

COLORADO  
DEPARTMENT OF TRANSPORTATION  
SPECIAL PROVISIONS  
US50 OVERLAY WEST OF TEXAS CREEK

The 2019 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

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### NOTICE TO BIDDERS

The proposal guaranty shall be a certified check, cashier's check, or bid bond in the amount of 5 percent of the Contractor's total bid.

Pursuant to subsections 102.04 and 102.05, it is recommended that bidders on this project review the work site and plan details with an authorized Department representative. Prospective bidders shall contact one of the following listed authorized Department representatives at least 12 hours in advance of the time they wish to go over the project.

Project Engineer - Steve Goure  
1480 Quail Lake Loop, Suite A  
Colorado Springs, CO 80906  
Office Phone: (719) 492-1431

Resident Engineer - Dave Watt  
Office Phone: (719) 227-3202

Program Engineer - Shane Ferguson  
Office Phone: (719) 227-3201

The above referenced individuals are the only representatives of the Department with authority to provide any information, clarification, or interpretation regarding the plans, specifications, and any other contract documents or requirements.

Questions received from bidders along with CDOT responses will be posted on the CDOT web site listed below as they become available.

<https://www.codot.gov/business/bidding/future-bidding-opportunities>

If the bidder has a question or requests clarification that involves the bidder's innovative or proprietary means and methods, phasing, scheduling, or other aspects of construction of the project, the Project Engineer will direct the bidder to contact the Resident Engineer directly to address the question or clarification. The Resident Engineer will keep the bidder's innovation confidential and will not share this information with other bidders.

The Resident Engineer will determine whether questions are innovative or proprietary in nature. If the Resident Engineer determines that a question does not warrant confidentiality, the bidder may withdraw the question. If the bidder withdraws the question, the Resident Engineer will not answer the question and the question will not be documented on the CDOT web site. If the bidder does not withdraw the question, the question will be answered, and both the question and CDOT answer will be posted on the web site. If the Resident Engineer agrees that a question warrants confidentiality, the Resident Engineer will answer the question, and keep both question and answer confidential. CDOT will keep a record of both question and answer in their confidential file.

All questions shall be directed to the CDOT contacts listed above no later than 7:00 A.M. Monday of the week of bid opening. Final questions and answers will be posted no later than Tuesday morning of bid opening week.

Questions and answers shall be used for reference only and shall not be considered part of the Contract.

END OF SPECIFICATION

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 April 1, 2020.
- (b) The latest date shall be April 30, 2020.
- (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 Region Transportation Director's approval. A different date may be authorized in writing by the Chief Engineer in the "Notice to Proceed."

The Contractor shall complete all work within 110 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.

END OF SPECIFICATION

REVISION OF SECTION 102  
PROJECT PLANS AND OTHER DATA

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

Subsection 102.05 shall include the following:

There are no 3D or electronic files that will be used with this project.

After the proposals have been opened, the low responsible bidder may obtain an electronic sets of plans and special provisions from the CDOT Business Management System (B2Gnow) website here: <https://cdot.dbesystem.com/>. Also, if they are available for the project, the low responsible bidder may also obtain cross sections, major structure plan sheets, and computer output data.

END OF SPECIFICATION

REVISION OF SECTION 102  
ASBESTOS AND LEAD TESTING REPORT

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

102.05 shall include the following:

The following information is available at the RE's office located at 1480 Quail Lake Loop, Colorado Springs, Colorado, 80906:

1. Asbestos and Lead Testing Report from Reservoirs Environmental, Inc.
2. Memorandum of Understanding Between the BLM, the CDOT, the FHWA and the USDA, Forest Service Rocky Mountain Region

END OF SPECIFICATION

REVISION OF SECTION 107  
STORMWATER CONSTRUCTION PERMIT

Section 107 of the Standard Specifications is hereby revised for this project as follows:

This project is anticipated to require a disturbance of less than one acre. Anticipated areas of disturbance include paving of access points and pullouts (0.45 acre), additional guardrail end section footprint (0.06 acre), staging areas (0.25 acre), and field office location (0.2 acre).

If a disturbance area of less than one acre can be achieved and maintained throughout the project, a CDPS-SCP will not be required.

In the event that the project requires a disturbance area of one acre or more - an alternate Storm Water Management Plan shall be used, as provided by the Engineer.

Subsection 107.25(c) shall include the following:

In the event that the project requires a disturbance area of one acre or more - the Colorado Discharge Permit System Stormwater Construction Permit (CDPS-SCP) shall be obtained by the Contractor.

END OF SPECIFICATION



REVISION OF SECTION 202  
CLEAN CULVERT

Section 202 of the Standard Specifications is hereby revised for this project as follows:

Subsection 202.01 shall include the following:

This work consists of cleaning, removing and disposing of sediment and other debris in the storm drain inlets and culverts at locations shown on the plans.

Subsection 202.10 shall include the following:

Prior to cleaning operations, the Contractor shall remove and store all grates and other appurtenances from the inlet or culvert pipe.

Culvert cleaning shall be performed using hand methods or other non-destructive methods to vegetation, as approved by the engineer. The amount of culvert to be cleaned is the first three feet measured from the up-stream end of the culvert. Removed material shall be disposed on site when approved by the engineer or at a suitable facility off the project site in accordance with all applicable regulations and guidelines. Remaining material left in the first three feet of the structure after cleaning shall be removed at the Contractor's expense.

Damaged or missing bolts for the grates and other appurtenances shall be replaced by the Contractor. Upon completion of the cleaning, existing and new bolts required for the grates and other appurtenances shall be treated with anti-seize compound. The grate and appurtenances shall then be re-installed using these bolts.

If debris accumulates in clean structures during construction, they shall be re-cleaned at the Contractor's expense.

Subsection 202.11 shall include the following:

Clean Culvert will be measured by the actual number of units of existing culvert pipes and inlets which are cleaned and accepted. Cleaning of drainage pipe between inlets, barrier drain holes and flaps, when required, will not be paid for measured and paid for separately, but included in the work.

Small Culverts are defined as those that are smaller than 36" diameter.

Large Culverts are defined as concrete boxes, and those that are 36" or larger diameter.

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REVISION OF SECTION 202  
CLEAN CULVERT

Subsection 202.12 shall include the following:

Payment will be made under:

<b>Pay Item</b>	<b>Pay Unit</b>
Clean Culvert (Large)	Each
Clean Culvert (Small)	Each

Payment will be full compensation for all work, materials and equipment required to clean, maintain, remove and dispose of sediment and other debris from the storm drain inlets and culverts prior to construction.

Anti-seize compound and new bolts required will not be measured and paid for separately, but shall be included in the work.

The removal and disposal of debris and water will not be measured and paid for separately, but shall be included in the work.

END OF SPECIFICATION

REVISION OF SECTION 202  
REMOVAL OF GUARDRAIL

Section 202 of the Standard Specifications is hereby revised for this project as follows:

Subsection 202.02 shall include the following:

Existing Type 3 Guardrail, end anchorages and Type 7 Precast Guardrail sections shall be removed at locations as designated on the plans.

Contractor shall conduct the following additional work included in the cost of the Removal of Guardrail Type 3:

1. Post holes shall be filled with a sand and pea gravel mix or a 10:1 concrete to sand mix or a method as approved by the Engineer in order to eliminate voids in the embankment.
2. Use a skid-steer, or other small equipment as approved by the Engineer which will not disturb the vegetated area beyond the back of guardrail, and native material to roughly level the two feet behind edge of asphalt.
3. Where grading allows, run a loaded Front Loader, or similar equipment as approved by the Engineer, over the approximately two feet behind edge of asphalt, including the removed post hole locations, to create a more level surface for installation.

The Contractor shall take possession of all guardrail not salvaged to CDOT in accordance with Section 202.03. This material shall become the property of the Contractor and shall be disposed of at his expense outside the project limits.

Subsection 202.03 shall include the following:

Three thousand (3000) feet of the best condition rustic (i.e., COR-TEN) weathering steel w-beam rail, along with 480 of the steel posts shall be delivered to:

Cotopaxi Patrol 60 Maintenance Yard  
110 County Road 51  
Cotopaxi, CO 81223

Subsection 202.11 shall include the following:

Removal of Guardrail Type 3 Linear Foot will be measured by the actual full linear length of metal w-beam rail (i.e., including end anchorages) removed. Dimensions will be measured to the ends and include the length of end anchorages, transitions, and/or to the splice point where existing w-beam rail remains in place.

Removal of End Anchorage Each will be used to pay for removal of all extra, ancillary and additional parts of the end anchorage or 3G/3H transitions that are called out for removal in the plans. Removal of End Anchorage - Each includes, but is not limited to, removal of all ancillary hardware, additional posts, in ground concrete anchors, etc. Note that not all 3G/3H transitions are to be removed. Those remaining in place will not be paid.

END OF SPECIFICATION

REVISION OF SECTION 202  
REMOVAL OF PAVEMENT MARKING  
(ASPHALT OR CEMENT GROOVING)

Section 202 of the Standard Specifications is hereby revised for this project as follows:

Subsection 202.05 shall include the following:

- (c) *Removal of Pavement Marking (Asphalt or Concrete Grooving)*. Pavement marking shall be removed by asphalt grooving or concrete grooving to provide a recessed channel in the pavement surface for the placement of permanent pavement markings at locations as shown on the plans. The channel shall have a transverse and longitudinally uniform depth of 60 mils. The dimensions of the channel shall match the length and width of the specified pavement marking, within a tolerance of 0.25 inches. Where broken line patterns are required, the grooved channel length shall not be continuous, but shall consist of individual grooved segments matching the required pavement marking pattern.

Asphalt, concrete, and pavement marking debris generated by the grooving process shall be collected and removed from the roadway and disposed of lawfully. Displacement of grooving debris to the roadway shoulder shall not be permitted. Collection and removal of grooving debris shall not be measured and paid for separately, but shall be included in the cost of the work.

Subsection 202.12 shall include the following:

Payment will be made under:

<b>Pay Item</b>	<b>Pay Unit</b>
Removal of Pavement Marking (Asphalt Grooving)	Square Foot
Removal of Pavement Marking (Concrete Grooving)	Square Foot

END OF SPECIFICATION

REVISION OF SECTION 202  
REMOVAL OF ASPHALT MAT (PLANING)

Section 202 of the Standard Specifications is hereby revised for this project as follows:

Delete subsection 202.09, and replace it with the following:

**202.09 Removal of Asphalt Mat (Planing).** Prior to beginning planing operations, the Contractor shall submit a planing plan and a Quality Control Plan (QCP) for approval by the Engineer. The planing plan shall include at a minimum:

- (1) The number, types and sizes of planers to be used.
- (2) The width and location of each planing pass.
- (3) The number and types of brooms to be used and their locations with respect to the planers.
- (4) The proposed method for planing and wedging around existing structures such as manholes, valve boxes, and inlets.
- (5) The longitudinal and transverse typical sections for tie-ins at the end of the day.
- (6) If requested by the Engineer, a plan sheet showing the milling passes.

The QCP shall include as a minimum:

- (1) The schedule for replacing the cutting teeth.
- (2) The daily preventive maintenance schedule and checklist.
- (3) Proposed use of automatic grade controls.
- (4) The surface testing schedule for smoothness.
- (5) The process for filling distressed areas.
- (6) The schedule for testing macrotexture of the milled surface.
- (7) Corrective procedures if the milled surface does not meet the minimum macrotexture specification.
- (8) Corrective procedures if the milled surface does not meet the minimum transverse or longitudinal surface finish when measured with a 10-foot straightedge.

The Contractor shall not start the planing operation until the hot mix asphalt (HMA) mix design has been approved and a Form 43 has been signed by the Engineer.

The existing pavement shall be milled to the cross-slope as shown on the plans, and shall have a surface finish that does not vary longitudinally or transversely more than 3/8 inch from a 10-foot straightedge. A 10-foot straightedge shall be supplied by the Contractor.

All milled surfaces shall be broomed with a pick-up broom, unless otherwise specified, before being opened to traffic. A sufficient number of brooms shall be used immediately after planing to remove all milled material remaining in the roadway.

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REVISION OF SECTION 202  
REMOVAL OF ASPHALT MAT (PLANING)

If the Contractor fails to adequately clean the roadway, work shall cease until the Engineer has approved the Contractor's revised written proposal to adequately clean the roadway.

The milled surface shall have a macrotexture equal to or less than 0.170 inches for single-lift overlays and 0.215 inches for multiple-lift overlays as tested in accordance with CP 77. Milled surfaces that do not meet these criteria shall require corrective action in accordance with the QCP. The Contractor shall be responsible for testing the macrotexture of the milled surface at the location directed by the Engineer in accordance with CP 77 at a stratified random frequency of one test per 10,000 square yards or a minimum of once per work day.

At the completion of each day's work, longitudinal vertical edges greater than 1 inch shall be tapered. No transverse vertical edges will be allowed. Longitudinal milled surface tie-ins to existing pavement shall be tapered to not less than a 3:1 slope, transverse milled surface tie-ins to existing pavement shall be tapered to not less than a 50:1 slope. Transverse tapered joints may be tapered with the planing machine, a temporary asphalt ramp, or other methods approved by the Engineer. No longitudinal joint between the milled and existing surfaces shall fall between 1 to 5 feet of any lane line.

If the transverse joint is tapered with a temporary asphalt ramp, the milled surface at the joint shall be constructed as a butt joint the full depth of the lift of asphalt to be placed on the milled surface. The Contractor shall be responsible for maintaining this asphalt ramp until all corresponding HMA is placed. All work associated with this joint will not be paid for separately, but shall be included in the cost of planing.

If the transverse joint is tapered with a planing machine, a butt joint shall be cut into the taper the full depth of the lift of asphalt to be placed on the milled surface prior to commencement of resurfacing. All work associated with this joint will not be paid for separately, but shall be included in the cost of planing.

Other approved transverse joint tapers shall be maintained at the expense of the Contractor, and at a minimum shall incorporate a butt joint the full depth of the lift of asphalt to be placed on the milled surface prior to commencement of resurfacing.

Distressed or irregular areas identified in the planed surface by the Engineer shall be patched.

The roadway shall be left in a safe and usable condition at the end of each work day. The Contractor shall take appropriate measures to ensure that the milled surface does not trap or hold water. All required pavement markings removed by the planing shall be restored before the roadway is opened to traffic.

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REVISION OF SECTION 202  
REMOVAL OF ASPHALT MAT (PLANING)

All milled surfaces to be overlaid with HMA shall be left open to traffic under the milled surface for at least 2 full working days unless approved by the Engineer based on weather or other concerns. Milled surfaces shall then be covered with new asphalt within 7 working days from the day of milling. All areas on this project that are not overlaid within the specified working days will be assessed a lane rental fee of \$2,900 per occurrence for each day or fraction thereof and any required surface repairs shall be paid for by the Contractor.

All planing shall be completed full width and parallel to the travel lanes before resurfacing commences unless otherwise directed by the Engineer.

All material generated by the planing operation shall become the property of the Contractor unless otherwise noted in the Contract.

Each planer shall conform to the following:

The planer shall have sufficient power, traction and stability to maintain an accurate depth of cut. The propulsion and guidance system of the planer shall be maintained in such condition that the planer may be operated to straight and true lines.

The planer shall be capable of operating with automatic grade controls (contact or non-contact) on both sides of the machine using a 30-foot averaging system or other approved grade control systems. The use of such controls shall be described in the Contractor's QCP.

The planer shall be capable of picking up the removed material in a single operation. A self-loading conveyor shall be an integral part of the planer. Windrows will not be allowed.

Subsection 202.12 shall include the following:

Macrottexture testing, macrottexture corrective actions, planers, brooms, and all other work necessary to complete the item, Removal of Asphalt Mat (Planing), will not be measured and paid for separately, but shall be included in the work.

END OF SPECIFICATION

REVISION OF SECTION 202  
RECLAIMED ASPHALT PAVEMENT MILLINGS

Section 202 of the Standard Specifications is hereby revised for this project as follows:

Subsection 202.09 shall include the following:

The Contractor shall take possession of approximately 28,930 tons of the Reclaimed Asphalt Pavement (RAP) millings removed from the existing asphalt mat on this project. CDOT will retain approximately 5,000 tons of RAP milling from the project. All remaining RAP millings, if any, may be used in the project as allowed in the Contract or as approved by the Engineer. Otherwise, they shall become the property of the Contractor and shall be disposed of at his expense outside the project limits.

For this project, the RAP millings that CDOT will retain shall be delivered and stockpiled at the following location(s):

Texas Creek CDOT Maintenance RAP Millings Stockpile  
US50 – MP 252.4 (STA 97+00), South Side

Subsection 202.12 shall include the following:

Unless otherwise specified in the Contract, the disposal and hauling of the RAP millings to other locations or its use on the project or at other locations will not be measured and paid for separately, but shall be included in the work.

END OF SPECIFICATION



REVISION OF SECTION 202  
REMOVAL OF ASPHALT MAT (PLANING) (SPECIAL)

Section 202 of the Standard Specifications is hereby revised for this project to include the following:

**DESCRIPTION**

This work consists of the removal of all asphalt material and the removal of waterproofing membrane from the surface of the concrete.

**CONSTRUCTION REQUIREMENTS**

All asphalt material and waterproofing membrane (if present) shall be removed from the surface of the bridge deck. The surface of the deck shall be relatively smooth upon completion of removal operations. Jagged or broken edges or otherwise unsmooth areas shall be removed and ground smooth.

The Contractor is responsible for cleaning and maintaining the deck prior to and during placement of the new surface treatment.

Prior to beginning removal operations, the Contractor shall submit a removal plan for approval. This plan shall include as a minimum:

1. Methods of removal including confined areas that are unreachable with large equipment.
2. The type and number of all equipment to be used. If cold milling is to be performed for removal of the final ½ inch of asphalt, appropriate information must be provided to demonstrate the equipment meets the requirements of this specification.
3. The width, location and phasing of removal passes along with the proposed schedule for these passes.

The Contractor shall remove the existing asphalt by cold milling to within ½ inch of the concrete deck. Removal of the remaining ½ inch of asphalt and any existing membrane shall be performed by any one or combinations of the following three methods:

1. Scraping with a loader equipped with a smooth-edged bucket (no teeth).
2. Diamond grinding.
3. Cold milling with equipment that has the capabilities and features as described below.

Cold milling equipment must be able to:

- A. Remove concrete to a depth of ¼ inch.
- B. Provide a surface relief of at most ¼ inch.
- C. Provide a 5/32-inch grade tolerance.

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REVISION OF SECTION 202  
REMOVAL OF ASPHALT MAT (PLANING) (SPECIAL)

Cold milling equipment must have the following features:

- A. 3 or 4 riding tracks.
- B. An automatic grade control system with electronic averaging having 3 sensors on each side of the equipment.
- C. A conveyor system that leaves no debris on the bridge.
- D. A drum that operates in an up-milling direction.
- E. Bullet tooth tools with tungsten carbide steel cutting tips.
- F. A maximum tool spacing of ¼ inch.
- G. A maximum operating one track weight of 47,000 pounds, and as equivalent to the Tandem Axle Group as shown on the Colorado Bridge Weight Limit Map, White (10 feet less than or equal to d less than or equal to 12 feet, with d the axle group spacing)
- H. A maximum track unit weight of 3,500 pounds per foot.
- I. New tooth tools at the start of the job.

For all cold milling operations, the Contractor shall:

1. Saw cut the outline of the asphalt surfacing to be removed to a depth of ½ inch.
2. Provide personnel on each side of the milling drum to monitor milling activities. Maintain constant radio communication with the operator during milling activities.
3. Verify the depth of the asphalt surfacing every 50 feet at one location on each shoulder and in the traveled way.

If the Contractor proposes a milling machine that exceeds the maximum operating one track weight or maximum track weight per foot, or the machine does not conform to the same configuration assumptions used in determining these weight limit assumptions, the Contractor's Engineer shall rate the bridge for the proposed milling machine or complete a comparative analysis using the Colorado Bridge Weight Limit Map. The Contractor shall provide to the Engineer for review a stamped certified letter and accompanying rating of the bridge or comparative analysis for the proposed milling machine.

A small width rotomill (maximum 2-foot head) and low impact hand tools may be used in confined areas where the primary removal equipment will have difficulty accessing.

In the transverse direction, removal shall extend to the face of the barriers. The removal depth near the face of the barriers shall be consistent with the remainder of the bridge deck.

Hydrodemolition and pressure jetting will not be permitted for removal operations.

After cold milling is complete, the Contractor shall ensure that the coarse aggregate remaining at the removal depth is firmly embedded and remove it if it is not.

The Contractor shall prepare the bridge deck surface for placement of the new overlay. All construction debris, wearing surface material, and residual materials from the scarification process shall be completely removed from the bridge deck.

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REVISION OF SECTION 202  
REMOVAL OF ASPHALT MAT (PLANING) (SPECIAL)

If cold milling is to be performed for removal of the final ½ inch of asphalt, the Contractor shall furnish a documented history of successfully performing cold milling on bridge decks with equipment similar to that described herein. The documentation shall include three projects within the past five years and shall include equipment type used as well as specifics regarding the bridges.

If mechanical milling results in the exposure of reinforcing steel, the operation shall be stopped immediately, and the depth of removal adjusted. Damaged or dislodged reinforcing steel as a result of Contractor negligence during the operation shall be repaired or replaced at the Contractor's expense.

The Contractor shall take all necessary precautions to protect the expansion devices, barriers, and drains from damage. All damage to the bridge expansion devices, barriers, drains or any other property of CDOT resulting from removal operations shall be repaired at the Contractor's expense without time extension and per approval of the Engineer.

The Contractor shall take all precautions to protect the bridge deck from damage that would not ordinarily occur with the removal methods described herein. This includes damage to deck reinforcing and post-tensioning. Such damage resulting from removal operations shall be repaired at the Contractor's expense without time extension and per approval of the Engineer.

The Contractor shall provide protection to live traffic and waterways below from any falling debris in work areas.

At the completion of each day's work, vertical edges caused by planing that are greater than ¾ inch in height shall be: Longitudinal - tapered edges parallel to the direction of traffic shall be tapered to not less than a 4:1 (horizontal:vertical) slope, Transverse - tapered edges perpendicular to the direction of traffic shall be tapered to not less than a 50:1 (horizontal:vertical) slope.

All removal operations shall be completed parallel to the travel lanes unless otherwise directed by the Engineer.

**METHOD OF MEASUREMENT**

Removal of Asphalt Mat (Planing) (Special) will be measured by the actual quantity completed to the required depth and accepted.

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REVISION OF SECTION 202  
REMOVAL OF ASPHALT MAT (PLANING) (SPECIAL)

**BASIS OF PAYMENT**

The accepted quantities of Removal of Asphalt Mat (Planing) (Special) will be paid for at the contract unit price.

Payment will be made under:

<b>Pay Item</b>	<b>Pay Unit</b>
Removal of Asphalt Mat (Planing) (Special)	Square Yard

Payment for Removal of Asphalt Mat (Planing) (Special) will be full compensation for all labor, materials, tools, equipment, and incidentals required to remove the asphalt and any waterproofing membrane as designated in the plans, as specified in these special provisions, and as directed by the Engineer.

Asphalt depth verification will not be measured and paid for separately but shall be included in the work.

Methods to prevent debris from falling from the structure, and methods to protect the traveling public using the structure, or adjacent to the structure, from airborne debris will not be paid for separately, but shall be included in the work.

END OF SPECIFICATION

REVISION OF SECTION 202  
REMOVAL OF PORTIONS OF PRESENT STRUCTURE (CLASS 2 AND 3)

Section 202 of the Standard Specifications is hereby revised for this project to include the following:

**DESCRIPTION**

This work consists of saw cutting, removal and disposal of existing deteriorated bridge deck and approach slab concrete. Removal operations shall be conducted so that the traveling public is protected, and so that interference with the traveling public using the structure is minimized.

The applicable classes of removal shall be performed as defined in the plans. The locations and limits of removal will be as determined by the Engineer.

**CONSTRUCTION REQUIREMENTS**

**(a) General:**

At least 10 working days before beginning removal, the Contractor shall submit a Method Statement to the Engineer with details of the removal operations including the means, methods, sequence of removal, tools, and equipment to be used.

The Contractor's Method Statement shall also include proposed methods used to:

- (1) Determine the locations and limits of deteriorating concrete
- (2) Prevent debris from falling to the ground or waterways below the structure
- (3) Protect the traveling public using the structure, and adjacent to the structure, from airborne debris generated by the removal operations.

All removal operations, methods, and equipment must be approved by the Engineer before the work begins.

The Contractor shall control dust and run-off in accordance with applicable governmental agencies. The Contractor is responsible for the proper disposal of all material removed, including but not limited to, material collected by vacuuming the deck.

Prior to removal of concrete, the Contractor shall sound the bridge deck for delamination in accordance with ASTM D4580, Procedure B Chain Drag. The Contractor shall mark the areas of deteriorated concrete to be removed as directed by the Engineer. Removal and patching areas not designated for removal by the Engineer will not be measured or paid for.

The existing concrete shall be removed as shown on the plans or as directed by the Engineer. The Contractor shall saw cut along the removal limits prior to removal. Removal operations shall not occur prior to approval of the Engineer. The sawing of concrete shall be done to a true line, with a vertical face, unless otherwise specified. Feathered edges will not be acceptable. The depth of the saw cut shall be approximately  $\frac{3}{4}$ -inch.

The Contractor shall remove and repair only the amount of work that can be completed and reopened to traffic within the designated lane closure times as specified in the Traffic Control Plan.

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REVISION OF SECTION 202  
REMOVAL OF PORTIONS OF PRESENT STRUCTURE (CLASS 2 AND 3)

The Contractor shall take all steps necessary to prevent cutting or otherwise damaging reinforcing steel, including any vertical stirrups, and/or structural steel including welded shear connectors projecting into the bridge deck. All bars or shear connectors damaged by the Contractor's operations shall be repaired or replaced at the Contractor's expense using means and methods approved by the Engineer with no allowance for contract time extension.

Following the removal of the concrete, all exposed non-epoxy reinforcing steel to remain in place shall be straightened as required and thoroughly cleaned to sound metal by sandblasting per Revision of Section 202 Sandblasting. Epoxy coated reinforcing steel, if present, shall not be sandblasted but shall be cleaned with hand tools. Epoxy coating on reinforcing steel, if damaged, shall be repainted with epoxy paint prior to placement of the concrete.

Following sandblasting, the condition of all exposed reinforcing bars will be inspected by the Engineer. If, in the opinion of the Engineer, the loss of original cross-sectional area of the bar due to deterioration is 25 percent or more, the Contractor shall add additional bars to replace the section area loss due to deterioration, as approved by the Engineer. New added bars shall be lap spliced as shown in the plans. If the required lap splice length cannot be utilized, a mechanical splice shall be used. The mechanical splice shall develop at least 125 percent of the specified yield strength of the bar. The Mechanical splice shall be selected from CDOT's Approved Products List. All minimum clearances shall be maintained as defined in the plans. As an alternative, the Contractor may remove additional sound concrete to achieve the required lap length. Payment for additional removals and repairs will be based on the unit price for the appropriate class of removal and repair method.

All reinforcing steel shall be secured to adjacent bars or to the bridge deck as provided in subsection 602.

All areas of the prepared surface contaminated by oil or other materials detrimental to bonding shall be thoroughly cleaned by a method approved by the Engineer.

**(b) Surface Preparation Equipment**

Pneumatic hammers heavier than nominal 15-pound class will not be permitted. Pneumatic hammers and chipping tools shall not be operated at an angle exceeding 60° relative to the surface of the slab. Such tools may be started in the vertical position but must be immediately tilted to 60° operating angle.

Hand tools such as hammers and chisels shall be provided for removal of final particles of loose, unbonded concrete. Only short, one-handed hammers with a maximum head weight of 5 pounds will be allowed unless Class 3 removal is designated. Hydraulic demolition may be utilized with approval of Engineer.

Sandblasting equipment shall meet the requirements of Revision of Section 202 Sandblasting.

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REVISION OF SECTION 202  
REMOVAL OF PORTIONS OF PRESENT STRUCTURE (CLASS 2 AND 3)

(c) **Class 2:**

Removal of Portions of Present Structure (Class 2) shall consist of removing existing bridge deck concrete within the limits shown on the plans, or as designated by the Engineer. Class 2 removal shall begin at the surface of the existing concrete bridge deck and extend to sound concrete, but not more or less than the maximum and minimum for Class 2 shown in the plans.

Wherever solid bond between existing concrete and reinforcing steel is lacking, or where more than half of the diameter of the reinforcing bars is exposed by removal of concrete, the concrete adjacent to the bar shall be removed to a minimum clearance of one inch below and around the bar in all directions to permit new concrete to bond to the entire periphery of the bar. Care shall be taken so as not to fracture sound concrete in the bottom half of the bridge deck.

Removal may be performed by power chipping or hand tools in accordance with these specifications or as otherwise approved by the Engineer.

If loose or deteriorated concrete exists below Class 2 limits, Class 3 removal is required.

(d) **Class 3:**

Removal of Portions of Present Structure (Class 3) shall consist of removing existing bridge deck concrete within the limits shown on the plans, or as designated by the Engineer, following the Class 2 removal work. The concrete within the designated limits shall be removed full depth from the top of bridge deck to bottom of bridge deck.

The Contractor shall take all precautions necessary to prevent damage to diaphragms and girders below the removal limits and to minimize spalling on the bottom of the bridge deck slab adjacent to the removal boundaries.

The Contractor shall implement a containment system that prevents debris from falling to the ground or waterways below the structure.

The Contractor is responsible for the disposal of all removed material and debris.

**METHOD OF MEASUREMENT**

Removal of Portions of Present Structure will be measured by the actual quantity completed and accepted to the required depth for each class. Each area of bridge deck removal will only be measured once as Class 2 or Class 3; measurement of removal areas will not overlap.

Removal and repairs beyond the minimum required lap length of reinforcing steel will not be measured or paid for, but will be at the contractor's expense.

Cleaning of prepared surfaces contaminated by oil or other materials detrimental to bonding will not be measured and paid for separately, but shall be included in the work.

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REVISION OF SECTION 202  
REMOVAL OF PORTIONS OF PRESENT STRUCTURE (CLASS 2 AND 3)

**BASIS OF PAYMENT**

Planned deck rehabilitation quantities are approximate. The actual accepted quantities of Removal of Portions of Present Structure will be paid for at the contract unit price.

Payment will be made under:

<b>Pay Item</b>	<b>Pay Unit</b>
Removal of Portions of Present Structure (Class 2)	Square Yard
Removal of Portions of Present Structure (Class 3)	Square Yard

Payment for Removal of Portions of Present Structure will be full compensation for all labor, materials, tools, equipment and incidentals required to complete the item including saw cutting removal of concrete to the required depth, sandblasting or hand cleaning reinforcing steel including epoxy repair, and disposal of removed materials and debris.

Methods to prevent debris from falling from the structure, and methods to protect the traveling public using the structure, or adjacent to the structure, from airborne debris will not be paid for separately, but shall be included in the work.

Cleaning, straightening, and repairing epoxy coating of existing reinforcing steel will not be paid for separately, but shall be included in the work.

Sounding and marking repair areas will not be paid for separately, but shall be included in the work.

Payment for the new reinforcement steel will be made in accordance with Section 602. Payment for the Mechanical splice will be as the weight of reinforcing steel for the designated lap splice for that bar size.

END OF SPECIFICATION



**REVISION OF SECTION 202  
SANDBLASTING REINFORCING STEEL**

Section 202 of the Standard Specifications is hereby revised for this project to include the following:

**DESCRIPTION**

Sandblasting shall consist of cleaning exposed non-epoxy reinforcing steel designated to remain in place and roughening the surface and removing all fractured particles from the entire existing concrete surface against which new concrete is to be placed.

**CONSTRUCTION REQUIREMENTS**

Sandblasting equipment shall be capable of removing rust scale and concrete fragments or laitance from reinforcing steel, roughening existing surface, and removing all fractured particles from the existing concrete surface.

Following the removal of adjacent concrete, all exposed non-epoxy reinforcing steel designated to remain in place shall be cleaned to sound steel by sandblasting. Sound steel is defined as free of oil, dirt, concrete fragments, or laitance, loose rust scale, and other coatings of any character that would limit or inhibit the bond with the new concrete. Epoxy-coated steel shall not be sandblasted.

Rust that may form on the reinforcing steel within seven calendar days following the accepted sandblasting, will not be cause for rejection of the steel.

When acceptable reinforcing steel is exposed to the elements for more than seven calendar days prior to encasement in concrete, adequate measures shall be taken by the Contractor, as approved by the Engineer, to protect the steel from contamination or corrosion. Reinforcing steel contaminated or corroded, shall be re-sandblasted at the Contractor's expense. No adjustment in Contract time will be made for re-sandblasting.

**BASIS OF PAYMENT**

Sandblasting, including labor, materials, tools, equipment and incidentals, will not be measured and paid for separately but shall be included in the work.

**END OF SPECIFICATION**

REVISION OF SECTION 210  
ADJUST GUARDRAIL

Section 210 of the Standard Specifications is hereby revised for this project as follows:

Subsection 210.01 shall include the following:

This work consists of modification to the components and height of the existing guardrail at the locations designated on the plans.

Subsection 210.05 shall include the following:

Where designated on the plans and as directed by the Engineer, adjust existing Type 3 Guardrail as noted and achieving a height of 28 inches to 30 inches.

All Type 3 Guardrail being adjusted shall have the existing wood or steel 8" blocks replaced with FHWA approved black synthetic blocks. Additionally, the entire length of the adjusted guardrail shall have the w-beam rail and new blocks connected to the posts at the higher post bolt hole (i.e., raising the rail 3 inches). Existing guardrail height shall then be checked along the entire length of each rail section that has been adjusted, and the guardrail/post either embedded further or pulled up to achieve the required 28 inch to 30-inch final height. Existing hardware may be reused if in good and serviceable condition. Existing hardware that is not in serviceable condition shall be replaced. All exposed steel parts and hardware shall be COR-TEN rustic weathering steel A588 or equivalent materials.

Existing retroreflector tabs shall be disposed of by the contractor entirely and replaced. New retroreflector tabs shall be installed on all adjusted guardrail per M-606-1 (Sheet 2 Note 15). New retroreflective tabs installed with adjusted guardrail shall be COR-TEN rustic weathering steel. Back-to-back tabs shall be installed on both the inside and outside of all sections of guardrail on curves.

No existing wood post guardrail is intended to be reset.

Where any steel post needs to be further raised after the 3-inch adjustment using the post holes, the contractor shall ensure the void under the post is satisfactorily removed as approved by the Engineer.

Damaged posts or w-beam sections shall be brought to the attention of the Engineer and shall be replaced as needed with COR-TEN rustic weathering steel A588 or equivalent materials.

Adjust Guardrail shall be conducted during allowed lane closures. All guardrail lengths shall be fully connected and functional during non-working time periods.

Subsection 210.12 shall include the following:

As all adjusted guardrail on the project requires new synthetic blocks, retroreflector, and other work, the measured quantity shall be the length from splice-to-splice connecting to the adjoining transitions or end anchorages. Pay length will terminate at the point where adjoining guardrail is removed, replaced, allowed to remain in place (e.g., certain 3G transitions on the project) or otherwise paid under other project pay items.

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REVISION OF SECTION 210  
ADJUST GUARDRAIL

Where the Contractor finds existing w-beam guardrail or posts to be damaged and unserviceable for adjustment, the Engineer shall be informed and will pre-approve installation of new posts and/or w-beam. These replaced components shall be COR-TEN rustic weathering steel A588 or equivalent materials. The cost of all installation of these materials shall be included in the linear foot cost of adjust guardrail. The material cost of the new/replacement installed posts and/or w-beam rail will be paid based on certified invoices provided by the Contractor. The Engineer will pay only the invoice cost the Contractor paid for the post or w-beam materials and will not add any loading or other additional payment.

Subsection 210.13 shall include the following:

Payment will be made under:

<b>Pay Item</b>	<b>Pay Unit</b>
Adjust Guardrail	LF
Guardrail (Materials)	F/A

With the exception of posts and w-beam rail, cost of all other additional or replacement hardware, including use of COR-TEN rustic weathering steel on all exposed steel materials, will not be measured and paid for separately but shall be included in the work.

Reflector tabs and all ancillary hardware shall be included in the cost of the work.

END OF SPECIFICATION

SECTION 240  
PROTECTION OF MIGRATORY BIRDS  
WORK PERFORMED BY A CDOT 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.

The CDOT Biologist will conduct raptor nest surveys within 0.5 mile of the construction site corridor 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 Parks and Wildlife (CPW) recommended buffer zone for specific raptors, "NO WORK" zones shall be established according to the CDOW standards or by the CDOT Wildlife Biologist in consultation with the CDOW around active sites during construction. The "NO WORK" zone shall be marked with either fencing or signing. Work shall not proceed within a "NO WORK" zone until the CDOT Biologist has determined that the young have fledged or the nest is unoccupied

**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).

(a) *Vegetation Removal.* When possible, vegetation shall be cleared prior to the time 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 by a CDOT biologist for active migratory bird nests. The CDOT biologist will also survey for active migratory bird nests within 50 feet outside of the work limits. Project personnel shall enter areas outside CDOT right of way only if a Form 730, *Permission to Enter Property*, has been signed by the property owner. The Contractor shall avoid all active migratory bird nests. The Contractor shall avoid the area within 50 feet of the active nests or the area within the distance recommended by the biologist until all nests within that area have become inactive. Inactive nest removal and other necessary measures shall be incorporated into the work as follows:

1. *Tree and Shrub Removal or Trimming.* Tree and shrub removal or trimming shall occur before April 1 or after August 31 if possible. If tree and shrub removal or trimming will occur between April 1 and August 31, a survey for active nests will be conducted by the CDOT biologist within the seven days immediately prior to the beginning of work in each area or phase of tree and shrub removal or trimming. The Contractor shall notify the Engineer at least ten working days in advance of the need for the CDOT biologist to perform the survey.

If an active nest containing eggs or young birds is found, the tree or shrub containing the active nest shall remain undisturbed and protected until the nest becomes inactive. The nest shall be protected by placing fence (plastic) a minimum distance of 50 feet from each nest to be undisturbed. This buffer dimension may be changed if determined appropriate by the CDOT biologist and approved by the Engineer. Work shall not proceed within the fenced buffer area until the young have fledged or the nests have become inactive.

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SECTION 240  
PROTECTION OF MIGRATORY BIRDS  
WORK PERFORMED BY A CDOT 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.

2. *Grasses and Other Vegetation Management.* Due to the potential for encountering ground nesting birds' habitat, if work occurs between April 1 and August 31, the area shall be surveyed by the CDOT biologist within the seven days immediately prior to ground disturbing activities. The Contractor shall notify the Engineer at least ten working days in advance of the need for the CDOT biologist to perform the survey.

The undisturbed ground cover to 50 feet beyond the planned disturbance, or to the right of way line, whichever is less, shall be maintained at a height of 6 inches or less beginning April 1 and continuing until August 31 or until the end of ground disturbance work, whichever comes first.

If birds establish a nest within the survey area, an appropriate buffer of 50 feet will be established around the nest by the CDOT biologist. This buffer dimension may be changed if determined appropriate by the CDOT biologist and approved by the Engineer. The Contractor shall install fence (plastic) at the perimeter of the buffer. Work shall not proceed within the buffer until the young have fledged or the nests have become inactive.

If the fence is knocked down or destroyed by the Contractor, the Engineer will suspend the work, wholly or in part, until the fence is satisfactorily repaired at the Contractor's expense. Time lost due to such suspension will not be considered a basis for adjustment of time charges, but will be charged as contract time.

The CDOT Biologist will 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 Parks and Wildlife (CPW) recommended buffer zone for specific raptors, "NO WORK" zones shall be established according to the CPW standards or by the CDOT Wildlife Biologist in consultation with the CPW around active sites during construction. The "NO WORK" zone shall be marked with either fencing or signing. Work shall not proceed within a "NO WORK" zone until the CDOT Biologist has determined that the young have fledged or the nest is unoccupied

- (b) *Work on structures.* The Contractor shall prosecute work on structures in a manner that does not result in a taking of migratory birds protected by the Migratory Bird Treaty Act (MBTA). The Contractor shall not prosecute the work on structures during the primary breeding season, April 1 through August 31, unless he takes the following actions:
  - (1) The Contractor shall remove existing nests prior to April 1. If the Contract is not awarded prior to April 1 and CDOT has removed existing nests, then the monitoring of nest building shall become the Contractor's responsibility upon the Notice to Proceed.

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SECTION 240  
PROTECTION OF MIGRATORY BIRDS  
WORK PERFORMED BY A CDOT BIOLOGIST

- (2) During the time that the birds are trying to build or occupy their nests, between April 1 and August 31, the Contractor shall monitor the structures at least once every three days for any nesting activity.
- (3) If birds have started to build any nests, the nests shall be removed before they are completed. Water shall not be used to remove the nests if nests are located within 50 feet of any surface waters.
- (4) Installation of netting may be used to prevent nest building. The netting shall be monitored and repaired or replaced as needed. Netting shall consist of a mesh with openings that are  $\frac{3}{4}$  inch by  $\frac{3}{4}$  inch or less.

If an active nest becomes established, i.e., there are eggs or young in the nest, all work that could result in abandonment or destruction of the nest shall be avoided until the young have fledged or the nest is unoccupied as determined by the CDOT Biologist and approved by the Engineer. The Contractor shall prevent construction activity from displacing birds after they have laid their eggs and before the young have fledged.

If the project continues into the following spring, this cycle shall be repeated. When work on the structure is complete, the Contractor shall remove and properly dispose of netting used on the structure.

- (c) *Taking of a Migratory Bird.* The taking of a migratory bird shall be reported to the Engineer. The Contractor shall be responsible for all penalties levied by the U. S. Fish and Wildlife Service (USFWS) for the taking of a migratory bird.

**METHOD OF MEASUREMENT**

**240.03** Removal of nests will be measured by the actual number of man-hours spent removing inactive nests just prior to and during the breeding season, April 1 through August 31. During this period, the Contractor shall submit to the Engineer each week for approval a list of the workers who removed nests and the number of hours each one spent removing nests.

Netting will be measured by the square yard of material placed to keep birds from nesting on the structure. Square yards will be calculated using the length of netting measured where it is attached to the ground and the average height of the netting where it is attached to the structure.

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SECTION 240  
PROTECTION OF MIGRATORY BIRDS  
WORK PERFORMED BY A CDOT BIOLOGIST

**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:

<b>Pay Item</b>	<b>Pay Unit</b>
Removal of Nests	Hour
Netting	Square Yard
Protection of Migratory Birds	Hour

Payment for Removal of Nests will be full compensation for all work and material required to complete the work.

Payment for netting will be full compensation for all work and material required to complete the item. Overlaps of netting will not be measured and paid for separately, but shall be included in the work. Maintenance and replacement, removal, and disposal of netting will not be measured and paid for separately, but shall be included in the work.

Clearing and grubbing will be measured and paid for in accordance with Section 201. Mowing will not be measured and paid for separately, but shall be included in the work.

Removal and trimming of trees will be measured and paid for in accordance with Section 202.

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

END OF SPECIFICATION

REVISION OF SECTION 250  
ENVIRONMENTAL, HEALTH AND SAFETY MANAGEMENT

Section 250 is hereby revised to include the following:

Subsection 250.03 of Section 250 is hereby revised to include the following:

The Contractor is advised that Asbestos and Lead Based Paint (LBP) Inspections have been ordered for structures K-14-A, K-14-L and K-14-N.

Only the results for Structure K-14-L have been obtained for this project. The Contractor is advised to obtain a copy of the results from the Project Engineer.

Structure K-14-L did not have asbestos containing components. The girders of K-14-L were found to have lead-containing silver paint (0.3%) (no lead was discovered in the paint on the guardrails of K-14-L).

K-14-A and K-14-N test results are pending, and results will be available from the Project Engineer.

If the pending test results for K-14-A and K-14-N include lead or asbestos containing materials, and if these components are disturbed, removed or manipulated by the contractor during construction, these lead paint or asbestos containing components will be removed in accordance with 29 CFR 1926.62 and Subsections 250.04 and 250.07 of the 2019 CDOT Standard Specifications for Road and Bridge Construction Handbook for handling, removing or disposing of such materials.

The contractor shall follow Subsection 250.04 ensuring that paint chips or other debris does not fall onto the ground below K-14-A, K-14-L and K-14-N from structure repair activities.

Removal of painted steel components and asbestos containing materials shall be paid for under Section 202 Removal of Structures.

END OF SPECIFICATION



REVISION OF SECTION 403  
 HOT MIX ASPHALT

Section 403 of the Standard Specifications is hereby revised for this project as follows:

Subsection 403.02 shall include the following:

The design mix for hot mix asphalt shall conform to the following:

Table 403-1							
Property	Test Method	Value For Grading					
				SX(75)			Patching
Air Voids, percent at: N (design)	CPL 5115			3.5 – 4.5			3.5 – 4.5
Lab Compaction (Revolutions): N (design)	CPL 5115			75			75
Stability, minimum	CPL 5106			28			28
Aggregate Retained on the 4.75 mm (No. 4) Sieve for S, SX and SG, and on the 2.36mm (No. 8) Sieve for ST and SF with at least 2 Mechanically Induced fractured faces, % minimum*	CP 45			65			65
Accelerated Moisture Susceptibility Tensile Strength Ratio (Lottman), minimum	CPL 5109 Method B			80			80
Minimum Dry Split Tensile Strength, kPa (psi)	CPL 5109 Method B			205 (30)			205 (30)
Grade of Asphalt Cement, Top Layer				PG 58-28			PG 58-28
Grade of Asphalt Cement, Layers below Top				PG 58-28			PG 58-28
Voids in the Mineral Aggregate (VMA) % minimum	CP 48			See Table 403-2			See Table 403-2
Voids Filled with Asphalt (VFA), %	AI MS-2			65-80			65-80
Dust to Asphalt Ratio							
Fine Gradation	CP 50			0.6 – 1.2			0.6 - 1.2
Coarse Gradation				0.8 – 1.6			0.8 – 1.6

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 REVISION OF SECTION 403  
 HOT MIX ASPHALT

Note: AI MS-2 = Asphalt Institute Manual Series 2  
 Note: Mixes with gradations having less than 40% passing the 4.75 mm (No. 4) sieve shall be approached with caution because of constructability problems.  
 Note: Gradations for mixes with a nominal maximum aggregate size of one-inch or larger are considered a coarse gradation if they pass below the maximum density line at the #4 screen.  
 Gradations for mixes with a nominal maximum aggregate size of 3/4" to 3/8" are considered a coarse gradation if they pass below the maximum density line at the #8 screen.  
 Gradations for mixes with a nominal maximum aggregate size of #4 or smaller are considered a coarse gradation if they pass below the maximum density line at the #16 screen.  
 \*Fractured face requirements for SF may be waived by RME depending on project conditions.

All mix designs shall be run with a gyratory compaction angle of 1.25 degrees and properties must satisfy Table 403-1. Form 43 will establish construction targets for Asphalt Cement and all mix properties at Air Voids up to 1.0 percent below the mix design optimum. CDOT will establish the production asphalt cement and volumetric targets based on the Contractor's mix design and the relationships shown between the hot mix asphalt mixture volumetric properties and asphalt cement contents on the Form 429. CDOT may select a different AC content other than the one shown at optimum on the Contractor's mix design in order to establish the production targets as contained on the Form 43. Historically, Air Voids adjustments typically result in asphalt cement increases from 0.1 to 0.5 percent. Contractors bidding the project should anticipate this change and factor it into their unit price bid.

**Table 403-2**

<b>Nominal Maximum Size*, mm (inches)</b>	<b>Minimum Voids in the Mineral Aggregate (VMA)</b>			
	<b>***Design Air Voids **</b>			
	<b>3.5%</b>	<b>4.0%</b>	<b>4.5%</b>	<b>5.0%</b>
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 (¾)	15.6	15.7	15.8	
4.75 (No. 4)	16.6	16.7	16.8	16.9
	* The Nominal Maximum Size is defined as one sieve larger than the first sieve to retain more than 10%. ** Interpolate specified VMA values for design air voids between those listed. *** Extrapolate specified VMA values for production air voids beyond those listed.			

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REVISION OF SECTION 403  
HOT MIX ASPHALT

The Contractor shall prepare a quality control plan outlining the steps taken to minimize segregation of HMA. This plan shall be submitted to the Engineer and approved prior to beginning the paving operations. When the Engineer determines that segregation is unacceptable, the paving shall stop and the cause of segregation shall be corrected before paving operations will be allowed to resume.

CDOT approved Warm Mix Asphalt (WMA) may be allowed on this project in accordance with CP 59. Unique requirements for WMA design, production and acceptance testing as documented during CDOT WMA approval shall be submitted and approved prior to creation of the Form 43 and before any WMA production on the project. Delays to the project due to WMA submittal and review will be considered within the Contractor's control and will be non-excusable.

The hot mix asphalt shall not contain any reclaimed asphalt pavement.

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

A minimum of 1 percent hydrated lime by weight of the combined aggregate shall be added to the aggregate for all hot mix asphalt.

Acceptance samples shall be taken at the location specified in either Method B or C of CP 41.

Subsection 403.03 shall include the following:

The Contractor shall construct the work such that all roadway pavement placed prior to the time paving operations end for the year, shall be completed to the full thickness required by the plans. The Contractor's Progress Schedule shall show the methods to be used to comply with this requirement.

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:

<b>Pay Item</b>	<b>Pay Unit</b>
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.

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REVISION OF SECTION 403  
HOT MIX ASPHALT

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.

END OF SPECIFICATION

REVISION OF SECTION 403  
TICKET COLLECTION FOR HOT MIX ASPHALT

Sections 403 of the Standard Specifications is hereby revised for this project as follows:

Subsection 403.05 shall include the following:

The Contractor shall collect the scale ticket on each load when it is delivered to the project site, and ensure that the information required in subsection 109.01 is shown on each ticket:

The scale tickets shall be available on site for CDOT personnel to inspect.

Each day the Contractor shall provide to the Engineer envelopes which contain the previous day's signed tickets and the following:

1. On each envelope: Project number, date of operation, type of material, daily total and cumulative total.
2. One of the following:
  - A. Two adding machine tape tabulations of the weight tickets with corresponding totals run and signed by different persons,
  - B. One signed adding machine tape tabulation of the weight tickets that has been checked and signed by a second person,
  - C. Signed check tape of computer scale tickets that have a cumulative total. These scale tickets must be consecutive and without voids adjustments.
3. A listing of any overweight loads on the envelope, including ticket numbers and amount over legal limit.
4. A comparison of the actual yield for each day's placement to the theoretical yield. Theoretical yield shall be based on the actual area paved, the planned thickness, and the actual density of the mixture being placed. Any variance greater than +2.5% shall be indicated on the envelope and a written explanation included.

The Contractor shall provide a vehicle identification sheet that contains the following information for each vehicle:

- (1) Vehicle number
- (2) Length
- (3) Tare weight
- (4) Number of axles
- (5) Distance between extreme axles
- (6) All other information required to determine legal weight
- (7) Legal weight limit

END OF SPECIFICATION

**REVISION OF SECTION 518  
SAWING AND SEALING BRIDGE JOINT**

Section 518 of the Standard Specifications is hereby revised for this project as follows:

**DESCRIPTION**

Subsection 518.01 shall include the following:

This work consists of sawing and sealing bridge joints of the size and type, at the locations shown on the plans.

**MATERIALS**

Subsection 518.02 shall include the following:

The materials shall conform to the requirements set forth in Subsection 702.04, of the Standard Specifications.

**CONSTRUCTION REQUIREMENTS**

Subsection 518.07 shall include the following:

Sawing and sealing the pavement joint at the abutments of designated structures shall be completed full width and coincident with the existing pavement crack at that location. The location of the existing pavement crack at the abutment shall be recorded and marked in a location that will not be disturbed by pavement milling or other construction operations. Upon Completion of the finished paving, the joint location shall be established, saw cut made, cleaned using a hot compressed air lance, and sealed. Joint construction shall be in accordance with the details shown in the plans. Joint preparation prior to sealing, and the sealing operation, shall be in accordance with the manufacturers recommendations.

**METHOD OF MEASUREMENT**

Subsection 518.12 shall include the following:

Sawing and Sealing Bridge Joints will be measured by the number of linear feet constructed and accepted.

**BASIS OF PAYMENT**

Subsection 518.13 shall include the following:

The accepted quantities of sawing and sealing bridge joints will be paid for at the contract price per linear foot. The contract price shall include all work, equipment, material, and all other items necessary, to complete this item.

Payment will be made under:

**Pay Item**  
Sawing and Sealing Bridge Joint

**Pay Unit**  
Linear Foot

END OF SPECIFICATION

REVISION OF SECTION 518  
BRIDGE COMPRESSION JOINT SEALER

Section 518 of the Standard Specifications is hereby revised for this project as follows:

Subsection 518.01 shall include the following:

This work consists of replacing compression joint sealers in existing bridge joints, or installing compression joint sealers in new bridge joints in accordance with these specifications and in conformity with the details shown on the plans or as directed by the Engineer. This work also consists of preparing existing or new bridge joint openings for the compression joint sealer installation.

Subsection 518.04 shall include the following:

Existing or new bridge joints consist of an elastomeric compression joint sealer and cover plates at the joints.

Elastomeric compression joint sealers shall meet the requirements of ASTM D3542.  
Adhesive lubricant shall meet the requirements of ASTM D4070.

The installed elastomeric compression joint sealer shall seal the pavement joint as indicated on the plans and prevent water from seeping through the bridge joint to the surface below.

The elastomeric compression joint sealer shall consist of a preformed polychloroprene compression seal and shall have a rated movement of ½ inches. Acceptable manufacturers and models include the following or an approved equal:

DS Brown  
Model: Delastic - CV- 1250  
419-257-3561  
www.dsbrown.com

Watson Bowman  
Model: Wabo – WA-162  
800-677-4922  
www.wbacorp.com

Erie Metal Specialties  
Model: BR-125  
716-542-3991  
www.eriametal.com

In subsection 518.09, delete the first and second paragraph and replace with the following:

At least 10 working days before the start of work, the Contractor shall submit a Method Statement and Working Drawings in conformity with subsection 105.02 for all compression joint sealers bid under this section. The manufacturer's instructions for proper installation of the expansion joint device shall be included in the Method Statement. Working Drawings and Method Statement submittals which lack manufacturer's installation instructions will be returned for resubmittal.

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REVISION OF SECTION 518  
BRIDGE COMPRESSION JOINT SEALER

Where applicable according to the plans, details of the expansion device through cover plates, and details of the cover plates and connections shall be shown on the working drawings.

The Method Statement shall include methods and equipment used to control the lines and grades of the concrete surface and installation of the new compression joint sealer to the tolerances listed herein. The Method Statement shall be approved by the Engineer prior to the start of work.

Subsection 518.09 shall include the following:

The Contractor shall take all steps necessary to avoid damage to all concrete. Any concrete damaged by the Contractor's operations shall be repaired or replaced at the Contractor's expense. No Contract time adjustment will be made for such repairs.

The initial concrete surface preparations and installations of the compression joint sealer shall be performed by the Contractor in the presence of a technical representative of the manufacturer. This representative shall be experienced in such installations and shall provide information to the Engineer for inspection and guidance for the Contractor on handling and installation procedures. The technical representative shall be on site until the Contractor has demonstrated successful installation of at least one joint. The technical representative shall be available for consultation upon request by the Engineer.

The installation of the new bridge expansion device shall conform to the staged construction required by the plans and Lane Closure Policy unless otherwise directed or approved by the Engineer.

*(a) Surface Preparation:*

For new or replacement compression joint sealers, the newly formed or sawcut joint opening blockout width shall be within 1/8 inch of the width shown in the Temperature Table or designated dimensions shown in the plans. The blockout width shall correspond to the appropriate ambient temperature at the time of concrete placement. The blockout depth shall be as shown in the plans.

Finished concrete joint surfaces shall be cleaned by use of sandblasting, or another method approved by the Engineer, until all unsound materials, adhesive, and contaminants are removed. The joint opening surfaces shall be smooth, true, and vertical. The opening faces shall be parallel and the opening width shall not vary by more than 1/8 inch along the entire length of the joint. All vertical surface imperfections, including saw blade gouges, greater than 1/16 inch shall be patched with non-shrink epoxy grout from the CDOT Approved Products List or ground smooth.

*(b) Sealer Installation:*

The compression joint sealer shall be installed in accordance with the manufacturer's instructions. After installation, the top of the compression joint sealer shall be 1/4 inch from the top of the concrete surface.

Upturn and downturn bends shall be cut per the manufacturer's instructions.

Existing cover plates shall be removed and reset as required. New cover plates are required as shown in the plans.



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REVISION OF SECTION 518  
BRIDGE COMPRESSION JOINT SEALER

(c) *Watertight integrity test:*

After the compression joint sealer has been permanently installed the Contractor shall test the full length of the device for watertight integrity per section 518.09.

Subsection 518.12 shall include the following:

Bridge Compression Joint Sealer will be measured as the actual quantity that is completely installed from curb face to curb face, watertight integrity tested, and accepted.

Subsections 518.13 shall include the following:

The accepted quantities of Bridge Compression Joint Sealer will be paid at the contract unit price.

Payment will be made under:

<b>Pay Item</b>	<b>Pay Unit</b>
Bridge Compression Joint Sealer	Linear Foot

Payment for Bridge Compression Joint Sealer will be full compensation for all labor, materials, tools, equipment and incidentals required to complete the item including saw cutting, sandblasting, surface cleaning and preparation, and installing of new compression joint sealers.

Surface preparation and adhesive lubricant will not be measured and paid for separately, but shall be included in the work.

Costs for the on-site technical representative of the manufacturer will not be measured and paid for separately, but shall be included in the work.

The cost for the watertight integrity test will not be measured and paid for separately, shall be included in the work.

END OF SPECIFICATION

**SECTION 522  
ENVIRONMENTAL STAIN (GALVANIZED)**

Section 522 is hereby added to the Standard Specifications for this project as follows:

**DESCRIPTION**

This work consists of applying an environmentally and animal safe, non-caustic, non-pigment based environmental surface stain to all visible galvanized steel surfaces including galvanized steel components of Guardrail Type 3 (31 Inch MGS), Transition Type 3G, End Anchorage (Nonflared) and End Anchorage (Flared) pay items.

**MATERIALS**

Environmental surface stain shall consist of a clear soluble solution of natural elements and soft buffered organic acids. No pigment based colorants shall be added to achieve the desired color. The stain shall react with the target surface over a period of 7 - 21 days to produce a consistent color and matte finish as approved by the Engineer. The stain shall be resistant to fading in the sun and have a minimum life expectancy of 25 years. In all situations involving the approval of submittals, the Engineer will coordinate with the CDOT Environmental Project Manager assigned to the project.

The Environmental Stain should be as provided by Natina Products ([www.natinaproducts.com](http://www.natinaproducts.com)) or an equivalent provided in a sample to the Engineer as noted in this specification.

**CONSTRUCTION REQUIREMENTS**

The final color shall be a complimentary or similar rustic brown color to Federal Standard 595 Color FS 20059, existing COR-TEN rustic weathering steel guardrail already installed in the corridor, and the intent of the Memorandum of Understanding Between the BLM, the CDOT, the FHWA and the USDA, Forest Service Rocky Mountain Region (see Subsection 102.05).

If a product other than Natina Products is used, the Contractor shall submit a copy of the manufacturer's product Safety Data Sheet for all related products (including cleaning agents) together with instructions for application of stain a minimum of 5 days prior to staining the sample section. Proposed methods to control overspray, spillage and protection of adjacent surfaces shall be submitted in writing for approval by the Engineer. Staining shall not begin until written approval of these methods has been received.

- (a) *Stain Sample.* The Contractor shall provide a minimum 12-inch by 12-inch sample section of galvanized metal as soon as feasible after Award of the project. If staining will occur onsite by the Contractor, rather than by the stain manufacturer, the sample shall be stained in the presence of the Engineer. The Contractor shall notify the Engineer and the CDOT Environmental Project Manager a minimum of 7 days prior to staining the sample section. The Contractor shall prepare and stain the sample section with the same materials, tools, equipment and methods to be used in staining final surfaces. The applied stain shall be or have been allowed to cure for a minimum of 21 days. The sample shall be submitted to the Engineer for approval. The cost of materials and labor necessary to achieve the accepted sample shall be included in the price of the work. In the event more than one sample section is required, each additional sample shall be included in the price of the work. The Contractor shall use the approved sample as the standard of comparison in determining acceptability of staining.

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SECTION 522  
ENVIRONMENTAL STAIN (GALVANIZED)

- (c) *Stain Application.* Prior to delivery to project site, environmental stain shall be applied by the stain manufacturer to all visible galvanized steel surfaces and components. Stain may only be applied onsite if approved by the Engineer and in accordance with the following criteria.

Prior to application of the stain onto the metal surface, excessive oils, dirt, and other contaminants shall be cleaned with cleaning agents conforming to the manufacturers recommendations and approved by the Engineer. All surfaces shall be dry before application of stain. Stain shall be applied in accordance with manufacturer's recommendations to achieve a color consistent with the approved sample.

If spray application is used, the Contractor shall follow manufacturer's recommendations. The Contractor shall minimize overspray on undesired surfaces and protect adjacent surfaces from overspray. Spray application shall not be performed under windy or rainy conditions. Stain shall be applied uniformly, free from sags, runs or defects of any kind. Irregularities shall be corrected according to the stain manufacturer's recommendations. Stained surfaces shall be kept dry for a period of 5 days following the application of stain.

If immersion application is used, the Contractor shall immerse the structure in a controlled area following manufacturer's recommendations. The Contractor shall minimize splashing, dripping and runoff on surfaces not intended for stain application. The structure shall have a uniform appearance, free from sags, runs or defects of any kind. Irregularities shall be corrected according to the manufacturer's recommendations. Stained surfaces shall be kept dry for a period of 5 days following the application of stain.

Multiple applications, per manufacturers' recommendations, may be required to achieve the color of the approved stain sample.

Final approval of products by the Engineer will occur when stain has achieved the color of the approved stain sample. All substandard items not achieving the color of the approved stain sample will be rejected.

- (d) *Storage of Materials.* Stained surfaces shall be stored properly at the construction yard after delivery, before, and up to, the time of installation. If components stack (e.g. guardrail), spacers shall be placed between rows to allow for necessary airflow. Items shall be stacked perpendicular to the ground sloped to allow for proper drainage. Items shall be elevated so they do not come into direct contact with soil or plant matter. The Contractor shall also conform to other standard storage procedures and manufacturer recommendations regarding storage. It is the responsibility of the Contractor to ensure that all components are stored properly on site.

**METHOD OF MEASUREMENT AND BASIS OF PAYMENT**

All costs associated with applying environmental stain to galvanized steel surfaces including multiple applications, cleaning surfaces, and preparing stain samples will not be measured and paid for separately but shall be included in the work.

Replacing rejected items including cost of original material, products and labor will not be paid for separately but shall be included in the work.

END OF SPECIFICATION

REVISION OF SECTION 601  
GALVANIC ANODES

Section 601 of the Standard Specifications is hereby revised for this project to include the following:

**DESCRIPTION**

This work consists of furnishing and installing galvanic anodes, tying existing steel reinforcing mats for electrical continuity, and testing for electrical continuity in concrete repair locations as shown on the plans or as directed by the Engineer.

**MATERIALS**

Galvanic anodes shall be one of the following:

- (1) "Galvashield XP2" as manufactured by Vector Corrosion Technologies,  
1330 Bellaire Street  
Broomfield, CO 80020  
303-465-5806
- (2) "MasterProtect 8105 CP" as supplied by BASF Corporation,  
889 Valley Park Drive,  
Shakopee, MN 55379  
800-433-9517
- (3) "Sentinel Silver" as manufactured by Euclid Chemical  
19218 Redwood Rd.  
Cleveland, OH 44110  
800-321-7628
- (4) "Galvashield XP+" as supplied by Sika Corporation  
201 Polito Ave.  
Lyndhurst, NJ 07071  
248-577-0980

Galvanic anodes shall be pre-manufactured and consist of a minimum of 100 grams of zinc conforming to ASTM B6 Special High Grade, cast around a pair of steel tie wires conforming to bright annealed ASTM A82.

At least 10 working days prior to the start of repair work, the Contractor shall submit documentation of the anode manufacturer's approval of the patching materials compatibility with their anode system and any special treatment requirements and installation instructions. The Contractor shall contact the manufacturer of the anodes to gain a full understanding of any special treatments that will be required and the process to properly install the anodes. The concrete patching material shall be as shown on the plans or as approved by the Engineer. Any grout used for grout beds or encapsulation of anodes shall have compressive strength equivalent to the original deck concrete per as-built drawings.

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REVISION OF SECTION 601  
GALVANIC ANODES

**CONSTRUCTION REQUIREMENTS**

Anodes shall be installed the same day as preparation and cleaning of steel reinforcement to bright metal at the anode tie wire connection. The anode units, in cementitious patching material, shall be pre-wet to achieve a saturated surface dry condition, and the repair shall be completed while the anodes are in this condition.

Anodes used with patching material having resistivity greater than 15,000 Ohm-Centimeters (Ohm-cm) or not meeting compatibility requirements shall be specially treated and installed in accordance with manufacturer recommendations.

Galvanic anodes shall be installed in accordance with manufacturer's recommendations. Anodes shall be placed in each patch, 18 to 24 inches apart on the perimeter, based on rebar spacing. A minimum of one anode shall be placed in each patch and may be placed in the middle of the patching material area if the spacing requirement cannot be met. Each anode shall have a minimum 1.5-inch top cover to the surface of the new concrete deck patch and a 1-inch minimum side and bottom clear cover.

Galvanic anodes shall be secured with anode tie wires as close as possible to the patch edge while achieving minimum cover requirements. The tie wires shall be wrapped around the cleaned reinforcing steel and twisted tight to allow little or no free movement.

Prior to placing new concrete, galvanic anodes shall be installed in accordance with the manufacturer's recommendations and inspected for proper connection and continuity to reinforcing steel.

*(a) Electrical Connection and Continuity.*

Electrical connection and continuity between anode tie wire and reinforcing steel shall be confirmed by measuring DC resistance (ohm) or potential with a multi-meter. Electrical connection and continuity is acceptable if the DC resistance measured with a multimeter is less than 1 ohm or the DC potential is less than 1 mV.

All intersections of reinforcing steel shall provide electrical continuity. The Contractor shall confirm continuity of at least three intersections per repair area on each structure or as directed by the Engineer. Intersections with visible separation or lack of continuity shall be cleaned and/or tied with bare steel tie wire to achieve continuity. Additional continuity testing will be required as directed by the Engineer. Electrical continuity within a repair area is acceptable if the DC resistance measured with a multimeter is less than 1 ohm or the potential is less than 1 mV.

The Contractor shall furnish the Department with a multimeter to independently check the electrical connection. The multimeter shall become the property of the Department.

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REVISION OF SECTION 601  
GALVANIC ANODES

**METHOD OF MEASUREMENT**

Galvanic Anodes will be measured as the actual quantity installed and accepted.

**BASIS OF PAYMENT**

The accepted quantities of Galvanic Anodes will be paid for at the contract unit price.

Payment will be made under:

<b>Pay Item</b>	<b>Pay Unit</b>
Galvanic Anodes	Each

Payment for Galvanic Anodes will be full compensation for all labor, equipment, materials, and incidentals required to complete the item.

Electrical continuity tie wiring and testing will not be measured and paid for separately, but shall be included in the work.

The multimeter will not be measured and paid for separately, but shall be included in the work.  
If additional anodes are required during construction, the additional anodes will be paid for at the original Contract unit price.

Any special treatment or installation of the anodes that is required by anode supplier due to the type of patching material used, including but not limited to, grout beds between substrate and anode, or grout encapsulation of the anodes, will not be measured and paid for separately, but shall be included in the work.

END OF SPECIFICATION

REVISION OF SECTION 601  
CONCRETE CLASS DR

Section 601 of the Standard Specifications is hereby revised for this project to include the following:

**DESCRIPTION**

This work consists of furnishing and placing concrete patching material in accordance with these specifications and in conformity with the lines, grades and dimensions as shown on the plans or established.

**MATERIALS**

The concrete patching material may be pre-packaged Concrete patching material or Class DR concrete.

(a) *Pre-Packaged Concrete Patching Material.* Concrete patching material shall be polymer modified hydraulic cement and shall be one of the following:

1. Rapid Set DOT Concrete Mix as manufactured by:  
CTS Cement Manufacturing Company  
11065 Knott Avenue  
Cypress, CA 90630
2. HD 50 as manufactured by  
Dayton Superior Corp.  
1125 Byers Road  
Miamisburg, Ohio 45342
3. or approved equal

Alternate concrete patching materials shall demonstrate 1/32-inch maximum mid panel and end crack widths, 0 percent delamination, and 0 percent spalling as tested by NTPEP in a one-year field evaluation. The Contractor shall refer to rapid-set concrete patch materials at [www.ntpep.org](http://www.ntpep.org).

Before January 1, 2020 equivalent materials may be tested to meet minimum requirements by an independent testing lab or NTPEP. If the product has not been field tested by NTPEP, the Contractor shall submit documentation of a project demonstrating the successful use of the proposed product in Colorado. The submittal shall document the material used, the project location and detailed pictures of the patch after at least 1 year of service.

The Contractor shall obtain and provide to the Engineer documentation from the Concrete patching material supplier of the expiration dates of the material components that will be used on the project.

Concrete patching material shall attain an average compressive strength of at least 2,500 psi prior to placing traffic and 4,500 psi at 28 days. Concrete patching material compressive strengths shall be tested according to ASTM C39 or ASTM C109. The compressive strengths shall be used to develop a strength versus time curve for the material. Three strength data points shall be determined to assess the necessary time to wait before traffic is allowed on the material. Maturity meter data may also be submitted to allow the use of maturity meter to determine when the patching material has gained the required strength for opening to traffic.

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REVISION OF SECTION 601  
CONCRETE CLASS DR

Concrete patching material shall provide a minimum bond strength of 2,000 psi at 28 days, as tested by ASTM C882.

Concrete patching material shall have a relative durability factor greater than 90 and a mass loss not to exceed 2.0 percent as tested by ASTM C666.

Concrete patching material shall have a maximum expansion of 0.05 percent, at 28 days as tested by ASTM C157

ASTM C39, C109, C882 and C157 testing shall be from the same lot of concrete patching material being used on the project. A CTR, in accordance with subsection 106.13, shall be submitted to the Engineer for approval at least 2 weeks prior to placement.

Two bags of the concrete patching material, and two bags of the extending aggregate if used, from the same lot to be used on the project shall be submitted to an accredited Lab to verify compressive strength, and set time properties, by the Contractor before the concrete patching material is to be used on the project. Test results shall be submitted to the Engineer for acceptance. Verification of the strength properties will be achieved if the test results are either equal in strength or stronger than those advertised. Verification of the set time will be achieved if the set time is equal or less than the advertised value. Testing shall be included in the cost of the materials. Test results from other projects using the same lot may be submitted. If the project uses material from more than one lot, test results are required for each lot used.

When Anodes are specified and are to be installed with pre-packaged concrete patching material, the Contractor shall submit test results of ASTM C1760 that the concrete patching material has an electrical resistivity of 15,000 Ohm-centimeters or less. Concrete patching materials that do not meet the electrical resistivity requirements may be used with special anode installation methods recommended by the anode manufacturer and approved by the Engineer. Additional work for special anode installation methods shall be included in the bid price.

- (b) *Class DR Concrete.* Class DR Concrete shall have a minimum cement content of 615 pounds per cubic yard, an air content of 5 to 8 percent, a maximum water to cement ratio of 0.44, a minimum 6-hour compressive strength of 2,500 psi and a minimum 28-day compressive strength of 4,500 psi. The concrete mix shall consist of a minimum of 50 percent AASHTO M 43 Size No. 7 or Size No. 8 coarse aggregate by weight of total aggregate. Lab test results shall show that the unrestrained shrinkage is less than 0.050 percent when tested by CP-L 4103.

ASTM C150 Type III or ASTM C1157 Type HE cement may be used in lieu of Concrete Class DR, as approved.

The Contractor shall develop maturity relationships in accordance with CP 69. The Contractor shall provide a multi-channel maturity meter and all necessary wire and connectors. The Contractor shall be responsible for the placement and maintenance of the maturity meter and wire. Placement shall be as directed by the Engineer.



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REVISION OF SECTION 601  
CONCRETE CLASS DR

**CONSTRUCTION REQUIREMENTS**

- (a) *Pre-Packaged Concrete Patching Material.* Concrete patching material shall be placed in the repair areas before the expiration date of the material. Proportions of all mix components shall be measured by volume measurement (number of bags of standard weight and quantity of water or liquid component in gallons or quarts). If partial bags are used the bagged mix, extending aggregate, and water shall be weighed on a calibrated scale provided by the Contractor. The Contractor shall submit the Concrete patching material mix design for approval two weeks before any concrete patching material is placed. The Contractor shall also submit a method statement describing what type of equipment will be used to batch the patching material, including the type of mixer, the type of material, volume measures to be used, scales for partial bags, procedures to insure accurate proportioning of the patching material components, and tools to be used in placing and finishing the surface of the patch.

The Contractor shall produce a batch ticket for each mixed batch of concrete patching material with the following information shown on each ticket:

- (1) Project No.
- (2) Bridge No.
- (3) Structure Temperature
- (4) Date and Time of batch
- (5) Material Type, name, and manufacturer
- (6) Material expiration date
- (7) Weight or volume of bag mix concrete
- (8) Weight or volume of extending aggregate
- (9) Weight or volume of water or liquid component
- (10) Location of placement (Lane and Station Limits)

The tickets shall be available on site for CDOT personnel to inspect.

Each day the Contractor shall provide to the Engineer tickets for each bridge in separate envelopes stating Project Number, Bridge Number, Date of Paving, Type of Material, Daily Total, and Cumulative Total.

Concrete patching material minimum and maximum thicknesses shall be per recommendation of the material manufacturer.

Concrete patching material site preparation, batching, extending with aggregate, mixing, placement, placement during cold temperatures, consolidation, and curing shall be in accordance with the manufacturer's recommendations. A mix may be extended up to 90 percent of the manufacturer's maximum extension. The surface of concrete patching material shall have a similar texture as the adjacent driving surfaces.

The Contractor shall submit a report consisting of the mix proportions and compressive strength vs time curve information to the Engineer at least two weeks before the material is to be used on the project.

Field cast cylinders or cubes shall be taken by a qualified testing representative, with a minimum ACI Field Testing Technician Grade I certification, and test results shall be submitted to the Engineer within 24 hours, the first day and every other subsequent day deck patching material is placed with compressive strength determined at 24 hours according to ASTM C 39 or ASTM C109.

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REVISION OF SECTION 601  
CONCRETE CLASS DR

Areas patched with Concrete Class DR shall not be opened to traffic until concrete patching material has reached a compressive strength of 2,500 psi using the compressive strength versus time curve developed for the material.

- (b) *Class DR Concrete.* Class DR Concrete shall be placed in accordance with Class D concrete with the following changes:

The area to be patched with Class DR Concrete and anodes shall be saturated surface dry before placement and shall be free of standing water at the time of placement.

Portions of decks patched with Concrete Class DR shall not be opened to traffic until the concrete's compressive strength, determined by CP 69, has achieved at least 2500 psi.

Concrete Class DR shall be cured until a compressive strength of at least 2500 psi has been achieved. The curing compound shall conform to ASTM C309, Type 2 applied at a rate of 1 gallon per 100 square feet. The curing compound shall be applied as a fine spray within 10 minutes of discontinuing the finishing operation. Before and during application the curing compound shall be kept thoroughly mixed. Curing blankets with a minimum R-value of 0.5 shall be provided and shall be placed as soon as they can be placed without marring the surface. When the ambient temperature is below 50°F, the Contractor shall maintain the concrete temperature above 50°F during the curing period.

**METHOD OF MEASUREMENT**

Concrete Class DR will be measured and paid for as the actual quantity placed and accepted by the Engineer.

**BASIS OF PAYMENT**

The accepted quantities will be paid for at the contract unit price per unit of measurement for each of the pay items listed below that appear in the bid schedule.

<b>Pay Item</b>	<b>Pay Unit</b>
Concrete Class DR	Cubic Yard

Payment for Concrete Class DR will be full compensation for all the work, materials, tools, equipment, testing, and incidentals required to complete patching, excluding special installation of anodes when specified, when required.

Furnishing all appurtenances including the molding, curing and breaking of cylinders or cubes for generating the strength versus time curve and for determining the information cylinder or cube strength will not be measured and paid for separately, but shall be included in the work. Concrete patching material or Class DR Concrete will not be measured and paid for separately, but shall be included in the Concrete Class DR bid item.

END OF SPECIFICATION

REVISION OF SECTION 606  
GUARDRAIL

Section 606 of the Standard Specification is hereby revised for this project as follows:

Subsection 606.01 shall include the following:

This work consists of installation of guardrail in accordance with the project plans, drawings and specifications. Newly installed guardrail shall meet MASH standards, except for (1) required transitions from NCHRP 350 standard to MASH, (2) nonflared end anchorages, if MFLEAT is not on CDOT's approved list by the time of installation, (3) replaced Precast Type 7 Barrier, or (4) as directed by the Engineer.

This work also consists of installing new Guardrail Type 7 (Precast) section as shown in the plans to replace damaged sections. Quantity of replaced Type 7 (Precast) actually replaced will only be as needed to replace damaged portions of existing barrier at location(s) noted on the plans. The limits and quantity will be field verified by the Engineer prior to installation.

In subsection 606.02 delete the fifth paragraph and replace with the following:

Prior to beginning work on each run of guardrail, the Contractor shall set a meeting on site with the Engineer, or lead guardrail inspector if designated, within a lane closure to walk the length of the rail and confirm the applicability and appropriateness of the work shown in the plans and tabulations. Specific emphasis will be on ensuring the end anchorage selected is correct. Except for Phase 1 guardrail and end anchorages (i.e., these should be put on order immediately after Notice to Proceed), the Contractor shall hold these meetings prior to acquisition of guardrail. Because of the expected lead time in acquiring the guardrail and completing the Environmental Stain process, these meetings shall be held as early as feasible and before milling operations begin. If the Contractor reasonably acquires guardrail or end sections for Phase 1 work immediately after Notice to Proceed and later finds those materials to be unable to be installed in any of the guardrail work phases, then the Contractor shall deliver the materials, in full, to the Region Maintenance facility noted in the Section 202 revision for salvaging guardrail, and the Contractor will be paid in accordance with Section 606.05.

The Contractor shall furnish steel posts and FHWA approved synthetic material blocks for guardrail and end sections as shown on the plans. Posts and guardrail shall be galvanized steel. Posts for end section shall be metal posts.

All exposed steel components of new w-beam (i.e., Type 3) guardrail systems, end anchorages, transitions and any other ancillary or associated parts shall meet the color and other requirements of Section 522 of the specifications.

At newly installed end anchorages, the Contractor shall carefully mill and pave to attempt to achieve the dimensions and requirements noted in the Guardrail Details for HMA apron. The Contractor shall only extend, lengthen or otherwise enlarge the existing apron where it can be achieved without encroaching on vegetated areas. This work is anticipated to require some minor grading in some locations, but in most cases can be milled and overlaid with the principal project milling and paving operations. Two (2) ton of HMA at each end anchorage shall be paid as HMA (Patching) (Asphalt) TON to reimburse the Contractor for the extra effort. This tonnage will be, therefore, reduced from the other HMA tonnage pay item on the project and will not be paid twice.

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REVISION OF SECTION 606  
GUARDRAIL

The Contractor shall plan guardrail removal and installation such that no gap in rail or end anchorage will be present over a weekend, unless approved by the Engineer in unusual or extraordinary circumstances. Missing end anchorages or gaps of no more than 25 feet may be delineated with half spaced drums and allowed during non-work shift on weekdays only or if daily (i.e., including weekend) work is ongoing and approved by the Engineer.

End Anchorage (Nonflared) shall be Road Systems, Inc. (RSI) MSKT.

End Anchorage (Flared) shall be Road Systems, Inc. (RSI) MFLEAT.

The Contractor shall consult with the Engineer within 10 days after Award, and prior to ordering and end anchorages, to ensure the MFLEAT has been added to CDOT's Approved Products List. If it is not approved, the Engineer may direct the use of FLEAT-350 as an alternative, or replace the pay item with End Anchorage (Nonflared). If replaced with nonflared, that pay item will be used. If replaced with FLEAT-350, the End Anchorage (Flared) EACH pay item will be used.

Where the plans call for Type 3 "No Block", installation shall be per standard detail M-606-2. Guardrail Type 7 (Precast) shall conform to M-606-14.

Subsection 606.03 shall include the following:

Guardrail installation required for Phase 1 and Phase 2 require either rapid, high productivity installation during the limited window that the pavement is maintaining a milled surface or low production operations and risk where only minimal length sections of removed guardrail may be left unattended during non-working hours. The Guardrail Phasing plans and Tabulation of Guardrail provide additional information about these requirements.

The Contractor shall immediately upon Notice to Proceed for this project acquire the guardrail, end anchorages and other required elements to complete the installation of guardrail noted as Phase 1 on the Tabulation of Guardrail.

Where the plans call for Type 3 "No Block", installation shall be per standard detail M-606-2. Guardrail Type 7 (Precast) shall conform to M-606-14.

Subsection 606.05 shall include the following:

HMA (Patching) (Asphalt) TON related to guardrail end anchorage installation will be paid as described in the Guardrail Details and Subsection 606.02.

In the event the Contractor acquires bid items immediately after Notice to Proceed for Phase 1 guardrail work, and those materials cannot be incorporated into Phase 1 or other phase guardrail work due to field conditions found later, the Contractor will be paid bid price for the item once delivered to CDOT.

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REVISION OF SECTION 606  
GUARDRAIL

Mobilization (without Autopay) (Guardrail) Lump Sum shall be full reimbursement for all coordination, scheduling, extra work shifts, night work or any other effort required as the Contractor completes the Phase 1 and Phase 2 guardrail work. Traffic Control will be paid for using Contract 630 pay items; however, the Mobilization (without Autopay) (Guardrail) Lump Sum item will pay for all other costs, including but not limited to Phase 0 work or any other special effort, special insurance or risk management within the work site, overhead for special materials, costs required for accelerated delivery to meet Phasing requirements, etc. The Contractor is encouraged to work with the Engineer and propose more efficient methods, but the cost of any such improved methods shall not be paid separately but shall be considered included in the Lump Sum cost. Other methods must be pre-approved by the Engineer in writing prior to implementation.

Subsection 606.06 shall include the following:

Payment will be made under:

<b>Pay Item</b>	<b>Pay Unit</b>
Guardrail Type 3 (31 Inch Midwest Guardrail System)	Linear Foot
Guardrail Type 7 (Precast)	Linear Foot
Mobilization (without Auto Pay) (Guardrail)	Lump Sum

END OF SPECIFICATION

REVISION OF SECTION 620  
FIELD FACILITIES

Section 620 of the Standard Specifications and Supplemental Specifications is hereby revised for this project as follows:

Delete subsection 620.02 replace with the following:

**620.02 Field Offices.** Field Office, Class 2.

The field office shall be equipped with a facsimile machine, copy machine, and telephone service and conform to the following:

1) Electrical Grounding.

If buildings/trailers are to be connected to share a data/voice network, then a common ground is important to protect occupants using computer equipment and phones in the event of electrical storms and also for the protection of the equipment itself.

For example, if the site will have two field trailers, where one Trailer will serve as the office and the other will serve as the lab, the two trailers will set together as one to share a common electrical ground so computer cabling can be installed without spanning driveways. Greater separation may require either separate data networks or buried conduit to contain fiber optic cabling and surge suppressed voice cabling.

Running exposed copper cabling along the ground between buildings is unacceptable.

2) Cellular Signal Booster

If deemed necessary by the Engineer during the initial site survey due to weak cellular signal, the Contractor shall furnish and install a 4G LTE cellular signal booster at the field facility location. Important Note: Cellular service signal can be difficult to achieve in rural areas. It is strongly recommended that site selection for the trailers be made with consideration of the availability of 4G LTE cellular service signal. If none is available, the CDOT Project Engineer shall be notified immediately in case site relocation is necessary.

The cellular signal booster shall be compatible with Verizon Wireless and AT&T service, capable of providing 4G coverage up to 5,000 sq. ft. and compatible with the available power supply on-site. Acceptable model example: *weBoost Home MultiRoom Signal Booster Kit – 470144*, or equivalent.

Installation and maintenance of the cellular signal booster shall be completed by a qualified technician; the Contractor shall be responsible for coordinating installation and maintenance work in a timely manner that does not unduly impede the usage requirements of the Engineer.

3) High Speed Internet.

Note: The Contractor shall contact CDOT Regional Network Analyst (Mike Vencius 719-546-5737) for the most recent specifications of required network equipment (See Network Equipment section below) and of high-speed provider restrictions and limitations.

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REVISION OF SECTION 620  
FIELD FACILITIES

The Contractor shall provide the field location with high-speed internet connection and equipment. Important Note: High Speed Internet access can be difficult to achieve in rural areas. It is strongly recommended that site selection for the trailers be made with consideration of the availability of High Speed Internet access. If none is available, the CDOT Project Engineer shall be notified immediately in case site relocation is necessary.

The type of High Speed Connection shall preferably be of DSL type. The throughput shall be a minimum of 10 Mbps. IP addressing shall be DHCP.

If DSL is not available, Cable or wDSL (Wireless DSL) or a 4G “Cellular” from Verizon Wireless or AT&T device that provides internet service to multiple computers may suffice if above specified throughput speeds are achieved.

As a last resort Aircards for each computer perhaps augmented with a cellular signal booster equipment may suffice.

If the Internet service is to serve more than 6 computers, it is recommended that additional circuits be provided.

A UPS (battery Backup) of a minimum rating of 500va (volt amp) needs to be provided to protect the Internet equipment.

Note that satellite type broadband will NOT work for CDOT purposes.

4) Connectivity

Cabling: Cat 5e cabling must be installed connection the DSL (cable, wDSL, etc.) modem to all computers.

WIFI option: The use of Wifi may be acceptable provided the service remains as fast and stable as Cat 5e cable and not obstructed by electronic interference (microwaves, generators, etc.) or by distance or walls which will impair the signal. Also, if any of the CDOT computers do not have Wi-Fi capability such as the desktop models, then the Cat5e cabling must be installed.

If CDOT computers will reside in more than one trailer, as with a MAT lab, then fiber, conduit and transceivers (preferable) or cat 5e cooper cabling with surge suppressors (more subject to failure and needing regular replacement) will need to purchased and installed as per CDOT IT. The cost here may range up to \$500. Another and possibly more cost efficient option may be to provide separate high speed Internet service to each building.

5) Network Equipment:

If there are multiple trailers or buildings on site, the Contractor will need to provide the cabling and surge suppression equipment necessary. The Contractor MAY also need to provide additional equipment needed for CDOT network security. Note that this equipment is in addition to the DSL modem provided by the internet provider.

If CDOT computers will reside in more than one trailer, as with a MAT lab, then fiber and transceivers or cat 5e copper cabling with surge suppressors will need to be purchased and installed as per CDOT IT. Contact the CDOT Regional Network Analyst for current specifications for this network equipment.

Procuring this equipment may take time, so haste in contacting the CDOT Regional Network Analyst is recommended. It is not unusual for this equipment to take over a month to procure due to back orders. Contact cdot regional network analyst (mike vencius 719-546-5737).

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REVISION OF SECTION 620  
FIELD FACILITIES

Note: if cisco network equipment is deemed required by CDOT, then the current cost of this specialized equipment is approximately \$800.00 to \$1,300.00 depending on site requirements. If cisco equipment is not needed, the cost will be determined on whether additional buildings are needed to be connected and if the Wi-Fi is available, there may be no additional cost for network equipment.

6) Important Cyber Security Issue: At project conclusion, all network equipment (if provided) will be returned to CDOT Regional Network Analyst for removal of CDOT confidential data and network configuration.

7) Copy/Printer Machine:

The Contractor shall provide a self-feeding plain paper photo copying/printer machine, which is capable of making at least fifteen copies per minute and have color copying capability. Maximum size of original shall be 11" by 17" and copy paper size shall be 5-1/2" by 8-1/2" to 11" by 17" with standard intermediate sizes. The copier/printer machine shall have an automated document feeder capable of feeding a stack of up to 25 originals ranging in size from 5-1/2" by 8-1/2" to 11" by 17". The copy/printer machine shall have two standard paper cassettes accommodating paper sizes of 5-1/2" by 8-1/2" to 11" by 17". Each cassette shall accept 250 sheets for a total of 500 sheets of paper capacity and have a single sheet bypass for manual copying onto special stock not in paper cassettes and shall be capable of using paper sizes of 5-1/2" by 8- 1/2" to 11" to 17". The copier/printer machine shall be capable of zoom/magnification /reduction from 70% to 150% in 1% increments. The copier/printer machine shall have sorting capabilities.

Printers/ MFPs, if requested, may NOT be networked or shared across different networks for example between the CDOT network and non-CDOT computer network (consultant and/or contractor).

The printer/ MFP must be directly connected by USB cable only to a CDOT computer and can then be shared for use by other CDOT computers.

Note: Wi-Fi on the printers may not work because the ip address will conflict with the CDOT ip network. All equipment is to be new with warranties.

The Contractor shall supply all necessary supplies and a roll around stand. Contractor will provide and maintain stock of printer paper and toner for any provided printers, scanners, fax machines.

8) Computer Accessories: CDOT has restrictions and limitations with regard to the type of equipment permitted to be connected and supported on its computers and network. Due to the constantly changing nature of the computer field, contact the CDOT Regional IT Analyst for latest recommendations and cautions before purchasing any requested equipment such as printers, scanners, cameras, etc.

It is imperative that any accessories be compatible with the CDOT standard computer operation system: Windows10 64-bit.

Warning: Many devices will not work on the required 64-bit version, but only on the more common consumer Windows 32-bit version. Make sure the product states Windows 10, **64-bit** compatible.

Copy/Fax/Scanner/Network Printer units that created PDF files and rely on connectivity across the CDOT IP network violate CDOT cyber security policies and are not permitted to be installed on the CDOT network. All equipment is to be new with warranties. Contractor will provide and maintain stock of printer paper and toner for any provided printers, scanners and fax machines.



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REVISION OF SECTION 620  
FIELD FACILITIES

9) Miscellaneous Equipment:

- Two (2) Nikon Coolpix P900 16.0 MP Digital Camera or equivalent for use during the project duration.
- One (1) Dry Erase Board 6' x 4' or 8' x 4'.
- Four (4) each extra folding tables 72" x 36".
- Twenty (20) folding chairs.

Subsection 620.06 shall include the following:

The Field Facilities compound consisting of the Field Office (Class 2), Field Laboratory (Class 2) and Field Laboratory (State Furnished) shall be provided with all-weather surfacing and all-weather access, and a securely fenced and lighted yard with adequate area to accommodate state vehicles and state employee parking, minimum of 10 parking spaces.

The Contractor shall provide insurance for full replacement of all the contents of the Field Office (Class 2), Field Laboratory (Class 2) and Field Laboratory (State Furnished) due to theft, fire, or any other cause. Insurance shall be provided at all times that the office or laboratory is on the project.

The Contractor shall provide the Engineer with Security System for the Field Office (Class 2), Field Laboratory (Class 2) and Field Laboratory (State Furnished). This system shall be monitored 24 hours per day and shall include Police and CDOT employee notification. The Contractor shall install and maintain the system and pay all monthly service fees.

**METHOD OF MEASUREMENT  
AND  
BASIS OF PAYMENT**

Subsection 620.08 shall include the following:

All costs associated with the above work for setting up the Field Office (Class 2) and Field Laboratory (Class 2) shall be included in the original contract price of the Field Office (Class 2) and Field Laboratory (Class 2).

Copier, facsimile machine, printer, computer network system, insurance, and other incidental items will not be measured and paid for separately, but shall be included in the work.

Field Facilities will be measured by the number of facilities installed, certified, and accepted. The accepted quantities will be paid for at the contract unit price for the pay item listed below.

<b>Pay Item</b>	<b>Pay Unit</b>
Field Office (Class 2)	Each

END OF SPECIFICATION

REVISION OF SECTION 626  
PUBLIC INFORMATION SERVICES (TIER III)

Section 626 of the Standard Specifications is hereby revised for this project to include the following:

**DESCRIPTION**

This work consists of providing Public Information Management throughout the duration of the project. The contractor shall submit the Public Information Management deliverables to the Project Engineer for approval. Prior to approval by the Engineer, the Region Communications Manager (RCM) will also review deliverables. Anticipated communications issues on this project include:

- (1) Coordination with local rafting businesses operating on the Arkansas river within the project limits.
- (2) Building a strong stakeholder list, including emails for e-flier distribution.

**CONSTRUCTION REQUIREMENTS**

- (a) *Public Information Manager (PIM)*. The Contractor shall designate a PIM who shall be responsible for all activities associated with Public Information Management for this project. Within ten days following the date of the Notice to Proceed, the Contractor shall submit the name, contact information, and resume qualifications of the PIM and the Backup PIM for approval by the Engineer. The RCM will also review the PIM's and Backup PIM's resume. The PIM shall be identified, approved, and able to perform all requirements in this Section at least 14 days before the start of work. If this is not feasible, the Contractor is responsible for the project start-up deliverables and the individual preparing the deliverables shall meet the minimum qualifications of the PIM. The PIM shall have a minimum of five years of professional experience in public/media relations, marketing, or other related field and good verbal and written communication skills. Administrative/business office experience is not considered experience in a related field. The PIM shall not be the Project Superintendent.
- (b) *Activities of the PIM*. From the Notice to Proceed through the Final Acceptance of the project, the PIM shall be responsible for the following:
  - (1) *Project Onboarding Checklist*. The PIM or Backup PIM shall complete and update the Project Onboarding Checklist (<https://form.jotform.com/71167524405150>) on a monthly basis or as requested by the Engineer. The checklist will assist the PIM and CDOT with tracking required activities and deliverables.
  - (2) *On-Call*. The PIM shall be available or on-call each day there is work on the project and shall be available upon the Engineer's request outside of normal working hours.
  - (3) *Public Information Office*. The Contractor shall establish a public information office equipped with a telephone, a local telephone number with voicemail, a computer, and an email address. The public information office may be located within the project office, off-site, or within the PIM's office. The telephone line will be the Project Hotline and shall be included on the Project Information signs. The voicemail greeting shall be updated at least weekly. The greeting shall include the project's completion date, forthcoming activities for the update period, and allow the caller to leave a voice message. The PIM shall answer calls, check voicemail and email messages, and respond to messages throughout each day that construction operations are in effect. The PIM, and when necessary the Engineer, shall respond to all

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REVISION OF SECTION 626  
PUBLIC INFORMATION SERVICES (TIER III)

inquiries with a phone call, a voice message, or an email within one work day. The PIM shall document the name, contact information, either a phone number or email address, and the action taken. Within two days of receiving the message, the PIM or Backup PIM shall enter message details and follow-up action into Dialog.

(4) *Lane Closure Reporting.*

(i) *Dialog Project Account.* At the Pre-Construction Conference, the PIM shall submit a “Request for Dialog Account” to the Engineer. The Engineer will provide the Contractor a login and password for the Dialog Customer Service Program and the Lane Closures and Updates Program. At least once per week, the PIM or Backup PIM shall be responsible for entering project information into the Dialog Project Account.

(ii) *Weekly Lane Closures.* The PIM shall enter the planned weekly lane closures and updates into the Dialog Program by Thursday at 12:00 P.M. for the upcoming Sunday through Saturday. The information will be included on the website, [www.cotrip.org](http://www.cotrip.org), and a media report. The PIM shall develop Traffic Advisories that include lane closure and update information. The PIM or Backup PIM shall notify the Engineer and the RCM one week in advance of all planned “no work” periods. The Engineer will approve the Lane Closure and Updates by each Friday at 3:00 P.M. Each Monday by 12:00 P.M., the PIM shall review [www.cotrip.org](http://www.cotrip.org) and verify that the lane closure and update information is accurate. If corrections are necessary, the PIM shall coordinate those corrections to [www.cotrip.org](http://www.cotrip.org) with the Engineer.

(iii) *Real-Time Lane Closure Changes.* The PIM or Backup PIM shall notify the Engineer at least 24 hours in advance for changes to an approved Lane Closure. The Engineer will notify the PIM when the Dialog Program record is available for changes. After changes are made, the PIM shall notify the Engineer the changes are ready for review and approval.

(5) *Public Information Collateral.* The PIM shall develop a variety of Public Information Collateral to share project information with the public as necessary for major project milestones such as long-term closures or impactful construction activities. Collateral includes the following:

(i) *Photographs and Video Recordings.* The PIM shall take photographs and video recordings on regular intervals and submit them to the Engineer and the Region Communications Manager. A cell phone camera is permitted. Photographs and video recordings may capture traffic control, paving, slope repair, erosion control, bridge deck, and rail work activities. Photographs and video recordings may also include other key areas of work as identified by the Contractor or the Engineer and will be used in Public Information Collateral. The Contractor shall submit a minimum of two digital photographs or video recordings each month to the Engineer. Each photograph and video recording shall include project number, project code, date, time, location and station or milepost, and name of person taking the picture or video recording.

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REVISION OF SECTION 626  
PUBLIC INFORMATION SERVICES (TIER III)

- (ii) *Web Page Updates.* The PIM shall work with CDOT to develop the latest project information for the internet web page content. The PIM shall supply information for the web page using the CDOT web page template. When applicable, the updates shall contain all appropriate web page links to and from other sites. The PIM shall provide updated information at least weekly. CDOT will update the web page.
- (iii) *Electronic Project Fliers.* The Contractor or PIM shall develop electronic Project Fliers using the CDOT template and shall include CDOT's logo, and at the Engineer's discretion may include the project logo. The Contractor or
- (iv) PIM shall contact the Engineer for copies of the templates. At least 14 days prior to delivering electronic Project Fliers, the Contractor or PIM shall prepare and submit a draft of the flier to the Engineer. The Engineer's review will not exceed seven days. Fliers shall be approved by the Engineer before distribution. Fliers shall be delivered by email. The list of recipients shall be developed from the Stakeholder's List and shall be approved by the Engineer and RCM. The RCM will post the Project Fliers on social media.

This project requires Project Fliers at the following milestones:

1. Initial Project Flier
2. Project Completion

Initial Project Flier. At least four days prior to the start of work, the PIM shall deliver one approved electronic flier to each email recipient on the approved list. The Initial Project Flier shall provide the project start and end dates, project location, description of work, traffic impacts, scheduled work hours and work days, the Project Hotline, email address, web address, project map, photo of project area, and a construction safety message as defined by the Department.

- (v) *Media Relations.* The PIM shall develop media releases using the CDOT template. The releases shall include detour maps or other visual aids. The PIM shall develop media releases based on major construction milestones such as project start, lane shifts, a traffic switch, closures, and on other occasions as directed by CDOT. At least 14 days prior to the construction milestone, the PIM shall submit a draft to the Engineer for approval. The Engineer's review will not exceed seven days. The media release, shall be approved by the Engineer before distribution. CDOT will distribute media releases.

At least 14 days prior to the start of work, the Contractor or PIM shall submit for approval by the Engineer a media release summarizing the project scope, construction phasing, potential construction activities that impact traffic, the project end date, and a summary of project benefits.

CDOT will address all media inquiries and media requests. The PIM or Backup PIM shall immediately notify the Engineer of any on-site situations involving the media. When the media contacts the PIM or Contractor staff, the PIM shall provide the RCM's contact information.

- (vi) *Maps and Graphics.* The PIM shall develop maps, detour maps and graphics for use in Public Information Collateral.

REVISION OF SECTION 626  
 PUBLIC INFORMATION SERVICES (TIER III)

- (6) *Public Information Plan.* The PIM shall submit a Public Information Plan (PIP) within ten days of the Pre-Construction Conference for approval by the Engineer. The PIP shall be specific to the project. The Plan shall include the public information strategies for community and business relations, government affairs and media relations, the stakeholder list, identification of public information issues, proposed outreach, and approach to crisis communications using the Public Information Collateral. The PIP shall be updated as necessary and as directed by the Engineer.
- (7) *Project Meetings.* The PIM shall participate in the weekly project meetings. The PIM shall discuss communication issues, and provide a status on the items in this specification.
- (8) *Language Assistance for LEP Persons.* CDOT is required to provide access to Limited English Proficient (LEP) persons. LEP persons are individuals for whom English is not their primary language and who have a limited ability to read, write, speak, or understand English. Examples of language assistance include translation of meeting notices and interpretation services at meetings. The PIM shall work with CDOT to provide interpretation services upon request by an LEP person. When the project is located in a community that has greater than five percent LEP persons, Public Information Collateral shall be translated for those individuals. The PIM shall document all measures taken to communicate with LEP persons and record all requests for language assistance.
- (c) *Response Protocol to CDOT and the Public.* The PIM shall follow Table 626-1 in responding to correspondence from stakeholders and the public:

**Table 626-1**  
**RESPONSE PROTOCOL**

TYPE OF COMMUNICATION	TIMING OF RESPONSE
Project Hotline calls and voice messages	Answer calls and check messages throughout each work day. Respond the same day or within 24 hours. Enter details into Dialog within two days.
Email messages	Respond the same day. For high volume situations, respond within two work days. Enter details into Dialog within two days.
Calls from CDOT Staff	Respond as soon as possible, and within 24 hours.
Web page Inquiries	Respond the same day. For high volume situations, respond within two work days.

- (d) *Deliverable Protocol.* The PIM shall conform to the Project Onboarding Checklist or Region Public Information Management Communication Checklist available from the Engineer and RCM.

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REVISION OF SECTION 626  
PUBLIC INFORMATION SERVICES (TIER III)

- (e) *Public Information Management Contact Sheet.* The PIM shall complete and update a Public Information Management (PIM) Contact Sheet with the names and contact information of the individuals pertinent to Public Information for approval by the Engineer. At a minimum the Contact Sheet will include the Resident Engineer, the Project Engineer, Region Communications Manager, CDOT Website Administrator, CDOT Dialog Administrator, CDOT Colorado Traffic Management Center, PIM, Contractor Superintendent, and Traffic Control Supervisor. If applicable the contact sheet shall include the Region 1 Joint Operations Center and Region 2 Joint Operations Center. The PIP shall include the PIM Contact Sheet.
- (f) The following contacts shall be included in the PIM Contact Sheet as communication liaisons with commercial as well as public Arkansas river recreation.

Tom Waters  
Assistant Park Manager  
Arkansas Headwaters Recreation Area  
Colorado DNR  
[tom.waters@state.co.us](mailto:tom.waters@state.co.us)  
719-539-7289 (x4713)

Rob White  
Park Manager  
Arkansas Headwaters Recreation Area  
Colorado DNR  
[rob.white@state.co.us](mailto:rob.white@state.co.us)  
719-539-7289

- (g) Stakeholder List. The PIM shall submit a Stakeholder List as part of the PIP. The Stakeholder List shall include stakeholder's information including, stakeholder group, contact name, telephone number, email, and notes on communication needs for the project and project impacts.
- a. *The stakeholder list shall include residences and businesses with accesses directly impacted by the project. Specifically, those located on Shannon Rd. and Pinon Acres Dr. as well as at the intersection of US50 and CR 27 at Texas Creek. The list shall include all commercial rafting companies known to be operating with the project limits.*
  - b. *The stakeholder list shall be completed prior to the Pre-Construction meeting and prior to two weeks before the start of construction activities.*

**METHOD OF MEASUREMENT**

Public Information Management will be measured as the number of days elapsed between project Notice to Proceed and Final Acceptance. Failure to provide acceptable Public Information Management will result in withholding of payment for the days affected.

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REVISION OF SECTION 626  
PUBLIC INFORMATION SERVICES (TIER III)

**BASIS OF PAYMENT**

Payment will be made under:

<b>Pay Item</b>	<b>Pay Unit</b>
Public Information Management (Tier III)	Day

Payment for Public Information Management will be full compensation for all work, materials and equipment to provide public information throughout the project in accordance with this specification.

If the Contractor fails to complete construction within the approved contract time, payment will not be made for Public Information Management for the period of time after expiration of the approved contract time. These items shall be provided at the Contractor's expense.

END OF SPECIFICATION

REVISION OF SECTIONS 627  
MODIFIED EPOXY PAVEMENT MARKING ACCEPTANCE

Sections 627 of the Standard Specifications is hereby revised for this project as follows:

Subsection 627.05 shall include the following:

The Contractor shall take retroreflectivity readings on all modified epoxy pavement marking lines for each mile of roadway striping on the project. A test section is defined as each continuous line type (lane lines, centerlines, edge lines, channelizing lines, and others), which has been completed in a single day.

The Contractor shall use a Contractor-furnished retroreflectometer conforming to ASTM E 1710 or AASHTO TP111. The retroreflectometer shall be calibrated, tested and operated in accordance with manufacturer recommendations. The Contractor shall take one retroreflectivity reading within every lane mile striped in a single day. The calibration for the retroreflectometer shall be verified each day, prior to the readings being taken. The retroreflectivity readings shall be taken in the presence of the Engineer no earlier than 3 days and no later than 14 days after the marking is tack free. Traffic control required for retroreflectivity readings shall be included in the cost of the work.

The initial minimum retroreflectivity reading (mcd/m<sup>2</sup>/lux) in a one-mile line section of pavement marking paint shall be 350 for white and 200 for yellow. Any retroreflectivity readings below 350 for white and 200 for yellow shall be subject for removal and replace. In the case of a failing retroreflectivity reading three additional readings can be taken at random within the same line mile, if the average of the three additional readings is equal to or greater than 350 for white and 200 for yellow. That new average may be substituted for a passing retroreflectivity reading.

Any corrective work will not be paid for separately but shall be incidental to Pay Item 627-00008 (Modified Epoxy Pavement Marking). Prior to taking retro-reflectivity readings, the Contractor shall remove at the retro-reflectivity reading locations any excess beads placed during marking application.

END OF SPECIFICATION



REVISION OF SECTIONS 627 AND 713  
PERFORMED THERMOPLASTIC PAVEMENT MARKING

Section 627 of the Standard Special Provisions is hereby revised for this project as follows:

Subsection 627.09 shall include the following:

- (a) *Application.* An epoxy resin primer shall be applied to any existing surface (concrete, asphalt, existing markings, etc.) prior to the application of any new preformed thermoplastic, plastic pavement marking. The epoxy resin primer shall conform to CDOT Standard Specifications subsection 708.07. Primer shall be required for all markings used including markings that manufacture does not require a primer. Primer and application will not be measured and paid for separately, but shall be included in the work.

Surface shall be dry and free of dirt, dust, chemicals, and/or significant oily substances. Application procedures for Portland concrete pavement shall be as described above except a compatible primer sealer shall be applied before application of marking to assure proper adhesion.

- (c) *Inlaid Preformed Thermoplastic Pavement Marking.* Shall be done for Xwalk and Stop Lines and FHWA Exit Ramp Arrows. The grooved width shall be the pavement marking width plus 1 inch, with a tolerance of  $\pm \frac{1}{4}$  inch. The dimensions of the Xwalk marking shall 2ft x 8ft typical. The dimension of the stop bar shall be 2ft x length of need. The FHWA Exit Ramp Arrow is composed of two 10ft x 8 in and one 16.5ft x 8 in lines. The depth of the grooves shall be 130 mils  $\pm$  5 mils. Groove position shall be a minimum of 2 inches from the edge of the pavement marking to the longitudinal pavement joint. Grinding of existing preformed thermoplastic pavement marking and the inlaying of proposed preformed thermoplastic pavement marking shall not be measured and paid for separately, but shall be included in the work. Word Symbols (Arrows), shall be Preformed Thermoplastic Pavement Marking and surface applied.

Grooving shall not be performed on bridge decks.

The preformed thermoplastic pavement marking shall be inlaid on new and existing pavements as shown in the Contract. The material shall be capable of use for patching worn areas of the same type according to the manufacturer's recommendations.

Subsection 627.13 shall be include following:

Payment will be made under:

<b>Pay Item</b>	<b>Pay Unit</b>
Preformed Thermoplastic Pavement Marking (Xwalk-Stop Line)(Special)	Square Foot
Preformed Thermoplastic Pavement Marking (Word-Symbol)(Special)	Square Foot
Preformed Thermoplastic Pavement Marking (Word-Symbol)	Square Foot

Removal and application of temporary preformed thermoplastic pavement marking associated with wet-cutting of pavement shall be at the Contractor's expense.

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REVISION OF SECTIONS 627 AND 713  
PREFORMED THERMOPLASTIC PAVEMENT MARKING

Subsection 713.14 shall include the following:

(a) *General.*

Material such as lines, legends, or symbols shall be capable of being affixed to HMA or PCC pavements. Marking shall be capable of conforming to pavement contours, breaks, and faults etc. by the use of the normal heat of a propane torch. Marking shall be capable of withstanding the actions of traffic at normal pavement temperatures. Marking shall have resealing characteristics such that it is capable of fusing with itself and previously applied thermoplastic pavement markings when heated with the torch.

(c) *Performance.*

Marking, when applied in accordance with manufactures recommendations shall demonstrate a uniform level of sufficient night time retro-reflection when tested in accordance to ASTM E1710-97. The applied material must have an initial minimum intensity reading of  $500 \text{ mcd} \cdot \text{m}^{-2} \cdot 1\text{x}^{-1}$  for white and  $300 \text{ mcd} \cdot \text{m}^{-2} \cdot 1\text{x}^{-1}$  for yellow as measured with a retro-reflectometer.

The top surface of the stencils (the same side as the factory applied surface beads) shall have an indicator system for the contractor to properly gauge the correct amount of heat to apply during installation. The indicator system shall have a positive visual indication, such as beads changing color or indents closing together, when the material has reached the correct installation temperature. The indicator system must also provide a positive, visual indication if the material has not reached the correct installation temperature.

END OF SPECIFICATION

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.

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REVISION OF SECTION 630  
PORTABLE MESSAGE SIGN PANEL

Subsection 630.13 shall include the following:

The portable message sign panels shall be on the project site 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.

Subsection 630.15 shall include the following:

Portable message sign panels will be measured one of the two following ways:

- (1) By the actual number of days each portable message sign is used on the project as approved by the Engineer.
- (2) By the maximum number of approved units in use on the project at any one time.

Subsection 630.16 shall include the following:

<b>Pay Item</b>	<b>Pay Unit</b>
Portable Message Sign Panel	Day
Portable Message Sign Panel	Each

END OF SPECIFICATION

**REVISION OF SECTION 630  
IMPACT ATTENUATOR (TEMPORARY)**

Section 630 of the Standard Specifications is hereby revised for this project to include the following:

**DESCRIPTION**

This work consists of furnishing, installing, certifying, moving, repairing, maintaining, and removing temporary impact attenuators in accordance with these specifications and in conformity with the lines and details shown on the plans or established.

**MATERIALS**

Each impact attenuator shall be selected from the Crash Cushion and End Treatment Application Chart as listed in the *Safety Selection Guide* on the CDOT Design and Construction Project Support web site. Impact attenuators shall conform to the requirements of the manufacturer and be capable of bi-directional shielding of the objects detailed and located on the plans.

The attenuator shall meet the requirements of NCHRP Report 350 (only applicable for impact attenuators developed prior to 2011) or MASH (acceptable for all impact attenuators), TL-3. TL-2 attenuators shall not be accepted.

**CONSTRUCTION REQUIREMENTS**

The site shall be prepared to receive the impact attenuator by filling, excavating, smoothing, constructing the paved foundation pad, installing approved transition and anchoring, and all other work necessary for the proper installation of the attenuator.

The impact attenuator shall be fabricated and installed in accordance with the manufacturer's recommendations. The Contractor shall provide a copy of the manufacturer's installation instructions and parts list to the Engineer prior to installation of the device.

Each installation shall be supervised and certified as correct upon completion by a representative of the device manufacturer or by an employee of the Contractor who is a certified installer. The certified installer shall have completed device training and shall be registered with the manufacturer as a certified installer. The Contractor shall submit all appropriate documentation to validate that the certified installer has completed device training and has been registered with the manufacturer as a certified installer.

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REVISION OF SECTION 630  
IMPACT ATTENUATOR (TEMPORARY)

**METHOD OF MEASUREMENT**

Impact Attenuator (Temporary) will be measured by the number of attenuators shown on the plans, installed, certified, and accepted; or the actual number of authorized 24-hour periods that the attenuator is used.

**BASIS OF PAYMENT**

If the pay unit is “day” there will be no incremental payment for the device. If the pay unit is “each” the item will be paid incrementally in accordance with subsection 630.16.

The accepted quantities will be paid for at the contract unit price for the pay item listed below:

Payment will be made under:

<b>Pay Item</b>	<b>Pay Unit</b>
Impact Attenuator (Temporary)	Each
Impact Attenuator (Temporary)	Day

Payment will be full compensation for all work and materials required to furnish, install, certify, move, repair, maintain, and remove the impact attenuator. Site preparation, foundation pad, epoxy painting, and all necessary hardware including anchors and transitions will not be paid for separately, but shall be included in the work.

END OF SPECIFICATION

REVISION OF SECTION 630  
MOBILE ATTENUATOR

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

Subsection 630.01 shall include the following:

This work shall consist of furnishing, operating, and maintaining a truck with an attached impact attenuator.

Subsection 630.09 shall include the following:

**Mobile Attenuator shall be truck mounted:**

**Truck Mounted Attenuator.** The Contractor shall supply a vehicle with a truck mounted attenuator approved by the FHWA to meet NCHRP 350 criteria for level TL-3 collisions. The attenuator shall be mounted to a suitable truck in a manner meeting the Manufacturer's specifications. The truck shall be furnished with a roof mounted Advance Warning Flashing or Sequencing Arrow Panel (B Type). The truck shall be used when setting up or taking down the work zone and shall be parked in the activity area protecting the construction work while work is being performed, unless otherwise directed.

Subsection 630.13 shall include the following:

Maintenance, storage, operation, and all repairs of Mobile Attenuator and associated vehicle shall be the responsibility of the Contractor.

Subsection 630.17 shall include the following:

Mobile Attenuators will be measured as the actual number of attenuators that are used during construction; or the actual number of authorized 24-hour periods that the attenuator is used.

Subsection 630.18 shall include the following:

<b>Pay Item</b>	<b>Pay Unit</b>
Mobile Attenuator	Each
Mobile Attenuator	Day

Payment will be full compensation for all labor, materials and equipment required to operate and maintain the truck and attenuator for the duration of the project, including the attenuator and flashing panel.

END OF SPECIFICATION

**FORCE ACCOUNT ITEMS**

**DESCRIPTION**

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

**BASIS OF PAYMENT**

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

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

<u>Force Account Item</u>	<u>Estimated Quantity</u>	<u>Amount</u>
F/A – Minor Contract Revisions	F.A.	\$200,000 *
F/A – Asphalt Pavement Incentive	F.A.	\$100,000
F/A – Fuel Cost Adjustment	F.A.	\$60,000
F/A – Roadway Smoothness Incentive	F.A.	\$250,000
F/A – Asphalt Cement Cost Adjustment	F.A.	\$100,000
F/A – Interim Surface Repair	F.A.	\$50,000 *
Project First Program	F.A.	\$10,000
F/A – Erosion Control	F.A.	\$10,000
F/A – Guardrail (Materials)	F.A.	\$10,000 *

F/A Minor Contract Revisions – Consists of minor work authorized and approved by the Engineer, which is not included in the contract plans or specifications, and is necessary to accomplish the scope of work of this contract.

F/A Asphalt Pavement Incentive – Incentive/disincentive will be made in accordance with subsection 106.05.

F/A Fuel Cost Adjustment – Adjustment will be made in accordance with subsection 109.06(i).

F/A Roadway Smoothness Incentive – Incentive/disincentive will be made in accordance with Section 105.07.

F/A Asphalt Cement Cost Adjustment – Adjustment will be made in accordance with the subsection 109.06(j).

F/A Interim Surface Repair – Consists of work related to the Project Special Provision: Revision of Section 202 – Removal of Asphalt Mat (Planing).

F/A Project First Program – Cost of participating in a Project First Program between the Contractor and the Department in accordance with the Standard Special Provision.



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FORCE ACCOUNT ITEMS

F/A Erosion Control – Supplemental erosion control measures suggested by the Erosion Control Supervisor, but not provided for in the contract plans or specifications. All items shall be approved by the Engineer prior to installation or they will be at no cost to the project.

F/A Guardrail (Materials) - Consists of materials costs related to the Project Special Provision: Revision of Section 210 – Adjust Guardrail.

END OF SPECIFICATION

## TRAFFIC CONTROL PLAN – GENERAL

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

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

1. Subsection 104.04 and Section 630 of the specifications.
2. 2009 Manual on Uniform Traffic Control Devices (MUTCD).
3. Standard Plan S-630-1, Traffic Controls for Highway Construction and Standard Plan S-630-2 (most current revisions).
4. Region 2 Lane Closure Strategy, Latest Edition.
5. Schedule of Construction Traffic Control Devices.
6. Signing Plans.
7. Construction phasing details.

Unless otherwise approved by the Engineer, the Contractor's equipment shall follow normal and legal traffic movements. The Contractor's ingress and egress of the work area shall be accomplished with as little disruption to traffic as possible. Traffic control devices shall be removed by picking up the devices in a reverse sequence to that used for installation. This may require moving backward through the work zone. When located behind a barrier or at other locations shown on approved traffic control plans, equipment may operate in a direction opposite to adjacent traffic.

CDOT may have entered into operating agreements with one or more law enforcement organizations for cooperative activities. Under such agreements, at the sole discretion of CDOT, law enforcement personnel may enter the work zone for enforcement purposes and may participate in the Contractor's traffic control activities. The responsibility under the Contract for all traffic control resides with the Contractor and any such participation by law enforcement personnel in Contractor traffic control activities will be referenced in either the Special Provisions or General Notes of the plans depending on whether the Contractor is to hire local law enforcement or if CDOT is contracting with Colorado State Patrol for uniformed traffic control. Nothing in this Contract is intended to create an entitlement, on the part of the Contractor, to the services or participation of the law enforcement organization.

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

During the construction of this project, traffic shall use the present traveled roadway unless identified on the plans or approved by the Engineer.

The Contractor shall not have construction equipment or materials in the lanes open to traffic at any time unless approved by the Engineer.

At least two weeks prior to starting construction, the Contractor shall notify the Engineer of the date the Contractor intends to start construction. The Contractor PIM shall also at that time confirm with the Engineer the key stakeholders and inform the agreed list of stakeholders no later than one week prior to construction.

All costs incidental to the requirements as listed in this specification shall be included in the 630 pay items contract prices for the project and will not be paid for separately.

TRAFFIC CONTROL PLAN – GENERAL

**Project Working Times**

(a) *Project Specific Working Time Matrix.* The Contractor shall not perform any work requiring a lane closure on the roadway except within the hours as listed below, or as directed by the Region Traffic Engineer.

<b>PROJECT SPECIFIC WORKING TIME MATRIX</b>									
*** Seasonal Lane Closure Hours (October – May)									
Day Time Operations (Mon – Thurs) / Night Time Operations (Sun – Thurs)									
State Highway Number	From	To	Beginning of Section MP	End of Section MP	Lanes	Facility Type	Direction	< 0.25 mile closure	0.25 - 1 mile closure
050A	<i>Chaffee/Fremont County Line</i>	<i>SH 9</i>	<i>225.58</i>	<i>269.13</i>	<i>2</i>	<i>Arterial</i>	<i>Both</i>	<i>Anytime</i>	<i>5pm - 10am</i>
*** Seasonal Lane Closure Hours (June – September)									
Day Time Operations (Mon – Thurs) / Night Time Operations (Sun – Thurs)									
State Highway Number	From	To	Beginning of Section MP	End of Section MP	Lanes	Facility Type	Direction	< 0.25 mile closure	0.25 - 1 mile closure
050A	<i>Chaffee/Fremont County Line</i>	<i>SH 9</i>	<i>225.58</i>	<i>269.13</i>	<i>2</i>	<i>Arterial</i>	<i>Both</i>	<i>Anytime</i>	<i>6pm - 8am</i>
*** Weekend (Fri-Sun) Lane Closure Hours (October – May)									
State Highway Number	From	To	Beginning of Section MP	End of Section MP	Lanes	Facility Type	Direction	< 0.25 mile closure	0.25 - 1 mile closure
050A	<i>Chaffee/Fremont County Line</i>	<i>SH 9</i>	<i>225.58</i>	<i>269.13</i>	<i>2</i>	<i>Arterial</i>	<i>Both</i>	<i>Anytime</i>	<i>5pm - 9am</i>
*** Weekend (Fri-Sun) Seasonal Lane Closure Hours (June – September)									
State Highway Number	From	To	Beginning of Section MP	End of Section MP	Lanes	Facility Type	Direction	< 0.25 mile closure	0.25 - 1 mile closure
050A	<i>Chaffee/Fremont County Line</i>	<i>SH 9</i>	<i>225.58</i>	<i>269.13</i>	<i>2</i>	<i>Arterial</i>	<i>Both</i>	<i>5pm - 10am</i>	<i>7pm - 8am</i>

\*\*\* Weekend Operations apply from noon on Friday to midnight Sunday PM/Monday AM; Friday afternoon closures shall observe the most prohibitive of the weekday or weekend schedule. Working time variance from times as listed above shall require written request to Region 2 Traffic Engineer for approval. Request shall be submitted minimum 30 calendar days prior to planned work requiring a variance for review. See below for instructions, process, and requirements on submittal.

TRAFFIC CONTROL PLAN – GENERAL

Weekend work will not be permitted unless approved by the Engineer or Region 2 Traffic Engineer.

(b) *Variance Process for Project Specific Working Time Matrix.*

1. Contractor will have 30 working days to submit a variance request to Region 2 Traffic Engineer in advance of planned work requiring a proposed variance for review.
  - A. Request for variance will be submitted through the Engineer for accuracy check prior to submittal to the Region 2 Traffic Engineer.
  - B. Region 2 Traffic Engineer will either approve or reject the request within five working days of receipt of submittal from the Engineer.
  - C. Contractor will have five working days to alter/change request based on comments from Region 2 Traffic Engineer if rejected and resubmit.
  - D. Appeal request for variance will be submitted through the Engineer for accuracy check prior to submittal to the Region 2 Traffic Engineer
  - E. Region 2 Traffic Engineer will either approve or reject appeal request within five working days of receipt of submittal from the Engineer.
2. Contractor shall have two appeal opportunities to alter or change request. After two appeal attempts by the Contractor, the request will no longer be accepted by the Engineer.
3. Engineer will be required to keep communication log and all documentation of variance request for construction project files.

**Method of Handling Traffic (MHT) and Traffic Management Plan (TMP)**

All lane closures shall be subject to the approval of the Engineer. A MHT (Method of Handling Traffic) shall be computer generated (not hand drawn) and shall be approved by the Engineer prior to any request for a lane closure or lane shift.

Request for a lane closure shall be made at least seven calendar days in advance of the time the lane closure is to be implemented. Lane closures will not be allowed to remain unless being utilized continuously for the intended purpose for which they were set up.

As part of the Traffic Control Plan - General and as required by the Contract, the Contractor shall develop detailed MHT plans in accordance with the accepted Construction Traffic Control Plan and Phasing Plans. The detailed MHT plans shall include the Contractor's construction activities, phases, and required elements of the construction traffic control required for the completion of the project. The Engineer may require additional information for specific tasks or construction activities.

A. MHT plans shall address or include at a minimum the following:

- (1) Design details and location of detours, including speed reduction and special signing requirements.
- (2) Traffic control required for the placement of all signing, traffic control devices, drum channelizing devices, temporary pavement markings, and any other related devices or required work items.
- (3) Traffic control for the placement of temporary barriers.

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#### TRAFFIC CONTROL PLAN – GENERAL

- (4) Portable Message Sign Panels and other specialty device placement and use, including messages.
- (5) Placement of temporary pavement markings.
- (6) Oversize load restrictions, notification and handling for specific work activities and proposed overall project handling.
- (7) Road closure points and barricade placement.
- (8) Use of special construction signs.
- (9) Work zone protection.
- (10) Site specific details, and handling of isolated work elements.
- (11) Flagging stations and illumination, if required.
- (12) Control of construction access points and prevention of unauthorized use.
- (13) Emergency vehicle handling.
- (14) Accident resolution and emergency road closure details.
- (15) Method of handling bicycles and pedestrians.
- (16) Method of public notification of progress, pending schedule and special activities.
- (17) Traffic control during structure and paving operations.
- (18) Flagging and signing of haul routes and Access Line (R.O.W.) breaks, if required.
- (19) Special construction activities.
- (20) Construction striping and detour implementation plan.
- (21) Traffic control during phase changes.
- (22) Public and local notification.
- (23) Number of flaggers and support personnel for all work.
- (24) Construction Speed Zoning.
- (25) Night work requirements and device placement.
- (26) Coordination requirements for adjoining projects.
- (27) Maintenance of access to businesses and homes.

Traffic lanes through the construction area shall not be modified or shifted and shall have a clear width of at least 11 feet per lane.

During the resurfacing work, only one lane may be closed to traffic at any time unless approved by the Engineer. Traffic shall not be delayed for more than 15 minutes, or as directed by the Engineer.

The Contractor and subcontractors shall equip their construction vehicles with flashing amber lights. Equipment to be used at night shall also be equipped with flashing amber lights. Flashing amber lights on vehicles and equipment shall be visible from all directions.

Any signs damaged due to the Contractor's operations shall be replaced in kind or repaired by the Contractor at no additional cost to the project.

#### B. Reduction in Speed Limits (CDOT Form 568) Submittal

Link: <https://www.codot.gov/library/forms/cdot0568.pdf>

Submittal Instructions for 568 requests on US50 in Region 2:

Send to: Matthew Jagow, Region 2 Traffic Resident Engineer  
Email: [matthew.jagow@state.co.us](mailto:matthew.jagow@state.co.us)

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## TRAFFIC CONTROL PLAN – GENERAL

### 1. Requirements and Process

- A. Must be submitted using the most current form (see link).
- B. Must be submitted with approved MHTs or TMPs (as applicable).
- C. Must be submitted minimum 20 working days prior to proposed requested implementation date as indicated on form.
  - (1) Region 2 Traffic Engineer or Region 2 Traffic Resident Engineer will either approve or reject within five working days from date of submittal by the Engineer.
  - (2) If rejected, Engineer and Contractor will have five working days from date of reply to resubmitted for re-review by Region 2 Traffic personnel indicated above for approval.
  - (3) Region 2 Traffic Engineer or Region 2 Traffic Resident Engineer will either approve or reject within five working days from date of resubmittal by the Engineer.
  - (4) If rejected, Region 2 Traffic Engineer or Region 2 Traffic Resident Engineer will indicate to Engineer if a 568 request can be resubmitted for re-review.

### 2. Distribution Requirements

- A. Region 2 Traffic personnel as listed above will be required for distributing approved 568s to the Engineer and appropriate Law Enforcement Agencies as listed in the Public Information Management specification – Revision of Section 626 Project Special Provision.
- B. The Engineer will be required to distribute approved 568s to the following entities if applicable:
  - (1) Region 2 Resident Engineer in charge of project
  - (2) Region 2 Program Engineer in charge of project
  - (3) Local Region 2 Maintenance Area Ops and Foreman
  - (4) Local Public Works Departments, as necessary
  - (5) Other Stakeholders as necessary, listed in this project’s Public Information Management specification

### **Modified Holiday Working Times and Schedule Modifications**

The Contractor shall coordinate all operations requiring traffic control with special events as directed by the Engineer.

Holidays recognized for unusual traffic volumes are:

New Year’s Day  
Dr. Martin Luther King, Jr.’s Day  
President’s Day  
Good Friday  
Memorial Day

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## TRAFFIC CONTROL PLAN – GENERAL

Independence Day  
Labor Day  
Columbus Day  
Veterans' Day  
Thanksgiving Day  
Christmas Day

The Contractor shall not perform work requiring active traffic control management on any day of a three or four-day holiday weekend. Active traffic control operations shall stop at 12:00 noon the day before the start of the holiday weekend and shall commence the day after the three or four days have passed. The Contractor shall only perform active traffic control operations to make emergency repairs, and provide proper protection of the work and traveling public on these days. The Contractor shall perform traffic control inspection in accordance with subsection 630.11(6) on these days.

Additional legal holidays, when designated by the Governor or the President of the United States, will also be recognized by the State.

### **Vehicle and Pedestrian/Bicycle Access Management**

The Contractor shall not install construction traffic control devices that block or impede sidewalks at ramp intersections for pedestrians, disabled persons, or bicyclists. The Contractor is restricted from storing materials, equipment, or construction traffic control devices (signs, cones, etc.) in any median, shoulder, or sidewalk area.

The Contractor shall maintain continuous access at ramp intersections within the project for pedestrians, bicyclists, and disabled persons. When the existing access route is disturbed by construction, an alternate route shall be provided as designated on the plans.

The Contractor shall maintain access to all properties at all times unless otherwise directed by the Engineer. The costs of maintaining access will not be paid for separately but shall be included in the work.

During non-working hours, the roadways shall be restored to a safe travel condition for the free flow of traffic. Any maintenance required to restore the roadways to this condition, including pavement patching and grading, shall be done prior to opening the areas to traffic or completing work for the day.

When the Contractor removes, obliterates, or overlays any pavement markings, the Contractor shall replace them on a daily basis prior to opening the affected areas to traffic. All temporary pavement markings shall fully comply with the Standard Specifications and Special Provisions.

The Contractor shall clean the roadway of all construction debris before opening it to traffic.

The Contractor shall not place tack coat on any surface to be paved where traffic will be forced to travel upon prior to bituminous material application.

### **Project Communications**

Contractor shall notify Engineer within 48 hours of anticipated schedule change.

TRAFFIC CONTROL PLAN – GENERAL

Contractor shall follow all requirements as noted in Project Special Provision, Revision of Section 626 – Public Information Management. The Engineer and Region 2 Communication Officer shall approve any deviation from requirements prior to implementation.

Contractor shall copy identified stakeholders, as directed by the Engineer, on all lane closure submittals.

**Project Special Traffic Control Guidelines**

It is anticipated that this project will impact commercial river access.  
The Contractor shall follow communication requirements in Revision of Section 626 – Public Information Management (Tier III)

**Project Coordination**

Contractor shall refer to Public Information Management Project Special Provision in contract for list of identified stakeholders to notify of construction impacts, operation activities, etc., as directed by the Engineer.

Other Stakeholders Groups not previously identified in Public Information Management Project Special Provisions:

Maintenance:	<i>Mike Hammons</i>	Phone: (719) 371-6436 Email: <a href="mailto:michael.hammons@state.co.us">michael.hammons@state.co.us</a>
Access:	<i>Valerie Sword</i>	Phone: (719) 546-5415 Email: <a href="mailto:valerie.sword@state.co.us">valerie.sword@state.co.us</a>
R2 Bike/Ped Cord:	<i>Roger Graham</i>	Phone: (719) 251-6976 Email: <a href="mailto:roger.graham@state.co.us">roger.graham@state.co.us</a>
ADA Cord:	<i>Ken Brubaker</i>	Phone: (303) 757-9804 Email: <a href="mailto:kenneth.brubaker@state.co.us">kenneth.brubaker@state.co.us</a>
Fremont County Sheriff's Department		Phone: (719)276-5555
Canon City Fire Department		Phone: (719) 275-8666
Oversized/Overweight Vehicles <i>CDOT Truck Permit Office</i>		Phone: (303) 757-9539

END OF SPECIFICATION



UTILITIES

Known utilities within the limits of this project are:

Tier 1	Tier 2	Utility Company	Contact Information		
			Name	Email	Phone
x		CenturyLink			719-204-3165
x		Sangre De Cristo Electric			719-395-2412
	x	CDOT Region 2 Fiber	Joe Pererra	<a href="mailto:joseph.pirera@state.co.us">joseph.pirera@state.co.us</a>	719-582-0948
x		Black Hills Energy	Chris Seltzer	<a href="mailto:christopher.seltzer@blackhillscorp.com">christopher.seltzer@blackhillscorp.com</a>	719-546-6456

The work described in these plans and specifications requires coordination between the Contractor and the utility companies in accordance with subsection 105.11 in conducting their respective operations as necessary to complete the utility work with minimum delay to the project.

The work listed below shall be performed by the Contractor in accordance with the plans and specifications, and as directed by the Engineer. The Contractor shall keep each utility company advised of any work being done to its facility, so that the utility company can coordinate its inspections for final acceptance of the work with the Engineer.

**The work listed below will be performed by the contractor:**

No work by the contractor is anticipated.

All utilities within the project shall be avoided. The Contractor shall modify construction plans to avoid existing underground facilities as needed, and as approved by the Engineer. Please note that UNCC marks only its members' facilities – Other facilities, such as ditches and drainage pipes may exist, and it is the Contractor's responsibility to investigate, locate and avoid such facilities.

The contractor shall positively identify all existing utilities that may be in conflict with the work and to the satisfaction of the project engineer. This work is incidental to the project.

**The work listed below will be performed by the utility owners or their agents:**

No work by utility owners are anticipated.

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UTILITIES

GENERAL:

The Contractor shall comply with Article 1.5 of Title 9, CRS ("Excavation Requirements") when excavation 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 the day of notification, prior to commencing such operations. The Contractor shall contact the Utility Notification Center of Colorado (UNCC) at (8-1-1) or 1-800-922-1987 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 excavating or grading. The location of utility facilities as shown on the plan and profile sheets, and herein described, were obtained from the best available information.

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

END OF SPECIFICATION