

PROJECT

CA FLAP 03S11(1)

LOCATION

INYO NATIONAL FOREST

COUNTY

MADERA COUNTY

STATE

CALIFORNIA

LENGTH

SCHEDULE A: 2.5 MILES
OPTION X: 5.8 MILES

TYPE OF IMPROVEMENT

ROAD RECONSTRUCTION, ROAD
REHABILITATION, MSE WALL, SOIL
NAIL WALL, REINFORCED SOIL SLOPE,
GRADING, DRAINAGE, SIGNING,
STRIPING

Section 101. – TERMS, FORMAT, AND DEFINITIONS**101.03 Abbreviations.****(a) Acronyms.** Add the following:

EEBACS — Engineer's Estimating, Bidding, Award, and Construction System
GSA – General Services Administration

(b) US Customary abbreviations and symbols. Delete the text and add the following:

°F	—	degrees Fahrenheit	temperature
A	—	ampere	electric current
ac.	—	acre	area
BTU	—	British Thermal Unit	energy
cu. in. or in³	—	cubic inches	volume
cu. ft., cf, ft³ or CUFT	—	cubic feet	volume
cu. yd., cy, yd³ or CUYD	—	cubic yards	volume
D	—	day	time
deg. or °	—	degree	plane angle
Fc	—	foot-candles	luminous intensity
fl. oz.	—	fluid ounces	volume
ft. or '	—	foot or feet	length
gal. or GAL	—	gallon	volume
H	—	Henry	inductance
hr. or HR	—	hour	time
Hz	—	hertz (s ⁻¹)	frequency
in. or "	—	inch or inches	length
K	—	kelvin	temperature
lb or LB, lbs	—	pound, pounds	mass
Lbf	—	pound-force	force
lnft or LNFT	—	linear foot	length
mi.	—	miles	length
min. or m	—	minute	time
min. or '	—	minute	plane angle
oz.	—	ounces	mass
Psi	—	pounds/square inch	pressure
Q	—	cubic feet/second	flow rate
sec. or s	—	second	time
sec. or "	—	second	plane angle
sq. in. or in²	—	square inches	area
sq. ft., sf, ft² or SQFT	—	square feet	area
sq. yd., sy, yd² or SQYD	—	square yards	area

T	— short ton (2000 lbs)	mass
V	— volt (W/A)	electric potential
W	— watt (J/s)	power
YD	— yard or yards	length
Ω	— ohm V/A	electric resistance

(c) **Metric unit abbreviations and symbols.** Delete the text and add the following:

A	— ampere	electric current
Cd	— candella	luminous intensity
°C	— degree Celsius	temperature
D	— day	time
deg. or °	— degree	plane angle
g or gram	— gram	mass
H	— Henry	inductance
Ha	— hectare	area
hr. or HR	— hour	time
Hz	— hertz (s^{-1})	frequency
J	— Joule (N m)	energy
K	— kelvin	temperature
Kg	— kilogram	mass
L	— liter	volume
Lx	— lux	illuminance
M	— meter	length
mm	— millimeter	length
m²	— meter squared	area
m³	— cubic meter	volume
min. or m	— minute	time
min. or '	— minute	plane angle
N	— Newton ($kg\ m/s^2$)	force
Pa	— Pascal (N/m^2)	pressure
sec. or s	— second	time
sec. or "	— second	plane angle
Sta.	— station	Length
T	— metric ton	Mass
V	— volt (W/A)	electric potential
W	— watt (J/s)	Power
Ω	— ohm V/A	electric resistance

101.04 Definitions.

Add the following:

EEBACS — Engineer's Estimating, Bidding, Award, and Construction System. A web-based system used by the Government, Construction Contractors, and Subcontractors on this Government contract to prepare "*Inspector's Daily Record of Construction Operations*" (*Contractors Daily Reports*) and measurement notes (pay notes and field measurement documentation).

Roadway Prism Delete the text and substitute the following:

Roadway Prism – The volume defined by the area between the original terrain cross-section and the final design cross-section multiplied by the horizontal distance between the centroids (geometric center) of the area.

Subcontractor Delete the text and substitute the following:

Subcontractor – An individual or legal entity with which the Contractor sublets part of the work. This includes subcontractors and material suppliers at any tier.

Section 104. — CONTROL OF WORK**104.03 Specifications and Drawings.**

Add the following to (a) General (2) Drawings:

(h) Erosion and sediment control drawings for the SWPPP application.

Section 105. — CONTROL OF MATERIAL**105.01 Source of Supply and Quality Requirements.** Add the following:

Materials containing petroleum-based solvents such as cutback asphalts and traffic paints may be restricted from use by local laws or ordinances in certain geographic areas. Upon presenting proof of such restrictions, alternate materials considered acceptable to the CO may be substituted for the materials specified in the contract.

Add the following:

Certify, according to Subsection 107.10 (d)(2), that sources of rock, sand, gravel, earth, subsoil, or other natural material imported into the project construction limits are noxious weed free.

105.04 Storing and Handling Material. Add the following after the third sentence of the second paragraph:

For Contractor-located, non-commercial staging, storing, and material handling areas, secure environmental clearances according to Subsection 107.10.

Add the following:

The Contractor may use the staging areas shown in the plans for storing and handling of material, equipment, stockpiles, and placing soil waste as shown in the plans. If staging areas are used for placing soil waste, submit grading and seeding plan for CO approval. Do not place soil waste within 50-feet of a stream or water way at staging areas.

Use all products according to the manufacturer's recommendations for handling, storage, and disposal. Follow the requirements of FAR Clause 52.236-10 Operations and Storage Areas and FAR Clause 52-236-12 Cleaning Up. Maintain the staging and storage areas in a clean, neat, and orderly condition satisfactory to the CO.

Store construction materials within the limits indicated on the contract drawings. Properly store materials according to the applicable permit and the requirements in Section 107, 157, 203, 204, 624, and 625. Check the storage areas weekly and according to the applicable permit.

Submit a site map showing the material storage and stockpile locations at least 14 calendar days prior to the start of construction activities.

Keep the manufacturer's MSDS, an inventory of the material, and emergency numbers near the storage area. Take appropriate measures to ensure that incompatible chemicals are not stored next to each other.

Section 106. — ACCEPTANCE OF WORK

106.01 Conformity with Contract Requirements. Delete (a) and (b) and substitute the following:

(a) Disputing Government test results. If the accuracy of Government test results is disputed, promptly inform the CO. If the dispute is unresolved after reasonable steps are taken to resolve the dispute, further evaluation may be obtained by written request. Include a narrative describing the dispute and a proposed resolution protocol that addresses the following:

- (1) Sampling method
- (2) Number of samples
- (3) Sample transport
- (4) Test procedures

- (5) Testing laboratories
- (6) Reporting
- (7) Estimated time and costs
- (8) Validation process

(b) Alternatives to removing and replacing non-conforming work. As an alternative to removal and replacement, the Contractor may submit a written request to:

- (1) Have the work accepted at a reduced price; or
- (2) Be given permission to perform corrective measures to bring the work into conformity.

The request must contain supporting rationale and documentation. Include references or data justifying the proposal based on an evaluation of test results, effect on service life, value of material or work, quality, aesthetics, and other tangible engineering basis. The CO will determine disposition of the nonconforming work.

Add the following after (b):

The number of significant figures used in the calculations will be according to ASTM E 29, absolute method.

Where sample/testing procedures make reference to AASHTO, ASTM, or other standards (designated as FLH T), the procedure as modified in the Materials Manual shall govern. Where the specifications make reference to AASHTO Test T11, "Procedure B - Washing Using a Wetting Agent" shall be the procedure followed.

Where the specifications make reference to AASHTO Test T310, "Direct Transmission Method of In-Place Nuclear Density and Moisture Content" shall be the procedure followed.

106.02 Visual Inspection. Delete the Subsection and substitute the following:

106.02 Visual Inspection. Acceptance is based on visual inspection of the work for compliance with the contract requirements. In the absence of specific contract requirements or tolerances, use prevailing industry standards.

106.03 Certification. Add the following after the second paragraph:

See Table 106-3 for schedule for full or partial acceptance by material certification. Submit certification and sample of material for testing as required.

Delete the third paragraph and substitute the following:

Check certifications before incorporating the material into the work to ensure that the requirements of the contract have been met. Mark the certifications with the following information:

- Project number and name;

- Pay item number and description;
- Contractor signed certification stating “to the best of our knowledge the materials certified by the attached certification represent the materials incorporated into the work of this contract”; and
- Date.

Table 106-3 Schedule For Full or Partial Acceptance by Materials Certification. Add Table 106-3 following Table 106-2.

Table 106-3
Schedule For Full or Partial Acceptance by Materials Certification

Section	Description	Material	Material Property Or Specification	Frequency	
				Certification	Sample
302	Minor Crushed Aggregate	Crushed Aggregate	Source, Quality and Gradation	1 per source	1 per source
312	Dust Palliative	Calcium Chloride Magnesium Chloride, Lignosulfonate,	As specified	1 per shipment	First shipment
403	Asphalt Concrete	Aggregate Asphalt Mix	Source quality, Gradation, Stability, and Grade	1 per mix	1 per source
634 and 635	Permanent Pavement Markings, Temporary Traffic Control	634.02 as applicable, 635 as applicable	As specified	1 per source	-----
701	Hydraulic Cement	Portland Cement, Blended Hydraulic Cement, Masonry and Mortar Cement	AASHTO M 85, M 240, ASTM C 91 and ASTM C1392 as applicable	1 per shipment	1 per 100 tons
702.01	Asphalt Material	Asphalt Cement	AASHTO M 226 or M 320, as applicable	1 per shipment	1 per shipment
702.02	Asphalt Material	Emulsified Asphalt	AASHTO M 140 or M 208 as applicable	1 per shipment	1 per shipment
702.03	Asphalt Material	Asphalt Materials used for Dampproofing and Waterproofing Concrete and Masonry Surfaces	As specified for each type of asphalt material	1 per shipment	-----
702.05	Antistrip	As specified	As applicable	1 per shipment	-----
706	Concrete and Plastic Pipe	As specified	As applicable	1 per shipment	-----
707	Metal Pipe	As specified	As applicable	1 per shipment	-----

Section	Description	Material	Material Property Or Specification	Frequency	
				Certification	Sample
708	Plastic Pipe	As specified	As applicable	1 per shipment	-----
709	Reinforcing and Prestressing Steel	As specified	As applicable	1 per shipment	For 709.01 submit 3, 1- yard (1-meter) bars of each size and grade of bar furnished. 709.02 submit 1 6-foot (2- meter) length for each size furnished
710	Fence and Guardrail	As specified	As applicable	1 per shipment	-----
711	Concrete Curing Material and Admixtures	As specified	As applicable	1 per material source per material type	-----
712	Joint Material (all)	As specified	As applicable	1 per shipment	-----
713	Roadside Improvement Materials (all)	As specified	As applicable	1 per shipment	-----
714	Geosynthetic Material (all)	As specified	As applicable	1 per shipment	1 per project per type
715	Piling	As specified	As applicable	1 per shipment	-----
716	Material for Timber Structures	Timber and Hardware	As applicable	1 per shipment	-----
717	Structural Metal	As specified	As applicable	1 per shipment	717.01(e) minimum 6 per shipment for each size used. 717.10 1 per project
718	Traffic Signing and Marking Material (all)	As specified	As applicable	1 per shipment	-----
719	Paint	As specified	As applicable	1 per batch\lot	1 sample for quantities > 25 gallons (100L)
720	Structural Wall and Stabilized Embankment Material (all)	As specified	As applicable	1 per shipment per material type	-----

Section	Description	Material	Material Property Or Specification	Frequency	
				Certification	Sample
721	Electrical and Illumination Material (all)	As specified	As applicable	1 per shipment per material type	-----
722	Anchor Material	As specified	As applicable	1 per shipment per material type	-----
725	Miscellaneous materials	As specified	As applicable	1 per shipment per material type	-----

Section 107. - LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

107.01 Laws to be Observed. Add the following:

Maintain and require all subcontractor(s), that are performing work covered under the applicable permits, to maintain at the construction site or in the nearby field office, a copy of all permits, all Notification and Compliance Reporting Requirements, and all records demonstrating that every requirement of the permits have been complied with.

The Government has secured the following authorizations (see appendices for copies):

- (1) 401 / 404 Permits
- (2) Caltrans Encroachment Permit

Secure the following authorizations:

- (3) National Pollution Discharge Elimination System (NPDES)
- (4) Caltrans Encroachment Double Permit

The Contractor is responsible for obtaining any other Federal, State, or local authorizations not listed above, as required by law, and extending any contractor obtained permits that expire within the expected construction schedule.

Section 401 and 404 of the Clean Water Act.

Comply with the terms and conditions of any permits that authorize the discharge of dredged or fill material in waters of the U.S., including Section 404 permits and Section 401 water quality certifications.

The 404 Nationwide Permit 14 and the 401 Water Quality Certification (WDID No. 5B20CR00117) are located in the Appendix. Contractor is required to prepare the following

documents for review and approval by CO in compliance with the 401 Water Quality Certification:

- Commencement of Construction Report
- Accidental Discharge of Hazardous Material Report, per occurrence
- Violation of Compliance with Water Quality Standards Report, per occurrence
- Water Quality Monitoring Plan
- Surface Water Diversion and/or Dewatering Plan(s)
- Notifications to the Central Valley Water Board at least 48 hours prior to initiating work in water or stream diversions
- In-Water Work/Diversions Water Quality Monitoring Reports
- Surface Water Sampling Reports
- Annual Reports
- Request for Notice of Completion of Discharges Letter
- Request for Notice of Project Completion Letter

Caltrans Encroachment Permit

Comply with the conditions of the Caltrans Encroachment Permit No. 09-22-N-MC-1010 located in the Appendix.

Contractor is required to apply for and obtain the Caltrans Encroachment Double Permit prior to starting work. The Contractor's double permit application must state the permit No. 09-22-N-MC-1010. The submittal for the permit may be emailed to:

Caltrans District 9 Encroachment Permits Office
Caltrans.D9.Permits@dot.ca.gov
Attention: Mark Reistetter
Cell (760) 937-0113
500 S. Main Street Bishop, CA 93514
Website: <https://dot.ca.gov/programs/traffic-operations/ep>

Section 402 of the Clean Water Act.

Comply with the terms and conditions of any permits that are issued for the performance of work, including Section 402 permits for Construction, Municipal Separate Storm Sewer Systems, Industrial, and Chemical applications in accordance with the National Pollutant Discharge Elimination System. Prepare a Stormwater Pollution Prevention Plan (SWPPP) according to Section 157.

National Pollutant Discharge Elimination System (NPDES)

Comply with the requirements of California Construction General Permit (CGP); Permit No. 2009-0009-DWQ amended by 2010-0014-DWQ & 2012-0006-DWQ.

This permit expired on 9/2/2014. This permit has been administratively extended until a new order is adopted and become effective. Amend the SWPPP and site plan when a new permit goes into effect to meet new permit conditions.

Allow 7 days from submittal and payment of NOI to issuance of permit.

(a) General. Designate a qualified Erosion Control Supervisor according to Subsection 157.03.

Obtain a separate NPDES permit associated with industrial activity for any mobile asphalt and concrete plants that provide material for the project. Provide a copy of the permit and acknowledgement letter to the CO for their records.

(b) Notice of Intent (NOI). File a NOI as a primary operator if required or permitted. Provide a copy of the NOI and confirmation letter to the CO. The Government will also file a separate NOI if required and provide that information to the Contractor for inclusion in the SWPPP. Do not perform any ground disturbing activities including clearing, grubbing, or earthwork until an acknowledgement letter is received from the regulatory agency and the SWPPP has been approved and implemented.

Post all project authorization numbers near the entrance to the site and on the bulletin board.

(c) Payment of Permit Fees. Submit the appropriate permit fees and renewal fees required for both the Contractor and Government to the regulatory agency.

(d) Notice of Termination (NOT). File a NOT if the conditions listed in the CGP have been met or transfer the NOI to the maintaining agency when project has reached final acceptance.

107.02 Protection and Restoration of Property and Landscape

Add the following at the end of this subsection:

The locations of the utilities shown in the plans have been certified to a Quality Level B, with spot locations certified to a Quality Level A according to the CFLHD Utility Data Quality Certification requirements:

<https://highways.dot.gov/federal-lands/rw-util/cfl/utility-data-quality-level-certification>

Table 107-1
Status of Utilities

	Company	Utility Type	Contact Name	Phone Number	Status 1, 2, 3, or 4
1	US Forest Service	Water	Nora Gamino	760-873-2414	2
2	US Forest Service	Sanitary Sewer	Nora Gamino	760-873-2414	4
3	So. Cal. Edison	Power	Tim Rafferty	760-873-2902	4
4	Frontier	Phone	Bin Liang	951-723-0736	4

Status 1: The utilities are in conflict with the project and require relocation by others during construction.

Status 2: The utilities are in conflict with the project and require relocation by the Contractor during construction.

Status 3: The utilities are in conflict with the project and require relocation by others BEFORE construction.

Status 4: The utilities are located within the project rights of way but require no relocation.

107.05 Responsibility for Damage Claims. Delete the first sentence of the third paragraph and substitute the following:

Before work begins, submit “*certificates of insurance*” certifying that the policies will not be changed or canceled until 30 days written notice has been given to the Government.

107.10 Environmental Protection.

(a) Federal Water Pollution Control Act (Clean Water Act) 33 USC § 1251 et seq. Add the following:

(4) Do not ford running streams with construction equipment. Obtain approval from the CO to use temporary bridges or other structures whenever crossings are necessary.

(5) Immediately clear ephemeral drainages, intermittent and perennial streams, lakes and reservoirs of all work items, debris or other obstructions placed by or resulting from construction operations.

(6) Locate machinery servicing and refueling areas a minimum of 300 feet from streambeds and wetlands to reduce the possibility and minimize the impacts of accidental spills or discharges.

(b) Oil and hazardous substances. Add the following to the end of the third paragraph:

Sand or soils are not approved absorbent materials.

Add the following to the end of the fourth paragraph:

Report the spill to the appropriate federal, state, and local authorities as required by the SPCC plan or hazardous spill plan.

(c) Dirt, plant, and foreign material. Add the following:

All vehicles and equipment entering the project area must be clean of noxious weeds and free from oil leaks and are subject to inspection. Wash all construction equipment, including individual equipment such as waders and wading boots, to thoroughly remove all dirt, plant,

and other foreign material prior to entering the project. Particular attention must be shown to the under carriage and any surface where soil containing exotic seeds may exist. Allow the CO to inspect each piece of equipment before entering the project. Provide the cleaning and inspection records to the CO. Equipment found operating on the project that has not been inspected, or has oil leaks will be shut down and subject to citation.

(d) Clearances for Contractor-selected, noncommercial areas. Add the following to the end of the first paragraph:

Use rock, sand, gravel, earth, subsoil, or other natural materials from a Contractor-selected non-commercial materials source that has been certified free of noxious weeds. Materials imported into the project limits which do not include a noxious weed free certification may be rejected and ordered by the CO to be removed from the project limits. The CO has the discretion of requesting inspection of certified materials by a third party, and rejecting the use of the source if noxious weeds or seeds thereof are found to be present.

Add the following:

(5) Any required Certifications.

Add the following:

(e) Project Specific Commitments.

- (1) Environmental awareness training is mandatory for all construction employees working on-site. The training will be provided in the form of a fact sheet. The fact sheet is contained in the Appendix to these SCRs. Provide each employee and sub-contractor employee with a copy of the fact sheet and submit a signed copy of the fact sheet to the CO from each employee confirming that they have read and understands the fact sheet. Provide all new employees with the complete environmental training prior to their presence on the project site. No employee will be allowed on the project site until completion of the training has occurred.
- (2) Stop work and notify the CO if an active bird nest is found within the construction limits. Resume work only after approval of the CO.
- (3) For each construction season, provide a qualified biologist at no additional cost to the government to conduct the following tasks. Provide documentation to the CO that the qualified biologist has a bachelor's degree in a relevant field and at least two full years of documented experience leading bird surveys:
 - (a) Contact the USFS Inyo National Forest to determine the location of any known raptor nests near project limits.

- (b)* Conduct surveys in the construction limits for active bird nests within 10 days prior to vegetation removal (i.e., trimming, clearing or grubbing) from the start of the construction season to August 31. Extend survey area to a 300-foot buffer from project limits for nesting raptor species.
 - (c)* If vegetation removal will occur in phases along the project route, conduct nest survey in phases so that no more than 10 calendar days lapses between survey and vegetation removal at any one location.
 - (d)* Provide results of nest survey and avoidance strategies applied, if any, to the CO in a written format within seven days of completing a survey.
 - (e)* If an active nest is identified notify the CO.
 - (f)* Determine appropriate avoidance strategy in coordination with CO such as establishing a no-work zone around the nest and delaying vegetation removal or delaying the use of heavy equipment near the nest.
 - (g)* Monitor the active nest until young have fledged or the nest is no longer active. Notify the CO of any changes in nest status.
- (4) Provide a qualified archaeologist at no cost to the Government to monitor all ground disturbing construction activities between Stations 781+00 and 786+70. Provide documentation to the CO that the archaeologist meets the Secretary of Interior's Professional Qualifications Standards for Archeology (48 FR 44738-39). Within 30 days of completion of project-related ground disturbing activities within authorized areas, submit a report detailing the archaeological monitoring and any discoveries of any previously unknown cultural resources. If cultural resources are encountered during construction, stop work at the discovery location and establish a 100-foot buffer around the find. Follow procedures of Section 107.02 and 36 CFR 800.3 (b)(3).
- (5) No more than 14 days prior to construction along Reds Meadow Road between Station 781+40 and 786+70, delineate Environmentally Sensitive Areas with highly visible fencing as shown in the plans and as directed by the CO in consultation with the Forest Service. Avoid Environmentally Sensitive Areas. Remove plastic fencing within 7 days of placing the final lift of asphalt pavement or as directed by the CO.
- (6) Provide bear-resistant containers at the project site and staging areas for storage of all trash and food items. Secure and store trash containers within buildings, hard-sided vehicles, or other appropriate area(s), as approved by the CO, at the end of each working day. Keep bear-resistant containers closed and locked at all times. Do not leave scented items and ice chests unattended. Dispose of waste off the project site at

an approved disposal site once per week at a minimum or immediately and often at the first sign of wildlife scavenging.

- (7) Provide a qualified biologist at no additional cost to the Government to locate and mark in the field all whitebark pine with driplines within project limits. Provide documentation to the CO that the qualified biologist has a bachelor's degree in a relevant field and at least two full years of documented experience leading similar tree surveys. To facilitate the identification of whitebark pines, the CO will provide GIS (Geographic Information System) shape files of individual whitebark pine locations. Flag or fence no work zones at the drip line of identified whitebark pines along the project corridor and at the Minaret staging and stockpile site. Do not store material or park equipment within the driplines of retained whitebark pine located near construction limits.

- (8) Do not permit pets of workers to enter the construction limits.

107.11 Protection of Forests, Parks, and Public Lands. Add the following:

Fire Plan. The Forest Service fire prevention plan involving emergency curtailment of operations is included in the Appendix and is in effect on this project. The CO will order the suspension of operations when conditions are unsafe as determined by the CO and the land management agency.

Section 108. — PROSECUTION AND PROGRESS

108.01 Commencement, Prosecution, and Completion of Work. Add the following:

Limit operations according to Subsection 107.10(e) and Section 156.

Limit operations as follows:

The CO will issue a Notice to Proceed before commencement of any work. The contract completion date is October 18, 2024. If Option X is awarded, no additional contract time will be provided.

General Limitations:

- (a) Asphalt concrete pavement mix design must be approved before pulverizing activities commence.
- (b) Limit construction delays according to 156.07.
- (c) Limit nighttime operations according to 156.08.
- (d) Develop a public information plan according to 156.09.

- (e) A construction season is defined as the period when work can be accomplished in accordance with the contract requirements related to weather and in an efficient manner without undue delay due to weather conditions. Weather and conditions will vary from year to year, however, the winter shutdown period is anticipated for the months of November thru mid-May due to the high-altitude climate and snow fall.
- The start of the construction season will be defined as the date when the weather and soil conditions are considered suitable for prosecution of work after May 15.
 - The end of the construction season will be defined as the date when the weather or soil conditions are considered unsuitable for prosecution of work or November 18, whichever comes first.
 - Snow removal during the construction season is the responsibility of the contractor and performed at no cost to the Government. Snow removal can begin as approved by the CO in consultation with the Forest Service.
- (f) Stabilize all disturbed areas prior to the winter shutdown period, as follows:
- Roadways must have either the existing asphalt in place (18-foot wide minimum), the roadway paving completed full width through the first lift of asphalt, or temporary asphalt, approved by the CO, placed at no cost to the Government. Temporary Asphalt must be placed at a minimum thickness of 1 ½ inches and conform to the requirements of Section 403, Asphalt Concrete.
 - Earthen Areas must have final stabilization as shown in the plans, otherwise contractor will provide a temporary 3-inch layer of clean wooden mulch or erosion control blanket approved by the CO at no cost to the Government.
 - Staging Areas must comply with the Project's NPDES California Construction General Permit.

Perform no work except to maintain traffic control devices, erosion control devices, the roadway driving surface, and to control dust during the listed Federal holidays and surrounding days as shown in Table 108-2.

Table 108-2
Federal Holidays and Surrounding Days

Federal Holiday	Time	Remarks
Memorial Day	12:00 Noon Friday to 6:00 am Tuesday	-
Independence Day	12:00 Noon July 3 to 6:00 am July 5	If July 4 falls on a weekend, Friday, or Monday, do not work the weekend.
Labor Day	12:00 Noon Friday to 6:00 am Tuesday	-

Thanksgiving	12:00 Noon Wednesday to 6:00 am Monday	-
Christmas / New Year's	12:00 Noon December 23 to 6:00 am January 2	If December 23 or January 1 falls on a Monday, do not work the adjacent weekend and do not work on December 23. If January 1 falls on a Friday, do not work the weekend.

Schedule at least 2 non-work days out of every 14 calendar days. The selected non-work days do not need to be consecutive, but they must be scheduled. Provide at least 2 weeks notice before changing the scheduled days off.

The CO may grant written approval for exemptions to scheduled days off for specific project operations and for periods of limited duration.

Add the following:

Use the Government's web-based system, *Engineer's Estimating, Bidding, Award, and Construction System (EEBACS)*, to prepare all "*Inspector's Daily Record of Construction Operations*" (*Contractors Daily Reports*) and measurement notes (pay notes and field measurement documentation).

Attend a training session on the use of EEBACS. The training session will require up to 4 hours. No more than 3 Contractor staff may attend the training unless approved by the CO. The Contractor shall be responsible for training additional staff.

Complete and electronically submit "*EEBACS User Account Form*" (Form EEBACS-001) for each individual requiring EEBACS access. Submit forms to the CO at the preconstruction conference or at least 10 days prior to the start of any contract work or EEBACS training. As needed, request additional system access using Form EEBACS-001 and allow 7 days for system access.

Maintain active EEBACS accounts for all contractor staff who use EEBACS and ensure that the CO is notified within 24 hours after an account holder is reassigned or no longer employed by the Contractor. Within 24 hours after an account holder is reassigned or no longer employed by the Contractor, submit an EEBACS-001 form requesting that the account be disabled.

The electronic version of EEBACS-001 is available at:

<https://highways.dot.gov/federal-lands/estimates/forms>

108.02 Subcontracting. Delete the third paragraph and substitute the following:

Within 14 days of subcontract award, submit a completed SF 1413 and 1413S. Complete Part I for each Subcontractor, and include Part II when the Subcontractor performs on-site work. Complete other forms that may be required by the Government to show the work subcontracted and the total dollar amount of the subcontract. Submit the above required information for each Subcontractor at lower tiers.

108.04 Failure to Complete Work on Time.

Delete Table 108-1 and substitute the following:

Table 108-1
Charge for Liquidated Damages for Each Day
Work Is Not Substantially Completed

Original Contract Price		Daily Charge
From More Than —	To and Including —	
\$ 0	\$ 1,000,000	\$ 1,600
\$ 1,000,000	\$ 2,000,000	\$ 2,400
\$ 2,000,000	\$ 5,000,000	\$ 4,100
\$ 5,000,000	\$ 10,000,000	\$ 5,600
\$ 10,000,000	and more	\$ 6,500

Section 109. — MEASUREMENT AND PAYMENT

109.01 Measurement of Work. Add the following after the sixth paragraph:

Prepare, sign, and submit electronic measurement notes (pay notes and supporting field documentation) using EEBACS. Measurement notes will be reviewed by the CO. Unacceptable measurement notes will be electronically rejected and returned. Correct rejected measurement notes and resubmit electronically.

109.02 Measurement Terms and Definitions.

(c) Cubic yard (Cubic meter).

(1) Cubic yard (Cubic meter) in-place. Delete this subsection and substitute the following:

Measure the solid volumes by a method approved by the CO, or by a surface to surface method approved by the CO.

(o) Square foot and Square yard (Square meter). Add the following: Do not measure overlaps.

109.06 Pricing of Adjustments Add the following:

ASPHALT BINDER PRICE ADJUSTMENT PROVISION

GENERAL The Asphalt Binder Price Adjustment Provision provides for a price adjustment in the form of payment to the Contractor or a rebate to the Government for fluctuations in the cost of asphalt binder used in the performance of applicable construction work for CA FLAP 03S11(1) Reds Meadow Road. Price adjustment provisions are applicable only to the asphalt binder, as defined in Section 702.01, and incorporated in the following contract pay items:

- 40101-5600 Asphalt concrete pavement, gyratory mix

The price adjustment provisions are also applicable to eligible pay items when the Government adds extra work to the Contract.

The provision will remain in effect throughout the duration of the contract. Enactment of the Asphalt Binder Price Adjustment Provision will only be considered when the **increase or decrease** in the price of asphalt binder exceeds 10 percent.

The Asphalt Binder Price Adjustment Provision is intended to reduce but not eliminate the cost effects of price uncertainty to the Contractor and the Government for asphalt binder used in the construction of this contract. It provides for sharing by the Government a portion of the Contractor's risk, which could result from unusual price fluctuations. The provision is not intended to compensate the Contractor for normal day-to-day fluctuations and seasonal changes or to serve as a guarantee of full compensation for asphalt binder price fluctuations.

PRICE INDEXES The Government will post a monthly performance price index at:
<https://highways.dot.gov/federal-lands/business/escalation-factors-cfl>

Poten and Partners, Inc. (PPI), publishes a weekly report (Asphalt Weekly Monitor) on high and low selling prices for states in five regions throughout the United States including:

- East Coast/Northeast
- Mid-Continent/Midwest
- Gulf Coast/Mid South
- Rocky Mountains
- West Coast/Northwest

Weekly high and low selling price data reported for *West Cost/Northwest* will be averaged and used to establish a base price index, BPI, for this project and a monthly performance price index, MPPI, for the duration of the contract. These indexes are defined as follows:

- **BASE PRICE INDEX** The base price index, BPI, is the price index posted by the Government as determined by arithmetic average, as specified above, shown in the four weekly publications immediately preceding the contract award. It is as follows:

BASE PRICE INDEX (BPI) FOR ASPHALT BINDER
PER SHORT TON (TON) = \$702.50

Note (1): BPI calculated by the Government and inserted here immediately before contract award.

- **MONTHLY PERFORMANCE PRICE INDEX** The monthly performance price index, MPPI, is the monthly price index at the time of performance of applicable work as determined by arithmetic average, as specified above, shown in the four weekly publications issued prior to the last Wednesday of the month (i.e. the monthly performance price index during which asphalt binder is used in the performance of applicable construction work).

PRICE ADJUSTMENTS Price adjustments calculated by the Government are not intended to reflect the Contractor's actual purchase price. The ratio of the monthly performance price index and the base price index (MPPI/BPI) is calculated and used to determine price adjustments as follows:

- **No Price Adjustment** – When the ratio MPPI/BPI falls within the range of 0.90 to 1.10, no price adjustment will be made for any asphalt binder used in construction work performed during the relevant month.
- **Government Rebate** – When the ratio MPPI/BPI is calculated to be less than 0.90, the Government is due a rebate determined in accordance with the following formula:

$$\text{Government Rebate} = [0.90 - (\text{MPPI/BPI})] (\text{BPI}) (Q)$$

- **Contractor Payment** - When the ratio MPPI/BPI is calculated to be greater than 1.10, the Contractor is due additional payment determined in accordance with the following formula:

$$\text{Contractor Payment} = [(\text{MPPI/BPI}) - 1.10] (\text{BPI}) (Q)$$

The following definitions are applicable to both the Government Rebate and the Contractor Payment formulas:

MPPI = Monthly Performance Price Index for the month during which asphalt binder is used in the performance of applicable construction work.

BPI = Base Price Index that is established immediately preceding the bid opening.

Q = Quantity in tons of asphalt binder for each pay item that was used on the project during the progress payment period. The quantity will be calculated using the asphalt content of the approved mix design and the following formula:

$$Q = \text{Asphalt Concrete Pavement tons placed} \times (\% \text{ Asphalt}/100)$$

PRICE ADJUSTMENT COMPENSATION Monthly adjustments will be accrued. The final price adjustment will be paid, or rebated, after completion of all work for each eligible pay item. The Contractor may request in writing a partial price adjustment payment once every 12 months, or when the unpaid accrued increase exceeds \$10,000. The Government will take a rebate when the deductive accrual exceeds \$10,000.

No price adjustments will be made for work performed beyond the Government-approved Contract completion date.

The maximum allowable monthly and final price adjustment to the Contractor or rebate to the Government is limited to a (MPPI/BPI) ratio of 1.6 and 0.4, respectively.

109.06 Pricing of Adjustments Add the following

FUEL PRICE ADJUSTMENT PROVISION

GENERAL The Fuel Price Adjustment Provision contained herein provides for a price adjustment in the form of payment to the Contractor or a rebate to the Government for fluctuations in the cost of diesel fuel consumed in the performance of applicable construction work for CA FLAP 03S11(1) Reds Meadow Road. The price adjustment provisions are applicable only to contract items listed as eligible pay items in Table 1 below. The price adjustment provisions are also applicable to these eligible pay items when the Government adds extra work to the Contract.

The provision will remain in effect throughout the duration of the contract. Enactment of the Fuel Price Adjustment Provision will only be considered when the **increase or decrease** in the price of diesel fuel as defined herein exceeds 10 percent.

The Fuel Price Adjustment Provision is intended to reduce but not eliminate the cost effects of price uncertainty to the Contractor and the Government for diesel fuel used in the construction of this contract. It provides for sharing by the Government in a portion of the Contractor's risk, which could result from unusual price fluctuations. The provision is not intended to compensate the Contractor for normal day-to-day fluctuations and seasonal changes or to serve as a guarantee of full compensation for diesel fuel price fluctuations.

PRICE INDEXES The Government will post a monthly performance price index at:
<https://highways.dot.gov/federal-lands/business/escalation-factors-cfl>

Gross CARB Ultra Low Sulfur, No. 2 Diesel Fuel using price data obtained from the Oil Price Information Service (OPIS), which publishes a weekly newsletter on the distillate wholesale rack prices for major cities throughout the United States. The OPIS 5-day newsletter average rack price reported for *Barstow [860]* will be averaged and used to establish a base price index, (BPI), for this project and a monthly performance price index, (MPPI), for the duration of the contract. These indexes are defined as follows:

- **BASE PRICE INDEX** The base price index, BPI, is the price index posted by the Government as determined by arithmetic average, as specified above, shown in the four weekly publications immediately preceding the contract award. It is as follows:

BASE PRICE INDEX (BPI) FOR GROSS CARB ULTRA LOW SULFUR, NO. 2 DIESEL
FUEL
PER GALLON = \$ 4.98

Note (1): BPI calculated by the Government and inserted here immediately before contract award.

- **MONTHLY PERFORMANCE PRICE INDEX** The monthly performance price index, MPPI, is the monthly price index at the time of performance of applicable work as determined by arithmetic average, as specified above, shown in the four weekly publications issued prior to the last Wednesday of the month (i.e. the monthly performance price index during which diesel fuel is consumed in the performance of applicable construction work).

PRICE ADJUSTMENTS Price adjustments are calculated by the Government are not intended to reflect the Contractor's actual purchase price. The ratio of the monthly performance price index and the base price index (MPPI/BPI) is calculated and used to determine price adjustments for eligible pay items as follows:

- **No Price Adjustment** – When the ratio MPPI/BPI falls within the range of 0.90 to 1.10, no price adjustment will be made for any diesel fuel consumed in construction work performed during the relevant month.
- **Government Rebate** – When the ratio MPPI/BPI is calculated to be less than 0.90, the Government is due a rebate determined in accordance with the following formula:

$$\text{Government Rebate} = [0.90 - (\text{MPPI/BPI})] (\text{BPI}) (Q) (\text{FUF})$$

- **Contractor Payment** - When the ratio MPPI/BPI is calculated to be greater than 1.10, the Contractor is due additional payment determined in accordance with the following formula:

$$\text{Contractor Payment} = [(\text{MPPI/BPI}) - 1.10] (\text{BPI}) (Q) (\text{FUF})$$

The following definitions are applicable to both the Government Rebate and the Contractor Payment formulas:

MPPI = Monthly Performance Price Index for the month during which motor diesel fuel is consumed in the performance of applicable construction work.

BPI = Base Price Index that is established immediately preceding the bid opening.

Q = Quantity of work on the project during the progress payment period for eligible pay items shown in Table 1 below. The Government, to agree with the units associated with the applicable Fuel Usage Factor, will convert work quantities, as necessary.

FUF = Fuel Usage Factor shown in Table 1 below applicable to No. 2 diesel fuel.

Table 1 – Eligible Pay Items For Price Adjustments and Associated Fuel Usage Factors		
Eligible Pay Items	Fuel Usage Factor U.S. Customary Units	Fuel Usage Factor Metric Units
Earthwork:		
Section 204 – Excavation and Embankment 20401 Roadway excavation 20402 Subexcavation 20403 Unclassified borrow 20404 Unclassified borrow* 20410 Select borrow 20411 Select borrow* 20415 Select topping 20416 Select topping* 20419 Embankment construction* 20420 Embankment construction 20421 Rock excavation	0.30 gallons per cubic yard	0.39 gallons per cubic meter
Aggregate and Base Courses:		
Section 301 – Untreated Aggregate Courses 30101 Aggregate base 30102 Aggregate base* 30103 Aggregate base* 30105 Subbase 30106 Subbase* 30107 Subbase* 30110 Aggregate Surface Course 30111 Aggregate Surface Course* 30112 Aggregate Surface Course*	0.70 gallons per ton	0.77 gallons per metric ton
Section 305 – Full Depth Reclamation (FDR) with Cement 30501 FDR with Cement* 30502 FDR with Cement	0.30 gallons per square yard	0.36 gallons per square meter
Section 306 – Full Depth Reclamation (FDR) with Asphalt 30601 FDR with Emulsified Asphalt*	0.30 gallons per square yard	0.36 gallons per square meter

30602 FDR with Emulsified Asphalt 30603 FDR with Foamed Asphalt* 30604 FDR with Foamed Asphalt		
Section 309 – Emulsified Asphalt Treated Base Course 30901 Emulsified asphalt treated aggregate base 30902 Emulsified asphalt treated aggregate base* 30903 Emulsified asphalt treated aggregate base*	0.70 gallons per ton	0.77 gallons per metric ton
Section 310 – Cold In-Place (CIP) Recycled Asphalt Base Course 31001 CIP Recycled asphalt base* 31002 CIP Recycled asphalt base	0.15 gallons per square yard	0.18 gallons per square meter
Section 311 – Stabilized Aggregate Surface Course 31101 Stabilized aggregate surface course* 31102 Stabilized aggregate surface course* 31103 Stabilized aggregate surface course	0.70 gallons per ton	0.77 gallons per metric ton
Asphalt Pavements:		
Section 401 – Asphalt Concrete Pavement By Gyratory Mix Design Method 40101 Asphalt concrete pavement, gyratory mix 40102 Asphalt concrete pavement, gyratory mix, wedge and leveling course	2.40 gallons per ton	2.65 gallons per metric ton
Section 402 – Asphalt Concrete Pavement by Hveem or Marshall Mix Design Method 40201 Asphalt concrete pavement, Hveem or Marshall mix 40202 Asphalt concrete pavement, Hveem or Marshall mix, wedge and leveling course	2.40 gallons per ton	2.65 gallons per metric ton
Section 403 – Asphalt Concrete 40301 Asphalt concrete pavement 40302 Asphalt concrete pavement* 40303 Asphalt concrete pavement, wedge and leveling course	2.40 gallons per ton	2.65 gallons per metric ton
Section 405 – Open-Graded Asphalt Friction Course 40501 Open-graded asphalt friction course	2.40 gallons per ton	2.65 gallons per metric ton
* The Government, to agree with the units associated with the applicable Fuel Usage Factor, will convert work quantities, as necessary.		

PRICE ADJUSTMENT COMPENSATION Monthly adjustments will be accrued. The final price adjustment will be paid, or rebated, after completion of all work for eligible pay items. The Contractor may request in writing a partial price adjustment payment once every 12 months, or when the unpaid accrued increase exceed \$10,000. The Government will take a rebate when the deductive accrual exceeds \$10,000.

No price adjustments will be made for work performed beyond the Government-approved Contract completion date.

The maximum allowable monthly and final price adjustment to the Contractor or rebate to the Government is limited to a (MPPI/BPI) ratio of 1.6 and 0.4, respectively.

109.08 Progress Payments.

(a) General. Delete the last sentence and substitute the following:

The CO may withhold partial progress payment according to Subsection 109.08 (g) for failure to make satisfactory progress until a construction schedule or schedule update is approved by the CO.

(b) Closing date and invoice submittal date. Delete the text and substitute the following:

Submit invoices to the designated billing office by the 7th day after the closing date. Invoices received by the designated billing office after the 16th day following the closing date will not be accepted for payment processing that month. Include late, unprocessed invoice submittals in the following months invoice.

(d) Government's receiving report. Delete the first sentence and substitute the following:

The Government's receiving report will be developed using the measurements and quantities from Pay Notes received by the CO in EEBACS and determined acceptable.

(e) Processing progress payment requests.

(1) Proper invoices. Delete the title and text and substitute the following:

(1) Invoices received by the 7th day following the closing date.

(a) Proper invoices. If the invoice meets the requirements of Subsection 109.08(c), and the quantities and unit prices shown on the Contractor's invoice agree with the corresponding quantities and unit prices shown on the Government's receiving report, the invoice will be paid.

(b) Defective invoices. If the invoice does not meet the requirements of Subsection 109.08(c), or if any of the quantities or unit prices shown on the Contractor's invoice exceed the corresponding quantities and unit prices shown on the Government's receiving report, the invoice will be deemed defective and the Contractor so notified according to FAR Clause 52.232-27(a)(2). Defective invoices will not be corrected by the Government and will be returned to the Contractor within 7 days after the Government's designated billing office receives the invoice.

Revise and resubmit returned invoices by the 18th day following the closing date. The CO will evaluate the revised invoice. If the invoice still does not meet the requirements of Subsection 109.08(c), the Contractor will be so notified according to FAR Clause 52.232-27(a)(2), and no progress payment will be made that month. Correct the deficiencies and resubmit the invoice the following month.

If the revised invoice meets the requirements of Subsection 109.08(c), but still had quantities or unit prices exceeding the corresponding quantities and unit prices shown on the Government's receiving report, the Government's data for that item or work will be used. The Contractor's invoice, as revised by the Government's receiving report, will be forwarded for processing by the 23rd day following the closing date. The Contractor will be notified by the 23rd day following the closing date of the reasons for any changes to the invoice.

(2) Defective invoices. Delete the title and text and substitute the following:

(2) Invoices received between the 8th and 16th day following the closing date.

(a) Proper invoices. If the invoice meets the requirements of Subsection 109.08(c), and the quantities and unit prices shown on the Contractor's invoice agree with the corresponding quantities and unit prices shown on the CO's receiving report, the invoice will be deemed proper and forwarded for processing within 7 days of receipt.

(b) Defective invoices. If the invoice does not meet the requirements of Subsection 109.08(c), the invoice will be deemed defective, the Contractor so notified according to FAR Clause 52.232-27(a)(2), and no progress payment will be made that month. Correct the deficiencies and resubmit the invoice the following month.

If the invoice meets the requirements of Subsection 109.08(c), but has quantities or unit prices exceeding the corresponding quantities and unit prices shown on the Government's receiving report, the Government's data for that item of work will be used. The Contractor's invoice, as revised by the Government's receiving report, will be forwarded for processing within 7 days of the Government's receipt of the invoice. The Contractor will be notified of the reasons for any changes to the invoice.

(f) Partial payments. Delete the subsection and substitute the following:

(f) Partial payments. Progress payments may include partial payment for material to be incorporated in the work according to FAR Clause 52.232-5(b)(2), provided the material meets the requirements of the contract and is delivered on, or in the vicinity of, the project site or stored in acceptable storage places.

Partial payments for stockpiled manufactured material (aggregates) will be based on Contractor process control test results. If test results show the material to be out-of-specification, or in "reject" where statistical evaluation procedures are used, no payment for stockpiled materials will be made.

Partial payment for material does not constitute acceptance of such material for use in completing items of work. Partial payments will not be made for living or perishable material until incorporated into the project.

Individual and cumulative partial payments for preparatory work and material will not exceed the lesser of:

- (1) 80 percent of the contract bid price for the item; or
- (2) 100 percent of amount supported by copies of invoices submitted.

The quantity paid will not exceed the corresponding quantity estimated in the contract. The CO may adjust partial payments as necessary to protect the Government.

Section 152. — CONSTRUCTION SURVEY AND STAKING

Construction Requirements

152.04 General. Add the following to the second paragraph:

The Government will establish basic survey control points for vertical and horizontal control of:

- Schedule A, with the exception of Minaret Vista Road and Spur.
- Option X for Reds Meadow Road Station 713+00 to 725+00 only, no horizontal or vertical control information will be provided for the remaining Option X areas.

The Government will furnish the following:

- (1) 3D coordinates and offset distance from centerline for subgrade and surface course finishing stakes at 50-foot (20-meter) intervals and miscellaneous intermediate stations.
- (2) Slope stake data containing centerline grade and slope staking information at 50-foot (20-meter) station intervals and miscellaneous intermediate stations.
- (3) Computer listings containing: horizontal alignment, vertical alignment, earthwork quantities, and staking details showing superelevation template data and slope information.

Perform additional conversions and calculations as necessary for convenient use of Government-furnished data. The Contractor is responsible for the accuracy of all information converted from the Government-furnished data. Provide immediate notification of apparent errors in the furnished data.

The Government will furnish horizontal and vertical alignment staking information for Schedule A (except for Minaret Vista Road and Spur) and Option X for Reds Meadow Road Station 713+00 to 725+00 only.

Delete the last sentence of the fourth paragraph from the bottom of the subsection and substitute the following:

Reestablish missing control points and stakes before slope staking begins.

152.05 Survey and Staking Requirements.**(b) Centerline establishment.** Add the following:

Reestablishment of centerline may be ordered by the CO and paid for under Section 623 for purposes other than to control the work.

(d) Slope and references stakes.**(2) Conventional survey methods.** Add the following:

When the centerline curve radius is less than or equal to 250 feet (75 meters), use a maximum longitudinal spacing between stakes of 25 feet (8 meters). When the centerline is on a tangent or the curve radius is greater than 250 feet (75 meters), use a maximum longitudinal spacing between stakes of 50 feet (15 meters).

(f) Grade-finishing stakes. Delete paragraph (1) AMG method.**(g) Culverts.** Delete the text and substitute the following:

Verify and set culvert locations at the inlet, outlet, and inlet basin points according to the plans. Plot the centerline of the proposed culvert at a 1:20 scale. Show the natural ground, the flow line, the roadway section, and the culvert including end treatments and other appurtenances. Provide the elevations, grade, culvert length, degree of elbow, catch points, and hinge points on the plot.

Perform the following if the culvert design shown in the plans does not fit field conditions, when the CO requires adjustment to a culvert location, or when a culvert design isn't provided for a new culvert, culvert replacement, or culvert extension:

- (1) Recommend a revised culvert location and alignment if needed.
- (2) Survey and record the ground profile along the culvert centerline;
- (3) Determine the slope catch points at the inlet and outlet;
- (4) Set reference points and record information necessary to determine culvert length and end treatments;
- (5) Plot to scale the profile along the culvert centerline. Show the natural ground, the flow line, the roadway section, and the culvert including end treatments and other appurtenances. Show elevations, grade, culvert length, and degree of elbow.

(a) For single skewed culverts, submit a plotted field-design cross-section normal to roadway centerline and at each end section. Plot the offset and elevation of natural ground at the end section and at proposed template break points between centerline and the end section. Ensure the template design embankment slope is not exceeded;

- (b) For multiple skewed culverts, submit a plotted field design cross-section normal to roadway centerline and at the end sections (left and right) nearest to the shoulder. Plot the offset and elevation of natural ground at the end section and at proposed template break points between centerline and the end section. Ensure the template design embankment slope is not exceeded;
- (c) Submit the plotted field-design cross-section for approval of final culvert length and alignment. Plot at a clear and readable scale;
- (d) Set inlet, outlet, and reference stakes when the field design has been approved. Stake inlet and outlet ditches to make sure the culvert and end treatments (such as drop inlets) are functional; and
- (e) Adjust slope, reference, and clearing stakes as necessary to provide for culvert inlet treatments in cut slopes. Readjust slope, reference, and clearing stakes as necessary when culvert inlets are moved from their plan locations. Review slope adjustments with the CO and obtain approval.

(i) Retaining walls and reinforced soil slopes. Delete the Subsection and substitute the following:

(i) Retaining walls. Survey and record profile measurements along the face of the proposed wall at 5 feet (1.5 meters), 10 feet (3 meters), and in front of the wall face. Take cross-sections every 25 feet (8 meters) along the length of the wall and at major breaks in terrain within the limits designated by the CO. Measure and record points every 25 feet (8 meters) and at major breaks in terrain for each cross-section. Set additional references and control points to perform the work.

Add the following:

(m) Centerline verification and staking. Verify stationing shown in the plans by measuring along the existing centerline with a method approved by the CO. Calibrate all measuring devices and furnish calibration data to CO before use. Use landmarks (e.g., culverts, turnouts, approach roads) to verify that the ground stationing matches the stationing shown on the plans. Use white spray paint to mark each centerline station. Add station equations to adjust field stationing to match the plans. Notify the CO on any readjustment or change to stationing or establishment of additional centerline points.

Measure the existing surface width at 200 foot (60 meters) stationing intervals on tangent and at 50 foot (15 meter) intervals on curves. At each location, each side of the roadway and outside the construction limits, place an offset stake of adequate dimensions to place all required information. Label each stake with the following information corresponding to each respective lane:

(1) Station

(2) Offset from striped centerline or other location as directed by the CO

(3) Offset from the proposed edge of pavement

Measure stations to the nearest foot (meter), offsets to the nearest 2 inches (50 millimeters).
Record the above information and provide to the CO.

Use this recorded information to control the proposed roadway width and reestablish striping.

Measurement

152.07 Delete the third paragraph and substitute the following:

Do not measure miscellaneous survey and staking.

Add the following to the fourth paragraph:

Reestablishing missing control points and stakes will be measured under Special labor, Hired survey services when it is paid by the hour.

Add the following:

Measure centerline verification and staking only one time per project.

Section 153. — CONTRACTOR QUALITY CONTROL

Description

153.01 Add the following:

This work also consists of using EEBACS to prepare electronic “*Inspector's Daily Record of Construction Operations*” (*Contractors Daily Reports*) and measurement notes (pay notes), including entering labor, equipment, subcontractors, and inspection records into the system.

Construction Requirements

153.02 **Qualifications.**

(a)(1) **Full-time, on-site QCM.** Delete subsections (a) and (b) and substitute the following:

(a) Four years of experience managing quality control on highway construction projects of similar type and scope, and

(b) National Institute for Certification in Engineering Technologies (NICET) Level III certification, or equivalent, in highway construction or highway material.

153.03 **Quality Control Plan (QCP).**

(b) Quality control procedures

- (2) Add the following: List the material to be tested by pay item, tests to be conducted, the location of sampling, and the frequency of testing.

Add the following:

(d) Subcontractors and suppliers. Include the work of all subcontractors. If a subcontractor is to perform work under this Section, explain how the subcontractor's inspection plan will interface with the Prime Contractor first tier subcontractors and lower tier subcontractors and organizations, and the CO. Include the work of major suppliers and suppliers of structural and geotechnical services and materials.

Add the following:

Modifications or additions may be required to any part of the plan that is not adequately covered. Acceptance of the quality control plan will be based on the inclusion of the required information. Acceptance does not imply any warranty by the Government that the plan will result in consistent contract compliance. It remains the responsibility of the Contractor to demonstrate such compliance.

153.04 Prosecution of Work. Delete this Subsection and substitute the following:

Address each of the subjects shown for each phase of construction:

(a) Preparatory phase.

- (1) In a preparatory phase meeting, review the contract requirements for the work; the process for constructing the work; and the plan for inspecting, testing, measuring, and reporting the work. Include the project superintendent, the quality control manager (QCM), the foreman for the work to be performed, and the CO in the meeting. Schedule and conduct a preparatory meeting for each type of work to be performed at least one week prior to beginning the work.
- (2) Review and coordinate certifications, submittals, plans, drawings, and permits.
- (3) Verify the capabilities of equipment, material, and personnel. Provide training as necessary.
- (4) Establish a detailed testing schedule based on the production schedule.
- (5) Ensure preparatory testing and inspection is accomplished.
- (6) Review accuracy of the surveying and staking.

(b) Start-up phase.

- (1) In a start-up phase meeting, review the contract requirements and the processes for constructing the work with the personnel who will be performing the work. Invite the CO, project superintendent, QCM, testers, and inspectors of the work being performed, and the

personnel directly supervising and performing the work. Review the planned testing, inspection, and reporting requirements with the quality control personnel responsible for the testing and inspection. Explain the reporting procedures to be used when defective work is identified. Conduct a start-up meeting for each type of work to be performed upon beginning the work.

(2) Inspect, test, and report start-up work according to the QCP and ensure the work conforms to the contract.

(c) Production phase.

(1) Inspect, test, and report according to the QCP and evaluate the acceptability of the work produced.

(2) Identify and correct deficiencies.

(3) Request Government inspection and acceptance.

(4) Provide feedback on processes and deficiencies. Identify root causes of deficiencies and make timely and effective changes to work processes to prevent repeated deficiencies.

(d) Construction progress meeting.

(1) Schedule and facilitate a weekly construction progress meeting. Invite the CO, project superintendent, QCM, and any other personnel directly supervising or managing the project. At a minimum, discuss the Working Schedule according to Subsection 155.06(f).

153.05 Sampling and Testing. Delete the text and substitute the following:

153.05 Sampling and Testing.

Perform sampling and testing required by the accepted QCP. As a minimum perform process control testing according to the Sampling, Testing and Acceptance Requirements tables at the end of each Section where applicable. Where no minimums are specified, submit proposed tests to be performed and the proposed sampling and testing frequencies.

(a) Sample Splitting. Schedules and times or locations for obtaining on-site split samples for Government use will be provided by the CO using a procedure for random sampling. Sample any material that appears defective or inconsistent with similar material being produced, unless such material is voluntarily removed and replaced or otherwise corrected according to Subsection 106.01

(b) Testing. If the Government-furnished field laboratory bid option is not exercised by the CO, furnish a laboratory equipped with all test equipment necessary to satisfy the requirements of the contract. Ensure test equipment has been checked, calibrated, standardized and/or otherwise verified in accordance with AASHTO and ASTM standards by an individual qualified to perform the work. Perform an equipment inspection after the laboratory has been moved to its permanent location on the project site, and anytime it is

moved thereafter. Inspect equipment within 45 days of actual use for project testing, and at least once a year thereafter. Do not use equipment that has not been inspected or is found to be deficient. Mark deficient equipment and take it out-of-service until repaired or replaced and shown by subsequent inspection to perform as required. Maintain records documenting laboratory equipment inspections. Provide certification(s) stating the equipment conforms to testing requirements and provide evidence of current inspection. Keep laboratory facilities clean and maintain equipment in proper working condition. Allow the CO unrestricted access to the laboratory for inspection and review.

The CO may require a demonstration of proficiency in sampling and testing capabilities. One or more proficiency samples may be provided by the Government to verify basic qualifications. Provide the results of the proficiency samples to the CO within 48 hours of receipt of the material.

153.06 Certifications. Delete the text and substitute the following:

For materials or work accepted by certification according to Subsection 106.03, review all certifications to insure compliance with the requirements of the contract prior to incorporating materials into the work and provide a signed copy of the reviewed certification(s) to the CO. According to FAR Subpart 46.407, materials or work without proper certification will be rejected in writing, and payment for such material or work will be withheld until proper certification has been provided to the CO.

153.07 Records and Control Charts. Delete the first sentence and substitute the following:

Maintain complete testing and inspection records by pay item number and make them accessible to the CO.

(a) Quality control and construction operations reports. Delete the text and substitute the following:

For each day of the contract, prepare an “*Inspector’s Daily Record of Construction Operations*” (*Contractors Daily Reports (CDR)*) using EEBACS. Enter initial data for Labor/Equipment and Subcontractors prior beginning any work. Maintain and update the Labor/Equipment and Subcontractors data to reflect ongoing changes as they occur. Report operations or items of work separately, with manpower and equipment assigned to each operation separately. Detail inspection results, including deficiencies observed and corrective actions taken. Complete a CDR for each contractor and subcontractor working that day.

When submitting test results on material being incorporated into the work, report test results within the reporting times indicated in the sampling and testing requirements at the end of each section or as specified in the contract.

Enter the following data into EEBACS:

(1) Subcontractors data.**(2) Labor/Equipment.**

(a) All manpower and equipment, including contractor and subcontractors. Complete all data fields.

(b) Labor: Type/classification, move-in date, move-out date, hourly rate, the contractor or subcontractor, and name.

(c) Equipment: Type/classification, move-in date, move-out date, make, model, and year of equipment manufacture.

Certify all CDR's using the following statement:

"I certify that the information contained in this record is accurate and that work documented herein complies with the contract. Exceptions to this certification are documented as a part of this record."

Submit certified CDR's that have been signed by a person who has both responsibility for the inspection system and signature authority.

Submit the record and certification within 24 hours of the work being performed. If the CDR is incomplete, in error, or otherwise misleading, the CDR will be rejected and returned within EEBACS with corrections noted. Correct rejected CDRs and resubmit the revised CDR within 24 hours. When chronic errors or omissions occur, correct the procedures by which the records are produced.

153.08 Acceptance. Add the following:

Performance of the work may be stopped according to Subsection 108.05, either in whole or in part, for failure to comply with the requirements of this Section. The Government may charge to the Contractor the cost of any additional inspections required when the work being inspected is found not to comply with contract requirements during the initial inspection. Work stop orders, due to recurring deficiencies of work required by this Section, will be rescinded after the Contractor demonstrates to the CO that changes were made to the quality control plan and system which resulted in the correction of those deficiencies. There will be no adjustment in the contract time, or payments to the Contractor for any impacts, delays or other costs due to any periods of work stoppage resulting from failure to comply with the requirements of this Section.

EEBACS electronic documentation will be evaluated under Subsection 106.02.

153.09 Measurement and Payment. Delete the text and substitute the following:**Measurement**

153.09 Measure contractor quality control according to Subsection 109.02.

Do not measure EEBACS electronic documentation for payment.

Payment

153.10 The accepted quantities will be paid at the contract price per unit of measurement for the Section 153 pay item listed in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.

Progress payments for Contractor quality control will be paid as follows:

- (1) 25 percent of the item amount, not to exceed 0.5 percent of the original contract amount, will be paid after the contractor quality control plan is accepted; all testing facilities are in place; qualified quality control supervisor, inspection, and sampling and testing personnel are in position to provide quality control activities; and the work being inspected or tested has started.
- (2) 65 percent of the total lump sum will be prorated for payment based on the completed portion of the total work not including the original 25 percent completed under (1) above.
- (3) Payment of the remaining 10 percent of the lump sum will be paid when all inspections, test results, submittals, and reports are complete and accepted.

Section 154. — CONTRACTOR SAMPLING AND TESTING

Construction Requirements

154.03 Sampling. Add the following:

Perform the initial curing of all concrete test cylinders. Provide for transporting the government verification cylinders to the FHWA-Central Federal Lands Highway's Laboratory unless other testing facilities are authorized by the CO.

Label each concrete mold with the name and number of the Project, the cylinder number, date molded, location of the sample, and the test age (i.e. – 7, 14, or 28 days). Label the mold after casting and the cylinder after stripping to ensure the sample can be identified throughout the entire curing process.

Provide the required cylinder molds.

154.04 Testing Add the following:

Where Process Control Sampling and Testing frequencies are identical to the Sampling, Testing, and Acceptance Tables at the end of each Section for all applicable work, the Process Control Samples may be used for acceptance.

Add the following subsections:

~~154.04A Field Laboratory (Government Furnished).~~ Refer to the "Notice To Bidders" in the bid proposal for information regarding the option to use a Government-Furnished field laboratory.

If the bid option "Item 15401-0000, Contractor Testing, Using Government-Furnished Field Laboratory" is exercised, the government will provide for the Contractor's use a mobile field laboratory, including testing equipment as follows:

- ~~Pine AFG-1A Gyrotory Compactor~~
- ~~NCAT Thermolyne Ignition Oven~~
- ~~AASHTO T-209 Rice Vacuum Equipment~~
- ~~AASHTO T-166 Bulk Specific Gravity of Compacted Mix Equipment~~
- ~~Convection Oven~~
- ~~Liquid Limit Machine and Grooving Tool~~
- ~~30,000 Gram Balance~~
- ~~12,000 Gram Balance~~
- ~~4,600 Gram Balance (readable to 0.01)~~
- ~~Platform Scale~~
- ~~Mechanical Compactor (Moisture Density) and Accessories~~
- ~~12-inch Sieve Shaker and Sieve Stack~~
- ~~Drill Press with Muller~~
- ~~Large Sample Splitter~~
- ~~Small Sample Splitter~~

~~Provide any additional equipment or facilities necessary to fulfill the requirements of the Contract.~~

~~Transport the laboratory from 12300 West Dakota Avenue, Lakewood, CO to the point of use and return the laboratory to the same Lakewood address upon completion of the work. The trailer will be available upon issuance of Notice to Proceed and must be returned no later than 14 days following final acceptance of the contract. Contact the CFLHD Equipment Depot at (720) 963-3459 or (720) 963-3384 for specific directions to the laboratory storage location.~~

~~Assume responsibility for the replacement of any and all missing or damaged equipment and for the repair of any damage to the laboratory. Replacement cost for missing or damaged equipment or facilities will be deducted from any remaining monies owed the Contractor. If sufficient funds are not available under the Contract for such retention, the Contractor agrees to make payment directly to the Government for any damaged or missing equipment or facilities.~~

Specifies:

~~Furnished equipment will be inspected by the Government by checking, standardizing, calibrating and/or verifying, as appropriate, in accordance with applicable AASHTO and ASTM standards. The Government equipment inspection will be completed after the laboratory has been moved to its permanent location on the project site prior to actual use in~~

~~project testing and at least once a year thereafter. Notify the CO at least 30 days in advance of intent to use the testing equipment on the project so that Government equipment inspection can be scheduled and performed. Assume responsibility for additional equipment inspections prior to the Government's yearly inspection if the mobile laboratory is moved. Maintain records documenting these inspections in the laboratory.~~

~~Maintain equipment in proper operating condition. Do not use equipment that is found to be deficient or defective. Mark deficient or defective equipment and take it out of service and immediately notify the CO. If Government furnished testing components fail through no fault or negligence of the Contractor, the Government will replace or repair the equipment in the most expeditious manner practicable. Requests for time extension and/or delay damages will not be granted for delays of less than 48 hours for any one occurrence, or for cumulative delays amounting to less than 5 (five) days in any one 365-day period. Requests for time extensions or damages due to equipment-related delays caused by equipment misuse or other Contractor fault will not be granted.~~

- ~~• Furnish water to the Government provided field laboratory which is clear and free of oil, acid, rust, alkali, sugar, and vegetable substances. Furnish 120/240-volt, 60-cycle, single-phase current adequate to operate all of the Government field laboratory facilities at all times as required by the CO. Supply enough power to support a 200 amp service panel. Equip the power supply with a regulator that limits the voltage of the power furnished to the laboratory to not less than 220 volts and not more than 240 volts.~~
- ~~• All equipment provided by the Government and replaced by the Contractor will remain with the laboratory and will become the property of the Government.~~
- ~~• Use of the laboratory is limited to testing materials in connection with this contract.~~

154.04B Field Laboratory (Contractor-Furnished). If the Government-furnished field laboratory bid option is not exercised, furnish a laboratory equipped with all test equipment necessary to satisfy the requirements of the contract.

The sampling and testing services of a commercial laboratory meeting or exceeding the requirements described herein may be used if all contract sampling and testing requirements are satisfied by the use of the commercial facility.

Ensure test equipment has been checked, calibrated, standardized and/or otherwise verified in accordance with AASHTO and ASTM standards by an individual qualified to do this work. Ensure mobile laboratories receive an equipment inspection after the laboratory has been moved to its permanent location on the project site and anytime it is moved thereafter. Inspect equipment within 45 days of actual use in project testing and at least once a year thereafter. Do not use equipment that has not been inspected or is found to be deficient. Mark deficient equipment and take out-of-service until it is repaired or replaced and shown by subsequent inspection to perform as required. Maintain records documenting these inspections in the laboratory. Provide certification(s) stating the equipment conforms to testing requirements and provide evidence of current inspection.

The CO may require the Contractor to perform testing to demonstrate acceptable equipment and an acceptable level of technician competence. The CO may also check equipment and inspection records to verify condition. Repair or replace equipment not meeting applicable requirements. Keep laboratory facilities clean and maintain equipment in proper working condition. Provide the CO unrestricted access to the laboratory for inspection and review.

Section 155. — SCHEDULES FOR CONSTRUCTION CONTRACTS

Construction Requirements

155.04 Preliminary Construction Schedule.

Add the following:

(j) A list of the permits required for the contract. See Section 107.

155.05 Initial and Baseline Construction Schedule.

Delete (a) (1) (c) and substitute the following:

(c) Show activities in the order the work will be performed, including submittals, submittal reviews, permit applications, permit reviews, fabrication, and delivery.

Delete the second sentence of (b) (2) (g) and substitute the following:

Non-construction activities include mobilization, drawing and sample submittals by pay item number, permit applications, and the fabrication and delivery of key material.

Add the following to the end of (b) (2) (g):

Refer to the permitting agencies to determine an appropriate duration for permit application review, permit approval, and distribution of permits.

(f) Submission and approval. Add the following to the end of the second paragraph:

No progress payments will be made until an initial construction schedule is approved by the CO.

155.06 Baseline Schedule Updates. Delete the second paragraph and substitute the following:

Unless previously approved by the CO, changes to the construction schedule for the work that is still to be completed, can only be changed with a Time Impact Analysis according to Subsection 108.03, and a Baseline Construction Schedule revision according to Subsection 155.07. Receipt of a baseline construction schedule update with negative float does not constitute agreement by the Government of the revised completion date.

Add the following:

(f) Working Schedule. At each construction progress meeting, provide the CO with a written summary detailing the work completed in the previous week and the proposed work activities for the following two weeks. Provide detail of proposed operations that will affect traffic flow, residents and businesses adjacent to the project. Provide the CO with a schedule revision if the written summary significantly differs from the baseline construction schedule or the latest construction schedule revision.

155.07 Baseline Schedule Revision. Delete the first paragraph and substitute the following:

Submit a time impact analysis when requesting approval of a baseline schedule revision. Submitting a proposed baseline schedule revision is not considered a notification of delay or of other basis for change. Continue to submit monthly schedule updates according to Subsection 155.06 until a baseline construction schedule revision is approved.

Section 156. — PUBLIC TRAFFIC

Construction Requirements

156.04 Accommodating Traffic During Work. Delete the first paragraph and substitute the following:

Accommodate traffic according to the MUTCD, contract traffic control drawings, Section 635, and this Section. Submit a Traffic Control Plan for approval according to Subsection 104.03. Submit a Traffic Control Plan at least 30 days before intended use. Update Traffic Control Plans for each area of work. Include signage at the Minaret Vista Entrance Station, bus stops, and parking lots to alert users about the timing, duration, and nature of construction-related impacts, detours and closures. Include portable changeable message signs per Section 635.04.

Add the following:

Develop a Public Information Plan, to be approved by the CO prior to instituting any traffic delays/closures, to notify the public of potential delays/closures caused by construction and changes in traffic control configurations a minimum of 21 days prior to the delays/closures. Nighttime operations will be included to inform campers and other recreational uses within the valley of expected noise levels in compliance with Section 156.08. The plan must detail the contractor's procedure to notify emergency services as listed below, Town of Mammoth Lakes and Inyo National Forest on a monthly basis at a minimum, of on-going construction activities and when delays of more than 30 minutes are anticipated. As part of the plan, prepare a flier once every month, and with every change in the sequence of construction operations. The flier shall be electronic and shall include information about the ongoing construction operations, the anticipated completion date, and the schedule for the forthcoming month. The flier shall also contain the Contractor's contact person, telephone number, and office hours of the construction

staff. Provide all fliers electronically to the CO for review, approval, and distribution. It is extremely important to communicate clearly with project partners and stakeholders and to maintain road user confidence in the traffic control expectations that are advertised in advance.

Emergency Services include:

- Town of Mammoth Lakes Police Department – (760) 965-3700
- US Forest Service Dispatch Center – (760) 873-2400
- Mono County Sheriff – (760) 932-7549
- Madera County Sheriff – (559) 675-7770
- California Highway Patrol – (760) 872-5960
- Mono County Search and Rescue – (760) 914-4669
- Madera County Search and Rescue – (559) 658-2555
- Mammoth Lakes Fire Department – (760) 934-2300
- Calfire – (760) 387-2565

156.05 Maintaining Roadways During Work.

(a) Add the following:

Do not construct diversions outside of the clearing limits or use alternate route detours without the approval of the CO.

Add the following:

(h) From the start of the construction season until noon on the first Friday in June, contractor may close Reds Meadow Road to buses and public traffic, with access provisions for emergency vehicles and agency maintenance vehicles and equipment. See Section 108.01(d) for snow removal requirements. Provide agency maintenance vehicle and equipment access at least two weeks prior to opening the road to public traffic.

(i) From noon on the first Friday in June through the third Sunday in September, maintain access for buses and public traffic from 11:00 am to 7:00 pm with maximum delays of 30 minutes. Contractor may close Reds Meadow Road to buses and public traffic from 7:00 pm to 11:00 am, with access provisions for emergency vehicles and agency maintenance vehicles and equipment.

(j) After the third Sunday in September until winter shutdown, contractor may close the road Monday through Friday to buses and public traffic, with access provisions for emergency vehicles and agency maintenance vehicles and equipment. Maintain access on Saturdays and Sundays for buses and public traffic from 9:00 am to 7:00 pm with maximum delays of 30 minutes. Contractor may close the road Saturdays and Sundays to buses and public traffic from 7:00 pm to 9:00 am, with access provisions for emergency vehicles and agency maintenance vehicles and equipment.

(k) Minaret Vista Road and Parking Lot may be closed a maximum of two weekdays (Monday through Friday) per week for pulverizing pavement and repaving, with prior approval from CO.

156.07 Limitations on Construction Operations.

(c) Delete the first sentence and substitute the following:

For alternate one-way traffic control, provide a minimum lane width of 10 feet (3 meters). For two-way traffic, provide a minimum roadway width of 22 feet (6.7 meters) or the existing pavement width from Station 10+00 to 139+00 if narrower than 22 feet.

(i) Delete the text and substitute the following:

Limit operations per section 108.01 and the following:

Limit construction-caused delays to public traffic to a maximum of 30 minutes per passage through the project exclusive of allowable road closures. Delays to public traffic, exclusive of road closures, will be measured from one end of the project to the other.

Add the following:

(k) Maintain access to all approach roads, access roads, bus stops, parking areas, trails and the entrance station building (guard shack) during construction, exclusive of allowable road closures.

156.08 Nighttime Operations.

Add the following:

Nighttime operations are allowed for the Schedule A items of work. Nighttime operations are not allowed for the Option X items of work.

Add the following to the second paragraph after the first sentence:

Use hooded light fixtures to direct light only on the project work area.

Add the following:

Loud activities such as rock blasting, rock hammering and pile driving of guardrail posts, or as determined by the CO, are prohibited during nighttime operations.

Measurement and Payment

156.11 Add the following:

Do not measure the Public Information Plan for payment.

Section 157. — SOIL EROSION AND SEDIMENT CONTROL

Delete the entire Section and substitute the following:

**Section 157. — SOIL EROSION CONTROL, SEDIMENT CONTROL,
AND STORMWATER POLLUTION PREVENTION PLAN****Description**

157.01 This work consists of preparing and managing a Stormwater Pollution Prevention Plan (SWPPP) including non-stormwater pollution prevention. This work also consists of implementing the SWPPP including but not limited to furnishing, constructing, and maintaining soil erosion and sediment control devices to eliminate or minimize pollutants in stormwater discharges from the project.

Material

157.02 Conform to the following Subsections:

Backfill material	704.03
Concrete masonry unit	725.07(c)
Fertilizer	713.03
Fiber rolls and socks	713.12
Floating turbidity curtains	713.21
Gravel bags	713.13
Mulch	713.05
Plastic lining	725.12
Prefabricated filter insert	713.20
Riprap	705.02
Rock mulch	705.07
Sandbags	713.14
Sediment filter bags	713.19
Seed	713.04
Separation and stabilization geotextile and geotextile filter	714.01(a)
Silt fence	713.16
Tackifiers	713.11(a)
Temporary culvert pipe	713.15
Temporary plastic fence	710.11
Temporary rolled erosion control products	713.17
Turf reinforcement mats	713.18
Water	725.01(b)

If using materials not listed here, see Subsection 106.04.

Construction Requirements

157.03 Qualifications. Submit the names of personnel responsible for the following roles and qualifications for approval with SWPPP submittal:

- (a) SWPPP Developer;
- (b) Erosion Control Supervisor; and
- (c) On-Site Stormwater Lead.

Provide documentation that personnel meet the qualifications set forth in the Construction General Permit of the state(s) that the project is located in, or the qualifications below, whichever is more stringent. Include certifications in those states where applicable. One person may serve in more than one role if qualified.

(a) SWPPP Developer. Provide a SWPPP Developer with all the following qualifications:

- (1) Have completed 40 hours of stormwater management training;
- (2) Have 5 years of highway or equivalent experience developing stormwater pollution prevention plans and designing site specific best management practices (BMPs); and
- (3) Be registered or certified in the state(s) in which the project is located for one or more of the following:
 - (a) Registered civil engineer;
 - (b) Registered professional geologist or engineering geologist;
 - (c) Licensed landscape architect;
 - (d) Registered professional hydrologist; or
 - (e) Other state or nationally recognized certification program for erosion and sediment control professionals.

(a) (b) Erosion Control Supervisor. Provide an Erosion Control Supervisor with the following qualifications:

- (1) Both of the following:
 - (a) Have completed 24 hours of stormwater management training; and
 - (b) Have 3 years of highway or equivalent construction experience that included oversight of erosion, sediment, and pollution control best management practices; or
- (2) One of the following:
 - (a) Meet requirements of SWPPP Developer above; or
 - (b) Be registered or certified as a stormwater inspector from a state or nationally recognized certification program for stormwater inspectors.

(c) On-Site Stormwater Lead. Provide a Stormwater Lead with the following qualifications:

(1) Both of the following:

- (a)* Have completed 8 hours of stormwater management training;
- (b)* Have 1 year of highway construction experience including stormwater management duties; or

(2) One of the following:

- (a)* Meet requirements of Erosion Control Supervisor;
- (b)* Be registered or certified as a stormwater inspector from a state or nationally recognized certification program for stormwater inspectors.

157.04 Roles and Responsibilities. Furnish a Stormwater Team that is qualified to perform the following roles and responsibilities:

(a) SWPPP Developer. Develop and approve the SWPPP for the project based on requirements in the Construction General Permit, contract plans, and specifications. Show construction phasing of erosion, sediment, and pollution prevention BMPs for all construction activities on a site plan to meet water quality regulations. Review field changes and provide amendments to the SWPPP when substantial changes occur.

(b) Erosion Control Supervisor. Implement the SWPPP, which includes but is not limited to scheduling installation and maintenance of all BMPs, job site inspections, and other activities for pollution prevention. Review all inspection reports and ensure that SWPPP and Site Plan are implemented and updated.

(c) Stormwater Lead. Install and maintain BMPs, conduct site inspections, monitor water quality, and perform all on-site and reporting activities required to comply with the Construction General Permit. Inform the Erosion Control Supervisor when changes are made. The Stormwater Lead is required to be on the project site during working hours, and available during non-work hours to do inspections before, during, and after qualifying rain events.

157.05 General. Develop, submit, and manage a SWPPP or SWPPP amendment according to the Construction General Permit requirements for project location. Contract permits amend the requirements of this Section. Submit SWPPP to the CO at or before the preconstruction conference. Allow 7 calendar days for CO review and approval prior to submission to regulatory agency(ies).

Basic project information typically needed to fill out an NPDES permit and produce an acceptable SWPPP will be provided by the Government for the Contractor's use in development of the SWPPP.

When soil erosion and sediment pollution control measures are not functioning as intended, take immediate corrective action to eliminate or minimize pollutants in stormwater discharges from the project.

Provide certified weed free devices.

Do not use monofilament plastic for erosion or sediment control products.

157.06 Controls and Limitations on Work. Prior to the start of a construction activity, implement appropriate pollution prevention measures for the activity. No soil disturbing construction activity may begin on the project until the SWPPP has been reviewed and approved and the NOI has been accepted by the permitting agency and is active.

157.07 Stormwater Pollution Prevention Plan. Prepare, submit, and implement a Construction SWPPP following the SWPPP template of the state in which the project is located. Include the Federal Highway Administration as an operator on the project in charge of plans and specifications. If the state does not provide a template, follow the SWPPP template provided by the Environmental Protection Agency (EPA)

(<https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates#swppp>).

Provide a SWPPP according to the Stormwater Construction General Permit (CGP) and the following manual: "The Stormwater Practitioners Guide by the FHWA, Central Federal Lands Highway Division" (The CFL Stormwater Guide) which is available at: <https://highways.dot.gov/federal-lands/construction/cfl-stormwater-guide>

Provisions in the SWPPP are incorporated by reference into the contract. Provide an electronic copy of the SWPPP and obtain approval from the CO prior to mobilization.

Based on the approved SWPPP, provide the CO a list of the planned pollution prevention devices for each of the following: erosion controls, sediment controls, and non-stormwater controls.

Implement the SWPPP as required throughout the construction period. Modify the erosion, sediment, and non-stormwater pollution control details and SWPPP plans as necessary to accommodate project site conditions and proposed construction operations. Update the SWPPP when modifying erosion, sediment, and non-stormwater pollution controls. Provide a copy of the updated SWPPP monthly to the CO for review.

157.08 Soil Erosion Control. Apply erosion control measures to stabilize soils and to control temporary concentrated flows throughout the duration of the project. Construct and maintain measures according to manufacturer's recommendations, the project requirements, and according to the following manual: "The CFL Stormwater Guide."

157.09 Sediment Control. Apply sediment control measures to intercept, slow and detain the flow of stormwater throughout the duration of the project. Construct and maintain measures

according to manufacturer's recommendations, the project requirements, and according to the following manual: "The CFL Stormwater Guide."

157.10 Non-Stormwater Controls. Apply non-stormwater measures as needed and as required in the SWPPP to control non-stormwater discharges, and to prevent or limit potential pollutants at their source from contact with stormwater throughout the duration of the project. Construct and maintain measures according to manufacturer's recommendations, the project requirements, and according to the following manual: "The CFL Stormwater Guide."

157.11 Acceptance. Material for erosion, sediment, and non-stormwater pollution control measures will be evaluated under Subsections 106.02 and 106.03.

Construction, maintenance, and removal of erosion control, sediment control, and non-stormwater controls will be evaluated under Subsections 106.02 and 106.04.

Separation and stabilization geotextile and geotextile filter will be evaluated under Section 207.

Measurement

157.12 Measure the Section 157 pay items listed in the bid schedule according to Subsection 109.02 and the following as applicable:

Do not measure replacement erosion, sediment, or non-stormwater pollution control measures.

Do not measure additional or changed erosion, sediment, or non-stormwater pollution control measures required when planned controls are not functioning as intended and corrective actions are taken.

Payment

157.13 The accepted quantities will be paid at the contract price per unit of measurement for the Section 157 pay items listed in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.

(a) Progress payments for SWPPP will be paid as follows:

(1) 25 percent of the pay item amount will be paid on the approval of the SWPPP by the CO and upon receipt of authorization from the permitting agency that the project permit is active.

(2) An additional 50 percent of the pay item amount will be prorated based on total work completed.

(3) The remaining portion of the pay item amount will be paid when a copy of the final SWPPP and all accompanying documentation, to include, inspection reports, water quality sampling results, and annual report submittals, is submitted and accepted by the CO after the final inspection and resolution of punch list items.

(b) Progress payments for erosion and sediment control measures or devices will be paid as follows:

- (1) 80 percent of the pay item amount will be prorated based on total contract work completed.
- (2) 20 percent of the pay item amount will be paid at completion of contract after final acceptance.

Section 158 – WATERING FOR DUST CONTROL

Construction Requirements

158.03 General. Add the following:

Do not use water from streams, lakes or other waterbodies along the project corridor.

Section 201 – CLEARING AND GRUBBING

Construction Requirements

201.03 General. Add the following:

The US Forest Service performed selective removal of merchantable timber (diameter at breast height of 8-inches and greater) within the Schedule A and Option X construction limits in 2021 and 2022 leaving approximately 500 stumps. Remove stumps as part of clearing and grubbing operation. Removed stumps may be ground/chipped for use as temporary erosion control material or disposed at no additional cost to the Government.

Section 202 – ADDITIONAL CLEARING AND GRUBBING

Construction Requirements

202.04 Selective Clearing. Add the following:

Perform selective clearing to improve sight distance for drivers at the locations shown in the plans and as directed by the CO.

Section 203. — REMOVAL OF STRUCTURES AND OBSTRUCTIONS**Construction Requirements****203.03 Salvaging Material.** Add the following:

For Schedule A, remove and salvage buried concrete blocks near Station 99+00 and place in Staging Area No. 1 for retrieval by Forest Service as shown in the plans.

203.04 Removing Material. Add the following:

For Schedule A, remove and dispose of dual underdrain pipes near Station 98+00 as shown in the plans.

For Schedule A and Option X, remove and dispose of all concrete wheel stops, downdrains, concrete pads, bollards, and boulders as shown in the plans.

203.05 Disposing of Material.**(a) Remove from Project.** Add the following:

Secure clearances according to Subsection 107.10.

(b) Burn. Delete the subsection.**(c) Bury.** Delete the subsection.**Measurement****203.07 Add the following:**

Do not measure removal of buried concrete blocks, underdrain pipes, concrete wheel stops, concrete pads, bollards, or boulders for payment.

Section 204. — EXCAVATION AND EMBANKMENT**Description****204.02 Definitions.****(d) Waste.** Add the following:

Pumice soil, as defined in the Geotechnical Report, excavated in Schedule A between approximately Station 5+96 to 10+70, 54+00 to 69+30, and 80+00 to 92+00; and in Option X subexcavation areas is unsuitable material for reuse and treated as waste.

Materials**204.03. Add the following:**

Crushed aggregate
Geotextile
Asphalt concrete

703.06
714.01(a)
403, Type II

Construction Requirements**204.05 Conserved Topsoil. Delete the first sentence and substitute the following:**

Conserve topsoil from the roadway excavation and from embankment foundation areas to the extent and depth determined by the CO.

204.06 Roadway Excavation.**(a) Rock cuts. Add the following:**

When blasting rock, use controlled blasting methods according to Subsection 205.08(b).

204.07 Subexcavation. Delete the subsection and substitute the following:**204.07 Subexcavation.**

For subexcavation areas where evidence of subsurface water is observed during construction or where underdrain is called for with the subexcavation in the plans, use separation-stabilization geotextile, class 1 woven, type B. For subexcavation areas without evidence of subsurface water observed during construction, use stabilization geogrid per Subsection 714.03.

Notify the CO of type and source of backfill material anticipated for subexcavation work at the preparatory phase meeting according to Subsection 153.04(a). Subexcavation areas may be backfilled with suitable roadway excavation material that complies with Section 704.03(a) Backfill Material. Excavate unsuitable materials to the limits designated in the plans, or as directed by the CO. Notify the CO of any additional locations requiring subexcavation, or which require a change in surface dimension or depth. Advise the CO of any adverse conditions such as active subsurface or subsurface water or unstable soil conditions prior to backfilling. Dispose of unsuitable material according to Subsection 204.14. Do not subexcavate during periods of inclement weather.

Submit a neat line drawing of the excavated volume for each subexcavation prior to backfilling. Place geotextile according to Section 207 prior to placing soil or aggregate backfill materials in the subexcavation. Place and compact soil or aggregate backfill according to Section 204.11, or Section 403 for hot asphalt concrete backfill until the subgrade elevation is achieved. Prevent backfill materials from becoming contaminated with unsuitable materials. Replace the excavated

structural section with the structural section shown in the typical section of the plans. Adjust the subgrade elevation to accommodate the replacement structural section.

204.14 Disposal of Unsuitable or Excess Material. Add the following:

Secure environmental clearances according to Subsection 107.10(d).

204.15. Add the following:

Geotextile will be evaluated under Section 207.

Asphalt concrete will be evaluated under Section 403.

Measurement

204.16 Add the following:

For Schedule A, measure Embankment Construction for payment and do not measure Roadway Excavation. For Option X, measure Roadway Excavation for payment and do not measure Embankment Construction.

(a) Roadway Excavation (for Option X).

(1) Include the following volumes in roadway excavation:

(e) Delete the text and substitute the following:

Conserved topsoil stripped from cuts.

(h) Delete the text and substitute the following:

Conserved material taken from stockpiles and used in Section 204 work except topsoil measured under Section 624. Only materials required to be conserved by the CO are eligible for measurement under this item.

(2) Do not include the following in roadway excavation: Add the following:

(n) Conserved topsoil stripped from fills.

(c) Embankment construction (for Schedule A). Delete the text and substitute the following:

Measure embankment construction in its final position. Do not make deductions from the embankment construction quantity for the volume of minor structures.

(1) Include the following volumes in embankment construction:

(a) Roadway embankments;

(b) Material used to backfill holes, pits, and other depressions; and

(c) Material used for dikes, ramps, mounds, and berms.

(2) Do not include the following volumes in embankment construction:

(a) Preparing foundations for embankment construction;

(b) Adjustments for subsidence or settlement of the embankment or of the foundation on which the embankment is placed;

(c) Material used to round fill slopes;

(d) Material used to backfill subexcavated areas; and

(e) Material used to restore obliterated roadbeds to original contours.

(g) Subexcavation. Delete the text and substitute the following:

When a subexcavation pay item is shown in the bid schedule:

(1) Measure subexcavation by the cubic yard of excavation measured in its original position

(2) Do not measure backfill material, geocomposite drain and geotextile for payment.

For Schedule A Reds Meadow Road Stations 55+00 to 61+00 and 80+00 to 92+00, Pumice dig out shown in the plans is not measured for separately.

Payment

204.17 Add the following:

Payment for Item 20401 is limited to ten percent of the plan quantity of excavation in the cut until the slope rounding in that cut is completed.

A price adjustment will be made for fluctuations in the cost of diesel fuel consumed in the performance of applicable construction work according to Subsection 109.06 Pricing of Adjustments Fuel Price Adjustment Provision.

Section 205. — ROCK BLASTING

205.05 Blasting Plan

(a) General blasting plan (6). Add the following to the end.

The blasting plan needs to produce a final rock face that does not have any drill holes (half casts) or equipment scars.

Measurement**205.11** Add the following:

Do not measure blasting, cost is considered incidental to the rock excavation item as described in the plans and special contract requirements.

Section 207. – EARTHWORK GEOSYNTHETICS**Measurement****207.09** Delete the second sentence.**Section 253. - GABIONS AND REVET MATTRESSES****Material****253.02** Add the following:

Select granular backfill

704.08

Section 259. — SOIL NAIL RETAINING WALLS**Description****259.01** Add the following:

This work also consists of constructing a soil nail retaining wall with a simulated rock finish pneumatically placed concrete mortar (referred to hereinafter as sculpted shotcrete) by hand sculpting and staining in accordance with Section 566 - SHOTCRETE.

259.04 Submittals. Add the following:

(p) Procedures and methods to repair large voids along the exposed cut face during excavation and removal of large boulders or inadequate poor existing soils determined by the CO.

(q) Procedures and methods to temporarily stabilize the exposed cut face, reduce the potential for raveling during excavation, and facilitate construction of the soil nail walls.

- (r) Procedures and methods describing diversion, control and disposal of all surface and ground water.
- (s) Procedures and methods to prevent soil nail shafts from caving due to ground water.
- (t) Identify wall surface preparation details necessary for the completion of the mechanical reinforcement, shotcrete placement, sculpting, staining, and finishing.
- (u) Provide a schedule and sequence of work through final acceptance.

259.05 General. Add the following:

Determine the final drillhole diameters required to develop the specified pullout resistance and to also provide a minimum 1-inch grout cover over bare bars or minimum 1/2 in. grout cover over the encapsulation of encapsulated nails. Show the minimum drillhole diameter on the drawings.

Install the production soil nails before the application of the reinforced shotcrete facing.

The shotcrete facing may be placed before drilling and installing the nails subject to prior written approval from CO. Provide a blackout through the shotcrete facing at drillhole locations using PVC pipe or other suitable material to prevent damage to the facing during drilling. As part of the required construction submittals, provide structural design calculations demonstrating that the facing structural capacity will not be reduced and that the bearing plates are adequate to span the nail drillhole blackout. If required, furnish larger size bearing plates and/or additional reinforcement beyond that detailed in the Plans.

259.10 Wall Drainage. Add the following:

Provide positive control and discharge of all surface water that will affect construction of the soil nail retaining wall. Maintain all pipes or conduits used to control surface water and repair damage caused by surface water during construction. Upon substantial completion of the wall, remove surface water control pipes or conduits from the site. If approved, pipes or conduits may be left in place, provided they are fully grouted and abandoned or left in a way that protects the structure and all adjacent facilities from migration of fines through the pipe or conduit and potential ground loss.

Localized areas of perched water or seepage may be encountered during excavation. Immediately give notification if unanticipated existing subsurface drainage structures are discovered during excavation. Suspend work in these areas until remedial measures, as approved, are implemented. Capture surface water runoff flows independently of the wall drainage network and convey them as directed.

Measurement

259.15 Add the following:

Do not measure the following items for payment: wall excavation, wall drainage system, pneumatically placed concrete mortar, reinforcing steel, expansion joints, rock sculpting the wall facing, staining the wall facing, or test panels for the rock sculpting and concrete staining.

Section 261. — REINFORCED SOIL SLOPES

Measurement

261.07 Delete the second paragraph and add the following:

Measure earthwork under Section 204.

Measure reinforcement under Section 207.

Section 301. — UNTREATED AGGREGATE COURSES

Construction Requirements

301.03 General. Add the following:

For base course set target values within the gradation ranges shown in Table 703-2, grading C, D, or E.

For surface course aggregate set target values within the gradation range shown in Table 703-3.

Section 304. — FULL DEPTH RECLAMATION

Description

304.01 Add the following:

This work also consists of pulverizing of any existing curbs.

304.11 Add the following:

Measurement of full depth reclamation will not be adjusted due to increased depth.

**Section 401. — ASPHALT CONCRETE PAVEMENT
BY GYRATORY MIX DESIGN METHOD****Description**

401.01 Delete the second paragraph and substitute the following:

Asphalt concrete pavement nominal maximum size aggregate is designated according to Tables 401-1 and 703-4. Equivalent single axle loads (ESAL) or number of gyrations at design (N_{Design}) is designated according to Table 401-1.

Delete the fifth paragraph and substitute the following:

Antistrip additive type is designated according to Subsection 702.05. A minimum of one percent Type 3 (lime) is required in the asphalt concrete mixture.

Add the following:

Pavement roughness is type III-B, and IV as shown in Subsection 401.16.

Asphalt binder grade is PG 64-28M. The Pressure Aging Vessel test temperature shall be 212°F (100°C).

Construction Requirements

401.03 Composition of Mix (Job-Mix Formula). Add the following after the first paragraph:

Compact specimens with the gyratory effort corresponding to the design ESAL level of 0.3 to <3 million. Use a gyratory compactor which meets the internal angle requirement according to AASHTO T 312.

If more than 1.0 percent hydrated lime is proposed in the JMF, provide AASHTO T 283 test results showing the additional lime is necessary to meet the minimum tensile strength ratio requirements in Table 401-1.

(c) Submission**(1) Aggregate and mineral filler.**

(a) Target values: Delete line (2) and substitute the following:

(2) Designate target values within the gradation band specified for the nominal maximum size aggregate grading shown in Table 703-4. Allowable deviations are shown in Table 703-5:

(2) Asphalt binder. Add the following:

(e) Laboratory mixing and compaction temperatures and maximum plant mixing temperature

(3) Antistrip additives. Add the following:

(e) Dosage rate.

(4) RAP. Add the following:

(f) Optional sheet for RAP on Form FHWA 1641.

(d) Verification. Delete the first paragraph and substitute the following:

The verification process starts when all required job mix formula documentation and materials are received. The CO will review the job mix formula and may perform job mix formula verification testing. If verification testing is performed, the information supplied in the Contractor's job mix formula must agree with the verification test results within the tolerances shown below. Do not begin asphalt concrete mix production for the control strip until the JMF has been approved.

Delete lines (3) and (4) and substitute the following:

(3) Bulk specific gravity of aggregate (G_{sb}). The Contractor's coarse and fine G_{sb} is verified if the CO's results are within 0.038 for AASHTO T 85 and 0.066 for AASHTO T 84.

(4) Voids in the mineral aggregate (VMA). The Contractor's VMA is verified if the CO's result is within the specification limit in Table 401-1.

Add the following:

(8) Hveem stabilometer value. The Contractor's Hveem stabilometer value is verified if the CO's result is above the minimum specification of 30.

Table 401-1 Gyratory Asphalt Concrete Mix Design Requirements, AASHTO R 35. Add the following note:

(4) For AASHTO T 283, use 4-inch (100-millimeter) diameter specimens. Note that AASHTO T 283 requires a freeze-thaw cycle.

401.05 Equipment.

(b) Materials Transfer Vehicle (MTV). Delete this Subsection and substitute the following:

(b) Materials Transfer Vehicle (MTV). Furnish an MTV with the following:

(1) Independently operated with its own driver/operator;

(2) Independent from the paver;

- (3) A loading system with the ability to receive mixtures from hauling equipment;
- (4) A minimum storage capacity of 15 tons (13.6 metric tons) with a remixing system in the material storage bin;
- (5) Remixing capability within the storage bin;
- (6) A discharge conveyor to deliver the mixture to the paver hopper; and
- (7) A mass not exceeding the maximum legal loadings on structures.

Pick-up machines, hopper inserts, and material transfer devices are not considered MTVs.

In the event the MTV malfunctions during paving operations, the Contractor must suspend paving, however mix in transit and stored in the silo at the time of breakdown may be placed without the use of an MTV. Do not resume mix placement until the MTV is operational.

401.14 Compacting. Add the following:

Do not cause cracking, shoving, or undue displacement. Continue rolling until all roller marks are eliminated, all cracks are sealed, and the required density is obtained. For HMA, do not roll the mix after the surface cools below 175 °F (80°C).

401.15 Joints, Trimming Edges, and Cleanup. Add the following:

Make the longitudinal joint in the top layer at the centerline of the pavement on two-lane roadways or at the lane lines of roadways with more than two lanes. Establish the centerline of the pavement from recorded data defined in Subsection 152.05(b) or construction staking data if provided by the government. Offset the longitudinal joint in the layer immediately below at least 6-inches (150-millimeters) from the joint.

For curve widening see the plans for locations and details. For two-lane roadways make the longitudinal joint at the centerline of the pavement. Do not vary the shoulder width where curve widening exists.

At connections to existing pavements and previously placed lifts, make the transverse joints vertical to the depth of the new pavement. Form transverse joints by cutting back the previous run to expose the full-depth of the course.

Delete Subsection 401.16 and substitute the following:

401.16 Pavement Roughness. Measure the profile of the pavement surface according to the designated pavement roughness type. In addition, construct pavement surfaces to meet the requirements of Subsection 401.16(e).

- (a) **Profile measurement.** The CO will use profile measurements to determine the Mean Roughness Index (MRI) values for the traveled way using the current version of Profile Viewer

and Analysis (ProVAL) software. The CO will also determine areas of localized roughness. The MRI and areas of localized roughness will be used to determine payment for the designated pavement roughness type and pavement areas requiring surface corrections.

Conform to the following:

(1) Equipment. Provide an ASTM E950, Class 1 inertial profiling system conforming to AASHTO M 328 and certified according to AASHTO R 56. Provide copies of the system certifications at least 21 days before profiling begins. Display a current decal on the equipment indicating the expiration date of the certifications.

The CO may perform verification testing, equipment validation, or both as follows:

(a) Verification testing. Verification testing will consist of the CO profiling a section of pavement and comparing the results against the Contractor's results for the same section of pavement. Comparison runs will be made within 21 days of each other. The Contractor's results will be considered verified if the CO's International Ride Index (IRI) for each wheel path differs from the Contractor's IRI for the same wheel path by no more than 10 percent of their mean. Do not use equipment that fails verification.

(b) Equipment validation. Equipment validation will consist of determining a cross correlation value on at least one section of pavement having a minimum length of 528 feet (161 meters). The Contractor's profiler and the CO's profiler will be cross correlated on the same day. Coordinate and schedule the equipment validation date at least 14 days before the validation date. The CO will determine the location of the cross correlation segments. The Contractor's equipment will be considered validated if the cross correlation value is greater than or equal to 0.90. Do not use equipment that fails validation.

(2) Personnel. Provide the following:

(a) A profile system operator certified according to AASHTO R 56. Submit copies of the operator's certifications at least 21 days before profiling begins.

(b) Flaggers, pilot car operations, or other temporary traffic control according to Section 635 as required.

(3) Measuring. The CO will identify the beginning and ending points of the profile measurements. Measure the pavement profile in both wheel paths using a sensor path spacing of 65 - 71 inches (1650 - 1800 millimeters) and centered in the traveled way of the lane. Operate the inertial profiler according to AASHTO R 57 and the manufacturer's recommendations. Do not apply filters when collecting profile data. Filtering will be applied during profile analysis in ProVAL. Collect profile data (elevation and distance) at a maximum interval of 2 inches (50 millimeters). Provide a lead-in distance of at least 150 feet (45 meters) after reaching the testing speed. Use the profiler's automatic start/stop activation when collecting data.

The CO will identify excluded areas. Cattle guards, bridges not being overlaid, and turning lanes, passing lanes, side roads less than 500 feet (150 meters), and ramps less than 1,000

feet (300 meters) in length will be excluded from profile measurement, the calculation of MRI, and the determination of localized roughness. Use event markers to mark the beginning and ending location of areas to be excluded from profile measurement. Measure excluded areas with a straightedge according to Subsection 401.16(e).

Coordinate profiling operations with the CO. Export each profile (elevation, distance data, header, and marker information) in pavement profile format (ppf) and format specific to the profiler manufacturer to a CD or DVD and submit after profiling. Do not submit non-continuous data files.

Use the following naming convention for electronic file submissions:

(a) For Type I and Type II pavement roughness:

[Project Name (or abbreviation)] _ [beginning station_to_ending station] _ [Initial or Final],

Beaver_Cr_Rd_25+50_to_387+35_Initial.ppf.

(b) For Type III pavement roughness:

[Project Name (or abbreviation)] _ [beginning station_to_ending station],

Beaver_Cr_Rd_25+50_to_387+35.ppf.

(4) Evaluation. The CO will review and analyze profile measurements. The MRI will be calculated from profile measurements using ProVAL.

Using ProVAL, a high pass filter length of 300 feet (90 meters) and a low pass filter of 10 inches (250 millimeters) will be applied to the profiles. Individual MRI values are determined by averaging the IRI value from each wheel path. Fixed interval MRI values are reported as an average of the individual MRI values over the fixed interval length. An overall MRI value will be determined by averaging the individual MRI values, excluding segments less than 25 feet (7.62 meters) for Type I and Type II pavement roughness or 528 feet (161 meters) for Type III pavement roughness.

Areas of localized roughness will be identified by using ProVAL's continuous MRI function with a segment length of 25 feet (7.62 meters). This will yield an average MRI value and a length for each area of localized roughness which exceeds the localized roughness threshold value of every possible 25-foot (7.62-meter) segment. Areas for which the continuous report exceeds the threshold MRI value for the specified roughness type area defective areas. When corrections are not allowed, a reduction in payment will be applied according to Subsection 401.16(f). No deduction will be made for areas of localized roughness identified within 12.5 feet (3.81 meters) of the beginning or end of a profile section or within 12.5 feet (3.81 meters) of excluded areas. Measure these areas with a straightedge according to Subsection 401.16(e).

(b) Type I pavement roughness. Measure the profile of the initial pavement surface before construction activities disturb the existing pavement surface. The initial pavement surface is defined as the existing pavement surface before construction activities begin. The localized

roughness threshold computed to the nearest whole number for Type I pavement roughness is equal to the following:

$$\text{Localized Roughness Threshold} = \text{Initial Overall MRI} + 1.881(S_{25})$$

where:

Initial Overall MRI = MRI obtained before construction activities begin.

S_{25} = sample standard deviation of the 25 foot (7.62 meters) fixed interval MRI values.

Do not proceed with work that will disturb the initial pavement surface until the CO's analysis is complete.

Measure the profile of the final pavement surface before placing a surface treatment and within 14 days of completing roadway paving. The original overall surface MRI will be used in conjunction with the final overall MRI to determine an overall percent improvement for the entire traveled way.

The overall percent improvement in MRI will be determined to one decimal place for the traveled way according to the following formula:

$$\% \text{ Improvement} = [(\text{Initial Overall MRI} - \text{Final Overall MRI}) / \text{Initial Overall MRI}] \times 100$$

Table 401-3 will be used to determine the final pay factor (PF_{rough}) for the traveled way to two decimal places.

No defective area corrections are allowed on the final pavement surface except at locations that do not meet Subsection 401.16(e). Correct locations that do not meet Subsection 401.16(e) according to Subsection 401.16(g).

Correct areas of localized roughness according to Subsection 401.16(g). If a pavement has an overall negative percent improvement, place a minimum 1-inch (25-millimeter) overlay over the entire paved surface.

If a pavement has less than an overall negative percent improvement, place a minimum 1-inch (25-millimeter) overlay over the entire paved surface.

Table 401-3
Type I Pavement Roughness Pay Factors

Type I-A	Type I-B	
Percent Improvement (%)	Percent Improvement (%)	Pay Factor (PF_{rough})
Greater than 50.0	Greater than 45.0	PF = 1.05
47.6 – 50.0	44.0 – 45.0	PF = 1.04
45.1 – 47.5	43.0 – 43.9	PF = 1.03
43.6 – 45.0	41.6 – 42.9	PF = 1.02

42.1 – 43.5	40.1 – 41.5	PF = 1.01
25.0 – 42.0	20.0 – 40.0	PF = 1.00
24.0 – 24.9	19.0 – 19.9	PF = 0.99
23.0 – 23.9	18.0 – 18.9	PF = 0.98
22.0 – 22.9	17.0 – 17.9	PF = 0.97
21.0 – 21.9	16.0 – 16.9	PF = 0.96
20.0 – 20.9	15.0 – 15.9	PF = 0.95
19.0 – 19.9	14.0 – 14.9	PF = 0.94
18.0 – 18.9	13.0 – 13.9	PF = 0.93
17.0 – 17.9	12.0 – 12.9	PF = 0.92
16.0 – 16.9	11.0 – 11.9	PF = 0.91
15.0 – 15.9	10.0 – 10.9	PF = 0.90
14.0 – 14.9	9.0 – 9.9	PF = 0.89
13.0 – 13.9	8.0 – 8.9	PF = 0.88
12.0 – 12.9	7.0 – 7.9	PF = 0.87
11.0 – 11.9	6.0 – 6.9	PF = 0.86
10.0 – 10.9	5.0 – 5.9	PF = 0.85
5.0 – 9.9	4.0 – 4.9	PF = 0.80
0.0 – 4.9	0.0 – 3.9	PF = 0.70
Negative % Improvement	Negative % Improvement	Correct & overlay

(c) Type II pavement roughness. Measure the profile of the initial pavement surface before construction activities disturb the pavement surface. The initial pavement surface is defined as the original existing pavement surface before construction activities begin. The localized roughness threshold computed to the nearest whole number for Type II pavement roughness is equal to the following:

$$\text{Localized Roughness Threshold} = \text{Initial Overall MRI} + 1.282(S_{25})$$

where:

Initial Overall MRI = MRI obtained before construction activities begin.

(S_{25}) = sample standard deviation of the 25-foot (7.62-meter) fixed interval MRI values.

Do not proceed with work that will disturb the initial pavement surface until the CO's analysis is complete.

Measure the profile of the final pavement surface before placing a surface treatment and within 14 days of completing roadway paving. The original overall surface MRI will be used in conjunction with the final overall MRI to determine an overall percent improvement for the entire traveled way.

The overall percent improvement in MRI will be determined to one decimal place for the traveled way according to the following formula:

$$\% \text{ Improvement} = [(\text{Initial Overall MRI} - \text{Final Overall MRI}) / \text{Initial Overall MRI}] \times 100$$

Table 401-4 will be used to determine the final PF_{rough} for the traveled way to two decimal places.

No defective area corrections are allowed on the final pavement surface except at locations that do not meet Subsection 401.16(e). Correct locations that do not meet Subsection 401.16(e) according to Subsection 401.16(g).

Lower paving lifts can be profiled to locate areas of localized roughness and estimate the final profile pay factor. Defective areas can be corrected on lower paving lifts according to 401.16(g).

If a pavement has less than a 20.0 percent improvement, place a minimum 1-inch (25-millimeter) overlay over the entire paved surface.

Table 401-4
Type II Pavement Roughness Pay Factors

Type II-A	Type II-B	
Percent Improvement (%)	Percent Improvement (%)	Pay Factor (PF_{rough})
Greater than 65.0	Greater than 55.0	PF = 1.05
64.0 – 64.9	54.0 – 54.9	PF = 1.04
63.0 – 63.9	53.0 – 53.9	PF = 1.03
62.0 – 62.9	52.0 – 52.9	PF = 1.02
61.0 – 61.9	51.0 – 51.9	PF = 1.01
60.0 – 60.9	50.0 – 50.9	PF = 1.00
59.0 – 59.9	49.0 – 49.9	PF = 0.99
58.0 – 58.9	48.0 – 48.9	PF = 0.98
57.0 – 57.9	47.0 – 47.9	PF = 0.97
56.0 – 56.9	46.0 – 46.9	PF = 0.96
55.0 – 55.9	45.0 – 45.9	PF = 0.95
54.0 – 54.9	44.0 – 44.9	PF = 0.94
53.0 – 53.9	43.0 – 43.9	PF = 0.93
52.0 – 52.9	42.0 – 42.9	PF = 0.92
51.0 – 51.9	41.0 – 41.9	PF = 0.91
50.0 – 50.9	40.0 – 40.9	PF = 0.90
48.0 – 49.9	38.0 – 39.9	PF = 0.89
46.0 – 47.9	36.0 – 37.9	PF = 0.88
44.0 – 45.9	34.0 – 35.9	PF = 0.87
42.0 – 43.9	32.0 – 33.9	PF = 0.86
40.0 – 41.9	30.0 – 31.9	PF = 0.85
35.0 – 39.9	25.0 – 29.9	PF = 0.80
30.0 – 34.9	20.0 – 24.9	PF = 0.70
Less than 30.0	Less than 20.0	Correct & overlay

(d) Type III pavement roughness. Measure the profile of the final pavement surface for payment. Measure the profile before placing a surface treatment and within 14 days of completing roadway paving. No defective area corrections are allowed on the final pavement surface except at locations that do not meet Subsection 401.16(e). Submit electronic files and the analysis to the CO for analysis. Correct locations that do not meet Subsection 401.16(e) according to Subsection 401.16(g).

Pay factors from Table 401-5 will be used in conjunction with the long continuous histogram printout from ProVAL's Smoothness Assurance Analysis function utilizing a long continuous 528-foot (161-meter) segment length for analysis. The final PF_{rough} is equal to the sum of the products of the individual pay factors indicated in Table 401-5 multiplied by the ratio of individual lane miles (lane kilometers) to the overall project lane miles (lane kilometers) and by ProVAL's corresponding histogram percentages, divided by 100. The final PF_{rough} will be determined to three decimal places.

Lower paving lifts can be profiled to locate areas of localized roughness and estimate the final profile pay factor. Defective areas can be corrected on lower paving lifts according to 401.16(g).

If the final roadway MRI for the entire traveled way is greater than the value shown in Table 401-5, place a minimum 1-inch (25-millimeter) overlay over the entire paved surface.

Table 401-5
Type III Pavement Roughness Pay Factors

Mean Roughness Index (MRI) Type III-A in/mi (m/km)	Mean Roughness Index (MRI) Type III-B in/mi (m/km)	Pay Factor (PF_{rough})
Localized roughness threshold 170 in/mi (2.681 m/km)	Localized roughness threshold 190 in/mi (2.996 m/km)	
If MRI of entire roadway is greater than 125 in/mi (1.973 m/km)	If MRI of entire roadway is greater than 140 in/mi (2.210 m/km)	Correct with Overlay
Greater than 95.0 (1.50)	Greater than 110.0 (1.74)	0.700
95.0 – 90.0 (1.50 – 1.42)	110.0 – 105.0 (1.74 – 1.66)	0.750
90.0 – 85.0 (1.42 – 1.34)	105.0 – 100.0 (1.66 – 1.58)	0.800
85.0 – 80.0 (1.34 – 1.26)	100.0 – 95.0 (1.58 – 1.50)	0.850
80.0 – 75.0 (1.26 – 1.18)	95.0 – 90.0 (1.50 – 1.42)	0.900
75.0 – 70.0 (1.18 – 1.10)	90.0 – 85.0 (1.42 – 1.34)	0.950
70.0 – 65.0 (1.10 – 1.02)	85.0 – 80.0 (1.34 – 1.26)	0.970
65.0 – 60.0 (1.02 – 0.94)	80.0 – 75.0 (1.26 – 1.18)	1.000
60.0 – 55.0 (0.94 – 0.86)	75.0 – 70.0 (1.18 – 1.10)	1.010
55.0 – 50.0 (0.86 – 0.78)	70.0 – 65.0 (1.10 – 1.02)	1.020
50.0 – 45.0 (0.78 – 0.70)	65.0 – 60.0 (1.02 – 0.94)	1.030
45.0 – 40.0 (0.70 – 0.62)	60.0 – 55.0 (0.94 – 0.86)	1.040
40.0 – 35.0 (0.62 – 0.54)	55.0 – 50.0 (0.86 – 0.78)	1.050

(e) **Type IV straightedge measurement.** Use a 10 foot (3.0 meters) metal straightedge to measure at right angles and parallel to the centerline. Defective areas are deviations between the surface and the bottom of the straightedge in excess of ¼ inches (6 millimeters) measured between two contacts of the straightedge or deviations in excess of ¼ inches (6 millimeters) measured at the end of the straightedge. Correct defective areas according to Subsection 401.16(g).

(f) **Localized roughness area pay reduction.** Each area of localized roughness exceeding the threshold MRI specified for the designated pavement roughness type will receive a reduction in payment according to Table 401-6.

Table 401-6
Localized Roughness Area Pay Reductions

Type I	Type II	Localized Roughness Limit MRI	Localized Roughness Limit MRI, in/mi (m/km)	Type III-A	Type III-B
Deduction per Occurrence	Deduction per Occurrence			Deduction per Occurrence	Deduction per Occurrence
\$200	\$300	Computed MRI value per Subsection	170.0 – 179.9 (2.681 – 2.838)	\$200	-
		401.16(b) for Type I	180.0 – 189.9 (2.839 – 2.995)	\$400	-
		401.16(c) for Type II	190.0 – 199.9 (2.996 – 3.154)	\$600	\$300
		401.16(d) for Type III	200.0 – 209.9 (3.155 – 3.311)	\$800	\$400
			210.0 – 219.9 (3.312 – 3.469)	\$1,000	\$500
			220.0 – 229.9 (3.470 – 3.626)	\$1,500	\$750
			230.0 – 239.9 (3.627 – 3.784)	\$2,000	\$1,000
			≥ 240.0 (3.785)	\$4,000	\$1,500

(g) **Defective area correction.** Obtain approval before starting corrective work. Allow 7 days for review and approval of correction method proposal. Correct defective areas by one of the following methods:

(1) **Milling.** Replace the defective area by milling at least one-half the pavement depth and repaving with the approved asphalt concrete mix. Mill the defective area according to Section 413.

(2) **Grinding.** Use a diamond blade machine to grind off the defective surface area. Provide the manufacturer and model of the equipment to be used. Identify the beginning and ending station of each grind location, the grinding depth, and lateral extent of grinding. Seal the surface after grinding. Submit the type of seal to be applied after grinding is completed to the CO for approval. Place seal according to Section 409 or 410. Limit the grinding depth to 12.5 percent of the design pavement thickness. If grinding in excess of this depth, provide a minimum 1-inch (25-millimeter) overlay.

(3) Other. Submit a proposal for approval for other correction methods not listed above.

After corrections are made, re-measure the pavement profile according to Subsection 401.16(a). Data from the re-measurement will be analyzed to determine the MRI or percent improvement, areas of localized roughness, and the final PF_{rough} .

401.17 Acceptance. Delete (b) and substitute the following:

(b) VMA. The specification limit shown in Table 401-1. After the JMF has been verified according to Subsection 401.03 and 401.12, use the Contractor's combined coarse and fine bulk specific gravity of aggregate G_{sb} values to calculate VMA on field produced asphalt concrete mix samples;

Payment

401.19 Delete the equation for Roughness Factor (RF) and substitute the following:

RF = Roughness factor: 80,000 U.S. Customary (49,600 Metric).

Delete the last row of Table 401-8 and substitute the following:

Table 401-8 (continued)
Sampling, Testing, and Acceptance Requirements

Material or Product (Subsection)	Type of Acceptance (Subsection)	Characteristic	Test Methods Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time	Remarks
Finished Product								
Asphalt concrete pavement	Measured and tested for conformance (106.04)	Type I roughness, before construction (Initial MRI)	AASHTO R 56 & R 57	See Subsection 401.16	Left and right wheel paths	No	Within 14 days of Notice to Proceed	Original surface before construction
		Type I roughness, after construction (Final MRI)	"	"	"	"	Within 21 days after completing paving	Surface after construction
		Type II roughness, before construction (Initial MRI)	"	"	"	"	Within 14 days of Notice to Proceed	Original surface before construction
		Type II roughness, after construction (Final MRI)	"	"	"	"	Within 21 days after completing paving	Surface after construction

		Type III roughness (Final MRI)	"	"	"	"	Within 21 days after completing paving	Surface after construction
	Process control (153.03)	Surface tolerance	Straightedge measurements Subsection 401.16(e)	Contractor determined	See Subsection 401.16(e)	"	24 hours	—

401.19 Payment. Add the following:

A price adjustment will be made for fluctuations in the cost of asphalt binder used in the performance of applicable construction work according to Subsection 109.06 Pricing of Adjustments Asphalt Binder Price Adjustment Provision.

A price adjustment will be made for fluctuations in the cost of diesel fuel consumed in the performance of applicable construction work according to Subsection 109.06 Pricing of Adjustments Fuel Price Adjustment Provision.

Section 403. — ASPHALT CONCRETE**Description****403.01** Add the following:

Use an Asphalt binder that would be specified for the project location and is designated according to AASHTO M 320.

Construction Requirements**403.02 Composition of Mix (Job-Mix Formula).** Add the following:

The CO may perform mix design-verification testing to confirm the mix meets the contract requirements. If verification testing is required, submit a loose mix sample to the CO 14 days prior to placement.

403.09 Compacting. Add the following:

For HMA, do not roll the mix after the surface cools below 175 °F (80°C).

Along forms, curbs, headers, walls, and other places not accessible to the rollers, compact the mix with alternate equipment to obtain the required compaction.

403.12 Acceptance. Add the following:

During production placement of the mix, sample loose mix and compacted cores according to Table 403-2 and submit to the CO for acceptance. Materials that do not meet the approved job-mix formula are considered unacceptable.

Delete Table 403-2 and substitute the following:

Table 403-2
Sampling, Testing, and Acceptance Requirements

Material or Product (Subsection)	Type of Acceptance (Subsection)	Characteristic	Test Methods Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time	Remarks
Mix Design								
Asphalt concrete mixture Type I (403.02(a))	Measured and tested for conformance (106.04)	Job-mix formula	Subsection 403.02(a)	When requested by the CO.	Flowing mix stream (bin or belt discharge) or behind the paver before compaction.	Yes	Before approval of job-mix formula	Tested by the CO
Production								
Asphalt concrete, Type I (403.02(a))	Measured and tested for conformance (106.04)	Job-mix formula	Subsection 403.02	1 per 700 tons (650 metric tons)	Behind the paver before compaction.	Yes		Deliver cores to CO for testing
		Density ⁽¹⁾	AASHTO T 166	"	In-place after Compacting	Yes		
		Maximum specific gravity	AASHTO T 209 ⁽²⁾	"	Behind the paver before compaction	Yes		
		Surface Tolerance	Straightedge measurement, Subsection 403.11	Continuously, after compaction	Finished pavement surface	No		
		Placement temperature	—	First load and as determined by CO thereafter	Hauling vehicle before dumping, or windrow before pickup	No	Upon completion of measurement	—

Table 403-2 (continued)
Sampling, Testing, and Acceptance Requirements

Material or Product (Subsection)	Type of Acceptance (Subsection)	Characteristic	Test Methods Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time	Remarks
Production								
	Process control (153.03)	Gradation at the plant	AASHTO T 27 & T 11	Contractor determined	Cold feed or hot bins as applicable	No	24 hours	—
		Moisture content of aggregates	AASHTO T 255	"	Stockpile	No	"	—
		Density	ASTM D2950	1 per 500 feet (150 meters)	In-place after compacting	No	"	—
Asphalt concrete, Type II (403.02(b))	Measured and tested for conformance (106.04)	"	"	3 per 700 tons (650 metric tons)	In-place after compacting	No	"	—

(1) Dry cores to constant mass at 125±5°F (52±3 °C) or vacuum dry, ASTM D7227 before testing. For asphalt concrete Type I, cut two 6-inch (150-millimeter) diameter side by side cores. Remove them with a core retriever and fill and compact the core holes with asphalt concrete mixture. Label the cores and protect them from damage due to handling and temperature. Submit one core for verification testing. Dry the other core to constant mass at 125±5 °F (52±3 °C) or vacuum dry it according to ASTM D7227 before performing the core density and measuring the thickness. Use 62.245 pounds per cubic foot (997.1 kilograms per cubic meter) to convert specific gravity to density. Use AASHTO T 166 regardless of the volume of water absorbed. Use the average maximum specific gravity value (AASHTO T 209) of the first three samples to determine the percent compaction of each Lot.

(2) Do not use the dry back method (Section 11 of AASHTO T 209).

Section 563. — PAINTING

Description

563.01 Add the following:

This work also consists of finishing surfaces with a reactive colorant to produce a natural weathered appearance.

Material**563.02** Add the following:

Weathering Agent

725.19

Construction Requirements**563.05 Protection of Public, Property, and Workers.** Add the following:

Comply with all applicable federal, state, and local regulations. Furnish material safety data sheets for all cleaning and staining products.

Add the following:**563.10A Weathering Agents.**

Apply weathering agent to the required galvanized surfaces at the manufacturer's facility. After application, cure the treated guardrail materials to develop the full coloration according to the manufacturer's recommendation.

Furnish at least 1 sample of galvanized rail treated with the proposed weathering agent product measuring at least 12 inches by 12 inches to the CO for approval. If requested, provide photos with the location and owner/agency name for projects where the sample product was applied to steel products. The weathering agent manufacturer or the manufacturer's authorized application contractor shall apply the weathering agent for samples and production applications.

Do not acquire the production weathering agent until the CO has provided written notification that a treated rail sample has been approved.

Apply weathering agent to guardrails, steel posts, attachment hardware and guardrail terminal sections per manufacturer's recommendations.

Repair damages or discoloration to the final finish by field applying weathering agent according to the manufacturer's recommendations.

563.12 Acceptance. Add the following:

Reactive colorant finishes will be evaluated under Subsections 106.02.

Measurement**563.13** Add the following:

Do not measure the reactive colorant finishing for guardrail, steel posts, attachment hardware and guardrail terminal sections for payment, cost is considered incidental to the items requiring colorant as described in the plans and special contract requirements.

Section 566. — SHOTCRETE**566.01** Add the following:

This work also consists of constructing a simulated rock finish for soil nail retaining walls with pneumatically placed concrete mortar (referred to hereinafter as sculpted shotcrete) by hand sculpting and staining.

Construction Requirements**566.03 Qualifications.** Add the following:

(c) **Sculptors.** Provide lead sculptor, additional sculptors and lead staining artisan, each having experience installing sculpted shotcrete. Submit the following for approval at least 30 days before starting work:

(1) Names of personnel; and

(2) A resume for each individual describing their experience on at least five projects of similar magnitude and difficulty over the past 5 years. Include project names, locations, and contact information for project owners. Provide a signed statement of experience certifying the Contractor is an established business with a minimum of 15 years of experience and indicate in detail experience in successfully constructing textured artificial rockwork and earthwork, and 8 different geological and architectural sculpted retaining wall finishes.

566.04 Composition (Shotcrete Mix Design). Add the following:

(h) Procedures describing the number and qualifications of nozzle men available for the placement of shotcrete, the number of nozzle men on the project site at any time during the shotcrete placement, description of their work schedule, and the procedures for avoiding fatigue of any nozzle men.

(i) Provide manufacturer information on staining materials.

(j) Identify curing methods for the completed sculpted shotcrete surface. Use methods that are compatible with the stain as recommended by the stain manufacturer.

566.07 Shotcrete Construction.**(d) Shotcrete application.** Add the following:

(6) For the 12-inch sculpted shotcrete wall, form the back face of wall that extends above the 4-inch shotcrete wall to achieve the geometry of the wall shown on the plans.

(7) Finish the face of the sculpted shotcrete to produce a rock-like aesthetic finish to simulate the color and texture of the surrounding existing rock faces, see plans. Produce a rock-like aesthetic finish by carving relief into the shotcrete wall face to the depth required to simulate the required texture. The texture and color shall closely resemble that of the approved architectural shotcrete mockup panel. Do not exceed sculpted rock facing depth shown in the Plans.

(8) Apply stain after the wall is completely sculpted, cured, and the surface is prepared per the stain manufacturer's recommendations. Apply percentage strength applications of the base stain, in accordance with the manufacturer's recommendations, in order to achieve varying hues and darkness of colors that mimic and match the natural colors of the local geology. Apply a minimum of two separate applications of at least two multiple stain colors to all sculpted shotcrete surfaces such that the sculpted wall face demonstrates individual color variations and character to match that of the existing field variations.

566.11 Acceptance. Add the following:

Preconstruction test panels, to verify mix design strengths, and production test panels, and architectural shotcrete mockup panels, for acceptance by the CO, are required.

For the sculpted shotcrete, upon approval of shop drawings, construct a 48 inch x 48 inch architectural shotcrete mockup panel for approval. Contact CO a minimum 48 hours prior to inspection. Construct the panel to provide a sampling shotcrete material types, finishes, textures, construction joints, reveals, staining colors, and portions of special features. Make the preconstruction test panel prior to the commencement of production work using the same equipment, materials, nozzlemen, sculptor, staining artisan, mixture proportions, stain application, and procedures proposed for the production work. Use the same architectural rock patterning that is intended for use on the finished structure. Construct the test panel as an unreinforced, vertically applied, sculpted, and stained shotcrete mockup panel.

Construct the finished rock sculpted and stained surface to resemble in appearance the texture, pattern, surface relief, strata line detail, and staining treatment of the existing geology in the area. A photo characterizing the desired final wall aesthetics is provided and the photo serves as criteria for determining final approval of the test panel.

Use the approved test panel as the standard of comparison in determining acceptability of the final wall sculpting and staining by the CO.

Remove unsatisfactory panels and replace with satisfactory panels. Dispose of test panels after completion of finished shotcrete structure or as directed by the CO.

Measurement

566.12 Add the following:

Do not measure the shotcrete, sculpting and staining for payment, cost is considered incidental to the soil nail retaining wall item as described in the plans and special contract requirements.

Section 601. — MINOR CONCRETE STRUCTURES

601.07 Acceptance. Add the following:

The concrete mixture's density, air content, slump, temperature, and compressive strength will be evaluated under Subsections 106.02 and 106.04.

Table 601-2
Sampling, Testing, and Acceptance Requirements

Material or Product (Subsection)	Type of Acceptance (Subsection)	Characteristic	Test Methods Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time	Remarks
Source								
Aggregate (703.01 & 703.02)	Measured and tested for conformance (106.04 & 105)	Quality	Subsection 703.01 & 703.02	1 per material type	Source of material	Yes	Before producing	—
Mix Design								
Concrete Composition (601.03)	"	All	Subsection 601.03	1 per mix design	"	If requested	"	—
Production								
Concrete ⁽¹⁾	Measured and tested for conformance (106.04)	Density	AASHTO T 121	1 set per 30 yd ³ (25 m ³), but not less than 1 per day	Discharge stream at point of placing	No	Upon completing tests	—
		Air content	AASHTO T 152 or AASHTO T 196	"	"	No	"	—
		Slump	AASHTO T 119	"	"	No	"	—
		Temperature	ASTM C1064	"	"	No	"	—
		Compressive strength ⁽²⁾⁽³⁾ (28-day)	AASHTO T 23 & T 22	1 set per 30 yd ³ (25 m ³), but not less than 1 per day	Discharge stream at point of placing	No	28 days	Deliver cylinders to the CO or designated laboratory for scheduled testing

(1) Sample according to AASHTO R 60, except composite samples are not required.

(2) Cast at least four compressive strength test cylinders for 6- by 12-inch (150- by 300-millimeter) specimens or six compressive strength cylinders for 4- by 8-inch (100- by 200-millimeter) and carefully transport the cylinders to the job site curing facility.

(3) A single compressive strength test result is the average result from two 6- by 12-inch (150- by 300-millimeter) or three 4- by 8-inch (100- by 200-millimeter) cylinders cast from the same load.

(4) If the point of placement is different from the point of discharge, correlate the discharge tests with the placement tests to document the changes.

Section 602. — CULVERTS AND DRAINS**Construction Requirements****602.03 General.**

Delete the first sentence of the first paragraph and substitute the following:

Furnish galvanized steel culvert pipe with 12 gage wall thickness or polymer coating.

Add the following:

Construct diversions of live stream flows for permanent culvert installations and other work using temporary channels, temporary culverts, pumps, sandbags, or other methods. Submit a cross-section of the proposed diversion to the CO for approval, including calculations showing that the proposed diversion will accommodate the live stream flows. Provide outlet protection and stabilize temporary channels using the following:

- (a) Plastic lining. Use plastic lining to protect underlying soil from erosion. Place the plastic lining loosely on a smooth soil surface free of projections or depressions that may cause the liner to puncture or tear. Lap transverse joints at least 3 feet (1 meter) in the direction of flow. Do not use longitudinal joints. Anchor the lining in place using riprap, gravel bags, or sandbags.
- (b) Riprap. Construct riprap for channel lining according to Section 251.
- (d) Rolled erosion control products. Use rolled erosion control products to stabilize waterways and slopes. Install according to Section 629.

Measurement**602.09 Add the following:**

Do not measure diversions of live stream flows for payment.

Section 609. — CURB AND GUTTER**Description****609.01 Add the following:**

This work also consists of constructing paved ditches and paved gutters along the roadway.

Construction Requirements**609.03 General.** Add the following:

For asphalt paved ditches and paved gutters, form the bed parallel to the finished surface of the ditch.

Measurement**609.10** Add the following:

No separate measurement will be made for the asphalt mixture included in asphalt curb.

Section 611. — WATER SYSTEMS**Construction Requirements****611.03 General.** Delete the fifth paragraph and substitute the following:

Coordinate with the CO and U.S. Forest Service to identify acceptable dates and times for water pipe relocations. Water pipe relocation work may be required during times other than normal working hours. Do not stop work on a water pipe relocation until it is completed.

Section 617. — GUARDRAIL**Description****617.01****(a)** Add the following:

MGS — Midwest Guardrail System (MGS)

(d) Add the following:

MGS Flared	- Straight flared MGS W-beam terminal
MGS Tangent	- Tangent MGS W-beam terminal
SBL-FAT	- Flared SBL anchor terminal

Material**617.02** Add the following:

Painting

563

Construction Requirements

Treat all galvanized material for guardrail systems with a weathering agent according to Section 563.

Use tangent terminals meeting MASH Test Level 2. When proprietary terminals are required, submit the installation manual from the manufacturer for the terminal, including inspection checklists.

617.04 Post Installation. Delete the fifth and sixth paragraphs and substitute the following:

When a post cannot be placed at its normal location due to an impenetrable object an additional blockout may be added. If the post cannot be offset, follow the post in rock detail, the long span detail, or omit a post as shown in the plans.

Use the post length as shown in the plans. Do not change the post length or spacing in terminal sections.

617.11 Acceptance. Add the following:

Painting will be evaluated under Section 563.

Section 623. — GENERAL LABOR

Delete the text of this Section and substitute the following:

Description

623.01 This work consists of furnishing workers and hand tools for construction work, survey crews, and furnishing qualified personnel to perform technical work ordered by the CO and not otherwise provided for under the contract.

Construction Requirements

623.02 Workers and Equipment. Furnish competent workers and appropriate hand tools for the work. Provide a crew of sufficient size and qualifications necessary to accomplish the required surveying services within acceptable tolerances.

Obtain approval of the length of a workday and workweek before beginning the work. Keep daily records of the number of hours worked. Submit the records along with certified copies of the payroll.

623.03 Surveying Services. Furnish personnel, equipment, and material that conform to the requirements of Subsection 152.01. Survey according to Section 152.

Survey and establish controls within the tolerances shown in Table 152-1, or within other tolerances as established by the CO.

Prepare field notes in an approved format. Furnish calculations. All field notes, supporting documentation, and calculations become the property of the Government upon completion of the work.

623.04 Technical Services. Furnish qualified engineering personnel experienced in highway construction and design, capable of performing in a timely and accurate manner. Provide personnel with a minimum of NICET Level II certification in highway design and construction, or State (SHA) or industry certification-related design and construction equivalent to their intended responsibilities. Personnel with 2 years or more of recent job experience in the type of highway design and construction provided for under the contract may be used in lieu of certifications. Provide the names and relevant experience of all personnel. Furnish supporting tools and equipment (e.g., calculator, computer, and software, and appropriate and commonly-used drafting tools for the assigned task).

All calculations, notes, and supporting documentation become the property of the government upon completion of the work.

623.06 Acceptance. General labor work will be evaluated under Subsection 106.02.

Additional surveying services will be evaluated under Section 152.

Hired technical services will be evaluated under Subsections 106.02 and 106.04

Measurement

623.07 Measure the Section 623 items listed in the bid schedule according to Subsection 109.02 and the following as applicable.

Round portions of an hour up to the nearest half hour. Measure time in excess of 40 hours per week at the same rate as the first 40 hours.

Measure surveying service by the crew hour regardless of crew size. Do not measure time spent in making preparations, performing calculations, plotting cross-sections, processing computer or other data, and other efforts necessary to successfully accomplish the ordered survey services.

Do not measure time for worker's transportation to and from the project site.

Measure office technical services by the hour, as ordered by the CO, for performing calculations, plotting cross-sections, and processing computer or other data.

Do not measure biologist or archeologist for payment.

Payment

623.08 The accepted quantities will be paid at the contract price per unit of measurement for the Section 623 pay item listed in the bid schedule. Payment will be full compensation for the work prescribed in this section. See Subsection 109.05.

Section 625. — TURF ESTABLISHMENT**Construction Requirements**

625.03 General. Delete the first sentence and substitute the following:

Perform all seeding between October 1st and Winter Shutdown.

Measurement

625.11 Delete the second sentence and substitute the following:

When measuring turf establishment and supplemental applications by the acre (hectare) or square yard (square meter), measure on the ground surface.

Add the following:

Do not measure bonded fiber matrix mulching, cost is considered incidental to the seeding item as described in the plans and special contract requirements.

**Section 629. — ROLLED EROSION CONTROL PRODUCTS
AND CELLULAR CONFINEMENT SYSTEMS****Construction Requirements**

629.05 (a) Slope Installations. Delete the text and substitute the following:

(a) Slope Installations. At the top of the slope, anchor the RECP by using an anchor trench.

(1) Anchor trench. Construct a 6- by 6-inch (150- by 150-millimeter) trench. Extend the upslope terminal end of the RECP 36 inches (900 millimeters) past the trench. Use staples on 12-inch (300-millimeter) centers to fasten the RECP into the trench. Backfill the trench and compact the soil. Secure the terminal end with a single row of staples on 12-inch (300-millimeter) centers and cover the end with soil. Apply turf establishment to trench.

Securely fasten all RECP to the soil by installing staples according to the manufacturer's recommendations.

Section 633. — PERMANENT TRAFFIC CONTROL

Construction Requirements

633.05 Sign Panels. Add the following:

For all permanent sign panels, uniformly apply a 2-inch (50 millimeters) wide protective overlay film to the upper edge(s) of the sign and wrap over the front and back of the sign panel equally. Apply the film using methods recommended by the manufacturer. Film must be manufactured expressly for use as a protective overlay film for outdoor traffic signs.

Film must be applied during manufacture of signs; field installation is not permitted.

Add the following subsection after 633.06:

633.06A Shoulder Rumble Strips, Edge Line Rumble Strips, Centerline Rumble Strips, and Transverse Rumble Strips. This work consists of constructing shoulder, edge line, centerline, and transverse calming rumble strips by milling indentations into the asphalt concrete surface as shown in the plans.

(a) Furnish equipment capable of milling concave indentations with a vacuum attachment to remove the residue from the roadway. The removed material becomes the property of the Contractor and is to be removed from the project and disposed of in a manner complying with local regulations.

(b) Do not construct rumble strips on structures or approach slabs.

(c) Construct rumble strips within 2 inches (50 mm) of the specified alignment. Indentations must comply with the specified dimensions within ¼ inch (5 mm) in length and ¼ inch (5 mm) in width. The depth of the indentation must be within the range of ½ inch (10 mm) to ¾ inch (15 mm).

(d) Apply pavement markings after rumble strips are installed according to the plans.

633.08 Acceptance. Add the following:

Rumble strips will be evaluated under Subsection 106.02.

Measurement

633.09 Add the following:

When rumble strips are measured by the linear foot (m) or mile (km), measure the length of rumble strip constructed parallel to the roadway centerline as shown in the plans. When rumble strips are measured by the square yard, measure the area of rumble strip cluster constructed including space between grooves as shown in the plans.

Section 634. — PERMANENT PAVEMENT MARKINGS

Construction Requirements

634.03 General. Add the following to the ninth paragraph:

Apply glass beads to parking lot markings at the direction of the CO.

634.05 Waterborne Traffic Paint (Type B and C). Delete the Subsection and substitute the following:

Apply paint when the pavement and air temperature are at 50°F (10°C) and rising.

(a) Type B. Do not heat the paint above 120°F (49°C). Apply paint at a rate of 100 square feet per gallon (2.5 square meters per liter).

Apply Type 1 glass beads on the paint at a rate of 6 pounds per gallon (0.72 kilograms per liter) of paint.

Apply two applications of paint and glass beads. Apply the second coat in the opposite direction of the first application. Apply the second application after the first is tack free.

(b) Type C. Do not heat the paint above 120°F (49°C). Apply paint at a rate of 70 square feet per gallon (1.7 square meters per liter).

Apply glass beads using two dispensers. Apply Type 3 glass beads on the paint at a rate of 8 pounds per gallon (0.96 kilograms per liter) immediately followed by Type 1 glass beads at a rate of 6 pounds per gallon (0.72 kilograms per liter).

Measurement

634.12 Add the following after the first paragraph:

When two applications of paint are required, measure each application.

Delete the second paragraph and substitute the following:

When pavement markings are measured by the linear foot (meter) or mile (kilometer), measure the length of line applied along the centerline of each line applied regardless of color or line width. Measure broken or dotted pavement lines from end to end of the line including gaps.

Measure solid pavement lines from end to end of each continuous line. For wide lines (12 inches (300 millimeters) in width or greater), adjust the measured length of line in the ratio of the required width to 4 inches (100 millimeters).

Section 635. — TEMPORARY TRAFFIC CONTROL

Description

635.01 Delete the second paragraph and substitute the following:

Arrow board, portable changeable message sign, barricade, and warning light types are designated in the MUTCD.

Material

635.02 Delete the Subsection and substitute the following:

635.02 Conform to the MUTCD and the following Sections and Subsections:

Concrete barrier (temporary)	618
Delineator and object marker retroreflectors	718.08
Guardrail (temporary)	617
Retroreflective sheeting	718.01
Sign panels	718.03
Sign posts	718.04
Sign hardware	718.06
Temporary plastic fence	710.11
Temporary pavement markings	718.16

Construction Requirements

635.04 General. Add the following:

(j) Obtain a Caltrans encroachment permit for the placement, operation and maintenance of portable changeable message signs along Highway 203 during each construction season. Submit message content to CO for approval 14 days prior to start of construction activities. Message content will communicate the hours of closure for Reds Meadow Road / Devils Postpile and hours of expected 30-minute delays. Furnish, operate, and maintain three portable changeable message signs at the following locations:

- (1) Along the west bound side of Highway 203 immediately west of the intersection of Mammoth Scenic Loop.
- (2) Along the west bound side of Highway 203 immediately prior to the Mammoth Mountain Main Lodge parking lot.

(3) Along the west bound side of Highway 203 approximately 1,000-feet west of the Highway 395 southbound offramp.

(k) Furnish, operate, and maintain temporary signal system(s) for work areas that cannot accommodate two lanes of traffic during non-work hours.

(l) Provide flaggers during working hours for work areas that cannot accommodate two lanes of traffic for periods of public access in accordance with Section 156.05.

(m) Provide pilot car(s) during working hours for work areas that have a temporary signal system and work areas with flaggers that are longer than 0.5 mile for periods of public access in accordance with Section 156.05.

(n) Furnish, place, and reposition temporary barriers and crash cushions throughout construction to protect vehicles from entering work areas with steep slopes and drop-offs.

635.07 Construction Signs. Delete the first paragraph and substitute the following:

Fabricate and install sign panels according to Subsection 633.05. Use Type III, IV, VIII, IX, or XI prismatic retroreflective sheeting. Use fluorescent sheeting for orange signs. For roll-up signs, use fluorescent Type VI retroreflective sheeting.

Add the following:

Provide the same type of sheeting on all post-mounted construction signs that pertain to the project.

Use crashworthy posts within the traversable area adjacent to traffic.

635.09 Flaggers. Add the following:

Perform the work described under MUTCD Part 6. Use fluorescent retroreflective sheeting on the "SLOW" side of the flagger paddle.

635.13 Temporary Pavement Markings and Delineation. Add the following to the last paragraph:

If permanent pavement markings are not placed within 14 days, provide, at no cost to the contract, additional temporary delineation equivalent to the permanent pavement marking pattern required by the contract.

Measurement

635.24

Delete the second paragraph and substitute the following:

When measuring temporary traffic control pay items, measure only one time even if relocated or replaced.

Add the following:

Do not measure portable changeable message signs, temporary signal systems, flaggers, pilot cars, temporary barriers, temporary crash cushions, or other temporary traffic control devices for payment.

Payment

635.25 Add the following:

Progress payments for temporary traffic control lump sum will be paid as follows:

- (a) 25% of the pay item amount will be paid when initial construction signs are in place and needed devices onsite for use.
- (b) An additional 65% of pay item amount will be prorated based on total work complete.
- (c) The remaining portion of the pay item amount will be paid when the construction signs and devices are no longer needed and have been removed from the project.

Section 637. — FACILITIES AND SERVICES

Construction Requirements

637.02. General. Delete the first sentence of the first paragraph and substitute the following:

Provide the facilities and services beginning no later than 14 days prior to beginning on-site construction activities and ending 21 days after final acceptance of all contract and Government option work.

637.03. Facilities. Delete the last sentence of the first paragraph and substitute the following:

Locate the Government field office within 15 miles of the project and where high-speed Internet service, as described in Subsection 637.04(b) (1), is available. Existing non-mobile office space in a commercial development is acceptable. Alternative locations and facilities may be proposed by the Contractor for acceptance by the CO. Obtain CO approval for field facilities, associated services, facility furnishings and office equipment prior to committing to or signing any agreements for these items.

(a) Field office. Add the following:

Provide a storage area to accommodate one or a combination of the following:

(1) A minimum of 20 asphalt concrete samples and at least 2,000 pounds.

(2) A minimum of 5 aggregate samples and at least 2,000 pounds.

Provide enough space for each sample. Samples may be stacked three units high using the sample containers required in Subsection 154.03. Provide one of the following:

- A divided or separated area within the Government field office.
- A separate storage structure with minimum dimensions of 8-foot wide by 8-foot long by 6-foot high stationed within 50 feet of the Government field office. If an exterior structure is used, protect items being stored from contamination and weather elements, and maintain a temperature ranging from 40 °F to 80 °F.

(b) Residential housing. Delete the Subsection and substitute the following:

(b) Lighting. For a standalone office, provide ample exterior lighting to illuminate the area surrounding the Government field office at night. Equip the lights with photocell sensor devices and motion detectors to activate the lights.

Add the following:

(c) Equipment. Furnish the following office equipment in the Government field office:

(1) All-in-One (AIO) Device. A self-feeding plain paper printer, copier and scanner with the following minimum capabilities:

- (a) Printing, copying, and scanning black and white, and color hardcopies for each size paper; 8½- by 11-inch (letter size), 8½- by 14-inch (legal size), and 11- by 17-inch paper
- (b) Equipped with 3 separate paper trays, 1 for each size paper; 8½- by 11-inch (letter size), 8½- by 14-inch (legal size), and 11- by 17-inch paper.
- (c) Automatic document feeder capable of making at least 20 copies per minute for each size paper;
- (d) Reducing or enlarging originals, including duplex (double-sided) copying, for each size paper;
- (e) Capable of scanning at 600 dpi for each size paper;
- (f) Reducing or enlarging originals, including duplex (double-sided) copying, for each size paper;
- (g) Copying to Universal Serial Bus (USB) flash drive in Adobe Acrobat (*.pdf) file format; and

(h) Built-in wireless technology (Wi-Fi capable).

Furnish all necessary supplies for the AIO device, including paper.

Delete Table 637-1 and substitute the following:

Table 637-1
Minimum Requirements for Field Office and Associated Services

Property	Size or Quantity
Floor space, square feet	450
Locking outside door, deadbolt with keys	1
Steps with slip-proof tread and handrails	✓ ⁽¹⁾
Windows with locks	2
Total window area, square feet	30
Ceiling height, 7 feet	✓
Rooms including toilet room	3
Room size, except toilet room, square feet	100
Closet, 45-cubic foot	✓
Electrical lighting	✓
Heat and air conditioning ⁽²⁾ , maintain temperature of 72±7 °F	✓
Adequate electrical outlets	✓
Surge protectors (3 Total)	✓
Adequate electricity (120 and 240 V, 60 cycle as applicable)	✓
Adequate potable water supply	✓
Functioning indoor sink with faucets for both hot and cold water with paper towel supply.	✓
Functioning hot water source.	✓
Functioning indoor flushing toilet with toilet paper supply	✓
Parking for three vehicles on gravel or asphalt surface	✓
6-foot high chain link fence with gate around building and parking area if it is a standalone building. Commercial offices with secure parking will not require a chain link fence.	✓

(1) As required by local code.

(2) If window air conditioning is provided, provide a separate unit for each room.

Delete Table 637-2 and substitute the following:

Table 637-2
Minimum Facility Furnishings

Property	Size or Quantity
File cabinet, 2-drawer, fire resistant, metal, with lock & keys	2
File cabinet, 4-drawer, fire resistant, metal, with lock & keys	1
Table, 30 in. wide x 98 in. long x 30 in. high	2
Desk lamp ⁽¹⁾	2
Desk, 12-square foot ⁽¹⁾	2
Rolling office chair ⁽¹⁾	3
Office chair ⁽¹⁾	4
Storage cabinet, 72 in. wide x 36 in. high x 18 in. deep	1
Book case, 72 in. wide x 48 in. high x 16 in. deep	1
Small metal office trash cans	3
Fire extinguisher	1
Compact refrigerator, 2.4 cubic feet	1
Microwave, 1.1 cubic feet and 1000 Watts of cooking power	1

(1) Meet industry standards for ergonomics.

637.04 Services.

(b) Communications. Add the following:

Furnish the following communication equipment and services in the Government field office:

(1) High-speed Internet access. Provide dedicated commercial high-speed internet service with no bandwidth limitations, data caps, or throttling that meets the following minimum capabilities:

(a) Fiber Optic Service (FIOS), Cable Internet Service, or Digital Subscriber Line (DSL), with minimum speeds of:

(1) Download speed of 25,000 kilobits per second;

(2) Upload speed of 10,000 kilobits per second;

(b) Equipped with a modem and a router with a firewall or a router and a firewall appliance;

(c) Router with Internet Protocol Version 6 (IPv6) capable, Wi-Fi Protected Access II (WPA2) or higher encryption, Simple Network Management Protocol (SNMP) Monitoring, Dynamic Host Configuration Protocol (DHCP), and at least Category 6 Registered Jack 45 (RJ45) LAN office drop cables; and

(d) Supports simultaneous internet access of at least 3 workstations connected by Category 6 Registered Jack 45 (RJ45) LAN office drop cables.

Alternate internet access service options, including Satellite Internet, a dedicated Transmission System 1 (T1), or mobile hotspot (MiFi) may be submitted for approval if the required service options are not available.

Add the following Section:

Section 646. — ROADSIDE DEVELOPMENT

Description

646.01 This work consists of constructing earthen trails and timber stairs.

Material

646.02 Conform to the following Sections and Subsections:

Treated Structural Timber and Lumber	716.03
Reinforcing steel	709.01

Construction Requirements

646.03 General. Excavate and backfill according to Section 209. Compact the finished surface of the earthen trail with at least three passes of a lightweight mechanical tamper, roller, or vibratory system.

646.04 Stairs. Saw timber to meet the field conditions for step run length and overall width, and pre-drill holes for rebar pinning. Lay timbers on a prepared surface, pin with rebar, and backfill with suitable material.

Measurement

646.05 Measure the Section 646 pay items listed in the bid schedule according to Subsection 109.02.

Do not measure timber or reinforcing steel for trail stairs.

Payment

646.06 The accepted quantities will be paid at the contract price per unit of measurement for the Section 646 pay items in the bid schedule. Payment will be full compensation for the work rescribed in this Section. See Subsection 109.05.

Section 702. — ASPHALT MATERIAL

702.01 Asphalt Binder. Delete the Subsection and add the following:

702.01 Asphalt Binder. Conform to M 320, Table 1.

In AASHTO M 320, Table 1 replace footnote g with the following:

^g If the creep stiffness is below 300 MPa, the direct tension test is not required. If the creep stiffness is between 301 and 600 MPa, the creep stiffness value shall be used. The *m*-value requirement must be satisfied in both cases.

702.01 Asphalt Binder. Add the following:

Asphalt binder will be Grade PG 64-28M conforming to Table 702-1A. Blend the PG 64-28M at the source of supply and deliver as a completed mixture to the job site. Do not modify the asphalt binder using polyphosphoric acid.

Table 702-1A
Asphalt Binder Grade PG 64-28M

Test	Test Method	Requirement
Tests on Original Binder:		
Viscosity @ 135°C, Pa·s	AASHTO T 316	3.00 Max. ⁽¹⁾
Dynamic Shear, G*/sin δ, Test Temp 64°C @ 10 rad/s, kPa	AASHTO T 315	1.00 Min.
Solubility (min, %),	AASHTO T 44 ⁽⁴⁾	97.5
Polymer Content, % by mass	(2)	Report
Tests on Residue from R.T.F.O., AASHTO T 240:		
Mass Loss, %	AASHTO T 240	1.00 Max.
Dynamic Shear, G*/sin δ, Test Temp 64°C @ 10 rad/s, kPa ⁽³⁾	AASHTO T 315	2.20 Min.
Dynamic Shear, Delta (degress), Test Temp @ 10 rad/s	AASHTO T 315	80 max.
Elastic Recovery, %, Test Temp 25°C, %	AASHTO T 301	75 Min.
Tests on Residue from Pressure Aging Vessel, AASHTO R28 @ 100°C:		
Dynamic Shear, G*/sin δ, Test Temp 22°C @ 10 rad/s, kPa	AASHTO T 315	5000 Max.
Creep Stiffness, S, Test Temp -18°C @ 60 sec, MPa	AASHTO T 313	300 Max.
Creep Stiffness, m-value, Test Temp -18°C @ 60 sec	AASHTO T 313	0.300 Min.

⁽¹⁾ The spec is waived if the supplier provides written certification the asphalt binder can be adequately pumped and mixed at temperatures meeting applicable safety standards.

⁽²⁾ Certificates of compliance provided for the material shall certify that the minimum polymer content is present.

⁽³⁾ The test temperature is the temperature at which G*/sin δ is 2.2 kPa. A graph of log G*/sin δ plotted against temperature may be used to determine the test temperature when G*/sin δ is 2.2 kPa. A graph of delta versus temperature may be used to determine the delta at the temperature when G*/sin δ kPa. The graph must have at least 2 points that envelope G*/sin δ of 2.2 kPa, and the test temperature must not be more than 6 °C apart. Direct measurement of delta at the temperature when G*/sin δ is 2.2 kPa is also acceptable.

⁽⁴⁾ ASTM D5546 or ASTM D7553 is allowed instead of AASHTO T 44. Particles recovered from ASTM D5546 or ASTM D7553 or AASHTO T 44 must be less than 250µm.

Section 703. — AGGREGATE

703.01 Add the following:

703.01 Fine Aggregate for Concrete.

(c) Sand equivalent value, AASHTO T 176,

75 min.

Alternate Method No. 2

703.05 Subbase, Base, and Surface Course Aggregate.**(a) General.** Delete the following:

(3) Durability index (coarse), AASHTO T 210 35 min.

(4) Durability index (fine), AASHTO T 210 35 min.

(b) Subgrade or Base aggregate. Delete line (2) and substitute the following:

(2) Liquid limit, AASHTO R 58 and T 89 25 max

Section 704. – SOIL**704.04 Structural Backfill.** Delete line (c) and add the following:

(c) Plastic index, AASHTO R 58 and T 90 6 max.

(d) Liquid limit, AASHTO R 58 and T 89 30 max.

704.07 Select Borrow. Delete line (b) and add the following:

(b) Liquid limit, AASHTO R 58 and T 89 30 max.

(c) Plastic index, AASHTO R 58 and T 90 6 max.

Section 705. — ROCK**705.01 Gabion and Revet Mattress Rock.** Delete the Subsection and substitute the following:**705.01 Gabion and Revet Mattress Rock.** Furnish angular stone from a rock quarry or cut that is hard, durable, free of organic and spoil material, and resistant to weathering and water action. Do not use crushed river rock or rock with rounded surfaces. Conform to the following:**(a)** Density of a filled basket 100 lb/ft³ (1600 kg/m³) min.**(b)** Gradation. Furnish rock with breadth and thickness at least one-third its length.**(1)** Baskets greater than 1 foot (300 millimeters) in the vertical dimension.**(a)** Maximum dimension 8 in (200 mm)

- | | |
|---|-----------------|
| (b) Minimum dimension | 4 in (100 mm) |
| (2) Baskets 1 foot (300 millimeters) or less in the vertical dimension. | |
| (a) Maximum dimension | 6 in (150 mm) |
| (b) Minimum dimension | 3 in (75 mm) |
| (c) Los Angeles abrasion, AASHTO T 96 | 50 percent max. |

Section 710. — FENCE AND GUARDRAIL

710.06 Rail Elements.

- (a) **Metal beam rail.** Delete the first sentence and substitute the following:

Furnish guardrail posts conforming to the Task Force 13 *Guide to Standardized Roadside Safety Hardware*.

710.07 Guardrail Posts. Delete the first sentence and substitute the following:

Furnish guardrail posts conforming to the Task Force 13 *Guide to Standardized Roadside Safety Hardware*.

710.09 Guardrail Nuts, Bolts, and Cables.

- (b) **Weathering nuts and bolts.** Delete the second sentence and substitute the following:

Furnish bolts conforming to ASTM F3125, Type 3.

710.10 Guardrail Hardware. Delete the first sentence and substitute the following:

Furnish guardrail posts conforming to the Task Force 13 *Guide to Standardized Roadside Safety Hardware*.

Add the following:

Furnish a flexible hinged guardrail delineator which allows the reflector to fold down and spring back to an upright position after impact. Furnish retroreflective sheeting conforming to ASTM D4956, including supplementary requirements. Use type IV or XI retroreflective sheeting permanently adhered to 0.090-inch minimum thick body.

Section 713. — ROADSIDE IMPROVEMENT MATERIAL**713.04 Seed.** Add the following:

Use the following seed mix (PLS = Pure Live Seed):

Upland/Dry Sites:

Grass	Squirreltail (<i>Elymus elymoides</i>)	8 lb/ac PLS
Grass	Blue Wildrye (<i>Elymus glaucus</i>)	6 lb/ac PLS
Grass	Lemmon's needlegrass (<i>Stipa lemmonii</i>)	2 lb/ac PLS
Forb	Balsamroot Arrowleaf (<i>Balsamorhiza sagittata</i>)	5 lb/ac PLS
Forb	Sulfur Buckwheat (<i>Eriogonum umbellatum</i>)	1 lb/ac PLS
Brush	Big Mountain Sagebrush (<i>Artemisia tridentata</i> subsp. <i>vaseyana</i>)	<u>1 lb/ac PLS</u>
TOTAL:		23 lb/ac PLS

Riparian Sites:

Grass	California brome (<i>Bromus carinatus</i>)	3 lb/ac PLS
Grass	Blue Wildrye (<i>Elymus glaucus</i>)	2 lb/ac PLS
Grass-like	Nebraska sedge (<i>Carex nebracensis</i>)	2 lb/ac PLS
Grass-like	Baltic Rush (<i>Juncus arcticus</i>)	1 lb/ac PLS
Forb	Red Columbine (<i>Aquilegia canadensis</i>)	1 lb/ac PLS
Forb	Gracilis Cinquefoil (<i>Potentilla gracilis</i>)	<u>2 lb/ac PLS</u>
TOTAL:		11 lb/ac PLS

Adjustments to the prescribed seed mix will be reviewed by the Forest Botanist for approval by the CO prior to inclusion in the mix.

713.16 Silt Fence. Delete Subsection (a) and substitute the following:

(a) **Geotextile.** Conform to Table 8 of AASHTO M 288.

Section 718. — TRAFFIC SIGNING AND MARKING MATERIAL**718.01 Retroreflective Sheeting.** Add the following:

Furnish fluorescent type sheeting for all signs and all devices specifying an orange or a yellow background.

Section 719. — PAINT**719.08 Penetrating Stain.** Add the following:

Furnish a product specifically manufactured for staining concrete surfaces to use for the sculpted shotcrete consisting of the following unless otherwise approved, a base and accent stain material. Furnish a base stain that is an organic based non-toxic iron oxide derivative. Furnish an accent stain that is a water base solution of metallic salts that penetrate and react with the shotcrete surface to produce insoluble, abrasion-resistant color deposits in the pores of the shotcrete. Furnish an accent stain that contains dilute acid to etch the shotcrete surface so that the staining ingredients can penetrate the shotcrete. Deliver materials in the original sealed containers clearly marked with the manufacturer's name, brand, and type of material, batch number, surface preparation, application instructions, and date of manufacture.

Section 725. — MISCELLANEOUS MATERIAL**725.04 Pozzolans.** Delete line (a) and substitute the following:

- (a) **Fly ash.** Conform to AASHTO M 295 4.5 percent max
Class C or Class F.
When used to mitigate alkali-silica reactivity,
also available alkalies as equivalent Na₂O

Add the following:

725.19 Weathering agent. Furnish a weathering agent that colors rock, cementitious, and galvanized surfaces to a brownish earth tone, and contains no pigments. Furnish a material that contains chemical components that have no adverse reactions or effects on soils, plants, or animals. The material cannot contain corrosive by-products once the product has been applied.

PermeonTM and Natina® Rock are acceptable products for coloring rock surfaces; PermeonTM and Natina® Concrete are acceptable products for coloring cementitious surfaces; and Natina® Steel is an acceptable product for coloring galvanized surfaces. Identification by brand name is intended to be descriptive, not restrictive, and is intended to indicate the quality and characteristics of products that will be satisfactory. Submit "or equal" products meeting the following salient characteristics to the CO for approval.

- (a) A soluble solution that contains organic acids and natural oxidizers.
- (b) All coloring developed through a reactionary process that etches surfaces, producing a finish that's resistant to fading from exposure to sunlight, with an expected performance life exceeding 10 years in nonaggressive climates.

(c) A product that causes negligible zinc coating losses when applied to galvanized surfaces.

Acceptable products include:

Permeon™
manufactured by Soil-Tech
6420 South Cameron, Suite 207
Las Vegas, NV 89118
702-873-2023
www.soil-tech.com

Natina® Rock; Natina® Concrete; Natina® Steel
manufactured by Natina Products, LLC
1577 First Street
Coachella, CA 92236
877-762-8462
www.natinaproducts.com