

Project: I-70 Vail Pass Various Wall Repairs

Project Sub Acct. No: 21897

Date: November 1, 2018

## **Technical Requirements**

### **Section 1 – General**

#### **PROJECT DESCRIPTION**

The existing facilities are retaining walls protecting or supporting the I-70 facility. I-70 is a four-lane, mountainous, rural interstate highway.

The wall repairs are funded through CDOT's Wall program.

The intent of the proposed project is to increase safety and maintain and enhance the structural integrity of the existing wall infrastructure. The Region 3 Lane Closure Policy shall be followed.

#### ***Project Location***

The project is located on I-70 at the interchange with US 24 west of Vail, MP 171, and from east of the Big Horn Road interchange to west of the Shrine Pass interchange, MP 182.4 to 188. The project is in Eagle County.

#### ***Construction Configuration***

The Construction Configuration is defined as all Work that the Contractor is required to construct as defined by the Contract documents. Bidders are directed to Project Technical Requirements described within the Contract.

The Major Elements of the Construction Configuration are as follows:

1. Construct various types of wall repairs:
  - Bin wall  
R070A171042LRA
  - MSE Cruciform Walls  
R070A182489LRA  
R070A185113RRA  
R070A185409RRA
  - Scalloped Post and Panel walls  
R070A183555LRA  
R070A184163LRA  
R070A186429MCA
  - Drainage  
R070183086MCA

See plan details in Book 4 and accompanying Technical Requirements.

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2. Construct drainage improvements as required. See plan details in Reference Documents and accompanying Technical Requirements.

The Contractor shall inspect the walls to determine exact repair locations for CDOT approval. If the agreed upon quantities exceed the quantities shown plus 20 percent, the Contractor will be entitled to a Change Order for the full quantity over run above 20 percent.

### **Contract Components**

The Contract consists of the following items. Construction shall be governed by the 2017 “CDOT Standard Specifications for Road and Bridge Construction”, as revised by the contract:

1. Contractor’s Proposal
2. Instructions to Proposers and Notice to Bidders
3. Book 2 - Technical Requirements
  - Section 1 – General
  - Section 2 – Project Management
  - Section 3 – Quality Management
  - Section 4 – Public Information
  - Section 5 – Environmental Requirements
  - Section 6 – Third Party Agreements
  - Section 7 – Utility Relocations
  - Section 8 – Right-of-Way
  - Section 9 – Survey
  - Section 10 – Geotechnical and Roadway Pavements
  - Section 11 – Earthwork
  - Section 12 – Hydraulics
  - Section 13 – Roadway Design
  - Section 14 – Signing, Pavement Markings, and Lighting
  - Section 15 – Structures
  - Section 16 – Maintenance of Traffic
  - Section 17 – Landscaping
  - Section 18 – Maintenance During Construction
  - Section 19 – ITS
  - Section 20 – Modifications to Standard Specifications
4. Contract Drawings (Survey)
5. Contractor prepared Project Plans, drawings and details
6. 2017 CDOT Standard Specifications for Road and Bridge Construction
7. 2012 M & S Standard Plans with most recent revisions

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#### **Contract Hierarchy**

Each of the Contract Documents is an essential part of the Contract and a requirement occurring in one is as binding as though occurring in all. The Contract Documents are intended to be complementary and to describe and provide for a complete Contract. If there is any conflict among the Contract Documents, the order of precedence shall be as set forth below:

1. Instructions to Proposers
2. Technical Requirements
3. Standard Special Provisions
4. 2017 CDOT Standard Specification for Road and Bridge Construction
5. 2012 M & S Standard Plans and revisions
6. The Proposal Documents, to the extent that they meet or exceed the requirements of the other Contract Documents. In other words, if the Proposal Documents include statements that can reasonably be interpreted as offers to provide higher quality items than otherwise required or to perform services in addition to those otherwise required or otherwise contain terms which are more advantageous to CDOT than the requirements of the Contract Documents, the Contractor's obligations hereunder shall include compliance with all such statements, offer, and terms.

Notwithstanding the foregoing, in the event of conflicting requirements involving any requirement within the Contract Documents or reference documents, CDOT shall have the right to determine, in its sole discretion, which requirement(s) apply. The Contractor shall request CDOT's determination respecting the contract hierarchy among conflicting provisions promptly upon becoming aware of any conflict.

#### **Design Requirements**

##### ***Design Surveys***

The Contractor shall arrange for all supplemental survey information and utility locations necessary to complete the design and construction. Surveying shall be performed in accordance with the CDOT Survey Manual. Traffic control and permits necessary to complete the survey shall be the responsibility of the Contractor. The Contractor will deliver the data (in InRoads TMOSS survey format) and field notes to CDOT for review upon completion of the survey. Errors and omissions found by the CDOT Project Manager shall be corrected by the Contractor and resubmitted.

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#### **General**

The Contractor shall perform all the design work as described herein. Clarification, if required, will be provided by the CDOT Project Manager. Specific design criteria are required for Professional Engineering Services, including Roadway, Hydraulics, Traffic and Structural elements.

Bidders will not be compensated by CDOT for any design required to prepare the Proposal or the bid for the work, except for the stipend, if awarded. Bidders who will have performed design work before award, but who do not get the award, for any reason, will have performed that work solely at their own cost, not subject to reimbursement by CDOT.

All designs provided by the Contractor shall be completed under the responsible charge of a Professional Engineer registered in the State of Colorado. The designs and plans shall be sealed in accordance with the bylaws and rules of procedure of the Colorado State Board of Registration for Professional Engineers and Professional Land Surveyors by the responsible engineer in charge.

The Contractor shall ensure that the design meets all applicable design criteria including but not limited to the safety and serviceability, as described herein and as shown on the Plans. The Contractor shall use the plans, references and guidelines indicated herein for the design criteria.

Designs predicated on any errors or omissions in the Contract will be rejected. If any such error, omission or discrepancy is discovered, the Contractor shall notify CDOT immediately. Failure to notify CDOT will constitute a waiver of all claims for misunderstandings, ambiguities, or other situations resulting from error, omission, or discrepancy.

Wall designs provided by the Contractor shall include an independent design review and check by an engineer registered in the State of Colorado other than the engineer-of-record.

Some activities such as exploratory drilling on existing pavement or access to the State Highway system may require a Utility Permit from CDOT. Permits shall be obtained by the Contractor and copies shall be submitted to the CDOT Project Manager.

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#### **Roadway Engineering**

All drawings/plan sets will be produced using CDOT's CADD standards. All electronic drawings and Roadway modeling will be developed in MicroStation/ InRoads using CDOT's latest configuration, workspace and drafting standards. CDOT's configuration and workspace can be downloaded from CDOT's website at:

<https://www.codot.gov/business/designsupport/cadd/microstation-inroads-configuration/v8i-ss2-configuration>. All drawings/plan sets will be submitted in a PDF format and the appropriate electronic format (DGN, DTM, etc.). CDOT's configuration and workspace for MicroStation and InRoads can be downloaded from the CADD Website at no cost to the project or consultants.

All roadway design plans provided by the Contractor shall be in accordance with and meet all criteria specified in the CDOT Roadway Design Guide found at:

[http://www.coloradodot.info/business/designsupport/bulletins\\_manuals/roadway-design-guide](http://www.coloradodot.info/business/designsupport/bulletins_manuals/roadway-design-guide).

Plan sheets and details shall be prepared in accordance with the CDOT Drafting Manual. The Contractor shall use references listed herein when necessary design criteria are not available in the CDOT Roadway Design Guide.

The Project design plans shall include the following:

- Wall Repair Plans
- Drainage and Grading Details
- Quantity tabulations and summaries
- Maintenance of Traffic details
- Stormwater Management Plan
- Details of all additional work the Contractor determines necessary to complete the Contract.

#### **Reference Documents**

Reference documents listed in the Technical Requirements can be found at:

[Project Website - I-70 Vail Pass Various Wall Repairs.](#)

## Technical Requirements

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#### Definitions

**Accept or Acceptance**

Formal conditional determination in writing by the CDOT Project Manager that a particular matter or item appears to meet the requirements of the Contract Documents.

**Approve or Approval**

Formal conditional determination in writing by the CDOT Project Manager that a particular matter or item is good or satisfactory for the Project. Such determination may be based on requirements beyond those set forth in the Contract Documents without payment of additional compensation or a time and may reflect preferences of CDOT.

**Nonconforming Work**

Work performed that does not meet the requirements of the Contract Documents.

**Punch List**

The list of Work items with respect to the Project which remain to be completed after achievement of each Milestone Completion, each Segment Completion, or the Project Completion, generally limited to minor incidental items of Work necessary to correct imperfections which have no adverse effect on the safety or operability of the Project.

**Quality Assurance (QA)**

All those planned and systematic actions necessary for CDOT to verify that all Work fully complies with the requirements of the Contract Documents and that all materials incorporated in the Work, all equipment used, and all elements of the Work will perform satisfactorily for the purpose(s) intended.

**Quality Control (QC)**

The activities performed by the Contractor, designer, producer or manufacturer to ensure and document that a product meets the requirements of the Contract Documents. Activities may include checking, materials handling and construction procedures, calibrations and maintenance of equipment, shop drawing review, document control, production process control, and any sampling, testing, and inspection done for these purposes.

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### **Work**

All duties and services to be furnished and provided by Contractor as required by the Contract Documents, including the administrative, design, engineering, quality control, Relocation, procurement, legal, professional, manufacturing, supply, installation, construction, supervision, management, testing, verification, labor, Materials, equipment, documentation and other efforts necessary or appropriate to achieve Final Acceptance except for those efforts which the Contract documents specify will be performed by CDOT or other Persons. In certain cases, the term is also used to mean the products of the Work.

### **Deliverables**

The Contractor shall submit the following to the CDOT Project Manager:

<b>Deliverable</b>	<b>Acceptance or Approval</b>	<b>Schedule</b>
Field Notes	Acceptance	Before Final Acceptance

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#### **Project Special Provisions**

#### **Disadvantaged Business Enterprise (DBE) Contract Goal**

This is a federally-assisted construction project. As described in the CDOT DBE Standard Special Provision, the Bidder shall make good faith efforts to meet the following contract goal:

**3%    Percent DBE participation**



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#### **COMMENCEMENT AND COMPLETION OF WORK**

The Contractor shall select the date that work begins for this project. The Contractor shall notify the Engineer, in writing, at least 20 days before the proposed beginning date. The date that work begins shall be subject to the Region Transportation Director's approval. A different date may be authorized in writing by the Chief Engineer in the "Notice to Proceed."

The Contractor shall achieve project completion by the date set in the accepted bid submittal and shall complete all work in accordance with the "Notice to Proceed."

Salient features to be shown on the Contractor's progress schedule shall be as shown in Section 2 – Project Management of the Technical Requirements.

The work will be considered completed when it conforms to the Contract and has been accepted in accordance with subsection 105.21(c).

The Bidder's proposal shall specify a unit bid price for each pay item in the schedule. Failure to include unit bid prices for each bid item in the bid schedule shall be cause for rejection of the Bidder's proposal.

The bid opening process will be as follows:

1. Bids will only be read from proposers that receive a pass rating on the technical proposal and pre-qualification.
2. The technical score points and the construction duration points will be announced.
3. The maximum acceptable bid for the project will be announced immediately prior to the bid opening.
4. The bid will be read for each responsive bidder.
5. The apparent highest score will be calculated and announced.

The Department will award the Contract to the highest responsive bidder's calculated score that results in a bid at or less than the maximum acceptable bid. If the highest score does not result in a total cost under 110 percent of the Project Budget, the Department may supplement the Project Budget in order to award the project.

In accordance with 24-109-102 CRS, protests, if any, must be submitted in writing within seven working days after contract award. Pursuant to 24-109-104 CRS, if a protest is sustained and the protesting bidder should have been awarded the contract and was not, the protestor shall be entitled to recover only the reasonable costs incurred in connection with the solicitation, including bid preparation costs. Reasonable costs shall not include attorney fees. The protestor shall not be entitled to recover any other costs.

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### **COMMENCEMENT AND COMPLETION OF WORK**

Wall R070A185409RRA is above the Vail Pass Recreational Trail. Once the trail is opened to the public, flagging shall be required per Book 2 Section 16 – Maintenance of Traffic. CDOT will consider issuance of a site-specific Notice to Proceed #2 for construction at this location to permit construction prior to the opening of the trail to the public.

If the completion of the work is past the fixed completion date set by the awarded bid, liquidated damages will be deducted from payments made to the Contractor. This disincentive will equal the actual number of calendar days required to complete the work past the completion date at a daily rate of \$4,100 per day.

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#### **ON THE JOB TRAINING CONTRACT GOAL**

The Department has determined that On the Job Training shall be provided to trainees with the goal of developing full journey workers in the types of trade or classification involved. The contract goal for On the Job Trainees working in an approved training plan in this Contract has been established as follows:

Minimum number of total On the Job Training required 400 hours.

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#### REVISION OF SECTION 102 BIDDING REQUIREMENTS AND CONDITIONS

Section 102 of the Standard Specifications is hereby revised for this project as follows:

Subsection 102.01 shall include the following:

**Only bidders whose Firm for Design Services is prequalified with the Department will be Awarded the project.**

In Subsection 102.02, delete the second sentence and replace with the following:

These forms will state the location and description of the contemplated construction and will have an item for which a lump sum bid is invited.

Delete subsection 102.03 (b) and replace with the following:

(b) *Measurement Not Required.* When the Contract does not require quantities of work performed or material furnished to be measured, payment will be made by lump sum, as amended elsewhere in the Contract.

Subsection 102.05 shall include the following:

The following information will be available for review on the website at:

[Project Website - I-70 Vail Pass Various Wall Repairs.](#)

Instructions to Proposers and Notice to Bidders  
Index of Technical Requirements, Contract Documents and Reference Documents  
Technical Requirements / Project Special Provisions  
Standard Special Provisions  
Contract Documents  
Reference Documents

In Subsection 102.07 delete subsections (4) and (5).

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#### **REVISION OF SECTION 104**

#### **FINAL CLEAN UP**

Section 104 of the Standard Specifications is hereby revised for this project as follows:

In subsection 104.06 shall include the following:

Final cleaning up shall include all items or results of work necessary for the performance of work but temporary in nature. These items shall include but not be limited to removal of construction stakes, and shaping and restoration of temporary facility sites.

All costs incidental to the foregoing requirements shall be included in Work.

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#### REVISION OF SECTION 107 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:

**107.061 Performance of Safety Critical Work.** The following work elements are considered safety critical work for this project:

- (1) Removal of portions of existing structures and sandblasting operations adjacent to the roadway
- (2) All work on steep slopes or above vertical drops exceeding 6 feet in height
- (3) All work below existing walls where structural elements are deteriorated or showing signs of failure
- (4) Any work requiring the use of cranes or other heavy lifting equipment where construction materials are being lifted that may fall onto active traffic lanes or pedestrian/bike facilities.
- (5) Temporary works: falsework, shoring that exceeds 5 feet in height
- (6) Excavation and embankment adjacent to the roadway, especially if it requires shoring

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 removal plan, or a removal of portion of structure 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. The construction plan will not be approved by the Engineer.

- (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) Additional actions that will be taken to ensure that the work will be performed safely.
- (6) 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

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**REVISION OF SECTION 107  
PERFORMANCE OF SAFETY CRITICAL WORK**

- (7) 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
  - C. Certifications earned in performing similar work
- (8) 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. Equipment failure
  - F. Other potential difficulties inherent in the type of work being performed
- (9) Name and qualifications of Contractor's person designated to determine and notify the Engineer in writing when it is safe to open a route to traffic after it has been closed for safety critical work.
- (10) 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.

The Construction Plan shall include the following:

A safety critical element conference shall be held two weeks prior to beginning construction on each safety critical element. The Engineer, the Contractor, the safety critical element subcontractors, and the Contractor's Engineer 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 shall sign and seal temporary works, such as falsework, shoring etc., related to construction plans for the safety critical elements. The final construction plan shall be stamped "Approved for Construction" and signed by the Contractor.

The Contractor shall perform safety critical work only when the Engineer is on the project site. The Contractor's Engineer shall be on site to inspect and provide written approval of safety critical work for which he provided signed and sealed construction details. Unless otherwise directed or approved, the Contractor's Engineer 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.

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### **REVISION OF SECTION 107 PERFORMANCE OF SAFETY CRITICAL WORK**

When ordered by the Engineer, 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 Engineer will authorize resumption of the work.

When ordered by the Engineer, 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 108.06.

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 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, he shall submit a revised plan to the Engineer prior to resuming operations.

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.



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#### **REVISION OF SECTION 108 PROSECUTION AND PROGRESS**

Section 108 of the Standard Specifications is hereby revised for this project as follows:

Subsection 108.08 shall include the following:

Contractor will be restricted to conducting all work per the Region 3 Lane Closure Strategy report and the Book 2 Technical Requirements, unless otherwise approved in writing by the Engineer.

All costs incidental to the foregoing requirements shall be included in the Work.

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### **REVISION OF SECTION 109 MEASUREMENT AND PAYMENT**

Section 109 of the Standard Specifications is hereby revised for this project as follows:

Subsection 109.02 shall include the following:

The intent of this project is to provide the work in a dollar (DOL) basis for work related to the completion of Design and Construction Components identified in Book 2 Section 2 – Project Management. All items necessary for the completion of the work shall not be measured and paid for in the listed pay items for each Basis of Payment section of the Standard Specifications but shall be included in the Dollar price to complete each component.

Sections of Basis of Payment within the Standard Specifications and Standard Special Provisions will be disregarded.

Section 620 Field Facilities of the Standard Specifications shall not be modified by this revision.

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### **FORCE ACCOUNT ITEMS**

#### DESCRIPTION

This special provision contains the Department's estimate for force account items included in the Contract. The estimated amounts marked with an asterisk will be added to the total bid to determine the amount of the performance and payment bonds. Force Account work shall be performed as directed by the Engineer.

#### BASIS OF PAYMENT

Payment will be made in accordance with subsection 109.04. Payment will constitute full compensation for all work necessary to complete the item.

Force account work valued at \$5,000 or less, that must be performed by a licensed journeyman in order to comply with federal, state, or local codes, may be paid for after receipt of an itemized statement endorsed by the Contractor.

<u>Force Account Item</u>	<u>Estimated Quantity</u>	<u>Amount</u>
F/A Minor Contract Revisions	F.A.	\$95,000 *
F/A Partnering	F.A.	\$4,000
F/A On-The-Job Trainee	F.A.	\$4,000