written report setting out its determination of, whether the Contractor has (i) achieved each of the DBE and ESB Goals as of the Substantial Completion Date (or, as applicable, as of the Final Acceptance Date) and (ii) in relation to any such goal that has not been met, demonstrated that it has made good efforts to achieve such goal.

### **2.9.3. Quarterly Civil Rights Plan Progress Report**

The Contractor shall submit to CDOT for Acceptance a quarterly progress report no later than 30 Calendar Days following the quarterly reporting period as defined by a Contract Year, addressing the following areas:

- 1. General
  - A. List of Subcontractors and Suppliers (all tiers) that commenced Work during the reporting quarter, including: (1) tiering, (2) type of work to be performed, (3) total contracted amount, (4) DBE and/or ESB status, (5) status of CDOT Design Build Form 1415 submission, (6) Commitment Amount, and (7) Eligible Commitment Amount.
  - B. List of Subcontractors and Suppliers (all tiers) that have completed their portion of the Work during the reporting quarter, including total amount paid to the Subcontractor and whether the Subcontractor is still owed retainage.
- 2. Achievement of DBE and ESB Goals
  - A. A schedule that demonstrates the Contractor's achievement of the Annual Participation Targets by Contract Year, as approved by CDOT in the Contractor's SDBPP, for the current Contract Year and reporting quarter towards each DBE and ESB Goal. The schedule should be organized based on the Contractor's planned Work Area per the SDBPP for all Contract Years and quarters (as included in the Reference Documents), and to include at a minimum:



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- i. DBE or ESB Planned Work Area per SDBPP.
  - ii. DBE or ESB Name, as included in the Contractor’s Utilization Plan for the specified Goal and Contract Year, and for which a Commitment Confirmation (CDOT Design Build Form 1415) has been Accepted by CDOT. Anticipation DBE or ESB Participation applicable to future Contract Years that has not been reported in a Utilization Plan or Commitment Confirmation, may be referred to as such, but must be accounted for in the schedule to demonstrate how the relationship of the current reporting period in achievements with the projected annual participation targets of the Contractor’s approved SDBPP.
  - iii. Scope of Work for each DBE or ESB listed.
  - iv. The total dollar value of each DBE or ESB Commitment distributed by Contract Year. For anticipated DBE or ESB participation applicable to future Contract Years that has not been reported in a Utilization Plan or Commitment Confirmation, the dollar value of such estimated Work by Contract Year, such that the total commitments submitted to CDOT to date and anticipated commitments total the annual participation target by Contract Year and All Contract Years as Approved by CDOT in the Contractors SDBPP.
  - v. Actual payments made to each DBE or ESB for the reporting quarter and total paid to date, including total paid to all DBEs or ESBs for the reporting quarter and percentage of the annual participation target achieved for that quarter and quarter to date. Actual DBE and ESB participation amounts should be based on data available at the time of report submission.
  - vi. Modifications to Annual Participation Targets, as Approved by CDOT, should be separately identified and reflected in the totals for accuracy along with any updates to actual participation amounts that may not have been available at the time of report submission.
- B. A narrative discussing the Contractor’s progress toward meeting each DBE and ESB Goal for the reporting quarter and current Contract Year, and any impacts the current quarters achievements may have on future quarters and overall successful achievement of the annual Goal participation target for the Contract Year and any future Contract Years.
- C. A progress update on the Contractor’s efforts toward making new DBE or ESB commitments for future Contract Years.
- D. A description of the anticipated Work to be done by DBEs and ESBs in the upcoming quarter and a list of corresponding DBEs and ESBs anticipated to complete that specific Work effort.
- E. A description of any new DBE or ESB subcontracting opportunities expected during the upcoming quarter.
- F. A description of compliance issues, such as payment disputes, non-performance of DBEs and ESBs, significant scope of work changes, and commercially useful function concerns in the reporting quarter.
- G. Good faith efforts conducted by the Contractor in the reporting Quarter towards

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achieving the DBE or ESB Goals as per the SDBPP.

- H. A description of any concerns the Contractor may have in meeting the current Contract Year goal for each DBE and ESB Goal or future Contract Years and the potential impact on the annual participation targets for those Contract Years as approved in the SDBPP.
- I. A list and description of any CDOT Design Build Form 1420's submitted in the reporting quarter, or anticipated to be submitted, and the impacts on achievement of future Contract Year goals and anticipation of requesting a modification to the annual participation targets for any upcoming Contract Years.
- J. A bidders list of all firms that submitted a quote to participate on the Project. The list shall include a description of the Work for which the bid was submitted, whether the firm is a DBE or ESB, and whether the firm was selected for the Work (including a reasoning non-selections).

### 3. OJT Goal

- A. An updated quarterly schedule indicating all anticipated Work to be performed in each quarter for the duration of the Project and the expected distribution of training hours separated by areas of Work for the duration of the Project.
- B. A narrative discussing the Contractor's progress toward meeting the OJT goal, including a summary of OJT hours achieved to date.
- C. If the Contractor has fallen behind its previously submitted quarterly schedule, the Contractor shall provide a description of the actions it is taking to facilitate increased OJT participation to make up for lost progress.

#### 2.9.4. Submission of Certified Payroll

- A. To comply with the DBRA requirements contained in Book 1, Section 7.4, weekly certified payrolls shall be submitted electronically utilizing LCPtracker at the following link: <https://prod.lcptracker.net/WebForms/login.aspx>
- B. Each construction subcontractor shall submit their payrolls directly into LCPtracker for approval by the Contractor.
- C. The Contractor shall submit and approve their own payrolls in LCPtracker.
- D. For all Work covered by DBRA, the Contractor and all Subcontractors shall pay workers unconditionally and not less often than once per week. Workers shall be paid within 7 Days of the applicable contractor's regular weekly pay period end date.
- E. The Contractor and all Subcontractors shall submit certified payrolls within seven (7) Days of the applicable contractor's regular weekly payment date. Certified payrolls not submitted within the required seven (7) Day timeframe are considered to be late and in noncompliance. The Contractor shall serve in the "primer approver" role within the LCPtracker system. The Contractor shall have seven (7) Days to either "approve" or "reject" a submitted payroll. If a payroll is rejected for noncompliance, the applicable contractor shall be given seven (7) Days to correct and resubmit the previously rejected certified payroll. The Contractor shall then review the resubmitted certified payroll within seven (7) Days, and either "approve" or "reject" the resubmitted certified payroll. If the payroll is found to be in noncompliance upon

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resubmission or no response to the noncompliance notice is received from the applicable contractor, an NCR shall be issued by the Contractor.

- F. The Contractor shall utilize Administrative Notices within LCPTracker as the communication method to reject certified payrolls and communicate the reasoning for such rejection. The Administrative Notice shall include: (1) subject week ending date, (2) initials or name of the person issuing the Administrative Notice, (3) a description of the noncompliance issue, (4) actions to be taken to correct the payroll, and (5) a deadline for response of seven (7) days from issuance of the notice.
- G. For late certified payrolls, the Contractor shall notify the applicable contractor in writing within seven (7) Days of the missed deadline that it is in noncompliance and the applicable contractor shall be given seven (7) Days from the date of the notice to submit the requested certified payroll. Late payroll notices issued by the Contractor shall be uploaded into LCPTracker eDocuments (with the subject week ending field appropriately selected) and include: (1) the subject payroll week ending date, (2) a description of the non-compliance issue (i.e., late payroll), (3) actions to be taken (i.e., submit payroll) to correct the issue, and (4) a deadline for response of seven (7) days from issuance. If the applicable contractor fails to submit the certified payroll within seven (7) Days of the Contractor's written notification as requested, the Contractor shall issue an NCR for noncompliance.
- H. Required supporting documentation: The following supporting documentation is required for a certified payroll submission be considered complete.
  - i. CDOT's Contractor Fringe Benefit and Deduction Statement (CFBDS): Each contractor shall submit a CFBDS in the LCPTracker system prior to or concurrently with its first certified payroll submission. On the CFBDS, each contractor shall list company-wide fringe benefits and allowable deductions offered to its general employee population. If a contractor's fringe benefits or deductions are altered during the life of the Project, a revised CFBDS shall be submitted.
  - ii. Individual Deductions: Deductions listed on a certified payroll that are unique to a specific individual shall be accompanied by supporting documentation submitted into LCPTracker eDocuments as detailed in CDOT Certified Payroll Memo (issued June 12, 2018) available online at <https://www.codot.gov/business/civilrights/compliance/labor/payroll>. Examples of such required supporting documentation includes, but is not limited to: wage garnishment orders, child support court orders, loan documentation, USDOL approval letters, Owner Affidavits.
  - iii. The Contractor shall ensure compliance with the Copeland Act that requires employee payroll deductions to be within those allowed by the U.S. Department of Labor (USDOL), or otherwise contractors have obtained USDOL approval as documented in a USDOL Approval Letter.
  - iv. All deductions shall be detailed by type and dollar amount on each certified payroll.

### 2.9.5. Payment Reporting

All Subcontractors must be registered with B2GNow and be listed for this Project in CDOT's

B2GNow database.

- A. By the 15th of each month, the Contractor shall record all payments to Subcontractors by completing an audit in B2GNow.
- B. Each Subcontractor acting as a payor shall report its payments in B2GNow by the 15th of each month.
- C. Once a payment is reported in B2GNow, the payee Subcontractor or supplier will receive a notice to confirm payment. The Subcontractor or supplier shall have 15 Days from the notice to confirm payment or report an issue.

**2.10 Deliverables**

The Contractor shall submit the following to CDOT for Review, Acceptance, or Approval:

**Table 2-2 Deliverables**

<b>Deliverable</b>	<b>Review, Acceptance, or Approval</b>	<b>Schedule</b>
WBS	Acceptance	Prior to NTP1
Scheduling software	Approval	Prior to NTP1
Preliminary Baseline Schedule	Acceptance	Prior to NTP1
Original Baseline Schedule	Approval	45 days prior to NTP2
Methods Statements	Acceptance	Prior to NTP2
Current Baseline Schedule	Acceptance	Concurrent with Monthly Invoice
Revised Progress Schedule	Approval	Upon CDOT's or Contractor's request
Monthly Progress Schedule	Acceptance	Concurrent with Monthly Invoice
Recovery Schedule	Approval	Within 14 Days after the Contractor first becomes aware of a schedule delay. See Section 2.4.2.6
As-Constructed Schedule	Acceptance	With the last Monthly Invoice
List of Contractual Schedule Constraints	Review	With Original Baseline Schedule, Current Baseline Schedule, Revised Progress Schedule, and Recovery Schedule
Narrative of changes to previous actual dates or dates required in the Contract	Approval	With any Schedule when dates have been revised
Draft Monthly Invoices	Review	Within 10 Days following prior month's end concurrent with the Progress Status Meeting
Final Monthly Invoices	Approval	Monthly
Invoice Supporting Documents	Approval	Prior to NTP1
Monthly Invoice format changes	Approval	At least 15 Days prior to first invoice and prior to NTP2

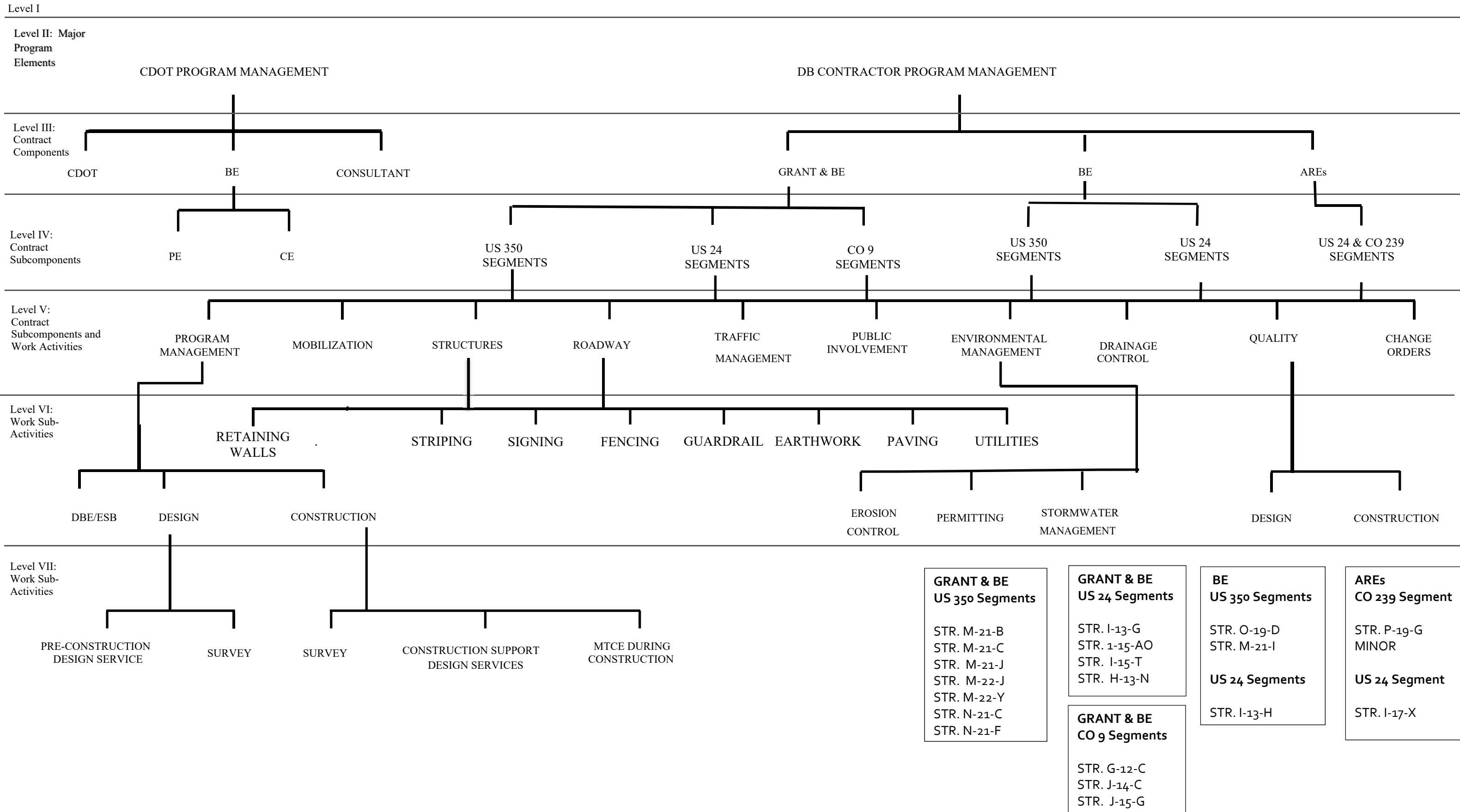
Monthly Progress Report format	Acceptance	Within 10 Days after NTP1
Monthly Progress Schedule	Acceptance	Concurrent with each Monthly Invoice
Certifications by Contractor’s Quality Control Administrator	Review	Concurrent with each Monthly Invoice
Monthly Maintenance Progress Report	Acceptance	Concurrent with each Monthly Invoice
Drawdown Plan/Revised Drawdown Plan	Review	With Original Baseline Schedule, Current Baseline Schedule, Revised Progress Schedule, and Recovery Schedule
Pre-construction photographs and video	Acceptance	Prior to NTP2
Progress photographs	Review	Progress photos monthly. Photographs of buried Structures just prior to burial
Office facilities and options	Approval	Prior to CDOT occupying any Contractor-provided facilities not later than 30 Days after NTP1
Project directory	Acceptance	Prior to NTP2, updated quarterly
Project Safety Management Plan	Acceptance	Prior to NTP2
Project Safety Management Plan updates	Review	When a process, method, chemical, or other Work criterion changes that affects the safety of a person or property
Civil Rights Plan	Approval	No later than 3 weeks prior to NTP2
Small and Disadvantaged Business Performance Plan (SDBPP)	Approval	No later than 30 Calendar Days prior to issuance of NTP1; thereafter, updated annually and submitted no later than 30 Calendar Days prior to the start of the Contract Year (July 1)
DBE Design Utilization Plan by Contract Year	Acceptance	For Contract Year 1, no later than 30 Calendar Days prior to the issuance of NTP1; for each Contract Year thereafter, no later than 30 Calendar Days prior to the start of each Contract Year (July 1).
DBE Construction Utilization Plan by Contract Year	Acceptance	For Contract Year 1, no later than 30 Calendar Days prior to the issuance of NTP2; for each Contract Year thereafter, no later than 30 Calendar Days prior to the start of each Contract Year (July 1).
ESB Utilization Plan by Contract Year	Acceptance	For Contract Year 1, no later than 30 Calendar Days prior to the issuance of NTP1; for each Contract Year thereafter, no later than 30 Calendar Days prior to the start of each Contract Year (July 1).
CDOT Design Build Form 1415	Acceptance	Concurrently with each submission of the DBE and ESB Goal Utilization Plans by Contract Year for each DBE; updated when commitments change

CDOT Design Build Form 1416	Approval	When Contractor determines it cannot meet one of the DBE goals (if applicable)
CDOT Design Build Form 1420	Acceptance	To modify a Utilization Plan by Contract Year and an Annual Participation Target for a Contract Year in the SDBPP; submitted concurrently with the SDBPP and no later than 30 Calendar Days prior to the affected Contract Year
CDOT Form 893	Acceptance	Submitted to CDOT no less than 10 Calendar Days before the DBE commences Work
Joint Check Letter	Acceptance	Prior to use of a joint check
CDOT Design Build Form 1432 for every DBE counting toward goal	Acceptance	To be completed by the Contractor and DBE for each DBE Firm as per Book 1, Section 2.5.2.6.H. and submitted to CDOT within 14 Calendar Days after completion of CDOT Design Build Form 1432 by both the Contractor and DBE.
Quarterly Civil Rights Plan Progress Report	Acceptance	No later than 30 Calendar Days following the quarterly reporting period end (based on Contract Year)
Certified Payroll in LCPtracker System	Review	Weekly
Payments to all Subcontractors in B2Gnow System	Review	Monthly
Small and Disadvantaged Business Participation Final Report	Approval	No later than 30 Calendar Days prior to Substantial Completion Date, with an updated report, as needed, no later than 30 Calendar Days prior to Final Acceptance and to include final payments and release of retainage to all Subcontractors and Suppliers.

**2.11 Exhibits**

Exhibit 2-A Work Breakdown Structure

**R2B2 DESIGN BUILD**



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### **3.0 QUALITY MANAGEMENT**

This Section 3 includes the requirements for the quality management Work for the Region 2 Bridge Bundle Design Build Project (Project). This Work shall be completed in accordance with the Contract Documents.

The Contractor shall be responsible for implementation and maintenance of an effective quality program to manage, control, document, and assure all obligations of the Contractor comply with the requirements of the Contract Documents for the Project. The Quality Management Plan (QMP) shall encompass all Work performed by the Contractors of all tiers and the Project's overall Quality Assurance program, including, at a minimum, a Design Quality Management Plan (DQMP) and a Construction Quality Management Plan (CQMP).

The QMP shall describe in detail the quality processes for internal checks, reviews, audits, responsibility and authority, and resolutions to occurrences of nonconformance to Contract requirements. The QMP shall address the responsibility and Approval authority of the Colorado Department of Transportation (CDOT) and outline processes for addressing issues related to elements of Work that do not comply with the Contract. The CDOT review time for all submittals is 14 Days, except for review times specifically identified in the Contract. The QMP shall include the Contractor's quality policy, quality planning, and quality improvement processes. The QMP shall include an approach to Process Control (PC) relative to design, construction, civil rights and Work management. The QMP shall address all actions to ensure a successful quality program integrated with CDOT's Owner Acceptance (OA) testing, which will be performed on construction Activities as defined in this Section. All other Quality actions are the responsibility of the Contractor.

The QMP shall be in effect until Final Acceptance and shall address the responses to Warranty issues during the Warranty period.

#### **3.1 Administrative Requirements**

The Contractor shall submit the DQMP to CDOT for Approval prior to issuance of First Notice to Proceed (NTP1). CDOT will deliver its Approval or rejection and provide comments on the initial DQMP submission within 14 Days following CDOT's receipt of the DQMP. The Contractor shall revise and resubmit the DQMP within 7 Days of receiving CDOT's rejection and comments.

The Contractor shall submit the sections of the CQMP prior to the issuance of Second Notice to Proceed (NTP2).

The entire QMP (including the DQMP and CQMP) for all of the Work on the Project must have CDOT's Approval before NTP2 will be issued. CDOT will deliver its Approval or rejection and provide comments on the full QMP submission within 21 Days following CDOT's receipt of the QMP. The Contractor shall revise/resubmit its full QMP within 14 Days upon notification by CDOT of rejection and comments.

The QMP shall be reviewed by the Contractor's executive management, Quality Control Administrator (QCA), and CDOT during the course of the Project, but no less than every 6 months, to ensure its continued suitability, adequacy, and effectiveness. Such reviews should include PC/OA results, status of corrective/preventative actions, quality trends, follow-up items



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from previous reviews, changes to the QMP, and recommendations for improvement. The Contractor shall submit all revisions of the QMP to CDOT for Approval prior to implementing any QMP modifications.

### **3.1.1. Quality Policy**

The QMP shall include the Contractor's executive management written definition and endorsement of the Contractor's policy for quality, including QMP objectives, and its commitment to quality. The QMP shall delineate procedures used by the Contractor's executive management to implement the Contractor's quality policy. The Contractor's executive management shall ensure its policy is implemented at all levels of the Project organization.

The Contractor shall publish and post a statement of its commitment to quality and the organization's quality objectives in several locations throughout the Project. Posted locations shall be such that the statement is visible to employees and Subcontractors. The statement shall explain the Contractor's commitment to quality and the responsibility the Contractor has for ensuring that it meets the quality requirements for the Project.

### **3.1.2. Quality Planning**

The Contractor shall include in the QMP its planning methods to meet the requirements of the Contract. The Contractor shall include the following tasks, at a minimum, in its quality planning efforts to ensure continued conformance to Contract requirements:

1. Identify the necessary processes, resources, and personnel that are needed for Design PC, Design Quality Assurance (QA), and Construction PC to ensure the Work meets the requirements of the Contract.
2. Develop processes to ensure all project personnel are trained in the implementation of the QMP.
3. Include procedures to develop and maintain the currency of the PC and quality improvement.
4. Identify and define all measurable Contract requirements.
5. Develop procedures for preparation, control, Approval, and distribution of the QMP.
6. Develop procedures for internal quality auditing to ensure the Contractor employees, Subconsultants, Subcontractors, and Suppliers understand and are effectively implementing the QMP. The Contractor shall audit the implementation of the QMP on a quarterly basis.
7. Identify the process to ensure the Contractor's executive management approves and endorses the QMP and reviews the implementation of QMP throughout the duration of the Project.

### **3.1.3. Communication**

The Contractor and CDOT will provide complementary support of all functions, personnel, and goals of the QMP. The Contractor shall identify and implement processes and procedures that foster communication with CDOT and all stakeholders of the Project.

The Contractor shall include in the QMP, a process to notify CDOT in advance of all items

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requiring OA, Inspection, and/or testing.

#### **3.1.4. Quality Improvement**

The Contractor shall establish, document, and implement a program for quality improvement. The Contractor shall include in the QMP the methods for identifying, analyzing, evaluating, and implementing solutions to continuously improve quality. The QMP shall establish and maintain specific procedures to ensure a successful quality improvement program.

The Contractor's quality improvement program shall include internal quality audits and regularly scheduled quality meetings with staff and supervisors to discuss quality issues.

### **3.2 General Roles and Responsibilities**

#### **3.2.1. Contractor Roles and Responsibilities**

The Contractor shall establish, document, and implement the QMP. The QMP shall include all procedures necessary for the Contractor to control the quality of its design and construction processes to meet the requirements of the Contract. The QMP shall include a testing and inspection schedule to control the construction processes.

The Contractor shall provide a PC team to implement, monitor, assess, and adjust the production to ensure the final products meet the Contract requirements.

The Contractor shall provide a qualified design quality team that shall oversee the design processes of the Project by conducting design reviews, providing review documentation, and coordinating with the Contractor and CDOT to ensure the design meets the requirements of the Contract. The Contractor shall provide QA for the design quality process.

#### **3.2.2. CDOT Roles and Responsibilities**

CDOT will retain responsibility for the Owner Acceptance (OA), as required by Title 23, Code of Federal Regulations, Part 637 (23 CFR 637).

CDOT will provide a qualified construction OA team to perform QA auditing and acceptance testing. The CDOT construction OA will perform on-site inspection and testing of the construction elements of the Work to verify all Work has been constructed in conformance with the Contract requirements, following the requirements of the CDOT *Field Materials Manual*.

CDOT will perform Independent Assurance Activities to confirm the sampling and testing Activities performed by the OA and the Contractor's PC at CDOT's discretion are conducted by qualified personnel using proper procedures and properly calibrated and functioning Equipment.

### **3.3 Personnel Requirements**

The Contractor shall include in the QMP an organizational chart that illustrates a commitment to implementing an effective QMP to ensure all Work meets the requirements of the Contract. The QMP shall describe the hierarchy of the Contractor's organization. The QMP shall graphically depict the principal quality participants, showing lines of responsibility, authority, and communication with CDOT, other involved agencies, Subconsultants, Subcontractors, and Suppliers and any other team members having a significant quality role.

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The Contractor's executive management shall have overall responsibility for successful execution of the QMP and shall ensure responsibilities and authority are defined and communicated within its organization. The Contractor shall identify a Quality Control Administrator (QCA) that reports directly to executive management and shall be responsible for all Contractor design and construction quality Activities for the Project. The QCA shall not be responsible for the management and direction of PC Activities.

### **3.3.1. Training**

The Contractor shall establish and maintain documented procedures for identifying training needs and requirements for the implementation of the QMP and shall provide training of all personnel performing Activities affecting quality. Personnel performing specifically assigned tasks affecting quality shall be trained in the specific plans, processes, and procedures as assigned in the QMP.

The QMP shall specify procedures that:

1. Familiarize all personnel with all requirements of the Contract Documents, including the proposal documents, pertaining to their responsibilities.
2. Educate, train, and certify (as appropriate) personnel performing activities affecting or measuring the quality of the Work and ensure they achieve and maintain reasonable proficiency.
3. Ensure personnel performing the Work do so according to the QMP and all other Contract Documents.
4. Provide formal training on the proper use and procedures for document control prior to implementation.
5. Provide documentation verifying all training efforts and activities.

The Contractor shall provide training to all personnel that may interface with CDOT's OA efforts to ensure they understand their roles and responsibilities for cooperating and responding to CDOT OA Activities.

Quality training shall precede the associated Work.

## **3.4 Documentation**

Document management and control shall conform to the Contract requirements, including Book 2, Section 2.

### **3.4.1. Documentation Control**

The Contractor's team and CDOT's personnel shall maintain construction workmanship and materials quality records of all Inspections and Tests performed. These records shall include factual evidence the required Inspections and Tests have been performed, including type and number of Inspections or Tests involved; results of Inspections or Tests; nature of defects, deviations, causes for rejection, proposed remedial action; and corrective actions taken.

The Contractor shall store and maintain all Contractor's quality documentation in the Contractor's Document Control System (DCS). The QMP shall include the proposed file structure and naming conventions for all required quality documentation. The Contractor

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shall provide CDOT access to the Contractor's DCS to access all quality documentation. The Contractor shall submit to CDOT all quality documentation with each structure segment completion.

The QMP shall identify (by name) the document control supervisory personnel for the maintenance and management of records and documents for the Contractor.

The Contractor's Construction Quality Manager (CQM) shall maintain a daily log of all Inspections performed for both Contractor and Subcontractor PC operations. The daily inspection reports shall identify Inspections conducted, dates of inspections, results of inspections, locations and nature of defects found, causes for rejection, and remedial or corrective actions taken or proposed. The responsible technician and the technician's supervisor shall sign the daily inspection reports. These daily inspection reports shall document the day's events, Activities, and discussions in a format consistent with the requirements contained within CDOT's *Field Materials Manual* and CDOT's *Construction Manual*.

To enhance coordination of CDOT's QA and OA Activities during construction, the Contractor shall provide CDOT a weekly look-ahead of specifically scheduled construction Activities, designating the location and planned quantities of Materials to be placed and the protocols for identifying completed construction Work. The Contractor shall also provide CDOT the actual construction Activities conducted during the previous week, designating location and quantities of Materials that were placed. The Contractor shall provide this information to CDOT at weekly status meetings both electronically and in hard copy format.

The Contractor's records shall include a master list of approved design submittals, revisions, Field Design Changes (FDC), Notice of Design Changes (NDC), and Requests for Information (RFI). The QMP shall include a process to communicate design changes to both the Contractor and CDOT on a timely basis consistent with the progress of construction Activities.

### **3.4.2. Request for Information**

The QMP shall define a method to control the RFI process for issues generated by both the Contractor and Third Parties and identify the party responsible for providing the RFI response. CDOT shall be included in the distribution of all RFIs and RFI responses. If Nonconforming Work is discovered through the RFI process, it shall be addressed with the Nonconforming Work process described in Section 3.6.

### **3.4.3. Design Review Documentation**

The QMP shall outline a process to document the results of all design reviews and comment resolution meetings.

The Contractor's process shall include, at a minimum, a record of the following information, which shall be provided to CDOT in accordance with Book 2, Section 3:

1. List of the participants in each review or meeting.
2. Record of all items discussed.
3. Discrepancies noted and reports on corrective action(s) taken or planned.
4. Follow-up action items, due dates, and the responsible party.

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5. Items needing resolution and time constraints for resolution.

#### **3.4.4. Quality Status Reports**

The QMP shall outline a reporting process for recording, organizing, and distributing a record of internal quality activities. These Quality Status Reports shall be issued by the QCA and distributed to the Contractor's and CDOT's management personnel. The Contractor shall submit the Quality Status Reports to CDOT for Review with each Monthly Invoice submittal. The reports shall include the following:

1. A summary of internal quality Activities.
2. A summary of the status of all RFIs.
3. A summary of the status of all NDCs and FDCs.
4. A summary of the status of all Nonconforming Work.
5. A summary of any corrective and preventative actions.
6. A summary of any quality trends, both positive and negative, as applicable.
7. Materials Testing and Inspection Plan (MTIP) results (both cumulative and monthly).

### **3.5 Design Quality**

The QMP shall include a DQMP to describe specific procedures to be followed to ensure all the designs conform to the requirements of the Contract and to the design documents being used as the basis of construction.

The DQMP shall describe design quality management practices and processes that:

1. Specify quality procedures for preparing and checking all plans, specifications, calculations, reports and other documentation.
2. Specify procedures for verifying computer programs used and their input and output.
3. Control and independently ensure the design meets the requirements of the Contract.
4. Identify and track Design Document deliverables.
5. Provide for the Approval, tracking, and recording of revisions to Design Documents.
6. Provide a formal procedure for comment resolution included in the QMP.
7. Provide procedures for Approval of Released for Construction (RFC) Documents.

The Contractor's DQMP shall include two primary elements: design process quality control; and independent design quality control and audits.

The Contractor's DQMP shall also include a process for field verification of as-constructed conditions and subsequent incorporation into the As-Constructed Documents.

#### **3.5.1. Design Process Control**

Design Process Control shall include the following Activities:

1. Quality Process Control checking of design calculations.
2. Quality Process Control checking by discipline of milestone design packages

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(Preliminary Design Plans, RFC Documents, Final Design Documents, and As-Constructed Documents).

3. Quality Process Control reviews of studies, reports, and other design supporting documents.
4. Interdisciplinary reviews of milestone design packages (including regulatory compliance).
5. Constructability reviews of milestone design packages.
6. Log of design changes.
7. Design software validation.

All design process quality control Activities shall be well defined in the DQMP and shall be fully documented processes.

### **3.5.2. Independent Design Quality Control and Audits**

Independent design quality control and audits shall include the following Activities:

1. Audits of all the design process quality control Activities related to the release of each specific design milestone package performed and documented to ensure the package quality prior to its final release. Audits shall be performed by the Design Quality Manager (DQM) and reviewed and approved by the QCA.
2. Independent technical reviews.
3. Independent Structure reviews where required by the Technical Requirements or the Approved DQMP.

### **3.5.3. CDOT Design Acceptance**

Ultimately, CDOT Design Acceptance will be through the Acceptance of the Final Design Documents. To facilitate the Acceptance of the Final Design Documents, CDOT will perform in-progress acceptance activities, including:

1. Monitoring the adequacy of the DQMP.
2. Over-the-shoulder, in-progress design reviews.
3. Formal design reviews of milestone design packages using comment resolution forms, which shall be maintained as a database by the Contractor.
4. Audits of the resolution of design review comments through comment resolution forms.

### **3.5.4. Preliminary Design Plans**

The Contractor shall prepare Preliminary Design Plans (at approximately 30% design completion) showing how the Contractor's design meets the Book 2, Section 1 requirements. The Contractor shall submit the plans to CDOT for Review a minimum of 14 Days, excluding Holidays, prior to the review meeting. CDOT Review of the Preliminary Design Plans will not relieve the Contractor from compliance with any of the Project design requirements that may not be adequately addressed or are incorrectly addressed in the plans. The Preliminary Design Plans shall include at a minimum:

1. General: cover sheet, typical sections

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2. Roadway: geometric layouts, roadway plans and profiles with limits of construction (toes of slope/tops of cut), cross-sections (100-foot maximum interval)
  3. Structures: general layouts, Bridges, Concrete Box Culverts (CBCs), Arch Structures, major drainage structures, retaining wall layouts, structures typical sections
  4. Drainage: master drainage plan and profiles with contours and locations and type of structures, structure hydraulic information
  5. Traffic Control: phasing plans, detour plan and profile with limits of construction (toes of slope/tops of cut)

The Contractor shall include the three-dimensional (3-D) model of the design with this submittal.

### **3.5.5. Released For Construction Documents**

RFC Documents allow the Contractor to initiate construction in advance of CDOT's Acceptance of the Final Design Documents. The QMP shall identify the procedure for releasing RFC Documents, including a discussion of the specific roles of the Contractor's Project Manager, QCA, DQM, CQM, and Design Manager. The QMP shall identify a specific process for CDOT's Review of the RFC Documents and review by any other Agencies that will ultimately have acceptance or approval authority for the Work and the Final Design Documents.

#### **3.5.5.1 Pre-RFC Documents (100%)**

RFC Documents shall be submitted initially to CDOT as Pre-RFC Documents (100%), a minimum of 14 Days, excluding Holidays, prior to the review meeting. The Review process shall include a comment resolution process for documenting all review comments affecting the RFC Documents and their resolution prior to the submittal of Final RFC Documents to CDOT. The Pre-RFC Documents shall include plan quantities following standard CDOT item naming conventions to facilitate both PC and OA. The Pre- RFC Documents shall also include all applicable inspection hold points from the QMP.

#### **3.5.5.2 Final RFC Documents**

The DQM shall provide documented assurance with the submittal of the Final RFC Documents that all comments received on the Pre-RFC Documents have been resolved and the submittal meets all Technical Criteria. The Contractor shall submit the DQM assurance with the Final RFC Documents to CDOT for Acceptance a minimum of 10 days prior to construction of the applicable Work provided that no significant changes, as determined at CDOT's sole discretion, have been made to the plans since the Pre-RFC Documents submittal. The RFC Documents shall include plan quantities following standard CDOT item naming conventions to facilitate both PC and OA. The RFC Documents shall also include all applicable inspection hold points from the QMP. The Contractor's QCA shall approve the Final RFC Documents prior to their release.

CDOT's Acceptance of partial designs within the Final RFC Documents will not constitute Acceptance of the overall design or subsequent construction, nor relieve the Contractor of its responsibility to meet the Contract requirements. Irrespective of whether CDOT provides the Contractor with the authority to begin construction on elements of the Project prior to completion of the entire design, the Contractor shall bear the responsibility to ensure construction meets the requirements of the Contract Documents, applicable law, and the Governmental Approvals.

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The QMP shall include a process for a Colorado licensed Professional Engineer(s) in responsible charge for the design to review, approve, and seal all Final RFC Documents prior to their issuance and review; and to approve and seal revisions to previous versions of RFC Documents.

### **3.5.6. Design Changes after Plans have been Released for Construction**

The QMP shall outline the design, review, and approval method for issuing NDCs or FDCs after the Final RFC Documents have been released. Design changes are new or revised items of Work that were not included in the Final RFC Documents. NDCs and FDCs must go through a formal and documented design review process. All NDCs and FDCs shall be approved by a Colorado licensed Professional Engineer(s) in responsible charge of the original design(s).

The QMP shall include a process to propose, notify, receive, track, respond to, and distribute design changes; the participants and their associated responsibilities; and a Work process for each change. CDOT will Review all design changes. The Contractor shall invite CDOT to all reviews. The Contractor and CDOT shall jointly determine the procedures and timing of reviews, with the mutual understanding that a timely and expeditious design change process benefits all parties, balanced with the quality of the end product.

CDOT Acceptance will be required for all NDC and FDC documents, prior to Release For Construction.

### **3.5.7. Working Shop and Falsework Drawings**

The Contractor shall outline the process in the QMP for how working drawings, shop drawings, and falsework drawings are prepared, reviewed, and corrected. The process outline shall include:

1. Personnel assigned to perform construction submittal reviews.
2. Procedures for documenting reviews and approvals and for obtaining corrective action.

The QMP shall include a process for a Colorado licensed Professional Engineer(s) in responsible charge for the design to review, approve, and seal all shop drawings and falsework drawings prior to their issuance in accordance with CDOT *Standard Specifications for Road and Bridge Construction*. All approved and sealed shop drawings and falsework drawings shall be submitted to CDOT for Review.

### **3.5.8. Method for Handling Traffic Drawings**

The Contractor shall outline the process in the QMP for how the Method of Handling Traffic (MHT) drawings are prepared, reviewed, and corrected. The process outline shall include:

1. Personnel assigned to perform construction submittal reviews.
2. Procedures for documenting reviews and approvals and for obtaining corrective action.

MHT drawings shall be submitted to CDOT for Acceptance in accordance with Book 2, Section 16.

### **3.5.9. Final Design Documents**



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The Contractor shall submit Final Design Documents to CDOT for Review and Acceptance. The Contractor shall ensure and provide documentation to CDOT that all review comments have been addressed. The Final Design Documents shall include a complete, final assembled design set that includes the latest RFC plans incorporating all NDC, FDC, RFI's and all required design documentation. CDOT will not Accept the Final Design Documents until the Contractor has completed all design and has addressed, resolved, and incorporated any prior Contractor, Third Party, and/or CDOT Acceptance review comments to the satisfaction of CDOT. If deemed necessary by CDOT, the Contractor shall resubmit revised Final Design Documents until such time that CDOT determines the Review comments have been satisfactorily addressed.

The Final Design Documents submittal shall include, at a minimum:

1. All sealed design plans.
2. Design calculations.
3. Design reports.
4. Specifications.
5. Estimated quantities.
6. Computer-Assisted Drafting and Design (CADD) files and the three-dimensional (3-D) model of the design with this submittal.

### **3.5.10. As-Constructed Documents**

As-Constructed Documents shall be submitted to CDOT for Acceptance with each structure segment completion. The Contractor shall provide documentation to CDOT that all outstanding issues have been addressed. CDOT will assess As- Constructed Documents to ensure completeness and compliance with the requirements of the Contract. CDOT will not Accept As-Constructed Documents until the Contractor has adequately addressed any prior Contractor PC reviews, QA audits, and CDOT inspections/testing.

The As-Constructed Documents submittal shall include, at a minimum:

1. All plans reflecting RFC Documents and any revisions to RFC Documents, including all RFIs, FDCs, NDCs, the Contractor's log of design changes, and As-constructed survey items as required in the CDOT *Survey Manual* and Book 2, Section 9.
2. Resolution of prior Contractor QC audits, QA audits, or CDOT audits, including completed comment resolution forms demonstrating all formal meeting review comments have been fully addressed through the design and construction of the Project.
3. Design calculations.
4. Design reports.
5. Specifications.
6. CADD files.

### **3.5.11. Design Coordination**

The QMP shall describe how the design team schedules design efforts, including, but not limited to, task force meetings, design reviews, constructability reviews, design meetings,

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independent design checks, and a schedule for RFC Documents, Final Design Documents, and As-Constructed Documents.

The Contractor shall conduct weekly task force meetings to coordinate the design development within the Contractor's organization, CDOT, and other affected agencies. At a minimum, the Contractor shall prepare an agenda and conduct each meeting to discuss the status of the design, coordinate the design development between design disciplines, discuss constructability issues, and identify any questions associated with design requirements. The Contractor shall maintain an action and decision log for all task force meetings and provide the log to CDOT within 3 Days after each meeting.

The Contractor shall hold joint design milestone review meetings for the Preliminary Design Plans, Pre- and Final RFC Documents, NDC and FDC documents, Final Design Documents, As-Constructed Documents, and other milestone reviews deemed appropriate by the Contractor or requested by CDOT. The design progress meetings shall be scheduled, conducted, and documented by the Contractor. The Contractor shall maintain an action and decision log for all design milestone review meetings and provide the log to CDOT within 7 Days after each meeting. The Contractor shall provide review documents stamped "Checked and Ready for Review."

The DQM shall keep CDOT updated on the schedule of all upcoming milestone reviews at least 14 Days in advance of review meetings. Milestone review meetings shall not be scheduled within intervals of less than 7 Days, unless otherwise approved by CDOT.

### **3.6 Construction Quality**

The Contractor shall be responsible for performing and documenting all required construction PC Activities necessary to control the Work, which shall be documented within the QMP as the CQMP. The CQMP shall cover both permanent and temporary Work.

The CQMP shall include the following:

1. Specific procedures to be followed to ensure all Work conforms to all the requirements of the Contract and of the design documents being used as the basis of construction; and that all Materials, Equipment, and elements of the Work incorporated in the Project will perform satisfactorily for the purpose intended.
2. Specific procedures for inspections, sampling, test procedures, checking, and documenting the Work, including all Work performed by Subcontractors, and for distribution of information (e.g., RFC Documents, design changes, Nonconformance Report [NCR] remediation) to all necessary parties. The CQMP shall include a procedure on how construction changes (e.g., NDCs, FDCs, RFIs) are documented for inclusion in the As-Constructed Documents.
3. Provisions to ensure the requirements of CDOT *Standard Specifications for Road and Bridge Construction* Section 105.18—Load Restrictions with regard to all Material, including Material quantified by weight or volume, are adhered to.
4. Provisions to ensure the quality and safety of safety-critical Work.

#### **3.6.1 Construction Process Control**

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The Contractor shall establish, document, and implement a PC Plan as part of the CQMP. The PC Plan shall include all procedures necessary for the Contractor to control the quality of its production processes to meet the requirements of the Contract. The Contractor shall develop a test and inspection schedule to control the production processes.

All PC personnel shall be capable of performing all field and laboratory Inspections and Tests they are assigned. All testing personnel shall be properly certified. The Contractor shall have enough qualified personnel to handle the workload. The Contractor shall provide the Equipment and facilities to perform all Tests. The PC labs shall be certified and on the American Association of State Highway and Transportation Officials (AASHTO) Materials Reference Laboratory (AMRL) accredited list.

PC staff shall:

1. Be responsible for quality of the Work during production.
2. Have authority to stop Work.

The PC Plan shall include PC checklists. The Contractor shall use current CDOT forms, manuals, and handbooks to develop PC checklists that are organized for the execution of Work Breakdown Structure (WBS) Activities and all other associated Contract requirements. The Contractor shall maintain the checklists at the Project Site and be available for CDOT review at all times. Unmaintained or outdated PC checklists will constitute Nonconforming Work. Work shall not proceed until the PC checklist is updated and made compliant to this Section.

### **3.6.1.1 Materials Testing and Inspection Plan**

The Contractor shall prepare and implement a Materials Testing and Inspection Plan (MTIP) as part of the QMP. The MTIP shall include the appropriate criteria, Test Procedures, and Inspection requirements identified in the *CDOT Construction Manual*, *CDOT Field Materials Manual*, *CDOT Standard Specifications for Road and Bridge Construction*, and this RFP.

The MTIP shall identify all inspections and tests required, including, at a minimum, reference to the requirements of the Contract and frequency of the inspections and tests. Where no inspections or test standard exists in any of the CDOT manuals, the MTIP shall develop criteria based on the best-available industry standard information and technology.

The MTIP shall include:

1. Contractor-developed Inspection checklists of requirements.
2. All PC Inspections and Tests required, including, at a minimum, reference to the requirements of the Contract, frequency of the Inspections and Tests, and the Contractor-developed PC processes. Where there is no Inspection or Test standard in any of the CDOT manuals, the MTIP shall include criteria based on the best-available industry standard information and technology.
3. A summary of Activity-specific Material quantities to document that the minimum sampling, testing, and inspection requirements have been met. This summary shall be documented on each structure segment CDOT Form 250 and provided to CDOT with the monthly Quality Status Report.
4. Processes to control, calibrate, and maintain both field and laboratory Test Equipment to ensure the Equipment meets industry standards and other applicable requirements.

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- A. Test Equipment used by the Contractor shall be of a quality and capacity that ensures measurements made are to levels of accuracy and precision required by the Test procedure.
  5. Procedures for delivery, handling, and storage of furnished products that ensure they are properly handled and stored to prevent damage, deterioration, or theft.
  6. Detailed Inspection procedures to be used in cases where Inspections are to serve as the basis for verifying compliance with the requirements of the Contract.

#### **3.6.1.1.1 Inspection**

The Contractor shall conduct each Inspection in accordance with the Approved QMP. The Contractor shall document whether the Inspection passed or failed based on the “pass/fail criteria” established in the procedure and the requirements of the Contract (e.g., concrete depth checks on deck pours, rebar clearance/size, locations, elevations, stationing). The Contractor shall include failing Inspection results in the Inspection documentation.

The Inspection documentation shall be submitted to CDOT for Review within 48 hours following the Inspection.

#### **3.6.1.1.2 Testing**

At a minimum, the Contractor shall follow the requirements of Book 2, Section 19; the CDOT *Field Materials Manual*; the Project Specifications; and the CDOT *Field Materials Manual* Frequency Guide Schedule for Minimum Materials Sampling, Testing, and Inspection identified under the column titled “Project Verification Sampling and Testing Frequency.”

The Contractor shall document the results and show if the Test passed or failed based on the “pass/fail criteria” established in the Contract. The Contractor shall include failing Test results in the Test documentation.

At a minimum, the Contractor shall document results of tests in report format that includes the following:

1. Contract or project identification number.
2. Identification of items tested.
3. Quantity represented.
4. Date and time test conducted.
5. Location of items tested.
6. Test procedure used.
7. Name of technician.
8. Acceptance criteria.
9. Results.
10. Authorized signature.

The Test data and results shall be submitted to CDOT for Review within 48 hours following the

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Test.

### 3.6.1.2 Product Control Plan

The Contractor shall prepare and implement a Product Control Plan (PCP) as part of the QMP. The PCP shall include procedures for the Contractor to inspect and test, where applicable, procured products from Suppliers during the manufacture, receiving, and installation of the products to ensure the requirements of the Contract Documents are met. The Contractor shall follow the Buy America requirements.

The PCP shall include QA Activities at manufacturing and fabrication sites, as required by the CDOT *Field Materials Manual*. CDOT may designate hold points in the manufacturing and installation process.

In accordance with the CDOT *Field Materials Manual*, the PCP shall include procedures to document and demonstrate product compliance with requirements of the Contract documents by Certificates of Compliance (COC) or Certified Test Reports (CTR). The Contractor shall obtain COCs and CTRs prior to installing products and before including them on the Monthly Invoice. Certification shall be according to requirements of the Contract.

The Contractor shall maintain a complete log of all COCs and CTRs, per the CDOT *Field Materials Manual*. The Contractor shall include in the COC and CTR log the signed certification that all Materials represented by each COC and CTR were installed in the Work. The log and all COCs and CTRs shall be available for CDOT's Verification at any time. The Contractor shall submit to CDOT for Acceptance all COCs and CTRs to CDOT with each structure segment completion.

The PCP shall include procedures for delivery, handling, and storage of furnished products, ensuring that they are properly handled and stored to prevent damage, deterioration, or theft. The PCP shall document procedures for stored items and materials consistent with the expected duration and type of storage.

The PCP shall include procedures for monitoring special processes utilized in fabrication, assembly, and testing of specified products. Special processes are those requiring qualified/certified production, inspection, and testing personnel to perform highly skilled Work, such as welding, brazing, soldering, non-destructive testing, machining, coating, or plating.

### 3.6.1.3 Specialized Manufacturing Facilities and Products

Specialized manufacturing facilities may be required to supply items or materials. The QMP shall specify how the Contractor shall ensure that specialized manufacturing facilities meet requirements established by CDOT. These requirements include, but are not limited to, the following:

1. How manufacturing facilities will be selected.
2. How the Contractor and the CDOT QA team will determine the inspection requirements of the facility (e.g., initial capabilities of the facility, ongoing process and production, final product certification and documentation, delivery and handling processes, etc.).
3. The lead times required for on-Site Inspection of the facilities. CDOT requires a 30-Day

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lead time to make travel arrangements for facility Inspection.

4. Sampling and Test requirements of the final product.

#### **3.6.1.4 Hold Point Inspection**

A hold point is a point in time when construction has proceeded to a defined stage and at which representatives of the Contractor's production, Contractor's PC, and CDOT's QA staff determine the conformance of the Work up to that point. The Contractor shall provide a daily summary to CDOT of the next day's planned construction activities by 4:00 p.m. to facilitate CDOT oversight activities.

With the exception of corrective work items, no additional Work may take place past the hold point until the Work conforms to the requirements of the Contract.

The QMP shall identify construction hold points for the Contractor's quality efforts. The QMP shall specify processes for monitoring the progression of Work, including associated quantities of materials, through the tracking of hold points. The process should be designed to aid in progressing Work, verifying payments, and avoiding duplicate inspection, testing, and reporting.

CDOT may identify additional hold points to be included at any time during the Project. CDOT and the Contractor will coordinate to define the procedures and criteria for additional hold points.

#### **3.6.1.5 Specific Inspection Procedures**

##### **3.6.1.5.1 Deep Foundations**

The QMP shall detail the Contractor's process for monitoring and inspecting all elements of the Work required by the Contract related to drilled shafts, driven piles, and micropiles.

##### **3.6.1.5.2 Embankment**

The QMP shall detail the Contractor's process for monitoring and inspecting all elements of the Work required by the Contract related to placement of embankment material. Monitoring shall include long-term measurements of settlement of embankment fill and compressible native soils beneath embankments.

##### **3.6.1.5.3 Structural Steel**

The QMP shall detail the Contractor's process for inspecting structural steel components produced off Site at a fabricator and any structural steel connections that may need to be made on-site.

#### **3.6.1.6 Nonconforming Work**

The Contractor shall coordinate with CDOT OA to include in the QMP procedures to develop and maintain a system to identify, control, remedy, and report Nonconforming Work, including Nonconforming Work identified by PC testing and Inspection and CDOT OA. The QMP shall include procedures to identify Nonconforming Work and to withhold progress payment requests on the Monthly Invoice until the Nonconforming Work is remedied. The Contractor shall remedy Nonconforming Work in accordance with the QMP. The responsibility for review and disposition

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of Nonconforming Work shall be established in the QMP.

The Contractor shall identify Nonconforming Work by completing an NCR that shall include:

1. Identification of Nonconforming Work, including tagging Work products and location.
2. Description and evaluation of the Nonconforming Work.
3. Identification of the Contractor's crew/foreman responsible for the Nonconforming Work.
4. Applicable Contract requirements.
5. Cause of Nonconforming Work.
6. Recommendation for "remove and replace," "repair," or "use as is" dispositions.
7. Cost adjustment recommendations (if applicable).
8. Cause of Nonconforming Work.
9. Proposed corrective action to prevent recurrence.
10. Responsibility for accomplishing corrective action.
11. Schedule of Work and a date of remedy completion.
12. Signature lines for the Engineer in responsible charge, QCA, and CDOT verifying that the recommended remedy for Nonconforming Work has been approved.

The recommended remedy for the Nonconforming Work shall be approved by the Contractor's Engineer responsible for the work and the QCA prior to its submittal to CDOT. The Contractor shall not perform the recommended remedy prior to receiving from CDOT a determination of "repair" and "use as is" dispositions. For "repair" and "use as is" dispositions, the NCR shall clearly identify if and how the remedy is out of compliance with the Contract requirement and why its nonconforming use is acceptable.

The Contractor shall develop and maintain a Nonconforming Work log to track and identify the status of Nonconforming Work. An updated log shall be submitted to CDOT weekly for Acceptance and shall be used by the Contractor to look for Nonconforming Work trends to determine if corrective actions are needed. Each NCR shall be numbered sequentially and include a brief description and status.

The Contractor shall include in the QMP procedures for controlling the use of Nonconforming Work, including the tagging of Nonconforming Work products. Nonconforming Work product tags shall only be removed by the originator of the NCR or the originator's supervisor, and only when the Contractor demonstrates to CDOT that the Nonconforming Work product meets the requirements of the Contract.

As a part of its Acceptance, CDOT will perform audits, which may result in CDOT-issued NCRs. These efforts do not relieve the Contractor of PC responsibilities. CDOT will forward all audit reports and Nonconformance Notices (NCN) to the Contractor, and the Contractor shall respond to each NCN within 7 Days of issuance. The Contractor's response shall identify how it proposes to remedy the Nonconforming Work and the date by which the remedy shall be completed. The QMP shall describe the approach and methodology for resolving CDOT NCNs.

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### 3.6.1.7 Corrective and Preventative Action

The QMP shall describe corrective and preventative action procedures that the Contractor shall use to identify and improve processes that produce, or may produce, systemic Nonconforming Work identified by the Contractor or by CDOT. The Contractor's corrective and preventative action procedures shall include:

1. Methods to investigate the cause of systemic Nonconforming Work and to determine what corrective action is needed to prevent recurrence.
2. Methods to analyze all processes, Work operations, quality records, service reports, and CDOT assessments/testing to detect and eliminate the possibility of systemic Nonconforming Work from occurring.
3. Methods to prioritize corrective and preventive action efforts based on the level of risk to the quality of the Work.
4. Controls to ensure that effective corrective and preventative actions are taken when the need is identified.
5. Methods to implement and record changes in procedures resulting from corrective and preventative actions.
6. Procedures to respond to CDOT-issued Corrective Action Requests (CAR).

### 3.6.2 Operational Quality Control

The Contractor shall establish, document, and implement an Operational Quality Control Plan as part of the CQMP. The Operational Quality Control Plan shall include all procedures necessary for the Contractor to control the quality operations that support the construction of the Project, including:

1. Environmental Compliance Work Plan included in Book 2, Section 5.
2. Maintenance of Traffic operations.
3. Construction water quality.
4. Maintenance during construction.
5. Safety.

## 3.7 CDOT Owner Acceptance Activities

### 3.7.1 CDOT Quality Assurance

CDOT will provide the construction acceptance testing and inspections on the Project. Acceptance of Work items for payment shall be based on results from current CDOT testing and inspection procedures. Minimum sampling and testing frequencies of the product will be based on the CDOT *Field Materials Manual* and Book 2, Section 19.

The Contractor shall ensure the compatibility and integration of design, construction, installation, traffic management, and public information with CDOT's inspection and testing procedures.



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Materials accepted on the basis of a COC or CTR may be sampled, inspected, and tested by CDOT at any time.

CDOT's Quality Assurance will assess the Contractor's compliance with the requirements of the Contract Documents.

CDOT will:

1. Perform quality oversight audits and reviews.
2. Monitor and audit the Contractor's quality processes to verify adherence to the QMP.
3. Participate in pre-activity meetings, hold point inspections, on-site meetings, and plan and specification reviews, as deemed necessary by CDOT.
4. Participate in Contractor-initiated training, as deemed necessary by CDOT.
5. Audit the Project records.
6. Conduct verification and testing (oversight, sampling, inspection, and evaluation).
7. Conduct Independent Assurance Testing (IAT).
8. Perform off-site verification inspection and testing of the fabrication of precast and prestressed concrete structures and of structural steel.
9. Issue Final Acceptance of the Work.

CDOT retains the right to stop Work if:

1. There is evidence that the QMP procedures are not being followed, or if the design, Materials, or workmanship do not meet the Contract requirements. CDOT may, at its sole discretion, stop Work until corrective procedures have been established and implemented.
2. The Contractor fails to correct conditions that are unsafe, as determined by CDOT, for project personnel and/or the general public.

CDOT reserves the right to:

1. Check testing equipment for compliance with specified standards and to check test procedures and techniques.
2. Access the test facilities of independent testing agencies to witness testing and verify compliance of test procedures, test techniques, tester certifications, and test results.

CDOT has the authority to remove any of the following from the Project:

1. A tester who does not perform tests in accordance with the test methods established in CDOT's *Field Materials Manual*.
2. A tester who does not report test results accurately.
3. An inspector who does not perform duties consistent with industry-accepted standard practices or who demonstrates incongruity with respect to the Contract.
4. An inspector or tester who is not currently certified for the test or inspection being

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performed.

### **3.7.2. Independent Assurance Roles and Responsibilities**

CDOT will perform independent assurance reviews and IAT to ensure:

1. CDOT and Contractor quality personnel are trained and certified and can demonstrate they understand the test procedures they are performing.
2. The test equipment used by CDOT's and the Contractor's quality personnel is calibrated.
3. Split sample test results correlate.

IAT results also will be used as referee tests to assess statistically significant differences, determined by CDOT in its sole discretion, between Contractor PC Tests and OA results. The results of the IAT shall be documented in the QRD.

### **3.7.3. Third Party Owner Inspections and Approvals**

Third Party personnel have the right to inspect the Work, provided the Third Party has jurisdiction over the Work and as required by Applicable Law. The Contractor shall adhere to Third Party inspection and approval procedures.

### **3.7.4. Corrective Action Request**

CDOT may issue a Corrective Action Request (CAR) to the Contractor if CDOT detects systematic trends in performance in implementation of the Contractor's QMP or other management plans. The Contractor shall provide CDOT with a written response to the CAR for Acceptance within 48 hours of receipt of the request and shall include the following information:

1. Identification of the cause(s) of the performance trend.
2. Recommendation on a proposed action(s) that addresses the cause(s) of the performance trend and prevents future reoccurrence.
3. A method to ensure the proposed action(s) are implemented and were effective in correcting the performance trend.
4. Date when the proposed action will be implemented.

The Contractor shall not implement the proposed action(s) prior to Acceptance of the CAR response by CDOT.

## **3.8 Final Inspection and Final Acceptance**

The Contractor shall include a process within the QMP for scheduling, accomplishing, and tracking the final inspection and final acceptance process for each structure segment and for the Project overall; and for developing and resolving punch lists in conformance with the requirements in Book 1, Section 20. The Contractor shall establish an acceptance task force to implement and monitor the final inspection and final acceptance process. This task force shall include the QCA, DQM, CQM, and CDOT personnel and shall meet prior to each structure segment completion and no later than 6 months prior to the Project Completion Deadline. CDOT's final inspection will be performed prior to Final Acceptance of the Project in accordance with of Book 1, Section 20.

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Contractor quality personnel shall perform an independent Inspection of all Work and address any outstanding and/or Nonconforming Work prior to requesting an Inspection from CDOT. The Contractor shall invite CDOT and other affected Agencies to attend independent inspections of the Work. CDOT will attend at its sole discretion. The punch list and punch list log shall be completed by Contractor quality personnel and shall be provided to CDOT for information.

At the completion of constructed elements of the Work, CDOT and the Contractor quality personnel will conduct a final inspection of the Work and the associated As-Constructed Documents, certifications, and Contractor cleanup requirements. After the joint Inspection, CDOT and the Contractor will agree upon punch list items and an agreed date to complete correction of the items.

CDOT will perform a final field audit of the Work after the Contractor has resolved its final punch list. CDOT final inspection will be performed prior to Final Acceptance of the Project per Book 1, Section 20.

### **3.9 Deliverable Requirements**

#### **3.9.1. Quality Management Plan**

The Contractor shall submit the QMP as required in Section 3.1.

#### **3.9.2. Design Deliverables**

The Contractor shall submit all design deliverables to CDOT for Review, Acceptance, or Approval including the QMP, Work plans, design reports and studies, Preliminary Design Plans, RFC Documents, NDC and FDC documents, Final Design Documents, and As-Constructed Documents. The design deliverables shall be submitted to CDOT as defined in Section 3.5, unless otherwise specified in the Contract Documents. The design Acceptance process shall include a comment resolution process for documenting all comments and their resolution. The DQM shall ensure all comments have been resolved prior to final submittal of all documents that require CDOT's Acceptance or Approval.

The Contractor shall identify on its Contract Schedules when design deliverables will be submitted to CDOT.

The Contractor shall provide CDOT one set of electronic files of the design deliverables. All deliverables shall be submitted in their native format and \*.PDF format.

As-Constructed Documents shall show all changes. All changes shall be noted using CADD. Hand-drawn changes will not be allowed.

The design deliverables shall be delivered to CDOT indexed and clearly marked to indicate the date of issue and stage of development. All design deliverables shall include a title block, consistent with the standard project drawing format established as part of the QMP, with the following information:

1. Date of issuance and including all prior revision dates.
2. Contract title and number.
3. Subject identification by Contractor drawing or Contract reference.

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All RFC Documents and NDC and FDC documents shall be sealed by the Engineer(s) in responsible charge. If a design deliverable requires review and approval from a Third Party or permitting authority, the Contractor shall gain such concurrence prior to submitting the design deliverable to CDOT.

Specifications applicable to a design deliverable shall be submitted with the design deliverable. The CADD drawings and associated documents shall be organized in a logical manner, have a uniform and consistent appearance, and clearly depict the intent of the design and construction. In addition:

1. The software requirements for all submitted design deliverables shall be Bentley OpenRoads Designer or compatible format, in accordance with the current CDOT standards in effect at the time of Proposal submittal by the Contractor.
2. All design deliverables shall be in English units. The Project coordinate system shall comply with the CDOT *Survey Manual*.
3. The Contractor shall prepare RFC, NDC, and FDC documents, and As-Constructed Documents that shall include, as applicable, the following:
  - A. Title Sheet
  - B. Index
  - C. Standard Plan List
  - D. Summary of Approximate Quantities
  - E. Roadway Design Data
  - F. General Notes
  - G. Pavement Details
  - H. Roadway Details
  - I. Drainage Details
  - J. Geotechnical Plans
  - K. Environmental Mitigation, as necessary
  - L. Permanent Signing Plans
  - M. Aesthetic Elements
  - N. Roadway Typical Sections
  - O. Roadway Geometric Layout Plans
  - P. Roadway Geometric Layout Tables
  - Q. Roadway Plan
  - R. Roadway Profile
  - S. Construction and Phasing and Traffic Control Plans
  - T. Intersection Plans
  - U. Pavement Plans

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- V. Drainage Plans
  - W. Pavement Marking Plans
  - X. Utility Plans
  - Y. Landscape/Seeding Plans
  - Z. Grading Plans
  - AA. Bridge Plans
  - BB. Wall Plans
  - CC. Stormwater Management Plans
  - DD. Right-of-Way Plans
  - EE. Survey Documentation Plans, as needed
  - FF. Other Details, as needed
  - GG. Specifications

The Contractor shall provide one set each of electronic files on compatible electronic media of Utility As-Constructed Documents to CDOT and to the respective Utility Owner(s) for Utility Work constructed by the Contractor, that conform to the CDOT *CADD Manual* (as listed in Book 3), except as modified by the specific requirements of the individual Utility Owners. The Contractor shall obtain from each Utility Owner, performing its own construction, 1 set of Utility As-Constructed Documents for its Utility Work and shall show the information on the As-Constructed Documents.

All CADD files shall be documented in a tabular format describing the path, file name, and description.

### **3.9.3. Document and Data Approval**

The Contractor shall ensure all deliverables include a signed and dated certification by the originator of the deliverables and the deliverable is complete and meets the requirements of the Contract.

### **3.9.4. Document and Data Changes**

The Contractor shall ensure any changes to deliverables provided to CDOT, as revised, are in a format that can enable changes to be readily apparent and trackable (e.g., documents use the redline/strikeout method).

### **3.9.5. Product Data**

The Contractor shall submit to CDOT for Acceptance all manufacturers' warranties, guarantees, instruction sheets, parts lists, and other product data within 20 Days of installation of the items to which they relate. The Contractor shall ensure the product data cited is organized and indexed in a manner that allows easy retrieval of information.

### **3.9.6. Deliverables**

The Contractor shall submit the following to CDOT for Review, Acceptance, or Approval:

**Table 3-1 Deliverables**

<b>Deliverable</b>	<b>Review, Acceptance, or Approval</b>	<b>Schedule</b>
Quality Management Plan	Approval	For design-related (DQMP) Work, prior to issuance of NTP1 For construction-related (CQMP) Work, prior to issuance of NTP2 For all Work (entire QMP) prior to issuance of NTP2
All quality documentation	Acceptance	Prior to Project Completion
Quality Status Report	Review	Concurrent with each Monthly Invoice
Summary of Activity-Specific Materials Quantities, to Support the MTIP	Acceptance	Monthly on Form 250 with Quality Status Report
Proposal level plans	Review	Address proposal level comments prior to NTP2 (comments on Volume IV Proposal Plans will be provided to the selected Proposer prior to NTP1)
Preliminary Design Plans (30% design completion)	Review	Prior to submittal of Pre-RFC documents (100%) and a minimum of 14 Days, excluding Holidays, prior to the review meeting
Pre-RFC Documents (100%)	Review	Prior to submittal of Final RFC Documents and a minimum of 14 Days, excluding Holidays, prior to the review meeting
Final RFC Documents	Acceptance	A minimum of 10 Days prior to construction of the applicable Work
Notice of Design Changes and Field Design Changes documents	Acceptance	Prior to construction of the revised Work
Final Design Documents	Acceptance	After the completion of all design
As-Constructed Documents	Acceptance	Prior to Segment Acceptance of the Work
Task force meetings action/decision log	Review	3 Days after meeting
Design milestone review meeting action/decision log	Review	7 Days after meeting
Contractor Inspections, Test data, and Test results	Review	Within 48 hours following Inspection and/or Test

<b>Deliverable</b>	<b>Review, Acceptance, or Approval</b>	<b>Schedule</b>
Certificates of Compliance (COC) or Certified Test Reports (CTR) documents	Acceptance	Prior to Segment Acceptance
Safety Critical Construction Plan	Review	2 weeks prior to the safety critical element conference per Book 2, Section
Nonconformance Reports and Work log	Acceptance	Weekly
Written response to Corrective Action Requests (CAR)	Acceptance	Within 48 hours of receipt of the request
Copies of all manufacturers' warranties, guarantees, instruction sheets, parts lists, and other product data	Acceptance	Within 20 Days of installation of the items to which they relate
Final Materials documentation and CDOT Form 250 Materials documentation Record	Acceptance	Prior to Final Acceptance

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## 4.0 PUBLIC INFORMATION

This Section 4 includes the requirements for the public information Work for the Region 2 Bridge Bundle project (Project). This Work shall be completed in accordance with the Contract Documents.

Public Information represents timely, relevant, and context-sensitive communication and is a critical component of the Project. The Public Information Manager (PIM) shall demonstrate a commitment to these values and to developing a comprehensive public information program, working closely with the Contractor and the Colorado Department of Transportation (CDOT), specifically the CDOT Regional Communications Manager (RCM) and CDOT Project Public Information Manager (PPIM).

### 4.1 Administrative Requirements

#### 4.1.1 Staff Requirements

The Contractor shall provide the name, credentials, and contact information for the selected PIM to CDOT prior to First Notice to Proceed (NTP1).

The PIM and any additional contracted staff members shall comprise the communications team. The PIM shall submit to CDOT for Acceptance, the names and resumes of additional members of the communications team and identify their assigned roles and responsibilities prior to NTP1. The PIM shall also provide a list of any specialists who will be a part of the communications team.

The PIM shall be responsible for overseeing Contractor communications during Project construction. The team shall be available at all times during Project Work hours, shall be on call after Work hours, and shall be available to respond to emergencies within 30 minutes of notification.

The PIM and/or the communications team may be housed at the Contractor's project office or may be located off site for the duration of construction.

#### 4.1.2 Staff Coordination

The PIM or a member of the communications team shall participate in the Contractor's weekly status meetings and in task force meetings, as described in Book 2, Section 2. At the meetings, the PIM shall be prepared to discuss weekly communications issues and work with the CDOT RCM and CDOT PPIM to provide recommendations for public messaging of Project events and updates that may have significant impacts on the general public or surrounding community.

The PIM shall maintain communications with the CDOT RCM and CDOT PPIM regarding all aspects of public information and communications related to the Project.

#### 4.1.3 CDOT RCM and CDOT PPIM Responsibilities

The CDOT RCM and CDOT PPIM are responsible for approving the development and dissemination of all Project public information and communications related to the Project vision and Project implementation.



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CDOT will review the information provided by the PIM regarding Project implementation, such as informing the public about any upcoming maintenance, operations issues, phasing, traffic impacts, major milestones, budget, etc. The PIM shall work with the CDOT RCM and CDOT PPIM to develop the messages and materials, and the CDOT RCM and CDOT PPIM will have final approval before the information is disseminated.

The CDOT PPIM will distribute all public information materials per CDOT's processes.

#### **4.1.4. PIM Responsibilities**

The PIM shall be responsible for developing and communicating information related to Project construction, including details about construction Activities, detours, lane closures, ramp closures, lane height and width reductions, access impacts, information resources available, and other Activities that affect the public, residents, and businesses.

The PIM shall be responsible for supporting communications to the CDOT PPIM related to the operations of the Roadway during Project construction.

The PIM shall obtain approval from the CDOT RCM and CDOT PPIM prior to making any information public.

### **4.2 Communications Onboarding with CDOT**

The PIM shall complete and submit the online Project onboarding form to the CDOT Office of Communications at <https://form.jotform.com/71167524405150>. The online form ensures the development and delivery of public communications tools for the Project. The online form provides the most current resources available from CDOT to set up Project communications tools, such as website updates, contact tracking, newsletter accounts, etc. The online form also provides a checklist of required deliverables, which shall be updated throughout the duration of the Project.

### **4.3 Communications Plans**

The PIM, in coordination with the CDOT RCM and CDOT PPIM, shall prepare and maintain the following communications plans to support robust, two-way communications during each phase of the Project:

1. Public Information Plan (PIP)
2. Crisis Communications Plan (CCP)

The initial plans shall be submitted to CDOT for Review within 30 Days following the First Notice to Proceed (NTP1). The final plans shall be submitted to CDOT within 7 Days following CDOT review of initial plans for Acceptance. The PIM shall update each plan and submit them to the CDOT Project Manager for Acceptance on a quarterly basis or when requested by CDOT.

Each plan (PIP and CCP) shall include Project milestones, planned communications strategies, outreach strategies, and identification of any public information issues.

Each plan (PIP and CCP) shall define the roles and responsibilities of the CDOT RCM, CDOT

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PPIM and the PIM. Roles and responsibilities are described in the following subsections.

#### **4.3.1. Public Information Plan (PIP)**

The PIM shall prepare and implement a PIP in coordination with the CDOT RCM and CDOT PPIM that supports two-way communication of Project information with the public and other stakeholder groups. The PIP shall include the details described in the following subsections.

As significant components of the PIP, there are categories of information that shall be communicated and coordinated between CDOT and the Contractor. These include the following:

1. The Vision of the Project

Answers to questions such as why the Project is needed, what work will be done, how the Project will benefit customers, how the Project fits into the community, and how the Project fits into broader transportation plans.

CDOT and the Contractor will provide the Project vision information to the public, as well as the related Project details (phasing, traffic, impacts, etc.). Working through the CDOT PPIM, the CDOT PPIM must first approve all information that is to be made public.

2. The Project's Progress

CDOT and the Contractor shall provide ongoing messages to keep the public and other stakeholders informed about the Project including the schedule, traffic impacts, major milestones, budget, etc. The Contractor shall work with CDOT to develop the messages and CDOT will have final approval before the messages are disseminated.

3. Coping During the Project Work

Coping information helps the public deal with inconveniences caused by the Project, such as details regarding detours, lane closures, closed ramps, bridge restrictions and access impacts, information resources available to the public, including Demand Management (TDM) strategies, and other Activities that affect residents and businesses.

The Contractor's PIM shall coordinate with the CDOT PPIM to provide coping information to the public, including utilization of the checklist according to requirements of Book 2, Section 16 – Transportation Management Plan.

The Contractor shall be accessible 24 hours a Day, 7 days a week, for Activities associated with public information and shall have experience in this area. The Contractor shall provide contact information, including home, fax and mobile numbers, and email addresses to CDOT for Acceptance (which may include Directors of Communication, Project Managers, and the appropriate Public Information Officer) at NTP1. The Contractor shall hold weekly coordination meetings with CDOT and CDOT's PPIM to provide Project schedule, accomplishments, and planned Activities, for the upcoming week.

The Contractor's final PIP shall be submitted to CDOT for Acceptance within 7 Days following CDOT review of initial submittal of PIP.

#### **4.3.1.1 Public Information Approaches and Tools**

The PIP shall include a variety of strategic and context-sensitive public information

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approaches and tools to ensure that the public and stakeholders have the necessary information about the Project schedule, progress, construction information, updates, and traffic coping messages; and to address specific issues as they arise.

#### **4.3.1.2 Stakeholder Contact List**

The PIM shall compile a master distribution list of contacts to be used for general public information, publications, informational flyers, and digital/online newsletters. This list or database shall be presented to the CDOT RCM and CDOT PPIM for Acceptance prior to NTP2.

Through the PIM's data-gathering process, the PIM shall assist CDOT in supplementing and updating the Project contact database.

The CDOT RCM and CDOT PPIM has identified key stakeholder groups as audiences requiring ongoing, coordinated outreach. The stakeholder groups include, but are not limited to:

1. All impacted regional counties in Colorado.
2. All impacted regional municipalities in Colorado.
3. Local, regional, and state government elected and appointed officials.
4. South Central Transportation Planning Region (TPR), Southeast TPR and Central Front Range TPR.
5. Emergency response agencies, such as the Colorado State Patrol, local police, local fire departments, ambulance service providers, and hospitals.
6. Area businesses.
7. Regional tourism organizations.
8. Regional economic development organizations.
9. Local Utility companies.
10. Local public school districts and private schools.
11. Local and regional transit services, such as public/city operated or privately operated companies.
12. Area neighborhood associations or groups.
13. US Department of the Army Fort Carson Pinyon Canyon Maneuver Site
14. CDOT employees and other internal team members, including CDOT Headquarters, the Office of Communications, the Office of Policy & Government Relations, and the Division of Transit and Rail.

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15. Other transportation construction projects in the area.

16. The traveling public.

### **4.3.1.3 Community/Business Relations**

The PIP shall include community and business relations strategies that communicate Project updates and coping messages. Communication strategies shall focus on providing the community and businesses with the information needed to make short-term and long-term decisions about how to cope with the Project construction with as little disruption as possible. Each strategy shall be uniquely tailored to the individual stakeholder group and shall identify the location or region of the stakeholder group(s); what information is needed and when; and tools to be used for dissemination, such as one-on-one meetings; additional research; multilingual communications; regular calls or contact, etc.

Special consideration shall be given to communications related to the specific issues described in the following sections.

#### **4.3.1.3.1 Bicycle, Pedestrian, Handicapped Mobility, Recreational, and Other Access**

The PIM shall clearly define and communicate to the public and other associated stakeholder groups the Contractor's plans for maintaining bicycle access, pedestrian access, recreational access, and mobility for persons with disabilities.

#### **4.3.1.3.2 Public Transit Access**

The PIM shall work with local public transit programs or private companies to clearly define and communicate to the public and other associated stakeholder groups the Contractor's plans for maintaining access to transit services.

#### **4.3.1.3.3 Access to Local Schools**

The PIM shall work with the public school districts and private schools to define and communicate plans for maintaining bus and vehicle access.

#### **4.3.1.3.4 Access to Businesses**

The PIM shall work with businesses directly impacted by and adjacent to the Project to define and communicate plans for maintaining vehicle access to businesses during business hours.

#### **4.3.1.3.5 Access to Residences**

The PIM shall work with residents and neighborhoods directly impacted by and adjacent to the Project to define and communicate plans for maintaining vehicle access to residences at all times.

#### **4.3.1.3.6 Utilities**

In addition to the requirements of Book 2, Section 7, for communicating with the Utility Owners, the PIM shall communicate the scheduling of Utility Work performed by the Contractor or the Utility Owner and its impacts including but not limited to traffic, disruption to

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service, access to individual property owners, and the traveling public.

#### **4.3.1.3.7 Noise**

The PIM shall communicate the scheduling of high noise activities, particularly noise caused by potential nighttime work, to individual property owners and impacted communities.

#### **4.3.2. Media Relations**

The PIP shall include CDOT’s required protocol related to media contacts. During the Project, the PIM shall immediately notify the CDOT Project Manager of all media requests and of any situations involving the media. The CDOT RCM and CDOT PPIM will handle all media inquiries and media requests but shall require the PIM or the communications team support to gather response information.

The PIM shall arrange and coordinate for the availability of Contractor project managers, supervisors, and other project area experts to assist in responding to media requests. The PIM shall assist in requests for media Site visits and adhere to media deadlines when possible. The PIM, when requested by the CDOT RCM, shall also be prepared to act as the project spokesperson.

#### **4.3.3. Governmental Relations**

The PIP shall include CDOT’s required protocol related to governmental relations. Throughout the duration of the Project, all communication requests received by the PIM from governmental entities shall be immediately referred to the CDOT RCM (not including those requests related to project management or coordination for Permits, or related to the Contractor’s responsibilities under the Contract Documents). The PIM shall assist in providing timely information to governmental entities regarding construction Activities and shall participate in governmental entity meetings as requested.

#### **4.3.4. Public Information Outreach Tools**

The PIP shall outline the public information outreach tools to be developed and implemented by the PIM. The PIM shall provide a public information tool box that has flexibility and ability to meet the needs of different stakeholder groups. The PIM shall monitor the tool box and coordinate with the CDOT RCM and CDOT PPIM to ensure that the tools employed during the Project are effective. The PIP shall include the tools described below, but are not limited to this list. The need for language translation or interpretation of any of these tools shall be evaluated by the PIM in coordination with the CDOT RCM and CDOT PPIM.

##### **4.3.4.1 Public Information Office, Telephone Hotline, and Email**

The PIM shall establish a public information office equipped with a telephone, voicemail, and computer. The public information office may be located off site.

The PIM shall set up a local telephone hotline with voicemail and be submitted to CDOT for Acceptance prior to NTP2. The voicemail greeting for the Project information hotline shall be recorded in English and Spanish and provide an updated message each week, or each day

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when necessary. The message shall contain forthcoming activities on the Project and the Project's completion date. The hotline must allow the recording of a message from the caller if the PIM or a Communications Team member is unable to answer the hotline. The PIM or a Communications Team member shall check and respond to voicemail messages throughout each day that construction operations and lane closures are in place. On days when construction operations and lane closures are not in place, the PIM or Communication Team member shall respond within 24 hours, if the initial call occurs outside normal working hours, including weekends.

The PIM shall set up an email account specific to the Project. The PIM or a communications team member shall check and respond to email messages throughout each day that construction operations and lane closures are in place or within 2 business Days in the event of high volume situations (in excess of 25 public contacts per day).

#### **4.3.4.2 Contact Tracking**

The PIM shall enter inquiries, complaints, and comments received through the telephone hotline, email, public meetings, website, and other outreach activities, along with follow-up action taken. All inquiries and complaints shall be followed up with a return phone call or email from the PIM within the time frames indicated in Table 4-1. The PIM shall utilize CDOT's "Dialog", a web-based contact and issue tracking database, as outlined in Section 4.2. The PIM shall generate a report from "Dialog" and submit it to CDOT for Review each week. If "Dialog" reports are unavailable, the PIM shall provide the report in an alternative format such as Microsoft Excel spreadsheet.

#### **4.3.4.3 Photos/Videos**

In addition to the photos and videos required by the Contract per Book 2, Section 2, the PIM shall take and submit digital photos/videos of the Project Work for use in reports to agencies, social media, and collateral materials. A smart phone camera is permitted. Photographs/videos may include traffic control, paving, slope repair, erosion control, structure Work, and other key areas of Work identified by the Contractor or the CDOT RCM and CDOT PPIM. A minimum of 10 photographs/videos shall be submitted each month to CDOT or as requested by CDOT.

#### **4.3.4.4 Public Meetings and Special Events**

The PIM shall coordinate with the CDOT RCM and CDOT PPIM for at least 4 public meetings/events at Project milestones, as follows:

1. Virtual open-house presentation for each highway corridor (CO 9, US 24 and US 350).
2. One in-person special event at Project completion.

Additional meeting(s) may be held at the Contractor's discretion with the approval of CDOT. CDOT may require additional public meetings.

The coordination shall include the development of method and content of visual displays for the meeting.

*Special Events.* PIM shall plan, coordinate and execute with the CDOT RCM and CDOT PPIM a special event announcing the completion of the project. Local elected officials,

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community members, stakeholders, project team and the media will be invited to attend event.

Public meetings and special events shall be an open house format. Participants shall include Key Personnel from the Contractor and CDOT. Meetings shall be held locally at a convenient location that will accommodate attendance by local elected officials, city/county staff, other surrounding local agencies, businesses, residents, and the traveling public.

If pandemic precautions and guidelines prevent in-person gatherings, virtual events may be substituted. Decisions to have in-person or virtual meetings will be made by the CDOT RCM and CDOT PPIM.

The PIM shall assist the CDOT RCM and CDOT PPIM in developing materials that will be used to publicize the meeting(s) through media advisories and press releases; website; emails; advertisements or inserts in local newspapers or newsletters; flyers; mailers; and social media.

The focus of the meetings will be to inform attendees of Project plans, schedules, and updates and to provide instructions on how to receive information or and digital/online newsletters (if any) about the Project, via an email address list such as CDOT's Alert messaging system as outlined in Section 4.2. The PIM shall be responsible for assisting in the preparation of Project exhibits, displays and presentations for the public meetings that communicate information on Project progress, phasing, traffic impacts, and other Project information of interest to the public.

The PIM shall respond to questions (that cannot be answered at the meeting) within 1 week of the meeting and shall be submitted to the CDOT for Review.

#### **4.3.4.5 Stakeholder Group Meetings**

The PIM shall, in coordination with the CDOT RCM and CDOT PPIM, respond to all requests and attend community and stakeholder group meetings. This may include city council meetings, county planning or commissioner meetings for Otero, Las Animas, El Paso, Fremont, Park, and Teller Counties, business association or neighborhood meetings, at which the Project may be discussed or a presentation is requested. The PIM shall attend, arrange for appropriate technical staff to attend, or prepare information materials for the requester in lieu of attendance. Any meetings with elected officials shall be coordinated with RCM and Government Liaison. The PIM should be prepared to create presentations for requested meetings.

#### **4.3.4.6 Project Tours**

The PIM shall respond to requests from CDOT for project tours from media, businesses, government officials, or other public groups. The PIM shall arrange for representatives of the Contractor team to participate in tours, when possible.

#### **4.3.4.7 Lane Closure Reports**

The PIM shall submit a Lane Closure Report (LCR) each Thursday by 10:00 AM for the following week's activities (Saturday through Friday) to CDOT for Review. After Review, the LCR shall be posted to CDOT's "Dialog" database and shall be provided to the contacts listed on the LCR and others as requested by CDOT each Thursday by noon.

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#### 4.3.4.8 Press Releases and Traffic Advisories

The PIM shall write, as requested, press releases or traffic advisories that may contain information about the Project schedule, Project progress, construction information, and address specific issues as they arise. The releases and advisories shall include CDOT's logo. The releases and advisories may also contain the Contractor's logo, if desired. The PIM shall not use its firm's own logo(s) or the logos of Subcontractors for public communications materials. The releases shall be drafted and submitted to CDOT for Approval at least 10 Days prior to distribution. CDOT will distribute the releases to the media.

#### 4.3.4.9 Travel Alerts

The PIM shall create a weekly travel alert to distribute via CDOT's alert messaging system, as outlined in Section 4.2. The alert shall include mainline and side road closures, ramp closures, lane height and width restrictions, and any activity that may impact the traveling public. The alert shall be sent for Approval to CDOT 5 Days prior to distribution. For more immediate road work, the PIM shall contact the CDOT RCM and CDOT PPIM for notification to the CDOT Region 2 Joint Operations Center (JOC) in Pueblo with information for permanent variable message sign (VMS) boards, website alerts, and social media posts. The PIM shall also coordinate any messaging required on portable VMS boards.

#### 4.3.4.10 Website Updates

The PIM shall work with the CDOT RCM and CDOT PPIM to provide updates and information for the Project website: <https://www.codot.gov/projects/region2bridges>.

#### 4.3.4.11 Project Flyers

At least 14 Days prior to the start of construction and at key construction milestones at each segment, the PIM shall prepare and coordinate with the CDOT RCM and CDOT PPIM flyers that will be delivered to each property owner within one mile that may be potentially impacted by the construction, including properties with direct access to the Highway, nearby businesses, schools, homes, churches, or others who rely on regular access in the construction zone. Project flyers may be digital, paper, or both digital and paper. Delivery of flyers will be performed by CDOT PPIM.

The flyer shall include the Project start and anticipated end date, location and description of the Work, traffic impacts, and hours/days of operation, the public information telephone hotline, email address, website url, site map(s), and a construction safety message. The flyer shall include CDOT's logo. The flyer may also contain the Contractor's logo, if desired. The PIM shall not use its firm's own logo(s) or the logos of Subcontractors for public communications materials.

Additional flyers may be required throughout the Project, as directed by CDOT or the Contractor. Flyers shall be submitted to CDOT for Approval one week prior to distribution.

#### 4.3.4.12 Language Assistance for Persons with Limited English Proficiency

CDOT is required to provide access to persons with limited English proficiency (LEP). LEP persons are individuals for whom English is not their primary language and who have a



limited ability to read, write, speak, or understand English. If the community where the Project is located has greater than 5 percent LEP persons, the Project collateral materials shall be translated. Language assistance may also be required for, but not limited to, translation of hotline recordings, meeting notices and interpretation services at meetings. At a minimum, the PIM shall work with CDOT to provide interpretation services requested by an LEP person. Additionally, the PIM shall document all measures taken to communicate with LEP persons and record all requests for language assistance.

**4.3.5. Response Protocols**

**4.3.5.1 Response Protocol to CDOT and the Public**

The PIM shall conform to Table 4-1 in responding to stakeholders and the general public.

**Table 4-1 Response Protocol**

Type of Communication	Timing of Response
Telephone Hotline Calls	Voice messages shall be checked throughout day Respond on the same day (initial call), or within 24 hours if the initial call occurs outside normal working hours, including weekends and CDOT recognized holidays
Email	Same day (within 2 business Days for high-volume situations)
Call from CDOT Staff	Same day or as soon as possible
Website Inquiries	Same day (within 2 business Days for high-volume situations)
Public Meeting Inquiries	Within 1 week of the meeting

**4.0.1.1 Public Notification Protocol**

The PIM shall conform to Table 4-2 in providing notifications to the public.

**Table 4-2 Public Notification Protocol**

Proactive Notification Element	Timing
Major Project Activities (full road closures, detours, and major traffic impacts lasting 7 Days or longer)	14 Days prior to the beginning of Activity in any area of the Project
Minor Project Activities (lane shifts, short intermittent closures lasting 7 Days or less)	7 Days prior to the beginning of Activity
Other remaining types of construction Activities in any area of the Project, including: <ul style="list-style-type: none"> <li>• Night Work</li> <li>• Utilities</li> <li>• Change of business/residential access</li> </ul>	7 Days prior to the beginning of Activity

Other construction updates (e.g., cancellation of planned closures, additional lane closures, closure removals, major traffic shifts, etc.) that directly impact the public	As soon as known, within at least 24 hours of Activity
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#### 4.4 Crisis Communications Plan (CCP)

The PIM shall prepare and maintain a CCP that describes how the Contractor, the PIM, and the communications team shall respond to emergencies and incidents during construction. The PIM shall coordinate this approach with the Contractor's overall IMP as described in Book 2, Section 16.

In the event of a crisis, CDOT will be the lead agency to handle communication with the media, public, CDOT staff, etc. The PIM shall be available to help coordinate with the CDOT RCM and CDOT PPIM and provide information necessary to respond to the crisis. The Contractor's final CCP shall be submitted to CDOT for Acceptance within 7 Days following CDOT review of initial submittal of CCP.

The CCP shall include:

1. Emergency response communications tree for each highway.
  - A. The PIM shall establish and manage an emergency response telephone and/or email tree. The PIM shall submit the emergency response communications tree to CDOT for Acceptance prior to NTP1.
  - B. All appropriate project personnel shall be included on this communications tree. The telephone/email tree shall be divided into areas of expertise so the proper individuals are called and/or emailed for specific emergency situations. The CDOT Resident Engineer, CDOT Project Director, CDOT Construction Project Manager(s), CDOT RCM, CDOT PPIM, and the Contractor's Design Build Project Manager shall be included on the communications tree for notification of any emergency that may arise.
  - C. The PIM shall develop and maintain a contact list of emergency service providers and responders to contact in the case of emergencies.
2. Types of potential emergencies.
3. Approaches to addressing potential emergencies.
4. Boilerplate messaging that includes:
  - A. Cause of specific disruptions (whether related to construction or not).
  - B. Actions to alleviate the problem.
  - C. Impact to the public and notification procedures.
  - D. Anticipated duration of the disruption.

The PIM shall provide specific details on internal coordination and communication that will occur with the Contractor, other Subcontractor groups, CDOT, other stakeholders, and the general public.

## 4.5 Deliverables

The Contractor or the PIM shall submit the following to CDOT for Review, Acceptance, or Approval:

**Table 4-3 Deliverables**

<b>Deliverable</b>	<b>Review, Acceptance, or Approval</b>	<b>Schedule</b>
PIM and team members, company name, credentials, roles and contact information	Acceptance	Prior to NTP1
Initial Public Information Plan	Review	30 Days following NTP1
Final Public Information Plan (PIP)	Acceptance	7 Days following CDOT Review of initial PIP
PIP Updates	Acceptance	Quarterly
Initial Crisis Communications Plan	Review	30 Days following NTP1
Final Crisis Communications Plan (CCP)	Acceptance	7 Days following CDOT Review of initial CCP
CCP Updates	Acceptance	Quarterly
Stakeholder Contact List	Acceptance	Prior to NTP2
Stakeholder Contact List Updates	Acceptance	Ongoing
Local Telephone Hotline and Project Email Address	Acceptance	Prior to NTP2
Contact Tracking	Review	Weekly
Photos/Videos	Review	Monthly or as requested
Public Meetings/ Special Events/ Project Tours/ Stakeholder Group Meetings	Approval	Prior to Project start and as planned through the duration of the Project
Response to public meeting	Review	Within 1 week of meeting
Lane Closure Reports (LCR)	Review	Weekly, on Thursday by 10:00 AM
Press Releases and Advisories	Approval	1 week prior to distribution
Travel Alerts	Approval	5 Days prior to distribution
Website Updates	Review	1 Day prior to submitting to Web Manager
Project Flyers	Approval	1 week prior to scheduled distribution

## 5.0 ENVIRONMENTAL REQUIREMENTS

This Section 5 includes the Environmental Requirements Work for the Region 2 Bridge Bundle Project (Project). This Work shall be completed in accordance with the Contract Documents.

### 5.1 Administrative Requirements

#### 5.1.1. Standards

The Contractor shall design and construct the Project in accordance with the requirements of the standards in the documents listed in Table 5-1 and those referenced in Book 3. The Contractor shall use the latest adopted edition at the time of the Proposal Due Date.

**Table 5-1. Standards for Environmental**

<b>Author or Agency</b>	<b>Title</b>
Colorado Department of Transportation (CDOT)	<i>MS4 Construction Program Manual</i>
CDOT	<i>Standard Specifications for Road and Bridge Construction (CDOT Standard Specifications)</i>
CDOT	<i>M&amp;S Standards</i>
CDOT	<i>Roadway Design Guide</i>
Federal Highway Administration (FHWA)	<i>FHWA-CFL/TD-11-003 Wildlife Crossing Structure Handbook</i>

#### 5.1.2 Environmental Laws, Regulations, and Governmental Approvals

The Contractor shall comply with all requirements of all applicable Local, State, and Federal Environmental Laws, Regulations, and Governmental Approvals issued thereunder, whether obtained by CDOT or the Contractor.

FHWA's NEPA implementing procedures (23 CFR part 771) list Categorical Exclusions for certain actions that FHWA has determined do not individually or cumulatively have a significant effect on the human environment and therefore do not require the preparation of an EA or EIS (23 CFR 771.117). All structure segments are Categorical Excluded (CatEx) under 23 CFR 771.117 Section (c)(28).

The Contractor shall be responsible for implementing required control measures, minimization of environmental impacts, and mitigation measures to minimize environmental harm from the Project. The Contractor shall minimize both environmental impacts and impacts to adjacent property owners as design decisions are made in task force meetings or milestone review meetings, and provide documentation of the decisions to CDOT as defined in Book 2, Section 3.

#### 5.1.3. Submittals

All submittals shall be prepared, reviewed, and submitted in accordance with the

requirements set forth in Book 2, Section 3.

## **5.2 Environmental Management**

### **5.2.1. Environmental Compliance Manager**

The Contractor shall employ an Environmental Compliance Manager (ECM) on the Project who shall report directly to the Design Build Project Manager. The ECM shall have experience with environmental documentation and implementing requirements that result from Environmental Impact Statements, Environmental Assessments, Categorical Exclusions, and all associated documents.

The ECM shall:

1. Monitor and ensure full Project compliance with all Environmental Laws, regulations, and Governmental Approvals, including Permits, design, construction, Technical Criteria, and operations.
2. Ensure the implementation of all the environmental, design, construction and operational commitments, and all conditions necessary to achieve the environmental approvals for the Project.
3. Perform formal reviews of changes, design changes, and field design changes to confirm compliance with all Environmental Requirements.
4. Serve as the primary liaison between the Contractor and CDOT on environmental issues during design and construction.
5. Be the lead responder to any noncompliance findings issued by CDOT, the Quality Manager, or the ECM in the case of self-reporting, for the construction Work.
6. Respond to all noncompliances to the Environmental Requirements regardless of severity.
7. Shall conduct final QA/QC reviews on all environmental submittals prior to submittal to CDOT.
8. Have the authority to stop construction if Work Activities violate Environmental Laws, regulations, or Permits; or if they potentially jeopardize human health and safety.
9. Implement quality improvement strategies to reduce the number and severity of noncompliance to the Environmental Requirements.
10. Lead a field review with CDOT to review the Project and environmental issues every month during the construction period.
11. Write and submit any updates to the Environmental Compliance Work Plan (ECWP) for Acceptance.
12. Provide a Mitigation Completion Report that documents and certifies the completion of all Environmental Requirements for Acceptance prior to Final Acceptance.

## **5.3 Environmental Compliance Documentation**

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### **5.3.1. Environmental Compliance Work Plans**

The Contractor shall prepare an Environmental Compliance Work Plan (ECWP) for the Project that specifically identifies all of the Environmental Requirements for compliance on the Project and the Contractor's approach to ensure compliance.

### **5.3.2 Environmental Compliance Work Plan**

The first ECWP shall be submitted to CDOT for Approval within 30 Days after First Notice to Proceed. At a minimum, the first ECWP shall include discussion on the following:

1. Environmental Compliance Team
  - A. Provide each team members names, title, contact information, and reporting structure.
  - B. Provide each team members description of role, responsibilities, education, certifications, and other qualifications.
2. Communication Protocol
  - A. Describe and provide an illustrative communication tree for environmental compliance team coordination responsibilities, including the following:
    - i. Design coordination
    - ii. Construction Inspection and coordination
    - iii. Owner controlled QA/QC coordination
    - iv. Environmental permitting and approvals coordination

This should demonstrate how each member of the environmental compliance team is integrated into the overall process and clarify communication protocol with the Contractor's team members; CDOT staff; Federal, State, and Local Agency representatives; and representatives of other relevant organizations.
3. Management Plans
  - A. Provide a list of plans incorporated by reference, including submittal schedule and approval process.
4. Environmental Information on Plans
  - A. Describe what environmental information will be included in the plan sets and/or map book and at what levels of design.
5. Environmental Compliance Plan
  - A. Identify and document all environmental requirements:
    - i. Contract requirements
    - ii. NEPA document requirements
    - iii. Permit requirements
  - B. Identify the applicable locations and phases for each Environmental Requirement.

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- C. For each Environmental Requirement applicable to design and preconstruction Activities, describe means and methods to achieve compliance.
  - A. For all other Environmental Requirements (those applicable to construction or post- construction Activities), provide a list of alternative solutions to achieve compliance. This list of alternative solutions shall communicate standard practices, typical approaches, or options the Contractor is considering for implementation on the Project.
  - B. Describe how noncompliance issues, regardless of issuer, will be documented, reported, and tracked to resolution. This shall be consistent with the communication protocol and provide additional detail, including response times, reporting and tracking tools to be used, and documentation to be provided.
  - C. Describe the purpose of the environmental team field reviews.
  - D. Provide an outline of how the 90-Day Environmental Compliance Work Plans (ECWP) will address Site-specific construction Activities.
2. Environmental Compliance Tracking
- A. Identify how compliance with each Environmental Requirement will be achieved.
    - i. Verification method (design review, field review, etc.)
    - ii. Timing/frequency of verification
    - iii. Documentation of compliance
  - B. Describe when and how compliance documentation will be made available to CDOT for review.
  - C. Provide an outline for the ECSR

### **5.3.3 90-Day Environmental Compliance Work Plan**

The first 90-Day ECWP shall be submitted to CDOT for Approval no later than 30 Days prior to NTP2. Approval of the 90-Day ECWP is a condition of issuance of NTP2. Once an ECWP has been Approved, the Contractor shall update the ECWP and submit for Acceptance every 90 Days until Final Acceptance. The 90-Day ECWP shall define how the Environmental Requirements shall be met for construction Activities planned for that 90-day period.

At a minimum, the 90-Day ECWP shall include the following:

- 1. Describe construction Activities for the next 90-Day period and how environmental compliance will be achieved.
  - A. Specify which options identified in the first ECWP will be applied to each Activity for compliance.
  - B. Provide means and methods to accommodate design changes/additions to previously submitted plans.

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### 5.3.4 Environmental Compliance Work Plan Amendment

The Contractor shall monitor the effectiveness of the ECWP and resubmit the ECWP at a minimum annually or when any of the following conditions exist for Acceptance.

1. A plan or procedure no longer adequately addresses the matters it was originally intended to address.
2. A plan or procedure does not comply with the Environmental Requirements.
3. An audit by the Contractor or CDOT identifies a deficiency in the ECWP triggering an update.
4. Organizational structure changes.
5. The Contractor is undertaking, or about to undertake, Activities that are not covered within the current ECWP.

### 5.3.5 Final Environmental Compliance Work Plan

A Final ECWP shall be submitted to CDOT for Approval as a condition for Final Acceptance of the Project. This submittal is the ECWP as it exists at the time of Project Completion.

### 5.3.6 Environmental Compliance Status Reports (ECSR)

The Contractor shall report on the status of Activities undertaken in accordance with the Environmental Requirements, during the period beginning with NTP2 through Project Completion. The ECM shall submit an ECSR monthly to CDOT for Acceptance, within 21 Days following the end of the reporting period (month).

The ECSR shall:

1. Document any pertinent environmental issues and include a narrative of the compliance actions (i.e. avoidance, minimization, and mitigations) that have occurred during the reporting period.
2. Include a summary of any Stakeholder communications and Governmental communications that have occurred during the reporting period.
3. Include a summary that lists the plan sets and submittals that have undergone environmental cross-disciplinary review since the previous reporting period.
4. Include the summaries from field reviews performed during the reporting period.
5. Include dated photographs documenting environmental compliance, noncompliance, and Work Activities.
6. Document Activities performed by environmental professionals, including the resumes of the individuals performing the Work.
7. Include any audit information documenting the Environmental Compliance efforts within the reporting period.
8. Include an action and decision log for the environmental task force as defined in Book 2, Section 3.



All narratives shall include enough detail to fully document the environmental Activities. The ECSR shall clearly identify, in a cover sheet, what changes were made in the plan update in order to expedite CDOT review.

## **5.4 Environmental Resources Requirements**

### **5.4.1 Air Quality**

The Contractor shall prepare and submit a Construction Air Quality Plan and Fugitive Dust Control Plan to CDOT for Acceptance prior to NTP2. The Contractor shall obtain an Air Pollution Emissions Notice(s) (APEN), including the Fugitive Dust Control Plan, from the Colorado Department of Public Health and Environment (CDPHE) Air Pollution Control Division.

All non-road diesel-powered Equipment shall use ultra-low sulfur diesel fuel. The Contractor shall minimize excessive idling of inactive Equipment and other vehicles. If construction Equipment is creating excessive air quality emissions that have a potential to affect air quality for operators or persons working/living in the area, Equipment shall be taken out of operation until properly serviced, repaired, or replaced. The Contractor shall also locate stationary emissions producing Equipment with consideration of public health and environment, and staging areas shall not be located within 200 feet of residences.

### **5.4.2 Noise**

#### **5.4.2.1 Noise Technical Report**

No permanent noise abatement mitigation measures (noise barriers) have been determined for the Project based on the design provided in the Reference Documents. If the Contractor's design varies from the design in the Reference Documents in a manner that results in the need for additional or revised noise mitigation measures, the Contractor shall be responsible for providing the necessary mitigation measures and shall obtain all required Approvals and Permits associated with the Work.

The Contractor shall perform a noise analysis based on its final design if design changes from the design warrant it. Design changes that could trigger a noise analysis include, but are not limited to, the following:

1. Change in vertical profile of 5 feet or more.
2. Change in horizontal alignment that halves horizontal distance between the nearest of travel lane and the existing sensitive receptors.

Preliminary and Final Noise Technical Reports shall document results of the noise analysis and be submitted for Acceptance prior to completing the Benefited Receptor Preference Survey. All noise analysis shall be completed in accordance to the standards and procedures of the applicable CDOT *Noise Analysis and Abatement Guidelines* and *CDOT Traffic Noise Tech Memo issued September 21, 2020*.

The Noise Technical Report shall determine and document the noise effects of any changes to the vertical and horizontal alignment, if they exceed the changes described above, from the Reference Documents. The noise analysis and Noise Technical Report shall include a

detailed description of the locations where the horizontal and vertical Roadway elevations have changed from the Reference Drawings. The noise analysis and Noise Technical Report shall determine if any new receptors have become eligible for noise abatement due to geometrical Roadway changes or changes that would affect line of sight between the noise source and the receptor via design. If any new receptors have become eligible for noise abatement because of changes in the vertical or horizontal alignment, the Contractor shall include that information in the analysis for recommended noise abatement and Noise Technical Report. The Contractor shall ensure proposed mitigation measures are consistent with mitigation standards identified in State and Federal guidelines.

The Contractor shall submit documentation with the noise analysis and Noise Technical Report verifying the analysis was performed by a qualified individual with expertise in the field of highway noise analysis in Colorado. If additional noise abatement is required because of Contractor-initiated changes to the vertical or horizontal alignment, all costs for the additional noise abatement shall be included in the Upset Amount (UA).

#### **5.4.2.2 Construction Noise and Vibration**

The Contractor shall comply with all applicable County noise ordinances and regulations, unless the Contractor secures a variance. The Contractor shall acquire the variance prior to the start of any associated construction Activities and be solely responsible for compliance with the Permit requirements.

#### **5.4.3. Cultural/Historical Resources, Archaeological Resources, and Historic Section 4(f) Resources**

CDOT has cleared all of the structures included in the Basic Configuration and AREs in compliance with Section 106 of the National Historic Preservation Act (Section 106) and the implementing regulations set forth in 36 CFR Part 800. Three historic resources were identified at three locations and necessitate additional requirements. M-22-U and P-19-G minor span irrigation canals and O-19-D is in proximity to the Earl School. CDOT submitted proposed plans for the replacement of both irrigation structures with potential shoofly detours. CDOT also submitted proposed limits of disturbance for construction proximity to the Earl School. If the contractor should elect to deviate, as determined by CDOT, from the approved plans provided in Book 3, the revised plans must be reviewed by the CDOT historian who may consult with the State Historic Preservation Office (SHPO) and interested consulting parties to ensure compliance with Section 106. The revised plan approval process could require a minimum of ten (10) weeks beginning when a CDOT Historian receives the revised plans. All communication with the SHPO and consulting parties must be conducted through the CDOT Historian. The contractor shall not have any direct contact with the SHPO or the consulting parties.

The CDOT Historian will require 30 calendar days to review the proposed plans and compile appropriate materials for consultation with the SHPO and the consulting parties. The CDOT Historian may request changes to the plans to ensure that the work will not adversely affect the historic resources of the Otero Canal (at bridge M-22-U), the Picketwire Ditch (at bridge P-19-G Minor), or the Earl School (at bridge O-19-D). Once received, SHPO and the consulting parties will require 30 calendar days to review the materials. If the consulting parties do not have any comments and SHPO concurs that the project results in no adverse

effect to the resources, the project can move forward as designed. If, in consultation with SHPO and the consulting parties, the CDOT Historian determines the project will result in an adverse effect to one or more resources, changes to the proposed plans may be requested to avoid or minimize effects. If, after further consultation with SHPO, CDOT determines that the proposed work will result in an adverse effect to one or more resources, steps must be taken to ensure compliance with both Section 106 and Section 4(f) of the Department of Transportation Act of 1966. These steps include, but are not limited to, notifying the Advisory Council on Historic Preservation of the adverse effect, taking measures to avoid or minimize the impacts to the resource(s), and completing a Memorandum of Agreement to outline mitigation for the adverse effect to the resource(s). The process for determination and resolution of an adverse effect could require from 285 to 320 calendar days.

All areas of existing ROW have been surveyed, and the Project, as described in Book 2, Section 1, requires no further survey for cultural resources. If the area of construction disturbance increases beyond what has been evaluated, the ultimate extent of construction shall be submitted for Approval. If modifications to the Project cause new impacts and/or require mitigation. The Contractor shall be responsible for coordinating the new impacts and/or required mitigation with CDOT to obtain the State Historic Preservation Office (SHPO) approval. The cost of the new impacts and/or required mitigation shall be included in the UA.

The Contractor shall notify CDOT of any previously unidentified historic, eligible for listing on the National Register of Historic Places, or Archaeological resources encountered or unearthed during construction. Upon discovery of any historic or Archaeological resources, the Contractor shall immediately cease Work in the vicinity of the discovery, fence off the area, and notify the CDOT Project Manager who will then notify the archaeologist or cultural resource staff by calling the Cultural Resource Program Manager at 303-757-9631. CDOT will determine the resource mitigation requirements the Contractor shall implement. The Contractor shall not resume Work in the area until receiving formal notification from CDOT allowing Work to recommence.

The Santa Fe Trail located on US 350 was designated a National Historic Trail in 1987 and the trail through Otero County was determined eligible for listing in the National Register of Historic Places in 1992. In Otero County, the trail has been recorded under site number 5OT234, located approximately 750 ft. southeast of the project area and Area of Potential Effects. Daughters of the American Revolution (DAR) placed stone markers along segments of the trail to commemorate the site. One of these markers is located along the right-of-way fence west of US 350 at milepost (MP) 69.4, roughly 1,500 ft. south of the project area. If any archaeological resources are uncovered during construction, specifically those related to the Santa Fe Trail, construction shall stop and a CDOT archaeologist shall be notified and be provided time to survey the finding. Workers will be made aware of the DAR trail marker at US 350 MP 69.4, and the area will be avoided by all construction activities. It shall not be used as a staging area or for any other purposes during construction.

Refer to CDOT *Standard Specification* 107.23, if encountering Archeological resources during earthwork Activities.

The Contractor shall clearly delineate environmentally sensitive areas on all RFC Documents; these areas will be shown as “No Parking and No Staging Areas”. This includes areas located

outside the limits of disturbance, as well as areas within the construction limits that require construction monitoring.

#### **5.4.4. Paleontology**

All areas of existing ROW have been surveyed, and the Project, as described in Book 2, Section 1, requires no further survey for paleontological resources. If modifications to the Project cause new impacts and/or require mitigation, the Contractor shall be responsible for coordinating the new impacts and/or required mitigation with CDOT, who will coordinate with the State Historic Office (SHPO) for approval. The cost of the new impacts and/or required mitigation shall be included in the UA.

If paleontological resources are uncovered during Project construction, the Contractor shall immediately notify the CDOT Project Manager who will then notify the paleontological staff by calling the Cultural Resource Program Manager at 303-757-9631 and follow procedures in Section 107.23 of the CDOT *Standard Specifications*.

#### **5.4.5. Trails, Parks, and Recreation**

Trails, parks, and recreation resources will not be impacted or require mitigation by the Project. If the Contractor causes impact to these environmental resources, including Comanche Grasslands, the Contractor shall be responsible for the Work needed to obtain clearance from CDOT, any mitigation required as a result of the impact, and any Permits necessary to complete the Work. The cost of the new impacts and/or required mitigation shall be included in the UA.

#### **5.4.6. Vegetation**

The Contractor shall enhance and incorporate impacted landscape areas (irrigated or otherwise) to optimize the longevity and maintainability of the existing vegetation. The contractor shall supply a native seed mix recommendation for CDOT for Review and Approval with RFC plan submittals for each structure segment. All seed, mulch and mulch tackifier shall be applied in accordance with requirements of the Contract.

##### **Disturbance Areas**

The Contractor shall reseed and protect temporary disturbance areas with approved control measures to avoid disturbance to existing vegetation. See Book 2, Section 17 for the seeding requirements.

##### **5.4.6.1 Weed Management**

The Contractor shall take actions necessary to control all State listed noxious weeds within the Project limits. Prior to construction, the Contractor shall perform an initial noxious weed survey, and prepare a Integrated Noxious Weed Management Plan for inclusion in the ECWP. The Integrated Noxious Weed Management Plan shall be submitted for Acceptance prior to NTP2.

The plan shall include a variety of species-specific control methods based on the size of the

weed populations and the surrounding landscape. Weed mitigation efforts shall take place at a minimum twice per year (spring and fall). The plan shall be implemented throughout Project construction as appropriate. The plan shall include monthly noxious weed surveys during the growing season, March through October, to identify and treat noxious weeds. Weed-infested staging areas shall not be allowed. Staging areas shall be mowed and cleared of noxious weeds and sprayed with the appropriate herbicide, or as referenced in the Colorado Department of Agriculture species fact sheets. Topsoil salvaged from the Site and stockpiled for reuse on the Site shall be treated in accordance with the methodology described in the first ECWP to eliminate noxious weeds prior to salvage. Topsoil stockpiles shall be monitored during the monthly noxious weed Surveys and treatment shall be implemented as needed. If imported topsoil is used for any part of the Project, the topsoil shall be inspected and certified noxious weed free. Mitigated sites shall be monitored at least twice over the first growing season following construction, and follow-up weed control shall be provided where needed.

#### **5.4.7. Wildlife**

In order to avoid any delays in the project's delivery, the following guidelines must be included in the plans and implemented during construction of the Project:

For structure G-12-C, the following guidelines must be met:

1. Construction should be conducted as to not permanently impede movement of lynx and prevent it from accessing habitats necessary for breeding, feeding, sheltering, and dispersal. This determination shall be made by a CDOT approved biologist.
2. Construction should be concentrated to as small of an area as possible in order to minimize the amount of habitat affected at one time and keep adjacent habitat areas available for use by lynx to forage, hide, or travel. Re-contour and restore all temporarily impacted habitats on the project site so that they become available for use.
3. The width and height of proposed concrete box culverts (CBC) must be equal to or larger than the existing size in order to not impede movement for lynx and maintain access to habitats used for breeding, feeding, sheltering, and dispersal. If a CBC will be longer than the existing CBC, the openness ratio of the original culvert must be maintained. The openness ratio is calculated by  $((\text{height} \times \text{width}) / \text{length})$  in meters. This measure does not apply to corrugated metal pipe (CMP).
4. Installation of concrete barrier shall not be allowed.
5. This segment is within 0.25 mile of alpine or sub-alpine habitat, as defined by the U.S. Geological Surveys' (USGS) Ecoregions of Colorado (level IV), construction activities shall be limited to outside of the rearing season (May through July) to reduce the effects of the project on reproducing Canada lynx to an insignificant level. Work initiated prior to May 1 and sustained until completion may continue into the rearing season.

For structure I-17-X, the following guidelines must be met:

1. Schedule construction activities outside the breeding season. Breeding season is from March 1 to August 31. Factors such as increased noise, lighting, and human activity could disrupt the species' breeding and foraging activities. Non-breeding season is September 1 - February 28.
2. Design project such that the amount of habitat disturbed is kept to a minimum.
3. Locate staging areas in previously disturbed areas

4. Use the minimum amount of lighting necessary to meet the objectives of the project. Where temporary artificial night lighting is necessary, design lighting to illuminate the minimum area needed for operational purposes, minimize the number of lights used, use the lowest illumination necessary for human safety, and selectively place, shield, and direct lighting away from Mexican Spotted Owl habitat. Use Dark Sky compliant lighting. Ensure that lights are in use only when necessary.

If any of these guidelines cannot be met, no work on G-12-C and I-17-X can proceed. The Contractor shall be responsible for coordinating the impacts with CDOT, who will coordinate with the US Fish and Wildlife. The consultation process could require a minimum of 165 calendar days. The Contractor shall be responsible for the Work and any mitigation required as a result of the impact.

#### **5.4.7.1 Federally Listed Species**

The Project, as described in Book 2 Section 1 and section 5.4.7 above, requires no further coordination with the U.S. Fish and Wildlife Service (USFWS). If modifications to the Project cause new impacts and/or require mitigation, the Contractor shall be responsible for coordination with CDOT for USFWS concurrence of a Biological Assessment. The cost of the impacts and/or mitigation due to the new impacts and/or required mitigation shall be included in the UA.

#### **5.4.7.2 Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act**

The Contractor shall comply with the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act at all times, including conducting preconstruction surveys for nesting birds set forth by USFWS, CPW, and Project Special Provision Revision of Section 240.

The Contractor shall schedule Work to avoid taking (pursue, hunt, take, capture or kill; attempt to take, capture, kill or possess) migratory birds protected by the MBTA. The incidental taking of a migratory bird shall be reported to CDOT. The Contractor shall be responsible for all penalties levied by the USFWS for the taking of a migratory bird.

The Contractor shall retain a qualified wildlife biologist, with a minimum of 3 years of experience conducting migratory bird and raptor surveys, to implement the requirements of the MBTA. The Contractor shall submit documentation of the biologist's education and experience to CDOT for Acceptance prior to commencement of any associated Work.

To the extent possible, vegetation removal Activities will be timed to avoid the migratory bird breeding season (April 1 through August 31). Areas that must be scheduled for vegetation removal between April 1 and August 31 shall be surveyed for nests, and a Migratory Bird Nest Survey Memorandum shall be submitted to CDOT for Acceptance prior to removing vegetation at each structure segment. Work buffers and Work exclusion zones shall be implemented as necessary to avoid impacts to nesting birds. Appropriate inactive nest removal and hazing/exclusion measures shall be incorporated into the Work to avoid the need to disturb active migratory bird nests.

The Contractor shall complete raptor nest surveys to evaluate for the presence of active raptor nests within 0.5 mile of the Project segment. This survey shall be completed

between February 1 through July 15. Raptor nest surveys shall be conducted no more than 7 Days prior to starting construction of the Project. Surveys for nocturnal bald eagle roosts shall be conducted between November 15 and March 15 prior to starting construction. If an active nest or roost is located in or near the Project area, the Contractor shall contact CDOT regarding use of seasonal buffers to prevent disturbance to nesting birds during construction. A Raptor Survey Memorandum shall be submitted to CDOT for Acceptance prior to construction occurring within 0.5-mile of a raptor nest.

### **5.4.7.3 Prairie Dogs**

The Project area is within the range and offers suitable habitat for occupation by prairie dogs. Active prairie dog burrows may be present within the agricultural fields, grazed pastureland, vegetated ROW, as well as woodland edges and openings within the Project area. Prairie dogs may be present as a clan or single family group with several characteristic burrows and mounds marking their home territory, or several clans may reside adjacent to one another forming a larger colony displaying a complex of burrows.

The Contractor shall follow all applicable Local, State and Federal laws, policies and regulations including the *CDOT Impacted Black-Tailed Prairie Dog Policy* (CDOT, 2009), Project Special Provision Revision of Section 240, and the CPW regulations (*CPW General Provisions*). At no time shall earth-moving Activities be performed that result in the burial of living prairie dogs. To achieve this guideline, the prioritization of prairie dog management is:

1. Avoidance and minimization of impacts.
2. Passive relocation.
3. Active relocation, although this may not be feasible as an appropriate relocation site may not be found.
4. Humanely euthanize in coordination with CPW.

The presence of active prairie dog burrows within 150 feet of the Project limits will necessitate pre- construction surveys for burrowing owl following guidelines developed by the CPW, *Recommended Survey Protocol and Actions to Protect Nesting Burrowing Owls When Conducting Prairie Dog Control*. Surveys shall be performed of active prairie dog burrows within 150 feet of the Project area between March 15 and October 31. Surveys shall be performed by the Contractor's biologist. Guidelines recommend a minimum of 3 surveys separated by approximately 1 week. If burrowing owls are detected during the survey effort, the CDOT regional biologist in coordination with the CPW, will determine if construction Activities need to be modified or limited in certain areas of the Project in order to comply with the CPW, *Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors* and the State of Colorado's Endangered-Threatened Species Conservation Act.

The Contractor shall submit a burrowing owl survey to CDOT for Acceptance within 7 Days prior to disturbance of prairie dog colonies. The Contractor shall submit burrowing owl survey documentation to CDOT for Acceptance prior to impacts to prairie dog habitat or species.

### **5.4.8. Water Quality**

Permanent water quality for the Project is not required. The Contractor shall prevent and/or minimize erosion, sedimentation and pollution of any State waters.

The Contractor shall comply with all aspects of:

1. The Colorado Discharge Permit System – Stormwater Construction Permit (CDPS-SCP) issued by CDPHE.
2. CDOT's Water Quality Specifications CDOT *Standard Specifications* Subsection 107.25 and Sections 208, 213 and 216.
3. CDOT *M&S Standards* M-208-1 and M-216-1.

Refer to Section 5.4.9 for waters of the U.S. requirements; Book 2, Section 3, for quality requirements; Book 2, Section 12, for drainage requirements; and Book 2, Section 17, for Landscape stabilization and Warranty requirements.

The Contractor shall submit Stormwater Management Plans (SWMP) to CDOT for Review in accordance with the CDOT SWMP over 1-acre or under 1-acre Template requirements with RFC plan submittals for each structure segment. In the case where more than one structure location is less than a quarter mile apart, all structures in that quarter mile vicinity shall account for disturbance area and help in determining whether an over 1-acre or under 1-acre CDOT SWMP Template will be required. See CDOT Bulletin 20-001.

The Contractor shall fill out the current CDOT SWMP template, including BMP narratives. The SWMP shall clearly describe the relationship between the phases of construction and the implementation and maintenance of the stormwater management controls. Any major modifications (i.e., change modification orders or minor changes revisions) to the CDOT SWMP template shall be submitted to CDOT for Acceptance. The Contractor shall revise the SWMP Site Map as necessary based on actual construction activities throughout the duration of the CDPS-SCP. All BMPs shall be listed on the SWMP Site Map per the requirements of the CDPS-SCP.

All documents pertaining to the CDPS-SCP shall be kept on-site in the CDOT Stormwater Management Plan (SWMP) Notebook (provided by CDOT) to maintain compliance with the SCP. Upon permit inactivation, the SWMP Notebook shall be turned over to CDOT and become the property of CDOT Project files.

### **Erosion Control Measures**

The Contractor shall install and maintain the construction erosion control measures for the Project in accordance with the CDOT Erosion Control and Stormwater Quality Guide and Sections 101, 107, and 208 of the Standard Specifications. Construction erosion control measures for the Project shall include, but are not limited to, those listed in the Standard Specifications, as well as, preservation of existing vegetation, surface roughening, tackifier or soil binder, soil retention blankets, temporary clean water diversions, storm drain and basins, protection of trees, hazardous waste and spill containment and saw water disposal, stabilized construction entrances, and pavement sweeping of the affected Project areas. The Contractor shall add an erosion control measure narrative to the SWMP on how it is being used, and shall supply the manufacturer details to be placed in the SWMP Notebook. The Contractor shall have a complete supply of all necessary construction erosion control measure Materials on Site at all times in preparation for construction water quality control emergencies.

The Contractor shall use erosion control blankets to promote the establishment of vegetation



on slopes steeper than 4H:1V to control erosion.

Slopes shall be roughened at the end of each day. Concrete washout shall be contained.

Non-structural erosion control measures may include litter and debris control, street sweeping, and landscaping and vegetative practices.

### **Site Inspections**

During the Project, multiple inspections by CDOT and the Contractor and his ECM will be occurring. Inspections shall be on the appropriate CDOT Forms and shall follow the requirements in CDOT *Standard Specifications*, Section 208. Prior to work commencing, a pre-construction conference shall be held with CDOT's Region Water Quality personnel. In addition, when the first phase of BMPs has been installed at each structure segment, the Contractor shall notify CDOT's Region Water Quality personnel to come out and inspect the BMPs for proper installation. Work shall not begin until the BMP installation inspection has occurred. CDOT's Region Water Quality personnel will be inspecting the Site on a monthly basis, as well as during the surprise Regional Erosion Control Assessment Team inspections. The Region Water Quality personnel may inspect the Project at any time and document any non-compliance issues that need to be resolved immediately by the Contractor. Fines may be assessed to the Contractor with the potential of Project shut downs, depending on the severity of the non-compliance. Prior to Substantial Landscape Completion at each structure segment, CDOT's Region Water Quality personnel shall be notified to perform a final walkthrough inspection. Any items identified for maintenance, replacement, or removal shall be done immediately or liquidated damages may be incurred upon the Contractor.

Based on the Consent Order, the Project Superintendent or ECM shall perform inspections of all BMPs to observe, record, and determine the effectiveness of all BMPs and to order their maintenance if needed. The results of the inspections shall be recorded in a stormwater log, which will be provided by CDOT. The Contractor shall cooperate with Local Agencies that may perform their own stormwater inspections on this Project.

#### **5.4.8.1 CDPHE & CDPS**

The Contractor shall obtain the CDPS and NPDES permits, if required, a minimum of 10 Days prior to the start of construction. CDOT and the Contractor will be co-owners for the CDPS permit and CDOT will be the owner of the NPDES permit.

All stormwater requirements, including the Stormwater Management Plan (SWMP), shall be fulfilled in accordance with CDPS-SCP, Specification 208 of the CDOT Standard Specifications, and in accordance with the NPDES Permit. CDOT will perform monthly audits.

The Contractor shall have properly trained and certified staff on Site who will manage, administer and inspect the Project to ensure the construction control measures are adequate for the Site conditions of the Project and are in good working condition. The Contractor shall prevent the discharge of any sediment or pollutants from the construction Activity into any storm drains or receiving waters during the life of the CDPS-SCP and NPDES Permit.

#### **5.4.8.2 Dewatering Permit**

The Contractor shall obtain a Construction Dewatering, Remediation, or Individual Permit(s) from the CDPHE for any dewatering of groundwater during construction in accordance with Water Quality Control Division (WQCD) requirements. The Permit(s) shall be obtained prior to the start of discharge Activities. The Contractor shall provide all information needed to assist the WQCD in their evaluation and setting of a water quality standard for the Permit(s), which may include monitoring of the discharged water. If the Contractor’s Activities require a permanent dewatering system, any such system will require the Approval of CDOT prior to submitting a Subterranean Dewatering Permit.

If the Contractor’s Activities result in a consumptive use during construction, the Contractor shall obtain a Substitute Water Supply Plan from the Division of Water Resources. If any dewatering Activities are required after construction, the Contractor shall design, operate, and maintain the dewatering system so that no consumptive use of the water occurs.

The Contractor shall monitor for any settlement caused by dewatering. The Contractor shall conduct a preliminary survey of any private property or buildings that may be affected by dewatering to establish existing conditions. The Contractor shall repair any damage caused by dewatering operations.

**5.4.9. Wetlands and Waters of the U.S.**

Wetland delineations were completed for the Project. Wetland maps, wetland shape files and Wetland Determination Forms are available in the Reference Documents and shall be used in determining wetland impacts during design and construction.

The Contractor shall replace all wetlands at a 1:1 ratio regardless if the wetland is jurisdictional or non-jurisdictional per Executive Order 11990 "Protection of Wetlands".

The wetlands within the Project area are estimated as follows:

**Table 5-2 Wetlands and Waters of the U.S. for the Project**

<b>Structure</b>	<b>Wetland (acre)</b>	<b>WOUS (linear ft; ac)</b>
G-12-C	0.12	414 lf; 0.16 ac
I-13-G	0.06	680 lf; 0.44 ac
H-13-N	0.7	102 lf; 0.09 ac
I-15-AO	0.15	640 lf; 0.18 ac
I-15-T	n/a	120 lf; 0.04 ac
J-14-C	n/a	115 lf; 0.03 ac
J-15-G	n/a	370 lf; 0.28 ac
M-21-B	n/a	n/a
M-21-C	n/a	635 lf; 0.58 ac
M-21-J	n/a	n/a
M-22-U	n/a	1,310 lf; 0.33 ac
M-22-Y	n/a	n/a
N-21-C	n/a	n/a
N-21-F	n/a	n/a
I-17-X	n/a	430 lf; 0.2 ac

I-13-H	0.73	n/a
M-21-I	n/a	n/a
O-19-D	n/a	245 lf; 0.1 ac
P-19-G	n/a	250 lf; 0.11 ac

1. It is assumed that impacts to Waters of the US (WOUS) can be permitted under Nationwide Permit #3 Maintenance or #14 Linear Transportation. All Preconstruction Notification documentation required by these permits shall be prepared by the Contractor.

#### 5.4.9.1 Wetlands Field Identification

If the Contractor proposes to work in areas outside of the wetland delineation conducted in each CatEx, then the Contractor shall delineate the additional Project area for waters of the U.S., including wetlands.

#### 5.4.9.2 Wetlands Inspection, Establishment, Acceptance, and Warranty Period

Inspection, Landscape Establishment, Acceptance and the Landscape Warranty Period for wetland areas shall be subject to the applicable requirements of Book 2 Section 17 - Landscaping.

Substantial Landscape Completion, Landscape Establishment Periods, and Acceptance for wetlands areas shall be subject to compliance of the requirements of all applicable permits.

The Landscape Establishment Period for wetlands areas shall commence upon receipt of a written "Notice of Substantial Landscape Completion" for wetlands areas from CDOT, and is not subject to prior Final Acceptance of the Project.

The Landscape Establishment Period for wetlands areas will last for 24 months, and will begin the following spring if Substantial Landscape Completion for the wetlands areas is issued in the fall.

The Contractor shall provide CDOT with annual mitigation progress reports. The reports shall be submitted to CDOT for Review December 21st of each year, and shall include the following:

1. Project number, 404-permit number, and county where project is located.
2. Summary on the status of the wetlands.
3. Percent of ground surface area that is vegetated.
4. Percent of the vegetated area that contains wetland vegetation.
5. List of prevalent plant species and their wetland establishment status.
6. Location map.
7. Drawings as needed for illustration.
8. Photographs of mitigation area for each report.
9. Percent cover of noxious weeds.
10. Acreage determination of successful mitigation sites.

Upon completion of the Landscape Establishment period for wetlands areas, at the Contractor's request, CDOT will inspect the wetlands to determine compliance to the requirements of the Contract Documents. Wetlands areas will not be Accepted until a minimum of 70 percent of the mitigation site consists of wetland species and noxious weeds comprise of less than 5% of the total cover.

Acceptance of the wetlands areas will initiate the one (1) year Landscape warranty period and maintenance period. Throughout the warranty and maintenance period the Contractor shall be responsible for remedial action and restoration of created wetlands.

Remedial action is defined action taken to correct failed wetland construction. This can include but is not limited to:

1. Re-evaluation of hydrology source.
2. Groundwater monitoring to identify and correct improper grade elevations.
3. Additional excavation or fill.
4. Replanting vegetation.

Restoration of created wetlands is defined actions taken to improve the conditions of an existing wetland that has limited functions. Techniques can include, but are not limited to:

1. Replanting vegetation.
2. Re-configuration of improper ground elevation
3. Enhancing hydrology.

### **Senate Bill 40/Wildlife**

The Senate Bill 40 Wildlife Certification (SB 40) will be required for construction Activities that impact streams and their associated riparian areas. The Contractor shall not perform construction Activities within the impacted riparian areas until Colorado Parks and Wildlife accepts the SB 40 Certification. The Contractor shall be responsible for preparing the SB 40 Certification on the behalf of CDOT. Submittal requirements for the SB 40 certification will include the following:

The Contractor shall comply with the Memorandum of Understanding between CDOT and Colorado Parks and Wildlife (Formerly Colorado Division of Wildlife) regarding avoiding and minimizing wetland impacts. The document is available in the Reference Documents.

Consultation for SB 40 permitting may require natural bottoms as a requirement for structures.

### **Contractor Requirements**

1. The Contractor shall submit RFC plans to CDOT for all construction that impacts the riparian areas for the purpose of obtaining the SB 40 Certification. The Contractor shall prepare an Individual SB 40 Certification package on CDOTs behalf to Colorado Parks and Wildlife. Individual SB 40 Requirements and an example of an Individual SB 40 Certification Package are available in the Reference Documents.

2. The Contractor shall incorporate the Colorado Parks and Wildlife recommendations.

**CDOT Requirements**

1. CDOT will coordinate directly with the Colorado Parks and Wildlife and will submit Contractor prepared SB 40 Certification documents.
2. CDOT will notify the Contractor when the SB 40 Certification is issued. Issuance of the SB 40 Certification allows the Contractor to begin Work in impacted stream and riparian areas.

**Senate Bill 40 Permit Mitigation Requirements**

Impacted riparian areas shall be identified in design plans. The requirements of the SB 40 Certification that the Contractor shall be responsible for complying with are as specified in this Section.

The Contractor shall fence off riparian areas that are not to be impacted by the Project prior to beginning construction adjacent to the riparian areas. Location of fencing to define and protect riparian areas shall be subject to the Approval of CDOT and shall be submitted 5-Days prior to placing fence.

Trespassing, parking, or storing equipment within riparian areas by the Contractor shall be considered an impact that requires appropriate mitigation.

Non-native riparian areas that are impacted shall be cut and sprayed to prevent future non-native plant establishment.

The locations of replacement species for mitigation of impacted riparian areas shall be subject to CDOT Approval. The Contractor shall submit a Landscape Plan and plant establishment plan for all riparian replacement areas to CDOT for Approval prior to performing the Work.

Impacted riparian areas shall be mitigated within the same natural drainage system, and within the Project limits.

The Contractor shall install beaver guards for all new trees.

Mitigation of riparian areas shall be subject to the requirements of the Landscaping Section.

**Mitigation of Non-Native Riparian Areas**

The Contractor shall provide 2:1 ratio of native to non-native tree replacement with native 1.5-inch or greater caliber Eastern Cottonwood Trees per acre for impacts to riparian areas that contain non-native tree species.

Non-native tree species include, but are not limited to, the following:

1. Siberian Elms
2. Russian Olive
3. Crack Willow
4. Black Locust
5. Tamarisk (Tree Form)

Non-native shrub species shall be replaced with Coyote Willow or Sandbar Willow where proper hydrology exists to support willow species.

Tamarisk in shrub form shall be replaced with coyote and/or sandbar willow.

### **Mitigation of Native Riparian Areas**

The Contractor shall provide one to one in-kind replacement for native tree species and use native seed or other methods to restore the herbaceous cover within impacted riparian areas.

Native species include, but are not limited to, the following:

1. Cottonwood Trees
2. Willow Trees (Peachleaf)
3. Willow Shrubs (coyote or sandbar)
4. Herbaceous riparian cover (sedges, rushes, and mesic grasses)

#### **5.4.9.3 Section 404 Permit**

The Contractor is required to obtain the necessary Section 404 permits for this project. Section 404 permits will be required for all Waters of the US including jurisdictional wetlands. The US Army Corps of Engineers (USACE) has indicated that the use of Nationwide Permits #3 Maintenance and #14 Linear Transportation, will be utilized where appropriate. CDOT anticipates that the entire Project can be permitted under multiple nationwide permits, but this is dependent upon final design and amount of impacts to jurisdictional waters and wetlands. The USACE is the regulatory agency and decides whether or not this Project will meet the Nationwide Permit or Individual permit requirements. The Contractor shall be responsible for complying with all of the requirements of the Section 404 permit(s), including those requirements as specified in this Section. The Contractor shall submit a Section 404 Individual or Nationwide Permit Application to CDOT for Review and Approval before it is submitted to the USACE. The Contractor shall be responsible for preparing preconstruction notification documentation as required by Nationwide Permits guidelines.

The Contractor shall be responsible for submitting a Wetland Finding Report if impacts exceed the thresholds identified in the 2006 Memorandum of Agreement between FHWA and CDOT regarding the programmatic approval of Wetland Findings. The Wetland Finding Report shall be Accepted by CDOT. A Functional Assessment of Colorado Wetlands (FACWet) analysis shall be performed if permanent wetland impacts meet or exceed 0.10 acre.

## **5.5 Recognized Hazardous Materials**

Recognized Hazardous Materials (RHM) are defined as the presence or suspected presence of Hazardous Substances which may require management and/or disposal. Hazardous Substances may exist on the surface, subsurface, in groundwater, or on structures to be demolished, and may be mixed with soil, water, and/or other waste materials.

The Contractor is advised to thoroughly read and understand the findings and requirements in the Categorical Exclusions, for any RHMs within the Project limits.

Structures identified to have asbestos or lead based paint, refer to Exhibit 5-A Asbestos and

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Lead Based Paint Summary Table.

## 5.6 Materials Management Plan

The Contractor shall develop a Materials Management Plan (MMP) to be submitted for Approval by CDOT prior to issuance of NTP1. The Contractor shall comply with all provisions set forth within the Approved MMP.

The MMP shall identify potential RHMs: locations, extent of impact, proposed Remediation Work, avoidance measures, investigation measures, as well as contingency planning for addressing unforeseen conditions. The plan shall identify the Contractor's representative responsible for environmental compliance, the proposed design and construction staff, and approach to implementation of the MMP. The plan should also include a narrative describing how the MMP will inform the design, and how the MMP will raise awareness during construction. In addition to meeting the requirements of Section 250 of the *CDOT Standard Specifications*.

The MMP shall include the following provisions:

1. The Contractor shall manage all RHMs including soils, groundwater, surface water, and other contaminated substances to prevent exposure to Project personnel and the public, and to prevent any contamination of non-contaminated areas.
2. Contractor shall manage the design such that RHM location avoidance is considered a primary consideration.
3. The Contractor shall classify such wastes according to one of the following categories:
  - A. Hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) requiring off Site disposal and/or treatment.
  - B. Contaminated soils requiring off Site disposal.
  - C. Soils to be stockpiled for further characterization.
  - D. Soils with concentrations of waste constituents below regulatory concern that can be reused without restriction.
  - E. Wastewater requiring off Site disposal and/or treatment.
  - F. Impacted water to be held for further characterization.
  - G. Asbestos containing material discovered during construction or demolition.
  - H. Lead-based paint associated with Structures, signage, light posts, etc.
  - I. Waste material to be contained for further characterization.
  - J. Contaminated groundwater requiring on Site treatment or off Site disposal.
4. Prior to commencing any Remediation Work, a scope of work shall be submitted to CDOT for Approval. The Contractor shall utilize the most cost-effective approach in the performance of any remedial action deemed necessary. Remediation Work shall not include sampling, characterization, stockpiling or disposal of materials that are determined not to require off Site disposal and/or treatment.

5. The Contractor shall not allow Hazardous Substances to be spilled or tracked off Site at any time during the Project.
6. The Contractor shall be responsible for locating storage facilities and disposal sites for RHM's that are to be removed from the Work Site.
7. The Contractor shall maintain documentation of completed waste profiles, manifest forms, and bill-of-lading forms for proper transportation and disposal of materials off Site. This information shall be available at all times for review by CDOT. The Contractor shall be held responsible for ensuring that all requirements of the transporter and receiving disposal facility and Federal, State, and Local statutes, rules, regulations and ordinances are complied with and properly documented.

### **5.6.1 Health and Safety Plan**

The Contractor shall develop a Health and Safety Plan (HASP) for the Work, according to the requirements of Section 250 of the 2019 CDOT *Standard Specifications for Road and Bridge Construction, Environmental, Health, and Safety Management*. The HASP shall be submitted to CDOT for Acceptance prior to NTP2.

#### **Asbestos and Lead Based Paint Surveys**

Demolition of structures will require a demolition permit from the CDPHE. A requirement of the permit is a certified asbestos inspection of the structure. CDOT has a demolition permit application for each of these structures with the signature of the certified asbestos inspector that performed the asbestos inspection. These permit applications are available in the reference documents.

#### **Required Personnel**

The Contractor shall designate a Health and Safety Officer (HSO) in accordance with subsection 250.03 of the Standard Specifications. The HSO shall have a thorough knowledge of all applicable OSHA, EPA, State, including but not limited to the CDPHE - Colorado Department of Public Health and Environment, and local regulations as they pertain to the protection of the environment and the safety and health of the workers.

The Contractor shall designate a monitoring technician as per Subsection 250.03. The monitoring technician will be responsible for the monitoring of hazardous substances during work on the project.

The Contractor shall provide certification indicating that the procedures, protection and work described in the method statement are in accordance with the OSHA and EPA standards and applicable federal, state and local regulations.

The Contractor shall develop a Health and Safety Plan (HASP) for the Work, as required by Section 250.03 of the 2019 CDOT *Standard Specifications*, CDOT MMP, and the CDOT Asbestos-Contaminated Soil Management SOP, as appropriate.

The Contractor shall distribute the HASP to all employees that could be potentially exposed to



RHMs. The HASP shall be displayed or made available on Site at all times. The Contractor shall develop and maintain all industrial hygiene information on Site, including “right-to-know” information. In addition to meeting the requirements of Section 250 of the CDOT *Standard Specifications*, the HASP shall include the following provision:

“The Contractor shall maintain documentation and provide information to CDOT, as requested, regarding potential or actual exposure to the public. The Contractor shall maintain records of all related incidents and notify CDOT and appropriate State authorities immediately.”

The Contractor shall provide to CDOT identification of all Subcontractors to be used in the performance of Work required within this Section prior to performing any such Work. The Contractor shall maintain documentation of all pertinent certifications of all subcontractors and make it available to CDOT upon request.

### **5.6.2 Spill Response Plan**

The Contractor shall develop a Spill Response Plan (SRP) for the Work, as required by Section 208 of the CDOT *Standard Specifications*, CDOT MMP, and the CDOT Asbestos-Contaminated Soil Management SOP as appropriate. The SRP shall be submitted to CDOT for Acceptance prior to NTP2.

The SRP shall establish operating procedures for handling pollutants and preventing spills. Pollutant sources include, but are not limited to, exposed and stored soils, paints, solvents, fertilizers or chemicals, vehicle tracking, management of contaminated soils, loading and unloading operations, outdoor storage, vehicle/Equipment maintenance and fueling, significant dust or particulate generation, on Site waste management practices, concrete truck/Equipment washing, dedicated asphalt and concrete batch plants, and non-industrial waste sources that may be significant, such as trash and portable toilets.

During the environmental task force meetings, the Contractor shall discuss the submittals of the MMP, SAP, HASP, and SRP. The Contractor’s ECM and the Contractor’s Safety Manager shall be present at the meeting. The Contractor shall incorporate comments into the submitted MMP, SAP, HASP, and SRP as agreed to during this meeting.

The Contractor shall comply with all provisions set forth in the Approved MMP, SAP, HASP, and SRP and shall maintain documentation of all pertinent certifications of all Subcontractors, which shall be available upon request by CDOT. The Contractor shall comply with all applicable requirements, including, but not limited to, all Federal, State, and Local Environmental Laws and regulations and CDOT *Standard Specifications*, Section 250, Environmental, Health and Safety Management; Section 208, Erosion Control; and any Project Special Revisions for the management and disposal of the RHMs. The Contractor shall notify CDOT within 24 hours if contacted by any regulatory agencies or Third Parties concerning RHMs associated or potentially associated with the Contract requirements. The Contractor shall coordinate all Work with CDOT and shall not discuss or negotiate with any regulatory agencies or Third Parties on behalf of CDOT. The Contractor shall support CDOT with necessary information, data and exhibits if any discussions or negotiations with any regulatory agencies or Third Parties are necessary.

## 5.7 Categorical Exclusion and Environmental Certification

### 5.7.1 Categorical Exclusion

If the Contractor proposes or creates a design change beyond the Project, as described in Book 2, Section 1, these changes shall be tracked, documented, and assessed as to whether or not they have resulted in a new impact or changed the impact to an already accounted for environmental resource. The changes shall be assessed per policies, procedures, guidelines, or regulatory requirements specific to that resource. If necessary, per input from CDOT, the Contractor shall be responsible for documenting that change through the requirements and conditions of CDOT Categorical Exclusion.

In addition, the Contractor shall be responsible for additional environmental documentation, Permits, and mitigation resulting from impacts associated with any Project change at the Contractor’s expense. The Contractor shall accept responsibility for any additional schedule impacts required to obtain the appropriate approvals and regulatory clearances throughout the Project.

### 5.7.2 Environmental Certification

Even if there are no changes, the Contractor shall complete a final environmental certification prior to the Work. This certification is documented via the CDOT Form #128. While CDOT is responsible to populate the form, the Contractor shall be responsible to submit all documentation and obtain all necessary Approvals that support this certification.

## 5.8 Environmental Permits

The Contractor shall be responsible for obtaining all governmental and agency Permits required for the Work, not otherwise obtained by CDOT, including, but not limited to, the Permits in Table 5-2.

Permits that have been obtained by CDOT during the development of the Project, as described in Book 2, Section 1, are included in the Reference Documents. Permits are subject to final review and approval by the appropriate Permitting Agency.

**Table 5-2 Required Environmental Permits**

Permits/Approvals	Permitting Agency	Permit Responsibility (CDOT or Contractor)
Colorado Discharge Permit System (CDPS - SCP) Stormwater Construction Permit	Colorado Department of Public Health and Environment – Water Quality Control Division	Contractor will obtain permit(CDOT will be a co-owner)
NPDES Permit (if required)	U.S. Environmental Protection Agency	Contractor will obtain permit (CDOT will be a co-owner)

Clean Water Act, Section 404 Permit	U.S. Army Corps of Engineers	Contractor
Senate Bill SB40 Certification	Colorado Parks & Wildlife	Contractor to prepare draft certifications. CDOT to submit to CPW
Section 401 Water Quality Certification	Colorado Department of Public Health and Environment	Contractor
Section 401 Water Quality Certification	U.S. Environmental Protection Agency	CDOT
Clean Water Act Section 402 Construction Dewatering Permit, Remediation, or Individual Construction Dewatering Permit, if contaminated groundwater is expected to be encountered.	Colorado Department of Public Health and Environment – Water Quality Control Division	Contractor
Subterranean Groundwater Permit	Colorado Department of Public Health and Environment – Water Quality Control Division	Contractor
Non-Extractive Industries Storm Water Permit	Colorado Department of Public Health and Environment – Water Quality Control Division	Contractor
Remediation Activities Discharging to Surface Water Permit	Colorado Department of Public Health and Environment – Water Quality Control Division	Contractor
Remediation Activities Discharging to Groundwater Permit	Colorado Department of Public Health and Environment – Water Quality Control Division	Contractor
Notification as Resource Conservation and Recovery Act (RCRA) hazardous waste generator	Colorado Department of Public Health and Environment – Hazardous Materials and Waste Management Division	Contractor
Air Pollution Emission Notice (APEN) and Construction Permit	Colorado Department of Health and Environment – Air Pollution Control Division	Contractor

Stationary Source Air Quality Permit (Emissions from portable units, such as rock crushers, generators, asphalt plants, and concrete plants, used during construction)	Colorado Department of Health and Environment – Air Pollution Control Division	Contractor
Noise Variance (as needed)	Local Agencies	Contractor

### 5.9 Deliverables

The Contractor shall submit the following to CDOT for Review, Acceptance, or Approval:

**Table 5-1 Deliverables**

<b>Deliverable</b>	<b>Review Acceptance or Approval</b>	<b>Schedule</b>
Environmental Compliance Work Plan (ECWP)	Approval	Within 30 Days after NTP1
90-Day Environmental Compliance Work Plan (ECWP)	Approval	No later than 30 Days prior to NTP2, and every 90 Days until Final Acceptance
Environmental Compliance Work Plan (ECWP) Amendment	Acceptance	Annually upon the anniversary of the first Approval of the ECWP or in accordance with 5.3.4
Environmental Compliance Status Reports	Acceptance	Monthly, within 21 Days following the end of the reporting period (month)
Final Environmental Compliance Work Plan	Approval	Required for Final Acceptance of the Project
Construction Air Quality Plan and Fugitive Dust Control Plan	Acceptance	Prior to NTP2
Preliminary Noise Technical Reports (as needed)	Acceptance	Prior to completing the Benefited Receptor Preference Survey
Planning Activities for the Benefited Receptor Preference Survey (as needed)	Acceptance	14 Days before initiating the survey
Final Noise Technical Report (as needed)	Acceptance	As part of the RFC Documents submittal
Construction Noise and Vibration Mitigation Plan	Acceptance	Prior to NTP2
Revised Plans that deviate from Book 3 (as needed)	Approval	As soon as revised plans are generated

RFC Documents	Review	At least 14 Days prior to associated construction Activities
Native Seed Mix Recommendation for each structure segment	Review and Approval	With RFC Documents
Integrated Noxious Weed Management Plan	Acceptance	Prior to NTP2
Biological Assessment (as needed)	Approval	As soon as known modifications to the Project cause new impacts and/or require mitigation
Biologists Education and Experience	Acceptance	Prior to commencement of any associated work with MBTA
One Migratory Bird Nest Survey Memorandum for each structure segment	Acceptance	No more than 7 Days prior to vegetation removal occurring between April 1 and August 31
Raptor Survey Memorandum	Acceptance	Prior to impacts to habitat
Burrowing Owl Survey	Acceptance	Within 7 Days Prior to disturbance
Burrowing Owl Documentation	Acceptance	Prior to impacts to prairie dog habitat or species
SWMP Plan	Review	With RFC Documents
Permanent Dewatering System (as needed)	Approval	Prior to submitting a Subterranean Dewatering Permit
Annual Mitigation Progress Reports	Review	10 Days prior to December 31 <sup>st</sup> of each year
Location of Fencing to Define and Protect Riparian Areas	Approval	5-Days prior to placing fence
Landscaping Plan and Plant Establishment Plan for all Riparian Replacement Areas	Approval	Prior to performing the Work
Section 404 Permit Individual or Nationwide Permit Application	Review and Approval	Prior to being submitted to USACE
Wetlands Finding Report	Acceptance	As soon as wetlands impacts are known
Materials Management Plan	Approval	Prior to issuance of NTP1
Sampling and Analysis Plan	Acceptance	30 Days prior to NTP2

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Health and Safety Plan	Acceptance	Prior to NTP2
Spill Response Plan	Acceptance	Prior to NTP2
Regulated Hazardous Materials Management Repots	Review	Monthly
Quarterly Summary of Hazardous Materials Management	Review	Quarterly
Documentation and Necessary Approvals for Environmental Certification	Approval	Prior to Work

## 5.10 Exhibits

Exhibit 5-A: Asbestos and Lead Based Paint Summary Table

Map ID	Bridge	Location	Asbestos	Lead Paint	Mitigation	Site Visit	ISA	Geo Search
1	G-12-C	SH 9, MP 71.445	None	Tan paint on concrete surfaces (abutments, piers, wing walls) are all lead based paint.	Lead paint removal and waste disposal must be performed in accordance with OSHA Standard 29 CFR 1926.62 and Section 250.04 of the 2017 CDOT Standard Specifications for Road and Bridge Construction Handbook.	No bird nests, Live perennial stream with lots of willows both up and downstream of bridge, wetlands likely.	No haz mat issues other than LBP at bridge site, note possible groundwater concern if dewatering is needed. See GeoSearch notes, rural location.	No regulatory records were reported for the project bridge site. Four adjacent mine sites had records. They are former metallic mining sites (gold, silver) but are now closed and appear to be used as gravel and/or stone quarries or other commercial uses. None of these sites appear to have affected the bridge project site directly from, for example, disposal of mine waste. However, the close proximity of the mining operations could have affected heavy metal surface deposits which may cause elevated heavy metal content of ground water. Should dewatering be necessary, ground water sampling and analysis should be performed as part of the decision whether to dewater or consider alternate means to work below the water table.
2	J-14-C	SH 9, MP 20.107	None	Lead-Based Paint (LBP) White wood Railing on sides of bridge Lead-Containing Paint (LCP) Silver steel Guardrails and Bridge Support Understructure	Lead paint removal and waste disposal must be performed in accordance with OSHA Standard 29 CFR 1926.62 and Section 250.04 of the 2017 CDOT Standard Specifications. Metal components can be recycled at a certified LBP recycler with appropriate notification	No bird nests, rocky / grass lined stream bed with no wetland vegetation, wetlands not likely	No haz mat issues other than LBP, rural location	No records listed.
3	J-15-G	SH 9, MP 15.97	None	None	No special requirements	Metal culverts with no birds, well vegetated with willows both upstream and downstream, wetlands likely	No haz mat issues, rural location	No records listed.
4	I-13-G	US 24, MP 227.095	None	None	No special requirements	No birds, appears to be dry arroyo with low probability of having wetlands	No haz mat issues, rural location	Historic land fill listed but down gradient and over 1/2 mile from bridge site. No haz mat issues.
5	I-15-AO	US 24, MP 271.9	None	None	No special requirements	No bird nests, well vegetated with willows, wetlands likely	No haz mat issues, rural location	No records listed.
6	I-15-T	US 24, MP 271.691	None	None	No special requirements	No bird nests, well vegetated with willows, wetlands likely	No haz mat issues, rural location	No records listed.
7	H-13-N	US 24, MP 240.686	None	None	No special requirements	No birds, live stream (frozen at time of visit) low brush along channel sides but low probability of wetlands	No haz mat issues, rural location	No records listed.
8	M-21-B	US 350, MP 51.682	None	Black and white paints located on the metal girders, concrete guardrails, and wing walls are lead-based paints	Lead paint removal and waste disposal must be performed in accordance with OSHA Standard 29 CFR 1926.62 and Section 250.04 of the 2017 CDOT Standard Specifications. Metal components can be recycled at a certified LBP recycler with appropriate notification	Large nest NW corner of bridge, dry arroyo, wetlands unlikely	No haz mat issues other than LBP, rural location	No records listed.
9	M-21-C	US 350, MP 50.582	None	Black and white paints on the metal girders, guardrails, and wing walls are lead-based paints	Lead paint removal and waste disposal must be performed in accordance with OSHA Standard 29 CFR 1926.62 and Section 250.04 of the 2017 CDOT Standard Specifications. Metal components can be recycled at a certified LBP recycler with appropriate notification	Large bird and some swallow nests under bridge, brushy but dry arroyo, wetlands are not likely present	No haz mat issues other than LBP, rural location	No records listed.
10	M-21-J	US 350, MP 57.069	None	Black paint on the wooden guardrails is lead-based paint	Lead paint removal and waste disposal must be performed in accordance with OSHA Standard 29 CFR 1926.62 and Section 250.04 of the 2017 CDOT Standard Specifications.	No bird nests, dry grassy arroyo, doubt any wetlands present.	No haz mat issues other than LBP, rural location	No records listed.
11	M-22-U	US 350, MP 69.817	None	Black paint on the metal girders and concrete is a lead-based paint	Lead paint removal and waste disposal must be performed in accordance with OSHA Standard 29 CFR 1926.62 and Section 250.04 of the 2017 CDOT Standard Specifications. Metal components can be recycled at a certified LBP recycler with appropriate notification	No birds observed, relatively dry ditch with grass and minor shrub channel, wetlands low probability	No haz mat issues other than LBP, rural location	No records listed.
12	M-22-Y	US 350, MP 57.474	None	The white paint located on the wooden guardrails is a lead-based paint	Lead paint removal and waste disposal must be performed in accordance with OSHA Standard 29 CFR 1926.62 and Section 250.04 of the 2017 CDOT Standard Specifications for Road and Bridge Construction Handbook.	No bird nests, dry brushy arroyo, wetlands low probability	No haz mat issues other than LBP, rural location	No records listed.
13	N-21-C	US 350, MP 47.131	None	The black and white paint located on the wood guardrails and wing walls are lead-based paint	Lead paint removal and waste disposal must be performed in accordance with OSHA Standard 29 CFR 1926.62 and Section 250.04 of the 2017 CDOT Standard Specifications for Road and Bridge Construction Handbook.	Large bird nests under bridge, brushy sand bottom arroyo, wetlands not likely present	No haz mat issues other than LBP, rural location	No records listed.
14	N-21-F	US 350, MP 48.744	None	The black paint located on the metal girders and wooden wing wall rails is a lead-based paint	Lead paint removal and waste disposal must be performed in accordance with OSHA Standard 29 CFR 1926.62 and Section 250.04 of the 2017 CDOT Standard Specifications. Metal components can be recycled at a certified LBP recycler with appropriate notification	Large bird nests under bridge, brushy arroyo, wetlands not likely present	No haz mat issues other than LBP, rural location	No records listed.
15	O-19-D	US 350, MP 10.289	None	None	No special requirements	A few bird nests under bridge, dense brushy channel with cottonwoods and tamarisk, may have wetlands.	No haz mat issues, rural location	No records listed.
16	M-21-I	US 350, MP 56.454	None	The white and black paints located on the wooden guardrails are lead-based paints	Lead paint removal and waste disposal must be performed in accordance with OSHA Standard 29 CFR 1926.62 and Section 250.04 of the 2017 CDOT Standard Specifications for Road and Bridge Construction Handbook.	No birds, appears to be dry arroyo with low probability of having wetlands	No haz mat issues other than LBP, rural location	No records listed.
17	I-13-H	US 24, MP 229.468	None	None	No special requirements	No birds, appears to be dry arroyo with low probability of having wetlands	No haz mat issues, rural location	No records listed.
18	I-17-X	US 24, MP 295.45	None	None	No special requirements	No Birds, sand and gravel perennial low but fast flow channel with little wetlands potential, however, banks are lined with willows and cottonwoods above the low flow level.	No haz mat issues, rural location	No records listed.
19	P-19-G minor	SH 239, MP 1.74	None	The white paint located on the wooden guardrail posts is a lead-based paint.	Lead paint removal and waste disposal must be performed in accordance with OSHA Standard 29 CFR 1926.62 and Section 250.04 of the 2017 CDOT Standard Specifications for Road and Bridge Construction Handbook.	No Birds, bridge is over an apparent irrigation canal with little vegetation, no wetlands present.	No haz mat issues other than LBP, rural location	No records listed.

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## 6.0 THIRD PARTY AGREEMENTS

The Contractor shall support CDOT in obtaining all third-party approvals required to complete the Work, except as otherwise specified in the Contract Documents. Third-party coordination and approvals will be required from, but not limited to, the following agencies: Otero Ditch Company and Picketwire Ditch Company. The work affecting Picketwire Ditch Company is an ARE. If the ARE is not included in the Contract all work required in regard to Picketwire Ditch Company in this section does not apply.

The Contractor shall not impact the Railroad for any reason. The Contractor shall not enter into any agreements with the railroad.

The work related to Utility Company requirements are addressed in Book 2, Section 7 – Utility Relocations.

### 6.1 Contractor Required Agreements

The Contractor shall be required to execute Agreements between CDOT and other Third Parties, which shall include, but may not be limited to:

1. Agreements with the Otero Ditch Company for all Work associated with the structure replacement of M-22-U.
2. Agreements with the Picketwire Ditch Company for all Work associated with the structure replacement of P-19-G minor.

### 6.2 Irrigation Ditch Companies

This Project includes Work on the Otero Ditch Company property interest and the Picketwire Ditch Company property interest.

“Irrigation Company” shall refer to all irrigation facilities encountered or impacted by the Project for the requirements necessary to complete the Work.

Due to the historic nature of the ditch canals, any relocation and/or change in alignment or profile of the ditch canals will not be considered by CDOT.

This Section 6 provides requirements applicable to Work performed upon or adjacent to the Irrigation Company property interest. Anticipated Work on or adjacent to the Irrigation Company property interest shall be limited to the construction of structures that carry each Irrigation Company’s flow and access modifications required to restore maintenance access for Irrigation Company’s operations impacted by the Work on the Project.

#### 6.2.1 Standards

The Contractor shall design and construct the Project in accordance with the appropriate written specifications, standards of practice (which may include design format), and construction methods that are current at the Proposal Due Date. The Contractor shall obtain all such written specifications, standards of practice, and construction methods from the Irrigation Company and



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submit to CDOT for Acceptance prior to beginning any Work on Irrigation Company property interest. In the event of a conflict between the requirements of the Irrigation Company and the requirements of the Contract Documents, CDOT, in its sole discretion, will determine which shall govern. The Contractor shall be responsible for resolution of any unresolved ambiguity prior to proceeding with any Work associated with the Irrigation Company.

The Contractor shall ensure all Work on the Irrigation Company's property interest allows for future maintenance to be performed outside of the ROW by the Irrigation Company without disruption to the operation or maintenance of US 350 and CO 239.

### **6.2.2 Administrative Requirements**

Within 7 Days after first Notice to Proceed (NTP1), the Contractor shall notify Irrigation Company representatives in writing of Project commencement.

#### Otero Ditch Company Contact Information:

Kenny Mills  
719-469-8841  
PO Box 239, La Junta, CO 81050

#### Picketwire Ditch Company Contact Information:

Jim Jolly  
719-846-3028  
[jim.jolly@comcast.net](mailto:jim.jolly@comcast.net)

The Contractor shall meet with the Otero Ditch Company representatives and CDOT, and the Picketwire Ditch Company representatives and CDOT as soon as practicable after NTP1 to review all points of concern and other items that may affect the Project schedule. The Contractor shall identify critical Activities and sequences as they affect ditch operations and a plan to effectively mitigate ditch impacts.

The Contractor shall obtain Otero Ditch Company and Picketwire Ditch Company approval in writing, in advance, of methods and procedures covering all Work within the ditch property interest. Copies of such approvals, notices, and correspondence shall be submitted to CDOT.

The Contractor shall be responsible for coordinating, developing, and preparing all agreements to be submitted to the Irrigation Company, including developing the agreement text, all supporting engineering and documentation, and exhibits to the satisfaction of Otero Ditch Company and the Picketwire Ditch Company. The Contractor shall submit the Agreements to CDOT for signature and after CDOT's signature, the Contractor shall then submit the agreement to the Irrigation Company for signature and approval. The final signed Agreement shall be submitted to CDOT for Acceptance prior to construction at each location.

### **6.2.3 Utility Crossings**

Otero Ditch Company and Picketwire Ditch Company are not responsible for Utility Work on ditch property interest. The Contractor shall locate all Utilities on ditch property interest within

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the immediate vicinity of the Work. The Contractor shall certify to the Irrigation Company that all the Utilities on ditch property interest and within the immediate vicinity of the Work have been identified and properly located.

### **6.3 Design Requirements**

#### **6.3.1 Submittals**

All design submittals shall be prepared, reviewed, and submitted in accordance with the requirements set forth in Book 2, Section 3.

The Irrigation Company will review design plans for Work on its properties. The Irrigation Company's review is separate from CDOT oversight. The Contractor shall coordinate the required ditch design reviews with the Irrigation Company. All plans submitted to the Irrigation Company for review and approval shall be in English units. If payment is required for the Irrigation Company's design review, it will be handled via a separate agreement between the Contractor and the Irrigation Company, and shall not be included in the Contract Price.

The Contractor shall obtain Irrigation Company's approval, in writing, of design plans for all of the design elements of the Work within the Irrigation Company property interest. Copies of such approvals, notices, and correspondence shall be submitted to CDOT for Acceptance prior to beginning any Work on Irrigation Company property interest.

### **6.4 Construction Requirements**

The Contractor shall coordinate with the Irrigation Company prior to beginning any construction that affects the operation or flow of the ditch. Ditch flows for Otero Ditch occur yearlong. Generally, ditch flows for the Picketwire Ditch occur between April 1<sup>st</sup> – October 15<sup>th</sup> with additional occurrences in December and March for livestock watering. Working windows for demolition and construction shall be coordinated with the Otero Ditch Company and Picketwire Ditch Company along with their inspectors.

The Contractor shall cooperate with the Irrigation Company where Work is within the limits of the Irrigation Company's property interest and shall perform the Work in such a manner and at such times as not to endanger or interfere with the continuous operation of the canal, property, and the flow of water at or in the vicinity of the Work. No Work shall be performed that interferes with the deeded schedule and volume of flow of the canal, including the delivery of water to its shareholders. The Contractor shall be responsible to the Irrigation Company for all damages for delays that may be sustained by the Irrigation Company caused by any interference that could have been avoided by proper handling of the Work.

The Contractor shall obtain Irrigation Company's approval, in writing, of construction for all of the elements of the Work within the Irrigation Company's property interest. Copies of such approvals, notices, and correspondence shall be submitted to CDOT for Acceptance prior to beginning any Work on Irrigation Company property interest.

The Contractor shall through the owner-controlled insurance program (OCIP) indemnify the Irrigation Company under its insurance coverage during the construction phase.

Upon completion of the Work to be performed within Irrigation Company property interest, the Contractor shall promptly remove all tools, Equipment, Materials, and debris from Irrigation Company property placed there by the Contractor or the Contractor's agents. The Contractor shall restore said property to the same state and condition as when the Contractor entered

thereon, and shall leave said property in a clean and presentable condition satisfactory to the Irrigation Company.

The Contractor shall provide As-Constructed Documents to the Irrigation Company within 10 Days of completion of Work within the Irrigation Company property interest.

## 6.5 Deliverables

All deliverables shall also conform to the requirements of Section 3 – Quality Management. At a minimum, the Contractor shall submit the following for information, review, Approval, and/or Acceptance:

**Table 6-1 Deliverables**

<b>Deliverable</b>	<b>Information, Review, Acceptance or Approval</b>	<b>Schedule</b>
Written notice to Irrigation Company of Project Commencement (Copies need to be sent to CDOT)	Information	Within 7 Days of NTP1
Final signed Irrigation Company Agreements for Construction (CDOT Form #1028) to CDOT	Information	Prior to construction at each location
Work methods and procedures for Work within Irrigation Company property interest	Acceptance	Approval from Irrigation Company prior to beginning any Work on Irrigation Company property interest
Design plans for Work within Irrigation Company property interest	Acceptance	Approval from Irrigation Company prior to beginning any Work on Irrigation Company property interest
Construction plans for Work within Irrigation Company property interest	Acceptance	Approval from Irrigation Company prior to beginning any Work on Irrigation Company property interest
As-Constructed Documents for Work within ditch property interest	Information	Within 10 days of completion of Work on Irrigation Company property interest

## 6.6 Exhibits

Exhibit 6-A CDOT Irrigation Company Agreement for Construction (CDOT Form #1028)

**COLORADO DEPARTMENT OF TRANSPORTATION  
IRRIGATION COMPANY AGREEMENT FOR  
CONSTRUCTION**

Construction project no.

Location

This agreement is entered into by and between the State of Colorado, Department of Transportation, Division of Engineering, Design and Construction (hereinafter referred to as "State") and

\_\_\_\_\_ (hereinafter referred to as "company").  
irrigation or ditch company

1. WHEREAS, the State desires to construct a transportation project hereinafter referred to as the "project" listed above.
2. WHEREAS, the right of way from the project crosses the company's property interest.
3. WHEREAS, the parties desire to enter in this agreement whereby the State will be permitted to construct the project within the company's property interest.

NOW THEREFORE, in consideration of the mutual promises hereinafter expressed, the parties agree as follows:

1. The company authorizes the State and all others deemed necessary by the State, to enter upon its property for all purposes related to the construction and maintenance of the structure depicted on attached Exhibit A.
2. The State agrees to pay all costs and expenses relating to the construction and maintenance of the structure depicted in Exhibit A.

3. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Irrigation company authorized representative signature	Date                          
Colorado Department of Transportation District Engineer signature	Date                          

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## 7.0 UTILITY RELOCATIONS

This Section 7 includes the requirements for the Utility Company (or Utility Owner) relocation Work for the R2B2 Design Build Project (Project). This work shall be completed in accordance with the Contract Documents.

This Section 7 does not apply to existing stormwater facilities, irrigation ditches, signage power, traffic signals, or Street lighting, all of which shall be installed, removed, Relocated, and/or Protected-in-Place by the Contractor and/or the Utility Owners pursuant to other sections of the Contract Documents.

### 7.0.1 Definitions

Capitalized terms used but not defined herein shall have the meanings given to them in Book 1 Section 1.1. In addition, the following capitalized terms shall have the meanings set out below:

1. **Betterments** has the meaning given to it in the Utility Relocation Agreements.
2. **Contractor's Utility Tracking Report** has the meaning given to it in Section 7.3.3 below.
3. **Pothole Log** means the existing utility pothole information included with the Reference Documents.
4. **Public Utilities** means a Utility that is owned by a public agency or political subdivision of the state.
5. **Private Utilities** means a Utility that is owned by a private company.
6. **Requested Relocation** means any Public or Private Utility relocation requested by a Utility Owner to be performed by the Contractor.
7. **Unidentified Utility** means a Utility that is discovered during construction that was not included in the Utility Data.
8. **Utility Data** means the Utility Drawings (As-Constructed), the Utility Matrix, and utility information from the Utility Owners that are included with the Reference Documents.
9. **Utility Drawings** means the Utility plan design sheets (As-Constructed) included with the Reference Documents.
10. **Utility Matrix** means the Project Utility Matrix that lists the Utility Data included with the Reference Documents.
11. **Utility Permit** has the meaning given to it in the Utility Relocation Agreements.
12. **Standard Utility Agreements (SUA)** means the executed agreements between CDOT and Utility Owners for the Project that are included with the Reference Documents.
13. **Utility Work** means any portion of the Work relating to (a) the Relocation of any Utility, (b) any Betterment, or (c) any Requested Relocation, in each case (a), (b) and (c), as further described in this Section 7.

### 7.1 General Utility Work Obligations

The Project will affect Utilities as part of the Work. The Contractor shall apply for and obtain CDOT Utility Permits for all new and relocated utilities. A Subsurface Utility Engineering (SUE) has been completed to a Quality Level B (QLB) for the Project and the Utility Drawings are located in the Reference Documents. Unless otherwise stated herein, relocation design and construction Work shall be paid for via a separate Agreement between the Utility Owner and the Contractor and shall not be included with the Contract Price. Relocation Work shall be coordinated concurrent with construction, in which case the Contractor shall be responsible for

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coordinating the Relocation Work to facilitate construction. The Contractor shall be responsible for making its own determination that the Utility Relocation Work currently proposed is acceptable and will work for purposes of meeting the Contractor's schedule and design.

Private service Relocation or adjustment for power, phone, water and sanitary sewer, irrigation lateral work and any other private service that is not shown to be completed by others within the plans or covered within Book 2, shall be the Contractor's responsibility. The Contractor shall plan, coordinate and complete private service Relocation. Work associated with private service Relocation shall be included in the Contract Price. An example would be the Relocation of the power service pedestal or secondary residential/commercial service drops to structures and equipment necessitated by the construction but not completed or performed as part of the overall work by the Utility Owner or covered by a Memorandum of Agreement (MOA) with the landowner.

The Contractor shall coordinate and cooperate with CDOT and the Utility Owners to ensure that all Utility Work (whether performed or furnished by the Utility Owners or by Contractor) is performed in accordance with the executed SUAs. The physical limits of the Contractor's obligation for the performance of Utility Work shall extend as far as is necessary to permit construction of the Project (taking into account the requirements of the Utility Owners, Governmental Persons with jurisdiction, and adjacent property owners), whether inside or outside the Right-of-Way (ROW).

The Contractor shall use due diligence to anticipate and avoid Utilities and to otherwise minimize and/or mitigate the consequences of the Utility Relocations so that the Contractor's construction completion date is achieved.

### **7.1.1 Utility Work**

The Contractor shall carry out all Utility Work in accordance with the requirements of the Standard Utility Agreements (SUAs), Book 1 Section 6.2 Utility Relocations, and this Section 7 – Utility Relocations.

The following Utilities were identified during completion of the SUE QLB as part of this Project (for contacts to each Utility, please see Utility Drawings in Reference Documents):

#### US 350 and CO 239:

1. CenturyLink
2. BNSF Railway
3. San Isabel Electric
4. Southeast Colorado Power Association
5. City of Trinidad

#### US 24 and CO 9:

1. CDOT
2. CenturyLink
3. Southpark Telephone
4. Intermountain Rural Electric Association
5. Xcel

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6. Colorado Natural Gas

Utility Work includes, but is not limited to, the following:

1. Verification of all Utilities, as identified or described in the Utility Data, and the identification of all other Utilities, including in each case all necessary potholing located within the Project limits or otherwise impacted by the Work.
2. Develop and update the Contractor's Utility Tracking Report.
3. Preparation and execution of a No Conflict Close-Out Form for Acceptance by CDOT prior to construction of the associated segment.
4. Negotiation, preparation, and execution of the Utility Work Order for each Utility Relocation, including preparing and providing such written information concerning the Project (such as reports, plans and surveys), as requested by CDOT and the Utility Owner.
5. Preparation of Utility Relocation design for each Public Utilities Relocation, and obtaining the design acceptance by the form of Design of Relocation Acceptance Letter (DRAL) from the Utility Owner.
6. Construction of the Public Utilities Relocations, including service lines and temporary relocations, and obtaining the construction acceptance by the form of Construction of Relocation Acceptance Letter (CRAL) from the Utility Owner.
7. Identification and removal of abandoned existing Public Utilities. If impractical to remove, flow-fill abandoned existing Public Utilities that are 6-inches in diameter or greater.
8. Review of the Utility Relocation design for each Private Utilities Relocation, then verification of and acceptance by the form of DRAL that the design for each Utility Relocation is compatible with the Project.
9. Reimbursement to Public or Private Utility Owners for design costs incurred by such Utility Owners in performing Utility Work.
10. Inspection of the Utility Relocation construction for each Private Utilities Relocation, then verification and acceptance by the form of CRAL that the construction of each Utility Relocation is compatible with the Project.
11. Reimbursement to Private Utility Owners for construction costs incurred by such Utility Owners in performing Utility Work within an easement owned by the Private Utility Owner.
12. Reimbursement to Utility Owners for replacement easements required or acquisition of easements required for Utility Work pursuant to Book 2, Section 8 – Right-of-Way.

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13. Resurfacing and restriping of streets and parking areas and reconstruction of curb and gutter and sidewalks, where necessary, due to Utility Work performed by Contractor or performed by a Utility Owner within the Project limits.
  14. Providing Public Information for Utility Work performed by Contractor, or performed by the Utility Owner.
  15. Performing traffic control for Utility Work performed by Contractor, or performed by the Utility Owner and coordinating traffic control for third-party Utility Owners to avoid conflicts with Project traffic control.
  16. Providing survey coordinates in the field for design and construction of the Utility Work performed by the Contractor or performed by the Utility Owner.
  17. Performing Incidental Utility Work as defined in the SUAs.
  18. Performing and coordinating As-Constructed plans for all Work Orders.
  19. Performing and coordinating As-Constructed Documents for all Utility Work Orders, including x, y, and z coordinates for all completed Utility Work Orders.
  20. Identification and removal of abandoned Private Utilities as required to complete the Work.
  21. Incorporation of Utility As-Constructed Documents into Project plans base file for inclusion in all subsequent plan submittals.
  22. All necessary Work associated with Utility Work.

### **7.1.3 Contractor's Responsibility to Perform**

The Contractor shall perform all Activities included in the Utility Work with respect to each impacted Utility regardless of the following:

1. Whether or not the Utility was indicated in the Reference Documents or, if indicated, whether or not the Utility was accurately indicated.
2. The type of action, if any (e.g., Relocation, Protection-in-Place), feasibility, estimated duration of Work time, or any other characteristic of any Relocation concept(s) proposed for the Utility in the Reference Documents.

The allocation of responsibility for any Utility Work to a Utility Owner pursuant to this Section 7 or SUA shall not relieve the Contractor of the obligation to coordinate with the Utility Owner as necessary for such Utility Work to be timely performed, or of the obligation to perform any other Utility Work not specifically assigned to such Utility Owner. The circumstances under which the Contractor will be entitled to a Change Order for Utility Work are set forth in Book 1, Section 6.

## **7.2 Performance Standards**



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### 7.2.1 Utility Owners

Except as otherwise provided in the SUA, all Utility Relocation designs and construction of relocations furnished or performed by the Contractor shall be consistent with the Utility Owner's written specifications, standards of practice (which may include design format), ease of maintenance access, and construction methods that are current at the Work Order. The Contractor shall obtain all such written specifications, standards of practice, and construction methods from the Utility Owners. In the event of a conflict between the requirements of the Utility Owner and the requirements of the Contract Documents, CDOT in its sole discretion, will determine which shall govern. The Contractor shall be responsible for resolution of any unresolved ambiguity prior to proceeding with any Utility Work.

Replacements for any existing Utilities shall be designed and constructed to provide service at least equal to that offered by the existing Utility, unless the Utility Owner approves a lesser replacement.

In performing the Utility Work, the Contractor shall ensure that all Utility Work results in Utilities being located in a manner to allow future Utility maintenance to be performed by the relevant Utility Owners without disruption to the operation or maintenance of the highway, which may include ramps and if applicable local streets, private accesses and/or county roads.

## 7.3 Identification of Utilities

### 7.3.1 CDOT-Supplied Information

CDOT has developed a list of possible Utility Owners along the Region 2 Bridge Bundle design build Project. See Reference Documents.

CDOT has completed an initial Utility investigation, SUE Quality Level B, and has identified the Utilities that may be impacted by the Project. CDOT has not performed a complete investigation of service lines. The results of CDOT's investigations are indicated in the Utility Data that is included with the Reference Documents.

The Utility plans for this Project were prepared in an effort to develop strategies to reduce risk to construction by identifying and coordinating in advance known Utility Work to be completed as part of the Project. To the extent possible, CDOT has coordinated with the Utility Owners, but has not complied fully with the 811 Subsurface Utility Engineering (SUE) requirements set forth under Article 9-1.5-102, Colorado Revised Statutes, as amended.

### 7.3.2 Contractor's Investigations

Without limiting its ability to negotiate a Change Order with respect to any Unidentified Utility, the Contractor shall take all actions reasonably practicable to identify and confirm the existence, exact location, size, and type of all Utilities within the Project limits or otherwise potentially impacted by the Project, whether or not such Utilities are shown in the Utility Data, including all potentially impacted service lines. Such actions shall include making diligent inquiry at the offices of the Utility Owners, consulting public records, and conducting field studies in accordance with the 811 Subsurface Utility Law. The Contractor shall take into consideration

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the possibility Utility Owners may provide inaccurate or inexact information with regard to their Utilities and require verification and confirmation of accuracy. If the Contractor's investigations identify Unidentified Utilities, the Contractor shall notify CDOT and the relevant Utility Owner in accordance with the SUAs immediately upon discovery. Thereafter, CDOT, the Contractor, and the relevant Utility Owner shall execute a Utility No Conflict Close-Out Form, or pursuant to a Utility Work Order treat an Unidentified Utility as either a Contractor-Relocated Utility or an Owner-Relocated Utility.

### **7.3.2.1 Subsurface Utility Engineering (SUE)**

It shall be the Contractor's responsibility to comply with the SUE certification process and prepare final Utility plans in accordance with the Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data as developed by the American Society of Civil Engineers (ASCE) CI/ASCE 38. The Contractor shall also be required to submit As-Constructed Utility plans in accordance with Section 7.6.2 upon completion of the Work.

The Contractor shall comply with the 811 Subsurface Utility Engineering (SUE) requirements as set forth under Article 9-1.5-102, et. seq. Colorado.

### **7.3.3 Utility Tracking**

The Contractor in accordance with the Utility Owner's SUA, shall at a minimum, submit to CDOT monthly and otherwise upon CDOT's reasonable request, for Review the Contractor's Utility Tracking Report and Utility Matrix to include the following information (unless otherwise agreed to by the parties):

1. The relevant number and execution date of each executed Utility Work Order.
2. Each No Conflict Close-Out Form execution date.
3. Each Design of Relocation Acceptance Letter (DRAL) execution date.
4. Each Construction of Relocated Acceptance Letter (CRAL) execution date.
5. Completed As-Constructed delivery date, to or by the Contractor, as applicable.
6. Identification of all changes made since the prior Contractor's Utility Tracking Report.
7. Meeting dates with Utility Owners for each draft Work Order.

### **7.3.4 Utility Work Orders**

The Contractor, Utility Owner, and CDOT, in that order, shall execute a Utility Work Order prior to commencement of any Utility Work. The Contractor may prepare a single Utility Work Order covering more than one Relocation, Betterment, or Requested Relocation with the consent of CDOT and the relevant Utility Owner.

Prior to executing any Work Order, the Contractor and CDOT shall meet with the relevant Utility Owner to negotiate the relevant draft Work Order, including the following:

1. In accordance with the procedures set out in the SUA, the scope of work, the implementation schedule (including any applicable seasonal work restrictions), and any

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exhibits.

2. In accordance with the paragraphs below, cost and payment responsibility.

The costs for work performed by the Contractor under a Utility Work Order for Betterments or Requested Relocations shall be negotiated between the Contractor and the Utility Owner. If the Utility Owner will be reimbursing the Contractor for any costs in connection with Utility Work, the Contractor shall provide a definitive cost estimate to the Utility Owner in accordance with the Utility Owner's standard practice and with the requirements of the SUAs, and shall submit such estimate to CDOT for Acceptance. After Acceptance by the Utility Owner and CDOT, the estimate shall be incorporated into the applicable Work Order. If a Utility Owner is responsible for the payment of any amount of the cost of a Betterment or Requested Relocation pursuant to a Work Order, payment must be made to the Contractor in accordance with the terms of the SUA. CDOT shall not be responsible for the payment of any amount with respect to a Betterment or Requested Relocation other than as expressly provided for in the SUAs or otherwise as agreed by CDOT upon CDOT's execution of the relevant Work Order.

The costs for construction of Utility Relocations within a Utility Owner permanent easement, or any Utility Relocation design work performed by a Private Utilities Owner under a Utility Work Order for each Private Utilities Owner-Relocated Utility, shall be negotiated between the Contractor and the Utility Owner. If the Contractor will be reimbursing a Utility Owner for any eligible costs in connection with Utility Work, the Contractor shall obtain a definitive cost estimate from the Utility Owner in accordance with the Utility Owner's standard practice and with the requirements of the SUAs, and shall submit such estimate to CDOT. After Acceptance by the Contractor and CDOT, the estimate shall be incorporated into the applicable Work Order. If the Contractor is responsible for the payment of any amount of the cost of a Private Utilities Owner-Relocated Utility pursuant to a Work Order, that amount shall be paid to the Utility Owner in accordance with the terms of the SUA.

For Betterments and Requested Relocations, the draft Utility Work Order shall include the direct impact of such Utility Work Order on the performance of the Work and the Contractor's ability to follow the Initial Schedule (or, as the case may be, Revised Initial Schedule), in each case taking into account the Contractor's obligations under Book 1, Section 13.3.1.2, and such other information as CDOT may reasonably require.

On the basis of the meetings held in accordance Section 7.3.2, the Contractor shall submit each draft Utility Work Order to CDOT for Acceptance.

CDOT will provide comments or Acceptance within 14 Days of delivery of the draft Utility Work Order by the Contractor to CDOT, provided that the Contractor shall not execute or otherwise commit to enter into any Utility Work Order or perform any work in respect of any Utility Work without CDOT's prior written Approval of the Final or Revised Utility Work Order.

If CDOT accepts the draft Utility Work Order and accepts both the cost, and the impact of such Utility Work Order on the performance of the Work, if any, then:

1. The Contractor shall submit the accepted Utility Work Order to the Utility Owner and CDOT for Approval and shall itself execute the Utility Work Order, in each case in accordance with the SUA; and

2. The Contractor shall thereafter perform the Utility Work for which it is responsible pursuant to such Utility Work Order as part of the Work.

The Contractor shall revise any Utility Work Order if and when necessary in accordance with the terms of the SUA. Such revised Utility Work Order shall be drafted and executed in accordance with the same procedures applicable to the drafting and execution of the original Utility Work Order under this Section 7.

### **7.3.5 Damage to Utilities Caused by the Contractor**

The Contractor shall be responsible for any damage caused by the Contractor or its Subcontractors, employees, or agents to property, Utilities, structures, or Subcontractors, employees, or agents of the Utility Owners. The Contractor shall immediately notify the affected Utility Owner of any utility damaged by the Contractor during performance of the Work.

Promptly after the Contractor's discovery of such damage, or the Contractor's receipt of notice of any such damage from the Utility Owner or from any other source: (a) the Contractor shall repair the damage to the Utility Owner's satisfaction; or (b) at the Utility Owner's election, the Utility Owner may make such repairs at the Contractor's expense.

Upon receipt of the Utility Owner's invoice, the Contractor shall make payment to the Utility Owner according to the invoice instructions or within 60 Days, whichever timeframe is shorter.

### **7.3.6 Multiple Moves**

The Contractor shall be responsible for all costs incurred by CDOT, the Contractor, or the Utility Owner to subsequently Relocate any Utility already Relocated to accommodate the Project provided the move is at the request of the Contractor and for benefit of the Contractor's work schedule. This includes the temporization of existing Utility lines necessitated by the Contractor's methods to construct and not otherwise planned for as part of the final Relocation Work as shown in the plans.

## **7.4 Utility Coordination**

### **7.4.1 General**

The Contractor shall be responsible for all coordination with the affected Utility Owners to accomplish each Utility Relocation in accordance with the SUAs. In the discharge of its coordination responsibilities, the Contractor shall:

1. Keep Utility Owners fully informed of schedules with regard to Utility Work. The Contractor shall provide to the Utility Owners, as soon as practicable, an estimated schedule for their respective Utility Work and shall notify the Utility Owners of any significant changes to the schedule as soon as practicable.
2. Keep Utility Owners fully informed of changes that affect their Utilities.
3. Consider, to the extent practicable, Utility Owners' needs for the allocation of resources to perform their respective Utility Work in a timely manner.

4. Keep Utility Owners involved in making decisions that affect their Utilities so Utility Owners are able to provide uninterrupted service to their customers, or to be subject to the least interruption practicable as approved by the Utility Owner.
5. Avoid multiple Relocations of the same Private Utility, in accordance with the Contract Documents.
6. Coordinate with Private Utility Owners performing their own Relocations to develop Private Utility schedules.
7. Provide to Private Utility Owners a prioritization of necessary Utility Relocations with the Contractor's schedule.

## **7.4.2 Utility Meetings**

### **7.4.2.1 Between the Contractor and Utility Owners**

In addition to any meetings or negotiations required under Section 7 and Book 2, Section 6, after execution of a Work Order, the Contractor shall schedule regular meetings with the relevant Utility Owner to complete the Utility Work pursuant to the terms of the Work Order. The Contractor shall not unreasonably deny any request by a Utility Owner to meet regarding any Utility Work. The Contractor shall provide CDOT with at least 5 Days prior notice of any meeting with a Utility Owner, in each case which CDOT may attend in its discretion, unless a shorter notice period is agreed by CDOT or is reasonably necessary under the circumstances.

### **7.4.2.2 Between CDOT and the Contractor**

The Contractor and CDOT shall meet as necessary and otherwise as reasonably requested by the other Party to discuss and resolve matters relating to the Utility Work.

The Party proposing a meeting shall provide the other Party with a minimum of 5 Days prior notice of any proposed meetings, unless a shorter notice period is agreed or reasonably necessary under the circumstances.

### **7.4.2.3 Meeting Log/Correspondence**

The Contractor shall maintain a running action and decision log for all Utility Work meetings with Utility Owners and/or CDOT and shall distribute copies of the log to CDOT for Acceptance and, when such meetings were attended by a Utility Owner, to the relevant Utility Owner, not later than 7 Days after each meeting date. The Contractor shall provide copies of all correspondence between the Contractor and any Utility Owner to CDOT for Acceptance no later than 7 Days after delivery of the correspondence. The Contractor shall take meeting minutes for all Utility Work meetings and distribute them to Utility Owners and/or CDOT no later than 7 Days after each meeting date.

## **7.4.3 Review Schedules**

In developing the Project Schedule, the Contractor shall allow appropriate time periods for the performance of all tasks shown on each Work Order.

All schedules and deadlines for the design and construction of Utility Work set forth in the Work Orders shall prevail over any estimated times noted in the Utility Matrix.

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#### 7.4.4 Notices

##### 7.4.4.1 To Utility Owners

To maintain the Project Schedules, the Contractor shall issue all notices in writing to the Utility Owners called for under the SUAs, with copies submitted to CDOT.

Notice shall be given to respective Utility Owners when the Contractor is performing Work adjacent to their Utilities. The Contractor shall be solely responsible for and liable for any damage to any Utilities that are damaged due to the Work.

##### 7.4.4.2 To CDOT

The Contractor shall be responsible for verifying progress of Utility Work performed by the Utility Owner and for notifying CDOT should the Contractor have cause to believe that the Utility Owner will not meet the specified time frame(s) in the Work Order. The Contractor shall provide such written notice to CDOT immediately after discovery.

If the Utility Owner is performing Utility Work that requires a CDOT Utility Permit, the Contractor shall verify to CDOT that the CDOT Utility Permit has been obtained and is being complied with. If the Contractor determines that the Utility Owner does not have the required CDOT Utility Permit, or is in violation of the terms and conditions of such permit, the Contractor shall provide such written notice to CDOT immediately after discovery.

##### 7.4.4.3 To Utility Notification Center of Colorado (UNCC)

The Contractor shall arrange for the UNCC to provide software and training for the Contractor to order call tickets to have utility field locates performed. The Contractor shall contact UNCC to make arrangements for the training. This will allow the Contractor to order its own call tickets online. The contact for UNCC web ticket training in Colorado is Todd Griffith, [tgriffeth@co811.org](mailto:tgriffeth@co811.org), (720) 705-7983 cell.

#### 7.5 Failure of Utility Owner to Cooperate or Timely Perform

The Contractor shall use reasonable efforts to obtain the cooperation of each Utility Owner as necessary for carrying out the Utility Work. The Contractor shall notify CDOT immediately if:

1. The Contractor becomes aware that any Utility Owner is not cooperating in identifying Utilities, negotiating or executing Work Orders, performing or approving any Utility Work, or delivering DRALs or CRALs;
2. A Utility Owner fails to complete design and/or construction work for which it is responsible on or before the deadline established in the applicable Work Order; or
3. Based on the progress made by the relevant Utility Owner, the Contractor believes that there is a possibility that the Utility Owner will not complete the Relocation of an Owner-Relocated Utility or any other Utility Work as required pursuant to a Utility Work Order to the extent and in the manner shown on the Utility Drawings within the time limits set out in the applicable Work Order; and
4. In each case (1), (2), or (3) advising CDOT whether the Contractor has complied in all respects with the requirements of this Section 7, including compliance with the SUA and the Utility Work Order with respect to the relevant portion of the Utility Work.

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After delivery of such notice, the Contractor shall continue to diligently pursue the Utility Owner's cooperation and shall assist CDOT in any attempts to reach a solution through the dispute resolution procedure outlined in the Utility Relocation Agreement.

The Contractor shall document any incurred costs as a direct result of the Utility Owner's failure to cooperate or perform its obligations under the SUA on a weekly basis and show how this failure to perform resulted in a delay to the Contractor's Work schedule and adversely affected the completion deadline. Utility delays shall be handled in accordance with Book 1, Section 6.2 and Book 1, Section 13.5.

In the event that CDOT pursues legal action against a Utility Owner pursuant to Section 43-1-1411, Colorado Revised Statutes, the Contractor shall cooperate as reasonably requested by CDOT in connection with such lawsuits, including having the Contractor's staff and Subconsultants act as witnesses in such lawsuits and providing information, reports, graphs, photos, plans, renderings, and similar materials to CDOT's counsel at the Contractor's expense.

## **7.6 Utility Work Procedure**

### **7.6.1 Utility Agreements**

A checklist for utility agreement instructions is included in the Reference Documents. The CDOT SUAs executed with each Utility Owner whose Utilities are, or may be, affected by the Project will be provided in the Reference Documents as the Agreements are executed. If a specific SUA is not executed by the Proposal Due Date, the Contractor shall utilize the checklist and instructions for that specific Utility Owner, unless directed otherwise by CDOT.

If the Contractor identifies Utility Work that is required from a Utility Owner without an executed SUA, CDOT may enter into a SUA with the Utility Owner. The Contractor shall not be a party to any Standard Utility Agreement and shall not be responsible for negotiating the Agreement. CDOT will be responsible for drafting and negotiating the SUA. The Contractor shall be responsible to coordinate with the Utility Owner as if it had an executed SUA.

### **7.6.2 As-Constructed Plans**

Where the Utility Owner performs the Utility Work, the Utility Owner shall provide As-Constructed plans of the Relocation to CDOT and to the Contractor as soon as practicable, but not later than 90 Days after execution of a CRAL from the Contractor. The As-Constructed plans may be in the form of redlining changes that deviate from the approved DRAL plans or labeling the approved DRAL plans "constructed per plan." The Contractor shall show the Utility As-Constructed information on the final Project As-Constructed Documents for Acceptance.

Where the Contractor performs the Utility Work, the Contractor shall provide As-Constructed plans of the Relocation to CDOT and the Utility Owner as soon as practicable, but not later than 90 Days after execution of a CRAL from the Utility Owner. The As-Constructed plans may be in the form of redlining changes that deviate from the approved DRAL plans or labeling the approved DRAL plans "constructed per plan." The Contractor shall show the Utility As-Constructed information on the final Project As-Constructed Documents for Acceptance.

The Contractor shall plan, schedule, and perform all surveys required to document the location of As-Constructed features on the Project. The Contractor shall deliver the survey data (in a Bentley DGN format compatible with OpenRoads Designer survey format, including x, y and z coordinates) and field notes for CDOT Review upon completion of the survey. Errors and omissions found by CDOT shall be corrected by the Contractor and resubmitted. All Work in completing the As-Constructed survey shall be at the responsibility of the Contractor and shall be completed in accordance with the CDOT *Survey Manual*.

### 7.6.3 Utility Specifications

The Contractor shall consult with Utility Owners for required specifications and as listed in the executed SUAs.

### 7.7 Deliverables

All deliverables shall also conform to the requirements of Section 3 – Quality Management.

At a minimum, the Contractor shall submit the following for review, Approval, and/or Acceptance:

**Table 7-1 Deliverables**

<b>Deliverable</b>	<b>Review, Acceptance or Approval</b>	<b>Schedule</b>
Contractor's Utility Tracking Report and Utility Matrix	Review	Monthly or at CDOT's request
Utility No-Conflict Closeout	Acceptance	No later than 7 Days after delivery
Definitive cost estimate to Utility Owner if Utility Owner will be reimbursing the Contractor for costs in connection with Utility Work shall be submitted to CDOT	Acceptance	As required per Section 7.3.4
Draft Utility Work Order (including costs)	Acceptance	As required per Section 7.3.4
Final or Revised Utility Work Order (including costs)	Approval	As required per Section 7.3.4
Design of Relocation Acceptance Letter (DRAL)	Acceptance	No later than 7 Days after completion of relocation design
Construction of Relocation Acceptance Letter (CRAL)	Acceptance	No later than 7 Days after completion and acceptance of relocation work
Meeting action/decision log	Acceptance	No later than 7 Days after each meeting date
As-Constructed Documents	Acceptance	No later than 90 Days after execution of a CRAL
Meeting minutes	Acceptance	As required per Section 7.4.2



Correspondence between Contractor and any Utility Owner	Review	No later than 7 Days after delivery
Written notices to Utility Owners	Review	As required per Section 7.4.4
Written notice to CDOT of Utility Owner not meeting Work Order time frame	Review	Immediately after discovery
Written notice of Utility Permit violation	Review	Immediately after discovery
Written notice of failure of Utility Owner to carry out the Utility Work	Review	Immediately after discovery

## 7.8 Exhibits

The following exhibits are provided in Reference Documents:

- Exhibit 7-A - Utility No-Conflict Closeout Form
- Exhibit 7-B - Form of Utility Work Order
- Exhibit 7-C - Form of Design of Relocation Acceptance Letter (DRAL)
- Exhibit 7-D - Form of Construction of Relocation Acceptance Letter (CRAL)
- Exhibit 7-E - Form of Buy America Certification
- Exhibit 7-F - Utility Conflict Matrix and Owner Information

**Exhibit 7-A  
Utility No-Conflict Closeout Form**

This Utility No-Conflict Closeout Form (“No-Conflict Form”) is executed by the Utility Owner and the CDOT Contractor in connection with the Region 2 Bridge Bundle Design-Build Project Utility Relocation Agreement (“URA”) entered into by the Utility Owner and CDOT. Unless the context clearly otherwise requires, initially capitalized terms shall have the meaning prescribed to them in the URA.

A fully-executed No-Conflict Form indicates the Parties’ concurrence that, as of the Project plans current at the date of Utility Owner’s execution hereof, no Relocation is required for Utility Owner’s Utility referenced herein. Utility Owner and the CDOT Contractor acknowledge that future modifications to the Project may require Relocation of the referenced Utility in accordance with the URA. Two originals shall be executed and a copy shall be forwarded to CDOT by the CDOT Contractor.

Utility Owner	
Utility Identification No.:	
Location	
Comments (attach pages as necessary)	

**FOR UTILITY OWNER**

By: \_\_\_\_\_  
 Name:  
 Title:

Date: \_\_\_\_\_

**FOR CDOT CONTRACTOR**

By: \_\_\_\_\_  
 Name:  
 Title:

Date: \_\_\_\_\_

If this form is not signed by the Utility Owner, the Utility Owner shall state below its basis for disagreement with the No-Conflict designation for this Utility:

(Attach pages as necessary)

**Exhibit 7-B  
Form of Utility Work Order**

Utility Owner: _____	
Utility Identification No.: _____	
Work Order No.: _____	Work Order Revision No.: _____
Work Breakdown Structure No.: _____	
<b><u>LOCATION:</u></b>	
<b><u>DESCRIPTION:</u></b>	
<b><u>OPERATING RIGHTS:</u></b>	
<b>DESIGN</b>	
	<input type="checkbox"/> No Design Required
Performing Party	<input type="checkbox"/> Contractor <span style="margin-left: 150px;"><input type="checkbox"/> Owner</span>
Responsible Party	<input type="checkbox"/> Contractor <span style="margin-left: 150px;"><input type="checkbox"/> Owner</span>
Contractor pays Owner	Lump Sum: _____ Actual Cost Not to Exceed: _____
Owner pays Contractor	Lump Sum: _____ Actual Cost Not to Exceed: _____
Comments	_____
<b>CONSTRUCTION</b>	
	<input type="checkbox"/> No Construction Required
Performing Party	<input type="checkbox"/> Contractor <span style="margin-left: 150px;"><input type="checkbox"/> Owner</span>
Responsible Party	<input type="checkbox"/> Contractor <span style="margin-left: 150px;"><input type="checkbox"/> Owner</span>
Contractor pays Owner	Lump Sum: _____ Actual Cost Not to Exceed: _____
Owner pays Contractor	Lump Sum: _____ Actual Cost Not to Exceed: _____
Comments	_____
<b>CONSTRUCTION INSPECTION</b>	
	<input type="checkbox"/> No Construction Inspection Required
Performing Party	<input type="checkbox"/> Contractor <span style="margin-left: 150px;"><input type="checkbox"/> Owner:</span>
Responsible Party	<input type="checkbox"/> Contractor <span style="margin-left: 150px;"><input type="checkbox"/> Owner:</span>
Contractor pays Owner	Lump Sum: _____ Actual Cost Not to Exceed: _____
Owner pays Contractor	Lump Sum: _____ Actual Cost Not to Exceed: _____
Comments	_____
<b>PROPERTY ACQUISITION</b>	
	<input type="checkbox"/> No Property Acquisition Required
Performing Party	<input type="checkbox"/> Contractor <span style="margin-left: 150px;"><input type="checkbox"/> Owner:</span>
Responsible Party	<input type="checkbox"/> Contractor <span style="margin-left: 150px;"><input type="checkbox"/> Owner:</span>
Contractor pays Owner	Lump Sum: _____ Actual Cost Not to Exceed: _____
Owner pays Contractor	Lump Sum: _____ Actual Cost Not to Exceed: _____
Comments	_____

**SCHEDULE (THIS WORK ORDER ONLY)**

**Design**

**Construction**

Start Date: \_\_\_\_\_ Start Date: \_\_\_\_\_

Completion Date: \_\_\_\_\_ Completion Date: \_\_\_\_\_

Comments: \_\_\_\_\_

**CHANGE ORDER**

If this section is signed by the CDOT representative, then this Work Order will function as a Change Order.

\_\_\_\_\_  
CDOT Representative

\_\_\_\_\_  
Date

**WORK ORDER TERMS AND CONDITIONS**

SCOPE OF WORK ORDER. This Work Order is entered into by and among Utility Owner and CDOT, and, where applicable, the CDOT Contractor in order to implement in part the URA identified herein, as the same may be amended from time to time, and which is incorporated herein by this reference. All work undertaken pursuant to this Work Order shall be performed in accordance with the requirements of the URA, which shall govern to the extent of any conflict between its terms and the terms of this Work Order. Relocation Standards specifically identified in the URA are incorporated herein by this reference. Unless otherwise defined herein, all initially capitalized terms and conditions shall have the meaning prescribed to them in the URA.

WORK ORDER ATTACHMENTS. This Work Order and any attachments hereto contain information specific to the Relocation to be performed hereunder. Attached and/or referenced Relocation Standards are incorporated herein by this reference and shall be considered a part of this Work Order. This Work Order governs only the Utility Work specifically identified herein and shall be conclusive as to all matters represented herein.

ORDER OF EXECUTION. This Work Order shall be executed first by Utility Owner, then by the CDOT Contractor (if applicable) and finally by CDOT.

IN WITNESS WHEREOF, CDOT, the Utility Owner, and where applicable, the CDOT Contractor have executed this Work Order, which shall be effective as of the date of the CDOT's signature.

**Utility Owner:** \_\_\_\_\_

**By:** \_\_\_\_\_

**Print Name:** \_\_\_\_\_

**Title:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**CDOT Contractor:** \_\_\_\_\_

**By:** \_\_\_\_\_

**Print Name:** \_\_\_\_\_

**Title:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**CDOT:** \_\_\_\_\_

**By:** \_\_\_\_\_

**Print Name:** \_\_\_\_\_

**Title:** \_\_\_\_\_

**Date:** \_\_\_\_\_

Utility Identification No.:

SECTION A		SCOPE	
SECTION B		REQUIRED PERMITS	
		Permit Type	Permit Responsibility
		_____	_____
		_____	_____
		_____	_____
		_____	_____
		_____	_____
SECTION C		LIST OF ATTACHMENTS	
		<input type="checkbox"/> Owner Design Sheet	_____
		<input type="checkbox"/> Project Design Sheet	_____
		<input type="checkbox"/> Cost Estimate	_____
		<input type="checkbox"/> Property Rights	_____
		<input type="checkbox"/> Other:	_____

**EXHIBIT 7-C**

**FORM OF DESIGN OF RELOCATION ACCEPTANCE LETTER**

This DESIGN OF RELOCATION ACCEPTANCE LETTER (“DRAL”) is executed by the non-Designing Party in connection with the Region 2 Bridge Bundle Design-Build Project Utility Relocation Agreement (URA), entered into by the Utility Owner and CDOT. Execution of this DRAL indicates the non-Designing Party’s acceptance and approval of the design of the Relocation, as attached to this DRAL, performed and completed by the Designing Party. Unless otherwise defined herein, initially capitalized terms shall have the meaning prescribed to them in the URA. Two originals shall be executed and a copy shall be forwarded to CDOT by the CDOT Developer.

Utility Owner: \_\_\_\_\_

Utility Identification No.: \_\_\_\_\_

Work Order No.: \_\_\_\_\_ Work Order Date: \_\_\_\_\_

Work Order Rev. No.: \_\_\_\_\_ Rev. Date: \_\_\_\_\_

Designing Party: \_\_\_\_\_

Now, therefore, the non-Designing Party executes this DRAL to indicate that it has reviewed the design of the Relocation completed by the Designing Party and has found the design of the Relocation to have been designed in accordance with the non-Designing Party’s Relocation Standards duly provided to the Designing Party:

<p><b>Non-Designing Party</b></p> <p>By: _____</p> <p>Name: _____</p> <p>Title: _____</p> <p>Date: _____</p>
--

The non-Designing Party declines execution of this DRAL at this time for the following reasons:

(attach pages as necessary)

<p><input type="checkbox"/> The Constructing Party may proceed with construction of the Relocation on the Project Site.</p> <p>_____</p>
--

**Exhibit 7-D**

**FORM OF CONSTRUCTION OF RELOCATION ACCEPTANCE LETTER**

This CONSTRUCTION OF RELOCATION ACCEPTANCE LETTER ("CRAL") is executed by the non-Constructing Party in connection with the Region 2 Bridge Bundle Design Build Project Utility Relocation Agreement (URA) entered into by the Utility Owner and CDOT. Execution of this CRAL indicates the non-Constructing Party's inspection and acceptance of the construction of the Relocation performed and completed by the Constructing Party. Unless otherwise defined herein, initially capitalized terms shall have the meaning prescribed to them in the URA. Two originals shall be executed and a copy shall be forwarded to CDOT by the CDOT Developer

The construction of the Relocation inspected and accepted by execution hereof is described below:

Utility Owner: \_\_\_\_\_

Utility Identification No.: \_\_\_\_\_

Work Order No.: \_\_\_\_\_ Work Order Date: \_\_\_\_\_

WO Revision No.: \_\_\_\_\_ WO Revision Date: \_\_\_\_\_

Constructing Party: \_\_\_\_\_

Now, therefore, the non-Constructing Party executes this CRAL to indicate that it has inspected the construction of the Relocation completed by the Constructing Party and has found the construction of the Relocation has been performed in accordance with the Relocation Plans:

<p><b>NON-CONSTRUCTING PARTY</b></p> <p>By: _____</p> <p>Name: _____.</p> <p>Title: _____.</p> <p>Date: _____</p>
---

The non-Constructing Party declines execution of this CRAL at this time for the following reasons:

(attach pages as necessary)

**Exhibit 7-E**  
**Form of Buy America Certification**

**(To be signed by authorized signatory(ies) of Utility Owner**

The undersigned certifies that only domestic steel and iron will be used for the construction portion of the Project.

To be considered domestic, all steel and iron used and all products manufactured from steel and iron must be produced in the United States and manufacturing processes, including application of a coating, for these materials must occur in the United States. Coating includes all processes, which protect or enhance the value of the material to which the coating is applied. This requirement does not preclude a minimal use of foreign steel and iron materials, provided the cost of such material does not exceed 0.1 percent of the total of the total contract cost or \$2,500, whichever is greater.

Signature: \_\_\_\_\_

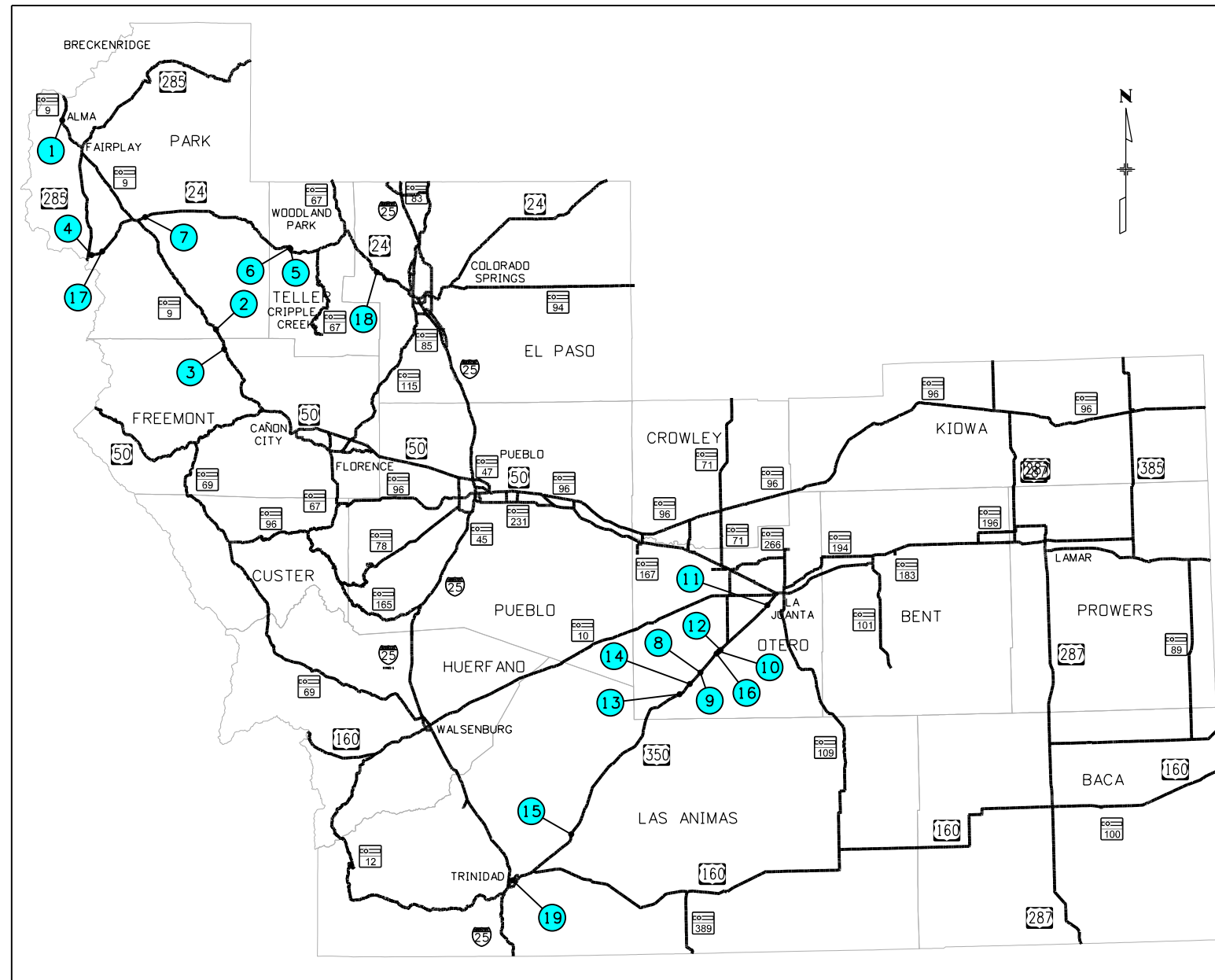
Date: \_\_\_\_\_

Title: \_\_\_\_\_



# DEPARTMENT OF TRANSPORTATION STATE OF COLORADO

## REQUEST FOR PROPOSAL DOCUMENTS REGION 2 BRIDGE BUNDLE



**PROJECT LOCATION MAP**  
0' 100,000' 200,000' 300,000'

### INDEX OF SHEETS

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ROADWAY PLAN AND PROFILE SHEETS  
STRUCTURE GENERAL LAYOUT  
ROADWAY CROSS SECTIONS
- ② STR. J-14-C - SH 9 MP 20.107  
TYPICAL SECTIONS  
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TYPICAL SECTIONS  
ROADWAY PLAN AND PROFILE SHEETS  
STRUCTURE GENERAL LAYOUT  
ROADWAY CROSS SECTIONS
- ⑮ STR. O-19-D - US 350 MP 10.289  
TYPICAL SECTIONS  
ROADWAY PLAN AND PROFILE SHEETS  
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ROADWAY CROSS SECTIONS
- ⑯ STR. M-21-I - US 350 MP 56.454  
TYPICAL SECTIONS  
ROADWAY PLAN AND PROFILE SHEETS  
STRUCTURE GENERAL LAYOUT  
ROADWAY CROSS SECTIONS
- ⑰ STR. I-13-H - US 24 MP 229.468  
TYPICAL SECTIONS  
ROADWAY PLAN AND PROFILE SHEETS  
STRUCTURE GENERAL LAYOUT  
ROADWAY CROSS SECTIONS
- ⑱ STR. I-17-X - US 24 MP 295.45  
TYPICAL SECTIONS  
ROADWAY PLAN AND PROFILE SHEETS  
STRUCTURE GENERAL LAYOUT  
ROADWAY CROSS SECTIONS
- ⑲ STR. P-19-G MINOR - SH 239 MP 1.74  
TYPICAL SECTIONS  
ROADWAY PLAN AND PROFILE SHEETS  
STRUCTURE GENERAL LAYOUT  
ROADWAY CROSS SECTIONS

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 Horiz. Scale: Vert. Scale: As Noted  
  
 8000 South Chester St.  
 Suite 500  
 Centennial, CO 80112  
 Phone: 303-799-6806

Sheet Revisions		
Date:	Comments	Init.

Colorado Department of Transportation  
 5615 Wills Blvd  
 Pueblo, CO 81008  
 Phone: 719-546-5753  
 FAX: 719-546-5402  
  
 Region 2 JLS

As Constructed	
No Revisions:	
Revised:	
Void:	

REGION 2 BRIDGE BUNDLE			
TITLE SHEET			
Designer:	R. HANSON	Structure No.	
Detailer:	R. HANSON	M.P.	
Sheet Subset:	ROADWAY	Subset Sheets:	1 of 1

Project No./Code	
Sheet Number	

## 23558 - Region 2 Bridge Bundle Design Build Project

### Contact Information and Location of Conflicts for Owners


<p><b>C-02 TELEPHONE</b>  CENTURYLINK  US 350, MP 10.289, STR. O-19-D #15  RELOCATE LINE AND JUNCTION BOX  Robert Tomaselli (719) 733-2252 Robert.Tomaselli@centurylink.com  Tony Hasenack Anthony.Hasenack@Centurylink.com</p>	<p><b>E-03 ELECTRIC</b>  SECPA (Southeast Colorado Power Association)  US 350, MP 57.069, STR M-21-J #10  TEMPORARY RELOCATE DURING CONSTRUCTION – Detour Impact  Anthony Labato (719) 383-1343 Anthonyl@secpa.com</p>
<p><b>C-04 TELEPHONE</b>  CENTURYLINK  US 350, MP 48.744, STR. N-21-F #14  RELOCATE PORTION ON STRUCTURE  Robert Tomaselli (719) 733-2252 Robert.Tomaselli@centurylink.com  Tony Hasenack Anthony.Hasenack@Centurylink.com</p>	<p><b>E-06 ELECTRIC</b>  IREA  US 24, MP 229.468, STR I-13-H #17  RELOCATE PORTION IMPACTED BY SHOO-FLY  Engineering Department (303) 688-3100 ext 5302 engineering@irea.coop</p>
<p><b>E-01 ELECTRIC</b>  SECPA (Southeast Colorado Power Association)  US 350, MP 56.454, STR. M-21-I #16  RELOCATE PORTION IMPACTED BY DETOUR SHOO-FLY  Anthony Labato (719) 383-1343 Anthonyl@secpa.com</p>	<p><b>C-13 TELEPHONE</b>  CENTURYLINK  CO 239, MP 1.74, STR P-19-G MINOR #19  RELOCATE OUT FROM UNDER ROADWAY WORK  Robert Tomaselli (719) 733-2252 Robert.Tomaselli@centurylink.com  Tony Hasenack Anthony.Hasenack@Centurylink.com</p>

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											CONFLICT DATA AND RESOLUTION			
UTILITY ID NO.	UTILITY TYPE	UTILITY OWNER	CARRIER FACILITY			OH/U G	Approx Begin STA and offset	Approx End STA and offset	ENCASEMENT SIZE, MATERIAL, LENGTH	PROPERTY INTEREST  (public ROW, fee ROW, easement, permit, etc.)	DATA SOURCE  (owner maps, field observation, surveyed, pothole)	COMMENTS	Utility in Conflict With:	Proposed Resolution
			SIZE	MATERIAL	LOCATION (HWY, MP, STR.)								(roadway improvements, cuts, fills, bridge, etc.)	(relocate, protect in place, adjust, modify, no action, etc.)
C-01	TELEPHONE	CENTURYLINK			US 350, MP 10.289, STR. O-19-D #15		380+00.15, 65.77' RT.	388+37.00, 64.59' RT.			SURVEYED	UNDERGROUND ALONG EAST ROW	DETOUR SHOO-FLY	PROTECT IN PLACE
C-02	TELEPHONE	CENTURYLINK			US 350, MP 10.289, STR. O-19-D #15		380+00.00, 29.18' LT.	388+37.00, 28.52' LT.			SURVEYED	UNDERGROUND ALONG WEST ROW	ROADWAY	RELOCATE LINE AND JUNCTION BOX
C-03	TELEPHONE	CENTURYLINK			US 350, MP 47.131, STR. N-21-C #13		340+00.00, 65.68' RT.	350+00.00, 84.99 RT.			SURVEYED	UNDERGROUND ALONG ROW	NO IMPACT	NO ACTION
C-04	TELEPHONE	CENTURYLINK			US 350, MP 48.744, STR. N-21-F #14		360+00.00, 37.33' RT.	370+00.00, 38.13' RT.			SURVEYED	UNDERGROUND ALONG ROW AND CROSSING ROAD AND BRIDGE	ROADWAY/BRIDGE	RELOCATE
C-05	TELEPHONE	ABANDONED TELEPHONE LINE			US 350, MP 48.744, STR. N-21-F #14		362+77.36, 75.29' RT.	366+49.03, 55.35' RT.			SURVEYED	ALONG ROW	NO IMPACT	ABANDONED UTILITY
E-01	ELECTRIC	SECPA			US 350, MP 56.454, STR. M-21-I #15		402+24.65, 42.54' LT.	407+94.93, 52.70' RT.			SURVEYED	OVERHEAD TRANSMISSION LINES (CROSSING ROAD)	DETOUR SHOO-FLY	RELOCATE PORTION IMPACTED BY SHOO-FLY
E-02	ELECTRIC	SECPA			US 350, MP 56.454, STR. M-21-I #15		405+29.49, 74.35' LT.	406+43.98, 40.13' LT.			SURVEYED	OVERHEAD TRANSMISSION LINES (OUTSIDE CLEAR ZONE)	DETOUR SHOO-FLY	PROTECT IN PLACE
E-03	ELECTRIC	SECPA			US 350, MP 57.069, STR. M-21-J #10		277+38.90, 41.52' RT.	291+92.74, 54.16' RT.			SURVEYED	OVERHEAD TRANSMISSION LINE (OUTSIDE CLEAR ZONE)	DETOUR SHOO-FLY	TEMPORARY RELOCATE DURING CONSTRUCTION
C-06	TELEPHONE	CENTURYLINK			US 350, MP 57.069, STR. M-21-J #10		287+98.79, 240.13' RT.	291+92.88, 150.74' RT.			SURVEYED	UNDERGROUND ALONG ROW	NO IMPACT	NO ACTION
E-04	ELECTRIC	SECPA			US 350, MP 57.474, STR. M-22-Y #12		320+00.00, 49.60' RT.	330+00.00, 49.81' RT.			SURVEYED	OVERHEAD TRANSMISSION LINES (ALONG EAST ROW)	NO IMPACT	PROTECT IN PLACE
C-07	TELEPHONE	CENTURYLINK			US 350, MP 69.817, STR. M-22-U #11		300+00.00, 45.83' RT.	308+32.22, 35.63' RT.			SURVEYED	OVERHEAD TELEPHONE LINE (ALONG EAST ROW)	NO IMPACT	PROTECT IN PLACE
C-08	TELEPHONE	CENTURYLINK			US 350, MP 69.817, STR. M-22-U #11		308+31.17, 36.29' RT. #11	312+00.00, 40.43' RT.			SURVEYED	UNDERGROUND TELEPHONE (ALONG EAST ROW)	NO IMPACT	NO ACTION
C-09	FIBER OPTIC	CENTURYLINK			US 24, MP 295.45, STR. I-17-X #18		440+14.73, 47.63' RT.	440+21.18, 56.04' LT.			SURVEYED	UNDERGROUND FIBER OPTIC LINE	NO IMPACT	NO ACTION
C-10	TELEPHONE	CENTURYLINK			US 24, MP 227.095, STR. I-13-G #4		150+00.00, 91.94' RT.	160+01.00, 96.07' RT.			SURVEYED	UNDERGROUND TELEPHONE (ALONG EAST ROW)	NO IMPACT	NO ACTION
E-05	ELECTRIC	IREA			US 24, MP 227.095, STR. I-13-G #4		150+00.00, 91.85' LT.	160+00.00, 92.88' LT.			SURVEYED	OVERHEAD TRANSMISSION LINES (ALONG WEST ROW)	DETOUR SHOO-FLY	PROTECT POLES IN PLACE

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 Horiz. Scale: Vert. Scale: As Noted  
  
 8000 South Chester St. Suite 500 Centennial, CO 80112 Phone: 303-799-6806

Sheet Revisions		
Date:	Comments	Init.

Colorado Department of Transportation  
  
 5615 Wills Blvd Pueblo, CO 81008 Phone: 719-546-5753 FAX: 719-546-5402  
 Region 2 JLS


As Constructed	REGION 2 BRIDGE BUNDLE UTILITY MATRIX		Project No./Code
No Revisions:	Designer: D. DYER	Structure No.	
Revised:	Detailer: E. LUEETH	M.P.	
Void:	Sheet Subset: UTILITY	Subset Sheets: 1 of 2	Sheet Number

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												CONFLICT DATA AND RESOLUTION		
UTILITY ID NO.	UTILITY TYPE	UTILITY OWNER	CARRIER FACILITY			OH/UG	Approx Begin STA and offset	Approx End STA and offset	ENCASEMENT SIZE, MATERIAL, LENGTH	PROPERTY INTEREST  (public ROW, fee ROW, easement, permit, etc.)	DATA SOURCE  (owner maps, field observation, surveyed, pothole)	COMMENTS	Utility in Conflict With:	Proposed Resolution
			SIZE	MATERIAL	LOCATION (HWY, MP, STR.)								(roadway improvements, cuts, fills, bridge, etc.)	(relocate, protect in place, adjust, modify, no action, etc.)
E-06	ELECTRIC	IREA			US 24, MP 229.468, STR I-13-H #17		420+00.00, 74.16' LT.	430+00.00, 74.69' LT.			SURVEYED	OVERHEAD TRANSMISSION LINES (ALONG WEST ROW)	DETOUR SHOO-FLY	RELOCATE PORTION IMPACTED BY SHOO-FLY
C-11	TELEPHONE	CENTURYLINK			US 24, MP 229.468, STR I-13-H #17		420+00.00, 43.47' RT.	430+00.00, 61.36' RT.			SURVEYED	UNDERGROUND (ALONG EAST ROW)	ROADWAY/FILL	PROTECT IN PLACE
E-07	ELECTRIC	IREA			US 24, MP 271.691, STR I-15-T #6		204+92.47, 108.73' LT.	205+57.79, 61.05' RT.			SURVEYED	OVERHEAD TRANSMISSION LINES (CROSSING ROAD)	NO IMPACT	PROTECT IN PLACE
G-01	GAS	COLORADO NATURAL GAS			US 24, MP 271.691, STR I-15-T #6		207+85.32, 60.46' RT.	208+26.14, 57.40' LT.			SURVEYED	LOW PRESSURE GAS LINE (CROSSES HCL BUT NOT PROPOSED ROADWAY)	NO IMPACT	NO ACTION
E-08	ELECTRIC	IREA			US 24, MP 271.691, STR I-15-T #6		208+01.47, 71.49' RT.	208+26.32, 60.20' LT.			SURVEYED	OVERHEAD TRANSMISSION LINES (ACROSSES HCL BUT NOT PROPOSED ROADWAY)	NO IMPACT	NO ACTION
E-09	ELECTRIC	IREA			US 24, MP 271.900, STR I-15-AO #5		185+22.04, 30.76' LT.	185+48.00, 81.31' RT.			SURVEYED	OVERHEAD TRANSMISSION LINES (CROSSING ROADWAY)	ROADWAY/FILL	PROTECT IN PLACE, VERIFY VERTICAL CLEARANCE TO LINE
E-17	ELECTRIC	IREA			US 24, MP 271.900, STR I-15-AO #5		185+12.66, 50.61' LT.	185+40.14, 59.62' RT.			SURVEYED	OVERHEAD TRANSMISSION LINES (CROSSING ROADWAY)	ROADWAY/FILL	PROTECT IN PLACE, VERIFY VERTICAL CLEARANCE TO LINE
C-12	FIBER OPTIC	SOUTH PARK TELEPHONE			US 24, MP 240.868, STR H-13-N #7		220+00.00, 45.43' LT.	230+00.00, 46.04' LT.			SURVEYED	UNDERGROUND FIBER OPTIC LINE (ALONG WEST ROW)	ROADWAY/FILL	PROTECT IN PLACE
C-13	TELEPHONE	CENTURYLINK			CO 239, MP 1.74, STR P-19-G MINOR #19		460+00.00, 14.03' LT.	469+00.00, 22.40' LT.			SURVEYED	UNDERGROUND TELEPHONE (ALONG WEST ROW)	ROADWAY/FILL	RELOCATE
E-10	ELECTRIC	SAN ISABEL			CO 239, MP 1.74, STR P-19-G MINOR #19		460+00.00, 30.78' RT.	469+00.00, 28.75' RT.			SURVEYED	OVERHEAD ELECTRIC LINE (ALONG EAST ROW)	ROADWAY/FILL	RELOCATE, 4 POLES IMPACTED BY WORK
E-11	ELECTRIC	SAN ISABEL			CO 239, MP 1.74, STR P-19-G MINOR #19		468+82.65, 17.61' LT.	468+90.36, 28.71' RT.			SURVEYED	OVERHEAD ELECTRIC LINE (CROSSED HCL BUT NOT PROPOSED ROADWAY)	ROADWAY	PROTECT IN PLACE
E-12	ELECTRIC	XCEL			CO 9, MP 71.445, STR. G-12-C #1		100+00.00, 40.08' LT.	113+32.40, 47.78' LT.			SURVEYED	OVERHEAD ELECTRIC LINE (ALONG ROW)	NO IMPACT	PROTECT IN PLACE
C-14	TELEPHONE	CENTURYLINK			CO 9, MP 71.445, STR. G-12-C #1		100+00.00, 40.08' LT.	113+32.40, 47.78' LT.			SURVEYED	OVERHEAD TELEPHONE LINE (ALONG ROW)	NO IMPACT	PROTECT IN PLACE

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 Region 2 JLS

As Constructed	REGION 2 BRIDGE BUNDLE UTILITY MATRIX		Project No./Code
No Revisions:	Designer: D. DYER	Structure No.	
Revised:	Detailer: E. LUETH	M.P.	
Void:	Sheet Subset: UTILITY	Subset Sheets: 2 of 2	Sheet Number

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## 8.0 RIGHT-OF-WAY

This Section 8 includes the requirements for the Right-of-Way (ROW) Work for the Region 2 Bridge Bundle Design Build Project (Project). This Work shall be completed in accordance with the Contract Documents.

### 8.1 CDOT Provided ROW and Contractor Acquisitions

This Project shall be constructed within existing CDOT ROW.

**Contractor Acquisitions** - In the event that the Contractor requests additional ROW acquisition to perform the Work and CDOT Approves such request, the Contractor shall perform all acquisitions in compliance with the requirements of this Section 8 and Book 1. The term “Contractor Acquisitions” is defined as real property or interests needed in addition to the existing CDOT ROW. CDOT must Approve the Contractor request to purchase additional ROW for Approved design changes. The Contractor shall be responsible for completion of all steps in the ROW acquisition process for Contractor Acquisitions, if any, and for condemnations, if needed. If Approved by CDOT the Colorado Attorney General’s Office will file and prosecute all condemnations needed for Contractor Acquisitions.

If the Contractor’s design requires Contractor Acquisitions, the Contractor is required to:

1. Include the cost of all Contractor Acquisitions in the Contract Price.
2. Assume sole responsibility of all costs associated with Contractor Acquisitions, including, but not limited to, the Fair Market Value of the land to be acquired, cost of obtaining any necessary environmental clearances, as required by Section 2.25 of the CDOT *Right of Way Manual* and mitigation, if required; the costs associated with surveying and ROW Plan preparation; the costs associated with obtaining CDOT Chief Engineer Approvals; the costs associated with valuing and negotiating acquisition of the Contractor Acquisitions; condemnation costs and fees; relocation costs; and the costs of improvement demolition.
3. Acquire Contractor Acquisitions for the Project on behalf of CDOT with title reflecting: DEPARTMENT OF TRANSPORTATION, STATE OF COLORADO, whose legal address is 2829 W. Howard Place, Denver, CO 80204.

If the Contractor’s design requires Contractor Acquisitions, the Contractor is not entitled to:

1. Any Change Order for time or money as a result of Site conditions on the ROW (e.g., Recognized Hazardous Materials, Differing Site Conditions, geotechnical issues, Utilities, etc.).
2. Any Change Order for time or money as a result of any delay, inability, or cost associated with such ROW.

### 8.2 Administrative Requirements

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CDOT will retain possession of each parcel and all improvements, if any, made thereon by the Contractor. The Contractor's access and use of the ROW arises solely from the permission granted by the CDOT ROW Manager under the Contract.

### **8.2.1 Acquisition and Relocation Standards**

All ROW acquisition and relocations for Contractor Acquisitions shall be performed in accordance with all applicable federal and State laws, including:

1. The Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (Uniform Act), including regulations promulgated pursuant to the Uniform Act, which appear at Title 49 Code of Federal Regulations (CFR) Part 24, as amended.
2. ROW requirements for design-build projects per Title 23 CFR §710.313.
3. The Colorado Relocation Assistance and Land Acquisition Policies Act, Section 24-56-101, *et seq.*, Colorado Revised Statutes (C.R.S.), as amended.
4. The Colorado Eminent Domain Act, Section 38-1-101, *et seq.*, C.R.S., as amended.
5. CDOT *Right of Way Manual*, as amended.
6. CDOT Policy Directive 1301.0 entitled Transportation Guidelines to Determine Whether Acquisition of Property for a CDOT Highway Project will Serve the Public Interest (PD 1301.0).
7. CDOT's authority to acquire property and to acquire through eminent domain, if necessary, is set forth in Section 43-1-208, 210 and 43-3-106, C.R.S., as amended.
8. All recent changes in CDOT's ROW processes or administration procedures that are in effect, but not yet incorporated into the CDOT *Right of Way Manual*.

### **8.2.2 Status of Right-of-Way**

Properties within CDOT Right of Way must be owned by CDOT in fee simple. The only exception to this is for publicly owned properties or roadways and properties owned by a Railroad or other Governmental Agencies; in such cases, a permanent easement is sufficient. Any additional permanent or temporary ROW for the Project will be acquired by the Contractor. Any additional Contractor Acquisitions are to be determined by the Contractor's design and Approved by CDOT's ROW Manager and authorized by CDOT's Chief Engineer. Relocation is not anticipated for the Project. Embankment cannot be built on any property that CDOT does not have a permanent interest in. TEs shall be restored to existing conditions following completion of construction at each Project segment.

If the Contractor determines that any ROW is needed for the Work, the Contractor shall be responsible for hiring an acquisition consultant Approved by the CDOT ROW Manager to define, value, negotiate, and pay for the acquisition of such. If condemnation is needed to obtain possession of, or resolve acquisition negotiations, for any ROW, the Colorado Attorney General's Office will file and process such condemnations. The Contractor must account for any time delays caused by such condemnations in their schedule.

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The Contractor shall not trespass on private property. If CDOT discovers a trespass, the Contractor shall promptly vacate possession of the private property upon receipt of notice of the trespass from CDOT. If any liability occurs as a result of the trespass, the Contractor shall be responsible for such liability, including indemnifying CDOT for such liability. In the event that trespass occurs, and especially in instances where trespasses persist after receipt of a notice to desist from CDOT, the Contractor shall be liable for liquidated damages.

### **8.2.3 Right-of-Way Manager and Compliance with CDOT *Right-of-Way Manual***

The Contractor shall retain a ROW Manager if CDOT approves Contractor Acquisitions. The Contractor's ROW Manager shall be responsible for all ROW coordination and compliance requirements. The Contractor's ROW Manager shall be certified for both acquisition and relocation services pursuant to the CDOT *ROW Manual* and Approved by CDOT's ROW Manager and shall be on CDOT's approved acquisition consultant list.

The Contractor's ROW Manager shall coordinate all acquisition and relocation activities with CDOT's ROW Manager (or a designee). The Contractor shall execute a certification prior to NTP1 that it has reviewed the current copy of the CDOT *ROW Manual* and will comply with all of the requirements of the CDOT *ROW Manual*.

### **8.2.4 Property Management Plan**

Property Management Plan is not necessary for the Project.

### **8.2.5 Permission to Enter Property**

The Contractor shall secure Permission to Enter Property forms (CDOT Form 730) prior to entering any property outside the ROW for surveying, geotechnical investigation, environmental investigation, and appraisal purposes. It shall be the Contractor's sole responsibility to obtain signed forms from property owners, and the Contractor shall be responsible for any and all damages and liabilities arising from entering and occupying property outside of the ROW. The Contractor shall submit copies of all Permission to Enter Property forms to CDOT for Acceptance prior to entering the property.

Permission to Enter Property is limited to non-invasive activities (typically limited to foot travel, light vehicle travel, or minimally impactful survey work). If entry is needed for destructive or construction Activities, a TE or permanent acquisition (Contractor Acquisitions) acquired in accordance with the ROW acquisition requirements of this Section 8 is necessary.

## **8.3 Acquisition and Relocation Requirements**

### **8.3.1 Request for Right-of-Way**

Should the Contractor determine that Contractor Acquisitions, including but not limited to Fee parcel, Permanent Easements (PEs), Slope Easement, Utility Easements (UE), or TE parcels, are necessary or desirable for the Work, the Contractor shall submit a written request to CDOT's ROW Manager for Approval. If acquisition of both TEs and/or permanent ROW, including, but not limited to, Fee parcels, PEs, and Utility Easements (UE), are requested, the application, Approval, and acquisition requirements of this Section are applicable. Requests

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shall be presented with the Preliminary Design plans and request for ROW will require Approval prior to any RFC Design Approval. Each request shall include the following documentation:

1. Identification of the additional parcel and an explanation of a justification for its need.
2. An illustration of each parcel, superimposed on an aerial photograph, with approximate area of the parcel.
3. A preliminary cost estimate (Chief Engineer’s ROW Cost Estimate, CDOT Form 438) for each parcel that includes separate values for land, improvements, and damages or benefits, if any. A separate cost estimate shall be provided for Utility impacts, relocation (if applicable), survey, ROW Plan preparation, appraisal, and acquisition negotiation.
4. A title commitment report for each parcel, including all supporting documentation, not more than 90 Days old.
5. Any maps, deeds, or other information available to the Contractor that shall expedite the acquisition.
6. Acquisition Stage Relocation Plan if additional ROW acquisition requires occupant or personal property relocation, in accordance with Chapter 5 of the CDOT *Right of Way Manual*.
7. Required environmental reports documenting all required clearances.
8. A certification, in compliance with 23 CFR §710.313(d)(3), that the Contractor’s ROW Manager has reviewed the current copy of the CDOT *Right of Way Manual*.

CDOT’s ROW Manager will Review each Contractor Acquisition request and, if Approved, shall notify the Contractor in writing. CDOT will notify the Contractor of any deficiencies and may request a resubmittal of the request. The Contractor shall promptly correct any deficiencies and resubmit the appropriate documentation.

If Approval is obtained from CDOT for the Contractor to purchase Contractor Acquisitions, the Contractor shall be responsible for creation and implementation of an internal status tracking and Quality Control system for all ROW processes. The Contractor shall submit the status tracking and Quality Control system to the CDOT ROW Manager for Acceptance before implementation. The Contractor’s ROW Manager shall meet with CDOT every two weeks to review the status of the Contractor Acquisitions and relocations, if applicable, and check Quality Control/Quality Assurance as needed, until the completion and CDOT Approval of the Contractor Acquisitions and relocations. An updated copy of the status tracking form shall be provided to the CDOT ROW Manager at the meetings.

In the event that the Contractor requests additional ROW acquisition on Federal Lands to perform the Work and CDOT Approves such request, the Contractor shall perform all acquisitions in compliance with this Section 8, Book 1, and Chapter 11 of the CDOT *ROW Manual*. The acquisition shall be completed in close coordination with the CDOT ROW Manager. The Application for Transportation and Utility Systems and Facilities on Federal Lands, Exhibit 8-A, shall be used if acquisition of Federal Lands is requested and Approved.

### **8.3.2 Right-of-Way Plans**



If the CDOT ROW Manager Approves the request for Contractor Acquisitions, the Contractor may begin the ROW Plans preparation process in compliance with Chapter 2 of the CDOT *Right of Way Manual* and the CDOT *Survey Manual*. The Contractor's Project Survey Coordinator will arrange for title policies for and on behalf of CDOT. The Contractor's Project Survey Coordinator shall perform research and coordinate a field survey (tied to the Primary Control Network), to locate ROW monuments, private land surveyor monuments, and Public Land Survey System monuments to develop an existing property, encumbrance (from title commitments), and ROW model. The Contractor's Project Survey Coordinator shall resolve discrepancies between property boundary locations and the intersection of these boundary lines with the existing and proposed CDOT ROW.

If the additional ROW parcels are TEs only (no PEs or Fee parcels of any kind), TE exhibit(s) may be produced instead of producing a new ROW Plan set. See Section 2.25.10 of the CDOT *Right of Way Manual* for more detail. Any existing survey monuments that may be obliterated or disturbed within or adjacent to TE boundaries shall be replaced/reset at the Contractor's expense (see Book 2, Section 9).

An appropriate environmental clearance, as specified in Book 2, Section 5 - Environmental Requirements, shall be required as a prerequisite for Approval of ROW plans for the additional ROW.

For any acquisition of a permanent type (Fee parcel, PE, SE, UE, etc., as defined in the CDOT *Right of Way Manual*), the Contractor shall prepare a full ROW Plan set. The ROW Plan set shall contain, at a minimum, title sheet, tabulation of properties, land survey control diagram, tabulation of monuments to be set, plan sheet(s), and ownership map. Legal descriptions of parcels and Easements shall be prepared using the above-generated data. After completion of the ROW Plan set and the legal descriptions, a ROW Plan Review (ROWPR) shall be conducted.

After the Contractor incorporates comments and changes from the ROWPR into the ROW Plans, the Contractor shall prepare an authorization packet and submit it to the CDOT Survey Coordinator for Review. Pursuant to Section 2.25.6 of the CDOT *Right of Way Manual*, the authorization packet shall contain (electronic) copies of the ROW Plans; legal descriptions of the parcels and Easements; a memorandum listing individual ownerships requesting authorization of Function 3111 and/or 3109; a Chief Engineer's ROW Cost Estimate (CDOT Form 438); a title commitment for each parcel not more than 90 Days old and the environmental clearance required by Section 2.25 of the CDOT Right of Way Manual. All files shall use the current CDOT file naming conventions.

Approval of the Contractor Acquisitions by the Chief Engineer will require submittal of the authorization packet for the ROW Plans. The Contractor shall prepare the authorization packet for the ROW Plans for submittal to CDOT one week before the Chief Engineer reviews. If modification of these documents are requested by CDOT, the Contractor will promptly make the requested modifications. This lead time allows CDOT to Review and Accept the documents provided prior to their submittal by the CDOT ROW Manager. If the Chief Engineer Approves the Contractor Acquisitions, CDOT will then Approve the ROW Plans. The CDOT ROW Manager will communicate in writing the Chief Engineer resolution Approving the Contractor Acquisitions and CDOT's Approval of the ROW Plans to the Contractor.

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### 8.3.3 Acquisition of Right Of Way

After the Contractor receives written notification of the Chief Engineer resolution, the Contractor shall begin the ROW acquisition process for the Contractor Acquisitions. The Contractor shall conduct all aspects of the ROW process for Contractor Acquisitions in compliance with the CDOT *Right of Way Manual*, any other CDOT ROW procedures and processes, and the Chief Engineer authorization of the Contractor Acquisitions. This required compliance pertains to, and is not limited to, the processes of appraisal, valuation Review and Approval (appraisal Review and fair market value [FMV] preparation is the responsibility of CDOT), acquisition negotiations, and relocation, if needed. For any Fee parcels acquired, the Contractor shall obtain and provide appropriate release documents for any encumbrances affecting the parcels, including but not limited to, releases of deeds of trust, mortgages, Easements, and Liens. If Liens or encumbrances affect PE parcels, the Contractor shall notify CDOT of such Liens and encumbrances, and the Contractor shall be required to take the action requested by CDOT, which may include subordination or release of Liens and encumbrances.

If the Contractor Acquisitions are to be acquired from a landowner with whom CDOT has an unsettled condemnation case, the same appraiser who prepared the appraisal for CDOT's condemnation case shall value the Contractor Acquisitions at the Contractor's expense. If a condemnation of the Contractor Acquisitions becomes necessary, the Contractor shall use the same appraiser for the condemnation case that the Contractor used originally as a basis for the original offer of just compensation, unless otherwise Approved by CDOT. CDOT must Review all value determinations for the Contractor Acquisitions, including, if required, issue a Determination of FMV (Form 930) prior to any offer being made to the landowner. CDOT must Review and Approve all settlements over the amount of the offer to purchase at FMV that are made to the landowner.

Appendix A is provided as a general guideline of the CDOT acquisition process. It describes most tasks of the CDOT acquisition process that the Contractor shall undertake, the entity that is responsible for completion of each task (Contractor or CDOT), and approximate time frames for some of the tasks. Note that, since this is a general guideline, all time frames in Appendix A are approximate and shall not be relied upon by the Contractor for scheduling purposes and completion of required tasks. The actual schedule for Contractor relocations, developed by the Contractor, and the actual time for completion of these tasks may vary dramatically from the approximations in Appendix A or Section 8.

After completion of all Contractor Acquisitions, the Contractor shall prepare and submit to the CDOT ROW Manager all documents and complete files demonstrating compliance with the Federal requirements for each parcel.

### 8.3.4 Utility Easements

Construction of the Project will affect existing Utilities. Most known Easements for existing Utilities and Utilities located to a Quality Level B are in the Reference Documents. If the Contractor determines UE parcels are needed, the Contractor, at its sole cost and expense, shall be responsible for acquiring such additional UEs. Additional UEs shall be added to the ROW Plans.

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The acquisition of additional UEs requires prior CDOT Review. The Contractor shall conduct the acquisition of additional UEs in compliance with this Section 8.3.

### **8.3.5 Relocation**

If Contractor Acquisitions require occupant or personal property relocation, such relocation shall be conducted in compliance with Chapter 5 of the CDOT *Right of Way Manual*. Appendix B is provided as a general guideline of the CDOT relocation process. It describes most tasks of the CDOT relocation process that the Contractor shall undertake, the entity that is responsible for completion of each task (Contractor or CDOT), and approximate time frames for some of the tasks. Note that, since this is a general guideline, all time frames in Appendix B are approximate and shall not be relied upon by the Contractor for scheduling purposes and completion of required tasks. The actual schedule for Contractor relocations, developed by the Contractor, and the actual time for completion of these tasks may vary dramatically from the approximations in Appendix B or Section 8. The Contractor shall be fully responsible for developing and meeting the actual relocation schedule. If an acquisition displaces an occupant, the Contractor is advised that the relocation process is lengthy and should be prioritized. CDOT does not anticipate a need for relocations on this project.

### **8.3.6 Condemnation**

If the Contractor cannot reach an agreement with a landowner for the acquisition of the Contractor Acquisitions, the Contractor may request in writing that CDOT acquire the additional ROW through condemnation proceedings. The Contractor shall prepare the required documentation for CDOT Chief Engineer Review and Approval as required by PD 1301.0. The condemnation request shall include a certified check payable to the Clerk of the District Court of the appropriate county in the amount of the required condemnation filing fee and Approved FMV or waiver valuation.

The Contractor must work with CDOT's ROW Manager to establish a realistic schedule for filing condemnations, and setting and holding immediate possession hearings. It usually takes at least four months from the date of submission of a condemnation request file to the Colorado Attorney General's Office for a condemnation action to be filed and an immediate possession hearing to be set and held. The Contractor shall not enter any properties until notified in writing that legal possession has been obtained. If a settlement is negotiated with a property owner after the filing of a condemnation, the Contractor will be consulted on the settlement; however, CDOT shall have authority to decide whether to accept or reject the settlement. If CDOT Accepts the settlement, the Contractor shall pay the full amount of the settlement. If a valuation trial is held, the Contractor shall be responsible for payment of the full amount of the valuation trial award, including all interest, costs, and attorneys' fees per Section 38-1-101, et seq., C.R.S., as amended.

If there are any time delays as a result of condemnation proceedings, all costs associated with such time delays shall be borne by the Contractor. The Contractor may be required to provide personnel for pre-trial and court testimony for each condemnation request.

### **8.3.7 Contractor Possession of Acquired Properties**

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After each parcel of Contractor Acquisitions is acquired, the Contractor shall submit a complete parcel acquisition file, which shall include, but not be limited to, copies of offer letters, FMV determinations or waiver valuations, fully executed Easement documents and/or agreements, the negotiator’s signed diary, a copy of the payment, and a statement (CDOT Form 444) signed by the property owner acknowledging receipt of payment in full. If relocation is applicable, all required relocation forms shall be organized and submitted in a separate file. Parcel acquisition and relocation files shall be submitted to CDOT ROW Manager for Acceptance no later than 2 Working Days following payment to the landowner or displaced individual. The Contractor shall not access or take possession of any requested ROW parcel for construction until CDOT provides written Acceptance. CDOT will provide Contractor with a decision on a Contractor’s request for possession within 2 Days of the Contractor’s request.

## **8.4 Construction Requirements**

### **8.4.1 Restoration of Property and Landscape**

TEs are temporary rental of property. At the end of the rental period, property occupied by the Contractor under a TE shall be returned to the landowner in the same condition it was in prior to taking possession. If not purchased in the acquisition, the Contractor shall, at its sole cost and expense, repair and/or replace or restore any damage to TE property that may occur as a result of the Contractor’s occupancy, to a condition equal to or better than that which existed prior to the damage. Restoration may include, but is not limited to, repair, replacing in kind, rebuilding, or replanting. Such restoration shall be completed prior to the termination date of the TE rental term.

### **8.4.3 Protection of Property**

Once the CDOT ROW Manager provides written authorization to access property, in accordance with the requirements herein, the Contractor shall manage and minimize losses to the property in accordance with the requirements of Book 2, Section 18 - Maintenance during Construction. This shall include securing all buildings and structures and the installation of temporary chain-link security fencing sufficient to contain animals, people, etc., and prevent unauthorized entry or trespassing of the property. The temporary fencing shall be installed prior to removing any ROW fencing or sound barrier in place within the Project limits.

### **8.4.4 Prohibition Against Coercion, Impairment of Safety, and Inconvenience of Displaced Occupants Still in Occupancy**

In compliance with 23 CFR §710.313(d)(3), CDOT may establish hold off zones around occupied properties whose occupants are being displaced by a ROW acquisition, but have not vacated the premises. If such zones are established, no construction-related activity will be allowed within the hold off zone until CDOT’s ROW Manager provides written authorization in accordance with section 8.2.

In compliance with 23 CFR §710.313(d)(4), adequate access shall be provided to occupied properties whose occupants are being displaced by a ROW acquisition, but have not vacated the premises, to ensure emergency and personal vehicle access.

In compliance with 23 CFR §710.313(d)(5), utility service must be available to all to occupied properties whose occupants are being displaced by a ROW acquisition, but have not vacated the premises, at all times prior to and until relocation is completed.

**In compliance with 23 CFR §710.313(d)(6), open burning should not occur within 305 meters (1,000 feet) of occupied properties whose occupants are being displaced by a ROW acquisition, but have not vacated the premises.**

## 8.5 Deliverables

At a minimum, the Contractor shall submit the following to CDOT for review, Approval, and/or Acceptance:

Deliverable	Review, Acceptance or Approval	Schedule
Certification of Review of ROW Manual	Acceptance	Prior to NTP1
Permission to Enter Property form (Form 730)	Acceptance	Prior to entering private property
Contractor's formal request for Approval to acquire Contractor Acquisitions	Approval	As needed
Right-of-Way Plans for Contractor Acquisitions and all documents required for Authorization of Contractor Acquisitions	Review, Approval by Chief Engineer	Two weeks after submittal by Contractor (one package of all, not individual requests)
Appraisals or valuation waivers for Contractor Acquisitions	Approval	After delivery to CDOT of draft appraisals or waiver valuations
Settlements over the amount of the offer to purchase any Contractor Acquisitions	Approval	After delivery to CDOT of such proposed settlements
Status Tracking and Quality Control system for Contractor Acquisitions	Acceptance	After Chief Engineer Authorization of Contractor Acquisitions
Contractor's formal request for Approval to acquire Utility Easements as part of Contractor Acquisitions	Approval	As needed. If Approved, Approvals and Acceptances required for Utility Easements shall be the steps of the right-of-way process as indicated in 8.2.2 through 8.2.3, as set forth above in this Table 8-1.

Relocation Planning Study (49 CFR §24.205)	Approval	After delivery to CDOT.
For Business Relocations, Reimbursement Requests (49 CFR §§ 24,301, 24,304, 24,305 and Section 24-56- 103, C.R.S.)	Approval	After delivery of each request to CDOT.
For Residential Relocations, Reimbursement Requests (49 CFR §§ 24.301 and 24.401)	Approval	After delivery of each request to CDOT.
For Personal Property Relocations, Reimbursement Requests (49 CFR §24.301)	Approval	After delivery of each request to CDOT.
Contractor’s formal request for condemnation (letter) and required documentation	Review/ Approval by Chief Engineer	Two weeks after submittal by Contractor (one package of all not individual requests)
Parcel Acquisition File with all required documents (for Contractor Acquisitions)	Acceptance	No later than 7 Days following tender of payment to landowner

All deliverables shall also conform to the requirements of Section 3 - Quality Management.

**8.6 Exhibits**

Exhibit 8-A Application for Transportation and Utility Systems and Facilities on Federal Lands

**8.7 Appendices**

Appendix A Steps of the CDOT Right of Way Acquisition Process, Entity Responsible for Completion of Each Step, and Approximate Time Frames

Appendix B Steps of the CDOT Relocation Process, Entity Responsible for Completion of Each Step, and Approximate Time Frames

**APPLICATION FOR TRANSPORTATION AND  
 UTILITY SYSTEMS AND FACILITIES  
 ON FEDERAL LANDS**

FORM APPROVED  
 OMB NO. 0596-0082

FOR AGENCY USE ONLY

NOTE: Before completing and filing the application, the applicant should completely review this package and schedule a preapplication meeting with representatives of the agency responsible for processing the application. Each agency may have specific and unique requirements to be met in preparing and processing the application. Many times, with the help of the agency representative, the application can be completed at the preapplication meeting.

Application Number

Date Filed

1. Name and address of applicant (include zip code)

2. Name, title, and address of authorized agent if different from item 1 (include zip code)

3. Telephone (area code)

Applicant

Authorized Agent

4. As applicant are you? (check one)

- a.  Individual
- b.  Corporation\*
- c.  Partnership/Association\*
- d.  State Government/State Agency
- e.  Local Government
- f.  Federal Agency

\* If checked, complete supplemental page

5. Specify what application is for: (check one)

- a.  New authorization
- b.  Renewing existing authorization No.
- c.  Amend existing authorization No.
- d.  Assign existing authorization No.
- e.  Existing use for which no authorization has been received \*
- f.  Other\*

\* If checked, provide details under item 7

6. If an individual, or partnership are you a citizen(s) of the United States?  Yes  No

7. Project description (describe in detail): (a) Type of system or facility, (e.g., canal, pipeline, road); (b) related structures and facilities; (c) physical specifications (Length, width, grading, etc.); (d) term of years needed; (e) time of year of use or operation; (f) Volume or amount of product to be transported; (g) duration and timing of construction; and (h) temporary work areas needed for construction (Attach additional sheets, if additional space is needed.)

8. Attach a map covering area and show location of project proposal

9. State or Local government approval:  Attached  Applied for  Not Required

10. Nonreturnable application fee:  Attached  Not required

11. Does project cross international boundary or affect international waterways?  Yes  No (if "yes," indicate on map)

12. Give statement of your technical and financial capability to construct, operate, maintain, and terminate system for which authorization is being requested.

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13a. Describe other reasonable alternative routes and modes considered.

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b. Why were these alternatives not selected?

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c. Give explanation as to why it is necessary to cross Federal Lands.

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14. List authorizations and pending applications filed for similar projects which may provide information to the authorizing agency, (Specify number, date, code, or name)

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15. Provide statement of need for project, including the economic feasibility and items such as: (a) cost of proposal (construction, operation, and maintenance); (b) estimated cost of next best alternative; and (c) expected public benefits.

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16. Describe probable effects on the population in the area, including the social and economic aspects, and the rural lifestyles.

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17. Describe likely environmental effects that the proposed project will have on: (a) air quality; (b) visual impact; (c) surface and ground water quality and quantity; (d) the control or structural change on any stream or other body of water; (e) existing noise levels; and (f) the surface of the land, including vegetation, permafrost, soil, and soil stability.

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18. Describe the probable effects that the proposed project will have on (a) populations of fish, plantlife, wildlife, and marine life, including threatened and endangered species; and (b) marine mammals, including hunting, capturing, collecting, or killing these animals.

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19. State whether any hazardous material, as defined in this paragraph, will be used, produced, transported or stored on or within the right-of-way or any of the right-of-way facilities, or used in the construction, operation, maintenance or termination of the right-of-way or any of its facilities. "Hazardous material" means any substance, pollutant or contaminant that is listed as hazardous under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. 9601 et seq., and its regulations. The definition of hazardous substances under CERCLA includes any "hazardous waste" as defined in the Resource Conservation and Recovery Act of 1976 (RCRA), as amended, 42 U.S.C. 6901 et seq., and its regulations. The term hazardous materials also includes any nuclear or byproduct material as defined by the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2011 et seq. The term does not include petroleum, including crude oil or any fraction thereof that is not otherwise specifically listed or designated as a hazardous substance under CERCLA Section 101(14), 42 U.S.C. 9601(14), nor does the term include natural gas.

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20. Name all the Department(s)/Agency(ies) where this application is being filed.

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I HEREBY CERTIFY, That I am of legal age and authorized to do business in the State and that I have personally examined the information contained in the application and believe that the information submitted is correct to the best of my knowledge.

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Signature of Applicant

Date

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Title 18, U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious, or fraudulent statements or representations as to any matter within its jurisdiction.

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APPLICATION FOR TRANSPORTATION AND UTILITY SYSTEMS  
AND FACILITIES ON FEDERAL LANDS

GENERAL INFORMATION  
ALASKA NATIONAL INTEREST LANDS

This application will be used when applying for a right-of-way, permit, license, lease, or certificate for the use of Federal lands which lie within conservation system units and National Recreation or Conservation Areas as defined in the Alaska National Interest Lands Conservation Act. Conservation system units include the National Park System, National Wildlife Refuge System, National Wild and Scenic Rivers System, National Trails System, National Wilderness Preservation System, and National Forest Monuments.

Transportation and utility systems and facility uses for which the application may be used are:

1. Canals, ditches, flumes, laterals, pipes, pipelines, tunnels, and other systems for the transportation of water.
2. Pipelines and other systems for the transportation of liquids other than water, including oil, natural gas, synthetic liquid and gaseous fuels, and any refined product produced therefrom.
3. Pipelines, slurry and emulsion systems, and conveyor belts for transportation of solid materials.
4. Systems for the transmission and distribution of electric energy.
5. Systems for transmission or reception of radio, television, telephone, telegraph, and other electronic signals, and other means of communications.
6. Improved right-of-way for snow machines, air cushion vehicles, and all-terrain vehicles.
7. Roads, highways, railroads, tunnels, tramways, airports, landing strips, docks, and other systems of general transportation.

This application must be filed simultaneously with each Federal department or agency requiring authorization to establish and operate your proposal.

In Alaska, the following agencies will help the applicant file an application and identify the other agencies the applicant should contact and possibly file with:

Department of Agriculture  
Regional Forester, Forest Service (USFS)  
Federal Office Building,  
P.O. Box 21628  
Juneau, Alaska 99802-1628  
Telephone: (907) 586-7847 (or a local Forest Service Office)

Department of the Interior  
Bureau of Indian Affairs (BIA)  
Juneau Area Office  
Federal Building Annex  
9109 Mendenhall Mall Road, Suite 5  
Juneau, Alaska 99802  
Telephone: (907) 586-7177

Department of the Interior  
Bureau of Land Management  
222 West 7th Avenue  
P.O. Box 13  
Anchorage, Alaska 99513-7599  
Telephone: (907) 271-5477 (or a local BLM Office)

National Park Service (NPS)  
Alaska Regional Office  
2525 Gambell Street, Room 107  
Anchorage, Alaska 99503-2892  
Telephone: (907) 257-2585

U.S. Fish & Wildlife Service (FWS)  
Office of the Regional Director  
1011 East Tudor Road  
Anchorage, Alaska 99503  
Telephone: (907) 786-3440

Note - Filings with any Interior agency may be filed with any office noted above or with the Office of the Secretary of the Interior, Regional Environmental Office, P.O. Box 120, 1675 C Street, Anchorage, Alaska 99513.

Department of Transportation  
Federal Aviation Administration  
Alaska Region AAL-4, 222 West 7th Ave., Box 14  
Anchorage, Alaska 99513-7587  
Telephone: (907) 271-5285

NOTE - The Department of Transportation has established the above central filing point for agencies within that Department. Affected agencies are: Federal Aviation Administration (FAA), Coast Guard (USCG), Federal Highway Administration (FHWA), Federal Railroad Administration (FRA).

OTHER THAN ALASKA NATIONAL INTEREST LANDS

Use of this form is not limited to National Interest Conservation Lands of Alaska.

Individual department/agencies may authorize the use of this form by applicants for transportation and utility systems and facilities on other Federal lands outside those areas described above.

For proposals located outside of Alaska, applications will be filed at the local agency office or at a location specified by the responsible Federal agency.

SPECIFIC INSTRUCTIONS  
(Items not listed are self-explanatory)

Item

- 7 Attach preliminary site and facility construction plans. The responsible agency will provide instructions whenever specific plans are required.
- 8 Generally, the map must show the section(s), township(s), and range(s) within which the project is to be located. Show the proposed location of the project on the map as accurately as possible. Some agencies require detailed survey maps. The responsible agency will provide additional instructions.
- 9 10, and 12 - The responsible agency will provide additional instructions.
- 13 Providing information on alternate routes and modes in as much detail as possible, discussing why certain routes or modes were rejected and why it is necessary to cross Federal lands will assist the agency(ies) in processing your application and reaching a final decision. Include only reasonable alternate routes and modes as related to current technology and economics.
- 14 The responsible agency will provide instructions.
- 15 Generally, a simple statement of the purpose of the proposal will be sufficient. However, major proposals located in critical or sensitive areas may require a full analysis with additional specific information. The responsible agency will provide additional instructions.
- 16 through 19 - Providing this information is as much detail as possible will assist the Federal agency(ies) in processing the application and reaching a decision. When completing these items, you should use a sound judgment in furnishing relevant information. For example, if the project is not near a stream or other body of water, do not address this subject. The responsible agency will provide additional instructions.

Application must be signed by the applicant or applicant's authorized representative.

EFFECT OF NOT PROVIDING INFORMATION: Disclosure of the information is voluntary. If all the information is not provided, the application may be rejected.

DATA COLLECTION STATEMENT

The Federal agencies collect this information from applicants requesting right-of-way, permit, license, lease, or certification for the use of Federal lands.

The Federal agencies use this information to evaluate the applicant's proposal.

The public is obligated to submit this form if they wish to obtain permission to use Federal lands.

(For supplemental, see reverse)

SUPPLEMENTAL

NOTE: The responsible agency(ies) will provide instructions	CHECK APPROPRIATE BLOCK	
	ATTACHED	FILED*
<b>I - PRIVATE CORPORATIONS</b>		
a. Articles of Incorporation		
b. Corporation Bylaws		
c. A certification from the State showing the corporation is in good standing and is entitled to operate within the State		
c. Copy of resolution authorizing filing		
e. The name and address of each shareholder owning 3 percent or more of the shares, together with the number and percentage of any class of voting shares of the entity which such shareholder is authorized to vote and the name and address of each affiliate of the entity together with, in the case of an affiliate controlled by the entity, the number of shares and the percentage of any class of voting stock of that affiliate owned, directly or indirectly, by that entity, and in the case of an affiliate which controls that entity, the number of shares and the percentage of any class of voting stock of that entity owned, directly or indirectly, by the affiliate.		
f. If application is for an oil or gas pipeline, describe any related right-of-way or temporary use permit applications, and identify previous applications.		
g. If application is for an oil and gas pipeline, identify all Federal lands by agency impacted by proposal.		
<b>II - PUBLIC CORPORATIONS</b>		
a. Copy of law forming corporation		
b. Proof of organization		
c. Copy of Bylaws		
d. Copy of resolution authorizing filing		
e. If application is for an oil or gas pipeline, provide information required by item "I-f" and "I-g" above.		
<b>III - PARTNERSHIP OR OTHER UNINCORPORATED ENTITY</b>		
a. Articles of association, if any		
b. If one partner is authorized to sign, resolution authorizing action is		
c. Name and address of each participant, partner, association, or other		
d. If application is for an oil or gas pipeline, provide information required by item "I-f" and "I-g" above.		

\* If the required information is already filed with the agency processing this application and is current, check block entitled "Filed." Provide the file identification information (e.g., number, date, code, name). If not on file or current, attach the requested information.

**NOTICE**  
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0596-0082.

This information is needed by the Forest Service to evaluate the requests to use National Forest System lands and manage those lands to protect natural resources, administer the use, and ensure public health and safety. This information is required to obtain or retain a benefit. The authority for that requirement is provided by the Organic Act of 1897 and the Federal Land Policy and Management Act of 1976, which authorize the secretary of Agriculture to promulgate rules and regulations for authorizing and managing National Forest System lands. These statutes, along with the Term Permit Act, National Forest Ski Area Permit Act, Granger-Thye Act, Mineral Leasing Act, Alaska Term Permit Act, Act of September 3, 1954, Wilderness Act, National Forest Roads and Trails Act, Act of November 16, 1973, Archeological Resources Protection Act, and Alaska National Interest Lands Conservation Act, authorize the Secretary of Agriculture to issue authorizations or the use and occupancy of National Forest System lands. The Secretary of Agriculture's regulations at 36 CFR Part 251, Subpart B, establish procedures for issuing those authorizations.

The Privacy Act of 1974 (5 U.S.C. 552a) and the Freedom of Information Act (5 U.S.C. 552) govern the confidentiality to be provided for information received by the Forest Service.

Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Agriculture, Clearance Officer, Stop 7602, 1400 Independence Avenue S.W., Washington DC 20250-7602; and to the Office of Management and Budget, Office of Regulatory Affairs, Desk Officer for Forest Service, Washington, D.C. 20503.

**APPENDIX A  
STEPS OF THE CDOT RIGHT OF WAY ACQUISITION PROCESS, ENTITY RESPONSIBLE FOR COMPLETION OF EACH STEP,  
AND APPROXIMATE TIME FRAMES**

Description of ROW Task	Entity Responsible for Completion of ROW Task	Approximate Time Frame for Completion of ROW Task	Entity Responsible for Review and Approval of ROW Task	Approximate Time Frame for Completion of Review and Approval of ROW Task	Comments
Survey	Contractor	Variable depending on scope 2-4 weeks for smaller surveys, 2-4 months for larger surveys	CDOT Region 2 Survey Unit	2-3 weeks from submission	This is only survey of property boundary and topography needed for development of ROW Plans for Contractor Acquisitions
Delivery of Engineering Design of Improvements Requiring ROW Completed to a Sufficient Level to Ensure that Location, Size and Shape of ROW Parcels Will Not Change as Design is Advanced	Contractor	Variable depending on scope of improve-ments to be designed	CDOT Design Review Team and CDOT Region 2 ROW Manager	Variable depending on scope of improve-ments designed	Completion of sufficient design to this level is a common cause of delay in the ROW plans development process

Description of ROW Task	Entity Responsible for Completion of ROW Task	Approximate Time Frame for Completion of ROW Task	Entity Responsible for Review and Approval of ROW Task	Approximate Time Frame for Completion of Review and Approval of ROW Task	Comments
Appraisal and Appraisal Review	Appraisal: Contractor  Appraisal Review: CDOT	6-8 weeks per appraisal per landowner  1-2 weeks to review an appraisal	CDOT ROW Manager	1-2 weeks to review an appraisal	If the estimated value of the acquisition is \$5,000 or less (unless otherwise approved), a value finding can be prepared by a real estate specialist and an appraisal/appraisal review is not needed. All requests for valuation by a value finding vs. an appraisal must be Approved by CDOT.
Acquisition Negotiation	Contractor	4-6 weeks for the initial negotiation. 2 weeks for a final offer letter. 2 weeks for a last and final offer letter, if given.	CDOT must review and Approve all administrative settlements.	2-4 Days to review and Approve backup document-ation of completed acquisition negotiations	Contractor must hire a certified acquisition agent from the CDOT list and must comply with all CDOT and Federal guidelines.

Description of ROW Task	Entity Responsible for Completion of ROW Task	Approximate Time Frame for Completion of ROW Task	Entity Responsible for Review and Approval of ROW Task	Approximate Time Frame for Completion of Review and Approval of ROW Task	Comments
Condemnation	Colorado Attorney General's Office	At least four months to file a condemnation petition, serve it on the parties, set and hold an immediate possession hearing. Valuation trials can take a year or more from the date of filing the condemnation petition.	Initial condemnation request to be approved by CDOT ROW manager with final approval by CDOT's HQ ROW unit	1-3 weeks for initial request to be approved and sent to Attorney General's office  Condemnation time varies depending on court system.	All offers to purchase must be made in CDOT's name, so the Attorney General's Office is properly authorized to represent the CDOT as the condemning authority in the condemnation proceeding.
Certification that Acquisition was completed in compliance with State and Federal Requirements	Contractor		CDOT Region 2 ROW Manager		

**APPENDIX B  
STEPS OF THE CDOT RELOCATION PROCESS, ENTITY RESPONSIBLE FOR COMPLETION OF EACH STEP, AND  
APPROXIMATE TIME FRAMES**

Description of ROW Task	Entity Responsible for Completion of ROW Task	Approximate Time Frame for Completion of ROW Task	Entity Responsible for Review and Approval of ROW Task	Approximate Time Frame for Completion of Review and Approval of ROW Task	Comments
Relocation Planning Studies Required by 49 CFR §24.205	Contractor	Variable depending on scope 1-2 weeks for smaller studies	CDOT HQ ROW Unit	1-2 weeks from submission	
Relocation Advisory Services Required by 49 CFR §24.205	Contractor	Variable. Typically continuous throughout relocation process.	CDOT Region 2 Acquisition/Relocation Supervisor. Note: Approval of a specific deliverable is not required. Rather this is general oversight.	Generally continuous throughout relocation process.	CDOT Region 2 Acquisition/Relocation personnel can assist with advisory services, as needed.

Description of ROW Task	Entity Responsible for Completion of ROW Task	Approximate Time Frame for Completion of ROW Task	Entity Responsible for Review and Approval of ROW Task	Approximate Time Frame for Completion of Review and Approval of ROW Task	Comments
Provide Displaced Occupants Notice that They Have 90 Days to Vacate the Premises, and Later That They Have 30 Days to Vacate the Premises 49 CFR §24.203	Contractor	The 90-Day notice is provided at the time the written offer to purchase the property is provided to the landowner	CDOT Region 2 Acquisition/Relocation Supervisor. Note: Approval of a specific deliverable is not required. Rather this is general oversight.		90 Days for a displaced occupant to find a replacement property and move into it is the minimum required by law. As a practical matter, that is too short, especially for displaced businesses. It is desirable to lengthen this minimum time frame as much as possible. At least 6 months is a better expectation. The 30-Day notice cannot be provided until possession of the underlining property is obtained.

Description of ROW Task	Entity Responsible for Completion of ROW Task	Approximate Time Frame for Completion of ROW Task	Entity Responsible for Review and Approval of ROW Task	Approximate Time Frame for Completion of Review and Approval of ROW Task	Comments
<u>Business /Farm/Non-Profit Relocation</u> Prepare and Submit Requests for Reimbursement of all Available Business Relocation Monetary Benefits, Including Expenses Incurred Searching for a Replacement Property, 49 CFR §24.301, Moving Expenses, 49 CFR §24.301, Reestablishment, 49 CFR §24.304, or single “In Lieu” payment, 49 CFR §24.305	Contractor	Variable Note: since these are reimburs- able expenses, the displaced occupant must actually incur the expenses before a request for reimbursement can be prepared.	CDOT HQ ROW Unit	2-5 Days per submittal	



Description of ROW Task	Entity Responsible for Completion of ROW Task	Approximate Time Frame for Completion of ROW Task	Entity Responsible for Review and Approval of ROW Task	Approximate Time Frame for Completion of Review and Approval of ROW Task	Comments
<u>Residential Relocation</u> Prepare and Submit Requests for Reimbursement of all Available Residential Relocation Monetary Benefits, Including Replacement Housing Payment, 49 CFR §24.401 and Moving Expenses, 49 CFR §24.301	Contractor	Variable Note: since these are reimburs- able expenses, the displaced occupant must actually incur the expenses before a request for reimbursement can be prepared.	CDOT HQ ROW Unit	5-10 Days per submittal	

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## 9.0 SURVEY

### 9.1 Administrative Requirements

#### 9.1.1 Project Survey Coordinator

The Contractor shall designate a Colorado Registered Professional Land Surveyor as the Project Survey Coordinator. The Project survey coordinator shall be in responsible charge of all Contractor survey Work for the Project. The Contractor's Project Survey Coordinator shall direct and review all survey Work and shall be the point of contact for all survey related Activities. Contractor survey staff shall perform Work under the direct supervision of the Contractor's Project Survey Coordinator.

All survey crew chiefs shall carry business cards that include their name, title, business address, and phone number while engaged in performing survey Work on the Project. These cards shall be offered to any public contacts made during the performance of survey Activities as a means of introduction and point of contact.

#### 9.1.2 Standards

The Contractor shall design and construct the Project in accordance with the requirements of the standards referenced in Book 3 and in this Section 9. The Contractor shall use the latest adopted edition at the time of the Proposal Due Date. The Contractor shall meet all applicable federal, state, and local requirements related to surveys, records, and monuments. It is the responsibility of the Project Survey Coordinator, in responsible charge, to perform all survey work in conformance with the specifications, methods, and tolerances as set forth in the current Colorado Department of Transportation (CDOT) *Survey Manual*, *CDOT Right of Way Manual*, and *CDOT CADD Manual*.

Prior to any field survey Activities, all conventional survey Equipment shall be checked in accordance with the CDOT *Survey Manual* on a National Geodetic Survey (NGS)/National Oceanic and Atmospheric Administration (NOAA) calibrated baseline. In lieu of NGS/NOAA baseline observations, conventional Equipment can be checked and certified by a survey equipment vendor. A certificate of calibration is required from the vendor. Calibration documentation for conventional Equipment shall be submitted to CDOT for Review prior to any field survey Activities.

#### 9.1.3 CDOT Supplied Survey Data

Ground Survey information to be supplied by CDOT is provided in Reference Documents.

The ground survey was performed according to the guidelines for preliminary surveys published in the CDOT *Survey Manual*. The Project Survey Coordinator is responsible for verifying vertical and horizontal tie-ins to existing features. If the Project Survey Coordinator identifies any inaccuracies in CDOT- provided survey information, it shall be the Contractor's responsibility to provide additional surveys, as necessary, to resolve the inaccuracies to complete the Work.

The Contractor shall verify the Vertical Surface (500 ft. minimum Cross sections). Verification shall be submitted to CDOT for review prior to NTP2.

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Changes in conditions at all project segments may occur after the Proposal Due Date that require additional surveys. Survey of said changes are the responsibility of the Contractor at no added cost to the Project.

Any discrepancies in information provided shall be reported to the CDOT Project Manager.

#### **9.1.4 Preservation of Survey Monuments**

The preservation of survey markers and monuments is mandatory and affects all governmental agencies, including CDOT. The Contractor shall notify CDOT as soon as it becomes known that a marker/monument is in a position that will interfere with new construction or with Contractor operations. The marker/monument position shall be accurately preserved prior to disturbing any such marker in accordance with the current *CDOT Survey Manual*. The Contractor shall submit documentation for the preservation or re-monumentation of any survey monument for Acceptance by the agency affected.

#### **9.1.5 Survey Records**

The Contractor's Project Survey Coordinator shall prepare and maintain supporting documentation, including but not limited to field notes, drawings, and calculations for all survey Work on the Project.

Field books shall contain daily records of points set and/or measurements observed. The information recorded shall contain the date, crew members' names, point number, description, staking information, and sketches. If the survey information is collected electronically, information recorded shall be submitted to CDOT in a hard copy format that is intuitive, clear, and related to the supplemental information recorded in the field books. All linear surveys, such as slope stakes and blue tops, shall have the station and offset information related to the measured information. Non-linear surveys shall have sketches relating electronic information, such as point numbers, to the sketch.

All survey records shall conform to the formats shown in the *CDOT Survey Manual*. Such records shall be neat, legible, accurate, and maintained by the Contractor in a neat and orderly manner.

The Contractor's Project Survey Coordinator shall be required to sign and seal all survey documentation in accordance with State law, Section 625 and Section 629 of the current *CDOT Standard Specifications* and the *CDOT Survey Manual*. All survey records, including documentation, shall be submitted to CDOT for Acceptance at the completion of the Work and prior to Final Acceptance.

### **9.2 Design Requirements**

#### **9.2.1 Submittals**

All submittals shall be prepared, reviewed, and submitted in accordance with the requirements set forth in Book 2, Section 3.

#### **9.2.2 Project Control Survey/Networks**

The Project Survey Coordinator shall plan, schedule, and perform all surveys and monumentation necessary to develop, maintain, and supplement the Project control network for the design and construction of the Project in accordance with the *CDOT Survey Manual*. All existing CDOT primary

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control shall be checked and verified prior to use for any survey Activities. If any substantial discrepancies are found, the Project Survey Coordinator shall develop a report showing the discrepancies and immediately submit to CDOT for Review.

If it is determined that any primary control monuments will be disturbed by construction Activities, the Project Survey Coordinator shall establish replacement monuments. Replacement monuments shall be established before the existing primary control monuments are disturbed. All monument material shall be furnished by the Contractor. Within 30 Days of the establishment of the revised Project control network, the Project Survey Coordinator shall submit to CDOT for Review, a Project Control Diagram showing the revised Project control network and shall contain information as required in the CDOT *Survey Manual*.

After Review, the Project Control Diagram shall be signed and sealed by the Project Survey Coordinator.

### **9.2.3 Design Surveys**

The Contractor shall arrange for all supplemental survey information (including Utility locations) necessary to complete the design. Surveying shall be performed in accordance with the CDOT *Survey Manual*. The Project Survey Coordinator shall collect survey data in Bentley OpenRoads formats utilizing CDOT's Terrain Modeling Survey System (TMOSS) coding and configuration. The Contractor shall submit the survey data to CDOT for Review within 30 Days upon completion of the survey. Errors and omissions found by CDOT shall be corrected by the Project Survey Coordinator and the data resubmitted. Traffic control and permits necessary to complete the survey shall be the responsibility of the Contractor.

### **9.2.4 Right-of-Way Survey and Monumentation**

If the Contractor determines that additional ROW or Easements are required, the Contractor shall follow the request for ROW process set forth in Book 2, Section 8. The Project Survey Coordinator shall locate ROW monuments, private land surveyor monuments, and Public Land Survey System monuments, as required, to develop an existing property, encumbrance, and ROW model. The Project Survey Coordinator is responsible for conducting all parcel and Easement (temporary and permanent) staking associated with Contractor Acquisitions.

If the Contractor prepares ROW plans for Contractor Acquisitions, ROW monuments shall be set at a time when they will not be impacted by construction Activities. All Material for ROW monumentation shall be provided by the Contractor. The Project Survey Coordinator shall submit ROW plans to CDOT for Review and Acceptance before parcel/Easement acquisition and before ROW monuments have been set. The Project Survey Coordinator shall sign and seal the ROW Plans and deposit with the appropriate county office. A copy of the signed and sealed ROW Plans shall be submitted to CDOT for inclusion into the survey records.

## **9.3 Construction Requirements**

### **9.3.1 Construction Control Surveys**

The Contractor shall plan, schedule, and perform all surveys and monumentation necessary to maintain and supplement the Project control network for the construction layout of the Work.

### **9.3.2 Construction Layout Surveys**

The Contractor shall plan, schedule and perform all staking and construction layout required for the Work. All survey Work and staking intervals shall be done in accordance with the CDOT Survey Manual.

3D Engineered Construction Surveying (3DECS) is approved for the Project. The Contractor's use of 3DECS shall conform to the requirements set forth in CDOT *Standard Special Provision 625* included in Book 2, Section 20, and the Chapter 6, Section 6.5 (Construction Surveys) of the CDOT *Survey Manual*.

### **9.3.3 Pre-Survey Conference-Construction Survey**

Prior to beginning any construction survey Activities, the Contractor shall hold a Pre-survey Conference - Construction Survey as required in the CDOT *Survey Manual* Section 6.1.6. Any known error or oversight on the plans or specifications shall be discussed at the pre-survey conference.

### **9.3.4 As-Constructed Surveys**

The Contractor shall plan, schedule and perform all surveys required to document the location of constructed features on the Project as required in Section 6.13 of the CDOT *Survey Manual*. The Project Survey Coordinator shall collect as-constructed survey data in Bentley OpenRoads dgn format utilizing CDOT's TMOSS coding, configuration and workspace. The Project Survey Coordinator shall deliver the data and field notes to CDOT for Review and Acceptance upon completion of the survey. Errors and omissions found by CDOT shall be corrected by the Contractor and data resubmitted.

### **9.3.5 ROW Monumentation**

The Contractor shall replace all ROW monumentation lost or destroyed during the progression of the Work. The Contractor shall perform all work as per the CDOT *Survey Manual*.

The Contractor shall submit to CDOT for Acceptance revised ROW monumentation sheets listing all ROW monumentation reset by the Contractor prior to Final Acceptance.

**9.4 Deliverables**

At a minimum, the Contractor shall submit the following to CDOT for review, Approval and/or Acceptance:

<b>Deliverable</b>	<b>Review, Acceptance or Approval</b>	<b>Schedule</b>
Equipment Calibrated baseline check or vendor Equipment certificate and Current calibration documents	Acceptance	Prior to any field survey activities as per CDOT <i>Survey Manual</i> , Section 2.2
Report of any discrepancies in primary control	Review	Discrepancies shall be reported immediately.
Land Survey Control Diagram	Review	Prior to the disturbance of any monument
Verification of the Vertical Surface (500 ft. minimum Cross sections)	Review	Before NTP2
All other surveys and documentation, Survey Records	Review/Acceptance	Survey records may be Reviewed by CDOT at any time during the course of the Work. Acceptance at completion of the Work and Prior to Final Acceptance
Revised Project Control Diagram	Review	Revised Project Control Diagram shall be submitted within 30 Days of the establishment of the revised Project Control Network
Supplemental survey information for design and utility locations	Review	Within 30 Days upon completion of the survey
Right-of-Way plans for Contractor Acquisitions	Review/Acceptance	Before proposed acquisition and Right-of-Way monumentation
Revised ROW monumentation sheets	Acceptance	Prior to Final Acceptance
Documentation/date of the location As-Constructed features on the Project (in OpenRoads TMOSS survey format) and field notes	Review/Acceptance	At completion of the Work and prior to Final Acceptance

All deliverables shall also conform to the requirements of Section 3 - Quality Management.

## 10.0 GEOTECHNICAL AND ROADWAY PAVEMENTS

This section includes the requirements for the geotechnical and Roadway pavements work for the Design Build Project (Project). This work shall be completed in accordance with the Contract Documents

### 10.1 Administrative Requirements

#### 10.1.1 Standards

The Contractor shall design and construct the Project in accordance with the requirements of the standards in the documents listed in Table 10-1 and those referenced in Book 3. The Contractor shall use the latest adopted edition at the time of the Proposal Due Date.

**Table 10-1. Standards**

Author or Agency	Title
American Association of State Highway and Transportation	<i>AASHTOWare Pavement Mechanistic-Empirical Design Software, Version 2.3.1</i>
AASHTO	<i>Load Resistance Factor Design (LRFD) Bridge Design Specifications</i>
AASHTO	<i>Policy on Geometric Design of Highways and Streets</i>
Colorado Department of Transportation (CDOT)	<i>Standard Specifications for Road and Bridge Construction (Standard Specifications)</i>
CDOT	<i>Mechanistic-Empirical (M-E) Pavement Design Manual</i>
CDOT	<i>Field Materials Manual</i>
CDOT	<i>Bridge Design Manual</i>
CDOT	<i>Geotechnical Design Manual</i>
CDOT	<i>M&amp;S Standard Plans</i>

### 10.2 Geotechnical Investigations

The results of geotechnical investigations performed by CDOT are provided in Book 5 - Reference Documents.

The Contractor shall be responsible for any supplemental subsurface investigation necessary to complete the Work. Geotechnical investigations shall comply with the requirements of the CDOT Field Materials Manual, the M E CDOT Pavement Design Manual and any other applicable standards necessary to perform the Work. All supplemental investigations made by the Contractor shall be documented in geotechnical investigation reports of similar format as those referenced geotechnical documents and submitted to CDOT for review and comment within 30 days following completion of the fieldwork. The reports shall be signed and sealed by a Professional Engineer and must be Accepted by CDOT prior to Release for Construction drawings.

If groundwater observation wells are necessary to monitor water level or water quality, it shall

be the Contractor’s responsibility to properly abandon, permit, or renew the permits of these wells in accordance with Colorado State Engineer’s Office (CSEO) requirements.

The minimum depth and frequency of geotechnical borings for subsurface explorations is provided in Table 10-2. Roadway subgrade sampling is required for all pavement areas and shall conform to the *Region Soil Survey Sampling Checklist for Soil Survey of Constructed Roadbeds* presented in Chapter 200 and CP 24-19 of the CDOT *Field Materials Manual*. The soil survey shall be completed prior to beginning construction of the pavement Subbase course, in accordance with Book 2, Section 11.

**Table 10-2 Geotechnical Boring Depth and Minimum Frequency Table**

Exploration Type		Recommended Minimum Number of Borings	Recommended Minimum Boring Depth
Foundations	Drilled Shaft	One per substructure unit < 100 feet width Two per substructure unit > 100 feet width	10 feet into bedrock (N ≥ 50) or 3D below tip elevation.
	Driven Piles		10 feet into bedrock (N ≥ 50) or 20 feet below tip elevation.
	Spread Footing		2B where L < 2B, 4B where L > 2B and interpolate for L between 2B and 4B or 10 feet into bedrock.
	Concrete Box Culvert	One at each end and every 100 feet along axis	3H or 10 feet into bedrock (N ≥ 50).
Wall	Mechanically Stabilized Earth (MSE)/Cast in Place	One at each end and every 200 feet along wall	2H or 10 feet into bedrock (N ≥ 50).
	Tieback Anchor	One in anchorage zone spaced every 200 feet along wall	
	Soil Nail/Ground Nail	One in nail zone 1H from wall every 200 feet along wall	
Pavement Settling		Determined by size and extent of distressed area.	Determined by size and extent of distressed area.
Pavement Heaving			20 feet.
Material Soil Survey	Pavement realignment or widening	One every 1,000 feet along centerline or determined by CDOT.	Minimum of 5 feet below top of proposed pavement elevation or determined by CDOT.
	Cut sections – road widening	One at each end of cut section and every 500 feet or determined by CDOT.	
	Cut sections – new alignment	One at each end of cut section on opposite shoulders. If cut > 20 feet vertical, 1 boring through deepest section of cut on centerline.	
	Embankment Fill > 5 feet New alignment	One every 500 feet with at least one through the greatest thickness of fill.	Borings shall extend at least 2 times the total height of the proposed fill below the base elevation or 5 feet into hard substratum (N>30).

Modified from *Checklists and Guidelines for Review of Geotechnical Reports and Preliminary Plans and Specifications*. Publication No. Federal Highway Administration (FHWA) ED-88-05, Table 2; CDOT *M-E Pavement Design Manual*, Chapter 4; CDOT *Field Materials Manual*, Chapter 200; AASHTO *LRFD Bridge Design Specifications*, Table 10.4.2-1.

D = Diameter    B = Footing Width    H = Wall Height    L = Footing Length    N = Blow count values in 12



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inches

## **10.3 Design Requirements**

### **10.3.1 Submittals**

All submittals shall be prepared, Reviewed, and submitted in accordance with the requirements set forth in Book 2, Section 3.

### **10.3.2 Sulfate Resistant Concrete**

Concrete for foundation elements and pavements shall be designed for Class 2 Severity of Sulfate Exposure unless field sampling and laboratory testing indicates a greater sulfate resistance is required. The Contractor may, at their expense, have a certified laboratory test the subgrade as per the CDOT Field Materials Manual. Testing shall be at the same schedule and frequency as required for preliminary soil survey. The Contractor may propose a different Class of Exposure for the Project based on the test results.

### **10.3.3 Structure Foundation Analysis and Design**

Structure foundation analysis and design shall follow the requirements provided in Book 2, Section 15. Subsurface conditions the existing structure locations have been evaluated by CDOT and are documented in the Preliminary Geotechnical Studies (PGS). Foundation designs for structures may require supplemental geotechnical investigations. Performance and reporting of supplemental geotechnical investigations shall be in accordance with Section 10.2. Foundation analysis and design for Structures shall conform to the AASHTO LRFD Bridge Design Specifications and the CDOT Bridge Design Manual.

Preliminary Foundation Design Reports shall be submitted for Review for each major Structure and minor Structure as required in Book 2, Section 15, for the design of foundations for Bridges, retaining walls, and other Structures. The report shall be in draft form and contain design recommendations and substantiating analysis for foundation elements, lateral earth load parameters, soil corrosivity analysis, seismic design parameters, and any other geotechnical design or analysis parameters necessary to complete the design. The Preliminary Foundation Report shall be submitted to CDOT for Review with the Preliminary Design Plans package.

The Foundation Design Reports shall be revised from the Preliminary Foundation Design Report and be the basis for the load analysis from seismic and earth loads and the basis for the design of foundation elements. Supplemental soil borings required for Structures design shall have been completed.

Foundation Design Reports shall be submitted to CDOT for Acceptance 30 Days following completion of supplemental field Work or with the Release for Construction (RFC) Documents per Book 2, Section 3.

### **10.3.4 Baseline Roadway Pavement Analysis and Design**

#### **10.3.4.1 Pavement Structure**

The Pavement Structure is defined as the combination of one or more of the following courses placed on a subgrade to support and distribute the traffic load to the roadbed:

1. *Subbase*. The layer or layers of specified or selected material placed on a subgrade to support a base course, surface course, or both.
2. *Base Course*. The layer or layers of specified or selected material placed on a subbase or a subgrade to support a surface course.
3. *Surface Course*. One or more layers of a pavement structure designed to accommodate the traffic load. The top layer of the Surface Course resists skidding, traffic abrasion, and the disintegrating effects of climate.

#### 10.3.4.2 Baseline Pavement Design

CDOT has performed the baseline pavement design and Pavement Justification Report(s) to determine the pavement type, thickness, and minimum sub-grade stabilization requirements that will be used on this project. Alternative Technical Concepts (ATCs) involving a reduction in thickness or change in type of the materials included in the pavement section elements; including Hot Mix Asphalt (HMA), Aggregate Base Course (ABC), and minimum subgrade thicknesses, classifications, and support values, will be not considered for this project. The Contractor shall be responsible for all other aspects of pavement design, including the HMA Mix Design, except as otherwise provided for in the Contract Documents.

#### 10.3.5 Detours

The Contractor shall be responsible for designing, providing, and maintaining detour pavements in a safe and serviceable condition, subject to CDOT Approval. The Contractor shall determine the type and thickness of detour pavement through the use of M-E Design software and shall submit a detour pavement design to CDOT for Approval a minimum of 14 Days prior to detour paving. Detour pavements shall be designed in accordance with the CDOT *M-E Pavement Design Manual* and CDOT baseline design parameters. The minimum detour thickness design shall be based on the actual Subgrade strength and traffic loading for the length of time the detour is anticipated to be in service or a minimum 2- year design life in M-E Design, whichever is greater. If the Contractor's detour pavement design requires thicknesses greater than the minimum to serve for the life of the detour pavement, these shall be provided at no additional cost. Where detours will include existing paved Shoulders, the Contractor shall verify that there is sufficient Pavement Structure within the Shoulders to accommodate detour traffic.

#### 10.4 Construction Requirements

Excavation to the profile grades shown on the Reference Drawings, and possible alternative profile grades proposed by the Contractor, may expose transitions in Subgrade Materials. The Contractor shall perform subsurface exploration at Subgrade transition areas to confirm and document thickness of suitable native Subgrade and adequate depth of sub excavation for placement of Subbase Materials.

The Contractor shall construct the Pavement Structure in accordance with the requirements of the Contract Documents.

A minimum of 30 Days prior to the proposed construction of any pavement on the Project, a pre-paving conference shall be conducted. Prior to the pre-paving conference, the Contractor shall present mix designs for Acceptance and construction Paving Quality Control Plans (QCP) for HMA to CDOT for Approval. If the Hot Mix Asphalt will contain Recycled Asphalt Pavement (RAP), a RAP Quality Control Plan shall be submitted at that time as well.

Where it is required to cut existing pavement, the cutting shall be done to a neat work line full depth with a pavement cutting saw or other method as approved by CDOT.

The Contractor shall be responsible for constructing a Safety Edge in accordance with the requirements of the Contract Documents.

Any existing item which is to remain and is damaged as a result of the Contractor’s operation, shall be replaced at the Contractor’s expense.

**10.4.1 HMA Pavement Construction**

The Contractor shall construct the HMA pavement to the thickness requirements for the Project, as set forth in the Table below:

Location	Required Pavement Section Thickness (inches)			Pavement Smoothness Category
	HMA	Aggregate Base Course (Class 6)	Embankment	
US 350	6”	6”	See Section 11	II
US 24	6”	6”	See Section 11	II
CO 9	6”	6”	See Section 11	II
CO 239	6”	6”	See Section 11	II
US 350, US 24, CO 9, and CO 239 Overlay Transitions	1.5”		-	II

The Contractor shall use HMA Grading SX(75)(PG 58-28) for the HMA pavement and comply with the requirements in this Section and the specifications in Section 19 – Modifications to Standard Specifications and Section 20 – Project Special Provisions. HMA mixes shall be subject to AC/Gradation acceptance criteria.

Hot Mix Asphalt shall be constructed in lifts as follows:

Top layer: One, 1 1/2-inch layer of HMA (Grading SX)(75)(PG 58-28)

Bottom Layers: One, 2 1/2-inch layer and one, 2-inch layer of HMA (Grading SX)(75) (PG 58-28)

Tack coats for asphalt products shall be utilized in accordance with the following:

1. Tack coat (diluted) for asphalt products on this Project shall be one part emulsified

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asphalt (slow setting) and one part water. The rate of application shall be 0.1 gallons per square yard.

2. A tack coat of emulsified asphalt (slow setting) is to be applied to improve bond at the following locations:
  - A. Before placing new pavement over existing pavement.
  - B. Along adjacent existing pavement, and other surfaces against which asphalt will be placed.
  - C. Between new pavement courses.

The Contractor shall use HMA (Grading SX) for HMA patching and comply with the specifications in Section 20.

The Contractor shall prepare a Quality Control Plan (QCP) outlining the steps taken to minimize segregation of HMA. This plan shall be submitted to CDOT at the pre-paving conference.

The Contractor shall submit a pavement joint plan and pavement striping plan to CDOT for review and Approval prior to beginning paving operations. Paving shall not occur until these documents have been Approved.

#### **10.4.2 Hot Mix Asphalt Overlays**

The Contractor shall remove 1.5 inches of existing asphalt by planing prior to placing 1.5 inches of HMA for the overlay transitions and tie-in locations. HMA overlays shall be full-width. Overlay transitions to and from structures and all other tie-in locations shall have a thickness taper of 1 inch per 100 feet. Locations with ruts shall be milled to a depth of ½” below the bottom of the ruts. All milled surfaces shall be covered with new HMA within 5 working days.

#### **10.4.3 Smoothness**

Pavement Smoothness Criteria shall be MRI Category II.

#### **10.4.4 Shouldering**

Shouldering Material is required. The shouldering Materials and placement shall conform to the requirements of Project Special Provision – Revision of Sections 304 and 703 Aggregate Base Course (Shouldering Material).

### **10.5 Deliverables**

At a minimum, the Contractor shall submit the following to CDOT for review, Approval or

Acceptance:

<b>Deliverable</b>	<b>Review, Acceptance or Approval</b>	<b>Schedule</b>
Geotechnical investigation reports	Acceptance	Prior to Release for Construction drawings
Supplemental Geotechnical Investigation Reports	Acceptance	To CDOT within 30 Days following completion of field work
Preliminary Foundation Design Reports	Review	As part of the Preliminary Design Plans submittal
Foundation Design Reports	Acceptance	30 Days following completion of supplemental field Work or as part of the Pre-RFC Documents submittals
HMA mix designs	Approval	At the Pre-Paving Conference and at a minimum of 30 days prior to the planned placement of any HMA on the Project
Detour Paving Design	Approval	14 Days prior to beginning detour construction
Paving Quality Control Plan	Approval	At the Pre-Paving Conference and at a minimum of 3 weeks prior to the planned placement of any HMA on the Project
QCP-Outlining the Steps Taken to Minimize Segregation of HMA	Approval	At the pre-paving conference and at a minimum of 30 Days prior to the planned placement of any HMA on the Project.
RAP Quality Control Plan	Approval	At the Pre-Paving Conference and at a minimum of 30 Days prior to the planned placement of any HMA on the Project
Pavement joint plan	Approval	Prior to beginning paving operations
Pavement marking plan	Approval	Prior to beginning paving operations
Concrete mix designs	Approval	30 Days prior to concrete placement

All deliverables shall also conform to the requirements of Section 3 – Quality Management.

## 11.0 EARTHWORK

This section includes the requirements for earthwork for the Project and shall be in accordance with the Contract Documents.

### 11.1 Administrative Requirements

CDOT may issue a Notice to Proceed (NTP) in advance of the NTP2 for the Project.

#### 11.1.1 Standards

The Contractor shall design and construct the Project in accordance with the Contract, including the Project Special Provisions in Book 2, Section 20, Modification of Standard Special Provisions in Book 2, Section 19, requirements of the standards in the documents listed in Table 11-1 and those referenced in Book 3. The Contractor shall use the latest adopted edition at the time of the Proposal Due Date.

**Table 11-1 Standards**

<b>Author or Agency</b>	<b>Title</b>
Colorado Department of Transportation (CDOT)	<i>Standard Specifications for Road and Bridge Construction (Standard Specifications)</i>
American Association of State Highway and Transportation Officials (AASHTO)	<i>Standard Specifications for Transportation Materials and Methods of Sampling and Testing</i>
CDOT	<i>Field Materials Manual (FMM)</i>
CDOT	<i>Geotechnical Design Manual (GDM)</i>
CDOT	<i>Mechanistic-Empirical (M-E) Pavement Design Manual</i>
Federal Highway Administration (FHWA)	<i>Design of Mechanically Stabilized Earth Walls and Reinforced Slopes, Geotechnical Engineering Circular No. 11, Report No. FHWA-NHI-10-024, 2009 (GEC 11)</i>

### 11.2 Design Requirements

#### 11.2.1 Submittals

All submittals shall be prepared, Reviewed, and submitted in accordance with the requirements set forth in Book 2, Section 3-Quality.

#### 11.2.2 Cut and Fill Slope Design

Cut and fill slopes shall be designed with the minimum factors of safety for global stability shown in the *GDM*. Designs that include permanent reinforcing to improve stability shall follow the guidelines in *GEC 11*.

Evaluation of global stability for slopes shall be performed using limit-equilibrium analysis

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methods. Slope grades shall be designed to mitigate potential surface erosion, sloughing and rockfall; and to promote revegetation in accordance with Book 2, Section 17-Landscaping.

The Contractor is responsible for stability of temporary cut and fill slopes, and excavations.

### **11.3 Construction Requirements**

#### **11.3.1 Clearing and Grubbing**

Trees, logs, limbs, stumps, brush, trash, unsuitable materials, and any other items identified under clearing and grubbing shall become the property of the Contractor and shall be disposed of off Site. Clearing and grubbing shall conform to Section 201 of the CDOT *Standard Specifications*.

The Contractor shall conduct a landscape walkthrough, in accordance with requirements of Book 2, Section 17-Landscaping prior to the start of any construction Activities.

#### **11.3.2 Removal of Structures and Obstructions**

The Contractor shall raze, remove, and dispose of all structures and obstructions which are identified in the Basic Configuration for removal, except utilities, structures and obstructions removed under other contractual agreements, and salvable material designated to remain the property of the Department. Removal of structures and obstructions shall conform to Section 202 of the CDOT *Standard Specifications*.

Substructures of existing structures, regardless of location, shall be removed a minimum of two (2) feet below the existing natural ground surface or the proposed ground surface, whichever is at the lower elevation, and a minimum of 5 feet horizontally from proposed underground structures. The limits of removal shall be approved by CDOT prior to completing the work.

Existing pavements shall be removed for the Work. Removals, at a minimum, shall include Surface course, Base and Subbase courses, and unsuitable embankment Materials. Millings produced from removal of asphalt by planing shall become the property of the Contractor. Removal of asphalt mat shall conform to Project Special Provisions Revision of Section 202 - Removal of Asphalt Mat and Revision of Section 202 - Removal of Asphalt Mat (Planing).

#### **11.3.3 Excavations and Embankments**

Where the top of a cut slope meets existing grade, the slope shall be rounded and shaped to blend with the adjacent existing contours to create a pleasing appearance and to reduce erosion.

New embankment shall be benched into the existing slopes, where required.

Where Roadway embankment is retained by structurally designed walls (retaining walls), the retained embankment and reinforced fill Material properties shall be compatible with the soil parameters used in design of the walls. This shall apply to both externally stabilized and internally stabilized wall systems.

#### **11.3.4 Temporary Roads and Detours**



Detour submittals shall be as stated in Book 2, Section 10–Geotechnical and Pavements.

Temporary roads shall be designed and constructed to minimize disturbance to existing vegetation and shall be restored to the original contours or to new contours as shown on the restoration plans. Detours shall be obliterated and the alignments restored when they will no longer be used. Restoration of temporary roads and detour sites shall include stabilization, seeding and planting as required by Book 2, Section 5-Environmental, and Book 2, Section 17-Landscaping.

### **11.3.5 Material Requirements**

Except as required below, embankment material utilized for construction shall consist of materials meeting AASHTO classification A-1-a, A-1-b, or A-2-4 when classified in accordance with AASHTO M 145, and shall not contain Reclaimed Asphalt Pavement (RAP) materials in any percentage.

Materials generated on-site that do not meet AASHTO classification A-1-a, A-1-b, or A-2-4 when classified in accordance with AASHTO M 145 may be used on fill slopes and embankment areas outside of the roadway prism (See Section 101.65 of the Standard Specifications) as designated in the plans or as approved by the Engineer.

### **11.3.6 US 350, US 24, CO 9, and CO 239 Roadways**

The top two feet of subgrade immediately under the proposed Pavement Structure on all newly constructed composite pavements shall have a minimum resistance value (R-value) of 40 when tested by the Hveem Stabilometer and shall consist of A-1-a, A-1-b or A-2 material when classified in accordance with AASHTO M 145. The minimum horizontal limits for this material shall be the outer limits of the Pavement Structure, including shoulders and curb and gutter, plus two feet on each side.

The Contractor shall utilize the soils information included in the Reference Documents and conduct a supplemental soil survey to confirm/ascertain whether the existing roadway soil satisfies the above conditions if it is desired to re-use the on-site materials in the “roadway prism”. If the on-site materials are re-used, the material will be tested as stated in the CDOT Field Materials Manual during construction. This supplemental soil survey shall conform to the requirements as stated in the CDOT Field Materials Manual. Test holes are required at least every 1,000 feet. The Contractor shall provide any additional mitigation required as a result of the supplemental soil survey.

The results of the supplemental soil survey, along with any additional mitigation measures required, shall be submitted to CDOT for Approval before any embankment, aggregate base course, pavement and pavement related Work commences. The above information shall be submitted in a report format that clearly and concisely describes the existing soil conditions, delineates areas needing additional mitigation, and defines the required mitigation measures. The report shall include a soil profile, boring log, and the test results and shall be signed and sealed by a Professional Engineer.

All Work shall be conducted per the CDOT M-E Pavement Design Manual and the CDOT Field Materials Manual.

Alternative subgrade treatment shall be submitted to CDOT for Approval before any embankment, aggregate base course, pavement, and pavement related Work commences.

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### 11.3.7 Compaction Requirements

Depth of moisture-density control for this Project shall be as follows:

1. Full depth of all embankments
2. Six (6) inches for bases of cuts and fills unless otherwise specified
3. Twelve (12) inches underneath the proposed pavement section (pavement/base course/soil)
4. Compaction shall comply with (AASHTO) T-180 or T-99 testing procedures per Sections 203, 206, 304, and 603.

### 11.3.8 Reuse of Materials

The Contractor is allowed to use broken concrete that is less than 6 inches in maximum dimension or broken asphalt that is less than 6 inches in maximum dimension for embankment material provided it is placed in accordance with Section 203.06 of the Standard Specifications. Broken concrete or asphalt less than 6 inches in maximum dimension will not be allowed to be used within the top 5 feet of embankment material immediately below the proposed Pavement Structure or as ABC within the Pavement Structure

Inclusion of recycled asphalt will not be allowed in the embankment fill.

The Contractor shall not dispose of broken concrete greater than 6 inches in maximum dimension or asphalt greater than 6 inches in maximum dimension within the Project limits.

With Approval of CDOT, the existing subgrade may remain in place if it meets all other requirements herein, before any embankment, aggregate base course, pavement and pavement related Work commences.

### 11.3.9 Available Potential Source of Material

Potential sources of material have not been identified for this Project.

### 11.3.10 Geotextiles

Geotextiles shall meet the requirements for Geotextile Class I (Per AASHTO M 288) and be approved for stabilization and separation applications. The geotextile shall be selected from the New York State Department of Transportation list of approved products available at: <https://www.nysdot.gov/divisions/engineering/technical-services/technical-services-repository/alme/pages/470-1a.html>.

Locations requiring geotextile installation shall be as Approved by CDOT before any embankment, aggregate base course, pavement and pavement related Work commences. Where geotextile installation is required, in-situ soil shall be scarified to a depth of at least 12 inches and then compacted, following requirements of the Standard Specifications.

The geotextile shall be installed per manufacturer's recommendations.

**11.4 Deliverables**

The Contractor shall submit the following to CDOT for Review, Approval or Acceptance:

Deliverable	Review, Acceptance or Approval	Schedule
Supplemental Soil Survey Report and Subgrade Improvement Plan	Approval	Before any embankment, aggregate base course (ABC), pavement and pavement related Work commences.
Alternative subgrade treatment	Approval	Before any embankment, aggregate base course, pavement and pavement related Work commences
The existing subgrade will be allowed to remain in-place	Approval	Before any embankment, aggregate base course, pavement and pavement related Work commences
Locations requiring geotextile installation	Approval	Before any embankment, aggregate base course, pavement and pavement related Work commences

All deliverables shall also conform to the requirements of Section 3 – Quality Management

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## 12.0 DRAINAGE

This Section 12 includes the requirements for the drainage Work for the Region 2 Bridge Bundle Design Build Project (Project). This Work shall be completed in accordance with the Contract Documents.

The National Environmental Policy Act (NEPA) approval documents and Preliminary Hydraulics Report Package (PHRP) are included in the Reference Documents. These documents provide information regarding design flows, hydraulic conveyance structure sizing, preliminary scour analysis, and a conceptual layout of the proposed drainage for informational purposes.

For the overall system capacity, drainage will fully accommodate the Basic Configuration and AREs that are incorporated into the Project representing the ultimate build-out of the Project. Basic Configuration improvements shall be designed and constructed to limit reconstruction of future improvements. The Project consists of the Basic Configuration and the AREs as identified in Book 2, Section 1.

The Contractor shall design and construct a complete drainage system to intercept and remove surface runoff from the Project; maintain surface, channel, and conduit flow through the ROW; and convey flows crossing the highways. The drainage system shall be designed and constructed to manage subsurface flows to avoid saturation of Subgrade Materials that support the Roadway and its associated Structures. Since the project lies outside of CDOT's Municipal Separate Storm Sewer System (MS4) boundary, permanent water quality (PWQ) control measures (CM) are not required. The Contractor shall design and construct the drainage facilities to limit drainage-related hazards within and outside the ROW, while minimizing future operation and maintenance costs, public inconvenience, flood damages, and water quality impacts during construction.

Where applicable, the Contractor shall evaluate all existing cross drains, storm drains, and drainage facilities to remain within the Project for condition and performance, and shall provide recommendations on adequacy to CDOT for Acceptance. All drainage facilities shall be clean prior to Final Acceptance.

The Contractor shall design drainage facilities to be compatible with existing drainage systems on adjacent properties and shall preserve existing drainage patterns or discharges. Wherever possible, the Contractor shall design drainage facilities to be compatible with proposed drainage systems on adjacent properties. All existing and proposed drainage facilities shall be designed and constructed to be commensurate with Colorado Drainage Law documented in the Mile High Flood District (MHFD) *Urban Storm Drainage Criteria Manual*. The Contractor shall obtain approval from affected Local Agencies for any proposed -on-site drainage improvements that connect to or impact existing storm drains upstream or downstream of the Project. If existing drainage patterns or discharges must be changed or they increase above pre-project peak flow rates due to the design of the Project, the Contractor shall design and construct a solution that does not adversely impact CDOT or property owners outside the CDOT ROW or Easement areas. Where drainage patterns or discharges are changed from existing, the Contractor shall secure necessary approvals, permits, and additional Easements from Local Agencies and affected Stakeholders.

### 12.1 Administrative Requirements

#### 12.1.1 Standards

The Contractor shall design and construct the Project in accordance with the requirements of the standards in the documents listed in Table 12-1 and those referenced in Book 3. The Contractor shall use the latest adopted edition at the time of the Proposal Due Date.

**Table 12-1 Standards for Drainage**

<b>Author or Agency</b>	<b>Title</b>
CDOT	<i>Standard Specifications for Road and Bridge Construction (CDOT Standard Specifications)</i>
CDOT	<i>Standard Plans, M&amp;S Standards</i>
CDOT	<i>Drainage Design Manual (DDM)</i>
CDOT	<i>Erosion Control and Stormwater Quality Guide</i>
CDOT	<i>Design Bulletin Pipe Material Selection Policy</i>
CDOT	<i>Bridge Design Manual, Section 16—Hydraulics and Drainage</i>
Mile High Flood District (MHFD)	<i>Urban Storm Drainage Criteria Manual, Volumes I, II, and III (USDCM)</i>
Federal Emergency Management Agency (FEMA)	<i>National Flood Insurance Program Regulations (44 Code of Federal Regulations [CFR] Parts 59-80)</i>
Colorado Water Conservation Board (CWCB)	<i>Rules and Regulations for Regulatory Flood Plains in Colorado</i>
CWCB	<i>Floodplain and Stormwater Criteria Manual</i>
Otero County	<i>Resolution #2008-006 – Culverts, Road Access, Drainage &amp; Cattle Guards</i>
Las Animas County	<i>Las Animas County Land Use Regulations</i>
Park County	<i>Park County Land Use Regulations Article VII</i>
Fremont County	<i>Subdivision Regulations of Fremont County, Colorado</i>
Teller County	<i>Teller County Roadway Design and Construction Standards, Appendix G – Drainage Criteria</i>
El Paso County	<i>Drainage Criteria Manual of El Paso, Colorado</i>

### 12.1.2 Design Guidelines

Where the above standards do not address a certain design criterion or element, the design guidelines listed in Table 12-2 shall be used.

**Table 12-2 Design Guidelines for Drainage**

<b>Author or Agency</b>	<b>Title</b>
American Association of State Highway and Transportation Officials (AASHTO)	<i>A Policy on Geometric Design of Highways and Streets</i>

CDOT	<i>Erosion Control and Stormwater Quality Guide</i>
Federal Highway Administration (FHWA)	<i>Hydraulic Design Series (HDS) No. 4, Introduction to Highway Hydraulics</i>
FHWA	<i>HDS No. 5, Hydraulic Design of Highway Culverts</i>
FHWA	<i>Hydraulic Engineering Circular (HEC) No. 12, Drainage of Highway Pavements</i>
FHWA	<i>HEC-14, Design of Energy Dissipators for Culverts and</i>
FHWA	<i>HEC-15, Design of Roadside Channels with Flexible Linings</i>
FHWA	<i>HEC-18, Evaluating Scour at Bridges</i>
FHWA	<i>HEC-20, Stream Stability at Highway Structures</i>
FHWA	<i>HEC-21, Design of Bridge Deck Drainage</i>
FHWA	<i>HEC-22, Urban Drainage Design Manual</i>
FHWA	<i>HEC-23, Bridge Scour and Stream Instability Countermeasures: Experience, Selection, and Design Guidance-Third Edition</i>

### 12.1.3 Coordination with Other Agencies and Disciplines

The Contractor shall coordinate all drainage related issues with affected regulatory agencies. The Contractor shall include CDOT in all contacts with appropriate regulatory agencies.

The implementation of the conceptual drainage plan, as described in the NEPA approval documents and PHRP, is dependent upon Agreements between CDOT and Third Parties. The Agreements between the third parties and CDOT have not been executed. The Contractor shall be responsible for coordinating Third Party Agreements for the Project per Book 2 Section 6 – Third Party Agreements.

### 12.1.4 Permits

The Contractor shall be cognizant of and adhere to the requirements of the various environmental and stormwater permits that are necessary for construction and operation of the Project. The Contractor shall follow the requirements of the latest CDOT Stormwater Management Plan (SWMP) template and appropriate specifications. The Contractor shall be required to obtain all permits, unless otherwise indicated. The listing herein is not all-inclusive and it shall be the responsibility of the Contractor to determine all of the permits required to perform the Work. Because CDOT is the landowner, CDOT is partially liable for any Contractor negligence. Fines may be incurred upon the Project for permit non-compliance by CDOT or other regulatory agencies. Any non-compliance fines will be passed onto the Contractor. The Contractor shall refer to Book 2 Section 5 - Environmental Requirements for additional requirements. If conflicts exist between requirements of Book 2 Section 5 – Environmental Requirements and this Section 12, the more stringent shall apply.

#### 12.1.4.1 Colorado Discharge Permit System – Stormwater Construction Permit (CDPS-SCP)

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Implementation of the permit requirements (i.e., SWMP, SWMP Site Map, and SPCC Plan) shall be a first construction item. Construction cannot begin until these items have been Accepted by CDOT. CDOT will review the Contractor's stormwater management activities throughout the duration of the Project for verification of compliance with the CDPS-SCP and Consent Order. The Contractor shall comply with the requirements in Book 2 Section 5 – Environmental and CDOT Standard Specifications, Sections 101, 107 and 208.

#### **12.1.4.1.1 Temporary Drainage**

The Contractor shall be responsible for temporary drainage of each structure segment during construction to provide adequate drainage for each phase or stage of construction. The Contractor shall be responsible for the design and construction of temporary drainage of the Site for the duration of the Project. Temporary drainage shall comply with Project clear zone requirements. Temporary drainage shall be designed to avoid hydroplaning and icing for each phase or stage of construction.

The minimum size for temporary storm drains and cross drains shall be 12 inches. The minimum size of temporary underdrains shall be 4 inches. The Contractor shall be responsible for selection of material type for temporary drainage features. For any major drainage crossings, temporary pipe sizes shall be designed per the CDOT DDM.

The Contractor shall submit temporary drainage plans to CDOT for Acceptance in accordance with this Section.

Temporary drainage features shall be constructed in accordance with the Accepted temporary drainage plans for each phase or stage of construction. The Contractor shall continuously maintain temporary drainage features until removal. All temporary drainage features shall be removed when they are no longer required.

#### **12.1.4.2 Construction Dewatering Permit**

Refer to Book 2, Section 5 – Environmental.

#### **12.1.4.3 U.S. Army Corps of Engineers Section 404 Permit**

Refer to Book 2, Section 5 – Environmental.

#### **12.1.4.4 Other Regulations and Requirements**

##### **12.1.4.4.1 Floodplain Regulations**

The Contractor shall comply with all Local, State, and Federal Requirements associated with potential impacts to regulated floodplains. Regulated floodplains include the most recent flood hazard areas delineated on FEMA Flood Insurance Rate Maps (FIRM) (or Digital FIRMs [DFIRM]) or shown by more recent studies, local or regional master plans, or local floodplain maps. The Contractor shall obtain floodplain development permits (FDP), floodplain use permits (FPUP), no-rise certifications, and map revisions for impacts to floodplains crossing the Project. The Contractor shall obtain Approval for, and provide all technical analysis and supporting documentation for, necessary work in regulated floodplains as further described in this Section. The PHRP provide information regarding potential impacts to floodplains and anticipated regulatory processes for obtaining permits, no-rise certifications, and/or map revisions, as necessary.

##### **12.1.4.4.2 Senate Bill 40 Requirements**

Refer to Book 2, Section 5 – Environmental, for additional requirements.

## 12.2 Design Requirements

### 12.2.1 Submittals

All submittals shall be prepared, Reviewed, and submitted in accordance with the requirements set forth in Book 2, Section 3.

### 12.2.2 Drainage Design Software

The following software (most recent or compatible versions) shall be used in performing drainage design calculations.

1. FHWA, HY-8
2. FHWA, Hydraulic Toolbox
3. Bentley, InRoads Storm and Sanitary
4. Bentley, FlowMaster
5. Bentley, CulvertMaster
6. Bentley, StormCAD
7. MHFD, MHFD-Detention v4.03
8. MHFD, MHFD-Culvert v4.00
9. MHFD, UD-Inlet v4.06
10. MHFD, UD Rational 2.00
11. MHFD, UD-BMP v3.07
12. Environmental Systems Research Institute (ESRI), Arc-Geographic Information System (GIS)
13. US Army Corps of Engineers, HEC- HMS
14. EPA Stormwater Management Model (SWMM)
15. Aquaveo LLC, Surface-Water Modeling System (SMS)
16. US Bureau of Reclamation (USBR), SRH-2D
17. US Army Corp of Engineers, HEC-RAS

All software used must be capable of creating summary tables for all individual input values and all individual output values (including all hydraulic losses) and summary tables of the accumulated results of the analyses at key locations in the system.

No software or spreadsheets created by the Contractor may be used without Acceptance by CDOT. The Contractor shall demonstrate the proposed alternative provides analyses and



results more adequately than the aforementioned software. Alternative software shall also provide results of comparable accuracy and reliability prior to CDOT Acceptance. CDOT is under no obligation to consider alternatives to Accepted software and spreadsheets.

### **12.2.3 Data Collection**

The Contractor shall identify all drainage related issues using available data, including, but not limited to, requirements imposed by Local, State, and Federal Regulations and official documents concerning the Project.

The Contractor shall obtain all relevant storm drainage improvement plans, drainage planning studies, and drainage reports for the Project area from CDOT, FEMA, all Local Agencies, and appropriate ditch companies.

The Contractor shall obtain any existing and known projected future land uses from all Local Agencies, as necessary, to design facilities to be compatible with drainage systems, existing or proposed, on adjacent properties.

The Contractor shall perform detailed mapping and surveys, as required, to verify locations of existing drainage features necessary for the proposed drainage design. The Contractor shall further verify or identify boundaries, flow patterns, and land uses of drainage basins based on field observations.

### **12.2.4 Surface Hydrology**

The Contractor shall perform hydrologic analyses for all on Site drainage basins and for all local off-site drainage areas immediately adjacent to the Project that contribute runoff to on-site drainage basins. Local, on-site drainage basins shall include those that manage runoff generated from the Project improvements. Local, off-site drainage basins shall include those contributing flow onto the Project where flow rates are not quantified by published documents. The analyses shall be based on known projected future land uses.

Preliminary hydrology was performed for the project and is included in the Reference Documents.

The Contractor shall perform hydrologic analyses for any locations where published design flow rates are not available or where changes in off Site drainage patterns or increased discharges are proposed as a result of the design of the Project.

#### **12.2.4.1 Design Frequencies**

For all CDOT owned facilities, the design storm frequency shall comply with *Table 7.2, Table of Design Frequencies*, in the CDOT *Drainage Design Manual (DDM)* for rural areas. The design storm frequency for all cross drains shall be determined through the CDOT DDM and Approved by CDOT. The design storm frequency for all other roadways affected by the Project shall comply with the affected Local Agency's criteria.

#### **12.2.4.2 Precipitation**

Precipitation data for all drainage analyses shall be obtained from the National Oceanic and Atmospheric Administration (NOAA) Atlas 14, *Precipitation Frequency Atlas of the Western United States, Volume III, Colorado*.

### **12.2.4.3 Hydrologic Methods**

The Contractor shall perform the necessary hydrologic analyses using the following methods:

1. Areas less than 90 acres shall be evaluated using the Rational Method as described in the UDFCD *USDCM*. The minimum time of concentration shall be 10 minutes.
2. Areas greater than 90 acres shall be evaluated using methods described in the CDOT *DDM*.

### **12.2.5 Hydraulic Structures**

#### **12.2.5.1 Roadways**

Roadway component geometric configurations shall be designed to provide adequate drainage and minimize hydroplaning and icing. Roadway component geometric configurations shall be in accordance with the requirements of Book 2, Section 13.

##### **12.2.5.1.1 Roadway Profile**

Longitudinal grades shall be in accordance with the requirements of Book 2, Section 13. Where there is curb and gutter or Guardrail Type 9 Single Sloped Barrier and the minimum profile grades cannot be maintained, flanking inlets shall be constructed, as required in the CDOT *DDM*.

##### **12.2.5.1.2 Allowable Flow Spreads**

The Contractor shall design all Roadway storm drain systems including gutters, inlets, inlet spacing, catch basins, laterals, and trunk lines, using Section 13 of the CDOT *DDM*.

All other Roadways outside of CDOT ROW shall comply with the Local Agency's criteria.

##### **12.2.5.1.3 Edge Treatment**

In areas where the Roadway pavement discharges runoff to Guardrail Type 9 Single Sloped Barrier or Type 3 W Beam Guardrail with curb, inlets, Type 3 Embankment Protectors or Type 5 Embankment Protectors shall be used to manage flow from the curb section, down the Roadway embankment and protect the embankment from erosion. Erosion protection shall be constructed at the outfalls.

##### **12.2.5.1.4 Roadside Ditches, Open Channels, and Slope Protection**

For Roadside ditches along all existing and proposed Roadways, the design water surface profile shall have a minimum of 1 foot of freeboard, measured from the bottom of the Base Course to the water surface elevation, for the 10-year storm frequency peak discharge and shall not exceed edge of pavement for the 100-year storm frequency peak discharge. The Contractor is not responsible for analyzing or improving existing Roadside ditches that are not impacted or improved as part of this Project.

For infill sections and median ditches, the water surface profile elevation shall not exceed the edge of pavement for the 100-year storm frequency peak discharge.

All open channels within the Project shall be designed to capture and convey the 100-year

design flow, except at structure H-13-N, and designed in accordance with Chapter 8 of the CDOT *DDM*. Capacity shall be determined using Manning's Equation or backwater analysis at culverts, inlets, and other hydraulic structures.

All outside roadside ditch inverts shall be set at least 1 foot lower than the intersection of the ditch side slope with the bottom of the roadway pavement section to avoid routine exposure of the pavement section to routine ditch flows. Stabilized subgrade shall not be considered part of the roadway pavement section relative to this requirement.

All proposed Roadside ditches, swales, or other areas of concentrated flow shall be evaluated to determine the channel hydraulic shear stresses for 10-year design flows. Where hydraulic shear stresses are found to exceed the maximum allowable shear stresses, a Turf Reinforcement Mat (TRM) or riprap armoring shall be designed and placed to protect against the design shear stresses in the proposed ditch or channel facility. The maximum permissible shear stresses for a TRM Class 3 (CDOT *Standard Special Provision 216*) must meet or exceed the criteria identified in the CDOT *Erosion Control and Stormwater Quality Guide* or FHWA *Design of Roadside Channels with Flexible Linings*, HEC-15. Where slopes exceed the maximum allowable gradient of 5 percent or where the maximum allowable shear stress of 3.1 pounds per square foot is exceeded, embedded riprap armoring or other permanent erosion control treatment shall be designed and placed to protect against the design shear stresses in the proposed ditch/ channel facility.

Flexible channel linings shall be designed in accordance with FHWA *Design of Roadside Channels with Flexible Linings*, HEC-15. Riprap channel lining shall be designed in accordance with FHWA *Bridge Scour and Stream Instability Countermeasures*, HEC-23, or the *USDCM*.

All abandoned concrete diversion Structures in Roadside ditches and open channels shall be removed and disposed of off-site.

### **12.2.5.2 Cross Drains**

Cross drains shall be defined as pipes or culverts that convey water from one side of the Highway to the other. All cross drains shall be designed for the 100-year frequency peak discharge for the Project with no inundation of the Highway paved Shoulders or adjacent properties and no inadvertent detention or retention.

Hydraulic design of cross drains shall be based on the procedures included in FHWA HDS-5, *Hydraulic Design of Highway Culverts*. Hydraulic design data shall be listed on the final design and RFC Documents for each cross drain, including drainage area, peak discharges, allowable headwater elevation, and design headwater elevation.

The minimum allowable pipe size for cross drains shall be 36 inches in diameter. Flared end sections with toe walls or headwalls with beveled edges and wingwalls shall be provided for all cross drain pipe ends, regardless of size. Concrete aprons with a toe wall shall be installed at the ends of box culverts with the necessary scour protection. To reduce culvert sizes, improved inlets may be used. Improved inlets shall be designed based on FHWA HDS-5, *Hydraulic Design of Highway Culverts*.

All cross drain pipe Material shall comply with Section 624 – Drainage Pipe in the CDOT *Standard Specifications*.

Allowable headwater elevation for the 100-year frequency peak discharge shall be designed

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as described in Chapter 9.2.2 of the CDOT *DDM*. In addition, allowable headwater elevation shall be limited by the minimum of the following:

1. Non-damaging to upstream or adjacent property.
2. Below outside edge of Roadway Shoulder elevation.
3. Headwater to depth ratio requirements shall be as shown in the CDOT *DDM*, Table 9.3.
4. No overflow to another drainage basin is allowed.

The use of sag pipes or inverted siphons shall not be allowed.

Cross drains shall be continuous and straight. Bends or turns will not be permitted.

Cross drains that are connected directly to off-site existing drainage systems shall have a manhole constructed inside and adjacent to CDOT ROW, to join the CDOT cross drain to the existing drainage system. Manholes shall be constructed of the appropriate size and type, according to the CDOT *DDM*.

All stormwater runoff, either from off-site or on-site areas, shall drain freely to an existing cross drainage or storm drain system.

### **12.2.5.3 Storm Drains**

Storm drains shall be defined as a network of pipes that connect inlets, manholes, and other drainage features to an outfall. Cross drains and side drains connected to the storm drainage system are considered part of the storm drain system for the purpose of determining the hydraulic performance of storm drains. Runoff generated from within the limits of the Project and/or draining onto the Project from off Site areas shall be collected and conveyed in a drainage system designed for the design frequencies included herein. The drainage system shall be designed to not worsen the existing conditions for properties outside the CDOT ROW or Easement. Ponding shall not be permitted within the Project.

Hydraulic analyses and plans for storm drains that are connected to existing storm drain systems upstream or downstream of the Project must be coordinated with affected Local Agencies. The hydraulic analyses shall identify the impacts to the existing storm drain systems caused by the connections and proposed combined peak design discharges for the overall systems. The Contractor shall obtain acceptance of the proposed design by Local Agencies affected by connections to their storm drain systems and for runoff leaving the Project.

The minimum allowable pipe diameter for storm drain systems shall be 18 inches.

All storm drain pipe Material shall comply with Section 624 – Drainage Pipe in the CDOT *Standard Specifications*.

The use of sag pipes or inverted siphons will not be allowed.

Storm drains shall not decrease in size in the downstream direction. From upstream to downstream, pipe diameters shall remain constant or increase. All bends and turns shall occur within a manhole or inlet.

The maximum allowable pipe diameter within Mechanically Stabilized Earth (MSE) strap zones shall be 30-inch outside diameter.

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### 12.2.5.3.1 Hydraulic Design of Storm Drains

Storm drain system design shall be performed using hydraulic gradient analysis to account for all friction losses and minor losses. Friction losses shall be calculated using Manning's Equation. Minor losses at junctions, manholes, bends, and other appurtenances shall be calculated based on design procedures in FHWA *HEC-22, Urban Drainage Design Manual*.

Storm drains under the Highway shall be designed with the Hydraulic Grade Line (HGL) at or below the crown of pipe for the 10-year frequency peak discharge. The Energy Grade Line (EGL) shall be at or below of the surface of pavement and inlet grates where the pipe is required to convey the 100-year frequency peak discharge. Local Agency criteria shall be followed for storm drain system design outside of CDOT ROW. The hydraulic and energy gradient for the minor (10-year) and major (100-year) design peak discharges shall be plotted for all storm drains in each storm drain profile.

The flow velocity of storm drains shall not be less than 3 feet per second for the 10-year frequency peak discharge and shall not be greater than 22 feet per second for the 100-year frequency peak discharge. This minimum storm drain flow velocity requirement may be waived, at CDOT's sole discretion, in locations where tailwater controls the flow and no alternative solution is evident.

### 12.2.5.3.2 Storm Drain Alignment and Profile

Storm drain alignments shall be straight between Structures. Profiles of all storm drains shall be straight grades between Structures.

The Contractor shall comply with Local Agency criteria for storm drains outside CDOT ROW.

### 12.2.5.4 Inlets

Inlets are required at locations to collect runoff within the design controls specified in this Section 12. In addition, there are locations where inlets may be necessary with little regard to contributing drainage area. These locations shall be designated on the plans prior to computations regarding discharge, water spread, inlet capacity, or bypass. Examples of such locations can be found in Chapter 13.4.2 of the CDOT *DDM*:

1. CDOT *M&S Standard Plans* inlets shall be used on all CDOT Roadways.
2. The following criteria apply to inlets:
  - A. Type C and Type D inlets shall not be allowed within the Roadway pavement limits unless used in conjunction with embankment protectors.
  - B. Vane grate inlets shall be used in the Shoulders of the Highway and shall not extend into adjacent travel lanes.
  - C. Close mesh grates shall be used for Type C and D inlets near pedestrian areas; concrete aprons shall be installed on Type C and D inlets.
  - D. Type 13 or Type C inlets shall be used in conjunction with valley pans.
  - E. Pursuant to the CDOT Design Guide, placement of drainage inlet grates should be avoided within a bicycle facility regardless of whether that facility is a bike lane, shoulder, or shared lane. If this is not possible, drainage inlet grates should

be replaced with bicycle-safe grates that maintain the required hydraulic capacity for the inlet. A bicycle-safe grate should have, at a minimum, bars perpendicular to the travel direction at a 4 inch center-to-center spacing.

3. Inlet hydraulic efficiency and spacing shall be determined based on design procedures in FHWA *HEC-22, Urban Drainage Design Manual*; 100 percent of the bypass flow shall be added to the next downstream inlet.
4. For a continuous storm drain system, maximum inlet spacing shall be designed based on allowable flow spread or the manhole spacing criteria, whichever is less.
5. The sag vertical curve or sump area on a Roadway requires an inlet at the lowest point and flanking inlets on each side of the lowest inlet to provide relief from debris clogging. Inlets shall be located such that the design criteria for spread are maintained.
6. Inlets are required 10 feet upstream from the point where the street cross slope begins to super-elevate toward the opposite side to minimize cross street flow. Bypass flow across the Highway shall be limited to 0.1 cubic foot per second (cfs) or less for the 10-year design frequency. Sump inlets shall not be placed at the zero point of the superelevation transition.
7. Trench drains will not be allowed in the traveled way or transverse to traffic flow on the Highway.
8. Inlets and inlet aprons shall not be located in the travel lanes of the Highway or CDOT Roadways.
9. A clogging factor of 50 percent shall be used for sizing single-unit inlet grates. A clogging factor of 10 percent shall be used for sizing single-unit curb opening inlets. For multiple-unit inlets, the clogging factor may be reduced as recommended in the *UDFCD USDCM, Volume I, Chapter 7, Section 3*.

#### **12.2.5.5 Maintenance Access Structures**

Maintenance access Structures shall be incorporated into the storm drain system to provide access for inspection, cleaning, and other maintenance activities. Maintenance access shall be constructed at all junctions, changes in pipe size, drops, and grade changes. Maintenance access shall be provided at any change in horizontal alignment greater than 2 degrees. Maintenance access shall not be located in travel lanes of the Highway. Inlets should be used for maintenance access where permitted by pipe sizes according to the CDOT *DDM*.

A lateral that is less than half the size (inside diameter) of the trunkline, and no more than 75 feet long may be connected to the trunkline with a prefabricated pipe wye or tee connection. Larger laterals shall be connected to the trunkline with a maintenance access Structure.

The spacing of maintenance access Structures shall be in accordance with the criteria identified in the CDOT *DDM*. The spacing of maintenance access Structures outside of CDOT ROW shall be in accordance with Local Agency criteria. For storm drain diameters of 60 inches or greater, maintenance access Structures shall be located considering Site conditions that provide for staging of large-scale maintenance activities.

Maintenance access and junction Structure floors shall be shaped to fit the pipe inverts to

minimize hydraulic losses within the Structure.

Maintenance access Structures, junction Structures, and vaults in Roadside areas shall be designed to extend a maximum of 2 inches above the finished grade all around the Structure.

#### **12.2.5.6 Water Quality Control Measures**

Not required for the Project.

#### **12.2.5.7 Off Site Drainage Systems**

The Contractor shall assess the impacts of the increase in peak flows on the downstream system and provide the assessment as part of the drainage report to CDOT for Review and Acceptance. The report shall provide information regarding the source and amount of flows discharged off Site and the characteristics of the off Site system receiving the increase in peak flow. The report shall include options for mitigating the increase in peak flows to the off Site system. The report also shall include a record of communications with the owner of the off Site system and their stated position regarding the proposed design to address potential impacts due to the increase in peak flows.

The Contractor shall take immediate temporary action to mitigate potential impacts due to the increased peak flows while awaiting Acceptance for proposal to provide permanent mitigation of potential impacts.

The Contractor shall mitigate the increase in anticipated peak flow rates, if necessary, based on the Local Agency direction and as Approved by CDOT.

#### **12.2.5.8 Bridge Deck Drainage**

See Book 2, Section 15 – Structures, for more information on Bridge deck drainage.

#### **12.2.5.9 Stormwater Pumping Stations**

The use of stormwater pumping stations shall not be permitted.

#### **12.2.5.10 Drain Outfalls**

Cross Drain and storm drain outfalls shall be designed such that the outlet elevation matches the receiving drainageway flowline. Outfalls shall be oriented in a downstream direction and designed to minimize existing habitat disturbances during construction.

Permanent erosion protection shall be provided at all outfalls and along the drainage flowlines where needed. Energy dissipaters shall be designed in accordance with FHWA *HDS-5, Hydraulic Design of Highway Culverts*, or UDFCD *USDGM, Design of Low Tailwater Riprap Basins for Storm Sewer Pipe Outlets*.

All drain outfalls require either a headwall or flared end section regardless of pipe size. All drain outfalls with a pipe diameter (or an equivalent diameter) of 36 inches or larger shall require toe walls. End sections or headwalls shall be used for drains 48 inches and smaller. A headwall shall be used for any drain 54 inches and larger. Saddle headwalls shall not be used. Concrete pipe joint fasteners for end sections shall be installed so that a minimum of

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15 linear feet of the outlet end of the pipe are mechanically locked together.

The effect of tailwater in the receiving drainageway on the hydraulics of the outfall shall be evaluated. The design frequency of the tailwater of the receiving drainageway shall be based on the comparison of design discharge frequencies for coincidental occurrence included in FHWA HEC-22, *Urban Drainage Design Manual*.

Grouted boulder rundowns must extend down to bedrock or to at least 2 feet below the ultimate scour depth in the channel in the receiving water, whichever is less.

### **12.2.6 Scour and Erosion Control**

Existing scour, rill, or channel erosion, slope failures, and areas with poor vegetative cover within the Project limits and areas caused by the Work shall be identified and corrected by the Contractor.

Bridges over drainageways shall be designed in accordance with the CDOT *DDM* and the CDOT *Bridge Design Manual*. Scour analyses shall be completed for all existing and proposed Bridges based on the procedures in the FHWA HEC-18, *Evaluating Scour at Bridges*, and HEC-20, *Stream Stability at Highway Structures*. Scour countermeasures shall be designed in accordance with the FHWA HEC-23, *Bridge Scour and Stream Instability Countermeasures: Experience, Selection, and Design Guidance-Third Edition*.

Outlet protection for culverts shall be designed in accordance with the standards of the *USDCM*, Chapter 9, Section 3 or FHWA HDS-5, *Hydraulic Design of Highway Culverts* or UDFCD *USDCM Design of Low Tailwater Riprap Basins for Storm Sewer Pipe Outlets*.

The following minimum criteria apply to riprap layer thickness:

1. Thickness shall not be less than the spherical diameter of the D100 stone or less than 2.0 times the spherical diameter of the D50 stone, whichever results in the greater thickness.
2. Thickness shall not be less than 12 inches for practical placement.
3. The thickness determined by the criteria above, shall be increased by 50 percent where the riprap is placed underwater to provide for uncertainties associated with this type of placement.
4. Stones greater than the D100 spherical diameter shall not be used.
5. Minimum D50 shall not be less than 9 inches.
6. Geotextile (Drainage) (Class 1) shall be used under all riprap per CDOT M&S Standards.

### **12.2.7 Subsurface Drainage Systems**

Where needed, subsurface drainage systems (e.g., underdrains, edge drains) shall be designed in accordance with the CDOT *DDM*. Subsurface drainage systems shall not be discharged to the stormwater systems, with the exception of open channel conveyances.

Groundwater may be encountered during construction of this Project. If groundwater is daylighted to the ground surface via storm drains (point source), a Subterranean Permit from CDPHE shall be required.

Upon completion of the Project, the permit shall be transferred to CDOT. The Contractor shall



be responsible for obtaining the permit. Refer to Book 2, Section 5.

If underdrains are found to exist in certain locations, the Contractor shall preserve the capacities and functionality of all existing groundwater drains encountered during construction or replace drains if impacted by construction. Geotechnical investigations conducted for the Project are provided in the Reference Documents.

If the Contractor encounters wells or springs within the Project limits, the Contractor shall protect the flow quantity, water quality, access, and availability of the wells and springs during and after construction.

### 12.2.8 Irrigation Facilities

All irrigation ditches, canals, and laterals crossing the Project shall be protected and preserved in place, or reconstructed as needed to accommodate the Project, and the Contractor shall ensure all facilities are maintained so that normal ditch operations are uninterrupted. The Contractor shall coordinate with the appropriate owners to identify and mitigate any potential disturbance to the irrigation facilities or operations. All irrigation facilities impacted by the Project shall be cleaned prior to Final Acceptance.

The Contractor shall limit stormwater discharges to irrigation ditches to be equal to or less than pre- Project discharges.

See Table 12-3 for a summary of irrigation facilities affected by the Project.

**Table 12-3 Irrigation Summary Table**

Location	Irrigation Type	Irrigation Ditch Name	Irrigation Owner
US 350 (MP 69.817)	Canal	Otero Ditch	Otero Ditch Company
SH 239 (MP 1.74)	Canal	Picketwire Ditch	Picketwire Ditch Company

### 12.2.9 Floodplains

The Project will impact several FEMA and/or locally regulated floodplains (1-percent and 0.2-percent annual chance) associated with at least seven flooding sources. Several other flooding sources do not have a FEMA/local regulated floodplain. The floodplains and the anticipated regulatory requirements are discussed in more detail in the PHRP. The Contractor shall comply with all local, State, and federal regulations associated with the proposed modifications located in regulated floodplains. Receiving Approval of required floodplain permits, no-rise certifications, and map revisions will require close coordination with CDOT and the local agencies to comply with local agencies' permit applications and submittal requirements. Local agencies affected or potentially affected by the proposed changes to a regulatory floodplain shall be notified and approve of the proposed changes.

The Contractor shall obtain Floodplain Development Permits and/or other similar permits from the appropriate local agencies for any Work associated with the Project that is within or will

impact regulated floodplains prior to any grading and/or construction within the limits of the regulated floodplains. The Contractor shall provide all additional surveying, analyses, recertification, and mapping required to document proposed and constructed changes to the regulated floodplains.

Where applicable and required by local and/or FEMA regulations, the Contractor shall obtain Approval of Conditional Letter of Map Revisions (CLOMRs) and/or no-rise certifications prior to commencing work within the regulated floodplains. Upon completion of construction in the floodplains, the Contractor shall obtain As-Built data reflecting all changes located in the floodplain. The Contractor shall utilize the As-Built data to compile and submit Letter of Map Revisions (LOMRs) and no-rise recertification for local review and acceptance. After local acceptance, CLOMRs (if required) and LOMRs shall be submitted to FEMA for final review and Approval. The Contractor shall be responsible for the schedule, all local agency and FEMA submittal/review fees associated with the permit applications, and flood map revision requests.

The anticipated primary and adjacent jurisdiction local review agencies for the floodplain permitting, no-rise certification, and FEMA map revisions and their respective administrative contacts are shown in Table 12-4.

**Table 12-4 Anticipated Local Agency Floodplain Jurisdiction Contacts for the Project**

Structures in Zone A Floodplains	Flooding Source	Local Jurisdiction	Contact	
			Name	Telephone
G-12-C	Middle Fork South Platte River	Park County	Jenny Gannon	(719) 836-4292
H-13-N	Middle Fork South Platte River			
J-14-C	Louis Gulch			
M-21-I	Unnamed	Otero County	Lex Nichols	(719)383-3038
M-21-B	Lone Tree Arroyo			
M-21-C	Hoe Ranch Arroyo			
N-21-F	Sheep Canyon Arroyo			
I-17-X	Upper Fountain Creek	El Paso County	Keith Curtis	(719)327-2898

**12.2.10 Project and Area-Specific Drainage Requirements and/or Information**

**12.2.10.1 Structures in Non-Regulatory Floodplains**

The Contractor shall model the existing 100-year floodwater surface for all structures. The proposed structures must limit the allowable maximum rise of backwater to less than 1-foot and shall not cause increased flood damage to properties insurable to under the National Flood Insurance Program (NFIP). The existing and proposed elevations of the 100-year floodwater surface shall be documented in the sealed Final Hydraulics Reports for CDOT Acceptance.

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The Contractor shall verify decreed flows with the irrigation canal companies.

The Twin Creek is directly downstream of structures I-15-AO and I-15-T. Impacts to the hydraulic conditions of the structures due to tailwater conditions from Twin Creek flows must be included in the hydraulic design of these structures.

### **12.2.10.2 Structures in Regulatory Floodplains**

The Contractor shall model the existing 100-year Base Flood Elevations (BFE) for all structures. The proposed structures must limit the change in BFE to less than +/- 0.5 feet per CWCB Rules and Regulations and shall not cause increased flood damage to properties insurable to under the National Flood Insurance Program (NFIP). The Contractor shall coordinate with Floodplain Administrators and complete the CLOMR/LOMR process if necessary. The existing and proposed elevations of the 100-year BFE shall be documented in the sealed Final Hydraulic Reports for CDOT Acceptance.

It has been determined that at segment H-13-N that passage of the 100-year flow cannot be achieved within the scope of this Project. The structure shall be replaced in-kind and not change the floodplain base elevation. The Contractor shall obtain a no-rise certification from the floodplain administrator prior to commencing work. Variances to the DDM requirements shall be documented in the sealed Final Hydraulics Report for CDOT Acceptance. The Contractor shall assist CDOT in development of a Safety Plan for the Roadway and structure overtopping that includes signage, maintenance response requirements, etc. The Safety Plan will be reviewed by FHWA.

### **12.2.10.3 Structures used for Cattle Crossings**

Structures listed as known cattle crossings in Book 2, Section 15 – Structures, shall meet the requirements for stock passes in the CDOT *DDM*.

## **12.3 Construction Requirements**

The Contractor shall map all new and existing (remaining) outfalls for inclusion into CDOT's GIS system.

The Contractor shall resolve all conflicts between Utilities and proposed drainage improvements in accordance with Book 2, Section 7 – Utilities.

### **12.3.1 Pipe Material Selection Policy**

The Contractor shall comply with the CDOT *Design Bulletin Pipe Material Selection Policy*, except where required pipe Materials are specified herein. The most current version, as signed by the CDOT Chief Engineer at the time of the Proposal Due Date, shall be utilized.

Clarifications of the CDOT *Pipe Material Selection Policy* are as follows:

1. The Contractor shall sample soil and water.
2. References to "Project Manager" in the Guide shall be the Contractor.
3. The Contractor shall provide a sampling schedule for pipe selection to CDOT for review 30 Days after issuance of the First Notice to Proceed (NTP1).
4. Pipe material selection report shall be submitted as part of the Drainage Reports.
5. Storm Drains that are both parallel to and within the strap zone of retaining walls

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shall be solid wall plastic conduit.

## **12.4 Deliverables**

### **12.4.1 Drainage Reports**

#### **12.4.1.1 Final Hydraulics Reports**

The Contractor shall prepare a Final Hydraulics Report for each proposed structure. The purpose of the Final Hydraulics Reports is to document hydrology and hydraulic analysis and design for each structure. The Final Hydraulics Reports shall be prepared by the Contractor and submitted to CDOT for Acceptance prior to RFC.

#### **12.4.1.2 Documentation Procedure**

Hydraulics Reports shall follow the documentation procedure in Chapter 4 of the CDOT *DDM* and shall include the following:

1. Basic design data, design assumptions, hydrologic and hydraulic methodologies, assumptions, model inputs and outputs, detailed calculations, computations and computer printouts, relevant design criteria, circumstances influencing design, discussion of all drainage issues and drainage facilities, appropriate maps, figures, and plans.
2. Rationale for sizing and selection of all drainage elements, including, but not limited to, catch basins, storm drain systems, cross drains, ditches, swales, detention/infiltration facilities, and pipe Materials selection.
3. Hydraulic data sheets with a summary of hydraulic design information for each storm drain and cross drain.
4. A delineation of contributing basins, existing drainage patterns for both Highway and cross- drainage flows, drainage parameters, discharge characteristics, and other information necessary for the design of the drainage system; all drainage reports shall include documentation of tributary flows from areas outside of each construction segment, as defined by the Contractor.
5. Documentation that the proposed runoff will be controlled and treated in accordance with this Section 12 and all drainage Permits.
6. Documentation of existing drainage discharge rates, outfall locations, and pond release rates.
7. Documentation of the impact of proposed drainage designs on existing drainage facilities.

In addition to the documentation procedure in Chapter 4 of the CDOT *DDM*, the Contractor shall follow the report outline below. The section and subsection headings shall be maintained at a minimum. If a section or subsection is not used, the reason it is not applicable to the Project shall be specified. New sections or additional subsections shall be added as necessary to fully document the drainage design.

#### **12.4.1.3 Hydraulics Report Outline**

The Hydraulics Reports shall use the report outline below as guidance. The report outline

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shall also address the documentation requirements set forth in Chapter 4 of CDOT's *DDM*. New sections or additional subsections shall be added as necessary to fully document the design:

1. TABLE OF CONTENTS
2. INTRODUCTION
  - A. Location of Improvements
  - B. Description of Improvements
  - C. Discussion of Drainage Investigation
3. CROSS DRAINAGE, DRAINAGEWAY, AND IRRIGATION DITCH CROSSINGS
  - A. Location and General Discussion
  - B. Hydrology and Design Flow Development
    - i. Information Sources
  - C. Agency Coordination (i.e., FEMA, Local Agencies)
  - D. Description of Structural Design (i.e., for non-CDOT standard concrete box culverts)
  - E. Hydraulic Design
  - F. Irrigation Ditch Crossings
  - G. Drainageways and Floodplains
  - H. Scour Analysis
  - I. Bank Stabilization
4. ROADWAY DRAINAGE SYSTEMS
  - A. General Discussion
  - B. Design Coordination
    - i. Adjacent Segments
    - ii. Agency Coordination
  - C. Drainage Basin Delineations and Characterization
    - i. Existing Basins
    - ii. Proposed Basins
  - D. Hydrology and Design Flow Development
  - E. Pavement, Median and Roadside Drainage
    - i. Inlet/Catch Basin Spacing Design
    - ii. Storm Drain Design
    - iii. Roadside Ditch and Channel Design
    - iv. Erosion Control Design
5. PERMANENT BEST MANAGEMENT PRACTICES
  - A. Assumptions and Methodologies
    - i. Allowable Release Rate Discussion
  - B. Hydrology and Hydraulics
    - i. Storage and Outlet Design Documentation

6. REFERENCES

7. APPENDICES

- A. Hydrologic Analysis
  - i. On Site Hydrology
  - ii. Off Site Hydrology
  - iii. Precipitation Data
  - iv. Soil Survey
  - v. Land Use
  - vi. FEMA Maps
- B. Hydraulic Analysis
  - i. Spread width, Inlet and Storm Drain Calculations
  - ii. Roadside Ditch and Channel Calculations
  - iii. Hydraulic Grade Line Calculations
  - iv. Drain Outfalls, Scour and Erosion Control Calculations
  - v. Sub-Drainage Systems
- C. Basin Maps
  - i. Existing and Proposed On-Site Basin Maps
  - ii. Off-Site Basin Maps (full size 22-inch by 34-inch sheets)
- D. Floodplain Development Permits and Map Revision Documentation
- E. Maintenance Exhibit

The Contractor shall submit to CDOT the Final Hydraulics Reports for Acceptance. All Hydraulics Reports shall be signed and sealed. The Contractor also shall submit to CDOT an electronic copy of all signed and sealed drainage reports in a format compatible with Adobe .PDF. All hydraulics reports shall include electronic copies of all computer analysis input and output files in the native file format.

#### **12.4.2 Water Quality Reports**

Not required for the Project.

#### **12.4.3 Drainage Design Plans**

The Contractor shall prepare plans for all drainage-related facilities for the Project in a format that follows the documentation procedure in the CDOT *DDM* Chapter 4, the CDOT *CADD Manual*, and the CDOT *Drafting Manual*.

The Contractor shall submit all applicable plans with each hydraulics report. The Contractor shall include the following for all drainage plan deliverables:

1. PLAN VIEW
  - A. Provide the location of all existing and proposed storm drains. Provide a label for each proposed storm drain location. The Contractor shall establish a labeling system that is specific to each proposed storm drain system and provide a table to summarize all pertinent information. The table shall include, at a minimum, the drain line and sheet number where the profile can be found.
  - B. Provide the location of all existing and proposed inlets, maintenance access Structures, end sections, and outlet protection. Provide a label for each proposed inlet, manhole, end section, outlet structure, and outlet protection. Include a table

that summarizes all pertinent information. The table shall include, at a minimum, the label identification (ID), station and offset, item, length, pay depth, and notes.

- C. Provide all existing and proposed grading.
- D. Provide all Utility locations and Relocations.
- E. Provide location of ROW lines.

## 2. PROFILES

- A. Provide profiles for all proposed storm drains. Include the label ID from plan view sheets, station and offset, invert elevations, rim elevations, structure depth, slopes, sizes, Material, Utility crossings, existing and proposed finished grade lines, the design flow for the 10-year and 100-year event, and the calculated HGL and EGL for the 10-year and 100-year event.
- B. Provide profiles for all proposed cross drains. Include the label ID from plan view sheets, station and offset, invert elevations, slopes, sizes, material, utility crossings, and existing and proposed finished grade lines. Provide the drainage area of contributing basin, 50 and 100 year design discharge, tailwater, and headwater elevation on all applicable profile sheets for cross drains.

## 3. DRAINAGE DETAILS

- A. Include details for all non-standard CDOT items.

### 12.4.4 Drainage As-Constructed Documents

The Contractor shall provide accurate as-constructed survey of the constructed drainage systems for the Project per the requirements of Book 2, Section 9.

The Contractor shall submit As-Constructed Documents to CDOT for Acceptance per the requirements of Book 2, Section 3.

Clearly label and locate all items of Work with station, offset, coordinates, and elevation information based on surveys of what was actually built in the field. Provide summaries of all As-Constructed drains with the following hydraulic information, at a minimum: pipe/culvert size, invert elevations and slope.

### 12.4.5 Floodplain Design and Permitting Reports

The Contractor shall provide analyses and reports documenting the design and impacts of all Project-related improvements and changes located in the 1-percent (100 year) and 0.2-percent annual chance (500-year) floodplain and the Project's compliance with Federal, State, and local floodplain management regulations. The Contractor shall provide a combined hydraulic design and floodplain permitting report. A separate report shall be provided for each flood hazard area identified along the Project.

#### 12.4.5.1 Floodplain Improvements Report

##### 12.4.5.1.1 Certification of No-Rise in the Base Flood Elevation

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All proposed work in regulated flood fringe or floodways is considered floodplain development work and must be preceded by an approved local agency permit, commonly referred to as a Floodplain Development Permit (FDP) or Floodplain Use Permit (FPUP). Each permit request must be supported by certifiable evidence from a Professional Engineer licensed to practice in the State of Colorado. All proposed floodway activities must be certified to cause no-rise in the base flood elevation (BFE) shown on the current effective work map, or in the most recent study or work map provided by local agencies, State agencies, or FEMA for a given watershed. If no-rise cannot be proven by hydrologic and hydraulic analysis in accordance with standard engineering practices, then a CLOMR must be prepared to quantify impacts to upstream and downstream BFEs for review, comment, revision, and ultimate Approval by the governing local agency or agencies and FEMA.

#### **12.4.5.1.2 Conditional Letter of Map Revision (CLOMR)**

The Contractor shall prepare a CLOMR Report and submit it to CDOT for Acceptance concurrent with the Preliminary (60% Level) Plan Package. The CLOMR shall document the proposed project's hydraulic design, floodplain impacts, and compliance with all applicable floodplain regulations, as discussed in this Section.

#### **12.4.5.1.3 Interim Hydraulic Design and Floodplain Permitting**

If changes are made to design conditions approved with the CLOMR, the Contractor shall provide an addendum to the CLOMR that documents the changes and their compliance with Federal, State, and local floodplain management regulations.

#### **12.4.5.1.4 Letter of Map Revision (LOMR)**

The Contractor shall prepare a LOMR Report and submit it to CDOT for Acceptance prior to Notice of Final Acceptance. The Contractor shall include a summary index that documents all physical Project changes and their floodplain impacts from the CLOMR Report to the LOMR Report. The LOMR shall document the As-Built Project's hydraulic analyses, floodplain impacts, and compliance with floodplain regulations, as discussed in this Section. Survey information will be required and must be sealed by a Professional Land Surveyor licensed to practice in the State of Colorado as certifiable material supporting all LOMR analyses. Any violations of or inconsistencies with local, State, or Federal floodplain standards will require analytical revisions and/or on-the-ground mitigation after construction at the Contractor's expense.

#### **12.4.5.1.5 Floodplain Improvements Report Content**

The hydraulic design portions of the reports shall provide the documentation supporting the applicable parts of the analyses documented in Chapters 10 and 17 of the CDOT DDM and other design criteria and guidelines for road and bridge design in riverine environments. The floodplain permitting portions of the reports shall provide the documentation supporting compliance with Federal, State, and local floodplain regulations, as discussed in this Section.

In general, the Floodplain Improvements Report shall describe the following:

1. Project Description
2. Background Information
3. Topography, Aerial Photos, and Mapping Sources/Information
4. Hydrology
5. Hydraulics



6. Modeling Results
7. Regulatory Compliance
8. References

### **12.4.5.2 Floodplain Improvements Report Outline**

The Floodplain Improvements Reports shall follow the report outline below. New sections or additional subsections shall be added as necessary to fully document the hydraulic design and the floodplain permitting compliance.

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##### **I. INTRODUCTION**

- 1.1 Background
  - 1.1.1 Definitions of Project Reach, Study Limits, and Model Limits
- 1.2 Previous Studies
  - 1.2.1 Effective Condition
  - 1.2.2 Best Available
- 1.3 Topographic Mapping and Vertical Datum Considerations
  - 1.3.1 Effective Condition
  - 1.3.2 Corrected/Existing/Pre-Project
  - 1.3.3 Revised/Post-Project Condition
- 1.4 Purpose of Study

##### **II. HYDROLOGY**

- 2.1 Effective Regulatory
- 2.2 Previous Flooding History Other/Local/Best Available Hydrology
- 2.3 Other/Local/Best Available Hydrology
- 2.4 Discharge Probability (in support of construction crossings and low flow channel designs)

##### **III. EFFECTIVE CONDITION**

- 3.1. Published Effective Condition
- 3.2 Duplicate Effective Condition

##### **IV. CORRECTED EFFECTIVE CONDITION (or EXISTING CONDITION if no CORRECTED)**

- 4.1 Model Development
- 4.2 Floodplain Results
- 4.2 Floodway Results

##### **V. DESIGN CRITERIA AND DISCUSSION**

- 5.1 Local Criteria
  - 5.1.1 City/County
- 5.2 State Criteria and Guidelines
  - 5.2.1 Colorado drainage law

- 5.2.2 CWCB
- 5.2.3 CDOT
- 5.3 Federal/National Criteria and Guidelines
  - 5.3.1 FEMA
  - 5.3.2 FHWA and ASSHTO
- 5.4 Selected Bridge Design Criteria and Parameters
- VI. PRELIMINARY DESIGN SUMMARY/HYDRAULIC EVALUATION FINAL DESIGN ALTERNATIVES
- VII. HYDRAULIC DESIGN OF SELECTED BRIDGE OPTION (POST-PROJECT)
- VIII. SCOUR EVALUATIONS
- IX. SCOUR MITIGATION
- X. REVISED CONDITION HYDRAULIC EVALUATION AND FLOODPLAIN PERMITTING
  - 10.1 Floodplain Results and Comparisons
  - 10.2 Floodway Results and Comparisons
  - 10.3 Compliance with Local, State, and Federal Regulations
    - 10.3.1 Local—Codes/Ordinances, Local Permits/Applications
    - 10.3.2 State—CWCB Rules and Regulations
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- XI. REFERENCES

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Appendix 2.3 Hydraulic Work Maps

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Appendix 4.1 Alternative Evaluations (if applicable)

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Appendix 5.0 Scour Evaluations

Appendix 5.1 Geotechnical and Hydraulic Inputs

Appendix 5.1.1 Geotechnical Report (Hardcopy Excerpts—Complete Copy on Disk)

Appendix 5.1.2 Hydraulic Inputs

Appendix 5.2 Scour Calculations

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Appendix 5.2.2 Local Scour-Piers, Abutments

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Appendix 6.0 Scour Mitigation

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Appendix 6.3 Riprap Configuration

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Appendix 8.2 Certifications of Compliance with Floodplain and Floodway Regulations

Appendix 8.3 Property Owner Notification(s)

Appendix 8.4 City/County Floodplain Development Applications/Permits

Appendix 8.5 Correspondence/Meeting Minutes

Appendix 9.0 HEC-RAS Models (Report and Hydraulic Models)

Appendix 9.1 HEC-RAS Model/Project/Plan Summary Descriptions

Appendix 9.2 HEC-RAS Design Model

Appendix 10.0 Disk (Report and Hydraulic Models)

## 12.5 Deliverables

At a minimum, the Contractor shall submit the following to CDOT (and all applicable review agencies) for Review, Acceptance, or Approval:

### Table 12-5 Deliverables

Deliverable	Review, Acceptance, or Approval	Schedule
Temporary Drainage Plans	Acceptance	Within 14 Days prior to the implementation of each TCP
Sampling Schedule for Pipe Selection	Review	30 Days after issuance of NTP1
Final Hydraulics Report	Acceptance	Prior to RFC
Revised Final Hydraulics Report (as required)	Acceptance	Prior to Project Final Acceptance
Floodplain Improvements Report – West Fork South Platte River (Structure G-12-C)	Acceptance	As part of the Final RFC Documents submittal
Floodplain Improvements Report – West Fork South Platte River (Structure H-13-N)	Acceptance	As part of the Final RFC Documents submittal
Floodplain Improvements Report – Louis Gulch (Structure J-14-C)	Acceptance	As part of the Final RFC Documents submittal
Floodplain Improvements Report – Lone Tree Arroyo (Structure M-21-B)	Acceptance	As part of the Final RFC Documents submittal
Floodplain Improvements Report – Hoe Ranch Arroyo (Structure M-21-C)	Acceptance	As part of the Final RFC Documents submittal
Floodplain Improvements Report – Sheep Canyon Arroyo (Structure N-21-F)	Acceptance	As part of the Final RFC Documents submittal
Floodplain Improvements Report – Fountain Creek (Structure I-17-X)	Acceptance	As part of the Final RFC Documents submittal
Floodplain Improvements Report – Unnamed Wash (Structure M-21-I)	Acceptance	As part of the Final RFC Documents submittal
FEMA Approved CLOMR (as required)	Acceptance	Prior to RFC Documents
FEMA Approved LOMR (as required)	Acceptance	Prior to Final Acceptance
Drainage As-Constructed Documents	Acceptance	Per the requirements of Book 2, Section
Temporary Drainage As-Constructed Documents	Acceptance	To be maintained during the duration of the Project

## 13.0 ROADWAYS

The design and construction of roadways for the Project shall be in accordance with the Contract Documents.

### 13.1 Administrative Requirements

#### 13.1.1 Standards

The primary requirements for the design and construction of mainline roadways shall include, but are not limited to, the following documents:

**Table 13-1 Standards for Roadway**

<b>Author or Agency</b>	<b>Title</b>
Colorado Department of Transportation (CDOT)	<i>Roadway Design Guide</i>
American Association of State Highway and Transportation Officials (AASHTO)	<i>A Policy on Geometric Design of Highways and Streets</i>
AASHTO	<i>Roadside Design Guide</i>
CDOT	<i>Standard Plans, M&amp;S Standards</i>
CDOT	<i>Standard Specifications for Road and Bridge Construction</i>
State of Colorado	<i>State Highway Access Code</i>
International Code Council (ICC)	<i>International Fire Code (IFC)</i>

#### 13.1.2 Local Roadways

Local Roadways include county roads and local streets.

The requirements for the design and construction of local roadways shall include, but are not limited to those listed in Table 13-1 and other manuals and standards required to complete the work.

## 13.2 Design Requirements

### 13.2.1 Submittals

All submittals shall be prepared, reviewed and submitted in accordance with the requirements set forth in Book 2, Section 3.

### 13.2.2 General Design Requirements by Project Element

#### 13.2.2.1 Basic Configuration Accommodation

The infrastructure constructed with the Project shall consider and accommodate the Basic Configuration, including but not limited to horizontal/vertical geometry and clearances to Structures.

The Contractor shall prepare and submit the preliminary design plan elements in consideration of the Basic Configuration for the Project for review prior to issuance of Released for Construction plans, according to procedures of its Approved Quality Management Plan.

### **13.2.3 Cross Slope and Superelevation**

#### **13.2.3.1 Normal Cross Section**

All new and reconstructed pavement sections shall have a normal cross slope of 2%.

For pavement widening sections, the widened section shall have a normal cross slope of 2% or match existing cross slope.

For overlay sections where the existing cross slope is equal or greater than 2%, the Contractor shall maintain the existing pavement cross slope. For overlay sections where the existing cross slope is less than 2% the cross slope will be built up through the use of a variable thickness overlay to a minimum of 2%, unless otherwise Approved by CDOT in advance of construction activities.

#### **13.2.3.2 Superelevation Rates**

Superelevation design shall comply with the design criteria and methodology of AASHTO, A Policy on Geometric Design on Highways and Streets (PGDH), the CDOT Roadway Design Guide and CDOT Standard Plans List of M & S Standards. Maximum Superelevation rate ( $e_{max}$ ) is 8%.

Superelevation diagrams shall be provided in the Roadway plans to verify that edge profiles meet design criteria. Superelevation shall be modified if necessary to meet these criteria.

Superelevation transitions shall be designed to eliminate 0.0% cross slopes on Bridge Decks or on profile crest and sag curves where grades flatter than 0.5% occur.

### **13.2.4 Stopping Sight Distance, Decision Sight Distances, and Passing Sight Distances**

Sight distances shall be determined in accordance with the AASHTO PGDH and the CDOT Roadway Design Guide.

### **13.2.5 Fill and Cut Slopes and Clear Zones**

The Contractor shall design cut and fill slopes to obtain clear zones and avoid the need for guardrail wherever possible. Where clear zones cannot be obtained within CDOT ROW, guardrail shall be required.

Clear zones shall be designed in accordance with the recommendations of AASHTO Roadside Design Guide and shall use the horizontal curve adjustment factor where applicable. All other guidelines within the AASHTO Roadside Guide shall apply. Clear zones shall be measured from the outside edge of auxiliary lanes where they are present.

Note: All slopes stated herein are in terms of horizontal:vertical.

### 13.2.5.1 Roadside Slopes Adjacent to Pavement

Roadside slopes directly adjacent to the roadways shall be 6:1 except, at guardrail locations and where otherwise noted. The Point of Slope Selection (POSS) is defined as the location at which the roadside slope, also known as the Z-Slope, adjacent to the pavement ends and the cut or fill slope begins. Width and slope of the area between the Edge of Pavement (EOP) and the POSS shall be located a minimum of 8 feet beyond the edge of the pavement.

### 13.2.5.2 Fill Slopes

Fill slopes and heights beyond the POSS shall be designed and constructed in accordance with the following priority:

US 350/CO 239 (Plains)	CO 9 (Mountainous)	US 24 (Rolling)
H≤ 4', Z then 6:1	H≤ 4', Z then 4:1	H≤ 4', Z then 4:1
H>4'to10', Z then 4:1	H>4'to10', Z then 4:1	H>4'to10', Z then 4:1
H>10' to 15', Z then 4:1	H>10' to 15', Z then 3:1	H>10' to 15', Z then 3:1
H>15', Z, then 3:1	H>15', Z, then 3:1	H>15', Z, then 3:1

1. Where the above conditions cannot be obtained the Contractor may use any of the following design approaches:
  - A. Use 2:1 slopes with barrier protection, with CDOT Approval
  - B. Use retaining walls as necessary, with guardrail protection, to obtain matches with existing conditions within the Project limits. Where retaining walls are used, provide a traversable surface with a maximum 6:1 cross slope and a minimum 10 feet width between face of wall and ROW or permanent line, fence line or other obstruction.

Fill slope areas will be designed with ditch rip rap as necessary to prevent roadside and slope drainage from flowing onto adjacent properties.

All fill slopes shall be rounded at their matches to provide for a pleasing appearance.

### 13.2.5.3 Cut Slopes

Cut slopes beyond the POSS shall be designed and constructed in accordance with the following priorities:

1. Cut slopes must be transitioned at the match with the 6:1 slopes adjacent to roadway pavement in such a manner to comply with the recommendations of the AASHTO Roadside Design Guide.
2. Use 4:1 or flatter slopes for cut slopes where matches with existing conditions can be obtained within the Project limits.
3. Use 3:1 slopes for cut slopes where such slopes steeper than 4:1 are necessary to obtain matches with existing conditions within the Project limits.
4. Where the above conditions cannot be obtained, the Contractor may use any of the following design approaches:
  - A. Use 3:1 foreslopes with barrier protection.
  - B. Use retaining walls as necessary, with guardrail protection to obtain matches with existing conditions within the Project limits. Where retaining walls are used, provide a

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traversable surface with a maximum 6:1 cross slope and a minimum 10 feet width between face of wall and ROW or permanent line, fence line or other obstruction.

All cut slopes shall be rounded at their matches to provide a pleasing appearance.

#### **13.2.5.4 Guardrail**

Guardrail shall be required wherever clear zone requirements cannot be achieved. All Guardrail Type 3 W Beam shall be Midwest Guardrail System (MGS) 31-inch with steel posts and synthetic blocks. Guardrail Type 3 W Beam shall include hot mix asphalt (HMA) as shown on M-606-1. Wooden curb and earthen shoulder is not allowed. Shoulder transitions shall occur after the length of need is met at a 25:1 taper length. Shoulder width shall be full width until length of need has been met.

#### **13.2.5.5 Barrier**

All concrete barriers shall be cast-in-place. Precast barriers are not allowed for permanent installations. All concrete barriers shall be Guardrail Type 9 Single Slope Barrier.

#### **13.2.5.6 End Terminals**

All end terminals shall be MASH compliant and included in CDOT's M&S.

### **13.2.6 Local Access**

Modifications to currently proposed local access shall follow State of Colorado, State Highway Access Code, and shall be subject to CDOT Approval and the approval of the Local Agency prior to issuance of applicable Released for Construction Documents.

Connecting Approach (Access) roads shall be paved in accordance with CDOT M-Standard 203-1 using similar pavement as the adjacent roadway, and shall be replaced in conformance to the above requirements to the limits required to match existing grade.

### **13.2.7 Design Exceptions**

#### **13.2.7.1 Design Exception Process**

Design exceptions shall be submitted to CDOT for Approval prior to the submittal of the Pre-RFC Documents. Design exceptions may be subject to the Approval of FHWA. Design exceptions that require Approvals beyond CDOT, may require additional time for Approval. Delays incurred from said Approvals are non-compensable and shall not justify any additional time to the schedule.

The Contractor shall comply with the following requirements when requesting a design exception:

1. The Contractor shall submit design exception requests in the form of a letter addressed to the CDOT Project Director for Approval prior to the submittal of Pre-RFC Documents.
2. The design exception request shall consist of the following items:
  - A. A letter identifying the exception(s) by number, Project number, location, and



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status (new submittal, resubmittal, etc.).

- B. A completed CDOT Form 464 – Design Exception Variance Request, Exhibit 13-B.
- C. Supporting documentation indicating the justification for the design exception. Justification shall address the following items:
  - i. Site conditions of the exception.
  - ii. Compelling reason for the exception, including which standard is not being met. If the exception affects any other standards, state what will be done to mitigate the effects of the exception.
  - iii. Effects of the exception on safety and operation of the facility.
  - iv. Previous crash history near the location of the exception.
  - v. Calculations estimating the cost of attaining the design standard and costs of exception as proposed.
  - vi. Effect on scenic, historical, or other environmental features.
- D. Plan and profile drawings depicting the exception.

### **13.3 Construction Requirements**

#### **13.3.1 Safety Edge**

The Contractor's design shall include safety edges. Safety edge shall be constructed on all roadways except in front of guardrail.

#### **13.3.2 Shouldering Material**

Shouldering Material may be placed in lieu of topsoil along the pavement edge for 4' in width per the requirements of Book 2, Section 10.

#### **13.3.3 Fencing**

##### **13.3.3.1 Temporary Fencing**

Installation of temporary fencing shall be required where existing ROW fence needs to be removed to aid in construction in order to protect and control livestock and to protect adjacent private property. The Contractor shall maintain the temporary fence in such condition that it is capable of performing its intended function until such time the permanent fence is completed. The Contractor shall give the landowner 30 Days written notice before any existing fence or gates are removed unless otherwise noted in Book 2, Section 8.

In remaining areas, temporary fencing should be considered to control construction operations and avoid impacts beyond ROW limits. Temporary fence shall be placed as required as any other section of the Contract.

##### **13.3.3.2 Permanent Fencing**

The Contractor shall provide permanent fencing and gates in accordance with CDOT Standard M-607-1.

### 13.3.3.3 Mailboxes

Mailboxes shall be reset and replaced per CDOT Standard M-210-1.

## 13.4 Deliverables

At a minimum, the Contractor shall submit the following to CDOT for review, Approval and/or Acceptance:

Deliverable	Review, Acceptance or Approval	Schedule
Preliminary design plan elements in consideration of the Basic Configuration	Review	Prior to issuance of Released for Construction plans
Access design modifications	Approval	Prior to issuance of applicable Released for Construction Documents
Design exceptions(if applicable)	Approval	Prior to issuance of applicable Released for Construction Documents

All deliverables shall also conform to the requirements of Section 3 - Quality Management.

## 13.5 Exhibits

Exhibits are as follows:

- A. Roadway Design Criteria Table
- B. CDOT Design Exception Variance Request Form

**Exhibit A: Roadway Design Criteria Table**

DESIGN ELEMENT		US 350 A	US 350 A	US 24 A	CO 9 A	CO 9 C	CO 239
<b>Roadway Classification</b>							
Roadway Classification		Minor Arterial	Minor Arterial	Minor Arterial	Minor Arterial	Minor Arterial	Minor Arterial
Access Control Classification		R-B Rural	R-B Rural	R-B Rural	R-B Rural	R-A Regional	R-B Rural
Mile Marker to Mile Marker		0 to 45.149	45.149-72.718	226. - 376.59	8.626-21.246	71.153-76.454	0.97-3.345
Terrain		Plains	Rolling	Rolling	Moun-tainous	Moun-tainous	Plains
Design Speed	(MPH)	75	75	75	65	60	55
Posted Speed Limit (MPH)		65	65	65	55	50	45
Design Vehicle		WB-67	WB-67	WB-67	WB-67	WB-67	WB-67
<b>Typical Section Criteria</b>							
Lane Width (Ft.)		12'	12'	12'	12'	12'	11'
Shoulder Widths		*6'	*6'	8'	8'	8'	*6'
*Six foot outside shoulders with a paved two foot guardrail offset.							

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**Exhibit B: CDOT Design Exception Variance Request Form**

[Microsoft Word - cdot0464.doc \(codot.gov\)](#)

**R2B2 DESIGN BUILD**

FBR R200-266 (23558) (Grant)

FBR R200-267 (23559) (Non-Grant)

**14.0 SIGNING AND PAVEMENT MARKING**

The Contractor shall provide and be responsible for the design and installation of the Project permanent signing and pavement marking within the limits of the Project and shall be completed in accordance with the Contract Documents.

**14.1. Administrative Requirements****14.1.1 Standards**

The Contractor shall design and construct the Project in accordance with the requirements of the standards in the documents listed in Table 14-1 and those referenced in Book 3. The Contractor shall use the latest adopted edition at the time of the Proposal Due Date.

**Table 14-1. Standards**

<b>Author or Agency</b>	<b>Title</b>
American Association of State Highway and Transportation Officials (AASHTO)	<i>A Policy on Geometric Design of Highways and Streets (PGDHS)</i>
AASHTO	<i>Roadside Design Guide</i>
AASHTO	<i>Standard Specifications for Highway Bridges</i>
Colorado Department of Transportation (CDOT)	<i>Standard Specifications for Road and Bridge Construction (CDOT Standard Specifications)</i>
CDOT	<i>Retroreflective Sheetting Materials Guide</i>
CDOT	<i>Sign Design Manual</i>
CDOT	<i>M&amp;S Standard Plans</i>
CDOT	<i>The Colorado Supplement to the Federal Manual on Uniform Traffic Control Devices</i>
Federal Highway Administration (FHWA)	<i>Manual on Uniform Traffic Control Devices (MUTCD)</i>
FHWA	<i>Standard Highway Signs (with supplements)</i>

**14.2 Design Requirements****14.2.1 Submittals**

All submittals shall be prepared, reviewed, and submitted in accordance with the requirements set forth in Book 2, Section 3.

**14.2.2 Temporary Traffic Control**

All requirements for temporary traffic control, including, signing, and striping for the Work, are found in this Section and in Book 2, Section 16.

**R2B2 DESIGN BUILD**

FBR R200-266 (23558) (Grant)

FBR R200-267 (23559) (Non-Grant)

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**14.2.3 Permanent Signing and Striping**

The Contractor shall provide permanent signing, pavement marking, delineation, and other traffic control devices that facilitate safe travel flow through the completed Project elements.

The Contactor shall submit to CDOT signage and pavement marking plans to CDOT for Acceptance prior to the RFC Documents submittal.

**14.3.3.1 Signing Design**

The Contractor shall prepare signing plans for all necessary guide, warning, supplemental, and regulatory signs for the Project. The plans shall also include additions, removals, or modifications to existing signs and appurtenances.

Signing design shall comply with the requirements of the most current publications of the CDOT *Standard Specifications for Road and Bridge Construction (CDOT Standard Specifications)*, *M&S Standard Plans*, and *Sign Design Manual*; and the FHWA *Manual on Uniform Traffic Control Devices (MUTCD)*, as modified by the Colorado Supplement, as well as all Interpretation issued by FHWA. The requirements of the MUTCD shall include both the standard requirements and the guidance recommendations of the manual. Unless stipulated otherwise by CDOT in writing, all MUTCD “should” and “shall” standards and guidance recommendations are to be assumed Project Technical Criteria and as part of the Work. MUTCD standards take precedence over any Request for Proposal (RFP) exhibit or preliminary design.

Signing plans shall provide layouts showing the locations of ground-mounted and overhead signs. Signs created for use in the CDOT ROW shall meet current CDOT and MUTCD specifications.

New mile markers shall be field-measured from the previous undisturbed existing mile marker to provide precise placement and location of the new markers at 1-mile intervals.

These plans shall be a component of all Released for Construction Documents where any signing and pavement marking is required for the Work. No material, part, or attachment of any equipment shall be substituted or applied contrary to the manufacturer’s recommendations and standard practices.

The Contractor shall provide permanent signing, pavement marking, delineation, and other permanent traffic control devices that facilitate safe flow of traffic through the completed Project elements of the Project.

All signing shall be replaced inside the Project limits.

The Contractor shall submit plans for all Class III and regulatory and guide signs to CDOT for Approval 90 days prior to issuance of Released for Construction Documents. These plans shall identify the location and legend for each sign. Sign legends shall be consistent with the CDOT Sign Design Manual. The Contractor shall submit sign layouts for all special signs of any size to CDOT for Approval 90 days prior to issuance of Released for Construction Documents.

**R2B2 DESIGN BUILD****FBR R200-266 (23558) (Grant)****FBR R200-267 (23559) (Non-Grant)**

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Sign structures shall be designed in accordance with CDOT Standard S-614-50.

The Contractor shall use P1 or P2 tubular steel posts per CDOT S-Standard Plans for all Class I and Class II ground signs. Double posting of signs shall be required as per CDOT M&S Standards. Wood posts for mounting ground signs shall not be used. All delineators shall have flexible posts and conform to the requirements of Section 612, of the CDOT *Standard Specifications*, and CDOT S Standard S-612-1.

All ground signs shall include breakaway devices per CDOT S-Standard Plans.

Sign panel materials shall conform to CDOT Standard Specifications Section 713. Sheeting shall be Type IV and Type XI as defined in the CDOT *Retroreflective Sheeting Materials Guide*, and shall conform to Subsections 713.04 and 713.06 when applicable. For all permanent signs, the legend, borders, and background shall be Type XI.

The Contractor shall not reuse any existing sign structures, ground signs, delineators or their components. All removed sign structures, ground signs and their components shall become the property of the Contractor.

**14.2.3.2 Pavement Marking Design**

The Contractor shall prepare pavement marking designs and plans for roads affected by the construction of the Project and shall submit the plans to CDOT for Approval 60 days prior to issuance of Released for Construction Documents. These plans shall include, but not be limited to, all striping required for center lines, edge lines, lane lines, intersection markings, delineation, and other striping, as well as any modifications required for transitions to existing pavement markings.

Pavement marking design for CDOT facilities shall comply with the requirements of the most current publications of the CDOT *Standard Specifications for Road and Bridge Construction* and *M & S Standard Plans*, and the FHWA MUTCD. The requirements of the MUTCD shall include both the standard requirements and the guidance recommendations of the manual.

**14.2.3.2.1 Materials**

Pavement markings shall conform to the requirements specified herein and the Project Special Provisions, Standard Special Provisions, Standard Specifications, M&S Standards, MUTCD and the Local Agency Standard Specifications.

The Contractor shall use the following pavement marking materials at each location:

**R2B2 DESIGN BUILD**

FBR R200-266 (23558) (Grant)

FBR R200-267 (23559) (Non-Grant)

**Table 14-2**

<b>Pavement Marking</b>	<b>Type</b>
Edge lines and Centerlines	Modified Epoxy Pavement Marking (Inlaid)
Lane Lines	Preformed Plastic Pavement Marking (Type I) (Inlaid)
Stop Bars	Preformed Thermoplastic Pavement Marking (Inlaid)

**14.3 Construction Requirements**

No Material, part, or attachment of any Equipment shall be substituted or applied contrary to a manufacturer's recommendations and standard practices.

**14.3.1 Permanent Signing**

Sign posts shall be installed plumb. Vertical deviation shall not exceed 0.5 inch in 10 feet.

**14.3.2 Pavement Marking Removal**

Removal of existing markings and temporary markings shall be hydroblasted or other approved method by CDOT, prior to placing permanent markings.

**14.3.3 Temporary Signalization**

Refer to Book 2, Section 16, for temporary signal requirements for construction operations.

**14.4 Deliverables**

The Contractor shall submit the following to CDOT for review, Approval or Acceptance:

<b>Deliverable</b>	<b>Review, Acceptance or Approval</b>	<b>Schedule</b>
Sign layouts for all special signs of any size	Approval	90 Days prior to issuance of Released for Construction Documents
Signage and Pavement Marking Plans	Acceptance	Issued as part of Released for Construction Documents

All deliverables shall also conform to the requirements of Section 3 - Quality Management.



## 15.0 STRUCTURES

This Section 15 includes the requirements for the structures Work for the Design Build Project (Project). This Work shall be completed in accordance with the Contract Documents.

### 15.1 Structures Work

#### 15.1.1. Bridges

Refer to Table 15-1 and this Section for Replacement Structures to be constructed in accordance with Book 2, Section 1, Basic Configuration and Additional Requested Elements (ARE) for the Project. General layouts are provided in the Reference Documents for information.

**Table 15-1 Replacement Structures**

HWY	Milepost	Structure No.	Description
CO 9	71.448	G-12-C	CO 9 over Middle Fork South Platte River (Basic Configuration)
CO 9	20.107	J-14-C	CO 9 over Louis Gulch (Basic Configuration)
CO 9	15.97	J-15-G	CO 9 over Mack Gulch (Basic Configuration)
US 24	227.095	I-13-G	US 24 over Draw (Basic Configuration)
US 24	271.9	I-15-AO	US 24 over Twin Creek (Basic Configuration)
US 24	271.691	I-15-T	US 24 over Seasonal Wash (Basic Configuration)
US 24	271.691	H-13-N	US 24 over Middle Fork South Platte River (Basic Configuration)
US 24	240.686	M-21-B	US 24 over Lone Tree Arroyo (Basic Configuration)
US 350	51.682	M-21-C	US 350 over Hoe Ranch Arroyo (Basic Configuration)
US 350	50.582	M-21-J	US 350 over Draw (Basic Configuration)
US 350	57.474	M-22-Y	US 350 over Draw (Basic Configuration)
US 350	47.131	N-21-C	US 350 over Jack Treese Arroyo (Basic Configuration)
US 350	48.744	N-21-F	US 350 over Sheep Canyon Arroyo (Basic Configuration)
US 350	10.289	O-19-D	US 350 over Luning Arroyo (Basic Configuration)

US 350	56.454	M-21-I	US 350 over Draw (Basic Configuration)
US 350	69.817	M-22-U	US 350 over Otero Ditch (Basic Configuration)
US 24	229.468	I-13-H	US 24 over Draw (Basic Configuration)
US 24	295.45	I-17-X	US 24 over Fountain Creek (ARE)
CO 239	1.74	P-19-G Minor	CO 239 over Pickwire Ditch (ARE)

### 15.1.2. Minor Structures

Minor Structures include the replacement or extension of existing cross culverts within the limits of the roadway widening. If an existing cross culvert is allowed to remain place, the culvert shall be cleaned.

### 15.1.3. Retaining Walls

Permanent retaining wall locations in the Basic Configuration are shown in the reference drawings. Final retaining wall types, sizes, and locations shall be determined by the Contractor. The Contractor may eliminate retaining walls if the grading requirements for the Project are met. Retaining Walls shall be designed and constructed in accordance with the requirements of this Section 15.

## 15.2 Administrative Requirements

### 15.2.1. Structure Numbers or Structure IDs

As required in the *BDM*, the Contractor shall obtain from the Colorado Department of Transportation (CDOT) the Structure numbers or Structure IDs for CDOT-managed structural assets and for new Structures added to the Project not included in Section 15.1. Location changes for new Structures listed in this Section may require a new or revised Structure number or ID to be requested. Structure numbers or IDs shall be shown on the Released for Construction (RFC) Documents.

## 15.3 Design Requirements

### 15.3.1. Standards

The Contractor shall design and construct the Project in accordance with the requirements of the standards in the *BDM* and documents referenced in Book 3. The Contractor shall use the latest adopted edition at the time of the Proposal Due Date.

The *BDM* defines policy and procedures currently in effect for the design of Bridges and other Roadway Structures on the Project. The *BDM* presents the minimum requirements for Structures, except as otherwise noted in this Section 15. Deviations from the *BDM* and this

Section 15 shall be submitted to CDOT for Approval prior to Acceptance of Final RFC Documents.

**Table 15-2 Standards**

<b>Author or Agency</b>	<b>Title</b>
American Association of State Highway and Transportation Officials (AASHTO)	<i>Load and Resistance Factor Design (LRFD) Bridge Design Specifications</i>
AASHTO	<i>LRFD Bridge Construction Specifications</i>
AASHTO	<i>Guide Specifications for Design and Construction of Segmental Concrete Bridges</i>
AASHTO	<i>Guidelines for Steel Girder Bridge Analysis</i>
AASHTO	<i>Manual for Bridge Evaluation</i>
AASHTO	<i>AASHTO LFRD Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals</i>
AASHTO	<i>Guide Specifications for LRFD Seismic Design</i>
AASHTO	<i>AASHTO/AWS D1.5 M- D 1.5, Bridge Welding Code</i>
AASHTO	<i>Guide for Development of Bicycle Facilities</i>
AASHTO	<i>Guide Specifications for Fracture Critical Non-Redundant Steel Bridge Members</i>
AASHTO	<i>Guide Specifications for Horizontally Curved Steel Highway Bridges</i>
AASHTO	<i>AASHTO LRFD Guide Design Specifications for Bridge Temporary Works</i>
AASHTO	<i>AASHTO M-203 Standard Specification for Steel Strand, Uncoated Seven-Wire for Concrete Reinforcement</i>
AASHTO	<i>AASHTO/NSBA Steel Bridge Collaboration Shop Detail Drawing Review/Approval Guidelines</i>
American Society for Testing and Materials (ASTM)	<i>ASTM A-416 Standard Specification for Low-Relaxation, Seven-Wire Steel Strand for Prestressed Concrete</i>
ASTM	<i>ASTM D-1143 Standard Test Methods for Deep Foundations Under Static Axial Compressive Load</i>
CDOT	<i>Bridge Design Manual</i>
CDOT	<i>Bridge Detail Manual</i>
CDOT	<i>Bridge Structural Worksheets</i>
CDOT	<i>Bridge Rating Manual</i>
CDOT	<i>Deck Geometry Manual</i>
CDOT	<i>Retaining &amp; Noise Wall Inspection &amp; Asset Management Manual</i>
CDOT	<i>Bridge Technical Memorandums</i>

Author or Agency	Title
CDOT	<i>Standard Specifications for Road and Bridge</i>
CDOT	<i>Standard Special Provisions</i>
CDOT	<i>Survey Manual</i>
CDOT	<i>Roadway Design Guide</i>
CDOT	<i>Drainage Design Manual</i>
CDOT	<i>Construction Manual</i>
CDOT	<i>Standard Plans, M &amp; S Standards</i>
CDOT	<i>Sign Design Manual</i>
CDOT	<i>Supplement to Standard Highway Signs</i>
Federal Highway Administration (FHWA)	<i>Corrosion/Degradation of Soil Reinforcements for Mechanically Stabilized Earth Walls and Reinforced Slopes</i>
FHWA	<i>Design and Construction of Mechanically Stabilized Earth Walls and Reinforced Soil Slopes</i>
FHWA	<i>FHWA RD-97-130 Design Manual for Permanent Ground Anchor Walls</i>
FHWA	<i>FHWA DP-90-068, Permanent Ground Anchors, Volume 1, Final Report</i>
FHWA	<i>FHWA IF-99-015 Geotechnical Engineering Circular No. 4 – Ground Anchors and Anchored Systems</i>
FHWA	<i>Geotechnical Engineering Circular No. 7 – Soil Nail Walls</i>
FHWA	<i>FHWA HI-95-038 “Geosynthetic Design and Construction Guidelines”</i>
FHWA	<i>Manual for the Design &amp; Construction Monitoring of Soil Nail Walls</i>
FHWA	<i>FHWA NH-00-043 Mechanically Stabilized Earth Walls and Reinforced Soil Slopes</i>
FHWA	<i>FHWA RD-73-93, Analysis and Design Problems in Modeling Slurry Wall Construction</i>
FHWA	<i>FHWA SA-93-068, Soil Nailing Field Inspectors Manual-Soil Nail Walls</i>
FHWA	<i>Hydraulic Design Series (HDS) No. 4, Introduction to Highway Hydraulics</i>
	<i>GDR</i>

### 15.3.2. Software

#### 15.3.2.1 Design

According to *BDM* Section 4.2, CDOT Staff Bridge does not support a preapproved list of software but reserves the right to disallow any software on a regular or case-by-case basis.

### 15.3.2.2 Load Rating

The following software shall be used to load rate all major and minor Structures on this Project:

1. AASHTOWare Bridge Rating (BrR). The Contractor shall confirm with CDOT which version to use.
2. If a Bridge type is selected that cannot be rated using the above software package, the Contractor shall submit to CDOT a proposed alternate Bridge rating method for Approval prior to the preparation of Bridge or Concrete Box Culvert ratings.

### 15.3.3 Bridge Enterprise Requirements

As outlined in the Colorado Bridge Enterprise Strategies for Enhancing Bridge Service Life, October 9, 2020, the following is the Tier Designation for recommended and required minimum strategies for each structure:

HWY	STRUCTURE	TIER DESIGNATION
US 350	M-21-B	2
US 350	M-21-C	2
US 350	M-21-J	2
US 350	M-22-U	2
US 350	M-22-Y	2
US 350	N-21-C	2
US 350	N-21-F	1
US24	I-13-G	1
US 24	I-15-AO	1
US 24	I-15-T	1
US 24	H-13-N	1
CO 9	G-12-C	1
CO 9	J-14-C	1
CO 9	J-15-G	1
US 350	O-19-D	1
US 350	M-21-I	2
US 24	I-13-H	1
CO 239	P-19-G Minor	2
US 24	I-17-X	1

Required minimum strategy for a structure designation:

Tier 1: Epoxy-Coated Rebar or Galvanized Rebar, Class G Concrete, Precast Deck Panels

Tier 2: Low carbon chromium rebar, Class G Concrete, Precast Deck Panels

### 15.3.4 Materials

#### 15.3.4.1 Concrete

Concrete shall be in accordance with the referenced Standards.

The use of lightweight concrete will not be allowed.

Class G concrete shall be used for all bridge structures. Class D shall be used for all concrete box culverts and steel arch structures.

Proposed concrete mix designs and procedures shall be submitted for Acceptance by CDOT at least 3 weeks prior to the anticipated concrete placement date.

### **15.3.5 Loads and Forces**

#### **15.3.5.1 Live Load**

Temporary Bridges shall be load rated for HL93 and CDOT permit vehicles.

#### **15.3.5.2 Uplift**

Bridge spans shall be proportioned to avoid uplift at supports due to non-seismic loads.

#### **15.3.5.3 Thermal Forces**

Temperature ranges for cold climates shall be used per the American Association of State Highway and Transportation Officials (AASHTO) *Load and Resistance Factor Design (LRFD) Bridge Design Specifications*.

### **15.3.6 Geotechnical**

Refer to Section 10 – Geotechnical and Roadway Pavements for Geotechnical requirements.

Geotechnical subsurface investigations conducted within the vicinity of the Structures are documented in the Reference Documents. Preliminary Geotechnical Study (PGS) memos that include recommendations to support the reference designs including: Structure foundation type and wall type are included in geotechnical memos for each structure in the Reference Documents. Supplemental geotechnical investigations, per Book 2, Section 10; will be required for Structures in segments of the Project beyond the Basic Configuration. Additionally, supplemental geotechnical investigations will be required for proposed Structure designs where the geotechnical investigation requirements of the *BDM* and *AASHTO LRFD Bridge Design Specifications* are not met by the *PGS memos*.

### **15.3.7 Structure Aesthetics Requirements**

#### **15.3.7.1 Aesthetic Requirements for Structures in General**

For consistency within the Project limits, retaining walls within a common viewshed shall incorporate similar visual Aesthetics.

#### **15.3.7.2 Aesthetic Requirements for Walls**

Preliminary layouts of the walls are shown in the reference drawings.

Wall panels shall be cast-in-place or precast concrete and shall be full height. All wall facing shall be of a consistent type (i.e., cast-in-place, precast facing, etc.) within any section of Road

and single viewshed. This includes surface treatment and jointing layout. Panel design and construction shall consider ease of replacement and/or repair.

### **15.3.8 Structure Openings**

#### **15.3.8.1 Stock Passes**

A stock pass must consist of either a bridge with an opening of 7 feet high, a standard box culvert with an opening 6 feet wide and 7 feet high, an 84-inch culvert, or a structural-plate arch culvert 5 feet – 10 inches span by 7 feet – 8 inches rise. Six inches of earth fill material must be placed in the invert of a round or arch culvert after installation. Rip Rap aprons will not be allowed. The following structures are identified as stock passes:

- Str. M-21-B
- Str. M-21-I
- Str. M-21-J
- Str. N-21-F
- Str. I-13-G
- Str. I-13-H
- Str. J-14-C

#### **15.3.8.2 Fish Habitat**

Refer to Book 2, Section 5 – Environmental for natural bottom requirements. The following structures are identified as fish habitat:

- Str. H-13-N
- Str. G-12-C

### **15.3.9 Bridges**

#### **15.3.9.1 Geometry**

##### **15.3.9.1.1 Geometric Layout**

Fill and cut slopes along the longitudinal axis of Bridges shall not be steeper than 2:1 (H:V) perpendicular to the abutment. A 2-foot minimum width berm shall be at the top of the slope at the front face of abutment and a 2-foot minimum vertical dimension from the top of this berm to the bottom of girder. See the *BDM* Figures 11-1, 11-3 and 11-4.

##### **15.3.9.2 Type**

Bridge types shall follow the guidelines in the *BDM* unless otherwise specified in this Section. Alternate Bridge types will be allowed, but only if they have been accepted for general use by other US State Transportation Authorities for major highways. The Contractor shall demonstrate that the design of the alternate Bridge types and components meet the Project Technical Criteria and perform well under the Project's environmental conditions.

Proposed Bridge types in the Structural Concept Plans/Report historically not used by CDOT shall be submitted for Approval prior to Structure Concept Plan and Report submittals.

Experimental Bridge types, timber Bridges, and masonry Bridges will not be allowed. The use of structural-plate arches is allowed for wildlife underpasses and not allowed

for water crossings.

### **15.3.9.3 Components**

#### **15.3.9.3.1 Bridge Rails**

Bridge rail shall be, at a minimum, AASHTO *Manual for Assessing Safety Hardware* (MASH) 2016 Test Level 4 (TL-4) compliant. CDOT Bridge Rail Type 9 and Type 10 MASH meet MASH 2016 Test Level (TL-4) and in some cases TL-5 requirements and shall be used.

The Contractor shall provide two (2) 2-inch conduit(s) in all Bridge curb(s) for the required and future utility line(s) on each bridge structure.

#### **15.3.9.3.2 Safety Railing**

Safety railing shall be required as specified in the *BDM*.

#### **15.3.9.3.3 Approach Slabs**

Approach slabs shall be a minimum of 20 feet in length measured along the centerline of the Bridge, except when other physical features of the Project preclude this minimum length.

The use of precast approach slabs shall be submitted to CDOT for Approval prior to Structure Concept Plan and Report submittals.

Bridge rails shall be connected to approach slabs.

Drainage and backfill behind the abutments and beneath the approach slabs shall be as prescribed in the *BDM*.

#### **15.3.9.3.4 Decks**

The Contractor shall provide a minimum concrete deck thickness of 8 inches.

Open or filled and partially filled metal grid decks, orthotropic steel decks, aluminum decks, fiber-reinforced polymer decks, and sandwich deck panels shall not be used.

Full-depth precast deck slabs shall have cast-in-place concrete joint closures, post-tensioning across joints, and an overlay.

Pre-tensioned, precast concrete deck forms shall be a minimum of 3 inches thick and have a full grout or concrete bearing. Full grout is defined as a 1-inch minimum thickness by 2-inch wide grout pad.

The use of concrete stay-in-place deck forms is optional. Metal stay-in-place deck forms are prohibited from use.

If non concrete stay-in place forms are used, they shall be transparent.

The superstructure, substructure, and foundation shall be designed for an extra 5 pounds per



square foot (psf) minimum dead load applied to the superstructure for future utilities.

Permanent deck forms will not be allowed for cast-in-place post-tensioned box girders, T-girder deck slabs, or cantilevered portions of decks.

Styrofoam blocks used to support precast deck panels shall be limited to five inches in height, unless approved by Staff Bridge.

Cast-in-place concrete placed on top of pre-cast double tee or pre-cast box girders shall be considered composite with the pre-cast top flange if the minimum total laminated deck thickness is 8 inches, the minimum cast-in-place thickness is 5 inches and the top surface of the pre-cast top flange is roughened.

If any part of the deck resists tension, the stress in the deck in this area shall not exceed 0.0948 times the square root of  $f'_c$ . ( $0.0948 \times (f'_c)^{1/2}$ ) where  $f'_c$  is in ksi. Minimum longitudinal steel in the top mat of cast-in-place decks shall be #4's at 6-inch spacing spliced to the negative-moment steel reinforcing over piers.

FHWA Design of Bridge Deck Drainage, Hydraulic Engineering publications referred to by CDOT Bridge Design manual states if the proposed vertical grade is less than 0.5%, the designer must specify a gutter grade that will run the water to the inlet boxes from high points between the boxes. If bridge structure is selected, design team shall address drainage issues during final design. The following bridges have less than 0.5% vertical grade:

- M-21-B
- M-21-I
- M-21-J
- M-21-C
- N-21-F

#### **15.3.9.3.5 Deck Joints**

The Contactor shall avoid or minimize joints wherever possible.

Bridges in length up to 460 feet precast or cast-in-place concrete) shall be integral, wherever possible, according to guidelines given in CDOT Bridge Design Manual.

For single-span bridges less than 150 ft. long and continuous-span bridges with a total length less than 250 ft., CDOT prefers to use asphalt-paved approaches and no expansion joints. Aluminum joints shall not be used.

The end dam on the approach slab shall be detailed to accommodate overlay.

#### **15.3.9.3.6 Overlays**

Bridges shall implement deck protection as discussed in Section 9.9 of the *BDM*.

#### **15.3.9.3.7 Superstructures**

Jointless construction shall be implemented as discussed in Section 14.4.1 of the *BDM*. The use of expansion joints at abutments and piers shall be submitted to CDOT for Approval prior to Structure Concept and Report submittals. Bridges shall be continuous over supports and shall not use intermediate hinges.

#### **15.3.9.3.8 Slope Protection**

The Contractor shall provide concrete slope protection, on any slopes from shoulder to top of retaining wall, and on slopes between tiered walls. Slope protection shall conform to the *BDM*. Slope protection on slopes between tiered walls and any slopes from shoulder to the top of retaining wall shall use similar detail. Slope Paving Details shall be included in the structural drawings.

#### **15.3.9.3.9 Bridge Deck Drains**

Bridge deck drainage and approach slab drainage systems shall be designed in accordance with the CDOT Bridge Design Manual. Scour analyses shall be based on the procedures in the FHWA HEC-18, Scour at Bridges, and HEC-20, Stream Stability at Highways. Scour countermeasures shall be designed in accordance with the FHWA HEC-23, Design of Countermeasures. Stormwater flowing toward the Bridges shall be intercepted prior to flowing onto the approach slab. Stormwater which falls on bridges shall be intercepted before it reaches expansion joints. All stormwater shall be directed to an outfall conforming to the Contract requirements. Permanent erosion protection shall be designed and installed at all outfall locations to prevent the occurrence of erosion. Outfalls shall have a well-defined and protected channel or pipe flow path. Sheet flow will not be allowed. Energy dissipation in the channel shall be required.

All Bridge deck drain inlets shall be grated. The Bridge deck drainage system shall be compatible with the structural reinforcement, components, and aesthetics of the Bridge. Outfalls shall be positioned to avoid corrosion of structural members, and drainage or splash on vehicular traffic and pedestrian or bike areas below the Bridge. Downspouts for Bridge drains shall be minimum 10-inch diameter galvanized steel pipe, and shall meet the requirements of ASTM A53, Grade B, and standard weight schedule 40. Downspout pipe shall be hot dipped galvanized after fabrication. Galvanizing shall meet the requirements of AASHTO M111. Metal used in the manufacture of castings shall meet the requirements of ASTM A48, Class 35B. Cleanouts shall be provided for downspout systems.

Bridge deck drains shall be located so that downspouts can be taken immediately down pier columns. Clean outs shall be accessible via an all-weather surface below. Bridge drain systems with “horizontal” runs shall not be used.

The Bridge deck drain system shall be designed and constructed to be easily modified to accommodate future changes to the Bridge. Downspout and outfall locations shall be located such that no changes are required in the future to accommodate the ultimate construction of roadway improvements.

The Bridge deck system shall also comply with requirements in Section 12 - Drainage.

#### **15.3.9.3.10 Utilities**

Utilities to be placed on Structures shall be submitted to CDOT for Approval no later than 30 Days prior to construction. Utility supports and other details shall be designed by a Professional Engineer licensed in the State of Colorado. Utilities shall be hidden from view in superstructure elevation.

Hanging of electrical conduits, telephone conduits, or other Utilities shall not be permitted under deck overhangs or on Bridge Rail. Protection of conduits from the settlement of the abutment backfill shall be provided.

### **15.3.10 Retaining Walls**

The criteria in this Section shall apply to permanent retaining wall Structures. Retaining walls that support traffic for interim phases of traffic and are left in place to become part of the final Structure shall be considered permanent retaining walls and be designed and constructed as such. The first and second phases of two-phase walls shall be considered part of a permanent wall and shall be designed and constructed as such.

The Contractor shall have sole responsibility for the type, Material, performance, and safety of temporary retaining wall Structures.

#### **15.3.10.1 Geometry**

Retaining wall layouts shall address slope maintenance above and below the wall and provide returns into the retained fill or cut at retaining wall ends. Residual wall batter shall be into the fill or cut.

Lengths of walls without relief joints shall be limited to lengths that control the differential settlement.

#### **15.3.10.2 Type**

Retaining wall types shall follow the guidelines in the *BDM* unless otherwise specified in this Section. Other wall types will be allowed, but only if they have been accepted for general use by other US State Transportation Authorities. The Contractor shall demonstrate that the design of the retaining wall types and components meet the Project technical requirements and perform well under the Project's geotechnical and environmental conditions. Proposed retaining wall types in the Structural Concept Plans/Report historically not used by CDOT shall be submitted to CDOT for Approval prior to Structure Concept Plan and Report submittals.

Experimental retaining wall types will not be allowed. Metal walls, including bin and sheet pile walls, recycled Material walls, Mechanically Stabilized Earth (MSE) block walls, and timber walls shall not be used for permanent retaining walls.

Permanent retaining walls and their associated structural support elements constructed for the Project shall be designed to resist corrosion or deterioration for a minimum service life of 100 years.

The latest FHWA geotechnical references and guidelines shall be used in conformance with the

Contract and as provided at the following website:  
<http://www.fhwa.dot.gov/engineering/geotech/index.cfm>.

Retaining wall installations shall provide for a positive drainage system of the Backfill. Backfill drainage outlets shall be shown on the plans. Retaining walls near irrigation lines for landscaping shall account for additional hydrostatic load due to a waterline break. Free draining Backfill Material and/or leak detection devices to reduce hydrostatic loads on retaining walls may be used.

#### **15.3.10.2.1 Mechanically Stabilized Earth (MSE) Walls**

The Contractor shall follow the FHWA *Geotechnical Engineering Circular No. 11 – Design and Construction of Mechanically Stabilized Earth Walls and Reinforced Soil Slopes – Volumes I and II* as guidelines for the design and construction of MSE walls. MSE wall designs integrated with abutments shall account for thermal movement of the Bridge and approach settlement.

MSE walls near or in bodies of water shall account for soft saturated soils and scour and shall prevent fine washout between facing elements. MSE walls may be used in scour areas provided the foundation of the wall is located below the scour level determined in accordance with CDOT *Drainage Design Manual*. MSE walls shall be designed for hydrostatic pressure or be constructed using a free-draining Material to account for water fluctuations, including rapid drawdown after flooding conditions to prevent failure.

Soil reinforcement for MSE walls shall be galvanized or epoxy-coated steel, geogrids, or fabrics meeting creep requirements of AASHTO *LRFD Bridge Design Specifications*. The design shall account for any items projecting through the soil reinforcement. Placement of culverts and Utilities perpendicular to soil reinforcement within the reinforced soil mass shall be avoided. Metal portions of soil reinforcement shall be protected from corrosion due to stray electrical currents.

MSE wall panels shall be constructed of reinforced concrete and provide corrosion protection for pre-stressing or post-tensioning steel. The cover to reinforcing steel shall be a minimum of 2 inches. Wall panels in the splash zone shall use epoxy-coated reinforcing steel.

#### **15.3.10.2.2 Anchored Walls**

The Contractor shall follow the FHWA *DP-90-068 Permanent Ground Anchors, Volume 1, Final Report*; FHWA *RD-82-046* and FHWA *RD-82-047 Tiebacks*; FHWA *RD-97-130 Design Manual for Permanent Ground Anchor Walls*, and FHWA *IF-99-015 Geotechnical Engineering Circular No. 4 - Ground Anchors and Anchored Systems* as guidelines for the design and construction of anchored walls.

Anchors shall be encapsulated with plastic sheathing. Load Tests for anchors shall be provided in accordance with the above FHWA guidelines.

#### **15.3.10.2.3 Soil Nail Walls**

The Contractor shall follow the FHWA *0-IF-03-017 Geotechnical Circular No. 7 Soil Nail Walls*,

*FHWA NHI-14-007 Soil Nail Reference Manual*, and the *BDM* as guidelines for the design and construction of soil nail walls. Soil nail walls may only be used when top-down construction is warranted. The exposed surface of pneumatically placed concrete shall meet the requirements of this Section. Load Tests for soil nails shall be provided in accordance with the above FHWA guidelines.

### **15.3.11 Maintenance Plan (Owner's Manual)**

The Contractor shall submit to CDOT, for Acceptance with the Final Plans and Specifications Packages, maintenance plans for each Bridge describing routine maintenance and items specific to each component of the Bridge. It shall also include a detailed list of all maintenance and rehabilitation work and the number of times each procedure is anticipated to be performed over the 100-year replacement Bridge life and 30-year rehabilitation bridge life itemized by the year performed.

## **15.4 Concrete Box Culverts**

### **15.4.1 Box Culverts**

Cast-in-place and precast concrete box culverts (CBCs) and wingwalls shall be designed according to the applicable M-Standard drawings and design criteria. Designs not meeting the standard sizes, loadings, or conditions provided in the M-Standard drawings are still required to meet design criteria. These include, but are not limited to, non-standard box culvert spans and heights' CBCs with top and/or bottom corner chamfers; live load surcharge greater than 2 ft.; fill heights or wearing surface thickness greater than those listed in the M-Standards; wingwall subject to live load surcharge; and headwalls subject to live load impact, including transfer of live load impact into the top slab.

Precast box culverts shall be from Qualified Manufacturers List (QML) as a fabricator of precast (not pre-stressed) concrete structures for CDOT projects.

### **15.4.2 Loading**

When designing non-standard CBCs, live load is applied as follows:

For design of culvert walls and bottom slabs, only the design lane load is applied.

For design of culvert top slabs, only axle loads of the design truck or design tandem are applied.

Apply live loads to both earth pressure cases shown in the M-Standard and as described in AASHTO 3.11.7 and AASHTO C3.11.7. Note that, due to the 50 percent reduction in earth pressure, the minimum load factor need not be applied to the 30 lb/ft<sup>3</sup> horizontal earth pressure load case. Live load distribution for various earth fills shall be per AASHTO 12.11.2.1.

It is preferred that bottom slabs for non-standard designs be modeled as rigid, not using soil springs, unless significant benefits can be demonstrated.

Applying thrust forces is inadvisable when designing non-standard CBCs unless significant benefits can be demonstrated. This criterion is consistent with CBC M-Standard and AASHTO BrR rating software design methodology, and is conservative due to unpredictable on-site foundation conditions and preparations. The Engineer may consider the benefits of thrust forces in non-standard designs but shall discuss its use in

the Structure Selection Report and obtain approval from Staff Bridge.

### **15.5 Arch Structures**

Arch structures shall be designed in accordance with Section 12 of the *BDM* and AASHTO Section 12. Arches shall be detailed in accordance with Bridge Detail Manual, Miscellaneous Structures. For arch culverts, soil structure interaction with refined analysis shall be used for vehicular load and for identifying positive arch action. Live load distribution factors for culverts and arch structures shall be calculated as outlined in Section 12, Buried Structures and Tunnel Liners, of the *BDM*.

Foundations shall be in accordance with recommendations in the Geotechnical report and shall be placed below frost depth or minimum 3 feet.

### **15.6 Removal of Bridges or Structures**

Removal of Bridges or Structures shall be in accordance with the referenced Standards and the requirements contained in this section.

The Contractor shall follow the requirements of the Section 7 – Utilities for the removal of the existing utilities on the existing structures.

Concrete deck and, any removed steel girders, any removed steel diaphragms, steel bridge railing, and bearings shall become the property of the Contractor and shall be removed from the site and shall not be reused in the new construction.

All Timber girders and deck boards, from the removed timber bridges, shall be salvaged and remain the property of CDOT. The timber girders and check boards shall be delivered to:

CDOT Maintenance Yard  
24211 County Road 31  
La Junta, CO 81050

The Contractor shall refer to the pre-demolition/renovation asbestos and lead-based paint inspection reports for all Bridges that are part of this Project.

A removal report/plan for each Bridge or Structure to be removed shall be submitted to CDOT for review, a minimum of fourteen (14) Days before removal operations begin. The report/plan shall describe methods of removal, equipment to be used, and sequence of removal. The report/plan shall document any structural analysis that was done for different stages of removal and explain whether or not any portion of the Bridge or Structure will remain open to traffic or over traffic during the different stages of removal. The report/plan shall describe any areas of concern for worker safety and the traveling public. The report/plan shall also describe the length of time for the removal, anticipated roadway closures and proposed detours, the estimated total number of worker shifts, effects of removal on pedestrians, bicycle, and traffic, locations where removed Bridge material will be temporarily stockpiled, and requirements for disposing of removed material including any material painted with lead-based paint.

A removal report/plan shall also be submitted to CDOT for review, a minimum of fourteen (14) Days before removal operations begin for removal of retaining walls supporting or adjacent to traffic or pedestrian activities, sound walls, overhead sign structures and traffic signals on the Project.

Removal of the substructure, between abutments of a proposed bridge structure or outside the toe of slope, shall be removed a minimum of two (2) feet below the existing natural ground surface or the proposed ground surface, taking into consideration any current or future improvements.

Removal of the substructure, within proposed side slopes, shall be removed a minimum of four (4) feet below the proposed finished grade. The limits of removal shall be approved by CDOT prior to completing the work.

Removal of the substructure, below the proposed roadway surface in a fill condition, shall be removed a minimum of 8 feet below the bottom of existing girders, including consideration of any current or future utility corridors.

Excavations resulting from substructure removal shall be backfilled with appropriate Structure Backfill (Class 1 or 2) or soil Embankment, to the adjacent existing or proposed grades. The material type will be dictated by the location of the removal. The material shall be approved by CDOT prior to placement.

The Contractor shall schedule a pre-removal meeting at least ten (10) Days prior to removal operations. The meeting shall be coordinated with CDOT.

## **15.7 Submittals**

Submittals shall be prepared, Reviewed, and submitted in accordance with the requirements set forth in Book 2, Section 3.

### **15.7.1 Preliminary Design Plans**

The Contractor shall submit Preliminary Design Plans for proposed major Structures and walls prior to proceeding to final design and preparation of the Pre-RFC Documents. The Preliminary Design Plans shall include Structure Concept Plans, Structure Concept Reports, and Preliminary Foundation Design Reports.

#### **15.7.1.1 Structural Concept Plans**

Structural Concept Plans shall include general layout drawings of proposed major Structures and retaining walls. Bridge plans shall be consistent with the *Bridge Detail Manual* for general layout drawings, as defined by the *BDM*. For proposed retaining walls, the general layout drawings shall provide plan, elevation, and typical section details like those provided for major Structures. The Contractor shall submit the plans to CDOT as part of the Preliminary Design plans submittal.

#### **15.7.1.2 Structure Concept Reports**

Structure Concept Reports shall be no more than a three-page description of the Structure type, Materials, foundation types, methods of accommodating differential settlement, design strategy

for lateral loads, and design-life considerations for each major Structure. It shall also include a list of transportation authority's actual Projects and references for all Bridges, and foundation types and retaining wall types not historically used by CDOT. Additional information provided for Structures not historically used by CDOT will not count toward the page limit. The Contractor shall submit the reports to CDOT as part of the Preliminary Design plans submittal.

### **15.7.1.3 Preliminary Foundation Design Report**

A Preliminary Foundation Design Report shall be submitted for each major Structure and minor Structure as required for the design of foundations for Bridges, retaining walls, and other Structures, in accordance with Book 2, Section 10. The report shall be in draft form and contain design recommendations and substantiating analysis for foundation elements, lateral earth load parameters, soil corrosivity analysis, seismic design parameters, and any other geotechnical design or analysis parameters necessary to complete the design.

## **15.7.2 RFC Documents**

### **15.7.2.1 Pre-RFC Documents**

Pre-RFC Documents shall be submitted for proposed CDOT-managed Structural assets. Pre-RFC Documents shall include plans and specifications; major and minor Structure load ratings; and the Foundation Design Report.

The Foundation Design Report shall be revised from the Preliminary Foundation Design Report and be the basis for the load analysis from seismic and earth loads and the basis for the design of foundation elements. Supplemental soil borings required for Structures design shall have been completed.

### **15.7.2.2 Final RFC Documents**

The Final RFC Documents shall include resubmittal of the Pre-RFC Documents listed above with all comments addressed.

## **15.7.3 Final Design Documents**

Final Design Documents shall include final plans and specifications for proposed CDOT-managed structural assets; design calculations and independent design calculations for major Structures; independent detail checks of the plans and specifications for major Structures; major and minor Structure load ratings, Foundation Design Reports, a final submittal letter and any other documentation required by the BDM.

### **15.7.3.1 Final Plans and Specifications**

The final plans and specifications for each Structure shall be signed and sealed by the Contractor's designer in accordance with laws for licensed Professional Engineers in the State of Colorado. Copies in PDF and Bentley OpenRoads format shall be made of all plans for all Structures on the Project and submitted to CDOT on a thumb drive other Approved format.

### **15.7.3.2 Design and Independent Design Calculations**



The design calculations or the independent calculations shall be prepared by, signed, and sealed by a Professional Engineer licensed in the State of Colorado with a minimum of 10 years Bridge design experience. Copies in .PDF and electronic format shall be made of design and design-check calculations and submitted to CDOT for Acceptance as part of the Final Design Documents submittal.

Calculations shall be in English (Standard) units and identify which code is utilized and reference the appropriate section in the right-hand column. References shall be included in the calculations to computer programs used to do the calculations. Computer documentation shall include the name of program, vendor, version, and release date; record of software output and Verification of output with manual calculations or other recognized program; clear identification of input and output values and meaning; and check of input.

### **15.7.3.3 Load Ratings**

A load rating package, as defined by the CDOT *Bridge Rating Manual*, shall be completed and submitted for Acceptance as part of the Final Design Documents submittal for each major and minor Structure prior to the start of Bridge construction activities.

### **15.7.3.4 Foundation Design Reports**

The Foundation Design Reports shall be signed and sealed by the Contractor's designer in accordance with laws for licensed Professional Engineers in the State of Colorado.

### **15.7.3.5 Final Detail Letter**

The Contractor's designer shall submit a letter containing a Professional Engineer's stamp to CDOT for Acceptance as part of the Final Design Documents submittal certifying that Structure plans and specifications have been prepared in accordance with the current CDOT design standards. An example letter can be found at <https://www.codot.gov/library/bridge/form-letters>.

### **15.7.4 Working and Shop Drawings**

The Contractor shall submit all approved Working and Shop Drawings in accordance with Table 105-1 of the CDOT *Standard Specifications* to CDOT for review. Preparation of steel Shop Drawings shall follow the Shop Detail Drawing Review/Approval Guidelines developed by the AASHTO/NSBA Steel Bridge Collaboration G1.1-1999. Working and Shop Drawing accuracy is the sole responsibility of the Contractor.

### **15.7.5 As-Constructed Documents**

As-Constructed Documents shall be submitted for each proposed Structure in accordance with Book 2, Section 3.

## **15.8 Construction Requirements**

The Contractor's Structural Engineer in Responsible Charge shall ensure the design and construction of the bridges and major structures meet design and construction criteria. This person shall be assigned to the Project for the duration of the Project and will be required to be onsite as required to oversee safety critical components of the Work.

The Contractor shall notify CDOT 7 Days in advance of reductions in vertical clearances or when lane closures, lane reductions, or lane width restrictions are put into effect.

Falsework shall be designed in accordance with the AASHTO *Guide Design Specifications for Bridge Temporary Works*. Shoring areas that are considered a risk to the traveling public shall require an independent design check. Falsework or shoring carrying live traffic shall be submitted for Acceptance 10 Days prior to construction.

Temporary retaining walls constructed of Materials not allowed for permanent walls may be abandoned and left in place. Temporary retaining walls left in place shall be completely covered by soil or construction Materials, so they are not visible. Structural components of temporary retaining walls may be reused as part of permanent retaining wall (two-phase walls) systems, provided all structural support elements and Materials of the permanent retaining walls meet the requirements of this Section 15.

Exposed concrete surfaces in the splash zone shall be sealed. The limits of concrete sealer shall be shown on the plans.

Concrete guardrails shall not be cast monolithically with integral pier caps.

Installers of pre-stressing, post-tensioning systems shall be Post-Tensioning Institute (PTI) certified.

### 15.9 Deliverables

The following Deliverables shall be submitted to CDOT for Review, Acceptance, or Approval:

**Table 15-7 Deliverables**

<b>Deliverable</b>	<b>Review, Acceptance, or Approval</b>	<b>Schedule</b>
Deviations from CDOT's <i>Bridge Design Manual</i> and this Section 15	Approval	Prior to Acceptance of Final RFC Documents
Alternate bridge rating software	Approval	Prior to major and minor Structure ratings
Concrete mix design and procedures	Acceptance	Minimum 3 weeks prior to the anticipated concrete placement date
Bridge types historically not used by CDOT	Approval	Prior to the submittal of the Concept Plans and Report submittals
Use of precast approach slabs	Approval	Prior to Structure Concept Plan and Report submittals
Use of expansion joints at abutments and piers	Approval	Prior to Structure Concept Plan and Report submittals

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Wall Structure types not historically used by CDOT	Approval	Prior to the submittal of the Concept Plans and Report submittals
Structural Concept Plans	Review	As part of the Preliminary Design Plans submittal

<b>Deliverable</b>	<b>Review, Acceptance, or Approval</b>	<b>Schedule</b>
Design and independent design calculations	Acceptance	As part of the Final Design Documents submittal
Load ratings	Acceptance	As part of the Final Design Documents submittal
Foundation design reports	Acceptance	As part of the Final Design Documents submittal
Final detail letter	Acceptance	As part of the Final Design Documents submittal
Falsework or shoring plans carrying live traffic	Acceptance	10 Days prior to construction
Structure Concept Reports	Review	As part of the Preliminary Design Plans submittal
Preliminary foundation design report	Review	As part of the Preliminary Design Plans submittal
Final plans and specifications	Acceptance	As part of the Final Design Documents submittal

## 16.0 TRANSPORTATION MANAGEMENT PLAN

This Section 16 includes the requirements for the Transportation Management Plan Work for the R2B2 Design Build Project (Project). This Work shall be completed in accordance with the Contract Documents.

The Transportation Management Plan (TMP) defines the strategies for managing the Work zone impacts of the Project. The TMP shall include a Maintenance of Traffic (MOT) Plan, a Traffic Operations Plan (TOP), and Traffic Control Plans (TCP); and shall incorporate the coping elements of the Public Information Plan (PIP) detailed in Book 2, Section 4.

### 16.1 Administrative Requirements

#### 16.1.1. Standards

The Contractor shall design and construct the Project in accordance with the requirements of the standards in the documents listed in Table 16-1 and those referenced in Book 3. The Contractor shall use the latest adopted edition at the time of the Proposal Due Date.

**Table 16-1 Standards**

<b>Author or Agency</b>	<b>Title</b>
American Association of State Highway and Transportation Officials (AASHTO)	<i>Roadside Design Guide</i>
American Association of State Highway and Transportation Officials (AASHTO)	<i>Highway Safety Manual</i>
American Traffic Safety Services Association (ATSSA)	<i>Quality Guidelines for Work Zone Traffic Control Devices</i>
ATSSA	<i>Guidelines on the Use of Positive Protection in Temporary Traffic Control Zones</i>
Colorado Department of Transportation (CDOT)	<i>Guidelines for the Use of Positive Protection in Work Zones</i>
CDOT	<i>M&amp;S Standard Plans</i>
CDOT	<i>Standard Specifications for Road and Bridge Construction (CDOT Standard Specifications)</i>
CDOT	<i>Roadway Design Guide</i>
CDOT	<i>Guidelines for Developing Traffic Incident Management Plans for Work Zones</i>
CDOT	<i>The Colorado Supplement to the Federal Manual on Uniform Traffic Control Devices</i>
CDOT	<i>Sign Design Manual</i>

CDOT	Work Zone Safety and Mobility Program: <a href="http://www.codot.gov/library/traffic/lane-close-work-zone-safety/work-zone-safety">http://www.codot.gov/library/traffic/lane-close-work-zone-safety/work-zone-safety</a>
CDOT	<i>Work Zone Safety and Mobility Rule</i>
CDOT	<i>Region 2 Lane Closure Strategy</i>
Federal Highway Administration (FHWA)	<i>Manual on Uniform Traffic Control Devices (MUTCD)</i>
FHWA	<i>Standard Highway Signs (with supplements)</i>

## 16.2 Transportation Management Plan

The Contractor shall prepare a TMP that defines the strategic plan for traffic management on the Project. The TMP shall address major aspects of the Work for individual construction areas, phases, and stages as defined herein. These aspects shall include, but are not limited to, county Road and local Road closures, Bridge closures, construction phasing and staging, numbers and type of major traffic shifts, detours, typical section requirements, pullout requirements, emergency and construction access, pedestrian impacts, and detours. The TMP is a planning and policy guide that the Contractor shall use to develop and execute the Project MOT program.

The TMP shall be submitted to CDOT for CDOT Acceptance prior to the Second Notice to Proceed (NTP2). No Work that impacts traffic shall commence until the TMP is Accepted.

The major aspects of the TMP shall include, but are not limited to:

1. An overview and description of the proposed construction, including maintenance of traffic during construction, and major traffic shifts.
  - A. Area: a specific grouping of Work along the Project defined by the Contractor which creates segments of the Project for the purpose of planning and executing the Work consistent with segments identified and included in the Contractor's Proposal, if any.
  - B. Phase: a specific sequence of the construction Work in an area during which a major traffic movement is redirected (e.g., a detour) and left in place until the Work is complete and traffic is redirected to another location. This is the level for each specific Traffic Control Plan (TCP). In some cases, multiple TCPs may be required at this level.
  - C. Stage: a subdivision of Work within a phase which combines similar components of Work to maintain efficiency. Sub-division below this level is at the Contractor's convenience. This is the level for individual (or sets) of Method of Handling Traffic (MHT) plans.
2. A detailed approach to the development of TCPs and Methods of Handling Traffic (MHT) on the Project per Book 2, Section 3. MHT plans shall be submitted to CDOT for Approval 5 Days prior to the implementation of each MHT.
3. A list of known or potential Roadway, ramp, and lane closures and traffic shifts, including the following information:

- A. Description of traffics shift.
  - B. Description of detour:
    - i. Specific routes used.
    - ii. Identification of detour limits to be used in each construction phase.
    - iii. Contractor’s identification and coordination with other construction projects within the vicinity of the proposed detour route. The impact of these construction projects shall be incorporated into the detour route planning and scheduling.
  - C. Number of shifts expected.
  - D. Duration of shifts and detours.
4. An approach to the use of existing and temporary Variable Message Sign (VMS) boards and traffic signals, including coordination with CDOT and the Contractor’s representative.
5. The Contractor’s plan for coordinating the TMP Activities with those Activities required under Book 2, Section 4.
- A. A checklist identifying specific items that shall be provided both to the Contractor’s Public Information Manager (PIM) and to CDOT every Thursday by 10:00 a.m. for public information data collection and management Activities on the Project. The checklist shall include supporting information relevant to coping messages and public awareness and shall be included in the PIP required in Book 2, Section 4.
  - B. An approach to night Work that addresses the night work requirements of Book 2, Section 5. Any night Work will require written preapproval from the local governing county and Approval from CDOT.
6. Additional Elements:
- A. An approach to coordination and cooperation with construction being performed by other projects along US 350, US 24, CO 239 and CO 9.
  - B. Approach to coordination and cooperation with construction being performed by Utility Companies or other Utility Relocations, as required in Book 2, Section 7.
  - C. An approach to traffic access management, including commercial vehicles and restrictions, bicycles, pedestrians, and potential impacts to handicapped mobility.
  - D. Relevant portions of the Incident Management Plan (IMP) described in Section 16.2.2.2.

- E. An approach to handle oversized loads through the Project.
  - F. An approach to coordination with US Army Pinyon Canyon Maneuver Site.
  - G. If needed, approach to coordinate local county pit access routes.
7. Typical section requirements.
8. Emergency requirements:
- A. Pull-out locations.
  - B. Emergency access.
  - C. Colorado State Patrol (CSP)
  - D. Traffic Incident Management Plan
    - i. Plan per segment and county
9. Temporary closure scenarios:
- A. Location
  - B. Time and duration
10. Access:
- A. Business/home/property
  - B. Work site (area)
  - C. Pedestrian/Bike
11. Construction zone temporary speed reduction: Temporary speed reduction, if warranted, must be authorized by a Form 568 approved by the Region 2 Traffic Engineer or designee. Temporary speed reduction may be authorized during the construction phasing of the Project.
- A. The Contractor shall submit a Form 568 to CDOT for Approval 7 Days prior to the date when speed reduction is to be implemented.
12. MHT Requirements



13. Traffic control device maintenance:

- A. A Work plan to meet the requirements of Section 16.4.2 shall to be provided to CDOT. This Work plan shall include, at a minimum, detailed staff commitments and contacts, along with a plan to deploy equipment and resources.

### **16.2.1 Maintenance of Traffic Plan**

The following elements shall be considered part of the MOT plan and shall be addressed in the TMP.

#### **16.2.1.1 Transportation Management Plan Task Force**

The Contractor shall establish a TMP task force to assure proper coordination with affected Local Agencies. The TMP Task Force shall include, at a minimum, the Contractor's PIM, the Contractor's TCS, the Contractor's superintendent, representatives from CDOT, cities, counties, and others as needed if Local Agency facilities are impacted. The Design-Build Project Manager or the Project Construction Manager shall be designated as the main point of contact for the MHT's, MOT's, and traffic control related issues The Contractor shall submit the proposed list of TMP task force members to CDOT for Acceptance within 30 Days after NTP1.

The TMP task force shall be included in the weekly status meetings as required in Book 2, Section 2 and shall be an integrated element of the Public Information Plan (PIP).

In addition to regular weekly status meetings, the Contractor shall schedule and conduct TMP task force meetings to present and discuss Contractor-prepared narratives identifying processes and critical elements of all lane closures and coordination Activities.

Within 14 Days after CDOT's Acceptance of the TMP task force members, the Contractor shall convene a TMP kick-off meeting. The meeting shall be used to develop an agreed-upon level of detail required for the TMP, as described in this Section 16.

#### **16.2.1.2 Business and Private Access**

The Contractor shall maintain public and private access to the local Street and Highway systems at all times. Temporary signage to business entrances shall be provided during construction to draw attention to Highway access points. TCPs and MHTs shall incorporate Stakeholder information from the PIP outlined in Book 2, Section 4, available surveys, and other pertinent studies relating to business and private access to the local Street system and the Highway. At a minimum, the Contractor shall communicate and document the following information relevant to business and private access:

1. Access point impacted by a particular construction phase or stage.
2. All notifications of affected business and land owners.
3. Schedule of closures and estimated durations.
4. Site-specific access or delivery requirements for local business (deliveries, wide load vehicles, etc.).
5. Proposed access mitigation efforts.

#### **16.2.1.3 Maintenance of Traffic Variance Process**

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The Contractor may request a MOT variance for any closure, detour, or other restriction beyond the specified limits defined herein or *Region 2 Lane Closure Strategy Guide*. Variance requests should be submitted when safety is a concern and/or other project goals and criteria can be maximized. The following information shall be included in each MOT variance request:

1. Summary of the variance request.
2. Justification for the variance request, including a list of the criteria that cannot be met and the reason(s) for not being able to meet them.
3. Public notification methods and schedule.
4. List of affected emergency services and the schedule for notification.
5. List of affected Local Agencies or private owners and the method(s) and schedule for notification.
6. Description of additional public information surveys to be performed, if required.
7. List of any potential safety hazards to which the public may be exposed.
8. Proposed revisions to the Accepted TCP or current MHT.
9. Proposed duration of closure, detour, or phasing change for which a variance is requested.

The Contractor shall allow CDOT a minimum of 14 Days for Review and Approval of any MOT variance requests. The Contractor shall obtain Local Agency approval for detours utilizing non-State-owned facilities. If Local Agency approvals are necessary, they shall be obtained prior to submittal of the MOT to CDOT.

#### **16.2.1.4 Detour Routes**

There are no approved detour routes. Full lane closures will not be allowed. The Contractor may propose alternate detour routes within the MOT variance process.

Detour route options have been analyzed for each structure and are shown in the Traffic Memorandum's for each structure in the Reference Documents.

#### **16.2.1.5 Bicycle Impacts**

If existing bicycle accommodations exist along CO 9, CO 239, US 350, and US 24, they shall be maintained at all times.

### **16.2.2 Traffic Operations Plan**

The TOP shall address the operations and management of the transportation system in the Work zone impact area. The TOP shall address the components described below.

#### **16.2.2.1 Variable Message Signs**

Public notices shall be provided through VMS boards to warn motorists of major traffic shifts, detours and Road closures 1 week prior to and 2 weeks after a change in the traffic pattern. The VMS boards shall be placed on the affected route in advance of the construction zone.

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The existing VMS boards and ITS system within the Project are available to assist the Contractor in completing the Work. The Contractor shall submit written requests for review 14 days prior to requested date for modification for all support Activities, including the following information:

1. VMS message text and board location.
2. Implementation dates, times and duration of modifications.
3. Reference TCP or MHT approval date.
4. Name, title and contact information of person requesting the modification.

The JOC is available to the Project to modify VMS messages 24 hours a day, 7 days a week, and may be contacted at (719) 562-5555.

The Contractor shall coordinate with CDOT and the JOC for emergencies in accordance with the Accepted IMP.

### **16.2.2.2 Incident Management Plan (IMP)**

The Contractor shall develop a detailed IMP by each segment and county as a companion to the TOP to manage traffic incidents and emergency operations on the Project Site. Emergency service providers shall be contacted and provided an access plan during construction to minimize delays and response times for emergency services.

The IMP shall comply with the CDOT Guidelines for Developing Traffic Incident Management Plans for Work Zones.

At a minimum, the IMP shall include the following components:

1. Coordination with the PIP, as described in Book 2, Section 4.
2. Incident detection and identification.
3. Incident response.
4. Incident Site management.
5. Incident clearance.
6. Dissemination of traveler information regarding incidents.
7. Emergency services notification, including local area police departments, the Colorado State Patrol, local area fire departments, ambulance services, and any other emergency response providers.
8. Notification of local school districts about possible impacts to school bus routes, student drop-offs, and/or pedestrian facilities.
9. Geographic and other special constraints.
10. Available resources.
11. Operational procedures.

The IMP shall be submitted to CDOT for Acceptance within than 30 Days prior to NTP2. No Work that impacts traffic shall commence until the IMP is Accepted.

### **16.2.2.3 Contractor Response Time**

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The Contractor shall have at least 1 employee(s) on call 24 hours a day, 7 days a week via cell phone, who shall respond to an incident within 30 minutes, 24 hours a day, 7 days a week. Upon arrival at the incident site, that employee shall assess the situation, shall be authorized to direct Work, and shall immediately notify the appropriate personnel to implement the IMP. Upon notification of the incident, the Contractor shall immediately undertake actions necessary to restore traffic operations to the maximum extent practicable.

#### **16.2.2.4 Special Events**

The Contractor shall coordinate with CDOT, the local agencies, and the Public Information Officer as specified in Book 2, Section 4 – Public Information to develop a list and schedule of special events. The Contractor shall update the list as events are identified or scheduled. The special event calendar shall be a standing agenda item at the Transportation Management Task Force meetings.

The Contractor shall identify and implement necessary changes in Work progress to accommodate traffic to and from special events. No lane closures on US 350, US 24, CO 9, CO 239, ramps, county roads and local roads shall be permitted on any day(s) of the event unless Approved by CDOT. Work outside the travel lanes, ramps and shoulders will be permitted during special events.

Contractor shall make necessary adjustments when possible to accommodate traffic on US 24 and CO 9 when I-70 or US 285 is closed due to winter storms.

#### **16.2.2.5 Coordination with Adjacent Projects**

Other projects along CO 9, CO 239, US 350, and US 24 may occur during the construction of this Project. The Contractor shall coordinate construction traffic and detour impacts with CDOT and contractors on those projects to minimize simultaneous closures or impacts to adjacent or alternate routes.

#### **16.2.3 Communications Plans**

The TMP shall reference the appropriate sections of the PIP and the Crisis Communications Plan developed in accordance with Book 2, Section 4.

### **16.3 Design Requirements**

The Contractor's Engineer in responsible charge of the MOT design shall prepare, review, and approve the TCP, Released for Construction (RFC) Documents, and Field Design Changes. These plans shall be in conformance with the TMP described in this Section 16.

Additional Requested Elements (AREs): The Contractor shall submit proposed compliance of all MOT design requirements in this Section 16 – Transportation Management Plan for AREs to CDOT for Approval.

#### **16.3.2 Traffic Control Plans**

The Contractor shall prepare TCPs to control traffic on the Project. The TCPs shall conform to the requirements specified herein, the CDOT *Standard Specifications for Road and Bridge*

*Construction (CDOT Standard Specifications)*, and the most current version of the Manual on Uniform Traffic Control Devices (MUTCD). The TCPs shall generally describe all lane and Shoulder configurations, including widths, traffic control signing, pavement markings, traffic control devices, temporary signalization, flagger locations, construction access, construction parking, emergency access, Work areas, and pedestrian/bicycle requirements necessary for each construction phase.

The TCP shall be submitted to CDOT for Acceptance 14 Days prior to implementation of the particular TCP.

Any major revision to a TCP, as determined by CDOT, shall require submission of a new TCP for Acceptance.

### **16.3.3 Method of Handling Traffic**

The Contractor shall prepare MHT's in accordance with the Special Provisions included in Book 2, Sections 19 and 20.

Temporary traffic signals shall be installed in conformance with standards set forth in Book 2, Section 14 – Signing, Pavement Marking, Lighting and ITS, and Section 20 – Project Special Provisions.

### **16.3.4 Design Vehicle**

The design vehicle shall be as described in Book 2, Section 13 – Roadways.

### **16.3.5 Temporary Work Zone Design Speed and Posted Speed**

Minimum design and posted speeds for Work zones shall conform to those listed in Table 16-2.

Design speeds shall in all cases be equal to or greater than the posted speed. The Contractor shall provide existing design and posted speed whenever it can be reasonably maintained. In the event speed reductions are required, the Contractor shall submit Form 568 to CDOT for allowable speed reductions as shown in Table 16-2.

**Table 16-2 Design and Posted Speeds for Work Zones**

<b>Location</b>	<b>Design Speed (mph)</b>	<b>Construction Posted Speed (mph)</b>
CO 9, US 24, & US 350	50	45
CO 239	30	25

### **16.3.6 Minimum Lane and Shoulder Requirements**

#### **16.3.6.1 Lane and Shoulder Restrictions**

Before any travel lanes or Shoulders are closed, the Contractor shall submit an appropriate MHT or TCP to CDOT for Acceptance.

The Contractor shall submit lane restrictions to CDOT by Thursday 10:00 a.m. of the week prior to the Work (for Work Sunday through Saturday), unless required by construction emergencies or other reasonably unforeseen events.

Minimum lane and Shoulder widths during construction shall be according to Table 16-3.

**Table 16-3 Minimum Lane and Shoulder Widths**

Location	Travel Lanes	Shoulder	
		Inside	Outside
All State Highways	11 ft.	2 ft.	2 ft.
All County Roads	10 ft.	0 ft.	0 ft.

When lane closures are Approved, and mainline lanes are reduced to a single lane in one direction, the Contractor shall provide a minimum clear width of 15 feet.

**16.3.6.2 Lane Closures**

Before any lanes are closed, an appropriate MHT shall be approved by the Contractor, the Traffic Control Supervisor, and Accepted by CDOT. Lane closures shall be submitted to CDOT for Acceptance at least 7 Days in advance of the closure, unless required by construction emergencies or other reasonably unforeseen events.

Any changes to closures, restrictions, and/or times to the requirements herein shall be submitted to CDOT. Contractor Request shall be prior to the Final submittal due date for all ACC and ATC’s. CDOT Approval or Denial of request shall occur prior to Final RFP addendum.

All lane closures shall be in accordance with CDOT *Region 2 Lane Closure Strategy*. To perform lane closures outside of the CDOT *Region 2 Lane Closure Strategy* restrictions, approval from CDOT shall be obtained. All highway mainlines shall maintain traffic flow throughout the duration of the project.

**16.3.6.3 Local Roads**

All variances for local Street lane closures and lane reductions shall be approved by CDOT and the local respective jurisdiction.

**16.4 Construction Requirements**

**16.4.1 Temporary Traffic Control Devices**

The Contractor shall install, maintain, and remove all temporary traffic control devices.

**16.4.1.1 Construction Signing**

Construction signing within the Project limits and all detours shall comply with CDOT Standard Specifications, the MUTCD, and all other applicable standards. The Contractor shall maintain all

existing guide signs, warning signs, and regulatory signs during construction. Construction signing and construction signing maintenance shall be the responsibility of the Contractor.

All signs in place for more than 3 Days shall be post-mounted.

#### **16.4.1.2 Temporary Barriers**

The Contractor shall maintain a clear zone in accordance with the AASHTO Roadside Design Guide. When clear zone cannot be obtained, the Contractor shall use barriers to positively separate traveled lanes from Work zones. All Work zone traffic control devices, barriers, crash cushions, and impact attenuators MASH TL-3 requirements.

Temporary barriers within the Project limits and all detours shall comply with CDOT Standard Specifications, CDOT M&S Standards, and the AASHTO Roadside Design Guide. All barrier termini within the clear zone shall have an approved end treatment. Barrier shall be installed per CDOT Standard M-606-14 when adjacent to roadside Work zone, obstructions, obstacles, hazards, and vertical drop-offs. Pinning of temporary barriers into new permanent pavement will not be allowed.

Temporary barriers shall be located so as to not negatively affect temporary drainage in current or future phases.

#### **16.4.1.3 Temporary Marking Paint and Signs**

The Contractor shall furnish, apply, and remove temporary pavement marking paint in accordance with CDOT Standard Specifications. Temporary paint striping shall meet the conformity of lines (including no overspray), dimensions, patterns, locations, retroreflectivity, and details established in the Contractor's TCP and MHT.

All temporary edge line shall be a minimum of 4 inches wide.

1. Temporary pavement paint striping shall be restriped as required to meet retroreflectivity standards and maintain safe traffic operations.
2. Hydroblasting, or other methods that do not result in scaring of permanent pavements shall be used for removal of temporary striping.
3. For temporary alignments in place for 3 months or more, modified epoxy striping shall to be used.

Barrier reflector strips shall be installed on all temporary barrier when barrier is within 4 feet of the traffic, per the CDOT Standard S-612-1. The spacing between each 3-foot panel shall be no more than 50 feet.

Delineation shall be placed and maintained through all phases of Work, including lighted areas.

#### **16.4.1.4 Temporary Traffic Signals**

Temporary traffic signals shall comply with the Project Special Provisions.

Upon discovery of a signal malfunction, the Contractor shall have a representative on site within 30 minutes to resolve the malfunction. Signal timing shall satisfy the queue requirements.

#### **16.4.2 Maintenance of Temporary Traffic Control Devices**

The Contractor shall be responsible for the maintenance of all temporary traffic control devices within the Project limits, including the local Street and county Road systems. All traffic control devices shall meet MUTCD requirements, including retroreflectivity standards, and shall meet the acceptable standard as defined by the ATSSA *Quality Guidelines for Work Zone Traffic Control Devices*. All devices shall be cleaned a minimum of every 2 weeks. If any traffic device's reflectivity is not in accordance with the most recent MUTCD, the Contractor shall replace the traffic control device within one (1) day of notification form CDOT.

#### **16.4.3 Detour Pavement**

The Contractor shall provide a paved surface for all detours. Design and construction of detour pavement shall conform to the requirements of Book 2, Section 10. Detour pavement locations shall be generally described in the Contractor's TMP and detailed in the Accepted TCP.

The Contractor shall maintain the detour pavement for the entire period that it is open to the traveling public, including all temporary approaches, accesses, crossings, and intersections with adjacent Roads and Streets. Detour pavements shall be maintained in good operating condition devoid of potholes, uneven surfaces, and rutting. CDOT may direct the Contractor to repair or replace detour pavements if, at CDOT's sole discretion, detour pavements are determined to be in poor condition. Detours that use existing Roads shall be subject to pavement repair or replacement where it is determined that the condition of the existing pavement has noticeably deteriorated over the duration of its use as a detour.

Cross slope breaks between existing pavements, detours, and crossovers shall not exceed 4.0%.

The Contractor shall be responsible for the complete removal and disposal of all detour pavement.

#### **16.4.4 Queue Delays During Construction**

The Contractor shall monitor queue lengths and durations on all Roads within the Project limits whenever a lane closure is in effect. If the queue times exceed 20 minutes, the Contractor shall notify CDOT and adjust the detours, lane closures, and traffic control devices, including advanced warning signage, to minimize delay. If queue lengths extend beyond the location of the advance warning signs, the Contractor shall adjust the detours, lane closures, traffic control devices, including advanced warning signage; and shall provide advance warning to motorists of stopped traffic.

#### **16.4.5 Working Time Violation Incidents**

If there is a violation of the working time limitations for traffic control as allowed for in this Section 16, the contractor will first be issued a written notice to stop Work at the start of the next Day. Work shall not resume until the Contractor ensures CDOT, in writing, there will not be a



reoccurrence of the working time violation. Subsequent Incidents, beyond this first written notice, will be assessed a price reduction. The working time violation incident (WTVI) price reduction charges shall be reflected on the Contractor's Monthly Invoice. Price reductions will not be considered a penalty, but will be a price reduction for failure to perform traffic control in compliance with the Contract.

A WTVI is any violation up to 30 minutes in duration. Each 30 minutes or increment thereof will be considered a WTVI. A price reduction will be assessed for each successive or cumulative 30-minute period in violation of the working time limitations, as determined by CDOT.

WTVI charges shall be as follows:

1. \$310 per WTVI for US 350, US 24, CO 239, and CO 9.
2. \$310 per WTVI for all local and county roads.

#### **16.4.5 Uniformed Traffic Control**

If the Contractor chooses to utilize uniformed traffic control for the project, the Contractor shall contract with either the Colorado State Patrol or a uniformed police agency, for uniformed traffic control services and vehicles needed or desired in the execution of the Work. The Contractor shall provide a copy of the Contract with either the Colorado State Patrol or a uniformed police agency to CDOT for Review.

The officer shall have completed "The Safe and Effective Use of Law Enforcement Personnel in Work Zones" Training Course. The Contractor shall provide copies of documentation to CDOT certifying the officer's successful completion of this course.

If a uniformed police agency is used, the traffic control vehicles shall be white sedans furnished with Class 1 SAE certified light bar and control panel for exclusive use by uniformed police agency officers while performing Uniformed Traffic Control. The light bar shall have the following configuration:

- (1) A minimum of 44 inches in length, and shall be either permanently or temporarily attached to the top of the vehicle.
- (2) A flash red on the driver side and blue on the passenger side.
- (3) Equipped with an amber-colored directional device in the rear of the bar.
- (4) Have alley and takedown lights.
- (5) The control panel shall be capable of controlling the front of the bar and the rear of the bar separately.
- (6) The traffic advisor shall be controlled separately.

The light bars shall be mounted on traffic control vehicles, and shall be maintained in good operating condition at all times. The Contractor shall obtain a permit from the police or sheriff department, as appropriate, for the use of the light bars. The Contractor shall keep the light bars covered at all times when the traffic control vehicle is being used by someone other than the authorized uniform police agency officer.

## 16.5 Deliverables

At a minimum, the Contractor shall submit the following to CDOT (and Local Agencies when applicable) for Review, Acceptance, or Approval:

**Table 16-5 Deliverables**

<b>Deliverable</b>	<b>Review, Acceptance, or Approval</b>	<b>Schedule</b>
Transportation Management Plan (TMP)	Acceptance	Prior to NTP2
TMP task force members	Acceptance	Within 30 Days after NTP1
Requests to CDOT for modifications to VMS messages	Review	By 10:30 a.m. on Thursday of the week prior to when the VMS boards will be needed
Incident Management Plan (IMP)	Acceptance	Within 30 Days prior to NTP2
CDOT Form 568 for temporary speed reduction	Approval	7 Days prior to the date when speed reduction is to be implemented.
Traffic Control Plan (TCP)	Acceptance	At least 14 Days prior to implementation of each TCP
Method of Handling Traffic (MHT)	Acceptance	At least 5 Days prior to implementation of each MHT
Maintenance of Traffic (MOT) Variance request	Approval	14 Days prior to implementation of MOT
Lane closure request	Acceptance	7 Days prior to implementation of

## 16.6 Exhibits

Exhibit 16-A: CDOT Form 568 Temporary Speed Limit Reduction



# CDOT TEMPORARY SPEED LIMIT REDUCTION FORM 568

## Required Information

\* Indicates a required field.

### CDOT Project Engineer or Manager

*First Name\**

*Last Name\**

*Title\**

*Region\**

*Section*

*Patrol*

### Local Agency Representative, Contractor, or Consultant (if applicable)

*First Name*

*Last Name*

*Title*

*Agency or Company Name*

*Email*

*Phone Number*

### Project Information

Subaccount No., Permit, or MPA Code\*

Description of Project (example: bridge repair).\*

## Authority

The Department is legally authorized to temporarily reduce speed limits based on Colorado Revised Statute § 42-4-1102(1). The reduction must be based on an assessment of how the construction or maintenance work activity will impact traffic flow through the work zone. The traffic assessment, traffic investigation, or maintenance work order must be documented in this form. Additionally, CDOT projects which include recommendations for reduced speeds as part of the TSM&O evaluation shall include a copy of the evaluation report with this form. Procedural Directive 1502.2 "Temporary Reduction in Speed Limits" must be reviewed prior to execution.

Speed reductions shall only apply while the conditions exist that warrant the reduction. This is not always for the entire length and duration of the project. The permanently posted speed limits shall be effective upon completion of the speed reduction and signs shall be either unmasked or re-installed.

Note: If no work is occurring, temporary traffic control speed limit signs must be removed or masked within one hour of the completion of work.

The Chief Engineer shall delegate signature authority to the Region Traffic Engineers or designee, the LTC Ops I or higher (Maintenance Superintendents, Deputy Superintendents) to determine appropriate temporary speed limits. This Form 568 shall be routed to the Region Traffic Engineer for speed limit reductions associated with the issuance of a permit, an engineering project or a local agency project on a state highway, or a reduction of speed limit outside of Table I.

**TABLE I**  
RECOMMENDED MINIMUM WORK ZONE SPEED LIMITS

Existing Posted Speed Limit	Minimum width Available to Traffic <sup>1</sup>	Non-active Work Zone Speed Limit <sup>2</sup>	Active Work Zone Speed Limit <sup>3</sup>	Approaching a Potential Full Stop Condition
75 MPH	14 FT	65 MPH	65-40 MPH	40 MPH
70 MPH	14 FT	60 MPH	60-40 MPH	40 MPH
65 MPH	14 FT	55 MPH	55-40 MPH	40 MPH
60 MPH	14 FT	50 MPH	50-40 MPH	40 MPH
55 MPH	14 FT	45 MPH	45-40 MPH	40 MPH
50 MPH	12 FT	40 MPH	40 MPH	40 MPH
45 MPH	12 FT	40 MPH	40 MPH	40 MPH

<sup>1</sup> Travel lane width adjacent to the shoulder plus the shoulder width. Reduced speeds are not recommended where width available to traffic exceeds these measurements.

<sup>2</sup> See notes 1 and 7 in Section (IV)(B) in PD 1502.2. Must include additional rationale for speed limit reduction for a non-active work zone.

<sup>3</sup> See notes 1 and 7 in Section (IV)(B) in PD 1502.2. Speed limit should be set at the maximum value practical within this range and must be justified by the extent of exposure/risk.

## Reduced Speed Limits Per Date/Time (This form is to be used per project.)

### **Reduction Request 1**

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<i>State Highway*</i>	<i>From Mile Point*</i>	<i>To Mile Point*</i>	<i>Direction of Traffic*</i>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<i>Posted Speed Limit*</i>	<i>Temporary Reduced Speed Limit*</i>	<i>From Date &amp; Time*</i>	<i>To Date &amp; Time*</i>

Please provide justification for speed reduction (You must include a reason for reducing the speed limit any time a speed reduction is requested. Examples include: reduced clear zones, temporary alignment or geometric changes, exposure to workers, reduced sight distances, physical hazards, etc.)\*

### **Reduction Request 2**

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<i>State Highway</i>	<i>From Mile Point</i>	<i>To Mile Point</i>	<i>Direction of Traffic</i>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<i>Posted Speed Limit</i>	<i>Temporary Reduced Speed Limit</i>	<i>From Date &amp; Time</i>	<i>To Date &amp; Time</i>

Please provide justification for speed reduction (You must include a reason for reducing the speed limit any time a speed reduction is requested. Examples include: reduced clear zones, temporary alignment or geometric changes, exposure to workers, reduced sight distances, physical hazards, etc.)

### **Reduction Request 3**

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<i>State Highway</i>	<i>From Mile Point</i>	<i>To Mile Point</i>	<i>Direction of Traffic</i>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<i>Posted Speed Limit</i>	<i>Temporary Reduced Speed Limit</i>	<i>From Date &amp; Time</i>	<i>To Date &amp; Time</i>

Please provide justification for speed reduction (You must include a reason for reducing the speed limit any time a speed reduction is requested. Examples include: reduced clear zones, temporary alignment or geometric changes, exposure to workers, reduced sight distances, physical hazards, etc.)

### **Reduction Request 4**

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<i>State Highway</i>	<i>From Mile Point</i>	<i>To Mile Point</i>	<i>Direction of Traffic</i>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<i>Posted Speed Limit</i>	<i>Temporary Reduced Speed Limit</i>	<i>From Date &amp; Time</i>	<i>To Date &amp; Time</i>

Please provide justification for speed reduction (You must include a reason for reducing the speed limit any time a speed reduction is requested. Examples include: reduced clear zones, temporary alignment or geometric changes, exposure to workers, reduced sight distances, physical hazards, etc.)

## Review and Approval

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The signing authority is responsible for routing the approved form to the appropriate personnel per PD 1502.2.

I hereby  Approve this request  Deny this request.

Reason for denial:

*First Name\**

*Last Name\**

*Title\**

*Signature\**

*Date\**

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## 17.0 LANDSCAPING

This Section 17 includes the requirements for the Landscaping Work for the Region 2 Bridge Bundle Design Build Project (Project). This Work shall be completed in accordance with the Contract Documents.

### 17.1 Administrative Requirements

#### 17.1.1 Standards

The Contractor shall design and construct the Project in accordance with the requirements of the standards referenced in Book 3. The Contractor shall use the latest adopted edition at the time of the Proposal Due Date.

### 17.2 Design Requirements

#### 17.2.1 Submittals

All submittals shall be prepared, Reviewed, and submitted in accordance with the requirements set forth in Book 2, Section 3.

#### 17.2.2 Landscape Plan

The Contractor shall prepare and submit Landscape Plans for Acceptance by CDOT. The Landscape Plans shall be required for any area of Work where construction disturbance occurs, including permanent Right-of-Way (ROW), temporary Easements, staging, haul road, locations of fill/borrow, temporary fills, access locations or other areas that are disturbed as part of the Work.

The Landscape Plans shall include:

1. Identification of the existing vegetation locations in all areas that may be potentially disturbed within temporary Easements as part of the Work. This shall include species, location, condition, size, health, and a recommendation for remaining undisturbed, pruning, removal, or replacement in conformance with Book 2, Section 8.
2. Identification of areas adjacent to existing wetlands, trees, and significant vegetation.
3. Identification of removals, clearing and grubbing, and selective thinning areas in the areas between the limits of construction and the ROW.
4. Locations, mitigations, removals, and replacements of trees, shrubs, and landscapes impacted by the Work.
5. The locations of protected areas. The Contractor shall protect and maintain all existing vegetation in the Project, except for the vegetation that must be removed to accommodate construction of the Project. The Contractor shall identify access roads, temporary fills, and any haul roads. The Contractor shall conduct a Site walkthrough to identify areas to be protected to accommodate temporary access features. All

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construction operations shall be performed in such a manner to avoid these protected areas.

6. Temporary, Interim, and Permanent stabilization for each construction phase.
7. Areas to be permanently stabilized after completion shall follow the requirements of the CDOT *Standard Specifications for Road and Bridge Construction*, Sections 101, 107, 207, and 208, 212, 213, 214, and 620, 213 Mulching specifications, and other referenced material.
8. Disturbed areas where work has halted shall follow the requirements of the CDOT *Standard Specifications for Road and Bridge Construction*, Sections 101, 107, 207, and 208, 212, 213, 214, and 620, and other referenced material.
9. Removal of adjacent roadside vegetation shall be minimized where possible.
10. Unforeseen Conditions. The Contactor shall design and implement erosion and sediment control measures for correcting conditions unforeseen during the design of the project, or for emergency situations, that develop during construction. CDOT's Erosion Control and Stormwater Quality Guide and CDOT M Standards shall be used as a reference document for the purpose of designing erosion and sediment control measures. Measures and methods proposed by the Contractor shall be reviewed and approved in writing by the Engineer prior to installation.
11. Amend embankment to prepare topsoil with compost/bionutrients. Temporary erosion control and sediment control BMP's shall be maintained until the requirements of Book 2, Section 5 – Environmental are satisfied.
12. A schedule of when Work shall take place, per CDOT *Standard Specifications for Road and Bridge Construction (CDOT Standard Specifications)*, Sections 212 and 214.
13. A watering schedule listing the Days chosen to complete the required watering.
14. Drawings and a design intent narrative.

A field review or detailed aerial photo survey shall be conducted prior to starting any Landscape Work and shall be submitted with the Landscape plan to CDOT for Acceptance.

When the Landscape Plan is Accepted by CDOT and prior to the start of all construction Activities, the Contractor shall designate and clearly tag all existing plants that will remain undisturbed, pruned, or removed, as identified in the Landscape plan.

Upon completion of the designation and tagging activities, the Contractor shall conduct an inspection of the existing Landscape with CDOT prior to the start of construction. The Contractor shall install protection, finish pruning in accordance with the Accepted Landscape plan and address any issues identified during the inspection. Removals may take place over the life of the Project.

### 17.3 Construction Requirements



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### 17.3.1 Temporary Seeding and Stabilization

All temporary disturbed areas not within the work area shall be returned to preconstruction elevation and contours and reseeded with the CDOT Approved seed mix design. At any sites where work will be temporarily halted for 14 days or more, sediment and material stockpiles and disturbed areas shall be stabilized per 208.04

The Contractor shall control noxious weeds, if present prior to disturbance, as needed throughout construction.

### 17.3.2 Clearing and Work Area Limits Identification and Protection

The Contractor shall delineate the clearing and work limits for Acceptance by the CDOT (see Book 2, Section 5 – Environmental, Migratory Birds for bird nesting survey requirements). Existing vegetation and or sensitive environments to remain shall be identified and protected. BMP's shall be used to prevent degradation of habitats adjacent to construction area. The CDOT Project Manager will flag those trees adjacent to the boundary that are to remain in place. If trees, shrubs and willows are within the Contractor delineated clearing and work limits the following requirements will apply:

1. The Contractor shall use all appropriate care to avoid damage or removal of the flagged trees. Trees that are damaged shall be replaced at the Contractor's expense. Trees that are damaged and assessed as salvageable shall be promptly repaired, pruned, wrapped, and protected from further damage at the Contractor's expense.
2. Any native tree removed with a diameter of 2 inches or greater will be replaced in-kind at a 1:1 ratio in the same work area. The diameter of a tree is the measured diameter 2-foot up the tree from the ground surface.
3. Shrubs and willows removed shall be replaced with live willow cuttings collected from nearby stands. Willow cuttings will be placed on 2 foot centers.
4. All planted trees and shrubs located in planting areas as shown in the Plans shall be protected with geotextile fabric and wood chip mulch. Trees will not be accepted if the ball of earth surrounding the roots is cracked or broken during delivery and planting.
5. The Contractor shall repair or replace in-kind all landscape material and vegetation on private property which is disturbed by the Work. Replaced materials shall be equal or better to the existing materials in size, type and condition.

### 17.3.3 Protected Areas

The Contractor shall install temporary fencing for the protection of all existing vegetation that is designated to remain undisturbed and any additional areas defined in Book 2, Section 5. After installation of the fence, the Contractor shall request a field Inspection from CDOT prior to proceeding with the Work.

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Fencing shall be placed at the drip line for trees. Construction Activities, such as earth disturbance, storage, staging, or parking inside the drip line shall be prohibited. No chemicals shall be applied or used around or near these areas that would be detrimental to vegetation health.

The Contractor shall immediately report damage to any tree within the Work area designated to remain undisturbed to CDOT for assessment of the damage and survivability. Trees that are damaged shall be replaced at the Contractor's expense if CDOT's, at their sole discretion, determines the tree(s) will not survive.

Any trees and shrubs impacted within temporary Easements shall be replaced. The replacement trees and shrubs shall be placed in the same area or in same general vicinity.

### **17.3.3 Removal of Trees and Shrubs**

Tree stumps within the Roadway prism or within 10 feet of the edges of Roadway pavements shall be completely removed and disposed of off Site. All other tree stumps within the Project area shall be ground to 3 feet below finished grade.

All trees or shrubs removed from the Project shall become the property of the Contractor and shall be completely disposed of off Site by the Contractor.

### **17.3.4 Tree and Shrub Transplanting**

The Contractor may transplant trees and shrubs. The Contractor shall not use non-native trees or shrubs.

### **17.3.5 Pruning**

The Contractor, if needed, shall have all root and branch pruning that interfere with the Work completed by a licensed and certified tree surgeon. All Work shall be in accordance with American National Standard Institute (ANSI) A300.

#### Root Pruning

Tree roots 2 inches or greater in diameter shall not be removed, unless they interfere with the work. Extensive root pruning may require tree replacement as directed by CDOT.

Roots below the excavation depth for the work shall not be pruned.

#### Branch Pruning

The Contractor may prune branches that will interfere with the Work per the Approved Landscape plan and according to Section 240 – *Protection of Migratory Birds, Biological Work Performed by the Contractor's Biologist* of the CDOT *Standard Specifications*.

The Contractor shall remove weak or dead branches on trees that are to remain within the ROW.

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### 17.3.6 Replacement Plant Material

Replaced Materials shall comply with Section 214 of CDOT's *Standard Specifications* and be equal or better to the existing Materials in type and function.

### 17.3.7 Staking and Watering

New replacement trees shall be guyed in accordance with M-Standard Plans M-214-1 and Section 214 of the CDOT *Standard Specifications*. Trees shall be staked for two growing seasons. All guying material shall be removed by the Contractor at completion of the Landscape Establishment Period, defined in Section 17.2.10.3.

The Contractor shall water new and protected trees on the Project until the Project has reached the Landscape Establishment Period. The Contractor shall water the plant Material per Section 214 of the CDOT *Standard Specifications*.

### 17.3.8 Topsoil

The existing topsoil should be stripped and stored separately for use on the Project to the extent practical. All topsoil shall follow the requirements in according to sections 207 and 212 of the CDOT *Standard Specifications*.

All topsoil, either imported or salvaged on Site, shall be treated with an herbicide for noxious weeds identified in the INWMP prior to final seeding.

### 17.3.9 Permanent Native Seeding

Placement of soil conditioning and fertilizer, seeding and mulching shall not be done in a single operation, and shall be completed within 48 hours following each construction phase or prior to any winter shutdown work. All seeding requirements in the Approved project SWMP shall also be followed. Fertilizer shall not be used adjacent to wetlands and waterways. Refer to CDOT *Standard Specification* Section 212 for additional requirements.

All disturbed areas that are not surfaced shall be re-vegetated to replicate or enhance native vegetative communities. Re-vegetation species that attract wildlife to the Highway or practices that allow noxious weeds shall not be used.

Due to high failure rates the Contractor will not be allowed to use hydromulching and/or hydroseeding or straw.

Seeding shall follow Section 212 of the CDOT *Standard Specifications* and Book 2, Section 5. Seeding of areas shall be completed in conjunction with erosion control requirements, final Roadside cut/fill slopes and as required in Book 2, Section 5.

If any detention facilities are incorporated into the Project, the slopes shall be planted with an Approved seed mix.

Placement of soil conditioner, topsoil, seeding, mulching (weed free), and mulch tackifier (or soil retention blanket) shall not be completed in a single operation, but shall be completed immediately following each area that is to final grade, per CDOT *Standard Specifications*,

Sections 208, 212, and 213.

The Contractor shall place native seed, mulch (weed free), and mulch tackifier after each construction phase and prior to any winter shutdown Work.

The Contractor shall use CDOT Online Transportation Information System (OTIS)(<https://dtdapps.coloradodot.info/MapView/>) to find the correct seed mix for each structure segment and the seed mix shall be Approved by CDOT prior to placement in accordance with Book 2 Section 5 – Environmental.

Soil conditioning and fertilizer requirements are as follows:

Soil Conditioning (Acre)		
Biological nutrient organic based fertilizer (lbs/acre)*	Humate (lbs/acre)	Compost (cys/acre) (1/2 inch depth)
300	200	65

Roadside ditches that have been disturbed by construction shall be lined with soil retention blanket or turf reinforcement blanket to contain the design flow width (wetted perimeter), designed based on the hydraulics of the ditch for both before and after the final stabilization is established. If soil retention blanket is used, mulch and tackifier are not required.

### 17.3.9 Reseeding Operations and Corrective Stabilization

Prior to final acceptance:

1. Seeded areas shall be reviewed during the 7 day inspections by the Erosion Control Supervisor for bare soils caused by surface or wind erosion. Bare areas caused by surface or gully erosion, blown away mulch, etc. shall be re-graded, seeded, mulched and have mulch tackifier (or blanket) applied as necessary.
2. Seeded areas shall be watered as appropriate to establish native vegetation regrowth irrigated until seeding is established.
3. The Contractor shall maintain seeding/mulch/tackifier, mow to control weeds or apply herbicide to control weeds in the seeded areas until Final Acceptance.

### 17.3.12 Noxious Weed Management Plan

Identify and provide a Noxious Weed Management plan if state noxious weeds are present in accordance with Book 2 Section 5 – Environmental.

### 17.3.13 Landscaping Inspection, Establishment, Acceptance, and Warranty Period

#### 17.3.13.1 Interim Landscape Inspections

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The Work shall meet the requirements of the Contract Documents prior to proceeding to the next Activity. The Contractor's Environmental Compliance Manager (ECM) shall conduct inspections at completion of the following Activities:

1. Completion of the subgrade preparation.
2. Completion of finished grade preparation.
3. Layout of trees.
4. Layout of all plant materials.
5. Completion of seeding operations.

Nonconforming Work shall be replaced or repaired promptly by the Contractor at its own expense. When damage endangers public safety or traffic, remedial action shall be taken immediately to ensure safety and prevent further disruption of traffic.

### **17.3.13.2 Substantial Landscape Completion**

Substantial Landscape Completion is defined as when all seeding, trees, or plant materials have been planted and are completed in compliance with the requirements of the Contract Documents. Trees and plants shall be healthy and in flourishing condition and be free of dying branches and branch tips; and shall bear foliage of normal density, size, and color.

Prior to Substantial Landscape Completion, a Landscape Inspection shall be held with CDOT at each structure segment to determine Acceptance of trees, plant Material and seeding areas. Upon Acceptance, CDOT will issue a Notice of Substantial Landscape Completion.

### **17.3.14 Landscape Establishment Period**

The Landscape Establishment Period will commence at Project Final Acceptance, which will be contingent upon issuance of a written "Notice of Substantial Landscape Completion" from CDOT in accordance with the requirements of Section 214 of the CDOT *Standard Specifications* and herein.

The Landscape Establishment Period will last for 12 months, and will begin the following spring if Notice of Substantial Landscape Completion is issued in the fall.

All landscape installations shall be completely maintained by the Contractor during the Landscape Establishment Period. The Contractor shall submit a detailed Landscape Maintenance Plan in accordance with the requirements of Section 214 of the Standard Specifications and prior to issuance of the Notice of Substantial Landscape Completion. CDOT will inspect the landscape installations on at least a monthly basis to determine the acceptability of the maintenance Work. Nonconforming maintenance will be brought up to acceptable levels within 5 Days of receipt of notice of maintenance deficiencies.

The Landscape Establishment Period can run concurrently with the Project Warranty Period and the Wetland Establishment Period. Both the Landscape Establishment and Wetland Establishment Periods could extend past the Project Warranty Period.

### **17.3.15 Final Landscape Acceptance**

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Upon completion of the Landscape Establishment Period, at the Contractor's request, CDOT will inspect the Landscaping to determine compliance to the requirements of the Contract Documents. All Landscape installations shall be fully established, weed-free, clean, smooth, properly graded, and without tree or plant mortality in order to be Accepted by CDOT.

The Contractor shall schedule a final Landscape Inspection and Verification walkthrough after this walkthrough, the Contractor shall submit a letter requesting Final Landscape Acceptance from CDOT. The Landscape Establishment Period and Contractor maintenance will terminate after CDOT Acceptance is reached. Should CDOT identify any areas of Nonconforming Work, the Contractor shall correct the deficiencies and extend the Landscape Establishment Period for a minimum of one additional growing season at no additional cost to the Project. If Final Landscape Acceptance occurs in the fall, the Contractor shall continue to maintain the Landscaped area until the following spring. Any dead trees, plant material, or seeding areas shall be replaced or repaired at no additional cost to the Project.

At the request of the Contractor, a final field review of the Landscaping shall be conducted to ensure compliance with the Contract Documents. The results of the Landscape final field review of the Project re-vegetation shall be submitted showing both the conditions of all landscape items. The Contractor shall remove all temporary erosion and sediment control measures following Landscape Establishment Period, unless otherwise specified by CDOT.

#### **17.3.16 Landscape Warranty Period**

All trees, shrubs, and ground covers, including seeding, shall be completely Warranted by the Contractor for 1-year from the date of Final Landscape Acceptance. Any plant Material deemed deficient following this 1-year Warranty period, shall be replaced in kind by the Contractor at no additional cost to the Project, and shall be Warranted for 1 additional year by the Contractor. Any additional 1-year Warranty period beyond the initial 1-year Warranty period will be considered an extended Warranty period. Another Inspection will be conducted at the request of the Contractor at the end of the extended Warranty period to determine Acceptance or rejection.

If access to a completed Landscaped area is required by the Contractor after Final Landscape Acceptance, Landscape Materials will be considered existing and shall be protected in accordance with the requirements of the Contract Documents.

#### **17.4 Deliverables**

At a minimum, the Contractor shall submit the following to CDOT for review, Approval and/or Acceptance:

Deliverable	Review, Acceptance or Approval	Schedule
Final Landscape Plan	Acceptance	As part of the Final RFC document submittal for each segment
Noxious Weed Management Plan	Acceptance	Prior to disturbance at each segment
Landscape Maintenance Plan	Acceptance	Prior to the Notice of Substantial Landscape Completion
Landscape As-Constructed Plans	Acceptance	After Final Landscape Inspection at each segment
Letter requesting Final Landscape Acceptance	Acceptance	After Final Landscape Inspection and Verification Walkthrough for each segment

All deliverables shall also conform to the requirements of Section 3 - Quality Management.

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## 18.0 MAINTENANCE DURING CONSTRUCTION

This Section 18 includes the requirements for the maintenance during construction Work for the Region 2 Bridge Bundle Design Build Project (Project). This Work shall be completed in accordance with the Contract Documents.

### 18.1 Maintenance Administration

#### 18.1.1 Responsibilities for Maintenance

The responsibility for performing maintenance of the Highway within the project limits shall be the Contractor's responsibility and shall conform to Sections 104.04, 105.19, 105.20 and 107.17 of the 2019 Colorado Department of Transportation (CDOT) *Standard Specifications for Road and Bridge Construction*, and as described herein.

Americans with Disabilities Act (ADA) compliant pathways with an all-weather surface shall be provided and maintained at all times by the Contractor, if applicable. The requirements herein define those maintenance Work responsibilities that shall be performed by the Contractor and those that will remain the responsibility of CDOT. All Work shall conform to the CDOT Highway Maintenance Levels of Service Manual.

##### 18.1.1.1 Initiation of Contractor Maintenance Responsibilities

The Contractor will commence maintenance responsibilities beginning upon the first mobilization for any Work on a structure segment through Final Acceptance, including any and all project suspensions for weather and/or seasonal shut downs.

##### 18.1.1.2 Termination of Contractor Maintenance Responsibilities

All responsibilities assigned to the Contractor shall remain as defined until Final Acceptance.

#### 18.1.2 Maintenance Level of Service Plan

The Contractor shall develop and submit to CDOT a Maintenance Level of Service (MLOS) plan for Approval. The MLOS plan shall define the Contractor's complete strategy for the implementation, coordination, scheduling, and monitoring of maintenance Activities during the Project. The MLOS plan shall conform to the CDOT *Highway Maintenance Level of Service Manual* and be updated at a minimum every six months or sooner if needed, to reflect changes in the Contractor's construction Activities. The Maintenance Level of Service Plan shall also address the following components:

1. Maintenance Condition Survey  
Every six (6) months, the Contractor shall perform a detailed survey of maintenance conditions for the Highway(s) and any Road provided for construction phasing until all of the Contractor's maintenance responsibilities are complete (Final Acceptance). The results of the survey shall be documented by the Contractor and submitted to CDOT for Acceptance.
2. Monthly Maintenance Progress Report



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Monthly Maintenance Progress Reports shall be required for the full term of the Contractor's maintenance responsibilities. These reports shall detail all maintenance Activities performed, monitored maintenance condition of existing facilities, identification of any deficiencies from minimum standards, and an action plan for correcting the deficiencies. Monthly maintenance progress reports shall be submitted to CDOT for review each month with the monthly invoice submittal for Review, as required in Book 2, Section 2 - Project Management.

The Maintenance Level of Service Plan shall be submitted to CDOT for Approval at least 21 Days prior to the Second Notice to Proceed (NTP2).

### 18.1.3 Maintenance Responsibilities of the Contractor

Except as specifically assigned to CDOT in Section 18.1.4, the Contractor shall perform all required maintenance Activities, within 48 hours or less of notice of maintenance item, for all roadways within the project limits per 18.1.1.1, including but not limited to:

1. Patching and repair of existing pavements
2. Patching and repair of all existing structures included as a part of the Project
3. Repair of shoulder drop-offs
4. Replacement and repair of existing Hot Mix Asphalt (HMA) shoulders
5. Snow and ice removal for lanes closed to traffic and behind all temporary barrier
6. Maintenance of delineators, signing and pavement markings
7. Compliance to ADA requirements for all-weather surfaces of all pathways and accesses at all times, if applicable.
8. Drainage maintenance
9. HMA overlays of existing pavements and structures utilized as detours or as a part of the Contractor's Maintenance of Traffic (MOT) plans
10. Replacement of damaged guardrail, bridge rail, barriers, and glare screens
11. Repair of impact attenuators
12. Vegetation control in conformance with local agency ordinances
13. Litter control
14. Graffiti removal (graffiti shall be removed within 24 hours of notification and surface shall be the same color as the original)
15. Activities described in Appendix 18-A, Maintenance Performance Specifications (During Construction).
16. Debris removal responsive to providing the minimum lane requirements in Book 2, Section 16 - Maintenance of Traffic.
17. Sweeping as required by CDOT *Standard Specifications for Road and Bridge Construction 208.04(f)*.

Snow removal operations in the lanes closed to traffic and behind all temporary barriers shall be done in a way to avoid placing snow back into open lanes to traffic. Snow must be removed far enough from the edge of travel lane that runoff from melting snow will not enter into the travel lanes.

The Contractor shall meet vehicle weight limits for all trucks hauling material over the Roadway. CDOT may request certified truck weights for any trucks hauling Material over the Roadway at any time. The Contractor shall pay a price reduction fee per CDOT *Standard Specifications for Road and Bridge Construction 105.18*.

Any items (debris) of value discovered by the Contractor on the highway shall be held by the Contractor at least 30 Days in consideration of claim by the original owner. This includes temporary advertisement signs. If the original owner does not claim these items within 30 Days, the Contractor shall then relinquish the items (debris) of value to CDOT's Maintenance Staff for storage and the Contractor may dispose of all advertising material at its discretion.

If repair or removal of items illegally dumped on any ROW or easement is required, the Contractor shall perform such services within 3 Working Days from the date discovered or reported.

#### **18.1.4 Maintenance Responsibilities of CDOT**

CDOT will perform the following maintenance Activities:

1. Inspection of structures
2. Patching and repair of all existing structures excluded from the Project
3. Snow and ice control for all lanes open to traffic on US 350, US 24, CO 9, and CO 239 prior to and during a snow event.

#### **18.1.5 Limits of Maintenance Responsibilities**

The longitudinal limits of the Contractor's maintenance responsibilities on the Project shall conform to the limits of the Project, including all portions of the Work.

The lateral limits shall be the ROW mainline, and ramps within the Project Site. Any other areas disturbed by Contractor Activities, outside of these limits, shall be the sole maintenance responsibility of the Contractor.

#### **18.1.6 Excluded Areas**

There are no excluded areas within the Project limits.

#### **18.1.7 Payment for Maintenance During Construction**

Progress payments for maintenance during construction shall be according to Book 2, Section 2 - Project Management.

### **18.2 Performance Specifications**

In performance of maintenance on the Project, the Contractor shall comply with the CDOT *Highway Maintenance Level of Service Manual*. Specifically, the Contractor shall adhere to the requirements for data collection and measurement for equating level of service (LOS) on the Highway and incorporate these requirements into its performance of all maintenance Work according to the maintenance of MLOS plan.

A minimum of LOS D shall be maintained within the Project limits through the duration of the Project, per the CDOT *Highway Maintenance Levels of Service Manual*.

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### 18.3 Right-of-Way Construction Requirements

#### 18.3.1 Risk of Loss, Obligation to Maintain and Repair

The Contractor shall comply with requirements in Book 2, Section 8 - Right of Way, and shall maintain improvements and provide reasonable safety and security measures to preserve any acquired ROW or easements (temporary or permanent). The Contractor shall conduct regular Site inspections and prevent, minimize, or correct problems such as vandalism, trespassing, rodent infestation, weed control (in accordance with any local agency ordinances), illegal dumping or disposal of rubble, and other debris on all areas of the Project that are under the Contractor's maintenance responsibility.

#### 18.4 Deliverables

At a minimum, the Contractor shall submit the following to CDOT for Review, Approval and/or Acceptance:

Deliverable	Review, Acceptance or Approval	Schedule
Maintenance Level of Service Plan	Approval	At least 21 Days prior to NTP2, then update every 6 months or sooner if needed
Maintenance condition surveys	Acceptance	Concurrent with the Maintenance Level of Service Plan update
Maintenance progress reports	Review	Included in monthly invoice submittal

#### 18.5 Appendix

Appendix 16-A: Maintenance Performance Specifications (During Construction)

**Appendix A**

**MAINTENANCE PERFORMANCE SPECIFICATIONS (DURING CONSTRUCTION)**

The following is an item Activities listing from CDOT’s Highway Levels of Service Manual, for which the Contractor shall be responsible during construction.

**Maintenance Program Area: Roadway Surface (150)**

Survey Item	CDOT Activities Number
Patching/Minor Surface Repair	152
Patching-Machine, Overlay and Leveling	154
Blading – Existing Unpaved Surface/Shoulder	162
Building / Restoring Unpaved Surface/Shoulder	163
Base Stabilization and Repair	164

**Maintenance Program Area: Roadside Facilities (200)**

Survey Item	CDOT Activities Number
Drainage Structures Clean, Repair or Replace	202
Maintenance of Ditches and Streambeds	206
Slope Repair	210
Fence, Gate Cleaning & Maintenance	216
Litter Barrel and Trash Cleanup	218
Sweeping – Machine	220
Sweeping – Hand	222

**Maintenance Program Area: Roadside Appearance (250)**

Survey Item	CDOT Activities Number
Vegetation Control – Dry Land	252
Vegetation Control – Bluegrass	253
Vegetation Control – Hand Mowing, Weeding	254
Vegetation Control – Herbicide & Pesticide App	256
Vegetation Control – Irrigation	258
Tree Planting, Removal, Trimming	260

**Maintenance Program Area: Traffic Services (300)**

Survey Item	CDOT Activities Number
Traffic Signs	302, 303
Delineators, Mile Markers	304
Metal Guardrail	306
Concrete Guardrail	307
Pavement Striping, Pavement Markings	308, 310
Roadway, Sign Lighting	312
Traffic Signals	314
Energy Attenuators	316

Electrical Wiring	320
Interconnect Systems	326

**Maintenance Program Area: Structure Maintenance (350)**

Survey Item	CDOT Activities Number
Bridge Decks	353
Bridge Superstructure	354
Bridge / Structure Painting	355
Bridge Curbs, Railings	356
Bridge Structure Bearings	357
Bridge Substructure	358
Bridge Approaches, Slopes	360
Bridge Deck Expansion Devices	364

**Maintenance Program Area: Snow and Ice Control (400)**

Survey Item	CDOT Activities Number
Snow Removal (Lanes Closed to Traffic)	402
Ice Control – Drainage Related	403

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## 19.0 MODIFICATIONS TO STANDARD SPECIFICATIONS

### 19.1 Construction Requirements

This Section sets forth modifications to the Colorado Department of Transportation (CDOT) *Standard Specification for Road and Bridge Construction* for design-build projects. The first section contains revisions to Division 100 of the Standard Specifications. The second section contains revisions to Divisions 200 through 700 of the Standard Specifications, as well as Standard Special Provisions applicable to the Project. All references to the “specifications” in this section refer to the CDOT Standard Specifications for Road and Bridge Construction as modified and incorporated into the RFP by the terms of this section.

These Contract Provisions revise the CDOT’s *Standard Specifications for Road and Bridge Construction*, and contain requirements generally applicable to the Work to be performed by the Contractor. In certain cases, provisions in Section 100 of the *Standard Specifications for Road and Bridge Construction* have been superseded by other provisions of the Contract Documents. For ease of reference, this document uses the same Section numbers as the *Standard Specifications for Road and Bridge Construction*, and identifies provisions of the Contract Documents that have replaced or modified the standard clauses.

All references to “Engineer” that are incorporated into this Request for Proposal (RFP) refer to the Contractor’s Engineer, unless the context requires or the Department determines otherwise. Non-capitalized terms, such as “work” that are defined in Book 1, Exhibit A, shall have the meanings defined therein unless the context requires otherwise. References to “approve, approval or approved” shall mean “Approve, Approval or Approved” as defined in Book 1, Exhibit A, when the approval is by CDOT or a division of CDOT. If the interpretation(s) pursuant to this paragraph are not clear, CDOT shall decide, in its sole discretion, how these terms shall be interpreted.

When the specifications describe actions, Materials, means or methods that are required and that are qualified by phrases such as: “as directed by the Engineer”, “when directed by the Engineer”, “as determined by the Engineer”, “with or without permission of the Engineer”, “in the opinion of the Engineer”, “unless authorized by the Engineer”, “satisfactory to the Engineer”, “as approved by the Engineer”, or “unless another type is specified or is permitted with approval of the engineer”, such phrases pertaining to Contractor actions, materials, operations, and means or methods shall be disregarded. If it is not clear whether a phrase should be disregarded, CDOT will make that decision in its sole discretion.

When the specifications refer to “CDOT”, “Department”, “Resident Engineer”, “Bridge Construction or Maintenance Engineer”, “TMC system inspector”, “Concrete Engineer”, “Project Engineer”, “Materials Engineer”, “Commissioner”, “Structural Metals Engineer”, “Geotechnical Engineer” or any other specific CDOT special engineer, such reference shall mean the CDOT Project Director.

When the specifications use the term Engineer relating to the approval of any activities involving the use of explosives, such term shall mean the CDOT Project Director.

When an approval or authorization of the Engineer or CDOT is required in these specifications for the use of alternative or substituted processes or components, the Engineer shall mean CDOT. If it is not clear whether a phrase involves the use of alternative or substituted processes, CDOT will make that determination in its sole discretion.

When the specifications refer to an approval of any correction or repair that deviates from the Contract requirements, the approval must be by CDOT. If it is not clear whether a specification involves a

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correction or repair that deviates from the Contract requirements, CDOT will make that determination in its sole discretion.

When the specifications provide that reports, records or other documents shall be submitted to CDOT or to the Engineer, such reports shall be made available to CDOT and do not have to be submitted unless either they are otherwise listed in the deliverables in the Contract Documents, or are required shop drawings, warranties, parts lists, instruction sheets or manufacturer’s drawings or specifications. Such documents shall be submitted to CDOT as required by the specifications.

When the specifications require actions, Materials, means or methods that are “either as indicated in the Plans or as designated by the Engineer,” the Contractor shall disregard the phrase “or as designated by the Engineer.”

When the specifications refer to the “Engineer” ordering work beyond the scope of work in the Contract, “Engineer” shall mean CDOT. Whenever in these specifications the Engineer may order work that results in additional costs to CDOT, the “Engineer” shall mean CDOT.

Any acceptances on behalf of CDOT or the State shall be performed by CDOT.

Any references to other standards, codes, or criteria, or to the latest version of other standards, codes, or criteria in Book 2 of the Contract Documents shall mean the latest version at the Proposal Due Date unless otherwise indicated.

### **19.1.1 Modifications to Section 100 of the CDOT Standard Specifications for Road and Bridge Construction**

#### 101 – Definitions

Definitions of terms used herein are set forth in Exhibit A, to Book 1 of the Contract Documents.

#### 102 – Bidding Requirements and Conditions

##### 102.01 – Prequalification of Bidders

Prequalification of Proposers was determined during the evaluation of the Statements of Qualifications.

##### 102.02 – Contents of Proposal Forms

Provisions regarding the contents of Proposal Forms are set forth in the Instructions to Proposers.

##### 102.03 – Interpretation of Quantities in Proposal Form

Not applicable.

##### 102.04– Interpretation of Plans and Specifications

Provisions regarding the interpretation of plans and specifications are set forth in the Instructions to Proposers.

##### 102.05– Examination of Plans, Specifications, Special Provisions, and Site or Work

Provisions regarding examination of plans, specifications, special provisions and Site or Work are set

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forth in the Instructions to Proposers and in Book 1, Sections 1 and 2, of the Contract Documents.

102.06– Preparation of Proposal

Provisions regarding preparation of the Proposal are set forth in the Instructions to Proposers.

102.07 – Irregular Proposals

Provisions regarding irregular Proposals are set forth in the Instructions to Proposers.

102.08 – Combination or Conditional Proposals

Not applicable.

102.09 – Anti-Collusion Affidavit

Provisions regarding Anti-Collusion Affidavit are set forth in the Instructions to Proposers.

102.10 – Material Guaranty

Provisions regarding Material Guaranty are set forth in Book 1, Section 21, and Book 2, Section 3.

103 – Award, and Execution of Contract

Provisions regarding award and execution of the Contract are set forth in the Instructions to Proposers and in Book 1, Section 8, of the Contract Documents.

104 – Scope of Work

104.01– Intent of Contract

Provisions regarding the intent of contract are set forth in Book 1 of the Contract Documents.

104.02 – Differing Site Conditions, Suspensions or Work, and Significant Changes in the Character of Work

Provisions regarding differing Site conditions and changes in the character of Work are set forth in Book 1, Sections 5 and 13, of the Contract Documents. Provisions regarding limitations to contract price increases are set forth in Book 1, Section 13.5, of the Contract Documents. Provisions regarding Suspensions of Work are set forth in Book 1, Section 14 of the Contract Documents.

104.03– Extra Work

Provisions regarding changes are set forth in Book 1, Section 13, of the Contract Documents.

104.04 – Maintaining Traffic

The provisions regarding maintenance of traffic are set forth in Book 2, Sections 16 and 18, of the Contract Documents. Provisions regarding maintenance responsibilities of the Contractor during Suspensions of Work are set forth in Book 1, Section 14, of the Contract Documents.

104.05– Rights In and Use of Materials Found on the Work



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The provisions regarding rights in and use of Materials found on the Work are replaced with the following:

The Contractor shall not excavate or remove any Material from within the Roadway, which is not within the grading limits, as indicated by the slope and grade lines, without written authorization from CDOT.

Unless otherwise provided, the material from Structures designated for removal shall be the Contractor's property and may be used temporarily by the Contractor in the erection of the new Structures.

104.06– Final Cleaning Up

Provisions regarding final cleaning up before Final Acceptance are fully incorporated herein.

104.07 – Value Engineering Change Proposals by the Contractor

Provisions regarding Value Engineering change proposals by the Contractor are set forth in Book 1, Section 12, of the Contract Documents.

105– Control of Work

105.01– Authority of the Engineer

The provisions regarding Control of Work are set forth in Book 1, Section 5, of the Contract Documents. CDOT has the authority by written order to suspend the Work wholly or in part for the reasons delineated in Book 1, Section 14, of the Contract Documents.

105.02– Plans, Shop Drawings, Working Drawings, other Submittals and Construction Drawings

Provisions regarding plans, Shop Drawings, Working Drawings and construction documents are set forth in Book 2, Section 3, of the Contract Documents.

105.03– Conformity to the Contract

The provisions regarding conformity to the Contract are revised as follows:

1. No incentive payments will be made under this Contract.
2. Paragraph 3 is deleted and replaced with the following: For those items of Work where working tolerances are not specified, the Contractor shall perform the Work in a manner consistent with reasonable and customary manufacturing and construction practices.
3. Paragraph 4 is deleted and replaced with the following: When the Engineer or CDOT finds the Materials furnished, the Work performed, or the finished product does not conform with the Contract Documents, but CDOT determines, in its sole discretion, that reasonably acceptable Work has been produced, CDOT will determine the extent the Work will be Accepted and remain in place. If accepted, the Contractor shall (a) document the basis for Acceptance based on CDOT's determination by Change Order which will provide for an appropriate reduction in the Contract price for such Work or Materials not otherwise provided for in this Subsection or (b) CDOT will notify the Contractor in writing that the agreed-upon unit price will be reduced in accordance with this Subsection when P is 25 or less, or (c) CDOT may notify the Contractor in writing if there should be no reduction in the Contract Price; or in lieu of a price reduction, CDOT may permit correction or replacement of the finished product, provided the correction or

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replacement does not adversely affect the Work.

4. For purposes of Nonconforming Work, the Contractor and CDOT will negotiate a unit price for determining the reduction in the Contract Price, with supporting documentation. The unit price is subject to Approval of CDOT. The reduction in Contract Price shall take place as provided in this Section 105.03, based upon the Approved unit price. The Change Order shall be prepared in accordance with this Section 105.03.
5. Paragraph 5 is deleted and replaced with the following: When the Engineer or CDOT finds the Materials furnished, Work performed, or the finished product are not in conformity with the Contract Documents, and CDOT determines, in his sole discretion, that it has resulted in an inferior or unsatisfactory product, the Work or Materials shall be removed and replaced or otherwise corrected by and at the expense of the Contractor.
6. Paragraph 8 is deleted and replaced with the following: Materials or Work will be evaluated for price reduction only when deviations from the requirements of the Contract Documents occur on any of the several individual Tests for the lot. Several individual test values will be averaged and the percent of price reduction for the lot will be determined by applicable formula and table as shown in Section 105.03.
7. Paragraph 15 is deleted and replaced with the following: Price reduction for those elements, which are not included in the Table of Price Reduction Factors as shown in Section 105.03 will be proposed by the Contractor for Approval by CDOT.
8. Paragraph 16 is deleted and replaced with the following: The Contractor will not have the option of accepting a price reduction in lieu of producing Material that complies with the Contract Documents. Continued production of nonconforming Material will not be permitted. Material, which is obviously defective, may be isolated and rejected by CDOT without regard to sampling sequence or location within a lot.

105.05– Conformity to the Contract of Hot Mix Asphalt

The provisions regarding conformity to the Contract of Hot Mix Asphalt is revised as follows: No incentive payments will be made under this Contract.

105.06– Conformity to the Contract of Portland Cement Concrete Pavement

Not applicable.

105.07 – Conformity to Roadway Smoothness Criteria of HMA

The provisions regarding conformity to Roadway Smoothness Criteria for HMA is revised as follows:

Pavement Smoothness Category of HMA shall be MRI Category II. See Book 2, Section 10.

No incentive payments will be made under this Contract.

105.08 – Conformity to Roadway Smoothness Criteria of Portland Cement Concrete Pavement

Not applicable.

105.09 – Coordination of Plans, Specifications, Supplemental Specifications, and Special Provisions

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Book 1, Section 1.3, of the Contract Documents sets forth the order of priority of the various Contract Documents.

105.10 – Cooperation by Contractor

Provisions regarding cooperation by the Contractor are set forth in Book 1, Section 2.2, of the Contract Documents.

105.11 – Cooperation with Utilities

Provisions regarding cooperation with Utilities are fully incorporated herein, except the reference to Extra Work is not applicable and the provisions for delays are set forth in Book 1, Section 6.2, and Book 2, Section 7, of the Contract Documents.

105.12 – Cooperation between Contractors

Provisions regarding Cooperation between Contractors are set forth in Book 1, Section 23.0 - Cooperation and Coordination, and in Book 2, Section 16, of the Contract Documents.

105.15 – Duties of the Inspector

Provisions regarding inspection of the Work are set forth in Book 1, Section 5 - Control of Work, Book 1, Section 22, and Book 2, Section 3, of the Contract Documents.

105.16 – Inspection and Testing of Work

Provisions regarding Inspection and Testing of the Work are set forth in Book 1, Sections 5, Book 1, Section 22, and Book 2, Section 3.

105.17– Removal of Unacceptable Work and Unauthorized Work

Book 1, Section 5.7, of the Contract Documents provides for removal of Nonconforming Work.

108.18 – Load Restrictions

The provisions regarding load restrictions are incorporated herein, except the fourth and fifth paragraphs are replaced with the following:

If a scale ticket from an overweight vehicle is inadvertently accepted and the Material incorporated into the Project, CDOT will adjust the price for the overweight load as follows:

1. The Contract price will be reduced by an amount based upon the pay item quantity represented by the amount of Material in excess of the legal weight according to a unit price to be proposed by the Contractor, with supporting documentation, and Approved by CDOT.

105.19 – Maintenance during Construction

Provisions for maintenance during construction are set forth in Book 1, Section 10 – Risk and Loss, and Book 2, Section 18, of the Contract Documents.

105.20 – Failure to Maintain Roadway or Structure

Provisions for failure to maintain the Roadway or Structure are set forth in Book 2, Section 18, of the

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Contract Documents.

105.21 – Acceptance

Provisions regarding Segment Completion and Final Acceptance are set forth in Book 1, Section 20 – Acceptance of Project of the Contract Documents.

105.22, 105.23, and 105.24 – Disputes and Claims for Contract Adjustments

Provisions regarding claims for Contract adjustments are set forth in Book 1, Section 13 – Changes in the Work and Encumbrance of Funds, and provisions regarding Dispute Resolution are set forth in Book 1, Section 19 – Project First, Claims for Adjustments and Disputes.

106 – Control of Material

106.02 - Material Sources

Provisions regarding Material sources are set forth in Book 2, Section 3, of the Contract Documents. The provisions regarding hazardous Materials are set forth in Book 1, Sections 5.3, 13.11, 18.1, and 18.2, of the Contract Documents.

106.03 – Samples, Tests, and Cited Specifications

Provisions regarding quality control and quality assurance are set forth in Book 2, Section 3, of the Contract Documents.

Unless otherwise designated, when American Association of State Highway and Transportation Officials (AASHTO), American Society for Testing and Materials (ASTM), or other specifications, standards, or policies are cited, the reference shall be to the latest edition as revised or updated by approved supplements or interim editions published and issued as of the Proposal Due Date unless otherwise indicated.

106.07– Material Inspection at Plant

Provisions regarding Material Inspection at the plant are set forth in Book 2, Section 3, of the Contract Documents.

106.08– Storage of Materials

Provisions regarding storage of Materials are set forth in Book 2, Section 3, of the Contract Documents.

106.09 – Handling Materials

Provisions regarding the handling of Materials are set forth in Book 2, Section 3, of the Contract Documents.

106.11 – Buy America

Provisions regarding Buy America are incorporated.

106.12 – Certificates of Compliance

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Provisions regarding Certificates of Compliance are incorporated.

106.13 – Certified Test Report

Provisions regarding Certified Test Reports are incorporated.

107 – Legal Relations and Responsibility to Public

107.02 – Permits, Licenses, and Taxes

Provisions regarding Permits, licenses and taxes are set forth in Book 1, Section 2.2, of the Contract Documents.

107.04– Restoration of Surfaces Opened by Permit

Provisions regarding restoration of surfaces opened by a Permit to construct or reconstruct a Utility service are set forth in Book 1, Section 6.2, and Book 2, Section 7, of the Contract Documents.

107.05– Federal Aid Provisions

Provisions regarding Federal Aid Provisions are contained in the Book 1, Section 1.10 – Federal Requirements.

107.06– Safety, Health, and Sanitation Provisions

Provisions regarding Safety, Health, and Sanitation are contained in Book 2 of the Contract Documents.

107.061 – Performance of Safety Critical Work

Section 107 of the Standard Specifications is hereby revised as follows:

Add subsection 107.061 immediately following subsection 107.06 as follows:

**107.61** Performance of Safety Critical Work. The following work elements are considered safety critical work for this project:

1. Overhead girder erection, location and structure number as shown on the plans.
2. Overhead structure(s) construction or repair, location and structure number as shown on the plans.
3. Removal of bridge, location and structure number as shown on the plans.
4. Removal of portion of bridge(s), location and structure number as shown on the plans.
5. Temporary work: falsework, shoring that exceeds 5 feet in height, cofferdams, and temporary bridges.
6. Work requiring the use of cranes or other heavy lifting equipment to set girders, sound walls, make overhead repairs; also when construction materials are being lifted that may fall onto active traffic lanes.
7. Blasting.

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8. Excavation and embankment adjacent to the roadway, especially if it requires shoring. The Engineer will specify the depth or proximity of the earthwork considered safety critical work
  9. Tunneling.
  10. Work operations such as pile driving and jack hammering which may create vibration and cause debris to fall onto traffic.
  11. Rockfall mitigation.
  12. Work within 50 feet of active railroad track centerline.
  13. Caissons and/or directional boring in high density utility corridor
  14. Work over or adjacent to river, stream, or other protected water way.
  15. Urban work near and/or where pedestrian or bicycle pathways must be maintained during construction

The Contractor shall submit, for record purposes only, an initial detailed construction plan that addresses safe construction of each of the safety critical elements. When the specifications already require an erection plan, a Bridge removal plan, or a removal of portion of Bridge plan, it shall be included as a part of this plan. The detailed construction plan shall be submitted two weeks prior to the safety critical element conference described below. The construction plan shall be stamped "Approved for Construction" and signed by the Contractor's Engineer in Responsible Charge of construction or the Quality Control Administrator (QCA).

The Construction Plan shall include the following:

1. Safety Critical Element for which the plan is being prepared and submitted.
2. Contractor or Subcontractor responsible for the plan preparation and the Work.
3. Schedule, procedures, Equipment, and sequence of operations, that comply with the working hour limitations
4. Temporary works required: falsework, bracing, shoring, etc.
5. Underground, above grade, and overhead utilities identification and protective steps taken.
6. Communication plan as necessary with stakeholders, media, and the public.
7. Additional actions that will be taken to ensure the Work will be performed safely.
8. Names and qualifications of workers who will be in responsible charge of the Work:
  - A. Years of experience performing similar work
  - B. Training taken in performing similar work
  - C. Certifications earned in performing similar work
9. Names and qualifications of workers operating cranes or other lifting equipment
  - A. Years of experience performing similar work
  - B. Training taken in performing similar work

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- C. Certifications earned in performing similar work
10. The construction plan shall address how the Contractor will handle contingencies such as:
    - A. Unplanned events (storms, traffic accidents, etc.)
    - B. Structural elements that don't fit or line up
    - C. Work that cannot be completed in time for the Roadway to be reopened to traffic
    - D. Replacement of workers who don't perform the Work safely
    - E. Unexpected absence of critical management team
    - F. Equipment failure
    - G. Other potential difficulties inherent in the type of Work being performed
  11. Name and qualifications of Contractor's person designated to determine and notify the Contractor's Engineer in Responsible Charge of construction in writing when it is safe to open a route to traffic after it has been closed for safety critical work.
  12. Erection plan or Bridge removal plan when submitted as required elsewhere by the specifications. Plan requirements that overlap with above requirements may be submitted only once.

A safety critical element conference shall be held two weeks prior to beginning construction on each safety critical element. The Contractor, the safety critical element Subcontractors, and the Contractor's Engineer in Responsible Charge of Construction or QCA shall attend the conference. Required pre-erection conferences or bridge removal conferences may be included as a part of this conference.

After the safety critical element conference, and prior to beginning work on the safety critical element, the Contractor shall submit a final construction plan to the Engineer for record purposes only. The Contractor's Engineer in Responsible Charge of construction, or QCA shall sign and seal temporary works, such as falsework, shoring etc., related to construction plans for the safety critical elements, (3) Removal of Bridge, (4) Removal of Portion of Bridge and (5) Temporary Works. The final construction plan shall be stamped "Approved for Construction" and signed by the Contractor's Engineer in Responsible Charge of Construction or QCA.

The Contractor shall perform safety critical work only when the Engineer is on the project site. The Contractor's Engineer in Responsible Charge of Construction or QCA shall be on Site to inspect and provide written approval of safety critical work for which they provided signed and sealed construction details. Unless otherwise directed or approved, the Contractor's Engineer in Responsible Charge of Construction or QCA need not be on Site during the actual performance of safety critical work, but shall be present to conduct inspection for written approval of the safety critical work.

When ordered by the Contractor's Engineer in Responsible Charge of Construction or QCA, the Contractor shall immediately stop safety critical work that is being performed in an unsafe manner or will result in an unsafe situation for the traveling public. Prior to stopping Work, the Contractor shall make the situation safe for Work stoppage. The Contractor shall submit an acceptable plan to correct the unsafe process before the Contractor's Engineer in Responsible Charge of Construction or QCA will authorize resumption of the Work.

When ordered by the Contractor's Engineer in Responsible Charge of Construction or QCA, the Contractor shall remove workers from the project that are performing the safety critical work in a manner that creates an unsafe situation for the public in accordance with subsection 108.05.

Should an unplanned event occur or the safety critical operation deviate from the submitted plan, the Contractor shall immediately cease operations on the safety critical element, except for performing any

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Work necessary to ensure worksite safety, and provide proper protection of the Work and the traveling public. If the Contractor intends to modify the submitted plan, they shall submit a revised plan to the Contractor's Engineer in Responsible Charge of Construction or QCA prior to resuming operations.

All costs associated with the preparation and implementation of each safety critical element construction plan will not be measured and paid for separately, but shall be included in the Work.

Nothing in the section shall be construed to relieve the Contractor from ultimate liability for unsafe or negligent acts or to be a waiver of the Colorado Governmental Immunity Act on behalf of the Department.

107.07– Public Convenience and Safety

Construction shall be conducted so obstructions to traffic are minimized. The safety and convenience of the public and the protection of persons and property shall be provided as specified in Book 2, Section 16, of the Contract Documents.

107.08– Railroad-Highway Provisions

The Railroad-Highway provisions are incorporated herein with the following revision: Delete the first paragraph and replace with the following:

If the Contract requires Materials to be hauled across Railroad tracks, the Contractor shall make arrangements with the Railroad for any new crossings required or for the use of any existing crossings.

107.15 – Responsibility for Damage Claims

Provisions regarding responsibility for damage claims are set forth in Book 1, Sections 3.3, 5.6, 9.0, and 11.1, of the Contract Documents.

107.16 – Opening Sections of Project to Traffic

The Provisions regarding opening sections of Project to traffic are deleted except as follows:

1. Opening certain sections of the Work for traffic use shall not constitute acceptance of the Work, or provide a waiver of any provision of the Contract Documents.

107.17 – Contractor's Responsibility for Work

Provisions regarding Contractor's responsibility for Work are set forth in Book 1, Section 2, of the Contract Documents.

107.19 – Furnishing Right of Way

The provisions regarding ROW for the Project are set forth in Book 1, Section 6.1 and Book 2, Section 8, of the Contract Documents.

107.20 – Personal Liability of Public Employees

The employees of CDOT or authorized representatives are acting solely as agents and representatives of CDOT when carrying out and exercising the power or authority granted to them under the Contract Documents. There shall not be any liability on them either personally or as employees of CDOT.

107.21 – No Waiver of Legal Rights



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Provisions regarding no waiver of legal rights are set forth in Book 1, Sections 2, 5, and 20, of the Contract Documents.

107.22 – Third Party Beneficiary

Provisions regarding Third Party beneficiaries are set forth in Book 1, Section 24.7, of the Contract Documents.

107.23 – Archaeological and Paleontological Discoveries

Provisions regarding archaeological and paleontological discoveries are set forth in Book 1, Sections 5 and 13, and Book 2, Section 5, of the Contract Documents.

108 – Prosecution and Progress

108.02 – Notice to Proceed

Provisions for notice to proceed are set forth in Book 1, Sections 4 and 11, of the Contract Documents.

108.03 – Schedule

Provisions regarding progress schedules are set forth in Book 1, Section 4, and Book 2, Section 2, of the Contract Documents.

108.04 – Payment Schedule

Provisions regarding the Contractor's Payment Schedule are set forth in Book 1, Section 11, and Book 2, Section 2, of the Contract Documents.

108.8 – Determination and Extension of Contract Time

Provisions regarding Completion Deadlines are set forth in Book 1, Section 4, of the Contract Documents; provisions for extensions of such deadlines are set forth in Book 1, Section 13, of the Contract Documents; provisions regarding time for construction operations are set forth in Book 2, Section 16, of the Contract Documents.

108.9 – Failure to Complete Work on Time

Provisions regarding Damages for late completion are set forth in Book 1, Section 17, of the Contract Documents.

108.10 – Default of Contract

Provisions regarding default of Contract are set forth in Book 1, Section 16, of the Contract Documents.

108.11 – Termination of Contract

Provisions regarding termination of Contract are set forth in Book 1, Sections 15 and 16, of the Contract Documents.

109 – Measurement and Payment

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109.02 – Scope of Payment

Provisions regarding scope of payment are set forth in Book 1, Sections 11, and Book 2 of the Contract Documents.

109.4 – Compensation for Changes and Force Account Work

Provisions for compensation for changes in the Work are set forth in Book 1, Section 13, of the Contract Documents.

109.5 – Eliminated Items

Provisions regarding eliminated items are set forth in Book 1, Section 13, of the Contract Documents.

109.06 – Partial Payments

Provisions regarding retainage and securities in lieu of Retainage are fully incorporated herein. Monthly payments will be based on the requirements set forth in Book 1, Section 11, and Book 2, Section 2, of the Contract Documents.

Notwithstanding the provisions of Book 1, Section 11.6, prior estimates and payments made in accordance with this Subsection 109.06(f) shall not be subject to correction in the Final Payment.

No cost adjustments will be made under this Contract.

109.07 – Payment for Material On Hand (Stockpiled Materials)

Provisions regarding payment for stockpiled structural steel are fully incorporated herein. Other provisions regarding payment for Materials on hand (stockpiled Materials) are set forth in Book 1, Section 11, of the Contract Documents.

109.9 – Acceptance and Final Payment

Provisions regarding Acceptance and final payment are set forth in Book 1, Section 11, of the Contract Documents.

109.10 – Compensation for Compensable Delays

Provisions regarding compensation for compensable delays are set forth in Book 1, Section 13, of the Contract Documents.

**19.1.2 Modifications to Section 200 to 700 of the CDOT Standard Specifications for Road and Bridge Construction and Standard Special Provisions**

**19.1.2.1 Modifications to Section 200 to 700 of the CDOT Standard Specifications for Road and Bridge Construction**

Sections 200 through 700 are incorporated herein, except as otherwise provided in the Contract Documents, with the following exceptions: (1) in Sections 200 through 600, the method of measurement and basis of payment provisions are superseded by the provisions set forth in Books 1 and 2 of the Contract Documents.

### 19.1.2.2 Standard Special Provisions

The following Standard Special Provisions are to be used by the Contractor for Design and Construction of the Work. The Standard Special Provisions are Revisions to the 2019 Standard Specifications for Road and Bridge Construction.

Standard Special Provision Index: June 2, 2021

The following Standard Special Provisions are available at the following link:

<https://www.codot.gov/business/designsupport/cdot-construction-specifications/2019-construction-specifications/rev-ssp>

<b>Name</b>	<b>Date</b>	<b>No. of Pages</b>
Revision of Section 101 – Holidays	(Sept. 17, 2020)	1
Revision of Section 101 – Record Set	(January 20, 2021)	1
Revision of Section 102 – Interpretation of Plans and Specifications	(December 28, 2020)	1
Revision of Section 103 – Award and Execution of Contract	(September 18, 2020)	1
Revision of Section 103 – Escrow of Proposal Documentation	(October 1, 2019)	1
Revision of Section 104 – Scope of Work	(January 20, 2021)	1
Revision of Section 105 – Control of Work (105.02 b)	(January 20, 2021)	2
Revision of Section 105 – Control of Work (105.02 f)	(December 28, 2020)	1
Revision of Section 105 – Control of Work (105.08)	(January 20, 2021)	1
Revision of Section 105 – Control of Work	(June 2, 2021)	18
Revision of Section 105 – Conformity to the Contract of Hot Mix Asphalt (Less than 5,000 Tons)	(October 1, 2019)	3
Revision of Section 106 – Control of Material	(January 20, 2021)	1
Revision of Section 107 – Project Safety Management Plan	(April 13, 2020)	1
Revision of Section 109 – Asphalt Cement Cost Adjustment (Asphalt Cement Included in the Work)	(January 27, 2020)	3
Revision of Section 202 – Removal of Bridge	(March 30, 2021)	5
Revision of Section 206 – Excavation and Backfill for Structures	(January 20, 2021)	1
Revision of Section 207 – Topsoil	(July 7, 2020)	6
Revision of Section 502 – Piling	(January 20, 2021)	1
Revision of Section 503 – Drilled Shafts	(January 20, 2021)	1
Revision of Section 504 – Walls	(January 20, 2021)	2
Revision of Section 504 and 606 – Precast Concrete	(September 3, 2020)	1
Revision of Section 504 and 641 – Soil Nail Wall	(October 1, 2019)	12
Revision of Section 509 – Steel Structures	(January 20, 2021)	1
Revision of Section 518 – Waterstops and Expansion Joints	(January 20, 2021)	1
Revision of Section 601 – Concrete Mix Designs	(March 30, 2021)	1
Revision of Section 601 – Structural Concrete	(October 4, 2019)	17
Revision of Section 601 – Structural Concrete (601.05)	(January 20, 2021)	1
Revision of Section 601 & 701 – Structural Concrete	(December 28, 2020)	3
Revision of Section 602 – Reinforcing Steel	(September 3, 2020)	4
Revision of Section 618 – Prestressed Concrete	(January 20, 2021)	1
Revision of Section 630 – Barrier (Temporary)	(October 4, 2019)	1
Revision of Section 630 – Construction Zone Traffic Control	(December 20, 2020)	1
Affirmative Action Requirements – Equal Employment Opportunity	(October 1, 2019)	10
Minimum Wages, Colorado	(January 1, 2021)	10
U.S. Department of Labor General Decision Number CO20210006, Highway Construction for Adams, Arapahoe, Broomfield, Clear Creek, Elbert, Gilpin,		

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Jefferson, and Park counties.

<b><u>Name</u></b>	<b><u>Date</u></b>	<b><u>No. of Pages</u></b>
Minimum Wages, Colorado U.S. Department of Labor General Decision Number CO20210008, Highway Construction for El Paso, Pueblo, and Teller counties.	(January 1, 2021)	6
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## 20.0 PROJECT SPECIAL PROVISIONS

The following Project Special Provisions supplement or modify the CDOT *Standard Specifications for Road and Bridge Construction* and take precedence over the CDOT Standard Specifications.

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**REVISION OF SECTION 202  
RECLAIMED ASPHALT PAVEMENT MILLINGS**

Section 202 of the Standard Specifications is hereby revised for this project as follows:

Subsection 202.09 shall include the following:

CDOT will retain 0% of the Reclaimed Asphalt Pavement (RAP) millings removed from the existing mat on this project. All remaining RAP millings, if any, shall be used in the project as allowed in the Contract or as approved by the Engineer. Otherwise, they shall become the property of the Contractor and shall be disposed at his expense outside the project limits.

If the Contractor desires to retain a quantity of RAP millings that exceeds that allowed by this Contract, the Contractor may request this by submitting a Value Engineering Change Proposal (VECP) in accordance with subsection 104.07.

**REVISION OF SECTION 202  
REMOVAL OF ASPHALT MAT**

Section 202 of the Standard Specifications is hereby revised for this project as follows:

Subsection 202.01 shall include the following:

This work includes removal and disposal of existing asphalt mat.

In subsection 202.02 delete the seventh paragraph and replace with the following:

The existing asphalt mat shall be removed in a manner that minimizes contamination of the removed mat with underlying material. The removed mat shall become the property of the Contractor and shall be either disposed of outside the project site, or used in one or more of the following ways:

1. Used in embankment construction in accordance with section 203.
2. Placed in bottom of fills as approved by the Engineer.
3. Recycled into the hot mix asphalt.

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**REVISION OF SECTION 202  
REMOVAL OF ASPHALT MAT (PLANING)**

Section 202 of the Standard Specifications is hereby revised for this project as follows:

Delete subsection 202.09, and replace it with the following:

**202.09 Removal of Asphalt Mat (Planing).** Prior to beginning planing operations, the Contractor shall submit a planing plan and a Process Control Plan (PCP) for approval by the Engineer. The planing plan shall include at a minimum:

- (1) The number, types and sizes of planers to be used.
- (2) The width and location of each planing pass.
- (3) The number and types of brooms to be used and their locations with respect to the planers.
- (4) The proposed method for planing and wedging around existing structures such as manholes, valve boxes, and inlets.
- (5) The longitudinal and transverse typical sections for tie-ins at the end of the day.
- (6) If requested by the Engineer, a plan sheet showing the milling passes.

The PCP shall include as a minimum:

- (1) The schedule for replacing the cutting teeth.
- (2) The daily preventive maintenance schedule and checklist.
- (3) Proposed use of automatic grade controls.
- (4) The surface testing schedule for smoothness.
- (5) The process for filling distressed areas.
- (6) The schedule for testing macrotexture of the milled surface.
- (7) Corrective procedures if the milled surface does not meet the minimum macrotexture specification.
- (8) Corrective procedures if the milled surface does not meet the minimum transverse or longitudinal surface finish when measured with a 10 foot straightedge.

The Contractor shall not start the planing operation until the hot mix asphalt (HMA) mix design has been approved and a Form 43 has been signed by the Engineer.

The existing pavement shall be milled to the cross-slope as shown on the plans, and shall have a surface finish that does not vary longitudinally or transversely more than 3/8 inch from a 10 foot straightedge. A 10 foot straightedge shall be supplied by the Contractor.

All milled surfaces shall be broomed with a pick-up broom, unless otherwise specified, before being opened to traffic. A sufficient number of brooms shall be used immediately after planing to remove all milled material remaining in the roadway.

If the Contractor fails to adequately clean the roadway, work shall cease until the Engineer has approved the Contractor's revised written proposal to adequately clean the roadway.



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**2**  
**REVISION OF SECTION 202**  
**REMOVAL OF ASPHALT MAT (PLANING)**

The milled surface shall have a macrotexture equal to or less than 0.170 inches for single-lift overlays and 0.215 inches for multiple-lift overlays as tested in accordance with CP 77. Milled surfaces that do not meet these criteria shall require corrective action in accordance with the PCP. The Contractor shall be responsible for testing the macrotexture of the milled surface at the location directed by the Engineer in accordance with CP 77 at a stratified random frequency of one test per 10,000 square yards or a minimum of once per work day.

At the completion of each day's work, longitudinal vertical edges greater than 1 inch shall be tapered. No transverse vertical edges will be allowed. Longitudinal milled surface tie-ins to existing pavement shall be tapered to not less than a 3:1 slope, transverse milled surface tie-ins to existing pavement shall be tapered to not less than a 50:1 slope. Transverse tapered joints may be tapered with the planing machine, a temporary asphalt ramp, or other methods approved by the Engineer. No longitudinal joint between the milled and existing surfaces shall fall between 1 to 5 feet of any lane line.

If the transverse joint is tapered with a temporary asphalt ramp, the milled surface at the joint shall be constructed as a butt joint the full depth of the lift of asphalt to be placed on the milled surface. The Contractor shall be responsible for maintaining this asphalt ramp until all corresponding HMA is placed.

If the transverse joint is tapered with a planing machine, a butt joint shall be cut into the taper the full depth of the lift of asphalt to be placed on the milled surface prior to commencement of resurfacing. All work associated with this joint will not be paid for separately, but shall be included in the cost of planing.

Other approved transverse joint tapers shall be maintained at the expense of the Contractor, and at a minimum shall incorporate a butt joint the full depth of the lift of asphalt to be placed on the milled surface prior to commencement of resurfacing.

Distressed or irregular areas identified in the planed surface by the Engineer shall be patched.

The roadway shall be left in a safe and usable condition at the end of each work day. The Contractor shall take appropriate measures to ensure that the milled surface does not trap or hold water. All required pavement markings removed by the planing shall be restored before the roadway is opened to traffic.

All milled surfaces to be overlaid with HMA shall be covered with new asphalt within 5 working days. Any milled areas left uncovered that are damaged after 5 days shall be removed and rebuilt by the Contractor in accordance with Book 2, Section 10 – Geotechnical and Pavements, subsection 10.4.1 HMA Pavement Construction.

All planing shall be completed full width and parallel to the travel lanes before resurfacing commences unless otherwise directed by the Engineer.

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**3**  
**REVISION OF SECTION 202**  
**REMOVAL OF ASPHALT MAT (PLANING)**

All material generated by the planing operation shall become the property of the Contractor unless otherwise noted in the Contract.

Each planer shall conform to the following:

The planer shall have sufficient power, traction and stability to maintain an accurate depth of cut. The propulsion and guidance system of the planer shall be maintained in such condition that the planer may be operated to straight and true lines.

The planer shall be capable of operating with automatic grade controls (contact or non-contact) on both sides of the machine using a 30 foot averaging system or other approved grade control systems. The use of such controls shall be described in the Contractor's PCP.

The planer shall be capable of picking up the removed material in a single operation. A self-loading conveyor shall be an integral part of the planer. Windrows will not be allowed.

Subsection 202.12 shall include the following:

Macrotecture testing, macrotecture corrective actions, planers, brooms and all other work necessary to complete the item will not be measured and paid for separately, but shall be included in the work.

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**REVISION OF SECTION 202  
REMOVAL OF BRIDGE**

Section 202 of the Standard Specifications is hereby revised for this project as follows:

Subsection 202.01 shall include the following:

This work consists of the removal of existing bridges.

Bridge removal shall consist of the complete removal of all superstructure and substructure elements unless otherwise shown on the plans.

Subsection 202.02 shall include the following:

The removal of each existing bridge shall be performed in a safe manner. The Construction Plan requirements (1) through (15) shown in Revision Section 107-Performance of Safety Critical Work shall be included in the Bridge Removal Plan.

When removal operations are located over or in proximity to a railroad or any live water way, additional coordination including potential incident emergency/risk management notifications with the railroad or other agency (United States Army Corps of Engineers (USACE), US Fish and Wildlife Service, US Forest Service, etc.) shall be required.

The Contractor shall submit a Bridge Removal Plan for each structure to the Engineer for review and acceptance at least 14 days prior to the proposed start of removal operations. This Plan shall detail procedures, sequences, and all features required to perform the removal in a safe and controlled manner. The Bridge Removal Plans shall be prepared by the Contractor's Engineer and contain the seal and signature of a Professional Engineer registered in the State of Colorado. The Bridge Removal Plan shall be stamped "Approved for Construction" and signed by the Contractor. The Bridge Removal Plan will be submitted to CDOT for review concurrent with the Engineer's review for general specification compliance, but will not be approved by the Engineer. Comments from the Engineer's review of the Bridge Removal Plan shall be submitted in writing to the Contractor within seven calendar days from receipt of the plan and prior to the Pre-removal Conference. Acceptance of the Bridge Removal Plans will be contingent upon the Contractor adequately addressing all written comments provided by the Engineer.

The Bridge Removal Plans shall provide complete details of the bridge removal process, including:

- (1) The removal sequence corresponding to the construction phasing shown on the plans, including calculations and analysis of the Contractor's removal equipment as related to loading capacity and any crane bearing during the removal operations. Sequence of operation shall include a detailed schedule that complies with the working hour limitations.
- (2) Equipment descriptions including size, number, type, capacity, backup/standby need, and location of equipment during removal operations.

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**REVISION OF SECTION 202**  
**REMOVAL OF BRIDGE**

- (3) Roles, responsibilities, and positioning of all CDOT project management, construction supervision, and critical workers during removal activities. This section shall include instructions for communicating and managing a 'safe-all-stop' scenario if unexpected hazards are discovered during the activity.
- (4) Shoring that exceeds 5 feet in height, all falsework and bracing. Shoring design shall follow the AASHTO Guide Design Specifications for Bridge Temporary Works, or other design standard as approved by the Engineer. Shoring construction, including verification and proof testing shall be in accordance with Section 206. Shoring will not be measured and paid for separately.
- (5) Details, locations, and types of protective coverings to be used. The protective covering shall prevent materials, equipment, and debris from falling onto the property below. When removal operations are located over or in proximity to a live waterway, railroad, or pedestrian/bicycle path, additional width of protective covering sufficient to protect these facilities shall be required. Detailed methods for protection of the existing roadway facilities, including measures to assure that people, property, utilities, and improvements will not be endangered. Catastrophic unplanned failure of the structure in demolition is to be considered as worst-case scenario.
- (6) Detailed methods for protection of live waterways including minimization of turbidity and sedimentation, and protection of existing wetlands.
- (7) Detailed methods for mitigation of fugitive dust resulting from the demolition.
- (8) Details for dismantling, removing, loading, and hauling steel elements.
- (9) Locations of railroad tracks, roadways, utilities (overhead and underground), structures or facilities located within the area of the bridge removal operations.
- (10) Detailed methods of fire suppression.
- (11) Methods of Handling Traffic, including bicycles and pedestrians, in a safe and controlled manner.
- (12) Details for managing project communications, media, and public on-looker during demolition as needed.
- (13) Contingency planning for unexpected weather.
- (14) Details for emergency and post-incident management in a catastrophic failure or other serious incident or worker injury.

**3**

**REVISION OF SECTION 202**  
**REMOVAL OF BRIDGE**

The Contractor's Engineer shall be responsible for the stability of the existing "in service" structure for any deviation from the bridge removal limits shown on the construction phasing plans. The Contractor is also responsible for the protection of any portion of the structure to remain in place for later phases, including protection from the Contractor's construction activities.

When a temporary works or demolition guideline is provided by a railroad or local agency, the more stringent criteria of the design guidelines shall be used.

A Pre-removal Conference shall be held at least ten days prior to the beginning of removal of the bridge. CDOT, the Contractor, the removal subcontractor, the Contractor's Engineer, the Traffic Control Supervisor (TCS), and CDOT/Project Communications Staff shall attend the Pre-removal Conference. The Bridge Removal Plan shall be finalized at this Conference. Meeting minutes and attendance list will be recorded.

The Contractor's Engineer shall sign and seal items (1) and (3) listed above in the final Bridge Removal Plan. Calculations shall be adequate to demonstrate that the loads and impact of the Contractor's demolition equipment do not impose detrimental effects on the stability of the structure remaining after the end of each phase of removal, before traffic is allowed to resume in its normal configuration.

The final Bridge Removal Plan shall be stamped "Approved for Construction" and signed and sealed by the Contractor's Engineer. The Contractor shall address all written comments from the Engineer and submit a final Bridge Removal Plan to the Engineer. The Contractor shall not begin the removal operations without the Engineer's written acceptance of the final Bridge Removal Plan.

Submittal of the final Bridge Removal Plans to the Engineer, and field inspection performed by the Engineer, will in no way relieve the Contractor and the Contractor's Engineer of full responsibility for the removal plan and procedures.

Work within Railroad right-of-way shall be in accordance with Section 107. For bridge removal over railroads, including overhead wires, tunnels and underground facilities, approval of the bridge removal plans will be contingent upon the drawings being satisfactory to the railroad company involved.

The Contractor's Engineer shall be onsite during safety critical removal operations considered to have a high degree of safety risk. Bridge removal operations determined to be of high safety risk shall be agreed upon and documented between the Contractor and Engineer at or before the Pre-removal Conference. The Contractor's Engineer shall inspect and provide written approval of each phase of the removal operations corresponding to the construction phasing shown on the plans prior to allowing vehicles or pedestrians on, below, or adjacent to the structure. The Contractor's Engineer shall certify in writing that the falsework, bracing, and shoring conform to the details of the final Bridge Removal Plan. A copy of the certification shall be submitted to the Engineer. Should any part of the adjacent structure designated to remain in place be damaged during removal operations, the Contractor's Engineer shall perform a full and complete engineering evaluation of the structure and submit a written report to the Engineer. This evaluation, as well as any additional costs to stabilize the structure due to or resulting

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**REVISION OF SECTION 202  
REMOVAL OF BRIDGE**

from the Contractor's actions or inactions, shall be borne solely by the Contractor. Further work involving the bridge shall not be permitted until the report and any subsequent remedial stability measures are complete and satisfactory to the Engineer and Staff Bridge.

The Contractor shall have all necessary workers, materials, and equipment at the site prior to closing any lanes to traffic to accommodate bridge removal operations. While the lanes are closed to public traffic, work shall be pursued promptly and without interruption until the roadway is reopened to traffic.

Removal of hazardous material shall be in accordance with Section 250.

The Contractor shall take all necessary steps to avoid contaminating state waters, in accordance with subsection 107.25.

Should an unplanned event occur or the bridge removal operation deviate from the submitted Bridge Removal Plan, the bridge removal operations shall immediately cease after performing any work necessary to ensure worksite safety. The Contractor shall submit to the Engineer the procedure or operation proposed by the Contractor's Engineer to correct or remedy the occurrence of this unplanned event or to revise the final Bridge Removal Plan. The Contractor's Engineer shall submit a written report to the Engineer within 24 hours of the event summarizing the details of the event and the procedure for correction. The Engineer shall review the information submitted regarding the unplanned event and provide written acceptance of the corrective action or remedy procedure prior to resuming operations.

Before removal of the protective covering, the Contractor shall clean the protective covering of all debris and fine material.

Bridge removal may be suspended by the Engineer for the following reasons:

- (1) Final Bridge Removal Plan has not been submitted, or written acceptance has not been provided by the Engineer to begin the removal.
- (2) The Contractor is not proceeding in accordance with the final Bridge Removal Plan, procedures, or sequence.
- (3) The Contractor's Engineer is not onsite to conduct inspection for the written approval of the work.
- (4) Safety precautions are deemed to be inadequate.
- (5) Existing neighboring facilities are damaged as a result of bridge removal.

Suspension of bridge removal operations shall in no way relieve the Contractor of their responsibility under the terms of the Contract. Bridge removal operations shall not resume until modifications have

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**REVISION OF SECTION 202**  
**REMOVAL OF BRIDGE**

been made to correct the conditions that resulted in the suspension, as approved in writing by the Engineer.

The Contractor shall notify all emergency response agencies of the proposed removal work and any detours a minimum of three days in advance of the work. This shall include the Colorado State Patrol, local Police Department, local Fire Department, all local ambulance services, and the Sheriff's Department, as appropriate.

All required traffic control devices, night time flagging stations, barricades and VMS signs shall be in place, with detours in operation, prior to the beginning of removal operations each day. Night work shall conform to the requirements of the MUTCD, Parts 1, 5, and 6.

Prior to reopening the roadway to public traffic, all debris, protective pads, materials, and devices shall be removed and the roadways swept clean.

Explosives shall not be used for removal work without the written approval of the Engineer.

Removal shall include the superstructure, the substructure, which includes the piers, abutments and wingwalls, the bridge rail, and any approach slabs and sleeper slabs.

Removal of the substructure shall be removed per Book 2, Section 15 - Structures. Holes resulting from substructure removal shall be backfilled with Structure Backfill (Class 2) to the adjacent existing grades.

All other materials removed from the existing structure shall become the property of the Contractor and shall be properly disposed of offsite at the Contractor's expense, unless otherwise stated.

Existing structures, facilities, and surrounding roadways shall not be damaged by the removal operations. Damage that occurs shall be repaired immediately at the Contractor's expense.

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**REVISION OF SECTION 202  
REMOVAL OF MARKING (ASPHALT  
OR CONCRETE GROOVING)**

Section 202 of the Standard Specifications is hereby revised for this project as follows:

Subsection 202.05 shall include the following:

- (c) *Removal of Pavement Marking (Asphalt or Concrete Grooving)*. Pavement marking shall be removed by asphalt grooving or concrete grooving to provide a recessed channel in the pavement surface for the placement of permanent pavement markings at locations as shown on the plans. The channel shall have a transverse and longitudinally uniform depth of 60 mils. The dimensions of the channel shall match the length and width of the specified pavement marking, within a tolerance of +0.25, -0.00 inches. Where broken line patterns are required, the grooved channel length shall not be continuous, but shall consist of individual grooved segments matching the required pavement marking pattern.

Asphalt, concrete, and pavement marking debris generated by the grooving process shall be collected and removed from the roadway and disposed of lawfully. Displacement of grooving debris to the roadway shoulder shall not be permitted.



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**REVISION OF SECTION 203  
EMBANKMENT MATERIAL**

Section 203 of the Standard Specifications is hereby revised for this project as follows:

Subsection 203.02 (c) shall include the following:

Embankment material containing significantly more than optimum moisture that would become stable if dried shall not be unsuitable material.

In subsection 203.03, first paragraph, after the second sentence add the following:  
Imported embankment material utilized for construction shall consist of materials meeting AASHTO classification A-1-a, A-1-b, or A-2-4 when classified in accordance with AASHTO M 145, and shall not contain Reclaimed Asphalt Pavement (RAP) materials in any percentage.

Materials generated on-site that do not meet AASHTO classification A-1-a, A-1-b, or A-2-4 when classified in accordance with AASHTO M 145 may be used on fill slopes and embankment areas outside of the roadway prism (See Section 101.65 of the Standard Specifications) as designated in the plans or as approved by the Engineer.

In subsection 203.03, seventh paragraph, delete the first sentence and replace with the following:  
Inclusion of recycled asphalt will not be allowed in the embankment fill. If recycled concrete is to be incorporated into embankment fill, the maximum dimension permitted for concrete is 6 inches.

Delete subsection 203.07(c) and replace with the following:

Use of Recycled Concrete: Recycled concrete may be incorporated into embankment material, and shall be processed, placed, and compacted in accordance with subsection 203.07(a) or (b), depending on the overall classification of the embankment material once the recycled material is incorporated. Recycled concrete shall not contain any rebar or reinforcing steel. Recycled concrete shall not be placed in the upper 2 feet of the final subgrade elevation or within 2 feet of the final finished side slopes unless otherwise noted in the Contract. Recycled or Reclaimed Asphalt Pavement will not be allowed in the new embankment materials.

Subsection 203.11 (b) shall include the following:

The disposal of unsuitable material and replacement of embankment will not be measured and paid for separately, but shall be included in the work.

Subsection 203.12 shall include the following:

The Contractor's Process Control efforts will not be measured and paid for separately but shall be included in the work.

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**REVISION OF SECTION 208  
CONSTRUCTION MAT**

Section 208 of the standard specifications is hereby revised for this project to include the following:

**DESCRIPTION**

**208.13** This work consists of furnishing and installing construction mats to support equipment working in wetlands, streams, and other locations designated on the plans while protecting the soils and vegetation beneath from damage.

**MATERIALS**

**208.14** Construction mats shall be capable of supporting the anticipated loads on the types of soil that will be encountered. Larger mats shall be used on soils with low bearing strength (e.g., muck or peat) to spread the weight over a larger area. Construction mats shall be free of leachable preservatives or other constituents harmful to aquatic environments. All treated wood shall contain a quality mark or letter of certification from a third party inspection agency assuring the product meets the minimum American Wood Protection Association (AWPA) Use Category 4A standard. The Contractor may fabricate the mats or use prefabricated mats designed for these purposes.

(a) *Construction Mats Fabricated by the Contractor.* The construction mats shall be fabricated of wooden cants, sawn dense hardwoods, or round logs fastened together. The mats shall be fabricated of cants or logs of length, width, and thickness to meet anticipated loads, soil strength, and construction equipment sizes. Alternative materials may be used if approved by the Engineer.

The mats shall be capable of being connected using quick links or other heavy-duty connectors if needed for stability or to reduce movement.

The Contractor's mat design shall be submitted to the Engineer for review and approval at least three weeks before the mats are to be used on the project. The design shall include a list of equipment and materials to be placed on the mats and anticipated loading.

Mats that are determined to be inadequate to support the required loads or protect the soil and vegetation beneath shall be removed from the project and replaced with adequate mats at the Contractor's expense.

(a) *Prefabricated Construction Mats.* Pre-fabricated mats shall be made of natural timber or other material approved by CDOT's Project Engineer. Mats shall be capable of assembly to form appropriate size mats to be placed directly onto ground surfaces for the purposes of holding or transferring heavy equipment, preventing excessive rutting, and minimizing vegetation disturbance.

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REVISION OF SECTION 208  
CONSTRUCTION MAT

(b) *Hardware*. Construction mats shall be supplied with all necessary hardware, including all bolts with nuts and washers, timber connectors, drift pins, dowels, nails, screws, spikes, metal pile protectors, steel anchor plates and all other metal fastenings.

**CONSTRUCTION REQUIREMENTS**

**208.15 General.** Prior to placement of mats, woody vegetation (willows, shrubs, trees, etc.) shall be cut or trimmed at or slightly above ground level. Vegetation shall not be uprooted, and the root mat of any vegetation shall not be disturbed.

Crossing sites shall be located where stream channel is narrow for the shortest possible clear span and where stream banks are stable and well defined. When feasible on large wetland complexes, structures shall be accessed from opposite sides to avoid crossing the entire wetland.

**208.16 Installation.** Mats shall be in good condition to ensure proper installation, use, and removal. Mats shall be inspected by the Engineer to ensure they are clean of soil and any invasive plant species seed stock or plant material from previous use. The spread of aquatic nuisance species, including the New Zealand mud snail, shall be prevented. Specifically, if heavy equipment (including mats) is used that was previously working in another stream, river, lake, pond, or wetland, it shall be cleaned using one of the following procedures:

- (1) Remove all mud and debris from equipment (tracks, turrets, buckets, drags, teeth, etc.) and spray/soak equipment with a solution of commercial grade quaternary ammonium disinfectant compound containing at least 8.0% active ingredient diluted in solution to achieve at least 0.8% concentration (roughly 12 ounces of product per gallon of water). Treated equipment shall be kept moist for at least 10 minutes, managing rinsate as a solid waste in accordance with local, county, state, or federal regulations, OR
- (2) Remove all mud and debris from equipment (tracks, turrets, buckets, drags, teeth, etc.) and spray or soak equipment with water hotter than 140 °F for at least 10 minutes.

Hand tools, boots, and any other equipment that will be used in the water shall be cleaned using option

(1) or (2) as well. The equipment shall be dried before use. Equipment shall not be moved from one water body to another without cleaning.

Equipment and associated materials (including mats) shall not be stored, maintained, fueled or repaired in waters of the U.S. or wetlands.

Operating heavy equipment on mats in wetlands shall be minimized.

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REVISION OF SECTION 208  
CONSTRUCTION MAT

Impacts to waters of the U.S. or wetlands areas shall be minimized during installation, use, and removal of construction mats. Mats shall be placed in a location that would minimize the amount needed for crossing the waters of the U.S. or wetlands.

Construction mats shall not be dragged into position. More than one layer of mats may be necessary in areas which are inundated or have deep organic wetland soils.

At crossings where no flow is present or anticipated during project construction, the mats may be placed directly onto the ground in order to prevent excessive rutting, provided stream banks and bottoms are not adversely altered.

For further protection, mats may be installed on top of nonwoven geotextile that covers the crossing area.

Construction mats may be used as a temporary bridge over a stream to allow vehicles access to the work site. Mats shall not be placed so that they restrict the natural flow of the stream. When used for flowing water crossings, small sections of mat shall be placed within and along the stream parallel to the flow of water. Mats shall then be placed perpendicular to the stream, resting on top of the initial construction mat supports. It may be necessary to place additional reinforcement for extra stability and to minimize the amount of sediment that could fall between the spaces of each timber.

In most cases, construction mats shall be placed along the travel area so that the individual cants or logs are resting perpendicular to the direction of traffic. Mats shall be placed far enough on either side of the stream or wetland to rest on firm ground.

Adequate erosion and sediment controls shall be installed at approaches to mats to promote a smooth transition to, and minimize sediment tracking onto, construction mats.

Matted crossings of waters of the U.S. or wetlands shall be monitored to assure correct functioning of the mats. Mats shall be inspected during use for any defects or structural problems. Mats which become covered with soils or construction debris shall be cleaned and the materials removed and disposed of in an upland location. The material shall not be scraped and shoveled into the resource area. Mats which become imbedded shall be reset or layered to prevent mud from covering them or water passing over them.

**208.17 Removal** Mats shall be removed by “backing” out of the site, removing mats one at a time. Construction mats shall not be dragged out of position. All other material placed for protection, such as geotextile fabric, straw, etc. shall then be removed. Any rutting or significant indentations identified during mat removal shall be regraded immediately, taking care not to compact soils.

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REVISION OF SECTION 208  
CONSTRUCTION MAT

Crossings shall be inspected following mat removal to determine the level of restoration required.

Mats shall be cleaned in an upland area which doesn't drain directly to waters of the U.S. or wetlands before transport to another wetland or stream location. Cleaning methods may include but are not limited to shaking or dropping mats in a controlled manner with a piece of machinery to knock off attached soil and debris, spraying with water or air, and sweeping.

**208.18 Restoration.** Upon removal of the construction mats, the Contractor and the Engineer shall examine the matted area together to determine what restoration, if any, is required. Restoration shall include, but is not limited to, the following:

Areas of disturbed soil located near waters of the U.S. or wetlands shall be promptly stabilized. Matted areas within wetlands shall be restored to their original condition and elevation. This may involve natural revegetation from existing root and seed stock of native plant species. Conditions may warrant planting and the broadcast of a wetland seed mix over the matted area to supplement the existing seed and rootstock. Seed mixes and vegetation shall contain only native plant species of the appropriate moisture tolerance regime. The use of mulch in wetlands shall consist of weed free mulch to mitigate the risk of the spread of invasive plant species.

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**REVISION OF SECTION 240  
PROTECTION OF MIGRATORY BIRDS BIOLOGICAL  
WORK PERFORMED BY THE CONTRACTOR'S BIOLOGIST**

Section 240 is hereby added to the Standard Specifications for this project as follows:

**DESCRIPTION**

**240.01** This work consists of protecting migratory birds during construction.

**MATERIALS AND CONSTRUCTION REQUIREMENTS**

**240.02** The Contractor shall schedule clearing and grubbing operations and work on structures to avoid taking (pursue, hunt, take, capture or kill; attempt to take, capture, kill or possess) migratory birds protected by the Migratory Bird Treaty Act (MBTA). The Contractor shall retain a qualified wildlife biologist for this project. The wildlife biologist shall have a minimum of three years experience conducting migratory bird surveys and implementing the requirements of the MBTA. The Contractor shall submit documentation of the biologist's education and experience to the Engineer for acceptance. A biologist with less experience may be used by the Contractor subject to the approval of the Engineer based on review of the biologist's qualifications.

The wildlife biologist shall record the location of each protected nest, bird species, the protection method used, and the date installed. A copy of these records shall be submitted to the Engineer.

(a) *Vegetation Removal.* When possible, vegetation shall be cleared prior to the time when active nests are present. Vegetation removal activities shall be timed to avoid the migratory bird breeding season which begins on April 1 and runs to August 31. All areas scheduled for clearing and grubbing between April 1 and August 31 shall first be surveyed within the work limits for active migratory bird nests. The Contractor's wildlife biologist shall also survey for active migratory bird nests within 50 feet outside work limits. Contractor personnel shall enter areas outside CDOT right of way only if a written, signed document granting permission to enter the property has been obtained from the property owner. The Contractor shall document all denials of permission to enter property. The Contractor shall avoid all active migratory bird nests. The Contractor shall avoid the area within 50 feet of the active nests or the area within the distance recommended by the biologist until all nests within that area have become inactive. Inactive nest removal and other necessary measures shall be incorporated into the work as follows:

1. *Tree and Shrub Removal or Trimming.* Tree and shrub removal or trimming shall occur before April 1 or after August 31 if possible. If tree and shrub removal or trimming will occur between April 1 and August 31, a survey for active nests shall be conducted by the wildlife biologist within the seven days immediately prior to the beginning of work in each area of tree and shrub removal or trimming. The survey shall be conducted for each phase of tree and shrub removal or trimming.

If an active nest containing eggs or young birds is found, the tree or shrub containing the active nest shall remain undisturbed and protected until the nest becomes inactive. The nest shall be protected by placing fence (plastic) a minimum distance of 50 feet from each nest to be

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**REVISION OF SECTION 240  
PROTECTION OF MIGRATORY BIRDS BIOLOGICAL  
WORK PERFORMED BY THE CONTRACTOR’S BIOLOGIST**

undisturbed. This buffer dimension may be changed if determined appropriate by the wildlife biologist and approved by the Engineer. Work shall not proceed within the fenced buffer area until the young have fledged or the nests have become inactive.

If the fence is knocked down or destroyed by the Contractor, the Engineer will suspend the work, wholly or in part, until the fence is satisfactorily repaired at the Contractor’s expense. Time lost due to such suspension will not be considered a basis for adjustment of time charges, but will be charged as contract time.

2. *Grasses and Other Vegetation Management.* Due to the potential for encountering ground nesting birds’ habitat, if work occurs between April 1 and August 31, the area shall be surveyed by a wildlife biologist within the seven days immediately prior to ground disturbing activities.

The undisturbed ground cover to 50 feet beyond the planned disturbance, or to the right of way line, whichever is less, shall be maintained at a height of 6 inches or less beginning April 1 and continuing until August 31 or until the end of ground disturbance work, whichever comes first.

If birds establish a nest within the survey area, an appropriate buffer of 50 feet will be established around the nest by the CDOT biologist. This buffer dimension may be changed if determined appropriate by the CDOT biologist and approved by the Engineer. The Contractor shall install fence (plastic) at the perimeter of the buffer. Work shall not proceed within the buffer until the young have fledged or the nests have become inactive.

If the fence is knocked down or destroyed by the Contractor, the Engineer will suspend the work, wholly or in part, until the fence is satisfactorily repaired at the Contractor’s expense. Time lost due to such suspension will not be considered a basis for adjustment of time charges, but will be charged as contract time.

The wildlife biologist shall conduct raptor nest surveys within 0.5 mile of the construction site prior to the start of construction and prior to each construction phase. This survey can be done with binoculars. If construction activities are located within the Colorado Division of Wildlife (CDOW) recommended buffer zone for specific raptors, "NO WORK" zones shall be established around active sites during construction according to the CDOW standards or as recommended by the wildlife biologist in consultation with the CDOW. The "NO WORK" zone shall be marked with either fencing or signing. Work shall not proceed within a "NO WORK" zone until the wildlife biologist has determined that the young have fledged or the nest is unoccupied.

- (b) *Work on structures.* The Contractor shall prosecute work on structures in a manner that does not result in a taking of migratory birds protected by the Migratory Bird Treaty Act (MBTA). The Contractor shall not prosecute the work on structures during the primary breeding season, April 1 through August 31, unless he takes the following actions:

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**REVISION OF SECTION 240  
PROTECTION OF MIGRATORY BIRDS BIOLOGICAL  
WORK PERFORMED BY THE CONTRACTOR’S BIOLOGIST**

1. The Contractor shall remove existing nests prior to April 1. If the Contract is not awarded prior to April 1 and CDOT has removed existing nests, then the monitoring of nest building shall become the Contractor’s responsibility upon Notice to Proceed.
2. During the time that the birds are trying to build or occupy their nests, between April 1 and August 31, the Contractor shall monitor the structures at least once every three days for any nesting activity.
3. If the birds have started to build any nests, they shall be removed before the nest is completed. Water shall not be used to remove the nests if nests are located within 50 feet of any surface waters.
4. Installation of netting may be used to prevent nest building. The netting shall be monitored and repaired or replaced as needed. Netting shall consist of a mesh with openings that are  $\frac{3}{4}$  inch by  $\frac{3}{4}$  inch or less.

If an active nest become established, i.e., there are eggs or young in the nest, all work that could result in abandonment or destruction of the nest shall be avoided until the young have fledged or the nest is unoccupied as determined by the wildlife biologist and approved by the Engineer. The Contractor shall prevent construction activity from displacing birds after they have laid their eggs and before the young have fledged.

If the project continues into the following spring, this cycle shall be repeated. When work on the structure is complete, the Contractor shall remove and properly dispose of netting used on the structure.

- (c) *Taking of a Migratory Bird.* The taking of a migratory bird shall be reported to the Engineer. The Contractor shall be responsible for all penalties levied by the U. S. Fish and Wildlife Service (USFWS) for the taking of a migratory bird.



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**REVISION OF SECTION 304 AND 703  
AGGREGATE BASE COURSE (SHOULDERING MATERIAL)**

Section 304 of the Standard Specifications is hereby revised for the project as follows.

Subsection 304.01 shall include the following:

This work consists of furnishing and placing recycled asphalt pavement (RAP), crushed concrete or virgin aggregate base course for shouldering material in accordance with these specifications and in conformity with the lines and details shown on the plans or established.

Subsection 304.02 shall include the following:

Aggregate Base Course (Shouldering Material) shall be 100 percent reclaimed asphalt pavement material, 100 percent recycled concrete aggregate or 100 percent crushed mineral aggregate conforming to the requirements of Table 703-3A.

Delete Subsection 304.04 and replace with the following:

**304.04 Placing.** Aggregate Base Course (Shouldering Material) shall be placed with a shouldering machine capable of shaping the material next to the roadway as shown in the plans. It shall be well compacted with a wheel roller after placement as directed by the Engineer. Aggregate Base Course (Shouldering Material) shall not be placed directly on new asphalt. Unless otherwise shown in the plans, stockpiling will not be permitted within the Right-of-Way for the project. The Contractor shall address these issues in the method statement for this work.

The contractor will be responsible for all labor, materials, equipment, and other items necessary and incidental to the completion of the work. Processing, hauling, placing and compacting of the Aggregate Base Course (Shouldering Material) will not be measured and paid for separately, but shall be included in the work.

Subsection 703.03 shall include the following:

The material Aggregate Base Course (Shouldering Material) shall conform to Table 703-3A and the following.

The plasticity index shall be less than 5 when tested in accordance with AASHTO T89 and AASHTO T90 respectively. The material shall not contain clay balls, vegetable matter, or other deleterious substances.

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REVISION OF SECTIONS 304 AND 703  
AGGREGATE BASE COURSE (SHOULDERING MATERIAL)

Table 703-3A  
GRADATION REQUIREMENTS - SHOULDER MATERIAL

Sieve Size	Mass Percent Passing Square Mesh Sieve
50 mm (2")	100
25 mm (1")	85 - 100
19 mm (3/4")	75 - 100
12.5 mm (1/2")	55 - 90
9.5 mm (3/8")	45 - 80
4.75 mm (No. 4)	30-65* 25 – 55**
1.18 mm (No. 16)	5 - 25
75 µm (No. 200)	0 – 15* 0 – 5**

\*Mineral Aggregate

\*\*RAP

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**REVISION OF SECTION 304 AND 403  
TICKET COLLECTION FOR AGGREGATE BASE  
COURSE AND HOT MIX ASPHALT**

Section 304 and 403 of the Standard Specifications is hereby revised for this project as follows:

Subsection 304.08 and 403.05 shall include the following:

The Contractor shall collect the scale ticket on each load when it is delivered to the project site, and ensure that the information required in subsection 109.01 is shown on each ticket:.

The scale tickets shall be available on site for CDOT personnel to inspect.

Each day the Contractor shall provide to the Engineer envelopes, which contain the previous day's signed tickets and the following:

1. On each envelope: Project number, date of paving, type of material, beginning and ending station, daily total and cumulative total.
2. One of the following:
  - A. Two adding machine tape tabulations of the weight tickets with corresponding totals run and signed by different persons,
  - B. One signed adding machine tape tabulation of the weight tickets that has been checked and signed by a second person,
  - C. Signed check tape of computer scale tickets that have a cumulative total. These scale tickets must be consecutive and without voids adjustments.
3. A listing of any overweight loads on the envelope, including ticket numbers and amount over legal limit.
4. A comparison of the actual yield for each day's placement to the theoretical yield. Theoretical yield shall be based on the actual area paved, the planned thickness, and the actual density of the mixture being placed. Any variance greater than +/- 2.5% shall be indicated on the envelope and a written explanation included.

The Contractor shall provide a vehicle identification sheet that contains the following information for each vehicle:

- (1) Vehicle number
- (2) Length
- (3) Tare weight
- (3) Number of axles
- (4) Distance between extreme axles
- (5) All other information required to determine legal weight.
- (6) Legal weight limit.

If the Contractor fails to provide the Engineer with the required information on a daily basis, paving will not be allowed to resume unless approved by the Engineer.

**REVISION OF SECTION 403  
HOT MIX ASPHALT**

Section 403 of the Standard Specifications is hereby revised for this project as follows:

Subsection 403.02 shall include the following:

The design mix for hot mix asphalt shall conform to the following:

Table 403-1							
Property	Test Method	Value For Grading					
				SX(75)			Patching
Air Voids, percent at: N (design)	CPL 5115			3.5 – 4.5			3.5 – 4.5
Lab Compaction (Revolutions): N (design)	CPL 5115			75			75
Stability, minimum	CPL 5106			28			28
Aggregate Retained on the 4.75 mm (No. 4) Sieve for S, SX and SG, and on the 2.36mm (No. 8) Sieve for ST and SF with at least 2 Mechanically Induced fractured faces, % minimum*	CP 45			70			70
Accelerated Moisture Susceptibility Tensile Strength Ratio (Lottman), minimum	CPL 5109 Method B			80			80
Minimum Dry Split Tensile Strength, kPa (psi)	CPL 5109 Method B			205 (30)			205 (30)
Grade of Asphalt Cement, Top Layer				PG 58-28			PG 58-28
Grade of Asphalt Cement, Layers below Top				PG 58-28			PG 58-28
Voids in the Mineral Aggregate (VMA) % minimum	CP 48			See Table 403-2			See Table 403-2
Voids Filled with Asphalt (VFA), %	AI MS-2			65-75			65-75
Dust to Asphalt Ratio Fine Gradation Coarse Gradation	CP 50			0.6 – 1.2 0.8 – 1.6			0.6 – 1.2 0.8 – 1.6

Table 403-1						
Property	Test Method	Value For Grading				
				SX(75)		Patching
Note:	AI MS-2 = Asphalt Institute Manual Series 2					
Note:	Mixes with gradations having less than 40% passing the 4.75 mm (No. 4) sieve shall be approached with caution because of constructability problems.					
Note:	Gradations for mixes with a nominal maximum aggregate size of one-inch or larger are considered a coarse gradation if they pass below the maximum density line at the #4 screen. Gradations for mixes with a nominal maximum aggregate size of 3/4" to 3/8" are considered a coarse gradation if they pass below the maximum density line at the #8 screen. Gradations for mixes with a nominal maximum aggregate size of #4 or smaller are considered a coarse gradation if they pass below the maximum density line at the #16 screen.					
*Fractured face requirements for SF may be waived by RME depending on project conditions.						

All mix designs shall be run with a gyratory compaction angle of 1.25 degrees and properties must satisfy Table 403-1. Form 43 will establish construction targets for Asphalt Cement and all mix properties at Air Voids up to 1.0 percent below the mix design optimum. CDOT will establish the production asphalt cement and volumetric targets based on the Contractor's mix design and the relationships shown between the hot mix asphalt mixture volumetric properties and asphalt cement contents on the Form 429. CDOT may select a different AC content other than the one shown at optimum on the Contractor's mix design in order to establish the production targets as contained on the Form 43. Historically, Air Voids adjustments typically result in asphalt cement increases from 0.1 to 0.5 percent. Contractors bidding the project should anticipate this change and factor it into their unit price bid.

Table 403-2

Minimum Voids in the Mineral Aggregate (VMA)				
Nominal Maximum Size*, mm (inches)	***Design Air Voids **			
	3.5%	4.0%	4.5%	5.0%
37.5 (1½)	11.6	11.7	11.8	N/A
25.0 (1)	12.6	12.7	12.8	
19.0 (¾)	13.6	13.7	13.8	
12.5 (½)	14.6	14.7	14.8	
9.5 (⅜)	15.6	15.7	15.8	
4.75 (No. 4)	16.6	16.7	16.8	16.9
	* The Nominal Maximum Size is defined as one sieve larger than the first sieve to retain more than 10%.			
	** Interpolate specified VMA values for design air voids between those listed.			
	*** Extrapolate specified VMA values for production air voids beyond those listed.			

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3  
REVISION OF SECTIONS 403  
HOT MIX ASPHALT

The Contractor shall prepare a quality control plan outlining the steps taken to minimize segregation of HMA. This plan shall be submitted to the Engineer and approved prior to beginning the paving operations. When the Engineer determines that segregation is unacceptable, the paving shall stop and the cause of segregation shall be corrected before paving operations will be allowed to resume.

CDOT approved Warm Mix Asphalt (WMA) may be allowed on this project in accordance with CP 59. Unique requirements for WMA design, production and acceptance testing as documented during CDOT WMA approval shall be submitted and approved prior to creation of the Form 43 and before any WMA production on the project. Delays to the project due to WMA submittal and review will be considered within the Contractor's control and will be non-excusable.

Hot mix asphalt for patching shall conform to the gradation requirements for Hot Mix Asphalt (Grading SX).

A minimum of 1 percent hydrated lime by weight of the combined aggregate shall be added to the aggregate for all hot mix asphalt.

Acceptance samples shall be taken at the location specified in either Method B or C of CP 41.

Subsection 403.03 shall include the following:

If liquid anti-stripping additive is added at the plant, an approved in-line blender must be used. The blender shall be in the line from the storage tank to the drier drum or pugmill. The blender shall apply sufficient mixing action to thoroughly mix the asphalt cement and anti-stripping additive.

The Contractor shall construct the work such that all roadway pavement placed prior to the time paving operations end for the year, shall be completed to the full thickness required by the plans. The Contractor's Progress Schedule shall show the methods to be used to comply with this requirement.

Aggregate, asphalt recycling agent, additives, hydrated lime, and all other work necessary to complete each hot mix asphalt item will not be paid for separately, but shall be included in the Lump Sum bid. When the pay item includes the PG binder grade, the asphalt cement will not be measured and paid for separately, but shall be included in the work. Asphalt cement used in Hot Mix Asphalt (Patching) will not be measured and paid for separately, but shall be included in the work.

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**REVISION OF SECTION 603  
CULVERTS AND SEWERS**

Subsection 603.07(a) shall include the following:

Joints for all circular reinforced pipe shall be made with confined rubber gaskets. Concrete collars shall be required at all nonstandard joints (not tongue and groove or bell and spigot), and at all connections to existing pipe.

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**REVISION OF SECTION 613  
ELECTRICAL CONDUIT**

Section 613 of the Standard Specifications is hereby revised for this project as follows:

Subsection 613.02(c) shall include the following:

PVC or Polyethylene pipe shall be used in all 90 degree sweeps in trenching and direction boring applications. The conduit is to be buried at the nominal depth of 3 feet and in applications where conduit is attached to bridges or structures. Conduit specified in the plans shall be trenching and the unit price shall include the work described herein. Existing concrete or asphalt surfaces; especially roadways shall be bored, no open cutting is allowed unless approved by the engineer. All materials furnished assembled, fabricated, or installed under this item shall be new, corrosion resistant and in accordance with this contract. Conduit sizes shall be a minimum of 2-inch diameter.

The conduit shall be schedule 80 PVC or other UV rated electrical conduit if it will be above ground or otherwise sun exposed. For bored conduit, polyethylene pipe shall be used. Pipe connections shall be made with UL approved fittings.

The Contractor shall submit documentation from the supplier that the polyethylene pipe meets or exceeds all requirements of ASTM D3350.

Transitions from polyethylene pipe to PVC pipe, if applicable, shall be made with UL approved couplers.

**CONSTRUCTION**

Electrical Conduit (Bored) shall be HDPE and installed using a trenchless technology of either jacked conduit or directional boring.

Electrical Conduit (Plastic) shall be PVC or HDPE and installed by direct burial methods such as plowing, open trenching, or other excavation methods. When PVC is used, expansion fittings shall be installed at 100' intervals.

One conduit per bundle shall have a copper tracer wire of at least 12-gauge in a single conduit. In trenches containing multiple conduits, the tracer wire shall not be installed in the same conduit as the fiber.

Each individual conduit shall be equipped with a pull tape of 1250 pounds tensile strength and be of a design to prevent cutting or burning of conduit walls during cable installation.

**CONSTRUCTION REQUIREMENTS**

The installation of conduit shall be performed in such a manner as to avoid unnecessary damage to streets, sidewalks, utilities, landscaping, and sprinkler systems. Excavations and conduit installation shall be performed in a continuous operation. All trenches shall be backfilled by the end work day. The material from trenching operations shall be placed in a location that will not cause damage or obstruction to vehicular or pedestrian traffic or interfere with surface drainage.



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**2**  
**REVISION OF SECTION 613**  
**ELECTRICAL CONDUIT**

The Contractor shall take all necessary precautions to avoid heaving any existing asphalt/concrete mat or over-excavating a trench, whether caused by equipment directly or by dislodging rocks and boulders. Any such heaving or over-excavation shall be repaired or replaced at the Contractor's expense. The Contractor shall bear the cost of backfilling all over-excavated areas with the appropriate backfill material as approved by CDOT.

The Contractor shall restore all surface materials to their preconstruction condition, including but not limited to pavement, sidewalks, sprinkler systems, landscaping, shrubs, sod, or native vegetation that is disturbed by the conduit installation operation. All repairs shall be included in the cost of the conduit.

If the Contractor is unable to bore the conduit at the lengths shown on the plans from access point to access point, all splice couplings and associated work to splice conduit shall be included in the cost of this item. The coupling technology shall allow the conduit to be connected without the need for special tools, and shall form a watertight, airtight seal. Breaking force between segments shall exceed 250 pounds of force. No metal fittings shall be allowed. No elevation difference between the conduit run and the splice location will be allowed. Conduit splices shall be kept to a minimum and all locations shall be approved by the project engineer. Additional pull boxes shall not be substituted for splices.

Conduit plugs shall be supplied and installed in all conduit ends as soon as the conduit is installed. Conduit shall be plugged at all termination points such as pull boxes, manholes, controller cabinets, and node buildings. Conduits containing cable shall be plugged with durable and reusable split type plugs, fabricated without metallic parts, and allow easy removal and reinstallation around in-place cables. Split type plugs shall provide a water and air-tight seal of at least 50 psi and shall be installable by hand without using special tools and without damaging the cable. All plugs shall be correctly sized to fit the conduit being plugged. Empty conduits shall be sealed with removable type duct plugs that provide a watertight barrier.

All conduits shall use sweeps to elevate the buried conduits to within 4 inches of the bottom of the pull box or manhole, as shown in project details. The sweeps shall be terminated within the pull boxes and manholes to allow for easy installation and removal of the conduit plugs. The sweeps shall be set above the ground surface within the pull box at a height that does not interfere with the coiling of the fiber optic cable.

If new conduits are installed in existing pull boxes, manholes or cabinet bases the Contractor shall carefully excavate around the pull box or manhole and install the new conduit as shown in the plans. The Contractor shall not damage the existing pull box, manhole or their contents. If the existing pull box, lid, or the concrete collars are cracked or damaged during conduit installation, the Contractor shall restore the damaged section to preconstruction condition at no additional cost.

Conduit shall also include anchors, bands, skids, sweeps, pull tape, copper tracer wire, warning tape, adapters, fittings, conduit plugs, installation equipment, splice coupling, mounting brackets and hardware, structural anchors, adhesives, labor and all other items necessary to complete the work

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**REVISION OF SECTION 613  
PULL BOXES**

Section 613 of the Standard Specifications is hereby revised for this project as follows:

**DESCRIPTION**

Contractor shall furnish and install fiberglass reinforced, polymer concrete pull boxes.

**MATERIALS**

The pull boxes shall be made of fiberglass reinforced polymer concrete. A certificate from the manufacturer shall be supplied for the structural capabilities and materials used in manufacturing.

The nominal dimensions shall be as shown in the plans. The pull box shall have a detachable cover that has a skidresistant surface and have the words “CDOT ELECTRICAL” physically impressed, (not painted) upon it. The cover shall be attached to the pull box body by screw-in bolts. Non-standard bolts shall not be used. Pull boxes shall have pre-formed knockouts located in the short ends of the box as shown on the details to allow entry of the conduit. A concrete collar shall be poured around each pull box, with a 12” width and a 6” depth, which shall be incidental to the cost of the pull box pay item.

The Contractor shall submit test results documenting the minimum lateral pressure capacity of 2000 pounds per square foot distributed can be accommodated over the sidewall of the box. The Contractor shall submit test results documenting the minimum vertical load capacity of 18000 lbs over 10 inches x 10 inches square.

**CONSTRUCTION**

The pull box shall be constructed in accordance with the Plans and CDOT Standard Specifications with regard to pull boxes. All pull boxes shall be outfitted with traffic bearing lids rated for AASHTO HS 20-44 loads. Pull boxes that are installed in traveled ways shall have a special concrete footing extending 6 inches around the outside and 3 inches around inside of the pull box bottom and pull boxes that are installed in dirt areas shall have a 12 inch by 6 inch Portland concrete collar around the top. Pull boxes shall be grounded with a 5-foot x 5/8 inch copper ground rod. Bedding under the pull box shall be 18-inch depth of 3/8-inch gravel or 1/2-inch crushed rock. Excavations for placement of pull boxes or conduit splices shall be back filled with aggregate base course class 6 material. Compaction for class 6 material shall be in accordance with AASHTO T-99. All excess and demolition materials shall become the property of the contractor and shall be disposed of in compliance with all state and federal laws.

**METHOD OF MEASUREMENT**

Pull Boxes shall include base, lid, excavation, backfill, concrete apron, wire mesh and 3/4” granite-gravel. Pull Boxes shall also include the removal and patching of pavement, sidewalks, curb and gutters and their replacement in kind to match existing grade.

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REVISION OF SECTION 620  
FIELD FACILITIES

**Electrical Grounding:**

The site shall have three field trailers, where the first trailer will serve as the Field Office, the second trailer will serve as the Field Laboratory, and the third trailer will be a Field Laboratory (State Furnished). The three trailers shall be set together and share a common electrical grounding so computer cabling can be installed without spanning driveways.

Running exposed copper cabling along the ground between buildings is unacceptable.

**Telephones & Cabling:**

Telephone lines shall be of type full business (1FB).

The number of line to be determined by the CDOT project Manager.

Of these lines:

If a fax and DSL will be ordered, piggy back them together on one circuit to save the expense of two separate lines.

One line will serve the office phone and will be located in the office trailer.

If a Lab trailer exists, one line will serve the Lab phone and shall be located in the lab.

Order phone lines through the Telco provider's (CenturyTel, etc.) business office to optimize cost efficiencies with regard to basic, local and long distance plans and charges.

All phones will be speakerphones supplied by the contractor.

At the discretion of the CDOT project Manager and dependent on the number of phone circuits installed, the type of phones may be of the multi-line type to fully utilize all the phone circuits.

Cabling of phones must be industry standard.

Labeling must completed on all wall jacks, ports, and phones with the actual phone numbers. This cabling is to be performed by the Telco or other certified technicians, past the demarc to the wall jacks.

The phone wall jacks will be located by the Project Manager.

The Contractor shall be responsible for providing and maintaining all phones, cables and circuits in good operating condition at all times during this project.

**High Speed Internet:**

Note: The contractor shall contact the CDOT Regional IT Analyst (Get contact information from CDOT PM) for most recent specifications of required network equipment (see Network Equipment section below) and of high-speed provider restrictions and limitations.

The contractor shall provide the field location with high-speed internet connection and equipment.

Important note: High Speed Internet access can be difficult to achieve in rural areas. It is strongly recommended that site selection for the trailer be made with consideration of the availability of High Speed Internet access. If none is available, the CDOT project manager will be notified immediately in case site relocation is necessary.

The type of High Speed Connection shall preferably be of DSL type. The throughput shall be a minimum of 3 Mbps. 10 Mbps or better is preferable. IP addressing shall be DHCP.

**If DSL is not available,** Cable or wDSL (Wireless DSL) or a 4G "Cellular" from VerizonWireless or AT&T device that provides internet service to multiple computers may suffice if above specified throughput speeds are achieved.

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REVISION OF SECTION 620  
FIELD FACILITIES

As a last resort Aircards for each computer perhaps augmented with a cellular signal booster equipment may suffice.

If the Internet service is to serve more than 6 computers, it is recommended that additional circuits be provided.

A UPS (battery Backup) of a minimum rating of 500va (volt amp) needs to be provided to protect the Internet equipment.

**Note that satellite type broadband will NOT work for CDOT purposes.**

Cabling: Cat 5e cabling must be installed connection the DSL ( cable, wDSL, etc. ) modem to all computers.

WIFI option: The use of Wifi may be acceptable provided the service remains as fast and stable as Cat 5e cable and not obstructed by electronic interference (microwaves, generators, etc.) or by distance or walls which will impair the signal. Also, if any of the CDOT computers do not have wifi capability such as the desktop models, then the Cat5e cabling must be installed.

If CDOT computers will reside in more than one trailer, as with a MAT lab, then fiber, conduit and transceivers (preferable) or cat 5e cooper cabling with surge suppressors (more subject to failure and needing regular replacement) will need to purchased and installed as per CDOT IT. The cost here may range up to \$500. Another and possibly more cost efficient option may be to provide separate high speed Internet service to each building.

**Network Equipment:**

Long term projects with several or more CDOT employees MAY require specialized Cisco network equipment possibly with higher speed circuits from a Telco (such as CenturyLink managed networks). Note that this equipment is in addition to the modem provided by the internet provider.

Contact the CDOT Regional IT Analyst (get contact information from CDOT PM) for current specifications for this network equipment. Procuring this equipment may take time, so haste in contacting the CDOT Regional Network Analyst is recommended. It is typical for this equipment to take over a month to procure due to back orders.

Note: If Cisco network equipment is deemed required by CDOT IT then the current cost of this specialized equipment is approximately \$800.00 to \$1300.00 depending on site requirements.

Important Cyber Security issue: At project conclusion, all network equipment (if provided) will be returned to CDOT Regional Network Analyst for removal of CDOT confidential data and network configuration.

**Facsimile Machine (if needed):** The Project Engineer must approve this machine. It must be able to perform sequential broadcast, polling and delayed transmissions with a minimum ten-page memory. The Contractor shall install and maintain the fax machine in the Engineer's field office. Should the fax machine require repair and be out of service for more than twenty-four hours, a replacement is to be provided and installed by contractor within twenty-four hours. The Contractor shall provide a roll around stand for the fax machine paper and supplies.

Contractor will provide and maintain stock of printer paper and toner.

Note: An All-In-One type printer/scanner/fax may be used if acceptable to the CDOT Project Manager.

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REVISION OF SECTION 620  
FIELD FACILITIES

**Computer Accessories:** CDOT has restrictions and limitations with regard to the type of equipment permitted to be connected and supported on its computers and network. Due to the constantly changing nature of the computer field, contact the CDOT Regional IT Analyst for latest recommendations and cautions before purchasing any requested equipment such as printers, scanners, cameras, etc.

It is imperative that any accessories be compatible with the CDOT standard computer operation system:

**Windows 7 64 bit.**

Warning: Many devices will not work on the required 64 bit version, but only on the more common consumer Windows 32 bit version. Make sure the product states Windows 7, **64bit** compatible.

**Printers / Multi-Function Copiers:**

The Contractor shall provide a self-feeding plain paper photo copying/printer machine, which is capable of making at least fifteen copies per minute and have color copying capability. Maximum size of original shall be 11" x 17" and copy paper size shall be 5-1/2" x 8-1/2" to 11" x 17" with standard intermediate sizes. The copier/printer machine shall have an automated document feeder capable of feeding a stack of up to 25 originals ranging in size from 5-1/2" x 8-1/2" to 11" x 17". The copy/printer machine shall have two standard paper cassettes accommodating paper sizes of 5-1/2" x 8-1/2" to 11" x 17". Each cassette shall accept 250 sheets for a total of 500 sheets of paper capacity and have a single sheet bypass for manual copying onto special stock not in paper cassettes and shall be capable of using paper sizes of 5-1/2" x 8-1/2" to 11" x 17". The copier/printer machine shall be capable of zoom magnification / reduction from 70% to 150% in 1% increments. The copier/printer machine shall have sorting capabilities. The Contractor shall supply all necessary supplies and a roll around stand. The Contractor shall maintain all furnished equipment in good working condition and shall provide replacement equipment due to breakage, damage, or theft within five working days. This copier/printer shall have capabilities to connect to the internet to serve as a network printer.

Printers/ MFPs, may **NOT** be networked or shared across different networks for example between the CDOT network and non-CDOT computer network (consultant and/or contractor).

The printer/ MFP must be directly connected by USB cable only to a CDOT computer and can then be shared for use by other CDOT computers.

Note: Wifi on the printers may not work because the ip address will conflict with the CDOT ip network.

All equipment is to be **new with warranties.**

Contractor will provide and maintain stock of printer paper and toner for any provided printers, scanners, fax machines.

The Field Facilities compound consisting of the Field Office(s) (Class 2) and Field Laboratory (Class 2) shall be provided with all-weather surfacing and all-weather access, and a security fenced and lighted yard with adequate area to accommodate state vehicles and state employee parking.

The Contractor shall provide insurance for full replacement of all the contents of the Field Office, Field Laboratory due to theft, fire, or any other cause. Insurance shall be provided at all times that the office or laboratory is on the project.

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**REVISION OF SECTIONS 627 AND 713  
MODIFIED EPOXY PAVEMENT MARKING ACCEPTANCE**

Sections 627 of the Standard Specifications is hereby revised for this project as follows:

Subsection 627.05 shall include the following:

The Contractor shall take retroreflectivity readings on all modified epoxy pavement marking lines for each mile of roadway striping on the project. A test section is defined as each continuous line type (lane lines, centerlines, edge lines, channelizing lines, and others), which has been completed in a single day.

The Contractor shall use a Contractor-furnished retroreflectometer conforming to ASTM E 1710 or AASHTO TP111. The retroreflectometer shall be calibrated, tested and operated in accordance with manufacturer recommendations. The Contractor shall take one retroreflectivity reading within every lane mile striped in a single day. The calibration for the retroreflectometer shall be verified each day, prior to the readings being taken. The retroreflectivity readings shall be taken in the presence of the Engineer no earlier than 3 days and no later than 14 days after the marking is tack free. Traffic control required for retroreflectivity readings shall be included in the cost of the work.

The initial minimum retroreflectivity reading (mcd/m<sup>2</sup>/lux) in a one-mile line section of pavement marking paint shall be 350 for white and 200 for yellow. Any retroreflectivity readings below 350 for white and 200 for yellow shall be subject for removal and replace. In the case of a failing retroreflectivity reading three additional readings can be taken at random within the same line mile, if the average of the three additional readings is equal to or greater than 350 for white and 200 for yellow. That new average may be substituted for a passing retroreflectivity reading.

Prior to taking retro-reflectivity readings, at the retro-reflectivity reading locations, the Contractor shall remove any excess beads placed during marking application.

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**REVISION OF SECTIONS 627 AND 713  
MODIFIED EPOXY PAVEMENT MARKING (INLAID)**

Sections 627 and 713 of the Standard Specifications are hereby revised for this project as follows:  
Section 627.05 shall include the following:

The surface area receiving marking shall be ground prior to placement of the Modified Epoxy Pavement Marking (Inlaid). This applies to new or existing concrete or asphalt pavements. Grinding of the pavement is required so that Modified Epoxy Pavement Marking (Inlaid) is inlaid into the surface being applied to. The grooved width for inlaid pavement marking shall be a max width of 4 ¼ inch and a min width of 4 inch. The depth of the inlaid grooves shall be 90 mils below the surface of the existing pavement. The Contractor shall set the spacer width between blades such that there is less than a 5 mil rise in the pavement between the blade grooves. The applied epoxy in the inlaid grooved shall have a width of min/max of 4 inch.

The ground surface shall be cleaned with a high pressure air blast to remove loose material prior to placement of the Modified Epoxy Pavement Marking (Inlaid). Grooves shall be clean, dry and free of laitance, oil, dirt, grease, paint or other foreign contaminants. The Contractor shall prevent traffic from traversing the grooves, and shall re-clean grooves, as necessary, prior to application of the preformed plastic pavement markings.

The Contractor shall not perform more inlaid grinds than can be applied by the pavement marking truck during the same working day or working period. Unless approved by the Engineer.

If a rain event occurs during grinding and marking application, temporary raised flexible pavement markers shall be installed on all channelizing, center, and lane lines. Temporary markers shall also be placed on edge lines where lighted curb or other delineation is not provided as directed by the engineer. The frequency of temporary markers shall be according to Section 6F.79 of MUTCD. Marking application may proceed only when pavement is dry and has had no moisture for a minimum of 24 hours.

Modified Epoxy Pavement Marking shall have uniform mil thickness and bead distribution across the entire width of the 4 inch line. Unless otherwise shown on the plans, typical pavement markings shall conform to the shapes and sizes as shown on Standard Plan S-627-1. Any marking that does not meet specification shall be assessed a reduction in pay factor per Standard Special Provisions 106.03.

Subsection 627.05 shall include the following:

Modified Epoxy Pavement Marking shall conform to subsection 713.17.

Section 713.17 shall include the following:

- (n) *Performance*. Marking, when applied in accordance with manufactures recommendations shall demonstrate a uniform level of sufficient night time retro-reflection when tested in accordance to ASTM E1710-97. The applied material must have an initial minimum intensity reading of 400  $\text{mcd}\cdot\text{m}^{-2}\cdot 1\text{x}^{-1}$  for white and 250  $\text{mcd}\cdot\text{m}^{-2}\cdot 1\text{x}^{-1}$  for yellow as measured with a retro-reflectometer. If not met pay factors will be assessed per Revision of Section 106 Modified Epoxy Pavement Markings Acceptance and Pay Factors.

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**REVISION OF SECTIONS 627 AND 713  
PERFORMED THERMOPLASTIC PAVEMENT MARKING**

Section 627 of the Standard Special Provisions is hereby revised for this project as follows:

Subsection 627.09 (a) shall include the following:

- (a) *Application.* An epoxy resin primer shall be applied to any existing surface (concrete, asphalt, existing markings, etc.) prior to the application of any new preformed thermoplastic, plastic pavement marking. The epoxy resin primer shall conform to CDOT Standard Specifications subsection 708.07. Primer shall be required for all markings used including markings that manufacture does not require a primer. Primer and application will not be measured and paid for separately, but shall be included in the work.

Surface shall be dry and free of dirt, dust, chemicals, and/or significant oily substances. Application procedures for Portland concrete pavement shall be as described above except a compatible primer sealer shall be applied before application of marking to assure proper adhesion.

Subsection 627.09 shall include the following:

- (c) *Inlaid Preformed Thermoplastic Pavement Marking.* Shall be done for Xwalk and Stop Lines and FHWA Exit Ramp Arrows. The grooved width shall be the pavement marking width plus 1 inch, with a tolerance of  $\pm \frac{1}{4}$  inch. The dimensions of the Xwalk marking shall 2ft x 8ft typical. The dimension of the stop bar shall be 2ft x length of need. The FHWA Exit Ramp Arrow is composed of two 10ft x 8 in and one 16.5ft x 8 in lines. The depth of the grooves shall be 130 mils  $\pm$  5 mils. Groove position shall be a minimum of 2 inches from the edge of the pavement marking to the longitudinal pavement joint. Grinding of existing preformed thermoplastic pavement marking and the inlaying of proposed preformed thermoplastic pavement marking shall not be measured and paid for separately, but shall be included in the work. Word Symbols (Arrows), shall be Preformed Thermoplastic Pavement Marking.

Grooving shall not be performed on bridge decks.

The preformed thermoplastic pavement marking shall be inlaid on new and existing pavements as shown in the Contract. The material shall be capable of use for patching worn areas of the same type according to the manufacturer's recommendations.



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**REVISION OF SECTION 627 AND 713  
PERFORMED THERMOPLASTIC PAVEMENT MARKING**

Subsection 713.14 (a) shall include the following:

- (a) *General.* Material such as lines, legends, or symbols shall be capable of being affixed to HMA or PCC pavements. Marking shall be capable of conforming to pavement contours, breaks, and faults etc. by the use of the normal heat of a propane torch. Marking shall be capable of withstanding the actions of traffic at normal pavement temperatures. Marking shall have resealing characteristics such that it is capable of fusing with itself and previously applied thermoplastic pavement markings when heated with the torch.

Subsection 713.14 shall include the following:

- (c) *Performance.* Marking, when applied in accordance with manufactures recommendations shall demonstrate a uniform level of sufficient night time retro-reflection when tested in accordance to ASTM E1710-97. The applied material must have an initial minimum intensity reading of 500  $\text{mcd}\cdot\text{m}^{-2}\cdot 1\text{x}^{-1}$  for white and 300  $\text{mcd}\cdot\text{m}^{-2}\cdot 1\text{x}^{-1}$  for yellow as measured with a retro-reflectometer.

The top surface of the stencils (the same side as the factory applied surface beads) shall have an indicator system for the contractor to properly gauge the correct amount of heat to apply during installation. The indicator system shall have a positive visual indication, such as beads changing color or indents closing together, when the material has reached the correct installation temperature. The indicator system must also provide a positive, visual indication if the material has not reached the correct installation temperature.

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**REVISION OF SECTION 624  
DRAINAGE PIPE**

Subsection 624.03 shall include the following:

Joint systems irrigation systems, cross drains, and storm drains shall be watertight. Testing of joints shall be performed by the Contractor in accordance with approved methods. Should any section of irrigation system, cross drains, and/or storm drains fail to meet the test requirements, it shall be corrected at the Contractor's expense.

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**REVISION OF SECTION 630  
IMPACT ATTENUATOR (TEMPORARY)**

Section 630 of the Standard Specifications is hereby revised for this project to include the following:

**DESCRIPTION**

This work consists of furnishing, installing, certifying, moving, repairing, maintaining, and removing temporary impact attenuators in accordance with these specifications and in conformity with the lines and details shown on the plans or established.

**MATERIALS**

Each impact attenuator shall be selected from the Crash Cushion and End Treatment Application Chart as listed in the *Safety Selection Guide* on the CDOT Design and Construction Project Support web site. Impact attenuators shall conform to the requirements of the manufacturer and be capable of bi-directional shielding of the objects detailed and located on the plans. A sand barrel array will not be permitted.

If the posted speed limits of the construction zone are 45 miles per hour or less, the impact attenuator shall comply with the crash test requirements contained in NCHRP Report 350 (only applicable for impact attenuators developed prior to 2011) or MASH (acceptable for all impact attenuators), TL-2. For posted speed limits in the construction zone greater than 45 miles per hour, the attenuator shall meet the requirements of TL-3.

**CONSTRUCTION REQUIREMENTS**

The site shall be prepared to receive the impact attenuator by filling, excavating, smoothing, constructing the paved foundation pad, installing approved transition and anchoring, and all other work necessary for the proper installation of the attenuator.

The impact attenuator shall be fabricated and installed in accordance with the manufacturer's recommendations. The Contractor shall provide a copy of the manufacturer's installation instructions and parts list to the Engineer prior to installation of the device.

Each installation shall be supervised and certified as correct upon completion by a representative of the device manufacturer or by an employee of the Contractor who is a certified installer. The certified installer shall have completed device training and shall be registered with the manufacturer as a certified installer. The Contractor shall submit all appropriate documentation to validate that the certified installer has completed device training and has been registered with the manufacturer as a certified installer.

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**REVISION OF SECTION 630  
PORTABLE MESSAGE SIGN PANEL**

Section 630 of the Standard Specifications is hereby revised for this project as follows:

Subsection 630.01 shall include the following:

This work includes furnishing, operating, and maintaining a portable message sign panel.

Add subsection 630.031 immediately following subsection 630.03 as follows:

**630.031 Portable Message Sign Panel.** Portable message sign panel shall be furnished as a device fully self-contained on a portable trailer, capable of being licensed for normal highway travel, and shall include leveling and stabilization jacks. The panel shall display a minimum of three - eight character lines. The panel shall be a dot-matrix type with an LED legend on a flat black background. LED signs shall have a pre-default message that activates before a power failure. The sign shall be solar powered with independent back-up battery power. The sign shall be capable of 360 degrees rotation and shall be able to be elevated to a height of at least five feet above the ground measured at the bottom of the sign. The sign shall be visible from one-half mile under both day and night conditions. The message shall be legible from a minimum of 750 feet. The sign shall automatically adjust its light source to meet the legibility requirements during the hours of darkness. The sign enclosure shall be weather tight and provide a clear polycarbonate front cover.

Solar powered message signs shall be capable of operating continuously for 10 days without any sun. All instrumentation and controls shall be contained in a lockable enclosure. The sign shall be capable of changing and displaying sign messages and other sign features such as flash rates, moving arrows, etc.

Each sign shall also conform to the following:

- (1) In addition to the onboard solar power operation with battery back-up, each sign shall be capable of operating on a hard wire, 100-110 VAC, external power source.
- (2) All electrical wiring, including connectors and switch controls necessary to enable all required sign functions shall be provided with each sign.
- (3) Each sign shall be furnished with an operating and parts manual, wiring diagrams, and trouble-shooting guide.
- (4) The portable message sign shall be capable of maintaining all required operations under Colorado mountain-winter weather conditions.
- (5) Each sign shall be furnished with an attached license plate and mounting bracket.
- (6) Each sign shall be wired with a 7-prong male electric plug for the brake light wiring system.

Subsection 630.13 shall include the following:

The portable message sign panel shall be on the project site at least 2 weeks prior to the start of active roadway construction. Maintenance, storage, operation, relocation to different sites during the project, and all repairs of portable message sign panels shall be the responsibility of the Contractor.

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**REVISION OF SECTION 630**  
**PORTABLE MESSAGE SIGN PANEL**

Subsection 630.15 shall include the following:

Portable message sign panels will be measured one of the two following ways:

- (1) By the actual number of days each portable message sign is used on the project as approved by the Engineer.
- (2) By the maximum number of approved units in use on the project at any one time.

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**REVISION OF SECTION 630  
TRAFFIC SIGNAL (TEMPORARY)**

Section 630 of the Standard Specifications is hereby revised for projects as follows:

In subsection 630.01 shall include the following:

This work consists of furnishing and installing, temporary, portable traffic signals to control one lane alternating traffic as shown on the Contractor's approved plans or MHTs. The work includes, all equipment, labor, signage and materials to install and maintain a complete and operational system that accommodates the variations in traffic flow and removal of the installation.

The Contractor shall develop a maximum of six traffic signal timing plans for each structure segment based on current traffic count data, for review and approval by CDOT and shall be responsible for implementing the timing and maintaining the traffic signals. Timing plans shall include provisions for weekend and weekday traffic variations and provide sufficient clearance time for vehicles through the work zone.

Subsection 630.04 shall include the following:

Portable temporary traffic signal units shall be portable trailers, licensed for normal highway travel and capable of travel at speeds up to 65 MPH. Portable units shall include stabilizing jacks and shall be stable in winds of 100 MPH. The Traffic Signal (Temporary) shall consist of a pair of portable traffic signals capable of radio communication, microwave or video vehicle detection for actuation, hardwire or CDOT approved interconnect method, multiple timing plans, manual operation and a paging or cell phone system capable of verifying and resetting the system operation. The interconnection system shall provide communication between the units within a one mile range. The power system can utilize either a direct power source to a local power line or solar power source. The signals shall operate by connection to a local power line with a transfer switch connecting the load to the power line when energized and disconnecting from the power line when power fails and connecting to the solar or generator power operation with battery back-up that will provide a minimum of five days of continuous operation. The Contractor may elect to go with a generator or solar powered system with a backup battery life of 10 days. The backup battery life shall be checked daily. All electrical wiring, including connectors and switch controls necessary to allow all signal functions required by the specification shall be provided with each system. Each system shall include an operating and parts manual, wiring diagrams, and trouble-shooting guide. Lenses and reflectors for the signal shall be of a type as described in ITE Technical Bulletin No. 1. The cantilevered signal faces shall be 12" and include louvered backing plates. Each unit shall have a locking device to ensure the cantilevered signal faces remain in position.

The portable traffic signal system shall be capable of maintaining all required operations under Colorado mountain-winter weather conditions. The portable temporary traffic signal shall be capable of operating for extended periods of time in severe weather conditions including temperatures ranging from -40 to 120 degrees Fahrenheit. The Contractor shall provide a half day of training on usage, maintenance and repair of the portable temporary traffic signal for up to six persons designated by CDOT.

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REVISION OF SECTION 630  
TRAFFIC SIGNAL (TEMPORARY)

The Traffic Signal (Temporary) shall be in satisfactory operating condition prior to installation. The Contractor shall demonstrate the satisfactory operating condition by operating the system prior to closing the road to one lane of traffic. The Traffic Signal (Temporary) shall be replaced at the Contractor's expense if the unit fails to operate satisfactorily to the Engineer and shall be retested until a satisfactorily operating Traffic Signal (Temporary) is obtained and installed. The unit shall be kept in satisfactory operating condition for the duration of its use. The unit shall remain in place or remain available until all the work is completed at each location that requires one-lane operation or as deemed necessary by the Engineer. The Traffic Signal (Temporary) shall include adequate spare parts and a source of replacement components such that the system is in operation continuously. Subsection 630.10 shall include the following:

(4) MHT's detailing the portable traffic signals for one-lane alternating traffic, shall follow the MUTCD Typical Application -12 in Chapter 6 and shall include provisions for the CDOT prequalified traffic signal contractor to be onsite during initial operation until traffic is serviced to the satisfaction of CDOT. The signal systems shall also be checked a minimum of daily for proper operation. Vehicle queue lengths shall not exceed 1000 feet and queued vehicles should clear the signal within two (2) cycles. The Contractor shall be on-site wherever Traffic Signal (Temporary) are used during both Friday and Sunday afternoons from 12 pm to 8 pm, or as directed by CDOT, during the first month of one-lane alternating traffic for observation, maintenance and troubleshooting, including timing plan adjustments and queue dissipation by manual override. If issues continue beyond the first month, the contractor shall be onsite as listed above, until the issues are resolved to the satisfaction of CDOT. The Contractor shall also provide two signs (24 inches x 36 inches) that shall be placed near each signal that provides a 7-day, 24 hour number that can be called if the signal malfunctions.

If the signal loses power, switches to flashing mode, or fails for any reason, the Contractor shall respond within two hours and establish traffic control with the use of flaggers. Flagger control of the site shall remain in place until the Traffic Signal (Temporary) system has been restored and demonstrates satisfactory operations.

Flaggers shall control traffic during the initial turn on of the signal. The flaggers shall remain on standby for 2 hours after the signal is turned on and operating properly.

Signal timing information shall be included with the MHT, and shall include phasing, green, yellow and red interval time at a minimum.

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**REVISION OF SECTION 630  
NIGHT WORK LIGHTING**

Section 632 is hereby added to the Standard Specifications for this project as follows:

**DESCRIPTION**

**632.01** This work consists of furnishing, installing, operating, maintaining, moving, adjusting, and removing lighting to illuminate construction work spaces for night work. Night work will be defined as work performed between 30 minutes before sunset and 30 minutes after sunrise.

**MATERIALS AND EQUIPMENT**

**632.02** The Contractor shall provide lighting for night work in the activity area work space where construction equipment, workers on foot, or both are present. The workspace is that portion of the roadway closed to road users, or outside of the roadway, set aside for workers, equipment and materials performing contract work. The work space may be stationary or may move as the work progresses.

Illumination may be accomplished by using a combination of portable lights, floodlights, equipment mounted lights, or other lighting methods that will provide the required minimum lighting intensity. Light fixtures that are mounted on the construction equipment shall have a secure connection to minimize vibration and ensure that the view of the equipment operator is not obstructed. Portable lights shall be aimed either generally parallel or perpendicular to the roadway, aimed downward towards the work to avoid glare to oncoming drivers.

In the event of any failure of the lighting system, the construction operation shall be discontinued until the required level of illumination is restored. Delays due to insufficient lighting levels are the responsibility of the Contractor. Existing street and highway lighting shall not eliminate the need for the Contractor to provide work area lighting. Vehicle headlights shall not be permitted as the sole means of illumination while working.

**632.03 Portable Generator and Inverter Generator.** The Contractor shall provide a portable generator, inverter generator, or both as needed to power the added equipment mounted lights on motorized equipment if the existing power supply on the equipment is insufficient to power the added lights. Fuel tank capacity and availability of fuel on site shall be sufficient to permit uninterrupted operation throughout the planned shift. All power sources shall be equipped with a ground-fault circuit interrupter. The generator shall be placed or temporarily mounted on the equipment without obstructing access onto the equipment or the view of the operator.

**632.04 Light Meter.** The Contractor shall furnish a light meter for use by the Engineer. The meter shall have a digital display calibrated to NIST standards, shall be cosine and color corrected with an accuracy of +/- 5 percent. The light meter shall remain the property of the Contractor after final acceptance.



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REVISION OF SECTION 630  
NIGHT WORK LIGHTING

CONSTRUCTION REQUIREMENTS

**632.05** Lighting for night work shall include:

- (1) Minimum lighting intensity of 5 foot candles for work space illumination.
- (2) Illuminate the stationary work space as stated in (1) above where construction equipment, workers on foot or both are present.
- (3) Light sources shall be positioned not to interfere with or impede traffic in any direction and not cause glare for motorists or onto adjacent properties whenever possible. The Contractor shall make adjustments, use visors or shields, or both to minimize glare.
- (4) Illumination for mobile operations within a closed travel lane with traffic control devices will be defined as 25 feet in front of and behind and 5 feet to each side of each piece of moving equipment.
- (5) Workers performing materials testing for either mobile or stationary operations shall have their work space illuminated as stated in (1) above. For concrete operations at night, the Contractor shall illuminate the designated concrete truck washout location including the access and the wash out site.
- (6) Workers on foot, performing work within a moving work space (i.e. striping layout/installation, surveying, etc.) shall wear ANSI approved high visibility apparel and headwear for Class 3 risk exposure including vest, Class E pants or leg gaiters, and reflective tape on hard hats.
- (7) Portable light towers and lights mounted on stands shall be sturdy and free-standing without the aid of guy wires or bracing. Minimum illumination levels as stated in (1) above shall be maintained at a distance of 5 feet on all sides of stationary equipment with either equipment mounted or free standing lights.
- (8) The Contractor shall ensure that all pieces of equipment have operating lights to illuminate operator's controls, backhoe and loader buckets, and illuminate the equipment reach limits around rotating equipment. (i.e. the paving machine shall have illumination for the hopper, auger, and screed areas.)
- (9) The TCS vehicle shall have the rear of the truck illuminated while installing, maintaining, and removing traffic control devices unless sufficient lighting levels exist with stationary lights.

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**REVISION OF SECTION 630  
NIGHT WORK LIGHTING**

- (10) The Contractor shall maintain a uniformity ratio no greater than 5:1 over the work space. Uniformity ratio is the ratio of average to minimum horizontal illuminance within the work space. The uniformity ratio shall be determined by dividing the average of all light meter measurements by the light meter measurement at the darkest spot within the illuminated area. The limits for checking the uniformity ratio for moving operations within the closed travel lanes will be limited to the 25 feet in front of and behind and 5 feet to each side of each piece of moving equipment.

**632.06 Night Work Lighting Plan.** The Contractor shall submit a lighting plan to the Engineer for review signed by the Contractor's designated person three days in advance of the Preconstruction Conference. The lighting plan shall appropriately describe the work and include the following:

- (1) Layout drawing and supplemental narrative showing light locations, equipment mounted lights, and configuration including both typical spacing and lateral placement for each work activity.
- (2) Tabulation of lights for those lights that are included within the Night Work Lighting pay item. Lights included in the tabulation such as tower lights, lights mounted on stands and lighting mounted to mobile equipment (not original equipment lights) but those additional equipment mounted lights or portable lights that provide the 25 feet in front and behind illumination zone shall have catalog cuts giving the specific brand names, model numbers, lamp type and wattage.
- (3) Narrative description of those operations where workers will be on foot in a moving work space.
- (4) Details of hoods, visors, louvers, shields or other means to be used to minimize glare.

The plan shall be revised and updated by the Contractor as requested by the Engineer during the progress of the work to accommodate changes to the work.

**632.07 Inspection of Lighting.** Lighting inspection by the Engineer will be performed jointly with the Contractor's designated person on a drive through the project to include (1) observation of the lighting setup to evaluate glare potential for drivers and workers and (2) light meter measurements to determine minimum illumination levels. The Contractor shall make adjustments to the lighting as needed based on the Engineer's inspection. Any corrections and deficiencies needed to provide the minimum illumination levels must be made within one hour of being notified or the Engineer is required to shut down construction.

The Engineer will take light meter measurements to verify the minimum lighting levels using a light meter provided by the Contractor during the night work shift. Light meter readings will be

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**REVISION OF SECTION 630  
NIGHT WORK LIGHTING**

taken within the work space where work is being performed, in a horizontal plane, light sensor part of the meter held parallel to the ground with the sensor aimed upward, 3 feet above the pavement or ground surface. Meter readings will be taken at the source at 5 foot intervals out to the illuminated work space perimeter. These measurements will be documented and filed in the project records.

**632.08 Lighting for Flagger Stations.** For nighttime flagging, flagger stations shall be illuminated by an overhead light source providing a minimum lighting intensity level of 5 foot candles measured 1 foot out from the flagger's chest. The flagger station light shall illuminate the station area with a radius of at least the width of the lane plus 5 feet, and be centered on the flagger in the initial flagging position. The size of the illuminated area shall be increased to account for flagger movements required to control traffic. The flagger station light shall be a minimum of 10 feet above the pavement and be capable of being shielded through the use of visors, hoods, louvers, or screens as needed to minimize glare to approaching traffic and spilling over onto adjacent properties.