

## 23558 Region 2 Bridge Bundle

### BOOK 2 Summary of changes included in Final Addendum in addition to Addendum 1 Dated August 9, 2021

Page/Section	Change	Description of change (in red)
Page 13-7, Section 13.5 Exhibits	Deleted and Replaced Exhibit A	Deleted Roadway Design Table and Replaced with a new Table, expanded to be specific to each site.
Page 15-9, Section 15.3.9.3.4	Deleted Text	<del>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 <math>f'_c</math> (<math>0.0948 \times (f'_c)^{1/2}</math>) where <math>f'_c</math> is in ksi.</del>
Page 16-9, Section 16.3.5	Deleted and Replaced Table 16-2	Deleted Design and Posted Speeds for Work Zone table and Replaced with a new table expanded to be specific to each site.

**BOOK 2 Summary of changes included in Addendum 1 – Dated August 9, 2021**

Page/Section	Change	Description of change (in red)
Page 1-7 <b>1.6.2 CO 239 Structure P-19-G Minor</b>	Deleted Text and Added Text	<ul style="list-style-type: none"> <li>As a two-lane arterial with <del>42</del>11-foot lanes and 6-foot outside shoulders with a paved 2-foot guardrail offset</li> </ul>
Page 5-17 <b>Section 5.4.9.2 Wetlands Inspection, Establishment, Acceptance, and Warranty Period</b>	Added Text	Consultation for SB 40 permitting may require natural bottoms as a requirement for structures. Structures that are required to have a natural bottom shall include a minimum of 12 inches of cover consisting of native material. Native material fill shall be existing or comparable stream bottom material, however, such material shall not be obtained from the live water area in the stream in accordance with Senate Bill 40 Wildlife Certification Guidelines.
Page 12-6 <b>Section 12.2.4.1 Design Frequencies</b>	Deleted Text and Added Text	<p>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. <del>The design storm frequency for all cross drains shall be determined through the CDOT DDM and Approved by CDOT.</del> The design storm frequency for all other roadways affected by the Project shall comply with the affected Local Agency's criteria.</p> <p>The Contractor shall also evaluate the current and proposed overtopping floods and overtopping flood flows. The new structures shall be sized to pass the design frequency event without roadway overtopping and shall not increase overtopping impacts to the roadway in events between the design frequency event and the 100-year event. Structure H-13-N is an exception to this requirement since it has been determined that it cannot pass the design frequency within the scope of the Project. H-13-N shall be replaced in-kind without an increase in existing overtopping impacts.</p> <p>The design storm frequency for all structure locations must be reviewed by CDOT prior to final design.</p>

Page/Section	Change	Description of change (in red)
Page 12-8  <b>12.2.5.1.4 Roadside Ditches, Open Channels, and Slope Protection</b>	Deleted Text	<p><del>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.</del> The Contractor is not responsible for analyzing or improving existing Roadside ditches that are not impacted or improved as part of this Project.</p> <p><del>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.</del></p> <p><del>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.</del></p> <p><del>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.</del></p> <p><del>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</del></p>

Page/Section	Change	Description of change (in red)
		<p><del>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.</del></p> <p><del>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.</del></p> <p><del>All abandoned concrete diversion Structures in Roadside ditches and open channels shall be removed and disposed of off-site.</del></p>
Page 12-8 and 12-9 <b>12.2.5.2 Cross Drains</b>	Deleted Text	<p><del>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 in advertent detention or retention.</del></p> <p>Allowable headwater elevation for the 100-year design storm frequency peak discharge shall be designed 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:</p>
Page 12-13 <b>12.2.6 Scour and Erosion Control</b>	Added Text	<p>For 3-sided culvert structures constructed over erodible deposits, the contractor shall perform an analysis to quantify the maximum depth of scour through the structure. Maximum scour depths shall be determined using the "Scour Design Check Flood Frequency" from Table 10.1 included in Section 10.6.3 of the CDOT DDM. All buried structures shall be designed in to meet the AASHTO</p>

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		Bridge Design Section 12.6.5 requirements. A non-paved erosion resistant invert is acceptable as long as the maximum scour depth analysis demonstrates the erosion resistant invert prevents significant scour through the 3-sided structure and the 3-sided structure remains stable.
Page 12-14 <b>12.2.8 Irrigation Facilities</b>	Added Text	Design of irrigation facilities shall accommodate water rights and intercepted runoff using the criteria in the DDM.
Page 12-15 and 12-16  <b>Table 12-4 Anticipated Local Agency Floodplain Jurisdiction Contacts for the Project</b>	Added Row to Table above Str. I-17-X, Added Column Headers	Structure In Zone AE Floodplain / Flooding Source / Local Jurisdiction / Contact –Name / Telephone
Page 12-25 <b>Table 12-5 Deliverables</b>	Added Row and Text for new deliverable	Design Storm Frequency / Review / Prior to final design
Page 13-3 <b>13.2.5.2 Fill Slopes</b>	Deleted Text	<del>Fill slope areas will be designed with ditch rip rap as necessary to prevent roadside and slope drainage from flowing onto adjacent properties.</del>
Page 13-4 <b>13.2.5.4 Guardrail</b>	Deleted Text and Added Text	Shoulder transitions shall occur after the length of need is met at a <del>50</del> 25:1 taper length.
Page 13-7 <b>Exhibit A: Roadway Design Criteria Table</b> Column: US 350 and Row: Mile Marker to Mile Marker	Deleted Text and Added Text	<del>45</del> 9.149-72.718
Page 15-6 <b>15.3.4.1 Concrete</b>	Added Text	Class G concrete shall be used for all bridge structures and includes all elements of the bridge structure except caissons. Caissons shall be Concrete class BZ Class D shall be used for all concrete box culverts and steel arch structures. Concrete Class G may be substituted for Class D, but NOT Class D for Class G.

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Page 15-8 <b>15.3.9.2 Type</b>	Deleted Text	<del>The use of structural plate arches is allowed for wildlife underpasses and not allowed for water crossing.</del>
Page 15-8 <b>15.3.9.3.4 Decks</b>	Deleted Text and added Text	<p><del>The Contractor shall provide a minimum concrete deck thickness of 8 inches.</del></p> <p>The Contractor shall provide minimum deck thickness per the CDOT Bridge Design Manual.</p> <p>Full-depth precast deck slabs shall have cast-in-place concrete joint closures, post-tensioning across joints <b>transverse to the span</b>, and an overlay.</p>
Page 16-6 <b>16.2.1.4 Detours Routes</b>	Deleted and added Text	There are no approved detour routes. Full <del>lane</del> <b>highway</b> closures will not be allowed. The Contractor may propose alternate detour routes within the MOT variance process.
Page 19-15 Index	Added Minimum Wages CO20210012 to Index	<p><b>Minimum Wages, Colorado</b></p> <p><b>U.S. Department of Labor General Decision Number CO20210012, Highway</b></p> <p><b>Construction for Alamosa, Archuleta, Chaffee, Conejos, Custer, Delta, Dolores, Fremont, Gunnison, Hinsdale, La Plata, Mineral, Montezuma, Montrose, Ouray, Rio Grande, Saguache, San Juan, and San Miguel counties. / (January 1, 2021) / 9</b></p>