

SPECIFICATIONS

CR-94 in Jamestown Pavement Repairs

BID # James.034

**SPECIAL PROVISIONS
JAMES CANYON DRIVE PERMANENT REPAIRS
JAMESTOWN**

COVER SHEET

SPECIFICATIONS

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SPECIAL PROVISIONS CR-94 IN JAMESTOWN PAVEMENT REPAIRS JAMESTOWN

The Colorado Department of Transportation *2017 Standard Specifications for Road and Bridge Construction* controls construction of this project. The following special provisions supplement or modify the Standard Specifications and take precedence over the Standard Specifications and plans.

PROJECT SPECIAL PROVISIONS

Cover Sheet.....	1
Project Special Provisions Index Page.....	2
Standard Special Provisions Index.....	3
Notice to Bidders	4
Commencement and Completion of Work (Floating Start Date).....	5
General Information.....	6-7
Revision of Section 101 – Definitions and Terms.....	8
Revision of Section 104 – Scope of Work.....	9
Revision of Section 105 – Control of Work.....	10
Revision of Section 105 – Coordination between Contractors.....	11
Revision of Section 106 – Buy America Requirements.....	12
Revision of Section 108 – Subletting of Contract.....	13
Revision of Section 108 – Prosecution and Progress	14
Revision of Section 201 – Clearing and Grubbing.....	15
Revision of Sections 202 and 627 – Pavement Marking.....	16
Revision of Section 208 – Erosion Control	17-18
Revision of Section 209 – Watering and Dust Palliatives.....	19
Revision of Section 213 – Boulders and Grouted Boulders.....	20-24
Revision of Section 240 – Protection of Migratory Birds, Biological Work Performed By The Contractor's Biologist.....	25-26
Revision of Section 401 – Reclaimed Asphalt Pavement.....	27-29
Revision of Section 403 – Hot Mix Asphalt.....	30-32
Revision of Section 506 – Riprap and Soil Riprap.....	33
Revision of Section 614 – Radar Speed Display Sign.....	34-37
Revision of Section 622 – Gateway Markers.....	38-49
Revision of Section 625 – Construction Surveying.....	50
Revision of Section 630 – Construction Zone Traffic Control.....	51-52
Revision of Section 630 - Portable Message Sign Panel.....	53-54

**-1-
STANDARD SPECIAL PROVISIONS**

Name	Date	No. of Pages
Revision of Section 103 – Colorado Resident Bid Preference	(July 3, 2017)	1
Revision of Section 103 – Consideration of Proposals	(July 3, 2017)	1
Revision of Section 105 – Disputes and Claims for Contract Adjustments	(Dec. 7, 2017)	32
Revision of Sections 105 and 106 – Conformity to the Contract of Hot Mix Asphalt (Voids Acceptance)	(Dec. 28, 2017)	10
Revision of Section 106 – Country of Origin	(July 3, 2017)	1
Revision of Section 106 – Supplier List	(July 3, 2017)	1
Revision of Section 107 – Laws to be Observed	(October 12, 2017)	1
Revision of Section 108 – Liquidated Damages	(July 20, 2017)	1
Revision of Section 108 – Subletting of Contract	(October 12, 2017)	1
Revision of Section 109 – Prompt Payment (Local Agency)	(July 3, 2017)	2
Revision of Section 206 – Removability Modulus	(October 12, 2017)	1
Revision of Section 206 – Shoring	(July 20, 2017)	3
Revision of Sections 206 and 703 – Structure Backfill (Flow-Fill)	(Dec. 28, 2017)	1
Revision of Section 208 – Erosion Control	(July 3, 2017)	1
Revision of Section 250 – Environmental, Health and Safety Management	(July 3, 2017)	3
Revision of Section 401 – Composition of Mixtures – Voids Acceptance	(July 3, 2017)	1
Revision of Section 401 – Reclaimed Asphalt Pavement	(July 3, 2017)	2
Revision of Section 401 – Tolerances for Hot Mix Asphalt (Voids Acceptance)	(July 3, 2017)	1
Revision of Section 502 – Extensions and Splices	(July 3, 2017)	2
Revision of Section 503 – Drilled Shafts	(July 3, 2017)	15
Revision of Section 612 – Flexible Delineators	(July 3, 2017)	1
Revision of Section 614 – Blank Out Sign (LED) (Speed Radar)	(July 3, 2017)	5
Revision of Section 625 – Construction Surveying	(July 3, 2017)	1
Revision of Section 630 – Mobile Pavement Marking Zone (Group 1 without Attenuator)	(July 3, 2017)	1
Revision of Section 630 - Rolling Roadblock	(July 3, 2017)	2
Revision of Section 703 - Aggregate for Bases (RAP Allowed)	(July 3, 2017)	1
Revision of Section 703 - Classification for Aggregate Base Course	(October 12, 2017)	1
Affirmative Action Requirements – Equal Employment Opportunity	(July 3, 2017)	10
Minimum Wages, Colorado,	(January 5, 2018)	4
U.S. Department of Labor General Decision Number CO180017		
Highway Construction for Boulder County.		
Minimum Wages, Colorado,	(January 5, 2018)	9
Special Construction Requirements, Fire Protection Plan	(July 3, 2017)	2

NOTICE TO BIDDERS

NOTICE: The proposal guaranty shall be a certified check, cashier's check, or bid bond in the amount of 10% of the Contractor's total bid. A payment and performance bond on the part of the contractor for 100% of the contracted amount is required. The cost of the bonds must be included in the proposed price.

Contractor hereby proposes to furnish all labor, machinery, equipment, materials and supplies, and to sustain all the expense incurred in doing the work per the proposal schedule, and in pursuance of a certain advertisement of the Town of Jamestown, of the State of Colorado, and in accordance with the full details, Plans, and Specifications as prescribed by Jamestown. The Colorado Department of Transportation's Standard Specifications for Road and Bridge Construction - 2017, and as revised by the special provisions, shall be used to control work on this project. The items of work and the unit prices contained in the Proposal Schedule are described in and are a part of the Standard Specifications and are to be the method of measurement of the project quantities and the basis of payment.

**COMMENCEMENT AND COMPLETION OF WORK
(FLOATING START DATE)**

The Contractor shall select the date that contract time begins for this project, subject to the following conditions:

- (a) The earliest date shall be July 5, 2018.
- (b) The latest date shall be July 20, 2018.
- (c) The Contractor shall notify the Engineer, in writing, at least 30 days before the proposed beginning date. If the earlier date, as stated above, follows the award date by less than 30 days, the Contractor's written notice to the Engineer shall be at least 10 days before the proposed beginning date.
- (d) The date that contract time begins shall be subject to the Engineer's approval. A different date may be authorized in writing by the Engineer in the "Notice to Proceed."

The Contractor shall complete all work in **60 working days** in accordance with the "Notice to Proceed."

If materials stockpiling begins before the beginning date, contract time will not be charged for the stockpiling effort. Stockpiling of materials before the beginning date is subject to the Engineer's approval. If such approval is given, stockpiled material will be paid for in accordance with Sections 109 and 626.

Salient features to be shown on the Contractor's Progress Schedule are:

- 1) Mobilization
- 2) Erosion Control
- 3) Construction Traffic Control
- 4) Pavement Removal
- 5) Boulder Wall
- 6) Earthwork
- 7) Pipe Culverts
- 8) Base Course
- 9) Asphalt Paving
- 10) Permanent Stabilization (riprap/seeding)
- 11) Signing & Striping
- 12) Gateway Markers

GENERAL INFORMATION

1. Boulder County and Jamestown have an intergovernmental agreement concerning maintenance and construction along CR-94 within the Jamestown town limits. The Boulder County Purchasing Department is advertising pavement repairs along CR-94 inside the town limits on behalf of Jamestown. All work is subject to inspection and approval **by Jamestown**.
2. The Colorado Department of Transportation "Standard Specifications for Road and Bridge Construction", 2017 (hereafter referred to as the "Standard Specifications") and the Boulder County Multimodal Transportation Standards, 2012, are made a part of this Contract by this reference, except as revised herein, and are hereby adopted as the minimum Standard Specifications of Compliance for this project. In those instances where the Standard Specifications conflict with any of the provisions of the preceding, the preceding Sections shall govern.
3. The Contractor shall have a copy of the Colorado Department of Transportation "Standard Specifications for Road and Bridge Construction", 2017, and the Boulder County Multimodal Transportation Standards on the project site at all times.
4. The Contractor is responsible for obtaining a CDPS-SCP (Colorado Discharge Permit System - Stormwater Construction Permit) from the CDPHE (Colorado Department of Public Health) and a Boulder County Stormwater Quality Permit prior to construction.
5. If dewatering is required the Contractor is responsible for obtaining the required permits.
6. The Contractor must address all permit requirements, if required, including the grading permit, erosion control, traffic management, haul routes, and all other necessary information required by Boulder County to complete and obtain the permit approval.
7. Flood repairs to CR-94 (James Canyon Drive, Mill St., Main St., and Overland Rd.), will be ongoing simultaneously with this project. Close co-ordination with Boulder County, Jamestown, and the CR-94 flood recovery contractor is required by the contractor and vital to the success of the project.
8. Haul routes for this project will be James Canyon Drive, Lefthand Canyon Drive, US 36 and Nelson Road. The bridge on US 36 over Lefthand Creek is under construction, the contractor shall coordinate haul and equipment operations with CDOT's contractor.
9. The Main Street Bridge and intersection with Mill Street in Jamestown shall be under construction during this project, the contractor shall coordinate operations with that contractor.
10. The Jamestown Irrigation Ditch at the end of Ward St. in Jamestown will be under construction during this project; the contractor shall coordinate operations with the contractor.
11. Contractor is advised that cell phone reception in Left Hand Canyon and James Canyon is limited. The contractor will provide an emergency communications plan for his work and his subcontractors' work. The plan will include alternative communications devices that will be supplied to all work groups on the project as well as Jamestown and its consultants.

12. The Contractor is responsible to obtain any additional permits, license and/or certification required by County or State agencies required to complete the work included in the Contract Documents.

**REVISION OF SECTION 101
DEFINITION AND TERMS**

Section 101 of the Standard Specifications is hereby revised for this project as follows:

Technical Specifications related to construction materials and methods for the work embraced under this Contract shall consist of the Colorado Department of Transportation, *Standard Specifications for Road and Bridge Construction*, dated 2017.

Certain terms utilized in the Specifications referred to in the paragraph above shall be interpreted to have different meanings within the scope of the Contract. A summary of redefinitions follows:

Subsection 101.28 Department shall be replaced with Town of Jamestown.

Subsection 101.29 Engineer shall be defined as the Town of Jamestown acting directly or through an authorized representative, who is responsible for engineering and administrative supervision of the project.

The terms Project Engineer and Project Manager shall be interchangeable in this contract.

Subsection 101.39 Laboratory shall be defined as the testing laboratory designated by the Engineer.

Subsection 101.58 Region Transportation Director shall be defined as the Town of Jamestown.

Subsection 101.76 State shall mean Town of Jamestown (where applicable).

**REVISION OF SECTION 104
SCOPE OF WORK**

Section 104 of the Standard Specification is hereby revised as follows:

Subsection 104.04 shall include the following:

This project consists of reconstructing pavement on parts of James Canyon, Mill Street, Main Street and Overland Road within Jamestown between flood repair areas (by others). Work will consist of asphalt removal, a boulder wall, roadway culverts, HMA pavement, signing, striping, construction traffic control and gateway markers. The project is approximately 1.9 miles in length.

The Contractor will coordinate work during construction with the Engineer as site conditions are variable and other contractors will be operating in the area.

REVISION TO SECTION 105 CONTROL OF WORK

Section 105 of the Standard Specifications is revised for this project as follows:

Subsection 105.11, Cooperation with Utilities, delete the first paragraph and include the following:

The Contractor is advised the following utilities exist at the project site:

- Overhead telephone – CenturyLink (Kathy Dunbar, kathy.dunbar@centurylink.com)
- Overhead electric – Xcel Energy (Robert Voegely, 303-245-2395, bob.voegely@xcelenergy.com)
- Water – Jamestown (Jon Ashton, 303-449-1806, jon@jimtown.org)
- Private septic systems and leach fields – Locations undetermined

Private septic systems (tanks and leach fields) are known to exist adjacent to homes within Jamestown. The Contractor shall avoid private septic systems. There are 2 known easements for septic systems within the ROW, which are at 160 and 180 Main St. Per the septic plans the septic system is not within these easements. Information pertaining to septic systems in Jamestown can be found at <https://www.bouldercounty.org/environment/water/septic-system-data/>.

No utility relocations are anticipated and the Contractor shall protect the utilities in place. Should the work described in these plans and specifications require coordination between the Contractor and the utility companies it shall be the responsibility of the contractor to notify the respective utility company. The contractor shall cooperate with the utility companies in accordance with subsection 105.06 in conducting their respective operations as necessary.

The Contractor shall keep the utility company(s) advised of any work being done to their facility, such that the utility company(s) can coordinate their inspections for final acceptance of the work by the Engineer.

The Contractor shall comply with Article 1.5 of Title 9, CRS ("Excavation Requirements") when excavating or grading is planned in the area of underground utility facilities. The Contractor shall notify **all** affected utilities at least two (2) business days, not including initial day of contact, prior to commencing such operations. Contact the Utility Notification Center of Colorado (UNCC) at 811 to have locations of UNCC registered lines marked by member companies. All other underground facilities shall be located by contacting the respective company. Utility service laterals shall also be located prior to beginning work.

The Contractor shall perform potholing, as required, to locate utilities that may conflict with the construction. As stated in Section 105 of the Specifications, the Contractor shall consider in the bid proposal, all of the permanent utility facilities in their present positions as shown in the Contract and as revealed by site investigation. Additional compensation will not be allowed for foreseeable coordination from the utility facilities or the adjustment operations as indicated in the plans.

All costs incidental to the foregoing requirements will not be paid for separately, but shall be included in the work.

**REVISION OF SECTION 105
COOPERATION BETWEEN CONTRACTORS**

Section 105 of the Standard Specifications is hereby revised for this project as follows:

Subsection 105.12 shall include the following:

- (a) **Jamestown Construction Projects:** Other construction agencies are working in the vicinity of the project. The Contractor shall conduct the work so as not to interfere with or hinder the progress or completion of the work being performed by other agencies or contractors. The Contractor is not entitled to compensation for delays caused by other construction activity. All Traffic control conflicts that arise between the needs of the various construction contractors and other agencies shall be brought to the attention of the Engineer. The Engineer will decide the method of resolution.
- (b) **Other Agency Construction Projects:** Other construction agencies are anticipated to be working on main routes leading to Jamestown. The Contractor shall coordinate work with the other Contractors and responsible agencies to insure the construction of all projects occur with minimal disruption to the traveling public. The Contractor is responsible for determining and addressing all construction and other potential coordination issues that may impact the project. The Contractor is not entitled to compensation for delays caused by other construction activity. Other anticipated concurrent projects and tentative schedules known in the area include:
 - a. James Canyon Drive Permanent Flood Repairs (Boulder County), begin spring 2017, end fall 2018
 - b. US 36 at Lefthand Creek Bridge (CDOT), under construction
 - c. Main Street Bridge Replacement, construction anticipated to begin Spring 2018.
 - d. Irrigation ditch replacement; construction anticipated to begin April 2018.

Available project construction schedules from all other projects in the area will be shared upon request and availability. Visit the Boulder County Closures and Construction webpage for additional schedule information. <http://www.bouldercounty.org/roads/construction/pages/default.aspx>

**REVISION OF SECTION 106
BUY AMERICA REQUIREMENTS
NON-FEDERAL AID**

Section 106 of the Standard Specifications is hereby revised for this project as follows:

Delete subsection 106.11(a) and replace it with the following:

(a) Federal *Buy America* requirements for iron and steel do not apply to this project.

REVISION OF SECTION 108 SUBLETTING OF CONTRACT

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

Delete subsection 108.01 and replace with the following:

108.01 Subletting of Contract. The Contractor shall not sublet, sell, transfer, assign, or dispose of the Contract or Contracts, or any portion thereof without written permission of the Engineer. Prior to beginning any work by subcontractor, the Contractor shall request permission from the Engineer by submitting a completed Sublet Permit Application, CDOT Form No. 205. The subcontract work shall not begin until the Contractor has received the Engineer's written permission. The Contractor shall make all project related written subcontracts, agreements, and purchase orders available to the Engineer for viewing, upon request and at a location convenient to the Engineer.

The Contractor will be permitted to sublet a portion of the Contract, however, the Contractor's organization shall perform work amounting to **25** percent or more of the total original contract amount. Any items designated in the contract as "specialty items" may be performed by subcontract. The cost of "specialty items" so performed by subcontract may be deducted from the total original contract amount before computing the amount of work required to be performed by the Contractor's own organization. The original contract amount includes the cost of material and manufactured products which are to be purchased or produced by the Contractor and the actual agreement amounts between the Contractor and a subcontractor. Proportional value of a subcontracted partial contract item will be verified by the Engineer. When a firm both sells material to a prime contractor and performs the work of incorporating the materials into the project, these two phases shall be considered in combination and as constituting a single subcontract.

The calculation of the percentage of subcontracted work shall be based on subcontract unit prices.

Subcontracts or transfer of Contract shall not release the Contractor of liability under the Contract and Bond.

REVISION OF SECTION 108 PROSECUTION AND PROGRESS

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

Subsection 108.02 shall include the following:

108.021 Meetings.

(a) Pre-construction Meeting. A pre-construction meeting will be scheduled by the Engineer and held prior to the start of construction. The Engineer, prime Contractor, and any Sub Contractors involved in earth disturbance activities shall attend the meeting. Notification of and invitation to attend shall be issued to any agencies granting approvals or permits. The pre-construction meeting will be conducted to clarify the construction requirements for the work, and to coordinate the construction schedule and activities.

(b) Project Meetings. The Contractor shall be prepared to attend, in-person, weekly meetings with the Town and Town's designated representatives for the duration of the project. These meetings will be held on Tuesdays during normal working hours and cover project progress, submittals, issues, finances, and schedule. At a minimum, the Contractor's project manager and superintendent shall attend these meetings.

Subsection 108.03 shall include the following:

The Contractor shall present a preliminary bar chart to the Engineer at or prior to the preconstruction conference. This preliminary bar chart shall show the major features of the project for the entire project time frame.

Working hours shall be 7am-7pm Monday-Friday.

No work shall be permitted on weekends and the week of July 4th.

The Contractor will not leave any vertical drop-off adjacent to the traveled way unless protected by the proper traffic control devices.

**REVISION OF SECTION 201
CLEARING AND GRUBBING**

Section 201 of the Standard Specifications is hereby revised for this project as follows:

Subsection 201.02 shall include the following:

Clearing and Grubbing is considered incidental to the work.

Subsection 201.04 shall include the following:

Clearing and grubbing will not be measured or paid for separately but shall be included in the work.

REVISION OF SECTIONS 202 AND 627 PAVEMENT MARKING

Sections 202 and 627 of the Standard Specifications are hereby revised for this project as follows:

Subsection 202.05 Pavement Markings shall include the following:

Pavement Markings to be removed shall be marked by the Contractor or Subcontractor no less than 48 hours prior to removal. The Department shall review and approve the pavement markings to be removed prior to the work. All Removal of Pavement Markings shall be completed prior to permanent striping layout. All pavement markings removed shall become the property of the Contractor and disposed of properly offsite.

Subsection 627.03 General shall include the following:

- (f) *Pre-striping and Marking Construction Meeting.* A pre-striping and marking construction meeting shall be held prior to the layout to confirm the pavement marking plan. At a minimum, attendees shall include the Contractor, the Striping Contractor or Subcontractor and Department representative(s).

Any striping or marking detail or minor modification shall be provided by the Department in advance of layout. Minor changes shall be addressed in the Pre-striping and Marking Construction Meeting and vetted for constructability and cost.

Any significant modification shall be addressed by an approved CMO or change order policy with the Engineer prior the Pre-striping and Marking Construction Meeting.

Control Points and layout shall be done by the Contractor no less than 48 hours prior to striping and marking, and the Department shall review and approve the layout prior to the work whether temporary or final. Layout of all pavement marking whether temporary or final is included in the work.

Subsection 627.05 Epoxy Pavement Marking shall include the following:

The Contractor shall clean up excess beads from the roadway, shoulders and adjacent facilities. Clean up of excess beads shall be included in the work.

The Contractor shall leave all "Highway Striping" "next __miles" construction warning signs in place until excess glass beads have been cleared from the facilities.

Subsection 627.06 Thermoplastic Pavement Marking shall include the following:

Crosswalk bars shall be 2' x 9', Stop bars shall be 2' wide, unless otherwise noted, and pavement marking arrows shall be the elongated type.

The Contractor shall clean up excess beads from the roadway, shoulders and adjacent facilities. Clean up of excess beads shall be included in the work.

-1-
**REVISION OF SECTION 208
EROSION CONTROL**

Section 208 of the Standard Specifications is hereby revised for this project as follows:

Subsection 208.01 is hereby revised to include the following:

Water quality control during construction activity shall be in accordance with Section 107.25.

The contractor will be the Permittee of the Colorado Discharge Permit System – Stormwater Construction Permit (CDPS-SCP) during the entire period that it remains open and is also responsible for inactivation of the permit once final stabilization of the construction site has been achieved and accepted by the Town. No transfer of ownership or control will be permitted.

The Contractor shall provide a copy of the permit application submitted to CDPHE, as well as and a copy of the issued permits, once obtained, to the Engineer.

The contractor shall proceed with this permit activity as soon as he deems necessary following the Notice of Award. No contract delays or extensions will be granted to the contractor for failure to implement the required SWMP plan and obtain the required state permit in a timeframe necessary to begin the work as specified in the contract.

Once construction has been completed, the Engineer and the contractor will complete a walk-through of the project site. The purpose of which is to determine the areas where BMP's may be removed or maintained.

Subsection 208.02(h) shall be replaced with the following:

All erosion logs shall be biodegradable. Photodegradable will not be accepted.

Subsection 208.02 (k) is hereby revised to include the following:

Prior to the initial arrival onto the project site, all equipment shall be thoroughly power washed, including the undercarriages and tires. Equipment must be clean of mud, vegetative matter, and other debris to prevent importation of non-native and noxious weed seeds from other project sites.

Subsection 208.03 (c) is hereby revised to include the following:

Any loss of time or materials related to erosion shall be the sole responsibility of the Contractor. Any damage to surrounding properties or facilities (either on site or off site) related to erosion caused by construction of this project, will be the sole responsibility of the Contractor.

Subsection 208.04 is hereby revised to include the following:

Water Control. The Contractor is responsible for control of all surface and subsurface water, which may flow across the project site, during normal or storm conditions, throughout the duration of the project as required eliminating or minimizing erosion and sediment. The Contractor shall obtain a Construction Dewatering (CDW) Permit any time groundwater is comingled with stormwater or surface water during construction activities.

-2-
**REVISION OF SECTION 208
EROSION CONTROL**

Subsection 208.12 is hereby modified to include the following payment items:

Payment will be made under:

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Erosion Log (12 Inch)	Linear Feet
Aggregate Bag	Linear Feet
Vehicle Tracking Pad	Each
Concrete Washout Structure	Each
Removal and Disposal of Sediment (Labor)	Hour
Removal and Disposal of Sediment (Equipment)	Hour
Erosion Control Supervisor	Day
Sweeping (Sediment Removal)	Hour

Payment for water quality control and permits will not be paid for separately but shall be included in the work.

**REVISION OF SECTION 209
WATERING AND DUST PALLIATIVES**

Section 209 of the Standard Specifications is hereby revised for this project as follows:

Subsection 209.05 shall include the following:

The contractor shall be responsible for controlling vehicle and equipment speeds within the project site to keep dust to a minimum. The Contractor shall monitor activities daily for dust. If excessive dust is being generated by construction traffic, the contractor shall immediately take corrective action.

In Subsection 209.08, delete paragraphs one, two and three and replace with the following:

Water required for all work covered under the contract will not be measured and paid for separately but shall be included in the work. The source of this water shall be the contractor's responsibility. Water may not be taken from on-site ditches, creeks, or their tributaries. The Contractor is advised the Town of Jamestown may be able to supply water.

-1-
REVISION OF SECTION 213
BOULDERS AND GROUTED BOULDERS

Section 213 of the Standard Specifications is hereby revised for this project as follows:

Subsection 213.01 is hereby revised to include the following:

This work consists of excavating, grading, and the construction of boulders, grouted boulders, boulder clusters, and boulder toe protection. Boulder work includes salvaging on-site boulders, furnishing and installing footer rocks (boulders), feature boulders, structure excavation, structure backfill and native backfill material along the entire length of the structure. Boulders shall be located and staked at the station points identified in the plans or as directed by the Engineer. Terms “boulders,” and “rock,” may be used interchangeably in this section.

Subsection 213.02 is hereby revised to include the following:

- A. Boulders salvaged from on-site material or furnished by the Contractor shall conform to the following:
1. Rocks (boulders) used shall be the type designated on the plans and confirm to the following:

Boulder Classification and Nominal Size (inches)	Range in Smallest Dimension of Individual Rock Boulders (inches)	Maximum Ratio of Largest to Smallest Rock Dimension of Individual Boulders
18	17-20	1.50
24	22-26	1.50
30	28-32	1.50
36	34-38	1.50
42	40-44	1.50
48	45-51	1.50

2. The specific gravity of the boulders shall be two and one-half (2.5) or greater.
3. Boulder specific gravity shall be according to the bulk-saturated, surface dry basis in accordance with AASHTO T85.
4. The bulk density for the boulder shall be 1.3 ton/cy or greater.
5. The boulders shall have a percentage loss of not more than forty percent (40%) after five hundred (500) revolutions tested in accordance with AASHTO T96.
6. The boulders shall have a percentage loss of not more than ten percent (10%) after five (5) cycles when tested in accordance with AASHTO T104 for ledge rock using sodium sulfate.
7. The boulders shall have a percentage loss of not more than ten percent (10%) after twelve (12) cycles of freezing and thawing when tested in accordance with AASHTO T103 for ledge rock, procedure A.

-2-

**REVISION OF SECTION 213
BOULDERS AND GROUTED BOULDERS**

8. Rock shall be free of calcite intrusions.
9. Color:
 - a. The color of the boulders shall be gray with gray/blue hues or other acceptable colors approved by the Engineer prior to delivery to the project site.

B. Grout:

1. Concrete for the grout shall be an approved batch meeting the following requirements:
 - a. All grout shall be CDOT Class B concrete with the following modifications.
 - b. Concrete mix shall be made with AASHTO M43 size No. 8 coarse aggregate.
 - c. Grout shall contain one and one-half (1-1/2) pounds of Fibermesh, or approved equivalent, per cubic yard of grout.
 - d. Color additive in required amounts shall be used when so specified by contract.

Subsection 213.03 is hereby revised to include the following:

- A. Channel slope, bottom or other areas to be protected with boulders shall be free of brush, trees, stumps, and other objectionable material and graded to a smooth compacted surface as shown on the plans.
- B. Contractor shall excavate areas to receive boulders to the specified depth (bedding material is not required for boulders unless otherwise specified).
- C. Subgrade materials:
 1. The subgrade materials shall be stable.
 2. If unsuitable materials are encountered, they shall be removed and replaced as Muck Excavation in accordance with Section 203.
- D. Additional compaction:
 1. Additional compaction shall not be required unless specified by the Engineer.
 2. When subgrade is built up with embankment material it shall be compacted to ninety five percent (95%) maximum density (ASTM D698).

-3-

**REVISION OF SECTION 213
BOULDERS AND GROUTED BOULDERS**

E. Boulder Placement:

Following excavation and acceptance of subgrade by the Engineer, boulder placement shall commence as follows:

1. Boulders shall be placed on prepared subgrade in a manner which will minimize voids.
2. Voids between boulders shall be chinked.

F. Grouting:

1. Prior to placing the grout, any type of debris, fines, smaller rock, or silt shall be removed from around or under and on the boulders.
2. Dewatering shall be implemented to guarantee that the grout will not be placed in water and for a period of twenty-four (24) hours after the grout has been placed. Contractor shall monitor pH levels of stream water when exposed to grout to ensure water quality standards and avoid fish kills.
3. Keep boulders receiving grout wet at all times prior to receiving grout.
4. The concrete grout shall be placed by injection methods by pumping under low pressure, through a two- (2") inch maximum diameter hose to ensure complete penetration of the grout into the void area as detailed on the plans. The grout mix shall be stiffened and other measures taken to retain the grout between the boulders.
5. Grout placement shall begin at the bottom of the lowest boulder and proceed upward to ensure no air voids exist between the grout, subbase, and boulders.
6. Grout shall be placed up to a height of one-half (1/2) of the diameter of the top row of boulders or as directed by the Engineer and shall be placed in the voids and behind the boulders and not on the surface of the rocks.
7. A "pencil" vibrator shall be used to make sure all voids are filled between the boulders from the subgrade and around the boulders to a depth as shown on the plans. The "pencil" vibrator may be used to smooth the appearance of the surface, but the Contractor shall use a wood float to smooth and grade the grout around the boulders.
8. Grout between boulders shall be recessed one third (1/3) the diameter of the boulders on the side facing the channel.
9. Grout should be troweled out and finished to minimize visibility.

-4-

**REVISION OF SECTION 213
BOULDERS AND GROUTED BOULDERS**

10. Clean and wash any spillage before the grout sets so the visual surfaces of boulders will be free of grout to provide a clean, natural appearance, or if washing does not clean off grout residue, the Contractor shall wash off any grout residue with muriatic acid and water, using a brush to scrub off the residue. All residue shall be captured to protect water quality.
11. Grout shall receive cold or hot weather protection in accordance with Section 601, Structural Concrete.

G. Rejection of Work and Materials

1. Engineer will reject boulders that do not conform to this section. Contractor shall immediately remove and relay the boulders to conform to Specifications.
2. Boulders shall be rejected which are either delivered to the job site or placed, that do not conform to this section.
3. Rejected Boulders shall be removed from the Project site by the Contractor at Contractor's expense.

Subsection 213.04 shall include the following:

The measured quantity of this item will be the actual number of tons of boulders that are installed and accepted by the Engineer. Boulders that are imported from the Contractor's source will be measured as Boulders. Boulders that are salvaged from on-site are to be approved by the Engineer prior to placement.

Measurement of imported boulders will be determined by load tickets. Measurement of on-site boulders will be determined by the volume of boulders placed and calculating the tons placed based on a specific gravity of 2.5.

The contract bid price for each pay unit shall include compensation to the Contractor for salvaging on-site boulders, and furnishing imported boulders and granular filter material. All labor, materials, equipment, and incidentals required to construct boulders, boulder edges, and boulder walls is included unless tabulated and paid for separately. The unit bid price shall include haul from the suppliers source, stockpiling at the job site, reloading for placement, placement, disposing of any rejected boulders, excavation, removal of material, backfilling and any other miscellaneous material as implied on the drawings and in accordance with the specifications complete in place and accepted. Transporting boulders to another project site location will not be paid separately but shall be included in the work.

Approximate boulder quantities including required dimensions are tabulated and included in the plans.. The Contractor shall furnish all quantities required to complete the work.

-5-

**REVISION OF SECTION 213
BOULDERS AND GROUTED BOULDERS**

Subsection 213.05 shall include the following:

Rocks, boulders, structure chinking, grout, excavation , including mulch, and backfill, all labor, equipment, materials and incidentals required to construct the boulder edge, stacked boulder edge, and grouted boulder edge, will not be paid for separately but shall be included in the cost of the work complete in place and accepted by the Engineer.

Payment will be made under:

Pay Item	Pay Unit
Boulder	Tons
Grouted Boulder	Tons

-1-

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 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 coordinate with Town of Jamestown staff when obtaining permissions to enter for properties inside Jamestown town limits. 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:

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 biologist. This buffer dimension may be changed if determined appropriate by the 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.

-2-

SECTION 240
PROTECTION OF MIGRATORY BIRDS
BIOLOGICAL WORK PERFORMED BY THE CONTRACTOR'S BIOLOGIST

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) *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.

METHOD OF MEASUREMENT

240.03 Wildlife Biologist will be measured by the actual authorized number of hours a wildlife biologist is on site performing the required tasks.

BASIS OF PAYMENT

240.04 The accepted quantities measured as provided above will be paid for at the contract unit price for each of the pay items listed below that appear in the bid schedule.

Payment will be made under:

Pay Item	Pay Unit
Wildlife Biologist	Hour

Payment for Wildlife Biologist will be full compensation for all work and materials required to complete the item, including wildlife biologist, wildlife survey, and documentation (record of nest location and protection method)

Fence (Plastic) will be measured and paid for in accordance with Section 607.

-1-
REVISION OF SECTION 401
RECLAIMED ASPHALT PAVEMENT

Section 401 of the Standard Specifications is hereby revised for this project as follows:

Subsection 401.02(b) shall include the following:

Reclaimed Asphalt Pavement (RAP) is allowed in hot mix asphalt (HMA) up to a maximum binder replacement of 20 percent for all lifts, provided all specifications for HMA are met. Fine Aggregate Angularity requirements shall apply only to the virgin fraction of the fine aggregate. The RAP shall not contain clay balls, vegetable matter, or other deleterious substances, and must meet the uniformity requirements as outlined below.

HMA Project Verification Testing for asphalt content and gradation will be performed at the frequencies listed in the Field Materials Manual in accordance with CP-L 5120.

The Contractor shall have an approved mix design for the amount of RAP to be used. The AC content of the RAP utilized in the Contractor RAP mix design shall be the average AC content determined in accordance with 1B or 1C, below, or alternatively, a minimum of five samples of the Contractors RAP stockpile may be sampled and the average AC content of the RAP be determined using AASHTO T-164, Method A or B, or in accordance with 1C below. The Contractor shall determine the total binder replaced by the binder in the RAP pursuant to the following equation:

Total Binder Replaced = $(A \times B) \times 100/E$

Where:

A = RAP % Binder Content *

B = RAP % in Mix *

E = Total Effective Binder Content *

* in decimal format (i.e. 2% is 0.02)

The Total Binder Replaced by the binder in the RAP shall not exceed 20 percent of the effective binder content of either the mix design or the produced mix.

The use of RAP shall be controlled in accordance with subsections 105.05 and 106.05. If the Contractor elects to use RAP, the following additional conditions shall apply:

1. The Contractor shall have an approved Quality Control (QC) Plan that details how the RAP will be processed and controlled. The QC plan shall address the following:
 - A. RAP Processing Techniques. This requires a schematic diagram and narrative that explains the processing (crushing, screening, and rejecting) and stockpile operation for this specific project.
 - B. Control of RAP Asphalt Binder Content (AASHTO T-164, Method A or B). RAP Asphalt Binder Content may also be determined in accordance with CP-L 5120, provided an RAP AC content correction factor is determined through correlation testing with AASHTO T-164, Method A or B. The correction factor shall be determined by performing correlation testing on

-2-

**REVISION OF SECTION 401
RECLAIMED ASPHALT PAVEMENT**

the first five samples of the RAP AC content, then at a frequency of one for every five AC content tests thereafter. The correction factor shall be determined by calculating the average difference in AC content between CP-L 5120 and AASHTO T-164, Method A or B, and applying the correction to the AC content determined in accordance with CP-L 5120 :

Frequency: 1/1000 tons of processed RAP material (minimum five tests)

- C. (Alternate) The Contractor may propose a RAP asphalt content correction factor to be used in conjunction with CP-L 5120. The proposed CP-L 5120 RAP asphalt content correction factor shall be used with all RAP asphalt contents tested for the mixture design and quality control sampling and testing. The methodology of the proposed CP-L 5120 RAP asphalt content correction factor shall be outlined in detail in the approved RAP QC Plan. At a minimum, the proposed CP-L 5120 correction factor shall identify the principal source locations of the RAP aggregate, gradation of the material tested, and specific ignition oven serial number used in all the RAP asphalt content testing. The RAP source locations, material gradation, and specific equipment used shall substantiate the CP-L 5120 asphalt content correction factor used for the testing. The substantiation must be from data gathered from historical information or specific asphalt content correction data obtained from tests performed on similar virgin aggregate sources, virgin material gradations, and the specific equipment used.
- D. Control of RAP Gradation (CP31 or AASHTO T-30):
Frequency: 1/1000 tons of processed RAP material (minimum three tests)
- E. Process Control Charts shall be maintained for binder content and each screen listed in subsection 401.02(b), during addition of any RAP material to the stockpile. The Contractor shall maintain separate control charts for each RAP stockpile. The control charts shall be displayed and shall be made available, along with RAP AC extraction testing laboratory reports to the Engineer upon request
2. The processed RAP must be 100 percent passing the 31.5 mm (1¼ inch) sieve. The aggregate obtained from the processed RAP shall be 100 percent passing the 25.0 mm (1 inch) sieve. The aggregate and binder obtained from the processed RAP shall be uniform in all the measured parameters in accordance with the following:

UNIFORMITY*

Parameter	Standard Deviation
Binder Content	0.5
Percent Passing 19 mm (¾")	4.0
Percent Passing 12.5 mm (½")	4.0
Percent Passing 9.5 mm (⅜")	4.0
Percent Passing 4.75 mm (#4)	4.0
Percent Passing 2.36 mm (#8)	4.0
Percent Passing 600 µm (#30)	3.0
Percent Passing 75 µm (#200)	1.5
*Uniformity is the Maximum allowable Standard Deviation of test results of processed RAP.	

-3-

**REVISION OF SECTION 401
RECLAIMED ASPHALT PAVEMENT**

1. If RAP millings generated are incorporated in the same project, in accordance with CPL 5145 the Contractor shall pave with a virgin mix design until sufficient amount of processed RAP has been stockpiled and tested to allow full production of a RAP HMA mix.

-1-
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				
			S(75)	SX(75)		Patching
Air Voids, percent at: N (design)	CPL 5115		3.5 – 4.5	3.5 – 4.5		3.5 – 4.5
Lab Compaction (Revolutions): N (design)	CPL 5115		75	75		75
Stability, minimum	CPL 5106		28	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		60	60		60
Accelerated Moisture Susceptibility Tensile Strength Ratio (Lottman), minimum	CPL 5109 Method B		80	80		80
Minimum Dry Split Tensile Strength, kPa (psi)	CPL 5109 Method B		205 (30)	205 (30)		205 (30)
Grade of Asphalt Cement, Top Layer			PG 58-28	PG 58-28		PG 58-28
Grade of Asphalt Cement, Layers below Top			PG 58-28	PG 58-28		PG 58-28
Voids in the Mineral Aggregate (VMA) % minimum	CP 48		See Table 403-2	See Table 403-2		See Table 403-2
Voids Filled with Asphalt (VFA), %	AI MS-2		65-80	65-80		65-80
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		0.6 - 1.2 0.8 – 1.6
<p>Note: AI MS-2 = Asphalt Institute Manual Series 2</p> <p>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.</p> <p>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.</p> <p>*Fractured face requirements for SF may be waived by RME depending on project conditions.</p>						

-2-

**REVISION OF SECTION 403
HOT MIX ASPHALT**

All mix designs shall be run with a gyratory compaction angle of 1.25 degrees and properties must satisfy Table 403-1. The Engineer 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. The Engineer 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. 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

Nominal Maximum Size*, mm (inches)	Minimum Voids in the Mineral Aggregate (VMA)			
	***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
	<p>* The Nominal Maximum Size is defined as one sieve larger than the first sieve to retain more than 10%.</p> <p>** Interpolate specified VMA values for design air voids between those listed.</p> <p>*** Extrapolate specified VMA values for production air voids beyond those listed.</p>			

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.

-3-
**REVISION OF SECTION 403
HOT MIX ASPHALT**

Hot mix asphalt for patching shall conform to the gradation requirements for Hot Mix Asphalt (Grading S).

Acceptance samples shall be taken per CP 41.

Subsection 403.03 shall include the following:

Delete subsection 403.05 and replace with the following:

403.05 The accepted quantities of hot mix asphalt will be paid for in accordance with subsection 401.22, at the contract unit price per ton for the bituminous mixture.

Payment will be made under:

Pay Item	Pay Unit
Hot Mix Asphalt (Grading S)(75)(PG 58-28)	Ton
Hot Mix Asphalt (Grading SX)(75)(PG 58-28)	Ton
Hot Mix Asphalt (Patching)(Asphalt)	Ton

Aggregate, asphalt recycling agent, asphalt cement, additives, hydrated lime, and all other work and materials necessary to complete each hot mix asphalt item will not be paid for separately, but shall be included in the unit price bid. When the pay item includes the PG binder grade, any change to the submitted mix design optimum asphalt cement content to establish production targets on the Form 43 will not be measured and paid for separately, but shall be included in the work. No additional compensation will be considered or paid for any additional asphalt cement, plant modifications and additional personnel required to produce the HMA as a result in a change to the mix design asphalt cement content.

Historically, typical asphalt cement increases reflected on the Form 43 are from 0.1 to 0.5 percent. However, the Contractor should anticipate the AC increases typical of his mixes. Contractors bidding the project should anticipate this change and factor it into their unit price bid.

When the pay item does not include the PG binder grade, asphalt cement will be measured and paid for in accordance with Section 411. Asphalt cement used in Hot Mix Asphalt (Patching) will not be measured and paid for separately, but shall be included in the work.

Excavation, preparation, and tack coat of areas to be patched will not be measured and paid for separately, but shall be included in the work.

-1-
REVISION OF SECTION 506
RIPRAP AND SOIL RIPRAP

Section 506 of the Standard Specifications is hereby revised for this project as follows:

Subsection 506.01 shall include the following:

This work includes construction of riprap outlet protection, riprap bedding material, and soil riprap.

Subsection 506.02 shall include the following:

Rock for soil riprap shall conform to Table 506 -2 for a nominal stone size (d50) of 18 inches. The soil material shall be 35 percent native topsoil mixed with 65 percent riprap by volume.

Subsection 506.03 shall include the following:

- 1) **Mixing Soil Riprap.** Soil riprap shall consist of a uniform mixture of soil and riprap without visible voids. Soil and riprap shall be stockpiled adjacent to each other at a predefined location. Stockpiling at the location of final soil riprap placement will not be permitted.

The Contractor shall mix the riprap and soil in the proportions described above, using additional moisture and control procedures that assure a homogenous mixture. The soil shall fill the inherent voids in the riprap without displacing riprap. Soil thickness between riprap shall be less than six inches.

- 2) **Installing Soil Riprap.** Install the thickness of the riprap layer in accordance with the plans. Water shall be added in such a manner to fill the remaining voids with soil. Remaining voids larger than 6 inches shall be filled with rock as needed; visible voids less than six inches shall be filled with soil. The mixture shall be consolidated to create a tight, dense interlocking mass. The resulting top surface shall be smooth.

The final surface of the soil riprap shall be thoroughly wetted, smoothed and compacted. The surface shall then be hand raked to receive planting or seeding.

Subsection 506.04 shall include the following:

Soil riprap will be measured as the actual number of cubic yards of soil and riprap mix that are installed and accepted

Subsection 506.05 shall include the following:

PAY ITEM	PAY UNIT
Riprap (6 Inch)	CY
Riprap (12 Inch)	CY
Soil Riprap (18 Inch)	CY

Structure excavation and granular filter bedding material where specified will not be measured and paid for separately, but shall be included in the work.

-1-
REVISION OF SECTION 614
RADAR SPEED DISPLAY SIGN

Section 614 of the Standard Specifications is hereby revised for this project as follows:

Subsection 614.01 shall include the following:

This work consists of furnishing, installing, configuring and testing a radar speed display feedback sign according to the plans and these specifications.

Subsection 614.08 shall include the following:

The Radar Speed Display Sign shall include a static “YOUR SPEED” legend and dynamic LED display with radar capability. The sign shall be solar powered and conform to the following requirements:

Overall Display

Parameter	Units	Value Range	Comments
"YOUR SPEED" legend height	Inches	4	Minimum
"YOUR SPEED" faceplate material	N/A	Aluminum	
Faceplate reflective sheeting	N/A	ASTM Type XI	MTUCD compliant reflectiveness
Faceplate color	N/A	White	MTUCD compliant color
Warranty	Years	2	Minimum
Setup functions	N/A	Menu driven	Software managed

Speed Display

Parameter	Units	Value Range	Comments
Real time numeric display updating	seconds	1	Shall update displayed speed every second
Programmable display speed thresholds	N/A	Minimum, Limit, Excessive, Maximum	Four thresholds
Programmable display modes	N/A	Constant, blank, flash, stay at maximum, “SLOW DOWN”, blue/red bars	Configured as directed
External sign configuration software	N/A	MS compatible	Speed thresholds, display modes, schedule times
Power requirements	watts	30	Maximum
Configuration device	N/A	PDA or laptop	Windows compatible
Voltage requirements	VDC	12	10.5 to 16
Hardwire communication connections	N/A	RS-232 or USB	
Wireless communication type	N/A	BlueTooth™	

-2-
**REVISION OF SECTION 614
RADAR SPEED DISPLAY SIGN**

Speed Display (continued)

Parameter	Units	Value Range	Comments
Wireless communication range	feet	30	Minimum
Warranty	years	2	Parts and labor
Warranty - LED panels	years	4	Minimum
Tests	N/A	Initial segment function test at startup	
LED 1/2 cone angle	degrees	15	Viewing angle
LED luminous intensity	CD	2250 (minimum)	On optical axis
LED luminous intensity @ 15°	CD	100	Maximum at 15 degrees horizontal from optical axis
LED type	N/A	AlInGaP	Amber
LED color (numerals)	N/A	ITE amber	590 nm to 600 nm wavelength
Character height	inches	10	Minimum
Maximum display brightness	N/A	settable	To suit various application requirements
Brightness control	N/A	automatic	Provide optimum viewability for all ambient light conditions
Window material	N/A	1/4" minimum thickness polycarbonate	10 year guarantee against pixel color fading and yellowing
Cabinet dimensions	inches	26x33x12	(w*h*d) nominal max.
Construction	gauge	11	Aluminum minimum
Hardware	N/A	Stainless or brass	Corrosion resistant
Operating temperature	°F	-22 to 140	
Wind load rating	MPH	100	Minimum
Electronics enclosure	N/A	NEMA 3R or better	
Enclosure ID tag	N/A	permanent	Shall include manufacturer's name, model number, serial number, date of manufacture, identification number, rated voltage, current, power and volt-amperes
Controller	N/A	on-board dedicated computer	Controls all sign system functions, solid state design, removable
Controller display	N/A	dedicated 2 line LCD	Minimum; backlight for night time operation

-3-
**REVISION OF SECTION 614
RADAR SPEED DISPLAY SIGN**

Radar

Parameter	Units	Value Range	Comments
Type	N/A	Internal, approach only	
Detection range	mph	5 to 100	
Distance range	feet	1000	Minimum
Operating voltage	VDC	10.8 to 16.8	12 VDC nominal
Operating temperature	° F	-22 to 140	
Accuracy	mph	+/- 1	
Band Type	N/A	K	
Frequency	GHz	24.15 +/- 0.1	
Beam width	degrees	12	Nominal
Transmit power	mW	25	Maximum
FCC Acceptance	N/A	Part 15 Certified	No license required

Solar Charging

Parameter	Units	Value Range	Comments
Battery type - sealed	VDC	12 deep cycle	
Battery capacity	days	5	Minimum operating time with no solar charging
Photovoltaic type	N/A	Crystalline silicon	Or equivalent
Photovoltaic panel size	watts	Sized to adequately charge and maintain the system	
Photovoltaic controller	N/A	LCD display	Manages solar energy input to battery, intelligent shutdown at low voltage point

The speed display sign shall include data logging capability with the ability to export the data.

Subsection 614.09 shall include the following:

The Radar Speed Display Sign shall be mounted on a pedestal pole as detailed in the plans with stainless steel straps. If the system uses a separate battery and/or controller enclosure it shall be mounted below the sign on the back side of the pedestal pole opposite approaching traffic. The solar panel shall be mounted on top of the pedestal pole and oriented southward.

Following installation the Contractor shall start up the sign, test its functions and configure it. The display settings shall be configured as directed by the Engineer. The sign will not be accepted until it satisfactorily performs its functions.

Subsection 614.13 shall include the following:

-4-

**REVISION OF SECTION 614
RADAR SPEED DISPLAY SIGN**

Radar Speed Display Sign will be measured by the actual number of signs installed and accepted. Drilled caissons will be measured and paid for according to Section 503. Pedestal poles will be measured and paid for according to Section 614.

Subsection 630.14 shall include the following:

Payment will be made under:

Pay Item	Pay Unit
Radar Speed Display Sign	Each

Payment shall include radar speed display feedback sign, solar panel, controller, batteries, enclosures, mounting hardware, wiring, testing, configuration, and all other incidental materials and labor required for an in-place completed unit.

-1-
**REVISION OF SECTION 622
GATEWAY MARKERS**

Section 622 of the Standard Specifications is hereby revised for this project as follows:

Subsection 622.01 shall include the following:

DESCRIPTION

This work consists of furnishing and installing gateway markers according to the details in the plans and these specifications.

A. SCOPE OF WORK

1. This work shall include all labor, materials and equipment necessary for the proper execution and completion of said work, as shown on the plans and as herein specified. It shall also include all work not specifically included in the Contract Documents which is properly inferable and necessary for the completion of this work. The Owner will not be providing any labor or materials. It shall be the responsibility of the Contractor to perform the complete structural design of the signs and to incorporate all the reasonable safety factors necessary to protect the Owner and their representatives, against liability. Contractor will submit engineered "shop drawings" to the Owner for review and approval. Signs must meet all applicable Federal, State, and local codes.

B. CONTRACT DOCUMENTS

1. Contractor acknowledges the Contract Documents are adequate to enable the Contractor to execute and complete the Work. Contractor shall complete the tasks which may be reasonably inferred as necessary of the Work in accordance with the requisite time frame, applicable laws, statutes, building codes, regulations, or as otherwise required by the Contract Documents. Apparent errors inconsistencies or omissions in the Contract Documents which the Contractor had knowledge of, or should have reasonably inferred are not an acceptable reason for Contractor Compensation. Any costs incurred correcting this Work will be the responsibility of the Contractor.

C. PROJECT SITE CONDITIONS

1. Contractor must field verify the project site conditions and indicate all pertinent information has been received before any construction activities on the site or in the fabrication shop has begun. This field verification shall include but not be limited to all structures, utilities, surface and subsurface conditions needed to complete the Contractor's entire Scope of Work. The Contractor shall provide all further investigation and testing as necessary or useful to determine the location and condition of structures, surface and subsurface conditions as part of their Scope of Work. Final sign locations are to be verified in the field with owner or owner's representative and CDOT representative, if located on CDOT maintained roads.

D. REFERENCES

1. General: Materials, design, detailing, fabrication and erection shall conform to the following:
 - 1.) AISC Specification for the design, fabrication and erection of structural steel for buildings.
 - 2.) AWS D1.1 Structural Welding Code, Steel.
 - 3.) AWS D1.2 Structural Welding code, Aluminum installation directions.

-2-

REVISION OF SECTION 622 GATEWAY MARKERS

- 4.) AA Specifications for Aluminum Structures.
- 5.) Standards and Codes: Contractor shall comply with the following codes and standards (latest adopted) as a minimum. Review and comply with any related governing statute, ordinance or code relative but not noted.
 - a. Manual for Uniform Traffic Control Devices (MUTCD)
 - b. The Americans with Disabilities Act
 - c. The Building Officials & Code Administrators International, Inc. (BOCA) National Building Codes
 - d. National Fire Protection Association (NFPA) regulations including Article 70 (National Electrical Code – NEC)
 - e. Occupational Safety and Health Act of 1970 (O.S.H.A.) standards
 - f. American Society for Testing and Materials (ASTM) standards
 - g. Underwriters Laboratories (UL)
 - h. Other State Building Codes
 - i. County codes and ordinances
 - j. City codes and ordinances

E. DESIGN CALCULATIONS

1. General: Submit complete design calculations for materials, structure and electrical (if applicable) from contract documents, covering all structural elements (including connections), weights, electrical loads, sign framing (including any required structural steel sub-framing not shown elsewhere on the Contract Drawings), sign supports and their anchorage prior to their fabrication. Design Calculations - The design calculations shall include, but not limited to:
 - 1.) Design Criteria and applicable codes
 - 2.) Reference standards
 - 3.) Materials
 - 4.) Design loads: including wind, live, dead, and any other forces.
 - 5.) Design analysis and drawings of all sign box framing and their supports and connections.
 - 6.) All required wind-loading design and associated structure calculation sheets should be numbered and indexed. The index sheets shall define the total number of sheets submitted and shall bear both the seal and signature of an experienced structural engineer holding a current Professional Engineer's license for the State of Colorado. Engineer shall be familiar with the design conditions and is responsible for the design.
2. The Contractor shall be responsible for engineering and internal construction of all signs.
3. The Contractor shall also be responsible for the design of all supports, anchoring, footings and foundations, and shall submit signed and stamped shop drawings and details to the Owner and Colorado Department of Transportation for review and approval.

F. FIELD MEASUREMENTS

1. Contractor to take any required field measurements prior to preparation of shop drawings and fabrication to insure proper fitting. Notify the Owner immediately, in writing, of any conflicts with the Contract Documents. Show recorded measurements on shop drawings.

-3-

**REVISION OF SECTION 622
GATEWAY MARKERS**

G. SUBMITTALS

1. Provide product data sheets for each type of sign specified. Include the manufacturer written instructions for maintaining and cleaning of the sign surfaces. Product data may be in the form of the following as a minimum:
2. Provide material samples from the same material to be used for the Work. The following products and components shall be submitted to show color, texture, or finish selected. Where finishes involve normal color and texture variations, include sets showing the full range of variations expected.
 - 1.) Aluminum: Samples of each finish type and color, on 6-inch (150mm) long sections of extrusions or bars. Provide at least 6-inches (150mm) square of sheet or plate.
 - 2.) Paint: Provide four (4) samples of each color and finish in squares of at least 6-inches (150mm).
 - 3.) Film: Provide four (4) samples of reflective and opaque Pressure Sensitive Film. Provide samples of each color in squares of at least 6-inches (150mm).
3. Provide shop drawings for each type of sign indicated to include: plans, documented field measurements, dimensioned layouts, detailed fabrication and mounting details, elevations and scaled sections of typical members and other components, quantities, and a sign face layout for each unique sign face. Submit for review and approval. The shop drawings shall include scaled drawings to indicate in a legible, comprehensive manner, compliance with the contract documents. Show weights, anchors, reinforcements, accessories, layout, and installation details relative to materials, dimensions of individual components, profiles, and finishes. Provide legible, original sign face layouts with and including samples of lettering, indicating kerning, spacing, height, font, etc. at an acceptable scale to indicate compliance to design performance requirements on plans. The Sign Contractor shall be responsible for all quantity take-off and shall be responsible for all sign type quantity shortages resulting from inaccurate take-off. Furnish installers of anchor bolts and other anchors with full size setting drawings, templates and installation directions.
4. Provide fabrication, delivery and installation schedules. When requested, successful contractor will submit for approval and review a schedule for the fabrication, delivery and installation of all the signs required for the project. The schedule shall be in an acceptable "Critical Path Method" (CPM) format and be coordinated with the required milestone dates and phasing established by the Contract. The schedule shall indicate as a minimum, anticipated dates for testing (if required) and prototype or mockup reviews as necessary by the Contract documents. If requested, the schedule shall be updated and submitted until the accepted date of Substantial Completion.
5. Provide spare parts list.
6. Provide written warranties to depict the understanding of the quality and performance requirements of the contract drawings.
7. Provide as-built documentation (conformed shop drawings) in digital PDF format.
8. Any fabrication or installation of materials for the Work in the shop or field which is performed before Designer's written approval is done entirely at the Contractor's own risk.

-4-

**REVISION OF SECTION 622
GATEWAY MARKERS**

Product Substitutions: Any Contractor proposed deviation from the Contract Documents or design intent shall be clearly noted on the Submittal and must be approved by the Owner, in writing, before being acceptable for incorporation into Contractor's Scope of Work. Contractor must also provide all information needed by the Owner to properly evaluate the deviation. No deviations will be an acceptable reason for any time extension. Substitutions shall be limited to those items that contain in their description the qualifying phrase "or approved equal" and approved in writing by the Designer. Comply with the requirements of the "General Conditions" for product "Substitutions" as described in other Sections of these specifications. Substitutions for materials and/or methods of construction/fabrication that have been specified herein and in the contract drawings must be accompanied by the following documentation:

- 1.) Product data including drawings, specifications, fabrication and installation procedures.
- 2.) Samples of the new product in a similar configuration and/or with similar finishes.
- 3.) Written comparison of the important qualities of the two products such as size, weight, durability, and visual appearance.
- 4.) A written list of any changes that would be required to other components due to the substitution.
- 5.) A statement indicating the substitutions effect on schedule.
- 6.) A cost comparison between the two products.
- 7.) Certification by the contractor that the proposed substitution is equal to or better in every respect to the product specified in the contract documents.
- 8.) The Contractor's request for a substitution may be considered by the Owner when the following conditions are satisfied:
 - a. Extensive revisions to the contract drawings are not required. Proposed changes are in keeping with the design intent of the contract drawings. The request is made in a timely manner. The material or product specified in the contract drawings cannot be obtained within the contract time or the material does not conform to necessary regulations, codes or other requirements.
 - b. The specified material cannot provide a warranty required by the contract documents.
 - c. Do not modify intended aesthetic effects, as judged solely by the Owner, except with the Owner's approval and only to the extent needed to comply with performance requirements.
 - d. Where modifications are proposed, submit comprehensive explanatory data to the Owner's for review.
9. All submittals must be reviewed and approved by the Owner.
10. Submittal approval does not denote acceptance of quantities, accuracy, dimensions, completeness, spelling correctness, safety issues, construction means, methods, techniques, sequences or procedures, etc. These items and similar items remain the responsibility of the Contractor.
11. Contractor shall be responsible for all Work performed and materials delivered until the Owner accepts the date of Substantial Completion. Contractor shall be responsible to restore any Work that has been damaged or destroyed no matter what the cause until the Owner accepts the date of Substantial Completion.

-5-

REVISION OF SECTION 622 GATEWAY MARKERS

H. LISTING AND LABELING

1. Listing and Labeling Agency Qualifications: A "Nationally Recognized Testing Laboratory" as defined in OSHA Regulation 1910

I. QUALITY ASSURANCE

1. General
 - 1.) The Contractor is responsible for coordination with other trades and of his sub-contractors. The Contractor shall maintain documentation of the means of coordination with other contractors to prevent foreseeable installation problems. Any conflicts shall be brought to the immediate attention of the Owner or authorized Representative of the Owner, in writing, for prompt resolution prior to fabrication.
2. Manufacturer Qualifications:
 - 1.) Provide written documents that demonstrate experience with related projects similar in cost, number of sign types and complexity of installation for the continuous five-year period or more.
3. Manufacturer Responsibilities
 - 1.) The Manufacturer shall be responsible for the quality of all materials and workmanship required for the execution of this Contract including the materials and workmanship of any firms who act as his subcontractors. Manufacturer shall be responsible for providing subcontractors with complete and up-to-date drawings, specifications, graphics schedule and other information issued.
 - 2.) Completed work shall find materials structurally sound, free from scratches, abrasions, distortions, chips, breaks, blisters, holes, splits or other disfigurement considered as imperfections for the specific material.
 - 3.) Signage shall be complete for proper installation as described in the drawings.
 - 4.) Finish work shall be firm, well anchored, in true alignment, properly squared, with smooth clean uniform appearance, without holes, cracks, discoloration, distortion, stains, or marks.
 - 5.) Construct all work to eliminate burrs, dents, cutting edges, and sharp corners.
 - 6.) Finish welds on exposed surfaces to be imperceptible in the finished work.
 - 7.) Except as indicated or directed otherwise, finish all surfaces smooth.
 - 8.) Surfaces, which are intended to be flat, shall be without dents, bulges, oil canning, gaps, or other physical deformities.
 - 9.) Surfaces, which are intended to be curved, shall be smoothly free-flowing to required shapes.
 - 10.) Except where approved otherwise by Owner, conceal all fasteners.
 - 11.) Make access panels tight-fitting, light proof, and flush with adjacent surfaces.
 - 12.) Carefully follow manufacturer's recommended fabricating procedures regarding expansion or contraction, fastening, and restraining of acrylic plastic.
 - 13.) Exercise care to ensure that painted, polished, and plated surfaces are unblemished in the finished work.
 - 14.) Isolate dissimilar materials. Exercise particular care to isolate nonferrous metals from ferrous metals.

-6-

**REVISION OF SECTION 622
GATEWAY MARKERS**

- 15.) Ease all exposed metal edges.
- 16.) Provide miscellaneous metal items required for completion of the work even though not shown or specified.
- 17.) Shop painting to be uniform on and around all sign elements to ensure sign elements will withstand all weather conditions.
- 18.) Mounting: Mounting plates shall be in conformance with manufacturer's written recommendations.
- 19.) Uniformity of Manufacturer: For each sign type and graphic process indicated furnish products of a single manufacturer.

J. INSTALLER QUALIFICATIONS

1. Engage an experienced Installer who is an authorized representative of the sign manufacturer or his own forces. Provide evidence that the Installer has completed installation of signs similar in material, design, costs and extent to those indicated for the Project and has resulted in construction with a record of successful in-service performance. Evidence shall describe a continuous three-year period or more.

K. WARRANTY

1. Manufacturer shall provide a standard warranty on materials and workmanship for a period of one (1) year. This shall begin upon acceptance of the date of Substantial Completion of the project by the Owner. Provide other component product warranties and guarantees as noted at closeout Warranty shall cover, but not be limited to:
 - 1.) Color fastness against fading, chalking, cracking, wrinkling or bubbling.
 - 2.) Assembly, construction, and operation.
 - 3.) Any part found to be defective due to faulty materials and/or workmanship will be replaced. Manufacturer shall assume all costs involved with the replacement. Manufacturer shall assume full responsibility for the removal and replacement of all other finishes required affecting such repair and/or replacement.

L. LOGOS

- 1.) The manufacturer's logo may not be located on any sign surface visible to the public.

M. PROJECT CONDITIONS

- 1.) The Contractor is responsible for shortages. Contractor shall be responsible for all related means and methods for performance of the Work. Refer to sign message schedules and sign location plans for quantities, positions, orientation and relation to other elements of the construction.

N. FIELD MEASUREMENTS

- 1.) The Contractor shall make any required field measurements prior to preparation of shop drawings and fabrication to ensure proper fitting. Show recorded measurements on shop drawings. Coordinate and submit a fabrication schedule coordinated to construction schedule to avoid undue delay.

O. DELIVERY

1. General

-7-

REVISION OF SECTION 622 GATEWAY MARKERS

- 1.) Delivery: Provide protective covering or crating as recommended by the manufacturer to protect the sign surfaces and components against damage during transportation and delivery.
 - a. Coordinate delivery time and location with Owner's Authorized Representative or Construction Manager.
 - b. Coordinate delivery time so signs can be installed within 24 hours (3 working days) of receipt at the project site, unless revised by direction of Construction Manager or authorized Owner representative prior, in writing.
- 2.) Handle signs carefully to prevent breakage, surface abrasion, denting, soiling, and other defects. Comply with the manufacturer written handling instructions for unloading components that are subject to damage.
 - a. Inspect sign components for damage on delivery.
 - b. Do not install damaged sign components.
 - c. Repair minor damage to signs, provided the finished repair is equal in all respects to the original work and is approved by Owner, in writing. Otherwise, remove and replace damaged sign and components as directed, at no additional costs to contract.

Subsection 622.02 shall include the following:

MATERIALS

A. MATERIALS

1. Aluminum Sheet or Plate
 - 1.) Alloy and temper recommended by the aluminum producer and finisher for the type of use and finish indicated, and with at least the strength and durability properties specified in ASTM B 209 (ASTM B 209M) for 5005-H15 alloy.
2. Aluminum Extrusions
 - 1.) Alloy and temper recommended by the aluminum producer and finisher for the type of use and finish indicated, and with at least the strength and durability properties specified in ASTM B 221 (ASTM B 221M) for 6063-T5 alloy.
3. Structural Steel: Provide the following:
 - 1.) Hot-rolled Structural-Steel Shapes: Comply with ASTM A6, A36 (ASTM A 36M) or ASTM A529 (ASTM A 529M).
 - 2.) Steel Tubing or Pipe: Comply with ASTM A 500, Grade B or ASTM A 501.

-8-

REVISION OF SECTION 622 GATEWAY MARKERS

- 3.) Steel Members Fabricated from Plate or Bar Stock: Comply with ASTM A 529 (ASTM A 529M) or ASTM A 572 (ASTM A 572M) for 42,000-psi (290-Mpa) minimum yield strength.
- 4.) Bolts for Structural Framing: Comply with ASTM A 307 or ASTM A 325 (ASTM A 325M) as necessary for design loads and connection details.
- 5.) For structural steel exposed to view on completion, provide materials selected for surface flatness, smoothness, and freedom from surface blemishes. Do not use materials whose surfaces exhibit pitting, seam marks, roller marks, rolled trade names, or roughness.
- 6.) Provide material hot-dip galvanized after fabrication with a minimum of 2.0 oz. of zinc/sq. ft. (610 g of zinc/sq. m) of surface area conforming to ASTM A 123).
4. Silicone Sealant: Provide high performance, low modulus, one-component, moisture curing, polyurethane sealant.
5. Stainless Steel: 14 gauge (.078 minimum nominal thickness), satin number 6 finish, and type 316 in sheet, strips or plate.
6. Double coated tape: Use 3M Scotch brand, Very High Bond (VHB) pressure sensitive tape, or approved equal. Thickness to be determined by the texture of the substrate (0.045 inch minimum, 25 pounds per square inch (psi) adhesion characteristics. Other acceptable suppliers include JV Converting Company (JVCC), Curbell Plastics, and Electro Tape Specialties, Inc.

B. COMPONENTS

1. Internal Structural Framing
 - 1.) Fabricate from standard internal structural aluminum or steel framing extrusions. Fabricate to profile indicated on plans and details using structural angles, channels, plates, and similar shapes. Provide welded construction using mitered joints. Cut, drill, and tap units to receive hardware, bolts, and similar items.
2. Boxes and Frames
 - 1.) Fabricate using standard external frame members and extrusions designed to withstand design wind pressure and for direct attachment of sign message panels. Fabricate to profile indicated on plans and details. Provide welded construction using mitered joints. Cut, drill, and tap units to receive hardware, bolts, and similar items. Comply with the following:
 - a. Frame Material: Extruded aluminum.
 - b. Corner Condition: Radiuses or eased corners.
 - c. Provide continuous piano-type stainless hinges where indicated on details.
 - d. Provide mechanisms with locking or pneumatic arm door and support assembly for maintenance access as detailed or required for maintenance access.
 - e. Provide watertight, weatherproofed construction where installation is exposed to weather.

C. ACCESSORIES

1. Fasteners
 - 1.) General

-9-

REVISION OF SECTION 622 GATEWAY MARKERS

- a. Unless otherwise indicated, use concealed fasteners fabricated from metals that are non-corrosive to either the sign material or mounting surface. All aluminum bolts, nuts and lockwashers shall meet the following aluminum association requirements.
 - b. Bolts: Alloy 2024-T4 or 6061-T6 ASTM B -211. Bolts shall have an anodic coating of at least 0.0002" thick and chromate sealed. Nuts: Alloy 6262-T9 or 6061-T6.
 - c. Lock Washers: 18-8, spring action, Alloy 7075-T6 or ASTM B-221.
 - d. Nylon washers: Provide nylon washers as required and detailed on plans for separation of metals.
 - e. Screws: Flat head, Philips-head type, countersunk, where exposed to view, self-drilling, #2, stainless types ASME B18.6.3. Machine screws where concealed may be steel.
- 2.) Anchors and Inserts
- a. Use nonferrous metal or hot dip galvanized anchors and inserts for exterior installations and as required for corrosion resistance. Use stainless steel type drop in anchor, 1/4" or 3/8" diameter, with embedment depths of 1" or 1 9/16" respectively. Where required or detailed provide 1/2" or 3/4" anchor bolt, washer and hex-head nuts for support bases.

D. FABRICATION

1. General

- 1.) The completed sign assembly shall consist of message panels supported on the manufacturer's standard, structural framing system. Fabrication shall utilize standard extruded shapes and forms wherever possible. Comply with requirements indicated for materials, thickness, finishes, colors, designs, shapes, sizes, and details of construction.
- 2.) Allow for thermal movement resulting from a maximum ambient temperature change (range) of 150-degree F (Fahrenheit). Design, fabricate, and install sign assembly to prevent buckling, opening up of joints, and overstressing of welds and fastenings. Base design on actual surface temperatures of metals due to both external and internal heat gains.
- 3.) Welded Connections: Comply with AWS standards for recommended practices in shop welding. Provide welds behind finished surfaces without distortion or discoloration of exposed side. Clean and grind smooth all exposed welded surfaces of welding flux and dress on all exposed and contact surfaces.
- 4.) Mill joints to a tight, hairline fit.
- 5.) Pre-assemble signs in the shop to the greatest extent possible to minimize field assembly. Disassemble signs only as necessary for shipping and handling limitations. Clearly mark units for re-assembly and installation, in a location not exposed to view after final assembly.
- 6.) Conceal fasteners if possible; otherwise, locate fasteners where they will be inconspicuous. Refrain from use of pop-riveting methods.
- 7.) Baseplate: Provide ground mount post and panel signs with integral base consisting of structural channels, angles, plates, or other fittings of sizes recommended by approved design and manufacturer. Pre-drill slotted holes in members as required for anchor bolt connection.

-10-

**REVISION OF SECTION 622
GATEWAY MARKERS**

- 8.) Provide anchor bolts of size required for connecting posts to support base. Coordinate selection of anchor bolts with structural engineer to insure adequate embedment depth without damage to post tensioned concrete deck.
- 9.) No seams in sign faces will be accepted unless approved in writing by engineer prior to fabrication. Provide seam layouts on shop drawings as required.
2. Coatings and Paints
 - 1.) All materials comprising a sign shall be finished with a coating system compatible with that material. Appropriate preparatory work/priming shall be done in strict accordance with finisher's specification unless specified otherwise. All exposed surfaces, edges and connections shall receive this same finish system.
 - 2.) Colors and degree of gloss for all surface paint/finish applications shall be consistent throughout, regardless of substrate.
 - 3.) Coating to be used on all surfaces shall be Matthews Acrylic Polyurethane manufactured by Matthews Paint Co., 400 S. Mercantile Court, Wheeling, IL 60090 or other approved acrylic polyurethane system that is ultraviolet inhibited. Each color must be proven to be equal in color and gloss retention to corresponding colors of Matthews Acrylic Polyurethane by United States Testing Company, Inc., Chemical Service Div., 1415 Park Ave., Hoboken, New Jersey 07030. The laboratory test shall consist of 1,000 hours in a QUV accelerated weathering tester maintained in accordance with ASTM G-53. The tester shall be programmed to alternate 40-degree C (Celsius) water condensation 4-hour periods with 60-degree C. ultraviolet 4-hour periods. Gloss measurements are to be made with a Photovolt meter and color measurements with a Hunterlab color difference meter (ASTM D-523 and D-2244, respectively). Any proposed alternate coating system shall include comparative results from independent testing laboratories as indicated above. The dried film shall conform to ANSI 266-1 with regards to heavy metals and the surfaces shall be prepared, primed and finish coated in accordance with coating manufacturer's instruction. Other acceptable suppliers include AkzoNobel, Precision Coatings, and Sherwin-Williams. Do not mix products from different manufacturers.

Subsection 622.05(a) in hereby added and shall include the following:

CONSTRUCTION REQUIREMENTS

A. PREPARATION

1. General: Locate sign units and accessories where indicated, using mounting methods of type described and complying with manufacturer's written instructions.
2. Maintain updated "as-built" drawings and related information during the course of the project.
3. Layout locations for each sign prior to installation and coordinate with any other work within the area as required. Coordinate with Construction Manager or Authorized Owner Representative as needed to avoid installation conflicts with other projects.
4. Identify company vehicles with logo. Identify workers with uniforms, badges or other approved identification.

-11-
REVISION OF SECTION 622
GATEWAY MARKERS

5. Area of installation must be inaccessible to public during installation. Rope off area as necessary.

B. INSTALLATION

1. Install signs level, plumb, and at the height indicated, with surfaces free from distortion or other defects in appearance.
2. Patch and repair existing surfaces damaged by installation and demolition.

C. CLEANING AND PROTECTION

1. At completion of installation, clean soiled surfaces of sign units according to manufacturer's written instructions.
2. Protect installed sign units from damage until acceptance by Owner.
3. Keep areas of work clean, neat and orderly at all times. Clean surfaces, inside and out. Use approved cleaners if necessary to remove dirt.
4. Upon completion of work and before final acceptance, remove tools, surplus materials, apparatus, and debris from the site. Leave the site in a neat, clean condition, acceptable to the Engineer. Wash, clean, and leave paved areas without stains.
5. Contractor shall repair and/or replace all damaged surfaces with like materials. All new surfaces adjacent to and within 2 meters of sign, including the entire excavated area shall be returned to its original condition and quality, including, materials, finish and grading that was present prior to excavation.
6. Contractor shall preserve and protect all existing trees, shrubs, plantings, street signs, parking meters, fences, retaining walls, buildings, entry ways, surface materials, property survey monuments, structures and utility line appurtenances. Any removal and replacements or protection required shall be considered part of the contractor's responsibility and shall be incidental to the Contract. Any damage to existing features within and adjacent to the work area, created by failure of the contractor to provide adequate protection from its construction operations, shall be repaired or replaced to the satisfaction of the respective owner at the contractor's expense.
7. Contractor shall preserve and protect all permanent survey markers, including private property corner markers, section or quarter section monuments, and permanent benchmarks. Survey markers necessarily moved as a result of construction, or otherwise damaged by the contractor shall be replaced at the contractor's expense by a land surveyor registered in the project state.

D. CLOSEOUT

1. Upon completion of work, a final inspection for acceptance will be performed by the Owner.
2. Provide all closeout documentation as required and related to this project and contract. Include but not limited to:
3. Maintenance and Operation manuals, warranties, product listings, suppliers, as-built documents, and other related work. Provide three (3) CDs of Maintenance and Operation manuals in pdf format.

-12-
REVISION OF SECTION 622
GATEWAY MARKERS

4. Provide three (3) CDs with digital pdf files containing “Conformed” sets of products and shop drawings of all materials, equipment and related signage for this Section. Include photographs of installed signs.

Subsection 622.27 shall include the following:

METHOD OF MEASUREMENT

The quantity of gateway markers measured will be the actual number of gateway markers installed and accepted.

BASIS OF PAYMENT

Subsection 622.28 shall include the following:

Payment will be made under:

Pay Item	Pay Unit
Gateway Marker	Each

Payment for gateway markers shall include shop drawing submittals, structure excavation, bedding, foundation concrete, reinforcing, anchors, gateway marker materials, and all other incidental labor, equipment and materials required for an in-place completed installation.

**REVISION OF SECTION 625
CONSTRUCTION SURVEYING**

Section 625 of the Standard Specifications is hereby revised for this project as follows:

Subsection 625.05 shall include the following:

Survey staking shall utilize wooden survey stakes or grade stakes. The Contractor shall not mark stations or other construction information on existing trees to remain, poles or rock faces.

-1-
REVISION OF SECTION 630
CONSTRUCTION ZONE TRAFFIC CONTROL

Section 630 of the Standard Specifications is hereby revised for this project as follows:

Subsection 630.01 shall include the following:

The key elements of the Contractor's method of handling traffic (MHT) are outlined in subsection 630.10.

The components of the TCP for this project are included in the following:

- (1) Subsection 104.04 and Section 630 of the specifications.
- (2) Standard Plan S-630-1, Traffic Controls for Highway Construction, cases on appropriate numbers, check latest CDOT plans for cases.

Special Traffic Control Plan requirements for this project are as follows:

The Contractor and the subcontractors shall equip their construction vehicles with flashing amber lights or as directed by the Engineer.

Employee vehicle parking is prohibited where it conflicts with safety, access or flow of traffic. No arrangements have been made by the Town for staging areas. The Contractor is responsible for obtaining, coordinating and maintaining acceptable parking and staging areas for the duration of the construction activities. Staging areas shall be returned to pre-project conditions following construction. This is considered incidental to the work and payment is included in the Mobilization work item.

The Contractor shall submit to the Engineer a method of handling vehicular traffic for approval at least one week prior to each construction phase, prior to changes in traffic control, and prior to any construction. The Contractor shall submit an MHT specifically for striping operations for approval by the Engineer.

Full closures of James Canyon Drive/Overland Road/Mill Street/Main Street are not allowed. At least one lane shall be open all times, with a minimum width of 10', with traffic controlled via flaggers.

Traffic shall utilize paved or gravel road surfaces at all times.

Delays to road users shall not exceed 15 minutes.

The Contractor shall furnish hand-held FM radios for the Engineer, if requested, so as to provide adequate communications during construction.

The Contractor is advised other construction projects may be ongoing in James Canyon and west of Jamestown. The Contractor shall coordinate with other contractors doing work in the area to facilitate vehicle movement and traffic control.

All costs incidental to the foregoing requirements shall be included in the original contract prices for the project.

-2-

**REVISION OF SECTION 630
CONSTRUCTION ZONE TRAFFIC CONTROL**

Subsection 630.09 shall be revised for this project to include the following:

Construction zone traffic control shall be in conformance with the latest edition of Manual of Uniform Traffic Control Devices (MUTCD), the plans and CDOT Standard S-630-1.

Additional signs may be required by the MUTCD or the Project Engineer.

The key elements of the Contractor's method of handling traffic (MHT) are outlined in Subsection 630.09.

Subsection 630.13 shall be revised for this project to include the following:

All flagging personnel used on the project shall be certified for traffic control operations by the Colorado Department of Transportation or the American Traffic Safety Services Association.

Subsection 630.15 shall include the following:

Payment will be made under:

Pay Item	Unit
Flagging	Hour
Traffic Control Inspection	Day
Traffic Control Management	Day
Construction Traffic Sign (Panel Size A)	Each
Portable Message Sign Panel	Each
Drum Channelizing Device	Each
Traffic Cone	Each

Subsection 630.15, fifth paragraph, shall be deleted and replaced with the following:

When Traffic Control Supervisor and Traffic Control Inspection are not pay items, traffic control management will not be paid for separately, but shall be included in the work for which it is required.

-1-
**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 7 calendar days 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.

-2-

**REVISION OF SECTION 630
PORTABLE MESSAGE SIGN PANEL**

Subsection 630.15 shall include the following:

Portable message sign panels will be measured by the maximum number of approved units in use on the project at any one time.

Subsection 630.16 shall include the following:

Pay Item	Pay Unit
Portable Message Sign Panel	Each

SUBMITTAL SECTION

CR-94 in Jamestown Pavement Repairs

BID # James.034

ITEM NO.	ITEM DESCRIPTION	UNIT	QTY.	UNIT COST	TOTAL COST
202	Removal of Tree	Each	3		
202	Removal of Pipe	LF	47		
202	Removal of Wall	LF	35		
202	Removal of Asphalt Mat	SY	15,618		
202	Removal of Ground Sign	Each	1		
202	Removal of Sign Panel	Each	2		
203	Unclassified Excavation (Complete in Place)	CY	9		
203	Rock Excavation	CY	2		
203	Laborer	Hour	40		
203	Proof Rolling	Hour	12		
203	Blading	Hour	8		
206	Structure Excavation	CY	15		
207	Topsoil	CY	140		
208	Erosion Log (12 Inch)	LF	7,270		
208	Aggregate Bag	LF	547		
208	Concrete Washout Structure	Each	1		
208	Vehicle Tracking Pad	Each	1		
208	Removal and Disposal of Sediment (Labor)	Hour	6		
208	Removal and Disposal of Sediment (Equipment)	Hour	3		
208	Sweeping (Sediment Removal)	Hour	9		
208	Erosion Control Supervisor	Day	12		
210	Reset Ground Sign	Each	1		
210	Reset Valve	Each	5		
210	Reset Sign Panel	Each	1		
212	Seeding (Native)	ACRE	0.24		
212	Soil Conditioning	ACRE	0.24		
213	Mulching (Hydraulic)	ACRE	0.24		
213	Boulder	Ton	349		
213	Grouted Boulder	Ton	20		
240	Wildlife Biologist	Hour	8		
304	Aggregate Base Course (Class 6)	Ton	418		
306	Reconditioning	SY	303		
403	Hot Mix Asphalt (Patching)(Asphalt)	Ton	20		
403	Hot Mix Asphalt (Grading S)(75)(PG 58-28)	Ton	1,844		
403	Hot Mix Asphalt (Grading SX)(75)(PG 58-28)	Ton	1,722		
420	Geotextile (Drainage) (Class 1)	SY	15		
503	Drilled Caisson (18 Inch)	LF	12		
506	Riprap (6 inch)	CY	45		
506	Riprap (12 inch)	CY	9.9		
506	Soil Riprap (18 inch)	CY	14		
507	Concrete Slope and Ditch Paving	CY	4.5		
601	Concrete Class B	CY	5.2		
603	18 Inch Corrugated Steel Pipe	LF	45		
603	36 Inch Reinforced Concrete Pipe	LF	34		
603	24 Inch Equivalent Arch Steel End Section	Each	2		

604	Inlet Type D (5 Foot)	Each	1		
607	Fence (Plastic)	LF	406		
609	Gutter Type 2 (7.5 Foot)	LF	23		
602	Delineator (Type III)	Each	2		
614	Sign Panel (Class I)	SF	30		
614	Steel Sign Support (2x2 Inch Tubing)	LF	27		
614	Radar Speed Display Sign	Each	2		
614	Traffic Signal Pedestal Pole Steel	Each	2		
620	Field Office (Class 2)	Each	1		
620	Sanitary Facility	Each	1		
622	Gateway Marker	Each	2		
625	Construction Surveying	L S	1		
626	Mobilization	L S	1		
627	Epoxy Pavement Marking	GAL	82		
627	Pavement Marking Paint (Waterborne)	Gal	20		
627	Thermoplastic Pavement Marking (Word-Symbol)	SF	30		
627	Thermoplastic Pavement Marking (Xwalk-Stopline)	SF	90		
630	Flagging	Hour	1,700		
630	Traffic Control Inspection	Day	18		
630	Traffic Control Management	Day	45		
630	Construction Traffic Sign (Panel Size A)	Each	20		
630	Portable Message Sign Panel	Each	2		
630	Drum Channelizing Device	Each	100		
630	Traffic Cone	Each	35		

SIGNATURE PAGE

CR-94 in Jamestown Pavement Repairs
BID # James.034

Failure to complete, sign and return this signature page with your proposal may be cause for rejection.

Contact Information	Response
Company Name	
Name and Title of Primary Contact Person	
Company Address	
Phone Number	
Email Address	
Company Website	

By signing below I certify that:

I am authorized to bid on my company's behalf.

I am not currently an employee of Jamestown.

None of my employees or agents is currently an employee of Jamestown.

I am not related to any Jamestown employee or Elected Official.

I am not a Public Employees' Retirement Association (PERA) retiree.

**Signature of Person Authorized to Bid on
Company's Behalf**

Date

Note: If you cannot certify the above statements, please explain in the space provided below.