## SPECIAL CONTRACT REQUIREMENTS

The following Special Contract Requirements amend and supplement the *Standard Specifications for Construction of Roads and Bridges, on Federal Highway Projects (FP-14),* U.S. Department of Transportation, Federal Highway Administration.

Embedded in the body of the SCR’s are hidden text boxes with “Notes to Designers”. To display the hidden boxes in Word activate the *show/hide* button (looks like this - ¶). Or you can use the key strokes ctrl+shift+\*.

02/25/2025

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|  |
| --- |
| Use on all projects. |

## 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 substitute the following:

|  |  |  |  |
| --- | --- | --- | --- |
| **ºF** | — | 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 **º** | — | 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 or YD** | — | yard or yards | length |
| **Ω** | — | ohm V/A | electric resistance |

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

|  |  |  |  |
| --- | --- | --- | --- |
| **A** | — | ampere | electric current |
| **Cd** | — | candella | luminous intensity |
| **oC** | — | degree Celsius | temperature |
| **D** | — | day | time |
| **deg.** or **º** | — | 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/s2) | force |
| **Pa** | — | Pascal (N/m2) | pressure |
| **sec.** or **s** | — | second | time |
| **sec.** or **"** | — | second | plane angle |
| **T** | — | metric ton | Mass |
| **V** | — | volt (W/A) | electric potential |
| **W** | — | watt (J/s) | Power |
| **Ω** | — | ohm V/A | electric resistance |

101.04 Definitions. Delete the definition of (c) Supplemental agreement under Contract Modification.

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 area between the original terrain cross-section and the final design cross-section.

**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.

|  |
| --- |
| The FP-14 describes ‘substantial completion’ as it relates to conventional road and bridge projects. For projects that include non-conventional items, such as trails, buildings, lighting, etc, the definition of ‘substantial completion’ may need to be clarified. If applicable, adjust the yellow-highlighted text below to fit project-specific conditions. Do not delete any of the text in the FP-14. |

**Substantial Completion** Add the following:

If applicable, insert project-specific definition of substantial completion

09/11/2014

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## Section 102. — BID, AWARD, ANDEXECUTION OF CONTRACT

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| Include the SCR for Subsection 102.03 on negotiated 8(a) contracts. |

**102.03 Bid Guarantee.** Delete the text.

04/12/2023

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## Section 103. — SCOPE OF WORK

|  |
| --- |
| Include on all projects |

**103.05 Partnering.** Delete the third paragraph and substitute the following:

If the partnering offer is accepted, mutually agree with the CO on the level of organizational involvement and the need for a professional to facilitate the partnering process. Engage the facilitator and other resources for key Contractor representatives and the CO to attend a partnership development and team-building workshop. Hold additional progress meetings upon mutual agreement.

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|  |
| --- |
| Use on all projects. |

## 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.

|  |
| --- |
| Use on projects where there is a concern for noxious weeds. |

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.

**105.02 Material Sources**

|  |
| --- |
| List source(s) when there is a government-provided source and it is mandatory. |

**(a) Government-provided sources.** Add the following:

Obtain material for use in the production of aggregates under Sections (list items) from (name source).

|  |
| --- |
| Include when there is a government-provided source and it is optional. |

Material for use in the production of aggregates under Sections (list items) may be obtained from (name source).

|  |
| --- |
| Include if there is a royalty on material taken from the source. |

Pay (name person or company) a royalty fee of (name dollar amount) per cubic yard, or if the material is weighed, (name dollar amount) per ton for material furnished from this source and used on the project.

Make monthly royalty payments directly to:

(owner of the source and address)

|  |
| --- |
| Include the following when there is a specific site available for a staging area. |

**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/shall) use the (description) for (a staging area/storage of materials/hot plant site/stockpiles/ etc).

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.

Store construction, building and waste materials, and containers in designated areas indoors or protect with a suitable covering.

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.

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|  |
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| Use on all projects. |

## 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.

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| --- |
| Add Table 106-3 to **all** projects. |

**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 ChlorideMagnesium 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 Damproofing 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 | ----- |
| **708** | Plastic Pipe | As specified | As applicable | 1 per shipment | ----- |
| **709** | Reinforcing andPrestressing 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.717.101 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 | ----- |
| **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 | ----- |

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## Section 107. - LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

**107.01 Laws to be Observed.** Add the following:

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| Add the following paragraph if a 401 or 404 permit is included in the contract. |

**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. See the appendix for permits.

|  |
| --- |
| Use the following Subsection 107.01 on projects that require coverage under an NPDES permit. Some state specific language may be needed in addition to the following. Information to fill in blanks located below:Exceptions:(1) Less than 1 acre of total disturbance (1). - No NPDES permit required.(2) Project meets criteria for routine maintenance (2). - No NPDES permit required. Document assumptions used to reach this decision in a memo in the project file.(3) Less than 5 acres of disturbance and the project qualifies for a Low Erosivity Waiver. Document assumptions used to reach this decision in a memo in the project file. Consult the construction general permit to determine if project-specific requirements are necessary. Consult with EPS for clarifications and technical assistance.(1) Disturbance area is typically clearing limit to clearing limit including the roadway. It also includes staging, stockpile, and waste areas outside of the clearing limits. Projects that are near the thresholds (1 acre and 5 acres) may be bumped to a higher category when the areas outside the clearing limits are included.(2) Routine Maintenance - Work that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of the site**. Not all states have this exception.*** Performed on a frequent basis – not longer than a few years
* Does not disturb soils beneath the pavement. This is a gray area when doing full depth reclamation that includes just aggregates and varies by state. Consult with EPS.
* Reconditioning dirt and aggregate surfaced roads and adding aggregate. Does not include widening of roadways.
* Cleaning (pulling) ditches on dirt or aggregate surfaced roads. If there is vegetation removal to soil on paved roads, it will probably not meet the criteria.
* Asphalt overlays of existing pavements with no other disturbances of soil. Does not include adding asphalt or concrete paving to existing aggregate or dirt roads.
* Pavement preservation. Chip seal, fog seal, and micro-surfacing with no soil disturbances. Large stockpile and staging areas can negate this if there is a potential for sediment loss or other pollution from those operations.
* Consult with EPS for other situations that may qualify.
 |

**National Pollutant Discharge Elimination System (NPDES)**

Comply with the requirements of the applicable Construction General Permit (CGP) as shown in Table 107-1. The applicable CGP is fill in State / Agency from Table 107-1.

Prepare a Stormwater Pollution Prevention Plan (SWPPP) according to Section 157. If the current CGP expires during the contract, amend the SWPPP when a new permit goes into effect to meet new permit conditions.

Allow XX days from submittal 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).** After the SWPPP is approved, file the NOI as a primary operator if shown in Table 107-1. Allow the regulatory review period, shown in Table 107-1, from submittal of NOI to receipt of authorization of coverage under the CGP. Provide a copy of the NOI and confirmation letter to the CO.

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).** If applicable, 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.

|  |
| --- |
| Include the entire Table 107-1 – do not delete rows from the table.For projects in Indian Country, revise the XX in the permit number to match the applicable state – see this EPA website for permit numbers <https://www.epa.gov/system/files/documents/2022-01/2022-cgp-final-appendix-b-areas-of-permit-cover.pdf>. <https://www.epa.gov/system/files/documents/2022-01/2022-cgp-final-appendix-b-areas-of-permit-cover.pdf>. |

**Table 107-1
NPDES Permits**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **State / Agency** | **Permit Number and Link** | **Effective Date** | **Expiration Date** | **Regulatory Review period** |
| Arizona | [AZG2020-001](https://static.azdeq.gov/permits/azpdes/cgp_permit.pdf) | 7/1/2020 | 6/30/2025 | 30 days |
| California(1) | [2022-0057-DWQ](https://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2022/wqo_2022-0057-dwq.pdf) | 9/1/2023 | 8/31/2028 | 7 days |
| Colorado (Federal) | [COR10F000](https://www.epa.gov/system/files/documents/2022-01/2022-cgp-final-permit.pdf) | 2/17/2022 | 2/16/2027 | 14 days |
| Colorado (Other) | [COR400000](https://oitco.hylandcloud.com/CDPHERMPublicAccess/api/Document/AQfwokluDriUFw9rLI8HeKnA3FOQD9oxLj2WtUV%C3%896urJ3JjLHBBWZPGaal9FHPt1L9vF9iX3AMKBHphEdDOVvyQ%3D/) | 4/1/2024 | 03/31/2029 | 10 days |
| Hawaii | [HAR 11-55, Appendix C](https://health.hawaii.gov/cwb/files/2024/01/January-29-2024-11-55-Appendices-C-A.pdf) | 1/29/2024 | 1/29/2029 | 10 days |
| Indian Country | [XXR10I000](https://www.epa.gov/npdes/2022-construction-general-permit-cgp#2022cgp)  | 2/17/2022 | 2/16/2027 | 14 days |
| Kansas | [S-MCST-2208-1](http://www.deq.state.ne.us/Publica.nsf/pages/WAT012) | 12/1/2021 | 11/30/2026 | 60 days |
| Nebraska | [NER210000](http://www.deq.state.ne.us/Publica.nsf/pages/WAT012) | 12/1/2021 | 11/30/2026 | 7 days |
| Nevada | [NVR100000](https://ndep.nv.gov/uploads/documents/Construction_SW_GPermit_2015_.pdf) | 1/5/2015 | 1/4/2020(2) | 14 days |
| New Mexico | [NMR100000](https://www.epa.gov/system/files/documents/2022-01/2022-cgp-final-permit.pdf) | 2/17/2022 | 2/16/2027 | 14 days |
| North Dakota | [NDR11-0000](https://deq.nd.gov/publications/wq/2_NDPDES/Stormwater/Construction/NDR11per20200401F.pdf) | 4/1/2020 | 3/31/2025 | 7 days |
| Oklahoma | [OKR10](https://www.deq.ok.gov/wp-content/uploads/water-division/OKR10-2022-Final-permit-1.pdf) | 10/18/2022 | 10/17/2027 | 14 days(3) |
| South Dakota | [SDR100000](https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/docs/DANR_ConstructionGeneralPermit2023.pdf) | 11/1/2023 | 10/31/2028 | 15 days |
| Texas (small)(4) | [TXR150000](https://www.tceq.texas.gov/downloads/permitting/stormwater/general/construction/2023-cgp-txr150000.pdf) | 3/5/2023 | 3/5/2028 | 2 days |
| Texas (large) | [TXR150000](https://www.tceq.texas.gov/downloads/permitting/stormwater/general/construction/2023-cgp-txr150000.pdf) | 3/5/2023 | 3/5/2028 | 7 days |
| Utah | [UTRC00000](https://documents.deq.utah.gov/water-quality/stormwater/construction/DWQ-2020-013890.pdf) | 07/1/2024 | 06/30/2029 | None |
| Wyoming (small)(5) | [WYR10-A000](https://drive.google.com/file/d/1GMfaOewy9KN3CbobjDrwFJvM8fLu--nA/view) | 9/11/2020 | 8/1/2025 | None |
| Wyoming (large) | [WYR100000](https://drive.google.com/file/d/1FwVC3LegHgCtbZpeRFX2F5UBy_x1rTm4/view) | 9/11/2020 | 8/1/2025 | 10 days |

(1) Upload the SWPPP to the California Water Boards Stormwater Multiple Application and Report Tracking System (SMARTS) and complete the NOI application previously started by the Government. Notify the CO once the NOI application is complete. Do not certify the NOI.

(2) Permit administratively extended.

(3) 45 days for projects over 40 acres or in a sensitive watershed.

(4) Prepare a Construction Site Notice rather than an NOI.

(5) Prepare a SWPPP rather than an NOI. Implement the SWPPP before ground disturbing activities.

**107.02 Protection and Restoration of Property and Landscape.**

|  |
| --- |
| Use the following on all projects. The Quality Level Certification defines the level of effort locating and mapping the utilities for the project. Be specific with spot locations, as applicable. |

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 \_\_, with spot locations certified to a Quality Level \_\_ according to the CFLHD Utility Data Quality Certification requirements:

<http://flh.fhwa.dot.gov/resources/row/cfl/documents/UtilityDataQualityLevelCertification.doc>

|  |
| --- |
| Include if NO utilities exist within the project limits. |

Add the following:

There are no known utilities within the project right of way.

|  |
| --- |
| Use the following if utilities exist within the project limits. The Quality Level Certification defines the level of effort locating and mapping the utilities for the project. Be specific with spot locations, as applicable. |

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 \_\_, with spot locations certified to a Quality Level \_\_ according to the CFLHD Utility Data Quality Certification requirements:

<http://flh.fhwa.dot.gov/resources/row/cfl/documents/UtilityDataQualityLevelCertification.doc>

|  |
| --- |
| Use the following when Utilities exist within the project limits. The Status of Utilities Table may be copied from the Right of Way and Utility Certification. Add additional language, as required, for project specific conditions. |

**Table 107-2
Status of Utilities**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Company | Utility Type | Contact Name | Phone Number | Status 1, 2, 3, or 4 |
| 1 |  |  |  |  |  |
| 2 |  |  |  |  |  |
| 3 |  |  |  |  |  |
| 4 |  |  |  |  |  |
| 5 |  |  |  |  |  |
| 6 |  |  |  |  |  |

|  |
| --- |
| Status 1: If utilities are in conflict with the project and require relocation by others during construction, include directions for any required coordination or notifications in this Subsection. Include any schedules and limits to construction under Section 108. |

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

|  |
| --- |
| Status 2: If utilities are in conflict with the project and require relocation by the Contractor during construction, include the appropriate Plan drawings, SCR;s (including, but not limited to: 611, 612, and 636) and Pay Items in the PS&E Package. Include any schedules and limits to construction under Section 108. Review any contractual requirements indicated by the Utility Resolution Plan and include the requirements in appropriate SCR Sections. |

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

|  |
| --- |
| Status 3: If utilities are in conflict with the project and require relocation before construction, include the estimated date relocations will be completed. Include any schedules and limits to construction under Section 108. |

**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.

|  |
| --- |
| Add the following for all projects. |

**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.

**107.08 Sanitation, Health, and Safety.** Delete the first paragraph and substitute the following:

Follow the requirements of FAR Clause 52.236-13 Accident Prevention, Alternate 1. Submit an accident prevention plan.

**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)** Locate machinery servicing and refueling areas away from streambed, wetlands, shorelines, lakes, and reservoirs to reduce the possibility and minimize the impacts of accidental spills or discharges.

**(b)** Oil and hazardous substances. Delete the third and fourth paragraphs and substitute the following:

Do not use equipment with leaking fluids. Repair equipment leaks immediately. Keep absorbent material manufactured for containment and cleanup of hazardous material on the job site. Sand and soils are not approved absorbent materials.

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

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| Add the following as necessary |

**(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 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.

**(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.**

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| Add any project specific environmental commitments due to legal requirements (additional permits not already mentioned, safety and health restrictions, trial ordinances, monitors, animal/bird surveys, etc).**DO NOT** duplicate information in multiple sections.Examples for this section:Provide a qualified archeological monitor during excavation activities between Stations 787+00 and 810+00. See Subsection 623.04A for qualification requirements.Do not remove, injure, or destroy trees or other plants without prior approval of the CO.Clear all trees between September 15 and March 1 to avoid nesting bird season.Construct riprap revetment during low flow periods of 200 cfs as measured at gauge 12345. Current stream gauge data is available at *[website link]*Notify the CO at least 14 days prior to working in archeological sensitive areas. Do not remove material in these areas without the approval of the CO in consultation with Park |

Add the following:

**(e) Project-specific commitments.**

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| Coordinate with Environment for project-specific commitments. The text in (1) below is for migratory bird surveys; revise as needed for project-specific conditions. |
| If applicable, use the following text in (1) if NOT including a specific pay item for the biologist. |

(1) Provide a qualified biologist, at no additional cost to the Government, to perform the following:

*(a)* Conduct pre-construction nest surveys within the clearing limits if vegetation clearing or work on suitable nesting structures will occur within the breeding season (from <<<Month Date>>> to <<<Month Date>>>). Survey vegetation and suitable nesting structures, including bridges and culverts, at least <<<XX>>> days before <<<describe work that triggers survey>>> at the site begins. If vegetation clearing or suitable nesting structure work occurs outside of the breeding season, no surveys are required.

*(1)* Conduct nest survey in phases if vegetation removal or suitable nesting structure construction will occur in phases along the project route, so that no more than <<<XX>>> days lapses between survey and potential nest disturbance at any one location.

*(2)* Notify the CO immediately if any active nest that may be adversely affected by construction activities is discovered; include information on nesting species, activities in the vicinity of the nest, topographic and other visual barriers, and recommended protection measures. Establish a no-disturbance buffer, in coordination with the CO, around the nests that is sufficient to ensure that breeding is not likely to be disrupted by construction. Maintain buffers until the qualified biologist has determined the young have fledged or nests are no longer active.

*(3)* Submit a report documenting the methodology and results of the surveys to the CO within 7 days after completion of surveys. Include recommendation for handling of any unoccupied nests observed and nesting prevention recommendations, if appropriate.

*(b)* Conduct a resurvey of vegetation and suitable nesting structures, as needed, after any lapse in construction of <<<XX>>> days or more within the breeding season.

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| If applicable, use the following text in (1) if including a specific pay item for the biologist. |

**(1)** Provide a qualified biologist according to Subsection 623.04.

**(2)** describe commitment

**(3)** describe commitment

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| Check with the owner agency for the requirements of a fire plan and have the agency (i.e. Forest Service, Park Service, etc.) provide the fire plan and include it in the Appendix.Delete the following paragraph if a fire plan is not included. |

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

Comply with the fire prevention plan included in the Appendix. The CO will order the emergency suspension of operations when conditions are unsafe as determined by the CO and the land management agency.

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| Add the following to all contracts unless there is a compelling reason not to do so, or if the partner agency requires more restrictive non-work schedules. If applicable, list interim completion dates, liquidated damages, and incentives in Subsection 108.04 and add a reference to Subsection 108.04 in Subsection 108.01, but **DO NOT** duplicate interim completion dates in Subsection 108.01. |

## Section 108. — PROSECUTION AND PROGRESS

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

Limit operationsaccording toSubsection 107.10(e) and Section 156.

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| Add any general work restrictions that limit the contractor’s site availability (winter shutdown, holidays, etc).**DO NOT** duplicate information in multiple sections.Examples for this section:Do not perform onsite work from October 1 through April 30.Complete underground utility work before constructing the subgrade. |

Limit operations as follows:

**(a)** (describe limitations)

**(b)** (describe limitations)

**(c)** (describe limitations)

**(d)** (describe limitations)

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| Use on all projects.Coordinate with the CFT and Partner Agency on specific holiday limitations. Adjust table as needed (for example, delete some of the federal holidays or add local holidays or events that may require work restrictions). |

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.

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| Table 108-2**Federal Holidays and Surrounding Days** |
| **Federal Holiday** | **Time** | **Remarks** |
| Birthday of Martin Luther King, Jr. | 12:00 Noon Friday to6:00 am Tuesday | - |
| Washington’s Birthday | 12:00 Noon Friday to6:00 am Tuesday | - |
| Memorial Day | 12:00 Noon Friday to6:00 am Tuesday | - |
| Juneteenth National Independence Day | 12:00 Noon June 18 to 6:00 am June 20 | If June 19 falls on a Saturday, do not work the preceding Friday. If June 19 falls on a Sunday, do not work the following Monday. |
| Independence Day | 12:00 Noon July 3 to6:00 am July 5 | If July 4 falls on a weekend, Friday, or Monday, do not work the weekend. If July 4 falls on a Saturday, do not work the preceding Friday. If July 4 falls on a Sunday, do not work the following Monday. |
| Labor Day | 12:00 Noon Friday to6:00 am Tuesday | - |
| Columbus Day | 12:00 Noon Friday to6:00 am Tuesday | - |
| Veterans Day | 12:00 Noon November 10 to 6:00 am November 12 | If November 11 falls on a Saturday, do not work the preceding Friday. If November 11 falls on a Sunday, do not work the following Monday. |
| Thanksgiving | 12:00 Noon Wednesday to6:00 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. |

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| **NOTE TO DESIGNER:** also inquire with local and owner agency for local holidays/celebrations/events that might require work restrictions. |

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. Notify the CO at least 2 weeks 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.

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| Use on projects as applicable. |

Add the following:

The CO will issue a Notice to Proceed before commencement of any work. The contract completion date is (fill in).

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| Include the following for A+B bidding (cost plus time). |

Add the following:

The count of contract time will begin upon issuance of the Notice to Proceed and shall run continuously until final construction completion.

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| Use on all projects. |

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**.

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| Use the following on all projects.The amount of Liquidated Damages (per day) will not be shown in the SCRs. PM or COE to use the CE Budget Spreadsheet to calculate the amount of Liquidated Damages (per day): The amount of Liquidated Damages (per day) will be provided to Acquisitions at PS&E check-in using the PS&E Advertisement Checklist. There is a specific field provided in the PS&E Advertisement Checklist for this. Acquisitions includes the amount of Liquidated Damages (per day) in the contract using a contract provision/clause.  |

Delete the second and fourth paragraphs and substitute the following.

Liquidated damages in the amount specified in FAR Clause 52.211-12 Liquidated Damages — Construction will be assessed for each day beyond the time allowed to complete the contract until substantial completion of the work.

Delete Table 108-1.

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| Update yellow highlighted text below when interim completion dates are applicable. Describe interim completion dates and, if any, incentives/disincentives. If incentives are used, be sure to set a maximum limit on the incentive payment. Where the work cannot be completed after the deadline, additional specifications may be required. For example: requiring the contractor to place a lift of pavement prior to November 15, 200x for a winter driving surface and assessing liquidated damages may not be appropriate. The specification should continue on to state what will be done if this doesn’t happen by the specified date and the temperature/weather conditions are not conducive to completing the work according to the requirements. In this case, the specification may require the contractor to construct a temporary sacrificial lift of pavement, at no cost to the government. This type of specification is especially important for environmental and winter shutdown timeframes. Environmental deadlines may require remobilization of the contractor’s operations, at no cost to the government. |

Add the following:

(describe any completion or interim completion dates, and any incentives or disincentives).

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| Consider using the weather delay SCR on the following types of projects:-Large earthwork jobs (4R) in areas where weather is likely to have a significant impact on the number of days available to perform critical path work-Projects where duration spans multiple seasons |

Add the following:

**108.06 Weather Delays.**

**(a) Definitions**.

**(1) Reasonably Predictable Weather Days.** Estimated weather day(s) where critical activities cannot be performed in any specific month, within contract weather or temperature limitations, or due to weather related soil conditions. Calculate Reasonably Predictable Weather Days according to Subsection 108.06 (b).

**(2) Weather Day**. Workday(s) where work cannot be performed within contract weather or temperature limitations or due to weather related soil conditions, and where work on critical activities cannot be performed for more than 50 percent of the workday.

**(3) Drying Day.** Work day(s) immediately following a weather day, as defined by Subsection 108.06 (a)(2) above, where work can’t be performed on scheduled critical activities within contract weather or temperature limitations, or due to weather related soil conditions, for more than 50 percent of the workday. Do not consider drying days when critical activities can be performed immediately after weather days. Do not consider drying days if they fall on scheduled non-work days within the contract or the construction schedule.

**(4) Work Day**. A day described under Subsections 155.05 (a)(2)(*e*) or 155.05 (b)(4)(*e*) in the Contractor’s Baseline Construction Schedule, are not excluded from work by the contract, or are not considered as a non-work day in the construction schedule.

**(5) Unusually Severe Weather Day**. The number of approved scheduled work days affected by weather that are greater than the calculated Reasonably Predictable Weather Days for the month in question. An Unusually Severe Weather Day will not be considered if it is a scheduled non-work day in the contract or the construction schedule.

**(b) Reasonably Predictable Weather Days.** Determine Reasonably Predictable Weather Days for this contract by completing Table 108-3. Calculate data for Table 108-3 as follows:

**(1)** Using the last 10 years of historical weather data from the nearest NOAA weather data collection station, or other approved weather station, compute the average number of weather days defined by Subsection 108.06 (a)(2) for each month. Include estimated drying days defined by Subsection 108.06 (a)(3). Calculate the standard deviation from the average for each month. Determine the Reasonably Predictable Weather Day(s) total for each month by adding the estimated average weather and drying days from above, plus one standard deviation.

**(2)** Submit a completed Table 108-3 with the initial construction schedule. Include NOAA or other approved weather data, the average number of weather days, the estimated number of drying days, and the standard deviation, calculations for each month with Table 108-3. Allow 14 days for approval or rejection of Table 108-3. If rejected, submit a revision within 7 days after the date of rejection. Time for review and approval starts again after the revised Table 108-3 has been resubmitted. Weather related Time Impact Analyses will not be accepted without an approved Table 108-3. If the normally scheduled work days are changed within the current construction schedule, provide the CO with a revised Table 108-3 which if approved will become the Reasonably Predictable Weather Days for each month of the remainder of the contract.

**Table 108-3**

**Reasonably Predictable Weather Days**

|  |  |
| --- | --- |
| Project Name |  |
| Project Number |  |
| Contractor |  |
| Month | Year | Reasonably Predictable Weather or Weather Related Soil Conditions(Monthly Total Days) |
| January or other month |  |  |
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|  |  |  |
| Date Submitted: |  |
| Signature of Authority:  |  |

**(c) Unusually Severe Weather.** Under FAR Clause 52.249-10, Default (Fixed-Price Construction), the Contractor can request time for a delay due to Unusually Severe Weather.

Determine the number of weather days conforming to Subsection 108.06 (a)(2) and Drying Days conforming to Subsection 108.06 (a)(3). Deduct any days meeting the following conditions:

**(1)** Workdays when only non-critical activities are shown for that day on the construction schedule, or only non-critical work is performed on that day.

**(2)** Drying days when only non-critical activities are shown for that day on the construction schedule, or only non-critical work as performed on that day.

**(3)** Weather or drying days where critical work was not performed more than 50 percent of the day, or could have been performed more than 50 percent of the day but was not.

**(4)** Scheduled or contract non-work days not accounted for under 108.06 (a) or (b).

Unusually severe weather has occurred during any month in question when the net number of actual workdays lost for critical work activities, due to contract weather or temperature limitations, or weather related soil conditions, is greater than the Reasonably Predictable Weather Day total from Table 108-3 submitted with the initial construction schedule.

**(d) Time Adjustments for Weather Delays.** No time adjustments will be made if the net number of weather days is less than the Reasonably Predictable Weather Day total for any month shown in Table 108-3. An excusable time extension may be granted if the net number of weather days is more than the Reasonably Predictable Weather Day total for any month shown in Table 108-3. Submit a weather or soil time impact analysis supporting any alleged delays due to unusually severe weather or soil conditions. Submit a weather-related soil or weather time impact analysis within the month that the weather days occur. If a period of weather days or soil conditions is split between months, submit a weather or soil time impact analysis for each month of occurrence.

**(e) Delays Due to Other Weather Conditions.** Delays due to other unusually severe weather conditions (extreme cold or heat, high winds, etc.) or soil conditions must be supported with a weather time impact analysis using historical weather data or construction site weather related soil conditions based on appropriate proctor test results and existing moisture contents.

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## Section 109. — MEASUREMENT AND PAYMENT

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| Use on projects where quantities are split between specific funding sources (i.e. FLAP and ERFO). Not required if funding sources are separated by schedule and option. |

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. Assign measurement note quantities to the correct funding source and account description for the work performed as designated in the plans. Measurement notes will be reviewed by the CO. Unacceptable measurement notes will be electronically rejected and returned. Correct rejected measurement notes and resubmit electronically.

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| Use on projects that do not have quantities splits (use this for most projects). |

**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.

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| Use subsection 109.02 on all projects. |

**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.

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| **ASPHALT Binder Price Adjustment Provision****Before including this SCR on any project coordinate with Acquisitions, Construction, and Materials.****Use this price adjustment provision on multiple season contracts/projects when:**1) The contract involves significant costs incurred beyond one year2) The contract amount is subject to substantial adjustment3) Materials and supplies are too unstable to permit reasonable risk between the Government and the Contractor4) Suppliers are unable to provide price quotations for the usual term of the contract5) Price quotes are based on the date of delivery or spot market conditions6) Shortages are expected. |

**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 *(insert the applicable project)*. Price adjustment provisions are applicable only to the asphalt binder, as defined in Section 702.01, and incorporated in the following contract pay items:

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| Edit this list to contain only items that apply to the contract. Be sure to enter the correct bid item number for the work being done. |

* 40101-xxxx Asphalt concrete pavement, gyratory mix
* 40102-xxxx Asphalt concrete pavement, gyratory mix, wedge and leveling course
* 40201-xxxx Asphalt concrete pavement, Hveem or Marshall mix
* 40202-xxxx Asphalt concrete pavement, Hveem or Marshall mix, wedge and leveling course
* 40301-xxxx Asphalt concrete pavement
* 40302-xxxx Asphalt concrete pavement
* 40303-xxxx Asphalt concrete pavement, wedge and leveling course
* 40501-xxxx Open-graded asphalt friction course

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| For each contract pay item from the list above, a corresponding statement should be added to the applicable payment section, which indicates:“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.” |

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.

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| The Construction Branch is responsible for:1) purchasing the Asphalt Weekly Monitor (AWM) newsletter2) selecting the applicable region3) calculating and posting price indexes on an accessible website4) calculating and paying price adjustment compensations.In order to establish a reference for the base and monthly performance price indexes, the Poten and Partners, Inc newsletter (i.e. Asphalt Weekly Monitor) should be surveyed and an applicable region inserted below. A website address must also be inserted below where the Contractor and other interested parties can check Government postings of monthly price indexes. The Base and Monthly Performance Price Indexes for Asphalt Binder must also be calculated using weekly high and low selling price data obtained from the Asphalt Weekly Monitor. Weekly high and low selling price data from four consecutive reports will be averaged to obtain a Base Price Index as well as a Monthly Performance Price Index. **The Construction Branch will calculate and provide the Base Price Index (BPI). The BPI is not inserted during advertisement. It is inserted into the spec by Acquisitions immediately before contract award.** The Monthly Performance Price Index must be posted monthly by Acquistions on the website. |

**PRICE INDEXES** The Government will post a monthly performance price index at: <https://flh.fhwa.dot.gov/business/construction/escalation/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 *(insert the applicable region)* 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 before contract award. It is as follows:

BASE PRICE INDEX (BPI) FOR ASPHALT BINDER

PER SHORT TON (TON) = $See Note (1) below

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:

Government Rebate = [0.90 – (MPPI/BPI)] (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:

Contractor Payment = [(MPPI/BPI) – 1.10] (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 before contract award.

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 = Asphalt Concrete Pavement tons placed x (% 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.

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| **FUeL Price Adjustment Provision****Before including this SCR on any project coordinate with Acquisitions, Construction, and Materials.****Use this price adjustment provision on multiple season contracts/projects when:**(1) The contract involves an extended period of performance with significant costs to be incurred beyond one year after performance begins.(2) The contract amount subject to adjustment is substantial.(3) The economic variables for materials and supplies are too unstable to permit a reasonable division of risk between the Government and the Contractor.(4) Suppliers are unable to provide price quotations for the usual term of the contract.(5) Price quotes are based on the date of delivery or spot market conditions.(6) Shortages are expected.The price adjustment provision should only be applied to the specific price of volatile materials and/or supplies called out below. |

**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 *(insert the applicable project)*. 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.

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| The Construction Branch is responsible for:(1) Purchasing the Oil Price Information Service (OPIS) newsletter;(2) Selecting the applicable rack city.(3) Calculating, preparing price indexes and sending completed indexes to Acquisitions for posting on the CFLHD website.(4) Calculating and paying price adjustment compensations. In order to establish a reference for the base and monthly performance price indexes, the Oil Price Information Service (OPIS) newsletter should be surveyed and an applicable rack city inserted below. A website address must also be inserted below where the Contractor and other interested parties can check Government postings of monthly price indexes. The Base and Monthly Performance Price Indexes for Gross Ultra Low Sulfur No. 2 Diesel Fuel must be calculated using weekly average rack price data obtained from OPIS for the applicable rack city. Weekly average rack price data from four consecutive reports will be averaged to obtain a Base Price Index as well as a Monthly Performance Price Index. **The Construction Branch will calculate and provide the Base Price Index (BPI). The Acquisitions will post the BPI on the CFLHD website before contract award.** The Monthly Performance Price Index must be posted monthly by Acquisitions on the website. |

**PRICE INDEXES** The Government will post a monthly performance price index at: <https://flh.fhwa.dot.gov/business/construction/escalation/cfl/>

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| If the project is in California replace “Gross Ultra Low Sulfur, No. 2 Diesel Fuel” below with “Gross CARB Ultra Low Sulfur, No. 2 Diesel Fuel”. |

Gross 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 wholsale rack prices for major cities throughout the United States. The OPIS 5-day newsletter average rack price reported for *(insert the applicable rack city)* 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 before contract award. It is as follows:

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| If the project is in California replace “Gross Ultra Low Sulfur, No. 2 Diesel Fuel” below with “Gross CARB Ultra Low Sulfur, No. 2 Diesel Fuel”. |

BASE PRICE INDEX (BPI) FOR GROSS ULTRA LOW SULFUR, NO. 2 DIESEL FUEL

PER GALLON = $ See Note (1) below

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:

Government Rebate = [0.90 – (MPPI/BPI)] (BPI) (Q) (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:

Contractor Payment = [(MPPI/BPI) – 1.10] (BPI) (Q) (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 before contract award.

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.

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| **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\* 30602 FDR with Emulsified Asphalt 30603 FDR with Foamed Asphalt\* 30604 FDR with Foamed Asphalt | 0.30 gallons per square yard | 0.36 gallons per square meter |
| **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. |

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| For each of the eligible contract pay items chosen above, a corresponding statement should be added to the applicable payment section, which indicates that “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.” |

**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.

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| Use on all projects. |

**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.

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| Use on all projects. |

## Section 152. — CONSTRUCTION SURVEY AND STAKING

**Construction Requirements**

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| Use on projects when no survey data is available. |

**152.04 General.**  Add the following to the second paragraph:

No horizontal or vertical control information will be provided.

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| Use on projects when staking data is going to be provided. Revise as needed to match project-specific requirements.Provide Surface Models in LandXML format.All files that will be furnished during bidding and construction (listed below) should be completed as part of the final submittal and provided at the time of ACQ check-in.All staking data will be provided with the physical data and provided at time of bid.  |

* 1. **General.**  Add the following to the second paragraph:

The Government will furnish the following for use during bidding and construction:

1. 3D LandXML models of existing ground, subgrade surface, final surface and top of base course surface.
2. 3D coordinates and offset distance from centerline for subgrade and slope staking information and top of base course information at 50-foot (20-meter) intervals and 3miscellaneous intermediate stations.
3. Horizontal and vertical alignment listings
4. Superelevation listing
5. Earthwork quantity information

Contact cflcontracts@dot.gov to request the files. These files are considered Physical Data according to FAR 52.236-4 Physical Data.

The Government will establish basic survey control points for vertical and horizontal control of the project.

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| Use on all projects. |

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.

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| Include 152.05(b) on all projects where centerline is reestablished from control points. |

**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.

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| Use 152.05(c) on projects where field fitting / re-design is anticipated due to limited survey data available during design. |

**(c) Original ground topographic verification.** Delete the second paragraph and substitute the following:

When existing ground topography is not provided generate cross-section data at slope stake locations between centerline and 10 feet (3 meters) beyond the actual point of intersection of the design slope with the natural ground line.

Add the following:

Submit ground topographic verification data to CO 21 days prior to anticipated construction. Do not begin embankment construction or excavation operations until the design profile has been verified. If differences in terrain are found, the CO may modify the profile to match the new terrain. Modified design data will be provided at locations where the design profile has been modified. Data consists of revised earthwork quantities, revised plan & profile sheets, cross-section sheets, and staking reports for modified locations, and an updated grading summary.

Submit one printed copy and one electronic file of the cross-sectional data in ASCII text format: station, offset, elevation, north coordinate, east coordinate, p-code text format. Include a file header that defines the data type of the column. (Contact the CO for more information on the format.) Include one observation per line in the submitted files showing the following data:

Station (nominal), offset from centerline, elevation, north coordinate, east coordinate, p-code (Feature code: RH for reference hub, CL for centerline).

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| Use on projects with Slope, reference, and clearing and grubbing stakes. |

**(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).

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| Use on projects with grade finishing stakes. |

**(f) Grade-finishing stakes.** Delete (1) AMG method.

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| Use on all projects with culverts, including culvert extensions. |

**(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 to scale the profile along the culvert centerline. Show the existing 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.

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| Use 152.05(i) on all projects with retaining walls |

**(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.

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| Use centerline verification and staking on all 3R projects with no widening or cross-slope correction and where striping needs to be reestablished.For reestablishing the original design cross-slope or making corrections, use “template control staking” |

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.

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| Include the following paragraphs **only** when 3R work includes template corrections. |

Add the following:

**(n) Template control 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.

Prior to disturbing the existing road surface measure the existing roadway surface width and cross-slopes at centerline points of curve and tangent, at changes in roadway template, at the beginning and ending of superelevation transitions and runoff, in the middle of superelevated sections, at 100 foot (30 meter) stationing intervals on tangents, 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;

**(3)** Offset from the proposed edge of pavement;

**(4)** Existing pavement cross-slope. If cross-slope is to be changed, provide proposed change;

**(5)** Offset to existing/proposed paved ditch, including ditch cross-slope, if different from mainline, and ditch width; and

**(6)** Offset to face of existing/proposed guardrail.

Record the above information and provide to the CO. Provide the CO a list of any stations or locations where the proposed pavement edge is within 2 feet (0.6 meters) of a break in the topography of the shoulder. The CO will determine if corrective action is required.

Measure stations to the nearest foot (meter), offsets to the nearest 2 inches (50 millimeters), and cross-slopes to the nearest 0.2 percent. Record the above information and provide one printed copy to the CO.

Make minor adjustments in alignment to produce a smooth flowing, best-fit alignment. The final alignment need not be a geometrically computed centerline and may be field adjusted up to 12 inches (300 millimeters).

Use the recorded information to reestablish the existing roadway template and striping. Control crown and superelevation on the project. Proposed cross-slope information shown in the plans is typical and grading adjustments may be altered as necessary to fit field conditions.

On tangents compute the appropriate grade adjustment from the measured elevation differences between centerline and proposed edge of pavement. Determine the elevation adjustment so both lanes are within the desired limits of minus 1 to minus 3 percent crown. The crown on each lane of the roadway may be different. Set a grade finishing stake on centerline to control crown.

On curves compute the appropriate grade adjustment from the measured elevation differences to obtain a consistent cross-slope along the curve length (typically an average of the measured cross-slopes) within a tolerance of ±0.5 percent. Where possible raise the elevation of a shoulder to make the adjustment. Only lower the elevation of a shoulder when approved by the CO. Set a grade finishing stake on either shoulder (typically the shoulder point to be raised) to control the cross-slope. Use the existing superelevation runoff and tangent runout lengths to transition between the crown on tangents and superelevation on curves.

The methodology used to accomplish the existing roadway surface measurement, template control staking, and to determine template adjustments shall be the Contractor’s option, but the methods will be subject to the approval of the CO.

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| Use on all pavement preservation projects. |

Add the following:

**(n) Pavement preservation roadway width verification.** Prior to placement of aggregate roadway surface, measure the existing pavement surface width at 500 foot (150 meters) stationing intervals on tangent, and at 100 foot (30 meters) intervals on curves. Use white spray paint to mark the pavement with the station of measurement on each side of the roadway. Take additional measurements between the above required intervals if the width varies more than one foot from the plan pavement surface with. Provide a record of width measurements and corresponding station locations to the CO for approval prior to beginning surfacing operations. Make additional measurements, at no additional cost to the Government, when requested by the CO. The revised approved surface widths will become the new surfacing width unless otherwise directed by the CO.

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| Note: Do not include a 152 bid item for Miscellaneous survey and staking. Include pay items/hours for Hired survey and staking and also Hired technical services so the CO can request additional work. Include hours for Hired survey and staking and Hired technical services under the bid items 62302-1000 Special Labor, Hired technical services and 62302-1100 Special Labor, Hired survey services. |

**Measurement**

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| Use on all projects. |

**152.07** Delete the third paragraph and substitute the following:

Do not measure miscellaneous survey and staking.

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| Use on all projects with government-established control points. |

**152.07** 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.

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| Use on all 3R projects with centerline verification and staking item. |

**152.07** Add the following:

Measure centerline verification and staking only one time per project.

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| Use on all 3R projects with template control staking item. |

**152.07** Add the following:

Measure template control staking only one time per project.

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| Use on **all** projects. |

## 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.**

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| Include either the (a)(1) Full-time QCM or (a)(2) Part-time QCM paragraph below. Do not include both. Use of Full-time or Part-time is a risk-based decision that should be made in coordination with the COE on a project-by-project basis. The default is a Full-time QCM and part-time will only be used in rare instances on small projects or where risk is deemed low.  |

**(a) Quality control manager (QCM)** Delete the first sentence and substitute the following:

Provide a QCM according to (1) below.

**(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.

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| Include (a)(2) below if a part-time QCM will be used. |

**(a) Quality control manager (QCM)** Delete the first sentence and substitute the following:

Provide a QCM according to (2) below.

**(2) Part-time, on-site QCM.**  Delete the paragraph and substitute the following:

Furnish a QCM who has at least two years of experience in highway construction, inspection, quality control, material testing, and (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

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| If a Government-furnished field laboratory is not available to the project, do not include the first portion of the first sentence which states, “If the Government-furnished field laboratory bid option is not exercised by the CO,” Include the remainder of the sentence which states, ”Furnish a laboratory equipped with all test equipment necessary to satisfy the requirements of the contract. |

**(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 ensure 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.

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| Use on all projects when 154 is a bid item. |

## Section 154. — CONTRACTOR SAMPLING AND TESTING

**Construction Requirements**

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| Use subsection 154.03 on all projects with concrete. |

**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.

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| Use subsection 154.04 on all projects. |

**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.

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| Use subsections 154.04A and 154.04B on all projects with material testing. Check with the CO regarding the need for and availability of a Government-furnished field laboratory to the project. (Small, short duration projects and projects that do not include statistically accepted materials may not warrant a Government trailer). If a Government-furnished field laboratory is not available or warranted, do not include Section 154.04A. |

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 AFG1A Gyratory Compactor (only included on Section 401 projects)
* 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.

Specifics:

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.

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| If a Government-furnished field laboratory is not available to the project, do not include the first portion of the first sentence which states, “If the Government-furnished field laboratory bid option is not exercised.” Include the remainder of the sentence which states, “Furnish a laboratory equipped with all test equipment necessary to satisfy the requirements of the 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 it 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.

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| Use on all projects. |

## 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.

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| Use on all projects |

## 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.

**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.

**156.07 Limitations on Construction Operations.**

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| If long vehicles or tight curvature is anticipated, increase the minimum lane width for alternate one-way traffic control.If the existing roadway width is less than 22 feet, adjust minimums appropriately. |

**(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).

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| Spell out project-specific traffic delay requirements here. |

**(i)** Delete the text and substitute the following:

Limit construction-caused delays to public traffic to a maximum of 30 minutes per passage through the project except during the following times on Monday through Friday:

 a.m. through p.m.

 p.m. through p.m.

During the above times, allow traffic to pass through the construction without delay.

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| Add any restrictions relating to public traffic (access to pullouts, buildings, weekend work, lane closures, detours, etc.)**DO NOT** duplicate information in multiple sections.Examples for this section:Maintain access to all approach roads, access roads, parking areas, pullouts, and trails during construction.Maintain access to the Colorado Trail throughout construction.Entrance Road may be closed to the public from June 1 through August 31. Open the road to the public one weekend per month from noon Friday to 6:00 a.m. Monday. Provide a two-week minimum notice to the CO regarding which weekend the road will be open each month.No weekend work will be allowed from August 31 to November 31.Maintain access to the Visitor’s Center and other buildings at all times during construction.Immediately open the road to emergency vehicles. |

Add the following:

**(k)** describe restriction

**(l)** describe restriction

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| Consider including the following on small, uncomplicated projects. Verify with PM and COE. |

**156.09 Traffic Control Supervisor.** Delete the second sentence and substitute the following:

The superintendent may serve as the traffic control supervisor provided the requirements of Subsection 156.03 are met.

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| There are 2 options for Section 157 SCRs depending on the specific project NPDES permit requirements:* projects that require coverage under an NPDES permit
* projects that do NOT require coverage under an NPDES permit.

Use this SCR for projects that require coverage under an NPDES permit. Use the SWPPP LPSM item; contractor will develop or amend the SWPPP for temporary construction BMPs. Use with the following pay items:* 15720-0000 Storm Water Pollution Prevention Plan LPSM and
* One of the following:
	+ 15701-0000 Soil Erosion Control LPSM
	+ Individual pay items for soil erosion control BMPs

. |

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)

**Construction Requirements**

157.03 Qualifications. Provide a SWPPP Developer, Erosion Control Supervisor, and On-Site Stormwater Lead with experience in implementing erosion and sediment control. Provide documentation that personnel meet the qualifications in the applicable Construction General Permit (CGP) 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.

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| Include the following sentence for big projects or extra environmentally sensitive smaller projects |

Do not designate the project superintendent to serve in any of these roles.

Submit the following for approval as part of the SWPPP submittal:

**(a) SWPPP Developer**. Provide a résumé describing the following:

**(1)** Have completed 40 hours of stormwater management training;

**(2)** Have 5 years of highway or equivalent experience developing SWPPPs and designing site-specific best management practices (BMPs); and

**(3)** Be registered or certified in the state in which the project is located for one or more of the following:

*(a)* Professional engineer, geologist, or hydrologist;

*(b)* Licensed landscape architect;

*(c)* Other state or nationally recognized certification program for erosion and sediment control professionals.

**(b) Erosion Control Supervisor.** Provide a résumé describing the following:

**(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 résumé describing the following:

**(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**.

**(a) SWPPP Developer**. Develop the SWPPP for the project based on requirements in the Construction General Permit, 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 according to the Construction General Permit requirements. Contract permits amend the requirements of this Section. Submit SWPPP to the CO at or before the preconstruction conference. Allow 14 calendar days for CO review and approval.

If soil erosion and sediment pollution control measures are not functioning as intended, take 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.**  Mark clearing limits and construct sediment perimeter control measures before ground disturbing activities. Before the start of a construction activity, implement appropriate pollution prevention measures for the activity.  No soil disturbing construction activity, including clearing and grubbing, may begin on the project until the SWPPP has been reviewed and approved, the NOI has been accepted by the permitting agency and is active, and the CO has authorized on-site work to proceed.

Limit the combined grubbing and grading operations areas to 5 acres of exposed soil at one time.

**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).

Provisions in the SWPPP are incorporated by reference into the contract.  Provide an electronic copy of the SWPPP.

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.

**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.

**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.

**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.

**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 resolution of the final inspection 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.

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| Use this SCR for projects that DO NOT require coverage under an NPDES permit. Use with either of the following pay item options:* 15701-0000 Soil Erosion Control LPSM
* Individual pay items for soil erosion control BMPs
 |

## Section 157. — SOIL EROSION AND SEDIMENT CONTROL

**157.04 General.** Delete the entire subsection and substitute the following:

Provide and implement a site-specific soil erosion and sediment control plan coordinated with the Contractor’s operations. Develop a soil erosion and sediment control plan to include necessary measures to minimize erosion and keep eroded soil particles from leaving the construction site. Submit the soil erosion and sediment control plan to the CO at or before the preconstruction conference. Allow 30 days for CO review and approval.

Contract permits amend the requirements of this Section. Do not modify the approved type, size, or location of controls or practices without prior approval from the CO.

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

Do not import without approval.

Provide certified weed free devices.

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

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## Section 203. — REMOVAL OF STRUCTURES AND OBSTRUCTIONS

**Construction Requirements**

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| Include 203.04 when the project includes concrete removal: |

**203.04 Removing Material.**

**(c) Concrete removal in repair areas.** Add the following to the second paragraph:

Use hand tools (hammers and chisels) to remove final particles of concrete or to achieve the required depth.

Delete the third paragraph and substitute the following:

Sandblast all exposed structural steel, reinforcing steel, and concrete surfaces that will be in contact with repair material. Remove all rust and foreign material. Clean the sound concrete surface by flushing with a high-pressure water jet or oil-free compressed air.

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| Use on projects when disposing of material is an option. |

**203.05 Disposing of Material.**

**(a) Remove from Project.** Add the following:

Secure clearances according to Subsection 107.10.

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| When burning debris on government property is **NOT an option**, include the following: |

**(b) Burn.** Delete the subsection.

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| When burying debris on government property is **NOT an option**, include the following: |

**(c) Bury.** Delete the subsection.

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| Use on all projects with earthwork. |

## Section 204. — EXCAVATION AND EMBANKMENT

**Materials**

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| Use Subsections 204.03, 204.07, 204.15, and 204.16(g) when subexcavation is included in the contract. |

**204.03.** Add the following:

Crushed aggregate 703.06

Geotextile 714.01(a)

Asphalt concrete 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.

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| Use Subsection 204.06 on projects with potential rock excavation, even when no rock excavation pay item is included. Check with Geotech on the necessity of controlled blasting. Edit the [use/do not use] text accordingly. |

**204.06 Roadway Excavation.**

**(a) Rock cuts.** Add the following:

When blasting rock, [use/do not use] controlled blasting methods according to Subsection 205.08(b).

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| Use Subsection 204.07 along with 204.03, 204.15, and 204.16(g) when subexcavation is included in the contract. |

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

**204.07 Subexcavation.**

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| Enter the geotextile type here provided by the geotechnical engineer. |

Use separation-stabilization geotextile, class X, type X.

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). 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 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.

|  |
| --- |
| Use the following on all projects. |

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

Secure environmental clearances according to Subsection 107.10(d).

|  |
| --- |
| Use Subsections 204.15 along with 204.03, 204.07, and 204.16(g) when subexcavation is included in the contract. |

**204.15.** Add the following:

Geotextile will be evaluated under Section 207.

Asphalt concrete will be evaluated under Section 403.

|  |
| --- |
| Use Subsections 204.16(a) on projects using a pay item for Roadway Excavation |

**Measurement**

**204.16**

**(a) Roadway Excavation.**

**(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.

|  |
| --- |
| Use Subsection 204.16 (c) on projects using pay item 20420-0000 Embankment construction. |

**(c) Embankment construction.** 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.

If the project has a large volume of material excavated from an obliteration area that is used in new construction or hauled to separate obliteration areas, include the obliteration volume in the embankment construction quantity. Discuss with the PM and COE. Add (d) to 204.16(c)(1) above and delete (2)(e) below

*(d)* Material imported into the obliteration area or exported out of the obliteration area necessary to restore obliterated roadbeds to original contours.

**(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.

|  |
| --- |
| Use Subsections 204.16 (g) along with 204.03, 204.07, and 204.15 on projects using pay item 20402-0000 Subexcavation. |

**(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 and geotextile for payment.

**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.

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## Section 207. – EARTHWORK GEOSYNTHETICS

|  |
| --- |
| Use on projects with geotextile or geogrid applications (some examples include MSE walls, reinforced soil slopes, and deep patch). |

**Construction Requirements**

**207.05** Delete this Subsection and substitute the following:

**207.05 Geotextile and Geogrid Reinforcement Applications.** For MSE retaining walls and reinforced soil slopes, place reinforcement geosynthetics according to Section 255 or 261, as applicable. For deep patch and other reinforcement applications, perform the work as follows:

**(a) Surface preparation.** Perform subexcavation according to Section 204. Provide a smooth, flat, and firm foundation for the geosynthetic.

**(b) Geosynthetic placement.** Place the reinforcement geosynthetic with the higher strength direction oriented perpendicular to the road centerline or slope face, as shown in the plans. Place the geosynthetic smooth, taut, and wrinkle free on the underlying surface. Conform to curves. Overlap 24 inches (600 millimeters) for biaxial geosynthetics in the direction of construction. For uniaxial geogrids, do not splice in the high strength direction, and abut adjacent sheets of geogrids. Hold the geosynthetic in place with pins, staples, or piles of cover material.

**(c) Backfilling.** Place the specified material onto the geosynthetic from the edge of the geosynthetic or from previously placed cover material. Do not operate equipment directly on the geosynthetic. Spread the material maintaining a minimum 6-inch (150 millimeter) lift over the geosynthetic before operating equipment over the geosynthetic. Avoid sudden stops, starts, or turns of the construction equipment. Fill ruts from the construction equipment with additional cover material. Do not blade material down to remove ruts. If rutting exceeds 3 inches (75 millimeters) during placement, decrease the construction equipment size, decrease the equipment weight, or increase the first lift thickness as directed.

Compact according to Subsection 204.11. Do not use sheepsfoot or studded compaction equipment. Compact from the face of slope or wall towards the back of reinforcement.

|  |
| --- |
| Use only when paying separately for geosynthetics. |

**Measurement**

**207.09** Delete the second sentence.

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|  |
| --- |
| Use on all projects with roadway obliteration. |

## Section 211. — ROADWAY OBLITERATION

**Description**

**211.01 (a) Method 1.** Add the following:

Blend obliteration areas into the adjacent natural ground along the horizontal and vertical planes by gradually transitioning obliteration slopes to remove noticeable breaks.

**Construction Requirements**

**211.02.** Delete this Subsection and substitute the following:

**211.02 Material Handling.**

**(a) Rigid material.** Remove rigid material according to Section 203. Dispose of material according to Federal, state, and local rules and regulations.

**(b) Nonrigid material.**

**(1) Nonasphalt material.** Scarify or rip the gravel, crushed stone, or other nonrigid surface, base, and subbase material. Mix the scarified or ripped material with the underlying soil. Bury the mixture under at least 12 inches (600 millimeters) of onsite soil.

**(2) Asphalt contaminated material.** Dispose of asphalt contaminated material according to Subsection 203.05.

**Measurement**

**211.05** Add the following:

Do not measure areas within slope stake limits under roadway obliteration.

Measure material excavated from an obliterated roadway and used for new construction or in separate obliteration locations under Section 204.

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|  |
| --- |
| Use on projects when rockeries are specified |

## Section 252. – ROCKERY, SPECIAL ROCK EMBANKMENT, AND ROCK BUTTRESS

**Description**

**252.01** Delete the text and substitute the following:

This work consists of constructing rockeries. Rockeries are formed of interlocking, dry-stacked rocks without reinforcing steel, mortar, or concrete. Rockeries may be constructed as either single structures or in tiers.

This work also consists of constructing special rock embankment and rock buttresses. Special rock embankments and rock buttresses are designated as hand-placed or mechanically-placed. Rock embankment consists of furnishing and placing hand-placed or mechanically-placed rock in fill sections. Rock buttress work consists of furnishing and placing hand-placed or mechanically-placed rock in cut sections.

**Material**

**252.02** Add the following:

 Plastic pipe 708.04

**Construction Requirements**

**252.03 Rockery.** Add the following:

Prior to the start of rockery construction submit the experience of the primary equipment operator responsible for placement of base, facing, and cap rocks.

**(b) Erection.** Add the following after the third paragraph:

Avoid placing rocks which have shapes that create voids with a linear dimension greater than 12 inches (300 millimeters).

Delete the sixth paragraph and substitute the following:

Backfill with granular rock backdrain concurrent with rock placement until level with the top of rock. Place granular rock backdrain in horizontal layers not to exceed 12 inches (300 millimeters) compacted depth. Within 2 feet (600 millimeters) above any subsurface drainage pipe, consolidate granular rock backdrain by rodding or other approved means to produce a uniform, tight fill. Compact each layer according to Subsection 204.11. Compact areas not accessible to rollers with other approved methods.

**Measurement**

**252.06** Add the following to the second paragraph:

Structure excavation, granular rock backdrain, foundation fill, drainage pipes (perforated and non-perforated), and geotextile will not be measured for payment and are considered incidental to the rockery.

**Table 252-1**. Delete table and substitute the following:

|  |
| --- |
| **Table 252-1****Sampling, Testing, and Acceptance Requirements** |
| **Material or****Product****(Subsection)** | **Type of****Acceptance****(Subsection)** | **Characteristic** | **Category** | **Test Methods****Specifications** | **Sampling****Frequency** | **Point of****Sampling** | **Split****Sample** | **Reporting****Time** | **Remarks** |
| **Source** |
| Rock forbuttresses(705.05) | Measured andtested forconformance(106.04 & 105) | Rock breadthand thickness | − | Subsection705.05(a)(1) | 1 perrock type | Source ofmaterial | No | Beforeusingin work | − |
| Apparentspecificgravity | − | AASHTO T 85 | " | " | Yes | " | Not requiredwhen usingGovernment-providedsource |
| Absorption | − | " | " | " | " | " | " |
|  |  |  |  |  |  |  |  |
| Rock forrockeries(705.06) | " | Apparentspecific gravity | − | " | 1 perrock type | Source ofmaterial | Yes | Beforeusingin work | Not requiredwhen usingGovernment-providedsource |
| Absorption | − | " | " | " | " | " | " |
| LA abrasion | − | AASHTO T 96 | " | " | " | " | " |
|  |  |  |  |  |  |  |  |
| Soundnessusingsodium sulfate | − | AASHTO T 104 | " | " | " | " | " |
| Rock forspecial rockembankment(705.04) | Process control(153.03) | Size | − | See Note (1) | 1 per100 yd3(80 m3) | In-place | No | 24hours | − |
| Rock forbuttresses(705.05) | " | " | − | " | 1 per100 yd3(80 m3) | " | " | " | − |
| (1) For mechanically placed embankments, verify rock size by confirming that the largest accessible rock has an intermediate dimension greater than the D50 size specified in Table 705-2. Also confirm that the smallest accessible rock has an intermediate dimension within the lower D50 size range specified in Table 705-2.For hand placed embankments, verify rock size by confirming that the largest accessible rock has an intermediate dimension greater than the D75 size specified in Table 705-3. Also confirm that the smallest accessible rock has an intermediate dimension within the D25 size range specified in Table 705-3. |

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|  |
| --- |
| Use with gabions or revet mattresses, as applicable. |

## Section 253. - GABIONS AND REVET MATTRESSES

**Material**

**253.02** Add the following**:**

Select granular backfill 704.08

**Construction Requirements**

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| --- |
| Include 253.03 with all projects that have gabions walls |

**253.03 General.**  Delete the first sentence and substitute the following:

Survey according to Section 152 and verify the limits of the installation.

Add the following:

If required, as determined by the Contractor, design and construct temporary shoring according to Section 562.

Excavation wall foundations to within 4 inches (100 millimeters) horizontally and vertically from the staked location.

If shown on the plans, install underdrain system according to Section 605.

|  |
| --- |
| Include 253.05 with all projects that have gabions walls |

**253.05 Structure Erection.** Add the following to the first paragraph:

For gabion structures, grade the foundation for a width equal to the base width of the gabions or revet, plus any additional width shown in the plans. Where gabions are set on rocky foundations, place 6 inches (150 millimeters) of select granular backfill under the baskets.

Add the following after the first paragraph:

Construct gabion walls to the following tolerances:

**(a) Vertical and horizontal.** ±1 inch (25 millimeters) at top of wall for every 10 feet (3 meters) of wall height.

**(b) Horizontal straight edge.** ±2 inches (50 millimeters) deviation at a point in the wall from a 10-foot (3 meter) metal straightedge placed horizontally or vertically on the theoretical plane of the design face.

|  |
| --- |
| Include 253.09 with all projects that have gabions walls |

**253.09 Acceptance.** Add the following:

Survey will be evaluated under Section 152.

Temporary works will be evaluated under Section 562.

Underdrains will be evaluated under Section 605.

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| Use on all projects with MSE walls |

**Section 255. — MECHANICALLY-STABILIZED EARTH WALLS**

**Material**

**255.02** Add the following:

Backfill material 704.03(a)

Geocomposite drain 714.02

Granular backfill 703.03(a)

Plastic pipe 708.04

Wall facing fill 705.08

**Construction Requirements**

**255.03 General.** Add the following:

Do not disturb existing ground until limits of wall installation have been verified and the CO has approved installation drawings.

Install reinforcement elements to within 2 inches (50 millimeters) vertically from the staked location.

Install wall drainage systems according to Section 605.

**255.04 Wall Erection.** Delete Table 255-1 and substitute the following:

|  |
| --- |
| **Table 255-1 Construction Tolerance** |
| **Facing Type** | **Vertical Tolerance(1)** | **Horizontal Tolerance(2)** | **Horizontal Straight Edge Point Check(3)** |
| Precast concrete panel, masonry block units | 0.5 inch(13 mm) | 0.5 inch(13 mm) | 0.75 inch(19 mm) |
| Welded wire, gabions | 1 inch (25 mm) mm) | 1 inch (25 mm) | 2 inch(51 mm) |
| (1) Wall vertical tolerance at top of wall for every 10 feet (3 meters) of wall height. For example, 65 feet (20 meter) wall height multiply 6.5×value.(2) Wall horizontal tolerance at top of wall for every 10 feet (3 meters) of wall height.(3)Maximum horizontal deviation at a point in the wall from a 10-foot (3-meter) straightedge placed horizontally or vertically on the theoretical plane of the design face. |

**255.04 (b)** **Wire-faced.** Add the following:

Cut horizontal bench into original ground to a sufficient width to accommodate placement and backfilling of the top 3 reinforcement elements. Begin bench at centerline of proposed roadway or a minimum of 3 feet (1 meter) beyond the intersection of the original ground and the highest point of the wall excavation slope, whichever is the greatest distance from the wall face.

**255.05 Backfilling.** Delete the text and substitute the following:

Backfill the reinforced zone with the specified material according to Subsection 209.09. Place wall facing fill or unit fill as shown in the approved drawings. Place select granular backfill material from the back of the wall face, facing fill, or unit fill to the end of the reinforcement plus the additional width sown in the plans. Ensure that no voids exist below the reinforcement. Compact each layer according to Subsection 209.10, except use an acceptable lightweight mechanical or vibratory compactor within 36 inches (900 millimeters) of the wall face.

Consolidate wall facing fill or unit fill by rodding or other approved means to produce a uniform, tight facing fill. Place wall facing fill or unit fill in sequence with select granular backfill such that the top of the adjacent materials are within 6 inches (150 millimeters) of one another.

Where the stabilized volume supports spread footings for bridges or other structural loads, compact the top 5 feet (1.5 meters) to at least 100 percent of the maximum density.

Do not damage or disturb the facing or reinforcing elements. Do not operate equipment directly on top of the reinforcing mesh or strips. Place at least 6-inch (150 millimeter) loose lift of fill before operating rubber-tired equipment over the reinforcements. Limit equipment speeds to 5 miles per hour and limit turning maneuvers to a minimum. Install and maintain reinforcement taut, unwrinkled, and in full contact with the underlying surface. Correct damaged, misaligned, or distorted wall elements.

Backfill and compact behind the reinforced zone with the specified material according to Subsections 209.09 and 209.10. At the end of the day's operation, slope the last lift of backfill away from the wall face to direct surface runoff away from the wall. Do not allow surface runoff from adjacent areas to enter the wall construction area.

**Measurement**

**255.07** Delete the fourth paragraph.

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| --- |
| Use on all projects with reinforced concrete retaining walls |

## Section 258. – REINFORCED CONCRETE RETAINING WALLS

**Materials**

**258.02** Add the following:

Geocomposite sheet drain 714.02(b)

**Construction Requirements**

**258.03 General.** Delete the first sentence and replace it with the following:

Survey according to Section 152 and verify the limits of wall installation.

Delete the second paragraph and replace it with the following:

Excavate and backfill according to Section 208.

**258.06 Backfilling.** Delete the first paragraph and substitute the following:

Install geocomposite sheet drain system according to Subsection 605.05. Backfill the area behind the wall with structural backfill according to Subsection 208.09. Compact each lift according to Subsection 208.10, except use an approved lightweight mechanical or vibratory compactor within 36 inches of the wall.

**Measurement**

**258.08** Delete the second paragraph and substitute the following:

For concrete retaining wall, determine the square foot area from the length of wall along gutterline at top of finished roadway and the height excluding footings.

Delete the third paragraph and substitute the following:

Do not measure the following for payment: structure excavation (walls), backfill material, wall backfill, foundation fill, structural backfill, structural concrete, reinforcing steel, epoxy coated reinforcing steel, joint material, geocomposite sheet drain, perforated pipe, outlet pipe, and shoring and bracing.

**Payment**

**258.09** Add the following:

Payment for reinforced concrete retaining wall will be made under the reinforced concrete retaining wall item contained in the bid schedule which corresponds to the actual constructed height. For constructed wall heights that fall between two bid item heights, payment will be made under the pay item which most nearly describes the actual height. (For example, walls measuring 6.99 feet in height will be paid as a 6 foot wall, and walls measuring 7.00 feet in height will be paid as an 8 foot wall.)

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| Use on all projects with reinforced soil slopes. (Verify actual pay items with geotech – CFL doesn’t use square foot face pay item for RSS). |

## Section 261. — REINFORCED SOIL SLOPES

**Construction Requirements**

**261.04 General.** Delete the second paragraph and substitute the following:

Survey according to Section 152 and verify the limits of the reinforced soil slope installation.

Add the following:

Install underdrain system according to Section 605 if shown in the plans.

**Measurement**

**261.07** Delete the second paragraph and add the following:

Measure earthwork under Section 204.

Measure reinforcement under Section 207.

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| Use on projects with **more** than 5000 tons (statistical acceptance). |

## 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.

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|  |
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| Use on projects with **less** than 5000 tons (certification acceptance). |

## Section 302. — MINOR CRUSHED AGGREGATE

**302.06 Acceptance.** Add the following to the second paragraph:

Sample material at the frequency shown in Table 302-1. Materials that do not meet the approved certification will be considered unacceptable.

Delete Table 302-1 and substitute the following:

|  |
| --- |
| **Table 302-1****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** |
| Crushedaggregate(1) | Measured andtested forconformance(106.04) | Moisture-DensityGradation(2) | AASHTOT 180,Method D (3)AASHTO T11 and T27 | 1 peraggregatesupplied1 per500 tons(450 metric tons) | Productionoutputor stockpileFrom the windrow or roadbed after processing. | YesYes | Before using in workBefore placing next layer | − |
| Density | AASHTOT310or other approvedprocedures | 1 per500 tons(450 metric tons) | In-placeaftercompaction | No | Before placing next layer | ForMethod 2compactiononly |
| Crushedaggregate | Processcontrol(153.03) | Moisturecontent(in-place) | AASHTOT310or other approvedprocedures | 1 per500 tons(450 metric tons) | In-placeaftercompaction | No | Beforeplacementof nextlayer or asrequested | − |
| **Finished Product** |
| Crushedaggregate | Measured andtested forconformance(106.04) | Surfacetolerance& grade | Subsection301.06 | Determinedby the CO | Surface offinal course | No | Beforeplacementof nextlayer or asrequested | − |
| (1) Sampling and testing required for roadway aggregate.(2) Use only sieves indicated for the specified gradation.(3) Minimum of 5 points per proctor. |

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| --- |
| Use on projects when removal of the pavement section is necessary to correct the subgrade issues (ie making superelevation corrections, etc.). This should only be used for specific areas and not for the entire project length. |

## Section 304. — FULL DEPTH RECLAMATION

**Construction Requirements**

**304.03 General.** Add the following:

Submit a plan to the CO for approval 14 days prior to beginning pulverizing. Include in the plan details on the following for the pulverized material and new aggregate (if required):

1. Processing. Describe procedures, methods, equipment, and extents of processing.
2. Removal and Handling. Describe procedures, methods, sequencing, and equipment used for removing the pulverized material.
3. Storage. If the pulverized material will be moved to a separate location and stored, provide relevant details for storing the material, such as duration and location of stockpiling the material. If applicable, stockpile material according to Subsections 314.04 and 314.05.
4. Quantities. Show the anticipated quantities in cubic yards of pulverized material that will be processed, removed, stored (if applicable), and re-used.
5. Sequencing. Describe the timing and order of operations to complete the work.
6. Mixing and placement locations. Describe the locations where the pulverized material will be placed and mixed with new aggregate (if required).

**304.05 Pulverizing.** Add the following:

Remove the pulverized material for use as crushed aggregate at the locations shown on the Plans.

Add the following Subsection:

**304.05A Preparing Surface.** Prepare the surface on which the pulverized material is placed according to Section 204 or 303 as applicable.

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|  |
| --- |
| Use on projects when cold in-place recycled asphalt base course is specified. |

## Section 310. — COLD IN-PLACE RECYCLED ASPHALT BASE COURSE

**Material**

**310.02** Delete the following:

Lime 725.03(c)

Add the following:

Lime 725.03(b)

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|  |
| --- |
| Use on all projects when a job-mix-formula will be developed for the specific project, and statistical acceptance will be used. Be mindful of the project duration. It takes 1 month to do a mix design. Use this for **more** than 7000 tons of asphalt concrete pavement.The CFL Incentives and Adjustments spreadsheet that matches the roughness calculations shown in this SCR has a revised date of 02-08-19 |

## Section 401. — ASPHALT CONCRETE PAVEMENTBY GYRATORY MIX DESIGN METHOD

**Description**

|  |
| --- |
| Enter the pavement roughness type and asphalt binder grade in the highlighted areas below. Materials will provide to the designer the following:1) **Roughness type**: Use the following guidelines:1. **Type I** is for 3R mill and fill **ONE lift**. This requires before and after IRI measurement.
* Type I-A is for higher speeds **greater than 35 mph**
* .Type I-B is for slower winding roads **less than 35 mph**.
1. **Type II** is for 3R mill and fill **TWO** lifts. This requires before and after IRI measurement.
* Type I-A is for higher speeds **greater than 35 mph**
* .Type I-B is for slower winding roads **less than 35 mph**.
1. **Type III** is for 4R and 3R work with pulverization, base, or other typical section work prior to placing the asphalt.
* Type III-A is for higher speeds **greater than 35 mph**.
* Type III-B is for slower winding roads **less than 35 mph**.

2) **Asphalt binder grade**: Binder grade is project specific.3) **Pressure Aging Vessel Temperature**: The default temperature should be110°C (212°F). If the project is in a desert environment the temperature could change to 110°C (230°F) in the **highlighted area below.** |

**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 (NDesign) 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 I-A, I-B, II-A, II-B, III-A, or III-B, and IV as shown in Subsection 401.16.

Asphalt binder grade is PG xx-xx. 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 (Gsb).** The Contractor’s coarse and fine Gsb 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.**

|  |
| --- |
| Do not include the pay item for a “Material Transfer Vehicle” in that it is considered incidental to construction. If haul distance is anticipated to be short (e.g. less than 30 minutes), Subsection 401.05(b) may be deleted. Verify with pavement & materials group. |

**(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 actives begin. The localized roughness threshold computed to the nearest whole number for Type I pavement roughness is equal to the following:

Localized Roughness Threshold = Initial Overall MRI + 1.881(S25)

where:

Initial Overall MRI = MRI obtained before construction activities begin.

S25 = 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:

% Improvement = [(Initial Overall MRI – Final Overall MRI) / Initial Overall MRI] × 100

Table 401-3 will be used to determine the final pay factor (PFrough) 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.

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| --- |
| Table 401-3**Type I Pavement Roughness Pay Factors** |
| **Type I-A** | **Type I-B** |  |
| **Percent Improvement****(%)** | **Percent Improvement****(%)** | **Pay Factor****(PFrough)** |
| 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 actives begin. The localized roughness threshold computed to the nearest whole number for Type II pavement roughness is equal to the following:

Localized Roughness Threshold = Initial Overall MRI + 1.282(S25)

where:

Initial Overall MRI = MRI obtained before construction activities begin.

(S25) = 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:

% Improvement = [(Initial Overall MRI – Final Overall MRI) / Initial Overall MRI] × 100

Table 401-4 will be used to determine the final PFrough 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.

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| Table 401-4**Type II Pavement Roughness Pay Factors** |
| **Type II-A** | **Type II-B** |  |
| **Percent Improvement****(%)** | **Percent Improvement****(%)** | **Pay Factor****(PFrough)** |
| 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 | 48.0 – 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 PFrough 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 PFrough 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.

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| 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****(PFrough)** |
| Localized roughness threshold170 in/mi (2.681 m/km) | Localized roughness threshold190 in/mi (2.996 m/km) |  |
| If MRI of entire roadwayis greater than125 in/mi (1.973 m/km) | If MRI of entire roadwayis greater than140 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 valueper Subsection401.16(b) for Type I401.16(c) for Type II401.16(d) for Type III | 170.0 – 179.9(2.681 – 2.838) | $200 | - |
| 180.0 – 189.9(2.839 – 2.995) | $400 | - |
| 190.0 – 199.9(2.996 – 3.154) | $600 | $300 |
| 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 PFrough.

**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 Gsb 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** |
| Asphaltconcretepavement | Measuredand testedforconformance(106.04) | Type Iroughness,beforeconstruction(Initial MRI) | AASHTOR 56 & R 57 | SeeSubsection401.16 | Left and rightwheel paths | No | Within14 days ofNotice toProceed | Originalsurface beforeconstruction |
| Type Iroughness,afterconstruction(Final MRI) | " | " | " | " | Within21 daysaftercompletingpaving | Surface after construction |
| Type IIroughness,beforeconstruction(Initial MRI) | " | " | " | " | Within14 days ofNotice toProceed | Originalsurface beforeconstruction |
| Type IIroughness,afterconstruction(Final MRI) | " | " | " | " | Within21 daysaftercompletingpaving | Surface after construction |
| Type IIIroughness(Final MRI) | " | " | " | " | Within 21 days after completing paving | Surface after construction |
| Processcontrol(153.03) | Surfacetolerance | StraightedgemeasurementsSubsection401.16(e) | Contractordetermined | SeeSubsection401.16(e) | " | 24hours | − |

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|  |
| --- |
| Use on all projects when a Hveem or Marshall job-mix-formula will be developed for the specific project, and statistical acceptance will be used. Be mindful of the project duration: it takes 1 month to do a mix design. Use this for **more** than 7000 tons of asphalt concrete pavement. |

## Section 402. — ASPHALT CONCRETE PAVEMENT BYHVEEM OR MARSHALL MIX DESIGN METHOD

**Description**

|  |
| --- |
| Enter the pavement roughness type and asphalt binder grade in the highlighted areas below. Materials will provide to the designer the following:1) Roughness type: Use the following guidelines:1. Type I is for 3R mill and fill ONE lift. This requires before and after IRI measurement.
* Type I-A is for higher speeds greater than 35 mph
* .Type I-B is for slower winding roads less than 35 mph.
1. Type II is for 3R mill and fill TWO lifts. This requires before and after IRI measurement.
* Type I-A is for higher speeds greater than 35 mph
* .Type I-B is for slower winding roads less than 35 mph.
1. Type III is for 4R and 3R work with pulverization, base, or other typical section work prior to placing the asphalt.
* Type III-A is for higher speeds greater than 35 mph.
* Type III-B is for slower winding roads less than 35 mph.

2) Asphalt binder grade: Binder grade is project specific.3) Pressure Aging Vessel Temperature: The default temperature should be110°C (212°F). If the project is in a desert environment the temperature could change to 110°C (230°F) in the highlighted area below. |

**402.01** 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:

Aggregate grading designation is ¾-inch (19-millimeter) or ½-inch (12.5-millimeter) as shown in Table 703-4.

Pavement roughness is type I-A, I-B, II-A, II-B, III-A, or III-B, and IV as shown in Subsection 402.16.

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

**Construction Requirements**

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

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 402-1.

Delete Table 402-2 and substitute the following:

**Table 402-2**

**Voids in Mineral Aggregate (VMA)**

**Hveem or Marshall Mix Design**

|  |  |
| --- | --- |
| **Sieve Size (1)** | **Voids in Mineral Aggregate,****Minimum, % (2)(3)** |
|  | **Hveem** | **Marshall** |
| No. 4 (4.75 mm) | 16.0-19.0 | 18.0-21.0 |
| ⅜ inch (9.5 mm) | 14.0-17.0 | 16.0-19.0 |
| ½ inch (12.5 mm) | 13.0-16.0 | 15.0-18.0 |
| ¾ inch (19 mm) | 12.0-15.0 | 14.0-17.0 |
| 1 inch (25 mm) | 11.0-14.0 | 13.0-16.0 |

(1) The largest sieve size listed in the applicable specification upon which material is permitted to be retained.

(2) VMA to be determined according to AASHTO R 35.

(3) When mineral filler or hydrated lime is used, include in the calculation for compliance with the VMA.

**(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 (7) and substitute the following:

**(3) Bulk specific gravity of aggregate (Gsb).** The Contractor’s coarse and fine Gsb is verified if the CO’s results are within 0.038 for AASHTO T 85 and 0.066 for AASHTO T 84.

**(7) Tensile strength ratio (TSR).** The Contractor’s TSR result is verified if the CO’s result is above 0.80.

Add the following:

**(8) Voids in the mineral aggregate (VMA)**. The Contractor’s VMA result is verified if the CO’s result is within the specification limit in Table 402-2.

**402.05 Equipment.**

|  |
| --- |
| Do not include the pay item for a “Material Transfer Vehicle” in that it is considered incidental to construction. If haul distance is anticipated to be short (e.g. less than 30 minutes), Subsection 402.05(b) may be deleted. Verify with pavement & materials group. |

**(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.

**402.14 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).

**402.15 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.

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| --- |
| Use on projects with a short duration and/or quantity less than 7000 tons. This section **does not use** statistical acceptance or QlPay and only requires a 10-foot straightedge for ride control (unless IRI is added). |

## Section 403. — ASPHALT CONCRETE

Description

**403.01** Add the following:

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| --- |
| If the project warrants specifying a special grade of asphalt binder that may not be commonly used add the grade below. This could include a polymer modified binder or a very cold climate binder. |

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.

|  |
| --- |
| Add Subsection 403.08(a) when the mix haul is anticipated to be long, or if the project is large enough to warrant a higher quality pavement Do not include the 622 pay item for a “Material Transfer Vehicle” in that it is now considered incidental to construction. |

**403.08 Placing and Finishing.**

1. Add the following:

Use an MTV with storage and remixing capabilities on all mainline construction for placing asphalt concrete mixtures. The MTV will independently remix and deliver mixture from the hauling equipment to the paving equipment.

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.

**403.09 Compacting.** Add the following:

For HMA, do not roll the mix after the surface cools below 175 ºF (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.

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| For Section 403.11,Pavement Straightedge Measurement, if the length of the project is greater than 5 lane miles (8 lane kilometers) **OR** if drivable speed is greater than 35 MPH (56 Km/hr) consideration should be given to deleting the straightedge requirement and adding the IRI requirement from Section 401/402. This should be discussed with the Project Manager. |

**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 mixtureType I(403.02(a)) | Measured andtested forconformance(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** |
| Asphaltconcrete,Type I(403.02(a)) | Measured andtested forconformance(106.04) | Job-mix formulaDensity (1)Maximum specific gravity | Subsection 403.02AASHTOT 166AASHTO T 209 (2) | 1 per 700 tons(650 metric tons)““ | Behind the paver before compaction.In-place afterCompactingBehind the paver before compaction | YesYesYes |  | Delivercores to COfor testing‘‘ |
| SurfaceTolerance | Straightedgemeasurement,Subsection403.11 | Continuously,aftercompaction | Finishedpavementsurface | No |  | − |
| Placementtemperature | − | First loadand asdetermined byCO thereafter | Hauling vehiclebefore dumping,or windrowbefore pickup | No | Uponcompletionofmeasurement | − |

|  |
| --- |
| **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) | Gradationat the plant | AASHTOT 27 & T 11 | Contractordetermined | Cold feed orhot binsas applicable | No | 24hours | − |
| Moisturecontent ofaggregates | AASHTOT 255 | " | Stockpile | No | " | − |
|  Density | ASTMD2950 | 1 per500 feet(150 meters) | In-place aftercompacting | No | " | − |
| Asphaltconcrete,Type II(403.02(b)) | Measured andtested forconformance(106.04) | " | " | 3 per700 tons(650 metric tons) | In-place aftercompacting | 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). |

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| --- |
| Include in NPS and BLM projects funded by the Great American Outdoors Act. Verify with the Project Manager. |

**Section 404. – ASPHALT CONCRETE PAVEMENT WARRANTY**

**Description**

**404.01** This work consists of providing a warranty for hot or warm mix asphalt concrete pavement.

**Construction Requirements**

**404.02 General.** Follow the requirements of FAR Clause 52.246-21 Warranty of Construction, as amended.

**404.03** **Warranty Requirement.** A 1-year warranty is required on all asphalt pavement items. The 1-year time period begins from the point of final acceptance. All warranty work items will be repaired at no additional cost to the Government. Table 404-1 contains warranty criteria information.

**(a) Warranty Criteria.**

**Table 404-1**

**Evaluation Method**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Warranty Indicator** | **Threshold/Description** | **Initial Identification** | **Evaluation Methods (B)** | **Possible Remedial Action** |
| *Shoving/Rutting* | An occurrence of a localized depression of greater than 0.375 inch | Visual inspection | Measure and document length and width of rutting/shoving.  | Mill distressed area to a full lane width and 50' length on each side and replace surfacing. Depth of milling not to exceed pavement depth.  |
| *Potholes, Raveling, Slippage/ delamination* | 1. Pothole with an area of 1 SF or greater and depth greater than 1 inch 2. Raveling - wearing away of the pavement surface to a depth exceeding 0.5 inches. 3. Slippage/Delamination - tearing of the asphalt surface  | Visual inspection | Confirm initial findings by measurement and visual observation. Document locations and quantity of distress exceeding threshold. | Remove and replace distressed area of area to a depth no greater than the pavement depth, to a full lane width and 50' length on each side. |
| *Cracking (Longitudinal and Transverse)(A)*  | Visible Cracking greater than 0.125 inches in width | Visual inspection | Measure and document crack type, length, and width.  | Remove and replace distressed area to a depth no greater than the pavement depth and to the full lane width |
| Note: If distance between repair areas is less than 100 feet, the CO may require one continuous repair. |
| (A)Longitudinal and transverse joints will not be considered cracks.  |  |
| (B) Measure using methodologies in FHWA-HRT-13-092 (Rev May 2014) |  |

**(b) Determination.** The CO will make a determination on conditions exceeding contract thresholds in Table 404-1 values requiring remedial action and notify the Contractor. During the warranty period, the Contractor may monitor the project using nondestructive methods and may participate with the CO in the field evaluation(s) upon request.

**404.04 Remedial Work.** Submit a remedial action plan within 15 days of notification of the determination by the CO. Begin remedial work within 30 calendar days of approval by the CO. Complete all work within 90 days of notification of the determination unless otherwise approved.

Notify the CO in writing prior to beginning any remedial work. Complete remedial work according to the specifications for that work item and as approved by CO. Submit a traffic control plan and provide temporary traffic control during the remedial work according to Sections 156 and 635. If remedial work necessitates a corrective action to overlying asphalt layers, pavement markings, adjacent lane(s), roadway shoulders, or other affected Contract work, perform these corrective actions as part of the remedial action. Complete all remedial work as approved by the CO.

**404.05 Acceptance.** The CO will provide written acceptance of the warranted construction upon expiration of the warranty period or satisfactory completion of any required remedial actions, whichever is later.

**Measurement**

**404.06** Do not measure warranty remediation for payment.

**Payment**

**404.07** No payment will be made for costs associated with warranty remediation.

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| --- |
| Use on projects when Double Course Chip Seal is to be measured by SQYD or m2. (Not needed if double chip seal measured by the ton) |

## Section 407. — CHIP SEAL

**Measurement**

**407.14** Add the following:

When double course chip seal (chip seal, type 2) is measured by the square yard (m2), measure the area only once. Chip seal, type 2 by the square yard (m2) includes both applications.

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|  |
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| Use on projects when concrete pavement restoration is required. |

## Section 502. — CONCRETE PAVEMENT RESTORATION

**Material**

**502.02** Add the following:

Sealants, fillers, and seals 712.01

**Construction Requirements**

**502.05(d) Joints.** Delete the last sentence and substitute the following:

Seal the joint according to Subsection 502.07.

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| Use on projects when structural concrete is required. Generally structural concrete is required for bridges, culverts, walls, and foundations (items that require load analysis or “that you can drive on”). A low water crossing may be paid under Section 552 or 501 as determined by the CFT (including roadway designer, bridge engineer, and pavements engineer). |

## Section 552. — STRUCTURAL CONCRETE

**Material**

**552.02** Add the following:

Concrete coloring agent 711.05

Precast concrete units and accessories 725.09

**Construction Requirements**

**552.03 Composition (Concrete Mix Design).** Delete the first two paragraphs and substitute the following:

Design and produce concrete mixtures that conform to Tables 552-1, 552-2, and 552-3 as required for the class specified.

Submit concrete mix designs on FHWA Form 1608, *552 Structural Concrete Mix Design Submittal* and determine the required average concrete compressive strength (fcr) with $\overbar{X}$ ≥ fcr.

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

Verify mixture design with trial mixes from proposed sources or with previous concrete production data for the mixture design submitted from proposed sources.

**(w)** Delete the paragraph and substitute the following:

Specified design strength (f’c) and required average concrete compressive strength (f’cr) for the concrete mixture at 28 days as determined by the process and associated calculations outlined on FHWA Form 1608, pages 4 and 5. Pending 28-day strength results, a mix design may be approved on the basis that 7-day compressive strength results meet or exceed 85 percent of the required average strength (f’cr) at 28 days;

**552.09 Quality Control of Mix.** Add the following:

**Prosecution of work**: At least 2 weeks prior to the start of concrete placement operations, arrange a pre-concrete placing conference. Coordinate attendance with the CO and any applicable subcontractors. Be prepared to discuss and/or submit the following:

**(1)** Proposed concrete placement schedule.

**(2)** Review approved concrete mix design and determination of batch weights.

**(3)** Discuss Section 153, Contractor Quality Control and the minimum frequency schedule for process control sampling and testing (to be performed by the Contractor).

**(4)** Discuss batching, mixing, placing, and curing requirements.

**(5)** Discuss Subsections 106.03, Certification, and 106.05, Statistical Evaluation of Material for Acceptance.

**552.11 Handling and Placing Concrete.**

**(e) Underwater placement.** Delete line (1) and substitute the following:

**(1) Tremies.** Use watertight tremies, with a diameter sufficient to ensure that aggregate-induced blockages will not occur. Use multiple tremies as required. Make tremies capable of being rapidly lowered to retard or stop the flow of concrete.

Seal the discharge end and fill the tremie tube with concrete at the start of concrete placement. Keep the tremie tube full of concrete to the bottom during placement. If water enters the tube, withdraw the tremie and reseal the discharge end. Maintain continuous concrete flow until the placement is completed.

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| Include Subsection 552.16 when integral concrete coloring is specified. Insert the description of the concrete to be colored and the color number in the spaces provided below. |

**552.16 Finishing Formed Concrete Surfaces.** Add the following:

**(g) Class 8 - Integral color finish.** All concrete in the describe will be integrally colored by adding a concrete coloring agent. After curing the colored concrete will match as closely as possible to AMS-STD-fill in number in AMS Standard 595A.

Prepare five square textured test panels with each panel 1 foot (300 mm) square. Use coarse and fine aggregates and cement as delivered on the project at the job mix rates with variable quantities of coloring agent as directed by the CO. Complete a Class 1 finish according to (a) above. The CO will select a test panel to serve as a guide for the colored concrete. Use the same rate of coloring agent used in the selected panel on all relative subsequent work.

Prepare and transport the test panels to the project staging area. Cure the test panels similar to the structure. Allow test panels a minimum of four weeks to cure prior to placing concrete requiring coloring agent.

**Measurement**

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| --- |
| Include the following when concrete for footing is to be poured against disturbed rock. |

**552.21** Add the following:

Do not measure for payment the volume of concrete required outside the neat lines of the footing to pour against undisturbed rock as shown on the plans. When the CO directs the removal of material below the established elevation of the bottom of the footing, the volume of concrete required to fill the void will be measured for payment.

|  |
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| Include the following when integral concrete coloring is used in the concrete. |

Add the following:

When measuring concrete coloring agent, measure by the pound (kilogram).

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|  |
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| When steel structures are required include Section 562 and the following: |

## Section 555. — STEEL STRUCTURES

**Construction Requirements**

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| --- |
| The AISC Quality Certification Program identifies categories related to bridge fabrication. Insert the applicable category. Coordinate with the Bridge Engineer. |

**555.07 Fabrication.** Delete the first sentence of the first paragraph and substitute the following:

Fabricate the structural steel in a fabricating plant that is Certified Bridge Fabricator-Simple (SBR), Certified Bridge Fabricator-Intermediate (IBR) OR Certified Bridge Fabricator-Advanced (ABR) with supplemental program requirements for: Applicators of Complex Coatings Endorsement (CCE) or Fracture Control Endorsement (FCE), under the AISC, *Quality Certification Program*.

|  |
| --- |
| The AISC Quality Certification Program identifies categories related to bridge erection. Insert the applicable category. Coordinate with the Bridge Engineer. |

**555.18 Erection.** Delete the text of the second sentence of the first paragraph and substitute the following:

Use steel erector certified under the Certification Program for Erectors (CSE) with Seismic Endorsement, Metal Deck Endorsement, or Bridge Endorsement under the AISC, *Quality Certification Program*.

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| Include the following with projects when staining riprap, boulders, slopes, guardrail or wall facing is required. |

## 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.**

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| --- |
| Include the following with projects when staining guardrail is required. |

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.

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

|  |
| --- |
| Include the following with projects when staining rock slopes, wall facing, boulders, and/or riprap is required. |

Apply weathering agent to slopes, wall faces, placed boulders, and riprap as directed by the CO. Prepare surfaces and apply weathering agents using the manufacturer’s recommendations.

Repair damages to the final finish on non-metallic surfaces by applying weathering agent to damaged areas until the finish matches that of the approved applicable test section.

**(1) Slopes and Wall Faces.** Prepare a minimum of three test sections, each 5 feet by 5 feet (1.5 m by 1.5 m), before production application of the weathering agent. After application, cure the test sections to develop the full coloration according to the manufacturer’s recommendations. Use different dilutions and application methods on the test sections, to determine the mix and method to be used to best match the surrounding terrain. Mark each section and record mixture and application used on each section.

After the curing period, the CO will select a test section for production work.

If none of the test sections are approved, adjust the dilution and application methods and prepare additional test sections at no additional cost to the Government.

Use the approved dilution and application methods during production work. Control overspray and protect adjacent surfaces.

**(2) Rock and Boulders.** Apply weathering agent at the rate necessary to achieve the desired color. Use the approved application rates to apply the weathering agent over the CO designated areas. Control overspray and protect adjacent surfaces.

**563.12 Acceptance.** Add the following:

Reactive colorant finishes will be evaluated under Subsections 106.02.

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| Include the following with projects when bearing devices are required. |

## Section 564. — BEARING DEVICES

**Construction Requirements**

**564.04 Elastomeric Bearings.** Delete the first paragraph and substitute the following:

Fabricate, comply with testing and acceptance criteria, and mark elastomeric bearings according to AASHTO M 251. Test and accept bearings specified by hardness and designed according to Method A of AASHTO*, Load and Resistance Factor Design (LRFD) Bridge Design Specifications* according to Section 8.8.4 of AASHTO M 251.

Use material that meets the flash tolerance, finish, and appearance requirements of the *Rubber Handbook* as published by the Rubber Manufacturer’s Association Incorporated, RMA F3 and T.063 for molded bearings and RMA F2 for extruded bearings.

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| Include the following with projects requiring drilled shafts: |

## Section 565. — DRILLED SHAFTS

**Construction Requirements**

**565.08 Concrete for Drilled Shafts.** Delete the fourth paragraph and substitute the following:

Furnish concrete conforming to Section 552, except:

* Use Class C structural concrete having a slump of 7±1 inches (180±25 millimeters) for shafts constructed without drilling fluid;
* Use Class C structural concrete having a slump of 8±1 inches (200±25 millimeters) for shafts constructed with drilling fluid; and
* Seal concrete for under water placement.

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| Use on projects when high performance concrete is required. |

## Section 568. — HIGH PERFORMANCE CONCRETE

**Construction Requirements**

**568.04 Composition (Concrete Mix Design).** Delete the first two paragraphs and substitute the following:

Design and produce concrete mixtures that conform to Tables 552-3 and 568-1.

Submit HPC mix designs on FHWA Form 1608, *552 Structural Concrete Mix Design Submittal* and determine the required average concrete compressive strength (fcr) with $\overbar{X}$ ≥ fcr.

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

Verify mixture design with trial mixes from proposed sources or with previous concrete production data for the mixture design submitted from proposed sources.

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| Use on projects when a concrete overlay for a bridge deck is required. |

## Section 569. — CONCRETE OVERLAYS FOR BRIDGE DECKS

**Construction Requirements**

**569.04 Composition (Concrete Mix Design).** Delete the first two paragraphs and substitute the following:

Design and produce concrete mixtures that conform to Table 569-1 for the class specified.

Submit concrete overlay mix designs on FHWA Form 1608, *552 Structural Concrete Mix Design Submittal* and determine the required average concrete compressive strength (fcr) with $\overbar{X}$ ≥ fcr.

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

Verify mixture design with trial mixes from proposed sources or with previous concrete production data for the mixture design submitted from proposed sources.

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| --- |
| Use on projects when concrete for minor structures is required. Generally, concrete structures are considered minor when structural analysis is not required. Examples include headwalls, curb and gutter, sidewalks, waterways, or other 600 series pay items as referenced in their specification. Bridges, culverts, walls, and foundations are considered structural and are specified under Sections 552 or 553. |

## 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.

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| **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 andtested forconformance(106.04 & 105) | Quality | Subsection703.01 &703.02 | 1 permaterialtype | Source ofmaterial | Yes | Beforeproducing | **−** |
| **Mix Design** |
| ConcreteComposition(601.03) | " | All | Subsection601.03 | 1 permixdesign | " | Ifrequested | " | **−** |
| **Production** |
| Concrete(1) | Measured andtested forconformance(106.04) | Density | AASHTOT 121 | 1 set per30 yd3(25 m3),but not lessthan 1 perday | Dischargestream atpoint ofplacing | No | Uponcompletingtests | − |
| Air content | AASHTOT 152 orAASHTOT 196 | " | " | No | " | − |
| Slump | AASHTOT 119 | " | " | No | " | − |
| Temperature | ASTMC1064 | " | " | No | " | − |
| Compressivestrength(2)(3)(28-day) | AASHTOT 23 & T 22 | 1 set per30 yd3(25 m3),but not lessthan 1 perday | Dischargestream atpoint ofplacing | No | 28days | Delivercylinders tothe CO ordesignatedlaboratoryfor 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. |

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| Use the following with projects requiring structural steel plate structures:. |

## Section 603. — STRUCTURAL PLATE STRUCTURES

**603.04** **Erecting.** Delete the seventh paragraph and substitute the following:

Torque steel bolts and aluminum bolts on 0.1-inch (205-millimeter) thick and heavier aluminum plates to at least 115 foot-pounds (155 newton-meters) and a maximum of 130 foot-pounds (180 newton-meters).

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|  |
| --- |
| Use on projects as appropriate. |

## Section 609. — CURB AND GUTTER

**Description**

**609.01** Add the following:

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

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| --- |
| When constructing paved asphalt ditches include 609.03 below and 609.08A.. |

**Construction Requirements**

**609.03 General.** Add the following:

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

|  |
| --- |
| When gluing concrete curb to asphalt pavement, insert 609.03 below. |

**609.03 General.** Add the following:

When bonding concrete curb to existing asphalt pavement thoroughly clean the pavement surface in advance of placing the curb. Abrade and/or high pressure water wash the existing asphalt pavement to assure removal of all dust and loose material.

Bond the extruded curb or precast curb to the existing asphalt pavement using an approved concrete to asphalt adhesive or a two-component epoxy, designed to bond fresh concrete to the existing pavement. Submit proposed adhesive for approval by the CO prior to use. Apply according to the manufacturer’s recommendations.

|  |
| --- |
| Use 609.08A on all projects with asphalt paved ditches and 609.03 above. |

Add the following:

**609.08A Asphalt Paved Ditch.** Perform the work according to Section 403, Type II. Before overlaying existing asphalt paved ditches, clean and seal the cracks according to Section 414. Compact according to Subsection 403.09.

|  |
| --- |
| Use on all projects with curbing and/or ditches. |

**Measurement**

**609.10** Add the following:

When measuring paved ditches, measure the length along the face of the curb.

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

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| Note: when the contract requires installing weathering steel (Type IV) for W-beam Guardrail (G4 and MGS), always specify the Metal Thickness Class B. |

## Section 617. — GUARDRAIL

**Description**

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| --- |
| Include when using MGS or SBL-FAT.  |

**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**

|  |
| --- |
| Include the following when galvanized steel guardrail system elements require an aesthetic finish by using a reactive colorant product applied to the guardrail |

**617.02** Add the following**:**

Painting 563

**Construction Requirements**

|  |
| --- |
| Include the following when galvanized steel guardrail system elements require an aesthetic finish by using a reactive colorant product applied to the guardrail |

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

|  |
| --- |
| Include the following for all projects with flared or tangent w-beam guardrail terminals. Check with the maintaining agency to determine whether a specific terminal type (e.g. MSKT, SRT-350, FLEAT, or others) is required. If so, insert the specific terminal type/name in the highlighted area below. Write a ‘brand name or approved equal’ memo to justify use of a specific proprietary terminal. If the maintaining agency does not have a preference, insert either FLARED or TANGENT in the highlighted area below.Specify the crash testing criteria required (typically MASH, limited situations will use NCHRP 350).Determine the test level for the terminal type chosen and insert it in the highlighted area below (e.g. 2 (for 45 mph and less) or 3 (for 50 mph and greater)). Also include the appropriate drawings in the plans. |

Use (flared, tangent, etc.) terminals meeting (MASH, NCHRP 350) Test Level (fill in). When proprietary terminals are required, submit the installation manual from the manufacturer for the terminal, including inspection checklists.

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| Include the following when using MGS guardrail (Details C617-31 or C617-32) |

**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.

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| Include the following when using G4 guardrail (Details C617-10 or C617-11), and the alternate hole arrangement is required to accommodate future pavement overlays. |

**617.04 Post Installation**. Add the following:

Use alternate hole arrangement detail as shown on Standard 617-(fill in).

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| Include the following on projects with structure transition rail. |

**617.07 Connection to Structure.** Add the following**:**

Do not change the post length or spacing in structure transition rail sections.

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| Include the following when galvanized steel guardrail system elements require an aesthetic finish by using a reactive colorant product applied to the guardrail |

**617.11 Acceptance.** Add the following**:**

Painting will be evaluated under Section 563.

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| Use on all projects and use BOTH of the following pay items to your EE and plans:62302-1000 Special labor, hired technical services AND62302-1100 Special labor, hired survey services. |

## 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.

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| The Technical Services qualifications below are intended for office survey-related work that is necessary for the above surveying services. When other Technical Services are required (i.e. Biologist, archeologist, etc.), add type and qualifications of the technical services required.  |

**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.

**623.05 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**

**623.06** 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.

**Payment**

**623.07** 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.

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| For Turf Establishment, discuss with partner if watering is required to establish turf and if installing temporary or permanent irrigation is needed. If watering is not required, update requirements in 625.09 as appropriate. If the partner has a preference on mulch material type, add an SCR to modify section 625.08 to specify the material type. Include the following if a specific seeding season will be identified in the contract or has been requested by a Maintaining/Cooperating Agency: |

## Section 625. — TURF ESTABLISHMENT

**Construction Requirements**

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

Perform all seeding between (fill in date) and (fill in date).

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| Include the following when paying for turf establishment by the sqyd or acre |

**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.

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| Use on projects with rolled erosion control products (also known as matting and erosion control blankets) installed on slopes. |

## Section 629. — ROLLED EROSION CONTROL PRODUCTSAND 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.

07/31/2017

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| Use on projects as necessary. |

## Section 633. — PERMANENT TRAFFIC CONTROL

**Construction Requirements**

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| If there is the potential for sign panels to be buried in snow, include the following: |

**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.

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| Use on all projects with rumble strips. |

Add the following subsection after 633.06:

**633.06A Shoulder Rumble Strips, Edge Line Rumble Strips, and Centerline Rumble Strips.** This work consists of constructing shoulder, edge line, and centerline 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 ⅝ inch (15 mm).

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

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| Use on all projects with rumble strips. |

**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.

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| Use on all projects. |

## Section 634. — PERMANENT PAVEMENT MARKINGS

**Construction Requirements**

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| Use 634.03 on projects with striped parking areas. |

**634.03 General.** Add the following to the ninth paragraph:

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

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| Use 634.04 on projects when solvent based paint is specified (Paint Type A). |

**634.04 Solventborne Traffic Paint (Type A).** Delete the Subsection and substitute the following:

Apply paint when the pavement and air temperature are at 35°F (2°C) and rising. 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.

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| Use 634.05 on all projects when water based paint is specified (Paint Type B or C). |

**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**

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| Measurement will be by the **length** of each stripe for both centerline and edge lines. When the total length exceeds 10,560 LNFT (5000 meters), measure and pay for pavement markings by the MILE (Kilometer).Solvent based Type A paint and water based Type B paint is applied twice and measured twice.Water based Type C paint is applied once and measured once. |

**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).

04/01/2020

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| Use on projects as appropriate. |

## 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

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| When construction signs are required, include the following |

**Construction Requirements**

**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.

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| When flaggers are required, include subsection 635.09. |

**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.

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| When temporary pavement markings is a pay item in the bid schedule, include subsection 635.13 and 635.24. Include Standards 635-2 and 635-3 in the plans. Use bid item “Temporary Traffic Control, Pavement Markings, by the linear foot or mile”. This pay item allows the contractor the option of using paint, tape, raised pavement markers or vehicle positioning guides. |

**635.13 Temporary Pavement Markings and Delineation.** Add the following:

For seasonal suspensions, apply the permanent pavement marking pattern with temporary traffic paint.

**(d) Delineation for Unmarked Pavements with Vehicle Positioning Guides.** For unmarked pavements, install signing and vehicle positioning guides as indicated in the plans. Use vehicle positioning guides that meet the requirements of Subsection 718.16(b), pavement markers.

Remove all vehicle positioning guides before placing additional pavement layers. Remove all vehicle positioning guides from the surface course before placing permanent pavement markings.

**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**

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| When flaggers are required, include the following two sections. |

Add the following:

Measure flaggers, for each hour a person is actually performing the work.  Do not measure time required to set up and take down required signage.

Delete the second paragraph and substitute the following:

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

Delete the first four sentences in the sixth paragraph and substitute the following:

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| Edit the [linear foot/mile] text accordingly. |

Measure temporary pavement markings by the [linear foot/mile] along the centerline of the roadway. Measure temporary pavement markings as a single measurement, inclusive of all markings, from end to end regardless of color, material type, or number of lines. Do not deduct for standard gaps between stripes.

Add the following:

Measure vehicle positioning guides used at the option of the Contractor in lieu of temporary markings as equivalent temporary pavement markings When vehicle positioning guides exceed the period of use stated in the plans, provide additional temporary or permanent pavement markings at no cost to the Government. Measure vehicle positioning guides by the [linear foot/mile] along the centerline of the roadway. Measure as a single measurement, inclusive of all markings, from end to end regardless of material type, gaps or number of lines. Measure only one application of vehicle positioning guides per lift. “DO NOT PASS”, “PASS WITH CARE”, and “NO CENTER STRIPE” signs required to be used with vehicle positioning guides are subsidiary to the temporary pavement marking item. Do not measure these signs as construction signs.

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| The FP is setup so the contractor furnishes a Traffic Control Supervisor for all projects, but does not get paid for it. See Subsection 156.11.Recommend the use of the Week long period to provide a Traffic Control Supervisor pay item on projects where there are **significant** (i.e., major complexities, complicated traffic control, numerous construction phases, etc.) issues with traffic or safety. This will be the exception rather than the rule.‘Week’ is defined in Subsection 109.02 (r). The definition for Week ensures that the traffic control effort covers a continuous period without breaks at night. |

Add the following:

Measure Traffic Control Supervisor by the week (7 consecutive days, beginning and ending at midnight on the same day of the week) for the work described in Subsection 156.09.

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| If LPSM is used, include the following. Also note that the PM or COE will need to update LD table in SCR Subsection 108.04 |

**Payment**

**635.25** Add the following:

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

1. 25% of the pay item amount will be paid when initial construction signs are in place and needed devices onsite for use.
2. An additional 65% of pay item amount will be prorated based on total work complete.
3. 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.

06/13/2019

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| Use on all projects when radar speed feedback signs are specificed. |

## Section 636. — TRAFFIC SIGNAL, TRAFFIC COUNTER, LIGHTING,AND ELECTRICAL SYSTEMS

**Description**

**636.01** Add the following:

This work also includes installing Radar Speed Feedback Sign (Changeable Message Sign).

**636.06 Traffic Signal and Lighting Systems.** Add the following:

Furnish Radar Speed Feedback Signs (RSFS), including all pertinent installation hardware with the following attributes:

(a) MUTCD compliant for color, location, legibility, light conditions, design, and installation requirements

(b) Solar powered, 20 W (20 J/s) (min.)

(c) Theft-resistant and tamper-resistant battery with 3-year (min.) manufacturer’s warranty

(d) Commercially available

(e) Breakaway pole or post mounted

(f) Lettering size meeting the minimum design speed requirements

(g) Combine with “YOUR SPEED XX MPH” message

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| Not all of our partners will want this option, but it is commercially available. |

(h) Data acquisition (survey summary, vehicle count, time/date, 85th percentile, 15-min, 1-hour, daily, and weekly analysis, SD/USB card reader) capability

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| Use on projects where the contractor will provide the government office. Discuss details of this spec during the 70% milestone review. |

## Section 637. — FACILITIES AND SERVICES

Delete this Section and substitute the following:

Description

637.01 This work consists of providing, installing, maintaining, and removing facilities and services for the exclusive use of Government personnel.

Construction Requirements

637.02 General. Provide the facilities and services starting no later than 14 days before starting on-site construction activities and ending no sooner than 21 days after on-site construction activities have concluded for all contract and Government option work. Provide notice for removal or termination date for facilities and services.

Submit a list of facilities, proposed facility locations, services, furnishings, and equipment for approval before committing to or signing any agreements or leases for these items.

Comply with applicable ordinances, safety codes, rules, and regulations.

If facilities or services become defective, are damaged, stolen, or for other reasons do not function as intended; repair or provide a replacement within 8 hours after being notified. Repairs and replacements are subject to approval.

Pay bills, including taxes and fees, for facilities and services by the payment due date.

Remove facilities and services when directed.

637.03 Facilities. Perform site work to accommodate the placement or construction of facilities. Comply with Subsection 107.10(d).

Provide and maintain facilities according to Tables 637-1 and 637-2. If not otherwise specified, provide furnishings of standard size, character, and condition for their function. Provide batteries and light bulbs necessary for the provided furnishings.

Provide safe, secure, sanitary, weatherproof buildings or trailers in good condition. Provide services according to Subsection 637.04.

Restore the ground to its original condition upon removal of facilities.

(a) Field office. Locate field office where high-speed internet service is available. Provide one of the following:

(1) Office trailer. Provide a portable office trailer. Locate the office trailer on or adjacent to the project site, or as directed. Locate the trailer so that it can be accessed 24 hours a day, 7 days a week. Provide 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.

(2) Commercial office space. Provide office space at a commercial development adjacent or near to the project site.

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| Table 637-1Minimum Requirements for Field Facilities |
| Property | FieldOffice(Each) |
| Floor space, square feet | 400 |
| Locking outside door, deadbolt with 2 sets of 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 | 4 |
| Room size, except toilet room, square feet | 100 |
| Shelves, 12-inch depth, square feet | 12 |
| Electrical lighting | ✓ |
| Heat and air conditioning, maintain temperature of 72±7 °F(2) | ✓ |
| Adequate electrical outlets | ✓ |
| Surge protectors | 3 |
| Adequate electricity(120 and 240 V, 60 cycle as applicable) | ✓ |
| Adequate potable water supply | ✓ |
| Drinking water cooler with water supply | ✓ |
| Sink with faucets for both hot and cold water | ✓ |
| Parking for three vehicles on gravel, or paved surface | ✓ |
| 6-foot high chain link fence with gate around building and parking area | ✓ |

 (1) As required by local code.

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

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| Table 637-2Minimum Facility Furnishings |
| Furnishing | FieldOffice (Each) |
| Table, wood or like, 96"L x 30"W x 30"H  | 3 |
| File cabinet, 2-drawer, fire resistant, metal, with lock and keys | 1 |
| File cabinet, 4-drawer, metal | 1 |
| Desk, wood or like, 60”L x 30”W x 30”H(1) | 2 |
| Desk lamp(1) | 2 |
| Office chair(1) | 5 |
| Storage cabinet, 72"L x 36"W x 18"H  | 1 |
| Fire extinguisher | 1 |
| Refrigerator, 18-cubic foot | 1 |
| Microwave oven, 1.1 cubic foot, 1100 watt | 1 |

 (1) Meet accepted industry standards for ergonomics.

(b) Storage facility. With the field office, provide a storage facility with a minimum floor space of 64 square feet, that is secure, enclosed, covered, and protected from the elements. Secure the storage facility with a padlock or other approved device. Provide keys, lock combinations, or gate codes necessary for entry to the CO. Provide one of the following:

(1) Stand-alone facility. Provide a stand-alone structure or storage container located adjacent to the Government field office, or as directed. Position the facility, or make improvements to the site, so that vehicles can park within 50 feet of the facility for loading and unloading.

(2) Commercial facility. Provide a drive-up storage facility at a commercial development located within 15 roadway miles of the project.

637.04 Services. Provide utilities and services necessary to operate field offices according to Table 637-3 and the following.

(a) Electricity. Provide electrical service from the local utility. Obtain approval to use generators if electricity cannot be provided to the facility by the utility.

(b) Water. Provide continuous potable water supply.

(c) Natural gas, propane, or heating oil. Provide service from a local utility or provider when required for appliances and furnishings.

(d) Sewer. Provide service from the local utility if required. Provide toilet paper, hand soap, and paper towels for bathrooms.

(e) Portable toilet. Provide portable toilets if sewer or septic hookups are unavailable for field office trailers. Provide one portable toilet with weekly service and cleanings. Locate portable toilet adjacent to the field office, as directed. Provide hand sanitizer and toilet paper. Provide a padlock if requested.

(f) Trash and waste disposal. Provide trash and waste disposal service weekly.

(g) Drinking water. Provide a bottled water dispenser, capable of cooling and dispensing chilled water. Provide purified drinking water for use with the water dispenser.

(h) Snow removal. Perform snow removal if directed. Plow parking areas and access roads to the provided facilities. Shovel sidewalks and walkways.

(i) Landscape maintenance. Perform landscape maintenance if directed.

(j) Pest control. Perform pest control if directed.

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

(1) One of the following:

*(a)* Fiber Optic Service (FIOS), Cable Internet Service, or Digital Subscriber Line (DSL), with the following properties:

*(1)* Download speed of at least 25 megabits per second; and

*(2)* Upload speed of at least 10 megabits per second; or

*(b)* Satellite connection with the following capabilities:

*(1)* Download speed of at least 5 megabits per second;

*(2)* Upload speed of at least 2 megabits per second; and

*(3)* Capable of mobile operation.

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

(3) 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

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

If the required service options are not available, alternate internet access service options may be submitted for approval.

(l) Telephone. Provide local and long-distance landline telephone service from a local provider. Supply two cordless telephones with the following capabilities:

(1) Touch tone, speaker phone, speed dial, hold button, and conference calling features; and

(2) One digital telephone answering machine or voicemail service capable of answering, recording, storing, and playing back telephone messages with a storage capacity of at least 30 minutes in length.

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

(1) 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;

(2) 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.

(3) Automatic document feeder capable of making at least 20 copies per minute for each size paper;

(4) Reducing or enlarging originals, including duplex (double-sided) copying, for each size paper;

(5) Capable of scanning at 600 dpi for each size paper;

(6) Reducing or enlarging originals, including duplex (double-sided) copying, for each size paper;

(7) Copying to Universal Serial Bus (USB) flash drive in Adobe Acrobat (\*.pdf) file format; and

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

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

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| Table 637-3Services Provided for Facilities |
| Service | FieldOffice |
| Electricity (120 and 240 V, 60 cycle as applicable) | ✓ |
| Water | ✓ |
| Natural Gas, Propane, and Heating Oil(1) | ✓ |
| Sewer(1) | ✓ |
| Portable Toilet(2) | ✓ |
| Trash and Waste Disposal | ✓ |
| Drinking Water | ✓ |
| Snow Removal(3) | ✓ |
| Landscape Maintenance(3) | ✓ |
| Pest Control(3) | ✓ |
| High-Speed Internet | ✓ |
| Telephone | ✓ |
| All-in-One (AIO) Device | ✓ |

 (1) If required for provided appliances or furnishings.

 (2) If indoor flush toilets are not available.

 (3) Provide service if directed.

637.05 Acceptance. Facilities and services will be evaluated under Subsections 106.02 and 106.04.

Measurement

637.06 Measure the Section 637 pay items listed in the bid schedule according to Subsection 109.02.

Payment

637.07 The accepted quantities will be paid at the contract price per unit of measurement for the Section 637 pay items listed in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.

Progress payments for facilities and services will be paid as follows:

(a) 75 percent of the pay item amount will be paid after installation and acceptance for occupancy.

(b) The remaining portion of the pay item amount will be paid after the facilities and services are removed.

08/26/2024

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| Use on all projects using pay item 65001-1000 *Construct and Maintain Diversion.* Revise the SCR to fit project-specific requirements. |

Add the following Section:

## Section 650. – CONSTRUCT AND MAINTAIN DIVERSION

Description

650.01This work consists of designing, constructing, maintaining, and removing temporary traffic diversions.

Material

650.02 Conform to the following Sections and Subsection:

Minor crushed aggregate 302

Culverts and drains 602

Water 725.01

Design Requirements

Revise yellow highlighted areas below to fit the project-specific conditions. Consider adding more detailed design requirements for curve widening or superelevation for higher speed or higher volume roadways.

650.03 Design. Design temporary traffic diversions conforming to Table 650-1. Maintain alternate one-way or two-way traffic. Design temporary traffic diversions to fit within the construction limits shown in the plans.

Table 650-1

Design Requirements for Temporary Traffic Diversion

|  |  |
| --- | --- |
| Criteria | Requirement |
| Design speed | 25 mph |
| Superelevation | 2 % normal crown, 6 % maximum |
| Lane width | See Subsection 156.07(c).Provide additional width on horizontal curves as needed to accommodate public traffic. |
| Horizontal curve radius | 144 feet minimum |
| Vertical grade | 11 % maximum |
| Vertical curve length | 50 feet minimum |
| Structural section | 2 inches asphalt over 4 inches crushed aggregate |
| Embankment slope | 1V:2H or flatter |

650.04 Submittals. At least 14 days before starting temporary traffic diversion work, submit the following according to Subsection 104.03:

1. Plan and profile drawings showing the horizontal and vertical alignment, superelevation design, edge of roadway, and limits of construction;

(b) Typical section drawing, including structural section information; and

(c) Description of roadway design standards used.

Construction Requirements

650.05 General. Complete construction of the temporary traffic diversion before use by public traffic.

Delete the yellow highlighted sentence if the temporary traffic diversion does not need to be paved.

Install erosion and sediment control devices according to Section 157. If required, construct temporary stream diversion according to Section 157. Perform earthwork according to Section 204. Place crushed aggregate according to Section 302. Place asphalt according to Section 403.

Provide temporary traffic control according to Section 635.

650.06 Maintenance. Maintain the temporary traffic diversion, including erosion and sediment control and temporary traffic control, the entire time it can be used for public traffic.

650.07 Removal. Remove the temporary traffic diversion to approximate original or planned contours once the mainline is open to the public and can accommodate two-way traffic. Dispose of unsuitable or excess material according to [Subsection 203.05](#_Toc131713276).

650.08 Acceptance. Design, construction, maintenance, and removal of the temporary traffic diversion will be evaluated under Subsections 106.02 and 106.04.

Delete the yellow highlighted sentence if the temporary traffic diversion does not need to be paved.

Asphalt will be evaluated under Section 403.

Crushed aggregate will be evaluated under Section 302.

Erosion and sediment control will be evaluated under Section 157.

Roadway excavation and embankment will be evaluated under Section 204.

Temporary stream diversion will be evaluated under Section 157.

Temporary traffic control will be evaluated under Section 635.

Measurement

650.09 Measure the Section 650 pay items listed in the bid schedule according to Subsection 109.02.

Do not measure individual items required to design, construct, maintain, and remove the temporary traffic diversion for payment.

Payment

650.10 The accepted quantities will be paid at the contract price per unit of measurement for the Section 650 pay items listed in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.

Progress payments will be paid as follows:

(a) 50 percent of the pay item amount will be paid after installation.

(b) The remaining portion of the pay item amount will be paid after the temporary traffic diversions are removed from the project.

Payment for all or part of this item may be retained if the temporary traffic diversion is not adequately maintained.

Include if the plans DO include a project specific temporary traffic diversion design. Use pay item 65001-1000 Temporary Traffic Diversion. Revise the SCR to fit project-specific requirements.

Add the following Section:

## Section 650. – CONSTRUCT AND MAINTAIN DIVERSION

Description

650.01 This work consists of constructing, maintaining, and removing temporary traffic diversions.

Material

650.02 Conform to the following Subsection:

Water 725.01

Construction Requirements

650.03 General. Complete construction of the temporary traffic diversion before use by public traffic.

Delete the yellow highlighted sentence if the temporary traffic diversion does not need to be paved.

Install erosion and sediment control devices according to Section 157. If required, construct temporary stream diversion according to Section 157. Perform earthwork according to Section 204. Place crushed aggregate according to Section 302. Place asphalt according to Section 403.

Provide temporary traffic control according to Section 635.

650.04 Maintenance. Maintain the temporary traffic diversion, including erosion and sediment control and temporary traffic control, the entire time it can be used for public traffic.

650.05 Removal. Remove the temporary traffic diversion to approximate original or planned contours once the mainline is open to the public and can accommodate two-way traffic. Dispose of unsuitable or excess material according to [Subsection 203.05](#_Toc131713276)

650.06 Acceptance. Construction, maintenance, and removal of the temporary traffic diversion will be evaluated under Subsections 106.02 and 106.04.

Delete the yellow highlighted sentence if the temporary traffic diversion does not need to be paved.

Asphalt will be evaluated under Section 403.

Crushed aggregate will be evaluated under Section 302.

Erosion and sediment control will be evaluated under Section 157.

Roadway excavation and embankment will be evaluated under Section 204.

Temporary stream diversion will be evaluated under Section 157.

Temporary traffic control will be evaluated under Section 635.

Measurement

650.07 Measure the Section 650 pay items listed in the bid schedule according to Subsection 109.02.

Do not measure individual items required to construct, maintain, and remove the temporary traffic diversion for payment.

Payment

650.08 The accepted quantities will be paid at the contract price per unit of measurement for the Section 650 pay items listed in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.

Progress payments will be paid as follows:

(a) 50 percent of the pay item amount will be paid after installation.

(b) The remaining portion of the pay item amount will be paid after the temporary traffic diversions are removed from the project.

Payment for all or part of this item may be retained if the temporary traffic diversion is not adequately maintained.

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| --- |
| Use on projects as appropriate. |

## Section 702. — ASPHALT MATERIAL

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| --- |
| Use on projects with paving (Sections 401, 402 and 403). |

**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 *f* with the following:

*f* 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.

|  |
| --- |
| When an Open Graded Friction Course is specified (Section 405) in Nevada, use the following. Anywhere other than Nevada check with Materials for the correct table. |

**702.01 Asphalt Binder.** Add the following:

Asphalt binder for the asphalt concrete pavement and open-graded asphalt friction course will be Grade PG 76-22NV conforming to Table 702-2. Blend the PG 76-22NV at the source of supply and deliver as a completed mixture to the job site. Do not transport PG 76-22NV by railroad car.

**Table 702-2**

**Asphalt Binder Grade PG 76-22NV for Open Graded Friction Course**

|  |  |  |
| --- | --- | --- |
| **Test** | **Test Method** | **Requirement** |
| **Tests on Original Binder:** |
| Viscosity @ 135°C, Pa⋅s | AASHTO T 316 | 3.00 Max. |
| Dynamic Shear, G\*/sin δ, Test Temp 76°C @10 rad/s, kPa  | AASHTO T 315 | 1.30 Min. |
| Ductility @ 4°C, 5 cm/min, cm | AASHTO T 51 | 20 Min. |
| Polymer Content, % by mass | (1) | 3.0 Min. |
| **Tests on Residue from R.T.F.O., AASHTO T 240:** |
| Mass Loss, % | AASHTO T 240 | 0.50 Max. |
| Dynamic Shear, G\*/sin δ, Test Temp 76°C @10 rad/s, kPa | AASHTO T 315 | 2.20 Min. |
| Multiple Stress Creep Recovery, Test Temp 76°C@ 3200 Pa, % | AASHTO TP 70 | 25 Min. |
| Ductility @ 4°C, 5 cm/min, cm | AASHTO T 51 | 10 Min. |
| **Tests on Residue from Pressure Aging Vessel, AASHTO R28 @ 110°C:** |
| Dynamic Shear, G\*sin δ , Test Temp 31°C @10 rad/s, kPa | AASHTO T 315 | 5000 Max. |
| Creep Stiffness, S, Test Temp −12°C @60 sec, MPa | AASHTO T 313 (2) | 300 Max. |
| Creep Stiffness, m-value, Test Temp −12°C @60 sec | AASHTO T 313 (2) | 0.300 Min. |
| Direct Tension, Failure Strain, Test Temp −12°C@ 1.0 mm/min, % | AASHTO T 314 (2) | 1.00 Min. |

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

(2) If the creep stiffness is below 300 MPa, the direct tension test is not required. If the creep stiffness is between 300 and 600 MPa, the direct tension failure strain can be used in lieu of the creep stiffness requirement. The m-value requirement must be satisfied in both cases.

|  |
| --- |
| Use on projects when Micro Surfacing is specified (Section 409). |

**702.02 Emulsified Asphalt**

**702.02 (b) Polymer-modified emulsified asphalt for micro-surfacing.** Delete the paragraph and substitute the following:

Conform to ISSA A143, except use Section 7, *Emulsified Asphalt Residue by Evaporation* of AASHTO T 59 to determine percent residue.

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| Use on all projects when aggregate for concrete, subbase, base and asphalt mix is specified. |

## Section 703. — AGGREGATE

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| --- |
| Include Subsection 703.01 for all concrete. |

**703.01** Add the following:

**703.01 Fine Aggregate for Concrete.**

**(c)** Sand equivalent value, AASHTO T 176, 75 min.

Alternate Method No. 2

|  |
| --- |
| Include Subsection 703.05(a) and (b) when specifying **subbase or base aggregate using Section 301**. Include Section 301 and the Table 703-2 reference: |

**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

|  |
| --- |
| Include Subsection 703.05(c) when specifying **surface course aggregate using Section 301**. Include Section 301 and the Table 703-3 reference: |

**(c) Surface Course Aggregate.** Add the following:

% passing #200

% passing #40

**(4)** Dust ratio: 2/3 max.

Do not use material that breaks up when alternately frozen and thawed or wetted and dried.

Obtain the aggregate gradation by crushing, screening, and blending processes as necessary. Fine aggregate, material passing the No. 4 sieve, will consist of natural or crushed sand and fine mineral particles.

Delete Table 703-3 and substitute the following:

**Table 703-3**

**Target Value Ranges for**

**Surface Course Gradation and Plasticity Index**

|  |  |
| --- | --- |
| **Sieve Size** | **Percent by Mass Passing****Designated Sieve****(AASHTO T 27 and T 11)** |
| ¾ inch (19 mm) | 100 (1) |
| No. 4 (4.75 mm) | 41-71 (6) |
| No. 40 (425 µm)  | 12-28 (4) |
| No. 200 (75 µm) | 9-16 (3) |
| Plasticity Index (PI) | 8 (4) |

(1) Statistical procedures do not apply.

( ) Allowable deviations (+/-) from the target values.

|  |
| --- |
| Include Subsection 703.06 when specifying **surface course aggregate using Section 302**. Include Section 302 and the following: |

**703.06 Crushed Aggregate.** Add the following to the end of the paragraph:

When aggregate is used as a surface course, furnish an aggregate with a Plasticity index (AASHTO T 90) conforming to Table 703-3a.

**Table 703-3a**

**Surface Course Gradation and Plasticity Index**

|  |  |
| --- | --- |
| **Sieve Size** | **Percent by Mass Passing****Designated Sieve****(AASHTO T 27 and T 11)** |
| ¾ inch (19 mm) | 100 |
| No. 4 (4.75 mm) | 41-71 |
| No. 40 (425 µm)  | 12-28 |
| No. 200 (75 µm) | 5-20 |
| Plasticity Index (PI) | 4-12 |

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|  |
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| When soil is required, include as applicable: |

## Section 704. — SOIL

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| When structural backfill is necessary, include Subsection 704.04. |

**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.

|  |
| --- |
| When select borrow is necessary, include Subsection 704.07. |

**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.

|  |
| --- |
| When select granular backfill is necessary, include Subsection 704.08. |

**704.08 Select Granular Backfill.**

**(a) Quality requirements.** Delete lines (2) and (4) and substitute the following:

**(2)** Peakshear maximum angle of internal friction 34o min.

on the portion passing the No. 4 sieve, AASHTO T 236

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

**(a) Quality requirements.** Add line (6):

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

**(b) Electrochemical requirements for MSE walls with metallic reinforcements.** Delete the Note and substitute the following:

**Note:** Tests for sulfate and chloride content are not required when the pH is between 6.0 and 8.0 and resistivity is greater than 5000 ohm centimeters.

|  |
| --- |
| Use on all projects with Reinforced Soil Slopes |

Add the following Subsection:

**704.09 Slope Fill.** Furnish sound, durable, granular soil free from organic matter or other deleterious material (such as shale or other soft particles with poor durability). Conform to the following:

**(a) Quality requirements.**

**(1)** Gradation Table 704-3

**(2)** Sodium sulfate soundness loss (5 cycles) 15% max.

**(3)** Liquid limit, AASHTO R 58 and T 89 40 max.

**(4)** Plastic index, AASHTO R 58 and T 90 20 max.

**Table 704-3**

**Slope Fill Gradation**

|  |  |
| --- | --- |
| **Sieve Size** | **Percent by Mass Passing Designated Sieve****(AASHTO T 27 and T 11)** |
| 4 inch | 100 |
| No. 4 | 20–100 |
| No. 40 | 0 – 60 |
| No. 200 | 0 – 35 |

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|  |
| --- |
| Use on projects as appropriate. |

## Section 705. — ROCK

|  |
| --- |
| Use on projects gabions or revet mattresses |

**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.

|  |
| --- |
| Use on projects with rockeries |

**705.06 Rock for Rockeries.**  Delete the following:

**(d)** Coarse durability index, AASHTO T 210 52 min.

|  |
| --- |
| Use on projects with MSE walls or reinforced soil slopes. |

Add the following:

**705.08 Wall Facing Fill**.  Furnish hard, durable, angular rock that is free of organic or other unsuitable material. Angular rock is characterized by sharp, clean edges at the intersections of relatively flat surfaces. Do not use shale, rock with shale seams, or other fissile or fissured rock that may break into smaller pieces in the process of handling and placing. Conform to the following:

**(a)** Gradation. Furnish rock with breadth and thickness at least one-third its length with a 6 in (150 mm) maximum dimension. Ensure that 95 percent of wall facing fill particles minimum dimension exceeds welded wire facing opening with remaining 5 percent exceeding one-half welded wire facing opening.

**(b)** Soundness of aggregate using sodium sulfate, 15 percent loss max.

AASHTO T 104 (5 cycles)

**(c)** Los Angeles abrasion, AASHTO T 96 50 percent max.

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## Section 706. — CONCRETE PIPE

|  |
| --- |
| Include the following when precast concrete box culverts are allowed: |

**706.07 Precast Reinforced Concrete Box Sections.** Add the following:

Concrete aggregates shall conform to subsections 703.01(b) and 703.02(c) for Alkali-silica reactivity.

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## Section 710. — FENCE AND GUARDRAIL

**710.06 Rail Elements.**

|  |
| --- |
| Include the following when using w-beam guardrail: |

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

Furnish metal beam rail conforming to the Task Force 13 *Guide to Standardized Roadside Safety Hardware.*

|  |
| --- |
| Include the following when using steel-backed log guardrail: |

**(d) Steel-backed log rail.** Delete the second paragraph and substitute the following:

Fabricate steel backing elements according to ASTM A242.

|  |
| --- |
| Include the following when using w-beam guardrail: |

**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*.

|  |
| --- |
| Include the following when using weathering steel w-beam guardrail: |

**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.

|  |
| --- |
| Include the following when using w-beam guardrail: |

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

Furnish hardware 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.

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## Section 713. — ROADSIDE IMPROVEMENT MATERIAL

|  |
| --- |
| Use on projects with seeding. Ask the partner agency for a specific seed mix to use. Include mix make up and PLS rate (pounds per acre), as appropriate.  |

**713.04 Seed.** Add the following:

Use the following seed mix:

[*Fill in project-specific seed mix*]

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|  |
| --- |
| Use on projects as appropriate. |

## Section 718. — TRAFFIC SIGNING AND MARKING MATERIAL

|  |
| --- |
| When retroreflective sheeting is used on the project include 718.01. |

**718.01 Retroreflective Sheeting.** Add the following:

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

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## Section 725. — MISCELLANEOUS MATERIAL

|  |
| --- |
| Use on all projects with fly ash. |

**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

|  |
| --- |
| Use on all projects with a weathering agent applied to rocks, guardrail, or slopes. |

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.

Natina® products are acceptable for coloring rock surfaces; cementitious surfaces; and 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.