U.S. Department of Transportation
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington

SPECIAL CONTRACT REQUIREMENTS

for

70% PIH REVIEW

AK DOT 135(6)

Glenn Highway Rehabilitation Kings River Bridge Section: MP 66.0 to MP 67.2

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.

70% PIH

May 28, 2019

TABLE OF CONTENTS

08/01/14–FP14

DESCRIPTION **PAGE**

Notice to Bidders A-1

Solicitation, Offer, and Award (SF 1442) A-3

Bid Schedule A-7

Solicitation Provisions B-1

Contract Clauses C-1

General Wage Decision D-1

SCRs Table of Contents

SPECIAL CONTRACT REQUIREMENTS (SCR)

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.

Division 100 ..... E-1

Division 150 ..... E-30

Division 200 ..... F-1

Division 250 ..... F-8

Division 300 ..... F-9

Division 400 ..... F-15

Division 550 ..... F-37

Division 600 ..... F-51

Division 700 ..... G-1

Permits ..... NA

[INSERT TITLE] ..... NA

Fire Protection and Suppression Plan ..... NA

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NOTICE TO BIDDERS

12/17/18–FP14

THIS PROJECT IS BEING SOLICITED AND AWARDED UNDER FP-14.

The FP-14 is FLH's *Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects*. To view the FP-14 electronically go to:

https://flh.fhwa.dot.gov/business/resources/specs/.

The FP-14 is a dual unit document with U.S. Customary units being the primary unit shown. Metric equivalents are shown in parenthesis.

When submitting bids, drawings, calculations, and other construction documents, use only U.S. Customary units of measure, unless otherwise stated.

I. Project Location

General Location. The project work is located approximately 68.5 miles NE of Anchorage, Alaska , and at milepost 66.5 on the Alaska Glenn Highway (AK-1) in Matanuska-Susitna Borough.

Project Limits. Signs have not been erected to identify the project limits. No Government personnel will be available for show-me tours.

II. Pre-bid Information.

GENERAL AND TECHNICAL QUESTIONS REGARDING PROPOSED WORK FOR THIS PROJECT WILL BE ACCEPTED UNTIL CLOSE-OF-BUSINESS ON [INSERT DATE]

Refer to page A-5 for information on how to submit questions related to General Information and Technical Information. Answers to General and Technical Questions will be posted at [INSERT WEBSITE].

Every attempt to respond to questions will be made. However, response to questions received after the above posted date is not guaranteed.

Electronic Plan Sheets. This solicitation includes electronic plan sheets available at [INSERT WEBSITE]. A paper copy of the plan sheets is available by submitting the form posted with this solicitation.

Physical Data. Physical data applicable to this project is listed in FAR Clause *52.236-4 Physical Data*.

Representations & Certifications. Submit or update Representations and Certifications online at https://www.sam.gov/portal/public/SAM/ before bid submittal. For more details go to FAR Provision *52.204-8 Annual Representations and Certifications* (see page B-2.). If you have previously registered on-line and the NAICS code for this solicitation is different than the code listed in your online file, please note the amended changes on the lines provided in FAR 52.204-8.

Requests for Information. Requests for technical information (Plan and Division 100 – 700 Specification questions only) about this project will only be accepted in writing (see Block 9 on page A-5).

Price Evaluation Factor. This solicitation contains a Price Evaluation Factor. In accordance with 13 CFR subsection 126.613, we will apply a factor of 10% to an apparent low bid submitted by a large business when we also receive a bid from a HUBZone small business; the 10% factor does not apply to an apparent low bid submitted by a small business.

HUBZone. If the contract is awarded after applying the price preference for HUBZone small business concerns under FAR clause 52.219-4; at least 50 percent of the cost of the contract performance incurred for personnel must be spent on the prime Contractor's employees or the employees of other qualified HUBZone small business concerns.

SF 1442, Solicitation, Offer, and Award. Particular attention should be paid to Standard Form l442, Solicitation, Offer and Award, to assure that Blocks 14, 15, 16, 19, 20A, and 20C are completed correctly. Sign Block 20B according to the instructions in Subsection 102.02. You must submit a completed 'Authority to Sign' document. You must also complete the representations and certifications contained in the Contract Provisions beginning on page B-1. Failure to furnish or complete any of the above may result in your bid being considered nonresponsive and being rejected.

Facsimile and email bids, modifications, and withdrawals. Facsimile and email bids are not authorized for this solicitation. Bids may be modified or withdrawn by facsimile, if such notice is received by the time specified for receipt of bids. The Government will not be responsible for any failure attributable to the transmission or receipt of facsimile data. See FAR Provision *52.214-5*, *Submission of Bid*s. FAX 360.619.7932. To confirm receipt, call 360.619.7520.

WFL NTB 03/31/16
Include the following in all projects with an IGE less than $6,500,000 (except task orders under the Glacier SATOC IDIQ).

Surety Bond Guarantee Program. Small businesses that need surety bonds can qualify for U.S. Small Business Administration (SBA) backed surety bonds. SBA assistance in locating a participating surety company or agent, and completing application forms is available online. For more information on the U.S. SBA's Surety Bond Guarantee program, go online to http://www.sba.gov/content/contractors or call 1-800-U-ASK-SBA.

Fraud Alert. Current and potential U.S. Department of Transportation (DOT) Contractors have recently been receiving fraudulent letters purporting to be issued by DOT. These fraudulent letters request that the Contractors resubmit their banking information to DOT. If you receive such a letter, please DO NOT complete the requested worksheet that is attached to the letters and DO NOT release any information. To register or update information, Contractors are required to go directly through the System for Award Management (SAM) website and never through a third party. You can access SAM at https://www.sam.gov/portal/public/SAM/.

III. Post Award Information.

Insurance. Insurance requirements are described in Subsection 107.05.

Contractor Performance Evaluations. This office posts performance evaluations in the *Contractor Performance Assessment Reporting System (CPARS);* for additional information, see http://www.cpars.gov/index.htm. Upon receiving an email notice of evaluation availability, you will have 14-60 days to review the evaluation online and submit comments. If you are unable to access the system, call 360.619.7520 for assistance or for a copy of the evaluation.

IV. Specifications and Permits.

Specifications. This solicitation and subsequent contract are governed by the *Federal Acquisition Regulation (FAR),* agency supplemental regulations, and the *Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-14*. An electronic version may be found at http://flh.fhwa.dot.gov/business/resources/specs/. A single paper copy can also be obtained from the Research & Technology Product Distribution Center (RTPDC) by e-mail to: report.center@dot.gov, or by phone 814-239-1160, or fax 814-239-2156.

Electronic Documentation. Requires all documents (including but not limited to correspondence, notifications, submittals, reports, and pay notes) to be submitted in a pdf format, or an approved fixed-layout electronic format. See Subsection 103.06.

WFL NTB 01/01/04
Include the following when Brand Name or equal is specified.
Edit as required.

Brand Name or Equal. Section [INSERT #], [INSERT SECTION TITLE], specifies a proprietary product. See FAR Provision *52.211-6, Brand Name or Equal*, when opting to use alternate products. Bid Item [INSERT # AND DESCRIPTION] has been identified as "Brand Name or Equal". If your offer is based on a brand name different than that listed in the Special Contract Requirements, the proposed "equal" must be identified in the space provided on the Bid Schedule. Include with your offer all documentation needed by the Government to determine if the proposed product meets the requirements listed in the appropriate Section. The evaluation of

offers and the determination as to equality of the product offered is the responsibility of the Government and will be based on information furnished by the Offeror as well as other information reasonably available to the contracting office. If the proposed "equal" is determined by the government to be "not equal", the bid will be considered nonresponsive.

WFL NTB 09/17/18
Include the following when specifying Permeon or Natina Brand Name or equal products

Carefully review Sections 563 and 725 of the Special Contract Requirements, and account for all material lead time(s) associated with performing work under these Sections.

WFL NTB 03/31/16
Include the following when sources and sites are not identified in the contract.
Examples:
Material sources, water sources, staging areas, stockpile areas, waste area, haul roads, etc.
If necessary be specific (i.e. Material sources for Section 301 and 401 have not ……).
Edit as required.

Material Sources. [INSERT SOURCE OR SITE] have not been identified for this project. Secure all permits and clearances for Contractor-located sites and sources. See Subsection 105.02(c).

WFL NTB 08/01/14
Include the following in all projects with an adjustment for price fluctuations (Include Subsection 109.06A).

Price Adjustment Clause. A price adjustment specification for [INSERT fuel OR asphalt binder OR fuel and asphalt binder] has been included in this [INSERT contract OR task order]. See Subsection 109.06A.

WFL NTB 08/01/14
Include the following with all solicitations when a laboratory trailer will be made available.

Lab Trailers. The Government offers to make available to the Contractor a laboratory trailer with test equipment. See Subsection 154.04A, Laboratory Trailer and Testing Equipment.

WFL NTB 08/01/14
Include the following when the Contractor will be required to purchase merchantable timber.

Merchantable Timber. The timber purchase price established in Subsection 201.03 is based on Government appraisals. However, since the actual market price for timber is subject to continuous changes in market conditions, the Government does not guarantee that the timber required to be purchased by this contract can be profitably marketed at the required purchase price. Bidders are responsible for making their own independent estimate of the market conditions for the time in which they intend to market the timber, and to make any adjustments that they deem appropriate to their bid price to account for such anticipated market conditions.

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ATTENTION

The following Special Contract Requirements (SCRs) are only a portion of the specifications for this project. These SCRs amend and supplement the Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-14. The FP-14 is a separately published book. In order to understand the solicitation properly you need to have the FP-14 as well as this packet. Pay particular attention to the provisions of Subsection 104.04 in the FP-14 that explain how each of the many contract documents fit together.

One printed copy of the FP-14 will be distributed to the successful bidder.

To view the FP-14 electronically, go to:
https://flh.fhwa.dot.gov/resources/specs/

A single paper copy can also be obtained from the Research & Technology Product Distribution Center (RTPDC) by e-mail report.center@dot.gov, phone 814-239-1160, or fax 814-239-2156.

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SCR TABLE OF CONTENTS

SPECIAL CONTRACT REQUIREMENTS (SCR)

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.

DIVISION 100 GENERAL REQUIREMENTS

Section 101. — Terms, Format, and Definitions E-1
Section 102. — Bid, Award, and Execution of Contract E-2
Section 103. — Scope of Work E-3
Section 104. — Control of Work E-6
Section 105. — Control of Material E-8
Section 106. — Acceptance of Work E-11
Section 107. — Legal Relations and Responsibility to The Public E-13
Section 108. — Prosecution and Progress E-17
Section 109. — Measurement and Payment E-20

DIVISION 150 PROJECT REQUIREMENTS

Section 152. — Construction Survey and Staking E-30
Section 153. — Contractor Quality Control E-34
Section 154. — Contractor Sampling and Testing E-40
Section 155. — Schedules for Construction Contracts E-43
Section 156. — Public Traffic E-48
Section 157. — Soil Erosion and Sedimentation Control E-50

DIVISION 200 EARTHWORK

Section 201. — Clearing and Grubbing F-1
Section 204. — Excavation and Embankment F-2
Section 205. — Rock Blasting F-5

DIVISION 250 SLOPE REINFORCEMENT AND RETAINING WALLS

Section 251. — Riprap F-8

DIVISION 300 AGGREGATE AND BASE COURSES

Section 301. — Untreated Aggregate Course F-9

DIVISION 400 ASPHALT PAVEMENTS AND SURFACE TREATMENTS

Section 401. — Asphalt Concrete Pavement by Gyratory Mix Design Method F-15

DIVISION 550 BRIDGE CONSTRUCTION

Section 551. — Drive Piles F-37
Section 552. — Structural Concrete F-39
Section 553. — Prestressed Concrete F-44
Section 554. — Reinforcing Steel F-45
Section 559. — Waterproofing F-46
Section 562. — Temporary Works F-49
Section 564. — Bearing Devices F-50

DIVISION 600 INCIDENTAL CONSTRUCTION

Section 622. — Rental Equipment F-51
Section 623. — General Labor F-52
Section 625. — Turf Establishment F-53
Section 633. — Permanent Traffic Control F-55
Section 635. — Temporary Traffic Control F-56
Section 637. — Facilities and Services F-59

DIVISION 700 MATERIAL

Section 703. — Aggregate G-1
Section 704. — Soil G-3
Section 705. — Rock G-4
Section 712. — Joint Material G-5
Section 713. — Roadside Improvement Material G-6
Section 715. — Piling G-8
Section 717. — Structural Metal G-9
Section 725. — Miscellaneous Material G-10

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Introductory section must end on an even page number.
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DIVISION 100
GENERAL REQUIREMENTS

Section 101. — TERMS, FORMAT, AND DEFINITIONS

09/17/18– FP-14

101.03 Abbreviations. Add the following to paragraph (a):

AMS-STD – Aerospace Material Specification Standard

OHWM or OHW – Ordinary High-Water Mark

SAE – Society of Automotive Engineers

101.04 Definitions. Add the following:

AK DOT&PF— Alaska Department of Transportation and Public Facilities

Holidays — Holidays occur on the following days:

- 1st day of January - New Years' Day;
- 3rd Monday in January - Martin Luther King, Jr. Day;
- 3rd Monday in February - Presidents' Day;
- Last Monday in May - Memorial Day;
- 4th day of July - Independence Day;
- 1st Monday in September - Labor Day;
- 2nd Monday in October - Columbus Day;
- 11th day of November – Veterans' Day;
- 4th Thursday in November - Thanksgiving Day;
- 25th day of December - Christmas Day;
- Other days declared holidays by the Congress or the President; and
- If a holiday occurs on a Saturday, the preceding Friday is also a legal holiday. If a holiday occurs on a Sunday, the Monday following is also a legal holiday.

In-Water Work — Work below the ordinary high-water mark (OHWM or OHW).

Pneumatic Roller — Self-propelled compaction device with smooth pneumatic tires staggered in position to provide overlap between the front and rear tires.

Section 102. — BID, AWARD, AND EXECUTION OF CONTRACT

12/17/18– FP-14

102.05A Contract Award. (Added Subsection).

Follow the requirements of FAR Provision 52.214-19, Contract Award - Sealed Bidding - Construction.

The successful bidder will be awarded all pay items listed in the bid schedule.

Section 103. — SCOPE OF WORK

04/20/18– FP-14

103.01 Intent of Contract. Add the following:

Additional work on sites within or in the vicinity of the project may be requested by the CO. Such work generally will be in response to natural disasters. Provide cost proposals and perform work as ordered by the CO.

103.05 Partnering. Delete the text of this subsection and insert the following:

To facilitate this contract, the CO offers to participate in a partnership with the Contractor. This partnership draws on the strengths of each organization to identify and achieve reciprocal goals. Partnering strives to resolve problems in a timely, professional, and non-adversarial manner. If problems result in disputes, partnering encourages, but does not require, alternative dispute resolution instead of the formal claim process. The objective is effective and efficient contract performance to achieve a quality project within budget and on schedule.

Acceptance of this partnering offer by the Contractor is optional, and the partnership is bilateral.

(a) Formal partnering. If the formal 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 usually between the time of award and the Notice to Proceed. Hold additional progress meetings upon mutual agreement.

The direct cost of formal partnering facilities, professional facilitation, copying fees, and other miscellaneous costs directly related to partnering meetings will be shared by the Contractor and Government. Secure and pay for facilities, professional fees, and miscellaneous requirements. Submit invoices to the CO. The Government will reimburse the Contractor for 50 percent of the agreed costs incurred for the formal partnering process. The Government's share will not exceed $5,000.00

Each party is responsible for making and paying for its own travel, lodging, and meal arrangements. No time extension for the completion of the project will be made for the use of formal partnering.

(b) Informal partnering. If the informal partnering offer is accepted, mutually agree with the CO on the timing and substance of an informal Partnering meeting.

Costs of implementing and maintaining the informal partnership are the responsibility of the party incurring the cost.

WFL Specification 04/20/18
Include the following in all projects. Coordinate with the COE, and edit the second paragraph to require paper copies of documents.

103.06 Electronic Documentation. (Added Subsection).

After award of the contract, provide all written documents in pdf format, or an approved fixed-layout electronic format.

In addition to electronic documents, provide paper copies of the following documents and as requested by the CO:

(a) Documents required under Section 102;

(b) Drawings required under Subsection 104.03;

(c) ESCP/SWPPP of Record required under Subsection 107.01A;

(d) Weight records required under Subsection 109.03;

(e) Receiving records required under Subsection 109.04;

(f) Final voucher and release of claims required under Subsection 109.09;

(g) WFLHD 470 forms required under Section 153;

(h) Construction schedules required under Section 155; and,

(i) Concrete batch tickets required under Subsection 552.09.

Provide documents in their native file format (the format produced by the software that the document was created in) upon request.

Physically sign documents requiring a signature, and scan the documents into an electronic format. Digital signatures, cursive fonts, or other simulated signatures will not be accepted.

Provide a resolution quality where color, text, and lines are clearly discernible. Submit each document in an individual file. Name files with a unique document name that includes the document date, document description, and project number, in the following format or as requested by the CO:

MMDDYYYY_description_project number; where: MMDDYYYY = month, day, and year.

Deliver electronic documents to the email address identified at the preconstruction conference or otherwise amended in writing by the CO. Limit the size of emailed document to 10MB. Deliver files greater than 10MB in size via portable electronic media (such as flash drive), or via Secure

Large File Transfer Solution (SLFTS) at https://slfts.fhwa.dot.gov/. Documents delivered after 5:00 pm local time will be considered received at 7:00 am on the following business day.

The CO will reject without review any documents that are unreadable or corrupted, illegible, or include malicious content.

Provide one paper copy of each document upon request, unless more paper copies are specified.

Section 104. — CONTROL OF WORK

09/17/18– FP-14

104.03 Specifications and Drawings. Amend as follows:

Delete the first paragraph of Subsection (a) and substitute the following:

(a) General. Submittals include both documents and drawings required to construct the work. Review submittals for accuracy, completeness, and compliance with the contract. Verify submittals according to Section 153. Submittals that do not include evidence of Contractor verification may be returned for resubmission.

Submit documents in an electronic format for approval. Submit drawings in both paper and electronic format for approval. See Subsection 103.06.

Time for approval starts over when submittals are returned for revision or if additional information is requested by the CO. Do not perform work related to submitted documents or drawings before approval of the CO. Obtain written approval before changing or deviating from the approved submittals.

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

(1) Documents other than drawings. Documents other than drawings include descriptive literature, illustrations, schedules, performance and test data, certifications, and similar material submitted by the Contractor to certify or explain, in detail, specific portions of the work required by the Contract. Allow 14 days for approval by the CO unless otherwise specified.

Delete the first sentence in the last paragraph of Subsection (a)(2) and substitute the following:

Submit 3 paper sets of drawings, and an electronic set of drawings with supporting calculations.

Delete Subsection (b)(2)*(i)* and substitute the following:

(i) Concrete box culvert, headwall, and wingwall details;

Delete Subsection (b)(3)*(d)* and substitute the following:

(d) Temporary bridge structures for public use, and load ratings for temporary bridge structures for public use.

WFL Specification 01/01/14
Include the following when other contracts in close proximity may have an effect on this project. List point of contact if applicable.

104.06 Other Contracts. (Added Subsection).

Follow the requirements of FAR Clause 52.236-8 Other Contracts.

[INSERT LANGUAGE].

Section 105. — CONTROL OF MATERIAL

09/17/18– FP-14

105.02 Material Sources. Amend as follows:

(a) Government-provided sources. Delete the text of this Subsection and substitute the following:

There are no Government-provided sources for this project.

(b) Government-provided material stockpile. Add the following:

There are no Government-provided material stockpiles for this project.

(c) Contractor-located sources. Delete the text of this Subsection and substitute the following:

The Contractor is responsible for Contractor-located material sources, including established commercial material sources. Use sources that fulfill the contract quantity and quality requirements. Determine the quantity, type of equipment, and work necessary to select and produce an acceptable material. Secure permits and clearances for use of the source and submit copies of the documents to the CO. Submit available historical data indicating acceptable material can be produced from the source. Perform quality control sampling and testing according to the approved Contractor Quality Control Plan in Section 153, aggregate source quality tests, and applicable Sampling, Testing, and Acceptance Requirements table included at the end of each Section. Allow the CO the opportunity to witness sampling and splitting of the test material.

Sites outside construction limits. Activities outside the construction limits that will require ground disturbance, occupation, clearing, or other environmental impacts are limited to the following: material sources, waste sites, staging areas, water sources. Provide the following documents before using these sites.

The requirements (1) through (6) below do not apply to Government designated sources or commercial sources that are established, have provided material to public and private entities on a regular basis over the last two years, have appropriate State and local permits, and do not require expansion outside their currently established and permitted area.

(1) Proposed activity description. Submit a description, schedule, and location of the proposed activities for approval by the CO. Include maps of the area and other relevant information.

(2) Cultural resources. Submit written documentation satisfactory to the CO for a recommendation of either "no historic properties affected" or “no effect” according to 36 CFR 800.4(d)(1) for historic properties on or eligible for listing to the National Register of Historic Places. Provide either:

(a) Documentation showing there are no cultural resources present, and a recommendation of either "no historic properties affected" or “no effect” according to

36 CFR 800.4(d)(1). Documents must be prepared by an individual qualified under the Secretary of the Interiors' Standards and Guidelines for Archeology and Historic Preservation, 48 FR 44716-44740.

Documentation must be satisfactory to the State Historic Preservations Officer (SHPO) or Tribal Historic Preservations Officer (THPO) as appropriate, according to 36 CFR 800.3(c).

The CO will submit the documentation to the SHPO or THPO. Anticipate a minimum of 45 days from receipt of the documentation by the SHPO or THPO before use of the site may be approved; or

(b) Documentation showing a finding of either "no historic properties affected" or "no effect" according to 36 CFR 800.4(d)(1) has been previously obtained for the proposed activities from the State, Tribal Government or Federal Land Management Agency responsible for the land. Include attached copies of SHPO concurrence, or Memorandum of Agreement (MOA) where concurrence is not required.

(3) Species protected under the Endangered Species Act of 1973. Submit written documentation satisfactory to the CO that the proposed action will have no effect to any threatened or endangered species or their critical habitat. Provide either:

(a) A current list of all threatened or endangered species in the site of proposed activities from the U.S. Fish and Wildlife Service; and a recommendation of a "no effect" determination according to Section 7 of the Endangered Species Act prepared by a biological specialist with a minimum of 3 years of experience in Endangered Species Act compliance or other qualifications acceptable to the CO. Allow for a minimum of 45 days from submittal to the CO before use of the site may be approved; or

(b) Documentation showing the proposed activities have previously been determined to comply with the Endangered Species Act and this determination remains valid. This documentation must be from the State, Tribal Government or Federal Land Management Agency responsible for the land. Attach evidence of compliance, including correspondence with the U.S. Fish and Wildlife Service.

(4) Wetlands as defined by the U.S. Army Corps of Engineers' 1987 Wetland Delineation Manual (WDM). Submit written documentation satisfactory to the CO, that the proposed action will comply with Section 404 of the Clean Water Act, Executive Order 11990, and will not affect any wetlands. Documentation must be prepared by a wetland specialist with a minimum of 3 years of experience in wetland delineation using WDM or other qualifications acceptable to the CO.

(5) Federal lands. Before use of sites on federal lands, submit a copy of the Letter of Approval or Special Use Permit from the applicable federal agency allowing use of the site for intended purposes.

(6) Tribal, state and local approvals. Comply with applicable laws regarding the proposed activities. Submit copies of required clearances, including hazardous waste compliance, tribal, State and local permits and approvals.

Allow 12 days (in addition to other agency time requirements) for approval of documents submitted to the CO.

Weed free certification. All material sources and materials incorporated into the work must be certified to be free from noxious weeds, invasive plants, and other deleterious materials by a federal, state or local public agency. Commercial certifications may be acceptable if materials have been certified through the North American Weed Free Forage Program standard or a similarly recognized certification process approved by the CO. Submit material certifications to the CO for approval at least 5 days before their use in the work.

WFL Specification 09/17/18
Include the following when staging or stockpiling of materials is required.
Only insert "portions of the right-of-way approved by the CO" if there is a possibility of portions being approved.
Coordinate with Partner Agency and edit as required.

105.04 Handling and Storing Material. Delete the text of the second paragraph and substitute the following:

Use [INSERT AREA NAME OR LOCATION AND/OR portions of the right-of-way approved by the CO] for staging or storing of materials such as culverts, geotextile fabric, temporary traffic control devices; and for equipment parking.

Provide additional space as needed. Do not use private property for staging or storage without written permission of the owner or lessee. Submit copies of agreements and documents.

Section 106. — ACCEPTANCE OF WORK

03/25/19– FP-14

106.01 Conformity with Contract Requirements. Amend as follows:

Add the following to the second paragraph:

Use the procedures for sampling and testing contained in the WFLHD *Sampling and Testing Methods,* except, when a specified sampling or test method is not included in this supplement, sample and test according to the referenced test procedure.

Delete the third paragraph and substitute the following:

Use the FLH *Field Materials Manual (FMM), Appendix B: FLH Test Methods* in effect on the date of the IFB or RFP. Electronic copies of the FLH Test Methods can be downloaded from:

https://flh.fhwa.dot.gov/resources/materials/fmm/

Delete the fourteenth paragraph and substitute the following:

Remove, repair, or replace work that does not conform to the contract, or to prevailing industry standards where no specific contract requirements are noted. Remove, repair, or replace work; provide temporary traffic control; and perform other related work to correct nonconformities at no cost to the Government.

Add the following:

Obtain copies of the following documents at:

https://flh.fhwa.dot.gov/resources/construction/paynotes/

- *Construction Paynote Examples*, dated August 2011.

Obtain copies of the following documents at:

https://flh.fhwa.dot.gov/resources/materials/

- *WFLHD Sampling and Testing Methods*;
- Materials Testing Forms;
- FLH T 521 – *Standard Method of Test for Determining Riprap Gradation by Wolman* Count; and,
- FLH Addendum to AASHTO T 308 – *Standard Method of Test for Correction Factors for Hot Mix Asphalt (HMA) Containing Recycled Asphalt Pavement (RAP) by the Ignition Method*.

106.02 Visual Inspection. Delete the text of this Subsection and substitute the following:

Acceptance is based on visual inspection of the work for compliance with the specific contract requirements. Use prevailing industry standards in the absence of specific contract requirements or tolerances.

106.03 Certification. Add the following after the second paragraph:

Obtain required certifications and maintain records of all required certifications according to Subsections 103.04, 153.04, and 155.07.

Submit a completed Form WFLHD 87 *Certification of Compliance* with each material requiring a certification. An electronic version may be found at:

https://flh.fhwa.dot.gov/resources/construction/forms/wfl/.

Submit all certifications to the CO unless otherwise specified in the Section ordering the work.

Section 107. — LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

09/17/18– FP-14

107.01 Laws to be Observed. Delete the third paragraph and substitute the following:

Comply with the terms and conditions included in all permits and agreements obtained by the Government for performing the work included in this contract (See Section H). Notify the CO immediately of any changes, including modifications to Government-obtained permits, or any additional permits or agreements that are required by the Contractor's methods of operation. Allow adequate time in the construction schedule for any additional permits or changes to Government-obtained permits. Furnish copies of all acquired permits and agreements not in the contract.

Note: Insert permit requirements and responsibility for removal of erosion control features. Coordinate with Subsection 157.15.

[INSERT REQUIREMENTS]

WFL Specification 04/20/18
Include the following when a Fire Protection and Suppression Plan is required.

Comply with the requirements of the Fire Protection and Suppression Plan included in this contract (See Section J).

107.01A Alaska Pollutant Discharge Elimination System (APDES) Authorization. (Added Subsection).

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

(b) Preparation of the Storm Water Pollution Prevention Plan (SWPPP). Prepare a SWPPP in accordance with the requirements of the APDES Construction General Permit (CGP) and contract requirements. The SWPPP may use information found in the Government's preliminary SWPPP listed under FAR Clause 52.236-4. Work on the SWPPP may begin before the Notice to Proceed is given. Follow the FHWA format in the SWPPP binder provided by the CO, including the narrative, maps, erosion control details and layout sheets, forms, and documentation.

(1) Complete the SWPPP narrative (tab 1) provided in the physical data or prepare a new SWPPP narrative. Include in the SWPPP narrative a statement stating that the Contractor is responsible for performing all work required in the SWPPP, including establishing

measures to prevent water pollution, performing inspections, and submitting required reports.

(2) Revise or prepare new site maps (tab 5) and erosion/sediment control details and layout sheets (tab 6) as necessary to accommodate project site conditions and proposed construction operations. Include map locations and erosion and sediment control measures for all Government-provided:

(a) Staging areas;

(b) Equipment storage areas;

(c) Erodible stockpiles; and

(d) Other locations required by the CGP.

(3) Identify the Erosion Control Supervisor and their qualifications in the SWPPP.

(4) Submit the SWPPP to the CO. Allow 10 working days for CO approval of SWPPP. Co-sign the approved SWPPP and maintain it as the SWPPP of record for the project. Make the SWPPP available for public and regulatory-agency inspection.

(c) Notice of Intent (NOI). After the SWPPP is signed, file a NOI with the Alaska Department of Environmental Conservation (ADEC). Use the information in the Government NOI (Appendix H) when filing the Contractor NOI.

The NOI can be filed by hardcopy or electronically. File the electronic NOI at the following website:

http://www.dec.state.ak.us/water/wnpspc/stormwater/APDESeNOI.html.

Provide a copy of the NOI and ADEC acknowledgement email to the CO.

Do not perform any ground disturbing activities including clearing, grubbing, or earthwork until the conclusion of the 7-day waiting period as stated in the ADEC acknowledgement letter or as otherwise provided by ADEC.

(d) Public Notice. Provide an aluminum sign panel to be installed in a location approved by the CO. Fabricate and mount signs according to Section 635. Post signs in a publicly accessible location. Furnish signs containing the following APDES CGP information:

(1) The APDES Permit tracking number.

(2) Contractor's contact name and phone number for obtaining additional information.

(3) A laminated copy of the completed NOI as submitted to DEC.

(4) Laminated 8.5" x 11" sheet of paper that includes the following statements:

- If you would like to obtain a copy of the Storm Water Pollution Prevention Plan (SWPPP) for this site, contact the [include the SWPPP inspector contact information].

- If you observe indicators of storm water pollutants in the discharge or in the receiving waterbody, contact the EPA through the following website: https://www.epa.gov/enforcement/report-environmental-violations.

(e) Inspections. Perform SWPPP inspections as required in the CGP, Part 6.0, and the SWPPP. Document inspections using FHWA forms provided in the SWPPP of record and retain the records in the SWPPP binder. Submit each inspection to the CO for approval. Allow 2 working days for CO approval of inspections. Co-sign each approved inspection and file in the SWPPP binder. Complete all SWPPP inspections and forms as construction progresses until final acceptance.

(f) Revisions to the SWPPP. Ensure that all erosion and sediment control procedures, practices, and inspections are current as required by the CGP. Revise the SWPPP as necessary during construction. Submit each revision to the CO for approval. Allow 2 working days for CO approval of a revision. Co-sign each approved SWPPP revision and file in the SWPPP binder. Implement approved revisions and corrective actions according to the timelines in the CGP.

(g) Notice of Termination (NOT). File the NOT when all conditions for terminating the permit have been met as described in CGP. Do not file the NOT without the CO's approval. If the site has not reached final stabilization at final acceptance of the project, request transfer of permit responsibility to the CO. Provide a copy of the NOT and ADEC acknowledgement email to the CO.

Provide the CO with the complete SWPPP of record upon final acceptance of the project, including inspection forms, logs, and all other required documentation added during project construction.

(h) Contractor selected sites. Prepare separate SWPPP and file separate NOI for all Contractor-selected sources and all waste, borrow, and staging sites not included in the contract. These SWPPP(s) and NOI(s) are solely the responsibility of the Contractor. Do not submit to CO for approval or for signature.

107.02 Protection and Restoration of Property and Landscape. Amend as follows:

Delete the third paragraph and substitute the following:

Do not disturb any area outside the construction limits unless authorized according to Subsection 105.02(c). Replace trees, shrubs, or vegetated areas outside the construction limits damaged by construction operations as directed and at no cost to the Government. Only remove damaged limbs of existing trees when directed by an approved arborist.

107.03A Public Notice. (Added Subsection).

Publish notices of the road work in local newspapers and on local radio stations. Refer to Subsection 156.09(n) for additional notice requirements. Include a description of the work, expected delays, and periods when the road is open to traffic without delays. Issue the notice at least 5 days before beginning work on the project, before beginning work after a winter suspension, at least two times during the normal tourist season and prior to subsequent construction phases requiring changes to the previously published delay schedule. Reissue notices prior to any changes to public delays per Subsection 156.07(i).

107.08 Sanitation, Health, and Safety. Add the following after the first paragraph:

Submit an accident prevention plan for implementing safety and health standards at the Preconstruction Conference. Use the Government furnished Form WFLHD-28, *Guide Outline of Contractor's Accident Prevention Plan*.

107.10 Environmental Protection. Amend as follows:

(d) Clearance for contractor-selected noncommercial sources. Delete this Subsection and substitute the following:

(d) Other requirements.

Comply with the following requirements:

(1) [INSERT LANGUAGE AS APPROPRIATE]

Section 108. — PROSECUTION AND PROGRESS

12/17/18– FP-14

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

Furnish at least a 48-hour advanced notice before changing the current work schedule. Work schedule changes that include additional shifts require a 14-day advanced notice.

Perform work under this contract according to the following:

(a) Limit work as provided for in Sections 105, 107, and 157.

(b) Limit work as provided for in Subsection 156.07.

( ) [INSERT LANGUAGE].

( ) [INSERT LANGUAGE].

108.01A Labor. (Added Subsection).

Follow the requirements of FAR Clause 52.222-6 Construction Wage Rate Requirements.

Adjacent or virtually adjacent work sites, as used in FAR Clause 52.222-6, are defined to be work sites within ½ mile of the project. Application of Construction Wage Rate Requirements (Davis-Bacon Act) for work sites beyond ½ mile of the project will be determined by the CO.

108.02 Subcontracting. Amend as follows:

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

Follow the requirements of FAR clauses 52.219-4, Notice of Price Evaluation Preference for HUBZone Small Business Concerns, 52.222-11 Subcontracts (Labor Standards), and 52.236-1, Performance of Work by the Contractor.

Delete the last paragraph and substitute the following:

Evaluate the percentage of the cost of contract performance incurred for personnel in FAR Clause 52.219-4, Notice of Price Evaluation Preference for HUBZone Small Business Concerns, according to the following formula:

$P = H / T$

where:

P = Percent of the cost of contract performance incurred for personnel working for HUBZone firms.

T = Total wages/benefits paid during the life of the contract. Certified payrolls will be used to determine Davis-Bacon wages and benefits paid. Submit certified statements at least monthly declaring the wages and benefits paid to non-Davis Bacon personnel under this contract.

H = Total wages/benefits paid to employees working for HUBZone firms (prime and subcontractors).

In FAR Clause 52.236-1, Performance of Work by the Contractor, the percentage of work performed on-site by the Contractor will be computed as 100 percent less the combined initial dollar amount of all subcontracts involving on-site labor as a percent of the original dollar amount of the contract.

108.03 Determination and Extension of Contract Time. Amend as follows:

Add the following to paragraph (c):

No adjustment in contract time or amount will be made for stop orders issued under Subsection 108.05(a) or (b), except an adjustment in contract time, as provided by FAR Clause 52.249-10 Default (Fixed-Price Construction), may be made when the Contractor is able to demonstrate that the weather was unusually severe based on the most recent 10 years of historical data.

108.04 Failure to Complete Work on Time. Delete this Subsection and substitute the following:

Follow the requirements of FAR Clause 52.211-12 Liquidated Damages — Construction.

Liquidated damages in the amount specified in Table 108-1 will be assessed for each calendar day beyond the time specified in the contract until substantial completion of the work.

Liquidated damages will not be assessed for the following:

(a) The day of the final inspection.

(b) Days required to perform work added to the contract after substantial completion including items identified during the final inspection that were not required before that time.

(c) Delays by the Government after all work is complete and before a formal acceptance is executed.

(d) Periods of time when all work is complete but acceptance is delayed pending the plant establishment period or similar warranty period.

(e) During winter shutdown periods ordered by the CO.

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

Original Contract Price		Daily Charge
From More Than —	To and Including —	
$ 0	$ 1,000,000	$ 1,000
$ 1,000,000	$ 2,000,000	$ 1,800
$ 2,000,000	$ 5,000,000	$ 3,500
$ 5,000,000	$ 10,000,000	$ 4,400
$ 10,000,000	and more	$ 5,200

108.05 Stop Order Delete the last paragraph.

WFL Specification 01/01/04
Include the following when there is a known, but indefinable suspension. Use only if the burden of risk is to be assumed by the Government.
Example:
Nesting or migrating Endangered Species, be specific.

108.06 Suspension. (Added Subsection).

Follow the requirements of FAR Clause 52.242-14 - Suspension of Work.

Suspend work, either in whole or in part, for such periods deemed necessary due to [INSERT REASON]. See Subsection 107.10.

Section 109. — MEASUREMENT AND PAYMENT

09/17/18– FP-14

109.01 Measurement of Work. Delete the text of this Subsection and substitute the following:

Take and record measurements and perform calculations to determine pay quantities for invoicing for work performed. Take or convert all measurements of work according to U.S. Customary (Metric) measure.

Unless otherwise specified, measure when the work is in-place and complete according to the contract. Measure the actual work performed, except do not measure work outside the design limits or other adjusted or specified limits (staked limits). Measure structures to the lines according to the plans or to approved lines adjusted to fit field conditions.

Take measurements as described in Subsection 109.02 unless otherwise modified by the Measurement Subsection of the Section controlling the work being performed. For individual pay items, the decimal accuracy for measurement of quantities will be determined by the CO. Decimal accuracy for measurement is one decimal beyond the accuracy of the quantity for payment.

Remeasure quantities if it has been determined that a portion of the work is acceptable, but has not been completed to the lines, grades, and dimensions shown in the plans or established by the CO.

Submit measurement notes within 24 hours of completing work that is in-place and complete according to the contract. For on-going work, submit measurement notes weekly. When work is not complete, identify the measurement as being an interim measurement. Submit the final measurement when the installation is completed. Measurement notes form the basis of the Government's receiving report; see Subsection 109.08(d). For lump sum items, submit documentation that supports invoiced progress payments each month.

Use an acceptable format for measurement notes. Include the following minimum information:

(a) Project number and name;

(b) Line item number, pay item number and description;

(c) Date the work was performed;

(d) Location of the work;

(e) Measured quantity;

(f) Calculations made to arrive at the quantity;

(g) Supporting sketches and details as needed to clearly define the work performed and the quantity measured;

(h) Names of persons measuring the work;

(i) Identification as to whether the measurement is interim or final; and

(j) Signed certification statement by the persons taking the measurements and performing the calculations, that the measurements and calculations are correct.

Prepare pay item measurement notes on Form FHWA 17-348 *Daily Record of Measurement and Payment*. An electronic version of the form is available at:

https://flh.fhwa.dot.gov/resources/construction/forms/wfl/.

109.02 Measurement Terms and Definitions. Amend the following:

Delete paragraph (o) and substitute the following:

(o) Square foot and Square yard (Square meter). 1 square yard equals 9 square feet. Measurements for area computations will be made horizontally or vertically to the surface being measured. No deductions from the area computation will be made for individual fixtures having area of 9 square feet (1 square meter) or less. Do not measure overlaps.

Add the following:

(s) Fixed hourly rate. 60 minutes. Measure the actual number of hours ordered by the CO and performed by the Contractor. Round portions of an hour up to the next half hour. Measure time exceeding 40 hours per week at the same rate as the first 40 hours.

109.06 Pricing of Adjustments. Add the following after the third paragraph:

At the preconstruction conference, furnish the following information to the CO, which will be used to price future adjustments and contract modifications.

- **Overhead.** Furnish the CO with a copy of the current certified or audited jobsite and home office overhead costs for the Contractor and Subcontractors. Provide supporting data, which justifies the costs. List costs that are included in overhead and identify the cost pool(s) to which overhead is applied.

- **Equipment.** Furnish the CO with a complete descriptive listing of equipment to be used by the Contractor and Subcontractors, including the make, model, and year of manufacturer of each piece of equipment, including attachments to the base equipment. Furnish the following cost information:
    - *Rented Equipment.* Provide current invoices to support rented or leased equipment costs.
    - *Owned Equipment.* Determine allowable ownership and operating costs for Contractor- and Subcontractor-owned equipment using actual equipment cost data determined from the operating cost records. If actual equipment cost data is not available, provide the CO with a statement signed by the highest officer or official in the company that such cost data is not available. Also provide a complete set of supporting documentation containing all ownership records that are available, including any purchase records, depreciation records, maintenance records, or other records that relate to the ownership and operating costs for each piece of equipment. When actual costs cannot be determined, use the rates shown in the U.S. Army Corps of Engineers Construction Equipment Ownership and Operating Expense Schedule

(CEOOES) for the region where costs are incurred. Adjust the rates for used equipment and for other variable parameters used in the schedules. Provide the CO with a completed WFLHD Form 103, proposed CEOOES rates for each piece of equipment with supporting calculations, and any other necessary documentation about the equipment to calculate allowable ownership and operating costs using CEOOES. An electronic version of the WFLHD Form 103 form is available at: https://flh.fhwa.dot.gov/business/resources/construction/forms/wfl/.

For equipment that is not planned to be used at the time of the preconstruction conference, but is later used on the project, provide required information and data prior to mobilizing the equipment to the project.

WFL Specification 7/21/17

Include the following on projects that meet all of the following conditions:

- **NOT funded by DoD (Department of Defense);**
- **greater than 1 year in duration;**
- **engineers estimate over $2.5 million;**
- **includes pay items from Table 109-2 that total more than 25% of the engineers estimate; and,**
- **approved by the Construction Operations Engineer.**

Contact a CO if you want to change the payment/rebate to something other than 50% of the Base Price Index.

See WFLHD PDDM Supplement 9.6.8.6-1 at:
https://flh.fhwa.dot.gov/resources/design/pddm/wfl/ch09/9.6.8.6-1.pdf, for more information.

The Construction Branch is responsible for obtaining and maintaining prices for the indexes.

Coordinate with Construction's Final Review Engineer to set up monitoring controls.

109.06A Adjustments for Price Fluctuations. (Added Subsection).

Price adjustments for pay items listed in Table 109-1 will be made when the price fluctuation for products used in the performance of the work exceed specified limits. Adjustments are not intended to compensate for normal day-to-day fluctuations, seasonal changes, or to serve as a guarantee of full compensation for price fluctuations. It does provide for sharing in a portion of the risk, which could result from unusual price fluctuations. No price adjustments will be made for work performed beyond the fixed completion date.

Table 109-1
Pricing Adjustment Pay Items

Line Item Number	Pay Item Number	Pay Item Description	Product
[INSERT NO.]	20401-0000	Roadway excavation	Fuel
[INSERT NO.]	30101-0000	Aggregate base	Fuel
[INSERT NO.]	40101-1000	Asphalt concrete pavement, gyratory mix,	Asphalt binder & Fuel

Monthly adjustments will be accrued with the payment or rebate to be made in the final voucher. A partial price adjustment payment may be made once every 12 months or when the unpaid accrued increase exceeds $10,000 when requested in writing. The Government will withhold a rebate when the deductive accrual exceeds $10,000.

The maximum allowable monthly and final adjustment for payment to the Contractor or rebate to the Government is limited to 50% of the Base Price Index.

(a) Asphalt binder adjustment. The Government will determine price indexes using price data obtained from the *Asphalt Weekly Monitor*® by Poten and Partners, Inc. The weekly high and low selling price data for [INSERT TYPE OF ASPHALT PRICED USED] reported for [INSERT Eastern Montana, Western Montana, Northern Wyoming, Boise, Northern Idaho, Seattle, or Portland] will be averaged and used to establish a Base Price Index (BPI) and a Monthly Performance Price Index (MPPI). These indexes are defined as follows:

(1) Base Price Index. The Base Price Index (BPI) is a price index determined by the arithmetic average for prices in the four *Asphalt Weekly Monitor*® publications immediately preceding the bid opening.

$BPI_{(Asphalt\ Binder)}$ = $ [PRICE TO BE INSERTED AT AWARD] per ton

(2) Monthly Performance Price Index. The Monthly Performance Price Index (MPPI) is the arithmetic average of the weekly price data from four *Asphalt Weekly Monitor*® publications issued before the last Wednesday of the month in which the work was performed.

The BPI and MPPI will be posted at:

https://flh.fhwa.dot.gov/business/construction/escalation/wfl/.

Asphalt binder contained in recycled asphalt pavement (RAP) incorporated into the mix will be excluded from price adjustments. Price adjustments to asphalt binder will be calculated by the Government using a ratio of the MPPI/BPI 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 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 as follows:

  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 as follows:

  Contractor Payment = (MPPI/BPI – 1.10) (BPI) (Q)

  where:

  Q = Table 109-1 pay item quantity (tons or metric tons) x ((% Asphalt Binder/100) – (% RAP/100 x % asphalt binder in RAP/100));

  % Asphalt Binder = % Binder by Mass of Total Mix from the approved job-mix formula;

  % RAP = percent recycled asphalt pavement from the approved job-mix formula; and

  % asphalt binder in RAP = percent of asphalt binder in recycled asphalt pavement from the approved job-mix formula.

When calculating the payment or rebate, the Government will round each portion of the calculation to two decimal places.

(b) Fuel Price Adjustment. The Government will determine price indexes for fuel using price data obtained from the Oil Price Information Service (OPIS) which publishes a daily report (Monday through Friday) on gasoline and distillate reseller prices. Gross No. 2 Distillate rack average price data for Ultra Low Sulfur No. 2 Diesel fuel reported for Anchorage, AK will be averaged and used to establish a Base Price Index (BPI) and a Monthly Performance Price Index (MPPI). These indexes are defined as follows:

(1) Base Price Index. The Base Price Index (BPI) is a price index determined by the arithmetic average as specified above, reported in the OPIS publications for the four weeks immediately preceding the bid opening.

BPI (LOW SULFUR, NO. 2 DIESEL FUEL) = $ [PRICE TO BE INSERTED AT AWARD] per U.S. gallon

(2) Monthly Performance Price Index. The Monthly Performance Price Index (MPPI) is the arithmetic average of the weekly price data from OPIS publications issued before the last Wednesday of the month in which the work was performed.

The BPI and MPPI will be posted at:

https://flh.fhwa.dot.gov/business/construction/escalation/wfl/.

Price adjustments to fuel will be calculated by the Government using a ratio of the MPPI/BPI 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 fuel 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 as follows:

  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 as follows:

  Contractor Payment = (MPPI/BPI – 1.10) (BPI) (Q) (FUF)

  where:

  Q = Quantity of work on the project during the progress payment period for pay items shown in Table 109-1; and

  FUF = Fuel Usage Factor shown in Table 109-2.

When calculating the payment or rebate, the Government will round each portion of the calculation to two decimal places.

Table 109-2
Fuel Usage Factors

Pay Items	Fuel Usage Factor[(2)]
Section 204 – Excavation and Embankment 20401 Roadway excavation 20402 Subexcavation 20403 Unclassified borrow 20420 Embankment construction 20421 Rock excavation	0.30 gallons/yard^3 (0.39 gallons/meter^3)
Section 204 – Excavation and Embankment 20410 Select borrow[(1)] 20411 Select borrow 20415 Select topping[(1)] 20416 Select topping	0.70 gallons/ton (0.77 gallons/metric ton)
Section 301 – Untreated Aggregate Courses 30101 Aggregate base 30102 Aggregate base[(1)] 30103 Aggregate base[(1)] 30105 Subbase 30106 Subbase[(1)] 30107 Subbase[(1)] 30110 Aggregate Surface Course 30111 Aggregate Surface Course[(1)]	0.70 gallons/ton (0.77 gallons/metric ton)

Pay Items	Fuel Usage Factor[2]
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/ton (2.65 gallons/metric ton)

[1] The Government will convert pay item quantities to match Fuel Usage Factor units.
[2] Fuel Usage Factor based on U.S. gallons.

WFL Specification 09/17/18
Include the following in all projects that DO have Subsection 109.06A Adjustments for Price Fluctuations.
(closing date for the progress payment is the last day of the month for ease in price adjustment calculations)

109.08 Progress Payments. Amend as follows:

Delete paragraph (b) and substitute the following:

(b) Closing date and invoice submittal date. The closing date for progress payments will be the last day of the month. Include work performed after the closing date in the following month's invoice. For work performed between September and July of any year, 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, for work included in the September through July invoices, will not be accepted for payment processing that month. For work included in the August invoice, submit the invoice to the designated billing office by the 5th day after the closing date. Invoices received by the designated billing office after the 5th day following the closing date, for work included in the August invoice, will not be accepted for payment processing that month. Include late, unprocessed invoice submittals in the following month's invoice.

WFL Specification 9/17/18
Include the following in all projects that do NOT have Subsection 109.06A Adjustments for Price Fluctuations.

109.08 Progress Payments. Amend as follows:

Delete paragraph (b) and substitute the following:

(b) Closing date and invoice submittal date. The closing date for progress payments will be designated by the CO. Include work performed after the closing date in the following month's invoice. For work performed between September and July of any year, 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, for work included in the September through July invoices, will not be accepted for payment processing that month. For work included in the August invoice, submit the invoice to the designated billing office by the 5th day after the closing date. Invoices received by the designated billing office after the 5th day following the closing date, for work included in the August invoice, will not be accepted for payment processing that month. Include late, unprocessed invoice submittals in the following month's invoice.

Delete paragraph (e) and substitute the following:

(e) Processing progress payment requests. No payment will be made for work unless field note documentation for the work was provided by the closing date.

(1) Work performed between September and July.

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

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

(2) 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 Contractors' invoice exceed the corresponding quantities and unit prices shown on the Governments' 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 has quantities or unit prices exceeding the corresponding quantities and unit prices shown on the Governments' receiving report, the Government's data for that item of work will be used. The Contractors' invoice, as revised by the Governments' 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.

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

(1) Proper invoices. If the invoice meets the requirements of Subsection 109.08(c), and the quantities and unit prices shown on the Contractors' invoice agree with the corresponding quantities and unit prices shown on the COs' receiving report, the

invoice will be deemed proper and forwarded for processing within 7 days of receipt.

(2) 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 Governments' receiving report, the Government's data for that item of work will be used. The Contractors' invoice, as revised by the Governments' receiving report, will be forwarded for processing within 7 days after receiving the invoice. The Contractor will be notified, within 7 days of the Government's receipt of the invoice, of the reasons for any changes to the invoice.

(2) Work performed during August.

(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 Governments' receiving report, the Government's data for that item of work will be used. The Contractors' invoice, as revised by the Governments' receiving report, will be forwarded for processing within 7 days after receiving the invoice. The Contractor will be notified, within 7 days of the Government's receipt of the invoice, of the reasons for any changes to the invoice.

Delete paragraph (f) and substitute the following:

(f) Partial payments. Invoices may include the following:

(1) Progress payments may include partial payment for material to be incorporated in the work, provided the material meets the requirements of the contract and is delivered on, or near, the project site or stored in acceptable storage places.

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.

(2) Partial payment for preparatory work. Partial payment for preparatory work does not constitute acceptance of work.

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

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

The quantity paid will not exceed the corresponding quantity estimated in the contract.

Submit pay notes according to Subsection 109.01. Provide a cost breakdown of the bid item components and submit invoices or other documents supporting the partial payment.

The CO may adjust partial payments as necessary to protect the Government.

109.09 Final Payment. Add the following after the first paragraph:

Payment for individual pay items will be based on the awarded unit price for each pay item according to the following table.

Decimal Accuracy of Quantities for Payment

Awarded unit price	Decimal Accuracy of Quantities for Payment
< $1.00	0 decimals
≥ $1.00 to < $100.00	1 decimals
≥ $100.00 to < $1000.00	2 decimals
≥ $1000.00	3 decimals

DIVISION 150
PROJECT REQUIREMENTS

Section 152. — CONSTRUCTION SURVEY AND STAKING

09/17/18–FP14

Description

152.01 Add the following:

WFL Specification 09/17/18
Consult the Construction Operations Engineer assigned to the project.
Include the following on earthwork projects that are likely to use Automated Machine Guidance grading methods, AND it has been determined that Government owned surveying equipment will not be available.

The work also includes: providing, configuring, and maintaining Robotic Total Station (RTS) equipment, Global Positioning System (GPS) equipment, or both, for exclusive use by the CO when Automated Machine Guidance (AMG) methods are employed; and training the CO on the use of the provided equipment.

Construction survey methods are defined as follows:

(a) Automated Machine Guidance (AMG) method. Grading equipment controlled with robotic total station (RTS) technology, global positioning system (GPS) technology, or a combination of the two.

(b) Conventional survey methods. All other survey methods.

Construction Requirements

152.02 Qualifications. Add the following:

Conform to the following:

(a) Personnel. Provide a crew supervisor on the project whenever surveying and staking is in progress.

(b) Equipment. Furnish survey instruments and supporting equipment capable of achieving the specified tolerances.

Construction equipment controlled with AMG methods may be used in earthwork and the construction of subgrade; constructing subbase, base, and surface aggregate courses; or other construction operations when approved.

(c) Material. Furnish acceptable tools and supplies of the type and quality suitable for highway survey work. Furnish stakes and hubs of sufficient length to provide a solid set in the ground with sufficient surface area above ground for necessary legible and durable markings.

152.04 General. Delete the text of this Subsection and substitute the following:

Include staking activities in the construction schedule submitted according to Section 155. Include the dates and sequence of each staking activity.

At the preconstruction conference, submit a cost breakdown of the work included in the lump sum item for the purpose of making progress payments.

(a) Government set reference lines and points. The Government has set horizontal and vertical control points for the project. The location and identity of each control point are shown on the plans.

Before beginning construction, notify the CO of any missing control points or stakes. The Government will reestablish control points and stakes missing before the beginning of construction.

(b) Government furnished information. The Government will furnish the design data described below:

(1) Proposed horizontal alignment(s) and profile grade(s) reports in Portable Document Format (.pdf);

(2) Cross Sections in Portable Document Format (.pdf);

(3) Earthwork end area volume report in Portable Document Format (.pdf);

(4) Superelevation report in Portable Document Format (.pdf);

(5) Clearing limits (based on theoretical catch points) in Portable Document Format (.pdf);

(6) Construction staking notes containing subgrade points at centerline and shoulders, and theoretical slope stake catch points, in Comma Separated Values (.csv) and Portable Document Format (.pdf); and,

(7) X, Y, Z coordinates of subgrade and base layer(s) points at centerline and shoulders, in Comma Separated Values (.csv) and Portable Document Format (.pdf).

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

(c) Pre-survey meeting. Before surveying or staking, discuss and coordinate the following with the CO:

(1) Surveying and staking methods;

(2) Stake marking;

(3) Grade control for courses of material;

(4) Referencing;

(5) Structure control;

(6) Field staking data;

(7) Localization of the GPS systems to the Government-established control points; and

(8) Other procedures and controls necessary for the work.

Do not start work until staking or three-dimensional (3D) verification data for the affected work has been approved.

Preserve initial reference and control points. Notify the CO of missing control points or stakes at least 10 days before beginning construction. The Government will reestablish control points and stakes missing before the beginning of construction.

Acceptance of the construction staking does not relieve the Contractor of responsibility for correcting errors discovered during the work and for bearing additional costs associated with the error.

Maintain legibility of stake markings for the duration of the project or until notified in writing the stakes are no longer needed. Replace stakes if necessary to ensure markings are maintained.

Record survey and measurement field data in an approved format. Sample note formats are available as listed in Subsection 106.01. Submit as-staked data and corrections made to the Government-furnished survey data. Submit survey and measurement data at least weekly.

The construction survey and staking work may be spot-checked for accuracy, and unacceptable portions of work may be rejected. Resurvey rejected work, and correct work that is not within the tolerances specified in Table 152-1.

Remove and dispose of flagging, paint, lath, stakes, and other staking material after the project is complete.

Compute and furnish calculations supporting pay quantities. Measure quantities within the tolerances established by the CO according to Subsection 109.01.

Adjust roadway prism excavation quantities for volume changes resulting from slope stake variations. See Subsections 152.05(d) and 204.16(a)(1)(a).

152.05 Survey and Staking Requirements. Amend as follows:

WFL Specification 09/17/18
Consult with the Construction Operations Engineer assigned to the project.
Include the following on earthwork projects that are likely to use Automated Machine Guidance grading methods, AND it has been determined that Government owned surveying equipment will not be available.

Add the following after the first paragraph:

When AMG methods are used, provide for exclusive Government use, all surveying equipment (such as robotic total station, GPS, data collectors, and reflectors), software, and data files necessary for Government quality assurance inspection of the grading work. Provide equipment of the same make, model and version being used to construct the project. Provide equipment at least two-weeks before starting work that relies on the equipment. Continuously ensure that data provided to the Government is the same version being used to construct the project. Maintain all equipment in good working order and provide replacements to the CO within two working days when breakdowns occur. The CO will return all supplied equipment upon project completion.

Provide two separate 8-hour training sessions on the use of the contractor-provided surveying equipment. Provide the first training session within one week after delivering equipment to the site. Provide the second training session upon request of the CO. Provide training on the project site by a manufacturers' representative or as approved by the CO.

Add the following to paragraph (c):

Do not take roadway cross-sections unless required for volume adjustments. See Subsections 152.05(d) and 204.16(a)(1)(a).

Payment

152.08 Delete the second paragraph and substitute the following:

Payment for lump sum items will be prorated based on the submitted cost breakdown for the work completed under this Section.

Section 153. — CONTRACTOR QUALITY CONTROL

09/17/18– FP-14

Delete the text of this Section and substitute the following:

Description

153.01 This work consists of planning and implementing a construction quality process to ensure work conforms to the contract requirements. This work also includes quality control (QC) inspection and documentation, process control sampling and testing, obtaining samples for QC testing, and performing QC tests. See FAR Clause 52.246-12 Inspection of Construction.

Construction Requirements

153.02 Qualifications. Provide a QC manager (QCM) with the following qualifications, and has no responsibilities for performing testing and inspection, managing the project, or performing operations other than managing quality control.

(a) One year of experience managing QC on highway construction projects of similar size, type, and complexity, and,

(b) One of the following:

(1) Two years' experience as a construction project manager or superintendent on highway construction projects of similar size, type, and complexity;

(2) Three years' experience as a project engineer, resident engineer, foreman, construction inspector, or equivalent on highway construction projects of similar size, type, and complexity; or

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

153.03 Quality Control Plan (QCP).

(a) Personnel. Provide a QCM, on-project during work, with authority to stop non-compliant work, or work that will result in non-compliance with contract requirements. Submit a letter, from a company officer or official with higher authority than the Superintendent, that authorizes the QCM to stop work.

Identify an alternate, meeting QCM qualifications, to act as QCM in the QCM's absence. Do not use an alternate as the QCM for more than three (3) days unless approved by the CO.

At least 14 days before starting work, submit names and qualifications of the QCM, any alternate, and any additional QC personnel being used on the project. Do not use QC personnel that have not been approved by the CO.

Provide a QCM (designated and alternates) that is exclusively dedicated to, and performs no duties other than, quality control management.

Furnish additional QC staff (inspectors, testers, reviewers, and clerical assistants) to complete the work specified in this Section.

At the preconstruction conference, submit a cost breakdown of the individual items included in the lump sum item for use in making progress estimate payments.

(b) Development. At least 14-days before starting a work feature, develop and submit a QCP, for each work feature listed below, to be approved by the CO. The absence of a plan does not relieve the Contractor of complying with the contract requirements. Additional QCPs, and/or activities, may be required to provide effective quality management. The CO may request a QCP for additional work features that are not listed below.

(1) Control of Material (Section 105);

(2) Construction Survey and Staking (Section 152);

(3) Soil Erosion and Sediment Control (Section 157);

(4) Clearing and Grubbing (Section 201);

(5) Removal of Structures and Obstructions (Section 203);

(6) Excavation and Embankment (Section 204);

(7) Rock Blasting; (Section 205);

(8) Earthwork Geosynthetics (Section 207);

(9) Structure Excavation and Backfill (Sections 208, 209);

(10) Roadway Obliteration (Section 211);

(13) Riprap (Section 251);

(14) Asphalt Concrete (Sections 401);

(17) Concrete, Steel, and Timber Structures (Sections 551, 552, 553, 554, 556);

(18) Water Membrane Proofing (Section 559);

(19) Drainage Structures (Section 602, 604, 605, 608);

(21) Topsoil and Turf Establishment (Sections 624, 625);

(22) Permanent Traffic Control (Section 633, 634);

(23) Temporary Traffic Control (Sections 156, 635); and,

Provide a QCP for each work feature in a format approved by the CO.

Include process control sampling and testing in the QCP. Perform process control sampling and testing according to Subsection 153.05 and the QCP.

153.04 Prosecution of Work. Complete the following:

(a) Preparatory and Start-up Phase. Thoroughly address the following activities (1 through 9) for each work feature, and denote in the plan the person/position performing each activity.

(1) Review contract requirements, plans, and specifications independently and with construction supervisory staff.

(2) Check and verify that submittals, plans, and materials certifications meet contract requirements, then submit these documents at least 7 days before installation unless otherwise stated in the contract. Certify compliance by completing and signing Form WFLHD-87. An electronic version of the form is available at:

http://flh.fhwa.dot.gov/resources/construction/forms/wfl/.

(3) Check site conditions for constructability, including staging, disposal, and storage areas. Verify materials delivered to the site conform to accepted materials certifications, submittals, plans, and contract requirements before incorporating into the project.

(4) Review construction staking to assure it meets contract requirements, accuracy, and sufficiency for each work feature.

(5) Provide an operational work plan. Include a brief written narrative of the activities for each work feature, describing: locations; crews; equipment; and proposed methods to complete work.

(6) Conduct pre-work meetings. Review contract requirements with the construction crew, foremen, and Government personnel before beginning work. Provide an overview of the operational work plan. Conduct additional pre-work meetings as necessary and when crew(s) change.

(7) Ensure construction methods will result in the end-product meeting contract requirements.

Include the following in the plan for applicable work features:

(a) The process to ensure the completed feature of work conforms to contract requirements.

(b) The inspection and testing frequency to ensure the process remains valid or work is being performed according to the established process.

(c) The action(s) to be taken and alterations to the inspection and testing frequency, if inspection or testing reveals the work is not meeting contract requirements.

Perform corrective actions as needed to ensure work meets contract requirements.

(8) Provide immediate on-site presence to communicate status of work to FHWA and contractor personnel and for QC issue resolution.

(9) Verify completed work meets contract requirements.

Revise the QCP when personnel, activities, or processes change; or when deficiencies occur in the work.

(b) Implementation. Implement QC activities as described in the accepted plan. Do not begin a work feature until the plan is approved by the CO and a pre-work meeting (activity 6) is performed. In the QC Reports described below, document when each activity (1 through 9) was performed, and by whom.

(1) QC Reports. Report the results of QC inspections that verify the work meets contract requirements as QC activities are performed. Describe the results of reviews, inspections, measurements, and testing activities. Attach original support data and test results. Document QC pre-work meetings, and discussions with the construction staff and Government personnel. Document deficiencies found in the work and describe corrective actions, adjustments to frequency of QC activities, and method or process changes to correct and eliminate future deficiencies. Provide reports to the CO daily or as otherwise approved. Include the following certification signed by the QCM:

"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."

(2) Notification of Completion of Work. Submit a completed *"Notification of Completion of Work"* (Form WFLHD 470) when the phase of work listed below is ready for inspection. An electronic version of WFLHD 470 is available at:

http://flh.fhwa.dot.gov/resources/construction/forms/wfl/.

Allow 1 working day for the following work to be inspected:

(a) Survey and staking (field stakes and notes). Provide survey notes for the following:

(1) Control points – before disturbing original control points;

(2) Clearing limits – before starting clearing and grubbing operations;

(3) Slope stakes – before clearing operations or topsoil removal;

(4) Subexcavation – after staking and prior to backfilling;

(5) Guardrail – before starting installation;

(6) Bridge – before starting work on each component; and

(7) Culverts – before starting installation.

(b) Construction work.

(1) Erosion control devices – prior to any ground disturbing activities;

(2) Sub grade – before placing pavement structure;

(3) Any pavement structure layer requiring hubs – before placing next layer;

(4) Structural excavation – before backfilling;

(5) Forms and reinforcing steel – before placing concrete; and

(6) Concrete deck – before placing concrete (perform checks of all deck pour requirements, including dry run results before inspection).

The CO may request submission of a form WFLHD 470 for worked not specifically listed in this subsection, or may not require a form for the listed work.

153.05 Sampling and Testing. Perform process control sampling and testing according to the *Sampling, Testing, and Acceptance Requirements* table included at the end of each Section.

Perform QC sampling and testing as defined in the QCP.

Allow the CO the opportunity to witness all sampling and/or testing. When requested, sample and split QC samples according to AASHTO or other acceptable procedures. Immediately perform splits when required. Deliver and label split QC samples according to Subsection 154.03.

Provide the following documentation:

(a) Test Results. Label test results with the same information required by Subsection 154.03. Attach work sheets, used to determine test values, to the test result forms when submitted.

(b) Control Charts. Maintain linear control charts identifying project number and name; pay item number; test number; each test parameter; upper and/or lower specification limits applicable to each test parameter; and test results. Use control charts to document process variability; identify production and equipment problems; and identify potential pay factor adjustments. Correct processes when problems exist. Post charts at the Contractor's project testing lab and on site.

153.06 Acceptance. Contractor QC will be evaluated under Subsections 106.02 and 106.04 based on the demonstrated ability of the Contractor's QC system to ensure that work meets the contract requirements.

If Government testing and inspections (quality assurance) indicate the Contractor's QC system is ineffective or the plans are not being followed, make immediate improvements to correct inadequacies. Submit written notifications of improvements and modifications to the system.

A maximum of 10 percent of the total progress payment amount will be retained and affected project work may be stopped if a QCP is not accepted, the plan is not being followed, or work does not meet contract requirements.

Measurement

153.07 Measure the Section 153 items listed in the bid schedule according to Subsection 109.02.

Payment

153.08 The accepted quantities, measured as provided in Subsection 109.02 and above, will be paid at the contract price per unit of measurement for the Section 153 pay items listed in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.

Payment for the lump sum item will be prorated based on the submitted cost breakdown for the work completed for this Section.

Section 154. — CONTRACTOR SAMPLING AND TESTING

09/17/18– FP14

Construction Requirements

154.02 General. Add the following to the second paragraph:

Provide representative samples according to the individual Sections ordering the work.

154.03 Sampling. Add the following:

When samples are required at the Vancouver Laboratory, send to:

Material Section
Western Federal Lands Highway Division
610 East Fifth Street
Vancouver, Washington 98661

If samples are sent other than through normal delivery vendors, call 360-619-7747 or 360-619-7970 before delivery. Deliveries will be accepted from 7:00 a.m. to 2:30 p.m. PT (Monday - Friday).

Access to the Government complex is controlled; check-in is required at the main building entrance located on East Fifth Street. Directions will be given for delivery of samples.

The sampling frequencies and reporting times are listed in the Sampling, Testing, and Acceptance Requirements tables included at the end of each Section.

154.04A Laboratory Trailer and Test Equipment. (Added Subsection).

A Government-furnished laboratory trailer with testing equipment is offered for use on this project upon request. To take advantage of this offer, email a request to the Construction Management Analyst (WFL.CMA@dot.gov) within 30 days after award of contract. Failure to do so will terminate the offer.

The laboratory trailer and testing equipment are located at Western Federal Lands Highway Division, 610 East Fifth Street, Vancouver, Washington. The specifications for the trailer are as follows:

- Width = 10 feet (3.0 meters);
- Length = 36 feet (11.0 meters);
- Height = 12 feet (3.7 meters);
- Gross Vehicle Weight (GVW) = 18,000 pounds (8174 kilograms);
- Tongue Weight = 4,500 pounds (2044 kilograms);
- Ball Requirements = 2 $^{5}/_{16}$ inch (60 millimeters); and
- 3 axles with electric brakes.

Before the trailer will be released for delivery, hauling vehicles must meet the following requirements:

- Ball height of 18 inches (450 millimeters) from ball to ground;
- Safety chains;
- Brake control (normal and break-away);
- Wiring harness for lights and brakes;
- Wide load signs;
- Transportation permits, if required; and
- Spare wheels and tires for trailer (USC 8-inch x 14½-inch).

Provide an authorization from the Contractor to accept delivery of the trailer.

Provide 21 days written notice to the CO and fax a copy to the Western Federal Lands Highway Divisions' Facility Management at 360-619-7846 before arriving to pick up the trailer. Pickup, return, and inspection of the trailer and equipment may be scheduled between the hours of 7:00 a.m. and 3:30 p.m., Monday through Friday, except holidays. Notify the CO 48 hours before returning the trailer to the Vancouver office.

A list of testing equipment may be obtained by calling the Contracts Section at 360.619.7520, e-mailing at wfl.contracts@dot.gov, or by fax at 360-619-7932.

Determine if the laboratory trailer and testing equipment are adequate to perform all testing required by the Contract. Check equipment (especially scales and gyratory compactor) and recalibrate as necessary after transporting the trailer. Submit written documentation to the CO that the equipment is properly calibrated.

A rental fee of $600 per month will be deducted from progress payments, except during non-work periods on the project exceeding 30 days. Fees will begin 5 days after receipt of trailer from the Vancouver office. The fee will be prorated for periods less than one month at $20 per day.

Return the laboratory trailer and equipment to Western Federal Lands Highway Division office in Vancouver, Washington within 14 days of the project being determined substantially complete or the rental fee will increase to $50 per day. Fee assessments will include the day of return to the Vancouver office.

Trailer and equipment will be inspected for damage or missing items. An invoice will be sent for the cost of replacing missing or damaged equipment and restoring the trailer to a working condition, less reasonable wear and tear. Costs incurred will be deducted from the final payment. A maximum of 30 days will be required to inspect the trailer and equipment after it is returned to Vancouver.

Follow the requirements of FAR Contract Clauses 52.245-1 – Government Property and 52.245-9 – Use and Charges and as follows.

(a) Provide a representative to accept written responsibility for the trailer and equipment when it is checked out from the Vancouver office.

(b) Testing equipment has been checked and calibrated to applicable specifications. Furnish any additional equipment required to perform tests not supplied with the laboratory trailer. Repair or replace equipment during use that requires calibration or does not meet specifications, due to wear and tear. Assume no responsibility for reasonable wear and tear to laboratory trailer and testing equipment upon final return to the Government. All equipment will remain or become the property of the Government.

(c) Assume responsibility and bear costs of transporting, installing, repairing and maintenance of the trailer and equipment in a workable condition. Obtain all necessary permits. Adhere to requirements of the Laboratory Trailer Manual. Adequately anchor the awning to prevent damage. Do not perform tests in the trailer until it has been leveled and blocked according to the Laboratory Trailer Manual.

(d) The trailer is wired with a 200-amp service box and contains a 90-gallon (341 liter) water tank. Provide a clean water supply, a 220-240 volt, 60 cycle commercial electric source, or a 220-240 volt, 60 cycle single phase ac regulated electrical supply of at least 60 kilowatts, and a supply of propane gas.

(e) Provide 48-hour notice to the CO before transporting the trailer from the project.

Section 155. — SCHEDULES FOR CONSTRUCTION CONTRACTS

09/17/18– FP-14

Delete this Section and substitute the following:

Description

155.01 This work consists of scheduling, monitoring, and reporting all construction activities. Follow the requirements of FAR Clause 52.236-15, Schedules for Construction Contracts.

Construction Requirements

155.02 Preliminary Work Plan. Only mobilization, temporary traffic control, and Section 637 work, is allowed before a preliminary work plan is accepted.

A preliminary work plan is a written narrative of contract activities for the first 45 days after the Notice to Proceed has been issued. Include the following:

(a) A title page stating contract number, project number, project name, Contractor name, current fixed completion date, date of submittal, submittal number, and "Preliminary Work Plan".

(b) Describe proposed work within each activity including the type and quantity of equipment, labor, and materials to be used.

(c) Describe planned production rates by pay item quantities (e.g. cubic yards (cubic meters) of roadway excavation per day).

(d) Describe the number of work days per week, holidays, number of shifts per day, and number of hours per shift. Include all calendars used in the schedule module.

(e) Estimate idle and partially-idle periods within each activity, showing start and end dates.

(f) Describe expected and critical delivery dates for equipment or material that can affect timely completion of the project. Describe the fabrication and delivery of key and long-lead procurement activities.

(g) Identify the Vendor, Supplier, or Subcontractor to perform an activity. State assumptions made in scheduling their work.

(h) Describe site mobilization.

(i) List shop drawing, sample submittals, and review times.

Submit a preliminary work plan at least 7 days before the preconstruction conference. Within 7 days after the preconstruction conference, the preliminary work plan will be accepted or rejected. If rejected, submit a revised plan within 3 days.

155.03 Initial Construction Schedule. Prepare a construction schedule according to Subsection 155.06. Within 20 days after the Notice to Proceed has been issued; submit three paper copies, one electronic copy according to Subsection 103.06, and one electronic copy in the native file format. When discrepancies exist, paper copies govern over electronic copies of the schedule.

Show completion of work within the contract time.

Allow 10 days for approval or rejection of the schedule. If rejected, submit a revised schedule within 10 days.

If an acceptable schedule is not received within 30 days after the Notice to Proceed is issued, the CO may withhold approval of progress payments in full or in part.

155.04 Baseline Schedule. Set the approved initial construction schedule as the baseline schedule for the first updated construction schedule. Submit revisions to the baseline schedule as needed, and allow 7 days for revised baseline schedules to be approved for use. Replace the baseline schedule for construction schedule updates with the applicable, approved baseline schedule revisions.

155.05 Updated Construction Schedule. Prepare a construction schedule according to Subsection 155.06, including proposed logic and time estimate revisions if necessary. Show actual start and finish dates for activities. Verify the remaining duration of uncompleted activities.

Update the written narrative for activities in progress, and activities not started, describing schedule changes from the last submitted schedule.

Submit three paper copies, one electronic copy according to Subsection 103.06, and one electronic copy in the native file format, by the 15th day of each month, or when the following occurs:

(a) A delay occurs in the completion of a critical (major) activity.

(b) A delay occurs which causes a change in the critical path for the CPM schedule.

(c) The actual prosecution of the work is different from that represented on the current construction schedule.

(d) An addition, deletion, or revision of activities is caused by a contract modification.

(e) There is a change in the schedule logic.

Show completion of work within the contract time.

Allow 7 days for approval or rejection of the schedule. If rejected, submit a revised schedule within 7 days.

If an acceptable construction schedule update is not received by the 15th day of the month, the CO may withhold approval of progress payments in full or in part.

155.06 Construction Schedule Requirements. A construction schedule is a Critical Path Method (CPM) schedule and a written narrative. Include the following:

(a) A CPM schedule including the following:

(1) A title page or header block with contract number, project number, project name, Contractor name, current fixed completion date, date of submittal, and submittal number.

(2) Show activity descriptions. Relate activities or groups of activities to contract pay items. Include activities for submittals, submittal reviews, fabrication, and deliveries. Do not include activities for continuous, non-critical items such as flagging, traffic control, QA/QC, etc.

(3) Show activity name or description with the activity bar on the CPM diagram.

(4) Group activities by area (i.e., separate distinct bridges or roadways), and by type of work (i.e., submittals, utilities, roadway, bridge).

(5) Show original and remaining durations for construction activities. Break construction activities into subtasks with no activity duration exceeding 20 working days. Break longer activities into two or more activities distinguished by location or some other description.

(6) Show original and remaining durations of non-construction activities. Non-construction activities include: mobilization; shop drawing and sample submittals by contract pay item number; and the fabrication and delivery of key materials. Non-construction activities may have durations exceeding 20 working days consistent with the contract. Indicate intended submittal dates and delivery dates for fabrication and delivery activities. Allow for review of each submittal according to the contract.

(7) Begin the construction schedule with the date of the Notice to Proceed and conclude with a milestone that shows the planned completion date.

(8) Show early start and finish dates.

(9) Show late start and finish dates.

(10) Show total float and free float.

(11) Show relationship lines (each activity must have at least one predecessor and one successor activity, except for the Notice to Proceed and planned completion date).

(12) Use a time scale to graphically show the work scheduled for performance.

(13) Show the sequence and interdependence of all activities.

(14) Identify the critical path, which is defined as the longest sequence of activities in the schedule that determines the project duration.

(15) Show the baseline bars in the construction schedule updates.

Float is a shared commodity and is not for the exclusive use of the Contractor or the Government. Either party has the full use of float until it is depleted.

(b) A written narrative stating the basis and assumptions underlying the schedule including:

(1) Describe proposed work within each activity including the type and quantity of equipment, labor, and materials to be used.

(2) Describe planned production rates by pay item quantities (e.g. cubic yards (cubic meters) of roadway excavation per day).

(3) Describe the number of work days per week, holidays, number of shifts per day, and number of hours per shift. Describe all calendars used in the schedule module and list the calendar used for each activity in the schedule module.

(4) Estimate idle and partially-idle periods within each activity, showing start and end dates.

(5) Describe expected and critical delivery dates for equipment or material that can affect timely completion of the project.

(6) Identify the Vendor, Supplier, or Subcontractor performing an activity. State assumptions made in scheduling their work.

(7) Describe organizational limitations, such as resource constraints or subcontractor commitments, which limit scheduling flexibility.

(8) Describe site mobilization.

(9) Provide a list and description of constraints used in the CPM scheduling software.

155.07 Contractor's Daily Record of Construction Operations. For each day of work, submit a completed Form WFLHD 465 *Contractor's Daily Record of Construction Operations (CDR)* or an approved alternate form within one day of the work being performed. Report operations of work separately, with manpower and equipment assigned to each operation separately. Document inspection results, including deficiencies observed and corrective actions taken. Complete a CDR for each contractor and subcontractor working that day. CDR's will be approved or rejected by CO. Correct rejected CDRs and resubmit the revised CDR within 24 hours.

Certify each CDR with the following statement signed by the person responsible for the construction operation:

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

Electronic versions of the form are available at:

http://flh.fhwa.dot.gov/resources/construction/forms/wfl/.

155.08 Acceptance. Construction schedules and preliminary work plans will be evaluated under Subsection 106.02. CDR's will be evaluated under Subsection 106.02 and 106.03.

Measurement

155.09 Measure the Section 155 items listed in the bid schedule according to Subsection 109.02.

Payment

155.10 The accepted quantities will be paid at the contract price per unit of measurement for the Section 155 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 construction schedule will be paid as follows:

(a) 25 percent of the item amount, not to exceed 0.5 percent of the original contract amount, will be paid after the initial construction schedule is approved.

(b) Payment of the remaining portion of the lump sum will be prorated based on the total work completed.

Payments made for construction schedules do not affect any rights the government may have because of failure to meet construction schedule contract requirements.

Section 156. — PUBLIC TRAFFIC

09/17/18– FP14

Construction Requirements

156.04 Accommodating Traffic During Work. Add the following:

Provide the Alaska State Troopers, local police and fire department with the radio frequencies used on the project and 24-hour telephone numbers of the Traffic Control Supervisor and Project Superintendent to alert them of emergency vehicles needing to pass through the project. When notified of emergencies, take immediate measures to provide temporary access to pass traffic through the project area.

156.07 Limitations on Construction Operations. Amend as follows:

Delete paragraph (c) and substitute the following:

(c) Provide minimum lane widths of 12 feet, or width needed to safely pass an AASHTO 2011 vehicle WB-67, whichever is greater. Additional curve widening may be needed. Use barricades, tubular markers, or other acceptable devices to delineate traffic lanes through areas where the edge of pavement or intended path has been obliterated by construction operations.

Delete paragraph (g) and substitute the following:

(g) Provide two-way radio communications between Traffic Control Supervisor, flaggers, and pilot cars. Provide two-way radio communications between flaggers, unless flaggers can see each other and communicate. Citizen band radios are not acceptable. Make radio equipment available to the CO as necessary.

Delete paragraph (i) and substitute the following:

(i) Full road closures for up to 6 hours will be allowed Sunday, Monday, Tuesday, Wednesday, and Thursday mornings between 12:01 a.m. and ending 6:00 a.m. for the entire project. These 6 hour closures may be shifted one hour at the discretion of the CO. Limit construction-caused delays to public traffic to a maximum of 20 minutes per passage through the project at all times outside of the allowed 6 hour closure window. Advertise scheduled closures on the portable changeable message signs near the project limits in advance and at an approved schedule. Publish public notices regarding scheduled closures in accordance with Subsection 107.03A, Subsection 156.09(n) and as required.

Add the following:

(k) Complete paving of adjacent traffic lanes to the same elevation by the end of each day.

(l) For purposes of facilitating traffic, perform grading or surfacing part-width at a time. Make the width not under construction available to public traffic under alternate one-way control.

Furnish pilot car and driver, or flaggers, or both, as ordered by the CO, to direct traffic through sections of road under one-way control.

156.09 Traffic Control Supervisor. Add the following:

(l) Transport personnel, construction signs, barricades, drums, cones, tubular markers, and other traffic control devices.

(m) Maintain a written log when flagging and/or pilot car operations are occurring. Submit the log daily in an approved format. Include the following information (for each flagging station):

- Time traffic stopped at each occurrence
- Time traffic released at each occurrence
- Number of vehicles in traffic queue at each occurrence

(n) Provide a minimum of 5 days-notice before major changes to traffic patterns, delays, lane restrictions, and road closures to local officials and transportation organizations, including but not necessarily limited to:

- Alaska Carriers Association;
- Alaska Trucking Association;
- Alaska State Troopers;
- Division of Measurement Standards;
- Local Police Department;
- Local Government Traffic Engineer;
- School and Transit Authorities;
- Local Emergency Medical Services;
- Local Media (newspapers, radio, television);
- Railroads (where applicable);
- U.S. Postal Service; and
- Major Tour Operator.

Section 157. — SOIL EROSION AND SEDIMENTATION CONTROL

09/17/18– FP-14

Material

157.02 Add the following to the material list:

Filter Rock	705.08

Construction Requirements

157.03 Qualifications. Delete this Subsection and substitute the following:

Provide an Erosion Control Supervisor (ECS) meeting one of the following criteria:

(a) Alaska Certified Erosion and Sediment Control Lead (AK-CESCL);

(b) Idaho Water Pollution Control Manager (WPCM);

(c) Montana Department of Environmental Quality (DEQ) SWPPP Administrator;

(d) Oregon Department of Transportation (ODOT) Certified Erosion Sediment Control Manager (ESCM);

(e) Washington State Certified Erosion and Sediment Control Lead (CESCL);

(f) Other State DOT-Approved Erosion and Sediment Control Certification;

(g) Certified Professional in Erosion and Sediment Control (CPESC);

(h) Certified Professional in Storm Water Quality (CPSWQ);

(i) Certified Erosion, Sediment and Storm Water Inspector (CESSWI);

(j) National Institute for Certification in Engineering Technologies (NICET) Erosion and Sediment Control Level 3 or 4; or

(k) Certified Inspector of Sediment and Erosion Control (CISEC).

157.04 General. Delete the text of this Subsection and substitute the following:

Provide and install permanent and temporary measures to control erosion, sedimentation, and discharge of pollutants, according to the Alaska Pollutant Discharge Elimination System (APDES) Construction General Permit (CGP), the project Storm Water Pollution Prevention Plan (SWPPP) of record, and this contract.

Immediately report to the CO any incident of non-compliance with the CGP that may endanger health or the environment. Provide copies of any correspondence or reports required by either the CGP or the SWPPP.

Provide an ECS to manage installation, maintenance, inspection, and reporting for erosion and sediment control measures, maintain and update the SWPPP of record, and prepare any documentation required by the CGP or the SWPPP. Furnish the ECS's name, project office address, 24-hour telephone number(s), and qualifications at the preconstruction conference.

If wood chips are used, do not import without approval from the CO.

157.05 Controls and Limitations on Work. Delete the text of this Subsection and substitute the following:

(a) Install all sediment perimeter control measures prior to clearing, grubbing, and grading activities. Install additional erosion and sediment control measures as needed during construction.

(b) Before conducting land clearing and disturbance, mark all clearing limits in the field. Mark trees, wetlands, sensitive areas, and buffer zones for preservation as shown on the plans. Preserve existing vegetation wherever possible.

(c) Stabilize and maintain construction access points between unpaved and paved sites to minimize tracking of mud and dirt onto public roads.

(d) Phase construction activities to minimize the amount and duration of soil exposed to erosion. Establish final grade as soon as practicable and apply temporary or permanent soil stabilization measures. Limit the combined grubbing, grading, excavating, borrow, and fill within the construction limits to 8 acres (3.2 hectares) of exposed soil at one time.

(e) Divert runoff around exposed soils.

(f) Commence temporary soil stabilization measures immediately if no further disturbance of an area of the site or stockpile is expected within the next 14 days. Complete temporary soil stabilization measures to disturbed sites or stockpiles within 14 days of last disturbance. Provide for temporary stabilization of all exposed soil prior to winter construction shut down.

(g) Construct and maintain perimeter protection and locate erodible stockpiles away from storm drain inlets, waterways, and drainage channels.

(h) Handle and dispose of all pollutants, including construction materials, waste materials, and construction debris, in a manner that does not cause contamination of storm water.

(i) Apply fertilizers and other chemicals in a manner and at application rates that will not result in loss of chemicals to storm water runoff. Follow manufacturers label requirements except as otherwise required by the contract

(j) Do not discharge concrete wastewater near or into waterways or wetlands. Submit proposed washout areas to the CO for approval.

(k) Do not discharge turbid waste water or process water into surface waters. Route turbid water to upland area for infiltration or containment for settling before discharge to upland.

157.11 Waterway and Slope Protection and Stabilization. Delete paragraph (c) and substitute the following:

(c) Check dams. Construct riprap, filter rock, gravel bags, sandbags, fiber rolls and socks, or earth berms for temporary check dams to reduce the velocity of runoff in ditches and swales.

157.14 Inspection and Reporting. Delete the text of this Subsection and substitute the following:

Inspect the following areas of the project:

(a) All areas where soil has been disturbed and that have not been permanently stabilized;

(b) All erosion and sediment control measures and pollution prevention measures;

(c) Government-provided material, waste, borrow, staging and maintenance areas;

(d) All areas where storm water typically flows within the site;

(e) All points of storm water discharge from the site; and

(f) All locations where temporary stabilization measures have been implemented.

Inspect all erosion and sediment control measures as required in the CGP Part 6.1. Monitor rainfall using an on-site rain gauge. Specify in the project SWPPP which inspection schedule will be used and use the same schedule throughout the duration of construction.

Furnish completed inspection reports to the CO within 24-hours after performing an inspection.

Inspections may be temporarily reduced or suspended as stated in CGP Part 6.2 when construction has become temporarily inactive if all disturbed areas have been permanently or temporarily stabilized. Document the reason for the reduction in inspection frequency in the SWPPP (tab 9). Resume the normal inspection schedule when the construction site thaws or construction activities resume.

157.15 Maintenance and Cleanup. Delete the text of this Subsection and substitute the following:

Maintain the functionality of erosion and sediment control measures, and clean measures that are half-full of sediment, until final acceptance or until disturbed sites are stabilized according to the CO. Remove and dispose accumulated sediment according to CGP Part 4.11.

Implement maintenance of erosion and sediment control devices or other corrective action within the following time requirements:

(a) In the event of discharge of sediment or other pollutants, immediately take steps to prevent further discharge until a permanent solution is installed and made operational;

(b) Begin corrective maintenance of sediment and erosion control devices within 24 hours of discovery and complete as soon as possible.

Upon approval of the CO, remove and dispose of erosion and sediment control devices and structures in accordance with the CGP.

WFL Specification 01/01/14

Include the following in projects where the responsibility for removal of erosion control devices is not part of the contract.

Revise the third paragraph of Subsection 157.15. Example:

"Removal and disposal of erosion control devices designated to remain will be performed by others."

Note: Coordinate requirements with Subsection 107.01 if necessary.

[INSERT REQUIREMENTS]

157.16 Acceptance. Delete the text of the first paragraph and substitute the following:

Material for erosion and sediment control measures will be evaluated under Subsections 106.02 and 106.03. Do not provide a copy of the certifications for erosion and sediment control materials to the CO, unless otherwise directed by the CO.

DIVISION 200
EARTHWORK

Section 201. — CLEARING AND GRUBBING

01/01/14– FP-14

Construction Requirements

201.03 General. Add the following:

WFL Specification 01/01/14
Include the following when merchantable timber is to remain the property of the landowner. Edit as required (add 201.06 which deletes the first sentence merchantable timber is the Contractor's property).

Perform felling, bucking, and decking of merchantable timber according to accepted logging practices with a minimum of breakage, damage, and waste. Saw the merchantable timber into standard log lengths with proper trim allowance.

WFL Specification 01/01/14
Include the following when merchantable timber is the landowner's property.
Note: Coordinate with first SCR listed in Subsection 201.03.

201.06 Disposal. Delete the first sentence of this Subsection and substitute the following:

All merchantable timber within the areas to be cleared on either private or Government land will remain the property of the landowners. Deck on each owner's property adjacent to the road in locations suitable for loading by others with self-loaders.

Measurement

201.08. Delete the second paragraph and substitute the following:

Where the new construction follows the existing road, exclude that portion of the old roadbed within the clearing and grubbing limits from the measurement width. Also exclude the area of any body of water and non-vegetated portions of its shoreline within the clearing and grubbing limits.

Section 204. — EXCAVATION AND EMBANKMENT

03/25/19– FP-14

Construction Requirements

WFL Specification 08/01/14
Include the following when sufficient quantity is available without processing the material.

204.06 Roadway Excavation. Amend as follows:

Delete paragraph (a) and substitute the following:

(a) Rock cuts. Variable thicknesses of soil (overburden) will be encountered throughout the project length. The Contractor is advised that the Kings River Cut is steep with difficult access and may require the use of specialized excavation and construction methodologies to establish the top of the cut for compound cut slopes (soil over rock). Construction bench access beyond the top of the cuts will not be allowed.

The top of the rock portion of the compound cut will be verified by the Contractor during pioneer access or initial excavation.

Construct the final soil cut prior to commencing drilling for rock blasting or other rock excavation methods unless authorized by the CO. When rock blasting is used, perform work according to Section 205.

Scale all rock slopes as the excavation process progresses and slopes are still accessible to the equipment.

Excavate rock cuts to 6 inches below subgrade within the roadbed limits. Backfill to subgrade with topping or other suitable material. Compact the material according to Subsection 204.11.

Delete the second to last paragraph and substitute the following:

Conserve sufficient quantities of 6-inch (150-millimeter) minus material from the roadway excavation to use for finishing the roadbed. Sufficient quantities are available within the roadway excavation. Dispose of unsuitable or excess excavation material according to Subsection 204.14. Replace shortage of suitable material caused by premature disposal of roadway excavation.

WFL Specification 01/01/14
Include the following when sufficient quantity is available without processing the material.

204.10 Embankment Construction. Add the following to paragraph (b):

Construct the top 12 inches (300 millimeters) of the embankment with 6-inch (150-millimeter) minus material conserved from the roadway cuts.

WFL Specification 01/01/14
Include the following when sufficient quantity is NOT available without processing the material.
Note: Add a topping item.

204.10 Embankment Construction. Add the following to paragraph (b):

Construct the top 12 inches (300 millimeters) of the embankment with topping.

204.11(c) Less than 50 percent retained on a No. 4 (4.75-millimeter) sieve. Delete the third paragraph and substitute the following:

Use compression-type or vibratory rollers. Compact each layer of material full width to at least 95 percent of the maximum density. Determine the in-place density and moisture content according to AASHTO T 310 or other approved test procedures.

204.13 Sloping, Shaping, and Finishing. Delete paragraph (d) and substitute the following:

(d) Finishing. Remove material larger than 6 inches (150 millimeters) from the top 6 inches (150 millimeters) of the roadbed. Remove unsuitable material from the roadbed, and replace it with suitable material.

(1) AMG method. Finish roadbeds that are compacted according to Subsection 204.11(b) and (c) to within ±0.05 foot (±15 millimeters) of the design line and grade. Finish roadbeds that are compacted according to Subsection 204.11(a) to within ±0.10 foot (±30 millimeters) of the design line and grade. Finish ditch cross-sections to within ±0.10 feet (±30 millimeters) of the design line and grade. Maintain proper ditch drainage.

(2) Conventional survey method. Finish roadbeds that are compacted according to Subsection 204.11(b) and (c) to within ±0.05 foot (±15 millimeters) of the staked line and grade. Finish roadbeds that are compacted according to Subsection 204.11(a) to within ±0.10 foot (±30 millimeters) of the staked line and grade. Finish ditch cross-sections to within ±0.10 feet (±30 millimeters) of the staked line and grade. Maintain proper ditch drainage.

WFL Specification 09/17/18
Include the following when disposal sites are designated.

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

Unsuitable or excess material may be disposed of at [INSERT DISPOSAL SITE LOCATION(S)].

WFL Specification 09/17/18
Use the following when watering and compaction of the disposal site is required.

Water and compact material disposed of at [INSERT DISPOSAL SITE LOCATION(S)].

Measurement

204.16 Amend as follows:

Add the following to paragraph **(a)(1)**(a):

> Use the design volume. The design volume is defined as the bid schedule quantity less any allowance, as shown in the summary of quantities sheet of the plans. This volume is subject to adjustments resulting from changes to slope stakes according to Subsection 152.05(d).

Add the following to paragraph **(a)(2)**:

> *(n)* Material excavated from the top of the rock portion of the compound cut from rock excavation.
>
> *(o) Material* scaled from rock slope excavation operations.

Section 205. — ROCK BLASTING

Construction Requirements

205.04 Qualifications. Delete paragraph (b) and substitute the following:

(b) Blasting crew personnel. Names of personnel and evidence they have completed at least 24 hours of blasting safety training in the last five years or have at least two years of blasting experience along with proof of a Federal Employee Possessor Permit for each crew person.

205.05. Blasting Plans. Amend as follows:

(a) General Blasting Plan. Add the following to paragraph **(a)**:

The CO will review and approve the General Blasting Plan within 7 days or return it for corrections.

Delete paragraph **(a)(4)** and substitute the following:

(4) Manufacturer's technical data sheets for proposed explosives, primers, initiators, and related blasting devices and accessories.

Delete paragraph **(a)(6)** and substitute the following:

(6) Typical scaled plan and section views for both production and controlled blasting. Include the following:

(a) Stationing intended for each typical blast plan;

(b) Maximum blast length, free face, burden;

(c) Hole spacing, hole inclination, hole depth, hole diameter,

(d) Stemming depth and subdrill depth;

(e) Powder factor, charge weight per delay, and

(f) Initiation method, sequence, and delay times.

(b) Site-specific blasting plans and general plan revisions and updates. Delete paragraph (7) and substitute the following:

(7) Flyrock, air-blast over-pressure (noise), and ground vibration control measures;

Add the following to paragraph **(b)**:

(11) When structures are within an area of ground vibration and/or air-blast overpressure concern, the site-specific blast plan shall include the attenuation study information for the

affected structures and indicate that the peak particle velocity versus peak frequency will not damage each structure.

205.06 Pre-blast Condition Survey and Blast Monitoring and Control. Amend as follows:

Delete paragraph (c) and substitute the following:

(c) Control ground vibrations and air-blast over-pressures with properly designed delay sequences and maximum allowable charge weights per delay. Verify allowable charge weights per delay by conducting representative trial blasts and measuring ground vibrations and air-blast over-pressure levels. The attenuation study will enable successful prediction of the peak particle velocity in any component (longitudinal, transverse, or vertical) anywhere on the surface of the structure(s). Conduct test blasts with blast plan modifications that limit ground vibrations and air-blast over-pressures to levels that will not cause damage to nearby buildings, structures, utilities and/or natural features as determined by the Vibration Specialist. Submit a copy of the attenuation study results and predicted peak particle velocity versus peak frequency for each structure.

Delete paragraph (d) and substitute the following:

(d) When ground vibration or air-blast damage is possible, monitor each blast with digital recording seismographs and air-blast monitoring equipment calibrated within the last year and approved by the CO. Locate monitoring equipment per the directions of the Vibration Specialist, placing a minimum of three recording stations between the blast area and closest susceptible structures, utilities or natural features, as well as at least one station on the structure. For ground vibration monitoring, use self-triggering seismographs capable of measuring peak air blast overpressure and recording particle velocity, displacement and acceleration for three mutually perpendicular components of vibration in the range generally found for controlled blasting. The instrument shall contain internal calibration and triaxial orthogonal transducers with flat frequency response from 2 to 250 hertz with a minimum sampling rate of 1000 data points per second with sufficient memory to store the full blasting sequence and their locations. Seismographs must be capable of producing a permanent digital time history file for each ground motion episode.

Delete the last paragraph of this subsection and substitute the following:

Record each blast using digital video equipment from two locations that clearly show the entire proposed blast site, preferably from locations on both sides of the blast.

Ensure blasting operations incorporate collected data and findings from vibration monitoring by having the Vibration Specialist interpret all seismograph and air-blast records.

Submit a copy of the interpreted seismograph and air-blast records to the CO with a certifying signature by the Vibration Specialist. If actual peak particle velocity versus peak frequency measurements exceed those predicted for a structure, the site-specific blast plan will need to be adjusted for the actual structural response to the blasting. The plan may include adjustments to pattern, loading, timing, flyrock measures and others.

205.07 Test Blasting. Delete the text of this Subsection and substitute the following:

Before beginning full-scale drilling and blasting, demonstrate adequacy of the site specific-blasting plan by drilling, blasting, and excavating a test blast up to 100 lineal feet in length, as measured along centerline, with any proposed containment measures in-place. Conduct the test blast at an approved location within the planned excavation area.

Space blast holes for presplit/cushion blasting no more than 30 inches apart for the initial test blast. Adjust the spacing based on the results of the test blast(s) for each excavation in differing geology as approved by the CO. Use the approved spacing in the full-scale blasting or subsequent test blasts if necessary.

A test blast is unacceptable when it results in excessive flyrock, potentially damaging ground vibrations or air-blasts, unplanned overbreak and backbreak, excessive damage to the final rock cut face, or results in unwanted overhangs. When a test blast is unacceptable, revise the site-specific blasting plan and conduct additional test blasts until the combination of blast hole pattern spacing, timing, controlled blast-hole alignment, and charges produce acceptable results.

205.08 Blasting. Amend as follows:

Delete bullet no.2 and no.4 of the eighth paragraph and substitute with the following bullets:

- Slopes exceed overbreak tolerances within the limits of the excavation, as shown in the Plans, or as determined by the CO for the site geology;

- Excessive blast damage occurs within the limits of the excavation, as shown in the Plans, or as determined by the CO;

(b) Controlled blasting. Delete paragraphs **(1)**, **(2)** and **(3)**.

205.09 Reporting. Delete the first paragraph and title of paragraph **(b)** and substitute the following:

(b) Monitoring. Submit copies of the digital videos to the CO after each blast. The next blast will not occur until the video has been received by the CO with an opportunity to review it over the course of a 24-hour period.

If vibration and/or air-blast monitoring is required, submit a vibration and air-blast report for CO review within 3 days following a blast and prior to drilling for further blasting. Do not drill until directed by the CO. Include the following:

DIVISION 250
SLOPE REINFORCEMENT AND RETAINING WALLS

Section 251. — RIPRAP

11/05/15– FP-14

Construction Requirements

251.03 General. Add the following:

Place riprap under or adjacent to structures before placing prefabricated superstructure units or constructing superstructure falsework.

DIVISION 300
AGGREGATE AND BASE COURSES

Section 301. — UNTREATED AGGREGATE COURSE

09/17/18– FP-14

Construction Requirements

301.03 General. Delete the text of this Subsection and substitute the following:

Prepare surfaces receiving aggregate courses according to Section 204 or 303 as applicable.

After a representative quantity of aggregate is produced, submit proposed target values for the appropriate sieve sizes along with a representative 400-pound (180-kilogram) sample at least 14 days before incorporating the aggregate into the work. Submit target values to the CO. Submit aggregate samples to the Vancouver Laboratory, using mailing tags provided by the CO.

Set target values for Base aggregate within the gradation ranges shown in Table 703-2 for the specified grading designation. List the percent passing for all sieve sizes shown in Table 703-2. Target values for non-specification sieves are necessary for performing *The Humphres Method of Granular Soils*.

301.04 Mixing and Spreading. Delete the text of this Subsection and substitute the following:

Use the optimum moisture content from the Government-performed Humphres Test. Mix aggregate and water to obtain a uniform mixture with a moisture content within 1 percent of the optimum moisture content. Spread and shape uniform layers of mixtures on prepared surfaces.

Do not place mixtures in compacted layers thicker than 6 inches (150 millimeters). Compact each layer according to Subsection 301.05 before placing the next layer. Route hauling equipment uniformly over the full surface width to minimize rutting and uneven compaction.

If the calculated mean value for a tested sieve differs from the target value by more than the allowable deviation for that sieve, terminate placement and submit new target values with another aggregate sample to the Vancouver Laboratory for a new Humphres Test.

301.05 Compacting. Delete the text of the first paragraph and substitute the following:

The Government will determine the maximum density and optimum moisture according to the test procedures described on pages 92 to 98 of Highway Research Board Bulletin No. 319, dated 1962, *The Humphres Method of Granular Soils*. Use the data provided to determine the maximum density based on the gradation of field compaction samples.

301.06 Surface Tolerance. Delete the text of this Subsection and substitute the following:

When grade finishing stakes are required according to Subsection 152.05(f), finish surfaces to within ±0.05 feet (±10 millimeters) from the staked line and grade elevation (or from the design line and grade elevation if Automated Machine Guidance (AMG) methods are used).

When grade finishing stakes are not required according to Subsection 152.05(f), shape surfaces to the required template and check the surface with a 10-foot (3-meter) straightedge. Defective areas are surface deviations exceeding ½ inch (13 millimeters) in 10 feet (3 meters) between two contacts of the straightedge with the surface.

Correct defective areas by loosening, adding, or removing material; reshaping; and compacting.

WFL Specification 05/30/14

Include the following when "subbase aggregate, grading A or B" or "base aggregate, grading C, D, or E" material is to be statistically evaluated for acceptance.

301.08 Acceptance. Amend as follows:

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

Aggregate gradation, SEP, and fractured faces will be evaluated under Subsection 106.05.

Delete paragraph (b) and substitute the following:

(b) SE/P_{200} (SE/P_{75}) Index (SEP). The lower specification limit for the SEP is 1.000.

Add the following:

(c) Fractured faces. The lower specification limit is 50 percent.

Delete Table 301-1 and substitute the following:

Table 301-1
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									
Aggregate quality (703.05(a) (b) (c))	Measured and tested for conformance (106.04 & 105)	LA abrasion (coarse)	–	AASHTO T 96	1 per type & not less than 5 per source of material[2]	Source of material	Yes	Before using in work	Not required when using Government-provided sources
		Soundness using sodium sulfate (coarse & fine)	–	AASHTO T 104	"	"	"	"	"
		Durability index (coarse & fine)	–	AASHTO T 210	"	"	"	"	"
		Accelerated Weathering	–	WFLHD-DMSO	"	"	"	"	"
Surface course aggregate (703.05(c))	Process Control (153.03)	Plasticity index	–	AASHTO R 58, T 89, & T 90	"	Crusher belt or after processing	"	"	"
Subbase, base, or surface course aggregate (703.05(b) (c))	"	Gradation	–	AASHTO T 11 & T27	2 per day per stockpile (minimum)	Crusher belt	No	24 hours	Not required when using a pre-crushed commercial source
		Fractured faces	–	ASTM D5821	"	"	"	"	
Surface course aggregate (703.05(c))	"	Plasticity index	–	AASHTO R 58, T 89, & T 90	"	Crusher belt or after processing	"	"	"

Table 301-1 (continued)
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
Production									
Subbase course Grading A & B	Statistical (106.05)	Gradation No. 4 (4.75 mm)	I	AASHTO T 27 & T 11	1 per 1000 tons (900 metric tons)	From windrow or roadbed after processing	Yes	4 hours	–
		No. 200 (75µm)	–						
		Other specified sieves	II						
		Sand Equivalent	–	AASHTO T 176 Alternate Method No. 2, Reference Method	"	"	"	"	–
		SEP	I	See Note (1)	"	"	"	"	–
		Fractured faces	II	ASTM D5821	"	"	"	"	–
Base course Grading C, D, & E	"	Gradation ⅜ inch (9.5 mm)	I	AASHTO T 27 & T 11	"	"	"	"	–
		No. 4 (4.75 mm)	I						
		No. 200 (75µm)	–						
		Other specified sieves	II						
		Sand equivalent	–	AASHTO T 176 Alternate Method No. 2, Reference Method	"	"	"	"	–
		SEP	I	See Note (1)	"	"	"	"	–
		Fractured faces	II	ASTM D5821	"	"	"	"	–

Table 301-1 (continued)
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
Production (continued)									
Subbase & base course Grading A, B, C, D, & E	Measured and tested for conformance (106.04)	Moisture-density (max density)	–	Humphres Method	1 per type & source of material	Stockpile or production output	Yes	14 days before use	Tested by Government
		Density	–	AASHTO T 310 or other approved procedures	1 per 500 tons (450 metric tons)	In-place after compaction	No	End of shift	–
		Moisture content (in-place)	–	"	"	"	"	"	–
Surface course aggregate	Statistical (106.05)	Gradation No. 4 (4.75 mm)	I	AASHTO T 27 & T 11	1 per 1000 tons (900 metric tons)	From windrow or roadbed after processing	Yes	4 hours	–
		No. 40 (4.75 µm)	I						
		Other specified sieves	II						
		Liquid Limit	II	AASHTO T 89, Method A & T 87	"	"	"	"	–
		Plasticity index	I	AASHTO R 58, T 89, & T 90	"	"	"	"	–

Table 301-1 (continued)
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
Production (continued)									
Surface course aggregate	Measured and tested for conformance (106.04)	Moisture-density (max density)	–	AASHTO T 180 Method D [3]	1 per type & source of material	Stockpile or production output	Yes	14 days before use	–
		Density	–	AASHTO T 310 or other approved procedures	1 per 500 tons (450 metric tons)	In-place after compaction	No	End of shift	–
		Moisture content (in-place)	–		"	"	"	"	–
		Fractured faces	–	ASTM D5821	1 per 1000 tons (900 metric tons)	From windrow on roadbed after processing	Yes	4 hours	–
Finished Product									
Subbase, base, and surface course	Measured and tested for conformance (106.04)	Surface tolerance & grade	–	Subsection 301.06	Determined by the CO	Surface of final course	No	Before placement of next layer or as requested	–

[1] SEP (SE/P_{200} (SE/P_{75}) Index) is a measure of a material's ability to perform based on the quality and quantity of fines present. Quality is represented by the sand equivalent (SE) and quantity is represented by the percent passing the No. 200 (75-µm) sieve ($P_{200\,(75)}$). SEP is computed as follows:

For SE ≥ 29, SEP = SE/($P_{200\,(75)}$ + 25) and for SE < 29, SEP = (SE + 4)/(SE + $P_{200\,(75)}$).

Where: SE = Plastic fines in graded aggregates and soils by using the sand equivalent test. See AASHTO T 176, Alternate Method No.2, Referee Method.

$P_{200\,(75)}$ = Material finer than the No. 200 (75 µm) sieve in mineral aggregates by washing. See AASHTO T 11.

[2] Furnish a minimum of five reports, but not less than one report per rock type for each source. Reports must be dated within 1 year of intended use. Obtain samples representative of aggregates being furnished. Include rock type and sample location on test reports.

[3] Minimum of 5 points per Proctor.

DIVISION 400
ASPHALT PAVEMENTS
AND SURFACE TREATMENTS

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

03/25/19–FP14

Description

401.01 Delete the text of this Subsection and substitute the following:

This work consists of constructing one or more courses of asphalt concrete pavement using hot or warm mix asphalt (HMA or WMA).

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

Pavement roughness type is designated according to Subsection 401.16. When no roughness type is designated use Type IV.

Asphalt binder is designated according to AASHTO M 320.

Asphalt binder grade for this project is [INSERT GRADE].

Antistrip additive type is designated according to Subsection 702.05.

Use 1 percent type 3 (lime) in all mixes. Type 1 (liquid) antistrip may be used in lieu of type 3 (lime) antistrip, if additive is allowed for use by the state department of transportation and meets the requirements in Subsection 401.03.

Construction Requirements

401.03 Composition of Mix (JMF). Add the following:

Provide documentation that demonstrates that the proposed type 1 (liquid) antistrip is allowed for use by the state department of transportation within the past 12 months. If type 1 (liquid) antistrip additive is included in the JMF, the minimum liquid antistrip additive is the minimum amount required to meet the design parameters in Table 401-1A.

Table 401-1A
Type 1 (liquid) Antistrip Requirements

Parameters	Value
Hamburg Wheel-Track Testing, AASHTO T 324 [(1)] Rut Depth at 15,000 passes, max., mm Stripping Inflection Point	 10 None
[(1)]Test all specimens at 45°C. Test all specimens to 20,000 passes. Perform two tests at each additive rate and perform one set of control specimens with no additive.	

401.03(c)(1) Aggregate and mineral filler. Delete paragraph *(a)(2)* and substitute the following:

(a)(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;

401.03(c)(3) Antistrip Additive. Delete the text of this Subsection and substitute the following:

(a) Type 1 (liquid) antistrip additive if part of the JMF:

(1) Target liquid antistrip additive dosage rate by weight of total binder;

(2) Test results according to AASHTO T 324, including:

(a) Mixing temperature for the specimens

(b) Compaction temperature for the specimens

(c) Air Void content for each specimen

(d) Hamburg curve plotting rut depth versus number of passes for each test

(3) 1 pint (0.5 liter) of liquid antistrip additive;

(4) Name of product;

(5) Manufacturer; and

(6) Manufacturer's MSDS and product data sheets.

(b) Type 3 (lime) antistrip additive if part of the JMF:

(1) 2 pounds (0.9 kilograms) of lime antistrip additive;

(2) Name of product;

(3) Manufacturer; and

(4) Manufacturer's MSDS and product data sheets.

401.03(d)(4) Delete this Subsection, including Table 401-1, and substitute the following:

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

Table 401-1
Gyratory Asphalt Concrete Mix Design requirements, AASHTO R35

Design ESAL (Million)	Gyrator Compaction Level (% Theoretical Maximum Specific Gravity G_{mm}) AASHTO T 312			Void-in-the Mineral Aggregate (VMA), % (1)				Voids Filled with Asphalt (VFA), %	Dust-to-Binder Ratio (3)	Minimum Tensile Strength Ratio, AASHTO T 283
				Nominal Maximum Size Aggregate (2)						
	$N_{initial}$	N_{design}	N_{max}	1 inch (25 mm)	¾ inch (19 mm)	½ inch (12.5 mm)	⅜ inch (9.5 mm)	#4 Sieve (4.75 mm)		
<0.3	6 (≤91.5%)	50 (96.0%)	75 (≤98.0%)	12.0-15.0	13.0-16.0	14.0-17.0	15.0-18.0	–	70.0 -80.0	0.80
0.3 to <3	7 (≤90.5%)	75 (96.0%)	115 (≤98.0%)						65.0-78.0	0.8-1.6
3 to 30	8 (≤89.0%)	100 (96.0%)	160 (≤98.0%)						65.0-78.0	
–	6 (≤91.5%)	50 (96.0%)	75 ≤98.0%)	–	–	–	–	16.0-19.0	76.0-80.0	0.6-2.0

(1) When mineral filler or hydrated lime is used, include in the calculation for compliance with the VMA.
(2) The nominal maximum size aggregate is one size greater than the first sieve to retain more than 10 percent of the combined aggregate.
(3) Dust to binder ratio is the effective asphalt content divided by the total percent of material passing the No. 200(75-µm) sieve. Dust includes lime, bag house fines, and other mineral matter.

WFL Specification 07/07/14
Include the following when a safety edge is NOT needed.
Coordinate with WFL Materials to determine safety edge need.

401.05(a) Pavers. Delete paragraph (9).

401.14 Compacting. Add the following to the third paragraph:

Obtain cores as soon as the pavement has cooled sufficiently to allow coring, but not later than 12 hours after final rolling.

WFL Specification 03/01/19
Include the following on all projects when:
1) Type I, Type II, or Type III Pavement Roughness is required, and
2) Roughness is evaluated by the government.
Coordinate with WFL Materials for Pavement Roughness Designation.

401.16 Pavement Roughness. Delete the text of this Subsection and substitute the following:

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.

(1) Equipment. The CO will provide and operate an ASTM E950, Class 1 inertial profiling system conforming to AASHTO M 328 and certified according to AASHTO R 56.

(2) Personnel. Furnish 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. The pavement profile will be measured 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. The inertial profiler will be operated according to AASHTO R 57 and the manufacturer's recommendations. Filters will not be applied when collecting profile data. Filtering will be applied during profile analysis in ProVAL. Profile data (elevation and distance) will be collected at a maximum interval of 2 inches (50 millimeters). A lead-in distance of at least 150 feet (45 meters) after reaching the testing speed will be provided and the profiler's automatic start/stop activation will be used when collecting data.

The CO will identify excluded areas. Cattle guards, bridges not being overlaid, and turning lanes, passing lanes, side roads, 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. Event markers will be used to mark areas to be excluded from profile measurement.

The CO will not measure excluded areas. Measure excluded areas with a straightedge according to Subsection 401.16(e).

(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 will be considered a defective area requiring correction. 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).

Correct areas of localized roughness according to Subsection 401.16(g).

(b) Type I pavement roughness. The CO will measure the profile of the initial pavement surface before construction activities disturb the existing pavement surface. The initial pavement surface is defined as the existing pavement surface before construction activities begin. The localized roughness threshold computed to the nearest whole number for Type I pavement roughness is equal to the following:

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

where:

Initial Overall MRI = MRI obtained before construction activities begin.

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

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

The CO will measure the profile of the final pavement surface before placing a surface treatment and within 21 days of completing roadway paving. The original overall surface MRI will be used in conjunction with the final overall MRI to determine an overall percent improvement for the entire traveled way.

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

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

Table 401-3 will be used to determine the final pay factor (PFrough) for the traveled way to two decimal places. When the percent improvement is less than 25.0 percent and the final overall MRI value is less than or equal to 70.0 inches per mile (1.105 meters per kilometer), Type III-A from Table 401-5 will be used to determine the final PFrough.

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.

Table 401-3
Type I Pavement Roughness Pay Factors

Type I-A	
Percent Improvement (%)	**Pay Factor (PF_{rough})**
Greater than 50.0	PF = 1.05
47.6 – 50.0	PF = 1.04
45.1 – 47.5	PF = 1.03
43.6 – 45.0	PF = 1.02
42.1 – 43.5	PF = 1.01
25.0 – 42.0	PF = 1.00
24.0 – 24.9	PF = 0.99
23.0 – 23.9	PF = 0.98
22.0 – 22.9	PF = 0.97
21.0 – 21.9	PF = 0.96
20.0 – 20.9	PF = 0.95
19.0 – 19.9	PF = 0.94
18.0 – 18.9	PF = 0.93
17.0 – 17.9	PF = 0.92
16.0 – 16.9	PF = 0.91
15.0 – 15.9	PF = 0.90
14.0 – 14.9	PF = 0.89
13.0 – 13.9	PF = 0.88
12.0 – 12.9	PF = 0.87
11.0 – 11.9	PF = 0.86
10.0 – 10.9	PF = 0.85
5.0 – 9.9	PF = 0.80
0.0 – 4.9	PF = 0.70
Negative % Improvement	Correct & overlay

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

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

where:

Initial Overall MRI = MRI obtained before construction activities begin.

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

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

The CO will measure the profile of the final pavement surface before placing a surface treatment and within 21 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 PF_{rough} for the traveled way to two decimal places. When the percent improvement is less than 49.0 percent and the final overall MRI value is less than or equal to 70.0 inches per mile (1.105 meters per kilometer), Type III-A from Table 401-5 will be used to determine the final PF_{rough}.

Correct areas of localized roughness according to Subsection 401.16(g). If a pavement has less than a 10.0 percent improvement, place a minimum 1-inch (25-millimeter) overlay over the entire paved surface

Table 401-4
Type II Pavement Roughness Pay Factors

Type II-A	
Percent Improvement (%)	**Pay Factor (PF_{rough})**
Greater than 60.0	PF = 1.05
58.6 – 60.0	PF = 1.04
57.6 – 58.5	PF = 1.03
56.6 – 57.5	PF = 1.02
55.1 – 56.5	PF = 1.01
49.0 – 55.0	PF = 1.00
48.0 – 48.9	PF = 0.99
47.0 – 47.9	PF = 0.98
46.0 – 46.9	PF = 0.97
45.0 – 45.9	PF = 0.96
44.0 – 44.9	PF = 0.95
43.0 – 43.9	PF = 0.94
42.0 – 42.9	PF = 0.93
41.0 – 41.9	PF = 0.92
40.0 – 40.9	PF = 0.91
38.0 – 39.9	PF = 0.90
36.0 – 37.9	PF = 0.89
35.0 – 35.9	PF = 0.88
34.0 – 34.9	PF = 0.87
33.0 – 33.9	PF = 0.86
31.0 – 32.9	PF = 0.85
25.0 – 30.9	PF = 0.80
10.0 – 24.9	PF = 0.70
Less than 10.0	Correct & overlay

(d) Type III pavement roughness. The CO will measure the profile of the final pavement surface before placing a surface treatment and within 21 days of completing roadway paving. Pay factors from Table 401-5 will be used in conjunction with the long continuous histogram printout from ProVAL's Smoothness Assurance Analysis function and by utilizing a long continuous 528-foot (161-meter) segment length for analysis. The final PF_{rough} is equal to the sum of the products of the individual pay factors indicated in Table 401-5 multiplied by the ratio of individual lane miles (lane kilometers) to the overall project lane miles (lane

kilometers) and by ProVAL's corresponding histogram percentages, divided by 100. The final PF_{rough} will be determined to three decimal places.

If the final overall MRI for the entire traveled way is greater than the values shown in Table 401-5, correct the traveled way according to Subsection 401.16(g).

Table 401-5
Type III Pavement Roughness
Pay Factors

Mean Roughness Index (MRI) Type III-A in/mi (m/km)	Pay Factor (PF_{rough})
Localized roughness threshold 140 in/mi (2.210 m/km)	
If MRI of entire roadway is greater than 125 in/mi (1.973 m/km)	REJECT
Greater than 95.0 (1.50)	0.700
95.0 – 90.0 (1.50 – 1.42)	0.800
90.0 – 85.0 (1.42 – 1.34)	0.850
85.0 – 80.0 (1.34 – 1.26)	0.900
80.0 – 75.0 (1.26 – 1.18)	0.960
75.0 – 70.0 (1.18 – 1.10)	0.980
70.0 – 65.0 (1.10 – 1.02)	1.000
65.0 – 60.0 (1.02 – 0.94)	1.010
60.0 – 55.0 (0.94 – 0.86)	1.020
55.0 – 50.0 (0.86 – 0.78)	1.025
50.0 – 45.0 (0.78 – 0.70)	1.030
45.0 – 40.0 (0.70 – 0.62)	1.035
40.0 – 35.0 (0.62 – 0.54)	1.040
35.0 – 30.0 (0.54 – 0.46)	1.045
Less than 30.0 (0.46)	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 exceeding ¼ inches (6 millimeters) measured between two contacts of the straightedge or deviations exceeding ¼ inches (6 millimeters) measured at the end of the straightedge. Correct defective areas according to Subsection 401.16(g).

(f) Localized roughness and straightedge measurement 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.

Each defective area as determined by a 10-foot (3.0-meter) metal straightedge will receive a reduction in payment according to Table 401-6.

Table 401-6
Localized Roughness and Straightedge Measurement Pay Reductions

Type I	Type II & IV		Type III	
Deduction per Occurrence	**Deduction per Occurrence**	**Localized Roughness Limit MRI**	**Localized Roughness Limit MRI, in/mi (m/km)**	**Deduction per Occurrence**
$200	$300	Computed MRI value per Subsection 401.16(b) for Type I 401.16(c) for Type II 401.16(d) for Type III	140.0 – 169.9 (2.208 – 2.680)	$300
			170.0 – 179.9 (2.681 – 2.838)	$450
			180.0 – 189.9 (2.839 – 2.995)	$600
			190.0 – 199.9 (2.996 – 3.154)	$750
			200.0 – 209.9 (3.155 – 3.311)	$900
			210.0 – 219.9 (3.312 – 3.469)	$1,200
			220.0 – 229.9 (3.470 – 3.626)	$1,500
			230.0 – 239.9 (3.627 – 3.784)	$2,000
			$\geq$ 240.0 (3.785)	$4,000

(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) Saw cutting. Replace the defective area by saw cutting and removing the defective area and repaving with the approved asphalt concrete mix. Saw cut and remove the defective area according to Section 203.

(3) 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. Optimize the endpoints of the areas where a grinder is to be applied using ProVAL's Smoothness Assurance function in conjunction with the grinding simulation function. Submit the type of seal to be placed after grinding is completed for approval. Place seals according to Section 409 or 410. Limit the grinding depth to 12.5 percent of the design pavement thickness. If grinding exceeds this depth, provide a minimum 1-inch (25-millimeter) overlay.

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

After corrections are made, the CO will re-measure the pavement profile according to Subsection 401.16(a). Data from the re-measurement will be analyzed to determine the MRI or percent improvement, areas of localized roughness, and the final PF_{rough}. If correction and re-measurement of the surface is required, the maximum allowable pay factor under Subsection 401.19 is 1.00.

If corrections are not allowed, no adjustment will be made to the final PF_{rough} or localized roughness pay deductions.

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

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

Measurement

401.18 Add the following:

Do not measure type 1 (liquid) antistrip additive that is used in lieu of type 3 (lime) antistrip additive.

Payment

401.19 Delete the text of this Subsection and substitute the following:

The accepted quantities will be paid at the contract price per unit of measurement for the Section 401 pay items listed in the bid schedule, except the asphalt concrete pavement contract price will be adjusted according to Subsections 106.05, 401.16, and Table 401-7. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.

Payment for asphalt concrete pavement will be made at a price determined by multiplying the contract price by the material pay factor. The material pay factor is calculated as follows:

$$PF_{material} = 1 + [(PF_{Volumetric} - 1) + (PF_{PG} - 1)]$$

where:

$PF_{material}$ = Material pay factor.

$PF_{Volumetric}$ = Pay factor for asphalt concrete pavement. $PF_{Volumetric}$ is the lowest single pay factor determined for asphalt binder content, VMA, and core density.

PF_{PG} = Pay factor for asphalt binder. The PF_{PG} formula is as follows:

$$PF_{PG} = (PF_1 + PF_2 + PF_3 + \ldots PF_n) / n$$

where:

$PF_{\#}$ = For each sample, the lowest pay factor determined from any test in Table 401-7. If the lowest pay factor for a sample is in reject, the sample's pay factor is zero.

n = Number of samples tested.

If either the pay factor for the asphalt binder (PF_{PG}) or the pay factor for asphalt concrete pavement ($PF_{Volumetric}$) is below 0.75, the lot for asphalt concrete pavement is in reject.

When the contract specifies a pavement roughness Type I, Type II, or Type III, a separate pay adjustment will be made for pavement roughness calculated as follows:

Type I, Type II, or Type III Pay Adjustment = $(RF)(PF_{rough} - 1.00)(L) - (LRPR)$

where:

PF_{rough} = Pay factor from Tables 401-3, 401-4, or 401-5.

L = Total project length in lane miles (lane kilometers).

LRPR = Localized roughness pay reduction from table 401-6.

RF = Roughness factor: 100,000 U.S. Customary (62,200 Metric).

WFL Specification 03/25/19

Include in all projects that require work in this Section. When Type I or Type II Pavement Roughness is required, coordinate with WFL Materials to adjust the reporting time in Table 401-8

Delete Table 401-8 and substitute the following:

Table 401-8
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									
Asphalt concrete aggregate (703.07)	Measured and tested for conformance (106.04 & 105)	Aggregate quality	–	Subsection 703.07	1 per type & not less than 5 per source of material[(5)]	Source of material	Yes	Before production	Not required when using Government - provided sources
Asphalt binder (702.01)	"	Quality	–	AASHTO M 320	"	Asphalt Supplier or mixing plant	"	"	–
Asphalt concrete (703.07)	Process control (153.03)	Gradation	–	AASHTO T 27 & T 11	2 per day Per stockpile	Crusher belt (during production)	No	24 hours	Not required when using a pre-crushed commercial source

Table 401-8 (continued)
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
Mix Design									
Asphalt concrete mixture	Measured and tested for conformance (106.04)	Gradation	–	AASHTO T 27 & T 11	1 per Submitted mix design	Stockpiles	Yes	30 days before producing	–
		RAP asphalt binder content	–	AASHTO T 308	"	"	"	"	–
		Bulk specific gravity of aggregate (coarse and fine)	–	AASHTO T 84 & T 85	"	"	"	"	–
		VMA	–	AASHTO R 35	"	–	"	"	–
		VFA	–	"	"	–	"		–
		Air voids	–	"	"	–	"	"	–
		Tensile strength ratio	–	AASHTO T 283	"	–	"	"	–

Table 401-8 (continued)
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
Production Start-up (control strip)									
Asphalt concrete pavement	Statistical (106.05)	Gradation		AASHTO T 30	3 minimum	Behind the paver before compaction	Yes	6 hours	–
		No. 4 (4.75 mm)	I						
		No. 30 (600 µm)	I						
		No. 200 (75 µm)	I						
		Other specified sieves	II						
		Asphalt Content[1]	I	AASHTO T 308	"	"	"	"	–
		VMA	I	AASHTO R 35	"	"	"	"	–
		Density[2]	I	AASHTO T 166	5 minimum	In-place after compaction	"	24 hours	Deliver cores to CO after determining specific gravity and compaction

Table 401-8 (continued)
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
Production Start-up (control strip) (continued)									
Asphalt concrete pavement	Measured and tested for conformance (106.04)	Mix temperature	–	–	First load and as determined by CO thereafter	Hauling vehicle before dumping or windrow before pickup	No	Immediately upon completion of test	–
		Maximum specific gravity[4]	–	AASHTO T 209	3 minimum	Behind the paver before compaction	Yes	24 hours	–
	Process control (153.03)	Density	–	ASTM D2950	5 minimum	At core location before coring	No	24 hours	See Subsection 401.12
Production									
Asphalt concrete pavement	Statistical (106.05)	Asphalt Content[1]	I	AASHTO T 308	1 per 700 tons (650 metric tons)	Behind the paver before compaction	Yes	6 hours	–
		VMA	I	AASHTO R 35	"	"	"	"	–
		Density[2]	I	AASHTO T 166	"	In-place after compacting	"	24 hours	Deliver cores to CO after testing is completed

Table 401-8 (continued)
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
Production (continued)									
Asphalt concrete pavement	Measured and tested for conformance (106.04)	Placement temperature	–	–	First load and as determined by CO thereafter	Hauling vehicle before dumping, or windrow before pickup	No	Immediately upon completion of measurement	–
		Maximum specific Gravity[3][4]	–	AASHTO T209	Minimum 1 per day	Behind the paver before compaction	Yes	24 hours	–
Asphalt binder (702.01)	Measured and tested for conformance (106.04)	Quality	See Table 401-7	AASHTO M 320	1per 2000 tons (1800 metric tons) of mix	In line between tank and mixing plant	Yes 2 1-quart (1-liter) samples	–	Test by Government

Table 401-8 (continued)
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
Production (continued)									
Asphalt concrete pavement	Process control (153.03)	Gradation at plant	–	AASHTO T 27 & T 11	Contractor determined	Cold feed or hot bins as applicable	No	24 hours	–
		Gradation at paver	–	AASHTO T 30	1 per 700 tons (650 metric tons) of mix	Behind the paver before compaction	"	"	–
		Moisture content of aggregates	–	AASHTO T 255	Contractor determined	Stockpile	"	"	–
		Density	–	ASTM D2950	1 per 500 feet (150 meters)	In-place after compacting	"	"	–
		Air voids	–	AASHTO T 312 & T 166	1 per 700 tons (650 metric tons) of mix	Behind the paver before compaction	No	24 hours	–
		VFA	–	AASHTO R 35	"	"	"	"	–

(Table 401-8 (continued)
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
		Finished Product							
Asphalt concrete pavement	Measured and tested for conformance (106.04)	Type 1 roughness, before construction (Initial MRI)	–	AASHTO R 56 & R 57	See Subsection 401.16	Left and right wheel paths	No	Within 14 days of Notice to Proceed	Original surface before construction
		Type 1 roughness, after construction (Final MRI)	–	"	"	"	"	Within 21 days after completing paving	–
		Type II roughness, before construction (Initial MRI)	–	"	"	"	"	Within 14 days of Notice to Proceed	Original surface before construction
		Type II roughness, after construction (Final MRI)	–	"	"	"	"	Within 21 days after completing paving	–
		Type III roughness, (Final MRI)	–	"	"	"	"	"	–
	Process control (153.03)	Surface tolerance	–	Straightedge measurements Subsection 401.16(e)	Contractor determined	See Subsection 401.16(e)	"	24 hours	–

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

(1) Use AASHTO T 308, Method A. Calculate the asphalt binder content by weighing the sample before and after the burn using a calibrated external balance.

(2) Cut 6-inch (150-millimeter) diameter cores from the compacted pavement. 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. Dry the 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. Submit cores to the CO after testing is completed.

(3) After production paving has begun, use the average maximum specific gravity value (AASHTO T 209) for each day to adjust the percent compaction for the cores that represent that day's paving.

(4) Do not use the supplemental procedure for mixtures containing porous aggregate (dry back method of AASHTO T 209).

(5) Furnish a minimum of five reports, but not less than one report per rock type for each source. Reports must be dated within 1 year of intended use. Obtain samples representative of aggregates being furnished. Include rock type and sample location on test reports.

DIVISION 550
BRIDGE CONSTRUCTION

Section 551. — DRIVE PILES

Construction Requirements

551.04 Submittal. Add the following to paragraph (c):

(10) Nonimpact Hammers. Manufacturer, model, type, serial number, and rated energy.

551.05 Pile Driving Equipment. Amend as follows:

Delete the text of paragraph (a)(5) and substitute the following:

(5) Nonimpact Hammers. Nonimpact hammers, such as vibratory hammers, may only be used to advance piling from the ground surface to elevation 530 feet. Use impact hammers only to drive all piling below elevation 530 feet. Only use nonimpact hammers with non-petroleum based hydraulic fluids and pure (B100) biodiesel fuels.

Add the following to the text paragraph (a)(6):

(6) Hydraulic Hammers. Only use hydraulic hammers with pure vegetable oil or grape seed oil.

Delete the second paragraph of (b) and substitute the following:

Approval of pile-driving equipment will be based on a wave equation analysis.

551.08 Driven Pile Capacity. Delete the text of this Subsection and substitute the following:

Drive piles to the specified penetration and to the depth necessary to obtain the required nominal pile capacity. Splice piles not obtaining the required nominal capacity at the ordered length, and drive with an impact hammer until the required nominal pile capacity is achieved.

Determine nominal pile capacity of the in-place piles using driving criteria developed from dynamic load test results.

551.13 Pile Load Tests. Add the following to paragraph (a):

(a) Dynamic load test. Perform a minimum of one dynamic load test per bent.

551.16 Placing Concrete in Steel Shell or Pipe Piles. Delete the first paragraph and substitute the following:

Clean the inside of pipe piles by removing material to the depth as shown on the plans. If a soil plug leaves a void deeper than the limits of concrete fill shown on the plans, fill up to the limits of concrete fill using a bentonite grout mix batched in the following proportions:

- 1 bag cement (94 pounds);
- 1/2 bag bentonite (25 pounds); and
- 30 gallons water.

Remove water before placing concrete or place the concrete using a tremie when water is present in the pile. Dispose of water according to Section 157.05.

Section 552. — STRUCTURAL CONCRETE

09/17/18–FP14

Construction Requirements

552.03 Composition (Concrete Mix Design). Amend as follows:

Delete the first paragraph 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. Determine design strength values according to Section 4 of ACI 301, *Specifications for Structural Concrete*.

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

Verify mixture design with trial mixes prepared according to Section 4 of ACI 301 from proposed sources or with previous concrete production data for the mixture design submitted from proposed sources.

Delete item **(w)** from the third paragraph and substitute the following:

(w) Specified design strength (f'_c) and required average strength (f'_{cr}) for the concrete mixture at 28 days as determined by the process described in Section 4 of ACI 301. This process and associated calculations are 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;

552.08 Delivery. Add the following to paragraph (a):

Do not exceed 300 total revolutions, including both mixing and agitating speed.

552.09 Quality Control of Mix. Add the following:

(c) Curing and Shipping. Provide the appropriate initial curing of concrete cylinders taken for compressive strength testing, and transport the cylinders to the project curing facility. After initial curing, furnish and maintain a suitable environment to cure cylinders according to WFLHD T 23-94. Provide suitable containers to protect and continue the curing of cylinders while transporting. Deliver cylinders to the Vancouver Laboratory according to Subsection 154.03. Cylinders will be tested at 7, 14, and 28 days from the date molded. Ensure cylinders arrive at the Vancouver Laboratory at least 1 day before the designated test date.

552.11(e)(1) Tremies. Delete the text of this subsection and substitute the following:

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.

552.16 Finishing Formed Concrete Surfaces. Amend as follows:

Delete the first paragraph and substitute the following:

Finish sound, formed concrete surfaces as described below. If any finished concrete surface that is exposed to view (e.g., piers, columns, web walls, etc.) has become streaked and unsightly due to spilled mortar, leaching, or some other cause, clean and refinish the concrete according to the appropriate class.

Delete paragraph (a) and substitute the following:

(a) Class 1 - Ordinary surface finish. Finish the following surfaces with a Class 1 ordinary surface finish:

(1) Under surfaces of slab spans, box girders, filled spandrel arch spans, and the roadway deck slab between superstructure girders;

(2) Inside vertical surface of T-girders of superstructures; and,

(3) Surfaces to be buried and culvert surfaces above finished ground that are not visible from the traveled way or a walkway.

Begin finishing as soon as the forms are removed. Remove fins and irregular projections from all surfaces that are exposed or will be waterproofed. Remove bulges and offsets with carborundum stones or discs. Remove localized, poorly-bonded rock pockets and honeycombed concrete, and replace with sound concrete or packed mortar. Fill all holes with mortar in the same cement/aggregate ratio as the concrete being finished, and float to an even, uniform finish. A bonding agent may be used with the approval of the CO.

Clean and point form tie cavities, holes, broken corners and edges, and other defects. Saturate the area with water. Finish the area with mortar that is less than 1-hour old. After the mortar is set, rub it (if required) and continue curing. Match exposed surfaces to surrounding concrete.

Carefully tool and remove free mortar and concrete from construction and expansion joints. Leave joint filler exposed for its full length with clean, true edges.

Rub or grind bearing surfaces on piers and abutments to the specified elevation and slope.

If the final finished surface is not true and uniform, rub it according to Subsection 552.16(b).

Delete paragraph (b) and substitute the following:

(b) Class 2 - rubbed finish. Finish the following surfaces with a Class 2 rubbed finish:

(1) Surfaces of bridge superstructures except those surfaces designated to receive a Class 1 or other finish;

(2) Surfaces of bridge piers, piles, columns and abutments, and retaining walls above finished ground and to at least 12 inches (300 millimeters) below finished ground;

(3) Surfaces of open spandrel arch rings, spandrel columns and abutment towers;

(4) Surfaces of pedestrian undercrossings except floors and surfaces to be covered with earth;

(5) Surfaces above finished ground of culvert headwalls and endwalls when visible from the traveled way or walkway;

(6) Inside surfaces of culvert barrels higher than 48 inches (1200 millimeter) that are visible from the traveled way. Finish for a distance inside the barrel at least equal to the height of the culvert; and,

(7) Surfaces of railings.

Complete a Class 1 finish according to Subsection 552.16(a).

Create a Class 2 rubbed finish according to steps (1) through (6), below.

(1) Thoroughly wash the surface of the concrete with water. Proceed with step (2) only after completing other work that could affect the surface;

(2) Brush on a mortar approved by the CO at a 1:1 cement/aggregate ratio.

(3) Brush on no more mortar than can be finished in 1 day;

(4) Rub the mortar with burlap or a piece of carpet as soon as it takes initial set (before it reaches final set);

(5) Fog-spray water over the finish as soon as the mortar has reached final set; and

(6) Keep the surface damp for at least 2 days.

If the mortar becomes too hard to rub as described in step (4), then rub the surface with a carborundum stone and water until form marks, projections, and irregularities are removed. Random grinding is not permitted. Leave a uniform surface free from all unsound patches, paste, powder, and objectionable marks.

Continue with the Class 2 rubbed finish until the entire surface has a smooth texture and uniform color.

When steel forms have been used and the surface has a smooth, uniform texture and color including the surface of the filled holes, steps (1) through (6) above may be omitted with the approval of the CO.

Measurement

Delete Table 552-9 and substitute the following:

Table 552-9
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
Aggregate source quality (703.01 & 703.02)	Measured and tested for conformance (106.04 & 105)	Quality	—	AASHTO M 80 AASHTO M 6	1 per material type	Source of material	Yes	Before producing
Concrete composition (mix design)	Measured and tested for conformance (106.04 & 105)	All	—	Subsection 552.03	1 per mix design	Source of material	Yes	Before producing
Produced aggregate (fine & coarse)	Measured and tested for conformance (106.04)	Gradation	—	AASHTO T 27 & T 11	1 per day	Flowing aggregate stream (bin, belt, discharge conveyor belt, or stockpile)	Yes, when requested	Before batching
		Fineness modulus	—	AASHTO T 27	—		"	"
		Moisture test	—	AASHTO T 225	—		"	"
Structural concrete (552.09(b)(3))	Measured and tested for conformance (106.04)	Unit mass	—	AASHTO T 121	1 per load	Discharge stream at point of placement	—	Upon completing tests
		Air content	—	AASHTO T 152 or AASHTO T 196	"		—	
		Slump	—	AASHTO T 119	"		—	"
		Temperature	—	Field measured	"	"	—	"
	Statistical (106.05)	Compressive strength[1]	II	WFLHD T 23-94[2] & AASHTO T 22	1 set per 30 yd^3 but not less than 1 per day	Discharge stream at point of placement	Yes	—

[1] A single compressive strength test result is the average result from two 6 inch by 12 inch cylinders, or three 4 inch by 8 inch cylinders cast from the same load and tested at 28 days.

[2] See *WFLHD Supplements to Nationally Developed Standard Test Procedures*.

Section 553. — PRESTRESSED CONCRETE

7/21/17–FP14

Material

553.02 Add the following to the material list:

Non-shrink grout	725.13(b)

Construction Requirements

553.03 Qualifications. Delete paragraph (a).

553.09 Storing, Transporting, and Erecting. Delete the second paragraph and substitute the following:

Before transporting prestressed concrete members, provide written certification from the precast concrete manufacturing plant Quality Control Manager that the members were fabricated and inspected according to the contract and meet minimum quality requirements.

Section 554. — REINFORCING STEEL

08/01/14–FP14

Construction Requirements

554.09 Splices. Add the following:

Mechanical couplers used in the superstructure slab must be butt type splices only.

Use only epoxy coated mechanical couplers for joining epoxy coated reinforcing. Splice sleeves must have a clear coverage of not less than 1.75 inches (45 millimeters) measured from the surface of the concrete to the outside face of the sleeve. Do not place slab bar mechanical splices adjacent to each other.

Perform splicing procedures according to the manufacturer's standard equipment, jigs, clamps, and other required accessories. Use procedures for making mechanical butt splices as recommended by the manufacturer and approved by the CO.

Section 559. — WATERPROOFING

Delete the text of this Section and substitute the following:

Description

559.01 This work consists of waterproofing concrete surfaces with spray-applied waterproofing membrane systems.

Material

559.02 Conform to the following Subsections:

Spray-applied waterproofing membrane	725.19

Construction Requirements

559.03 Submittals. Submit for approval a copy of the manufacturer's latest data sheets, installation procedure, curb and corner details, and manufacturer's representative name and experience. Provide one complete submittal not less than 30 days prior to installation of the waterproofing membrane system.

559.04 Quality Assurance. Install waterproofing membrane system under the on-site supervision of a representative from the manufacturer. The representative must be on site for the full duration of installation and testing operations. Do not substitute manufacturer's representative listed in the submittal without prior written approval from the CO.

Ensure the concrete surface is free of projections or depressions that might cause puncture of the membrane. Clean the concrete surface of dust and loose material. Do not place membranes on wet concrete. Do not place membrane on new concrete until at least 10 days after completion of the concrete curing process as defined in Subsection 552.15. Apply waterproofing in dry weather when the temperature is above 35 °F (2 °C) and rising. Apply primer and membrane beginning at the lowest point of the work.

559.05 Construction. Conform to the following:

(a) General. Install the waterproofing membrane system in accordance with the manufacturer's published installation procedure. Apply membrane to concrete and grout that has reached at least 80 percent of the specified 28-day compressive strength (f'c). Place a tack coat recommended for use by the manufacturer. Protect adjacent surfaces not to be covered with the membrane from splatter or coating. Use asphalt overlay material within the manufacturer's temperature limitations.

(b) Spray-applied waterproofing membrane. Prepare the concrete surfaces that are to receive the waterproofing membrane system as required by the manufacturer but as a minimum provide an abrasive blast cleaning meeting the requirements of the International Concrete

Repair Institute Guideline 310.2 CSP 5 followed by an air pressure sweep immediately prior to placing the primer.

Hold a pre-placement meeting with the CO at least 3 days prior to application of the membrane.

Maintain spray and other installation equipment in proper operating condition throughout installation. Provide reserve equipment as required.

559.06 Field Quality Control. Record material batch numbers, processing information and quantity of each material used.

Perform tensile adhesion bond testing of both primer and base membrane in accordance with ASTM D4541.

Perform dry film thickness testing of base membrane in accordance with SSPC-PA2 or SSPC-PA9 Measurement of Dry Coating Thickness. Destructive or stroke per gallon methods are also acceptable methods of thickness assurance.

(a) If on-site representative uses magnetic test equipment, perform testing in accordance with SSPC-PA2 Measurement of Dry Coating Thickness with Magnetic Gages.

(b) If on-site representative uses ultrasonic test equipment, perform testing in accordance with SSPC-PA9 Measurement of Dry Coating Thickness on Cementitious Substrates Using Ultrasonic Gages.

(c) Calibrate spray equipment with the stroke count per gallon of material sprayed method.

(d) Repair destructive areas by re-spraying or filling with special 2 component gun grade material provided by the manufacturer.

(e) Test the thickness of the other components of system using wet film or stroke per gallon methods.

Perform testing as needed to ensure proper thickness of each application but not less than 1 test for every 100 square feet of coated area.

Perform visual inspections of all coated surfaces throughout the installation process. Identify and repair all holidays or other defects in the waterproofing membrane system.

559.07 Overlay Placement. Limit traffic on the membrane to necessary construction equipment and emergency vehicles. For roadway surfaces of bridge decks, place a protective layer of asphalt concrete pavement as specified.

Place the overlay continuously over masked areas and subsequently cut at or near the expansion joint after the overlay is in place. Place a hot asphalt concrete overlay within 48 hours after placing the membrane.

Do not windrow asphalt concrete on the membrane ahead of the paving machine. Do not use an asphalt concrete pickup machine. Do not turn equipment on the membrane to avoid membrane movement and damage. Avoid abrupt starts and stops.

Sweep the membrane surface before placing the overlay. Repair damaged areas on the membrane before commencing overlay placement. Apply a light tack coat according to Section 412 before placing the overlay.

Limit the lay-down temperature of the mix to a maximum of 300 ºF (150 ºC).

559.08 Verification and Inspection. Perform verification testing of spray-applied waterproofing membrane prior to placement of tack coat or asphalt.

Saturate the deck with multiple slow passes of a water truck, or with a water hose. Ensure that all areas of the deck are wetted. Prevent or mitigate erosion of embankments at the ends of the bridge due to verification and inspection.

If leakage is observed in spray-applied waterproofing membranes, repair the waterproofing membrane system in accordance with the manufacturer's recommendations and re-test for leakage.

559.09 Acceptance. Material for waterproofing will be evaluated under Subsections 106.02 and 106.03.

Applying of waterproofing will be evaluated under Subsections 106.02 and 106.04.

Measurement

559.10 Measure the Section 559 pay items listed in the bid schedule according to Subsection 109.02.

Payment

559.11 The accepted quantities will be paid at the contract price per unit of measurement, for the Section 559 pay items listed in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.

Section 562. — TEMPORARY WORKS

04/20/18–FP14

Construction Requirements

562.03 Design. Add the following:

Design temporary bridge structures that are open to public traffic according to AASHTO, *LRFD Bridge Design Specifications*. Design for the following live load: HL93. Perform a load rating of the temporary bridge structure by or under the supervision of a licensed professional engineer in accordance with the AASHTO, *Manual for Bridge Evaluation*. Process all overload and permit load requests received for the temporary bridge structure within 14 days after receiving the request.

562.04 Drawings. Add the following:

Submit a complete design, load ratings, drawings, and erection plans for temporary bridge structures according to Subsection 104.03.

562.07 Maintenance and Inspection. Add the following:

For structures that qualify as Bridges in accordance with the definition for bridge under 23 CFR 650 Subpart C – National Bridge Inspection Standards, perform an initial safety inspection for the temporary bridge structure in accordance with the National Bridge Inspection Standards (NBIS) prior to opening the bridge to public traffic. Submit the initial bridge inspection report prior to opening the bridge to traffic.

Perform all other safety inspection in accordance with the NBIS. Maintain the in-service temporary bridge structure throughout its service life. Submit all other bridge inspection reports within 7 days after completing the inspection.

Section 564. — BEARING DEVICES

11/05/15–FP14

Material

564.02 Add the following to the material list:

Expanded polyethylene	712.01(h)

DIVISION 600
INCIDENTAL CONSTRUCTION

Section 622. — RENTAL EQUIPMENT

01/01/14–FP14

Description

622.01 Delete the text of this Subsection and substitute the following:

This work consists of furnishing and operating equipment for the construction work as ordered by the CO and listed below. Work under this Section does not include equipment time used to perform work provided for under any other pay item shown in the bid schedule. The work anticipated under this Section includes:

(a) [INSERT WORK DESCRIPTION];

(b) [INSERT WORK DESCRIPTION];

(c) [INSERT WORK DESCRIPTION]; and

(d) [INSERT WORK DESCRIPTION].

Construction Requirements

622.02 Rental Equipment. Delete the text of the first paragraph and substitute the following:

Furnish and operate the following equipment:

Number of Units	Type of Equipment
[INSERT #]	[INSERT EQUIPMENT TYPE]
[INSERT #]	[INSERT EQUIPMENT TYPE]
[INSERT #]	[INSERT EQUIPMENT TYPE]
[INSERT #]	[INSERT EQUIPMENT TYPE]

Submit the model number and serial number for each piece of equipment before use. Make equipment available for inspection and approval before use.

Section 623. — GENERAL LABOR

01/01/14–FP14

Description

623.01 Delete the text of this Subsection and substitute the following:

This work consists of furnishing workers and hand tools for the work listed in Subsection 622.01.

Section 625. — TURF ESTABLISHMENT

01/01/14–FP14

Construction Requirements

625.03 General. Delete the text of this Subsection and substitute the following:

Apply turf establishment to finished slopes and ditches between [INSERT DATE] and [INSERT DATE]. Do not apply turf establishment during windy weather or when the ground is excessively wet, frozen, snow covered, extremely dry, cloddy, hard pan, or not friable.

WFL Specification 01/01/14
Include the following when limestone is required.

625.04 Preparing Seedbed. Add the following:

Apply agricultural limestone at the rate of [INSERT #] pounds per acre ([INSERT #] kilograms per hectare).

WFL Specification 01/01/14
Include the following when water is not required.
Note: If water is required include pay item in EE.

625.05 Watering. Delete the text of this Subsection.

WFL Specification 01/01/14
Include the following when fertilizing by hydraulic method is required.

625.06 Fertilizing. Add the following to paragraph (b):

Apply fertilizer at the rate of [INSERT #] pounds (kilograms) per slurry unit. Fertilize areas inaccessible to hydraulic-type equipment by hand.

WFL Specification 01/01/14
Include the following when seeding by hydraulic method is required.
Note: List seed mix in Subsection 713.04.

625.07 Seeding. Add the following to paragraph (b):

Apply the seed at the rate of [INSERT #] pounds (kilograms) of live seed per [INSERT ACRE (HECTARE) or SLURRY UNIT].

WFL Specification 01/01/14
Include the following when mulching by hydraulic method is required.
Note: add alternative mulches if acceptable.

625.08 Mulching. Delete the second and third paragraphs of paragraph (b) and substitute the following:

Apply [INSERT MULCH DESCRIPTION] at a rate of [INSERT #] pounds (kilograms) per [INSERT ACRE (HECTARE) OR SLURRY UNIT] upon completion of seeding and fertilizing applications. This rate does not apply to mulch for tracer applied under Subsection 625.07 (b), Seeding, Hydraulic Method.

Section 633. — PERMANENT TRAFFIC CONTROL

08/01/14–FP14

Construction Requirements

633.04 Sign Posts. Add the following:

Fabricate sign posts from galvanized steel.

633.05(a)(1) Panels. Amend as follows

Delete the sixth paragraph and substitute the following:

> Use retroreflective sheeting as specified and according to ASTM D4956. For roadside signs, use Type III, IV, VIII, IX, or XI prismatic retroreflective sheeting. Use fluorescent yellow-green sheeting for school crossing signs.

Add the following:

> Fabricate sign panels from 0.125-inch thick aluminum sheeting.

Section 635. — TEMPORARY TRAFFIC CONTROL

04/20/18–FP14

Description

635.01 Add the following:

This work also includes providing the services of a Traffic Control Supervisor.

Material

635.02 Amend as follows:

Delete the following from the material list:

Sign panels	633.05
Sign posts	633.04

Add the following to the material list:

Sign hardware	718.06
Sign panels	718.03
Sign posts	718.04

Construction Requirements

635.07 Construction Signs. Delete the text of this Subsection 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 on sign panels. Roll-up signs may be used instead of panels when approved by the CO. For roll-up signs, use Type VI retroreflective sheeting.

Furnish posts conforming to Subsection 718.04, except wood posts may be untreated. Install posts according to Subsection 633.04. Portable sign supports may be used instead of sign posts when approved by the CO.

Remove or completely cover unnecessary signs. Use metal, plywood, or other acceptable material to cover signs. Do not use adhesive glue, tape, or mechanical fasteners that mar the face of the panel of the sign to be covered.

635.08A Traffic Control Supervisor. (Added Subsection).

Perform services described in Subsection 156.09. Provide all vehicles and incidentals necessary to perform the work.

WFL Specification 06/17/14
Include the following when temporary pavement markings and delineation is required on the final alignment before permanent markings are applied. Not appropriate for use when project staging requires interim markings that are different than those needed for the final alignment.
Note: Use when paving will last more than one day.

635.13 Temporary Pavement Markings and Delineation. Add the following after the first paragraph:

Apply temporary pavement markings to the same locations and cycle lengths as shown in the plans for permanent pavement markings, including all passing zones.

WFL Specification 10/31/16
Include the following when temporary pavement markings are required. Edit as required.

635.13A Temporary Signs and Vehicle Positioning Guides. (Added Subsection).

Temporary signs and vehicle positioning guides may be substituted for temporary pavement markings for up to 14 calendar days. Install "NO CENTER STRIPE" (W8-12), "NO PASSING ZONE" (W14-3), "DO NOT PASS" (R4-1) and "PASS WITH CARE" (R4-2) signs according to the MUTCD. Include the description and location of each sign in an alternate traffic control proposal according to Subsection 156.04. Install vehicle positioning guides (temporary raised pavement markers) spaced 40 feet (12 meters) apart for temporary centerline delineation.

635.23 Acceptance. Delete the first paragraph and substitute the following:

Material for temporary traffic control devices will be evaluated under Subsections 106.02 and 106.03. Do not provide a copy of the certifications for temporary traffic control materials to the CO, unless otherwise directed by the CO.

Measurement

635.24 Add the following:

Measure flaggers for each hour a person is actually flagging.

Measure Traffic Control Supervisor by the day for the work described in Subsection 156.09.

A day will be measured when:

(a) Construction operations require a Traffic Control Supervisor during the normal working days;

(b) The Traffic Control Supervisor makes normal checks during nonwork hours; or

(c) The Traffic Control Supervisor is called out during nonwork hours.

Do not measure flagging performed by the Traffic Control Supervisor when there is a pay item in the bid schedule for Traffic Control Supervisor.

WFL Specification 01/01/14
Include the following when temporary pavement markings are required.

Add the following:

Signs used to delineate passing zones and raised pavement markers used for vehicle positioning guides according to Subsection 635.13A will not be measured.

Payment

WFL Specification 01/01/14
Include the following when an item for temporary pavement markings is in the bid schedule.

635.25. Add the following:

Progress payment for temporary pavement markings will be made upon installation, except that when the pay item includes subsequent removal of the markings, up to 25 percent of the unit bid price may be withheld until the removal is completed.

Section 637. — FACILITIES AND SERVICES

08/01/14–FP14

WFL Specification 02/25/14
Include the following in all projects that require contractor furnished vehicles.

Description

637.01 Add the following:

This work also includes furnishing vehicles for the exclusive use of Government personnel.

WFL Specification 02/25/14
Include the following in all projects that require contractor furnished vehicles.
Consult with the COE for vehicle delivery location. Insert "the project" unless the COE requires delivery to another location.

Construction Requirements

637.03 Facilities. Add the following:

(c) Vehicle. Provide a ½ ton, 4x4 wheel drive, two-door pickup truck, manufactured within 5-years of the Award date. Deliver the vehicle to [**INSERT** LOCATION] on the day of the Notice to Proceed date in FAR Clause 52.211-10 Commencement, Prosecution, and Completion of Work. Furnish a vehicle with no visible Contractor's company name or logo. Equip the vehicle with a Citizen Band (CB) radio. Maintain the vehicle in such a manner to provide safety and reasonable comfort for the operator with all factory equipment in working order. Provide all fuels, maintenance, and collision and comprehensive insurance. Insurance is for the Contractor's protection. The Government will be responsible for all Government caused damage to the vehicle beyond normal wear and tear. The Government will not indemnify the Contractor for Government caused damage to third parties. Damage due to no fault of the Government will be the responsibility of the Contractor. Secure vehicle insurance according the standards established by the state in which the vehicle is owned/operated.

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Section F must end on an even page number.
Remove above blank page notice if this page ends up being an odd numbered page.

DIVISION 700
MATERIAL

Section 703. — AGGREGATE

7/15/16–FP14

703.05 Subbase, Base, and Surface Course Aggregate. Amend as follows:

Delete text in paragraph (a) and substitute the following:

(a) General. Furnish hard, durable particles or fragments of crushed stone, crushed slag, or crushed gravel conforming to the following:

(1) Los Angeles abrasion, AASHTO T 96	35 percent max.
(2) Soundness of aggregate using sodium sulfate, AASHTO T 104 (course and fine) (5 cycles)	12 percent loss max.
(3) Durability index (coarse), AASHTO T 210	35 min.
(4) Durability index (fine), AASHTO T 210	35 min.
(5) Fractured faces, ASTM D5821	50 percent min.
(6) Without organic matter and lumps or balls of clay.	
(7) Accelerated weathering of aggregate by use of Dimethyl Sulfoxide (DMSO), WFLHD Standard Test Method	12% max.

Delete the text in paragraph (b) and substitute the following:

(b) Subbase or base aggregate. In addition to paragraph (a) above, conform to the following:

(1) Gradation	Table 703-2
(2) Liquid Limit, AASHTO T 89	25 max.
(3) SEP (SE/P200 (SE/P75 Index)	1.000 min.

Delete Table 703-2 and substitute the following:

Table 703–2
Target Value Ranges for Subbase and Base Gradation

Sieve Size	Percent by Mass Passing Designated Sieve (AASHTO T 27 and T 11)				
	Grading Designation				
	A (Subbase)	B (Subbase)	C (Base)	D (Base)	E (Base)
2½ inch (63 mm)	100[(1)]				
2 inch (50 mm)	97 - 100[(1)]	100[(1)]	100[(1)]		
1½ inch (37.5 mm)		97 - 100[(1)]			
1 inch (25 mm)	65 - 79 (6)		80 – 100 (6)	100[(1)]	
¾ inch (19 mm)			64 - 94 (6)	86 – 100 (6)	100[(1)]
½ inch (12.5 mm)	45 - 59 (7)				
⅜ inch (9.5 mm)			40 - 69 (6)	51 – 82 (6)	62 – 90 (6)
No. 4 (4.75 mm)	28 - 42 (6)	40 - 60 (8)	31 - 54 (6)	36 – 64 (6)	46 - 74 (6)
No. 40 (425 µm)	9 - 17 (4)			12 - 26 (4)	12 - 26 (4)
No. 200 (75 µm)	10 max[(1)]	10 max[(1)]	10 max[(1)]	10 max[(1)]	10 max[(1)]

[(1)] Statistical procedures do not apply.
( ) The value in the parentheses is the allowable deviations (±) from the target values.

703.07 Asphalt Concrete Aggregate. Add the following after paragraph (g):

(h) Durability index, AASHTO T 210

(1) Course aggregate 35 min.

(2) Fine aggregate 35 min.

(i) Accelerated weathering of aggregate by use of Dimethyl Sulfoxide (DMSO), WFLHD Standard Test Method 12% max. loss

Section 704. — SOIL

704.07 Select Borrow. Amend as follows**:**

Delete paragraph (b) and substitute the following:

(b) Soundness of aggregate using sodium sulfate, AASHTO T 104 (5 cycles)	15 percent loss max.

Add the following:

(c) Plasticity index, AASHTO T 90	6 max.
(d) Los Angeles abrasion, AASHTO T 96	50 percent max.

Section 705. — ROCK

07/15/16–FP14

705.08 Filter Rock. (Added Subsection)

Furnish hard, durable, angular rock that is resistant to weathering and water action and 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) Apparent specific gravity, AASHTO T 85	2.40 min.
(b) Absorption, AASHTO T 85	4.0 percent max.
(c) Soundness of aggregate using sodium sulfate, AASHTO T 104 (5 cycles)	12 percent loss max.
(d) Los Angeles abrasion, AASHTO T 96	50 percent max.
(e) Rock particle intermediate dimension (width) and minimum dimension (thickness)	⅓ longest dimension (length) min.
(f) Gradation	Table 705-4

Table 705-4
Gradation Requirements for Filter Rock

Percent of Rock by Mass	Range of Intermediate Dimensions,(1) inches (millimeters)	Range of Rock Mass,(2) pounds (kilograms)
20	6-8 (150-200)	21-49 (10-22)
30	5-6 (125-150)	12-21 (5-10)
40	3-5 (75-125)	2.6-12 (1-5)
10	2-3 (50-75)	0.8-2.6 (0.4-1)

(1) The intermediate dimension is the longest straight-line distance across the rock that is perpendicular to the rock's longest axis on the rock face with the largest projection plane.
(2) Rock mass is based on a specific gravity of 2.65.

Section 712. — JOINT MATERIAL

11/05/15–FP14

712.01. Add the following:

(h) Expanded polyethylene. Use closed-cell expanded polyethylene with a density of at least 2.1 lb/ft^3 as determined by ASTM D3575 and with a minimum compressive stress of 9 psi at 25% deflection as determined by ASTM D3575.

Section 713. — ROADSIDE IMPROVEMENT MATERIAL

08/01/14–FP14

WFL Specification 01/01/14
Include the following when fertilizer is required.

713.03 Fertilizer. Add the following:

WFL Specification 01/01/14
Include the following when fertilizer turf establishment is required calling for the minimum percentage of available nutrients.
Example: Use 16:20:0 or 38:0:0 Nitrogen (N): Phosphorus (P): Potassium (K).

(a) Fertilizer for turf establishment. Furnish fertilizer with the following minimum percentages of available nutrients:

[INSERT N]:[INSERT P]:[INSERT K] and :[INSERT SULFUR, if necessary]

Each ingredient is acceptable up to 5 percent over the minimum requirements.

Potassium need not be present but will be allowed.

Formulate the 38:0:0 fertilizer from urea-formaldehyde compounds. The maximum activity index is 50.

WFL Specification 01/01/14
Include the following when fertilizer turf establishment is required calling for the amount of available nutrients.

(a) Fertilizer for turf establishment. Furnish fertilizer with the following minimum amount of available nutrients:

Nutrient	Quantity per [INSERT acres (hectares) or slurry unit]
Nitrogen	[INSERT #] pounds ([INSERT #] kilograms)
Phosphoric Acid	[INSERT #] pounds ([INSERT #] kilograms)
Potassium	[INSERT #] pounds ([INSERT #] kilograms)
Sulfur	[INSERT #] pounds ([INSERT #] kilograms)
Boron	[INSERT #] pounds ([INSERT #] kilograms)

Each nutrient is acceptable up to 5 percent over the minimum requirements

Determine the available percent for each nutrient and the application rate for the total mix. Supply this information with the certification.

WFL Specification 01/01/14
Include the following when fertilizer plants, trees, shrubs, vines, and groundcover is required.
Example: Use 5:10:10.

(b) Fertilizer for plants, trees, shrubs, vines, and groundcover. Furnish [INSERT #]:[INSERT #]:[INSERT #] granular fertilizer with a 1 year controlled release. Formulate nitrogen from urea-formaldehyde compound.

WFL Specification 01/01/14
Include the following when seed is required.
Example: Ryegrass, perennial (Lolium perpenne) var. Linn 20%

713.04 Seed. Add the following:

Furnish a mixture consisting of the following kinds of seed with the corresponding percentages by weight of "live seed":

[INSERT COMMON NAME, (BOTANICAL NAME)]	[INSERT % OF SEED]
[INSERT COMMON NAME, (BOTANICAL NAME)]	[INSERT % OF SEED]
[INSERT COMMON NAME, (BOTANICAL NAME)]	[INSERT % OF SEED]

Determine the amount of "live seed" in a container by the following formula:

Net weight of seed in container multiplied by the purity percentage multiplied by the germination percentage. (If seed is 85 percent pure and tests 90 percent germination, then a 100 pound (45.4 kilogram) container would contain 76.5 pounds (34.7 kilograms) of "live seed".)

Section 715. — PILING

715.05 Delete the subsection and substitute the following:

(a) Steel pipes. Conform to API 5L X52 PSL2, API 2B using ASTM A709, Grate 50T3 or ASTM A709 (one helical seam weld). Galvanize pipe piles to the limits shown on the plans according to AASHTO M 111**.**

Section 717. — STRUCTURAL METAL

7/21/17–FP14

717.07 Galvanized Coatings. Delete the text of this Subsection and substitute the following:

When specified, galvanize steel according to AASHTO M 111.

Section 725. — MISCELLANEOUS MATERIAL

725.13 (b) Nonshrink grout. Delete the text of this subsection and substitute the following:

Conform to ASTM C1107. Provide a minimum compressive strength of 9,000 pounds per square inch in 3 days.

725.19 Spray-Applied Waterproofing Membrane. (Added Subsection):

Conform to the requirements of Table 729-1.

Table 729-1
Spray-Applied Waterproofing Membrane

Property	Requirements	Test Method
Adhesion to concrete	100 psi min. with failure in concrete	ASTM D4541
Tensile strength at break	1500 psi min.	ASTM D638
Elongation at break	130% min.	ASTM D638
Crack bridging	Pass at 10 cycles of 1/8-inch when tested at -15°F	ASTM C1305
Interlayer shear Strength	40 psi min.	AASHTO TP-144

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Section G must end on an even page number.
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