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

MATERIALS PROCEDURE

PROCEDURE FOR EVALUATING PRODUCTS FOR USE IN HIGHWAY CONSTRUCTION

1. SCOPE

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

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

2. REFERENCE DOCUMENTS

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

~~2.2 MP 106.10.50: WVDOH Buy America Acceptance Guidelines.~~

3. DEFINITIONS

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

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

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

3.4 APL: Approved Product List.

3.5 MS&Ps: Material Supplier and/or Producer.

3.6 QPOM: Qualified Purchase Order Material.

3.7 QPOS: Qualified Purchase Order Submittal.

3.8 PO Project: Purchase Order Project.

4. SUBMISSION OF PRODUCT

4.1 Consideration for product evaluation shall be requested through completion by the MS&Ps of WVDOH Form HL-468, "Preliminary Information for New Product

Evaluation". Once completed, DOH Form HL-468 shall be submitted to the MCS&T via email to the New Products Evaluation email address: DOHNewProducts@wv.gov .

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

4.2 When submitting a product, the MS&P shall indicate whether the product is being submitted for either an APL or QPOM.

4.2.1 If a MS&P wishes the product to be submitted for both the APL and QPOM, they must complete two separate HL-468s. These may be sent together.

5. REVIEW OF SUBMITTED PRODUCT

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

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

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

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

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

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

6. APPROVED PRODUCT LIST

6.1 If the review indicates that the product meets the specifications, it shall be considered accepted and added to the APL. The MS&P shall be notified via letter.

6.2 If the reviewing entity determines that the WVDOH does not currently have any specifications for the submitted product, the WVDOH shall notify the MS&P via

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

email that there is no specification; the MS&P may choose to submit the product for consideration as a QPOS (see Section 7.)

6.2.1 If the MS&P indicates that they do not wish to be considered a QPOS, a non-approval letter shall be sent.

6.3 If the evaluation indicates that the product is not acceptable, the MS&P shall be notified by MCS&T via letter. The MS&P shall not submit the same product for evaluation within a six-month period.

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

7. QUALIFIED PURCHASE ORDER MATERIALS

7.1 All products which appear on the Division's APL are approved for use on PO Projects. Under no circumstances shall an approved QPOM be used on a project without prior testing and approval.

7.2 The reviewing entity shall determine if the QPOS performs as specified by the manufacturer. If this product meets those criteria, a QPOM acceptance letter shall be issued.

7.3 If the evaluation indicates that the product is not acceptable, the MS&P shall be notified by MCS&T via letter. The MS&P shall not submit the same product for evaluation within a six-month period.

7.4 If a product is approved for the APL, it shall be removed from the QPOM. In no cases shall a product be on both the APL and the QPOM. If this is found to be the case, the QPOM shall be removed and a letter to the producer/supplier issued.

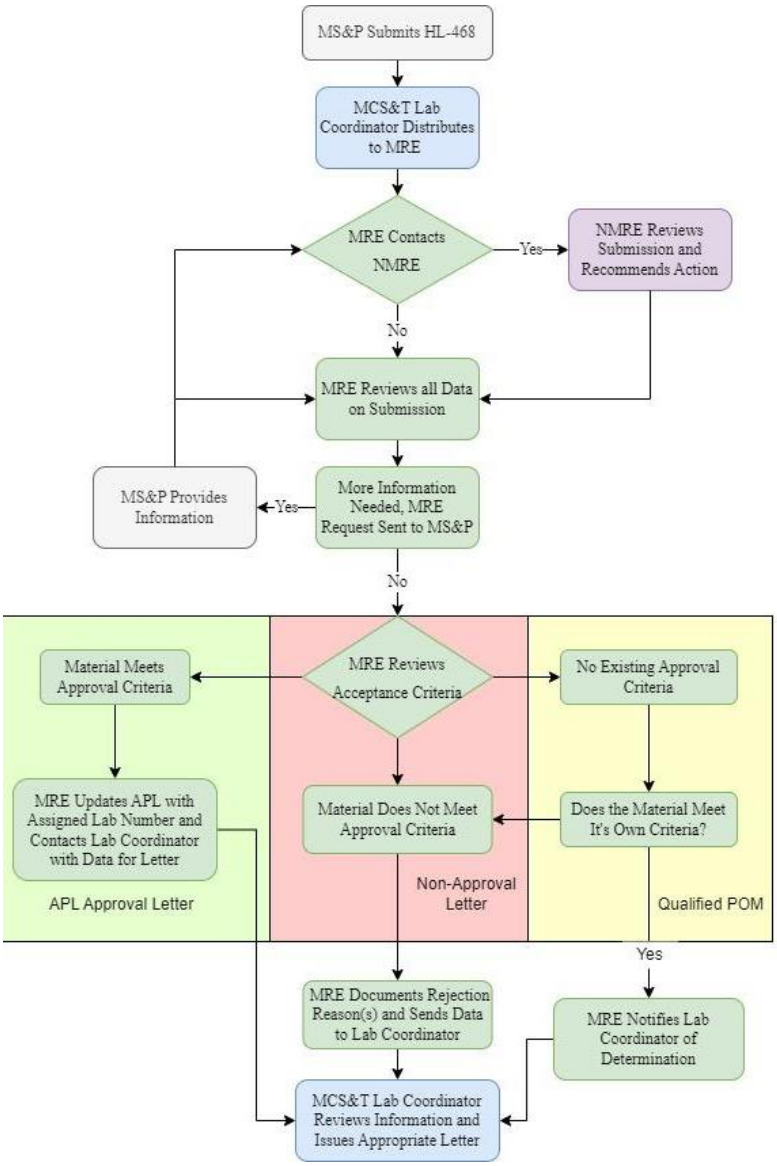
7.4.1 If a previously approved QPOM is approved for the APL, the approval letter shall note the removal from the QPOM.

~~7.3.1~~7.4.2 If a product is submitted and approved for the APL and QPOM concurrently, it shall only be approved for one or the other, with the APL approval taking priority if the product meets that criteria.

8. PROCESS FLOW CHART

8.1 A flow chart for the process is provided in Figure 1

Figure 1: Flow Chart for Approved Products List Process.



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

9. NOTIFICATION LETTERS

9.1 Sample language for submission responses is shown in Attachment 2.

10. DOCUMENTATION OF REVIEWED PRODUCTS

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

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

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

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

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

11. REMOVAL OF PRODUCTS FROM APL OR QPOM

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

11.2 In this instance, the reviewing entity shall notify the MS&P via letter.

~~**12. BUY AMERICA**~~

~~12.1 Each HL-468 submission must include whether the product meets the Federal and State Buy America requirements of Section 106.1 of the Specifications. If the MS&P indicates that their product meets Buy America requirements, the company shall produce a notarized Certificate of Compliance (CoC) signed by a company official with knowledge and authority to certify the product is compliant with applicable Buy America requirements.~~

~~12.1.1 In the event where the source of materials is changed and is no longer Buy America compliant, the MS&P must notify MCS&T in writing.~~

~~12.1.2 Under no circumstance shall the CoC described above be used for Buy America compliance on a project. Each project much submit a CoC as described in MP 106.10.50 "WVDOH Buy America Acceptance Guidelines."~~

~~12.2 A notarized CoC shall contain the following information:~~

~~12.2.1 Title: Certification of Buy America compliance for Source Approval.~~

~~12.2.2 The Name, Address and Contact Information for the Company.~~

~~12.2.3 The date of the application~~

~~12.2.4 A company statement that demonstrates compliance with Buy America.~~

~~12.2.5 The name of the material and/or material code reference in the CoC. This material name shall be a clear, common name of the material that is comparable to the AWP Material Name[4]. Part Numbers etc. may also be on the document if the company wishes.~~

~~12.2.6 Signature of the Company Official and date.~~

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

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

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~~12.3 The document must be notarized.~~

~~12.4 A sample of this CoC document is provided in Attachment 3.~~

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Michael A. Mance PE,
Director
Materials Control, Soils & Testing Division

MP 106.00.02 Steward – Lab Support Section
MAM:B
ATTACHMENTS

ATTACHMENT 1 - SAMPLE HL-468 FORM

Attachment 2: Sample APL Response Language

1. APL APPROVAL RESPONSE

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

2. NO APL RESPONSE:

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

This material may be evaluated for the Division's Quality Purchase Order Material List as specified in MP 106.00.02.

Designers may propose the use of this product in project plans or Contractors may propose the use of the product in projects they are constructing for the WVDOH. In either case, the WVDOH would evaluate the product and its proposed application in the specific project to make a determination on approving the use of it at that time.

3. NON-APPROVAL RESPONSE (APL)

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

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

4. QPOM ACCEPTANCE

The West Virginia Division of Highways (WVDOH) has evaluated your submittal of <Product Name>, <Product Material> as per Materials Procedure MP 106.00.02 for the Quality Purchase Order Material List.

West Virginia Division of Highways (WVDOH) Laboratory Approval Numbers Q2XXXXXX has been issued to your company <Name of Company>, for the above-mentioned product. This number, effective Date Month Day, 20XX, must appear on all shipping documentation for said product.

This product has been evaluated and meets the provided criteria. This material has been added to the Qualified Purchase Order Material List for use on Purchase Order projects only. The list is available on the Division's Webpage[5]. This material has not been added to the Division's Approved Product List and shall not be used on a contract project without prior approval.

5. NON-APPROVAL RESPONSE (QPOM)

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

This letter is to notify you that the Division is not approving this product for the Qualified Purchase Order Master List currently. As per the provided criteria, this material <description of failure>."

[5] https://transportation.wv.gov/highways/mcst/Pages/Quality-Purchase-Order-Materials-List.aspx

ATTACHMENT 3: SAMPLE COMPLIANCE FORM

Certification of Buy America, Build America Compliance For Source Approval

Acme Manufacturing Company
123 Main Street
Charleston, WV
25302

HL 468 Submission Date: 10/31/2022

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

This Certification of Compliance is for the material listed below:

526.003.004 – Widget, Part Qi
596.003.004 – Widget, Part Hr

OFFICIAL SEAL
NOTARY PUBLIC
STATE OF WEST VIRGINIA

Charleston, WV 25304
My Commission Expires October 16, 2027

Jonathan Doe, Quality Assurance Manager

WVDOH Use Only

Reviewed by: Reviewed Date: Status:

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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.

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]

2.4 ASTM E29 - Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications.

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.

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

1. .00 - .09 Field Sampling
2. .10 - .19 Pre-sampling (Source or Intermediate Points)
3. .20 - .29 Testing
4. .30 - .39 (For future designation)
5. .40 - .49 Inspection
6. .50 - .59 Quality Assurance System

[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

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7. .60 - .69 Reporting (laboratory)
8. .70 - .79 Reporting (issuance under master control)
9. .80 - .89 (For future designation)
10. .90 - .99 Miscellaneous

4. COMMON DEFINITIONS

4.1 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 WVDOH 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 WVDOH Standard Specifications, Roads and Bridges, current edition including Supplementals and Special Provisions, 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 Should: When referring to a rule or provision, it indicates that said rule or provision is not mandatory, but is recommended as part of good practice.

4.3.5 Shall: When referring to a rule or provision, indicates that said rule or provision is mandatory.

4.3.6 WVDOH project: When referring to any construction project in the state that is governed by the Specifications, the term to be used is "WVDOH project(s)."

4.3.7 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.

4.3.8 Chief Engineer: When referring to the final approving entity, the term "Chief Engineer" shall be used based on the WVDOH org chart.

4.3.9 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.

4.3.10 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.

4.3.11 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.

4.3.12 All other Divisions shall be spelled out once and then given an appropriate abbreviation. For example, Engineering Division "Engr Division"

4.3.13 APL: When referring to MCS&T Approved Product List, the term to be used is "APL", with all letters capitalized.

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4.3.13.1 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 For units each champion has the option of using solely SI, or both SI and Imperial (combined units) as the standard.

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

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

5.2.2 For combined units, the values stated in either SI or Imperial are to be regarded separately. 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.

5.2.3 When providing a sample calculation or an example of a filled form, the champion may choose to use any single unit system.

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.

5.2.4.1 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 An 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[4]. 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[5]. 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.

[4] https://downloads.transportation.org/Publications/aashto_style_manual.pdf
[5] https://transportation.wv.gov/highways/mcst/Pages/default.aspx

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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.

MP 700.00.00
JULY 6, 2020
RECONFIRMED: JULY 6, 2022
PAGE 1 OF 2

Figure 1 – MP Header with Approval Date and Reconfirmation Date

7.1.3 In the instance of either a new MP or an approved update to a MP, only the ~~Director~~ effective ~~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

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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 committee may vote to recommend or reject the proposed document. 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 Administration (FHWA). Once the document is affirmed by FHWA, the document is posted and distributed. If any comment is received during the approval process, 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[6]

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

[6] https://transportation.wv.gov/highways/TechnicalSupport/Pages/Design-Directives.aspx

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[7]. 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 appliable), an archived link is available to provide a documented history of updates. Figure 4 provides an example.

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.

10.3 The effective date of an MP is the next contract letting date after the date of the FHWA affirmation. The Director may push this back one letting date at their discretion if the affirmation date is too close to the letting.

~~10.2~~10.3.1 ~~This shall not be retroactively applied to already approved MPs except at the discretion of the Director.~~

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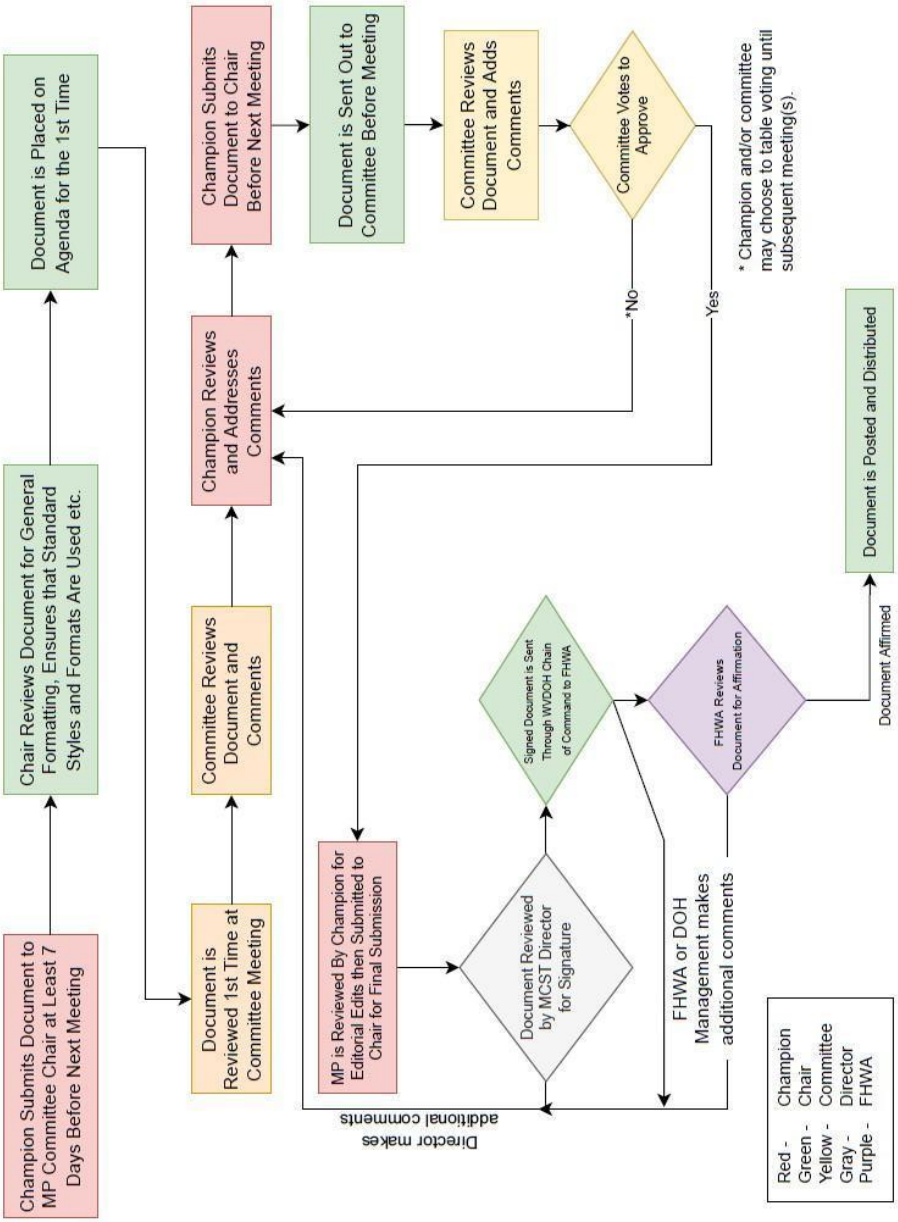
Michael A Mance, PE
Director
Materials Control, Soils & Testing Division

MP 100.00.00 Steward – Materials Control Section
MM:Bb
ATTACHMENT

[7] https://transportation.wv.gov/highways/mcst/Pages/WVDOH-Materials-Procedures.aspx



ATTACHMENT 1 – MP Committee Meeting Flowchart

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

MATERIALS PROCEDURES

PROCEDURE FOR ASPHALT MIXTURE PLANT AND TRUCK INSPECTION

1. PLANT AND EQUIPMENT INSPECTION STICKERS

1.1 Physical plants and equipment which prepare materials for, or deliver materials to, State projects or Purchase Orders shall be regularly inspected and approved by the DOH District personnel in which the plant is located.

1.2 The inspections and approval shall be confirmed by an inspection sticker supplied by the Materials Control, Soils & Testing Division (MCS&T). The inspection sticker will indicate the following:

1. Name of inspector
2. Plant or portion thereof, or singular piece of equipment inspected.
3. Date of inspection
4. Date of expiration of approval
5. Lab Number

1.3 Inspections may be made at any time at the option of the Division. The status of the inspected facility shall be determined by the latest inspection. The date of expiration of approval, as noted on the latest inspection sticker, shall be the last day on which the facility is approved by the Division. The facility must have an approved status at time of production for or delivery to State projects or Purchase Orders.

1.4 The sole purpose of the inspection sticker is to inform all concerned that an entire plant, a portion thereof, or a singular piece of equipment has been inspected and found to substantially meet all requirements of the specifications and is, therefore, approved to supply materials to State projects. The inspection sticker shall be affixed to the equipment or displayed in other manners so that the purpose as stated above will be fulfilled.

1.5 The stickers shall be applied, insofar as practicable, and each District shall maintain records of these inspections in ProjectWise. The records shall include all the items listed in 1.2, a completed inspection checklist for Batch Plants or Drum Plants, and any supporting documentation.

1.6 A plant or portion thereof, or a singular piece of equipment, shall be approved for a period not to exceed twelve (12) months. The period of approval shall be determined, in general, by the age, physical condition, or durability of the plant or equipment, and the inspection interval shall be such that the Division will have reasonable assurance that the plant or equipment is maintained in an acceptable manner for that duration. If an Asphalt Mixture Plant, portion thereof, or singular piece of equipment is approved for a shorter period, the determining factor shall be noted on the Plant Inspection Checklist.

1.7 Each time a plant has been inspected, the District that performs the inspection shall notify the Asphalt Section at MCS&T, via email, at DOHAsphalt@wv.gov. MCS&T will generate a list of approved plants and post them on the Division Webpage[1].

1.8 Plant Inspection Checklists can be found in the Tool Box section of the Division's webpage. A flow chart and a sample of an inspection sticker can be found in Attachments 1 and 2.

2. QUALITY ASSURANCE IN ASPHALT MIXTURES

2.1 PURPOSE

The purpose of this procedure is to establish guidelines which will aid Division personnel in implementing in a prescribed and uniform manner the Division's Quality Assurance Program for Asphalt Mixtures. This program shall be directed primarily to maintain a predetermined and acceptable level of assurance that Asphalt Mixtures produced for the Division conform to their governing specifications.

2.2 DEFINITION OF TERMS

2.2.1 QUALITY ASSURANCE

Quality Assurance is an expression of confidence which the Division has in its program of acceptance testing and inspection which determines conformance of materials and construction to governing specification. A Quality Assurance Program is a planned program of acceptance testing and inspection which is conducted by the Division for the express purpose of maintaining a predetermined and acceptable level of assurance that construction materials conform to their governing specifications. Part of any Quality Assurance Program is an awareness and knowledge of the Producer's Quality Control Program and the level of Quality Control maintained by that Producer.

2.2.2 QUALITY CONTROL

[1] https://transportation.wv.gov/highways/mcst/pages/default.aspx

Quality Control is a planned program of testing, inspection and related activities conducted by an Asphalt Mixture Producer. The purpose of QC is to measure the various properties of Asphalt Mixtures and their component materials to control these properties within the limits of their governing specifications.

2.3 GENERAL DISCUSSION

The Division and the Producer/Supplier jointly participate in a program whose primary objective is to improve the quality of Asphalt Mixtures used in highway construction. One of the outcomes of this program is that the Division will run a smaller risk of having nonconforming materials incorporated into the work, and the Producer/Supplier will run a smaller risk of having suitable materials rejected.

The following major developments are outgrowths of the Quality Assurance Program:

2.3.1 WVDOH Asphalt Plant Technician certification is available to the Producer/Supplier to aid in the implementation of a Quality Control Program.

2.3.2 The requirement for a Contractor to maintain equipment and qualified personnel including at least one certified Asphalt Plant Technician at each plant is specified in Section 401.6.1 of the Standard Specifications.

2.3.3 The requirement for a Contractor to have a field laboratory which is equipped and maintained in a specified manner to facilitate a proper Quality Control Program is specified in Section 401.9.8 of the Standard Specifications.

2.3.4 Asphalt Mixture plants and hauling equipment are regularly inspected by the Division, and their approval as conforming to requirements of governing specification is attested to by an inspection sticker (See Section 1 of this MP for details).

2.3.5 The requirement for each producer to design a Job Mix Formula (JMF) using acceptable sources and types of materials that are to be used in the work, is specified in Section 401.4.2 of the Standard Specifications. The requirement for each producer to perform JMF Field Verification, yearly, for each JMF, is specified in Section 401.6.2 of the Standard Specifications. The requirement for each producer to conduct ongoing Quality Control Testing is specified in Section 401.6.3 of the Standard Specifications. These requirements compel producers to design and maintain JMF's for each of the various mixture types to be supplied, and it guards against the possibility of source materials changing appreciably and affecting the quality of the mixtures.

2.4. PHYSICAL PLANT EVALUATION

District personnel will inspect and evaluate asphalt mixture plants in conformance with Section 1 of this MP. Any nonconformities shall be documented on the inspection report. A copy of the inspection data, which is specified in Subsection 1.5, shall be transmitted to MCS&T immediately after the inspection is completed.

3. PLANT APPROVAL STATUS

3.1 PLANT CERTIFICATION

3.1.1 When District Personnel determine that an Asphalt Plant, which is not already listed as an approved plant on the Division's Approved Source Page, has met the requirements of this Materials Procedure, the Specifications, and all other applicable Materials Procedures, they shall notify MCS&T and provide all applicable documentation and information to MCS&T Division.

3.1.2 District Materials personnel shall notify the subject Asphalt Plant that they are approved to begin production for WVDOH projects, using mix designs approved by MSCS&T Division. MCS&T Division shall add the Asphalt Plant to the Division's Approved Products Page.

3.2 PLANT DE-CERTIFICATION

3.2.1 When District Personnel determine that an Asphalt Plant, which is currently listed on the Division's Approved Source Page, is not complying with the requirements of this MP, the Specifications, or any other applicable Materials Procedure, they shall immediately notify MCS&T Division and provide all applicable documentation and information to MCS&T Division. This information shall include a summary of the reason(s) for the de-certification of the subject Asphalt Plant.

3.2.2 Upon review and concurrence, MCS&T Division shall immediately notify the subject Asphalt Plant and all applicable WVDOH District and Divisions that the subject Asphalt Plant is no longer approved to supply asphalt for WVDOH projects. MCS&T Division shall remove the Asphalt Plant from the Division's Approved Products Page.

3.2.3 If the subject Plant, which has been de-certified and removed from approved status, desires re-approval, they shall initiate the re-approval process by submitting a plan of corrective action, which addresses all of the reasons for which that Plant was de-certified. This plan of corrective action shall be submitted to the District in which the Concrete Plant is located and to MCS&T Division.

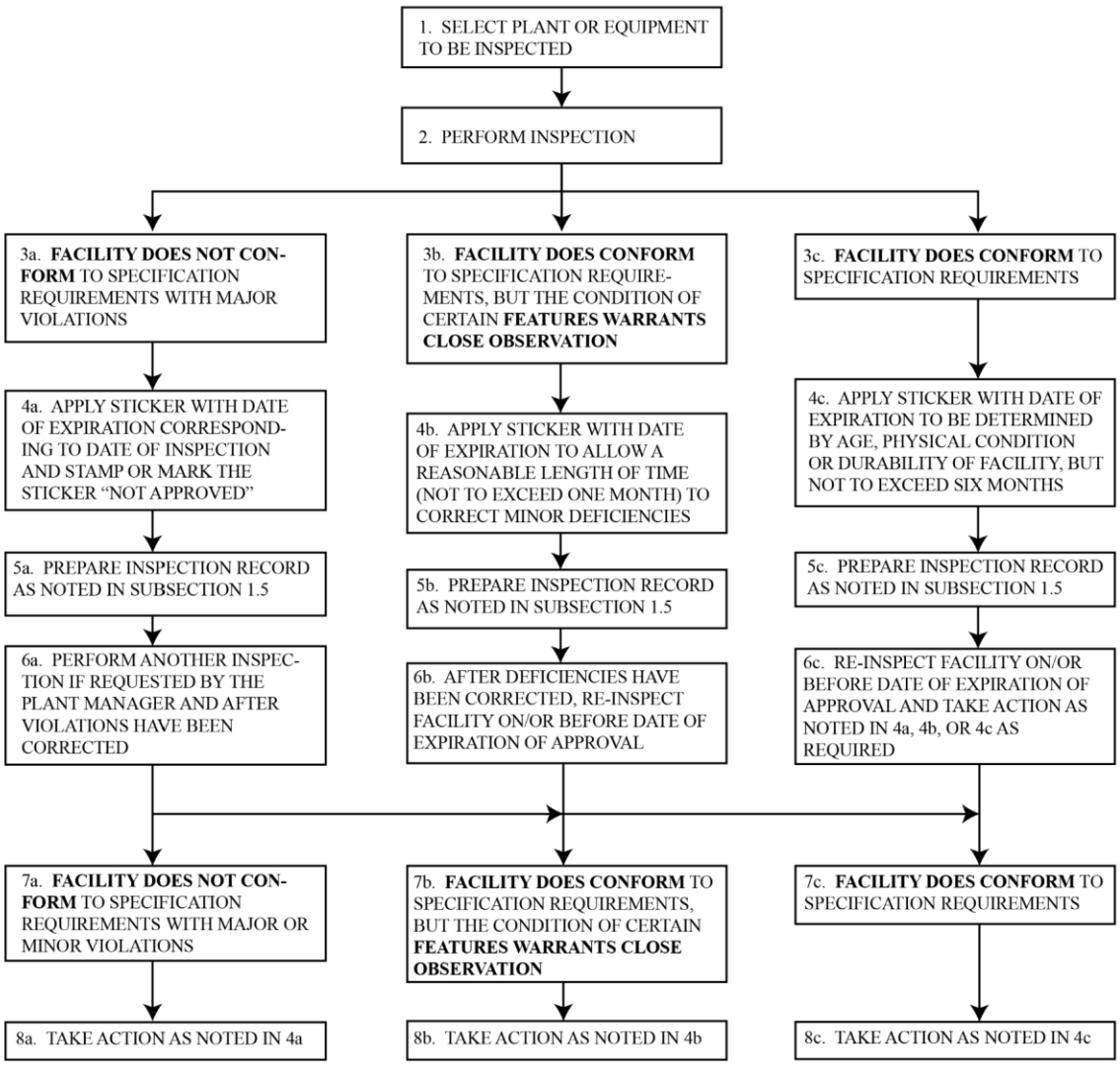
4. TICKETING REQUIREMENTS

In addition to all other plant inspection requirements listed in this MP, and in addition to the ticketing requirements listed in Section 5.2 of MP 401.03.50, each approved asphalt mixture plant shall have the capability of providing electronic ticket delivery (e-tickets), as required by Section 109.20.1 of the Standard Specifications. In the event an asphalt mixture plant does not have the capability of providing e-ticket delivery, the plant shall not be approved. The plant shall not be reconsidered for approval until the producer can demonstrate the ability to produce e-tickets.

Michael A. Mance, P.E.
Division Director
Materials Control, Soils & Testing Division

MP 401.09.40 Steward – Asphalt Section
MAM:J
Attachment

Plant Inspection Flow Chart



Sample Plant Inspection Sticker

West Virginia Division of Highways
CHECKED & ACCEPTED
INSPECTOR: _____ **DATE:** _____ **LAB NUMBER:** _____ **DISTRICT:** _____
DATE OF EXPIRATION **MONTH/DAY/YEAR** _____/_____/_____
PLANT / TRUCK

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

GUIDE TO DESIGNING ASPHALT MIXTURES WITH RECLAIMED ASPHALT PAVEMENT

1. PURPOSE

~~1.1.~~ To establish criteria for designing asphalt mixtures which contain reclaimed asphalt pavement (RAP) and Performance Graded (PG) Binders.

1.1.

2. SCOPE

~~2.1.~~ This procedure is applicable to all asphalt mixture designs which contain both RAP and PG Binders.

2.1.

3. GENERAL

~~3.1.~~ This MP does not alter the design specification requirements of the 401 Specification, ~~or~~ MP 401.02.22, or MP 401.02.27. It is to be used only as a supplement to the specifications when designing RAP mixtures. It does not affect RAP mixtures which were designed through previously approved methods prior to issuance of this MP.

3.1.

4. REFERENCED DOCUMENTS

~~4.1.~~ MP 401.02.22

4.1.

5. GUIDELINES

~~5.1. The following guidelines shall apply to all new mix designs which incorporate RAP with PG Binders.~~

5.1. For ~~design~~ purposes of RAP mixture design and production the following shall apply:

5.1.1. ~~,t~~The specific gravity of the binder in the ~~virgin~~ RAP~~PG Binder~~ shall be assumed equivalent to the ~~used as the~~ specific gravity of the virgin ~~asphalt~~ bbinder, as supplied by the ~~in the RAP.~~Binder supplier. ~~Also, t~~

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5.2.5.1.2. The effective specific gravity of the aggregate (Gse) in the RAP shall be determined from the RAP material and shall be used as the bulk specific gravity of the RAP aggregate for calculation purposes. (For greater accuracy, the producer may calculate a binder absorption of their virgin aggregates, utilize that absorption with the Gse of the RAP to calculate an assumed Gsb for the RAP).

5.2. RAP content is defined as the percentage of RAP by weight vs total weight of material. Allowable RAP content shall vary based on Base Binder Grade, RAP Fractionation, and Nominal Max Aggregate Size(NMAS) of the mixture as described in Table 1.

5.3. Proper stockpile management in accordance with Best Practices for RAP Management as documented by NCHRP report 752, Appendix D, and as discussed in Publication No. FHWA-HRT-11-0-21. These documents can be accessed at the respective links below:

http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_752.pdf

http://www.fhwa.dot.gov/publications/research/infrastructure/pavements/11021/11021.pdf

TABLE 1 – Maximum RAP by Weight allowable per Mix Type and Fractionation Practices

	Project Specifies <PG64E-22 Binder				Project Specifies PG64E-22 Binder (Note 1)	
	Fractionated RAP		Non-Fractionated RAP		Fractionated RAP	Non-Fractionated RAP
Mix Type NMAS	Project Specified binder	Binder Dump Note 3	Project Specified binder	Binder Dump Note 3		
4.75mm Note 2	15	15	15	15	15	15
9.5mm	25	30	20	25	20	15
12.5mm	25	30	20	25	20	15
19mm	30	35	20	25	25	20
25mm	30	35	20	25	25 Note 4	20 Note 4

Note 1 – Binder dumping is not permitted on projects which specify PG64E-22.
Note 2 – RAP material utilized for a 4.75mm mixture for both design and production must be fractionated, scalped, and/or crushed to less than 4.75mm prior to incorporation into the mix.
Note 3 – Binder dump is defined in section 5.4.
Note 4 – 25mm should not normally be specified with PG64E-22

If the amount of RAP in the mix is equal to or less than 15 percent, then the selected PG Binder to be used as the virgin asphalt shall be the same as the specified PG Binder for the region where the mix will be used. For example, if the specified PG Binder for the region is a PG 64S-22 then the PG Binder used in the RAP design shall be a PG 64S-22.

5.3. If the amount of RAP in the mix is 16 to 25 percent, then the selected PG Binder to be used as the virgin asphalt shall be one grade below both the high and low temperature grade of the specified PG Binder for the region where the mix will be

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~~used. For example, if the specified PG Binder for the region is a PG 64S-22 then the PG Binder used in the RAP design shall be a PG 58S-28.~~

5.4. A binder dump is defined as the reduction of the PG temperature grades by one 6-degree step for both the high and low temperature requirements of the specified PG Binder. For example, if the specified PG Binder for the projects is a PG 64S-22 then the PG Binder used in a RAP design requiring a dump shall be a PG 58S-28. PG64H-22 > PG58H-28

~~5.4.~~ For projects specifying PG64S-22 and PG64H-22 binders and mixtures with NMAS greater than or equal to 9.5mm,~~If the amount of RAP in the mix is more than 25 percent, then the~~ a contractor may utilize blending charts to exceed the limits of Table 1. Blending chart usage is described in Section 6.0 of this MP shall be used to select the high temperature grade of the virgin asphalt. The low temperature grade shall be at least one grade lower than the binder grade specified for the area where the mix will be used. The binder test data and the blending chart must be submitted along with the mix design package (JMF).

5.5.

6. EXAMPLE USE OF BLENDING CHART

6.1. The dynamic shear rheometer (DSR) can be used to look at permanent deformation (rutting factor) of the binder, which is governed by limiting G*/sin d at the test temperature. The maximum allowable value of the rutting factor shall be 2.0 kPa. A blending chart, similar to the viscosity blending charts used with viscosity graded asphalts, has been developed which plots G*/sin d on a log-log scale on the y-axis as a replacement test for viscosity. Both the recovered asphalt and the virgin asphalt are tested at the high temperature of the specified binder to be used in the design. The test value G*/sin d for each asphalt is plotted on the chart (the recovered asphalt result on the left and the virgin asphalt on the right) and connected with a straight line. The point on the chart where the plot of G*/sin d intersects the y-axis (G*/sin d, kPa, at test temperature) at 2.0 kPa is represented on the x-axis (% virgin binder) as the minimum percentage of virgin binder to be used in the RAP design.

~~6.2.~~ The attached example illustrates how the blending chart shall be used. The standard binder for the design in this example is a PG 64S-22. Test measurements for both the recovered asphalt and the virgin binder are taken at 64 °C. Point A on the chart represents the G*/sin d value for the recovered asphalt. Point B represents the G*/sin d test value for the PG 64S-22 binder which has a minimum requirement of

1.0 kPa. The line connecting points A and B intersects the 2.0 kPa rutting factor value at approximately 87% on the x-axis. This means that the minimum amount of virgin asphalt (PG 64S-22) used in the RAP design shall be 87%.

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6.2.

6.3. Looking at point C on the example chart, this represents G*/sin d for a PG 58S-28 Binder which has been tested at 64 °C. A PG 58S-28 Binder would normally be tested at 58 °C and would have a minimum G*/sin d value of 1.0 kPa. However, because this material is being used where the required binder is a PG 64S-22, the virgin binder must be tested at 64 °C. The higher test temperature results in a test value of less than 1.0 kPa, as illustrated on the chart attachment. The line connecting points A and C intersects the 2.0 kPa rutting factor value at approximately 75% on the x-axis. This means that the minimum amount of virgin asphalt (PG 58S-28) used in the RAP design shall be 75%.

01/04/2023

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

MP 401.02.24 Steward – Asphalt Section RLS:J

ATTACHMENT

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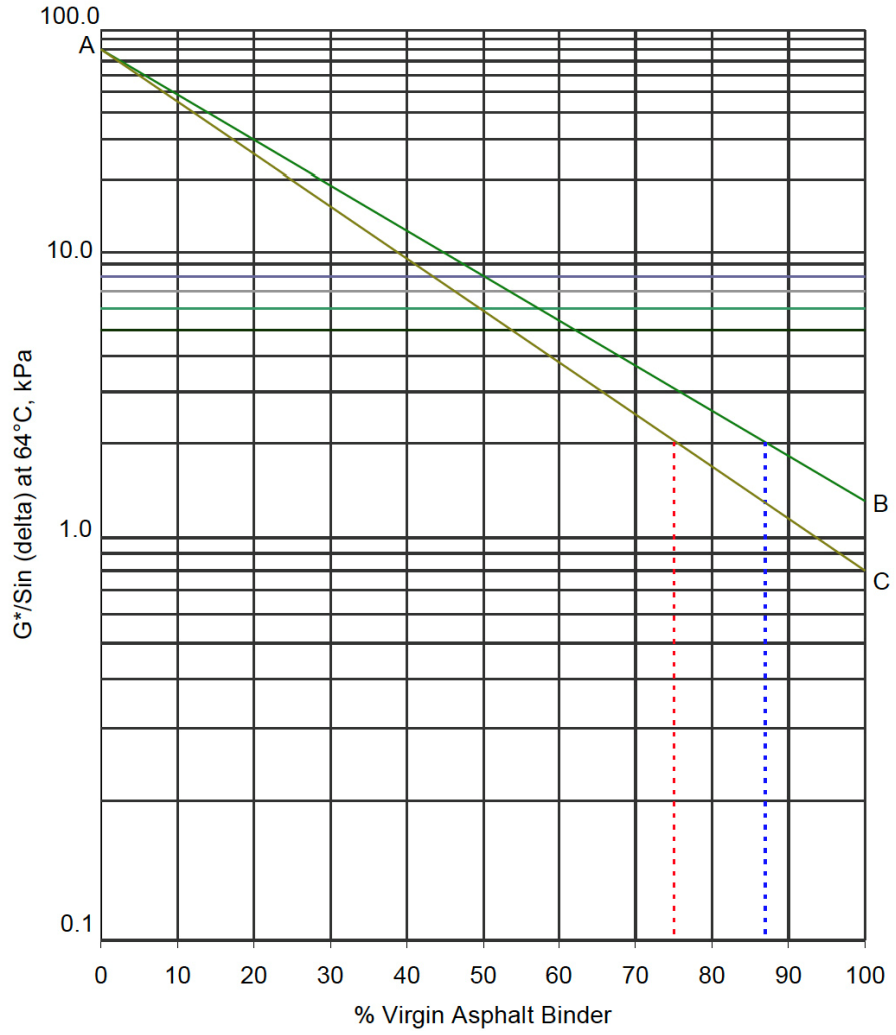
PG Binder/RAP Blending Chart



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

MATERIALS PROCEDURE

GUIDE TO DESIGNING ASPHALT MIXTURES USING THE SUPERPAVE VOLUMETRIC DESIGN ~~M~~METHOD

1. PURPOSE

1.1 To establish an approved ~~Asphalt~~Asphalt Mixture design or Job Mix Formula (JMF) using the Superpave volumetric design to be used for construction of an asphalt pavement. ~~method,~~ To outline test methods and procedures~~,~~ and to establish evaluation criteria for Superpave asphalt mixtures. ~~If reclaimed asphalt pavement (RAP) is used in the design, refer to Materials Procedure (MP) 401.02.24 for additional guidelines.~~

2. SCOPE

2.1 This procedure is applicable to design tests conducted for the purpose of establishing mixture proportions for asphalt mixtures using the Superpave mix design method. ~~Superpave~~JMFs~~ designs previously approved under the March 2000~~approved prior to June 2025~~ version of this MP~~ may continue to be used only if they can meet the current ~~were designed and approved within the~~ volumetric, aggregate and gradation parameters of Table 1, Table 2, Table 3 and Table ~~4~~3, as well as ~~and~~ the quality control requirements of MP 401.02.29 can be maintained. Such JMFs should be sent to the Division for reapproval and issuance of a new JMF number.

2.2 If reclaimed asphalt pavement (RAP) is used in the design, refer to Materials Procedure ~~(~~MP~~)~~ 401.02.24 for additional guidelines.

2.3 The Division may, at any point, revoke the approval of a JMF.~~Any approved mix design that~~ which exhibits poor field and/or laboratory performance. See MP401.02.29 for details on steps to revoke a JMF. ~~may be rejected from further use by the Division.~~

~~2.2~~2.4 Multiple factors of mixture design are based upon a project 20-year design traffic Equivalent Single Axel Loads (ESAL) counts. ESAL counts are to be provided by WVDOH within the project's contract documents. If values are not indicated contact District Construction to obtain this information.

3. REFERENCED DOCUMENTS

3.1 AASHTO Standards:

- M 323, Superpave Volumetric Mix Design
- R 30, Mixture Conditioning of Asphalt Mixtures
- R 35, Standard Practice for Superpave Volumetric Design for Asphalt Mixtures
- T 11, Materials Finer Than 75 µm (No. 200) Sieve in Mineral Aggregates by Washing

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- T 27, Sieve Analysis of Fine and Coarse Aggregates
- T 30, Mechanical Analysis of Extracted Aggregate
- T 84, Specific Gravity and Absorption of Fine Aggregate
- T 85, Specific Gravity and Absorption of Coarse Aggregate
- T 164, Standard Method of Test for Quantitative Extraction of Asphalt Binder from Asphalt Mixtures
- T 166, Bulk Specific Gravity of Compacted Asphalt Mixtures Using Saturated Surface-Dry Specimens
- T 176, Plastic Fines in Graded Aggregates and Soils by Use of the Sand Equivalent Test
- T 209, Theoretical Maximum Specific Gravity and Density of Asphalt Mixtures
- T 269, Percent Air Voids in Compacted Dense and Open Asphalt Mixtures
- T 283, Resistance of Compacted Asphalt Mixtures to Moisture-Induced Damage
- T 304, Uncompacted Void Content of Fine Aggregate
- T 308, Determining the Asphalt Binder Content of Asphalt Mixtures by the Ignition Method (Test Method A)
- T 312, Preparing and Determining the Density of Asphalt Mixture Specimens by Means of the Superpave Gyratory Compactor

3.2 ASTM Standards

- D 4791, Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate
- D 5821, Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate

3.3 Material Procedures

- MP 401.02.24, Guide to Designing Asphalt Mixtures with Reclaimed Asphalt Pavement
- MP 401.02.29, Guide for Quality Control and Acceptance Requirements for Superpave Asphalt Mixtures

3.4 WVDOH Webpage Form

3.4.1 Current version of the WVDOH T-400 Form~~1~~, available at the WVDOH MCS&T Toolbox.

~~3.4.1~~3.4.2 https://transportation.wv.gov/highways/mcst/Pages/tbox.aspx

4. LABORATORY AND TECHNICIAN REQUIREMENTS

4.1 The laboratory performing the design shall be a Division approved laboratory. In order to~~To~~ obtain Division approval, a laboratory must demonstrate ~~that~~ they are equipped, staffed, and managed for batching and testing asphalt mixtures in accordance with this MP. This shall be accomplished by submitting a copy of their latest report of inspection by AASHTO re:source to the District Materials Section. The laboratory must also submit a letter detailing ~~the~~all ~~-~~actions taken to correct ~~any~~ deficiencies noted during said inspection. The inspection shall include~~in~~ the test procedures listed below. The District will forward this information to Materials Control, Soils and Testing Division (MCS&T). To maintain Division approval

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a ~~It is also required that the~~ design laboratory shall ~~request to be included on the~~be routinely ~~schedule of inspections~~inspected by AASHTO re:source. Subsequent inspections shall take place on a roughly 24-month cycle, depending on AASHTO re:source's availability. MCS&T will maintain a list of the approved design laboratories.~~, which are usually every 18 to 24 months to maintain their approval status.~~

4.1.1 A design laboratories AASHTO re:source inspection shall include a minimum of the following AASHTO Test Procedures.

- T 30, Mechanical Analysis of Extracted Aggregate
- T 84, Specific Gravity and Absorption of Fine Aggregate
- T 85, Specific Gravity and Absorption of Coarse Aggregate
- T 166, Bulk Specific Gravity of Compacted Asphalt Mixtures Using Saturated Surface-Dry Specimens
- T 176, Plastic Fines in Graded Aggregates and Soils by Use of the Sand Equivalent Test
- T 209, Theoretical Maximum Specific Gravity and Density of Asphalt Mixtures
- T 283, Resistance of Compacted Asphalt Mixtures to Moisture-Induced Damage (specimens prepared using T 312)
- T 304, Test for Uncompacted Void Content of Fine Aggregate
- T 308, Determining the Asphalt Binder Content of Asphalt Mixtures by the Ignition Method (Test Method A)
- T 312, Preparing and Determining the Density of Asphalt Mixture (HMA) Specimens by Means of the Superpave Gyratory Compactor
- T 324, Hamburg Wheel-Track Testing (HWTT) of Compacted Asphalt Mixture (only applicable to laboratories utilizing this method for Section 5.6)

4.1.2 ~~The~~An asphalt mixture design laboratory shall~~is required to have~~be staffed with at least one ~~a~~ technician who has ~~attended and successfully~~been certified ~~completed~~through a WVDOH approved Asphalt Mixture Design course, henceforth known as the designer. ~~a Division approved Superpave mix design class. In addition to the class offered through the Division in conjunction with the Asphalt Pavement Association (APA) of West Virginia, hands on Superpave mix design classes offered by the Asphalt Institute, National Center for Asphalt Technology (NCAT), and National Asphalt Pavement Association (NAPA)~~The designer shall also be certified as a WVDOH Asphalt Plant Technician and shall retain such certification at all times. Failure to maintain the Asphalt Plant Technician will result in revocation of mix design certification. MCS&T will maintain an official list of approved design technicians.

4.1.3 An Asphalt Mixture Design Course shall include but not be limited to material on the following topics: procedures and calculations for determining aggregate properties, gradations, and blending of properties and gradation; proper selection of design aggregate structure; proper sample mixing, aging and splitting procedures; volumetric testing and analysis; and hands on mixture creation.

4.1.4 A course developed in conjunction and offered through the Asphalt Pavement Association

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Couple options
Test every X years
Participate in a Refresh course
Submit X number of mixtures/year
JMFs verified

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of West Virginia was specifically developed to meet the requirement in section 4.2. Alternative courses such as those offered by the Asphalt Institute, National Center for Asphalt Technology (NCAT), or other state DOTs may be approved at the discretion of the Division. To seek approval for such cases, proof of successful completion of all course requirements (including a written examination and hands-on experience) must be provided. Additionally, course materials including agenda, course outline, and other course materials may be requested for approval. Submit such requests electronically to the MCS&T Asphalt Section (DOHAsphalt@wv.gov) ~~have been approved. Superpave design classes offered by other state DOTs may be approved at the discretion of the Division. Classes offered by other state DOTs will be evaluated for approval, as needed. Proof of successful completion of all class requirements (including a written examination) must be provided. Approval of an older design class that did not require a written examination will be on a case-by-case basis including a review of the designer's experience. MCS&T will maintain a list of the approved design laboratories and design technicians.~~

~~3.4.2~~

~~3.4.3 TESTING REQUIREMENTS~~

~~3.4.4 The laboratory performing the design shall be a Division approved laboratory. To obtain Division approval, a laboratory must demonstrate that they are equipped, staffed, and managed for batching and testing asphalt mixtures in accordance with this MP. This shall be accomplished by submitting a copy of their latest report of inspection by AASHTO re:source to the District Materials Section. The laboratory must also submit a letter detailing the actions taken to correct any deficiencies noted in the test procedures listed below. The District will forward this information to Materials Control, Soils and Testing Division (MCS&T). It is also required that the design laboratory request to be included on the routine schedule of inspections by AASHTO re:source, which are usually every 18 to 24 months to maintain their approval status.~~

~~3.4.5 AASHTO Test Procedures~~

~~3.4.6 T 30, Mechanical Analysis of Extracted Aggregate~~

~~3.4.7 T 84, Specific Gravity and Absorption of Fine Aggregate~~

~~3.4.8 T 85, Specific Gravity and Absorption of Coarse Aggregate~~

~~3.4.9 T 166, Bulk Specific Gravity of Compacted Asphalt Mixtures Using Saturated Surface-Dry Specimens~~

~~3.4.10 T 209, Theoretical Maximum Specific Gravity and Density of Asphalt Mixtures~~

~~3.4.11 T 283, Resistance of Compacted Asphalt Mixtures to Moisture Induced Damage (specimens prepared using T 312)~~

~~3.4.12 T 308, Determining the Asphalt Binder Content of Asphalt Mixtures by the Ignition Method (Test Method A)~~

~~3.4.13 T 312, Preparing and Determining the Density of Asphalt Mixture (HMA) Specimens by Means of the Superpave Gyratory Compactor~~

~~The laboratory is required to have a technician who has attended and successfully completed a Division approved Superpave mix design class. In addition to the class offered through the Division in conjunction with the Asphalt Pavement Association (APA) of West Virginia, hands on Superpave mix design classes offered by the Asphalt Institute, National Center for Asphalt Technology (NCAT), and National Asphalt Pavement Association (NAPA) have been approved. Superpave design classes offered by other state DOTs may be approved at the discretion of the Division. Classes offered by other state DOTs will be evaluated for approval, as needed. Proof of successful completion of all class requirements (including a written examination) must be provided. Approval of an older design class that did not require a written examination will be on a case-by-case basis including a review of the designer's experience. MCS&T will maintain a list of the approved design laboratories and design technicians.~~

VOLUMETRIC MIXTURE

5. TESTING REQUIREMENTS

5.1 The mix design shall be developed using the volumetric design guidelines provided in AASHTO M 323 and R 35 with the exception of any ~~variations~~modifications or additions ~~that are~~ noted in this Materials ~~M~~Procedure~~P~~. In addition, all laboratory prepared design specimens shall be conditioned in accordance with the *Mixture Conditioning for Volumetric Mixture Design* guidelines within AASHTO R 30.

5.2 Gyrations Level

5.2.1 For laboratory compaction of samples, the standard gyratory counts shall be equal to sixty-five (65) for all mixtures, regardless of ESAL counts.

5.2.2 A 4.75mm mixture is the only exception to section 5.3.1, with 4.75mm mixtures being compacted to fifty (50) gyrations.

5.3 Performance Graded (PG) Binder Selection

5.3.1 The PG Binder for the JMF shall be selected in accordance with Section 401.2 of the Standard Specifications based on ESAL levels of the project.

5.3.2 If Reclaimed Asphalt Pavement (RAP) is to be utilized in the JMF, refer to MP 401.02.24 regarding any modifications required to PG Binder Selection and/or RAP material processing.

5.3.3 The PG Binder for J

TABLE 1—SUPERPAVE METHOD VOLUMETRIC MIX DESIGN CRITERIA

Design air void content, percent (T269)						4.0
		Nominal Maximum Size, mm (in.)				
AASHTO R35 Tests		25 (1)	19 (¾)	12.5 (½)	9.5 (⅜)	4.75 (No.4)
Fines-to-effective asphalt (FA) ratio	Fine	0.6-1.2	0.6-1.2	0.6-1.2	0.6-1.2	0.9 – 2.0
	Coarse	0.8-1.6	0.8-1.6	0.8-1.6	0.8-1.6	
Percent Voids in Mineral Aggregate (VMA)[(Note 3)]		12.5	13.5	14.5	15.5	16.5
Percent Voids Filled with Asphalt (VFA)		68 – 76	70 – 78	72 – 79	74 – 80	75 – 81

Note 3: Mixtures designed with the VMA exceeding the minimum value by more than two percent may be susceptible to flushing and rutting, especially when used on pavements subjected to slow moving traffic conditions. They may also be difficult to compact as they often have a tendency to shove under the roller.

5.4 Volumetric Design

5.4.1 Utilizing best practices and historic knowledge the designer shall determine an estimated asphalt content for the mixture. Designers in need of guidance of selecting an estimated asphalt content should review Asphalt Institute's MS-2 publication, in particular the section on *Selecting a design aggregate Structure*. To establish a JMF, mixture samples shall be created at a minimum of four asphalt contents (P_b) as described below.

5.4.1.1 The designer shall create a minimum of two bulk specific gravity (G_{sb}) samples the estimated asphalt content as well as asphalt contents which are -0.5%, +0.5%, +1.0% from the estimated asphalt content.

Commented [JC7]: Is 65 the right number? Some states have moved lower (VA=50, PA=75. T =65, OH 65, KY=65

Commented [JC8]: Design ESALs
< 3 = 64S
3 - <15 = 64S
15 - <25 = 64H
≥ 25 = 64E

Commented [JC9R8]: ESALs
<20 = 64S
20 - < 30 = 64H
≥ 30 = 64E

Commented [JC10R8]: Using the later to stay with the current spec and DD

Commented [JC11]: Make a reference for new techs to get a starting point

5.4.1.2 The designer shall create two maximum theoretical specific gravity (G_{mm}/Rice) samples at 0.5% above the designers' estimated asphalt content. The average value of these two Rice samples shall be utilized to calculate the effective specific gravity of stone (G_{se}). Utilizing G_{se} calculate the Rice values at the remaining asphalt contents for use in volumetric analysis.

5.4.2 Samples prepared in Section 5.4.1 shall be analyzed for the volumetric properties including: Percent Air Voids (VTM), Percent Voids in the Mineral Aggregate (VMA), Percent Voids Filled with Asphalt (VFA) and Dust to Effective Asphalt (FA)~~The mix design~~.

5.4.3 The optimal design binder content shall be selected from the interpolation of the P_b vs VTM graph at 4% Air Voids. The remaining volumetric properties shall be determined via interpolation with the optimal design binder content and ~~properties~~ shall meet the design criteria ~~requirements~~listed in ~~of~~ Table 1~~, and shall consist of the following:~~

5.4.4 When a JMF is under development using the same aggregate proportions, and sources as a prior Division approved JMF, but with a different neat binder grade, full volumetric testing is not required. Utilizing the existing approved JMF's aggregate structure and the new PG binder grade, the designer may instead elect to create two bulk specific gravity (G_{sb}) samples and two maximum theoretical specific gravity (G_{mm}/Rice) samples at the approved JMF's optimal design binder content. Samples shall be made in accordance with this section. Mixing and compaction temperature will be adjusted based on the requirements of the new binder grade. The designer shall calculate the volumetric properties of the one-point check, which shall meet the criteria of Table 2 or Table 1 as noted. If the one-point check meets these requirements, then the designer shall submit the one-point data along with a new T-400 which denotes the reference T-400 number in the remarks. If the mix design fails to meet all of the requirements, then a new mix design shall be developed.

TABLE 2 – ONE-POINT VOLUMETRIC MIX DESIGN CRITERIA

Design air void content, percent (T269)	4.0 ± 0.3%
Percent Voids in Mineral Aggregate (VMA)	Reference JMF VMA ± 0.5%
Fines-to-effective asphalt (FA) ratio	Design Criteria (Table 1)
Percent Voids Filled with Asphalt (VFA)	Design Criteria (Table 1)

5.5 Moisture Susceptibility Analysis

5.5.1 Designers may utilize either the Tensile Strength Ratio or Hamburg Wheel Tracking Test to analyze JMFs for moisture susceptibility.

5.5.2 Tensile Strength Ratio

5.5.2.1 Test specimens shall be prepared and compacted using a gyratory compactor in accordance with AASHTO T-312 and AASHTO T283 at the JMF's optimal design asphalt content. An 80 ~~If the 80~~ percent minimum tensile strength ratio is required. ~~is not met, a new design will be required. A Division approved antistripping additive, such as hydrated lime, conforming to the requirements of M 303 or a liquid antistripping additive, may be added to the mixture if needed. The additive must be identified on the T-400 Form.~~

5.5.2.2 If a ~~T 283 shall be waived when a~~ new ~~mix design~~JMF is under ~~develope~~development ~~d~~ using ~~the exact~~identical aggregate sizes, percentages, and sources of a previously approved ~~mix design~~JMF, and the previously approved JMF ~~that~~ has ~~met the required~~ a minimum

Commented [JC12]: Should we add a threshold of when this needs to be tested?

tensile strength ratio of ~~at least~~ 85 percent., TSR testing shall be waived. Follow section 5.5.5.~~This waiver information should be noted on the submitted design package along with the previously approved design T-400 number to inform MCS&T why T283 test data has not been included. If the approved design contained an antistripping additive, then the new design must also contain this additive.~~

5.5.2.3 Hamburg Wheel Tracking Test (HWTT) Stripping Inflection Point

5.5.2.4 Test specimens shall be prepared and compacted using a gyratory compactor in accordance with AASHTO T312 and AASHTO T324 at the JMF's optimal design asphalt content. A Stripping Inflection Point (SIP) shall not be found within XXXX number of passes, nor shall the rut depth exceed YY mm.

Commented [JC13]: Will have to come up with criteria

5.5.3 If a new JMF is under development using identical aggregate sizes, percentages, and sources of a previously approved JMF, and the previously approved JMF has met the requirements of Section 5.6.3.1, HWTT testing shall be waived. Follow section 5.6.5.

5.5.4 If the requirements within Section 5.5.2 or 5.5.2.3 are not met, the designer may consider a new aggregate structure, or the use of a Division approved antistripping additive. Such additives as hydrated lime, conforming to the requirements of AASHTO M303 or a liquid antistripping additive, may be added to the mixture. To validate an additives effectiveness, the JMF shall be retested for moisture susceptibility. The additive name, type and dosage rate shall be recorded on the JMF's T-400 Form.

5.5.5 If a previously approved JMF is to be reference for a moisture susceptibility waive, the designer shall: include the reference T400 number in the remarks of the JMF submittal; include all moisture susceptibility analysis from the reference JMF; if the reference JMF contained an antistripping additive, the new JMF must contain the same additive at the same dosage rate, the designer shall not such additives in the remarks of the JMF submittal.

5.5.6 MCS&T may request ~~the~~ moisture susceptibility of a JMF ~~tensile strength ratio~~ be verified ~~checked~~ at any time on any design ~~that is shown to exhibit signs of stripping~~.

~~1.1~~
~~1.1.1 Percent Air Voids: T 269~~
~~1.1.2 Percent Voids in Mineral Aggregate (VMA): R 35~~
~~1.1.3 Percent Voids Filled With Asphalt (VFA): R 35~~
~~1.1.4 Fines to effective asphalt (FA) ratio: R 35~~
~~1.1.5 Tensile Strength: T 283~~

~~**TABLE 1 SUPERPAVE METHOD VOLUMETRIC MIX DESIGN CRITERIA**~~

~~**Design air void content, percent**~~	~~**4.0**~~
~~Fines-to-effective asphalt (FA) ratio[Note 1]~~	~~0.6 1.2~~
~~Tensile strength ratio, percent (T283)[Note 2]~~	~~80 (minimum)~~

~~Nominal Maximum Size, mm (in.)~~

	~~25~~	~~19~~	~~12.5~~	~~9.5~~	~~4.75~~
	~~(1)~~	~~(¾)~~	~~(½)~~	~~(⅜)~~	~~(No.4)~~

Percent Voids in Mineral Aggregate (VMA)(Note 3)	12.5	13.5	14.5	15.5	16.5
Percent Voids Filled with Asphalt (VFA)	68 – 76	70 – 78	72 – 79	74 – 80	75 – 81

Note 1: When the design aggregate gradation falls within the coarse graded requirement of Table 4, the FA ratio criteria shall be 0.8 – 1.6. For all 4.75 mm (No. 4) mixes, the FA ratio shall be 0.9 – 2.0.

Note 2: Test specimens shall be compacted using a gyratory compactor in accordance with T 312. If the 80 percent minimum tensile strength ratio is not met, a new design will be required. A Division approved antistripping additive, such as hydrated lime, conforming to the requirements of M 303 or a liquid antistripping additive, may be added to the mixture if needed. The additive must be identified on the T 400 Form. T 283 shall be waived when a new mix design is developed using the exact aggregate sizes, percentages, and sources of a previously approved mix design that has met the required tensile strength ratio of at least 85 percent. This waiver information should be noted on the submitted design package along with the previously approved design T 400 number to inform MCS&T why T283 test data has not been included. If the approved design contained an antistripping additive, then the new design must also contain this additive. MCS&T may request the tensile strength ratio be checked at any time on any design that is shown to exhibit signs of stripping.

Note 3: Mixtures designed with the VMA exceeding the minimum value by more than two percent may be susceptible to flushing and rutting, especially when used on pavements subjected to slow moving traffic conditions. They may also be difficult to compact as they often have a tendency to shove under the roller.

TABLE 2 - GYRATORY COMPACTION CRITERIA (NOTE 4)

	Compaction Parameters Gyration Level 1	GyrationLevel 2
20 Year Projected design ESALs (millions)	N_{design} for Binder < PG 64E-XX	N_{design} for Binders ≥ PG 64E-XX or Mixes Below Top Two Lifts(Note 5)
< 0.3	50	50
0.3 to < 3	65	65
3 to < 30	80	65
≥ 30	80	65

Note 4: Unless otherwise specified in the contract documents, a PG 64S-22 binder shall be used in mixtures located below the top two pavement lifts. The use of a different binder grade must be approved by the Engineer.

Note 5: The Gyration Level 2 criteria for mixes placed below the top two lifts applies only to mainline paving. Multi-lift base failure and other pavement repairs shall fall under the criteria of Gyration Level 1 unless otherwise specified in the contract documents.

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6. JMF AGGREGATE REQUIREMENTS

6.1 Aggregate Source Property Requirements

6.1.1 Individual aggregates used in a JMF shall meet the requirements of Standard Specification

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Sections 702.3, 702.4, 703.1, 703.2, and 703.3.

6.1.2 Aggregate gradations for the individual aggregates utilized in a JMF shall be determined using an average of a minimum of three (3) gradation samples. Each sample shall be recorded in the JMF packet.

6.1.3 The JMF's combined aggregates ~~design~~ gradation ~~-~~shall meet the requirements of Table 3 for the specified mix type. Table 4 shall be used to distinguish between the gradation criteria for each mix type. The percent passing each sieve listed in Table 3, from one sieve larger than the nominal maximum size down to the 75 µm (No. 200), shall be included in all gradation calculations.

~~1.2~~

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TABLE —3 – —DESIGN —AGGREGATE —GRADATION —REQUIREMENTS —FOR ~~SUPERPAVE~~ ASPHALT MIXTURES (NOTE 7)

Type of Mix	25	19 (Patch-~~/&~~ Level)	12.5	9.5 (Scratch)	4.75 (Scratch)
Standard Sieve Size	Nominal Maximum Size				
	25 mm (1 inch)	19 mm (3/4 inch)	12.5 mm (1/2 inch)	9.5 mm (3/8 inch)	4.75 mm (No. 4)
~~50 mm (2")~~					
37.5 mm (1½")	100				
25 mm (1")	90 – 100	100 ~~100~~			
19 mm (3/4")	90 max	90 – 100 ~~90 – 100~~	100		
12.5 mm (1/2")		90 max ~~90 max~~	90 – 100	100 ~~100~~	100
9.5 mm (3/8")			90 max	90 – 100 ~~85 – 100~~	95 – 100 ~~100~~
4.75 mm (No.4)		(Note 6) ~~47 min~~		90 max ~~80 max~~	90 – 100 ~~90 – 100~~
2.36 mm (No.8)	19 – 45	23 – 49 ~~20-50~~	28 - 58	32 – 67 ~~30 – 55~~	---- ~~90 max~~
1.18 mm (No.16)					30 – 60 ~~40 – 65~~
600 µm (No.30)					
300 µm (No. 50)					
75 µm (No.200)	1.0 - 7.0	2.0 – 8.0 ~~2.0 – 8.0~~	2.0 - 10.0	2.0 - 10.0 ~~2.0 – 9. 0~~	6.0 – 12.0 ~~3.0 – 11.0~~

Note-6: When a 19 mm mix is specified for use as a ~~heavy duty~~ surface mix, it shall be designed as a fine-graded mix with the additional requirement of a minimum of 47% passing the 4.75 mm (No.4) sieve. For quality control of the mixture, ~~T~~the allowable tolerance limit shall be the JMF ± 5% on the 4.75 mm (No.4) sieve, but not below the minimum requirement.

Note 7: For quality control of the mixture, the allowable tolerances for each JMF shall be the specified design control points shown in Table-3 with the exception that a 4.75 mm mix shall have a tolerance limit of the JMF ± 5% on the 1.18 mm (No. 16) sieve and all other mix types shall have a tolerance limit of the JMF ± 6% on the 2.36 mm (No.8) sieve. These tolerances shall also be applied to the mix design and shall be documented on the T-400 Form. The tolerances shall not fall outside of the specified control points of Table-3.

TABLE 4–COARSE AND FINE GRADED MIXTURE CRITERIA

Commented [JC14]: Completely removed 37.5mm

Commented [JC15]: Remove this and just make the 19mm have a 47 minimum on all mixtures?
This change will:
Remove any confusion over different 19mm mixtures.
Due to the nature of finer mixtures it will promote better compaction of base mixtures

Mixture Nominal	Coarse Graded	Fine Graded
Maximum Size	% Passing / Sieve Size	% Passing / Sieve Size
~~37.5 (1½)~~	~~< 47% / 9.5 mm~~	~~≥ 47% / 9.5 mm~~
25 (1)	< 40% / 4.75 mm	≥ 40% / 4.75 mm
19 (¾)	< 47% / 4.75 mm	≥ 47% / 4.75 mm
12.5 (½)	< 39% / 2.36 mm	≥ 39% / 2.36 mm
9.5 (3/8)	< 47% / 2.36 mm	≥ 47% / 2.36 mm
4.75 (No. 4)	No distinction between coarse and fine grading	

6.2 ~~The aggregate used in the mix design shall meet the requirements of Sections 702.3, 702.4, 703.1, 703.2, and 703.3 of the Standard Specifications with~~ Aggregate Consensus Property Requirements

6.2.1 Given a JMF which meets the requirements set forth within Table 1, and 3, aggregate consensus properties including coarse and fine aggregate angularity, fine aggregate sand equivalency and coarse aggregate flat and elongated particles ~~exceptions and additions as noted in Table 5~~shall be determined on the final aggregate blend of a JMF. Table 5 outlines the consensus property requirements for a JMF based on the 20-year Design ESAL level of the pavement. Consensus properties shall be determined and test results submitted with a JMF on their appropriate T400 attachments. Consensus testing may be performed by a WVDOH certified Asphalt Plant Technician or Aggregate Inspector. The name and location of the testing laboratory and the technician's name conducting the test shall be indicated on the worksheets. All consensus testing results shall be reported to the whole number.

6.2.2 Fine aggregate angularity testing shall be conducted in accordance with AASHTO T304 (Method A). Material for the fine aggregate angularity as well as the fine aggregate bulk specific gravity utilized in the determination of fine aggregate angularity shall be based on a sample blended in accordance with the methods described in Section 6.2.4.1 and 6.2.4.2.

~~3.4.14~~ If a ~~mix~~ JMF contains ~~reclaimed asphalt pavement (~~RAP~~)~~, the asphalt binder ~~must~~shall be removed from the RAP for ~~gradation~~ consensus analysis via~~by the~~ ignition oven ~~method~~ (AASHTO T-308) or ~~a~~ solvent extraction ~~process (T~~(AASHTO T-164). ~~If the T-164 solvent extraction test method is used, a non-chlorinated solvent may be substituted for the standard specified solvent, and the test method may be modified as per the recommendations of the solvent supplier. The solvent must be a product that has been tested for use in extracting asphalt from asphalt mixtures.~~ The RAP aggregate shall be proportionally blended into the samples submitted to MCS&T as described in Section ~~4.8~~6.2.5. The RAP used for designing a mix must come from the plant stockpile from which it will be produced.

6.2.3

~~1.3 Test results for fine aggregate angularity, recorded on Design Attachment Number 13, shall be submitted along with the mix design package (JMF). Testing shall be conducted in accordance with T 304 (Method A) on a sample blended in accordance with the methods described in Section 4.8.1 and 4.8.2. This testing may be performed by a WVDOH certified Asphalt Plant Technician or Aggregate Inspector. The name of the testing laboratory and the technician conducting the test shall be indicated on the worksheets.~~

~~1.4 Other than the exception noted in Section 4.9, to obtain final approval of the mix design, coarse~~

Commented [JC16]: Is this still needed?

Commented [JC17R16]: no

Commented [JC18]: check

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~~and fine aggregate samples shall be submitted to MCS&T through the District Materials Section. These samples shall be tested and used as part of the overall approval process for the mix design, therefore, they should be submitted well in advance of the earliest anticipated use of the mix. The aggregate property requirements of Table 5 shall be applied to the blend of coarse and fine aggregates within the mixture.~~

~~1.4.1 For each mix design, a minimum 30,000 gram sample (40,000 gram sample for a 37.5 mm mix) of the coarse and fine aggregates shall be blended to the mix design proportions. The blended sample shall then be separated into plus 4.75 mm (No. 4) and minus 4.75 mm (No. 4) portions. The fine aggregate sample shall then be further prepared in accordance with Section 4.8.2. Mixtures shall be designed in accordance with the criteria set forth in Table 1, 2 and 3 unless otherwise indicated in a special provision or as a note in the contract documents. All samples shall be submitted by the design laboratory in appropriate containers to prevent sample loss or contamination.~~

~~1.4.2 Fine Aggregate Sampling Procedure: The minus 4.75 mm (No. 4) portion of the blended aggregate sample shall be split into two separate samples. One of these split samples shall be bagged and labeled as the unwashed portion of the fine aggregate blended sample. The other split sample shall be washed, oven dried, and graded to remove all plus 2.36 mm (No. 8) and minus 150 µm (No. 100) material. This washed sample shall then be split and placed into two sample bags. One bag shall be labeled as *washed fine aggregate specific gravity* sample and the other shall be labeled as *washed fine aggregate angularity* sample.~~

6.2.4 Consensus Property Division Approval

6.2.4.1 Other than exception noted in Section 0 or otherwise indicated in a special provision, to obtain final approval of a JMF, the designer shall submit samples in accordance with 6.2.4.2 to the division. Samples shall be submitted by the design laboratory to MCS&T through the District Materials Section. Samples shall be in appropriate containers to prevent sample loss and/or contamination. Samples shall include adequate documentation to demonstrate what JMF the consensus properties are associated with. These samples will be tested by MCS&T and used as part of the overall approval process for the mix design. These samples should be submitted well in advance of the earliest anticipated use of the mix. For JMF approval, the submitted samples shall meet the consensus property requirements of Table 5.

6.2.4.2 If a JMF is under development and uses the same aggregate sources at the same proportions as a previously approved JMF, the consensus evaluation used to accept the previous JMF will apply to the new JMF. The designer shall note the T400 number from the previously approved JMF in the remarks section of the T400 worksheet being submitted along with the documentation of the new JMF.

Commented [JC19]: What is the appropriate timeframe to utilize old Consensus properties.

6.2.4.3 Consensus Property Sample Preparation

6.2.4.3.1 For each JMF, a minimum 30,000-gram sample of the combined aggregates shall be blended to the mix design proportions. The blended sample shall then be separated into plus 4.75 mm (No. 4) and minus 4.75 mm (No. 4) portions as per 6.2.4.2.

6.2.4.3.2 Fine Aggregate Sampling Procedure: The minus 4.75 mm (No. 4) portion of the blended aggregate sample shall be split into two separate samples. One samples shall be bagged and labeled as *unwashed blended fine aggregate* to be tested for Sand Equivalency. The other sample shall be washed, oven dried, and graded to remove all plus 2.36 mm (No. 8) and minus 150 µm (No. 100) material. This washed sample shall then be split and the two potions labeled *washed fine aggregate specific gravity sample* and *washed fine aggregate angularity sample*.

~~1.5 If a new mix design uses the exact aggregate design structure and sources as a previously~~

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~~approved mix design, the aggregate evaluation used to accept the previous mix design will apply to the new mix design. A note of the testing waiver along with the T-400 lab number from the previous design shall be included in the remarks of the T-400 worksheet submitted along with the documentation of the new mix design.~~

6.2.5 Consensus Property Contractor Annual Review

6.2.5.1 Annually, following Division approval, aggregate consensus properties for approved JMFs shall be tested against the requirements of Table 5. Tests shall be performed on the blended aggregate sample as prepared in accordance with Section 6.2.4.3. These tests may be conducted by a WVDOH certified Asphalt Plant Technician or Aggregate Inspector. These test results shall be submitted to the District Materials Section for the purpose of maintaining approval of the mix design. The name of the testing laboratory, date tested, associated T400 number(s) and signature of the technician conducting the tests shall be indicated on the worksheets. The annual review packet shall be signed and reviewed by the designer. These test results must be submitted before the mix is used on any Division project each year.

6.2.5.1.1 Strictly for the purposes of the annual consensus review, in-lieu of blended aggregate samples, the Contractor may instead test each material stockpile individually and utilize mathematical proportional blending equation for calculating a composite result for each consensus property. If the contractor chooses to do this, the designer must submit the individual tests along with the forms showing the calculations.

6.2.5.2 If the aggregate consensus property test results submitted to the District meets specification requirements, the District shall sign off on the report and forward ~~the results~~ to MCS&T for the purpose of maintaining approval of the ~~mix design~~JMF. If any of the required aggregate tests fail to meet specification requirements, retesting by the contractor will be permitted, and the District shall submit a sample of the blended aggregate to MCS&T to verify the consensus property test that failed.

6.2.5.3 During the time that the annual aggregate consensus testing is being performed, the Division may periodically request that a duplicate set of blended aggregate samples be prepared for submittal to MCS&T for testing. The Division will identify the ~~mix design~~JMF in advance so that sufficient material is obtained for ~~preparation~~the preparation of duplicate samples. Nonconforming test results on these samples will require further investigation by the Division. No corrective action will be required by the Contractor unless the investigation concludes that it is necessary. If corrective action is required, the contractor will be notified, and at a minimum further use of the subject ~~mix design~~JMF (and associated JMFs, ie. JMFs conforming to section 6.2.4.2) shall be discontinued until the Division has determined that the problem has been properly addressed.

6.2.6 If the mix is comprised of 100 percent crushed blended aggregates that contain no more than 20 percent RAP, and it met requirements for coarse and fine aggregate angularity, the flat-and-elongated, and sand equivalent during the initial design approval, and any annual follow-up testing, then retesting each year by MCS&T will not be required. However, fine aggregate samples of mixes containing rounded natural sand and/or greater than 20 percent RAP must be prepared by a certified Asphalt Plant Technician in accordance with sections 6.2.4, and a sample of sufficient size required for testing the fine aggregate angularity shall be submitted to MCS&T on an annual basis.

Commented [JC20]: Will this work for FAA? there is a chance that when separates aggregates interact they produce a different result than a weighted blend of individual tests

Commented [JC21]: Will need to add language about what equation, stockpile replicates, etc.

Commented [JC22]: Should this not also include material for Find Agg Gravity

Commented [JC23]: This section needs refined as it contridicts items in Sections 6.2.5 now

TABLE 5 – AGGREGATE CONSENSUS PROPERTY REQUIREMENTS

20 Year Projected	Coarse Agg. Angularity (% Minimum) ASTM D5821 (Note 8)		Fine Agg. Angularity (% Minimum) AASHTO T304, Method A (Note 10)		Fine Agg. Sand Equivalent AASHTO T176	Coarse Agg. Flat and Elongated ASTM D4791
Design ESALs (millions)	Top Two Pavement Lifts (Note 9)	Below Top Two Pavement Lifts	Top Two Pavement Lifts	Below Top Two Pavement Lifts	% Minimum	Maximum (Note 13)
< 3 (Note 11)	75 / -	50 / -	-	-	40	10
3 to < 20	85 / 80	75 / -	45	40	45	10
20 to < 30	95 / 85	85 / 80	45	40	45	10
≥ 30	100/100	100/100	45	40	45	10

Note 8: "xx~~85~~/~~80~~"yy denotes that a minimum of ~~85~~ xx percent of the coarse aggregate has one fractured face and a minimum of ~~80~~ yy percent has two or more fractured faces. This criterion does not apply to 4.75mm mixtures

Note 9: The referenced "top two pavement lifts" does not include a scratch course or patching-and-leveling course that may be placed between these lifts. When a scratch or patching-and-leveling course is placed between the top two lifts, the aggregate requirements for the mix shall fall under the "top two pavement lifts" criteria.

Note 10: For design traffic levels of 3 million ESALs or greater, any mix composed of a 100 percent crushed aggregate blend that will be used in the top two lifts of the pavement structure will be acceptable with an FAA value of 43 percent or greater. The 43 percent FAA criteria shall also apply to the 30 million or greater traffic level for mixtures below the top two lifts. It shall also apply to 100 percent crushed aggregate blends that contain no more than ~~15~~20 percent RAP.

Note 11: The minimum requirement for coarse aggregate angularity for any DOH Specification Section 402 skid resistant mix design with a projected ESAL value of ~~0.3 to~~ less than 3 million shall be 85/80. ~~For skid resistant mix designs with a projected ESAL value of less than 0.3 million it shall be 75/ .~~

Note 12 – PG64E-22 grade may still be used on roadways less than 30 million ESAL upon approval from the District Engineer, if a roadway is to utilize a PG64E-22 it shall meet the aggregate requirements of >30mil ESALs

~~**Note 12:** The 10 to less than 20 million design ESAL aggregate criteria only applies to Section 402 skid resistant mix designs.~~

Note 13: Flat and elongated particles in coarse aggregates shall be tested in accordance with D4791 with the exception that the material passing the 9.5 mm (⅜ in.) sieve and retained on the 4.75 mm (No. 4) sieve shall be included. The aggregate shall be measured using the ratio of 5:1, comparing the length (longest dimension) to the thickness (smallest dimension) of the aggregate particles.

Commented [JC24]: I think we should get a temperature map of our roads that show where 25+ M ESALS exists and the quantity of road ways this will affect.
I would prefer this to affect major municipal interstates but that's about it

Commented [JC25]: Likely can be removed

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~~3.5 At the beginning of each paving season in subsequent years the aggregate consensus properties of Table 5 shall be tested on blended aggregate samples prepared in accordance with Section 4.8. These tests may be conducted by a WVDOH certified Asphalt Plant Technician or Aggregate Inspector. These test results shall be submitted to the District Materials Section for the purpose of maintaining approval of the mix design. The name of the testing laboratory, date tested, and signature of the technician conducting the tests shall be indicated on the worksheets. These test results must be submitted before the mix is used on any Division project each year.~~

~~1.5.1 During the time that the annual aggregate consensus testing is being performed, the Division may periodically request that a duplicate set of blended aggregate samples be prepared for submittal to MCS&T for testing. The Division will identify the mix design in advance so that sufficient material is obtained for preparation of duplicate samples. Nonconforming test results on these samples will require further investigation by the Division. No corrective action will be required by the Contractor unless the investigation concludes that it is necessary. If corrective action is required, the contractor will be notified, and further use of the mix design shall be discontinued until the Division has determined that the problem has been properly addressed.~~

~~1.6 If the aggregate consensus property test results submitted to the District meets specification requirements, the District shall forward the results to MCS&T for the purpose of maintaining approval of the mix design. If any of the required aggregate tests fail to meet specification requirements, retesting by the contractor will be permitted, and the District shall submit a sample of the blended aggregate to MCS&T to verify the consensus property test that failed.~~

~~1.7 If the mix is comprised of 100 percent crushed blended aggregates that contain no more than 15 percent RAP, and it met both the coarse and fine aggregate angularity requirements, the flat and elongated requirement, and the sand equivalent requirement during the initial design approval, and any annual follow up testing, then retesting each year by MCS&T will not be required. However, fine aggregate samples of mixes containing rounded natural sand and/or greater than 15 percent RAP must be prepared by a certified Asphalt Plant Technician in accordance with sections 4.8 and 4.8.1, and a sample of sufficient size required for testing the fine aggregate angularity shall be submitted to MCS&T on an annual basis.~~

~~1.8 Full mix design testing will not be required when a mix design is developed using the exact aggregate structure, sources, and compaction level as a prior Division approved design, along with a different neat binder grade. The designer may instead elect to make a set of bulk specific gravity test specimens and a maximum specific gravity test specimen with the approved aggregate structure and the new binder grade at the optimum asphalt content of the approved design. Since these samples are laboratory produced design specimens, they must be oven aged for 2 hours ± 5 minutes before testing in accordance with R 30 (Mix Conditioning of Asphalt Mixtures) as specified in R 35 (Superpave Volumetric Design for Asphalt Mixtures). Mix and compaction temperature will be based on the requirements of the new binder grade. The percent air voids shall be 4.0 ± 0.3 percent. The voids in mineral aggregate shall be within ± 0.5 percent of the original approved job mix formula design target (but not outside of the limits of this MP). All other mix design criteria shall be within the limits specified in this MP. If the mix design meets all of these requirements, then this test data may be submitted along with a new T-400 form for approval as a new mix design. A copy of the approved T-400 on which this new design is based shall also be included. If the mix design fails to meet all of the requirements, then a new mix design shall be developed.~~

~~2.~~7. REPORTING

~~2.1~~ The T-400 JMF form shall include the design property information required in Section

7.1.1 401.4 of the Standard Specification. JMF submittals shall include all Superpave mix design software printouts from the specimen compaction and analysis covering the required mix properties. In addition, if not automatically generated through the mix design software, the following information shall be included.

~~2.1.1~~7.2 A summary sheet (Superpave Package Attachment #1) showing the optimum asphalt content determination plus the design properties compared to the design criteria of Table 1. This attachment shall be signed and dated by the mix design technician.

~~2.1.2~~7.3 Worksheet for calculating the effective gravity of the blended aggregates (Attachment #4 or #4A).

~~2.1.3~~7.4 Worksheets showing calculations for maximum specific gravities of the mix at the different

Commented [JC26]: Should this not also include material for Find Agg Gravity

Commented [JC27]: This section still needs refined based on the JMF packet

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asphalt contents (Attachment #5). For any mix that contains any single coarse aggregate component with the water absorption of 1.5 percent or greater, follow the supplemental procedure of T 209 to determine if a dry-back is necessary. Because the dry-back procedure is addressing an aggregate coating issue, this same supplemental procedure shall be used on quality control and verification samples of mixes containing these high absorptive aggregates to determine if the dry-back procedure is necessary.

~~2.1.4~~7.5 Worksheet for calculating the bulk and apparent specific gravities of the total aggregate, and the percent VMA in the compacted mixture (Attachment #6 or #6A).

~~2.1.5~~7.6 Worksheet for determining the maximum specific gravity of the mixture, including the dry-back procedure when required (Attachment #7). Note that AASHTO R 35 specifies that the maximum specific gravity shall be based on the average of at least two tests.

~~2.1.6~~7.7 Worksheets showing calculation for bulk and apparent specific gravities and absorption of the coarse and fine aggregates used in the mix design (Attachments #8 or #8A).

~~2.1.7~~7.8 The 0.45 power gradation chart (Attachment #9) developed for each mix design. This chart shall include the maximum density line, aggregate control points, and a gradation plot showing each screen used in the design.

~~2.1.8~~7.9 A worksheet showing the calculations for the combined aggregate of the mix design (Attachment #10).

~~2.1.9~~7.10 Worksheets showing the washed sieve analysis results for each aggregate used in the mix design (Attachment #11).

~~2.1.10~~7.11 A worksheet showing the calculations for the fine aggregate angularity test (Attachment #13).

~~2.1.11~~7.12 A worksheet showing the calculations for absorbed asphalt and effective asphalt content (Attachment #14).

~~2.1.12~~7.13 The temperature-viscosity chart for the asphalt used in the mix design. A supplier issued chart or document containing the mix and compaction temperature recommended for the specific grade of asphalt will be acceptable.

~~2.2~~7.14 The entire T-400 JMF package shall be submitted, in Excel format, to the local District Materials Section in which the mixtures plant is located. After reviewing, the District shall attach a memo to the JMF package requesting approval of the design and submit it electronically to the MCS&T Asphalt Section (DOHAsphalt@wv.gov).

~~2.2.1~~ The MCS&T Asphalt Section will conduct a final review of the design package and assign a laboratory number to each approved mix design. MCS&T will contact the mix designer if there are any problems or concerns with the JMF package that will ~~dl~~

7.14.1 ~~d~~elay final approval. An electronic copy of the approved T-400 form shall be e- mailed to the District and Producer for distribution.

~~2.3~~7.15 All applicable mix design worksheets can be found on the MCS&T's Webpage Toolbox[2]

~~02/16/2023~~

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

MP 401.02.28 Steward – Asphalt Section
RLS:J

[2] http://www.transportation.wv.gov/highways/mcst

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

MATERIALS CONTROL, SOILS AND TESTING DIVISION

MATERIALS PROCEDURE

METHOD FOR APPROVING DEVICES USED FOR DENSITY AND/OR MOISTURE CONTENT ACCEPTANCE TESTING OF IN-PLACE MATERIAL

1. PURPOSE

1.1. The WVDOH has a long history of using nuclear moisture/density gauges and is familiar with the test procedures, reliability, maintenance, and calibration procedures of such devices. In recent years, more devices have come to the market that are low or non-nuclear. This MP is in place to establish procedures to approve the use of any testing devices~~s~~ for Density and/or Moisture for in-place material on WVDOH projects.

2. SCOPE

2.1. This MP applies to moisture and density testing devices used for acceptance testing, as well as any time such devices might be used when quality control testing results are used for acceptance.

3. REFERENCED DOCUMENTS

3.1. West Virginia Department of Transportation Standard Specifications Roads and Bridges

3.2. AASHTO T 355 - Standard Method of Test for In-Place Density of Asphalt Mixtures by Nuclear Methods

3.3. ASTM D2950/D2950M – Standard Test Method for Density of Asphalt Mixtures in Place by Nuclear Methods

3.4. AASHTO T 310 – Standard Method of Test for In-Place Density and Moisture Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

3.5. ASTM D6938 – Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

3.6. ASTM D8167/D8167M - Standard Test Method for In-Place Bulk Density of Asphalt Soil and Soil-Aggregate by a Low-Activity Nuclear Method (Shallow Depth)

3.7. ASTM D7830/D7830M - Standard Test Method for In-Place Density (Unit Weight) and Water Content of Soil Using an Electromagnetic Soil Density Gauge

3.8. AASHTO T 343 - Standard Method of Test for Density of In-Place Hot Mix Asphalt (HMA) Pavement by Electronic Surface Contact Devices

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3.9. ASTM D7113/D7113M - Standard Test Method for Density of Asphalt Mixtures in Place by the Electromagnetic Surface Contact Methods

3.10. MP 207.07.20 – Nuclear Field Density - Moisture Test for Random Material Having less than 40% of +3/4 Inch Material

3.11. MP 700.00.24 – Nuclear Density Test by the Roller Pass Method

3.12. MP 717.04.21 – Guide for Quality Control of Compaction

4. APPROVAL REQUIREMENTS OF DEVICES FOR TESTING OF DENSITY AND/OR MOISTURE OF IN-PLACE MATERIAL

4.1. The testing device must conform to the requirements of the applicable specification, AASHTO Standard, ASTM Standard, and/or Materials Procedure, as prescribed in this section.

4.2. Devices used for in-place density testing of asphalt mixtures shall meet the requirements of Section 5 of AASHTO T 310.

4.3. Devices used for in-place density testing of soils and aggregates shall meet the requirements of Section 5 of AASHTO T 310 or Section 6 of ASTM D8167/8167M.

4.4. In addition, when a device is used meeting the requirements of ASTM D8167/8167M, which employs an external moisture measurement device, initial moisture comparisons shall be made following ASTM D4959.

5. APPROVAL PROCESS

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5.1. For consideration to be added to the list of approved devices, submit the device information and manufacturer's documentation to dohcompaction@wv.gov.

5.2. The WVDOH will evaluate each brand/model of moisture/density testing device, as needed. Evaluations shall be based on the requirements listed in Section 4 and compared to the manufacturer's documentation. WVDOH reserves the right to reject or remove any device from the approval list

5.3. Devices meeting all the requirements of this MP will be evaluated first as a QC device. Upon satisfactory field performance as a QC device, it will be listed as a QA device. The brand and model can be found on the appropriate approved list on the MCS&T website.

Michael A. Mance, P.E.
Division Director
Materials Control, Soils & Testing Division

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MP 700.04.22 Steward – Lab Support Section
MAM:W

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

MATERIALS PROCEDURE

WVDOH BUY AMERICA EXCEPTION AND WAIVER GUIDELINES

1. PURPOSE

1.1. To set forth instructions for Waivers and Exceptions for Buy America Materials requirements as defined in MP 106.10.50.

1.2. Unless an exception or waiver exists, materials must meet all requirements of MP 106.10.50.

2. REFERENCED DOCUMENTS

2.1. MP 106.10.50 – WVDOH Buy America Acceptance Guidelines.

2.2. ~~MP 106.10.52 – WVDOH Buy America De Minimis Exception~~

2.3. West Virginia Code | §5A-3-56[1]

2.4. West Virginia Code | §5-19[2]

3. DEFINITIONS

3.1. Buy America Exception: A Buy America Exception is when, if certain conditions are met, the contractor may incorporate foreign materials without regard to the restrictions of the Buy American statute.

3.1.1. General Applicability Waiver (General Waiver): General Waivers are exclusions that apply generally across multiple projects. 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").

3.1.2. Project Specific Waiver: The Project-Specific Waivers are exclusions on a project-by-project basis, and they are not transferable. Therefore, a waiver that is approved for one particular project cannot be used on another project. WVDOH may request a project-specific waiver based on non-availability or inconsistent with Public Interest.

[1] http://www.legis.state.wv.us/Bill_Status/bills_text.cfm?billdoc=hb2207%20intr.htm&yr=2001&sesstype=RS&i=2207
[2] https://code.wvlegislature.gov/5-19/

4. SCOPE

4.1. For each Buy America required material as described in MP 106.10.50, a separate waiver and/or exception process is described.

These Buy America required materials are as follows:

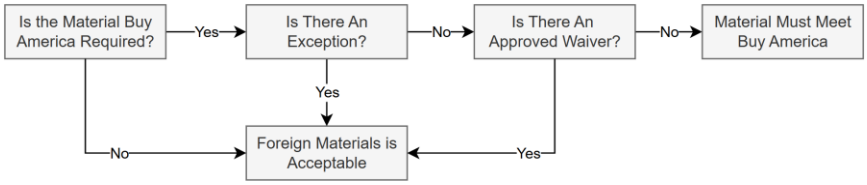
1. Steel and Iron
2. Manufactured Products
3. Construction Materials

4.2. If the material does not meet the requirements for an Exception as specified in Section 5, under certain circumstances a waiver may be granted. These waivers are specified in Sections 6-9.

4.3. If the material is Buy America required and neither an exception or nor waiver exists, the material must meet the requirements of MP 106.10.50.

4.4. A flowchart of the process is shown in Figure 1:

Figure 1: Overview of Buy America Exceptions and Waivers



5. OVERVIEW OF BUY AMERICA EXCEPTIONS

5.1. The Federal Minimal Use Exception may be granted for Steel and Iron Materials.

5.1.1. 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".

~~Unless MP 106.10.52 is applicable (the De Minimis Special Provision is active for the project), there are no Buy America exceptions for Manufactured Products or Construction Materials.~~

5.2. During the time which the De Minimis Special Provision is active for a project, there exists an exception for the minimal use of Manufactured Products and Construction Materials. The De Minimis Costs portion of the Special Provision waives the application of the requirements of the Build America, Buy America Act (BABA) for

when the total value of the non-compliant products is no more than the lesser of $1,000,000 or 5% of total applicable costs for the project. This portion of the waiver does not waive FHWA's Buy America requirements for Steel and Iron Materials, and FHWA continues to apply its Buy America requirements to projects that would otherwise be covered by the De Minimis portion of the waiver. It is important to note, however, that FHWA's De Minimis standard for Steel and Iron Materials under 23 CFR 635.410(b)(4) continues to apply. The application procedure for this exception is outlined in Section 10.

5.3. If these conditions are not met, foreign material shall not be used on a project unless a waiver is granted. The conditions for these waivers are described in the following sections for each of the Buy America required materials.

6. OVERVIEW OF BUY AMERICA WAIVERS

6.1. In certain circumstances, waivers (either General or Project-Specific) may be applied to materials exempting them from both Federal and State Buy America requirements.

6.2. These are described in the following sections for each of the Buy America required materials.

7. BUY AMERICA WAIVERS FOR STEEL AND IRON

7.1. If the contractor chooses to use foreign material for steel and iron and no exception applies, both Federal and State laws require Buy America waivers. 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.

7.2. General Waiver:

7.2.1. There are no General Waivers for Steel and Iron.

7.3. Project-Specific Waiver:

7.3.1. Federal Requirements

7.3.1.1. A Project-Specific Waiver from Federal Buy America requirements for steel and iron materials may be requested for the following instances:

(1) Public Interest: the application of Buy America requirements would be inconsistent with the public interest; or

(2) Non-Availability: steel and iron materials/products are not produced in the United States in sufficient and reasonably available quantities which are of a satisfactory quality.

7.3.1.2. If a contractor wishes to apply for a Project-Specific Waiver, they will contact the WVDOH with justification and relevant supporting information. If found acceptable, this will be sent to FHWA for approval.

7.3.2. State Requirements

7.3.2.1. As provided for in H.B. 2207, West Virginia Code | §5A-3-56, the Director of the West Virginia State Purchasing Division may authorize in writing the use of a Project-Specific Waver for a minimal amount of foreign steel products if either of the following is true:

(1) The cost for each contract item used does not exceed one tenth of one percent of the total contract cost, or two thousand five hundred dollars, whichever is greater. For the purposes of this section, the cost is the value of the steel product as delivered to the project.

(2) The director of the purchasing division determines that specified steel materials are not produced in the United States in sufficient quantity or otherwise are not reasonably available to meet contract requirements.

8. FEDERAL BUY AMERICA WAIVERS FOR MANUFACTURED PRODUCTS

8.1. There is no General Waiver or Project-Specific Waiver for Manufactured Products.

~~8.1. There is a Federal General Waiver for Manufactured Products. Due to this waiver, manufactured products permanently incorporated into FHWA-funded projects do not need to be produced domestically, apart from predominantly iron or steel manufactured products and predominantly iron or steel components of manufactured products.~~

~~8.2. There are currently no additional waivers (including Project-Specific) for Federal Buy America Requirements for Manufactured Products.~~

9. FEDERAL BUY AMERICA WAIVERS FOR CONSTRUCTION MATERIALS

9.1. If the contractor chooses to use foreign material for construction materials and no exception applies, Federal law requires Buy America waivers.

9.2. General Waiver:

9.2.1. There is no General Waiver for Construction Materials.

9.3. Project-Specific Waiver:

9.3.1. WVDOH may request a waiver from Federal Buy America requirements for construction materials based on:

(1) Public Interest: the application of Buy America requirements would be inconsistent with the public interest; or

(2) Non-Availability: construction materials/products are not produced in the United States in sufficient and reasonably available quantities which are of a satisfactory quality.

9.3.2. If a contractor wishes to apply for a Project-Specific Waiver, they will contact the WVDOH with justification and relevant supporting information. If found acceptable, this will be sent to FHWA for approval.

10. APPLICATION FOR DE MINIMIS FOR CONSTRUCTION MATERIALS

10.1. If the contractor wishes to apply the De Minimis Costs exception to foreign manufactured products and/or construction materials, the following procedures must be completed to be submitted for Division consideration for approval of De Minimis:

10.1.1. The contractor shall fill out form BAM-DM-25 and submit it to the Project. The form is located in the WVDOH Toolbox[3] and a sample form is attached for reference in Attachment 1.

10.1.1.1. The documentation shall ensure the conditions described in Section 4 are met and shall contain the following information:

1. Total Cost of Buy America Required Materials

2. Total Cost of Non-Compliant Buy America Materials.

3. Documentation of the delivered cost of materials (Invoices)

4. A signature from the Contractor certifying the accuracy of the document

5. The text: "I certify that the cost totals and provided documentation accurately reflect the cost of the materials delivered to the Project as defined by FHWA and MP 106.10.50. In the event of a change order, change in placed quantities, this form shall be updated and resubmitted to ensure continued compliance."

~~9.3.2.~~10.2. Upon approval the exception shall be granted. This documentation shall be placed in ProjectWise.

Michael A. Mance, P.E.
Director
Materials Control, Soils & Testing Division

MP 106.10.51 Steward – Materials Control Section
MM:Bb

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

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WVDOH Mininmal Use & De Minimus Worksheet

Federal Project #:

Contract ID:

De Minimis Cost Summary

Total Buy America Material on Project	$	2,734,000.00	
Total Non-Compliant Material	$	534,000.00	
Allowable Non Compliant Material ($1,000,000 or 5%)	$	1,000,000.00	Allowable Non-Compliant Material

Line #	Material Name	Cost of Material Delivered to Project	Buy America Compliant	Invoice Attached (Initial by Contractor)
0050	Epoxy Resin Injection System	$ 400,000.00	yes	
0060	Blockout, Polymer	$ 4,500.00	no	
0070	Impervious Membrane	$ 8,500.00	no	
0100	Paint, Intermediate Coat	$ 206,000.00	no	
0100	Paint, Top Coat	$ 315,000.00	no	
0200	Steel Super Structure	$ 1,800,000.00	yes	
	Total Cost of Non-Compliant Material	$ 534,000.00		
	Total Cost of All Material	$ 2,734,000.00		

I certify that the cost totals and provided documentation accurately reflect the cost of the materials delivered to the Project as defined by FHWA and MP 106.10.50. In the event of a change order, change in placed quantities, this form shall be updated and resubmitted to ensure continued compliance.

Signature of Consultant

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

MATERIALS PROCEDURE

QUALITY ASSURANCE PROCEDURES FOR CALIBRATION AND APPROVAL OF CONCRETE VOLUMETRIC MIXERS

1. PURPOSE

1.1. To set forth the Division's Quality Assurance procedure which governs the calibration, and approval of concrete volumetric mixer units.

2. SCOPE

2.1. This procedure establishes guidelines for verifying the contractor's calibration of volumetric mixers; and provides an Attachment for QA documentation of the calibration.

3. CALIBRATION FREQUENCY

3.1. The Contractor shall perform the calibration of volumetric mixers prior to the start of placement in the presence of the District.

3.2. The Division's project designated personnel shall verify that the contractor has completed all mixer calibrations, per mobilization of each unit. Additional calibrations may be required at the discretion of the Division's project designated personnel. Alterations to the approved mix design will require the unit to be recalibrated.

3.3. The Contractor shall provide documentation for any unit repair. After the unit has been repaired, it shall be recalibrated prior to use on a project.

4. PRE-CALIBRATION INSPECTION

4.1. Division personnel, or the designated inspector shall verify that the contractor confirmed all components of the unit are functioning properly, and all material component bins are empty and clean, the main conveyor belt and supply systems are clean, and all vibrators are functioning properly prior to the start of the calibration.

4.2. MIX DESIGN

The Division's designated personnel shall review the approved mix design prior to the start of the calibration and record them on Attachment 1.

4.3. QUALITY CONTROL PLAN

The Division's designated personnel will review the contractor's Quality Control Plan prior to the start of calibration. Any deviations from this procedure will be documented

in the Contractors Quality Control Plan. Possible deviations include the addition of fibers, which shall be calibrated according to the manufacturer's recommendations.

5. FIELD CALIBRATION PROCEDURE

5.1. For cement, sand and stone, verify that the contractor begins each by filling the specific material bin until the augers are completely covered, set mobile mixer to run at proper operating speed, and that the Contractor is using a clean container that can be placed under the chute of the mixer to catch all discharged material.

5.2. CEMENT CALIBRATION

The Division's designated personnel shall verify that the Contractor has checked the discharge tube at bottom of the cement bin and that it is clean and clear of residue. After reaching the predetermined count, the Division's designated personnel shall record the weight of cement, the elapsed time, and the meter count provided by the Contractor on Attachment 1. The contractor shall perform a minimum of 3 trials and provide the calculations to the Division's designated personnel, who will record the data on Attachment 1.

5.3. SAND AND STONE CALIBRATION

After reaching the predetermined count, the Division's designated personnel shall record the weight of aggregate, the elapsed time, and the meter count provided by the Contractor on Attachment 1. Using approximately the same number of counts, ~~.~~ t~~T~~he Contractor shall perform a minimum of 3 trials at both high and low settings and record.

5.4. WATER AND LATEX CALIBRATION

Division's designated personnel will verify that the Contractor adjusts the setting to achieve the target weight of water, or latex. The Contractor shall discharge the water, or latex into a suitable container capable of catching all material. The Division's designated personnel will record the weight of material discharged provided by the Contractor on Attachment 1. The contractor shall perform a minimum of 3 trials on both the water and latex.

5.5. ADMIXTURE CALIBRATION

Division's designated personnel will verify that each admixture is calibrated and used in accordance with manufacturer's recommendations and adheres to the proportions specified in the approved mix design. The Division's designated personnel shall record the application rate provided by the Contractor on Attachment 1.

5.6. YIELD TEST

The Contractor shall perform one yield test of ¼ cubic yard for every calibration performed. All materials and settings used during the yield test will be from those established during the calibration process.

The Division's designated personnel will record the results provided by the Contractor for the calculated yield ~~test~~ in Attachment 1. The weight batched divided by the unit weight tested should be within ±2% of the theoretical quantity batched. If the calculated yield ~~unit weight~~ is not within ±2% of the theoretical yield~~quantity batched~~, additional calibrations will be performed until the required yield result is achieved.

If after 3 trials the required ~~a passing~~ yield is not achieved, at the discretion of the Engineer a unit may not be certified to perform the concrete placement until the Contractor has proven he has taken corrective action to improve the unit's performance

Michael A Mance, PE
Director
Materials Control, Soils, & Testing Division

MP 679.02.99 Steward – Cement and Concrete Section
ATTACHMENT

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

CONCRETE VOLUMETRIC MIXER FIELD CALIBRATION SHEET

Project Number: _____ County: _____
District: _____ Contractor: _____
Truck Number: _____ Description: _____
Calibrated By: _____ Date of Calibration: _____
Verified By:_____

MIX DESIGN: Approved Mix ID: _____

Material	Cement	Sand	Stone	Water	Latex		
Amount							

Theoretical Yield: _____(cubic yard)

CEMENT:

	Weight (Lbs.)	Meter Count	Time (sec.)
1			
2			
3			
4			
5			
Totals			

$\text{Lbs./Count} = \frac{\text{Total Lbs.}}{\text{Total Counts}} = \frac{\quad}{\quad} = \_\_\_\_\_$

$\text{Lbs./Sec.} = \frac{\text{Total Lbs.}}{\text{Total Sec.}} = \frac{\quad}{\quad} = \_\_\_\_\_$

$\text{Counts for 94 Lbs.} = \frac{94}{\text{Lbs./Count}} = \frac{94}{\quad} = \_\_\_\_\_$

$\text{Sec. for 94 Lbs.} = \frac{94}{\text{Lbs./Seconds}} = \frac{94}{\quad} = \_\_\_\_\_$

SAND: Moisture Content: _____

Setting	_____(Low)	_____(Low)	_____(Low)	_____(High)	_____(High)	_____(High)
Amount (Lbs.)						

STONE: Moisture Content: _____

Setting	_____(Low)	_____(Low)	_____(Low)	_____(High)	_____(High)	_____(High)
Amount (Lbs.)						

WATER: Time for Calibration: _____

Setting					
Amount (Lbs.)					

LATEX: Time for Calibration: _____

Setting						
Amount (oz.)						

ADMIXTURE: Time for Calibration: _____ Target Flow Rate: _____

Setting						
Amount (oz.)						

CALCULATED YIELD: _____(cubic yard)

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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

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

3. DEFINITIONS

3.1 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.

3.2 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.

3.3 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.

3.4 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.

3.5 District Lab Number – This is the tracking number and database field for the WVDOH materials management system.

4. SCOPE

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

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

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

4.1.1.2 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).

4.1.1.3 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.

4.1.1.4 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 Specifications, the Engineer may accept materials that do not conform to Contract Documents. In this instance, material acceptance shall be processed via DMIR.

4.2.1 Unless otherwise specified (such as absent testing as described by MP 307.00.50, MP 401.03.50, or MP 601.03.50), ~~The~~ the cost assessment for a DMIR is at the discretion of the District, though when assessing the penalty the District is advised to use the rate listed in Section ~~2~~ 3 of MP 109.00.21.

~~4.2.1~~4.2.1.1 An additional processing fee shall be assessed as described in Section 105.3 of the Specifications. These assessments are in addition to any deductions for the resolution of the material. This rate is assessed per instance of the DMIR.

~~4.2.1.1~~4.2.1.2 For example, if a set of cylinders is not cured within the Specification temperature limits, the District may assess a penalty of the current rate listed in MP 109.00.21 ($700) plus the rate listed in Section 105.3 ($200). The Engineer may also deduct a portion of the cost of material.

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

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

5. DMIR DOCUMENTATION AND SUBMISSION TO MCS&T

5.1 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.

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

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5.1.1 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
9. Review and Signatures from Construction Engineer and Materials Supervisor
10. Supporting Documentation

5.1.2 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.

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

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

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

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

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

5.2.1 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:

5.2.1.1 DMIR-MXZXXXX-CID 20XX00XXXX

5.3 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.

5.3.1 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.

5.4 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

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Division. The Regional Construction Engineer will then forward it to the Director of Contract Administration with his/her recommendation.

5.5 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.

5.5.1 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.

Michael Mance Digitally signed by Michael Mance Date: 2024.08.01 14:33:23 -04'00'

Michael A. Mance, P.E.
Interim Director
Materials Control, Soils & Testing Division

MP 100.00.03 Steward – Materials Control Section
MM:B

New Business

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

3.1 AASHTO M 201 - Standard Specification for Mixing Rooms, Moist Cabinets, Moist Rooms, and Water Storage Tanks Used in the Testing of Hydraulic Cements and Concretes.

3.2 AASHTO T 22 - Standard Method of Test for Compressive Strength of Cylindrical Concrete Specimens.

3.3 AASHTO T 231 - Standard Method of Test for Capping Cylindrical Concrete Specimens.

3.4 ASTM C1077 - Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation.

3.5 ASTM C1231 - Standard Practice for Use of Unbonded Caps in Determination of Compressive Strength of Hardened Cylindrical Concrete Specimens.

3.6 ASTM C39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.

3.7 ASTM C511 - Standard Specification for Mixing Rooms, Moist Cabinets, Moist Rooms, and Water Storage Tanks Used in the Testing of Hydraulic Cements and Concretes.

3.8 ASTM C617 - Standard Practice for Capping Cylindrical Concrete Specimens.

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

3.10 MP 300.00.51 - Procedural Guidelines for Maintaining Control Charts for Aggregate Gradation.

3.11 MP 601.03.52 – Procedural Guidelines for Maintaining Control Charts for Portland Cement Concrete.

3.12 MP 601.04.20 - Curing Concrete Test Specimens in The Field.

3.13 MP 601.05.50 - Quality Assurance Procedures for Portland Cement Concrete.

3.14 MP 700.00.54 - Procedure for Evaluating Quality Control Sample Test Results with Verification Sample Test Results.

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

5.1.1 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.

5.1.2 A QC Plan must be developed by the Contractor and submitted to the Engineer prior to the start of construction on every project. Acceptance of the QC Plan by the Engineer will be contingent upon its concurrence with these guidelines.

As 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 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.

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.

5.2.2 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

5.2.3 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 concrete producers shall provide an E-Ticket that meets the requirements of Section 109.20.1 of the Specifications.

5.2.5 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 109.00.20, 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.

5.2.5.1 Any individual who samples or tests plastic concrete for quality control purposes shall be certified as a WVDOH PCC Inspector.

5.2.5.2 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 T22), 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 T22), ASTM C617 (AASHTO T231) 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. In addition any laboratory conducting concrete surface resistivity testing must be evaluated by CCRL for AASHTO T358.Any Laboratory which desires to test Contractor hardened concrete QC specimens on WVDOH projects shall submit the evidence/documentation, required in Section 4.2.4.2, 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 Concrete Cylinder Testing Labs. Laboratories that are certified to run AASHTO T358 will be indicated by an asterisk associated to the applicable footnote on the APL. 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 re:source to freely share information about assessment reports, proficiency samples, corrective actions, quality management system, and personnel competency and certification records.

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

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

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

5.2.6

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 per the manufacturer's pre-programmed value in a calculating device or the testing machine. When filling out the T-600 Form for compressive strength testing, the value of π used shall be carried out to 4 decimal places. In addition, the average cylinder diameters are calculated to two decimal places, and the cross-sectional areas are calculated to four decimal places.

5.2.7 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 section 5.2.7.1), 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 5.2.7.2 are met for each project on which the reduced testing of miscellaneous concrete is applied.

5.2.7.1 Miscellaneous concrete shall be defined as relatively small quantities, not exceeding 25 yd^3 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:
Note: Concrete testing for certain items below is waived, in some cases, by the referenced section of the specifications.

1 Sidewalks
2. Curb and Gutter
3. Slope walls for under drain outlet pipes
4. Temporary pavements and pipe crossings

5. Building floors
6. Slope paving and headers
7. Paved ditch or gutter
8. Small (less than 36" diameter) culvert headwalls
9. Catch basins, manhole bases, inlets, and junction boxes (and adjustments of such items) not located in the roadway
10. Foundations for breakaway supports
11. Utility trench fills
12. Cast-in-place survey markers

5.2.7.2 One sample per two days of production (for the same 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.

5.2.7.3 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.

5.2.8 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.

5.2.9 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

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

Batch Tickets

5.2.10 Each batch of Structural Concrete, including miscellaneous concrete (as defined in section 4.2.6.1), delivered at the project shall be accompanied by one batch ticket with all of the items of information listed in Section 4.2.9.1 pre-populated on the ticket. In the case of (PCC) Pavement, each batch of concrete delivered at the 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 4.2.9.1 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 4.2.9.2 pre-populated on the ticket.

5.2.10.1 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 (yd^3/m^3)
8. Time Batched
9. Contract Identification Number (CID #)
10. Federal Project Number (If applicable)
11. State Project Number
12. Material Code/Name
13. Water Allowed (gal/L)
14. Water at Plant (gal/L)
15. Weight of Ice at Plant (lb/kg)
16. Weight of Cement (lb/kg)
17. Supplementary Cementitious Material(s) (SCM) (lb/kg)
18. Weight of Fine Aggregate (lb/kg)
19. Weight of Coarse Aggregate (lb/kg)
20. *Admixture Name(s) and Dose (oz/L)
21. Cylinder I.D.
22. Initial Counter
23. Target Consistency (in/mm)
24. Target Air (%)

25. License Number of Haul Unit.

* If admixtures are added at the jobsite, these shall be entered by the project.

The following information shall be documented on the ticket by the project:

1. Contract Item Number
2. Contract Line Number
3. Time Unloaded
4. Water at Job (gal/L)
5. Concrete Temperature (ºF/ºC)
6. Final Counter
7. Actual Consistency (in/mm)
8. Actual Air (%)

5.2.10.2 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 (yd^3)
6. Time Batched
7. ~~7.~~ Contract Identification Number (CID #)
8. Federal Project Number (If applicable)
9. State Project Number
10. Material Code/Name
11. Water Allowed (gal/L)
12. Water at Plant (gal/L)
13. Weight of Ice at Plant (lb/kg)
14. Weight of Cement (lb/kg)
15. Weight of SCM (lb/kg)
16. Weight of Fine Aggregate (lb/kg)
17. Weight of Coarse Aggregate (lb/kg)
18. *Admixture Name(s) and Weight(s) (oz/L)
19. Target Consistency (in/mm)
20. Target Air (%)
21. License Number of Haul Unit.

* If admixtures are added at the jobsite, these shall be entered by the project

The following information shall be documented on the ticket by the project:

1. Item Number
2. Line Number
3. Time Unloaded
4. Temperature (°F/°C)
5. Actual Consistency (in/mm)
6. Actual Air (%)

5.2.10.3 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 yd^3. Consistencies are to be reported to the nearest 0.25 inch. Target and Actual Air are to be reported to the nearest 0.1% (to the nearest 0.25% if the volumetric method is used).

5.2.10.4 As per the requirements of Section 109.20.1 of the Specifications, an E-Ticket shall be provided to meet these requirements.

5.2.11 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.

5.2.12 Non-Conforming Materials:

5.2.12.1 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

5.2.13 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.

Types of QC Plans:

5.2.13.1 QC Plans which are intended for use on more than one project shall be defined as Master QC Plans. Section 4.3 outlines the procedures for Master QC Plan submittal and approval.

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

5.2.13.3 A Contractor may submit a Master QC Plan for Plant and/or Field operations instead of a Project Specific QC Plan.

5.2.13.4 Once any QC Plan is approved for a 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 project.

5.3 Master QC Plan

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.

5.3.1 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

5.3.2 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 4.2 thru 4.2.11.1 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

5.3.5 Contractor and/or Producer/Supplier.

Once a project has been awarded, if a contractor elects to use the approved Master Plant and Master Field QC Plans on that project, the Contractor shall submit a letter requesting to use the Master QC Plans for that project. This letter must be on the Contractor's letterhead, be addressed to the District Engineer/Manager or their designee, and contain the following information: project number, CID#, project 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 project. If the referenced Master QC Plan is found to be insufficient for some items on that 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 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 project's incoming-mail mailbox in ProjectWise.

5.3.5.2 A Master QC Plan that has been approved for project use shall be good for the duration of that project.

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

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.

5.3.6

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.

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

7.1.1

Michael A. Mance, P.E.
Director
Materials Control, Soils and Testing Division

MP 601.03.50 Steward – Cement and Concrete Section
MM:T
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. 75µm	Daily
c. Ā 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 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 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 WVDOH 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

New Business

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

New Business

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. They can be contacted in person at the plant, by telephone _____or at e-mail at _____.

Very truly yours,

_____

Company Representative

New Business

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. They can be contacted in person at the plant, by telephone _____or at e-mail at _____.

Very truly yours,

_____

Company Representative

New Business

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: XXXXXXX
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 AND TESTING DIVISION

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

1. PURPOSE

1.1. The purpose of the West Virginia Division of Highways (WVDOH) Technician and Inspector Certification Program is to improve the quality assurance of various materials by the certification of industry and WVDOH. This procedure is to establish guidelines for this purpose.

2. GENERAL

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

3. REFERENCED DOCUMENTS

3.1. MP 720.10.01 - Guide for Using a High-Speed Inertial Profiler to Measure the Longitudinal Profile of Pavement.

3.2. MP 106.03.51 - Policy for Materials Certification Reciprocity with PCC Inspector, PCC Technician, and Aggregate Technician

4. SCOPE

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

5. POLICIES AND ADMINISTRATION

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

1. State Highway Engineer
2. Deputy General Counsel
3. Director of MCS&T - hereafter referred to as “Director”
4. Quality Assurance Program Administrator
5. Applicable MCS&T Supervisor(s)

5.1.1. The Certification Board will meet when called by the Director.

5.1.2. Administration - The program will be administered by the Director.

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

6. REQUIREMENTS

6.1. Where applicable, quality control representatives of the contractor and/or producer will be certified in the applicable certifications listed below, depending on the individual's duties or responsibilities. Responsibilities and qualification requirements are listed in appropriate support documents such as Specifications, Materials Procedures and/or Quality Control Plans.

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

7. CERTIFICATION CLASSES

7.1. The Technician and Inspector Certification Program (TICP) offers certification classes in the following disciplines:

1. Aggregate Sampling Inspector, refer to Section 8
2. Aggregate Technician, refer to Section 9
3. Asphalt Field & Compaction Technician, refer to Section 10
4. Asphalt Plant Technician, refer to Section 11
5. Asphalt Preservation Technician, refer to Section 12
6. Inertial Profiler Operator, refer to Section 13
7. Portland Cement Concrete Inspector, refer to Section 14
8. Portland Cement Concrete Technician, refer to Section 15
9. Radiation Safety, refer to Section 16
10. Soils & Aggregate Compaction Technician, refer to Section 17

Refer to section 19 for Certification Process Requirements

8. AGGREGATE SAMPLING INSPECTOR

8.1. Certification as an Aggregate Sampling Inspector qualifies the technician to perform sampling of aggregates for both Quality Control and Quality Assurance.

8.1.1. Details of this class are available on the MCS&T Webpage[1]

8.2. The web-based examination for an Aggregate Sampling Inspector consists of the following areas:

1. Specifications
2. Sampling Fundamentals
3. Sampling Methods and Equipment
4. AASHTO T 27 Sieve Analysis of Fine and Coarse Aggregates
5. AASHTO T 11 Materials Finer Than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing

The Aggregate Sampling Inspector requires the successful completion of an online examination.

8.3. No practical examination nor apprenticeship is required for this certification.

9. AGGREGATE TECHNICIAN

9.1. Certification as an Aggregate Technician Inspector qualifies the technician to perform sampling and/or testing of aggregates for both Quality Control and Quality Assurance.

9.1.1. Details of this class are available on the MCS&T Webpage[2]

9.2. The written examination for an Aggregate Inspector consists of the following areas:

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

9.2.1. The applicant must complete an apprentice cycle, please refer to section 19.2. After successful completion of the written examination, the applicant will be required to pass the practical examination. The technician must be able to perform the routine tests associated with aggregate quality assurance.

9.3. American Concrete Institute (ACI) Aggregate Testing Technician - Grade I certification will be accepted as a portion of the West Virginia Aggregate Technician training. However, the applicant must pass the online West Virginia Aggregate Technician written certification test before a certification is issued. Refer to MP 106.03.51. ~~Documented 40 hours of work experience shall be submitted for certification, but~~ No practical examination nor apprenticeship is required for this option.~~a practical exam is not required.~~

9.4. APPRENTICESHIP REQUIREMENTS

9.4.1. Before scheduling the Practical Exam, each participant shall complete a ~~minimum~~minimum of 40 hours of hands-on training under the supervision of a

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

[2] https://transportation.wv.gov/highways/mcst/Pages/Agg-Technician.aspx

WVDOH Certified Aggregate Technician in the eight different aggregate tests on which the participant will be tested. The tests to be trained in are:

1. AASHTO T 11 Materials Finer Than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing
2. AASHTO T 19 Bulk Density ("Unit Weight") and Voids in Aggregate
3. AASHTO T 27 Sieve Analysis of Fine and Coarse Aggregates
4. AASHTO T 84 Specific Gravity and Absorption of Fine Aggregate
5. AASHTO T 85 Specific Gravity and Absorption of Coarse Aggregate
6. AASHTO T 89 Determining the Liquid Limit of Soils
7. AASHTO T 90 Determining the Plastic Limit and Plasticity Index of Soils
8. MP 703.00.21 Standard Method of Test for Percent Crushed Particles

Once the p~~P~~articipant has completed the minimum 40 hours of training, The WVDOH Certified Aggregate Technician who performed the training will complete the Apprenticeship Log Sheet and include their written name, signature and certification number with the date of completion. The Log Sheet shall then be submitted to the QA Program Administrator electronically.

9.4.2. Once the Training Log has been received and verified by the QA Program Administrator, the participant will be contacted by the MCS&T Aggregate Section to schedule the practical exam (All Practical Examinations must be completed within 90 days from the date of the original written test date.) If the participant fails, they will be denied the Certification.

10. ASPHALT FIELD AND COMPACTION TECHNICIAN

10.1. Certification as an Asphalt Field and Compaction Technician qualifies the technician to oversee or inspect asphalt pavement construction. In addition, the class hand-out material is a valuable reference tool for each stage of the construction process. The required radiation safety training is included in this class and will certify attendees with a passing score to perform nuclear density testing on asphalt pavements.

10.1.1. Details of this class are available on the MCS&T Webpage[3]

10.2. The written examination for this class consists of the following areas:

1. Specifications
2. Surface Preparation
3. Mix Delivery and Placement
4. Joint Construction
5. Percent Within Limitations (PWL)
6. Troubleshooting
7. Compaction Test Procedures
8. Radiation Safety and Nuclear Gauge
9. Test Procedure Problems
10. Testing Forms

[3] https://transportation.wv.gov/highways/mcst/Pages/AsphaltFieldTech.aspx

10.2.1. This certification has two options: with or without gauge endorsement. Only the applicant for the option with gauge must complete an apprentice cycle, please refer to section 19.2. For the option without the gauge, participants will take a written exam. For the option with the gauge, after successful completion of the written examination, the applicant will be required to pass the practical examination. The technician must be able to perform the routine tests associated with asphalt compaction quality assurance.

10.3. APPRENTICESHIP REQUIRMENTS

10.3.1. Each p~~P~~articipant shall complete a ~~minimum~~minimum of 40 hours of hands-on training for the following tests under the supervision of a WVDOH certified Asphalt Field and Compaction Technician.

1. AASHTO T 355 Standard Method of Test for In-Place Density of Asphalt Mixtures by Nuclear Methods
2. Specification 401 Gauge Comparison

Once the p~~P~~articipant has completed the minimum 40 hours of training, the WVDOH certified Asphalt and Field Compaction Technician who performed the training will complete the Apprenticeship Log Sheet and include their written name, signature and certification number with the date of completion. The Log Sheet shall then be submitted to the QA Program Administrator electronically.

10.3.2. The participant will be contacted by the MCS&T Pavement Analysis and Evaluation Section to schedule the practical exam. The practical exam may be attempted prior to the completion of the apprenticeship cycle (All Practical Examinations must be completed within 90 days from the date of the original written test date.) If the participant fails, they will be denied the Certification.

10.4. A technician that does not demonstrate proper radiation safety training shall not be allowed to continue testing on a WVDOH Project. They must be replaced by another qualified technician. Anyone who does not meet the applicable safety standards must provide proof of additional WVDOH approved radiation safety training before another evaluation will be conducted.

11. ASPHALT PLANT TECHNICIAN

11.1. Certification of the Asphalt Technician qualifies the employee technician to take asphalt mixture samples, perform quality control or quality assurance testing on plant produced asphalt mixtures, make plant and mix adjustments, aggregate proportioning, and other duties.

11.1.1. Details of this class are available on the MCS&T Webpage[4]

11.2. The written examination for this class consists of the following areas:

1. Specifications
2. Fundamentals

[4] https://transportation.wv.gov/highways/mcst/Pages/hotmixasp.aspx

3. Sampling and Testing
4. Control and Inspection
5. Mix Proportioning and Adjustment

11.2.1. The applicant must complete an apprentice cycle, please refer to section 19.2. After successful completion of the written examination, the applicant will be required to pass the practical examination. The technician must be able to perform the routine tests associated with asphalt plant quality assurance.

11.3. APPRENTICESHIP REQUIREMENTS

11.3.1. Each participant shall complete a minimum 40 hours of hands-on training under the supervision of a WVDOH Certified Asphalt Plant Technician in the tests on which the participant will be tested. The tests to be trained in are:

1. ASTM D6926 - Preparation of Asphalt Mixtures by Means of the Marshall Apparatus
2. AASHTO T 312 - Preparing and Determining the Density of Asphalt Mixture Specimens by Means of the Superpave Gyratory Compactor
3. AASHTO T 166 - Bulk Specific Gravity (GMB) of Compacted Hot Mix Asphalt (HMA) Using Saturated Surface-Dry Specimens
4. AASHTO T 331 - Bulk Specific Gravity (GMB) and Density of Compacted Hot Mix Asphalt (HMA) Using Automatic Vacuum Sealing Method
5. AASHTO T 209 – Theoretical Maximum Specific Gravity (GMM) and Density of Hot Mix Asphalt (HMA)
6. ASTM D6927 – Resistance to Plastic Flow of Asphalt Mixtures Using Marshall Apparatus
7. AASHTO T 308 – Determining the Asphalt Binder Content of Hot-Mix Asphalt (HMA) By the Ignition Method, (Method A)
8. AASHTO T 30 – Mechanical Analysis of Extracted Aggregate
9. AASHTO T 269 Standard Method of Test for Percent Air Voids in Compacted Dense and Open Asphalt Mixtures

Once the p~~P~~articipant has completed the minimum 40 hours of training, the WVDOH Certified Asphalt Plant Technician who performed the training will complete the Apprenticeship Log Sheet and include their written name, signature and certification number with the date of completion. The Log Sheet shall then be submitted to the QA Program Administrator electronically.

11.3.2. The participant will be contacted by the MCS&T Asphalt Section to schedule the practical exam. The practical exam may be attempted prior to the completion of the apprenticeship cycle (All Practical Examinations must be completed within 90 days from the date of the original written test date.) If the participant fails, they will be denied the Certification.

12. ASPHALT PRESERVATION TECHNICIAN

12.1.1. Certification of the Asphalt Preservation Technician is currently optional. This certification is for technicians who want to be more prepared for asphalt preservation style projects.

12.1.2. Details of this certification are available on the MCS&T Webpage[5]

12.2. This exam is based on web-based training found in the AASHTO Technical Training Solutions courses https://store.transportation.org/Trainings?/C_PP

12.2.1. The required courses are as follows:

1. Flexible Pavement Preservation Treatment Introduction (1 PDH)
2. Flexible Pavement Preservation Treatment Selecting the Right Treatment (0.5 PDH)
3. Flexible Pavement Preservation Treatment Materials (2 PDH)
4. Flexible Pavement Preservation Treatment Localized Pavement Repairs (1.5 PDH)
5. Flexible Pavement Preservation Treatment Crack Sealing and Fillings (1.5 PDH)
6. Flexible Pavement Preservation Treatment Fog Seals (1 PDH)
7. Flexible Pavement Preservation Treatment Chip Seals (1.5 PDH)
8. Flexible Pavement Preservation Treatment Slurry Seals (1.5 PDH)
9. Flexible Pavement Preservation Treatment Micro-Surfacing (1.5 PDH)
10. Flexible Pavement Preservation Treatment Thin Functional HMA Overlay (2 PDH)

12.2.2. A printed copy of the Certificates of Training from these courses is required to be presented for registration on the day of the exam.

12.3. The written examination for an Asphalt Preservation Technician consists of the following areas regarding chip seals, micro surfacing, thin overlays, and crack sealing

1. Fundamentals of Preservation
2. Pavement Conditions and Treatment Selection
3. Performance Characteristics
4. Inspection and Best Practices

12.3.1. No practical examination nor apprenticeship is required for this certification.

13. INERTIAL PROFILER OPERATOR

13.1. This certification allows a technician to operate a lightweight/low-speed and high-speed inertial profiler.

13.2. This certification does not have class, nor does the test need to be proctored by the WVDOH. The exam is provided upon request. Details of this certification are in MP 720.10.01 - Guide for Using a High-Speed Inertial Profiler to Measure the Longitudinal Profile of Pavement

13.3. The written examination for the inertial profiler operator covers of the following areas:

1. WVDOH Specifications

[5] https://transportation.wv.gov/highways/mcst/Pages/Asphalt-Preservation-Technician.aspx

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

13.3.1. No practical examination nor apprenticeship is required for this certification.

14. PORTLAND CEMENT CONCRETE INSPECTOR

14.1. Certification as a Concrete Inspector qualifies the technician to perform sampling and/or testing of concrete for Quality Control and/or Quality Acceptance.

14.1.1. Details of this class are available on the MCS&T Webpage[6]

14.2. The written examination for this class consists of the following areas:

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

14.2.1. The applicant must complete an apprentice cycle, please refer to section 19. After successful completion of the written examination, the applicant will be required to pass the practical examination. The technician must be able to perform the routine tests associated with Portland Cement Concrete quality assurance.

14.3. American Concrete Institute (ACI) Field Testing Grade I certification will be accepted as a portion of the West Virginia PCC Inspector training. However, the applicant must pass the online West Virginia PCC Inspector written certification test before a certification is issued. Refer to MP 106.03.51. ~~Documented 40 hours of work experience shall be submitted for certification, but a~~ No practical examination nor apprenticeship is required for this option~~practical exam is not required~~.

14.4. APPRENTICESHIP REQUIREMENTS

14.4.1. Each participant shall complete a minimum 40 hours of hands-on training under the supervision of a WVDOH Certified PCC Inspector in the tests on which the participant will be tested. The tests to be trained in are:

1. AASHTO R60 Standard Practice for Sampling Freshly Mixed Concrete
2. ASTM C1064 Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete
3. AASHTO T119 Standard Method of Test for Slump of Hydraulic Cement Concrete
4. AASHTO T196 Standard Method of Test for Air Content of Freshly Mixed Concrete by the Volumetric Method
5. AASHTO T152 Standard Method of Test for Air Content of Freshly Mixed Concrete by the Pressure Method
6. AASHTO T121 Standard Method of Test for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete
7. AASHTO R100 Standard Method of Making and Curing Concrete Test Specimens in the Field

[6] https://transportation.wv.gov/highways/mcst/Pages/concreteinspector.aspx

8. AASHTO T22 Standard Method of Test for Compressive Strength of Cylindrical Concrete Specimens

Once the p~~P~~articipant has completed the minimum 40 hours of training, the WVDOH Certified PCC Inspector who performed the training will complete the Apprenticeship Log Sheet and include their written name, signature and certification number with the date of completion. The Log Sheet shall then be submitted to the QA Program Administrator electronically.

14.4.2. The participant will be contacted by the MCS&T Concrete Section to schedule the practical exam. The practical exam may be attempted prior to the completion of the apprenticeship cycle. (All Practical Examinations must be completed within 90 days from the date of the original written test date.) If the participant fails, they will be denied the Certification.

15. PORTLAND CEMENT CONCRETE TECHNICIAN

15.1. Certification of the Concrete Technician qualifies the technician to make plant and mix adjustments, proportioning, and other concrete related duties.

15.1.1. Details of this class are available on the MCS&T Webpage[7]

15.2. The written examination for this class consists of the following areas:

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

15.2.1. The Concrete Technician requires only the successful completion of the written examination; no practical examination test is required.

15.3. National Ready Mixed Concrete Association (NRMCA) Concrete Technologist Certification Course, "Short Course," will be accepted as a portion of the West Virginia PCC Technician training. However, the applicant must pass the online West Virginia PCC Technician written certification test before a certification will be issued. Refer to MP 106.03.51.

15.4. APPRENTICESHIP REQUIREMENTS

15.4.1. PCC Inspector certification is a required prerequisite for the PCC Technician certification, and the NRMCA reciprocal certification. However, a participant may take the PCC Technician class, an exam prior to completing the required 40 hours of training, and or the PCC Inspector practical if they have passed the PCC Inspector written exam, but the PCC Technician Certification will not be granted until the participant has obtained the PCC Inspector Certification.

[7] https://transportation.wv.gov/highways/mcst/Pages/concretetech.aspx

16. RADIATION SAFETY

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

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

16.2. No practical examination nor apprenticeship is required for this certification.

16.3. This certification expires three years from the date of certification. This is regulated by the NRC.

17. SOILS AND AGGREGATE COMPACTION TECHNICIAN

17.1. Certification of the Soils and Aggregate Compaction Technician qualifies the technician to conduct tests on all Soil and Aggregate construction materials that require compaction testing.

17.1.1. Details of this class are available on the MCS&T Webpage[8]

17.2. The written examination for this class consists of the following areas:

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

17.2.1. The applicant must complete an apprentice cycle, please refer to section 19.2. After successful completion of the written examination, the applicant will be required to pass the practical examination. The technician must be able to perform the routine tests associated with soil and aggregate compaction quality assurance.

17.3. APPRENTICESHIP REQUIRMENTS

17.3.1. Before scheduling for the Practical Exam, each Participant shall complete a minimum 40 hours of hands-on training for the following tests under the supervision of a WVDOH certified Soil and Aggregate Compaction technician.

1. MP 700.00.24 Nuclear Density Test by Roller Pass Method
2. MP 712.21.26 Procedure for Determining Random Location of Compaction Lots
3. MP 207.07.20 Nuclear Field Density/Moisture Test for Random Material Having Less than 40% + 3/4-inch Material

Once the Participant has completed the minimum 40 hours of training, the WVDOH certified Technician who performed the training will complete the Apprenticeship Log

[8] https://transportation.wv.gov/highways/mcst/Pages/compactioninspector.aspx

Sheet and include their written name, signature and certification number with the date of completion. The Log Sheet shall then be submitted to the QA Program Administrator electronically.

17.3.2. Once the Training Log has been received and verified by the QA Program Administrator, the participant will be contacted by the MCS&T Soil and Aggregate Compaction Section to schedule the practical exam. (All Practical Examinations must be completed within 90 days from the date of the original written test date.) If the participant fails, they will be denied the Certification. A technician that does not demonstrate proper radiation safety shall not be allowed to continue testing on a WVDOH Project. They must be replaced by another qualified technician. Anyone who does not meet the applicable safety standards must provide proof of additional WVDOH approved radiation safety training before another evaluation will be conducted.

18. TESTING PROTOCOL

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

18.2. CLASS SUPPLY LIST

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

1. Laptop Computer or Tablet (Mandatory)
2. Photo ID
3. Current WV Specification book and the latest Supplemental to the Specification book. You will need this during the test. These are also available in printable PDF format on the WVDOH Webpage.[9]
4. Hand held calculator (No electronic devices other than a Hand held calculators are allowed to be used during testing.)
5. Highlighters
6. Sticky Notes
7. Ruler / Straight edge

18.3. SPECIAL NEEDS AND REQUESTS

18.3.1. Applicants with special needs should notify the QA Program Administrator prior to the class to ensure that the training location is prepared to accommodate their needs.

19. CERTIFICATION, APPRENTICESHIP, AND RE-CERTIFICATION

19.1. CERTIFICATION

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

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

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

19.1.2.1. If the applicant fails the second written exam, they may not attempt the written examination again until they retake the class or wait one calendar year.

19.1.3. If required by the certification, a practical exam must be successfully completed. Specific requirements for the practical exam are included in the respective sections. If a participant fails the practical exam, they may not retake the practical exam until they have attended the respective class and successfully passed the written examination again. An exception may be made at the discretion of the section head and the QA Program Administrator.

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

19.1.5. This certification is not transferable. A certification is valid for 5 years and expires December 31, of the 5th year of certification. For example, if a technician is certified in January of 2026, it will expire on December 31, 2031. Radiation Safety must be renewed every 3 years from the certification date. For example, if a technician is certified on January 15, 2026, it will expire on January 15, 2029.

19.1.6. Anyone who teaches during the certification classes shall have their certification extended 1 year per calendar year per certification taught. This does not apply to Radiation Safety.

19.2. APPRENTICESHIP

19.2.1. For the initial certification of an applicant technician, an apprenticeship is required which consists of three tasks; pass a written exam, hands-on experience, and pass a hands-on practical exam. The Technician shall work as an apprentice under the supervision of a certified technician for the Apprenticeship Cycle. This must be completed up to one year before and ninety days after the written exam. This requirement shall not apply to a technician who has let their certification expire with proof of previous certification.

An applicant who seeks certification via reciprocity must provide 40 hours of experience documented by the company's QC Manager or applicant's Supervisor on the Apprenticeship Log Sheet. The apprentice shall keep a work log that is signed by the supervising technician. (an example is on the WVDOH MCST Webpage Toolbox[10]). The work log shall record the number of hours performing the specified testing as outlined in the respective section. Hours spent shadowing or observing others

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

does not count. The work log shall be submitted to the QA Program Administrator and must be reviewed and approved by the appropriate MCS&T Section.

19.2.2. Apprenticeship requirements vary between certifications. See the respective section for details of the apprenticeship requirements.

19.3. APPRENTICE CYLE

19.3.1. The Apprentice Cycle is the number of hours for specific tests which must be performed by the applicant and documented by a certified technician. For each of the certification schools, the hours of testing are listed in the respective section.

19.4. RE-CERTIFICATION

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

19.4.2. Certification holders are responsible for ensuring that their certifications stay current. The WVDOH will no longer mail reminder letters to certification holders.

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

19.4.4. Independent Assurance (IA) test scores of 3 or better can be used in place of the hands-on practical for the following re-certifications;

1. PCC Inspector – Air and Slump tests
2. Soil and Aggregate Compaction – Moisture/Density Test, and pass the 1-point proctor

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

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

19.4.7. The certification holder is responsible for updating their personal information on the online learning website[11].

19.4.8. If an applicant seeking recertification disagrees with a recertification decision, they may file a written appeal with the Certification Board.

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

[11] http://www.onlinelearning.wv.gov/student/home.html

20. RECIPROCAL CERTIFICATIONS

20.1. Acceptance of WVDOH Certifications by other state agencies is at the sole discretion of the other agency. Refer to MP 106.03.51

21. TRAINING

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

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

21.3. CODE OF CONDUCT

21.3.1. The purpose of this Code of Conduct establishes expectations for behavior throughout the training course and during the end-of-course written exam. Its goal is to create a respectful productive, and fair learning environment for all participants.

21.3.2. Professional behavior is always expected. Participants are expected to treat instructors and fellow learners with courtesy and respect. Disruptive behavior, harassment, or discrimination of any kind will not be tolerated. Active participation is encouraged, but learners should allow others the opportunity to contribute.

21.3.3. Attendance and engagement are important to successful completion of the course. Arrive on time for all sessions and return promptly from breaks. Stay engaged during instruction, group work and activities. If you anticipate an absence, notify the instructor when possible.

21.3.4. Use of technology during training is encouraged. Laptops, tablets, and phones may be used for documentation, note taking, taking pictures, and searching documents. Please keep devices on silent ring during class, and if you must take a call, please excuse yourself from class to complete the conversation.

21.3.5. Academic integrity during exams is taken seriously. Cell phones, spreadsheets, and AI tools are prohibited during the written exam. Only approved materials may be used during the exam. These materials include notes taken during class, course manuals, MPs, current Specification book, and the WVDOH Website. Talking, sharing answers, or attempting to access unauthorized resources will result in disciplinary action, which may include exam failure or removal from the course.

21.3.6. Confidentiality must be observed. Course materials, discussions, and assessments may contain sensitive or proprietary information. Participants must not share or distribute course content without permission.

21.3.7. Safety must always be observed. Follow all safety guidelines provided by the instructor of facility. Report any unsafe conditions or concerns immediately.

21.3.8. Failure to follow this Code of Conduct may result in the following disciplinary actions; a verbal warning, removal from the classroom, disqualification from the exam, and dismissal from the course. Consequences will be applied at the instructor's discretion based on the severity of the violation.

~~21.2.~~

22. REVOCATION OF CERTIFICATION

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

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

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

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

23. APPEALING A DECISION

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

Appeals should be mailed to:
Certification Board
ATTN: Quality Assurance Program Administrator
West Virginia Division of Highways
190 Dry Branch Dr.

Charleston, WV 25306

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

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

24. THE LENGTH OF REVOCATION:

24.1. First Offense

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

24.2. Second Offense

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

24.3. Third Offense

24.3.1. This may include revocation of all certifications for life. There is also the possibility of disciplinary actions for WVDOH employees.

24.4. In the event of a serious violation as determined by the Division, the case may be referred to the Department of Justice.

25. CONTACT INFORMATION

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

Michael A Mance, PE
Director
Materials Control, Soils & Testing Division

MP 106.03.50 Steward – Technician Certification Section
MAM:Bh

New Business

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

MATERIALS PROCEDURE

MAINTAINING SPECIFIED LEVEL OF STRENGTH IN PORTLAND CEMENT CONCRETE

1. PURPOSE

1.1 The purpose of this procedure is to set forth a method of adjusting the cement content of Portland cement concrete so that a reasonable conformance with the specified level of strength may be assured.

2. SCOPE

2.1 The procedure shall apply to all classes of concrete.

3. PROCEDURE

3.1 Initial Cement Requirement

3.1.1 "Initial Cement Requirement" is the cement requirement determined by the formal laboratory design method outlined in MP 711.03.23.

3.2 Reevaluating Cement Requirement

3.2.1 A concrete mix design referred to herein means a combination of particular source and type of materials and a cement factor which satisfies the requirement of the governing specification, said combination of materials and cement factor being formulated for the express purpose satisfying the requirement of a particular class of concrete specified for the work. The cement factor in a particular mix design may be changed without invalidating the design. If source or type of materials in a mix design are changed, then the mix design is considered changed, and two or more mix designs would result from such change(s).

Strength data which represents two cement factors in one mix design may be processed collectively in the derivation of statistical parameters, average and standard deviation, for example, if it is felt that such a treatment does not significantly affect the statistics.

3.2.2 For the various classes of concrete which are designed in conformance with MP 711.03.23, the first reevaluation of cement requirement shall be made after at least ten pieces of strength data are available to evaluate the adequacy of the mix design. Thereafter, a reevaluation of cement requirement shall be made at monthly intervals at which time, the evaluation shall be based on the strength data developed during the preceding two months or on the last ten pieces of data developed, whichever is greater.

3.3 Method of Evaluating Cement Requirement

3.3.1 The cement requirement for all classes of concrete governed by this procedure shall be the quantity necessary to maintain the average strength of the concrete within the range of the Design Strength (f'_c) plus K_1 standard deviations and the Design Strength (f'_c) plus K_2 standard deviations $\{(f'_c + K_1\sigma) < \bar{X} < (f'_c + K_2\sigma)\}$.The average strength ($\bar{X}$) and the standard deviation (σ) shall be calculated using the strength data ~~developed during the previous two months or the last ten pieces of strength data, whichever is greater~~ from the previous 3-month period if there is at least 10 samples. If there are less than 10 samples during the previous 3-month period, then the strength data from the previous 12-month period shall be used. If there is not a minimum of 10 samples in the previous 12-month period, then the previous 24-month period shall be used.

3.3.2 If the average strength of concrete can be maintained at a level which is equal to or greater than the Design Strength plus K_2 standard deviations $\bar{X} > (f'_c + K_2\sigma)$, then the cement factor which causes this level of average strength to be developed may be reduced as indicated in Article 3.3.4.3 except that in no instance shall the cement factor be reduced below a level of the target specified cement factor minus 47 lbs. of cement per cubic yard.

3.3.3 If the average strength of the concrete is maintained below the level of the Design Strength plus K_1 standard deviations, $\bar{X} < (f'_c + K_1\sigma)$, then the cement factor which causes this level of average strength to be developed shall be increased as indicated in Article 3.3.4.2.

3.3.4 The relationship between the level of concrete strength (considered to be the average of all data developed during the preceding two months or the average of the last ten pieces of strength data, whichever is greater, and represented by $\bar{X}$), and the action which must be taken regarding the cement factor is as follows:

3.3.4.1 If the average strength is maintained at a level between the Design Strength plus K_1 standard deviations and the Design Strength plus K_2 standard deviations $\{(f'_c+K_1\sigma) < \bar{X} < (f'_c+K_2\sigma)\}$ the cement factor shall be maintained without change.

3.3.4.2 If the average strength falls below the Design Strength, plus K_1 standard deviations $\{\bar{X} < (f'_c+K_1\sigma)\}$ the cement factor shall be increased in accordance with the following formula:

$$C_i = \frac{(f'_c + K_1\sigma) - \bar{X}}{200}$$

Where C_i = Number of 23.5 lb. increments of cement increase per cubic yard, rounded up to a whole number.
f'_c = Design Strength
K_1 = Factor from Table 1
σ = Standard Deviation
$\bar{X}$ = Average Strength

3.3.4.2.1 When the cement factor for a certain mix design, which contains a Supplementary Cementitious Material (SCM), is required to be increased, the Concrete Producer

has two options to meet the cement factor increase requirement.

Option 1: Make the cement factor increase entirely with cement.

Option 2: Make the cement factor increase with the same cement/SCM ratio that is used in the subject mix design. For example, if 20% of the cementitious material in the subject mix design is fly ash and 80% of the cementitious material in the subject mix design is cement, and the cement factor was required to be increased by 23.5 pounds, the cement factor increase would consist of an additional 5 lbs. of fly ash and an additional 19 pounds of cement. Fractions of a pound that are 0.5 and above shall be rounded up, and fractions of a pound that are below 0.5 shall be rounded down.

3.3.4.3 If the average strength falls above the Design Strength plus K_2 standard deviations $\{\bar{X} > (f'_c+K_2\sigma)\}$ the cement factor may be decreased in accordance with the following formula:

$$Cd = \bar{X} - \frac{(f'_c + K_2\sigma)}{200}$$

Where C_d = Number of 23.5 lb. increments of cement to be decreased per cubic yard, rounded to the nearest whole number.

K_2 = Factor from Table 1

3.3.4.3.1 When the cement factor for a certain mix design, which contains a SCM, is permitted to be decreased, and if the Concrete Producer elects to decrease that cement factor, the cement factor shall be decreased with the same cement/SCM ratio that is used in the subject mix design. For example, if 20% of the cementitious material in the subject mix design is fly ash and 80% of the cementitious material in the subject mix design is cement, and the cement factor was permitted to be decreased by 23.5 pounds, the cement factor decrease would consist of a reduction of 5 lbs. of fly ash and a reduction of 19 pounds of cement. Fractions of a pound that are 0.5 and above shall be rounded up, and fractions of a pound that are below 0.5 shall be rounded down.

3.4 Reporting

Once each month, the Materials Control, Soils and Testing Division will publish a list of concrete producers (Commercial Suppliers and/or Contractors), with all concrete mix designs for each concrete producer, and their corresponding cement factor, determined in conformance with this MP.

3.5 Reevaluating Concrete Mix Design

A concrete mix design which is approved for a particular project will remain valid to the extent that it satisfies the requirement for that particular project for its duration.

A concrete mix design which is developed in accordance with MP 711.03.23 and maintained for a period of three years shall be re-approved in accordance with Section 6 of MP 711.03.23. It is the Contractor's responsibility to make adjustments to the design mix as necessary to maintain in the concrete proper placement properties, workability, finishability, yield, consistency, air content, and other requirements of the governing specification. The Contractor should be especially aware of this responsibility when the cement factor is changed in conformance with this procedure.

MAM:T
ATTACHMENT

TABLE 1
VALUES OF "K" FACTORS

NUMBER OF PIECES OF DATA	K1	K2
10	1.604	3.615
11	1.588	3.510
12	1.576	3.429
13	1.565	3.365
14	1.557	3.313
15	1.549	3.270
16	1.543	3.233
17	1.538	3.202
18	1.533	3.175
19	1.528	3.151
20	1.525	3.130
21	1.521	3.112
22	1.518	3.096
23	1.515	3.081
24	1.513	3.067
25	1.511	3.055
26	1.508	3.044
27	1.507	3.034
28	1.505	3.024
29	1.503	3.016
30	1.501	3.008
Above 30	1.500	3.000

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

MATERIALS PROCEDURE

WVDOH BUY AMERICA ACCEPTANCE GUIDELINES

1. PURPOSE

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

2. REFERENCED DOCUMENTS

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

2.2 Build America, Buy America Act (BABA).

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

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

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

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

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

2.8 West Virginia Notary Handbook, Current Edition.

2.9 MP 106.10.51 – WVDOH Buy America Waiver Guidelines.

~~2.10 MP 106.10.52 – WVDOH Buy America De Minimis Exceptions~~

3. ACCEPTANCE OF MATERIALS

3.1 This procedure applies to the following:

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

3.2 An article, material, or supply shall only be classified into a single category listed in Section 3.1. In some cases, an article, material, or supply may not fall under any of these categories. Classification of the category must be made based on the status of article, materials, or supply at the time it is brought to the work site for incorporation into the project. The work site is generally the location of the project at which the materials will be incorporated. An article, material, or supply permanently incorporated into a project must meet the Buy America Preference for only the single category in which it is classified.

3.3 A Buy America preference only applies to articles, materials, and supplies that are consumed in, incorporated into, or affixed to a 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 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 project but are not an integral part of the structure or permanently affixed to the project.[1]

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

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

4. STEEL AND IRON

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

4.2 Definition

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

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

4.3 Standard

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

5. MANUFACTURED PRODUCTS

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

5.2 Definition

5.2.1 "Manufactured products" means articles, materials, or supplies that have been processed into a specific form and shape, or combined with other articles, materials, or supplies to create a product with different properties than the individual articles, materials, or supplies. If an item is classified as an iron or steel product, an excluded material, or other product category as specified by law or in 2 CFR part 184, then it is not a manufactured product. However, an article, material, or supply classified as a manufactured product may include components that are iron or steel products, excluded materials, or other product categories as specified by law or in 2 CFR part

[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

184. Mixtures of excluded materials delivered to a work site without final form for incorporation into a project are not a manufactured product.

5.3 Standard for Projects Obligated on or after October 1st, 2025 (Final Assembly Standard)

5.3.1 Pursuant to Buy America Requirements, all manufactured products used in the project are produced in the United States; this means the final assembly of the manufactured product was manufactured in the United States.

5.4 Standard for Projects Obligated on or after October 1st, 2026 (55 Percent Standard)

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

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

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

5.4.1.2 Two exceptions must comply with "Manufactured products" requirements for the entire product and additionally comply with "Iron and Steel products" requirements for the wholly or predominantly Iron and Steel components:

1. Precast Concrete Products
2. ITS and electronic hardware systems cabinets or other enclosures

~~5.4.1.2~~

6. CONSTRUCTION MATERIALS.

6.1 Pursuant to Buy America Requirements, all Construction Materials are required to be produced in the United States. All manufacturing processes for the Construction Materials shall occur in the United States. "All manufacturing processes" is defined in 2 CFR 184.6.

6.2 Definition

[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.

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

6.2.1.1 The listed items are:

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

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

6.3 Standard

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

1. Non-ferrous metals. All manufacturing processes, from initial smelting or melting through final shaping, coating, and assembly, occurred in the United States.
2. Plastic and polymer-based products. All manufacturing processes, from initial combination of constituent plastic or polymer-based inputs, or, where applicable, constituent composite materials, until the item is in its final form, occurred in the United States.
3. Glass. All manufacturing processes, from initial batching and melting of raw materials through annealing, cooling, and cutting, occurred in the United States.
4. Fiber optic cable (including drop cable). All manufacturing processes, from the initial ribboning (if applicable), through buffering, fiber stranding and jacketing, occurred in the United States. All manufacturing processes also include the standards for glass and optical fiber, but not for non-ferrous metals, plastic and polymer-based products, or any others.
5. Optical fiber. All manufacturing processes, from the initial preform fabrication stage through the completion of the draw, occurred in the United States.
6. Lumber. All manufacturing processes, from initial debarking through treatment and planing, occurred in the United States.
7. Drywall. All manufacturing processes, from initial blending of mined or synthetic gypsum plaster and additives through cutting and drying of sandwiched panels, occurred in the United States.

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

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

7. SECTION 70917(C) MATERIALS

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

7.2 Definition

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

7.3 These materials are exempt from Buy American Requirements.

8. BUY AMERICA COMPLIANCE.

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

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

8.1.2 In the event of a change order which includes the addition of new materials, a new Certificate of Compliance shall be furnished to include the new materials.

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

8.1.3.1 Title: Buy America Certification of Compliance.

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

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

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

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

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

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

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

8.1.3.9 Signature of the Contractor and date.

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

8.1.3.11 If the notarization occurs in the state of West Virginia, the document must be notarized as per the "West Virginia Notary Handbook."

8.1.3.11.1 If the notarization does not occur in West Virginia, the document must be notarized as per the respective state of origin's Notary Handbook equivalent.

8.2 Attachment 1 shows a sample Certificate of Compliance.

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

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

9. CERTIFICATE OF COMPLIANCE TOOL

9.1 The WVDOH has created an online tool to generate a Certificate of Compliance. This tool is available on the MCST AWP Webpage. The Contractor will select their contract, then generate the report. This report will then be signed and notarized as specified in this document, then submitted to the Project.

9.1.1 In the event of a change order which adds materials, a new Certificate of Compliance must be submitted to include any new material.

10. BUY AMERICA WAIVERS

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

11. BUY AMERICA MATERIALS

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

Temporary Material: Material is not permanently incorporated into the project.

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

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

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

12. DOCUMENTATION OF BUY AMERICA CERTIFICATION OF COMPLIANCE

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

Michael Mance, P.E.
Director
Materials Control, Soils and Testing Division

MP 106.10.50 Steward – Materials Control Section
MM:Bb
ATTACHMENTS

Buy America Certification of Compliance

Acme Construction Company
123 Main Street
Charleston, WV 25302

Ship Date: 10/31/2024

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

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

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

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

Non-Compliant Buy America Materials

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

Janie Doe, Contractor President