

PLENARY ROADS DENVER, LLC
SPECIAL PROVISIONS
I-25 MANAGED LANES - INITIAL WORKS, PAVEMENTS
[Addendum #1 September 25, 2014](#)

The Colorado Department of Transportation 2011 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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Revision of Section 703 – Aggregate for Bases (Without RAP)	(Oct. 31, 2013)	1
Revision of Section 703 – Aggregate for Hot Mix Asphalt	(Nov. 1, 2012)	2
Revision of Section 703 – Aggregate for Stone Matrix Asphalt	(April 26, 2012)	1
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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, before submitting his bid, each Bidder must (a) examine the Contract Documents thoroughly, (b) visit the site to familiarize himself with local conditions that may in any manner affect performance of the work, (c) familiarize himself with federal, state, and local laws, ordinances, rules and regulations affecting performance of the work, (d) carefully correlate his observations with the requirements of the Contract Documents. A MANDATORY PRE-BID SITE WALK will be held September 19, 2014 from 9:45 a.m. to 11:45 a.m. Meet at the CDOT Maintenance Facility Project Trailer at East 70th Ave and Pennsylvania St., Denver, CO.

Program Engineer - Simon Stachnik
Office Phone: (303) 905-1340

Resident Engineer - Bruce Tonilas
Office Phone: (303) 941-1330

Project Engineer - Wes Kindt
Office Phone: (719) 368-9481

The above referenced individuals are the only representatives of Plenary 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 Plenary responses will be posted on the web site listed below as they become available.

<http://www.us36expresslanes.com>

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 above web site. If the bidder does not withdraw the question, the question will be answered, and both the question and Plenary 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. Plenary will keep a record of both question and answer in their confidential file.

All questions shall be directed to the Plenary contacts listed above no later than September 23, 2014 at 7:00 a.m. Final questions and answers will be posted no later than September 25, 2014 at 5:00 p.m.

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PROJECT NO. 2014-001

SEPTEMBER, 2014

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

**Plenary Roads Denver, LLC
PROJECT NO. 2014-001**

SEPTEMBER, 2014

Disadvantaged Business Enterprise (DBE) Contract Goal

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

4 Percent DBE participation

COMMENCEMENT AND COMPLETION OF WORK

The Contractor shall commence work under the Contract on or before October 13, 2014, unless such time for beginning the work is changed by the Program Engineer in the "Notice to Proceed." The Contractor shall complete all work in accordance with the "Notice to Proceed."

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

Section 108.03 shall include the following:

Salient features for this project are:

- (1) Removal of Concrete and Asphalt Pavement
- (2) HMA & SMA
- (3) Concrete Pavement (Panel Replacement)
- (4) Concrete (Patching)
- (5) Sawing, Routing and Sealing Concrete Joints and Cracks
- (6) Adjusting Drainage Inlets
- (7) Adjusting Manholes
- (8) Striping

**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:

The following information will be available for review in the Plenary Roads Denver, LLC offices located at 500 Eldorado Boulevard, Suite 2301, Broomfield, CO 80021 until the date set for opening of bids:

Plans and Specifications

Plenary will provide an area where contractors can review any available information. The material is also available for purchase from Plenary for \$25.00 (Twenty Five Dollars and no cents)

After the proposals have been opened, the low responsible bidder may obtain from Plenary Roads Denver, LLC offices located 500 Eldorado Boulevard, Suite 2301, Broomfield, CO 80021, at no cost: 5 (Five) sets of plans and special provisions for the project. If the low bidder has not picked up the plans and other available data by 4:00 p.m. on the first Friday after bid opening, they will be sent to the Resident Engineer in charge of the project. Additional sets of plans and other available data may be purchased on a cash sale basis from Plenary Roads Denver, LLC at current reproduction prices. Subcontractors and suppliers may obtain plans and other data from the successful bidder or they may purchase copies on a cash sale basis from Plenary Roads Denver, LLC at current reproduction prices.

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**REVISION OF SECTION 105
COOPERATION BETWEEN CONTRACTORS**

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

Subsection 105.12 shall include the following:

Other construction agencies may be working in the vicinity of the project. The Contractor shall conduct the work so as not to interfere with or hinder the progress or completion of the work being performed by other agencies or contractors. All Traffic control conflicts that arise between the needs of the various construction contractors and other agencies shall be brought to the attention of the Engineer. The Engineer will decide the method of resolution.

Projects in the vicinity of this work include the following;

US 36, Project 17516

I-25 Expansion Joint Replacements, Project 19590

I-25 North Widening, Project 18695

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

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

Add subsection 107.061 immediately following subsection 107.06 as follows:

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

- (1) Removal of Concrete and Asphalt pavement adjacent to the travelled way
- (2) Adjusting Drainage Inlets and Manholes adjacent to the travelled way

The Contractor shall submit, for record purposes only, an initial detailed construction plan that addresses safe construction of each of the safety critical elements.. The detailed construction plan shall be submitted one week prior to the safety critical element conference described below. The construction plan shall be stamped "Approved for Construction" and signed by the Contractor. The construction plan will not be approved by the Engineer.

The Construction Plan shall include the following:

- (1) Safety Critical Element for which the plan is being prepared and submitted.
- (2) Contractor or subcontractor responsible for the plan preparation and the work.
- (3) Schedule, procedures, equipment, and sequence of operations, that comply with the working hour limitations
- (4) Additional actions that will be taken to ensure that the work will be performed safely.
- (5) Names and qualifications of workers who will be in responsible charge of the work:
 - A. Years of experience performing similar work
 - B. Training taken in performing similar work
 - C. Certifications earned in performing similar work
- (6) The construction plan shall address how the Contractor will handle contingencies such as:
 - A. Unplanned events (storms, traffic accidents, etc.)
 - B. Replacement of workers who don't perform the work safely
 - C. Equipment failure
 - D. Other potential difficulties inherent in the type of work being performed

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

A safety critical element conference shall be held one week prior to beginning construction on each safety critical element. The Engineer, the Contractor, the safety critical element subcontractors, and the Contractor's Engineer shall attend the conference..

After the safety critical element conference, and prior to beginning work on the safety critical element, the Contractor shall submit a final construction plan to the Engineer for record purposes only. The final construction plan shall be stamped "Approved for Construction" and signed by the Contractor.

The Contractor shall perform safety critical work only when the Engineer is on the project site. The Contractor's Engineer shall be on site to inspect and provide written approval of safety critical work for which he provided signed and sealed construction details. Unless otherwise directed or approved, the Contractor's Engineer need not be on site during the actual performance of safety critical work, but shall be present to conduct inspection for written approval of the safety critical work.

When ordered by the Engineer, the Contractor shall immediately stop safety critical work that is being performed in an unsafe manner or will result in an unsafe situation for the traveling public. Prior to stopping work, the Contractor shall make the situation safe for work stoppage. The Contractor shall submit an acceptable plan to correct the unsafe process before the Engineer will authorize resumption of the work.

When ordered by the Engineer, the Contractor shall remove workers from the project that are performing the safety critical work in a manner that creates an unsafe situation for the public in accordance with subsection 108.05.

Should an unplanned event occur or the safety critical operation deviate from the submitted plan, the Contractor shall immediately cease operations on the safety critical element, except for performing any work necessary to ensure worksite safety, and provide proper protection of the work and the traveling public. If the Contractor intends to modify the submitted plan, he shall submit a revised plan to the Engineer prior to resuming operations.

All costs associated with the preparation and implementation of each safety critical element construction plan will not be measured and paid for separately, but shall be included in the work.

Nothing in the section shall be construed to relieve the Contractor from ultimate liability for unsafe or negligent acts or to be a waiver of the Colorado Governmental Immunity Act on behalf of the Department and Plenary Roads Denver, LLC.

**REVISION OF SECTION 107
WORKER SAFETY**

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

Subsection 107.06 shall include the following:

If the Contractor is ordered to cease operations due to violations of a noise ordinance as a result of equipment back up alarms, the Contractor shall take whatever actions are necessary to comply with the ordinance and continue work on the project. This includes the option of using an observer in lieu of using the equipment back up alarms as allowed by 29 CFR 1926.601(b) (4) (II) of the OSHA Safety and Health Standards. Should the Contractor fail to mitigate the noise ordinance violation, the Contractor shall be deemed to have waived any right to a claim as a result of work suspension or being required to perform the work at times not specified in the Contract.

If the Contractor uses an observer in lieu of back up alarms, the Contractor shall follow all of the OSHA requirements regarding the use of observers.

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

**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.

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.

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

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.

All milled surfaces to be overlaid with HMA shall be covered with new asphalt within 7 working days. All areas on this project that are not overlaid within the specified working days will be assessed a lane rental fee of \$12,000 (twelve thousand dollars and no cents) 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.

Add subsection 202.091 immediately following subsection 202.09 as follows:

202.091 Equipment

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.

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

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:

Macrotexture testing, macrotexture corrective actions, planers, brooms and all other work necessary to complete the item will not be measured and paid for separately, but shall be included in the work.

**REVISION OF SECTIONS 202 AND 412
REMOVAL AND REPLACEMENT OF CONCRETE PAVEMENT**

Sections 202 and 412 of the Standard Specifications are hereby revised for this project as follows:

In Subsection 202.02 delete the sixth paragraph and replace with the following:

The areas of concrete pavement to be removed shall be isolated in both the longitudinal and transverse directions by the double saw cut method of sawing in accordance with FHWA’s publication entitled “Guide for Full-Depth Repairs”. Sawing shall be accomplished with the use of a diamond blade saw or approved equivalent. Sawing of the concrete pavement shall be done to a true line, with a vertical face, unless otherwise specified. Sawing shall be full depth and shall go through the existing tie-bars and dowel bars, leaving free vertical edges at the limits of the removal.

After sawing has been completed, the deteriorated concrete shall be lifted vertically from its position unless otherwise approved by the Engineer. Pavement breakers or jackhammers shall be used in the removal process where lifting is not possible. All loose materials shall be removed from the repair area. Removed concrete slabs and excavated soils shall become the property of the Contractor and shall be disposed of in accordance with subsection 202.07.

After concrete pavement is removed, the underlying material will be evaluated by the Engineer. Unsuitable material shall be removed in accordance with subsection 206.03 and replaced with aggregate base course of the class and depth specified in the Contract.

The subsequent aggregate base course shall be placed with moisture and density control in accordance Section 304.

Subsection 202.11 shall include the following:

Removal of concrete pavement will be measured by the square yard, completed to the required depth, and accepted.

Subsection 202.12 shall include the following:

Payment will be made under:

Pay Item	Pay Unit
Removal of Concrete Pavement	Square Yard

Payment for Removal of Concrete Pavement will be full compensation for all work and materials required to complete the item, including sawing, removing, and disposal of the concrete pavement.

Structure excavation for removal of unsuitable material will be measured and paid for in accordance with subsection 206.07.

Aggregate base course will be measured and paid for in accordance with Section 304.

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**REVISION OF SECTIONS 202 AND 412
REMOVAL AND REPLACEMENT OF CONCRETE PAVEMENT**

Subsection 412.13 shall include the following:

Dowel bars and tie bars for replaced concrete pavement shall be placed in accordance with Standard Plan M-412-1 unless otherwise directed by the Engineer. To anchor dowel bars and tie bars, holes shall be drilled into the sawed face of the existing slab, perpendicular to the joints. All alignments shall be measured and verified prior to the placement of concrete. Dowel baskets shall be used for joints in repair areas that exceed more than one panel replacement.

Compressed air shall be used to remove dirt and debris from all drilled holes. After cleaning and prior to bar insertion, epoxy grout shall be discharged to the back of the hole to force the grout forward. Sufficient epoxy grout shall be injected into the back of the hole in order to cover the bar over the entire length of embedment. Each bar shall be twisted a minimum of one full turn during insertion.

Subsection 412.17 shall include the following:

The smoothness of the replaced concrete shall be tested in accordance with subsection 105.08(a)2.

In subsection 412.23, first paragraph, delete the first sentence and replace it with the following:

The quantities of Concrete Pavement, Concrete Pavement (Patching), and Placed Concrete Pavement to be paid for under these items will be the number of square yards completed and accepted.

Subsection 412.24 shall include the following:

Payment will be made under:

Pay Item	Pay Unit
Concrete Pavement (Patching)	Square Yard

Payment for Concrete Pavement (Patching) will be full compensation for all work and material required to place and finish the replacement concrete pavement in accordance with the Contract.

**Plenary Roads Denver, LLC
PROJECT NO. 2014-001**

SEPTEMBER, 2014

**REVISION OF SECTION 304
AGGREGATE BASE COURSE**

Section 304 of the Standard Specifications is hereby revised for this project as follows:

Subsection 304.02 shall include the following:

Materials for the base course shall be Aggregate Base Course (Class 6) as shown in subsection 703.03.

The aggregate base course (Class 6) must meet the gradation requirements and have a resistance value of at least 78 when tested by the Hveem Stabilometer method.

**REVISION OF SECTIONS 401 AND 703
STONE MATRIX ASPHALT PAVEMENT**

Sections 401 and 703 of the Standard Specifications are hereby revised for this project as follows:

Subsection 401.02 shall include the following:

Recycled Asphalt Pavement (RAP) shall not be used in Stone Matrix Asphalt (SMA) mix.

Subsection 401.09 shall include the following:

Each SMA load shall be completely covered and securely fastened with a full tarp.

Subsection 401.16 shall include the following:

The SMA mixture shall be transported and placed on the roadway without drain-down or flushing. All flushed areas behind the paver shall be removed immediately upon discovery. If more than 50 square feet of flushed SMA pavement is ordered removed and replaced in any continuous 500 linear feet of paver width laydown, operations shall be discontinued until the source of the flushing has been found and corrected. The Engineer will designate the depth and area of all flushed areas requiring removal and replacement. All costs associated with the removal and replacement of the flushed areas shall be at the Contractor's expense.

Subsection 401.17 shall include the following:

Rollers shall not be used in a vibratory mode on SMA unless they are first used successfully in the demonstration control strip specified in subsection 403.03. Pneumatic wheel rollers shall not be used on SMA mix.

Stone Matrix Asphalt Pavement shall be placed and compacted in accordance with the temperatures listed in subsection 401.07 as revised for this project.

The relative compaction for all SMA mixtures will be measured from roadway cores in accordance with CP 44, Method B (Rapid Test) or Method C (CoreDry Test), unless the SMA mixture is being placed on a structure (bridge deck) in which case the Engineer may specify that nuclear gauge measurements be used.

When cores are used, the Contractor shall provide all labor and equipment for the coring operation and filling the core holes. When nuclear density gauges are used, the tests will be performed in accordance with CP 81 and CP 82.

In-place density for SMA shall be 93 to 97 percent of the SMA daily maximum specific gravity as measured according to CP 51.

Subsection 401.22 shall include the following:

Acceptance, testing, and pay factors for SMA shall be in accordance with subsections 105.05 and 106.05 as revised for this project for Hot Mix Asphalt. The specifications for gradation acceptance shall be applied for all SMA placed on the project.

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**REVISION OF SECTIONS 401 AND 703
STONE MATRIX ASPHALT PAVEMENT**

Subsection 703.06 shall include the following:

Mineral filler for the Stone Matrix Asphalt pavement shall be limestone dust and shall meet the requirements of this subsection and the following:

Plasticity Index (AASHTO T90) 4% Maximum

The Contractor shall submit hydrometer analysis (AASHTO T88) for the mineral filler used in the SMA mix.

**REVISION OF SECTION 403
 STONE MATRIX ASPHALT PAVEMENT**

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

Subsection 403.01 shall include the following:

This work includes placing a Stone Matrix Asphalt (SMA) pavement as shown on the plans.

Subsection 403.02 shall include the following:

The SMA gradation for this project shall be ½ inch.

Mixture design and field control testing of SMA shall be performed using either the SuperPave (CPL 5115, 100 Gyration) or the Marshall Method (AASHTO T245, 50 Blow).

A minimum of two weeks prior to the proposed use of any Stone Matrix Asphalt pavement on the project, a pre-paving conference will be conducted. At that time, the Contractor shall submit to the Engineer, a mix design meeting the appropriate specification requirements for one of the following:

The SuperPave SMA mix design shall conform to the requirements of Table 403-1a:

Table 403-1a

Property	Test Method	Value for SMA
Air Voids, percent at: N(Design)	CPL 5115	3.0 – 4.0
Lab compaction (Revolutions) N(Design)	CPL 5115	100
Accelerated Moisture Susceptibility, tensile strength Ratio, (Lottman), minimum	CPL 5109, Method B	70
Minimum Dry Split Tensile Strength, psi	CPL 5109, Method B	30
Grade of Asphalt Cement		PG 76-28
Voids in the Mineral Aggregate (VMA) %, minimum	CP 48	17
Draindown at Production Temperature	AASHTO T305	0.3 maximum
% VCA ¹ _{MIX}	AASHTO R 46	Less than VCA _{DRC} ²
Note: The current version of CPL 5115 is available from the Region Materials Engineer, or provided by Plenary Note: Copies of AASHTO R 46 and M 325 can be obtained from the Region Materials Engineer, or Plenary Note: ¹ Voids in the Coarse Aggregate Note: ² Dry-rodded condition		

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**REVISION OF SECTION 403
STONE MATRIX ASPHALT PAVEMENT**

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. The Marshall SMA mix design shall conform to the following:

Mix Properties	Value
Stability, Marshall Compactor	1400 lbs., min
% Voids in Total Mix	3 – 4%
VMA (% Voids in the Mineral Aggregate)	17 min.
Lottman, CPL 5109, Method B	70% min
Dry Tensile Strength, (CPL 5109)	30 psi, min.

Regardless of mix design method, a minimum of 1 percent hydrated lime by weight of the combined aggregate shall be added to the aggregate for all Stone Matrix Asphalt.

The SMA Mix design must be approved by the Engineer before any pavement is placed on the project. In addition, the Contractor shall provide field control testing during production of the SMA mix and for the demonstration control strip. The Contractor shall perform the following tests and provide the results to the Engineer during production:

If a SuperPave SMA mix design is used, the Contractor shall perform the following tests and provide the results to the Engineer during production:

Superpave Mix Property	Frequency
Draindown (AASHTO T 305)	1/1000 tons or fraction thereof
Percent Voids in the total mix @ $N_{(design)}$	1/1000 tons or fraction thereof
VMA (Percent Voids in the Mineral Aggregate) @ $N_{(design)}$	1/1000 tons or fraction thereof
Lottman, CPL 5109, Method B	1/5000 tons or fraction thereof
Dry Tensile Strength, CPL 5109	1/5000 tons or fraction thereof
Percent AC & Aggregate Gradation CP 5120	1/1000 tons or fraction thereof

If a Marshall SMA mix design is used, the Contractor shall perform the following tests and provide the results to the Engineer during production:

Marshall Mix Property	Frequency
Draindown (AASHTO T 305)	1/1000 tons or fraction thereof
Stability (Marshall)	1/1000 tons or fraction thereof
Percent Voids in the total mix	1/1000 tons or fraction thereof
VMA (Percent Voids in the Mineral Aggregate)	1/1000 tons or fraction thereof
Lottman, CPL 5109, Method B	1/5000 tons or fraction thereof
Dry Tensile Strength, CPL 5109	1/5000 tons or fraction thereof
Percent AC & Aggregate Gradation CP 5120	1/1000 tons or fraction thereof

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**REVISION OF SECTION 403
STONE MATRIX ASPHALT PAVEMENT**

Subsection 403.03 shall include the following:

The mineral filler for SMA shall be stored in a separate silo and added automatically in the correct proportion. The mineral filler addition equipment shall be electronically or mechanically interlocked to the aggregate feed sensors so that the proper amount of mineral filler is added whenever SMA is produced.

The SMA mineral filler shall be added at the same point the asphalt cement is added to the aggregate.

Tack coat between the existing pavement and Stone Matrix Asphalt pavement shall be placed at a rate between 0.03 and 0.05 gallons per square yard.

Before proceeding with SMA placement, the Contractor shall demonstrate the ability to produce and place a satisfactory mix in a Demonstration Control Strip (DCS). The Contractor will coordinate with the Engineer on the proposed location of the DCS. The DCS shall consist of a minimum quantity of 100 tons placed in one lane, full width. Within the last 40 tons of SMA placed in the DCS, the Contractor and Plenary shall determine properties (VMA, Voids, in-place density, AC content, gradation, and Marshall Stability, if required) of the project produced SMA mix used in the DCS and provide the results to the Engineer. The Contractor may proceed with full production if all mixture properties are within the specified tolerances.

To determine the in-place density and roller pattern, one core shall be taken at three random locations within the last 40 tons of the DCS. The Engineer will determine the coring locations using a stratified random sampling process. The cores shall be immediately submitted to the Engineer and will be used for determining acceptance of the DCS. Densities of the random samples will be determined by cores according to CP 44. Coring shall be performed by the contractor under Plenary observation. Coring will not be measured and paid for separately but shall be included in the work.

The DCS will be designated as a separate process. Payment for the DCS will be made in accordance with Subsection 105.05, Conformity to the Contract of Hot Mix Asphalt.

Subsection 403.04 shall include the following:

Stone Matrix Asphalt will be measured by the actual number of tons that are completed and accepted.

Subsection 403.05 shall include the following:

PAY ITEM	PAY UNIT
Stone Matrix Asphalt (Fibers) (Asphalt)	Ton

Mix design, furnishing, hauling, preparing, and placing all materials, including aggregates, asphalt cement, limestone dust, hydrated lime, tack coat, and approved demonstration control strip; labor, equipment tools, setting of lines and guides where specified, and all other work necessary to complete the item will not be paid for separately but shall be included in the work.

REVISION OF SECTION 403
HOT MIX ASPHALT

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

Subsection 403.02 shall include the following:

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

TABLE 403-1

Property	Test Method	Value for Grading				S (100)
Air Voids, percent at: N (design)	CPL 5115					3.5 – 4.5
Lab Compaction (Revolutions): N (initial) [for information only] N (design)	CPL 5115					8 100
Stability, minimum	CPL 5106					30
Aggregate Retained on the 4.75 mm (No. 4) Sieve with at least 2 Mechanically Induced fractured faces, % minimum	CP 45					70
Accelerated Moisture Sus- ceptibility Tensile Strength Ratio (Lottman), minimum	CPL 5109 Method B					80
Minimum Dry Split Tensile Strength, kPa (psi)	CPL 5109 Method B					205 (30)
Grade of Asphalt Cement, Top Layer						
Grade of Asphalt Cement, Layers below Top						PG 64-22
Voids in the Mineral Aggregate (VMA) % minimum	CP 48					See Table 403-2
Voids Filled with Asphalt (VFA), %	AI MS-2					65-75
Dust to Asphalt Ratio Fine Gradation Coarse Gradation	CP 50					0.6 – 1.2 0.8 – 1.6
<p>Note: AI MS-2 = Asphalt Institute Manual Series 2</p> <p>Note: The current version of CPL 5115 is available from the Region Materials Engineer, or Plenary</p> <p>Note: Mixes with gradations having less than 40% passing the 4.75 mm (No. 4) sieve shall be approached with caution because of constructability problems.</p> <p>Note: Gradations for mixes with a nominal maximum aggregate size of one-inch or larger are considered a coarse gradation if they pass below the maximum density line at the #4 screen. Gradations for mixes with a nominal maximum aggregate size of ¾ inch or smaller are considered a coarse gradation if they pass below the maximum density line at the #8 screen.</p>						

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 REVISION OF SECTION 403
 HOT MIX ASPHALT

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

TABLE 403-2

Minimum Voids in the Mineral Aggregate (VMA)			
Nominal Maximum Size*, mm (inches)	***Design Air Voids **		
	3.5%	4.0%	4.5%
37.5 (1½)	11.6	11.7	11.8
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
* 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.			

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.

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

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REVISION OF SECTION 403
HOT MIX ASPHALT

Subsection 403.03 shall include the following:

If liquid anti-stripping additive is added at the plant, an approved in-line blender must be used. The blender shall be in the line from the storage tank to the drier drum or pugmill. The blender shall apply sufficient mixing action to thoroughly mix the asphalt cement and anti-stripping additive.

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:

PAY ITEM	PAY UNIT
Hot Mix Asphalt (Grading S) (100) (PG-64-22)	Ton

Aggregate, asphalt recycling agent, additives, hydrated lime, and all other work 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, the asphalt cement will not be measured and paid for separately, but shall be included in the work. 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.

**REVISION OF SECTION 403
HOT MIX ASPHALT TICKET COLLECTION**

Section 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 Plenary 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 paving, 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.

**SECTION 408
JOINT AND CRACK SEALANT**

Section 408 of the Standard Specifications is hereby revised for this project as follows:

Subsection 408.01 shall include the following:

DESCRIPTION

408.01 This work shall consist of sealing joints between hot mix asphalt surfacing and portland cement concrete pavement.

Subsection 408.02 shall include the following:

MATERIALS

408.02 Rubber-asphalt joint filler shall be a blend of new or reclaimed synthetic or natural rubber, paving grade asphalt cement, and other additives. The joint sealing material shall be submitted to Plenary's Materials and Tests Laboratory for approval.

The blend, when heated in accordance with the supplier's instructions, shall produce an easily applied, flexible, and adhesive compound that will effectively seal joints between portland cement concrete and the hot mix asphalt under typical Colorado climatic conditions.

The joint filler shall contain no solvents, shall not be self-leveling, and shall cure upon cooling to a consistency that will not be tracked by traffic.

The joint filler shall be suitable for melting and application with a conventional melter-applicator unit.

- (a) The safe heating temperature is the highest temperature to which the joint filler can be heated and still conform to all requirements of this specification.
- (b) A maximum of 11°C higher than the manufacturer's minimum recommended application temperature is considered the safe heating temperature.
- (c) For testing purposes, the pouring temperature for specimen preparation is the safe heating temperature recommended by the manufacturer.
- (d) Laboratory testing may begin only after the testing agency has received the safe heating temperature. All containers must maintain their safe heating temperature when in use.
- (e) The joint filler shall meet the following requirements:
 - (1) Softening Point: Minimum temperature of 65.5°C.
 - (2) Cone Penetration: At $25 \pm 0.1^\circ\text{C}$, using a 150 g for 5 s, shall not exceed 70 units. At $4 \pm 0.1^\circ\text{C}$, using 200 g for 60 s, the minimum shall be 15 units.
 - (3) Resilience: At $25 \pm 0.1^\circ\text{C}$, resilience shall be at least 30 percent recovery.

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**SECTION 408
JOINT AND CRACK SEALANT**

- (4) Asphalt Compatibility: There shall be no failure in adhesion, nor formation of an oily exudate at the interface between the joint filler and the asphaltic concrete specimen, nor softening or other deleterious effects on the asphaltic concrete or joint filler when tested at 60°C for 72 hours.

If granulated rubber is used, it shall not contain wire, fabric, or other contaminating materials.

Acceptance of the manufactured material will be based on a Certificate of Compliance for each lot or batch furnished by the supplier. The Certificate of Compliance shall state the type of rubber used and that material is in compliance with these Specifications. Random samples may be tested to verify compliance with these Specifications.

The rubber-asphalt joint filler shall be packaged in meltable (149°C) polyethylene bags contained in cardboard boxes. Each cardboard box shall contain two 11 kg packages of the rubber-asphalt joint filler. The net mass shall be 22 kg per box. The use of metal staples or fasteners of any kind will be prohibited for closing the lids of the boxes. Tape or other like material is acceptable. Boxed material shall be furnished on pallets with an approximate mass of 900 kg. Pallets shall be covered with clear plastic and banded.

The concrete to asphalt joint sealant shall meet requirements in ASTM D 5078.

Subsection 408.03 shall include the following:

CONSTRUCTION REQUIREMENTS

408.03 The Contractor shall prepare and construct the joint between the concrete pavement and asphaltic concrete to the dimensions of the typical sections shown in the plans. The full depth of the cut shall be cleaned by routing or any other method which results in a clean cut.

The Contractor shall apply sealant in accordance with the sealant manufacturer's recommended procedures.

Subsection 408.04 shall include the following:

METHOD OF MEASUREMENT

408.04 Joint and Crack Sealant will not be measured and paid for separately, but will be included in the work.

Subsection 408.05 shall include the following:

BASIS OF PAYMENT

408.05 The accepted quantities of Joint and Crack Sealant will be not be paid for separately, but will be included in the work.

**REVISION OF SECTION 630
TRAFFIC CONE & DRUM CHANNELIZING DEVICE**

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

In Subsection 630.05, second paragraph, the reflectorized material shall be AP 1000 Polyester (Reflexite Corp.), 3M Type III, Transparent (Reflexite Corp.), or 2010 Vinyl Cone Collar (Reflexite Corp.). Any other material is not acceptable unless its brightness is equivalent or greater than the types named.

Subsection 630.16 shall include the following:

PAY ITEM	PAY UNIT
Drum Channelizing Device (With Light) (Flashing)	Each

TRAFFIC CONTROL PLAN - GENERAL

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

The components of the Traffic Control Plan (TCP) for this project are included in the following:

- (1) Subsection 104.04 and Section 630 of the specifications.
- (2) Latest revised Standard Plan S-630-1(12/7/2009), Traffic Controls for Highway Construction and Standard Plan S-630-2.
- (3) Schedule of Construction Traffic Control Devices.
- (4) Construction Phasing Details: NOTES included on the I-25 ML Initial Works HMA and PCC Pavement MOT General Notes and Tabulation Plan.

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

For construction impacting US 36 and I-25:

The Contractor's work shall be limited to;

Contractor must maintain one (1) lane of traffic at all times between the hours of 5:00 a.m. and 8:00 p.m. during the duration of the project with the following exceptions;

- Contractor must allow traffic to self-declare (HOV or Toll) into 2 lanes at the toll gantry and provide 760 L.F. transition lengths into and out of the toll gantry.
- The Contractor must maintain two (2) lanes at all times during the following sporting events:
 - Sports Authority Field at Mile High
 - October 5 – 1:00 p.m. – 10:00 p.m.
 - October 19 – 5:30 p.m. – 2:30 a.m.
 - October 23 – 5:30 p.m. – 2:30 a.m.
 - November 23 – 1:30 p.m. – 10:30 p.m.
- Contractor has the option of a full closure of the I25 ML between the hours of 8:00 p.m. and 4:00 a.m. to be used as needed during the duration of the project. There is a lane rental fee associated with a full closure of \$2,500 (Two Thousand Five Hundred Dollars and no cents) per night. No proration will be given for partial night closures.
- Contractor has the option of a full weekend closure from 8:00 p.m. Friday through 4:00 a.m. Monday. There is a lane rental fee associated with a full closure during the weekend of \$6,000 (Six Thousand Dollars and no cents) per day. No proration will be given for partial days.
- Contractor is allowed to work on the 20th street approach from the hours of 3:00 a.m. to 12:00 p.m., Monday through Friday. The gates are closed during this time. No lane rental fee will be required during this time.
- Contractor must maintain minimum width on the 70th street ramp to allow for 1 lane (Minimum 11' lane, 2' shoulder) at all times, unless work is occurring during full closures as described in this section.

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The Contractor shall maintain traffic while performing the work in accordance with the plans, and these Specifications.

- (1) One traffic lane shall be maintained at all times along the managed lanes within the project area throughout the duration of this project, except as permitted above in the Commencement and Completion of Work section of the project special specifications. The Contractor's MHT submittals

shall include information regarding construction access from the US 36 and I-25 mainline lanes or ramps to construction areas.

- (2) The Contractor shall install construction traffic control devices where they do not block or impede other existing traffic control devices. The Contractor is restricted from storing any materials, construction traffic control devices, signs, etc. along mainline I-25 or US 36.

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TRAFFIC CONTROL PLAN - GENERAL

- (3) Construction equipment used on this project shall meet the same minimum exhaust requirements as those specified by the manufacturer of the equipment.
- (4) 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.
- (5) The Contractor shall maintain access to all lanes at all times unless otherwise directed by the Engineer. Parking areas temporarily disturbed by construction activities shall be restored to a useable condition during non-working hours.
- (6) Whenever the Contractor removes, obliterates, or overlays any pavement markings, he /she 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.
- (7) The Contractor shall not have construction equipment or materials in the lanes open to traffic any time unless directed by the Engineer.
- (8) All personal vehicle and construction equipment parking is prohibited where it conflicts with safety, access, or the flow of traffic. Landscaped areas and roadway shoulders shall be kept clear of parking and storage of all personal and construction equipment except where approved by the Engineer.
- (9) No work that interferes with traffic will be allowed on holidays or any day of a three-day or four-day weekend that includes a holiday. Holidays on which this restriction applies consist of those holidays recognized by the State of Colorado as listed in CDOT Standard Specifications, subsection 101.36.
- (10) All lane closures shall be subject to the approval of the Engineer. Request for each closure shall be made at least 24 hours in advance of the time the lane closure is to be implemented. Lane closures will not be allowed to remain unless being utilized in continuum for the intended purpose for which they were set up.
- (11) During non-working hours, the roadways shall be restored to safe travel conditions for the free flow of traffic. Any maintenance required restoring the roadways to this condition, including the pavement patching and grading, shall be done prior to opening the areas to traffic or completing work for the day.
- (12) The Contractor shall clean the roadway of all construction debris before opening it to traffic.

- (13) All flagging stations used at night shall be illuminated with floodlights. Street, highway lights and “high mast lighting” may be used for flagging station illumination when approved by the Engineer. Floodlights shall be located and directed so as not to interfere with the sight of any motorists, and the cost is to be included in the work.
- (14) Prior to removal and resetting of any sign the Contractor and Engineer shall prepare an inventory. 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. All sign replacements and repairs shall be approved by the Engineer.

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TRAFFIC CONTROL PLAN - GENERAL

The Contractor shall be responsible for any physical or environmental impacts associated with the action. All costs incidental to the foregoing requirements shall be included in the original contract prices for the project.

**FORCE ACCOUNT ITEMS
DESCRIPTION**

This special provision contains Plenary'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 (Five Thousand Dollars and no cents) 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>Unit</u>	<u>Quantity</u>	<u>Amount</u>
F/A 10 Minor Contract Revisions	FA	1	\$20,000*
F/A 12 Asphalt Pavement Incentive	FA	1	\$ 20,000
F/A 13 Concrete Pavement Incentive	FA	1	\$ 20,000
F/A 16 Fuel Cost Adjustment	FA	1	\$ 5,000
F/A 18 Roadway Smoothness Incentive	FA	1	\$ 10,000
F/A 19 Asphalt Cement Cost Adjustment for HMA and SMA	FA	1	\$ 20,000
F/A 25 Quality Incentive Payment	FA	1	\$ 20,000
F/A 380 Erosion Control	FA	1	\$ 10,000*

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FORCE ACCOUNT ITEMS

F/A 10 Minor Contract Revisions

This work consists of minor work authorized and approved by the engineer which is not included in the contract drawings or specifications and which is necessary to accomplish the scope of work of this contract.

F/A 12 Asphalt Payment Incentive

Asphalt Payment Incentive will be made in accordance with Revision of Sections 105 and 106 – Conformity to the Contract of Hot Mix Asphalt (Less than 5,000 Tons).

F/A 13 Concrete Payment Incentive

Concrete Payment Incentive will be made in accordance with Revision of Sections 105 and 106 – Conformity to the Contract of Portland Cement Concrete Pavement.

F/A 16 Fuel Cost Adjustment

This item is for price adjustments to reflect increases or decreases in the monthly average prices of gasoline, diesel and other fuels as specified in Revision of Section 109 – Fuel Cost Adjustment.

F/A 18 Roadway Smoothness Incentive (HMA)

Roadway Smoothness Incentive will be made in accordance with Revision of Sections 105 and 106 – Roadway Smoothness Criteria of HMA (High Speed Profiler).
Hot Mix Asphalt

F/A 19 Asphalt Cement Cost Adjustment for HMA and SMA

Payment will be made in accordance with the Revision of Section 109 – Asphalt Cement Cost Adjustment (Asphalt Cement Included in the Work).

F/A 25 Quality Incentive Payment Concrete and SMA

Quality Incentive will be made in accordance with Revision of Section 105 and 106 – Conformity to the Contract of Portland Cement Concrete Pavement and with Standard Special Provisions Revision of Sections 105 & 106 Conformity to the Contract of Hot Mix Asphalt (<5,000 tons).

F/A 380 Erosion Control

This work shall include all necessary work and materials for erosion control items not identified in the plans and at the Engineer's direction. Payment will be made based on time and materials used to perform the work. Work must be performed in a workmanlike manner and properly scheduled to minimize cost and inconvenience. The Force Account shall also be used to pay for any additional BMPs or testing, which may become required by future changes to the current storm water regulations by either EPA or CDPHE and could include future effluent limits.

**Plenary Roads Denver, LLC
PROJECT NO. 2014-001**

SEPTEMBER, 2014

