Materials Procedures Committee Regular Meeting

Meeting Time/Date: April 24th, 10:00 AM

Meeting Location: MCS&T (Conference Rm.) - 190 Dry Branch Drive, Charleston, WV 25306

Charleston WV, 25301

Online Meeting: Google Meet Video Conference

Online Link - (https://meet.google.com/apa-rvti-ndx?authuser=0)

Files Available on ProjectWise for DOT users – See Invite or Follow P/W path:

WVDOH ORGS\MCS&T (0077) - FM\Materials Procedure Committee\MP Committee Meeting Files\2024\2024 04 24 MP Meeting

Files Available on Webpage:

https://transportation.wv.gov/highways/mcst/Pages/MP-Committee-Page.aspx

Materials Procedures – Approved at Last Meeting

1. 106.00.21 - Acceptance Procedure for Mash Compliant Roadside Departure Hardware
2. 307.00.50 - Guide For Quality Control and Acceptance Plans for Subgrade, Base Course, And Aggregate Items
3. 401.03.50 - Guide for Quality Control Plans for Asphalt
4. 601.03.50 - Guide For Quality Control and Acceptance Requirements for Portland Cement Concrete

Materials Procedures - Old Business

*Note – Going Forward MCS&T will be using either SI units or Combined English and SI Units. Guidelines are established in the pending updates to MP 100.00.00.

Number	Champion	Title	Description
1*- 717.04.21	Brayack	Guide for Quality Control of Compaction	The contractor needs to specify in the QC plan the AWP material entry persons.
2*- 109.00.21	Brayack	Basis For Charges for Non-Submittal of Sampling & Testing Documentation by The Established Deadline	Removal of the ability for contractor to request an “opt-out” of material entry.
3*- 106.10.50	Brayack	WVDOH Buy America Acceptance Guidelines	Significant changes based on new guidance by FHWA. Changes are so large, track changes not used.
4&- 106.10.51	Brayack	WVDOH Buy America Waiver Guidelines	Splitting out from 106.10.50 due to length and complexity. Outlines waiver process for Buy America Materials
5* - 711.03.23	Shafiei / Mance	Mix Design for Portland Cement Concrete	Eliminating the 6 by 12 in. cylinders and only specifying 4 by 8 in.

Materials Procedures – Editorial Edits

None on this agenda	

Materials Procedures - New Business with Significant or Process Updates

1& - 106.03.50	Brayack	General Information Guide for Technician and Inspector Certification Program (TICP)	Updating board members, removing the Implementation Committee and removing the Attachment (incorporating into the MP itself)
2& - 106.00.02	Brayack	Procedure for Evaluating Products for Use in Highway Construction	Adds the ability to accept material for purchase order materials. Removes "No APL" letter.

Note 1: * Denotes this MP is up for Vote.

Note 2: & Denotes this MP is not up for Vote.

Comments

Comments due April 23rd, so the Champion may review and address them. Submit comments to Adam Nester (Adam.W.Nester@wv.gov)

Next Meeting

New or Updated MPs due to the MP Chair 2-weeks before the next meeting: May 1st

Meeting Time/Date: 10:00 AM, May 15, 2024

Meeting Location: MCS&T Conference Room

Online Meeting: Google Meet Video Conference (Link TBD)

Additional MP Committee Meeting Information

For details of previous meetings, please visit the MCST MP Committee Webpage

https://transportation.wv.gov/highways/mcst/Pages/MP-Committee-Page.aspx

Tentative MP Committee Dates for 2024:

June 19, July 17, August 21

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
MATERIALS CONTROL, SOILS AND TESTING DIVISION

MATERIALS PROCEDURE

GUIDE FOR QUALITY CONTROL OF COMPACTION

1. PURPOSE

1.1 This procedure sets forth minimum guidelines for the Contractor's Quality Control (QC) Plan for embankment, subgrade, pipe and random fill used as structure backfill material and aggregate base courses. It is intended that these requirements be used as a procedural guide in detailing the inspection, sampling, and testing necessary to maintain compliance with the specification requirements.

1.2 To establish procedural guidelines for approval and documentation of a Master QC Plan.

2. SCOPE

2.1 This procedure is applicable to all items requiring compaction control except asphalt pavements. This outlines the QC procedures for Compaction items and includes procedures for approving and using Master and/or Project Specific QC Plans. This procedure also aids in documentation and retention of QC Plans in ProjectWise.

3. REFERENCED DOCUMENTS

3.1 MP 109.00.21 - Basis for Charges for Non-Submittal of Sampling & Testing Documentation by the Established Deadline

3.2 MP 207.07.20 - Nuclear Field Density - Moisture Test for Random Material Having Less Than 40% of +3/4 Inch Material

3.3 MP 700.00.24 - Nuclear Density Test by The Roller Pass Methods Revised December 2008

3.4 MP 700.00.50 - Procedure for Monitoring the Contractor's Compaction Testing of Bituminous Concrete, Base Course, Embankment, Sub-Grade and Pipe and Structural Backfill

3.5 MP 712.21.26 - Procedure for Determining Random Location of Compaction Tests

4. GENERAL REQUIREMENTS

4.1 The Contractor shall provide and maintain a QC system that will provide assurance that all materials submitted to the Division for acceptance will conform to the contract requirements whether natural, manufactured or processed by the Contractor, or procured from suppliers. The QC Plan should clearly describe the methods by which the QC Program will be conducted. For example, the items to be controlled, tests to be performed, testing frequencies, sampling locations and techniques all should be included etc. Each item should be listed separately.

4.1.1 A detailed plan of action regarding disposition of non-specification material shall be included. Such a plan shall provide for immediate notification of the Division in the event of a non-conforming situation or instance.

4.2 Inspection and testing records shall be maintained, kept current, and made available for review by the Engineer throughout the life of the contract. All other documentation, such as date of inspections, tests performed, temperature measurements, and any accuracy, calibration, or re-calibration checks performed on production or testing equipment shall be recorded and kept.

4.3 The Contractor shall maintain standard calibrated equipment and qualified personnel in accordance with the contract and Specification requirements for the applicable material.

5. QUALITY CONTROL PLAN

5.1 The Contractor shall prepare a QC Plan detailing the type and frequency of inspection, sampling, and testing necessary to measure and control the compaction properties of materials and construction governed by the Specifications. As a minimum, the sampling and testing plan should detail sampling location, sampling techniques, and test frequency. QC sampling and testing performed by the Contractor may be utilized by the Division for acceptance.

5.1.1 A QC Plan shall be developed by the Contractor and submitted to the Engineer prior to the start of construction on every project. Acceptance of the QC Plan by the Engineer will be contingent upon its concurrence with these guidelines as listed in section 5.2 thru 5.4.5.2.

5.1.2 As work progresses, an addendum(s) may be required to a QC Plan to keep the QC program current. Personnel may be required to show proof of certification for testing.

5.2 QC PLAN MINIMUM REQUIREMENTS

5.2.1 The QC Plan should be on Company Letterhead, be addressed to the District which it pertains, and include the items to be controlled. An example/template is provided in Attachment 1.

5.2.2 Provide the name of the Person who is responsible for the Company’s QC program and will be liaison with the Division's personnel.

5.2.3 List all inspectors’ names performing compaction tests on the project and their date becoming a Certified Soils Compaction Inspector as per WVDOH Specification Section 106 Control of Materials.

5.2.4 Compaction field tests will be performed according to MP 207.07.20, MP 700.00.24, and Standard Specification 716.32.3

5.2.5 Soft shale tests are to be done as per Section 716 of the Standard Specifications.

5.2.6 Specify in the plan the methods by which each item will be tested. Table A and Table B summarizes the different materials, minimum frequencies, and the appropriate test procedure or method for controlling each material.

Table A- COMPACTION CONTROL OF AGGREGATE BASE COURSES

TEST PROCEDURE	LOT SIZE	NUMBER OF TEST	MATERIAL TYPE			
			PORTLAND CEMENT TREATED AGGREGATE BASE COURSE	CRUSHED AGGREGATE BASES AND SUBBASE COURSES	HOT-MIX HOT-LAID BITUMINOUS TREATED BASE COURSE	SOIL CEMENT BASE COURSE
MP 700.00.24	2000 FEET	1 PER SUBLOT 5 PER LOT	X	X	X	
MP 207.07.20	2000 FEET	1 PER SUBLOT 5 PER LOT				X

Table B - COMPACTION CONTROL OF EMBANKMENT BACKFILL AND SUBGRADE

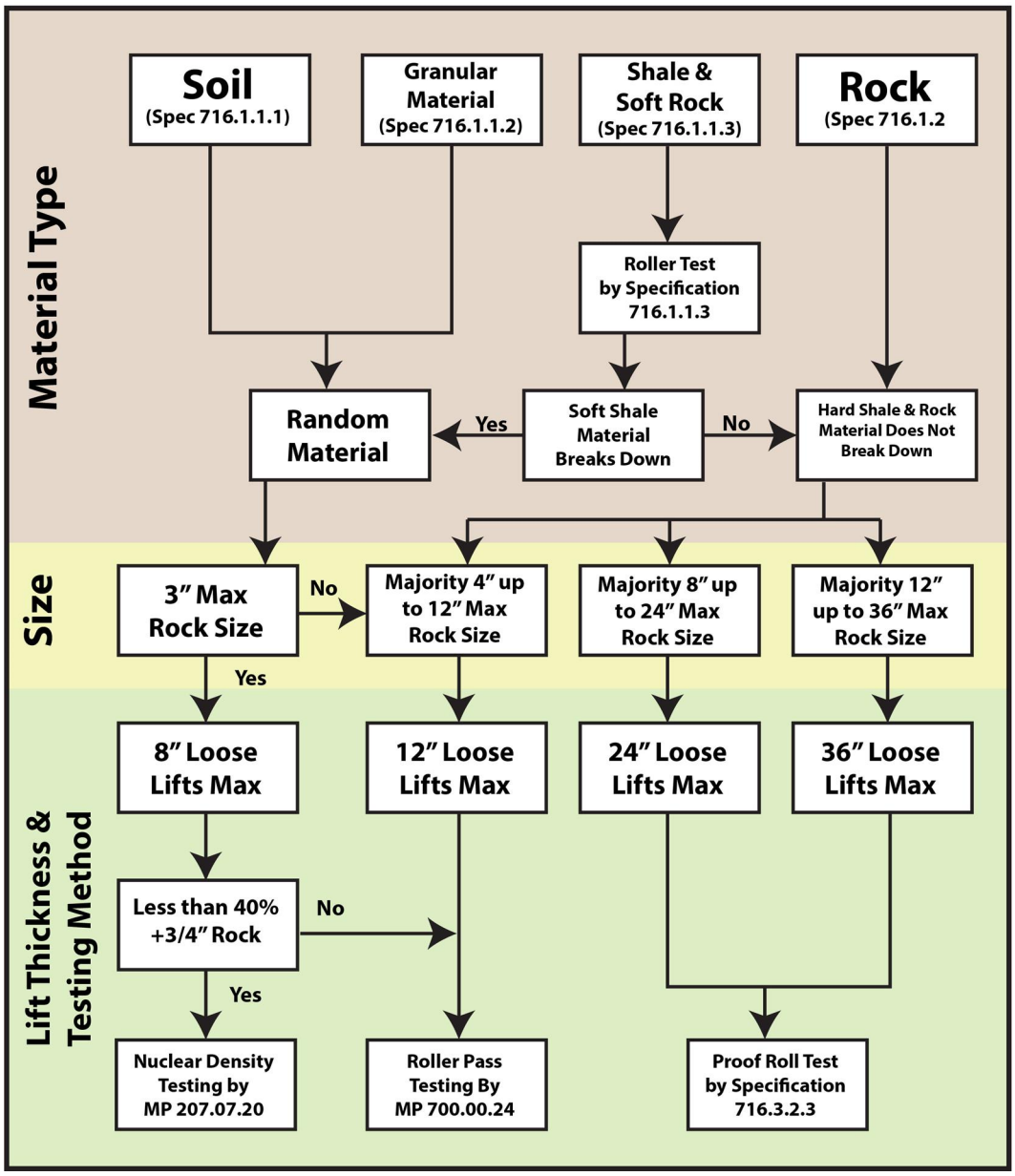
TEST	LOT SIZE	NUMBER OF TESTS	MATERIAL WITH LESS THAN 40% RETAINED ON ¾" (19.0 mm) SIEVE	MATERIAL WITH 40% OR MORE RETAINED ON ¾" (19.0 mm) SIEVE AND CAN BE PLACED IN A 12" (300 mm) LOOSE LIFT OR LESS		MATERIAL THAT CAN BE PLACED IN A LOOSE LIFT GREATER THAN 12" (300 mm)		GRANULAR SUBGRADE	SELECT MATERIAL FOR BACKFILLING AND CLASS I AGGREGATE
				UNIFORM	NON-UNIFORM	ROCK	HARD SHALE		
MP 207.07.20	SEE STD. SPECS.	1 PER SUBLOT 5 PER LOT	X						
MP 700.00.24	SEE STD. SPECS.	1 PER SUBLOT, 5 PER LOT		X [1]	X [1]. [2]			X	X
PROOF Rolling		1 REPORT PER LIFT				X	X		

1. If a hole for a direct transmission density reading cannot be readily made due to the coarse material, proof roll the lift.

2. If density readings are varying above 105 percent or below 95 percent and the material appears to be non-uniform, proof roll the lift.

5.2.7 A flow chart for embankment material, Table C, shall serve as a guide for identifying material types, maximum rock size, lift thickness and compaction test method. This table shall be included in the QC Plan for making field decisions to ensure that each type of material is properly placed and compacted.

Table C – Guide for Quality Control of Embankment Material



5.2.8 The plan shall include a statement that all necessary testing equipment will be provided to perform the procedures MP 700.00.24, MP 207.07.20, and Specification 716.3.2 and lists the required testing equipment for compaction tests. The plan shall list the make and model of equipment for proof rolling and its weight per Specification 716.3.2. The plan shall list the make and model and operating weight of the roller(s) to be used for the soft shale tests and per Specification 716.1.1.3.

5.2.9 List the type of gauge to be used (…i.e., Troxler 3430, etc). The calibration frequency must be acceptable to the Division. Gauges must be calibrated as per the manufacturer's requirements. This information shall be given to the Division upon their request.

5.2.10 If applicable, outline the procedure for performing a stability check on gauges that are not within the tolerance range for standard counts during the interval between

calibrations. Standard counts derived during the stability check for stable gauges may be used in lieu of the manufacturer's standards. Gauges found to be unstable cannot be used until repaired and calibrated.

5.2.11 Include in the plan the lot and sublot sizes to be used for testing each type of installation. During construction, some flexibility in lot sizes may be made if the situation warrants in order to maintain a workable system. For example, two or more areas containing small quantities of embankment material might be combined into one lot at the Contractor's option and subject to the Division's approval.

5.2.12 Specify the maximum time period for completion of a lot of embankment material. As a guide, if the desired lot size cannot be obtained within seven calendar days, then the material placed up to that time would constitute the lot and the specified number of tests for a lot would still be performed.

5.2.13 Specify in the plan when quality control tests for base and subgrade will be performed. QC tests are to be performed after the material has been shaped and final rolling has been completed.

5.2.14 The Contractor is responsible for the accuracy of their individual testing and calculations.

5.2.15 List the forms and method of distribution for tests and measurements.

5.2.16 Compaction test results are reported on forms specified in MP 207.07.20 and MP 700.00.24. The forms are supplied by the Division and available on the MCS&T Webpage[1]. Each form consists of an original and one copy. The original of a completed form is submitted to the Division's project supervisor and the other copy is for the Contractor's records.

5.2.17 Indicate the length of time after tests and measurements are completed that documentation will be provided.

5.2.17.1 Test results and measurements are made available to project personnel for review on a daily basis. Formal submission of measurements should be made within 24 hours after the measurements are taken and test results within 24 hours after testing of a lot is completed.

5.2.17.2 Tests performed in a lot before final rolling is completed should be submitted to the Project Supervisor and retained in the project files. This includes test documents for failing lots and moisture checks.

5.2.18 List the compaction equipment giving the quantity, make, model, and weight or applied force at which each roller will be operated. If ballast will be added to a roller, indicate the type and quantity of ballast and the method for verifying the gross weight. Attach the manufacturer's specifications for compaction capabilities for each roller to the plan or state the procedure for verifying the compaction capabilities of each

[1] https://transportation.wv.gov/highways/mcst/Pages/tbox.aspx

roller in cases where the manufacturer's specifications are not available. This equipment shall meet the requirements as per 207.7.5 of the Standards Specifications.

5.2.19 Indicate in the plan that a minimum of a 10-ton (9.07 Mg) roller will be used for testing as per MP 700.00.24 for soil and granular material only.

5.2.20 Rollers used to breakdown soft shale shall be in accordance with 716.1.1.3 of the Standard Specifications and shall have a minimum of 1.5 tons per linear foot of roller or drum.

5.2.21 Specify the method by which proof rolling will be conducted on embankment materials. The materials to be proof rolled are summarized in Table B in Section 5.2.6.

5.2.22 List the number of passes to be made and corrective measures if soft areas are detected. Documentation should include the type of material, number of passes, and corrective action if soft areas are detected.

5.2.23 For equipment used for proof rolling explain how the gross weight will be determined for any ballast added to the operating weight. For alternate proof rollers, attach to the QC Plan the calculations used to determine that the roller meets specifications. Also, attach the manufacturer's specifications for all proof rollers to the Plan. The following calculation is used to determine if an alternate proof roller meets specifications:

ENGLISH	Metric
$c = \frac{\sqrt{(ab\pi)}}{2}$	$c = \frac{\sqrt{(ab\pi)}}{50.8}$

Where:

a = weight (force) on a single tire = pounds (kg x .009807 = kN)
b = operating tire pressure = psi (kPa)
c = weight (force) per inch (mm) width of tire = pounds per inch (Nm)
The weight (force) per inch (mm) width of tire must be equal to or greater than 1315 pounds (9.067 kN/mm).

5.2.24 Outline the procedure for notifying the Division when the test section in MP 700.00.24 will be performed. The Division should be notified a minimum of 24 hours in advance unless other arrangements acceptable to the Division can be made.

5.2.25 Laboratory testing for random material is not required unless the material has unusual characteristics or differs from the soil and rock data used to develop the design. Testing to develop density curves, specific gravities, organic content, etc. may be required.

5.2.26 A list of test procedures is contained in Section 716 of the WVDOH Standard Specifications as a guideline for required testing should the need arise for random material.

5.2.27 Design a plan of action for the disposition of non-specification material, such as material with excessive moisture, excessive organic content, etc. These materials shall be stockpiled away from the embankment or fill placement areas. The Project Supervisor should be immediately notified in the event a nonconformance situation is detected.

5.2.28 List the method(s) and frequencies per Table E (attached) by which lift thickness measurements will be taken. If surveying of compacted lifts is not utilized, then the maximum loose lifts per Table C shall be measured.

5.3 TYPES OF QC PLAN

5.3.1 QC Plans which are intended for use on more than one project shall be defined as Master QC Plans. Section 5.4 outlines the procedures for Master QC Plan submittal and approval.

5.3.2 QC Plans which are intended for use on a single project shall be defined as Project Specific QC Plans. Project Specific QC Plans shall contain a cover letter which includes the following: project name/description, CID#, Federal and/or State Project Number.

5.3.3 A contractor may submit a Master QC Plan for field operations instead of a Project Specific QC Plan.

5.3.4 Once any QC Plan is approved for a project, the key date shall be entered in ASSHTOWare software by the appropriate District Materials personnel. The first date entered shall be the date the Project QC Plan letter is received. The second date shall be when the District approves the QC Plan for use on the project.

5.4 MASTER QUALITY CONTROL PLAN

5.4.1 The intent of Master QC Plans is to facilitate the approval process in a more uniform manner. A Master QC Plan can be submitted to the Division/District by the Contractor when their work in a given District is routinely repetitive for the year. The Master Quality Control Plan is applicable for only the calendar year for which it has been approved.

5.4.2 The Contractor shall submit the Master Compaction QC Plan yearly to each District in which they have work in. If the Contractor does not have work in a given District for the year then no Master QC Plan shall be submitted to that District.

5.4.3 The District will review the submitted Master QC Plan and assign a laboratory reference number upon approval for future referencing. The District will acknowledge approval of Master QC Plan to the Contractor by letter (see Attachment #2 for an example), which will include the laboratory reference number and a copy of the approved Master QC Plan attached. This will then be scanned and placed in ProjectWise under the appropriate District's Org for that Contractor.

5.4.4 Once a project has been awarded, if a contractor elects to use the approved Master Compaction QC Plan on that project, the Contractor shall submit a letter requesting

to use the Master QC Plan for that project. This letter must be on the Contractor's letterhead, be addressed to the District Engineer/Manager or their designee, and contain the following information: project number, CID#, project name/ description, type of Quality Control Plan and the laboratory reference number for the Master QC Plan (See Attachment #3 for an example).

5.4.5 The District shall review the referenced Master QC Plan to ensure that it covers all items in the project. If the referenced Master QC Plan is found to be insufficient for some items on the project, the District shall request the Contractor to submit additional information for QC of those items as an addendum on a project specific basis. When the District is satisfied with the QC Plan for this project, a letter shall be sent to the Contractor acknowledging approval (see Attachment #4 for an example), with the following attached: the Contractor's project QC Plan request letter and the Master QCP approval letter. This shall then be placed in the project's incoming-mail mailbox in ProjectWise.

5.4.5.1 A Master QC Plan that has been approved for project use shall be acceptable for the duration of that project, even if that project continues into subsequent calendar years, unless otherwise directed by the District.

5.4.5.2 For the use of Division Personnel, the District approval letter for this project must state the ProjectWise link to the referenced Master QC Plan for that Contractor. (i.e., WVDOT ORGS > District Organization #> Materials > Year>Master QC Plans…)

6. CERTIFICATION & ACCEPTANCE SAMPLING AND TESTING

6.1 The Contractor shall certify that compaction testing and sampling is in conformance with the approved QC plan, referenced MP's and referenced Standard Specifications in a letter format on the company's letterhead. The certification shall summarize what materials where encountered and the compaction method/lift thickness utilized. The letter shall state whether any deviations from the requirements of the QC plan, MP's, and Standard Specifications exist, and why.

6.2 Acceptance sampling and testing is the responsibility of the Division. QC tests by the Contractor may be used for acceptance.

6.3 The Division shall sample and test for applicable items completely independent of the contractor at a frequency equal but not limited to approximately ten (10) percent of the frequency for testing given in the approved Quality Control Plan. Witnessing the contractor's sampling and testing activities may also be a part of the acceptance procedure, but only to the extent that such tests are considered "in addition to" the ten (10) percent independent tests.

6.4 MP 700.00.50, MP 207.07.20, and Specification 716.3.2.3 outlines the procedures to be followed for acceptance of compaction testing.

7. ABSENT TESTING OF MATERIAL

7.1 If the Contractor fails to perform testing of the material in accordance with the Contractor's Division Approved Quality Control Plan, payment for the portion of the

item represented by the absent test shall be withheld, pending the Engineer's decision whether or not to allow the material to remain in place. Testing includes both performing the test and submitting the results as per MP 109.00.21.

7.1.1 If the Engineer allows the material to remain in place, the Division shall not pay for the material represented by the absent test. However, the Division shall pay for the cost of the placement of the material, including labor and equipment. The invoice or material supplier cost (if applicable), determined at the time of shipment, shall be used to calculate the cost of material when evaluating the total cost of labor and equipment.

7.1.1.1 If there is no material cost, the deduction shall be assessed on the tonnage of material that was failed to be tested via a District Materials Inspection Report (DMIR).

8. MATERIAL TEST DATA

8.1 The Contractor's Quality Control Plan shall clearly state the name(s) of the individual(s) entering test data as outlined in MP 109.00.21.

Ronald L. Stanevich, PE
Director
Materials Control, Soils & Testing Division

MP 717.04.21 Steward – Pavement Analysis & Evaluation Section

RLS:A
Attachments

For Committee – No changes to attachments

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

MATERIALS CONTROL, SOILS AND TESTING DIVISION
MATERIALS PROCEDURE

BASIS FOR CHARGES FOR NON-SUBMITTAL OF SAMPLING & TESTING DOCUMENTATION BY THE ESTABLISHED DEADLINE

1. PURPOSE

1.1 To provide a unit cost per test to be assessed to the Contractor when testing documentation or samples are not submitted by the Contractor by the established deadline. Periodic updates of this Attachment shall be the responsibility of the Director of Materials Control, Soils and Testing Division or their designee (Director).

2. SCOPE

2.1 This procedure is applicable to circumstances where a construction item's testing documentation or samples are not submitted by the deadline established in this document. In the case of a general item, this timeframe is seven (7) days from the sampling date. The timeframe for special-case items such as gradations and cylinder breaks is noted in Attachment 1.

2.1.1 All of the following requirements shall be met to meet the above-defined timeframe:

2.1.1.1 Documentation submission includes: (A) generating the sample in the Division Approved Sampling and Testing software (SiteManager, AASHTOWare Projects, etc.), (B) entering all data into this system, (C) presenting the data to the District for review and (D) providing all testing documentation.

~~2.1.1.2 The Contractor may request to the Project, in writing a waiver for the requirements of A-D. This must be done before any material is sampled or tested. If approved, the Project will be responsible for entering the testing data.~~

2.2 The penalty for an infraction as described in Section 2.1 is $700 per test. In the instance where a single test comprises of a prescribed series of sub-tests (typically 5), the cost of each infraction will be the standard rate divided by the total number of required sub-tests. This is only applicable in the certain circumstances as noted in Attachment 1.

2.2.1 This procedure is not limited to tests listed in Attachment 1, but applicable to any material test required by the Standard Specifications and/or Materials Procedures. For this case, the Director will establish the timeframe for the test or may utilize the standard timeframe as described in Section 2.1. The rate shall follow Section 2.2.

3. ABSENT TESTING DOCUMENTATION OR FAILURE TO TEST

3.1 In no case shall this Materials Procedure allow for the acceptance of non-tested material. In the case where no testing was performed, or no documentation was submitted for material, the resolution for the acceptance of the material shall be in accordance with the applicable section(s) of the Standard Specifications and Materials Procedures.

Additionally, and regardless of the outcomes of this resolution, a price assessment in accordance with Attachment 1 shall also be assessed.

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Ronald L. Stanevich, PE
Director
Materials Control, Soils & Testing Division

MP 109.00.21 Steward – Materials Control Section
RLS:B
ATTACHMENT

Cost Penalties Per Test

Material Category	Test and Rate	Testing Time Frame (Days)	#Cost/Ea	Cost
Soil and Aggregate	In-Place Density (5 tests)	*T	0.2 (*Rate)	*Rate
	Gradation (Each Test)	14	-	*Rate
	Liquid and Plastic Limits	*T	-	*Rate
	Crushed Particle Analysis	14	-	*Rate
Asphalt	Asphalt Mixture Test	*T	-	*Rate
	In-Field Density Testing	*T	0.2 (*Rate)	*Rate
Chip Seal	Gradation (Each Test)	*T	-	*Rate
Concrete	Abar	14		*Rate
	Optimized Gradation	14		*Rate
	Cylinder Test	35		*Rate
	Rapid Chloride Permeability	*T		*Rate
	Air and Slump (1 test)	*T		*Rate
Grout	Grout Break Report (Each Test)	*T		*Rate
	Grout Strength Report	*T		*Rate
CLSM	Cylinder Test	35		*Rate
	Flow Test	35		*Rate

*T - Standard timeframe as described in Section 2.1

*Rate - Standard rate as described in Section 2.2

#Cost/Ea - Unless there is rate in this column, each infraction results in the full rate

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
MATERIALS CONTROL, SOILS AND TESTING DIVISION

MATERIALS PROCEDURE

WVDOH BUY AMERICA ACCEPTANCE GUIDELINES

1. PURPOSE

1.1 To set forth instructions for compliance with both State and Federal Buy America Requirements (henceforth referred to as "Buy America Requirements"), as listed in this document.

2. REFERENCED DOCUMENTS

2.1 PUBLIC LAW 117–58—NOV. 15, 2021, Infrastructure Investment and Jobs Act.

2.2 Build America, Buy America Act (BABA).

2.3 23 U.S.C. 313 and 23 CFR 635.410 "Buy America Requirements".

2.4 2 CFR part 184 Buy America Preferences for Infrastructure Projects.

2.5 M-22-11 Initial Implementation Guidance on Application of Buy America Preference in Federal Financial Assistance Programs for Infrastructure.

2.6 M-24-02 Implementation Guidance on Application of Buy America Preference in Federal Financial Assistance Programs for Infrastructure.

2.7 Chapter 5, Article 19 and Chapter 5A, Article 3, Section 56 of the West Virginia Code, entitled "West Virginia American Steel Act of 2001."

2.8 West Virginia Notary Handbook, Current Edition.

2.9 MP 106.10.51 – WVDOH Buy America Waiver Guidelines.

3. ACCEPTANCE OF MATERIALS

3.1 This procedure applies to the following:

1. Steel and Iron
2. Manufactured Products
3. Construction Materials
4. Section 70917(c) Materials

~~3.2~~ An article, material, or supply should ~~not be considered to fall into multiple categories~~only be classified into one of the categories listed in Section 3.1. In some cases, an article, material, or supply may not fall under any ~~of the~~these categories ~~listed in Section 3.1~~. Classification of the category must be made based on the status of article, materials, or supply at the time it is brought to the work site for incorporation into the project. The work site is generally the location of the project at which the materials will be incorporated. ~~The classification of an article, material, or supply as falling into one of the categories listed in paragraph Section 3.1 must be made based on its status at the time it is brought to the work site for incorporation~~

~~into an infrastructure project. In general, the work site is the location of the infrastructure project at which the iron, steel, manufactured products, and construction materials will be incorporated.~~

~~3.3~~3.2 An article, material, or supply incorporated into an ~~infrastructure~~ project must meet the Buy America Preference for only the single category in which it is classified.

~~3.4~~3.3 A Buy America preference only applies to articles, materials, and supplies that are consumed in, incorporated into, or affixed to an ~~infrastructure~~ project. As such, it does not apply to tools, equipment, and supplies, such as temporary scaffolding brought to the construction site and removed at or before the completion of the ~~infrastructure~~ project. Nor does a Buy America preference apply to equipment and furnishings, such as movable chairs, desks, and portable computer equipment, that are used at or within the finished ~~infrastructure project, but~~project but are not an integral part of the structure or permanently affixed to the ~~infrastructure~~ project.[1]

~~3.4.1~~3.3.1 Buy America preference does not apply to materials such as temporary paint or temporary traffic control devices.

4. STEEL AND IRON

4.1 Pursuant to Buy America Requirements, all manufacturing processes for steel and iron materials must take place in the United States.

4.2 Definition

4.2.1 "Iron or steel products" means articles, materials, or supplies that consist wholly or predominantly of iron or steel or a combination of both.

4.2.1.1 "Predominantly of iron or steel or a combination of both" means that the cost of the iron and steel content exceeds 50 percent of the total cost of all its components. The cost of iron and steel is the cost of the iron or steel mill products (such as bar, billet, slab, wire, plate, or sheet), castings, or forgings utilized in the manufacture of the product and a good faith estimate of the cost of iron or steel components.

4.3 Standard

4.3.1 This includes all processes from the initial melting stage through application of coatings occurs in the United States.

5. MANUFACTURED PRODUCTS

5.1 The Federal Highway Administration (FHWA) has a longstanding waiver in effect exempting Manufactured Products from Buy America Requirements. ~~If this waiver is removed the provisions in this section will be applicable on the effective date of the removal.~~

5.2 Definition

5.2.1 Manufactured products means:

1. Articles, materials, or supplies that have been:
   A. Processed into a specific form and shape;

[1] M-24-02: Memorandum for the Heads of Executive Departments and Agencies, Implementation Guidance on Application of Buy America Preference in Federal Financial Assistance Programs for Infrastructure, Page 4

B. or Combined with other articles, materials,

C. or supplies to create a product with different properties than the individual articles, materials, or supplies.

2. If an item is classified as an iron or steel product, or a construction material, then it is not a manufactured product. However, an article, material, or supply classified as a manufactured product under 2 CFR 184.4(e) and paragraph (1) of this definition may include components that are construction materials, iron or steel products, or Section 70917(c) materials.

5.3 Standard

5.3.1 Pursuant to Buy America Requirements, all manufactured products used in the project are produced in the United States; this means the manufactured product was manufactured in the United States; and the cost of the components of the manufactured product that are mined, produced, or manufactured in the United States is greater than 55 percent of the total cost of all components of the manufactured product, unless another standard that meets or exceeds this standard has been established under applicable law or regulation for determining the minimum amount of domestic content of the manufactured product.[2]

5.3.1.1 In determining whether the cost of components for manufactured products is greater than 55 percent of the total cost of all components, use the following instructions:

1. For components purchased by the manufacturer, the acquisition cost, including transportation costs to the place of incorporation into the manufactured product (whether or not such costs are paid to a domestic firm), and any applicable duty (whether or not a duty-free entry certificate is issued).
2. For components manufactured by the manufacturer, all costs associated with the manufacture of the component, including transportation costs as described in paragraph (1), plus allocable overhead costs, but excluding profit. Cost of components does not include any costs associated with the manufacture of the manufactured product.

6. CONSTRUCTION MATERIALS.

6.1 Pursuant to Buy America Requirements, all Construction Materials are required to be produced in the United States. All manufacturing processes for the Construction Materials shall occur in the United States.

6.2 Definition

6.2.1 Construction materials means articles, materials, or supplies that consist of only one of the items listed in Section 6.2.1.1 ~~of this definition~~, except as provided in Section 6.2.1.2 ~~of this definition~~. To the extent one of the items listed in Section 6.2.1.1 contains as inputs other items listed in this section, it is nonetheless a construction material.

6.2.1.1 The listed items are:

1. Non-ferrous metals;

[2] M-24-02: Memorandum for the Heads of Executive Departments and Agencies, Implementation Guidance on Application of Buy America Preference in Federal Financial Assistance Programs for Infrastructure, Page 15-16.

2. Plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables);
3. Glass (including optic glass);
4. Fiber optic cable (including drop cable);
5. Optical fiber;
6. Lumber;
7. Engineered wood; and
8. Drywall.

6.2.1.2 Minor additions of articles, materials, supplies, or binding agents to a construction material do not change the categorization of the construction material.

6.3 Standard

6.3.1 The Buy America Preference applies to the following construction materials incorporated into ~~infrastructure~~ projects. Each construction material is followed by a standard for the material to be considered "produced in the United States."

(1) Non-ferrous metals. All manufacturing processes, from initial smelting or melting through final shaping, coating, and assembly, occurred in the United States.

(2) Plastic and polymer-based products. All manufacturing processes, from initial combination of constituent plastic or polymer-based inputs, or, where applicable, constituent composite materials, until the item is in its final form, occurred in the United States.

(3) Glass. All manufacturing processes, from initial batching and melting of raw materials through annealing, cooling, and cutting, occurred in the United States.

(4) Fiber optic cable (including drop cable). All manufacturing processes, from the initial ribboning (if applicable), through buffering, fiber stranding and jacketing, occurred in the United States. All manufacturing processes also include the standards for glass and optical fiber, but not for non-ferrous metals, plastic and polymer-based products, or any others.

(5) Optical fiber. All manufacturing processes, from the initial preform fabrication stage through the completion of the draw, occurred in the United States.

(6) Lumber. All manufacturing processes, from initial debarking through treatment and planing, occurred in the United States.

(7) Drywall. All manufacturing processes, from initial blending of mined or synthetic gypsum plaster and additives through cutting and drying of sandwiched panels, occurred in the United States.

(8) Engineered wood. All manufacturing processes from the initial combination of constituent materials until the wood product is in its final form, occurred in the United States.

6.3.2 Except as specifically provided, only a single standard under this section should be applied to a single construction material.

7. SECTION 70917(C) MATERIALS

7.1 The standards developed under BABA 70915(b) (1) shall not include cement and cementitious materials, aggregates such as stone, sand, or gravel, or aggregate binding agents or additives as inputs of the construction material. These are referred to as 70917(C) materials.

7.2 Definition

7.2.1 Section 70917(c) materials means cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives. See section 70917(c) of the Build America, Buy America Act.

7.3 These materials are exempt from Buy American Requirements.

8. BUY AMERICA COMPLIANCE.

8.1 On a given Project, ~~The~~ the Division shall not accept, approve, authorize, or make any payments to any Contractor not fully compliant with Buy America.

8.1.1 When Buy America Requirements apply, the Contractor shall furnish a notarized Certificate of Compliance signed by their official with knowledge and authority to certify that all applicable materials and products to be incorporated into the project, including those of any subcontractors and suppliers, are compliant with Buy America Requirements. This shall be done prior to the permanent incorporation of the materials into the project.

8.1.2 The notarized Certificate of Compliance shall contain the following information:

8.1.2.1 Title: Buy America Certification of Compliance.

8.1.2.2 The Name, Address and Contact Information for the Contractor.

8.1.2.3 A contractor statement that demonstrates compliance with Buy America Requirements.

8.1.2.4 The Contract ID for the Material (if applicable).

8.1.2.5 Both the Federal and State Project Number for the Material (if applicable).

8.1.2.6 The name of the material referenced in the Certificate of Compliance. This material name shall be a clear, common name of the material as stated in the proposal. Part Numbers, etc., may also be on the document if the contractor wishes.

8.1.2.7 The Line Item for the Material (if applicable).

8.1.2.8 The Bid and/or Placed Quantity of the Material.

8.1.2.9 Signature of the Contractor and date.

8.1.2.10 A list of materials on the project that “Buy America” applies but are not Buy America compliant.

8.1.2.11 The document must be notarized as per the "West Virginia Notary Handbook."

8.2 Attachment 1 shows a sample Certificate of Compliance.

8.2.1 Multiple items may be listed on the Certificate of Compliance, though all the information for each line must be on the document.

~~8.2.1~~8.2.2 A list of these materials may be referenced on an attached page as long as that page is also signed and notarized.

9. BUY AMERICA WAIVERS

9.1 Buy America Waivers are outlined in MP 106.10.51 as per "§ 184.7 Federal awarding agency's issuance of a Buy America Preference waiver" and "23 CFR 635.410(c)".

10. BUY AMERICA MATERIALS

10.1 Attachment 2 includes a list of materials and products used in WVDOH construction projects and the applicability of Buy America Requirements. This attachment also shows each category of each based on Section 3.1 of this document. Finally, if the material is not applicable to Buy America Requirements, justification is given. Example exemptions are as follows:

1. *Historic Waiver: Manufactured Product is waived by FHWA as per Section 5 of this Document.
2. Temporary Material: Material is not permanently incorporated into the project.

~~*Note if the Historic Waiver is sunset by FHWA, these materials will no longer be exempt from Buy America Requirements.~~

10.1.1 This materials and products list may be updated by the Director of MCS&T as needed to ensure compliance with Buy America Requirements. Any update to this form will be in accordance with guidance from and through an affirmation process with FHWA.

10.1.2 Glass added to a permanent paint product requires a Certificate of Compliance.

10.1.3 Attachment 3 includes OMB Memorandum M-24-02[3], dated October 25, 2023, for additional guidance and as the source material for WVDOH's compliance.

11. DOCUMENTATION OF BUY AMERICA CERTIFICATION OF COMPLIANCE

11.1 The Certificate of Compliance shall be placed in the QC Plan Folder in ProjectWise (or the current WVDOH approved document retention software) under the contract.

[3] https://www.whitehouse.gov/wp-content/uploads/2023/10/M-24-02-Buy-America-Implementation-Guidance-Update.pdf

Ronald L. Stanevich, P.E.
Director
Materials Control, Soils & Testing Division

MP 106.10.50 Steward – Materials Control Section
RLS:B
ATTACHMENTS

For Committee, attachment 3 withheld and available for reference on the net: https://www.whitehouse.gov/wp-content/uploads/2023/10/M-24-02-Buy-America-Implementation-Guidance-Update.pdf

Buy America Certification of Compliance

Acme Construction Company
123 Main Street
Charleston, WV 25302

Ship Date: 10/31/2023

The below listed materials and products meets all the requirements of all Federal and State Laws for Buy America, including but not limited to: Chapter 5, Article 19 and Chapter 5A, Article 3 Section 56 of the West Virginia Code; 23 U.S.C. 313 Buy America, 23 CFR 635.410 Buy America Requirements, and Build America, Buy America Act, Section 70914.

This Certification of Compliance is for the material and project listed below:

CID: 22000005R1
Federal Number: B-0010(000)X
State Number: U002-00-1.00

Line: 0020	Widget, Part Q^{i}	500 Cubits
Line: 0025	Widget, Part H^{r}	300 Cubits

Non-Compliant Buy America Materials

Line: 0055	Widget, Part I^{z}	300 Cubits

OFFICIAL SEAL
NOTARY PUBLIC
STATE OF WEST VIRGINIA

Charleston, WV 25304
My Commission Expires October 16, 2027

Janie Doe, Contractor President

DOH-M-22 WVDOH Buy America Requirement Materials

AWP Material Code	Material Description	Category	CoC Required	Notes
206.003.003.X	Base Reinforcement, Geogrid, Type 1,2	Construction Material	Yes	
211.004.000	Unclassified, Borrow Excavation	Section 70917(c) Material	No	
211.005.000	Rock Borrow Excavation	Section 70917(c) Material	No	
212.002.000	Select Material for Backfill	Section 70917(c) Material	No	
218.003.003	Riprap, Grouted	Section 70917(c) Material	No	
218.003.006	Slope Protection, Concrete	Section 70917(c) Material	No	
219.003.000.0X	CLSM -Type A,B,C - Controlled Low Strength Material	Section 70917(c) Material	No	
311.002.000.X	Free Draining Base Course, Open Graded - Asphalt/Cement	Section 70917(c) Material	No	
401.002.00X	Asphalt Mix, All Types	Section 70917(c) Material	No	
405.002.001.X	Type A,B,C - Chip Seal Aggregate	Section 70917(c) Material	No	
406.PSP.000	High Friction Surface Treatment	Construction Material	Yes	
412.002.001	Bituminous Patching Winter Grade	Section 70917(c) Material	No	
420.001.001	Asphalt, Micro Surfacing	Section 70917(c) Material	No	
420.002.002.X	Aggregate, 2,3FA, Fine, Micro-Surfacing	Section 70917(c) Material	No	
494.PSP.001	Asphalt, Cold In-Place Recycled	Section 70917(c) Material	No	
501.003.001.0X	Concrete, Pavement, All Types	Steel and Iron	Yes	*1
514.003.000	Concrete, Roller Compacted	Steel and Iron	Yes	*1
601.003.00X.0X	Concrete, All Classes	Section 70917(c) Material	No	
601.008.009	Stay-in-Place Fabricated Metal Forms	Steel and Iron	Yes	
601.PSP.001	Polymer, Fiberglass Reinforced (FRP)	Manufactured Material	No	*3
601.PSP.002	Epoxy Resin Injection System	Construction Material	Yes	
601.PSP.003	Epoxy Bonding Compound	Construction Material	Yes	
602.002.000.3	Reinforcing Bars, Uncoated Corrosion Resistant Rebar	Steel and Iron	Yes	
602.007.003	Reinforcing Bars, Splice Connector	Steel and Iron	Yes	
603.002.000.0X	Concrete Members (All Precast/Prestressed)	Steel and Iron	Yes	*1
603.006.002.2	Concrete, Class S-P, Self Consolidating	Section 70917(c) Material	No	
603.PSP.001	Post Tension Rod, Steel	Steel and Iron	Yes	
604.002.000	Concrete for Pipe Culvert	Section 70917(c) Material	No	
604.PSP.001	Pipe, Polyethylene Liner	Steel and Iron	Yes	
605.002.000	Concrete Manholes & Inlets (Precast)	Steel and Iron	Yes	
605.002.000	Concrete Manholes & Inlets (Precast)	Steel and Iron	Yes	*1
605.002.000.01	Steel, Welded Grates for Inlets	Steel and Iron	Yes	
605.002.000.0X	Inlet, All Types	Steel and Iron	Yes	*1
605.002.000.0X	Manhole, All Types	Steel and Iron	Yes	*1
605.002.000.14	Slot Inlet Riser, Perforated	Steel and Iron	Yes	
605.002.000.16	Lift Station & Valve Vault	Steel and Iron	Yes	
607.002.000.01	End Terminal, Flared or Tangent Steel	Steel and Iron	Yes	
607.002.000.02	Blockout, Polymer	Construction Material	Yes	
607.002.000.03	Blockout, Non Plastic	Construction Material	Yes	
607.PSP.000	High Tension Cable Barrier	Steel and Iron	Yes	
607.PSP.001	Cable End Terminal	Steel and Iron	Yes	
609.002.000	Concrete, Sidewalk	Steel and Iron	Yes	*1
609.002.001	Detectable Warning Surface	Construction Material	Yes	
610.002.000	Asphalt Curb	Section 70917(c) Material	No	
612.002.001.X	Tunnel Liner, Steel Plate Pipe, 2/4 Flange	Steel and Iron	Yes	
614.007.000	Lagging, Concrete	Steel and Iron	No	
615.000.000.01	Steel Superstructure, Truss/Arch	Steel and Iron	Yes	
615.000.000.02	Steel Superstructure	Steel and Iron	Yes	
615.000.000.03	Expansion Dam, Steel, Tooth Type	Steel and Iron	Yes	
615.000.000.04	Expansion Dam, Steel, Strip Seal Type	Steel and Iron	Yes	
615.000.000.05	Expansion Dam, Steel, Modular Type	Steel and Iron	Yes	
615.000.000.06	Bearing Assemblies, Steel	Steel and Iron	Yes	
615.000.000.07	Steel Girders	Steel and Iron	Yes	
615.000.000.08	Steel Crossframes	Steel and Iron	Yes	
615.000.000.09	Steel Diaphragms	Steel and Iron	Yes	
615.003.003	Shear Stud Connector, Steel	Steel and Iron	Yes	
616.009.000	Piles, Concrete (Precast)	Steel and Iron	No	
617.004.000	Pipe Railing, Steel	Steel and Iron	Yes	
617.005.000	Railing, Steel, Ferrous Metal	Steel and Iron	Yes	
617.006.000	Railing, Aluminum, Pedestrian	Construction Material	Yes	
620.000.000.01	Culvert, Concrete, Reinforced, Cast In Place, All Types	Steel and Iron	Yes	*1
620.000.000.02	Culvert, Concrete, Three-Sided Structure (Precast)	Steel and Iron	Yes	*1
620.000.000.03	Culvert, Concrete, Arch-Topped, (Precast)	Steel and Iron	Yes	*1
620.000.000.04	Culvert, Concrete, Flat-Topped, (Precast)	Steel and Iron	Yes	*1
620.000.000.05	Culvert, Concrete, Reinforced, Two Piece, (Precast)	Steel and Iron	Yes	*1
621.002.001	Flooring Steel Grid, Open Type	Steel and Iron	Yes	
621.002.002	Flooring, Steel Grid, Filled	Steel and Iron	Yes	

DOH-M-22 WVDOH Buy America Requirement Materials

AWP Material Code	Material Description	Category	CoC Required	Notes
623.002.000	Mortar	Manufactured Material	No	*3
625.004.003	Steel, Casing Pipe for Drilled Caissons	Steel and Iron	Yes	
625.004.004	CSL (Crosshole Sonic Logging) Testing Tubes for Caissons	Steel and Iron	Yes	
626.004.003	Retaining Wall, Cast In Place	Steel and Iron	Yes	*1
626.005.001	Retaining Wall (Precast)	Steel and Iron	Yes	*1
626.005.001.01	Retaining Wall, MSE, Wall Panels	Steel and Iron	Yes	*1
626.005.001.02	Retaining Wall, MSE Modular Block	Steel and Iron	Yes	*1
626.005.001.03	Retaining Wall, MSE Wire Face	Steel and Iron	Yes	*1
626.005.001.123	Modular Block Sealant	Construction Material	Yes	
626.006.001.3	Retaining Wall, Granular Backfill	Section 70917(c) Material	No	
626.006.002	Retaining Wall, Concrete, Cast in Place	Steel and Iron	Yes	*1
627.PSP.001	Expansion Joint, Foam	Construction Material	Yes	
631.002.000	Electrical, Miscellaneous	Steel and Iron	Yes	*1
632.002.001	Horizontal Drain	Steel and Iron	Yes	
633.002.000	Gutter, Invert Pipe	Steel and Iron	Yes	
633.004.000	Gutter, Concrete	Section 70917(c) Material	No	
633.006.000	Gutter, Dumped Rock	Section 70917(c) Material	No	
634.002.000	Cribbing, Concrete	Steel and Iron	Yes	*1
636.002.001.01	Traffic Control Devices	Temporary Item	No	
636.002.001.02	Warning Lights	Temporary Item	No	
636.002.001.03	Traffic Cones	Temporary Item	No	
636.004.000	Dust Palliatives	Temporary Item	No	
638.002.000	Survey Marker	Steel and Iron	Yes	
638.006.000	Outlet Marker	Steel and Iron	Yes	
642.006.000	Compost Filter Sock	Construction Material	Yes	
645.001.001	Elasticized Expanded Polystyrene - E-EPS	Construction Material	Yes	
645.001.003	Impervious Membrane	Construction Material	Yes	
645.002.001	Soil Reinforcement, Geosynthetic	Section 70917(c) Material	Yes	
645.002.002	Backfill Material	Section 70917(c) Material	No	
651.002.000	Topsoil	Section 70917(c) Material	No	
657.002.001	Supports, Beams	Steel and Iron	Yes	
657.002.006	Supports, Pipe, Steel	Steel and Iron	Yes	
657.002.008	Support, Sign, Steel, Anchor Bolt, Roadway	Steel and Iron	Yes	
657.002.010	Supports, Tubular, Steel	Steel and Iron	Yes	
657.002.011.1	Supports, Steel, Channel Bar (U Channel)	Steel and Iron	Yes	
657.002.011.2	Supports, Steel, Breakaway Splice Devices	Steel and Iron	Yes	
658.002.000	Sign Support, Steel, Overhead	Steel and Iron	Yes	
658.002.007	Sign Support, Steel, Anchor Bolt O-H	Steel and Iron	Yes	
661.002.001.1	Signs, Aluminum, Flat Sheet Finished	Manufactured Material	No	*3
661.002.001.2	Signs, Aluminum, Extruded Panel Finished	Manufactured Material	No	*3
661.002.001.3	Sign Hardware	Steel and Iron	Yes	
661.002.015	Delineators, XS1 Bicycle Rail	Construction Material	Yes	
662.002.007.1	Luminaires, Roadway, Area, Underpass, Sign Light	Manufactured Material	No	*3
662.002.007.2	Signs, Internally Illuminated LED	Manufactured Material	No	*3
662.002.013.1	Pole, Steel, Lighting Support	Steel and Iron	Yes	
662.002.013.1.6	Lighting Support, Steel, Anchor Bolt	Steel and Iron	Yes	
662.002.013.2	Lighting Support, Steel, High Mast Type	Steel and Iron	Yes	
662.002.013.4	Luminaire Support Arm, Steel, Type 1 & 2	Construction Material	Yes	
662.002.013.5	Luminaire Support Arm, Steel, Type 3	Construction Material	Yes	
662.002.013.6	Lighting Pole, Aluminum	Construction Material	Yes	
662.002.013.7	Luminaire Support Arm, Aluminum	Construction Material	Yes	
662.002.014	Navigation Lighting System	Manufactured Material	No	*3
667.PSP.000	LED Dynamic Message Sign	Manufactured Material	No	*3
679.002.002.1	Concrete, Latex Modified	Section 70917(c) Material	No	
679.002.002.2	Concrete, Microsilica	Section 70917(c) Material	No	
688.005.004	Soluble Salt Removers	Section 70917(c) Material	No	
689.000.000	Metalizing, Steel Coating	Construction Material	Yes	
701.001.000.7	Cement, Type UHR	Section 70917(c) Material	No	
701.001.000.8	Cement, Portland, Type 1 Low - Alkali	Section 70917(c) Material	No	
701.001.000.X	Cement, Portland, All Types	Section 70917(c) Material	No	
701.003.000	Cement, Type 1L - Blended Hydraulic	Section 70917(c) Material	No	
701.004.000	Cement, Masonry	Section 70917(c) Material	No	
704.00X.00X.0X	Aggregate - All Types/Classes	Section 70917(c) Material	No	
705.004.000.0X	Asphalt, Emulsion, All Types	Section 70917(c) Material	No	
705.005.000.0X	Asphalt, Liquid, All Types	Section 70917(c) Material	No	
705.007.000	Asphalt, Dampproofing and Water-Proofing	Section 70917(c) Material	No	

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AWP Material Code	Material Description	Category	CoC Required	Notes
705.008.000	Asphalt, Dampproofing and Water-Proofing, Primer	Section 70917(c) Material	No	
705.011.000.0X	Asphalt, Liquid, All Types	Section 70917(c) Material	No	
707.001.001	Type M Admixture, Concrete, Air-Entraining	Section 70917(c) Material	No	
707.002.002.01.1	Type D Admixture, Concrete Water-Reducing And Retarding	Section 70917(c) Material	No	
707.002.002.01.2	Type G Admixture, Concrete Water-Reducing And Retarding,	Section 70917(c) Material	No	
707.002.002.01.3	Admixture, Citric Acid (Retarder)	Section 70917(c) Material	No	
707.003.001.1	Type A Admixture, Concrete, Water-Reducing	Section 70917(c) Material	No	
707.003.001.2	Type F Admixture, Concrete, Water-Reducing	Section 70917(c) Material	No	
707.004.001	Fly Ash - SCM, Supplementary Cementitious Material	Section 70917(c) Material	No	
707.004.002	Slag Cement - SCM, Supplementary Cementitious Material	Section 70917(c) Material	No	
707.004.003	Silica Fume - SCM, Supplementary Cementitious Material	Section 70917(c) Material	No	
707.004.004	Natural - SCM, Supplementary Cementitious Material	Section 70917(c) Material	No	
707.005.000	Admixture, Latex	Section 70917(c) Material	No	
707.006.000	Burlap, Polyethylene Coated	Temporary Item	No	
707.007.000	Burlap, Jute or Kenaf	Temporary Item	No	
707.008.000	Curing, Concrete, Waterproof Paper	Temporary Item	No	
707.009.000	Curing, Concrete, Liquid Membrane Compound	Temporary Item	No	
707.010.000	Curing, Concrete, White Poly Sheeting	Temporary Item	No	
707.011.000	Coating, Epoxy Resin Protection, Type 3, Grades 1 or 2, Class B or C	Construction Material	Yes	
707.012.002	Sealer, Concrete	Construction Material	Yes	
707.013.001	Type C Admixture, Concrete, Accelerating	Section 70917(c) Material	No	
707.014.001	Admixture, Concrete, Water-Reducing & Accelerating, Type E	Section 70917(c) Material	No	
707.015.001	Type D - Admixture, Concrete, Hydration Control Stabilizing	Section 70917(c) Material	No	
707.016.001	Coating Materials, Concrete Protection	Construction Material	Yes	
707.017.001	Type S Admixture, Concrete, Specialized	Section 70917(c) Material	No	
707.018.001	Admixture, Concrete, Foaming Agent	Section 70917(c) Material	No	
708.001.001	Expansion Joint, Cork	Manufactured Material	No	*3
708.001.002	Expansion Joint, Bituminous Fiber	Manufactured Material	No	*3
708.002.001	Joint Seals, Preformed Elastomeric, Neoprene	Construction Material	Yes	
708.002.002	Expansion Joint, Sponge Rubber	Manufactured Material	No	*3
708.003.000	Joint Sealant, Hot-Poured for Concrete and Asphalt Pavements	Manufactured Material	No	*3
708.004.001.X	Sealant, Silicone Joint, All Types	Construction Material	Yes	
708.004.002	Joint, Back-up Material	Manufactured Material	No	*3
708.009.000	Bitumen Sealant, Concrete and Masonary	Section 70917(c) Material	No	
708.010.001	Waterstops (Elastomer Material), Polyvinylchloride	Construction Material	Yes	
708.010.002	Waterstops (Elastomer Material), Rubber	Construction Material	Yes	
708.PSP.001	Neoprene Sheet for Semi-Integral Abutments	Manufactured Material	No	*3
709.000.000	Steel, Miscellaneous	Steel and Iron	Yes	
709.000.000.0	Welding Electrodes, Piles	Steel and Iron	Yes	
709.001.000.1	Reinforcing Bar, Steel Rebar	Steel and Iron	Yes	
709.001.000.2	Reinforcing Bar, Steel, Epoxy Coated, Coaters Rebar	Steel and Iron	Yes	
709.001.000.3	Epoxy Powders for Rebar	Construction Material	Yes	
709.002.000.1	Reinforcement, 7-Wire Strand, Prestressing	Steel and Iron	Yes	
709.002.000.2	Reinforcement, Steel Bar, High Strength, Prestressing	Steel and Iron	Yes	
709.003.000	Bolt, Steel, Wire Mesh, Hook, Expansion	Steel and Iron	Yes	
709.004.000.1	Wire, Steel, Reinforcement	Steel and Iron	Yes	
709.004.000.2	Welded Wire, Steel, Reinforcement	Steel and Iron	Yes	
709.005.000	Pavement Reinforcement, Expanded Metal	Steel and Iron	Yes	
709.006.000	Bar or Rod Mats, Steel, Fabricated	Steel and Iron	Yes	
709.007.000	Bolt, Joint Tie Bolt Assembly, (J-Hook)	Steel and Iron	Yes	
709.008.000	Structural Metal, Steel, High Strength Low Alloy	Steel and Iron	Yes	
709.010.000.1	Gray Iron Castings	Steel and Iron	Yes	
709.010.000.2	Iron Castings, Ductile Iron Castings	Steel and Iron	Yes	
709.012.000.1	Structural and Eyebar, Steel, (Piling)	Steel and Iron	Yes	
709.012.000.2	Lagging, Steel	Steel and Iron	Yes	
709.015.000	Dowel Bars and Dowel Baskets, Assemblies, Coated	Steel and Iron	Yes	
709.017.000	Pipe, Steel, Welded & Seamless	Steel and Iron	Yes	
709.018.002	Copper Alloy Castings for Name Plates For Bridges	Steel and Iron	Yes	
709.021.000	Pipe, Steel, Floor Drains & Down-Spouts	Steel and Iron	Yes	
709.024.002	Bolt, Steel, High Strength A325 / A449	Steel and Iron	Yes	
709.024.003	Nut, Steel, High Strength	Steel and Iron	Yes	
709.024.004	Washer, Steel, High Strength	Steel and Iron	Yes	
709.036.000	Aluminum Alloy, Bolts, Nuts, and Set Screws	Steel and Iron	Yes	
709.037.000	Aluminum Alloy, Washers	Steel and Iron	Yes	
709.042.000	Steel, Galvanized Pipe or Tubing for Horiontal Drains	Steel and Iron	Yes	
709.045.000	Guardrail Posts, Galvanized Steel	Steel and Iron	Yes	

DOH-M-22 WVDOH Buy America Requirement Materials

AWP Material Code	Material Description	Category	CoC Required	Notes
709.046.000	Post, Braces & Grate Frames, Fence, Steel	Steel and Iron	Yes	
709.046.000.1	Post, Studded Tee	Steel and Iron	Yes	
709.050.000	Pile Points, Steel (Piling)	Steel and Iron	Yes	
709.051.000	Sign Support Surface Mount Bracket, Breakaway Device	Steel and Iron	Yes	
709.052.000	Sign Support, Omni-Directional Breakaway Device, Steel Beam,	Steel and Iron	Yes	
709.053.000	Supports, Steel, Tubular	Steel and Iron	Yes	
709.054.000	Sign Support Back to Back U-Channel, Breakaway Device	Steel and Iron	Yes	
709.055.000	Sign Support Bracket - Barrier Wall	Steel and Iron	Yes	
710.002.002	Hardwood, Structural	Construction Material	Yes	
710.002.003	Hardwood, Bridge Decking	Construction Material	Yes	
710.002.004	Graded Material	Section 70917(c) Material	No	
710.003.000	Preservative Treatment	Manufactured Material	No	*3
710.004.000	Wood Preservers	Construction Material	Yes	
710.005.000	Post, Wood, Guardrail, Rectangular	Construction Material	Yes	
710.005.000.4	Post, Wood for Fence and Signs	Construction Material	Yes	
710.006.000	Plywood	Construction Material	Yes	
710.007.000	Common Lumber	Construction Material	Yes	
710.008.000	Poles, Service and Lighting, Wood	Construction Material	Yes	
711.005.000	Concrete Protective Coatings And Stain	Construction Material	Yes	
711.006.000.1	Paint, Zinc Primers, Organic	Construction Material	Yes	*2
711.006.000.2	Paint, Zinc Primers, Inorganic	Construction Material	Yes	*2
711.012.000	Paint, Epoxy Coatings	Construction Material	Yes	*2
711.022.000	Paint, Zinc Rich Low VOC System	Construction Material	Yes	*2
711.022.003	Paint, Intermediate Coat	Construction Material	Yes	*2
711.022.004	Paint, Top Coat	Construction Material	Yes	*2
711.040.000	Paint, Temporary, White, Yellow Traffic	Temporary Item	No	
711.041.000.1	Paint, White or Yellow, Fast-Dry Traffic	Construction Material	Yes	*2
711.041.000.2	Paint, Yellow, Fast-Dry Traffic	Construction Material	Yes	*2
712.004.000	Guardrail, Fasteners and Anchor Bolts, Stains for Galvanized Steel	Steel and Iron	Yes	
712.004.001	Guardrail Splice Bolt	Steel and Iron	Yes	
712.004.002	Guardrail Post Bolt	Steel and Iron	Yes	
712.004.003	Guardrail Nuts	Steel and Iron	Yes	
712.004.004	Guardrail Washers	Steel and Iron	Yes	
712.004.005	Guardrail Beam, Steel	Steel and Iron	Yes	
712.004.007	Guardrail End, Steel	Steel and Iron	Yes	
712.005.000	Coating	Steel and Iron	Yes	
712.008.001	Fence, Steel, Chain-Link	Steel and Iron	Yes	
712.009.000.1	Coating	Steel and Iron	Yes	
712.009.000.2	Coating	Steel and Iron	Yes	
712.010.000	Barbed Wire, Coated Steel	Steel and Iron	Yes	
712.011.000	Fence, Safety	Steel and Iron	Yes	
713.002.000	Pipe and Pipe Arch, Metallic Coated Corrugated Steel	Steel and Iron	Yes	
713.003.000	Pipe and Pipe Arch, Asphalt Coated Corrugated Steel	Steel and Iron	Yes	
713.005.001	Pipe, Fiber Bonded Full Bituminous Coated Steel	Steel and Iron	Yes	
713.018.000	Box Culvert, Aluminum Alloy Structural Plate	Steel and Iron	Yes	
713.020.000	Pipe, End Sections for Corrugated Steel Pipe and Pipe Arch	Steel and Iron	Yes	
713.024.000	Pipe and Pipe Arch, Aluminum Coated Corrugated Steel	Steel and Iron	Yes	
714.002.000	Pipe, Reinforced Concrete Culvert, Storm Drain & Sewer, Class III, IV, V	Steel and Iron	Yes	*1
714.003.000	Pipe, Concrete, Arch, Storm Drain & Sewer	Steel and Iron	Yes	*1
714.004.000	Pipe, Reinforced Concrete, Eliptical Culvert, Storm Drain & Sewer	Steel and Iron	Yes	*1
714.005.000	Pipe, Perforated Concrete	Steel and Iron	Yes	*1
714.007.000	Box Culverts, Reinforced Concrete, Precast	Steel and Iron	Yes	*1
714.008.000	Concrete End Sections	Steel and Iron	Yes	*1
714.017.000	Pipe, Polypropylene, Dual Wall, 12-60 Inches	Construction Material	Yes	
714.018.000	Pipe, High Density Polyethylene, Steel Reinforced	Steel and Iron	Yes	*1
714.019.000.1	3-6 inches Perforated Pipe, High Density Polyethylene, Profile Wall	Construction Material	Yes	
714.019.000.2	3-10 inches Non Perforated Pipe, High Density Polyethylene, Profile Wall	Construction Material	Yes	
714.019.000.3	12-60 inches Pipe, High Density Polyethylene, Profile Wall	Construction Material	Yes	
714.020.000	Pipe, Perforated Plastic Semicircular	Construction Material	Yes	
714.022.000	Pipe, Polyvinyl Chloride (PVC)	Construction Material	Yes	
714.023.000	Box Culverts, Concrete, Precast Reinforced	Steel and Iron	Yes	*1
714.024.000	Pipe, Storm Drain, Non-Asbestos, Fiber-Cement	Steel and Iron	Yes	
715.001.000	Chloride, Calcium	Temporary Item	No	
715.002.000	Chloride, Sodium	Temporary Item	No	
715.004.001	Cementitious Materials, PCC Concrete Repair Materials	Section 70917(c) Material	No	
715.004.002	Non-Cementitious Materials, Concrete Repairs	Section 70917(c) Material	No	

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AWP Material Code	Material Description	Category	CoC Required	Notes
715.005.000	Cement Grout, Pakaged Dry, Hydraulic, Non-Shrink	Section 70917(c) Material	No	
715.005.000.1	Plant Produced Grout	Section 70917(c) Material	No	
715.006.000	Lime, Hydrated	Section 70917(c) Material	No	
715.007.000	Water for Hydraulic Cement	Section 70917(c) Material	No	
715.008.000	Fabric, Waterproofing	Construction Material	Yes	
715.009.003.6	Delineator Post, Soil Mounted Plastic	Manufactured Material	No	*3
715.009.003.7	Delineator Post, Guardrail Mounted Plastic	Manufactured Material	No	*3
715.009.003.8	Delineator - Type B1	Manufactured Material	No	*3
715.011.00X	Geotextile - Eng Fabric, All Types	Construction Material	Yes	
715.011.010	Engineering Fabric for Pumped Sediment and Erosion Control (Dewatering Device)	Manufactured Material	No	*3
715.012.000	Concrete, Miscellaneous Uses	Section 70917(c) Material	No	
715.013.000	Fabric Pads, Preformed	Construction Material	Yes	
715.014.000	Bearing Pads, Elastomeric, Plain & Reinforced	Steel and Iron	Yes	*1
715.015.000	Neoprene Sheeting for Miscellaneous Items	Construction Material	Yes	
715.016.000.001	Brick, Clay or Shale, Sewer Brick	Section 70917(c) Material	No	
715.016.000.002	Brick, Clay or Shale, Building Brick	Section 70917(c) Material	No	
715.017.000	Brick, Concrete	Section 70917(c) Material	No	
715.018.000	Concrete Units, Masonry	Section 70917(c) Material	No	
715.019.000.01	Concrete Units, Manholes and Inlets (Precast) Special	Steel and Iron	Yes	*1
715.019.000.04	Inlet, All Types	Steel and Iron	Yes	*1
715.019.000.0X	Manhole, All Types (Precast)	Steel and Iron	Yes	*1
715.019.000.14	Lift Station & Valve Vault (Precast)	Steel and Iron	Yes	*1
715.020.000	Precast Concrete Median Barriers (Temporary)	Steel and Iron	Yes	*1
715.022.000	Precast Concrete Median Barriers (Permanent)	Steel and Iron	Yes	*1
715.023.000	Gabion Baskets	Steel and Iron	Yes	*1
715.024.002.X	Matting for Erosion Control, All Types	Construction Material	Yes	
715.025.000	Limestone, Ground Agricultural	Section 70917(c) Material	No	
715.026.001	Fertilizer, Seeding	Temporary Item	No	
715.026.002	Fertilizer, Landscape Planting	Temporary Item	No	
715.027.001.1	Mulch, Straw, Seeding	Temporary Item	No	
715.027.001.2	Mulch, Wood Cellulose, Seeding	Temporary Item	No	
715.027.001.3	Mulch Binder, Chemical, Seeding	Temporary Item	No	
715.027.002	Mulch Materials, Landscape Plantings	Temporary Item	No	
715.028.000	Seed	Temporary Item	No	
715.029.000	Inoculating Bacteria	Temporary Item	No	
715.033.000	Vines and Ground Cover Plants	Temporary Item	No	
715.034.000	Seedling Plants	Temporary Item	No	
715.035.000	Trees and Shrubs	Temporary Item	No	
715.036.000	Asphaltum Base Paint for Tree Surgery	Temporary Item	No	
715.037.001	Tree Stakes	Steel and Iron	Yes	
715.037.002	Wire, Guying and Staking Plants	Steel and Iron	Yes	
715.037.003	Hose, Guying and Staking Plants	Temporary Item	No	
715.037.004	Twine, Tying Wrapped Tree Trunks	Temporary Item	No	
715.037.005	Tree Wrap	Temporary Item	No	
715.037.006	Anti-Desiccant - Emulsion Protective Film	Temporary Item	No	
715.038.000	Manhole Steps	Steel and Iron	Yes	
715.039.000	Elastomeric Gasket & Sealing Material	Construction Material	Yes	
715.040.002	Pavement Preformed Marking Material, Type V	Manufactured Material	No	*3
715.040.006.1	Raised Pavement Markers, Type P-2, RPM	Manufactured Material	No	*3
715.040.006.2	Raised Pavement Marker, Type R-4, RPM	Manufactured Material	No	*3
715.041.001	Traffic Safety Devices, Attenuating Type V	Steel and Iron	Yes	*1
715.041.001.01	Reflective U-Channel Strips	Construction Material	Yes	
715.041.001.02	Channelizer Cones	Temporary Item	No	
715.041.00X	Traffic Safety Devices, Attenuating All Types	Steel and Iron	Yes	*1
715.042.000.1	Traffic Signal Materials & Equipment	Steel and Iron	Yes	*1
715.042.000.2	Traffic Signals, Miscellaneous	Manufactured Material	No	*3
715.042.005.2	Loops (LPS)	Steel and Iron	Yes	*1
715.042.005.3	Closed Circuit Television (PAS-CCTV)	Manufactured Material	No	*3
715.042.005.4	Pedestrian Detector with Audible	Manufactured Material	No	*3
715.042.005.5	Radar Advance Digital Detection (RADD)	Manufactured Material	No	*3
715.042.005.6	Video Detection Cameras (VTDS)	Manufactured Material	No	*3
715.042.006.2	Signal Sections (V12) (V12P) (G16)	Steel and Iron	Yes	*1
715.042.009.1.2	Signal Supports, Mast Arm	Steel and Iron	Yes	
715.042.009.1.3	Supports, Signal, Video Arm	Steel and Iron	Yes	
715.042.009.2	Signal Supports, Strain Types C1, C1L, C2 and C2L	Steel and Iron	Yes	
715.042.009.2.2	Signal Supports, Anchor Bolts	Steel and Iron	Yes	

DOH-M-22 WVDOH Buy America Requirement Materials

AWP Material Code	Material Description	Category	CoC Required	Notes
715.042.009.4.1	Signal Supports, Aluminum, Pedestal E-1	Steel and Iron	Yes	
715.042.009.4.2	Signal Support, Steel, Pedestal E-2	Steel and Iron	Yes	
715.042.009.4.3	Signal Support, Steel, Pedestal E-3	Steel and Iron	Yes	
715.042.010.1	Conduit, Rigid, Type R	Construction Material	Yes	
715.042.010.2	Conduit, Flexible, PVC Cover	Construction Material	Yes	
715.042.010.3	Conduit, Type P (Polyvinyl Chloride)	Construction Material	Yes	
715.042.011.X	Junction Box, All Types, All Duty, Cast in Place	Steel and Iron	Yes	*1
715.045.000	Bentonite	Section 70917(c) Material	No	
716.001.001	Random Material	Section 70917(c) Material	No	
716.001.001.1	Soil	Section 70917(c) Material	No	
716.001.001.2	Granular Material	Section 70917(c) Material	No	
716.001.001.3	Shale, Soft	Section 70917(c) Material	No	
716.001.002	Rock	Section 70917(c) Material	No	
716.001.003	Shale, Hard	Section 70917(c) Material	No	
716.001.004	Borrow Material	Section 70917(c) Material	No	
718.000.000.1	Waterline Items	Steel and Iron	Yes	
718.000.000.2	Sewerline Items	Construction Material	Yes	
718.001.000	Pipe, Ductile Iron	Steel and Iron	Yes	
718.005.000	Pipe, Plastic (PVC) Waterline	Construction Material	Yes	
718.007.000	Pipe, Plastic (Polyethylene) Waterline	Construction Material	Yes	
718.009.000	Service Line, Copper	Construction Material	Yes	
718.010.000	Gate Valves	Steel and Iron	Yes	*1
718.011.000	Valve Box	Steel and Iron	Yes	*1
718.012.000	Pipe, Casing, Water/Sewer	Steel and Iron	Yes	*1
718.013.000	Fire Hydrants	Steel and Iron	Yes	*1
718.014.000	Meters	Steel and Iron	Yes	*1

Note *1 - Steel/Iron in this Material are Subject to Buy America Requirements.

Note *2 - Glass Beads in Paint Require a CoC.

Note *3 - FHWA has a standing historic waiver for Manufactured Materials.

Note: A CoC is only required if the material is permanently incorporated into the project.

Note: AWP Material Code is for internal use only.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
MATERIALS CONTROL, SOILS AND TESTING DIVISION

MATERIALS PROCEDURE

WVDOH BUY AMERICA WAIVER GUIDELINES

1. PURPOSE

1.1 To set forth instructions for Waivers for Buy America Materials.

2. REFERENCED DOCUMENTS

2.1 PUBLIC LAW 117–58—NOV. 15, 2021, Infrastructure Investment and Jobs Act

2.2 23 U.S.C. 313 and 23 CFR 635.410 "Buy America Requirements.

2.3 Build America, Buy America Act (BABA)

2.4 2 CFR part 184 Buy America Preferences for Infrastructure Projects

2.5 M-22-11 Initial Implementation Guidance on Application of Buy America Preference in Federal Financial Assistance Programs for Infrastructure

2.6 M-24-02 Implementation Guidance on Application of Buy America Preference in Federal Financial Assistance Programs for Infrastructure

2.7 Chapter 5, Article 19 and Chapter 5A, Article 3, Section 56 of the West Virginia Code, entitled "West Virginia American Steel Act of 2001."

2.8 MP 106.10.50 – WVDOH Buy America Acceptance Guidelines

3. OVERVIEW OF BUY AMERICA WAIVERS

3.1 In certain circumstances, waivers may be applied to materials exempting them from both Federal and State Buy America requirements.

3.2 For each type of material as described in MP 106.10.50, a separate process is described.

4. BUY AMERICA WAIVERS AND EXCEPTIONS FOR STEEL AND IRON

4.1 Both Federal and State laws require waivers for Buy America. These waivers are independent of each other. Compliance and acceptance of one waiver does not in any way shape or form demonstrate compliance with the other waiver.

4.1.1 As provided for in 23 CFR 635.410(c)(1), WVDOH may request a waiver from Federal Buy America requirements for steel and iron materials if: (1) the application of Buy America requirements would be inconsistent with the public interest; or (2) steel and iron materials/products are not produced in the United States in sufficient and reasonably available quantities which are of a satisfactory quality.

4.2 Federal Minimal Use Waiver: Steel and Iron Materials.

4.2.1 As provided for in 23 CFR 635.410(b)(4), an exception from Federal Buy America requirements exists for the minimal use of steel and iron materials "if the cost of such

materials used does not exceed one-tenth of one percent (0.1 percent) of the total contract cost or $2,500, whichever is greater. For the purposes of this paragraph, the cost is that shown to be the value of the steel and iron products as they are delivered to the project."

4.2.2 Authority for determining applicability and issuance of a minimal use exception for steel and iron materials has been delegated to the West Virginia Department of Transportation through its Stewardship and Oversight Agreement with the FHWA West Virginia Division Office.

4.2.3 Procedure for granting a minimal use exception from Federal Buy America requirements for the minimal use of steel and iron materials.

4.2.3.1 The Contractor shall submit a letter to the District Construction Engineer requesting a minimal use exception for the use of foreign steel or iron materials. The letter shall demonstrate that the cost of the foreign steel or iron materials to be incorporated into the project do not exceed one-tenth of one percent (0.1 percent) of the total contract cost or $2,500, whichever is greater. Attached to the letter shall be documentation (e.g., invoices) which demonstrates that the cost of the foreign steel or iron materials requested to be used is the cost of the materials as they are delivered to the project.

4.2.3.2 If the District Construction Engineer determines a minimal use exception is applicable and appropriate, they will respond to the Contractor via letter granting a minimal use exception.

4.2.3.3 All documentation related to the granting of a minimal use exception shall be maintained in the project files.

4.3 State Minimal Use Waiver: Steel Products.

4.3.1 As provided for in Chapter 5A, Article 3 Section 56 of the West Virginia Code, an exception from West Virginia domestic steel preference requirements exists for the minimal use of foreign steel products, when authorized in writing by the director of Purchasing Division, if "The cost for each contract item used does not exceed one tenth of one percent of the total contract cost or $2,500, whichever is greater. For the purposes of this section, the cost is the value of the steel product as delivered to the project."

4.3.2 Procedure for granting a minimal use exception from West Virginia domestic steel requirements:

4.3.2.1 The Contractor shall submit a letter to the District Construction Engineer requesting a minimal use exception for the use of foreign steel products. The letter shall demonstrate that the cost of the foreign steel products to be incorporated into the project do not exceed one-tenth of one percent (0.1 percent) of the total contract cost or $2,500, whichever is greater. Attached to the letter shall be documentation (e.g., invoices) which demonstrates that the cost of the foreign steel products requested to be used is the cost of the materials as they are delivered to the project.

4.3.2.2 If the District Construction Engineer determines a minimal use exception is applicable and appropriate, they will draft a letter to the director of Purchasing Division requesting the minimal use exception. The letter shall demonstrate that the cost of the foreign steel products to be incorporated into the project do not exceed

one-tenth of one percent (0.1 percent) of the total contract cost or $2,500, whichever is greater. Attached to the letter shall be documentation (e.g., invoices) which demonstrates that the cost of the foreign steel products requested to be used is the cost of the materials as they are delivered to the project.

4.3.2.3 If approved by the director of Purchasing Division, the District Construction Engineer will respond to the Contractor via letter granting a minimal use exception.

4.3.2.4 All documentation related to the granting of a minimal use exception shall be maintained in the project files.

5. BUY AMERICA WAIVERS AND EXCEPTIONS FOR MANUFACTURED PRODUCTS

5.1 There is a long-standing, historic waiver for Manufactured Products.

5.2 There are currently no additional exceptions for Federal Buy America Requirements for Manufactured Products.

6. BUY AMERICA WAIVERS AND EXCEPTIONS FOR CONSTRUCTION MATERIALS.

6.1 There are currently no additional exceptions for Federal Buy America Requirements for Construction Materials.

7. BUY AMERICA WAIVERS

7.1 Unless delegated by the West Virginia FHWA, the following paragraphs apply for the issuance of Buy America Waivers.[1]

7.2 Pursuant to Section 70914(b) of BABA and 2 CFR 184.7, the head of a Federal agency may waive the application of a Buy America preference under an infrastructure program in any case in which the head of the Federal agency finds that:

1. Applying the Buy America preference would be inconsistent with the public interest (a “public interest waiver”);
2. Types of iron, steel, manufactured products, or construction materials are not produced in the United States in sufficient and reasonably available quantities or of a satisfactory quality (a “nonavailability waiver”); or
3. The inclusion of iron, steel, manufactured products, or construction materials produced in the United States will increase the cost of the overall project by more than 25 percent (an “unreasonable cost waiver”).

7.3 Federal agencies are responsible for processing and approving all waivers, including waivers requested by recipients and on behalf of subrecipients consistent with the procedures in 2 CFR 184.7. Every waiver must be reviewed by the MIAO. To the

[1] M-24-02: Memorandum for the Heads of Executive Departments and Agencies, Implementation Guidance on Application of Buy America Preference in Federal Financial Assistance Programs for Infrastructure, Page 6.

greatest extent practicable, waivers should be targeted to specific products and projects.

7.4 A request for a Buy America waiver, accompanied by supporting information, must be submitted in writing to the FHWA West Virginia Division Administrator for consideration.

_____

Ronald L. Stanevich, P.E.
Director
Materials Control, Soils & Testing Division

MP 106.10.51 Steward – Materials Control Section
RLS:B

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
MATERIALS CONTROL, SOILS AND TESTING DIVISION

MATERIALS PROCEDURE

MIX DESIGN FOR PORTLAND CEMENT CONCRETE

1. PURPOSE

1.1 To establish a procedure for testing the physical properties of a proposed mix design.

1.2 To establish criteria for evaluating the test data to arrive at acceptable batch proportions for an approved mix design.

2. SCOPE

2.1 This procedure shall apply to the design of all portland cement concrete which is required by the specifications to be batched in accordance with an approved mix design. This procedure shall also apply to the design of self-consolidating concrete (SCC) specified in Section 603, but not to normal (non-SCC) concrete specified in Section 603.

3. REFERENCED DOCUMENTS

3.1 AASHTO Standards:

1. AASHTO M 201, Standard Specification for Mixing Rooms, Moist Cabinets, Moist Rooms, and Water Storage Tanks Used in the Testing of Hydraulic Cements and Concretes
2. AASHTO R 18, Standard Practice for Establishing and Implementing a Quality Management System for Construction Materials Testing Laboratories
3. AASHTO R 39, Standard Practice for Making and Curing Concrete Test Specimens in the Laboratory
4. AASHTO R 76, Standard Practice for Reducing Samples of Aggregate to Testing Size
5. AASTHO T 11, Standard Method of Test for Materials Finer Than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing
6. AASHTO T 19, Standard Method of Test for Bulk Density (Unit Weight) and Voids in Aggregate
7. AASHTO T 22, Standard Method of Test for Compressive Strength of Cylindrical Concrete Specimens
8. AASHTO T 27, Standard Method of Test for Sieve Analysis of Fine and Coarse Aggregates
9. AASHTO T 84, Standard Method of Test for Specific Gravity and Absorption of Fine Aggregate
10. AASHTO T 85, Standard Method of Test for Specific Gravity and Absorption of Coarse Aggregate

11. AASHTO T 119, Standard Method of Test for Slump of Hydraulic Cement Concrete
12. AASHTO T 121, Standard Method of Test for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete
13. AASHTO T 152, Standard Method of Test for Air Content of Freshly Mixed Concrete by the Pressure Method
14. AASHTO T 196, Standard Method of Test for Air Content of Freshly Mixed Concrete by the Volumetric Method
15. AASHTO T 197, Standard Method of Test for Time of Setting of Concrete Mixtures by Penetration Resistance
16. AASHTO T 231, Standard Practice for Capping Cylindrical Concrete Specimens
17. AASHTO T 277, Standard Method of Test for Electrical Indication of Concrete's Ability to Resist Chloride Ion Penetration
18. AASHTO T309, Standard Method of Test for Temperature of Freshly Mixed Portland Cement Concrete

3.2 ASTM Standards:

1. ASTM C 1231, Standard Practice for Use of Unbonded Caps in Determination of Compressive Strength of Hardened Cylindrical Concrete Specimens
2. ASTM C 1567 Standard Test Method for Determining the Potential Alkali0Silica Reactivity of Combinations of Cementitious Materials and Aggregate (Accelerated Mortar-Bar Method)

3.3 WVDOH Materials Procedures:

1. MP 700.00.06, Aggregate Sampling Procedures
2. MP 603.06.20, Test Method for the Determination of Bond Strength Between Prestressing Steel Strand and Self-Consolidating Concrete (SCC)

3.4 WVDOT Forms:

1. WVDOH Form T301E, A-Bar Calculation Worksheet
2. Optimized Aggregate Gradation (OAG) Worksheet
3. Excel Spreadsheet for 711.03.23

4. TEST PROCEDURE

4.1 With the exception of SCC produced in accordance with Section 603, mix designs shall be performed in accordance with the applicable requirements of AASHTO R39 (ASTM C 192) by a Division Approved Laboratory. To obtain Division approval, a laboratory must be accredited by the AASHTO Accreditation Program for AASHTO R18 for the following Standards: AASHTO M201 (ASTM C511), AASHTO R39 (ASTM C192), AASHTO T22 (ASTM C39), AASHTO T119 (ASTM C143), AASHTO T121 (ASTM C138), AASHTO T152 (ASTM C231), AASHTO T196 (ASTM C173), AASHTO T197 (ASTM C403), AASHTO T231 (ASTM C617) or ASTM C1231, AASHTO T277 (ASTM C1202), AASHTO T309 (ASTM C1064), AASHTO T11 (ASTM C117), AASHTO T19 (ASTM C29), AASHTO T27 (ASTM C136), AASHTO T84 (ASTM C128), AASHTO T85 (ASTM C127), and AASHTO R76 (ASTM C702). A listing of these laboratories, that are approved to develop concrete mix designs for the Division, is available on the WVDOH, MCS&T Web P1

[1] https://transportation.wv.gov/highways/mcst/Pages/APL_By_Number.aspx.

age. Requests to be placed on that list of Division Approved Concrete Mix Design Labs shall be sent to the following e-mail address: DOHMCSnTconcretelab@wv.gov. To be placed on that list, all Division Approved Laboratories shall agree to allow the WVDOH, CCRL, and AASHTO re:source to freely share information about assessment reports, proficiency samples, corrective actions, quality management system, and personnel competency and certification records.

4.2 The following information for each of the materials listed below that are to be used in the proposed mix design shall be listed in Attachments 1 and 6-ASR. For mix designs which meet the requirements for optimized aggregate gradation in Section 601.3.2.4.1, the following information for each of the materials listed below that are to be used in the proposed mix design shall be listed in Attachments 1 OAG and 6-ASR OAG. The Ā requirements will not apply for those mix designs which meet the requirements for optimized aggregate gradation in Section 601.3.2.4.1. Attachments 1 S-P and 6-ASR shall be used for SCC produced in accordance with Section 603.

4.2.1 Mix Design Component Materials

Cement:	Type, Materials Code, SiteManager Materials Code, Source and Location, Source Code, Producer/Supplier Code, Specific Gravity, Alkali Content
Supplementary Cementitious Material (SCM):	Type, Materials Code, SiteManager Materials Code, Source and Location, Source Code, Producer/Supplier Code, Specific Gravity, Alkali Content
Chemical Admixtures:	Type, Materials Code, SiteManager Materials Code, Source and Location, Source Code, Producer/Supplier Code
Coarse Aggregate:	Type, Materials Code, SiteManager Materials Code, Size, Source and Location, Source Code, Producer/Supplier Code, Specific Gravity, Absorption, A-Bar, Unit Weight, ASR Aggregate Reactivity Class
Fine Aggregate:	Type, Materials Code, SiteManager Materials Code, Source and Location, Source Code, Producer/Supplier Code, Specific Gravity, Absorption, A-Bar, Fineness Modulus, ASR Aggregate Reactivity Class

The mass and volume of each material that is to be used in each batch shall be listed in Attachment 2. Attachment 2 OAG shall be used for those mix designs which meet the requirements for optimized aggregate gradation in Section 601.3.2.4.1. Attachment 2 S-P shall be used for SCC produced in accordance with Section 603.

4.2.2 The aggregate correction factor, as defined in AASHTO T 152, shall be listed in Attachment 3. Attachment 3 OAG shall be used for those mix designs which meet the

requirements for optimized aggregate gradation in Section 601.3.2.4.1. Attachment 3 S-P shall be used for SCC produced in accordance with Section 603.

4.2.3 The completed WVDOH form T301E, A-Bar calculation worksheet, used to establish the target A-Bar, shall be included in the mix design submittal package. An A-Bar calculation worksheet is not required to be included with the mix design submittal package for SCC produced in accordance with Section 603 and those mix designs which meet the requirements for optimized aggregate gradation in Section 601.3.2.4.1. The completed optimized aggregate gradation (OAG) worksheet shall be included in the mix design submittal package.

4.2.4 Information (i.e. raw data) pertaining to the compressive strength test results of each cylinder shall be included in the mix design submittal package. This raw data shall include the specimen test age, date tested, cylinder ID, average cylinder diameter, maximum load applied to the cylinder, type of fracture, and compressive strength of the cylinder.

4.3 All classes of the concrete (except Class H, concrete for specialized overlays, and SCC produced in accordance with Section 603) for the proposed mix design shall be batched in at least five separate batches. Two of the batches shall be proportioned to produce a mix having a minimum cement factor. Two of the batches shall be proportioned to produce a mix having a minimum cement factor equal to the specified minimum cement factor plus one bag of cement [94 lb. (42.6 kg)]. These batches at the minimum cement factor plus one bag of cement shall be proportioned at a different water-cement ratio (w/c) that the batches at the minimum cement factor. A fifth batch shall also be proportioned to produce a mix at the minimum cement factor, but this batch shall be proportioned at a different water-cement~~w/c than~~ratio than the previous four batches. The slump tolerance in Section 4~~3~~.4 shall not apply to this fifth batch. All batches described above shall maintain the same replacement percentage of SCMs including plus one bag.

4.3.1 Class H concrete, concrete for specialized overlays, as set forth in Section 679 of the specifications, and SCC produced in accordance with Section 603 for the proposed mix design shall be batched in at least two separate batches.

The batches for Class H concrete shall be produced at the cement factor for Class H concrete that is required in the specifications. Two rapid chloride permeability tests, in accordance with AASHTO T 277, specified in Section 601.3 shall be performed, at the same test age, on each of these batches, and the same method of curing shall be used for ~~all of~~all the test specimens.

The batches for specialized concrete overlays shall be produced at or above the minimum cement factor specified in Section 679.2.2.1 or 679.2.2.2. Two rapid chloride permeability tests specified in Section 679.2.2 shall be performed, at the same test age, on each of these batches, and the same method of curing shall be used for ~~all of~~all the test specimens.

The information (i.e. raw data), from which each rapid chloride permeability test result was derived, shall also be included in the mix design submittal package.

The batches for SCC for prestressed concrete members shall be produced as outlined in Section 603.6.2.1 and at the cement factor required in Section 603.6.3.1.

4.4 Each batch of concrete shall be tested in the plastic state for air, consistency and yield. Each batch shall be adjusted as necessary to produce a plastic concrete having an air content, consistency, and yield equal to the specified value plus or minus a reasonable laboratory working tolerance. The following tolerances shall be used as a guide for all classes of concrete except SCC produced in accordance with Section 603: Air Content, ± ½ percent; Consistency, ± ½ in. (± 12 mm) of slump; Yield, ± 2 percent.

4.4.1 For SCC produced in accordance with Section 603, testing shall begin at the time immediately after the mixing sequence is completed. This time shall be designated as T_0. Temperature, air content, consistency, T_{50}, VSI, passing ability, rapid assessment of static segregation resistance, segregation resistance, unit weight, and yield tests shall be conducted on these batches and shall be within the tolerances set forth in Table 603.6.2.1A.

Air Content, consistency, and passing ability tests shall be conducted every thirty minutes until either the air content falls below the target value by more than 1.5%, the slump flow falls below the target spread by more than 2.0 inches (50 mm), or the J-Ring value falls below the target value by more than 1.5 inches (38 mm). For each time of testing, these values shall be plotted versus time after batching. Linear interpolation shall be used to determine the exact time when either the air content falls below the target value by more than 1.5%, the slump flow falls below the target spread by more than 2.0 inches (50 mm), or the J-Ring value falls below the target value by more than 1.5 inches (38 mm). The elapsed time, after T_0, when this occurs shall be noted as the "Workable Period" and shall be recorded in Attachment 2 S-P. This workable period shall be used as the time frame in which the entire member shall be construction, reference Section 603.6.7.

4.5 When the properties of a concrete batch have been established within acceptable limits, seven ~~4~~6 by ~~8~~12 in. (100 by 200 mm) cylinders shall be made from each batch produced in Section ~~4~~3.3 (or ~~4~~3.3.1) and tested in compression at the following ages: one cylinder at age 24 hours ± 2 hours (the exact age to the nearest hour at time of test shall be noted on the report); one cylinder at age 3 days; one cylinder at age 7 days; one cylinder at age 14 days; and three cylinders at age 28 days. The values of the physical properties of each mix produced in Section ~~4~~3.3 (or ~~4~~3.3.1) shall be the average of the physical properties established in the first two mixes produced at the minimum cement factor, the average of the physical properties established in the two mixes produced at the minimum cement factor plus one bag of cement, and the physical properties of the fifth batch at the minimum cement factor and different water-cement ratio~~w/c~~. These values shall be listed in Attachment 3. 4 by 8 in. (100 by 200 mm)

cylinders shall be permitted for SCC produced in accordance with Section 603. The results of these tests shall be listed in Attachment 3 S-P.

~~4.5.1 For any class of concrete other than SCC produced in accordance with Section 603, if it is desired to use 4 by 8 in. (100 by 200 mm) cylinders as the basis for acceptance or early strength determination in the field, in accordance with Section 601.4.4, then seven 4 by 8 in. (100 by 200 mm) cylinders shall be fabricated and tested as outlined in Section 43.5 for the first two trial batches at the minimum cement factor in addition to the seven 6 by 12 in. (150 by 300 mm) cylinders.~~

~~4.5.1.1 If the average compressive strength of the six 28-day 4 by 8 in. (100 by 200 mm) cylinders for the batches at the minimum cement factor is not more than 10.0 percent greater than the average compressive strength of the six 28-day 6 by 12 in. (150 by 300 mm) cylinders for the batches at the minimum cement factor, then 4 by 8 in. (100 by 200 mm) cylinders will be permitted to be used in the field. Otherwise, any cylinders fabricated in the field for acceptance or early strength determination must be 6 by 12 in. (150 by 300 mm) cylinders.~~

~~4.5.1.2 The following formula shall be used during the mix design approval process to determine if the average compressive strength of the three 28-day 4 by 8 in. (100 by 200 mm) cylinders is greater than 110.0 percent of the average compressive strength of the three 28-day 6 by 12 in. (150 by 300 mm) cylinders:~~

~~If $\bar{X}_{4x8} > \bar{X}_{6x12} \times 1.10$, then 4 by 8 in. (100 by 200 mm) cylinders are not permitted to be used in the field.~~

~~Where:~~
~~$\bar{X}_{6\times12}$ = Average 28-day compressive strength of 6 by 12 in. (150 by 300 mm) cylinders.~~

~~$\bar{X}_{4\times8}$ = Average 28-day compressive strength of 4 by 8 in. (100 by 200 mm) cylinders.~~

~~4.5.2~~4.5.1 The following properties of each batch of concrete produced in Sections ~~43~~.3 (or ~~43~~.3.1) shall be listed in Attachment 2: A-bar of total solids, consistency, air content, unit weight and yield, water-cement ratio, and temperature. The following properties of each batch of concrete produced in Sections ~~43~~.3 (or ~~43~~.3.1) shall be listed in Attachment 2 OAG, for those mix designs which meet the requirements for optimized aggregate gradation in Section 601.3.2.4.1: optimized aggregate gradation (OAG) worksheet, consistency, air content, unit weight and yield, water-cement ratio, and temperature.

~~4.5.3~~4.5.2 For SCC produced in accordance with Section 603, from one of the SCC trial batches required in 603.6.2.1, six more cylinders shall be fabricated for modulus of elasticity testing, eight more cylinders shall be fabricated for creep testing, three specimens shall be fabricated for length change testing, three specimens shall be fabricated for rapid chloride permeability testing, and three specimens shall be fabricated for freeze-thaw resistance testing. Casting of all Class S-P specimens to be used for hardened concrete

property testing shall be done in one lift without rodding or vibration. Curing and testing parameters for these specimens are noted in Section 603.6.2.1. These results of these tests shall be listed in Attachment 2 S-P.

Also, from one of the SCC trial batches required in 603.6.2.1, a prestressing strand bond strength test, in accordance with MP 603.06.20, shall be conducted, and the result shall be recorded in Attachment 3 S-P.

4.6 Mix design submittal packages including Attachments 1, 2, 3 and 6-ASR, A-bar worksheet(s), and raw data pertaining to the compressive strength and rapid chloride permeability tests shall be submitted to the WVDOH District Materials Section in which the Source (i.e. Concrete Batch Plant) is located. Mix design submittal packages, for those mix designs which meet the requirements for optimized aggregate gradation in Section 601.3.2.4.1 including Attachments 1 OAG, 2 OAG, 3 OAG and 6-ASR OAG, optimized aggregate gradation worksheet, and raw data pertaining to the compressive strength and rapid chloride permeability tests shall be submitted to the WVDOH District Materials Section in which the Source (i.e. Concrete Batch Plant) is located. These submittal packages may be submitted to the District electronically, and MCS&T Division may be copied on the electronic submittal also, as this may expedite the process. All mix concrete mix designs, except SCC mix designs, that are sent to MCS&T Division shall be submitted electronically to the following e-mail address: DOHConcreteMixDesign@wv.gov.

SCC mix designs, produced in accordance with Section 603, shall be submitted directly to MCS&T Division and shall include Attachments 1 S-P, 2 S-P, 3 S-P and 6-ASR.

4.6.1 In the case of mix design submittals for a single mix design which is used at multiple concrete plants, one submittal package (for the same design) may be used for multiple concrete plants. All ~~of the~~the concrete plants at which the mix design is being used shall be noted on Attachment 1, and each WVDOH Materials Section in which the concrete plants are located shall be included on the submittal. Attachment 1 OAG shall be used in leu of Attachment 1, for those mix designs which meet the requirements for optimized aggregate gradation in Section 601.3.2.4.1. This submittal will be reviewed by MCS&T Division, and if the mix design is approved, a separate lab number will be assigned to the mix design for each location at which it is approved.

5. ACCEPTANCE CRITERIA

5.1 If the standard deviation of the concrete plant production has been established, the mix design must have an average laboratory compressive strength, based on the 4 by ~~8 6 by 12~~ in. (100 by 200 mm) cylinder results equal to or greater than the "Design 28-Day Compressive Strength" required by the specifications plus two times the standard deviation. Data used to establish the standard deviation shall be taken from the Division's data bank and shall consist of at least 30 individual test results obtained from recent plant production of concrete with proportions similar to the design mix.

Information relative to the statistics for a particular plant will be furnished to the Contractor upon request.

5.2 If the standard deviation of the concrete plant production has not been established, or in the case of mobile mixer units, the mix design must have an average laboratory compressive strength equal to or greater than the "Design 28-Day Compressive Strength" plus 1,300 psi (9 MPa). The Division shall note the Plant Compressive Strength Standard Deviation, at the time of the mix design approval, in Attachment 3.

5.2.1 Note that the "Design 28-Day Compressive Strength" required by the Specifications is the minimum field strength sought in ~~6 by 12 in. (150 by 300 mm) or~~ 4 by 8 in. (100 by 200 mm) cylinders representing the concrete being placed in the ~~field, and~~field and should not be confused with the laboratory compressive strengths required for design. The compressive strength, required in Section 54.1 or 54.2 for mix design approval, shall be noted as the “Mix Design Approval Strength”.

~~4.3~~5.3 SCC mix designs, produced in accordance with Section 603, shall meet the mix design requirements as set forth in this MP and not the ACI mix requirements as specified in Section 603.6.2, ~~with the exception of~~except for the compressive strength “overdesign” requirements. SCC mix designs, produced in accordance with Section 603, shall meet the compressive strength “overdesign” requirements of ACI 301 Chapter 4.

6. PROPORTIONING DESIGN MIX

6.1 If the average of the batches produced in Section ~~4~~3.3 (or ~~4~~3.3.1), with the specified minimum cement factor, satisfies the acceptance criteria of Section 54, then it will be considered acceptable as the mix design for the class of concrete being designed.

6.2 If the average of the batches produced in Section ~~4~~3.3 with the specified minimum cement factor does not satisfy the acceptance criteria of Section 54, then a linear compressive strength-cement factor relationship will be established using the average 28-day compressive strength, based on the ~~4~~6 by ~~8~~12 in. (100 by 200 mm) cylinder results, of the batches with the minimum cement factor and the average 28-day compressive strength of the batches with the minimum cement factor plus one bag of cement. This relationship will be interpolated to determine a cement factor [to the nearest 1 lb. (0.45 kg)] which would cause the acceptance criteria to be satisfied. This interpolated cement factor will be considered acceptable for proportioning the mix design for the class of concrete being designed.

6.2.1 If neither of the averages of the batches produced in Section ~~4~~3.3 satisfies the acceptance criteria of Section 54, then that proposed mix design cannot be considered as acceptable, and a new mix design will be required.

6.2.2 Section ~~6~~5.2 does not apply to Class H concrete, specialized overlay concrete, and SCC produced in accordance with Section 603. Therefore, if the average compressive strength of the Class H, specialized overlay concrete batches, or SCC produced in accordance with Section 603, in Section ~~4~~3.3.1 does not satisfy the acceptance criteria

of Section 4, then that proposed mix design cannot be considered as acceptable, and a new mix design will be required.

6.3 The submittal for a proposed mix design shall include completed copies of Attachments 1 and 3. It shall also include a completed copy of Attachment 2 for each of the batches at the minimum cement factor. It shall also include a completed copy of Attachment 2 for each of the batches at the minimum cement factor plus one bag of cement, and a completed copy of Attachment 2 for the batch at the minimum cement factor with a different water-cement~~w/c~~ ratio~~-~~(i.e. fifth batch), when applicable. Attachments 1 OAG, 2 OAG, and 3 OAG shall be used in leu of Attachments 1, 2, and 3 respectively, for those mix designs which meet the requirements for optimized aggregate gradation in Section 601.3.2.4.1. All pertinent information supporting these attachments and pertaining to the information in them shall be submitted also. Upon approval of the subject mix design, the Division shall include a copy of Attachment 4 or 5 in ProjectWise, along with the approved mix design.

SCC mix design submittals, produced in accordance with Section 603, shall include completed copies of Attachments 1 S-P and 3 S-P. They shall also include a completed copy of Attachment 2 S-P for ~~both of the batches~~both batches produced in the mix design. All pertinent information supporting these attachments and pertaining to the information in them, including the test results pertaining to the workable period as outlined in Section 4~~3~~.4.1, shall be submitted also.

6.4 Although the Contractor has satisfied all requirements for concrete design and a mix design has been approved by the Engineer, the Contractor may still be required to adjust the approved mix design in the field as necessary to maintain all properties within the limits of the specification. These field adjustments shall include increasing the cement factor above the value specified in the approved mix design if such an adjustment would be necessary to cause the strength of the field placed concrete to conform to the requirements of the specification. These field adjustments shall also include the addition of water in the field for slump adjustment. The procedure for determining the maximum amount of water, which may be added to an approved concrete mix in the field, is outlined in the following sections.

6.4.1 Using the three different water-cement ratios from the batches produced in Section 4~~3~~.3 and the corresponding 28-day compressive strengths from Section 4~~3~~.5, the Excel file in Attachment 4 of this MP shall be used to create a best-fit line through these three points.

6.4.2 The water-cement ratio ~~(w/c)~~ that corresponds to the Mix Design Approval Strength, as outlined in Section 5.1 or 5.2, shall be determined from the Excel file in Attachment 4 of this MP. The maximum ~~water,~~water that is allowed to be added to an approved concrete mix in the field, shall be the amount of water, which corresponds to that water-cement ratio~~w/c~~ (i.e. the water-cement ratio~~w/c~~ that corresponds to the Mix Design Approval Strength). This maximum water amount shall be shown in Attachment 4. However, under no circumstance, shall the total amount of water in a mix, including field additions, exceed the amount of water corresponding to the maximum water

content noted in Table 601.3.1.1A (i.e. under no circumstances shall the water-cement ratio~~w/c~~ in Table 601.3.1.1A be exceeded).

6.4.3 For existing approved mix designs, for which there are only two different water-cement ratios, Attachment 5 shall be used to determine the maximum water, that is allowed to be added to that approved concrete mix in the field. Attachment 4 shall be used to determine the maximum water, that can be added in the field, for all other mixes.

6.4.4 For Class H mixes and concrete mixes for specialized overlays, as set forth in Section 679 of the specifications, no additional water beyond what was used in the approved mix designs shall be added in the field.

7. MIX DESIGN RE-APPROVAL

7.1 Each mix design shall remain approved for a period of three years from the date of approval, after which the mix design may be re-approved for an additional three years based on re-qualification tests outlined in Section 7~~6~~.2 and conducted at the Concrete Producer or a Division Approved Laboratory, meeting the requirements of Section 4~~3~~.1. If a mix design is used often enough (at least fifteen air content, slump, and compressive strength tests for the previous ~~three year~~three-year period), the re-qualification tests shall not be required, and the mix design may be re-approved based on the actual field tests performed during the previous ~~three year~~three-year period.

Re-approval of SCC mix designs, produced in accordance with Section 603, shall be re-approved as outlined in Section 603.6.2.

The mix design shall meet the ASR requirements in Section 601.3.1.1 according to the most recent aggregate reactivity, alkali content of cement and SCM, and CaO content of fly ash from the Division Approved Products Lists APLs. A mix design using an SCM replacement level below that required in Table 601.3.1.1.1.4.2b of the Specifications may evaluate the effectiveness of SCM to prevent deleterious expansion as described in Section 601.3.1.1.1.6 to meet the ASR requirements.

7.1.1 When a Concrete Producer desires to have a mix design re-approved, he shall submit a written request to the WVDOH District Materials Section in which that plant is located noting such and including the current mix design lab numbers to be evaluated. The WVDOH District Materials personnel shall verify ~~whether or not~~if there are a minimum of fifteen air content, slump, and compressive strength tests for that mix design in the previous three-year period.

7.1.2 If there are at least fifteen air content, slump, and compressive strength tests for that mix design in the previous ~~three year~~three-year period, then the WVDOH District Materials personnel shall notify MCS&T Division that the subject mix design may be re-approved based on the criteria in Section 7~~6~~.1. MCS&T Division shall then update the approval date of the subject mix design.

7.1.3 If there are not at least fifteen air content, slump, and compressive strength tests for that mix design in the previous three-year period, then the WVDOH District Materials personnel shall notify the Concrete Producer that the subject mix design must be re-approved as outlined in Section 76.2.

7.2 The following procedures shall be used to re-approve concrete mix designs that do not meet the criteria in Section 76.1.

7.2.1 The Concrete Producer shall provide a statement to the Engineer verifying that all sources of materials used in the approved mix designs are unchanged and the same as used in the original approved mix design. All materials shall meet the applicable sections of the specifications. The original mix design shall meet the ASR requirements in Section 601.3.1.1 according to most recent aggregate reactivity, alkali content of cement and SCM, and CaO of fly ash from the Division APLs.

7.2.2 Coarse and fine aggregate samples shall be obtained at the Concrete Producer's facility in accordance with MP 700.00.06, and the following tests shall be conducted on those aggregate samples by a WVDOH certified Aggregate Inspector: specific gravity (both coarse and fine aggregate), combined A-bar of total solids, absorption (both coarse and fine aggregate), fineness modulus (fine aggregate), and unit weight (coarse aggregate). The results of these tests shall be used by a WVDOH certified PCC Technician at the Concrete Producer or a Division Approved Laboratory, to establish a new target A-bar for the mix design and, if necessary, to adjust any batch volumes. Combined aggregate gradation shall be conducted in leu of combined A-bar of total solids for those mix designs with the optimized aggregate gradation. The working range on each sieve from cumulative combined percent retained from aggregate gradation shall be in accordance with Table 601.3.2.4.1B from Section 601.3.2.4.1.

7.2.3 The Concrete Producer shall then, at the Producer's facility and in the presence of WVDOH District Materials personnel, produce a representative batch (acceptable to both the Producer and the WVDOH personnel) in accordance with Sections 601.6 and 601.7 of no less than 6 yd^3 (4.6 m^3) of the concrete mix subject for re-approval. This batch shall be tested for air content, slump, unit weight and yield. Also, three 46 by 812 in.–(1050 by 3200 mm) 28-day compressive strength specimens, and if applicable, two rapid chloride permeability specimens (each to be tested at an age of 90 days or earlier and the average result used) shall be fabricated and tested from this batch.

7.2.3.1 In lieu of the batch produced at the Producer's facility, as outlined in Section 6.2.3, a batch may be produced at a Division Approved Laboratory. This batch does not need to be witnessed by WVDOH personnel. The size of this batch shall be the same as the size of the batches produced for new laboratory mix designs. If there are any changes to either the coarse or fine aggregate, certified laboratory personnel may perform the testing and mix adjustments as stated in Section 76.2.2.

~~7.2.4 If a Concrete Producer desires to have the option of using 4 by 8 in. (100 by 200 mm) cylinders in the field for a mix design which has already been approved, then at the time of mix design re-approval, or at any time prior to that time three additional 6 by 12 in. (150 by 300 mm) 28-day compressive strength specimens and six 4 by 8 in.~~

~~(100 by 200 mm) 28-day compressive strength specimens shall be fabricated and tested from the batch produced in Section~~ 76.2.3 ~~or~~ 76.2.3.1. ~~The six 6 by 12 in. (150 by 300 mm) cylinders shall then be compared to the six 4 by 8 in. (100 by 200 mm) cylinders as outlined in Section~~ 43.5.1.1 ~~in order to~~to ~~determine if 4 by 8 in. (100 by 200 mm) cylinders will be permitted in the field for the subject mix design.~~

7.3 The Concrete Producer or Division Approved Laboratory Personnel shall record the results of all tests required and the proportions used in the batch outlined in Section 76.2 in the applicable sections of Attachments 1, 2, and 3. Attachments 1 OAG, 2 OAG, and 3 OAG shall be used in leu of Attachments 1, 2, and 3 respectively, for those mix designs which meet the requirements for optimized aggregate gradation in Section 601.3.2.4.1. The Concrete Producer or Division Approved Laboratory Personnel shall then submit those attachments, along with the test data required in Section 76.2.2 to the WVDOH District Materials section, who will then forward them to MCS&T Division for evaluation. Based on these results, the existing mix design will either be re-approved (possibly with slight adjustments), or the current mix design will be considered to have expired, and a new mix design will be required. When a mix design is re-approved by MCS&T Division, the laboratory approval number for that mix shall not be changed, but the approval date (the "Date Sampled") shall be revised.

7.3.1 For mix design re-approval purposes, the compressive strength of the representative batch produced at the Producer, as outlined in Section 76.2.3, must meet or exceed the "Design ~~28-day~~28-day Compressive Strength" in Section 601.3, but it does not have to meet the "overdesign" acceptance criteria outlined in Section 54.

7.3.1.1 If a laboratory batch is produced in lieu of a batch at the Producer, as outlined in Section 76.2.3.1, then the compressive strength of that batch must have a compressive strength which exceeds the "Design 28-Day Compressive Strength" required by the specifications by the value (f'_{cr}) obtained from the formula below. The criteria used to establish the standard deviation is outlined in Section 54.1.

$$f'_{cr} = f'_c + \sigma$$

Where:
f'_{cr} = Required compressive strength of the batch produced in Section 76.2.3.1 (expressed in psi)
f'_c = Design 28-Day Compressive Strength (expressed in psi)
σ = Concrete Plant Standard Deviation (outlined in Section 54.1)

7.3.2 For mix design re-approval purposes, the average of the two rapid chloride permeability test results from the representative batch produced in Section 76.2.3 or 76.2.3.1 must be 1,000 coulombs or less in order for the mix design to be re-approved.

7.3.3 If a mix design has expired, it may still be used on projects which have started before the mix design expired. However, after its date of expiration, a mix design may not be used on any new projects; a new mix design shall be required for these projects.

8. CHANGING A COMPONENT MATERIAL USED IN A MIX DESIGN

8.1 Whenever more than one component material in an approved mix design is changed simultaneously, a new laboratory mix design, in accordance with Section 43 shall be required. This option is not permitted for SCC mix designs produced in accordance with Section 603.

8.1.1 There are circumstances when one component material in an approved mix design may be changed to another WVDOH approved component material without requiring a new laboratory mix design. Those circumstances, and the subsequent steps which must be taken in order forfor that component material change to be approved, are outlined in the following sections.

8.2 The changes, outlined below, to any of the following component materials are permitted provided the requirements in Section 87.3 are met. Only one component material may be changed at a time, otherwise a new laboratory mix design in accordance with Section 43 shall be required. When changing the type and/or source of any one component material, minor adjustments to the quantities of other component materials in the mix design are permitted, in order to maintain desired mix properties. When changing the type and/or source of any one component material, the mix design shall meet the ASR requirements in Section 601.3.1.1 according to the most recent aggregate reactivity, alkali content of cement and SCM, and CaO of fly ash from the APLs. ASTM C1567 testing in accordance with Section 601.3.1.1.1.6 may be used to evaluate the effectiveness of SCM to prevent deleterious expansion if the SCM minimum replacement requirements of Table 601.3.1.1.1.4.2b are not met.

8.2.1 Cement: The source of cement may be changed provided the requirements of Section 87.3 are met. A change from a Type I cement to a Type IL cement (or from a Type IL cement to a Type I cement) may also be considered a single component material change.

8.2.2 Supplementary Cementitious Material (SCM): The source and/or type of SCM may be changed provided the requirements of Section 87.3 are met.

8.2.3 Chemical Admixture: The source and/or type of any individual admixture (*i.e.*, air entraining, water reducing, or water-reducing and retarding, *etc.*) may be changed provided the requirements of Section 87.3 are met. If more than one admixture is used in a mix design, a change to an individual component material means a change in only one of those admixtures. If more than one admixture is used in a mix design, and a change to one of these admixtures is desired (a change to an individual component material), then the source of the new admixture must still be the same as the source of the rest of the admixtures in the mix (*i.e.*, water-reducing admixture A from Source X may be changed to water-reducing admixture B from Source X.)

8.2.4 Latex Admixture: The source of latex admixture may be changed provided the requirements of Section 87.3 are met.

8.2.5 Fine Aggregate: The source of fine aggregate may be changed provided the requirements of Section 87.3 are met. However, if the type of fine aggregate changes

(*i.e.*, silica sand to limestone sand or natural sand to manufactured sand), a new laboratory mix design in accordance with Section 3 shall be required.

8.2.6 Coarse Aggregate: The source of coarse aggregate may be changed provided the requirements of Section 87.3 are met. However, if the type or size of coarse aggregate changes (*i.e.,* river gravel to limestone or #57 limestone to #67 limestone), a new laboratory mix design in accordance with Section 43 shall be required.

8.3 When a change to any individual component material in an approved mix design, as outlined in Sections 87.1.1 and 87.2, is desired, the Concrete Producer shall, at the Producer's facility and in the presence of WVDOH District Materials personnel, produce two separate representative batches (acceptable to both the Producer and the WVDOH personnel) in accordance with Sections 601.6 and 601.7. Each of these batches shall be no less than 3 yd^3 (2.3 m^3), shall be batched at the target cement factor, and shall consist of the concrete mix with the proposed material change. The proportions for these batches shall be determined by a WVDOH certified PCC Technician.

8.3.1 If there is a change to either the coarse or fine aggregate, then a sample of the new material shall be obtained at the Concrete Producer's facility in accordance with MP 700.00.06, and the following tests shall be conducted by a WVDOH certified Aggregate Inspector on that aggregate sample: specific gravity, solid A-bar of the new material and A-bar of total solids, absorption, fineness modulus (fine aggregate), and unit weight (coarse aggregate). The results of these tests shall be used by a WVDOH certified PCC Technician at the Concrete Producer to establish a new target A-bar for the mix and, if necessary, to adjust any batch volumes. Combined aggregate gradation shall be conducted in leu of solid A-bar of the new material and A-bar of total solids for those mix designs with the optimized aggregate gradation. The results of these tests shall be used by a WVDOH certified PCC Technician at the Concrete Producer to establish a new target Combined % Retained for the mix, if necessary, to adjust any batch volumes.

8.3.2 In lieu of the two batches produced at the Producer's facility, as outlined in Section 87.3, two batches may be produced at a Division Approved Laboratory, meeting the requirements of Section 43.1. These batches do not need to be witnessed by WVDOH personnel. The sizes of these batches shall be the same as the size of the batches produced for new laboratory mix designs, and their proportions shall be determined by certified laboratory personnel. If there are any changes to either the coarse or fine aggregate, certified laboratory personnel may perform the testing and mix adjustments as stated in Section 87.3.1.

8.3.3 All of the information pertaining to the materials used in these batches shall be listed in Attachments 1, 2, 3 and 6-ASR as outlined in Section 43.2. Attachments 1 OAG, 2 OAG, and 3 OAG shall be used in leu of Attachments 1, 2, and 3 respectively, for those mix designs which meet the requirements for optimized aggregate gradation in Section 601.3.2.4.1.

8.3.4 Both batches of concrete shall be tested in the plastic state for air, consistency, and yield. Each batch shall be adjusted as necessary to produce a plastic concrete having an air content, consistency, and yield equal to the specified value plus or minus the following tolerances: Air content, ± 1 percent; Consistency, ± 1 in. (± 25 mm) of slump; Yield, ± 2 percent.

8.3.4.1 If laboratory batches are produced in lieu of batches at the Producer, as outlined in Section 87.3.2, then the batch tolerances specified in Section 43.4 shall apply.

8.3.5 When the properties of a concrete batch have been established within acceptable limits, 3 - 46 in by 812 in. (1050 by 3200 mm) cylinders shall be made from each batch produced in Section 87.3 and tested in compression at an age of 28 days. The values of the physical properties of this new mix design (with the component material change) shall be the average of the physical properties established in the two batches produced in Section 87.3. These values shall be listed in the column for the mix with the "Minimum Cement Factor" in Attachment 3. Attachment 3 OAG shall be used in leu of Attachment 3, for those mix designs which meet the requirements for optimized aggregate gradation in Section 601.3.2.4.1.

The following properties of each batch of concrete produced in Section 87.3 shall be listed in Attachment 2: A-bar of total solids, consistency, air content, unit weight and yield, water-cement ratio, and temperature. For those mix designs which meet the requirements for optimized aggregate gradation in Section 601.3.2.4.1, the following properties of each batch of concrete produced in Section 87.3 shall be listed in Attachment 2 OAG: optimized aggregate gradation (OAG) ~~worksheet, consistency~~worksheet, consistency, air content, unit weight and yield, water-cement ratio, and temperature.

8.4 When it is desired to change a component material in a mix which requires the rapid chloride permeability test (Class H concrete and specialized concrete overlays as outlined in Section 679), a minimum of one permeability specimen shall be fabricated from each of the batches produced in Section 87.3. The average value of these permeability specimens shall be no more than ten~~10~~ percent greater than the mix design permeability value, required in the applicable specification, when tested at the time frame specified in the applicable specification.

8.4.1 If laboratory batches are produced in lieu of batches at the Producer, as outlined in Section 87.3.2, then the average value of these permeability specimens shall be less than or equal to the mix design permeability value required in the applicable specification, when tested at the time frame specified in the applicable specification.

~~8.5 If 4 by 8 in. (100 by 200 mm) cylinders were approved for use with the mix design which was approved prior to the component material change, then 4 by 8 in. (100 by 200 mm) cylinders shall also be approved for use with the new mix (with the component material change) with no further testing required.~~

~~8.5.1 Otherwise, if it is desired to use 4 by 8 in. (100 by 200 mm) cylinders as the basis for acceptance or early strength determination in the field with the new mix (with the~~

~~component material change) then three 4 by 8 in. (100 by 200 mm) 28-day compressive strength specimens shall be fabricated and tested from each of the batches produced in Section 87.3. The six 6 by 12 in. (150 by 300 mm) cylinders from these batches shall then be compared to the six 4 by 8 in. (100 by 200 mm) cylinders from these batches as outlined in Sections 43.5.1.1 and 43.5.1.2 in order toto determine if 4 by 8 in. (100 by 200 mm) cylinders will be permitted in the field for the subject mix design.~~

~~8.6~~8.5 The average compressive strength of the two batches produced at the Producer in Section 87.3 must have an average compressive strength which exceeds the "Design 28-Day Compressive Strength" required by the specifications by the value (f'_{cr}) obtained from the formula below. The criteria used to establish the standard deviation is outlined in Section 54.1.

$$f'_{cr} = f'_c + 2.33\sigma - 500$$

Where:
f'_{cr} = Required average compressive strength of the batches produced in Section 87.3 (expressed in psi)
f'_c = Design 28-Day Compressive Strength (expressed in psi)
σ = Concrete Plant Standard Deviation (outlined in Section 4.1)

~~8.6.1~~8.5.1 If laboratory batches are produced in lieu of batches at the Producer, as outlined in Section 87.3.2, then the average compressive strength of these batches must have an average compressive strength which exceeds the "Design 28-Day Compressive Strength" required by the specifications by the value (f'_{cr}) obtained from the formula below. The criteria used to establish the standard deviation is outlined in Section 54.1.

$$f'_{cr} = f'_c + 2\sigma$$

~~8.6.2~~8.5.2 If the average compressive strength of the two batches produced in Section 87.3 (f'_{cr}) is less than the "Design 28-Day Compressive Strength" (f'_c) required by the specifications, the new mix (with the component material change) cannot be considered as acceptable, unless the requirements of Section 87.7 are met.

~~8.7~~8.6 It is not required, but if the Concrete Producer desires, two additional separate batches may be produced, at the same time that the two batches in Section 87.3 are being produced. These two additional batches shall be acceptable to both the Producer and the WVDOH ~~personnel, and~~personnel and shall be produced in accordance with Sections 601.6 and 601.7. Each of these batches shall be no less than 3 yd^3 (2.3 m^3), shall be batched at the target cement factor plus one bag of cement [94 lb. (42.6 kg)], and shall consist of the concrete mix with the proposed material change.

~~8.7.1~~8.6.1 In lieu of the two batches produced at the Producer's facility, as outlined in Section 87.7, two batches at the target cement factor plus one bag of cement [94 lb. (42.6 kg)] may be produced at a Division Approved Laboratory, meeting the requirements of Section 43.1. These batches, produced at a Division Approved

Laboratory, do not need to be witnessed by WVDOH personnel. The sizes of these batches shall be the same as the size of the batches produced for new laboratory mix designs, and their proportions shall be determined by certified laboratory personnel.

~~8.7.2~~8.6.2 Production of these two additional batches is not an option for Class H concrete or specialized overlay concrete.

~~8.7.3~~8.6.3 Both batches of concrete shall be tested in the plastic state for air, consistency, and yield. Each batch shall be adjusted as necessary to produce a plastic concrete having an air content, consistency, and yield equal to the specified value plus or minus the following tolerances: Air Content, ± 1 percent; Consistency, ± 1 in. (± 25 mm) of slump; Yield, ± 2 percent.

~~8.7.3.1~~8.6.3.1 If laboratory batches are produced in lieu of batches at the Producer, as outlined in Section ~~8~~7.7.1, then the batch tolerances specified in Section ~~4~~3.4 shall apply.

~~8.7.4~~8.6.4 When the properties of a concrete batch have been established within acceptable limits, three ~~4~~6 by ~~8~~12 in. (1050 by 3200 mm) cylinders shall be made from each batch produced in Section ~~8~~7.7 and tested in compression at an age of 28 days. The values of the physical properties of this new mix design (with the component material change) shall be the average of the physical properties established in the two batches produced in Section ~~8~~7.7. These values shall be listed in the column for the mix with the "Minimum Cement Factor + 1 Bag" in Attachment 3. Attachment 3 OAG shall be used in leu of Attachment 3, for those mix designs which meet the requirements for optimized aggregate gradation in Section 601.3.2.4.1.

The following properties of each batch of concrete produced in Section ~~8~~7.7 shall be listed in Attachment 2: A-bar of total solids, consistency, air content, unit weight and yield, water-cement ratio, and temperature. For those mix designs which meet the requirements for optimized aggregate gradation in Section 601.3.2.4.1, the following properties of each batch of concrete produced in Section ~~8~~7.7 shall be listed in Attachment 2 OAG: optimized aggregate gradation (OAG) worksheet, consistency, air content, unit weight and yield, water-cement ratio, and temperature.

~~8.7.5~~8.6.5 If the average of the batches produced in Section ~~8~~7.3, with the specified target cement factor, does not satisfy the acceptance criteria set forth in Section ~~8~~7.6, then a linear compressive strength-cement factor relationship will be established using the average 28-day compressive strength [based on the ~~4~~6 by ~~8~~12 in. (1050 by 3200 mm) cylinder results] of the batches with the target cement factor (Section ~~8~~7.3) and the average 28-day compressive strength of the batches with the target cement factor plus one bag of cement (Section ~~8~~7.7). This relationship will be interpolated to determine a cement factor [to the nearest 1 lb. (0.45 kg)] which would cause the acceptance criteria to be satisfied. This interpolated cement factor will be considered acceptable for proportioning the design mix for the class of concrete being designed.

~~8.7.6~~8.6.6 If neither of the averages of the batches produced in Sections ~~8~~7.3 or ~~8~~7.7 satisfy the acceptance criteria in Section ~~8~~7.6, then that proposed component material change

cannot be considered as acceptable, and a new laboratory mix design will be required ~~in order to~~to make a change in component materials.

~~8.8~~8.7 The submittal for a proposed mix design change, as outlined in Section ~~8~~7, shall include completed copies of Attachments 1 and 3. It shall also include a completed copy of Attachment 2 for each of the batches produced in Section ~~8~~7. Attachments 1 OAG, 2 OAG, and 3 OAG shall be used in leu of Attachments 1, 2, and 3 respectively, for those mix designs which meet the requirements for optimized aggregate gradation in Section 601.3.2.4.1. All pertinent information supporting these attachments and pertaining to the information in them shall be submitted also. The lab numbers of the original mix design shall be included in the submittal. This new mix design shall be submitted to the District in the same manner as a normal mix design, and it shall then be forwarded to MCS&T Division for review and approval. If approved, a new lab number will be assigned to this mix design, and it shall, from that point forward be treated as a new mix design.

~~8.9~~8.8 No additional component material changes are permitted to this mix design (without a new laboratory mix design) until there are a minimum of 20 consecutive field test results, from this new mix design, which meet or exceed the design compressive strength requirements. Once there are 20 consecutive field test results, from this new mix design, which meet or exceed the design compressive strength requirements, this mix design is eligible for another component material change in accordance with Section ~~8~~7.

9. REPLACEMENT OF FLY ASH WITH CEMENT OR ANOTHER APPROVED SOURCE OF FLY ASH IN A MIX DESIGN

9.1 When an issue arises with a fly ash source or any other circumstance arises which causes a Concrete Producer to discontinue the use of a source of fly ash in an approved mix design, ~~,~~ an equal volume of cement, or an equal volume of fly ash from a different WVDOH approved fly ash source, may be substituted for the fly ash in that mix. This option is not permitted for SCC mix designs produced in accordance with Section 603.

9.1.1 This option of replacing fly ash with cement, or fly ash from a different approved source, does not apply to Class H concrete and concrete for specialized overlays, as set forth in Section 679 of the specifications.

9.2 The Concrete Producer shall notify the WVDOH District Materials personnel that it is desired to replace the fly ash in an approved concrete mix design with an equal volume of cement or fly ash from a different approved source. The WVDOH District Materials personnel may then approve this change on a temporary basis. Field test data, as outlined in the following sections, shall be used to approve this mix design change as a permanent new mix design. The change on a temporary basis and permanent new mix design shall meet the ASR requirements in Section 601.3.1.1 according to the most recent aggregate reactivity, alkali content of cement and SCM, CaO of fly ash from the APLs. Evaluation of the effectiveness of SCM in accordance with 601.3.1.1.1.6 may

be used if SCM replacement level does not meet the minimum replacement level described in Table 601.3.1.1.1.4.2b.

~~8.2.1~~9.2.1 When fly ash from a different approved source is being substituted for the existing source of fly ash in an approved mix design, tests to determine the air content of the plastic concrete shall be performed at the Concrete Producer's facility and at the job site, in the presence of WVDOH personnel, on at least the first three batches of concrete produced with this different approved source of fly ash.

9.3 Two batches of concrete, produced with this mix containing either all cement or fly ash from a different approved source shall then be tested in the presence of WVDOH District Materials personnel. Both of these batches of concrete shall be tested in the plastic state for air, consistency, and yield. Each batch shall have an air content, consistency, and yield equal to the specified value plus or minus the following tolerances: Air content, ± 1 percent; Consistency, ± 1 in. (± 25 mm) of slump; Yield, ± 2 percent.

9.3.1 Three ~~4~~6 by ~~8~~12 in. (1~~0~~50 by ~~3~~200 mm) cylinders shall be made from each batch outlined in Section ~~9~~8.3 and tested in compression at an age of 28 days. The values of the physical properties of this new mix design (with the fly ash replacement) shall be the average of the physical properties established in the two batches produced in Section ~~9~~8.3. These values shall be listed in the column for the mix with the "Minimum Cement Factor" in Attachment 3.

The following properties of each batch of concrete produced in Section ~~9~~8.3 shall be listed in Attachment 2: A-bar of total solids, consistency, air content, unit weight and & yield, water-cement ratio, and temperature. For those mix designs which meet the requirements for optimized aggregate gradation in Section 601.3.2.4.1, the following properties of each batch of concrete produced in Section ~~9~~8.3 shall be listed in Attachment 2 OAG: optimized aggregate gradation (OAG) worksheet, consistency, air content, unit weight & yield, water-cement ratio, and temperature.

9.4 The average compressive strength of the two batches produced in Section ~~9~~8.3 must have an average compressive strength, which exceeds the "Design 28-Day Compressive Strength" required by the specifications.

~~8.5~~9.5 The submittal for a mix design change from a mix containing fly ash to a mix using either only cement as the cementitious material or fly ash from a different approved source, as outlined in Section ~~9~~8, shall include completed copies of Attachments ~~1, 3~~1, 3 and 6-ASR. It shall also include a completed copy of Attachment 2 for each of the batches produced in Section ~~9~~8.3. Attachments 1 OAG, 2 OAG, and 3 OAG shall be used in leu of Attachments 1, 2, and 3 respectively, for those mix designs which meet the requirements for optimized aggregate gradation in Section 601.3.2.4.1. All pertinent information supporting these attachments and pertaining to the information in them shall be submitted also. This mix design change submittal shall be submitted to the District in the same manner as a normal mix design, and it shall then be forwarded to MCS&T Division for review and approval. A new lab number will be assigned to this mix design, and it shall, from that point forward be treated as a new mix design,

using only cement as the cementitious material, or using fly ash from a different approved source along with the original source of cement as the cementitious materials.

10. ADDITION OF HYDRATION CONTROL STABILIZING ADMIXTURES TO EXISTING MIX DESIGNS

9.110.1 Approved Hydration Control Stabilizing Admixtures, as specified in Section 707.15, designed to stop the hydration of cement in a concrete mix, enabling an extension to the allowable discharge time from a truck mixer as outlined in Section 601.7 of the Specifications may be added to an existing approved concrete mix design in accordance with the procedures outlined in this Section. This option is not permitted for SCC mix designs produced in accordance with Section 603.

9.210.2 Two separate batches of concrete shall be produced as outlined in Section 8.37.3. These concrete batches shall be tested as outlined in Sections 8.37.3 and 8.47.4.

9.2.110.2.1 Additional testing, as outlined in the second, third, and fourth paragraphs of Section 707.15.2.1, shall also be performed on one of the batches produced in Section 9.2 ~~in order to~~to verify that the allowable concrete discharge time may be extended.

9.310.3 If the requirements set forth in Section 8.67.6 are met, then the procedures set forth in Sections 8.87.8 and 8.97.9 shall be followed, and the existing mix shall be approved for use with the hydration control stabilizing admixture, and a new lab number will be assigned to this mix design.

9.410.4 No additional changes to the existing mix design are permitted at the time that these concrete batches are being produced for the acceptance of the addition of the hydration control stabilizing admixture to the existing mix design.

Ronald L. Stanevich, P.E.
Director
Materials Control, Soils and Testing Division

RLS:Mtd

ATTACHMENTS

MP 711.03.23
SUPERSEDES: MAY 2020
REVISED: OCTOBER 2021
ATTACHMENT 1

Producer/ Supplier:		Producer/Supplier Code:	
Location:			
Class of Concrete:		SM Material Code:	
		AWP Material Code:	
Design Laboratory:		Date:	

Cementitious Material Data			
Data	Cement	Supplementary Cementitious Material (SCM) 1	Supplementary Cementitious Material (SCM) 2
Name			
Type			
SM Material Code			
AWP Material Code			
Source			
Location			
Producer/Supplier Code:			
Specific Gravity			

Admixture Data				
Data	Air Entrainment	Additional Admixture 1	Additional Admixture 2	Additional Admixture 3
Name				
Type				
SM Material Code				
AWP Material Code				
Source				
Location				
Producer/Supplier Code:				

Aggregate Data		
Data	Coarse Aggregate	Fine Aggregate
Class/Size		
Type		
SM Material Code		
AWP Material Code		
Source		
Location		
Producer/Supplier Code:		
Specific Gravity		
A-Bar		
Absorption		
Fineness Modulus		
Unit Weight		

MP 711.03.23
SUPERSEDES: MAY 2020
REVISED: OCTOBER 2021
ATTACHMENT 2

Source: _____
Source Location: _____
Design Laboratory: _____
Class of Concrete: _____
Date: _____

Check The Appropriate Box For Designated Batch:	Minimum Cement Factor		Mininimum Cement Factor + 1 Bag		Minimum Cement Factor with Different w/c	Additional Batch
	Batch 1	Batch 2	Batch 1	Batch 2		

Material	Mass	Units	Volume		Units
Cement		lb (kg)			ft^3 (m^3)
SCM 1		lb (kg)			ft^3 (m^3)
SCM 2		lb (kg)			ft^3 (m^3)
Latex Admixture		lb (kg)	gal (L)		ft^3 (m^3)
Water		lb (kg)	gal (L)		ft^3 (m^3)
Air Content, by volume		%			ft^3 (m^3)
Coarse Aggregate		lb (kg)			ft^3 (m^3)
Fine Aggregate		lb (kg)			ft^3 (m^3)
Total		lb (kg)			ft^3 (m^3)
Air Entrain. Admixture		oz/Cwt (mL/100kg)			fl. oz. (mL)
Chemical Admixture 1		oz/Cwt (mL/100kg)			fl. oz. (mL)
Chemical Admixture 2		oz/Cwt (mL/100kg)			fl. oz. (mL)
Chemical Admixture 3		oz/Cwt (mL/100kg)			fl. oz. (mL)

Mixture Test Data							
$\bar{A}$ Total Solids	W/C Ratio	Cement Factor (ft^3)	Temperature	Consistency	Air Content	Unit Weight	Yield

Compressive Stength, psi (MPa)		
Specified Test Age:	Actual Test Age (hours)	4" x 8" (100 x 200 mm) Strengths
24 ± 2 Hours		
3 Days		
7 Days		
14 Days		
28 Days		
28 Days		
28 Days		
Avg. 28 Day Strength		#DIV/0!

Rapid Chloride Permeability Testing (When Applicable)		
Method of Curing (Check Applicable Box)	Standard	Accelerated
	Age at Time of Test (Days)	Total Adjusted Charge Passed (Coulombs)
Test 1		
Test 2		
Average		#DIV/0!

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SUPERSEDES: MAY 2020
REVISED: OCTOBER 2021
ATTACHMENT 3

SUMMARY

Source: _____

Source Location: _____

Design Laboratory: _____

Class of Concrete: _____

Corresponding Design 28-day Compressive Strength from Table 601.3.1A (psi): _____

Corresponding Maximum Water Content from Table 601.3.1A: _____

Date: _____

	Minimum Cement Factor		Minimum Cement Factor + 1 Bag		Minimum Cement Factor with Different w/c	
Material	Mass	Units	Mass	Units	Mass	Units
Cement		lb (kg)		lb (kg)		lb (kg)
SCM 1		lb (kg)		lb (kg)		lb (kg)
SCM 2		lb (kg)		lb (kg)		lb (kg)
Water		lb (kg)		lb (kg)		lb (kg)
Coarse Aggregate		lb (kg)		lb (kg)		lb (kg)
Fine Aggregate		lb (kg)		lb (kg)		lb (kg)
Total		lb (kg)		lb (kg)		lb (kg)
Air Entrain. Admixture		oz/Cwt (mL/100kg)		oz/Cwt (mL/100kg)		oz/Cwt (mL/100kg)
Chemical Admixture 1		oz/Cwt (mL/100kg)		oz/Cwt (mL/100kg)		oz/Cwt (mL/100kg)
Chemical Admixture 2		oz/Cwt (mL/100kg)		oz/Cwt (mL/100kg)		oz/Cwt (mL/100kg)
Chemical Admixture 3		oz/Cwt (mL/100kg)		oz/Cwt (mL/100kg)		oz/Cwt (mL/100kg)
Total A-Bar Solids						
Water Cement Ratio						
Cement Factor		ft^3 (m^3)		ft^3 (m^3)		ft^3 (m^3)
Temperature		^OF (^OC)		^OF (^OC)		^OF (^OC)
Consistency		inches (mm)		inches (mm)		inches (mm)
Air Content		%		%		%
Unit Weight		lb/ft^3 (kg/m^3)		lb/ft^3 (kg/m^3)		lb/ft^3 (kg/m^3)
Yield		ft^3 (m^3)		ft^3 (m^3)		ft^3 (m^3)
Aggregate Correction Factor per AASHTO T 152		%		%		%

Compressive Strength, psi (Mpa)	Minimum Cement Factor Batch	Minimum Cement Factor + 1 Bag Batch	Minimum Cement Factor with Different w/c
1 Day			
3 Days			
7 Days			
14 Days			
28 Days			
28 Days			
28 Days			
Avg. 28 Day Strength	#DIV/0!	#DIV/0!	#DIV/0!
Plant Standard Deviation at time of Mix Design Approval (psi):			
Average Value of Rapid Chloride Permeability Test (Coulombs):			

MP 711.03.23
SUPERSEDES: MAY 2020
REVISED: OCTOBER 2021
ATTACHMENT 4

Fields will be Automatically Filled After Attachment 3 is Completed	28-day Compressive Strength (Known Y-Value)	Water/Cementitious Material Ratio (Known X-Value)
Average Strength of Two Batches at Target (Minimum) Cement Factor (from Field D49 in Attachment 3)	#DIV/0!	0
Average Strength of Two Batches at Target (Minimum) Cement Factor + 1 Bag (from Field H49 in Attachment 3)	#DIV/0!	0
Strength of Batch at Target (Minimum) Cement Factor but with Different w/c (from Field L49 in Attachment 3)	#DIV/0!	0
	Result of Best-Fit Line (Slope) #VALUE!	Result of Best-Fit Line (Y-Intercept) #VALUE!

Class of Concrete =	0
Maximum Water Content from Table 601.3.1A =	0
Target (Minimum) Cement Factor (lbs.) = (from Fields D19, D20, and D21 of Attachment 3)	0
Design Compressive Strength (psi) from Table 601.3.1A =	0
Plant Compressive Strength Standard Deviation (psi) =	0
Mix Design Approval Strength (psi) =	0
w/c that corresponds to the Mix Design Approval Strength =	#VALUE!
Maximum w/c Allowed in the Field =	**#VALUE!**
Total Maximum Pounds of Water Allowed in the Mix (Including Field Adjustments), at the Target (Minimum) Cement Factor) =	**#VALUE!**
Total Maximum Gallons of Water Allowed in the Mix (Including Field Adjustments), at the Target (Minimum) Cement Factor) =	**#VALUE!**

MP 711.03.23
SUPERSEDES: MAY 2020
REVISED: OCTOBER 2021
ATTACHMENT 5

Fields will be Automatically Filled After Attachment 3 is Completed	28-day Compressive Strength (Known Y-Value)	Water/Cementitious Material Ratio (Known X-Value)
Average Strength of Two Batches at Target (Minimum) Cement Factor (from Field D49 in Attachment 3)	#DIV/0!	0
Average Strength of Two Batches at Target (Minimum) Cement Factor + 1 Bag (from Field H49 in Attachment 3)	#DIV/0!	0
	Result of Best-Fit Line (Slope) #VALUE!	Result of Best-Fit Line (Y-Intercept) #VALUE!

Class of Concrete =	0
Maximum Water Content from Table 601.3.1A =	0
Target (Minimum) Cement Factor (lbs.) = (from Fields D19, D20, and D21 of Attachment 3)	0
Design Compressive Strength (psi) from Table 601.3.1A =	0
Plant Compressive Strength Standard Deviation (psi) =	0
Mix Design Approval Strength (psi) =	0
w/c that corresponds to the Mix Design Approval Strength =	#VALUE!
Maximum w/c Allowed in the Field =	**#VALUE!**
Total Maximum Pounds of Water Allowed in the Mix (Including Field Adjustments), at the Target (Minimum) Cement Factor) =	**#VALUE!**
Total Maximum Gallons of Water Allowed in the Mix (Including Field Adjustments), at the Target (Minimum) Cement Factor) =	**#VALUE!**

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REVISED: OCTOBER 2021
ATTACHMENT 6-ASR

Class of Concrete, Precast/Prestress Member	

Cementitious Material Data			
Data	Cement	Supplementary Cementitious Materials (SCM) 1	Supplementary Cementitious Materials (SCM) 2
Mass (lb/kg)			
Alklai Content (%)			
CaO (%)(Fly Ash Only)			

Aggregate Material Data		
Data	Reactivity	Most Reactivity
Coarse Aggregate		
Fine Aggregate		

1	Level of Prevention	If Level of Prevention is "V", stop here.

For Class H Concrete, Skip 2,3,4 and 5.

For Evaluation of the Effectiveness of SCM or/and Lithium Nitrate Admixture (ASTM C1567), skip 2,3,4, and 6. If concrete mix using a 100 percent lithium nitrate admixture dosage, skip 2,3,4,5, and 6.

2	Alkali Content of Concrete (Option 1)	0.00	lb/yd³ (kg/m³)
3	Replacement Level of SCM (Option 2)		%

4	For Prevention Level "Z" Only		
	Alkali Content of Concrete		%
	Replacement Level of SCM		%

5	Evaluation of the Effectiveness of SCM or/and Lithium Nitrate Admixture (ASTM C1567)		
	Data	Evaluation with Reactive Fine Aggregate	Evaluation with Reactive Coarse Aggregate
	Expansion results (%)		
	SCM (%)		
	Replacement of SCM in Mix Design (%)		
	Lithium Nitrate Admixture Dosage Rate (%)		

6	Option chosen from Specification Table 601.3.1C for Class H Concrete	

MP 711.03.23
SUPERSEDES: MAY 2020
REVISED: OCTOBER 2021
ATTACHMENT 1 S-P

Producer/ Supplier:		Producer/Supplier Code:	
Location:			
Class of Concrete:		SM Material Code:	
		AWP Material Code:	
Design Laboratory:		Date:	

Cementitious Material Data			
Data	Cement	Supplementary Cementitious Material (SCM) 1	Supplementary Cementitious Material (SCM) 2
Name			
Type			
SM Material Code			
AWP Material Code			
Source			
Location			
Producer/Supplier Code:			
Specific Gravity			

Admixture Data				
Data	Air Entrainment	Additional Admixture 1	Additional Admixture 2	Additional Admixture 3
Name				
Type				
SM Material Code				
AWP Material Code				
Source				
Location				
Producer/Supplier Code:				

Aggregate Data		
Data	Coarse Aggregate	Fine Aggregate
Class/Size		
Type		
SM Material Code		
AWP Material Code		
Source		
Location		
Producer/Supplier Code:		
Specific Gravity		
Absorption		
Fineness Modulus		
Unit Weight		

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ATTACHMENT 2 S-P

Source:
Source Location:
Design Laboratory:
Class of Concrete:
Date:

Check the Appropriate Box for the Designated Batch:	Batch 1	Batch 2	Additional Batch

Material	Mass	Units	Volume	Units
Cement		lb (kg)		ft^3 (m^3)
SCM 1		lb (kg)		ft^3 (m^3)
SCM 2		lb (kg)		ft^3 (m^3)
Water		lb (kg)	gal (L)	ft^3 (m^3)
Air Content, by volume		%		ft^3 (m^3)
Coarse Aggregate 1		lb (kg)		ft^3 (m^3)
Coarse Aggregate 2		lb (kg)		ft^3 (m^3)
Fine Aggregate		lb (kg)		ft^3 (m^3)
Total		lb (kg)		ft^3 (m^3)
Air Entrain. Admixture		oz/Cwt (mL/100kg)		fl. oz. (mL)
Chemical Admixture 1		oz/Cwt (mL/100kg)		fl. oz. (mL)
Chemical Admixture 2		oz/Cwt (mL/100kg)		fl. oz. (mL)
Chemical Admixture 3		oz/Cwt (mL/100kg)		fl. oz. (mL)

Mixture Test Data at T_0							
W/C Ratio	Cement Factor, ft^3 (m^3)	Concrete Temperature, °F (°C)	Slump Flow, in. (mm)	Air Content, %	Unit Weight, lb/ft^3 (kg/m^3)	Yield, ft^3 (m^3)	$T_{50,\ seconds}$
VSI	J-Ring, in. (mm)	Rpd. Asmnt. of Static Seg. Resist., in. (mm)	Segregation Resistance, %	Workable Period, minutes			

Compressive Strength Test, psi (Mpa)							
Test Age:	24 ± 2 hours	3 days	7 days	14 days	28 days	28 days	28 days
Actual Test Age (hours)							
Compressive Strength							
Average 28-day Compressive Strength:					#DIV/0!		

Modulus of Elasticity Test, psi (Mpa)						
Test Age:	3 days	7 days	14 days	28 days	28 days	28 days
Actual Test Age (hours)						
Modulus of Elasticity						
Average 28-day Modulus of Elasticity:				#DIV/0!		

Length Change (Shrinkage), % Length Change						
Test Age	Initial Reading	Reading at End of 28-day Curing Period	4 days after 28-day curing period	7 days after 28-day curing period	14 days after 28-day curing period	28 days after 28-day curing period
Specimen 1						
Specimen 2						
Specimen 3						
Average Length Change (Shrinkage) after 28-days of water curing and 28-days of Air Storage:						#DIV/0!

Rapid Chloride Permeability Testing		
	Age at Time of Test (days)	Total Adjusted Charge Passed (coulombs)
Specimen 1		
Specimen 2		
Specimen 3		
Average Total Charge Passed (coulombs):		#DIV/0!

Freeze-Thaw Resistance		
	# of Cycles Completed	Durability Factor
Specimen 1		
Specimen 2		
Specimen 3		
Average Durability Factor:		#DIV/0!

Creep Testing							
Age at Initial Loading (hours):		Comp. Str. Cylinder 1, psi (Mpa):		Comp. Str. Cylinder 2, psi (Mpa):		Initial Load, psi (Mpa):	
Initial Elastic Strain at Time of Initial Loading (Determined within 2 minutes after Initial Loading):							
	Loaded Cylinders - Total Strain	Control Cylinders - Drying Strain	Load Induced Strain	Load Induced Strain per Unit Stress	Creep Strain	Creep Strain per Unit Stress	Creep Coefficient
90 days After Initial Loading:							

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SUMMARY

Source: _____

Source Location: _____

Design Laboratory: _____

Class of Concrete: _____

Date: _____

	Mix Properties	
Material	Average Value from Two Trial Batches	Units
Cement		lb (kg)
SCM 1		lb (kg)
SCM 2		lb (kg)
Water	gal (L)	lb (kg)
Coarse Aggregate 1		lb (kg)
Coarse Aggregate 2		lb (kg)
Fine Aggregate		lb (kg)
Total Batch Weight		lb (kg)
Air Entrain. Admixture		oz/Cwt (mL/100kg)
Chemical Admixture 1		oz/Cwt (mL/100kg)
Chemical Admixture 2		oz/Cwt (mL/100kg)
Chemical Admixture 3		oz/Cwt (mL/100kg)
Water Cement Ratio		
Cement Factor		ft^3 (m^3)
Temperature		^OF (^OC)
Slump Flow		inches (mm)
Air Content		%
Unit Weight		lb/ft^3 (kg/m^3)
Yield		ft^3 (m^3)
T_{50}		seconds
VSI		
J-Ring		inches (mm)
Rapid Assessment of Static Segregation Resist.		inches (mm)
Segregation Resistance		%
Aggregate Correction Factor per AASHTO T 152		%

Compressive Strength, psi (Mpa)	Avg.Compressive Strength of both Trial Batches
24 ± 2 hours	
3 Days	
7 Days	
14 Days	
28 Days	
28 Days	
28 Days	
Avg. 28 Day Strength	#DIV/0!

Prestressing Strand Bond Strength Test (in accordance with MP 603.06.20) Check Applicable Box	
Pass:	
Fail:	

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Producer/ Supplier:		Producer/Supplier Code:	
Location:			
Class of Concrete:		SM Material Code:	
		AWP Material Code:	
Design Laboratory:		Date:	

Cementitious Material Data			
Data	Cement	Supplementary Cementitious Material (SCM) 1	Supplementary Cementitious Material (SCM) 2
Name			
Type			
SM Material Code			
AWP Material Code			
Source			
Location			
Producer/Supplier Code:			
Specific Gravity			

Admixture Data				
Data	Air Entrainment	Additional Admixture 1	Additional Admixture 2	Additional Admixture 3
Name				
Type				
SM Material Code				
AWP Material Code				
Source				
Location				
Producer/Supplier Code:				

Aggregate Data				
Data	Coarse Aggregate (I)	Coarse Aggregate (II)	Fine Aggregate (I)	Fine Aggregate (II)
Class/Size				
Type				
SM Material Code				
AWP Material Code				
Source				
Location				
Producer/Supplier Code:				
Specific Gravity				
Absorption				
Fineness Modulus				
Unit Weight				

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ATTACHMENT 2 OAG

Source:
Source Location:
Design Laboratory:
Class of Concrete:
Date:

Check The Appropriate Box For Designated Batch:	Minimum Cement Factor		Mininimum Cement Factor + 1 Bag		Minimum Cement Factor with Different w/c	Additional Batch
	Batch 1	Batch 2	Batch 1	Batch 2		

Material	Mass	Units	Volume		Units
Cement		lb (kg)			ft^3 (m^3)
SCM 1		lb (kg)			ft^3 (m^3)
SCM 2		lb (kg)			ft^3 (m^3)
Latex Admixture		lb (kg)	gal (L)		ft^3 (m^3)
Water		lb (kg)	gal (L)		ft^3 (m^3)
Air Content, by volume		%			ft^3 (m^3)
Coarse Aggregate (I)		lb (kg)			ft^3 (m^3)
Coarse Aggregate (II)		lb (kg)			ft^3 (m^3)
Fine Aggregate (I)		lb (kg)			ft^3 (m^3)
Fine Aggregate (II)		lb (kg)			ft^3 (m^3)
Total		lb (kg)			ft^3 (m^3)
Air Entrain. Admixture		oz/Cwt (mL/100kg)			fl. oz. (mL)
Chemical Admixture 1		oz/Cwt (mL/100kg)			fl. oz. (mL)
Chemical Admixture 2		oz/Cwt (mL/100kg)			fl. oz. (mL)
Chemical Admixture 3		oz/Cwt (mL/100kg)			fl. oz. (mL)

Mixture Test Data							
–	W/C Ratio	Cement Factor (ft^3)	Temperature	Consistency	Air Content	Unit Weight	Yield

Compressive Stength, psi (MPa)			
Specified Test Age:	Actual Test Age (hours)	4" x 8" (100 x 200 mm) Strengths	
24 ± 2 Hours			
3 Days			
7 Days			
14 Days			
28 Days			
28 Days			
28 Days			
Avg. 28 Day Strength		#DIV/0!	

Rapid Chloride Permeability Testing (When Applicable)		
Method of Curing (Check Applicable Box)	Standard	Accelerated
	Age at Time of Test (Days)	Total Adjusted Charge Passed (Coulombs)
Test 1		
Test 2		
Average		#DIV/0!

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ATTACHMENT 3 OAG

SUMMARY

Source: _____

Source Location: _____

Design Laboratory: _____

Class of Concrete: _____

Corresponding Design 28-day Compressive Strength from Table 601.3.1A (psi): _____

Corresponding Maximum Water Content from Table 601.3.1A: _____

Date: _____

	Minimum Cement Factor		Minimum Cement Factor + 1 Bag		Minimum Cement Factor with Different w/c	
Material	Mass	Units	Mass	Units	Mass	Units
Cement		lb (kg)		lb (kg)		lb (kg)
SCM 1		lb (kg)		lb (kg)		lb (kg)
SCM 2		lb (kg)		lb (kg)		lb (kg)
Water		lb (kg)		lb (kg)		lb (kg)
Coarse Aggregate (I)		lb (kg)		lb (kg)		lb (kg)
Coarse Aggregate (II)		lb (kg)		lb (kg)		lb (kg)
Fine Aggregate (I)		lb (kg)		lb (kg)		lb (kg)
Fine Aggregate (II)		lb (kg)		lb (kg)		lb (kg)
Total		lb (kg)		lb (kg)		lb (kg)
Air Entrain. Admixture		oz/Cwt (mL/100kg)		oz/Cwt (mL/100kg)		oz/Cwt (mL/100kg)
Chemical Admixture 1		oz/Cwt (mL/100kg)		oz/Cwt (mL/100kg)		oz/Cwt (mL/100kg)
Chemical Admixture 2		oz/Cwt (mL/100kg)		oz/Cwt (mL/100kg)		oz/Cwt (mL/100kg)
Chemical Admixture 3		oz/Cwt (mL/100kg)		oz/Cwt (mL/100kg)		oz/Cwt (mL/100kg)
Water Cement Ratio						
Cement Factor		ft^3 (m^3)		ft^3 (m^3)		ft^3 (m^3)
Temperature		^OF (^OC)		^OF (^OC)		^OF (^OC)
Consistency		inches (mm)		inches (mm)		inches (mm)
Air Content		%		%		%
Unit Weight		lb/ft^3 (kg/m^3)		lb/ft^3 (kg/m^3)		lb/ft^3 (kg/m^3)
Yield		ft^3 (m^3)		ft^3 (m^3)		ft^3 (m^3)
Aggregate Correction Factor per AASHTO T 152		%		%		%

Compressive Strength, psi (Mpa)	Minimum Cement Factor Batch	Minimum Cement Factor + 1 Bag Batch	Minimum Cement Factor with Different w/c
1 Day			
3 Days			
7 Days			
14 Days			
28 Days			
28 Days			
28 Days			
Avg. 28 Day Strength	#DIV/0!	#DIV/0!	#DIV/0!

Plant Standard Deviation at time of Mix Design Approval (psi): _____

Average Value of Rapid Chloride Permeability Test (Coulombs): _____

Cure Method: _____ Standard _____ Accelerated _____ Age (Days): _____

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ATTACHMENT 6-ASR OAG

Class of Concrete, Precast/Prestress Member	

Cementitious Material Data			
Data	Cement	Supplementary Cementitious Materials (SCM) 1	Supplementary Cementitious Materials (SCM) 2
Mass (lb/kg)			
Alklai Content (%)			
CaO (%)(Fly Ash Only)			

Aggregate Material Data		
Data	Reactivity	Most Reactivity
Coarse Aggregate (I)		
Coarse Aggregate (II)		
Fine Aggregate (I)		
Fine Aggregate (II)		

1	Level of Prevention		If Level of Prevention is "V", stop here.

For Class H Concrete, Skip 2,3,4 and 5.

For Evaluation of the Effectiveness of SCM or/and Lithium Nitrate Admixture (ASTM C1567), skip 2,3,4, and 6. If concrete mix using a 100 percent lithium nitrate admixture dosage, skip 2,3,4,5, and 6.

2	Alkali Content of Concrete (Option 1)	0.00	lb/yd³ (kg/m³)
3	Replacement Level of SCM (Option 2)		%

4	For Prevention Level "Z" Only		
	Alkali Content of Concrete		%
	Replacement Level of SCM		%

5	Evaluation of the Effectiveness of SCM or/and Lithium Nitrate Admixture (ASTM C1567)				
	Data	Fine Aggregate (I)	Fine Aggregate (II)	Coarse Aggregate (I)	Coarse Aggregate (II)
	Expansion results (%)				
	SCM (%)				
	Replacement of SCM in Mix Design (%)				
	Lithium Nitrate Ad. Dosage Rate (%)				

6	Option chosen from Specification Table 601.3.1C for Class H Concrete	

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
MATERIALS CONTROL, SOILS AND TESTING DIVISION

GENERAL INFORMATION GUIDE FOR TECHNICIAN AND INSPECTOR CERTIFICATION PROGRAM (TICP)

1. PURPOSE

1.1 The purpose of the West Virginia Division of Highways (WVDOH) Technician and Inspector Certification Program is to improve the quality assurance of embankments, subgrades, base course, asphalt and Portland cement concrete by the certification of industry and WVDOH. This procedure is to establish guidelines for this purpose.

2. GENERAL

2.1 It is the WVDOH's intent to conduct a cooperative program of training, study, and examination so that personnel of the producer, contractor, and the WVDOH will be able to better assure, by their increased technical knowledge, the level of quality required by the governing Specifications.

3. SCOPE

3.1 This procedure is applicable to all requirements, guidelines, and other support documents of the WVDOH that reference conditions, methods, and levels of qualification specific to the WVDOH Training and Certification Program.

4. POLICIES AND ADMINISTRATION

4.1 ~~Board of~~ Certification Board - The Certification Program will be carried out in accordance with general policy guidelines established or approved by the Chief Engineer. They will be advised by a Board composed of the following members:

1. Chief Engineer
2. ~~Human Resources Director~~Deputy General Counsel
3. Materials Control Soils and Testing (MCS&T)’s Director
4. Quality Assurance Training Program Administrator
5. Applicable MCS&T Supervisors

4.1.1 The Certification Board will meet upon call of the MCS&T’s Director.

~~4.2~~ Administration - The program will be administered by the Director of the MCS&T (hereafter referred to as "Director"), or their Designee. ~~The Director will have the assistance of an Implementation Committee appointed by the Chief Engineer as follows:~~

~~4.3 Quality Assurance Training Program Administrator~~

~~4.4 Applicable MCS&T Supervisors~~

~~4.5 A representative of the WVDOH Human Resources Division.~~

~~4.5.1 In addition, the Certification Board may jointly select representatives of producers and contractors to work with the Implementation Committee at such times and on such matters as the Director and the representatives mutually agree. These representatives shall not be candidates for certification.~~

~~4.5.2 The Implementation Committee will meet upon call of the Director, or person authorized by the Director. The board shall have a minimum of three (3) members in order to form a quorum for a meeting.~~

~~4.5.3~~4.1.2 The Program Administrator shall be appointed by the Director. The Program Administrator will be assigned to assist the Director in administering the program and to handle planning, administration, and coordinating functions as may be delegated within the scope of appropriate WVDOH directives.

5. REQUIREMENTS

5.1 Where applicable, quality control representatives of a contractor or producer will be certified in one (or more) of the certifications listed ~~in Section 6.0~~below, depending upon the individual's duties or responsibilities. Responsibilities and qualification requirements are listed in appropriate support documents such as Materials Procedures, Quality Control Plans and others.

5.2 For purposes of the WVDOH Quality Assurance Program, a non- WVDOH certified technician/Inspector represents the company of which he/she is a full-time employee on the WVDOH project, owner, or partner (as defined by the Federal Wage and Hour Legislation). If said company has subsidiary or affiliated organizations, each organization will be required to have its own certified Technicians/Inspectors where applicable unless the Chief Engineer makes an exception. Exceptions will be granted only when it can be proven that the certified Technician/Inspector actually performs the duties of the technician/inspector for all of the subsidiary or affiliated organizations.

5.3 Designated WVDOH personnel will be certified where applicable in one (or more) of the certifications listed ~~in Section 6.0~~in this document depending upon the individual's duties and responsibilities.

6. CERTIFICATION CLASSES

6.1 The TICP offers certification classes in the following disciplines:

1. Aggregate Technician
2. Aggregate Sampling Inspector
3. Soils & Aggregate Compaction Technician
4. Portland Cement Concrete Technician
5. Portland Cement Concrete Inspector
6. Asphalt Plant Technician
7. Asphalt Field & Compaction Technician
8. Radiation safety

EXCEPT AS NOTED HEREIN ALL CERTIFICATIONS ARE VALID FOR A THREE-YEAR PERIOD

~~5.4~~6.2 All certifications listed in the sections below require written examinations. Some of the listed certifications require a practical examination after successful completion of the written examination. It is the responsibility of the applicant to determine which certification is applicable to ~~his/her~~their assignment. Following is a description of the certifications listing relevant information about each:

~~5.5~~6.3 Aggregate Certifications

~~5.5.1~~6.3.1 Aggregate Sampling Inspector - The web-based examination for an Aggregate Sampling Inspector consists of the following areas:

1. Specifications
2. Sampling Fundamentals
3. Sampling Methods and Equipment
4. Gradations
5. T11 Wash Test

~~5.6~~6.4 The Aggregate Sampling Inspector requires the successful completion of an online examination. Certification as an Aggregate Sampling Inspector qualifies the employee, either Industry or Division, to perform sampling of aggregates relevant to the Quality Control Program or Acceptance Program respectively.

~~5.6.1~~6.4.1 Aggregate Technician - The written examination for an Aggregate Inspector consists of the following areas:

1. Aggregate Specifications and Procedures
2. Aggregate Fundamentals
3. Sampling, Control, and Inspection of Aggregates
4. Aggregate Testing

~~5.6.2~~6.4.2 After successful completion of the written examination, the applicant will be required to pass a practical examination consisting of ~~his/her~~ their demonstration of testing common to normal aggregate quality requirements. Certification as an Aggregate Inspector qualifies the employee, either Industry or Division, to perform sampling and/or

testing of aggregates relevant to the Quality Control Program or Acceptance Program respectively.

~~5.7~~6.5 Compaction Certifications

~~5.7.1~~6.5.1 Soils and Aggregate Compaction Inspector - The written examination for this class~~a Soils and Aggregate Compaction Inspector~~ consists of the following areas:

1. Specifications
2. Soil Compaction Test Procedures
3. Radiation Safety and Nuclear Gauge
4. Test Procedure Problems

~~5.7.2~~6.5.2 After successful completion of the written examination, the applicant will be required to pass a practical examination demonstrating ~~his/her~~their proficiency in using the testing equipment. Certification of the Soils and Aggregate Compaction Inspector qualifies the employee, either Industry or Division, to conduct tests on all Soil and Aggregate construction materials that require compaction testing.

~~5.8~~6.6 Concrete Certifications

~~5.8.1~~6.6.1 Concrete Technician - The written examination this class ~~for a Concrete Technician~~ consists of the following areas:

1. Specifications
2. Fundamentals
3. Sampling and Testing
4. Control and Inspection
5. Mix Proportioning and Adjustment

~~5.8.2~~6.6.2 The Concrete Technician requires only the successful completion of the written examination; no practical examination test is required. Certification of the Concrete Technician qualifies the employee, either Industry or Division, to make plant and mix adjustments, proportioning, and other duties.

~~5.8.3~~6.6.3 Concrete Inspector - The written examination for this class ~~a Concrete Inspector~~ consists of the following areas:

1. Fundamentals
2. Sampling and Testing
3. Control and Inspection
4. Specifications

6.6.4 After successful completion of the written examination, the applicant will be required to pass a practical examination demonstrating ~~his/her~~their proficiency in conducting tests common to concrete quality control. Certification as a Concrete Inspector qualifies the employee, either Industry or Division, to perform sampling and/or testing of concrete relevant to the Quality Control Program or Acceptance Program respectively.

6.6.5 American Concrete Institute (ACI) Field Testing Grade I certification will be accepted as a portion of the West Virginia PCC Inspector training. However, the applicant must pass

the online West Virginia PCC Inspector written certification test before a certification will be issued.

5.96.7 Asphalt ~~Mixture~~ Certifications

5.9.16.7.1 Asphalt Plant Technician - The written examination for ~~an Asphalt Plant Technician~~this class consists of the following areas:

1. Specifications
2. Fundamentals
3. Sampling and Testing
4. Control and Inspection
5. Mix Proportioning and Adjustment

5.9.26.7.2 After successful completion of the written examination, the applicant will be required to pass a practical examination demonstrating their proficiency in conducting tests common to Asphalt quality control. Certification of the Asphalt Technician qualifies the employee, either Industry or Division, to take asphalt mixture samples, perform quality control or quality assurance testing on plant produced asphalt mixtures, make plant and mix adjustments, aggregate proportioning, and other duties.

5.9.36.7.3 Asphalt Field and Compaction Technician (AFCT) ~~Asphalt Field Technician~~ The written examination for ~~an Asphalt Field Technician~~this class consists of the following areas:

1. Specifications
2. Compaction Test Procedures
3. Radiation Safety and Nuclear Gauge
4. Test Procedure Problems
5. Testing Forms

~~1. Specifications~~
~~2. Surface Preparation~~
~~3. Mix Delivery and Placement~~
~~4. Joint Construction~~
~~5. PWL~~
~~6. Asphalt Compaction~~

5.9.46.7.4 Successful completion of the written examination ~~and a practical examination test~~ is required. Technicians will have the option of either taking an exam with or without the nuclear gauge portion. ~~Certification~~ as an Asphalt Field Technician qualifies the employee, either Industry or Division, to oversee or inspect asphalt pavement construction. In addition, the class hand-out material is a valuable reference tool for each stage of the construction process. The required radiation safety training is included in this class and will certify attendees with a passing score to perform nuclear density testing on asphalt pavements.

~~5.9.4.1~~ Asphalt Field Technicians must also be evaluated by qualified District personnel on the first WVDOH paving project in which they perform this testing. The District personnel

will make the decision as to whether or not the technician is correctly conducting the nuclear density tests in accordance with the Specifications. The District will also complete an evaluation form and send it to the MCS&T for processing. A technician that does not demonstrate proper nuclear density testing techniques shall not be allowed to continue testing on the WVDOH project. They must be replaced by another qualified technician. Anyone who does not meet the evaluation standards must provide proof of additional WVDOH approved radiation safety training before another evaluation will be conducted.

~~5.9.5~~6.7.5 Inertial Profiler Operator- The written examination for the inertial profiler operator covers of the following areas:

1. WVDOH Specifications
2. AASHTO and ASTM Specifications
3. Knowledge of operation and analysis of collected data.

~~5.9.6~~6.7.6 This certification covers an employee of either a contractor, consultant, or DOH staff to operate a lightweight/low-speed and high-speed inertial profiler.

~~5.10~~6.8 Radiation Safety

~~5.10.1~~6.8.1 This certification is required by the Nuclear Regulatory Commission (NRC) before operating a portable nuclear gauge. The training consists of 3 - 4 hours classroom instruction and has a 25-50 question closed book exam. A minimum score of 70 percent is required for passing the course. The course and exam will cover the following areas:

1. Proper storage and security of portable nuclear gauges
2. Transportation of portable nuclear gauges
3. Personal safety while operating a portable nuclear gauge.

7. TESTING PROTOCL

7.1 TESTING PROTOCOL

7.1.1 The TICP has a testing protocol that must be followed. The protocol includes testing environment, time limits, proctoring exams, etc. The entire protocol will be covered with attendees prior to testing.

7.2 CLASS SUPPLY LIST

7.2.1 We recommend that participants bring the following items with them to the certification classes:

1. Laptop Computer or Tablet (Mandatory)
2. Photo ID
3. Current WV Specification book and the latest Supplemental to the Specification book. You will need this during the test. These are also available in printable PDF format on the WVDOH Webpage.[1]

[1] https://transportation.wv.gov/highways/contractadmin/specifications/Pages/default.aspx

4. Hand held calculator (No electronic devices other than a Hand held calculators are allowed to be used during testing.)
5. Hi-lighters
6. Sticky Notes
7. Ruler / Straight edge

7.3 Special needs and requests.

7.3.1 Applicants with special needs should notify the Quality Assurance Training Program Administrator prior to the class to ensure that the training location is prepared to accommodate their needs.

8. CERTIFICATION AND RE-CERTIFICATION

8.1 Certification

8.1.1 An individual must pass the examination in each level for which they are requesting certification. Unless otherwise noted, to pass the written examinations, the applicant must obtain a minimum score of 70 percent.

8.1.2 If an applicant fails to receive a minimum score of 70% on the first exam, they will be given another attempt at a later date to score a 70%. This second attempt shall be a subsequent, scheduled make-up exam. Failure to attend any examination counts as a failed exam.

8.1.3 Upon successfully completing the requirements for certification, applicants may print their certification card from the divisions Webpage. http://dotftp.wv.gov/materialsdir/

8.1.4 This certification is not transferable. A certification is valid for up to Three years and expires December 31, of the 3rd year of certification.

8.2 Re-Certification

8.2.1 The responsibility for obtaining re-certification shall lie with the certified individual.

8.2.1.1 Certification holders are responsible to ensure that their certifications stay current. The West Virginia Division of Highways will no longer mail reminder letters to certification holders.

8.2.2 The renewal of all certifications shall require a written exam and a hands-on practical exam, where applicable.

8.2.3 Applicants will be given two scheduled attempts to pass the recertification exam and one attempt to pass the practical exam (each, respectively). Any applicant that fails to acquire a minimum score of 70% on a recertification exam or who fails the subsequent practical exam will not have their certification renewed. The applicant will be required to take the respective certification classes at the next available time given by MCS&T.

8.2.4 Any failed recertification examination taken prior to the expiration date of the current certification, either practical or written will not result in termination of any current certification prior to the expiration date of that certification.

8.2.5 The certification holder is responsible updating their personal information on the online learning website[2].

8.2.6 If an applicant seeking recertification disagrees with a recertification decision, they may file a written appeal with the board.

8.3 If certification is not renewed by December 31, the Technician should take the class and shall take the full exam and practical at the next available offering.

9. RECIPROCAL CERTIFICATIONS

9.1 Acceptance of WVDOH Certifications by other state agencies is at the sole discretion of the other agency.

~~6.~~10. TRAINING

~~6.1~~10.1 Training - The Division of Highways, contractors, and producers may sponsor courses of instruction consisting of schools and seminars to help prepare personnel for certification under one or more of these certification programs. To the extent possible, these courses of instruction will be joint efforts of the industry and WVDOH. Nothing in this document shall be interpreted to prohibit any party from conducting courses of instruction for their personnel to assist in preparation for these exams.

~~6.2~~10.2 The purpose of the schools is to provide helpful information and instruction for people preparing to take the WVDOH Technician/Inspector examinations. These courses are designed to provide instruction for people with a basic foundation in the subject matter. Work experience in the subject matter is encouraged before attending classes.

~~7.~~11. EXAMINATIONS

~~7.1 Examinations, both written and practical, will be coordinated by MCS&T. The locations and dates of the examinations will be announced on the MCS&T's Webpage[3]. The examinations may be held on a regional basis when feasible. Most written examinations will be an "open book" type, with a time limit. Practical examinations require performance of the tests required by the Specifications for the material type involved.~~

~~7.2 To pass the written examinations, the applicant must obtain a score of at least 70 percent. The Inertial Profiler Operator exam requires a minimum of 75 percent to pass. The applicant will be allowed two attempts within a 12-month period to obtain a passing score per each certification class attended.~~

~~7.3 After the applicant passes the written examination, the applicant will have two attempts within a 12-month period to pass the practical exam. (Where applicable)~~

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[2] http://www.onlinelearning.wv.gov/student/home.html
[3] ~~http://transportation.wv.gov/highways/mcst/Pages/techcert.aspx~~

~~7.4 Certificate Non-Transferable - The status of the certification for a Technician or an Inspector is not transferable and is valid only for the quality control procedures designated by the bearer's certificate.~~

~~7.5 Revocation of Certificate - If at any time a WVDOH, contractor's, producer's, or supplier's Technician or Inspector is found to have altered or falsified test reports or is found to have improperly performed tests or reported their results, the individual's certification may be rendered invalid by the Chief Engineer upon recommendation of the Implementation Committee and/or the Board.~~

~~7.6~~11.1 Renewal and Certification – Certifications shall be renewed as required in ~~the Technician Inspector Certification Program (TICP) handbook~~this document. General guidance and information for renewal will be recommended by the Board as required by the Chief Engineer. All certifications shall terminate on December 31st of the year of expiration. There may be written, and practical examination required for recertification where applicable. ~~More recertification information can be found in the Technician Inspector Certification Program (TICP) handbook available on the MCS&T's Webpage.~~

~~7.6.1 The Implementation Committee or other designated party shall establish internal criteria for renewal. The Technician Certification Handbook with the current rules and requirements shall be posted on the MCS&T's Webpage.~~

~~7.6.2~~11.1.1 Upon obtaining renewal of certification, a renewal card may be printed from the MCS&T Webpage.

~~7.7~~11.2 For further information on classes, recertification, schedules, class calendars and other helpful information please visit the MCS&T's Webpage.

~~8.~~12. FUNCTIONS AND RESPONSIBILITIES

~~8.1~~12.1 Contractor or Producer - The producer and contractor will be responsible for product control of all materials during the handling, blending, and mixing operations. The contractor and producer also will be responsible for the formulation of a design mix that will be submitted to the Division for approval.

~~8.1.1~~12.1.1 Technician/Inspector - A Quality Control representative of a contractor or producer should be a certified Technician/Inspector as outlined in Section 5. and whose responsibilities may include such duties as proportioning and adjusting the mix, sampling and testing the product, and preparing control charts.

~~8.2~~12.2 The WVDOH - The WVDOH is responsible for all acceptance decisions.

~~8.2.1~~12.2.1 District Materials Supervisor - District Materials activities are the responsibility of the District Materials Supervisor.

12.2.2 Division Technicians and Inspectors – The WVDOH Technicians and Inspectors will be assigned as necessary to carry out the required acceptance decision activities. The WVDOH representatives will not issue instructions to the contractor or producer regarding process control activities. However, the WVDOH representatives have the responsibility to question, and where necessary to reject, any operation or sequence of operations, which are not performed in accordance with the contract documents.

~~9.~~13. REVOCATION OF CERTIFICATION

13.1 If at any time a WVDOH, contractor's, producer's, or supplier's Technician or Inspector is found to have altered or falsified test reports or is found to have improperly performed tests or reported their results, the individual's certification may be rendered invalid by the Chief Engineer upon recommendation of the Board.

~~9.1 The Certification Board grants certification upon satisfactory completion and maintenance of certain conditions and may be revoked upon any breach of these conditions.~~

~~9.2~~13.2 Generally, certifications may be revoked if in the opinion of the certifying authority, an individual has knowingly committed acts detrimental to the integrity of the Certification Program or transportation industry. Examples of situations that warrant revocation include, but are not limited to:

1. Deliberate falsification of field or quality control test results or records.
2. Deliberate falsification of calculations, test results or materials
3. Cheating on certification/re-certification exams.
4. Submittal of false information on certification applications.
5. Submitting trial mix mixture and/or calculations completed by someone other than the signatory, or knowingly supplying trial mix mixture and/or calculations for another individual's certification.

13.3 The Quality Assurance Training Program Administrator will take the lead in gathering facts and investigating any allegations which may require revocation of a certification. The review board will notify the individual in writing of intent to revoke certification(s).

14. APPEALING A DECISION

14.1 Any individual who disagrees with a decision by the Certification Board has 10 business days from the date of receipt of the notification to respond in writing to the board and present documentation to support their continued certification and/or request an opportunity for a meeting to present their case.

14.2 If the individual fails to respond within 10 days of receipt of the original notification of revocation letter, the revocation becomes final.

14.3 Not later than 20 business days after receiving a request for a meeting from the individual, the Certification Board will schedule a meeting in which the appellant can present their case. If the Certification Board was not persuaded by the documentation provided by the appellant and believes that revocation of the certification is warranted, the appellant may file a written appeal to the Chief Engineer for review. All information including any letter(s) of explanation from the appellant will accompany the documents submitted to the Chief Engineer. The board will mail the decision of the Chief Engineer to the appellant. The decision by the Chief Engineer is final.

15. THE LENGTH OF REVOCATION:

15.1 First Offense

15.1.1 This may include revocation of all certifications for up to one year. After the revocation period the individual may obtain recertification by passing respective certification exam and a practical (if applicable). If either exam is failed, the individual will be required to take the certification class before being permitted to test again. The individual will be required to retake and pass the written exam regardless of whether it was previously passed.

15.2 Second Offense

15.2.1 This may include revocation of all certifications for up to five years. There is also the possibility of demotion and reduced pay for WVDOH employees. After the revocation period the individual may obtain recertification by passing the respective certification exam and a practical (if applicable) at the discretion of the board. If either exam is failed, the individual will be required to take the certification class before being permitted to test again. The individual will be required to retake and pass the written exam regardless of whether it was previously passed.

15.3 Third Offense

15.3.1 This may include revocation of all certifications for life. There is also the possibility of termination, demotion and reduced pay for WVDOH employees.

16. CONTACT INFORMATION

16.1 If an applicant/technician/appellant has any questions about the DOH program or needs more information. Please contact: Qaschoolscoordinator@wv.gov

Ronald L. Stanevich, PE
Director
Materials Control, Soils & Testing Division

MP 106.03.50 Steward – Personnel, Payroll Section
RLS:Eh
~~ATTACHMENT~~

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
MATERIALS CONTROL, SOILS AND TESTING DIVISION

MATERIALS PROCEDURE

PROCEDURE FOR EVALUATING PRODUCTS FOR USE IN HIGHWAY CONSTRUCTION

1. SCOPE

1.1 New products are frequently presented to the Division by various manufacturers, suppliers and/or producers (MS&Ps) with a request that they be considered for use in our highway program. To facilitate handling of such requests in a uniform and expeditious manner, this Materials Procedure outlines the steps necessary for such product submittal and evaluation. This Procedure covers the addition of approved submitted products to the Division's Approved Product List (APL).

~~1.1~~1.2 This Materials Procedure outlines the review of materials for use outside of standard bid contract work. This applies to District Purchase Order Projects and outlines a path for the addition of materials to the Division's Qualified Purchase Order Materials (QPOMs).

2. REFERENCE DOCUMENTS

2.1 MP 106.00.03: Guidelines for Establishing and Maintaining Approved Product Lists of Materials, Systems and Sources.

2.2 MP 106.10.50: WVDOH Buy America Acceptance Guidelines.

3. DEFINITIONS

3.1 MCS&T Reviewing Entity: The applicable Section Supervisor at MCS&T who is responsible for the review and acceptance of a new product.

3.2 Non-MCS&T Reviewing Entity: A subject matter expert at a WVDOH division separate from MCS&T.

3.3 Project: For this Materials Procedure, this term means a traditional bid contract.

3.4 QPOM: Qualified Purchase Order Material.

3.5 QPOS: Qualified Purchase Order Submittal

~~3.2~~3.6 PO Project: Purchase Order Project.

4. SUBMISSION OF PRODUCT

4.1 Consideration for ~~new~~ product evaluation shall be requested through completion by the MS&Ps of WVDOH~~)~~ Form HL-468, "Preliminary Information for New Product Evaluation". Once completed, DOH Form HL-468 shall be submitted to the MCS&T~~)~~ via email to the New Products Evaluation email address: DOHNewProducts@wv.gov .

4.1.1 The HL-468 Form can be found on the MCS&T Division's Materials Procedures Webpage[1]. A sample of this form is shown in Attachment 1. An online form may also be used to meet this requirement.

5. REVIEW OF SUBMMITED PRODUCT

5.1 Upon receipt of the completed Form HL-468, the ~~Materials Control, Soils and Testing~~MCS&T Division shall distribute to applicable MCS&T Reviewing Entity for preliminary evaluation.

5.1.1 Within 30 calendar days of receipt, the MCS&T Reviewing Entity shall review the submittal in accordance with the applicable material requirements and decide if the product is acceptable.

5.1.2 This MCS&T entity shall ultimately be responsible for ~~the approving~~the review of the new product, though they may reach out to Non-MCS&T Reviewing Entities for additional approving criteria.

5.1.3 A Non-MCS&T Reviewing Entity shall be given 7 calendar days to review the submission before making a final decision. If the entity does not respond within that time, their affirmation for the approval will be assumed by the MCS&T Entity.

5.2 If the preliminary review indicates that the product may be accepted without further evaluation, the Product shall be considered accepted and added to the APL.

5.3 If the reviewing entity determines that the WVDOH does not currently have any specifications for the submitted product, ~~a "No-APL" letter shall be issued~~this product shall be classified as a QPOS. Further review shall be done to indicate if the QPOS performs as specified by the manufacturer. If this product meets those criteria, a QPOM letter shall be issued. The issuance of this letter does not mean the product cannot be used on a contract project, but rather, another acceptance method may be used to accept the material on those projects.

5.3.1 If a QPOS is submitted, has been tested by another entity and appears on the AASHTO Product Evaluation and Auditing Solutions UP3 portal, this testing data may be used to evaluate and approve the material for the QPOM list.

~~5.2.1~~5.3.2 If the review of the QPOS indicates that the product does not meet those criteria, a non-approval letter shall be issued.

~~5.3~~5.4 If the preliminary review indicates that additional information is needed, the MS&P shall be notified to submit additional information. This may include but not be limited to: samples, product specifications, certified test data, or product demonstrations. Product testing shall be coordinated by the MCS&T Division with the results of any further testing/evaluation being submitted to all appropriate evaluating parties. In the case where additional information has been requested or additional testing is required, the 30-day timeframe shall be reset to the date when the additional information is provided, or the testing has been completed.

~~5.3.1~~5.4.1 If the MS&P fails to submit the request information within 30-days, the reviewing entity may reject the request. Discretion may be given if the information request requires testing or evaluation that would exceed this time frame.

[1] https://transportation.wv.gov/highways/mcst/Pages/MP-100s.aspx

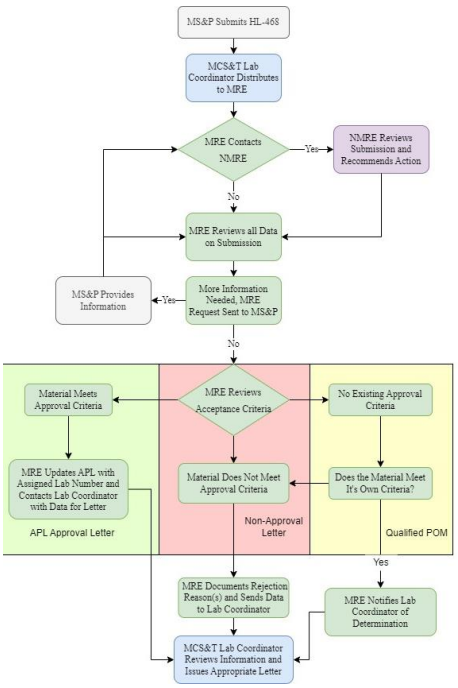
~~5.4~~5.5 If the evaluation indicates that the product is not acceptable, the Manufacturer/Supplier shall be notified by MCS&T. The MS&P shall not submit the same product for evaluation during the same calendar year.

~~5.5~~5.6 In the instance where a product has significant approved usage, the Director (or their Designee) of MCS&T may add a product to either a new or existing APL as per MP 106.00.03. If a product is a candidate for being added to the APL in this manner, the MCS&T Lab Coordinator shall contact the MS&P prior to the addition of the product to the APL to request completion of the required HL-468.

~~5.6~~5.7 Sample language for submission responses is shown in Attachment 2.

~~5.7~~5.8 A flow chart for the process is provided in Figure 1

Figure 1: Flow Chart for Approved Products List Process.



Key:
MRE: MCS&T Reviewing Entity
NMRE: Non-MCS&T, WVDOH Reviewing Entity
MS&P: Manufacturers, Suppliers and/or Producers

6. DOCUMENTATION OF ~~APPROVED~~ REVIEWED PRODUCTS

6.1 MCS&T shall maintain a directory on the Division's APL Webpage[2] listing all the current approved products.

6.1.1 Additionally, MCS&T may evaluate the product listing after one year to determine if the performance or functionality of the product/process meets the desired results,

[2] https://transportation.wv.gov/highways/mcst/Pages/APL_By_Number.aspx

goals, or intentions of the DOH. Any such evaluation may result in the product being removed from the Approved Product List.

6.2 All products which appear on the Division's APL are approved for use on PO Projects.

6.3 MCS&T shall maintain a directory on the Division's QPOM Webpage[3] listing all products in this category.

6.3.1 Additionally, MCS&T may evaluate the QPOM listing after one year to determine if the performance or functionality of the product/process meets the desired results, goals, or intentions of the DOH. Any such evaluation may result in the product being removed from the list.

7. REMOVAL OF PRODUCT FROM APL

7.1 If, at any time the reviewing entity determines that a previously approved product no longer meets the specifications, the product shall be removed from the MCS&T approved product list.

7.2 In this instance, the reviewing entity shall notify the MS&P.

8. BUY AMERICA

8.1 Each HL-468 submission must include whether the product meets the Federal and State Buy America requirements of Section 106.1 of the Specifications. If the MS&P indicates that their product meets Buy America requirements, the company shall produce a notarized Certificate of Compliance (CoC) signed by a company official with knowledge and authority to certify the product is compliant with applicable Buy America requirements.

8.1.1 In the event where the source of materials is changed and is no longer Buy America compliant, the MS&P must notify MCS&T in writing.

8.1.2 Under no circumstance shall the CoC described above be used for Buy America compliance on a project. Each project much submit a CoC as described in MP 106.10.50 "WVDOH Buy America Acceptance Guidelines."

8.2 A notarized CoC shall contain the following information:

8.2.1 Title: Certification of Buy America compliance for Source Approval.

8.2.2 The Name, Address and Contact Information for the Company.

8.2.3 The date of the application

8.2.4 A company statement that demonstrates compliance with Buy America.

8.2.5 The name of the material and/or material code reference in the CoC. This material name shall be a clear, common name of the material that is comparable to the AWP Material Name[4]. Part Numbers etc. may also be on the document if the company wishes.

8.2.6 Signature of the Company Official and date.

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[3] https://transportation.wv.gov/highways/mcst/Pages/APL_By_Number.aspx
[4] See "AWP Material Codes" at https://transportation.wv.gov/highways/mcst/Pages/tbox.aspx

8.3 The document must be notarized.

8.4 A sample of this CoC document is provided in Attachment 3.

_____
Ronald L. Stanevich, PE, Director
Materials Control, Soils & Testing Division

MP 106.00.02 Steward – Lab Support Section
RLS:B
ATTACHMENTS

WEST VIRGINIA DIVISION OF HIGHWAYS
PRELIMINARY INFORMATION FOR TECHNOLOGY/PRODUCT EVALUATION

1 TRADE NAME _____

MANUFACTURER _____

ADDRESS _____ APPLIED FOR? _____
City State Zip

2 REPRESENTATIVE _____

ADDRESS _____ PHONE _____
City State Zip

3 PRODUCT CATEGORY _____

4 EXISTING MATERIAL CODE: _____

5 BUY AMERICA BUILD AMERICA COMPLIANT? _____ NO _____ YES

5A IF 5 IS YES, SIGNED AND NOTARIZED CERTIFICATE OF COMPLIANCE PROVIDED IN ACCORDANCE WITH MP 106.00.02 _____ YES

6 RECOMMENDED USE - PRIMARY

7 RECOMMENDED USE - ALTERNATE

8 ANY KNOWN OR PROBABLE ADVERSE AFFECT ON PRESENTLY USED OR INSTALLED MATERIALS, STRUCTURES OR EQUIPMENT

9 PLAN DRAWING, PICTURE, OR SKETCH FURNISHED BY MANUFACTURER?

_____ YES _____ NO

10 MEETS REQUIREMENTS OF FOLLOWING SPECIFICATIONS

<-AASHTO <-ASTM <-FHWA <-OTHER

11 APPROVED FOR PROPOSED USE BY HIGHWAY AUTHORITIES OR OTHER AGENCIES IN THE FOLLOWING STATES

12 ARE INSTRUCTIONS OR DIRECTIONS FOR INSTALLATION, APPLICATION OR USE AVAILABLE?

_____ YES _____ NO

COPY ATTACHED: _____ YES _____ NO

13 WILL DEMONSTRATION BE PROVIDED? _____

14 ARE EDUCATIONAL COURSES OR VIDEOS AVAILABLE? _____ YES _____ NO

15 AVAILABILITY SEASONAL _____ NON-SEASONAL _____

DELIVERY AT SITE _____

AFTER RECEIPT OF ORDER.

ARE QUANTITIES LIMITED? _____ YES _____ NO

16 WILL FREE SAMPLE BE FURNISHED? _____ YES _____ NO

17 NEW MARKET? _____ YES _____ NO

ALTERNATE FOR WHICH EXISTING PRODUCT? _____

18 IS PRODUCT GUARANTEED? _____ YES _____ NO

CONDITIONS?

19 BACKGROUND DESCRIPTION OF COMPANY AND ITS PRODUCT

20 ADDITIONAL IMFORMATION

21 THE FOREGOING INFORMATION IS FURNISHED BY

NAME/TITLE: _____

EMAIL ADDRESS: _____

EMAIL COMPLETED FORMS TO:
DOHNewProducts@wv.gov

Attachment 2: Sample APL Response Language

1. NO APL RESPONSE:

The West Virginia Division of Highways (WVDOH) has evaluated your submittal of <Product Name>, <Product Material> as per Materials Procedure MP 106.00.02. This Division is not approving your material at this time for the Approved Product List; the WVDOH does not currently have a Specification or Materials Procedure which applies to your product.

This product has been evaluated and meets the provided criteria. This material has been added to the Qualified Purchase Order Material List, which is available on the Division's Webpage.

The inclusion of the material into a contract project's designs does not rest with this Division, though it may be specified at the discretion of WVDOH Designers or requested to be used by Contractors. If a contractor would propose to use it on a WVDOH project, or if the product is specified in Contract Documents, this product may be used, pending an individual evaluation on that project.

2. NON-APPROVAL RESPONSE (APL)

This material was submitted to the West Virginia Division of Highways for consideration in accordance with Materials Procedure 106.00.02.

This letter is to notify you that the Division has elected to not approve this product currently. As per Section <XXX> of the Standard Specifications Roads and Bridges, "<Description of Non-Approval Reason>."

3. NON-APPROVAL RESPONSE (QPOM)

This material was submitted to the West Virginia Division of Highways for consideration in accordance with Materials Procedure 106.00.02.

This letter is to notify you that the Division has elected to not approve this product currently. As per the provided criteria, this material <description of failure>."

~~3.~~4. APPROVAL RESPONSE

West Virginia Division of Highways (WVDOH) Laboratory Approval Numbers 2XXXXXX has been issued to your company <Name of Company>, for the above-mentioned product. The approval number, effective Date Month Day, 20XX, must appear on all shipping documentation for said product supplied to the Division of Highways projects.

ATTACHMENT 3: SAMPLE COMPLIANCE FORM

Certification of Buy America, Build America Compliance For Source Approval

Acme Manufacturing Company
123 Main Street
Charleston, WV
25302

HL 468 Submission Date: 10/31/2022

The below listed materials and products meets all the requirements of all Federal and State Laws for Buy America, including but not limited to: Chapter 5, Article 19 and Chapter 5A, Article 3 Section 56 of the West Virginia Code; 23 U.S.C. 313 Buy America, 23 CFR 635.410 Buy America Requirements, and Build America, Buy America Act, Section 70914.

This Certification of Compliance is for the material listed below:

526.003.004 - Widget, Part Qi
596.003.004 - Widget, Part Hr

OFFICIAL SEAL
NOTARY PUBLIC
STATE OF WEST VIRGINIA

Charleston, WV 25304
My Commission Expires October 16, 2027

Jonathan Doe, Quality Assurance Manager

WVDOH Use Only

Reviewed by: Reviewed Date: Status: