

## Table of Contents

|   |      |
|---|------|
| <a href="#">Introduction</a> .....  | vii  |
| <a href="#">Acknowledgments</a> .....   | xi   |
| <a href="#">Acronyms Common to the Colorado Department of Transportation (CDOT)</a> ..... | xiii |

### Section 1 Scoping, Budgeting and Programming

|   |      |
|---|------|
| <a href="#">1.01</a> Project Development Manual Purpose.....  | 1-1  |
| <a href="#">1.02</a> Statewide Planning, Funding and Budget Process .....   | 1-5  |
| <a href="#">1.03</a> Project Scope, Schedule and Budget.....  | 1-29 |
| <a href="#">1.04</a> Consultant Selection and Contracting Process .....   | 1-61 |
| <a href="#">1.05</a> Alternative Delivery.....  | 1-67 |
| <a href="#">1.06</a> Entity Agreement (Local Agency and Publicly Owned Agencies)<br>.....                         | 1-71 |
| <a href="#">1.07</a> Post – Award.....  | 1-73 |
| <a href="#">1.08</a> Form 895 – Force Account Construction Method – Finding in the Public Interest<br>(FPI). .... | 1-74 |

### Section 2 Project Development Process

|   |      |
|---|------|
| <a href="#">2.01</a> Design Scoping Review .....  | 2-1  |
| <a href="#">2.02</a> Staged Construction (Future Capacity Considerations).....  | 2-4  |
| <a href="#">2.03</a> 10-Year Vision Plan .....  | 2-4  |
| <a href="#">2.04</a> Design Data (Form 463).....  | 2-4  |
| <a href="#">2.05</a> Design Exception Variance Request (Form 464).....  | 2-10 |
| <a href="#">2.06</a> Procedures for Addressing Safety Requirements on Resurfacing, Restoration, and<br>Rehabilitation Projects..... | 2-15 |

|             |  |      |
|-------------|--|------|
| <u>2.07</u> | Safety Review (Including Clear Zone Decisions) .....                       | 2-20 |
| <u>2.08</u> | Roadside Barrier Design & Review .....                                     | 2-21 |
| <u>2.09</u> | Bicycle & Pedestrian Facilities .....                                      | 2-25 |
| <u>2.10</u> | Culvert Pipe Material Selection .....                                      | 2-29 |
| <u>2.11</u> | Colorado Department of Transportation (CDOT) Maintenance Input.....        | 2-30 |
| <u>2.12</u> | Field Survey (Form 1217) .....   | 2-32 |
| <u>2.13</u> | CDOT Design Phase Value Engineering (VE) Program.....                      | 2-33 |
| <u>2.14</u> | Design Project Management & Region Plan Status Review.....                 | 2-41 |
| <u>2.15</u> | Field Inspection Review (FIR).....   | 2-45 |
| <u>2.16</u> | Constructability Reviews .....   | 2-54 |
| <u>2.17</u> | Project Status Meetings .....  | 2-55 |
| <u>2.18</u> | Design Decision Letter .....   | 2-55 |
| <u>2.19</u> | On-the-Job Trainee Approval .....  | 2-59 |
| <u>2.20</u> | Disadvantaged Business Enterprise Goals .....                              | 2-59 |
| <u>2.21</u> | Special Provisions .....   | 2-60 |
| <u>2.22</u> | Proprietary Items .....  | 2-61 |
| <u>2.23</u> | Project Information Technology Needs .....                                 | 2-63 |
| <u>2.24</u> | Project Control Data (Form 859) .....                                      | 2-64 |
| <u>2.25</u> | Estimate Review by Engineering Estimates & Market Analysis Unit .....      | 2-65 |
| <u>2.26</u> | Final Office Review.....   | 2-67 |
| <u>2.27</u> | Bid Package Review (Form 1299) .....                                       | 2-69 |
| <u>2.28</u> | Plans, Specifications & Estimate Approval (Form 1180) .....                | 2-71 |
| <u>2.29</u> | Shopping Cart for Construction Contract .....                              | 2-73 |
| <u>2.30</u> | Plans & Reproduction Processes.....  | 2-75 |
| <u>2.31</u> | Advertisement.....   | 2-76 |
| <u>2.32</u> | Plans, Specifications & Estimate (PS&E) Revisions Under Advertisement..... | 2-80 |
| <u>2.33</u> | Re-Advertisement .....   | 2-89 |
| <u>2.34</u> | Retaining Bid Surplus Funds .....  | 2-90 |
| <u>2.35</u> | Go Sheet .....   | 2-91 |
| <u>2.36</u> | Mandatory Pre-Bid Conferences.....   | 2-92 |
| <u>2.37</u> | Cut Back & Multiple Schedule Projects.....                                 | 2-93 |

**Section 3 Environmental**

|                             |  |      |
|-----------------------------|--|------|
| <a href="#"><u>3.01</u></a> | Introduction .....   | 3-1  |
| <a href="#"><u>3.02</u></a> | 4(f) Properties .....  | 3-11 |
| <a href="#"><u>3.03</u></a> | 6(f) .....   | 3-13 |
| <a href="#"><u>3.04</u></a> | Air Quality .....  | 3-15 |
| <a href="#"><u>3.05</u></a> | Farmland .....   | 3-20 |
| <a href="#"><u>3.06</u></a> | Floodplain .....   | 3-22 |
| <a href="#"><u>3.07</u></a> | Hazardous Materials .....  | 3-23 |
| <a href="#"><u>3.08</u></a> | Historic Properties Clearances (Archaeology, History, Historic Bridge) ..... | 3-26 |
| <a href="#"><u>3.09</u></a> | Migratory Birds .....  | 3-29 |
| <a href="#"><u>3.10</u></a> | Noise Analysis .....   | 3-31 |
| <a href="#"><u>3.11</u></a> | Noxious Weeds.....   | 3-35 |
| <a href="#"><u>3.12</u></a> | Paleontology .....   | 3-36 |
| <a href="#"><u>3.13</u></a> | Senate Bill 40 (SB 40).....  | 3-37 |
| <a href="#"><u>3.14</u></a> | Environmental Justice and Equity.....  | 3-39 |
| <a href="#"><u>3.15</u></a> | Social Resources .....   | 3-41 |
| <a href="#"><u>3.16</u></a> | Threatened and Endangered Species.....                                       | 3-42 |
| <a href="#"><u>3.17</u></a> | Water Quality.....   | 3-44 |
| <a href="#"><u>3.18</u></a> | What Is Permanent Water Quality?.....  | 3-47 |
| <a href="#"><u>3.19</u></a> | Stormwater Management Plans (SWMP's).....                                    | 3-48 |
| <a href="#"><u>3.20</u></a> | Wetlands .....   | 3-51 |

**Section 4 Traffic**

|                             |   |      |
|-----------------------------|---|------|
| <a href="#"><u>4.01</u></a> | Traffic Data .....  | 4-1  |
| <a href="#"><u>4.02</u></a> | Request and Analyze Crash Data.....   | 4-2  |
| <a href="#"><u>4.03</u></a> | Turning Movements Request .....   | 4-3  |
| <a href="#"><u>4.04</u></a> | Traffic Movement Diagram .....  | 4-4  |
| <a href="#"><u>4.05</u></a> | Signal Warrants.....  | 4-4  |
| <a href="#"><u>4.06</u></a> | Intersection and Interchange Design .....   | 4-5  |
| <a href="#"><u>4.07</u></a> | Traffic Signal Plan .....   | 4-8  |
| <a href="#"><u>4.08</u></a> | Lighting Plan .....   | 4-9  |
| <a href="#"><u>4.09</u></a> | Permanent Signing and Pavement Marking.....   | 4-11 |
| <a href="#"><u>4.10</u></a> | Construction Transportation Management Plans .....  | 4-12 |
| <a href="#"><u>4.11</u></a> | Engineering Judgment and Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD) Request Options ..... | 4-15 |

|                             |  |      |
|-----------------------------|--|------|
| <a href="#"><u>4.12</u></a> | Operations Evaluation (Formerly TSM&O) ..... | 4-16 |
| <a href="#"><u>4.13</u></a> | Systems Engineering Analysis (SEA).....      | 4-20 |

**Section 5 Structures**

|                                  |  |      |
|----------------------------------|--|------|
| <a href="#"><u>5.01</u></a> .... | Introduction.....                              | 5-1  |
| <a href="#"><u>5.02</u></a> .... | Major Structure (Bridge).....                  | 5-1  |
| <a href="#"><u>5.03</u></a> .... | Minor Structure (Culvert).....                 | 5-3  |
| <a href="#"><u>5.04</u></a> .... | Minor Structures – Unusual.....                | 5-5  |
| <a href="#"><u>5.05</u></a> .... | Minor Structures.....                          | 5-6  |
| <a href="#"><u>5.06</u></a> .... | Pedestrian Overpasses & Underpasses.....       | 5-6  |
| <a href="#"><u>5.07</u></a> .... | Architectural & Aesthetic Treatments.....      | 5-7  |
| <a href="#"><u>5.08</u></a> .... | Foundation Investigation & Recommendation..... | 5-8  |
| <a href="#"><u>5.09</u></a> .... | Structure Selection Report.....                | 5-9  |
| <a href="#"><u>5.010</u></a> ... | Retaining Walls.....                           | 5-10 |
| <a href="#"><u>5.011</u></a> ... | Noise Walls.....                               | 5-11 |
| <a href="#"><u>5.012</u></a> ... | Analysis of Structures to be Resurfaced.....   | 5-12 |
| <a href="#"><u>5.013</u></a> ... | Determine Existing Structural Capacity.....    | 5-12 |
| <a href="#"><u>5.014</u></a> ... | Crashworthy Bridge Rail.....                   | 5-13 |
| <a href="#"><u>5.015</u></a> ... | Vertical Clearance of Structure.....           | 5-14 |
| <a href="#"><u>5.016</u></a> ... | Accelerated Bridge Construction (ABC).....     | 5-15 |

**Section 6 Materials**

|                             |                                      |     |
|-----------------------------|--------------------------------------|-----|
| <a href="#"><u>6.01</u></a> | Pavement Analysis For Distress ..... | 6-1 |
| <a href="#"><u>6.02</u></a> | Preliminary Soil Survey .....        | 6-2 |
| <a href="#"><u>6.03</u></a> | Geotechnical Services.....           | 6-3 |
| <a href="#"><u>6.04</u></a> | Geohazard Services .....             | 6-6 |
| <a href="#"><u>6.05</u></a> | Life Cycle Cost Analysis .....       | 6-8 |
| <a href="#"><u>6.06</u></a> | Pavement Justification Report.....   | 6-9 |

**Section 7 Right of Way & Utilities**

|                             |  |      |
|-----------------------------|--|------|
| <a href="#"><u>7.01</u></a> | Right of Way Involvement.....                    | 7-1  |
| <a href="#"><u>7.02</u></a> | Permits Required to Work on Government Land..... | 7-10 |
| <a href="#"><u>7.03</u></a> | Utility Involvement .....                        | 7-12 |
| <a href="#"><u>7.04</u></a> | Railroad Involvement.....                        | 7-17 |

**Section 8 Additional Project Development Considerations**

|                             |   |      |
|-----------------------------|---|------|
| <a href="#"><u>8.01</u></a> | Americans with Disabilities Act Standards.....                                | 8-1  |
| <a href="#"><u>8.02</u></a> | Detour Design .....   | 8-3  |
| <a href="#"><u>8.03</u></a> | Airport & Heliport Clearances .....   | 8-6  |
| <a href="#"><u>8.04</u></a> | Safety Rest Areas .....   | 8-8  |
| <a href="#"><u>8.05</u></a> | Railroad Design .....   | 8-10 |
| <a href="#"><u>8.06</u></a> | Transit Accomodations.....  | 8-13 |
| <a href="#"><u>8.07</u></a> | Irrigation Company Agreement.....   | 8-15 |
| <a href="#"><u>8.08</u></a> | Climbing & Passing Lanes.....   | 8-22 |
| <a href="#"><u>8.09</u></a> | Stockpasses, Landowners' Access, Wildlife Crossings & Machine Passes .....    | 8-23 |
| <a href="#"><u>8.10</u></a> | Experimental Items .....  | 8-25 |
| <a href="#"><u>8.11</u></a> | Disposal of Excess Material Off Project Site .....                            | 8-26 |
| <a href="#"><u>8.12</u></a> | Mandatory Source of Materials or Materials Furnished by a Public Agency ..... | 8-27 |