

Materials Procedures Committee Regular Meeting

Meeting Time/Date: December 20th, 10:00 AM

Meeting Location: Technical Support Division (Lower-Level Conference Rm.) - 1334 Smith St.
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\2023\2023 12 20 - MP Meeting](#)

Files Available on Webpage:

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

Materials Procedures – Approved at Last Meeting

1. 601.03.52 - Procedural Guidelines for Maintaining Control Charts for Portland Cement Concrete
2. 106.03.50 - General Information Guide for Technician and Inspector Certification Program (TICP)
3. 604.02.40 - Inspection and Acceptance Procedures for Precast Concrete Products
4. 700.00.53 - Acceptance Procedure for Evaluating Independent Assurance Samples with Samples Used for Acceptance
5. 700.00.56 - Sampling And Testing Procedures for Independent Assurance Sampling
6. 700.00.54 - Procedure For Evaluating Quality Control Sample Test Results with Verification Sample Test Results
7. 715.28.50 - Seed Acceptance Criteria
8. 661.02.40 - Inspection and Acceptance of Signing Material
9. 401.07.21, 700.04.10, 711.00.20, 711.20.59, 714.03.30 (Addition of SI Units)

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 - 106.10.50 &	Brayack	WVDOH Buy America Acceptance Guidelines	Updates to include new guidance from FHWA and other major edits, still a work in progress.
2 – 100.00.00 	Brayack	Preparing Materials Procedures	Updates to mandate SI or English/SI units for MPs.

Materials Procedures – Editorial Edits

1-700.03.50	Standard Method of Microscopic Determination of Air-Void Content	Previously Approved MP, Adding Metric
2-601.03.50	Guide for Quality Control and Acceptance Requirements for Portland Cement Concrete	Previously Approved MP, Adding Metric
3-711.00.21	Procedure for Approving Paint Formulations and Production Batches	Previously Approved MP, Adding Metric
4-709.15.50	Certification of Fabricators of Corrosion Resistant Coated Dowel Bars in Basket Assemblies and Coated Dowel Bars	Previously Approved MP, Adding Metric
5-601.03.21	Los Alamos Staining Method for Alkali Silica Reaction Gel	Previously Approved MP, Adding Metric
6-601.03.22	Damage Rating Index for Hardened Concrete	Previously Approved MP, Adding Metric
7-658.05.06	Ancillary Structure Anchor Bolt Tightening	Previously Approved MP, Adding Metric

Materials Procedures - New Business with Significant or Process Updates

1-100.00.03	Brayack	Method of Evaluation of Non-Standard or Non-Conforming Materials in Construction Via Dmir	Specifically points out the penalty location instead of a linked reference.
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Note 1:  Denotes this MP is up for Vote

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

Comments

Comments due December 13th, 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 3-weeks before the next meeting: December 27th

Meeting Time/Date: 10:00 AM, January 17, 2023

Meeting Location: Tentative – MCS&T

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:

February 21, March 20, April 17

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

MATERIALS PROCEDURE

PREPARING MATERIALS PROCEDURES

1. PURPOSE

- 1.1 To set forth instructions for drafting Materials Procedures (MP) concerning sampling, testing, reporting, and inspection.
 - 1.1.1 To establish a numbering system for MPs.
 - 1.1.2 To establish a styles guideline for MPs.
 - 1.2 To establish a workflow for the creation, acceptance, and approval for MPs.
 - 1.2.1 To set up a reconfirmation schedule for existing MPs.
 - 1.3 To provide further guidance and clarification from that set forth in DD-105.
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2. REFERENCED DOCUMENTS

- 2.1 [AASHTO Publications Style Manual and Process Guide](#)¹, current edition.
 - 2.2 [Using SI Units in ASTM Standards: A Guide to Form and Style for ASTM Standards, Part H](#)²
 - 2.3 [WVDOH Design Directives DD-105](#)³
 - ~~2.3~~ [ASTM E29 - Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications.](#)
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3. NUMBERING GUIDELINES

- 3.1 A MP consists of a sequence of numbers such as 120.20.01.
 - 3.1.1 The first set (three digits) of an MP are taken from the WVDOH Specifications Roads and Bridges to denote the general area to which the procedure applies.
 - 3.1.2 The second set (two digits) of an MP are taken from the WVDOH Specifications Roads and Bridges denotes the particular area to which the procedure applies.

¹ <https://materials.transportation.org/>

² <https://sn.astm.org/rules-and-regs/using-si-units-astm-standards-nd12.html>

³ <https://transportation.wv.gov/highways/engineering/Pages/Design-Directives.aspx>

3.1.3 The third set (two digits) is defined by this Division thus:

- .00 - .09 Field Sampling
- .10 - .19 Pre-sampling (Source or Intermediate Points)
- .20 - .29 Testing
- .30 - .39 (For future designation)
- .40 - .49 Inspection
- .50 - .59 Quality Assurance System
- .60 - .69 Reporting (laboratory)
- .70 - .79 Reporting (issuance under master control)
- .80 - .89 (For future designation)
- .90 - .99 Miscellaneous

4. COMMON DEFINITIONS

4.1 Often, different entities use different terminology to describe certain entities. To stay consistent, this section will define some commonly used terms and specify the term that is to be used in Materials Procedures.

4.2 Authors may choose to spell out these terms in titles, sections, or headers.

4.3 Specific Terms:

4.3.1 DWR: When referring to a Daily Work Report that is performed on a WVDOT project, the term to be used is “DWR”.

4.3.2 Coverage: When referring to coverage for a material, traditionally referred to as “Direct Coverage” or “Master Coverage”, the term to be used is “coverage”.

4.3.3 Specifications: When referring to the WVDOT Standard Specifications, Roads and Bridges, current edition including supplementals, the term to be used is “Specification(s)” with a capital “S”. There is no need to list the Specifications in the referenced document, this link is assumed. Specific references to aid in navigation are encouraged.

4.3.4 WVDOT project: When referring to any construction project in the state that is governed by the Specifications, the term to be used is “WVDOT project(s).”

4.3.5 MS&P: When referring to Manufacture and/or a Supplier and/or a Producer, the term to be used is: “MS&P”. This author may choose to define this in the first instance of use in the document as this is not a common, industry wide term.

4.3.6 Chief Engineer: When referring to the final approving entity, the term “Chief Engineer” shall be used. This position was previously the State Highway Engineer and is now the applicable Chief Engineer based on the WVDOT org chart.

~~4.3.6~~4.3.7 Division: When referring to the Department of Transportation, Division of Highways as an entire entity, the term: “Division” shall be used with a capital “D”. There is no need to spell out the name in any materials procedure.

~~4.3.7~~4.3.8 MCS&T Division: When referring to the Materials Control, Soils and Testing Division, the term: “MCS&T Division” shall be used. There is no need to spell out the name in any materials procedure, though the author may choose to do so.

~~4.3.84.3.9~~ TED Division: When referring to the Traffic Engineering Division, the term: “TED Division” shall be used. There is no need to spell out the name in any materials procedure.

~~4.3.94.3.10~~ All other Divisions shall be spelled out once and then given an appropriate abbreviation. For example, Engineering Division “Engr Division”

~~4.3.104.3.11~~ APL: When referring to MCS&T Approved Product List, the term to be used is “APL”, with all letters capitalized.

~~4.3.10.14.3.11.1~~ When referring to an APL submission, the following text shall be used: Prospective Producers/Suppliers shall complete form HL-468, as per MP 106.00.02 indicating their intention to be included on the WVDOH APL.

5. UNITS

5.1 Each champion has the option of using rationalized SI units, or both rationalized SI units and rationalized inch-pound units (combined units) as the standard units of measure.

5.2 When writing a procedure, the following two statements govern:

5.2.1 For solely SI standards, the values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

5.2.2 For combined units, the values stated in either SI units or inch-pound units are to be regarded separately as standard. The value stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the procedure.

5.2.3 When providing a sample calculation or an example of a filled form, the author may choose to use any single unit system; providing the exact calculation using another unit is a duplication of work.

5.2.4 When converting units, rounding shall be performed as specified in ASTM E29-Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications.

5.2.5 In the instance of length measurement, inches and feet shall be rounded to the nearest 5 mm. For example, 1 foot or 12 inches is 305 mm.

5.3 Example of the unit syntax is as follows:

5.3.1 The distance between the earth and moon is 238,900 mi (384,400 km).

5.3.2 The cylinder shall be 6 in (150 mm) x 12 in (305 mm).

6. FORMAT GUIDELINES

6.1 The style guides for MPs shall follow the general guidelines established in “Section 6.4.3” of [AASHTO Publications Style Manual and Process Guide Typography in Design](#). These guidelines are further refined in this document.

- 6.1.1 The font shall be Times New Roman, size 12, fully justified for all text except for the section title. The section title shall be all capital letters, fully justified, Times New Roman, size 12 and bold. There shall also be a horizontal line above this text.
- 6.1.2 The line numbering shall be as follows: “x.” For a section title and “x.x” for a section paragraph. From here, follow the format of “x.x.x...” for additional layers of sub paragraphs. This document provides an example of the formatting.
- 6.1.3 Links shall be [blue and clickable](#)⁴. The link path shall also be included as a footnote. An example of this is demonstrated by the “blue and clickable” text and link above and the footer at the bottom of this page.
- 6.1.3.1 Any instances of an email address shall also be clickable and adhere the guidelines for a link.
- 6.1.4 Figure labels shall follow the guidelines of “Section 2.1.4” of AASHTO Publications Style Manual and Process Guide Typography in Design. This section states: “The title should be succinct noun or noun phrase that describes the figure, but does not provide unnecessary background information, nor repeat information found in the text.” Do not abbreviate “Figure” and capitalize key words such; an example of this is as follows: “Conditions Determined to Be Pre-Existing.”
- 6.1.4.1 Formatting for labels shall be the same as normal body text, except that “Figure X.” shall be bold. All figure text shall be centered and located below the figure.

7. HEADER GUIDELINES

- 7.1 A standard numbering and indexing system shall appear in the upper right-hand corner shall of pages of all MPs. All header text shall be in “All Caps” format.
- 7.1.1 The letters MP shall appear first, denoting Materials Procedure. The number of the MP shall follow that text and be in the header of every page. The numbering of the MP shall follow the format as described in this document.
- 7.1.2 All MPs shall contain headers in the manner described in this section. There are two instances of a header. If an MP has been reconfirmed, the header will follow the example in Figure 1. This includes the date the latest date the MP was approved, and the date of confirmation.

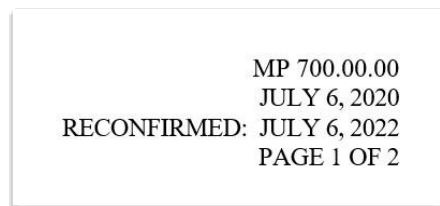
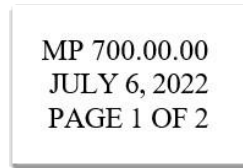


Figure 1 – MP Header with Approval Date and Reconfirmation Date

⁴ <https://transportation.wv.gov/highways/mcst/Pages/default.aspx>

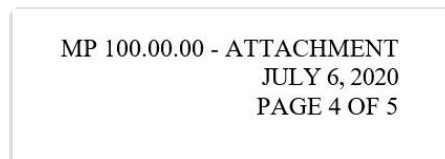
- 7.1.3 In the instance of either a new MP or an approved update to a MP, only the Director signature date (located at the end of the body section of the document) is in the header. A sample is provided in Figure 2.



MP 700.00.00
JULY 6, 2022
PAGE 1 OF 2

Figure 2 – MP Header With Approval Date

- 7.1.4 In the instance of an attachment, the first line of the MP header shall be in the format: MP XXX.XX.XX – ATTACHMENT. All other lines shall follow the guidelines previously described. This is demonstrated in Figure 3.



MP 100.00.00 - ATTACHMENT
JULY 6, 2020
PAGE 4 OF 5

Figure 3 – MP Attachment Header

- 7.1.4.1 In all instances, on all pages (do not use different first page), the text “PAGE X1 to X2” shall be last, with X1 being the current page and X2 being the total pages in the section. The main body and each attachment shall be considered a separate section; numbering shall be restarted on any new attachment instance.

8. MP APPROVAL PROCESS

- 8.1 In the instance of any MP Committee work, the champion is a person defined as the person who is the primary author, editor and/or liaison for the document. The champion is responsible for introducing and presenting the document. The champion is also responsible for addressing comments on the document.
- 8.2 Attachment 1 provides an overview of the approval process of an MP. First the document is brought to the MP committee chair (chair) by the champion. The document is distributed by the chair and discussed at the next MP committee meeting. After the document has been at a minimum of two consecutive MP meetings, the document may be approved by vote. The document is then reviewed, and if approved, signed by the Director of Materials Control, Soils and Testing Division (Director, MCS&T). The signed document is sent through DOH management for review and approval. Once the review is complete, the document is reviewed and affirmed by Federal Highways (FHWA). Once the document is affirmed by FHWA, the document is posted and distributed. If at any step an approving authority makes comments, the document is cycled back to the MP Committee meeting for review and another approval vote.

- 8.2.1 In the instance where a document has no content changes (editorial changes only), the MP committee may choose to vote to approve the document after one meeting. In this case, any voting member of the MP committee or the FHWA representative may veto this decision.
- 8.2.2 The details of the MP committee, including the submission process, distribution practices, and current voting members is available for review in Design Directive 105 and available at the [WVDOH Technical Support Webpage](#)⁵

9. RECONFIRMATION PROCESS

- 9.1 Each MP shall be periodically reviewed for both relevancy and accuracy. At a minimum frequency, each MP shall be reviewed every 4 years by the applicable MCS&T Section Supervisor (Reconfirmation Champion). In the instances where there is no obvious Section Supervisor, the delegation of the review shall be the responsibility of the chair in liaison with the Director of MCS&T.
- 9.2 After reviewing the document, if the Reconfirmation Champion determines that no changes are required, they will submit the document to chair for reconfirmation. The reconfirmation shall be done by the voting members.
- 9.3 If approved by the Committee, the MCS&T Director shall review the document and if accepted, sign the document. Because no changes were made to this document, once the document is signed, it shall be posted and distributed.

10. POSTING AND DISTRIBUTION OF MPS

- 10.1 Active MPs are available on the [WVDOH MCST MP Webpage](#)⁶. The webpage shows the MP number, the title of the MP and the latest approval or reconfirmation date.
- 10.1.1 For each document (if applicable), an archived link is available to provide a documented history of updates. Figure 4 provides an example.

106.00.02	Procedure for Evaluation of New Products for Use In Highway Construction	November 2016
Archive		

Figure 4 – MP Committee Webpage Example

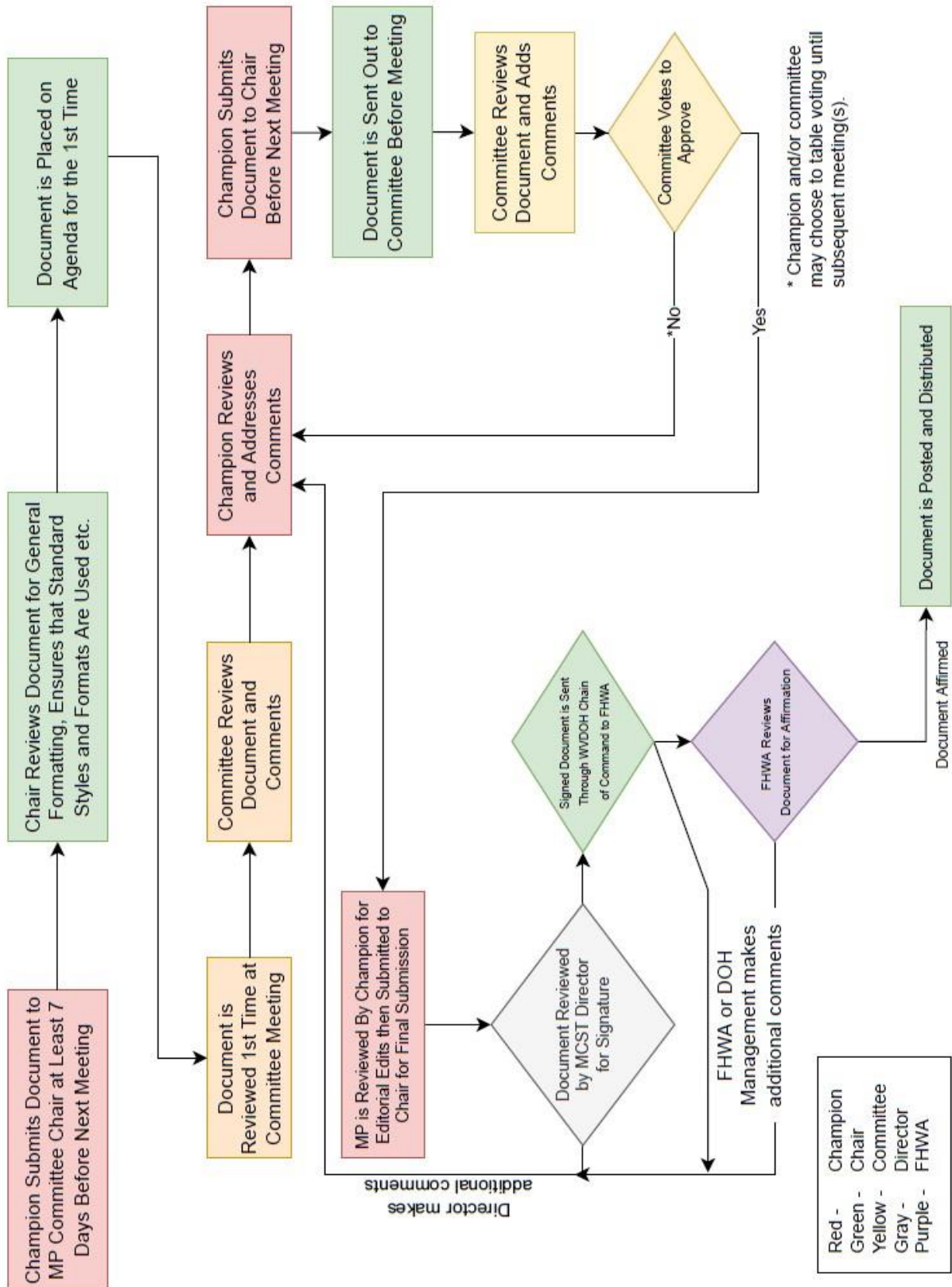
- 10.2 When a document is affirmed by FHWA, the documents will be distributed to applicable Division Directors, District Engineer/Managers and District Material Supervisors.

⁵ <https://transportation.wv.gov/highways/TechnicalSupport/Pages/Design-Directives.aspx>

⁶ <https://transportation.wv.gov/highways/mcst/Pages/WVDOH-Materials-Procedures.aspx>

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

MP 100.00.00 Steward – Materials Control Section
RLS:B
ATTACHMENT



ATTACHMENT 1 – MP Committee Meeting Flowchart

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

MATERIALS PROCEDURE

Commented [DB1]: Do not use CoC spell it out.

WVDOH BUY AMERICA ACCEPTANCE GUIDELINES

Commented [DB2]: General note, I have referenced the page the text was quoted from the OMB. This is mostly for WVDOH references while working on this document. These may be retained in the final document pending discussion among the committee.

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 Sections 2.2, 2.3 and 2.4 of this document.

2. REFERENCED DOCUMENTS

- 2.1 23 U.S.C. 313 and 23 CFR 635.410 "Buy America Requirements."
- 2.2 Chapter 5, Article 19 and Chapter 5A, Article 3, Section 56 of the West Virginia Code, entitled "West Virginia American Steel Act of 2001."
- 2.3 Build America, Buy America Act, Section 70914.
- 2.4 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 InfrastructureOffice of Management and Budget (OMB) Memorandum M-22-11, dated April 18, 2022.
- 2.32.5 West Virginia Notary Handbook, Current Edition.

3. ACCEPTANCE OF MATERIALS

- 3.1 This procedure applies to the following:
1. Steel and Iron
 2. Manufactured Products
 3. Construction Materials
- 3.2 Unless there is an approved exception as outlined in this MP, all applicable materials on construction projects shall conform to the requirements of Section 106.1 of the ~~WVDOH Standard~~ Specifications.
- 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 are not an integral part of the structure or permanently affixed to the infrastructure project.~~Buy America Requirements only apply to articles, materials, and supplies that are permanently incorporated into the project. It does not apply to materials brought to the~~

~~construction site, and removed at, or before the completion of the infrastructure project, such as tools, equipment, temporary scaffolding, or traffic control devices.¹~~

~~3.2-13.3.1~~ Buy America preference does not apply to materials such as temporary paint or traffic control devices.

~~3.33.4~~ For the purpose of complying with Buy America Requirements, a material or product should only be classified into one of the three categories listed in Section 3.1.

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. This includes all processes from the initial melting stage through application of coatings.

4.1.1 “Iron or steel products” means articles, materials, or supplies that consist wholly or predominantly of iron or steel or a combination of both.

4.1.1.1 “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.

5. **MANUFACTURED PRODUCTS.**

5.1 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.~~all Manufactured Products must be produced in the United States, and the cost of the components of the Manufactured Product that are mined, produced, or manufactured in the United States shall be greater than 55 percent of the total cost of all components of the Manufactured Product.²~~

5.2 Manufactured products” means:

(1) Articles, materials, or supplies that have been:

(i) Processed into a specific form and shape; or

(ii) Combined with other articles, materials, or supplies to create a product with different properties than the individual articles, materials, or supplies.

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

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) 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.

5.2.1.1 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:

- (a) 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).
- (b) For components manufactured by the manufacturer, all costs associated with the manufacture of the component, including transportation costs as described in paragraph (a), plus allocable overhead costs, but excluding profit. Cost of components does not include any costs associated with the manufacture of the manufactured product.

5.16. CONSTRUCTION MATERIALS.

5.1.1.1 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.

5.1.2 Construction Materials includes any article, material, or supply that is or consists primarily of: non-ferrous metals; plastic and polymer-based products (including PVC, composite building materials, and polymers used in fiber optic cables); glass (including optic glass); lumber; or drywall.

Commented [DB3]: Add new materials

5.1.3 Construction Materials does not include items of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregate such as stone, sand, or gravel; or aggregate binding agents or additives.

5.1.4 Items that consist of two or more of the listed Construction Materials that have been combined together through a manufacturing process shall be treated as a Manufactured Product.

5.1.5 Items that consist of at least one of the listed Construction Materials that have been combined together through a manufacturing process with another material that is not listed shall be treated as a Manufactured Product.

6.1.2 "Construction materials" means articles, materials, or supplies that consist of only one of the items listed in paragraph (1) of this definition, except as provided in paragraph (2) of this definition. To the extent one of the items listed in paragraph (1) contains as inputs other items listed in paragraph (1), it is nonetheless a construction material.³

(1) The listed items and their definitions are:

³ 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 18.

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

(ii) 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.

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

(iv) 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.

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

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

(vii) 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.

(viii) 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.

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

6.7. BUY AMERICA CERTIFICATION COMPLIANCE.

7.1.1 The Division shall not accept, approve, authorize, or make any payments to any Contractor not fully compliant with Buy America.

~~6.1.3~~ 7.1.2 When Buy America Requirements apply, the Contractor shall furnish a notarized Certificate of Compliance signed by ~~a company official~~ 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.

~~6.1.2 The Division shall not authorize or make any payments to any Contractor not fully compliant with this requirement. Any payment made to any Contractor who did not fully comply with this requirement shall be recovered by the Division.~~

~~6.1.3~~ 7.1.3 The notarized Certificate of Compliance shall contain the following information:

~~6.1.3.1~~ 7.1.3.1 Title: Buy America Certification of Compliance.

~~6.1.3.27.1.3.2~~ The Name, Address and Contact Information for the ~~Company~~Contractor.

~~6.1.3.3~~ ~~The Name of the Customer.~~

~~6.1.3.4~~ ~~The shipping date of the material.~~

~~6.1.3.57.1.3.3~~ A ~~company-contractor~~ statement that demonstrates compliance with Buy America Requirements.

~~6.1.3.6~~ ~~The statement: "In the event where a supplied material does not meet applicable Buy America Requirements, any payments made for the associated material shall be returned to the Division."~~

~~6.1.3.77.1.3.4~~ The Contract ID for the Material (if applicable).

~~6.1.3.87.1.3.5~~ Both the Federal and State Project Number for the Material (if applicable).

~~6.1.3.97.1.3.6~~ The name of the material ~~and/or material code~~ referenced in the Certificate of Compliance. This material name shall be a clear, common name of the material ~~that is comparable to the AWP Material Name as stated in the proposal~~. Part Numbers, etc., may also be on the document if the ~~company-contractor~~ wishes.

~~6.1.3.107.1.3.7~~ The Line Item for the Material (if applicable).

~~6.1.3.117.1.3.8~~ The ~~Bid and/or Placed~~ Quantity of the Material. ~~Shipped.~~

~~7.1.3.9~~ Signature of the ~~Company Official~~Contractor and date.

~~6.1.3.127.1.3.10~~ A list of materials on the project that "Buy America" applies but are not Buy America compliant.

~~6.1.3.137.1.3.11~~ The document must be notarized ~~as per the "West Virginia Notary Handbook."~~

~~6.1.47.1.4~~ Attachment 1 shows a sample Certificate of Compliance.

~~6.1.5 The project shall file this Certificate of Compliance in each respective Line Item Folder in ProjectWise (or the current Division utilized document retention software) for the project.~~

~~6.1.6~~ 7.1.5 Multiple items may be listed on the Certificate of Compliance, though all the information for each line must be on the document.

8. BUY AMERICA WAIVERS - <THIS SECTION AS WELL AS FOLLOWING WAIVER SECTIONS ARE STILL A WORK IN PROGRESS>

8.1 Unless delegated by the West Virginia FHWA, the following paragraphs apply for the issuance of Buy America Waivers.⁴

8.2 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”).

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

8.4 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.

7.9. BUY AMERICA MINIMAL USE EXCEPTIONS WAIVERS AND EXCEPTIONS FOR STEEL AND IRON MATERIALS

9.1 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.

9.1.1 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

⁴ 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.

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| 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.

~~7.1~~ Steel and Iron Materials:

~~7.1.1~~ As provided for in 23 CFR 635.410(e)(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.

~~7.1.2~~ 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.

~~7.29.2~~ Federal Minimal Use Waiver: Steel and Iron Materials.

~~7.2.19.2.1~~ 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.”

~~7.2.29.2.2~~ 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.

~~7.2.39.2.3~~ Procedure for granting a minimal use exception from Federal Buy America requirements for the minimal use of steel and iron materials.

~~7.2.3.19.2.3.1~~ 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.

~~7.2.3.29.2.3.2~~ 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.

~~7.2.3.39.2.3.3~~ All documentation related to the granting of a minimal use exception shall be maintained in the project files.

~~7.39.3~~ State Minimal Use Waiver: Steel Products.

~~7.3.19.3.1~~ 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

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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.”

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

7.3.2.19.3.2.1 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.

~~7.3.2.29~~7.3.2.2 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.

~~7.3.2.39~~7.3.2.3 If approved by the director of Purchasing Division, the District Construction Engineer will respond to the Contractor via letter granting a minimal use exception.

~~7.3.2.49~~7.3.2.4 All documentation related to the granting of a minimal use exception shall be maintained in the project files.

WAIVERS AND EXCEPTIONS

~~10.1~~ There are currently no ~~minimal use~~ exceptions for Federal Buy America Requirements for Construction Materials.

~~10.2~~ Is Buy America delegated like steel and iron (federal) and iron (state)?

11. BUY AMERICA WAIVERS AND EXCEPTIONS FOR MANUFACTURED MATERIALS

~~11.1~~ The Federal Highway Administration (FHWA) has a longstanding waiver in effect exempting Manufactured Products from Buy America Requirements.

~~11.2~~ There are currently no additional exceptions for Federal Buy America Requirements for Construction Materials.

~~8.4~~~~11.3~~ Is Buy America delegated like steel and iron (federal) and iron (state)?

9. BUY AMERICA WAIVERS

10.12. BUY AMERICA MATERIALS

~~10.1~~ Attachment 1 includes a sample Certificate of Compliance

~~10.2~~12.1 Attachment 2 includes a list of materials and products used in WVDOT construction projects and the applicability of Buy America Requirements.

12.1.1 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

Commented [DB4]: Is this still true?

be in accordance with guidance from and through an affirmation process with FHWA.

~~10.2.1~~ 12.1.2 Glass added to a permanent paint product requires a Certificate of Compliance.

12.1.3 Attachment 3 includes OMB Memorandum M-2224-110,2 dated ~~April 18, 2022~~ October 25, 2023, for additional guidance and as the source material for WVDOH's compliance.

13. DOCUMENTATION OF BUY AMERICA CERTIFICATION OF COMPLIANCE

13.1 The CoC shall be placed in the QC Plan Folder in ProjectWise (or the current WVDOH approved document retention software) under the contract.

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

MP 106.10.50 Steward – Materials Control Section
RLS:B
ATTACHMENTS

Buy America Certification of Compliance

Acme ~~Manufacturing~~
~~Company~~Construction
~~Company~~
123 Main Street
Charleston, WV 25302

Customer	Ship Date:	10/31/2023
Stark Construction Company		
413 Kanawha Boulevard		
Charleston, WV 25305		

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. ~~In the event where a supplied material does not meet applicable Buy America Requirements, any payments made for the associated materials shall be returned to the Division.~~

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	526.003.004	Widget, Part Q ⁱ	500 Cubits
Line: 0025	596.003.004	Widget, Part H ^r	300 Cubits

<u>Non-Compliant Buy America Materials</u>			
<u>Line: 0055</u>	<u>Widget, Part I^r</u>		<u>300 Cubits</u>

~~Jonathan Janie~~ Doe, Quality Assurance
~~Manager~~Contractor President

Attachment 2: A sample from M-22. Full document is available at the [WVDOH MCST Toolbox](#)⁵.

⁵ <https://transportation.wv.gov/highways/mcst/Pages/tbox.aspx>

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ATTACHMENT 3

Attachment 3 – M-22-11 –
Link to file: <https://www.whitehouse.gov/wp-content/uploads/2022/04/M-22-11.pdf>

DOH-M-22 WVDOH Buy America Requirement Materials

AWP Material Code	Material Description	CoC Required	Notes
211.004.000	Unclassified, Borrow Excavation	No	
211.005.000	Rock Borrow Excavation	No	
212.002.000	Select Material for Backfill	No	
218.003.003	Riprap, Grouted	No	
218.003.006	Slope Protection, Concrete	No	
219.003.000.0X	CLSM -Type A,B,C - Controlled Low Strength Material	No	
311.002.000.X	Free Draining Base Course, Open Graded - Asphalt/Cement	No	
401.002.00X	Asphalt Mix, All Types	No	
405.002.001.X	Type A,B,C - Chip Seal Aggregate	No	
406.PSP.000	High Friction Surface Treatment	No	
412.002.001	Bituminous Patching Winter Grade	No	
420.001.001	Asphalt, Micro Surfacing	No	
420.002.002.X	Aggregate, 2,3FA, Fine, Micro-Surfacing	No	
494.PSP.001	Asphalt, Cold In-Place Recycled	No	
601.003.00X.0X	Concrete, All Classes	No	
601.PSP.001	Polymer, Fiberglass Reinforced (FRP)	No	
603.006.002.2	Concrete, Class S-P, Self Consolidating	No	
604.002.000	Concrete for Pipe Culvert	No	
605.002.000	Concrete Manholes & Inlets (Precast)	No	
610.002.000	Asphalt Curb	No	
614.007.000	Lagging, Concrete	No	
616.009.000	Piles, Concrete (Precast)	No	
622.001.000	Timber Bridges-delete	No	
623.002.000	Shotcrete, Monofilament Polypropylene Fibers for Pneumatically Applied Mortar	No	
627.PSP.001	Expansion Joint, Foam	No	
633.004.000	Gutter, Concrete	No	
633.006.000	Gutter, Dumped Rock	No	
636.002.001.01	Traffic Control Devices	No	
636.002.001.02	Warning Lights	No	
636.002.001.03	Traffic Cones	No	
636.004.000	Dust Palliatives	No	
645.002.002	Backfill Material	No	
651.002.000	Topsoil	No	
661.002.001.1	Signs, Aluminum, Flat Sheet Finished	No	
662.002.007.1	Luminaires, Roadway, Area, Underpass, Sign Light	No	
662.002.007.2	Signs, Internally Illuminated LED	No	
662.002.014	Navigation Lighting System	No	
667.PSP.000	LED Dynamic Message Sign	No	
679.002.002.1	Concrete, Latex Modified	No	
679.002.002.2	Concrete, Microsilica	No	
688.005.004	Soluble Salt Removers	No	
701.001.000.7	Cement, Type UHR	No	
701.001.000.8	Cement, Portland, Type 1 Low - Alkali	No	
701.001.000.X	Cement, Portland, All Types	No	
701.003.000	Cement, Type 1L - Blended Hydraulic	No	
701.004.000	Cement, Masonry	No	
704.00X.00X.0X	Aggregate - All Types/Classes	No	
705.004.000.0X	Asphalt, Emulsion, All Types	No	
705.005.000.0X	Asphalt, Liquid, All Types	No	
705.007.000	Asphalt, Dampproofing and Water-Proofing	No	
705.008.000	Asphalt, Dampproofing and Water-Proofing, Primer	No	
705.011.000.0X	Asphalt, Liquid, All Types	No	
707.001.001	Type M Admixture, Concrete, Air-Entraining	No	
707.002.002.01.1	Type D Admixture, Concrete Water-Reducing And Retarding	No	
707.002.002.01.2	Type G Admixture, Concrete Water-Reducing And Retarding,	No	
707.002.002.01.3	Admixture, Citric Acid (Retarder)	No	
707.003.001.1	Type A Admixture, Concrete, Water-Reducing	No	
707.003.001.2	Type F Admixture, Concrete, Water-Reducing	No	
707.004.001	Fly Ash - SCM, Supplementary Cementitious Material	No	
707.004.002	Slag Cement - SCM, Supplementary Cementitious Material	No	
707.004.003	Silica Fume - SCM, Supplementary Cementitious Material	No	
707.004.004	Natural - SCM, Supplementary Cementitious Material	No	
707.005.000	Admixture, Latex	No	

DOH-M-22 WVDOH Buy America Requirement Materials

AWP Material Code	Material Description	CoC Required	Notes
707.006.000	Burlap, Polyethylene Coated	No	
707.007.000	Burlap, Jute or Kenaf	No	
707.008.000	Curing, Concrete, Waterproof Paper	No	
707.009.000	Curing, Concrete, Liquid Membrane Compound	No	
707.010.000	Curing, Concrete, White Poly Sheeting	No	
707.013.001	Type C Admixture, Concrete, Accelerating	No	
707.014.001	Admixture, Concrete, Water-Reducing & Accelerating, Type E	No	
707.015.001	Type D - Admixture, Concrete, Hydration Control Stabilizing	No	
707.017.001	Type S Admixture, Concrete, Specialized	No	
707.018.001	Admixture, Concrete, Foaming Agent	No	
708.001.001	Expansion Joint, Cork	No	
708.001.002	Expansion Joint, Bituminous Fiber	No	
708.002.002	Expansion Joint, Sponge Rubber	No	
708.004.002	Joint, Back-up Material	No	
708.009.000	Bitumen Sealant, Concrete and Masonary	No	
708.PSP.001	Neoprene Sheet for Semi-Integral Abutments	No	
710.002.004	Graded Material	No	
710.003.000	Preservative Treatment	No	
711.040.000	Paint, Temporary, White, Yellow Traffic	No	
715.001.000	Chloride, Calcium	No	
715.002.000	Chloride, Sodium	No	
715.004.001	Cementitious Materials, PCC Concrete Repair Materials	No	
715.004.002	Non-Cementitious Materials, Concrete Repairs	No	
715.005.000	Cement Grout, Pakaged Dry, Hydraulic, Non-Shrink	No	
715.005.000.1	Plant Produced Grout	No	
715.006.000	Lime, Hydrated	No	
715.007.000	Water for Hydraulic Cement	No	
715.009.003.6	Delineator Post, Soil Mounted Plastic	No	
715.009.003.7	Delineator Post, Guardrail Mounted Plastic	No	
715.009.003.8	Delineator - Type B1	No	
715.011.010	Engineering Fabric for Pumped Sediment and Erosion Control (Dewatering Device)	No	
715.012.000	Concrete, Miscellaneous Uses	No	
715.016.000.001	Brick, Clay or Shale, Sewer Brick	No	
715.016.000.002	Brick, Clay or Shale, Building Brick	No	
715.017.000	Brick, Concrete	No	
715.018.000	Concrete Units, Masonry	No	
715.025.000	Limestone, Ground Agricultural	No	
715.026.001	Fertilizer, Seeding	No	
715.026.002	Fertilizer, Landscape Planting	No	
715.027.001.1	Mulch, Straw, Seeding	No	
715.027.001.2	Mulch, Wood Cellulose, Seeding	No	
715.027.001.3	Mulch Binder, Chemical, Seeding	No	
715.027.002	Mulch Materials, Landscape Plantings	No	
715.028.000	Seed	No	
715.029.000	Inoculating Bacteria	No	
715.033.000	Vines and Ground Cover Plants	No	
715.034.000	Seedling Plants	No	
715.035.000	Trees and Shrubs	No	
715.036.000	Asphaltum Base Paint for Tree Surgery	No	
715.037.003	Hose, Guying and Staking Plants	No	
715.037.004	Twine, Tying Wrapped Tree Trunks	No	
715.037.005	Tree Wrap	No	
715.037.006	Anti-Desiccant - Emulsion Protective Film	No	
715.040.002	Pavement Preformed Marking Material, Type V	No	
715.041.001.02	Channelizer Cones	No	
715.045.000	Bentonite	No	
716.001.001	Random Material	No	
716.001.001.1	Soil	No	
716.001.001.2	Granular Material	No	
716.001.001.3	Shale, Soft	No	
716.001.002	Rock	No	
716.001.003	Shale, Hard	No	
716.001.004	Borrow Material	No	

DOH-M-22 WVDOH Buy America Requirement Materials

AWP Material Code	Material Description	CoC Required	Notes
206.003.003.X	Base Reinforcement, Geogrid, Type 1,2	Yes	
501.003.001.0X	Concrete, Pavement, All Types	Yes	*1
514.003.000	Concrete, Roller Compacted	Yes	*1
601.008.009	Stay-in-Place Fabricated Metal Forms	Yes	
601.PSP.002	Epoxy Resin Injection System	Yes	
601.PSP.003	Epoxy Bonding Compound	Yes	
602.002.000.3	Reinforcing Bars, Uncoated Corrosion Resistant Rebar	Yes	
602.007.003	Reinforcing Bars, Splice Connector	Yes	
603.002.000.0X	Concrete Members (All Precast/Prestressed)	Yes	*1
603.PSP.001	Post Tension Rod, Steel	Yes	
604.PSP.001	Pipe, Polyethylene Liner	Yes	
605.002.000	Concrete Manholes & Inlets (Precast)	Yes	*1
605.002.000.01	Steel, Welded Grates for Inlets	Yes	
605.002.000.0X	Manhole, All Types	Yes	*1
605.002.000.0X	Inlet, All Types	Yes	*1
605.002.000.14	Slot Inlet Riser, Perforated	Yes	
605.002.000.16	Lift Station & Valve Vault	Yes	
607.002.000.01	End Terminal, Flared or Tangent Steel	Yes	
607.002.000.02	Blockout, Polymer	Yes	
607.002.000.03	Blockout, Non Plastic	Yes	
607.PSP.000	High Tension Cable Barrier	Yes	
607.PSP.001	Cable End Terminal	Yes	
609.002.000	Concrete, Sidewalk	Yes	*1
609.002.001	Detectable Warning Surface	Yes	
612.002.001.X	Tunnel Liner, Steel Plate Pipe, 2/4 Flange	Yes	
615.000.000.01	Steel Superstructure, Truss/Arch	Yes	
615.000.000.02	Steel Superstructure	Yes	
615.000.000.03	Expansion Dam, Steel, Tooth Type	Yes	
615.000.000.04	Expansion Dam, Steel, Strip Seal Type	Yes	
615.000.000.05	Expansion Dam, Steel, Modular Type	Yes	
615.000.000.06	Bearing Assemblies, Steel	Yes	
615.000.000.07	Steel Girders	Yes	
615.000.000.08	Steel Crossframes	Yes	
615.000.000.09	Steel Diaphragms	Yes	
615.003.003	Shear Stud Connector, Steel	Yes	
617.004.000	Pipe Railing, Steel	Yes	
617.005.000	Railing, Steel, Ferrous Metal	Yes	
617.006.000	Railing, Aluminum, Pedestrian	Yes	
620.000.000.01	Culvert, Concrete, Reinforced, Cast In Place, All Types	Yes	*1
620.000.000.02	Culvert, Concrete, Three-Sided Structure (Precast)	Yes	*1
620.000.000.03	Culvert, Concrete, Arch-Topped, (Precast)	Yes	*1
620.000.000.04	Culvert, Concrete, Flat-Topped, (Precast)	Yes	*1
620.000.000.05	Culvert, Concrete, Reinforced, Two Piece, (Precast)	Yes	*1
621.002.001	Flooring Steel Grid, Open Type	Yes	
621.002.002	Flooring, Steel Grid, Filled	Yes	
625.004.003	Steel, Casing Pipe for Drilled Caissons	Yes	
625.004.004	CSL (Crosshole Sonic Logging) Testing Tubes for Caissons	Yes	
626.004.003	Retaining Wall, Cast In Place	Yes	*1
626.005.001	Retaining Wall (Precast)	Yes	*1
626.005.001.01	Retaining Wall, MSE, Wall Panels	Yes	*1
626.005.001.02	Retaining Wall, MSE Modular Block	Yes	*1
626.005.001.03	Retaining Wall, MSE Wire Face	Yes	*1
626.005.001.123	Modular Block Sealant	Yes	
626.006.001.3	Retaining Wall, Granular Backfill	Yes	*1
626.006.002	Retaining Wall, Concrete, Cast in Place	Yes	*1
631.002.000	Electrical, Miscellaneous	Yes	*1
632.002.001	Horizontal Drain	Yes	
633.002.000	Gutter, Invert Pipe	Yes	
634.002.000	Cribbing, Concrete	Yes	*1
638.002.000	Survey Marker	Yes	
638.006.000	Outlet Marker	Yes	
642.006.000	Compost Filter Sock	Yes	
645.001.001	Elasticized Expanded Polystyrene - E-EPS	Yes	

DOH-M-22 WVDOH Buy America Requirement Materials

AWP Material Code	Material Description	CoC Required	Notes
645.001.003	Impervious Membrane	Yes	
645.002.001	Soil Reinforcement, Geosynthetic	Yes	
657.002.001	Supports, Beams	Yes	
657.002.006	Supports, Pipe, Steel	Yes	
657.002.008	Support, Sign, Steel, Anchor Bolt, Roadway	Yes	
657.002.010	Supports, Tubular, Steel	Yes	
657.002.011.1	Supports, Steel, Channel Bar (U Channel)	Yes	
657.002.011.2	Supports, Steel, Breakaway Splice Devices	Yes	
658.002.000	Sign Support, Steel, Overhead	Yes	
658.002.007	Sign Support, Steel, Anchor Bolt O-H	Yes	
661.002.001.2	Signs, Aluminum, Extruded Panel Finished	Yes	
661.002.001.3	Sign Hardware	Yes	
661.002.015	Delineators, XS1 Bicycle Rail	Yes	
662.002.013.1	Pole, Steel, Lighting Support	Yes	
662.002.013.1.6	Lighting Support, Steel, Anchor Bolt	Yes	
662.002.013.2	Lighting Support, Steel, High Mast Type	Yes	
662.002.013.4	Luminaire Support Arm, Steel, Type 1 & 2	Yes	
662.002.013.5	Luminaire Support Arm, Steel, Type 3	Yes	
662.002.013.6	Lighting Pole, Aluminum	Yes	
662.002.013.7	Luminaire Support Arm, Aluminum	Yes	
689.000.000	Metalizing, Steel Coating	Yes	
707.011.000	Coating, Epoxy Resin Protection, Type 3, Grades 1 or 2, Class B or C	Yes	
707.012.002	Sealer, Concrete	Yes	
707.016.001	Coating Materials, Concrete Protection	Yes	
708.002.001	Joint Seals, Preformed Elastomeric, Neoprene	Yes	
708.003.000	Joint Sealant, Hot-Poured for Concrete and Asphalt Pavements	No	
708.004.001.X	Sealant, Silicone Joint, All Types	Yes	
708.010.001	Waterstops (Elastomer Material), Polyvinylchloride	Yes	
708.010.002	Waterstops (Elastomer Material), Rubber	Yes	
709.000.000	Steel, Miscellaneous	Yes	
709.000.000.0	Welding Electrodes, Piles	Yes	
709.001.000.1	Reinforcing Bar, Steel Rebar	Yes	
709.001.000.2	Reinforcing Bar, Steel, Epoxy Coated, Coaters Rebar	Yes	
709.001.000.3	Epoxy Powders for Rebar	Yes	
709.002.000.1	Reinforcement, 7-Wire Strand, Prestressing	Yes	
709.002.000.2	Reinforcement, Steel Bar, High Strength, Prestressing	Yes	
709.003.000	Bolt, Steel, Wire Mesh, Hook, Expansion	Yes	
709.004.000.1	Wire, Steel, Reinforcement	Yes	
709.004.000.2	Welded Wire, Steel, Reinforcement	Yes	
709.005.000	Pavement Reinforcement, Expanded Metal	Yes	
709.006.000	Bar or Rod Mats, Steel, Fabricated	Yes	
709.007.000	Bolt, Joint Tie Bolt Assembly, (J-Hook)	Yes	
709.008.000	Structural Metal, Steel, High Strength Low Alloy	Yes	
709.010.000.1	Gray Iron Castings	Yes	
709.010.000.2	Iron Castings, Ductile Iron Castings	Yes	
709.012.000.1	Structural and Eyebars, Steel, (Piling)	Yes	
709.012.000.2	Lagging, Steel	Yes	
709.015.000	Dowel Bars and Dowel Baskets, Assemblies, Coated	Yes	
709.017.000	Pipe, Steel, Welded & Seamless	Yes	
709.018.002	Copper Alloy Castings for Name Plates For Bridges	Yes	
709.021.000	Pipe, Steel, Floor Drains & Down-Spouts	Yes	
709.024.002	Bolt, Steel, High Strength A325 / A449	Yes	
709.024.003	Nut, Steel, High Strength	Yes	
709.024.004	Washer, Steel, High Strength	Yes	
709.036.000	Aluminum Alloy, Bolts, Nuts, and Set Screws	Yes	
709.037.000	Aluminum Alloy, Washers	Yes	
709.042.000	Steel, Galvanized Pipe or Tubing for Horizontal Drains	Yes	
709.045.000	Guardrail Posts, Galvanized Steel	Yes	
709.046.000	Post, Braces & Grate Frames, Fence, Steel	Yes	
709.046.000.1	Post, Studded Tee	Yes	
709.050.000	Pile Points, Steel (Piling)	Yes	
709.051.000	Sign Support Surface Mount Bracket, Breakaway Device	Yes	
709.052.000	Sign Support, Omni-Directional Breakaway Device, Steel Beam,	Yes	

DOH-M-22 WVDOH Buy America Requirement Materials

AWP Material Code	Material Description	CoC Required	Notes
709.053.000	Supports, Steel, Tubular	Yes	
709.054.000	Sign Support Back to Back U-Channel, Breakaway Device	Yes	
709.055.000	Sign Support Bracket - Barrier Wall	Yes	
710.002.002	Hardwood, Structural	Yes	
710.002.003	Hardwood, Bridge Decking	Yes	
710.004.000	Wood Preservers	Yes	
710.005.000	Post, Wood, Guardrail, Rectangular	Yes	
710.005.000.4	Post, Wood for Fence and Signs	Yes	
710.006.000	Plywood	Yes	
710.007.000	Common Lumber	Yes	
710.008.000	Poles, Service and Lighting, Wood	Yes	
711.005.000	Concrete Protective Coatings And Stain	Yes	
711.006.000.1	Paint, Zinc Primers, Organic	Yes	**2
711.006.000.2	Paint, Zinc Primers, Inorganic	Yes	**2
711.012.000	Paint, Epoxy Coatings	Yes	**2
711.022.000	Paint, Zinc Rich Low VOC System	Yes	**2
711.022.003	Paint, Intermediate Coat	Yes	**2
711.022.004	Paint, Top Coat	Yes	**2
711.041.000.1	Paint, White or Yellow, Fast-Dry Traffic	Yes	**2
711.041.000.2	Paint, Yellow, Fast-Dry Traffic	Yes	**2
712.004.000	Guardrail, Fasteners and Anchor Bolts, Stains for Galvanized Steel	Yes	
712.004.001	Guardrail Splice Bolt	Yes	
712.004.002	Guardrail Post Bolt	Yes	
712.004.003	Guardrail Nuts	Yes	
712.004.004	Guardrail Washers	Yes	
712.004.005	Guardrail Beam, Steel	Yes	
712.004.007	Guardrail End, Steel	Yes	
712.005.000	Guardrail, Fasteners and Anchor Bolts, Zinc-Aluminum-Magnesium Alloy Coating	Yes	
712.008.001	Fence, Steel, Chain-Link	Yes	
712.009.000.1	Fence, Wire, Steel, Right of Way, Zinc Coated (Galvanized) Class 1 Coating	Yes	
712.009.000.2	Fence, Wire, Steel, Right of Way, Zinc Coated (Galvanized) Class 3 Coating	Yes	
712.010.000	Barbed Wire, Coated Steel	Yes	
712.011.000	Fence, Safety	Yes	
713.002.000	Pipe and Pipe Arch, Metallic Coated Corrugated Steel	Yes	
713.003.000	Pipe and Pipe Arch, Asphalt Coated Corrugated Steel	Yes	
713.005.001	Pipe, Fiber Bonded Full Bituminous Coated Steel	Yes	
713.018.000	Box Culvert, Aluminum Alloy Structural Plate	Yes	
713.020.000	Pipe, End Sections for Corrugated Steel Pipe and Pipe Arch	Yes	
713.024.000	Pipe and Pipe Arch, Aluminum Coated Corrugated Steel	Yes	
714.002.000	Pipe, Reinforced Concrete Culvert, Storm Drain & Sewer, Class III, IV, V	Yes	*1
714.003.000	Pipe, Concrete, Arch, Storm Drain & Sewer	Yes	*1
714.004.000	Pipe, Reinforced Concrete, Elliptical Culvert, Storm Drain & Sewer	Yes	*1
714.005.000	Pipe, Perforated Concrete	Yes	*1
714.007.000	Box Culverts, Reinforced Concrete, Precast	Yes	*1
714.008.000	Concrete End Sections	Yes	*1
714.017.000	Pipe, Polypropylene, Dual Wall, 12-60 Inches	Yes	
714.018.000	Pipe, High Density Polyethylene, Steel Reinforced	Yes	*1
714.019.000.1	3-6 inches Perforated Pipe, High Density Polyethylene, Profile Wall	Yes	
714.019.000.2	3-10 inches Non Perforated Pipe, High Density Polyethylene, Profile Wall	Yes	
714.019.000.3	12-60 inches Pipe, High Density Polyethylene, Profile Wall	Yes	
714.020.000	Pipe, Perforated Plastic Semicircular	Yes	
714.022.000	Pipe, Polyvinyl Chloride (PVC)	Yes	
714.023.000	Box Culverts, Concrete, Precast Reinforced	Yes	*1
714.024.000	Pipe, Storm Drain, Non-Asbestos, Fiber-Cement	Yes	
715.008.000	Fabric, Waterproofing	Yes	
715.011.00X	Geotextile - Eng Fabric, All Types	Yes	
715.013.000	Fabric Pads, Preformed	Yes	
715.014.000	Bearing Pads, Elastomeric, Plain & Reinforced	Yes	*1
715.015.000	Neoprene Sheeting for Miscellaneous Items	Yes	
715.019.000.01	Concrete Units, Manholes and Inlets (Precast) Special	Yes	*1
715.019.000.04	Inlet, All Types	Yes	*1
715.019.000.0X	Manhole, All Types (Precast)	Yes	*1
715.019.000.14	Lift Station & Valve Vault (Precast)	Yes	*1

DOH-M-22 WVDOH Buy America Requirement Materials

AWP Material Code	Material Description	CoC Required	Notes
715.020.000	Precast Concrete Median Barriers (Temporary)	Yes	*1
715.022.000	Precast Concrete Median Barriers (Permanent)	Yes	*1
715.023.000	Gabion Baskets	Yes	*1
715.024.002.X	Matting for Erosion Control, All Types	Yes	
715.037.001	Tree Stakes	Yes	
715.037.002	Wire, Guying and Staking Plants	Yes	
715.038.000	Manhole Steps	Yes	
715.039.000	Elastomeric Gasket & Sealing Material	Yes	
715.040.006.1	Raised Pavement Markers, Type P-2, RPM	Yes	*1
715.040.006.2	Raised Pavement Marker, Type R-4, RPM	Yes	*1
715.041.001	Traffic Safety Devices, Attenuating Type V	Yes	*1
715.041.001.01	Reflective U-Channel Strips	Yes	
715.041.00X	Traffic Safety Devices, Attenuating All Types	Yes	*1
715.042.000.1	Traffic Signal Materials & Equipment	Yes	*1
715.042.000.2	Traffic Signals, Miscellaneous	Yes	*1
715.042.005.2	Loops (LPS)	Yes	*1
715.042.005.3	Closed Circuit Television (PAS-CCTV)	Yes	*1
715.042.005.4	Pedestrian Detector with Audible	Yes	*1
715.042.005.5	Radar Advance Digital Detection (RADDD)	Yes	*1
715.042.005.6	Video Detection Cameras (VTDS)	Yes	*1
715.042.006.2	Signal Sections (V12) (V12P) (G16)	Yes	*1
715.042.009.1.2	Signal Supports, Mast Arm	Yes	
715.042.009.1.3	Supports, Signal, Video Arm	Yes	
715.042.009.2	Signal Supports, Strain Types C1, C1L, C2 and C2L	Yes	
715.042.009.2.2	Signal Supports, Anchor Bolts	Yes	
715.042.009.4.1	Signal Supports, Aluminum, Pedestal E-1	Yes	
715.042.009.4.2	Signal Support, Steel, Pedestal E-2	Yes	
715.042.009.4.3	Signal Support, Steel, Pedestal E-3	Yes	
715.042.010.1	Conduit, Rigid, Type R	Yes	
715.042.010.2	Conduit, Flexible, PVC Cover	Yes	
715.042.010.3	Conduit, Type P (Polyvinyl Chloride)	Yes	
715.042.011.X	Junction Box, All Types, All Duty, Cast in Place	Yes	*1
718.000.000.1	Waterline Items	Yes	
718.000.000.2	Sewerline Items	Yes	
718.001.000	Pipe, Ductile Iron	Yes	
718.005.000	Pipe, Plastic (PVC) Waterline	Yes	
718.007.000	Pipe, Plastic (Polyethylene) Waterline	Yes	
718.009.000	Service Line, Copper	Yes	
718.010.000	Gate Valves	Yes	*1
718.011.000	Valve Box	Yes	*1
718.012.000	Pipe, Casing, Water/Sewer	Yes	*1
718.013.000	Fire Hydrants	Yes	*1
718.014.000	Meters	Yes	*1

Note *1 - Only Steel/Iron<DELETE>/Non-Ferrous Components<DELETE> in this Material are Subject to Buy America Requirements.

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

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

Note: AWP Material Code is for internal use only.

DOH-M-22 WVDOH Buy America Requirement Materials

AWP Material Code	Material Description	CoC Required	Notes
211.004.000	Unclassified, Borrow Excavation	No	
211.005.000	Rock Borrow Excavation	No	
212.002.000	Select Material for Backfill	No	
218.003.003	Riprap, Grouted	No	
218.003.006	Slope Protection, Concrete	No	
219.003.000.0X	CLSM -Type A,B,C - Controlled Low Strength Material	No	
311.002.000.X	Free Draining Base Course, Open Graded - Asphalt/Cement	No	
401.002.00X	Asphalt Mix, All Types	No	
405.002.001.X	Type A,B,C - Chip Seal Aggregate	No	
406.PSP.000	High Friction Surface Treatment	No	
412.002.001	Bituminous Patching Winter Grade	No	
420.001.001	Asphalt, Micro Surfacing	No	
420.002.002.X	Aggregate, 2,3FA, Fine, Micro-Surfacing	No	
494.PSP.001	Asphalt, Cold In-Place Recycled	No	
601.003.00X.0X	Concrete, All Classes	No	
601.PSP.001	Polymer, Fiberglass Reinforced (FRP)	No	
603.006.002.2	Concrete, Class S-P, Self Consolidating	No	
604.002.000	Concrete for Pipe Culvert	No	
605.002.000	Concrete Manholes & Inlets (Precast)	No	
610.002.000	Asphalt Curb	No	
614.007.000	Lagging, Concrete	No	
616.009.000	Piles, Concrete (Precast)	No	
622.001.000	Timber Bridges-delete	No	
623.002.000	Shotcrete, Monofilament Polypropylene Fibers for Pneumatically Applied Mortar	No	
627.PSP.001	Expansion Joint, Foam	No	
633.004.000	Gutter, Concrete	No	
633.006.000	Gutter, Dumped Rock	No	
636.002.001.01	Traffic Control Devices	No	
636.002.001.02	Warning Lights	No	
636.002.001.03	Traffic Cones	No	
636.004.000	Dust Palliatives	No	
645.002.002	Backfill Material	No	
651.002.000	Topsoil	No	
661.002.001.1	Signs, Aluminum, Flat Sheet Finished	No	
662.002.007.1	Luminaires, Roadway, Area, Underpass, Sign Light	No	
662.002.007.2	Signs, Internally Illuminated LED	No	
662.002.014	Navigation Lighting System	No	
667.PSP.000	LED Dynamic Message Sign	No	
679.002.002.1	Concrete, Latex Modified	No	
679.002.002.2	Concrete, Microsilica	No	
688.005.004	Soluble Salt Removers	No	
701.001.000.7	Cement, Type UHR	No	
701.001.000.8	Cement, Portland, Type 1 Low - Alkali	No	
701.001.000.X	Cement, Portland, All Types	No	
701.003.000	Cement, Type 1L - Blended Hydraulic	No	
701.004.000	Cement, Masonry	No	
704.00X.00X.0X	Aggregate - All Types/Classes	No	
705.004.000.0X	Asphalt, Emulsion, All Types	No	
705.005.000.0X	Asphalt, Liquid, All Types	No	
705.007.000	Asphalt, Dampproofing and Water-Proofing	No	
705.008.000	Asphalt, Dampproofing and Water-Proofing, Primer	No	
705.011.000.0X	Asphalt, Liquid, All Types	No	
707.001.001	Type M Admixture, Concrete, Air-Entraining	No	
707.002.002.01.1	Type D Admixture, Concrete Water-Reducing And Retarding	No	
707.002.002.01.2	Type G Admixture, Concrete Water-Reducing And Retarding,	No	
707.002.002.01.3	Admixture, Citric Acid (Retarder)	No	
707.003.001.1	Type A Admixture, Concrete, Water-Reducing	No	
707.003.001.2	Type F Admixture, Concrete, Water-Reducing	No	
707.004.001	Fly Ash - SCM, Supplementary Cementitious Material	No	
707.004.002	Slag Cement - SCM, Supplementary Cementitious Material	No	
707.004.003	Silica Fume - SCM, Supplementary Cementitious Material	No	
707.004.004	Natural - SCM, Supplementary Cementitious Material	No	

DOH-M-22 WVDOH Buy America Requirement Materials

AWP Material Code	Material Description	CoC Required	Notes
707.005.000	Admixture, Latex	No	
707.006.000	Burlap, Polyethylene Coated	No	
707.007.000	Burlap, Jute or Kenaf	No	
707.008.000	Curing, Concrete, Waterproof Paper	No	
707.009.000	Curing, Concrete, Liquid Membrane Compound	No	
707.010.000	Curing, Concrete, White Poly Sheeting	No	
707.013.001	Type C Admixture, Concrete, Accelerating	No	
707.014.001	Admixture, Concrete, Water-Reducing & Accelerating, Type E	No	
707.015.001	Type D - Admixture, Concrete, Hydration Control Stabilizing	No	
707.017.001	Type S Admixture, Concrete, Specialized	No	
707.018.001	Admixture, Concrete, Foaming Agent	No	
708.001.001	Expansion Joint, Cork	No	
708.001.002	Expansion Joint, Bituminous Fiber	No	
708.002.002	Expansion Joint, Sponge Rubber	No	
708.004.002	Joint, Back-up Material	No	
708.009.000	Bitumen Sealant, Concrete and Masonary	No	
708.PSP.001	Neoprene Sheet for Semi-Integral Abutments	No	
710.002.004	Graded Material	No	
710.003.000	Preservative Treatment	No	
711.040.000	Paint, Temporary, White, Yellow Traffic	No	
715.001.000	Chloride, Calcium	No	
715.002.000	Chloride, Sodium	No	
715.004.001	Cementitious Materials, PCC Concrete Repair Materials	No	
715.004.002	Non-Cementitious Materials, Concrete Repairs	No	
715.005.000	Cement Grout, Pakaged Dry, Hydraulic, Non-Shrink	No	
715.005.000.1	Plant Produced Grout	No	
715.006.000	Lime, Hydrated	No	
715.007.000	Water for Hydraulic Cement	No	
715.009.003.6	Delineator Post, Soil Mounted Plastic	No	
715.009.003.7	Delineator Post, Guardrail Mounted Plastic	No	
715.009.003.8	Delineator - Type B1	No	
715.011.010	Engineering Fabric for Pumped Sediment and Erosion Control (Dewatering Device)	No	
715.012.000	Concrete, Miscellaneous Uses	No	
715.016.000.001	Brick, Clay or Shale, Sewer Brick	No	
715.016.000.002	Brick, Clay or Shale, Building Brick	No	
715.017.000	Brick, Concrete	No	
715.018.000	Concrete Units, Masonry	No	
715.025.000	Limestone, Ground Agricultural	No	
715.026.001	Fertilizer, Seeding	No	
715.026.002	Fertilizer, Landscape Planting	No	
715.027.001.1	Mulch, Straw, Seeding	No	
715.027.001.2	Mulch, Wood Cellulose, Seeding	No	
715.027.001.3	Mulch Binder, Chemical, Seeding	No	
715.027.002	Mulch Materials, Landscape Plantings	No	
715.028.000	Seed	No	
715.029.000	Inoculating Bacteria	No	
715.033.000	Vines and Ground Cover Plants	No	
715.034.000	Seedling Plants	No	
715.035.000	Trees and Shrubs	No	
715.036.000	Asphaltum Base Paint for Tree Surgery	No	
715.037.003	Hose, Guying and Staking Plants	No	
715.037.004	Twine, Tying Wrapped Tree Trunks	No	
715.037.005	Tree Wrap	No	
715.037.006	Anti-Desiccant - Emulsion Protective Film	No	
715.040.002	Pavement Preformed Marking Material, Type V	No	
715.041.001.02	Channelizer Cones	No	
715.045.000	Bentonite	No	
716.001.001	Random Material	No	
716.001.001.1	Soil	No	
716.001.001.2	Granular Material	No	
716.001.001.3	Shale, Soft	No	
716.001.002	Rock	No	

DOH-M-22 WVDOH Buy America Requirement Materials

AWP Material Code	Material Description	CoC Required	Notes
716.001.003	Shale, Hard	No	
716.001.004	Borrow Material	No	
206.003.003.X	Base Reinforcement, Geogrid, Type 1,2	Yes	
501.003.001.0X	Concrete, Pavement, All Types	Yes	*1
514.003.000	Concrete, Roller Compacted	Yes	*1
601.008.009	Stay-in-Place Fabricated Metal Forms	Yes	
601.PSP.002	Epoxy Resin Injection System	Yes	
601.PSP.003	Epoxy Bonding Compound	Yes	
602.002.000.3	Reinforcing Bars, Uncoated Corrosion Resistant Rebar	Yes	
602.007.003	Reinforcing Bars, Splice Connector	Yes	
603.002.000.0X	Concrete Members (All Precast/Prestressed)	Yes	*1
603.PSP.001	Post Tension Rod, Steel	Yes	
604.PSP.001	Pipe, Polyethylene Liner	Yes	
605.002.000	Concrete Manholes & Inlets (Precast)	Yes	*1
605.002.000.01	Steel, Welded Grates for Inlets	Yes	
605.002.000.0X	Manhole, All Types	Yes	*1
605.002.000.0X	Inlet, All Types	Yes	*1
605.002.000.14	Slot Inlet Riser, Perforated	Yes	
605.002.000.16	Lift Station & Valve Vault	Yes	
607.002.000.01	End Terminal, Flared or Tangent Steel	Yes	
607.002.000.02	Blockout, Polymer	Yes	
607.002.000.03	Blockout, Non Plastic	Yes	
607.PSP.000	High Tension Cable Barrier	Yes	
607.PSP.001	Cable End Terminal	Yes	
609.002.000	Concrete, Sidewalk	Yes	*1
609.002.001	Detectable Warning Surface	Yes	
612.002.001.X	Tunnel Liner, Steel Plate Pipe, 2/4 Flange	Yes	
615.000.000.01	Steel Superstructure, Truss/Arch	Yes	
615.000.000.02	Steel Superstructure	Yes	
615.000.000.03	Expansion Dam, Steel, Tooth Type	Yes	
615.000.000.04	Expansion Dam, Steel, Strip Seal Type	Yes	
615.000.000.05	Expansion Dam, Steel, Modular Type	Yes	
615.000.000.06	Bearing Assemblies, Steel	Yes	
615.000.000.07	Steel Girders	Yes	
615.000.000.08	Steel Crossframes	Yes	
615.000.000.09	Steel Diaphragms	Yes	
615.003.003	Shear Stud Connector, Steel	Yes	
617.004.000	Pipe Railing, Steel	Yes	
617.005.000	Railing, Steel, Ferrous Metal	Yes	
617.006.000	Railing, Aluminum, Pedestrian	Yes	
620.000.000.01	Culvert, Concrete, Reinforced, Cast In Place, All Types	Yes	*1
620.000.000.02	Culvert, Concrete, Three-Sided Structure (Precast)	Yes	*1
620.000.000.03	Culvert, Concrete, Arch-Topped, (Precast)	Yes	*1
620.000.000.04	Culvert, Concrete, Flat-Topped, (Precast)	Yes	*1
620.000.000.05	Culvert, Concrete, Reinforced, Two Piece, (Precast)	Yes	*1
621.002.001	Flooring Steel Grid, Open Type	Yes	
621.002.002	Flooring, Steel Grid, Filled	Yes	
625.004.003	Steel, Casing Pipe for Drilled Caissons	Yes	
625.004.004	CSL (Crosshole Sonic Logging) Testing Tubes for Caissons	Yes	
626.004.003	Retaining Wall, Cast In Place	Yes	*1
626.005.001	Retaining Wall (Precast)	Yes	*1
626.005.001.01	Retaining Wall, MSE, Wall Panels	Yes	*1
626.005.001.02	Retaining Wall, MSE Modular Block	Yes	*1
626.005.001.03	Retaining Wall, MSE Wire Face	Yes	*1
626.005.001.123	Modular Block Sealant	Yes	
626.006.001.3	Retaining Wall, Granular Backfill	Yes	*1
626.006.002	Retaining Wall, Concrete, Cast in Place	Yes	*1
631.002.000	Electrical, Miscellaneous	Yes	*1
632.002.001	Horizontal Drain	Yes	
633.002.000	Gutter, Invert Pipe	Yes	
634.002.000	Cribbing, Concrete	Yes	*1
638.002.000	Survey Marker	Yes	

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AWP Material Code	Material Description	CoC Required	Notes
638.006.000	Outlet Marker	Yes	
642.006.000	Compost Filter Sock	Yes	
645.001.001	Elasticized Expanded Polystyrene - E-EPS	Yes	
645.001.003	Impervious Membrane	Yes	
645.002.001	Soil Reinforcement, Geosynthetic	Yes	
657.002.001	Supports, Beams	Yes	
657.002.006	Supports, Pipe, Steel	Yes	
657.002.008	Support, Sign, Steel, Anchor Bolt, Roadway	Yes	
657.002.010	Supports, Tubular, Steel	Yes	
657.002.011.1	Supports, Steel, Channel Bar (U Channel)	Yes	
657.002.011.2	Supports, Steel, Breakaway Splice Devices	Yes	
658.002.000	Sign Support, Steel, Overhead	Yes	
658.002.007	Sign Support, Steel, Anchor Bolt O-H	Yes	
661.002.001.2	Signs, Aluminum, Extruded Panel Finished	Yes	
661.002.001.3	Sign Hardware	Yes	
661.002.015	Delineators, XS1 Bicycle Rail	Yes	
662.002.013.1	Pole, Steel, Lighting Support	Yes	
662.002.013.1.6	Lighting Support, Steel, Anchor Bolt	Yes	
662.002.013.2	Lighting Support, Steel, High Mast Type	Yes	
662.002.013.4	Luminaire Support Arm, Steel, Type 1 & 2	Yes	
662.002.013.5	Luminaire Support Arm, Steel, Type 3	Yes	
662.002.013.6	Lighting Pole, Aluminum	Yes	
662.002.013.7	Luminaire Support Arm, Aluminum	Yes	
689.000.000	Metalizing, Steel Coating	Yes	
707.011.000	Coating, Epoxy Resin Protection, Type 3, Grades 1 or 2, Class B or C	Yes	
707.012.002	Sealer, Concrete	Yes	
707.016.001	Coating Materials, Concrete Protection	Yes	
708.002.001	Joint Seals, Preformed Elastomeric, Neoprene	Yes	
708.003.000	Joint Sealant, Hot-Poured for Concrete and Asphalt Pavements	No	
708.004.001.X	Sealant, Silicone Joint, All Types	Yes	
708.010.001	Waterstops (Elastomer Material), Polyvinylchloride	Yes	
708.010.002	Waterstops (Elastomer Material), Rubber	Yes	
709.000.000	Steel, Miscellaneous	Yes	
709.000.000.0	Welding Electrodes, Piles	Yes	
709.001.000.1	Reinforcing Bar, Steel Rebar	Yes	
709.001.000.2	Reinforcing Bar, Steel, Epoxy Coated, Coaters Rebar	Yes	
709.001.000.3	Epoxy Powders for Rebar	Yes	
709.002.000.1	Reinforcement, 7-Wire Strand, Prestressing	Yes	
709.002.000.2	Reinforcement, Steel Bar, High Strength, Prestressing	Yes	
709.003.000	Bolt, Steel, Wire Mesh, Hook, Expansion	Yes	
709.004.000.1	Wire, Steel, Reinforcement	Yes	
709.004.000.2	Welded Wire, Steel, Reinforcement	Yes	
709.005.000	Pavement Reinforcement, Expanded Metal	Yes	
709.006.000	Bar or Rod Mats, Steel, Fabricated	Yes	
709.007.000	Bolt, Joint Tie Bolt Assembly, (J-Hook)	Yes	
709.008.000	Structural Metal, Steel, High Strength Low Alloy	Yes	
709.010.000.1	Gray Iron Castings	Yes	
709.010.000.2	Iron Castings, Ductile Iron Castings	Yes	
709.012.000.1	Structural and Eyebars, Steel, (Piling)	Yes	
709.012.000.2	Lagging, Steel	Yes	
709.015.000	Dowel Bars and Dowel Baskets, Assemblies, Coated	Yes	
709.017.000	Pipe, Steel, Welded & Seamless	Yes	
709.018.002	Copper Alloy Castings for Name Plates For Bridges	Yes	
709.021.000	Pipe, Steel, Floor Drains & Down-Spouts	Yes	
709.024.002	Bolt, Steel, High Strength A325 / A449	Yes	
709.024.003	Nut, Steel, High Strength	Yes	
709.024.004	Washer, Steel, High Strength	Yes	
709.036.000	Aluminum Alloy, Bolts, Nuts, and Set Screws	Yes	
709.037.000	Aluminum Alloy, Washers	Yes	
709.042.000	Steel, Galvanized Pipe or Tubing for Horizontal Drains	Yes	
709.045.000	Guardrail Posts, Galvanized Steel	Yes	
709.046.000	Post, Braces & Grate Frames, Fence, Steel	Yes	

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AWP Material Code	Material Description	CoC Required	Notes
709.046.000.1	Post, Studded Tee	Yes	
709.050.000	Pile Points, Steel (Piling)	Yes	
709.051.000	Sign Support Surface Mount Bracket, Breakaway Device	Yes	
709.052.000	Sign Support, Omni-Directional Breakaway Device, Steel Beam,	Yes	
709.053.000	Supports, Steel, Tubular	Yes	
709.054.000	Sign Support Back to Back U-Channel, Breakaway Device	Yes	
709.055.000	Sign Support Bracket - Barrier Wall	Yes	
710.002.002	Hardwood, Structural	Yes	
710.002.003	Hardwood, Bridge Decking	Yes	
710.004.000	Wood Preservers	Yes	
710.005.000	Post, Wood, Guardrail, Rectangular	Yes	
710.005.000.4	Post, Wood for Fence and Signs	Yes	
710.006.000	Plywood	Yes	
710.007.000	Common Lumber	Yes	
710.008.000	Poles, Service and Lighting, Wood	Yes	
711.005.000	Concrete Protective Coatings And Stain	Yes	
711.006.000.1	Paint, Zinc Primers, Organic	Yes	**2
711.006.000.2	Paint, Zinc Primers, Inorganic	Yes	**2
711.012.000	Paint, Epoxy Coatings	Yes	**2
711.022.000	Paint, Zinc Rich Low VOC System	Yes	**2
711.022.003	Paint, Intermediate Coat	Yes	**2
711.022.004	Paint, Top Coat	Yes	**2
711.041.000.1	Paint, White or Yellow, Fast-Dry Traffic	Yes	**2
711.041.000.2	Paint, Yellow, Fast-Dry Traffic	Yes	**2
712.004.000	Guardrail, Fasteners and Anchor Bolts, Stains for Galvanized Steel	Yes	
712.004.001	Guardrail Splice Bolt	Yes	
712.004.002	Guardrail Post Bolt	Yes	
712.004.003	Guardrail Nuts	Yes	
712.004.004	Guardrail Washers	Yes	
712.004.005	Guardrail Beam, Steel	Yes	
712.004.007	Guardrail End, Steel	Yes	
712.005.000	Guardrail, Fasteners and Anchor Bolts, Zinc-Aluminum-Magnesium Alloy Coating	Yes	
712.008.001	Fence, Steel, Chain-Link	Yes	
712.009.000.1	Fence, Wire, Steel, Right of Way, Zinc Coated (Galvanized) Class 1 Coating	Yes	
712.009.000.2	Fence, Wire, Steel, Right of Way, Zinc Coated (Galvanized) Class 3 Coating	Yes	
712.010.000	Barbed Wire, Coated Steel	Yes	
712.011.000	Fence, Safety	Yes	
713.002.000	Pipe and Pipe Arch, Metallic Coated Corrugated Steel	Yes	
713.003.000	Pipe and Pipe Arch, Asphalt Coated Corrugated Steel	Yes	
713.005.001	Pipe, Fiber Bonded Full Bituminous Coated Steel	Yes	
713.018.000	Box Culvert, Aluminum Alloy Structural Plate	Yes	
713.020.000	Pipe, End Sections for Corrugated Steel Pipe and Pipe Arch	Yes	
713.024.000	Pipe and Pipe Arch, Aluminum Coated Corrugated Steel	Yes	
714.002.000	Pipe, Reinforced Concrete Culvert, Storm Drain & Sewer, Class III, IV, V	Yes	*1
714.003.000	Pipe, Concrete, Arch, Storm Drain & Sewer	Yes	*1
714.004.000	Pipe, Reinforced Concrete, Elliptical Culvert, Storm Drain & Sewer	Yes	*1
714.005.000	Pipe, Perforated Concrete	Yes	*1
714.007.000	Box Culverts, Reinforced Concrete, Precast	Yes	*1
714.008.000	Concrete End Sections	Yes	*1
714.017.000	Pipe, Polypropylene, Dual Wall, 12-60 Inches	Yes	
714.018.000	Pipe, High Density Polyethylene, Steel Reinforced	Yes	*1
714.019.000.1	3-6 inches Perforated Pipe, High Density Polyethylene, Profile Wall	Yes	
714.019.000.2	3-10 inches Non Perforated Pipe, High Density Polyethylene, Profile Wall	Yes	
714.019.000.3	12-60 inches Pipe, High Density Polyethylene, Profile Wall	Yes	
714.020.000	Pipe, Perforated Plastic Semicircular	Yes	
714.022.000	Pipe, Polyvinyl Chloride (PVC)	Yes	
714.023.000	Box Culverts, Concrete, Precast Reinforced	Yes	*1
714.024.000	Pipe, Storm Drain, Non-Asbestos, Fiber-Cement	Yes	
715.008.000	Fabric, Waterproofing	Yes	
715.011.00X	Geotextile - Eng Fabric, All Types	Yes	
715.013.000	Fabric Pads, Preformed	Yes	
715.014.000	Bearing Pads, Elastomeric, Plain & Reinforced	Yes	*1

DOH-M-22 WVDOH Buy America Requirement Materials

AWP Material Code	Material Description	CoC Required	Notes
715.015.000	Neoprene Sheeting for Miscellaneous Items	Yes	
715.019.000.01	Concrete Units, Manholes and Inlets (Precast) Special	Yes	*1
715.019.000.04	Inlet, All Types	Yes	*1
715.019.000.0X	Manhole, All Types (Precast)	Yes	*1
715.019.000.14	Lift Station & Valve Vault (Precast)	Yes	*1
715.020.000	Precast Concrete Median Barriers (Temporary)	Yes	*1
715.022.000	Precast Concrete Median Barriers (Permanent)	Yes	*1
715.023.000	Gabion Baskets	Yes	*1
715.024.002.X	Matting for Erosion Control, All Types	Yes	
715.037.001	Tree Stakes	Yes	
715.037.002	Wire, Guying and Staking Plants	Yes	
715.038.000	Manhole Steps	Yes	
715.039.000	Elastomeric Gasket & Sealing Material	Yes	
715.040.006.1	Raised Pavement Markers, Type P-2, RPM	Yes	*1
715.040.006.2	Raised Pavement Marker, Type R-4, RPM	Yes	*1
715.041.001	Traffic Safety Devices, Attenuating Type V	Yes	*1
715.041.001.01	Reflective U-Channel Strips	Yes	
715.041.00X	Traffic Safety Devices, Attenuating All Types	Yes	*1
715.042.000.1	Traffic Signal Materials & Equipment	Yes	*1
715.042.000.2	Traffic Signals, Miscellaneous	Yes	*1
715.042.005.2	Loops (LPS)	Yes	*1
715.042.005.3	Closed Circuit Television (PAS-CCTV)	Yes	*1
715.042.005.4	Pedestrian Detector with Audible	Yes	*1
715.042.005.5	Radar Advance Digital Detection (RADD)	Yes	*1
715.042.005.6	Video Detection Cameras (VTDS)	Yes	*1
715.042.006.2	Signal Sections (V12) (V12P) (G16)	Yes	*1
715.042.009.1.2	Signal Supports, Mast Arm	Yes	
715.042.009.1.3	Supports, Signal, Video Arm	Yes	
715.042.009.2	Signal Supports, Strain Types C1, C1L, C2 and C2L	Yes	
715.042.009.2.2	Signal Supports, Anchor Bolts	Yes	
715.042.009.4.1	Signal Supports, Aluminum, Pedestal E-1	Yes	
715.042.009.4.2	Signal Support, Steel, Pedestal E-2	Yes	
715.042.009.4.3	Signal Support, Steel, Pedestal E-3	Yes	
715.042.010.1	Conduit, Rigid, Type R	Yes	
715.042.010.2	Conduit, Flexible, PVC Cover	Yes	
715.042.010.3	Conduit, Type P (Polyvinyl Chloride)	Yes	
715.042.011.X	Junction Box, All Types, All Duty, Cast in Place	Yes	*1
718.000.000.1	Waterline Items	Yes	
718.000.000.2	Sewerline Items	Yes	
718.001.000	Pipe, Ductile Iron	Yes	
718.005.000	Pipe, Plastic (PVC) Waterline	Yes	
718.007.000	Pipe, Plastic (Polyethylene) Waterline	Yes	
718.009.000	Service Line, Copper	Yes	
718.010.000	Gate Valves	Yes	*1
718.011.000	Valve Box	Yes	*1
718.012.000	Pipe, Casing, Water/Sewer	Yes	*1
718.013.000	Fire Hydrants	Yes	*1
718.014.000	Meters	Yes	*1

Note *1 - Only Steel/Iron<DELETE>/Non-Ferrous Components<DELETE> in this Material are Subject to Buy America Requirements.

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

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

Note: AWP Material Code is for internal use only.



EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
WASHINGTON, D.C. 20503

THE DIRECTOR

October 25, 2023

M-24-02

MEMORANDUM FOR THE HEADS OF EXECUTIVE DEPARTMENTS AND AGENCIES

FROM: Shalanda D. Young 

SUBJECT: Implementation Guidance on Application of Buy America Preference in Federal Financial Assistance Programs for Infrastructure

This memorandum provides supplemental implementation guidance to Federal agencies on: (1) the application of a Buy America preference¹ to Federal financial assistance programs for infrastructure; and (2) the process for waiving such a Buy America preference — including the circumstances under which waivers may be justified as consistent with applicable law and policy.² This memorandum rescinds and replaces Office of Management and Budget (OMB) Memorandum M-22-11. In addition, this memorandum removes direct conflicts between the earlier Memorandum M-22-11 and subsequent guidance issued by OMB in part 184 of Title 2 of the Code of Federal Regulations (“CFR”).³ This memorandum also provides updated guidance on a limited number of topics — including the waiver process — which modifies earlier guidance provided by OMB in Memorandum M-22-11. To the extent that any guidance provided in this memorandum conflicts with guidance in 2 CFR part 184, the guidance in part 184 prevails.

On November 15, 2021, President Biden signed into law the Infrastructure Investment and Jobs Act (“IIJA”), Pub. L. No. 117-58, which includes the Build America, Buy America Act (“BABA”). Pub. L. No. 117-58, §§ 70901-27. BABA strengthens Buy America preferences associated with Federal financial assistance for infrastructure and will bolster America’s industrial base, protect national security, and support high-paying jobs. BABA requires that the head of each covered Federal agency⁴ must ensure that none of the funds made available for a Federal financial assistance program for infrastructure are obligated for a project unless all of the iron, steel, manufactured products, and construction materials used in the project are produced in the United States.⁵

BABA affirms, consistent with Executive Order 14005, *Ensuring the Future Is Made in All of America by All of America’s Workers* (“the Executive Order”), this Administration’s priority to

¹ 2 CFR 184.3.

² 2 CFR 184.7; Executive Order 14005, “Ensuring the Future Is Made in All of America by All of America’s Workers,” 86 FR 7475 (Jan. 28, 2021).

³ 88 FR 57750 (Aug. 23, 2023).

⁴ For the purposes of this guidance, the terms “Federal agency” and “agency” mean any authority of the United States that is an “agency” (as defined in section 3502 of title 44, United States Code), other than an independent regulatory agency (as defined in that section). IIJA, § 70912(3).

⁵ IIJA, § 70914(a).

“use terms and conditions of Federal financial assistance awards to maximize the use of goods, products, and materials produced in, and services offered in, the United States.”⁶

On April 18, 2022, OMB issued Memorandum M-22-11, “Initial Implementation Guidance on Application of Buy America Preference in Federal Financial Assistance Programs for Infrastructure.” Memorandum M-22-11 provided initial implementation guidance to Federal agencies on the application of the Buy America preference to Federal financial assistance programs for infrastructure, the Buy America waiver process, and other topics.

On August 23, 2023, OMB issued a Notification of Final Guidance revising title 2 of the Code of Regulations (“CFR”) to add a new part 184 and revise section 200.322.⁷ Part 184 provides guidance to Federal agencies on how to apply the “Buy America” preference set forth in BABA to Federal awards for infrastructure projects.⁸ The revised section 200.322 clarifies existing provisions within part 200 on domestic preferences for procurements made under Federal financial assistance awards, and specifies that Federal agencies providing Federal financial assistance for infrastructure projects must implement the Buy America preferences set forth in 2 CFR part 184.⁹ OMB issues this memorandum to provide Federal agencies with supplemental guidance on implementing BABA and 2 CFR part 184.

I. Rescission of OMB Memorandum M-22-11

This memorandum rescinds and replaces OMB Memorandum M-22-11. OMB’s primary guidance related to implementation of BABA is contained in 2 CFR part 184. This memorandum summarizes certain aspects of 2 CFR part 184, and provides supplemental guidance for infrastructure projects subject to BABA. Federal agencies should refer to 2 CFR 184.2 for the effective date and applicability of part 184.¹⁰

II. Scope

In 2 CFR part 184, OMB identifies a limited set of infrastructure projects that will remain subject to certain requirements established in Memorandum M-22-11. See 2 CFR 184.2(b)-(c). For such projects, refer to Appendix II for applicable requirements originally contained in Memorandum M-22-11.

This memorandum modifies the guidance in Section VII of OMB Memorandum M-22-11 on “Issuing Buy America Waivers” for all infrastructure projects, including both projects subject to part 184 of 2 CFR and projects subject to the requirements of the rescinded OMB Memorandum M-22-11. Thus, Section VI of this Memorandum, entitled “Issuing Buy America Waivers,” is the effective OMB guidance on waivers for all infrastructure projects subject to BABA.

III. Summary of 2 CFR part 184

⁶ Exec. Order No. 14005 (see footnote 1).

⁷ See 88 FR 57750 (Aug. 23, 2023).

⁸ IJIA § 70912(a)(5)(7).

⁹ See 88 FR 57750 (Aug. 23, 2023).

¹⁰ 2 CFR 184.2(b).

2 CFR part 184 includes definitions for key terms, including iron or steel products, manufactured products, construction materials, and materials identified in section 70917(c) of BABA (section 70917(c) materials). These definitions at 2 CFR 184.3 provide a common system for Federal agencies to distinguish between the product categories established under the statutory text in BABA.

2 CFR 184.4(c)-(d) provides guidance on the meaning of infrastructure under BABA. Section 184.4(c) explains that “infrastructure” encompasses public infrastructure projects in the United States. The term includes, at a minimum, the structures, facilities, and equipment for roads, highways, and bridges; public transportation; dams, ports, harbors, and other maritime facilities; intercity passenger and freight railroads; freight and intermodal facilities; airports; water systems, including drinking water and wastewater systems; electrical transmission facilities and systems; utilities; broadband infrastructure; and buildings and real property; and structures, facilities, and equipment that generate, transport, and distribute energy including electric vehicle (EV) charging.

OMB also provides a definition of “infrastructure project” at 2 CFR 184.3. Section 184.4(d) explains that Federal agencies should interpret the term “infrastructure” broadly and consider the description provided in section 184.4(c) as illustrative and not exhaustive. Section 184.4(d) also explains that, when determining if a particular construction project of a type not listed in section 184.4(c) constitutes “infrastructure,” agencies should consider whether the project will serve a public function, including whether the project is publicly owned and operated, privately operated on behalf of the public, or is a place of public accommodation, as opposed to a project that is privately owned and not open to the public. Through this memorandum, OMB notes that projects with the former “public” qualities have greater indicia (or distinguishing features) of “infrastructure,” while projects with the latter “private” quality have fewer. As a result, projects consisting solely of the purchase, construction, or improvement of a private home for personal use, for example, would not constitute a public infrastructure project for purposes of BABA. Federal agencies are strongly encouraged to consult with OMB when making such determinations or if they are uncertain about the applicability of this guidance to any particular infrastructure program.

2 CFR part 184 also includes —

- Information on the applicability and effective date of part 184 (2 CFR 184.2);
- Information on the non-applicability of part 184 to certain existing Buy America preferences implemented by Federal agencies (2 CFR 184.2(a));
- Guidance on the applicability of the Buy America preference to infrastructure projects and including the preference in Federal awards (2 CFR 184.4(a)-(b));
- Guidance on categorizing articles, materials, and supplies into the appropriate category (2 CFR 184.4(e));
- Guidance on applying the Buy America preference by category (2 CFR 184.4(f));
- Guidance for determining the cost of components of manufactured products (2 CFR 184.5);
- Standards that define “all manufacturing processes” in the case of construction materials (2 CFR 184.6);

- Guidance on proposing and issuing Buy America waivers (2 CFR 184.7);
- Guidance on how Federal agencies should allow recipients to request waivers (2 CFR 184.7); and
- Guidance on exemptions to the Buy America preference (2 CFR 184.8).

IV. Guidance on Applicability to Federal Financial Assistance Programs

The Buy America preference under BABA and 2 CFR part 184 applies to all Federal financial assistance as defined in 2 CFR 200.1 or successor regulations¹¹ — whether or not funded through IIJA — where funds are appropriated or otherwise made available and used for a project for infrastructure. See 2 CFR 184.2(a), 200.1, and 200.322(c). For the purposes of this memorandum, Federal financial assistance means assistance that non-Federal entities receive or administer in the form of grants, cooperative agreements, non-cash contributions or donations of property, direct assistance, loans, loan guarantees, and other types of financial assistance. The term “non-Federal entity” includes States, local governments, territories, Indian tribes, Institutions of Higher Education (IHE), and nonprofit organizations.¹²

For purposes of this guidance, for-profit organizations are not considered non-Federal entities. However, this guidance does not alter legal authorities that agencies may have to include the Buy America preference, or other domestic content requirements, in awards of Federal financial assistance issued to for-profit organizations. Federal agencies may consider applying this guidance to for-profit entities consistent with their legal authorities. For example, 2 CFR 200.101(a)(2) allows Federal agencies to apply certain subparts of part 200 to for-profit entities. See also the discussion of for-profit entities in the preamble for 2 CFR part 184; and discussion below in this memorandum on requirements that “flow down” to “subrecipients.”

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 are not an integral part of the structure or permanently affixed to the infrastructure project.

A Buy America preference only applies to the iron and steel, manufactured products, and construction materials incorporated into an infrastructure project receiving a Federal award. If an agency has determined that no funds from a particular project receiving a Federal award will be used for infrastructure, a Buy America preference does not apply to that project. A Buy America preference does not apply to non-infrastructure components or expenditures under an infrastructure project receiving a Federal award.

A Buy America preference applies to *an entire infrastructure project*, even if it is funded by both Federal and non-Federal funds under one or more awards. In other words, if an

¹¹ IIJA § 70912(4)(A)

¹² See 2 C.F.R. § 200.1.

infrastructure project receives a Federal award, the Buy America preferences applies to both the Federal funds and non-Federal funds used for the infrastructure project.

Part 184 clarifies that it does not apply to a Buy America preference meeting or exceeding the requirements of section 70914 of BABA applied by a Federal agency to Federal awards for infrastructure projects before November 15, 2021 (when IIJA was signed into law). Federal agencies must make necessary changes to come into compliance with BABA's requirements, unless such agencies have policies and provisions that already meet or exceed the standards required by BABA. For example, a program in which the standards for iron and steel already meet the standards in BABA may nevertheless be required to adopt new standards for manufactured products and construction materials. Maintaining current policies where appropriate avoids unnecessary disruption to programs, or elements of programs, that already meet or exceed BABA requirements. For additional information, see 2 CFR 184.2(a) and associated discussion of that section in the preamble to the final guidance.¹³

Unless the Federal award specifically indicates otherwise, subawards should conform to the terms and conditions of the Federal award from which they flow.¹⁴ For example, if a Federal agency obligates an award to a State government as a direct recipient, and the State issues a subaward to a for-profit entity to carry out the project as a subrecipient, then the Buy America preference requirements included in the Federal award would flow down to the for-profit entity.

Through Memorandum M-22-11, OMB explained that, before applying a Buy America preference to a covered program that will affect Tribal communities, Federal agencies should follow the consultation policies established through Executive Order 13175, Consultation and Coordination with Indian Tribal Governments, and consistent with policies set forth in the Presidential Memorandum of January 26, 2021, on Tribal Consultation and Strengthening Nation-to-Nation Relationships. Federal agencies should continue to strengthen Nation-to-Nation relationships through regular and meaningful consultation and collaboration with Tribal communities in accordance with the Presidential Memorandum of January 26, 2021 and the Presidential Memorandum of November 30, 2022, on Uniform Standards for Tribal Consultation.

Agencies with questions regarding the application of a Buy America preference to agency programs, including questions about the possible use of waivers, are advised to reach out to OMB's Made in America Office ("MIAO") for technical assistance and advice.

V. Consistency with International Agreements

Pursuant to Section 70914(e) of BABA, this guidance must be applied in a manner consistent with the obligations of the United States under international agreements. Federal financial assistance awards are generally not subject to international trade agreements because these international obligations only apply to direct Federal procurement activities by signatories to such agreements. The Federal Acquisition Regulation ("FAR") addresses how international trade agreements implemented by the Trade Agreements Act apply to direct Federal procurement activities of the U.S. at FAR subpart 25.4.¹⁵ In the case of Federal financial assistance, a number of

¹³ 88 FR 57750 (Aug. 23, 2023).

¹⁴ 2 CFR 200.101(b)(2).

¹⁵ See also FAR 25.1101, 25.1103, and 52.225-5.

U.S. States have opted to obligate their procurement activities to the terms of one or more international trade agreements and, as such, are included in schedules to the international trade agreements. If a recipient is a State that has assumed procurement obligations pursuant to the Government Procurement Agreement or any other trade agreement, a Federal agency that applies a BABA preference to Federal awards may propose to waive BABA requirements in the public interest to allow a State to comply with its obligations. Federal agencies should follow the procedures in Section 184.7 of the OMB guidance in 2 CFR part 184 and relevant supplemental guidance in this memorandum. For additional information, interested entities may also consult with the State in question or the Federal agency providing the funds.

VI. Issuing Buy America Waivers

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 —

- Applying the Buy America preference would be inconsistent with the public interest (a “public interest waiver”);
- 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
- 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”).

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 greatest extent practicable, waivers should be targeted to specific products and projects.¹⁶

Before issuing a final waiver, the Federal awarding agency must make the proposed waiver and the detailed written explanation publicly available in an easily accessible location on a website designated by the Federal awarding agency and OMB. The Federal agency must also provide a period of not less than 15 calendar days for public comment on the proposed waiver.¹⁷ General applicability waivers are subject to a minimum 30-day public comment period when reviewed for modification or renewal.¹⁸ The MIAO may request that Federal agencies use a 30-day comment period for other waivers on a case-by-case basis when circumstances warrant — for example when a waiver covers items of special importance to American supply chains (such as those identified in section 3(b) of the Executive Order 13953) or involves a substantial amount of Federal funding.

Agencies are required to provide the website address where they will be posting proposed waivers for public comment to OMB at MBX.OMB.MadeInAmerica@omb.eop.gov. Pursuant to sections 70914(c) and 70937 of IIJA, the waiver must also be cross-posted to a

¹⁶ See Section VI of this guidance for information on waiver principles and criteria.

¹⁷ 2 CFR part 184.7(d).

¹⁸ IIJA § 70914(d)(2)(A)(ii). See Section VII of this guidance for information on general applicability waivers.

centralized waiver transparency website managed by the General Services Administration (GSA), [BuyAmerican.gov](https://www.buyamerican.gov),¹⁹ in addition to the agency website. To minimize duplication and promote efficiency, MIAO and GSA will continue to coordinate with agencies on the expansion of the existing website's functionality to display waivers for Federal financial assistance and provide further instructions to agencies as necessary.

Federal agencies are responsible for performing due diligence, including market research, and approving or rejecting waivers consistent with BABA, 2 CFR part 184, this guidance, and any other applicable Buy America laws.

Federal agencies should notify the MIAO, and are encouraged to consult with the MIAO when possible, in advance of posting an award- or project-level proposed waiver for public comment. However, Federal agencies must consult with the MIAO for proposed waivers with broader applicability (such as a general applicability waiver) before posting them for public comment. The purpose of the consultation is to identify any opportunities to structure the waiver in order to maximize the use of goods, products, and materials produced in the United States to the greatest extent possible consistent with law. Federal agencies should send proposed waivers for review to MBX.OMB.MIAwaivers@omb.eop.gov.

Federal agencies must submit to the MIAO a draft of the waiver for review after the public comment period has concluded. MIAO will review the draft waiver to determine if it is consistent with applicable law and policy,²⁰ and will notify the Federal agency of its determination.

All waiver requests must include a detailed justification for the use of goods, products, or materials mined, produced, or manufactured outside the United States²¹ and a certification that there was a good faith effort to solicit bids for domestic products supported by terms included in requests for proposals, contracts, or nonproprietary communications with potential suppliers.²² In addition, at a minimum and to the greatest extent practicable, each proposed or draft final waiver submitted to the MIAO should include the following information, as applicable:

- Waiver type (nonavailability, unreasonable cost, or public interest).
- Recipient name and Unique Entity Identifier (UEI).
- Federal awarding agency organizational information (e.g., Common Government-wide Accounting Classification (CGAC) Agency Code).
- Financial assistance listing name and number.
- Federal financial assistance program name.
- Federal Award Identification Number (FAIN) (if available or applicable).
- Federal financial assistance funding amount.
- Total estimated infrastructure expenditures, including all Federal and non-Federal funds (if applicable).
- Infrastructure project description and location (to the extent known).

¹⁹ [BuyAmerican.gov](https://www.buyamerican.gov) redirects to [MadeInAmerica.gov](https://www.madeinamerica.gov).

²⁰ Executive Order 14005, § 4(c).

²¹ IIJA, § 70937(c)(2)(A).

²² IIJA, § 70937(c)(2)(D).

- In the case of general applicability waivers, a description of the relevant Federal program(s)—including information on the size and scale of the program(s), an estimate of the dollar amount of Federal financial assistance that would be subject to the waiver, and an estimate of how many infrastructure projects would be subject to the waiver.
- List of iron or steel item(s), manufactured products, and construction material(s) proposed to be excepted from Buy America requirements, including name, cost, country(ies) of origin (if known), and relevant Product and Service Code (PSC) and North American Industry Classification System (NAICS) code for each.
- A description of efforts made (e.g., market research, industry outreach, etc.) by the Federal awarding agency and, in the case of a project or award specific waiver, by the recipient, in an attempt to avoid the need for a waiver. Such a description may cite, if applicable, the absence of any Buy America-compliant bids received in response to a solicitation.
- Market research, where applicable, should include relevant details, including who conducted the market research, when it was conducted, sources that were used, and the methods used to conduct the research.
- Anticipated impact if no waiver is issued.
- For final waivers, any relevant comments received through the public comment period, and the agency's response to those comments.

The purpose of the information is to demonstrate the agency's due diligence, and provide the MIAO with sufficient information to determine whether the proposed waiver is consistent with law and policy. For proposed waivers, agencies should also ensure that sufficient information is available for public review. Information provided for public review should help interested manufacturers gauge the demand for products for which agencies are considering waiving a Buy America preference.

To avoid a need for duplicative waiver requests from entities that receive funding for one infrastructure project through multiple Federal agencies, the Federal agency contributing the greatest amount of Federal funds for the project may be considered the Cognizant Agency for Made in America ("Cognizant Agency") and may take responsibility for coordinating with the other Federal awarding agencies. Such coordination has the benefit of providing uniform waiver criteria and adjudication processes, minimizing duplicative efforts among Federal agencies, and reducing burdens on recipients. Based on the statutory waiver authority at section 70914(b) of BABA, each Federal agency waiving a BABA preference must make their own waiver determination. In other words, a Cognizant Agency cannot independently issue a waiver that applies to other agencies, but other agencies may rely on the work performed by the Cognizant Agency when proposing and issuing waivers for a single infrastructure project. When appropriate, agencies may consider proposing a joint waiver including two or more agencies relying on the work performed by the Cognizant Agency. Any Federal agency that did not jointly issue the proposed and final waivers will need an individual waiver, but it may also potentially rely on work performed by the Cognizant Agency when appropriate under the circumstances. The Cognizant Agency is responsible for consulting with the other Federal agencies, publicizing the proposed joint waiver, and submitting the proposed joint waiver for review to the MIAO.

a. Waiver Principles and Criteria

To ensure they are scrupulously monitoring, enforcing, and complying with applicable Buy America Laws and minimizing the use of waivers,²³ agencies must apply consistent criteria to determine whether to grant a waiver in a given circumstance. Agencies should establish policies and practices to ensure consistency with this guidance.

Agencies may reject or grant waivers in whole or in part. To the greatest extent practicable, waivers should be issued at the project level and be product-specific. As appropriate, a project-level waiver may be further narrowed to apply only to a single product or product type on that project. Overly broad waivers undermine market signals designed to boost domestic supply chains, particularly for key articles, materials and supplies in critical supply chains (i.e., critical supply chains identified in Executive Order 14017, *America's Supply Chains*). When necessary, agencies may consider issuing a waiver that has applicability beyond a single project; however, agencies should always issue, construe, and apply waivers to ensure the maximum utilization of goods, products, and materials produced in the United States, consistent with applicable law.

Federal agencies may consult with the MIAO when establishing or modifying criteria for granting waivers. They may also work within the Made in America Council,²⁴ a practice that will help to foster consistency across agencies to the greatest extent practical and appropriate. Federal agencies should use the following principles before issuing a waiver of any type —

- **Time-limited:** In certain limited circumstances, a Federal agency may determine that a waiver should be constrained principally by a length of time, or phased-out over time, rather than by the specific projects to which it applies. Waivers of this type may be appropriate, for example, when an item that is “non-available” from domestic sources is widely used in projects funded by a particular program’s awards. When issuing such a waiver, the agency should identify an appropriate, definite time frame (e.g., no more than one to two years) designed to ensure that, as domestic supply becomes available, domestic producers will have prompt access to the market created by the program.
- **Targeted:** Waivers that are not limited to particular projects should apply only to the item(s), product(s), or material(s) or category(ies) of item(s), product(s), or material(s) necessary. Waivers that are overly broad will tend to undermine domestic preference policies. Broader waivers will receive greater scrutiny from the MIAO.
- **Conditional:** Federal agencies are encouraged to issue waivers with specific conditions that support the policies of BABA and the Executive Order.

These principles and criteria should be viewed as minimum requirements for the use of

²³ IIJA § 70933(2).

²⁴ “Launching a New Made in America Council,” OMB, Briefing Room, Blogs (Jan. 19, 2022).

waivers by Federal agencies.²⁵ The MIAO expects all general applicability waivers to be appropriately targeted and time-limited. For example, agencies may consider phasing-out a waiver over time to provide a phased application of the Buy America preference requirements for a specific Federal program. Agencies also may consider limiting the scope of the waiver to only specific Buy America preference requirements (such as proposing to waive requirements for a limited set of construction materials). Project-level and award-level waivers should also be narrowly targeted, as appropriate.

Federal agencies should propose waivers to apply prospectively to future expenditures incurred after the effective date of the final waiver. While the BABA requirements apply when Federal funds are obligated²⁶ (when a Federal award is made), the MIAO recognizes that certain circumstances may justify a waiver of those domestic content requirements even after an award has been made. While waivers can be granted after a Federal agency makes an award, the waiver cannot apply to expenditures already incurred under the Federal award for items subject to a Buy America preference before the effective date of the waiver.

Non-availability Waivers

Before granting a non-availability waiver, agencies should consider whether the recipient has performed thorough market research, which may be accomplished with assistance from the agency, and adequately considered, where appropriate, qualifying alternate items, products, or materials. Waivers should describe the market research activities and methods to identify domestically manufactured items capable of satisfying the requirement, including the timing of the research and conclusions reached on the availability of sources. Agencies are encouraged to engage with the Made in America Council to develop resource lists for common items, goods, or materials.

Unreasonable Cost Waivers

An unreasonable cost waiver is available if 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. Before granting an unreasonable cost waiver, to the extent permitted by law, agencies should ensure the recipient has provided adequate documentation that no domestic alternatives are available within this cost parameter. Agencies may assist recipients in gathering documentation.

For requests citing unreasonable cost as the statutory basis of the waiver, the waiver justification must include a comparison of the overall cost of the project with domestic products to the overall cost of the project with foreign-origin products, pursuant to the requirements of the applicable Made in America law.²⁷ Publicly available cost comparison data may be provided in lieu of proprietary pricing information.²⁸ Unreasonable cost waivers should be no broader than necessary.

²⁵ See Section IV. of this guidance for agencies that have existing regulations or guidance.

²⁶ IIJA § 70914(a).

²⁷ IIJA, § 70937(c)(2)(B).

²⁸ IIJA, § 70937(c)(2)(B).

Before granting an unreasonable cost waiver, to the extent permitted by law, agencies should also assess whether a significant portion of any cost advantage of a foreign-sourced product is the result of the use of dumped steel, iron, or manufactured products or the use of injuriously subsidized steel, iron, or manufactured products. More information on this topic is provided below in the discussion of public interest waivers.

Public Interest Waivers

A waiver in the public interest may be appropriate where an agency determines that other important policy goals cannot be achieved consistent with the Buy America requirements established by BABA and the proposed waiver would not meet the requirements for a non-availability or unreasonable cost waiver. Such waivers must be used judiciously and construed to ensure the maximum utilization of goods, products, and materials produced in the United States.²⁹ To the extent permitted by law, determination of public interest waivers must be made by the head of the agency with the authority over the Federal financial assistance award.³⁰

Public interest waivers may have a variety of bases. As with other waivers, they should be project-specific whenever possible, as what is in the public interest may vary depending upon the circumstances of the project, recipient, and specific items, products, or materials in question.

Federal agencies may wish to consider issuing a limited number of general applicability public interest waivers in the interest of efficiency and to ease burdens for recipients. The agency remains responsible for determining whether such a waiver is appropriate to apply to any given project; the MIAO will not review each application of such a waiver. The following are examples of types of public interest waivers an agency may consider proposing and issuing³¹ —

- ***De Minimis*:** Ease of administration is important to reduce burden for recipients and agencies. Federal agencies may consider whether a general applicability public interest waiver should apply to infrastructure project purchases below a *de minimis* threshold. An agency may consider whether a public interest waiver should apply when necessary to ensure that recipients and Federal agencies make efficient use of limited resources, especially if the cost of processing the individualized waiver(s) would risk exceeding the value of the items waived. Agencies may consider adopting an agency-wide public interest waiver that sets a *de minimis* threshold, for example, of five (5) percent of applicable project costs up to a maximum of \$1,000,000, where applicable project costs are defined as material costs subject to the Buy America preference.
- **Small Grants:** Agencies may wish to consider whether it is in the public interest to waive application of a Buy America preference to awards at or below the Simplified Acquisition Threshold (SAT) that meet the following criteria: (1) the total Federal award does not exceed the SAT, currently set at \$250,000; and (2) the Federal award amount, inclusive of other funding sources for the infrastructure

²⁹ IIJA, § 70935(a).

³⁰ IIJA, § 70935(b).

³¹ The list is not exhaustive and no agency is required to issue the types of waivers noted as examples. As with other general applicability waivers, generally applicable public interest waivers must be reviewed at least every five years and more often as appropriate.

project, is not anticipated to exceed the SAT for the life of the Federal award. Federal agencies and the MIAO have found this type of waiver to be consistent with policy in some cases in the initial years after enactment of IIJA, but it may potentially be phased out over time as agencies develop more efficient award-level or project-level waiver review capabilities.

- **Minor Components:** Agencies may wish to consider whether it is in the public interest to allow minor deviations for miscellaneous minor components within iron and steel products. A general applicability, public interest, minor components waiver may allow non-domestically produced miscellaneous minor components comprising no more than five (5) percent of the total material cost of an otherwise domestically produced iron and steel product. This waiver type may not exempt an entire iron and steel product from the Buy America preference; the primary iron and steel components of the product must still be produced domestically. It would not be in the public interest to use a minor components waiver to exempt a whole product from the iron and steel requirements, or to allow the primary iron or steel components of the product to be produced other than domestically.
- **International Trade Obligations:** If a recipient is a State that has assumed procurement obligations pursuant to the Government Procurement Agreement or any other trade agreement, a waiver of a Made in America condition to ensure compliance with such obligations may be in the public interest.
- **Other Considerations:** A waiver may be in the public interest in one circumstance, but not in another, and considerations will depend upon the nature and amount of resources available to the recipient, the value of the items, goods, or materials in question, the potential domestic economic impacts, and other policy considerations, including sustainability, equity, accessibility, performance standards, and the domestic content (if any) of and conditions under which the non-qualifying good was produced.

All proposed waivers citing the public interest as the statutory basis must include a detailed written statement, which must address all appropriate factors, such as potential obligations under international agreements, justifying why the requested waiver is in the public interest.³²

Before granting a waiver in the public interest, to the extent permitted by law, agencies must assess whether a significant portion of any cost advantage of a foreign-sourced product is the result of the use of dumped steel, iron, or manufactured products or the use of injuriously subsidized steel, iron, or manufactured products. As explained above, Federal agencies should also conduct a similar analysis for unreasonable cost waivers, but it is not needed for non-availability waivers. Agencies may consult with the International Trade Administration (ITA) in making this assessment if the granting agency deems such consultation to be helpful. The agency must integrate any findings from the assessment into its waiver determination as appropriate.³³ MIAO will work with ITA and agencies to develop standard processes to expedite this required assessment, such as by ensuring agencies know how to easily access lists of dumped or injuriously subsidized products. Agencies can contact the MIAO for more information on possible resources.

³² IIJA, § 70937(c)(2)(C).

³³ Executive Order, § 5.

b. General Applicability Waivers

The term “general applicability waiver” refers to a waiver that applies generally across multiple agency projects or awards. A general applicability waiver can be “product-specific” (e.g., applies only to a product or category of products) or “non-product specific” (e.g., applies to all “manufactured products”).

General applicability waivers should be issued only when necessary to advance an agency’s missions and goals, consistent with IIJA, the Executive Order, and this guidance. For example, an agency might issue a general applicability waiver for a product for which there are well-established domestic sourcing challenges. General applicability waivers will require appropriate justification from the Federal agency.

Except as provided below, Federal agencies must review general applicability waivers within five years of the date on which the waiver was issued. Agencies are encouraged to review general applicability waivers more frequently, when appropriate. In reviewing of any general applicability waiver, the head of a Federal agency, or their delegated authority, must —

(A) Publish in the *Federal Register* a notice that—

- (i) describes the justification for the general applicability waiver; and
- (ii) requests public comments for a period of not less than 30 days on the continued need for the general applicability waiver; and

(B) Publish in the *Federal Register* a determination on whether to continue or discontinue the general applicability waiver, considering the comments received in response to the notice published under paragraph (A).³⁴

Through November 15, 2026, the requirement to review general applicability waivers under paragraphs (A) and (B) above does not apply to any product-specific general applicability waiver that was issued before May 19, 2021.³⁵

OMB has instructed Federal agencies with existing, non-product specific general applicability waivers that were issued more than five years before November 15, 2021 to promptly commence review of each such waiver by publishing a *Federal Register* notice as required in section 70914(d)(2)(A) of the IIJA. Should the review justify retaining the waiver, agencies should consider narrowing the waiver in a manner that would support supply chain resilience and boost incentives to manufacture key products domestically, as appropriate.

The MIAO will work with agencies to expedite consideration of general applicability waivers for products or categories of products for which domestic sourcing challenges have been well documented. Agencies should align such waivers with complementary policies, such as work to boost supply chain resiliency and domestic employment. General applicability waivers should include appropriate expiration dates designed to ensure that, once available, Buy America

³⁴ IIJA, § 70914(d)(1) & (2).

³⁵ IIJA, § 70914(d)(3).

qualifying products receive appropriate consideration.

Appendix I: Example of Award Term (Sample Language) —Required Use of American Iron, Steel, Manufactured Products, and Construction Materials

Where applicable, the Federal agency must include appropriate terms and conditions in all awards, in accordance with applicable legal requirements and its established procedures, in order to effectuate the requirements of BABA and this guidance. The following is sample language.

To achieve the greatest possible consistency across agencies and programs, agencies should send their proposed terms and conditions to the MIAO for review prior to incorporating them into applicable awards. Agencies should include appropriate language in the Notice of Funding Opportunity to provide applicants fair notice of the Buy America conditions that will apply to funds obligated on or after that date.

** ** **

Buy America Preference. Recipients of an award of Federal financial assistance from a program for infrastructure are hereby notified that none of the funds provided under this award may be used for an infrastructure project unless:

- (1) All iron and steel used in the project are produced in the United States—this means all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States;
- (2) 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; and
- (3) All construction materials are manufactured in the United States—this means that all manufacturing processes for the construction material occurred in the United States. The construction material standards are listed below.

Incorporation into an infrastructure project. The 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 are not an integral part of the structure or permanently affixed to the infrastructure project.

Categorization of articles, materials, and supplies. An article, material, or supply should only be classified into one of the following categories: (i) Iron or steel products; (ii)

Manufactured products; (iii) Construction materials; or (iv) Section 70917(c) materials. An article, material, or supply should not be considered to fall into multiple categories. In some cases, an article, material, or supply may not fall under any of the categories listed in this paragraph. The classification of an article, material, or supply as falling into one of the categories listed in this paragraph 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.

Application of the Buy America Preference by category. 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.

Determining the cost of components for manufactured products. 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:

(a) 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); or

(b) For components manufactured by the manufacturer, all costs associated with the manufacture of the component, including transportation costs as described in paragraph (a), plus allocable overhead costs, but excluding profit. Cost of components does not include any costs associated with the manufacture of the manufactured product.

Construction material standards. 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.” Except as specifically provided, only a single standard should be applied to a single construction material.

(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.

Waivers

When necessary, recipients may apply for, and the agency may grant, a waiver from these requirements. The agency should notify the recipient for information on the process for requesting a waiver from these requirements.

When the Federal agency has made a determination that one of the following exceptions applies, the awarding official may waive the application of the Buy America Preference in any case in which the agency determines that:

- (1) applying the Buy America Preference would be inconsistent with the public interest;
- (2) the 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; 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.

A request to waive the application of the Buy America Preference must be in writing. The agency will provide instructions on the format, contents, and supporting materials required for any waiver request. Waiver requests are subject to public comment periods of no less than 15 days and must be reviewed by the Made in America Office.

There may be instances where an award qualifies, in whole or in part, for an existing waiver described at [\[link to awarding agency web site with information on currently applicable general applicability waivers\]](#).

*Definitions*³⁶

“Buy America Preference” means the “domestic content procurement preference” set forth in section 70914 of the Build America, Buy America Act, which requires the head of each Federal agency to ensure that none of the funds made available for a Federal award for an infrastructure project may be obligated unless all of the iron, steel, manufactured products, and construction materials incorporated into the project are produced in the United States.

“Construction materials” means articles, materials, or supplies that consist of only one of the items listed in paragraph (1) of this definition, except as provided in paragraph (2) of this definition. To the extent one of the items listed in paragraph (1) contains as inputs other items listed in paragraph (1), it is nonetheless a construction material.

(1) The listed items are:

- (i) Non-ferrous metals;
- (ii) Plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables);
- (iii) Glass (including optic glass);
- (iv) Fiber optic cable (including drop cable);
- (v) Optical fiber;
- (vi) Lumber;
- (vii) Engineered wood; and
- (viii) Drywall.

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

“Infrastructure” means public infrastructure projects in the United States, which includes, at a minimum, the structures, facilities, and equipment for roads, highways, and bridges; public transportation; dams, ports, harbors, and other maritime facilities; intercity passenger and freight railroads; freight and intermodal facilities; airports; water systems, including drinking water and wastewater systems; electrical transmission facilities and systems; utilities; broadband infrastructure; and buildings and real property; and structures, facilities, and equipment that generate, transport, and distribute energy including electric vehicle (EV) charging.

“Infrastructure project” means any activity related to the construction, alteration, maintenance, or repair of infrastructure in the United States regardless of whether infrastructure is the primary purpose of the project. See also paragraphs (c) and (d) of 2 CFR 184.4.

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

³⁶ Federal agencies may choose to provide definitions on a public-facing website and reference that website in the terms and conditions, rather than including all definitions in the terms and conditions itself. If an agency chooses to provide definitions on a public-facing website, it is not considered a deviation from the terms and conditions provided and does not need to be reviewed by OMB.

“Manufactured products” means:

(1) Articles, materials, or supplies that have been:

- (i) Processed into a specific form and shape; or
- (ii) Combined with other articles, materials, 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, a construction material, or a Section 70917(c) material under 2 CFR 184.4(e) and the definitions set forth in 2 CFR 184.3, 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.

“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.

“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.

Appendix II: Guidance for Projects Identified at 2 CFR 184.2(b)-(c) as Remaining Subject to OMB Memorandum M-22-11

In 2 CFR part 184, OMB identifies a limited set of infrastructure projects that will remain subject to certain requirements established in Memorandum M-22-11. For projects identified at 2 CFR 184.2(b)-(c) as remaining subject to the requirements of Memorandum M-22-11, recipients and subrecipients may continue to rely on —

- a. The requirements established in Section VIII of the rescinded Memorandum M-22-11 on “Preliminary Guidance for Construction Materials,” which is included, in relevant part, in this appendix. This includes reliance on the shorter list of construction materials identified in Memorandum M-22-11 and the preliminary standard for “all manufacturing processes” applicable to construction materials on that list; and
- b. Their good faith efforts to categorize articles, materials, and supplies as (1) iron or steel products, (2) manufactured products, or (3) construction materials based on the guidance provided in Sections I, VI, and VIII of the rescinded OMB Memorandum M-22-11. In other words, recipients and subrecipients of Federal awards for these projects are not required to recategorize items based on the more specific guidance provided in 2 CFR part 184 and the associated preamble, but may rely on clarifying guidance in part 184 or the associated preamble if useful.

Below is relevant guidance for these projects restated from OMB Memorandum M-22-11 —

The IIJA finds that “construction materials” includes an article, material, or supply — other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives — that is or consists primarily of:

- non-ferrous metals;
- plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables);
- glass (including optic glass);
- lumber; or
- drywall.

To provide clarity to item, product, and material manufacturers and processors, items that consist of two or more of the listed materials that have been combined together through a manufacturing process, and items that include at least one of the listed materials combined with a material that is not listed through a manufacturing process, should be treated as manufactured products, rather than as construction materials. For example, a plastic framed sliding window should be treated as a manufactured product while plate glass should be treated as a construction material.

Absent any existing applicable standard in law or regulation that meets or exceeds these preliminary standards, agencies should consider “all manufacturing processes” for construction materials to include at least the final manufacturing process and the immediately preceding manufacturing stage for the

construction material.

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

MATERIALS PROCEDURE

STANDARD METHOD OF MICROSCOPIC
DETERMINATION OF AIR-VOID CONTENT

1. PURPOSE

- 1.1 To obtain quantitative information concerning air voids, matrix, fine aggregate, and coarse aggregate in hardened concrete.
-

2. SCOPE

- 2.1 By using the linear traverse method of point counts, the relative composition of hardened concrete cylinders or cores on a percentage basis can be determined.
-

3. EQUIPMENT

- 3.1 A large stone saw.
- 3.2 A lapidary grinding apparatus.
- 3.3 A linear traveler apparatus.
- 3.4 A reflecting illumination system.
- 3.5 A binocular microscope with a cross hair type reticle. (Magnification preferably in the 10x, 30x, and 60x range).
- 3.6 Miscellaneous: Silicon carbide grinding material, grit numbers 120, 240, 400 and 600, a set of 4 mechanical specimen counters, or a wet polishing device with similar grit values ranging from 120 to 600, a 12 in (305 mm) ruler, and a permanent marker.
-

4. PROCEDURE FOR PREPARATION OF CONCRETE SPECIMENS

- 4.1 The concrete specimens shall be cut on the large stone saw so as to bisect the cylinder along its longitudinal dimension. Care shall be taken in avoiding, if possible, the steel reinforcing bars encountered in bridge deck cores.
- 4.2 Select the better half of the specimen and make a cut perpendicular to its long axis, 4 in (102-100 mm) below the top surface of bridge deck core specimens. If the specimen is a concrete cylinder a 4 in (102-100 mm) section from the middle of the cylinder is cut and used for point counting. These operations are done so that the linear traveler specimen holder can accommodate the specimen.
- 4.3 All portions of the specimen are retained for possible later inspection.

- 4.4 That portion of the specimen prepared in Section 4.2 is now polished, first using silicon carbide grit number 120, in order to obtain a uniform surface, and subsequent polishing by silicon carbide grit numbers 240, 400 and 600 to obtain a smooth, highly polished surface.

5. OPERATIONAL PROCEDURES USING THE LINEAR TRAVELER

- 5.1 The polished specimen is placed on the specimen holder of the linear traveler.
- 5.2 After the specimen is centered on the specimen holder, the specimen shall be leveled, so as to minimize refocusing.
- 5.3 A right vertical margin and a left vertical margin shall be drawn on the polished surface of the specimen. The placement of each margin is dependent upon the horizontal limits of the linear traveler and the irregularity of the boundaries of the specimen. If an irregularity exists, the corresponding margin is placed along the inner edge of the irregularity.
- 5.4 A light source shall be directed onto the specimen surface for illumination of the visual field.
- 5.5 The binocular microscope assembly shall be positioned so that the technician can observe the entire distance between margins as the linear traveler moves horizontally.
- 5.6 Horizontal movement of the linear traveler is accomplished according to the manufacturer's specifications or recommendations. Automated travelers will transition after the previous point is recorded.
- 5.7 Vertical movement of a manual linear traveler is accomplished according to the manufacturer's recommendation. For automated travelers, the vertical movement will be executed once the horizontal traveler is returned to the home position.
- 5.8 By using the controls of the linear traveler, position the specimen while viewing through the microscope at 10x, 30x or 60x magnification, so that the vertical cross hair is in line with one of the vertical margins and the horizontal cross hair is approximately 1/8th in (3.2 mm) below the specimen, or 1/8th in 3.2 mm below the deepest penetration of an irregular edge.
- 5.9 Readjust the light source so as to obtain an adequate field illumination.
- 5.10 Adjust the horizontal linear traveler so that the technician views that portion of the specimen between the margins as the linear traveler moves horizontally.
- 5.11 Focus the microscope on the specimen surface (periodic refocusing may be necessary).
- 5.12 Push the horizontal motion control switch so that the linear traveler moves one unit and stops.

- 5.13 At the intersection of the cross hairs, decide whether the material is an air void, matrix, fine aggregate (-4.75 mm) or coarse aggregate (+4.75 mm) and record the decision on a mechanical specimen counter properly designated.
- 5.14 Repeat procedures set forth in Sections 5.12 and 5.13 for the entire width of the specimen between the margins.
- 5.15 When the vertical cross hair reaches a margin after traversing the specimen, reverse the horizontal direction on a manual traveler according to the manufacturer's specifications. For an automatic traveler, follow the manufacturer prompts to return the horizontal traveler to the beginning of the traverse, and follow the manufacturer prompt to allow the vertical traveler to transition to the next row for testing.
- 5.16 Repeat procedures set forth in Sections 5.14 and 5.15 until the total number of point counts indicated on the mechanical specimen counter equals 600.

6. COMPOSITION PERCENTAGES

- 6.1 Each category such as air void content, matrix, fine aggregate (4.75 mm), and coarse aggregate (+4.75 mm), is expressed as a percentage of total number of point counts.

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

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

MATERIALS PROCEDURE

GUIDE FOR QUALITY CONTROL AND ACCEPTANCE REQUIREMENTS FOR
PORTLAND CEMENT CONCRETE

1. PURPOSE

- 1.1 To establish minimum requirements for Contractor's Quality Control (QC) system and the Division's Acceptance Plan. It is intended that these minimum requirements be followed in detailing the inspection, sampling, and testing deemed necessary to maintain compliance with all Specification requirements.

2. SCOPE

- 2.1 This Materials Procedure (MP) is applicable to all Portland Cement Concrete (PCC) items, and it outlines the quality control procedures for both plant and field operations 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

- a. 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
- b. AASHTO T 22 - Standard Method of Test for Compressive Strength of Cylindrical Concrete Specimens
- c. AASHTO T 231 - Standard Method of Test for Capping Cylindrical Concrete Specimens
- d. ASTM C1077 - Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation
- e. ASTM C1231 - Standard Practice for Use of Unbonded Caps in Determination of Compressive Strength of Hardened Cylindrical Concrete Specimens
- f. ASTM C39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens

- g. ASTM C511 - Standard Specification for Mixing Rooms, Moist Cabinets, Moist Rooms, and Water Storage Tanks Used in the Testing of Hydraulic Cements and Concretes
- h. ASTM C617 - Standard Practice for Capping Cylindrical Concrete Specimens
- i. MP 109.00.21 - Basis for Charges for Non-Submittal of Sampling & Testing Documentation by the Established Deadline
- j. MP 300.00.51 - Procedural Guidelines for Maintaining Control Charts for Aggregate Gradation
- k. MP 601.03.52 – Procedural Guidelines for Maintaining Control Charts for Portland Cement Concrete
- l. MP 601.04.20 - Curing Concrete Test Specimens in The Field
- m. MP 601.05.50 - Quality Assurance Procedures for Portland Cement Concrete
- n. MP 700.00.54 - Procedure for Evaluating Quality Control Sample Test Results with Verification Sample Test Results
- o. West Virginia Division of Highways Specifications

4. GENERAL REQUIREMENTS

- 4.1 The Contractor shall provide and maintain a quality control system that will provide reasonable assurance that all materials and products submitted to the Division for acceptance will conform to the contract requirements whether manufactured or processed by the Contractor or procured from suppliers, subcontractors, or vendors. The Contractor shall perform or have performed the inspections and tests required to substantiate product conformance to contract document requirements and shall also perform or have performed all inspections and tests otherwise required by the contract. The Contractor's quality control inspections and tests shall be documented and shall be available for review by the Engineer throughout the life of the contract. The Contractor shall maintain standard equipment and qualified personnel as required by the Specifications to assure conformance to contract requirements. Procedures will be subject to the review of the Division before the work is started.

5. QUALITY CONTROL PLAN

- 5.1 The Contractor shall prepare a QC Plan detailing the type and frequency of inspection, sampling, and testing deemed necessary to measure and control the various 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 to be utilized. Quality control sampling and testing performed by the Contractor may be utilized by the Division for acceptance.
- 5.1.1 A QC Plan must be developed by the Contractor and submitted to the Engineer prior to the start of construction on every WVDOH Project. Acceptance of the QC Plan by the Engineer will be contingent upon its concurrence with these guidelines.
- 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 Quality Control Plan Guidelines
- 5.2.1 The Plan shall identify the personnel responsible for the Contractor's quality control. This should include the company official who will act as the liaison with Division personnel, as well as the Certified Portland Cement Concrete Technician who will direct the inspection program at the plant or in the field depending on if it is a plant or field QC Plan. Their phone number and email address must also be included as a means for contact by the Division personnel.
- 5.2.2 All classes of concrete and corresponding mix design numbers, which may be used, shall be listed on the Plant QC Plan. All classes of concrete, which may be used, shall be listed on the Field QC Plan.
- 5.2.3 Process control sampling, testing, and inspection should be an integral part of the contractor's quality control system. In addition to the above requirements, the Contractor's QC Plan should document the process control requirements shown in Table 1 of Attachment 1. The process control activities shown in Table 1 are considered to be normal activities necessary to control the production and placement of a given product or material at an acceptable quality level. To facilitate the Division's activities, the Contractor, as per ML-25, shall retain all completed gradation samples until further disposition is designated by the Division.
- 5.2.4 All sampling and testing shall be in accordance with the methods and procedures required by the Specifications. Measuring and testing equipment shall be standard and properly calibrated as per the specified test procedures. If alternative sampling methods, procedures, and inspection equipment are to be used, they shall be detailed in the QC Plan. Any QC testing that is not performed in accordance with the methods and procedures required by the Specifications shall be considered an invalid test, and the applicable penalty for the cost associated with that test, in accordance with MP 109.00.21, will be assessed to the contractor, along with the applicable price adjustment in Section 105.3. The test specimen(s) represented by an invalid test shall be considered as not meeting Specifications and documented accordingly. The Division may, however, use the results of an invalid test to determine if material may be accepted

- and allowed to remain in place and if payment may be made for the material represented by the invalid test.
- 5.2.4.1 Any individual who samples or tests plastic concrete for quality control purposes shall be certified as a WVDOH PCC Inspector.
- 5.2.4.2 Any Laboratory which tests the hardened concrete cylinders for the Contractor, for quality control purposes, shall be listed in the Contractor's QC Plan for field operations. This Laboratory shall provide evidence that it meets the applicable requirements in ASTM C1077, pertaining to testing hardened concrete cylinders, for a concrete testing laboratory, including curing facilities, testing equipment, technician proficiency, participation in the Cement and Concrete Reference Laboratory (CCRL) Concrete Proficiency Sample Program (PSP), Quality Management System documentation, and recordkeeping. The only test required for these laboratories, in the CCRL Concrete PSP, is ASTM C39 (AASHTO T 22), but it is recommended that the laboratory perform all the field test portions of these Proficiency Samples and maintain the results of these tests, in order to evaluate any root cause issues pertaining to compressive strength. Each Laboratory shall be inspected and evaluated initially, and at least once every regular inspection tour cycle (approximately 30 months) by the CCRL. The ASTM standards pertaining to testing concrete cylinders, with which the subject laboratory must comply, include ASTM C39 (AASHTO T 22), ASTM C617 (AASHTO T 231) or ASTM C1231, and ASTM C511 (AASHTO M201). The Personnel Qualification requirements in Section 6 of ASTM C1077 regarding PE direction, Laboratory Supervisors, and concrete laboratory personnel testing certifications also apply, except that a Laboratory Supervisor with at least five years' experience in construction materials testing shall be a permissible substitution for the licensed professional engineer. Subsequent documentation shall be provided to the Division showing that the subject Laboratory and personnel meet the applicable requirements of ASTM C1077, pertaining to testing concrete cylinders, for a concrete laboratory.
- 5.2.4.3 Any Laboratory which desires to test Contractor hardened concrete QC specimens on WVDOH projects shall submit the evidence/documentation, required in Section 5.2.4.2, confirming compliance with ASTM C1077, with regards to testing concrete cylinders, to MCS&T Division at the following e-mail address: DOHMCSnTconcretelab@wv.gov. MCS&T Division will review this submittal. In this submittal, the subject Laboratory shall also explain how all deficiencies noted in the CCRL Laboratory Inspection Report have been addressed. All deficiencies noted in the CCRL Laboratory Inspection Report shall be resolved to the satisfaction of the Division within 90 days from the date of the CCRL Laboratory Inspection Report. Once MCS&T Division determines that the subject Laboratory is in compliance with the applicable requirements of ASTM C1077, and all deficiencies have been adequately resolved, that Laboratory will be placed on the Division's Approved List of Concrete Cylinder Testing Labs. All laboratories which test contractor hardened concrete QC specimens on WVDOH projects must be listed on the Division's Approved List of Co

concrete Cylinder Testing Labs. A listing of these laboratories is available on the WVDOH MCS&T [Webpage](#)¹. All Division Approved Laboratories shall provide the Division with the CCRL Lab Number for their laboratory and agree to allow DOH, CCRL, and AASHTO resource to freely share information about assessment reports, proficiency samples, corrective actions, quality management system, and personnel competency and certification records.

- 5.2.5 When calculating the compressive strength of concrete cylinders in accordance with AASHTO T22, the following procedure shall be used:

$$CS = \frac{ML}{0.25 \times \pi \times D^2}$$

Where:

CS = Compressive Strength of the specimen
ML = Maximum load carried by the specimen during the test
 π = Mathematical constant PI
D = Diameter of the cylinder being tested (in accordance with AASHTO T 22)

Note: The calculation for CS shall be performed in one continuous step (without any rounding), either by the testing machine, or by calculating device, and only the final value (CS) is permitted to be rounded (to the accuracy specified in AASHTO T 22). The value for π shall be the manufacturer's pre-programmed value in a calculating device or the testing machine.

- 5.2.6 Miscellaneous Concrete:

The contractor is not required to perform the process control testing required by Part C of Table 1 of the Attachment on miscellaneous concrete (as defined in 5.2.6.1), provided that the concrete in question is being supplied by an A1 or A2 plant (as defined in MP 601.05.50, formerly numbered as IM-18), and provided that the requirements of section 5.2.6.2 are met for each WVDOH project on which the reduced testing of miscellaneous concrete is applied.

- 5.2.6.1 Miscellaneous concrete shall be defined as relatively small quantities, not exceeding 25 yd³ (19 m³) per day, incorporated into items that will not adversely affect the traffic carrying capacity of a completed facility. Such items would not include any concrete intended for major structures, permanent mainline or ramp pavements, or any other structurally critical items part of, or adjacent to the roadway.

The following items are suggested as a guideline in establishing items that may be categorized as miscellaneous concrete:

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

- 1 Sidewalks
2. Curb and Gutter
3. Temporary pavements and pipe crossings
4. Building floors
5. Slope paving and headers
6. Paved ditch or gutter
7. Small (less than 36" diameter) culvert headwalls

5.2.6.2 One sample per two days of production (for the same WVDOH project) shall be tested (beginning on the first day of production) for compressive strength, air content, and consistency. On a minimum of ten percent of the samples outlined above, the Division will observe the batching operation at the plant (that is producing the concrete to be sampled) and check the operational control.

5.2.6.3 When placing miscellaneous concrete and no testing is required, an Approved Source Sample will be generated in SiteManager. The C##### representing the test from the previous day of production shall be entered in the intended use field. Miscellaneous Concrete will be entered in remarks. Miscellaneous Concrete will be written on all batch tickets for which testing is not required, per the miscellaneous concrete provisions of this MP, prior to scanning and placing in ProjectWise.

5.2.7 Documentation:

The Contractor shall maintain adequate records of all inspections and tests. The records shall indicate the nature and number of observations made, the number and type of deficiencies found, the quantities approved and rejected, and the nature of corrective action taken as appropriate. The Contractor's documentation procedures will be subject to the review and approval of the Division prior to the start of the work and to compliance checks during the progress of the work.

5.2.8 Charts and Forms:

All conforming and non-conforming inspections and test results shall be kept complete and shall be available at all times to the Division during the performance work. Forms shall be on a computer-acceptable medium where required. Batch ticket data shall be documented in accordance with the applicable section of MP 601.03.50, with a copy to be submitted to the District Materials Section within 72 hours of the concrete placement. Gradation data shall be documented on WVDOH form T300 using the material codes listed in the online computer systems user guide. The original gradation data shall be submitted to the District Materials Section within 72 hours of obtaining the gradation sample. Test data for (PCC) shall be charted in accordance with the applicable requirements of MP 601.03.52. Gradation test data shall be plotted in accordance with the applicable requirements of MP 300.00.51. The Contractor may use other types of control charts as deemed appropriate by the Division. It is normally expected that testing and charting will be completed within 48 hours after sampling.

The Contractor shall also ensure that all Material Suppliers prepare and submit the HL-441 form (weekly supplier report) in a timely manner

- 5.2.8.1 All charts and records documenting the Contractor's quality control inspections and tests shall become property of the Division upon completion of the work.

5.2.9 Batch Tickets

Each batch of Structural Concrete, including miscellaneous concrete (as defined in section 5.2.6.1), delivered at the WVDOH project shall be accompanied by one batch ticket with all of the items of information listed in Section 5.2.9.1 pre-populated on the ticket. In the case of (PCC) Pavement, each batch of concrete delivered at the WVDOH project on which a test in accordance with Table 1 of Attachment 1 is to be performed shall be accompanied by a batch ticket. This batch ticket shall have all of the items listed in section 5.2.9.1 pre-populated on the ticket unless non-agitator trucks or truck agitators are used. In this case, the batch ticket shall have all of the items listed in section 5.2.9.2 pre-populated on the ticket.

- 5.2.9.1 All batch tickets for Structural Concrete and (PCC) Pavement Concrete transported by truck mixers shall have all the following items pre-populated on the ticket:

1. Producer/Supplier Code
2. Producer/Supplier Name
3. Producer/Supplier Location
4. Mix Design Laboratory Reference Number
5. Date
6. Sequence Number
7. Volume (yd³)(m³)
8. Time Batched
9. Time Unloaded
10. Contract Identification Number (CID #)
11. Federal Project Number (If applicable)
12. State Project Number
13. Material Code
14. Material Name
15. Water Allowed (Gallon)(Liter)
16. Water at Plant (Gallon)(Liter)
17. Weight of Ice at Plant (lb.)(kg)
18. Water at Job (Gallon)(Liter)
19. Weight of Cement (lb.)(kg)
20. Supplementary Cementitious Material(s) (SCM) (lb.)(kg)
21. Weight of Fine Aggregate (lb.)(kg)
22. Weight of Coarse Aggregate (lb.)(kg)
23. Admixture Name(s) and Dose (ounces)(gram)

24. Temperature (~~°F~~)(°C)
25. Cylinder I.D.
26. Initial Counter
27. Final Counter
28. Target Consistency (in)(cm)
29. Actual Consistency (in)(cm)
30. Target Air (%)
31. Actual Air (%)
32. License Number of Haul Unit.

5.2.9.2 All batch tickets for concrete delivered by means of non-agitator trucks or truck agitators shall have all of the following items pre-populated on the ticket:

1. Producer/Supplier Name
2. Mix Design Laboratory Reference Number
3. Date
4. Sequence Number
5. Volume (yd³)(m³)
6. Time Batched
7. Time Unloaded
8. CID#
9. Federal Project Number (If applicable)
10. State Project Number
11. Material Code
12. Material Name
13. Water Allowed (Gallon)(Liter)
14. Water at Plant (Gallon)(Liter)
15. Weight of Ice at Plant (lb.)(kg)
16. Weight of Cement (lb.)(kg)
17. Weight of SCM (lb.)(kg)
18. Weight of Fine Aggregate (lb.)(kg)
19. Weight of Coarse Aggregate (lb.)(kg)
20. Admixture Name(s) and Weight(s) (ounces)(gram)
21. Temperature (~~°F~~)(°C)
22. Target Consistency (in)(cm)
23. Actual Consistency (in)(cm)
24. Target Air (%)
25. Actual Air (%)
26. License Number of Haul Unit.

5.2.9.3 The batch ticket in the case of either type of concrete shall be a batch ticket prepared by the plant. This ticket must be computer generated with blank fields provided in which all of the required data shall be recorded. The data items listed above that are completed in the field (such as Time Unloaded, Actual Consistency, etc.) must have a

- field on the batch ticket for completion. Volume is to be reported to the nearest 0.01 yd³ (**m3**). Consistencies are to be reported to the nearest 0.25 inch (**2 cm**). Target and Actual Air are to be reported to the nearest 0.1% (to the nearest 0.25% if the volumetric method is used).
- 5.2.9.4 As per the requirements of Section 109.20.1 of the Specifications, an e-ticket shall be provided to meet these requirements.
- 5.2.10 Corrective Action:
- The Contractor shall take prompt action to correct conditions, which have resulted, or could result, in the submission to the Division of materials and products, which do not conform to the requirements of the Contract documents.
- 5.2.11 Non-Conforming Materials:
- 4.2.11.1 The Contractor shall establish and maintain an effective and positive system for controlling non-conforming material, including procedures for its identification, isolation and disposition. Reclaiming or reworking of non-conforming materials shall be in accordance with procedures acceptable to the Division. All non-conforming materials and products shall be positively identified to prevent use, shipment, and intermingling with conforming materials and products. Holding areas, mutually agreeable to the Division and the Contractor shall be provided by the Contractor.
- 5.2.12 Types of QC Plans:
- 5.2.12.1 QC Plans which are intended for use on more than one WVDOT project shall be defined as Master QC Plans. Section 5.3 outlines the procedures for Master QC Plan submittal and approval.
- 5.2.12.2 QC Plans which are intended for use on a single WVDOT project shall be defined as Project Specific QC Plans. Project Specific QC Plans shall contain a cover letter which includes the following: project description, CID#, Federal and/or State Project Number.
- 5.2.12.3 A Contractor may submit a Master QC Plan for Plant and/or Field operations instead of a Project Specific QC Plan.
- 5.2.12.4 Once any QC Plan is approved for a WVDOT project, the key date shall be entered in SiteManager 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 WVDOT project.

5.3 Master QC Plan

- 5.3.1 The intent of Master QC Plans is to facilitate the approval process in a more uniform manner. Master QC Plans can be submitted to the Division by the Contractor when their workload in a given District is routinely repetitive for the year.
- 5.3.2 The Contractor shall submit a Master Field QC Plan yearly to each District in which they have work (see Attachment 2). If the Contractor does not have work in a given District for the year, then a Master Field QC Plan does not need to be submitted to that District.
- 5.3.3 The Producer/Supplier shall submit a Master Plant QC Plan at the beginning of each year to the District in which their plant is located (see Attachment 3).
- 5.3.4 The District will review the submitted Master QC Plans to see if they meet the applicable requirements of Sections 5.2 thru 5.2.11.1 and assign a Laboratory Reference Number to each QC Plan upon approval, for future referencing. The District will acknowledge approval of each Master QC Plan to the Contractor and/or Producer/Supplier by letter (see Attachment 4), which will include the Laboratory Reference Number and a copy of the approved Master QC Plan. This will then be scanned and placed in ProjectWise under the appropriate District's Org for that Contractor and/or Producer/Supplier.
- 5.3.5 Once a WVDOH project has been awarded, if a contractor elects to use the approved Master Plant and Master Field QC Plans on that WVDOH project, the Contractor shall submit a letter requesting to use the Master QC Plans for that WVDOH 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 description, type of Quality Control Plan and the laboratory reference number for the Master QC Plan. See Attachment 5 for an example of a plant letter and Attachment 6 for an example of a field letter.
- 5.3.5.1 The District shall review the referenced Master QC Plans to ensure they cover all items in that WVDOH project. If the referenced Master QC Plan is found to be insufficient for some items on that WVDOH project, the District shall request the Contractor to submit additional information for quality control of those items as an addendum on a project specific basis. When the District is satisfied with the QC Plan for that WVDOH project, a letter shall be sent to the Contractor acknowledging approval (see Attachment 7), with the following attached: the contractor's project QC Plan request letter and the Master QC Plan approval letter. This shall then be placed in the WVDOH project's incoming-mail mailbox in ProjectWise.
- 5.3.5.2 A Master QC Plan that has been approved for WVDOH project use shall be good for the duration of that WVDOH project.

-
- 5.3.5.3 For the use of Division Personnel, the District approval letter for this WVDOT project must state the ProjectWise link to the referenced Master QC Plan for that Contractor (for example: WVDOT ORGS > District Organization #> Materials > Year > Master QC Plans).
- 5.3.6 The Master Field and Plant QC Plans shall be valid for the duration of one calendar year beginning on January 1st and ending on December 31st. The Master Plant QC Plan will also cover maintenance purchase order concrete for the year.

6. ACCEPTANCE SAMPLING AND TESTING

- 6.1 Acceptance sampling and testing is the responsibility of the Division. Quality control tests by the Contractor may be used for acceptance.
- 6.2 The Division shall sample and test for applicable items completely independent of the contractor at a frequency equal to approximately ten (10) percent of the frequency for testing given in the approved QC 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.
- 6.3 Results from independent tests conducted by the Division for gradation, entrained air, consistency, and strength will be plotted on the Contractor's quality control charts with a red circle but are not to be included in the moving average. When the Contractor's tests are witnessed, the results are circled on the control chart in red and are to be included in the moving average calculations.
- 6.4 Results from both independent tests and witnessed tests will be evaluated in accordance with MP 700.00.54. If a dissimilarity is detected, an investigation shall be immediately initiated to determine the cause of the dissimilarity.

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.

Ronald L. Stanevich, P.E.
Director

Materials Control, Soils and Testing Division

MP 601.03.50 Steward – Cement and Concrete Section

RLS:Tt

Attachments

TABLE 1
CONTRACTORS PROCESS CONTROL
REQUIREMENTS

STRUCTURAL CONCRETE AND
PORTLAND CEMENT CONCRETE PAVEMENT

Minimum frequency*

A. PLANT AND TRUCKS

- | | |
|--------------------------------------|----------------------------------|
| 1. Mixer Blades | Prior to Start of Job and Weekly |
| 2. Scales | |
| a. Tared | Daily |
| b. Calibrate | Prior to start of Job |
| c. Check Calibration | Weekly |
| 3. Gauges and Meters-Plant and Truck | |
| a. Calibrate | Yearly |
| b. Check Calibration | Weekly |
| 4. Admixture Dispenser | |
| a. Calibrate | Prior to Start of Job |
| b. Check Operation and Calibration | Daily |

B. AGGREGATES

- | | |
|-------------------|---|
| 1. Fine Aggregate | |
| a. Gradation | Per section 601.3.2.4 of the Specifications |
| b. Moisture | Daily |

2. Coarse Aggregates

- | | |
|---|---|
| a. Gradation | Per section 601.3.2.4 of the Specifications |
| b. Percent passing No. 75 μ m | Daily |
| c. $\bar{A}$ for Combined Coarse Aggregates
Fine Aggregates and Cement | Per section 601.3.2.4 of the Specifications |
| d. Moisture | Daily |

3. Optimized Aggregates

- | | |
|--------------|---|
| a. Gradation | Per section 601.3.2.4.1 of the Specifications |
| b. Moisture | Daily |

C. PLASTIC CONCRETE

1. Entrained Air Content

- | | |
|---|--|
| Pavement Concrete | Two at the beginning of the paving operation, per Section 501.4.2, then one per 500 yd ³ (380 m ³) or fraction thereof, with a minimum of two per day |
| Structural Concrete
(except Bridge Superstructure) | One per 100 yd ³ (75 m ³) or fraction thereof, with a minimum of one per ½ day of operation |
| Bridge Superstructure | One per batch |

2. Consistency**

- | | |
|---|--|
| Pavement Concrete | One per 500 yd ³ (380 m ³) or fraction thereof, with a minimum of two per day |
| Structural Concrete
(except Bridge Superstructure) | One per 100 yd ³ (75 m ³) or fraction thereof, with a minimum of one per ½ day of operation |

Bridge Superstructure	One for first batch and one for every fifth batch thereafter
3. Temperature	Per Specification
4. Yield	
Pavement Concrete	Per Section 501.3 of the Specifications and one for each five days of operation after the first five days of operation
Structural Concrete	Per Section 601.3.2.3 of the Specifications and one for each ten sets of cylinders after the first ten
5. Compressive Strength***	
Pavement Concrete	One set of concrete cylinders for each 350 yd ³ (75 m ³) or fraction thereof
Structural Concrete	For each class concrete delivered and placed on a calendar day from a single supplier, one set of concrete cylinders for each 100 yd ³ (75 m ³) or fraction thereof
6. Permeability	
Pavement Concrete	N/A
Structural Concrete	Per Section 601.4.5 of the Specifications
Specialized Concrete Overlays	Per Section 679.2.2 of the Specifications

- * Frequency for Process Control will vary with the size and type of aggregate or mixture and the batch-to-batch variability of the item.
- ** When superplasticizer is added to the concrete in the field, additional consistency testing is required as per Section 601.3.2.1 of the Specifications.
- *** All cylinders shall be made, cured, and shipped to the Laboratory in accordance with AASHTO R 100 and MP 601.04.20. They shall be tested in accordance with AASHTO T 22 and the applicable section of the Specifications.

Example
COMPANY LETTERHEAD

Mr./Ms./Mrs. _____
West Virginia Department of Highways
District ____ Engineer/Manager
_____, WV #####

RE: Master PCC Field QC Plan

Dear _____,

We are submitting our PCC Field Quality Control Plan, developed in accordance with Sections 501 and 601 of the (year) WVDOH Standard Specifications, the (year) WVDOH Supplemental Specifications, and MP 601.03.50.

1. The Quality Control program is under the direction of _____, who can be contacted in Field/Office, by telephone number _____, cell# _____, and/or e-mail address _____.
2. Sampling and testing will be performed by qualified personnel as per WVDOH specifications Section 106.
3. Class(es) of Concrete to be controlled are listed as follows:
 - All types Class A - All types Class B - All types Class C
 - All types Class D - All types Class K - All types Class H
 - Etc.
4. All items in this QC Plan will be sampled at a minimum frequency as specified in Table 1 of Attachment 1. We acknowledge that additional sampling may be required by the Division in addition to the minimum frequency stated.
5. All sampling and testing will be in accordance with the methods and procedures required by the Specifications. All measuring and testing equipment shall be standard and properly calibrated as per the specified test procedure. *(If alternative sampling methods, procedures and inspection equipment are to be used please state in detail what they are and how they will be utilized.)*

6. Batch ticket data shall be documented in accordance with the applicable section of MP 601.03.50, with a copy to be submitted to the District Materials Section within 72 hours of the concrete placement.
7. Calculation of the compressive strength of concrete cylinders will be done as shown in Section 5.2.5 of MP 601.03.50.
8. Testing of Miscellaneous Concrete will be as specified in Section 5.2.6 and Sub-Sections 5.2.6.1 thru 5.2.6.3 of MP 601.03.50.
9. We will maintain adequate records of all inspection and tests. The records will indicate the type of test, number of observations made, the amount and type of deficiency's found, the quantities approved and rejected, and the nature of corrective actions taken as appropriate.
Our documentation procedures will be subject to the review and approval of the Division prior to the start of the work and to compliance checks during the progression of the work.
10. **Our company** will take prompt action to correct conditions, which have resulted or could result, in the submission to the Division/District of materials and products, which do not conform to the requirements of the contract documents.
11. **Non-Conforming Materials** -- *State how you will establish an effective and positive system for controlling non-conforming material. This shall include the following:*
 - *procedures for non-conforming material identification*
 - *isolation and disposition of this material*

Reclaiming or reworking of non-conforming materials shall be in accordance with procedures acceptable to the Division.

Our company will specify and provide holding areas, which shall be mutually agreeable by the Division and Contractor.

Very Truly Yours,

Company Official, Title

Example
COMPANY LETTERHEAD

Mr./Ms./Mrs. _____
West Virginia Department of Highways
District ____ Engineer/Manager
_____, WV #####

RE: Master PCC Plant QC Plan

Dear _____,

We are submitting our PCC PLANT Quality Control Plan, developed in accordance with Sections 501 and 601 of the (year) WVDOH Standard Specifications, the (year) WVDOH Supplemental Specifications, and MP 601.03.50.

1. The Quality Control program is under the direction of _____, who can be contacted in Field/Office, by telephone number _____, cell# _____, and/or e-mail address _____.
2. Sampling and testing will be performed by qualified personnel as per Specifications Section 106.
3. The PCC Mix Designs and class of concrete to be controlled are listed below:

Mix Design Number	Class of Concrete
1. #####	Class B
2. _____	_____
3. _____	_____
4. _____	_____
Etc.	

4. All items in this QC Plan will be sampled at a minimum frequency as specified in Table 1 of Attachment. We acknowledge that additional sampling may be required by the Division in addition to the minimum frequency stated.
5. All sampling and testing will be in accordance with the methods and procedures required by the Specifications. All measuring and testing equipment shall be standard and properly calibrated as per the specified test procedure. *(If alternative sampling methods, procedures*

and inspection equipment are to be used please state in detail what they are and how they will be utilized.)

6. Charts and forms

Our Company will make sure all conforming and non-conforming inspections and test results shall be kept complete and shall be available at all times to the Division during the performance work. Forms shall be on a computer-acceptable medium where required. Gradation data shall be documented on WVDOT form T300 using the material codes listed in the online computer systems user guide. The original gradation data shall be submitted to the District Materials Section within 72 hours of obtaining the gradation sample. Test data for Portland cement concrete shall be charted in accordance with the applicable requirements of MP 601.03.52. Gradation test data shall be plotted in accordance with the applicable requirements of MP 300.00.51. We may use other types of control charts as deemed appropriate by Division. It is normally expected that testing and charting will be completed within 48 hours after sampling. **Our Company** shall also ensure that all Material Suppliers prepare and submit the HL-441 form (weekly supplier report) in a timely manner. All charts and records will be turned over to the Division upon completion of work for a given WVDOT project.

7. *State that batch tickets will conform to requirements of MP 601.03.50 Section 5.3.9 and its applicable subsections.*

8. **Our company** will take prompt action to correct conditions, which have resulted or could result, in the submission to the Division of materials and products, which do not conform to the requirements of the contract documents.

9. Non-Conforming Materials - *State how you will establish an effective and positive system for controlling non-conforming material. This shall include the following:*

- *procedures for non-conforming material identification*
- *isolation and disposition of this material*

Reclaiming or reworking of non-conforming materials shall be in accordance with procedures acceptable to the Division.

Our company will specify and provide holding areas, which shall be mutually agreeable by the Division and Contractor.

Very Truly Yours,

Company Official, Title

WVDOH District Master QCP Approval Letter

*** EXAMPLE ***

WVDOH LETTERHEAD

ACME Company
20 First St.
Somewhere, WV #####

RE: PCC Plant or PCC Field (*whichever is applicable*)
Master QC Plan
Description: (YEAR)
P/S code: (only if a plant QCP)

Dear Sir,

Your Quality Control Plan (**M#-#####**) for _____ has been reviewed and found to be acceptable for the following items:

- All WVDOH approved Designs for PCC Classes of Concrete controlled by the referenced QC plan.

As work progresses throughout the season an addendum(s) may be required to this QCP to keep the QC program current. **Also note that personnel may be required to show proof of certification for testing. Please use Lab Reference # M#-##### when corresponding about this QC plan.** Please make sure that all appropriate personnel have a copy of this plan in their possession.

Very truly yours,

Name, Title

Example
COMPANY LETTERHEAD

Mr./Ms./Mrs. _____
WV Department of Highways
District ____ Engineer/Manager
_____, WV #####

RE: PCC Quality Control Plan
for Plant ---- Project

Federal Project No. _____
State Project No. _____
Contract ID No. _____
Description _____

Dear Mr./Ms./Mrs. _____,

We would like to use our **Producer/Supplier's name** Master PCC Plant QC Plan, reference number _____ for the project referenced above. All PCC items on the referenced project are covered by the Master PCC Plant QC Plan. *(if needed state the Special Provision and that the addendum is attached for Quality Control of Special Provision Item)*

The Quality Control Plan is under the direction of _____,
_____ (title), and will be the company's contact representative to the Division of Highways District Materials and Construction Departments. He/She can be contacted in person at the plant, by telephone _____ or at e-mail at _____.

Very truly yours,

Company Representative

Example
COMPANY LETTERHEAD

Mr./Ms./Mrs. _____
WV Department of Highways
District ____ Engineer/Manager
_____, WV #####

Re: PCC Quality Control Plan
for Field ---- Project

Federal Project No. _____
State Project No. _____
Contract ID No. _____
Description _____

Dear Mr./Ms./Mrs. _____,

We would like to use our approved Master PCC Field QC Plan, reference number _____ for the project referenced above. All PCC items on the referenced project are covered by the Master PCC Field QC Plan. *(if needed state the Special Provision and that the addendum is attached for Quality Control of Special Provision Item)*

The Quality Control Plan is under the direction of _____,
_____ (title), and will be the company's contact representative to the Division of Highways District Materials and Construction Departments. He/She can be contacted in person at the plant, by telephone _____ or at e-mail at _____.

Very truly yours,

Company Representative

WVDOH District Master QCP Approval Letter
*** EXAMPLE ***
WVDOH LETTERHEAD

ACME Company
20 First St.
Somewhere, WV #####

RE: PCC Field or PCC Plant (*whichever is applicable*) QC Plan

Project CID#: #####
Fed/State Project #: NHPP- ## - #####-##
Description: Falling Slide
County: XXXXXXXX
P/S Code: (If a Plant)

Dear Sir,

Your request to use Master Quality Control Plan (**M# - #####**) for **PCC Plant or PCC Field** (*whichever is applicable*) on the project referenced above, has been reviewed and found to be acceptable for the following items:

- All WVDOH approved designs and classes of PCC controlled by this QCP listed below:
- Class B - Class B modified - Class K -etc.

As work progresses throughout this project an addendum(s) may be required to this QCP to keep the QC program current. **Please use M# - ##### when corresponding about this QC Plan. Also note that personnel may be required to show proof of certification for testing.** Please make sure that all appropriate personnel have a copy of this plan in their possession.

For Division Reference: The Master Quality Control Plan can be reviewed in ProjectWise at the folder shown below:

WVDOH ORG>D0#>year>MASTER QC PLANS>Contractors or Plant>Company
>folder>Name of file (i.e.: 2016 04 05 M#160001 PCC Plant QCP)

Very truly yours,

Name, Title

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

MATERIALS PROCEDURE

PROCEDURE FOR APPROVING PAINT

FORMULATIONS AND PRODUCTION BATCHES

1. PURPOSE

- 1.1 To establish a procedure for approving paint formulations and to set forth procedures for sampling, testing, and shipping of batches once the formulation is approved.
- 1.2 This procedure shall apply to manufacturers who furnish paint to the Division.

2. REFERENCED DOCUMENTS

1. West Virginia Department of Transportation, Division of Highways, Standard Specifications Roads & Bridges, Section 711 Protective Coatings, Stains, and Traffic Paints
2. MP 711.00.20 - Paint Testing Methods
3. MP 711.20.59 - Inorganic Zinc Primer Quality Assurance Procedures
4. MP 711.20.60 - Intermediate Field Coat for Zinc Rich Systems
5. MP 711.22.22 - Inorganic Zinc Rich Low VOC System
6. ASTM D3925 - Sampling Liquid Paints and Related Pigment Coatings

3. FORMULATION QUALIFICATION

- 3.1 The manufacturer shall have test equipment and qualified personnel necessary to test the material for compliance with the Specifications.
- 3.2 The manufacturer shall submit the Division of Highways a one ~~liter~~-quart (liter) sample of each formulation. The sample should be sent to:

**WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
MATERIALS CONTROL, SOILS AND TESTING DIVISION
190 DRY BRANCH DRIVE
CHARLESTON, WEST VIRGINIA 25306**

- 3.2.1 Accompanying the sample shall be one ~~liter-quart~~ (liter) of thinner for each product, along with product data sheets and material safety data sheets for each.
- 3.2.2 The appropriate specification number should be identified for each material submitted.
- 3.2.3 The color of top coats shall be one of those specified in WVDOH Spec 711.22.4. Each color or shade of top coat shall constitute a separate formulation.
- 3.2.4 The formulation will be tested in accordance with Section 711 by the Materials Control, Soils and Testing Division (MCS&T) laboratory. The Division will notify the manufacturer of the results.

4. BATCH APPROVAL

- 4.1 Unless otherwise specified, paints will be tested and approved on a batch-to-batch basis. Each batch that meets the specification requirements will receive an individual approval number.
- 4.2 Sampling shall be conducted in accordance with ASTM D3925. Tests shall be conducted in accordance with MP 711.00.20. It is the paint manufacturer's obligation to notify the Division when a batch will be ready for sampling.
- 4.2.1 Process control tests such as weight per gallon, viscosity, and grind are to be witnessed by the Division prior to shipment of samples to the MCS&T laboratory. Failure of any of these tests will result in the batch being rejected at the manufacturer's facility. The batch will then have to be reworked and assigned a revised batch number prior to sampling.
- 4.2.2 Two one-~~liter-quart~~ (liter) samples of each batch will be obtained by the Division. One is to be retained by the sampler at a location away from the manufacturing facility. The other is to be submitted by the Division to the address in Section 3.2 of this Materials Procedure.
- 4.2.3 The retained sample may be disposed of once the approval has been obtained on the batch. Disposal is to be in accordance with the local Environmental Protection Agency's policies.

5. APPROVAL OF SMALL QUANTITIES

- 5.1 When the quantity of material is ~~200 liters or less~~ (50 Gallons (200 liters) or less), the Division may elect to accept the material based on certified test data from the manufacturer or passing test results from the MCS&T laboratory. No preliminary tests are required.

6. PROCEDURES FOR SHIPPING

- 6.1 The manufacturer shall include the following information on each shipping document: name and location of the company, type of material, quantity, date shipped, approval number issued by MCS&T Division, batch number, and date of manufacture.
- 6.2 A copy of the shipping document shall be submitted to the Division of Highways at the address shown in Subsection 3.2 of this Materials Procedure.

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

RLS:P

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

MATERIALS PROCEDURE

CERTIFICATION OF FABRICATORS OF CORROSION RESISTANT COATED DOWEL
BARS IN BASKET ASSEMBLIES AND COATED DOWEL BARS

1. PURPOSE

- 1.1 To establish a procedure for Certification of Fabricators of corrosion resistant coated dowel bars in basket assemblies and coated dowel bars, to set forth conditions for certification and to establish inspection and procedures for certified fabricators.
- 1.2 This procedure shall apply to fabricators of corrosion resistant coated dowel bars in basket assemblies and coated dowel bars who furnish material to WVDOH projects and purchase orders.

2. REFERENCED DOCUMENTS/SPECIFICATIONS

- 2.1 The coated dowel bars in basket assemblies and coated dowel bars shall meet the requirements of Section 709.15 of the Specifications.

3. DOCUMENTATION OF CERTIFIED COATER

- 3.1 The fabricator shall obtain the following information from the certified coater:
 - 3.1.1 Source for Each Steel Used
 - 3.1.2 WV Laboratory Number for the Steel
 - 3.1.3 Source of Coating
 - 3.1.4 Type of Coating
 - 3.1.5 WV Laboratory Number for the Coating
 - 3.1.6 Dry Film Thickness of the Coating
 - 3.1.7 Total Number of Linear Feet of Steel Used.

Commented [1]: Should this be "dowel bar" instead of "steel", or does this include the wire for the baskets also?

4. WORKMANSHIP AND INSPECTION

- 4.1 The load transfer unit shall be made in accordance with the applicable WVDOH Standard Detail Sheet.
- 4.2 The fabricator shall inspect the coating for the following items:
 - 4.2.1 Saw cut ends of the dowel shall be free of burns and projections.
 - 4.2.2 Flaws, such as perforations, cracks, and holidays.

- 4.2.3 Damage from welding or mechanical fixation shall not extend more than ~~26~~
~~millimeter~~ 1.0 inches (26 mm) from the weld or point of fixation.

Commented [2]: changing from Metric to English Units

5. DIVISION SAMPLING AND TESTING

- 5.1 The Division may obtain samples at the fabricator's shop and/or at the project site to ensure Specification compliance.
- 5.1.1 The Division may elect to use other methods of verification, such as material, Division laboratory testing, and/or third-party laboratory testing.
- 5.1.2 An inspection of the fabricator shall be conducted every two years to verify the ability of the facility to produce products that meet Specification requirements.

6. APPROVED PRODUCT/SOURCE LIST

- 6.1 The Division will maintain an APL for Coated Dowel Bars and Coated Dowel Bars in basket assemblies.
- 6.1.1 Prospective Producers/Suppliers shall complete form HL-468, as per MP 106.00.02 indicating their intention to be included on the WVDOH APL.
- 6.1.2 The APLs for Coated Dowel Bars and Coated Dowel Bars in basket assemblies will be updated a minimum of once a year or as often as deemed necessary with the addition of a new facility or with the removal of a facility.
- 6.1.3 If for any reason a fabricator fails to meet the requirements as set forth above or in the Specifications, the fabricator will be removed from the APL until such time as corrective action is taken to meet the acceptance criteria.
- 6.1.4 The acceptance criteria for the APL for Coated Dowel Bars and Coated Dowel Bars in basket assembly shall meet WVDOH Specs 709.15 and MP 709.01.51.

7. DOCUMENTATION

- 7.1 For DOT projects, the fabricator will submit the information contained on Attachment 1 with each shipment. Two copies will be required. One copy is sent with the shipment to the project; the other is sent to the following address:
- Materials Control, Soils & Testing Division
190 Dry Branch Drive
Charleston, WV 25306
- 7.2 Upon receipt of the coated dowel bars and coated dowel bars in basket assembly from a certified source, the project shall note the lab number for that MS&P on the DWR.

Attachment 1

COATED DOWEL BARS AND COATED DOWEL BARS IN BASKET ASSEMBLY

PROJECT:

FABRICATOR:

LOCATION:

SOURCE OF STEEL BARS:

WV LABORATORY APPROVAL NO. FOR STEEL BARS:

SOURCE OF STEEL WIRE:

WV LABORATORY APPROVAL NO. FOR STEEL WIRE:

COATER:

LOCATION:

SOURCE OF COATING:

WV LABORATORY APPROVAL NUMBER FOR COATING:

QUANTITY OF BASKET ASSEMBLIES:

NO. OF LINEAL FEET (METER):

SHIPPED TO:

DATE SHIPPED:

SIGNED _____

DATE _____

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

MATERIALS PROCEDURE

LOS ALAMOS STAINING METHOD FOR ALKALI SILICA REACTION GEL

1. PURPOSE

- 1.1. To provide a staining method of testing to detect the gel, that is a byproduct of alkali silica reactions, on concrete that may have been affected by alkali silica reactivity.
- 1.2. While this method provides a way to detect such reaction gels, it is not intended to be a standalone diagnostic, but an aide. Other factors could present the same staining, so it is recommended that a more in-depth look is made with magnification to confirm or deny the results obtained.

2. SCOPE

- 2.1. This method is applicable to fractured concrete in the field, or with concrete cores in the laboratory.
- 2.2. For our intent of testing this method will be applied to concrete cores in the laboratory.

3. REFERENCES AND APPLICABLE DOCUMENTS

- 3.1. Guthrie, G. D., and Carey, J. W., Geochemical Methods for the Identification of ASR Gel, Transportation Research Board, July 1998, [Link to Webpage](#)¹.
- 3.2. Farny, A. James., and Kerkhoff, Beatrix., Diagnosis and Control of Alkali-Aggregate Reactions in Concrete, [Link to Webpage](#)².
- 3.3. Dr. Berry, Micheal, Alkali Silica Reactivity in the State of Montana, February 2019, [Link to Webpage](#)³.
- 3.4. MP 601.03.22: Damage Rating Index for Hardened Concrete

¹ <https://www.osti.gov/servlets/purl/762098>

² https://www.cement.org/docs/default-source/fc_concrete_technology/is413-02---diagnosis-and-control-of-alkali-aggregate-reactions-in-concrete.pdf

³ https://www.mdt.mt.gov/other/webdata/external/research/docs/research_proj/Alkali/Task_1_Report.pdf

4. APPARATUS

1. Safety glasses, rubber gloves, apron, respirator
2. Saturated Solution of Sodium Cobaltinitrite
3. Saturated solution of rhodamine B base
4. Large Stone Saw
5. Concrete Wet Polisher (50 – 3000 grit pads)
6. Distilled water

5. SAMPLE PREPERATION

- 5.1. Secure a concrete core in accordance with ASTM C856, under section 8 (Samples). Generally, a core shall have a size minimum of 6 inches (150 mm) in diameter and 1 foot (305 mm) in length, however the sizes can be different due to the specific nature of the coring location.
- 5.2. The concrete specimens should be cut on the large stone saw so as to bisect the cylinder along its longitudinal axis. Care should be taken in avoiding, if possible, the steel reinforcing bars encountered in bridge deck cores.
- 5.3. Select the better half of the core for the next step, however, set the second half to the side for possible later inspection.
- 5.4. The half chosen for inspection is now wet polished. Using a concrete wet polisher start with the coarsest grit (50) and work your way to the finest grit (3000). Complete this step until the surface is sufficiently polished.

6. PROCEDURE

- 6.1. Take the polished concrete slab and rinse the surface of it with gas free, distilled water, making sure to remove any residue from the surface
- 6.2. Cover the rinsed surface with the sodium cobaltinitrite solution and allow this to sit for 30 to 60 seconds. After allowing the reaction sufficient time to happen rinse the surface again with gas free distilled water.
- 6.3. After the rinse cover the surface with the rhodamine compound, allow to sit for 30 to 60 seconds. Once the reaction has had time to happen rinse the surface again with gas free distilled water.

7. OBSERVATIONS

- 7.1. Reaction gel that is present with alkali silica reactions is rich in potassium. The sodium cobaltinitrite reacts with this free potassium creating a yellow stain.
- 7.2. The rhodamine solution reacts with deterioration by products in concrete. One of which is a modified composition of the ASR that migrates away from the reacted aggregate and replaces its alkali constituents with calcium. This change will cause a reaction with the rhodium that causes a pink stain.
- 7.3. When all of the staining on the surface has been completed make notes of the extent of staining present on the surface.
- 7.4. Record any visual damage or deterioration that is seen on the concrete. This includes the amount of cracking present and the severity of the cracking.
- 7.5. Observations of any damage present on the concrete and the staining that is seen can be a good indicator of the presence (or absence) of ASR. The person making these observations must use their good judgement and knowledge to interpret their findings.
- 7.6. Further investigation can be made on the stained core using magnification to strengthen the findings from this test, as staining is made possible through other factors that can be ruled out through further investigation. (See MP 601.03.22)

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

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

MATERIALS PROCEDURE

DAMAGE RATING INDEX FOR HARDENED CONCRETE

1. PURPOSE

- 1.1. To obtain visual observations of characteristics in hardened concrete that can be interpreted to help quantitate the severity of alkali silica reactivity.

2. SCOPE

- 2.1. By observing the hardened concrete under magnification characteristics associated with alkali silica reactivity can be identified and counted. Through interpretations of the information collected, along with the process of elimination, determination of the presence or severity of alkali silica reactions can be quantified.

3. EQUIPMENT

1. Stone Saw
2. Safety glasses, gloves
3. Concrete Wet Polisher
4. Ruler
5. Stereomicroscope
6. Photomicrograph equipment

4. REFERENCED AND APPLICABLE DOCUMENTS

- 4.1. Fournier, B., Tremblay, S., Thomas, M. D. A., & Folliard, K. J. (2011). (publication). Evaluation of Pine Bluff Bypass Concrete Pavement in Pine Bluff, Arkansas. Federal Highway Administration. [Webpage Link](https://www.fhwa.dot.gov/pavement/concrete/asr/petrographic/arkansas.pdf)¹.
- 4.2. Fournier, B., Thomas, M. D. A., & Folliard, K. J. (2010). (publication). Evaluation of Bibb Graves Bride in Wetumpka, Alabama. Federal Highway Administration. [Webpage Link](https://www.fhwa.dot.gov/pavement/concrete/asr/petrographic/alabama.pdf)².
- 4.3. MP: 601.03.21: Los Alamos Staining Method for Alkali Silica Reaction Gel.

¹ <https://www.fhwa.dot.gov/pavement/concrete/asr/petrographic/arkansas.pdf>

² <https://www.fhwa.dot.gov/pavement/concrete/asr/petrographic/alabama.pdf>

5. SAMPLE PREPERATION

- 5.1. If the core being examined has already been used for the staining method begin this procedure with step 4.6.
- 5.2. Secure a concrete core in accordance with ASTM C856, under section 8 (Samples). Generally, a core shall have a size minimum of 6 inches (150 mm) in diameter and 1 foot (305 mm) in length, however the sizes can be different due to the specific nature of the coring location.
- 5.3. The concrete specimens should be cut on the large stone saw so as to bisect the cylinder along its longitudinal dimension. Care should be taken in avoiding, if possible, the steel reinforcing bars encountered in bridge deck cores.
- 5.4. Select the better half of the core for the next step, however, set the second half to the side for possible later inspection.
- 5.5. The half chosen for inspection is now wet polished. Using a concrete wet polisher start with the coarsest grit (50) and work your way to the finest grit (3000). Complete this step until the surface is sufficiently polished.
- 5.6. Use a ruler to outline a grid of 1 cm X 1 cm squares on the surface of the concrete. There are no restrictions on the length or width of the grid, however, a minimum of 100 squares is required. The layout of the grid will depend on the working surface available.

6. PROCEDURE

- 6.1. Observe each square under a stereomicroscope with a magnification of at least 15X.
- 6.2. Count and write down the characteristics that are associated with alkali silica reactions that present themselves in each square. Attached at the end of document is a table with each characteristic and their respective weighing factors (Table 1).

Table 1

Petrographic feature	Abbreviation	Weighing factor
Coarse aggregate with cracks	CrCA	x 0.75
Open crack in coarse aggregate	OCrCA	x 4.0
Coarse aggregate with cracks and reaction products	Cr + RPCA	x 2.0
Coarse aggregate debonded	CAD	x 3.0
Reaction rims around aggregate	RR	x 0.5
Cement paste with cracks	CrCP	x 2.0
Cement paste with cracks and reaction products	Cr+RPCP	x 4.0
Air voids lined or filled with reaction products	RPAV	x 0.50

- 6.3. While documenting these characteristics, take note of the particles that are in the core, especially those associated with the presence of gel and/or cracking.

- 6.3.1. NOTE – there are several resources available to aid in identification of the different characteristics, and some aggregate particles. See the referenced documents.

7. RESULTS

- 7.1. Multiply the number of each feature tallied to their respective weighing factor.
- 7.2. Sum all of the calculations of each feature to get the Damage Rating Index (DRI).
- 7.3. The DRI gives a good indication of the severity of ASR if it is present. While there is no standard system for rating, generally values less than 250 a low degree of reaction, 500 is moderate, and 1000 is high. Values exceeding 1000 are a very high reaction and deterioration.

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

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

MATERIALS PROCEDURE

ANCILLARY STRUCTURE ANCHOR BOLT TIGHTENING

1. PURPOSE

- 1.1 To establish equipment, procedure, documentation, and documentation transmittal requirements for the tightening of anchor bolt nuts associated with signing, signal, lighting, and intelligent transportation systems (ITS) related roadway ancillary structures.
- 1.1.1 This Materials Procedure is specifically focused on the procedure to be followed when tightening anchor bolt nuts and does not address all requirements and procedures pertaining to the installation of ancillary structures. Individual component pre-inspection and repair, structure pre-assembly, structure installation preparation, pre-application of protective coatings, overall installation procedure, and proper tightening of structural connection bolts are included as part of the Standard Specifications.

2. MATERIALS AND EQUIPMENT

- 2.1 The mandatory materials and equipment required to properly tighten the anchor bolts include lubricant, and a hydraulic fastener tightening wrench.
- 2.1.1 Beeswax or toilet ring wax may be used as lubricant.
- 2.1.2 Hydraulic wrenches and accompanying documentation are to meet the requirements herein.
- 2.1.2.1 The wrenches are to be capable of generating the necessary torque in order to tighten the anchor bolt nuts as described herein.
- 2.1.2.2 The hydraulic wrench consists of a wrench and a hydraulic power pack to power and operate the wrench.
- 2.1.2.3 Hydraulic wrenches are to have the wrench and the pressure or torque readout gauge associated with the power pack calibrated regularly. Prior to the tightening of any anchor bolt nuts, the project Engineer is to be provided with separate calibration certificates for the wrench and the gauge. The dates of the calibrations are to be one year or less prior to the date that the bolt tightening is performed. The certificates are to be from a calibration lab that is International Organization for Standardization (ISO) 17025 accredited, with the certificate indicating as such. The certificate for each is to display a serial number matching that shown on the wrench or gauge. If the gauge does

not provide readings directly in torque values, the calibration certificate is to be accompanied by calibration charts which equate gauge pressure readings to torque values. Example calibration certificates and charts are included as part of attached ATTACHMENT 2.

3. DOCUMENTATION

- 3.1 The tightening of all anchor bolt nuts is to be documented using the form “WVDOH ANCILLARY STRUCTURE ANCHOR BOLT TIGHTENING RECORD” (documentation form) attached as ATTACHMENT 1, and available at the [MCS&T DOH Webpage](#).¹

4. PROCEDURES

- 4.1 Install the top nuts and washers and verify that the top nuts & washers, as well as the leveling nuts & washers, are all in firm contact with the base plate. Snug tighten the top nuts and leveling nuts utilizing the hydraulic wrench and the following procedure:
- 4.1.1 Use a permanent marker to indicate on the base plate the sequence of tightening to be followed. The sequence shall be a star pattern, examples of which are provided in Figures 1 and 2 below.
- 4.1.2 Snug tighten the top nuts to approximately 50% of the snug tightened condition torque values specified in Table 1 below following the star pattern.
- 4.1.3 Snug tighten the bottom nuts to approximately 50% of the snug tightened condition torque values specified in Table 1 below following the star pattern.
- 4.1.4 Snug tighten the top nuts to 100% of the snug tightened condition torque values specified in Table 1 below following the star pattern.
- 4.1.5 Snug tighten the bottom nuts to 100% of the snug tightened condition torque values specified in Table 1 below following the star pattern.

¹ <https://transportation.wv.gov/highways/mcst/Pages/tbox.aspx>

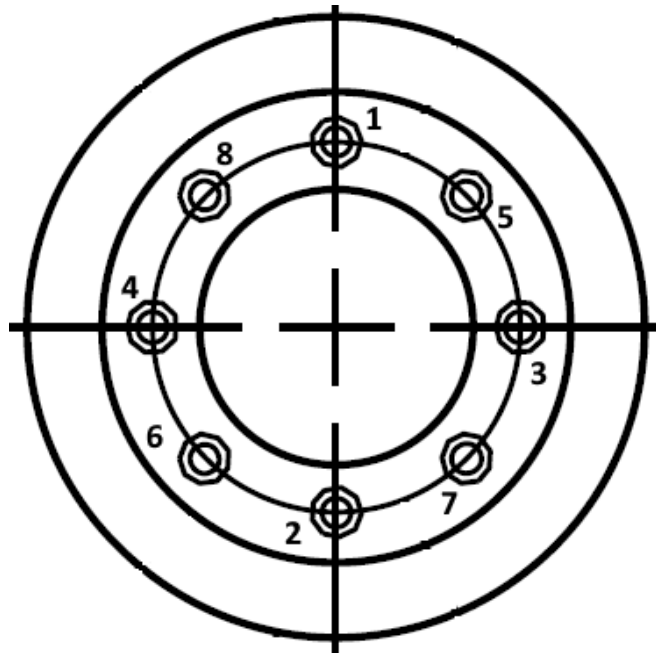


FIGURE 1 - EXAMPLE NUT TIGHTENING SEQUENCE FOR 8 BOLT BASE PLATE



FIGURE 2 -SNUG TIGHTENING SEQUENCE NUMBERING ON BASE PLATE

Diameter (in.)	Threads/inch	Snug Torque Value (ft-lbf)
1-1/4 (32 mm)	7 (3.629 Pitch in mm)	140 (190 Nm)
1-1/2 (38 mm)	6 (4.233 Pitch in mm)	240 (325 Nm)
1-3/4 (44 mm)	5 (5.080 Pitch in mm)	380 (515 Nm)

2 (51 mm)	4.5 (5.664 Pitch in mm)	570 (775 Nm)
2-1/4 (57 mm)	4.5 (5.664 Pitch in mm)	830 (1125 Nm)

TABLE 1 – SNUG TIGHTENED TORQUE VALUES FOR ASTM F1554 GRADE 55 ANCHORS (CONTACT TRAFFIC ENGINEERING DIVISION FOR ANCHORS OUTSIDE THOSE COVERED BY THIS TABLE)

- 4.2 After all nuts have been snug tightened and the necessity or unnecessity for repeating the snug tightening procedure with beveled washers has been determined and performed if required, snug tight condition reference marks are to be placed on the nut and base plate using a permanent marker to prepare for the full tightening procedure(see Figure 3 below). One reference mark is to be placed on the top of the nut at one of the corners. One reference mark is to be placed on the base plate such that this reference mark and the reference mark on top of the nut will be aligned when the nut is rotated one half of the amount specified in Section 4.3.1. An additional reference mark is to be placed on the base plate such that this reference mark and the reference mark on top of the nut will be aligned when the nut is rotated the complete amount specified in Section 4.3.1. All reference marks are to be placed such that they will remain visible when the tightening wrench is placed on the nut.

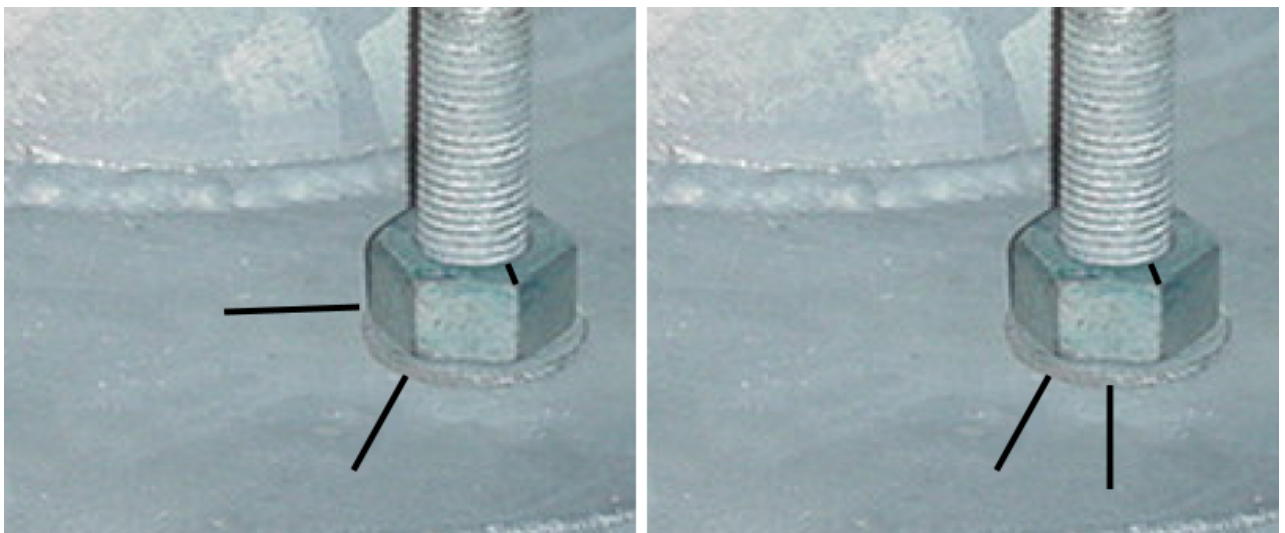


FIGURE 3 - SNUG TIGHT CONDITION REFERENCE MARKS FOR BOLTS 1-1/2" DIAMETER OR LESS (LEFT) AND BOLTS GREATER THAN 1-1/2" DIAMETER (RIGHT)

- 4.3 Fully tighten the top nuts using the hydraulic wrench.
- 4.3.1 Full tightness of each nut is achieved by rotating the nut a prescribed number of flats beyond the reference position. Rotation is to be 1/3 (2 flats) beyond the reference position for bolts 1-1/2-inches in diameter or less. Rotation is to be 1/6 (1 flat) beyond the reference position for bolts greater than-1-1/2 inches in diameter.

- 4.3.2 Tightening is to proceed from nut to nut in the same star pattern that was used for the snug tightening procedure and is to be achieved over two cycles. Using a structure with 2-inch anchor bolts as an example, each nut is to be tightened $\frac{1}{2}$ flat. Each nut is to then be tightened an additional $\frac{1}{2}$ flat.
- 4.4 Upon completion of the tightening of all nuts, a verification torque (Tv) is to be applied to each nut using the same hydraulic wrench and power pack that was used to tighten the nuts. The required verification torque is to be based on Table 2 below. The applied torque is not to exceed this value.

<u>Diameter (in.)</u>	<u>Threads/inch</u>	<u>Tv Value (ft-lbf)</u>
<u>1-1/4</u> (32 mm)	<u>7</u> (3.6 Pitch in mm)	<u>550</u> (745 Nm)
<u>1-1/2</u> (38 mm)	<u>6</u> (4.2 Pitch in mm)	<u>950</u> (1290 Nm)
<u>1-3/4</u> (44 mm)	<u>5</u> (5.1 Pitch in mm)	<u>1500</u> (2035 Nm)
<u>2</u> (51 mm)	<u>4.5</u> (5.7 Pitch in mm)	<u>2250</u> (3050 Nm)
<u>2-1/4</u> (57 mm)	<u>4.5</u> (5.7 Pitch in mm)	<u>3290</u> (4460 Nm)

TABLE 2 – VERIFICATION TORQUE VALUES FOR ASTM F1554 GRADE 55 ANCHORS (CONTACT TRAFFIC ENGINEERING DIVISION FOR ANCHORS OUTSIDE THOSE COVERED BY THIS TABLE)

If the gauge associated with the power pack does not provide a torque readout, the pressure readout required to achieve the verification torque is to be determined from the power pack calibration charts.

- 4.4.1 The documentation form is to be marked where indicated to indicate that a torque value of at least that provided in Table 2 would be required to further tighten the nuts. If the nuts further tighten prior to achieving the verification torque, the Traffic Engineering Division is to be notified of this issue.
- 4.5 At least 48-hours after the tightening and verification torque procedures are completed, and after all attachments (signs, lighting, etc.) have been installed on the structure, a torque equal to 110% of the Tv torque is to be applied to each nut using the same hydraulic wrench and power pack that was used to tighten the nuts. The 110% Tv torque is to be based on Table 3 below. The applied torque is not to exceed this value.

<u>Diameter (in.)</u>	<u>Threads/inch</u>	<u>110% Tv Value (ft-lbf)</u>
<u>1-1/4</u> (32 mm)	<u>7</u> (3.6 Pitch in mm)	<u>605</u> (880 Nm)
<u>1-1/2</u> (38 mm)	<u>6</u> (4.2 Pitch in mm)	<u>1045</u> (1410 Nm)
<u>1-3/4</u> (44 mm)	<u>5</u> (5.1 Pitch in mm)	<u>1650</u> (2235 Nm)
<u>2</u> (51 mm)	<u>4.5</u> (5.7 Pitch in mm)	<u>2475</u> (3355 Nm)
<u>2-1/4</u> (57 mm)	<u>4.5</u> (5.7 Pitch in mm)	<u>3619</u> (4905 Nm)

TABLE 2 – 110% VERIFICATION TORQUE VALUES FOR ASTM F1554 GRADE 55 ANCHORS (CONTACT TRAFFIC ENGINEERING DIVISION FOR ANCHORS OUTSIDE THOSE COVERED BY THIS TABLE)

- If the gauge associated with the power pack does not provide a torque readout, the pressure readout required to achieve a torque of 110% Tv is to be determined from the power pack calibration charts.
- 4.5.1 The documentation form is to be marked where indicated to indicate that a torque value of at least that provided in Table 3 would be required to further tighten the nuts. If the nuts further tighten prior to achieving the 110% Tv torque, the Traffic Engineering Division is to be notified of this issue.

5. DOCUMENTATION TRANSMITTAL

- 5.1 Upon completion of all procedures described herein and the documentation form being completed in its entirety, the Engineer is to transmit an electronic copy of the documentation form to the email address DOH.OS.AnchorNutTightening@wv.gov, which is established by the Traffic Engineering Division for this purpose. Prior to transmittal, the calibration certificates for the wrench and power pack pressure or torque readout gauge, as well as the calibration charts for the gauge, should be attached to the documentation form and included with the submittal. The subject line of the email should be named using the following format: D(*District Number*)-(Contract ID Number)-(Sign, Signal, Lighting, or ITS) Structure (*Structure Number as indicated on the project Plans*). Examples of this would be D4-2016000994-Sign Structure 6 and D7-2006001093-Lighting Structure HML1. An example of all documents that should be included as part of a complete transmittal is attached as ATTACHMENT 2.

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

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

METHOD OF EVALUATION OF NON-STANDARD OR
NON-CONFORMING MATERIALS IN CONSTRUCTION VIA DMIR

1. PURPOSE

- 1.1 Provide a method for evaluating material that does not meet the requirements of the Contract Documents.
- 1.1.1 To evaluate a material when a failure is not otherwise addressed in the Contract Documents.
- 1.2 Provide guidelines and/or a course of action when a material test has not been performed or has been performed incorrectly.

2. REFERENCED DOCUMENTS

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

2.3. DEFINITIONS

- 2.13.1 ST-1: Special Testing Form 1- The ST-1 is a historic WVDOH document which has been used to provide an acceptance method for a material that does not have a prescribed acceptance method or is otherwise outside the scope of the normal acceptance procedure. An ST-1 is to be accepted before the material is placed.
- 2.23.2 DMIR: District Materials Inspection Report – A DMIR is a materials investigation, into a situation where the material does not meet the requirements of the Contract Documents.
- 2.33.3 AWP: (AASHTOWare Project Management Software) – This is the generic term for the suite of software used by the WVDOH to manage and process projects. This system manages contracts, samples, tests and other aspects of projects.
- 2.43.4 Concur/Non-Concur of Sample – This is a technical AWP term in which the reviewer indicates their acceptance of a sample. A “Non-Concur” typically requires additional action to accept the material in the AWP system.
- 2.53.5 District Lab Number – This is the tracking number and database field for the WVDOH materials management system.

3.4. SCOPE

- 3.14.1 This procedure applies to situations where the resolution of a non-conformance is not clearly defined or described by Contract Documents.

3.1.14.1.1 The DMIR shall be submitted to MCS&T for consideration and either concurrence/non-concurrence for the following situations:

3.1.1.14.1.1.1 The Material did not meet the Standard Specifications or other Division Testing Requirements.

3.1.1.24.1.1.2 The Material is not addressed in the Standard Specifications or other Division Documents and has been placed before testing (ST-1 or evaluation methods were not utilized).

3.1.1.34.1.1.3 Sampling and/or testing was not done correctly, samples or documentation was lost, or testing otherwise cannot be used to represent or accept the material.

3.1.1.44.1.1.4 The resolution of the material has not been addressed in a change order or other contractual document.

4.2 As per Section 105.3 of the ~~Standard~~ Specifications, the Engineer may accept materials that do not conform to Contract Documents. In this instance, material acceptance shall be processed via DMIR.

3.24.2.1 ~~The cost assessment for a DMIR is at the discretion of the District, though the District is advised to use the rate listed in Section 2.2 of MP 109.00.20. An additional processing fee shall be assessed as described in Section 105.3 of the Specifications~~

3.2.14.2.2 In any event of a DMIR, a change order shall be processed, even if the final evaluation/penalty of the DMIR is \$0.00.

3.2.24.2.3 A note of each DMIR, regardless of evaluation amount shall be in the final material certifications letter (MC-8).

4.5. **DMIR DOCUMENTATION AND SUBMISSION TO MCS&T**

4.15.1 The DMIR form is available on the [WVDOH MCS&T Webpage](#)¹. All required fields must be completed before submitting the DMIR to MCS&T.

4.1.15.1.1 The preparer of the DMIR, typically the Materials Supervisor or their designee, shall clearly state all details that initiated the DMIR and shall include the following categories of information:

1. General/Project Information
2. Date or Dates of Incident
3. Date of Report
4. Materials Information
5. Type of Deviation
6. Situation
7. Review
8. Conclusion

¹ <https://transportation.wv.gov/highways/mcst/Pages/tbox.aspx>

9. Review and Signatures from Construction Engineer and Materials Supervisor
10. Supporting Documentation

4.1.25.1.2 A description of the material, known quantities, technical issues, or any requirement from the applicable Specifications, Contract Proposal, Project Plans, Material Procedures (MPs), Standard Details, Special Provisions, AASHTO, ASTM, or any Non-Specification issues shall be provided.

4.1.35.1.3 A justification and any supporting and/or relevant detail shall be provided.

4.1.45.1.4 The conclusion shall clearly state and justify the final price assessment resolution (which may be \$0.00), including all applicable fees and penalties.

4.1.55.1.5 The assessment fees should be listed individually and with a final total price assessment. Justification of the price assessment shall be provided.

4.1.65.1.6 The supporting documentation shall provide the necessary information and evidence for the materials inspection.

4.25.2 The DMIR shall be sent to the ST-1/DMIR mailbox (St1dmir@wv.gov).

4.2.15.2.1 DMIR Request Email files shall be submitted in the following format for both the subject of the email and the file name for the submission: DMIR-District Lab Number-CID Contract ID. An example follows:

4.2.1.15.2.1.1 DMIR-MXZXXXXX-CID 20XX00XXXX

4.35.3 The sample shall be logged in the current materials tracking system and sent to the applicable MCS&T Section to review. If the subject material(s) and the resolution meets the project requirements, MCS&T will concur; otherwise, MCS&T will non-concur.

4.3.15.3.1 The District must electronically send the fillable PDF form. This cannot be hand-written and scanned (Fields must be able to be selected for Copy and Paste). The entire submission shall be 1 file, with a total file size must be less than 25MB. Only one DMIR instance (unique line-item and material) may be submitted per email.

4.45.4 After MCS&T has reviewed the DMIR (whether be concur or non-concur), the DMIR will be sent to Regional Construction Engineer at the Contract Administration Division. The Regional Construction Engineer will then forward it to the Director of Contract Administration with his/her recommendation.

4.55.5 After the DMIR has been completed, the Director of Contract Administration will send the resolution back to MCS&T and the District with their final decision.

4.5.15.5.1 If the project is being tracked in AWP, the initiating District Materials Supervisor will document the DMIR status on the contract via DWR. Otherwise, the sample record in SiteManager shall be processed by the project.

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MP 100.00.03 Steward – Materials Control Section
RLS:B