Materials Procedures Committee Regular Meeting

Meeting Time/Date: 10:00 AM, August 23, 2023

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

Online Meeting: Google Meet Video Conference

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

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

WVDOH ORGS\MCS&T (0077) - FM\Materials Procedure Committee\MP Committee Meeting Files\2023\2023 08 23 Meeting

Files Available on Webpage:

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

Materials Procedures approved at the last meeting (7/19/23)

1. 700.03.50 - Standard Method of Microscopic Determination of Air-Void Content
2. 700.00.22 - Procedure for Determining an Adjusted Pay Quantity Resulting from Excess Moisture in Aggregates
3. 700.00.51 - Guide for Quality Control and Acceptance Plans for Purchase Order Contracts for Stone and Aggregate
4. 642.03.50 - Contractor's Quality Control for Surface Water and Sampling Procedures for Quality Determination
5. 700.01.01 - Field Sampling and Testing of Surface Water for Quality Determination
6. 661.00.00 - Chemical Analysis of Aluminum Alloys
7. 701.01.10 - Portland Cement and Blended Hydraulic Cement Mill Certification
8. 700.04.10 - Determining Application Rate of Ground Agriculture Limestone Based on pH Tests
9. 711.20.59 - Inorganic Zinc Primer Quality Assurance Procedure
10. 711.20.60 - Intermediate Field Coat for Zinc Rich Systems
11. 711.22.22 - Zinc Rich Low VOC Systems

Materials Procedures - Old Business

Number	Champion	Title	Description
1 - 658.05.06&	Whitmore	Ancillary Structure Anchor Bolt Tightening	Ted making significant changes to update bolt tightening.
2 - 700.00.56*	Ross	Commercial And Potential Skid Resistant Aggregate Source Approval Procedures	Major Updates
3 - 712.21.26*	Jobes	Procedure For Determining the Random Location of Compaction Tests	Corrected numbering (was out of order before) and removed metric examples, and updated the graphics in the examples, also a few small grammar edits.

4 - 212.02.20*	Ross	Procedure For Determining a Reduced Unit Price to Be Paid for Select Material for Backfilling Which Does Not Conform to Grading Requirements of Governing Specifications	Edits corresponding to special investigation and spec updates. Removal of information duplicated in the specifications
5 - 615.20.01*	Hanna	Preparing, Recording and Transmitting Information on Approved List of Welded Stud Shear Connectors	Minor process edits.
6 - 700.05.10*	Pennington	Quality Assurance of Fertilizer at Source Fertilizer Acceptance Criteria	Reconfirmation with no content edits. Comments from last meeting, champion to discuss/address
7 - 711.00.21*	Preston	Procedure For Approving Paint Formulations and Production Batches	Reconfirmation with no content edits. Comments from last meeting, champion to discuss/address
8 - 715.27.20*	Ratchford	Test Methods for Wood Cellulose Fiber Mulches	Reconfirmation with no content edits. Comments from last meeting, champion to discuss/address
9 - 715.28.50*	Ratchford	Seed Acceptance Criteria	Reconfirmation with no content edits. Comments from last meeting, champion to discuss/address
10 - 709.46.50*	Danberry	Quality Control of Steel Fence Post Studded Tee	Renumbered MP with only formatting edits. Comments from last meeting, champion to discuss/address
11 - 601.03.52*	Thaxton	Procedural Guidelines for Maintaining Control Charts for Portland Cement Concrete	The purpose of the MP change is to include guidelines for the preparation of control charts when using computers or as deemed appropriate by the Division. The last time this MP updated was in 1995 when only paper charts were in practice.
12 - 106.00.03*	Brayack	Guidelines For Establishing and Maintaining Approved Product Lists of Materials, Systems and Sources	Adding NTPEP change to AASHTO Project Evaluation and Audit Solutions, minor process updates, including a change in company name.
13 - 207.06.20*	Preston	Chemical Analysis for pH of Soil	Added “to the nearest 0.01g.” to items B and C to 4.1, otherwise, no content edits

Materials Procedures - New Business with Significant or Process Updates

1 - 106.00.02&	Brayack	Procedure for Evaluating Products for Use in Highway Construction	Updating No APL section, added ST1 Reference. Adds Section 5.4.1, "If the MS&P fails to submit the request information within 30-days, the reviewing entity may reject the request. Discretion may be given if the information request requires testing or evaluation that would exceed this time frame."
2 – Various QC Updates&	Brayack	Quality Control MPs: 307.00.50, 401.03.50, 601.03.50, 717.04.21	Added: "Testing includes both performing the test and submitting the results as per MP 109.00.21."
3 - 601.03.50&	Thaxton	Guide for Quality Control and Acceptance Requirements for Portland Cement Concrete	MP Ref Update, Changes to 5.2.6.1, Thaxton to explain.
4 - 715.09.20&	Mullins	Standard Method for Determining the Stability of Portable Sign Stands	New document for the testing of Temporary Traffic Signs.
5 - 106.10.50&	Brayack	WVDOH Buy America Acceptance Guidelines	Added Non-Compliance Enforcement, added notary handbook guidelines. Attachment changed: "708.003.000" and note at the bottom.
6 - 661.02.50&	Danberry	Criteria to Approve Manufacturers of Aluminum Sheeting for Traffic Signs	New Document, Jacey to Discuss.
7 - 712.05.57&	Hanna	Criteria to Approve Fence Producer / Suppliers and their Materials.	Minor Updates from Previous Version, Hanna to discuss.
8 – 679.03.00&	Preston	Percent of Solids in the Latex Used in Latex Modified Compositions	Addressed comments from management, Preston to discuss.

Note 1: * Denotes this MP is up for Vote

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

Comments

Comments due August 16th, so the Champion may review and address them. Submit comments to Adam Nester (Adam.W.Nester@wv.gov)

Next Meeting

New or Updated MPs due to the MP Chair 3-weeks before the next meeting: August 30th

Meeting Time/Date: 10:00 AM, September 20, 2023

Meeting Location: MCST

Online Meeting: Google Meet Video Conference (Link TBD)

Additional MP Committee Meeting Information

For details of previous meetings, please visit the MCST MP Committee Webpage https://transportation.wv.gov/highways/mcst/Pages/MP-Committee-Page.aspx

Tentative MP Committee Dates for 2023:

October 26, November 15, December 13

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

MATERIALS CONTROL, SOILS & TESTING DIVISION

MATERIALS PROCEDURE

ANCILLARY STRUCTURE ANCHOR BOLT TIGHTENING

1. PURPOSE

1.1 To establish equipment, procedure, documentation, and documentation transmittal requirements for the tightening of anchor bolt nuts associated with signing, signal, lighting, and intelligent transportation systems (ITS) related roadway ancillary structures.

1.1.1 This Materials Procedure is specifically focused on the procedure to be followed when tightening anchor bolt nuts and does not address all requirements and procedures pertaining to the installation of ancillary structures. Individual component pre-inspection and repair, structure pre-assembly, structure installation preparation, pre-application of protective coatings, overall installation procedure, and proper tightening of structural connection bolts are included as part of the Standard Specifications.

2. MATERIALS AND EQUIPMENT

2.1 The mandatory materials and equipment required to properly tighten the anchor bolts include lubricant, snug tightening wrenches, and a hydraulic fastener tightening wrench.

2.1.1 Wrenches used for a snug tightening are to have an appropriate handle length in order to achieve a level of initial snug tightening as predictable and uniform as possible. The handle length used for fasteners 3/4-inch to 1-1/4-inches in diameter is to be 23-inches. The handle length used for fasteners 1-1/2-inches to 2-1/4-inches in diameter is to be 36-inches.

2.1.2 Beeswax or toilet ring wax may be used as lubricant.

2.1.3 Hydraulic wrenches and accompanying documentation are to meet the requirements herein.

2.1.3.1 The wrenches are to be capable of generating the necessary torque in order to tighten the anchor bolt nuts as described herein.

2.1.3.2 The hydraulic wrench consists of a wrench and a hydraulic power pack to power and operate the wrench.

2.1.3.3 Hydraulic wrenches are to have the wrench and the pressure or torque readout gauge associated with the power pack calibrated regularly. Prior to the tightening of any

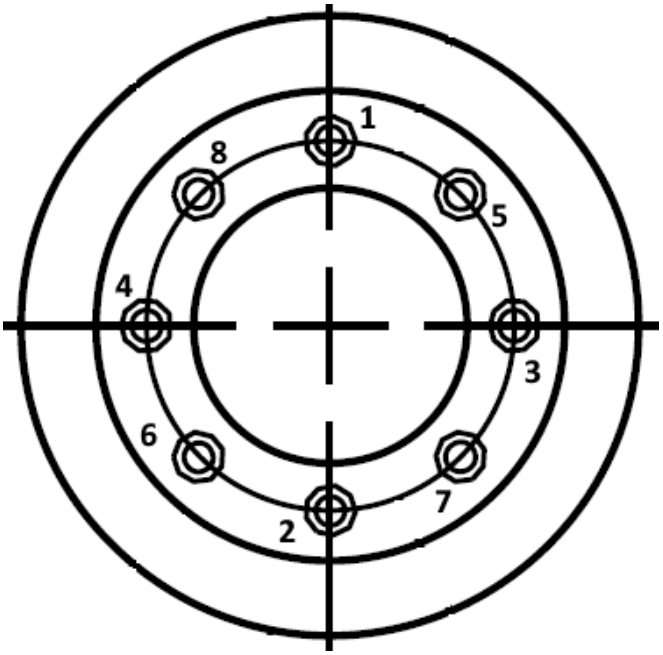
anchor bolt nuts, the project Engineer is to be provided with separate calibration certificates for the wrench and the gauge. The dates of the calibrations are to be one year or less prior to the date that the bolt tightening is performed. The certificates are to be from a calibration lab that is International Organization for Standardization (ISO) 17025 accredited, with the certificate indicating as such. The certificate for each is to display a serial number matching that shown on the wrench or gauge. If the gauge does not provide readings directly in torque values, the calibration certificate is to be accompanied by calibration charts which equate gauge pressure readings to torque values. Example calibration certificates and charts are included as part of attached ATTACHMENT 2.

3. DOCUMENTATION

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

4. PROCEDURES

4.1 Install the top nuts and washers and snug tighten the top nuts using the appropriate handle length wrench. Snug tightening is to proceed from nut to nut in a star pattern and the specific sequence chosen is to be indicated on the base plate by numbering the sequence using a permanent marker (see Figures 1 and 2 below). Snug tightness is considered to be the tightness which exists due to the full effort of a person using a spud wrench with the appropriate length handle for the bolt being tightened.



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

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

FIGURE 2 -SNUG TIGHTENING SEQUENCE NUMBERING ON BASE PLATE

4.1.1 Snug tighten the leveling nuts following a star pattern.

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

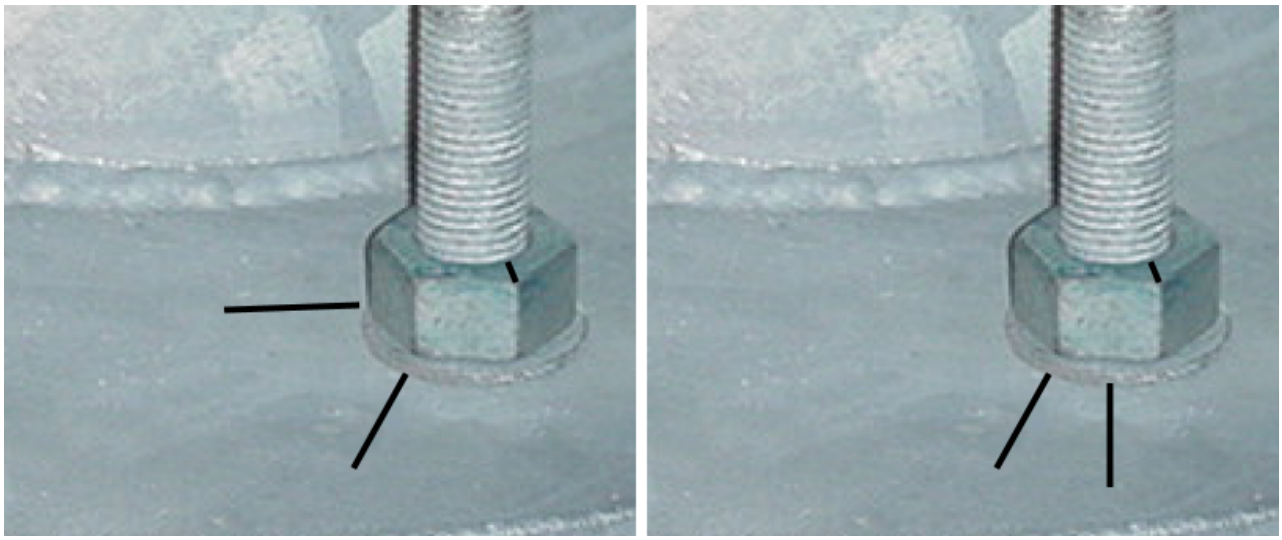


FIGURE 3 - SNUG TIGHT CONDITION REFERENCE MARKS FOR BOLTS 1-1/2" DIAMETER OR LESS (LEFT) AND BOLTS GREATER THAN 1-1/2" DIAMETER (RIGHT)

4.3 Fully tighten the top nuts using the hydraulic wrench.

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

4.3.2 Tightening is to proceed from nut to nut in the same star pattern that was used for the snug tightening procedure and is to be achieved over two cycles. Using a structure with 2-inch anchor bolts as an example, each nut is to be tightened ½ flat. Each nut is to then be tightened an additional ½ flat. The amount of torque, as indicated on the power pack gauge, at the point when the full rotation of each nut is achieved is to be recorded on the documentation form. If the gauge associated with the power pack does not provide a torque readout, the pressure readout is to be recorded and the associated torque is to be determined from the power pack calibration charts and recorded on the documentation form.

4.4 Upon completion of the tightening of all nuts, a verification torque (Tv) is to be applied to each nut using the same hydraulic wrench and power pack that was used to tighten the nuts. This step is necessary to verify threads have not been stripped and is not intended to tighten the nuts further. The verification torque should be insufficient to

further turn and tighten the nuts. The required verification torque is to be calculated using the following formula and documented on the documentation form:

$$Tv = 0.12\ (Db)\ Fi$$

Where:

Tv = verification torque (inch-kips)
Db = nominal body diameter of the anchor bolt (inches)
Fi = 60% of the anchor bolt minimum tensile strength (kips.) For the commonly specified ASTM F1554 Grade 55 bolts, this calculated value is equal to 45
Multiply Tv by 83.3 to calculate Tv in ft-lbs

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

4.4.1 The documentation form is to be marked where indicated to indicate that application of the verification torque did not result in further turning of each nut. If the application of the verification torque results in further turning of any nuts, the Traffic Engineering Division should be notified of this issue.

4.5 At least 48-hours after the tightening and verification torque procedures are completed, a torque equal to 110% of the Tv torque (1.10Tv) is to be applied to each nut using the same hydraulic wrench and power pack that was used to tighten the nuts. This step is necessary to verify threads have not been stripped and is not intended to tighten the nuts further. The 1.10Tv torque should be insufficient to further turn and tighten the nuts. If the gauge associated with the power pack does not provide a torque readout, the pressure readout required to achieve a torque of 1.10Tv is to be determined from the power pack calibration charts.

4.5.1 The documentation form is to be marked where indicated to indicate that application of the 1.10Tv torque did not result in further turning of each nut. If the application of the 1.10Tv torque results in further turning of any nuts, the Traffic Engineering Division should be notified of this issue.

5. DOCUMENTATION TRANSMITTAL

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

-2006001093-Lighting Structure HML1. An example of all documents that should be included as part of a complete transmittal is attached as ATTACHMENT 2.

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

MP 658.05.06 Steward – Traffic Certification Section
RLS:W
ATTACHMENTS

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

COMMERCIAL AND POTENTIAL SKID RESISTANT AGGREGATE SOURCE APPROVAL PROCEDURES

1. PURPOSE

1.1 To provide a uniform procedure for the following:

1.1.1 Approval of producers/suppliers of aggregates for the West Virginia's Department of Transportation's Division of Highways (WVDOH) Approved Material Source/Product List.

1.1.2 Monitoring of producers/supplier's ongoing compliance with the governing specifications for use of their products in WVDOH projects.

2. SCOPE

2.1 This procedure shall apply to any aggregate producers/suppliers intending on supplying aggregates to any WVDOH projects ~~conducted by the WVDOH~~.

3. APPLICABLE DOCUMENTS

3.1 West Virginia Division of Highways ~~Standard~~ Specifications, Roads and Bridges~~, both Current Edition & Supplementary~~.

3.2 West Virginia Division of Highways Construction Manual~~, Current Edition~~.

3.3 West Virginia Division of Highways Materials Procedures.

3.4 MP 106.00.02 Procedure for Evaluating Products for Use In Highway Construction ~~Add ref to 106.00.02 as per Hao Chen~~

~~3.3~~3.5 MP 700.00.01 Sampling and Testing of Materials at the Source

4. CONSIDERATION FOR THE LIST OF COMMERCIAL AGGREGATE SOURCES

4.1 If ~~an~~a producer/supplier of aggregates ~~entity~~ wants to be placed on the commercial source list and has had no previous dealings with WVDOH, they shall submit a ~~Letter of Intent (LOI)~~HL-468 New Products Evaluation form to the Materials Control, Soils and Testing Division (MCS&T). The producer/supplier shall describe~~) describing~~ what they intend ~~on selling~~to sell, what production processes~~process~~ ~~is~~ are used, to what type of projects they intend on supplying, and when they intend ~~on~~ to starting production. The ~~LOI~~submission, upon review by MCS&T, will be forwarded to the nearest adjacent WVDOH District Materials Supervisor for notification purposes.

Commented [MMA1]: See comment below

Commented [DB2]: Thomas to update to include definition of "full quality" and also review this document to make sure we say "full quality" and not just "quality"

Commented [BDA3]: DB, MM, where is the quarterly sampling requirement?

Commented [MMA4]: Is this just for the Commercial Source APL? Aren't A-1 Sources (Maintenance Contracts) covered by MP 700.00.52? We should clarify this.

Commented [MMA5]: Should this be the District Materials Supervisor in the District in which the source is located?

4.2 Test dData from a minimumtotal of 20 samples shall be evaluatedconsidered for addition of the new Producer/Supplier to the WVDOH List of Approved Aggregate Sources. Historic data concerning aggregate quality test results signifying compliance with WVDOH specifications shall be available for review. Any data accepted by MCS&T concerning the quality of the material shall be obtained from an AASHTO re:source accredited laboratory. Quality testing consist of one or more of the fallowingfollowingfallowing tests: . (Los Angeles abrasion, Sodium Sulfate Soundness, Liquid Limit, Plasticity index, and deleterious Material) See applicable test in section 702 and 703 in the WV DOH Standard Specifications.

4.2.1 At their discretion, MCS&T may sample stockpiles currently in production for full quality testing.. If the material sampled meets the quality specifications, the stockpile can be approved for use in WVDOH projects. This data will be included with the required 20 sets of data for source approval in the future, if necessary. Any material submitted for use in WVDOH projects shall meet the criteria described in Sections 702, 703 and 704 of the WVDOH Standard Sspecifications for that particular material.

4.2.2 Independent quality testing data shall be evaluatedverified by MCS&T to ensure compliance with the WVDOH Standard governing sSpecifications. All data submitted will be reviewed in the verification process and may be included in the quality testing data compiled by MCS&T.

4.2.3 Records of both the geologic features of the source and historical quality testing data of the products compiled by the producer/supplier, if available, may be submitted to MCS&T for review.

4.2.4 Manufacturing and quality control processes and pertinent historical data shall be made available for review by MCS&T, if requested.

4.2.44.2.5 The new Producer/Supplier shall demonstrate that they are capable of producingcan produce an E-Ticket as defined in Section 109.20.1 of the Specifications. A sample ticket shall be provided to MCS&T and shall be included on the HL-468 New Products Evaluation form at the time of initial submittal.

4.3 Subsequent toAfter the review of historical and geologic data concerning the material in question, a sampling regimen shall be implemented to continually evaluate the quality of the material over the course of production.

4.4 Acceptance of any material submitted for approval from any potential producer/supplier is left to the discretion of the Director of the MCS&T division or their representativedesigneeMCS&T.

5. MAINTENANCE OF THE LIST OF COMMERCIAL AGGREGATE SOURCES

5.1 To remain on the WVDOH List of Commercial Aggregate Sources, the following criteria shall apply:

Commented [MMA6]: Commercial and Potential Skid Resistant ?

Commented [MMA7]: Possibly re-word as: "may be used in this evaluation if it is available"

Commented [MMA8]: Do we need to define "quality testing"? (i.e. Soundness, LA Abrasion, Deleterious, etc.)

Commented [MMA9]: I think that we should discuss this. Is "all" data included or just data from an AASHTO re:source accredited lab?
Also, is this an "evaluation" process or an "approval" process?

Commented [BDA10]: DB, MM, where is the quarterly sampling requirement? How many samples tested per year to remain on the list?

Commented [BDA11]: Add e-ticketing here.

5.1.1 The Pproducer/Ssupplier shall maintain their consistent and satisfactory ~~compliance of the~~ quality of the aggregates in according accordance wit~~ow~~ith Sections 702, 703, and 704 of the WVDOH Specifications ~~of Roads and Bridges, Sections 702, 703 and 704 by~~ and shall permit~~ting~~ to random, intermittent quality sampling and testing ~~of~~ of the aggregate source by MCS&T or a representative of MCS&T. This testing will determine~~s~~ if the approved products continually exhibit the same characteristics and quality as the originally approved material (see ~~MP~~ MP 106.00.03~~700.00.55~~; Guidelines for Establishing ~~And~~ and Maintaining Approved Lists ~~Of~~ of Materials And Sources, ~~section~~ Section 6)

Commented [MMA12]: Is this where we want to specify a frequency (i.e. quarterly, annually, etc.)?

Commented [MMA13]: Should this be MP 106.00.03 instead?

5.2 If the Pproducer/Ssupplier has not provided any material~~products~~ to any WVDOH projects over a period of 5 consecutive years from the same source, that source will be removed from the WVDOH List of Commercial and Potential Skid Resistant Aggregate Sources. ~~In the event of~~ If an inactive Producer/Supplier~~source~~ re-establishes~~ing~~ production and desires to~~the producer/supplier wishes to~~ regain Division approval~~acceptance~~, ~~they shall refer to~~ ~~s~~Section 4 of this MP shall apply~~for reconsideration~~.

6. REMOVAL FROM LIST OF COMMERCIAL AND POTENTIAL AGGREGATE SOURCES

6.1 In the event the Pproducer/Ssupplier does not provide materials in compliance with the ~~governing~~ ~~s~~Specifications, the following actions shall be taken by the Pproducer/Ssupplier~~,~~ and ~~subsequently by~~ MCS&T, up to and including removal from the List of Commercial and Potential Skid Resistant Aggregate Sources:

6.1.1 Upon testing~~sampling~~ of an aggregate sample ~~source~~ by MCS&T, if the quality test results from that sample do not meet the minimum specification~~s~~ requirements, then a second test portion a "split" test portion shall be ~~be split~~taken~~split~~ from the original~~same~~ field sample, and it shall be ~~re~~tested. The test results and methods of testing shall then be reviewed for accuracy and precision.

Commented [MMA14]: Need to define "quality" tests. See Section 4.2.2.

6.1.2 ~~When~~ If the "split" sample in Section 6.1.1~~a material, upon reexamination,~~ fails to meet quality requirements~~WVDOH Specifications, MCS&T shall notify the Pproducer/Ssupplier shall be notified of the failing results and a~~. A second field sample shall be obtained by MCS&T and tested for quality as in Section 6.1.12. At this time, MCS&T shall notify the Producer/Supplier of the failing results from the ~~previous~~initial field sample and "split" sample. The results from this sample will determine if further action is needed.

6.1.3 ~~Given the failure of the initial field sample and it's "split",For the second Field sample, fIfTheollow the same proceduretocol infor Section 6.1.1 for thea~~ second field samples shall be obtained in Section 6.1.2 ~~and~~ shall ~~will~~ be tested for quality requirements as in section 6.1.1. If the second field ~~sample, and subsequent "split"~~ sample does not meet quality requirements, MCS&T will review the Producer/Suppliers quality test performed by MCS&T over the previous 5 years.

6.1.3.1 If the Producer/Supplier has had zero failing quality test results over the last 5 years (not including the most recent two tests described in the Sections above), a third sample will be obtained from the Producer/Supplier by ~~MSC~~MS~~C~~S&T and tested for quality in accordance with 6.1.1. If the third sample does not meet quality requirements, the following course of action shall be taken: MCS&T shall notify the Producer/Supplier of the failing results of the third sample and inform the Producer/Supplier of their removal from the approved source list as stated in section 6.1.5.

~~6.1.3~~6.1.4 In the event the Producer/Supplier source does have failing results during the previous 5 years, ~~in the past 5 years~~ the source will be contacted with the results and informed they are being removed from the approved Producer/Supplier list. ~~specifications, at the discretion of MCS&T personnel, a third sample may be obtained from the Pproducer/Ssupplier by MSC&T and tested for quality.~~

~~6.1.4~~6.1.5 ~~For the third Field sample, fFollow tThe~~he same protocol ~~in~~for Section 6.1.1 ~~for the~~ third sample obtained in Section 6.1.4~~3~~. will be tested for quality. If the third sample does not meet quality requirements, ~~specifications~~ the following course of action shall be taken: .MCS&T shall notify the Producer/Supplier of the failing results of the third sample and inform the Producer/Supplier of their removal from the approved source list. In the event the Producer/Supplier field sample results remain within WVDOH Specification the Producer/Supplier will remain on the approved list.

6.2 Communication of sample information shall be implemented as follows:

6.2.1 The P~~p~~roducer/Ssupplier shall be notified of what aspect(s) of the samples did not meet Specification requirements~~the deficiency~~, either in writing or via electronic communication (i.e. email).

6.2.2 The 10 District Material Supervisors, the Regional Construction Engineers, the Director of Contract Administration, and the Director of MCS&T shall be notified of what aspect(s) of the samples did not meet Specification requirements ~~the deficiency~~ via electronic communication (~~i.e.~~i.e., email).

6.3 The P~~p~~roducer/Ssupplier of the material in question~~substandard product~~ is then responsible for mitigating the deficiency~~linquency~~ and improving the production quality to comply with the ~~corresponding governing s~~Specifications. Mitigation of substandard materials is not the responsibility of MCS&T; only the verification of the quality of material provided by the P~~p~~roducer/Ssupplier shall be the responsibility of MCS&T.

7. REINSTAINTMENT TO THE LIST OF COMMERCIAL AGGREGATE SOURCES

7.1 The following procedure shall be used by a Producer/Supplier desiring to ~~A supplemental sampling program shall be implemented to confirm the mitigation of the deficiency and shall be coordinated as follows~~return to the Commercial and Potential Skid Resistant source list:

7.1.1 The Producer/Supplier shall supply three passing quality test results from an AASHTO re:source accredited laboratory for quality testing. Once the passing tests have been reviewed by MCS&T personnel, a sampling plan will be implemented by MCS&T to resample the Producer/Supplier.

7.1.2 The sampling plan will consist of six (6) samples to be obtained, either by MCS&T or by a representative of MCS&T and tested for quality. The first three (3) samples shall be obtained every six (6) days of production. The second three (3) samples will be obtained randomly over the following four (4) weeks after the first three (3) samples have been obtained and tested.

7.1.3 If the samples in Section and 6.4~~7.1~~.2 all meet the Specification requirements , the Producer/Supplier shall be notified of compliance, and they shall be included on the next List of Commercial and Potential Skid Resistant Aggregate.

Commented [JC15]: This seems like a 3+ year reinstatement. Am I reading this correctly?

Commented [MMA16]: At what point did we remove them from the list? Did we want to remove them in Section 6.2 or 6.3 until they have shown us that they have mitigated the problem, or do we want to say "shall remain on the …"?

Commented [MMA17]: Does this only apply when a Producer/Supplier is removed (Sections 6.4.4 and 6.5) or any time that mitigation is required (Section 6.3)?

~~6.3.1~~7.1.4 If any one of the six (6) samples in section 6.47.1.2 fails to meet quality requirements sampling will be terminated and the producer/Supplier will start at section 6.47.1.1 again.

~~7.~~8. DOCUMENTATION

~~7.1~~8.1 All samples obtained by MCS&T shall be assigned a corresponding laboratory reference number for record keeping, ensuring proper access by MCS&T personnel to pertinent information regarding the materials provided by the ~~p~~Producers/~~s~~Suppliers.

~~7.2~~8.2 In the event of recurring failure to meet ~~repeat non-conformance of~~ WVDOH ~~s~~Specifications, the following procedure shall be implemented:

8.2.1 ~~7.2.1~~ A record of communication between the Division and the P~~p~~roducer/S~~s~~upplier's contact shall be retained for future reference.

~~7.2.1~~8.2.2 The sample (or samples) failing to meet ~~quality s~~Specification~~s~~ requirements shall be packaged and stored for later access by MCS&T personnel for future reference. Such samples will be stored for no longer than one year from the date testing was performed. The sample containers shall display the lab reference number, the date on which the tests were conducted, the type of material tested, and data revealing what ~~s~~Specification~~s~~ requirements were not met~~out of compliance~~.

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

MP 700.00.56 Steward – Aggregate Section
RLS:R

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
MATERIALS DIVISION

MATERIALS PROCEDURE

PROCEDURE FOR DETERMINING THE RANDOM LOCATION OF COMPACTION TESTS

1. PURPOSE

1.1 This procedure provides methods for determining the random locations for soil and aggregate compaction tests on WVDOH projects.

2. SCOPE

2.1 This procedure is applicable for locating all compaction tests.

3. EQUIPMENT

3.1 Measuring tape, approximately 50 feet.

4. DEFINITIONS

4.1 Test Section- A test section is an isolated quantity of material used to determine the maximum density and optimum moisture content of the material using the roller pass method.

~~3.1~~4.2 Lot- A lot is an isolated quantity of specified material from a single source or a measured amount of specified construction assumed to be produced by the same process.

~~4.~~5. PROCEDURE

~~4.1~~5.1 Compaction test site locations are to be randomly located along the roadway centerline (length) and offset (width) randomly from this reference line. Some test site locations, such as pipe backfill, require random selection of lifts for the tests and a random determination of the side of the pipe backfill to test.

~~4.2~~5.2 Selection of random numbers

~~4.2.1~~5.2.1 Determine the number of test sites which will be required for the lot or test section.

~~4.2.2~~5.2.2 The table of random numbers (Table I attached) or a calculator, which will generate random numbers, can be used.

~~4.2.3~~5.2.3 The table of random numbers contains 5 sections with 2 columns of numbers in each section.

~~4.2.3.1~~5.2.3.1 The first column of numbers in each section is for determining the test site along the centerline. The second column of numbers is for determining the distance from the centerline (offset). Either column of numbers can be used for selecting lifts to be tested.

~~4.2.3.2~~5.2.3.2 To use the table, select a random point on the table by tossing a pencil upon the page or blindly pointing out a location with the finger. The selection of random numbers will consist of a pair of random numbers. Once the point is located, select the number in the first column for the length and the corresponding number in the right column for the width. When more than one pair of random numbers is needed, continue selecting the pairs of numbers down the page. If the bottom of the page is reached, go to the top of the next section to the right or to the top of the first section on the left side of the page if the bottom of the right most section of the page is reached. When selecting lifts to be tested, only single random numbers are needed and can be obtained from any of the columns of numbers.

5.2.3.3 To use a calculator, which will generate random numbers, select all numbers needed for a test site before selecting numbers for additional test sites.

~~4.2.3.3~~5.2.3.4 Round to the nearest whole number when calculating the test site location. If the test site falls on the edge of the lot or sublot, move 2 feet into the lot and perform the test at that location. Alternatively, a new set of random numbers can be used to avoid this occurrence.

~~4.3~~5.3 Location of test sites

~~4.3.1~~5.3.1 There are many variations in the required number of tests and the physical dimensions of the area to be tested.

~~4.3.2~~5.3.2 Random location of tests on a single lift that rectangular in shape (Example 1 of Attachment).

~~4.3.2.1~~5.3.2.1 Generally, the Materials Procedure used for testing a material and/or Specifications requires a lot, portion of a lot, or a test section to determine the maximum compacted density of a material to be divided into equal sublots or subsections when more than one test is required.

~~4.3.2.2~~5.3.2.2 Divide the length of the area along the centerline by the number of tests to determine the length of each sublot or subsection.

~~4.3.2.3~~5.3.2.3 From the beginning station number, add the length of the subsection or sublot to the station number to determine the station number for the beginning of the next sublot or subsection. Next add the length of the subsection or sublot to this station number to determine the station number at the beginning of the next subsection or sublot. Continue this procedure until the beginning station numbers for all subsections or sublots have been calculated.

~~4.3.2.4~~5.3.2.4 Select the random numbers according to ~~4.2 through 4.2.3.3~~section 4.2.

~~4.3.2.5~~5.3.2.5 Multiply the length of the subsections or sublots by the random numbers selected for the length. Add the values to the corresponding station numbers for the beginning of each subsection or sublot. The station numbers locate the test sites along centerline.

~~4.3.2.6~~5.3.2.6 Next multiply the width of the test section or lot by the random numbers selected for the offset. Determine the offset distance of the lot or test section from the centerline when the centerline is not within the area to be tested. This will usually be a constant value. Always calculate the offset by working from the side nearest the centerline. Add each of the values calculated in 4.3.2.7 to the constant value. The values establish the offset distance of each test site from the centerline. Designate ~~rather~~ if the offset is left or right of centerline.

~~4.3.2.7~~5.3.2.7 When the centerline is contained within the area to be tested, the offset can be calculated from the left or right side of the test area and test location designated in relation to centerline.

~~4.3.3~~5.3.3 Random location of test sites on a single lift that is irregular in shape (Example 2 attached).

~~4.3.3.1~~5.3.3.1 Determine the dimensions of the area to be tested.

~~4.3.3.2~~5.3.3.2 Determine the minimum dimensions of a rectangle that will contain the area to be tested and has two sides parallel to centerline.

~~4.3.3.3~~5.3.3.3 Divide the rectangle into the desired number of subsections or sublots and randomly locate the test sites locations as in sections 4.3.2. ~~4.3.2.8 above.~~ If a test site location falls outside the area to be tested, obtain a new set of random numbers for the test site and recalculate the test site location. Continue this procedure until the test site falls within the area to be tested.

5.3.4 Random selection of lifts to be tested (Example 3 attached).

5.3.4.1 When testing certain materials, especially backfill material, where an area to be backfilled will constitute a lot of material to be tested, a random selection of lifts shall be tested.

5.3.4.2 Determine the projected number of lifts to be contained within the lot. Divide the number of lifts by the number of tests in the lot. If the value is not an even number, assign an additional lift to the first sublot and continue to assign a lift to each consecutive sublot until all remaining lifts have been assigned to a sublot.

5.3.4.3 By starting with the bottom lift, number the lifts in the lot, select a single random number for each test site.

5.3.4.4 Multiply each random number by the number of lifts in each sublot and round the values to whole numbers. Each value designates which lift in each sublot that will be tested.

5.3.4.5 Once the lifts to be tested have been selected, the random location of the test site on the lift can be determined.

5.3.4.6 The test site can be found by multiplying the length of the back fill by the random number selected from the table.

5.3.5 Random selection of the side of backfill for pipe culverts.

5.3.5.1 When a lot of pipe backfill is being tested, tests should be performed on both sides of the pipe. The side to be tested can be randomly selected by using the random numbers selected for the location of the tests along the pipe. If the random number is less than 0.500, the test is on the left side and greater than or equal to 0.500 on the right side of the pipe.

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TABLE 1 RANDOM NUMBERS

.858	.082	.886	.125	.263	.176	.551	.711	.355	.698
.576	.417	.242	.316	.960	.819	.444	.323	.331	.179
.687	.288	.835	.636	.596	.174	.866	.685	.066	.170
.068	.391	.739	.002	.159	.423	.629	.631	.979	.399
.140	.324	.215	.358	.663	.193	.215	.667	.627	.595
.574	.601	.623	.855	.339	.486	.065	.627	.458	.137
.966	.529	.757	.308	.025	.836	.200	.055	.510	.656
.608	.910	.944	.281	.539	.371	.217	.882	.324	.284
.215	.355	.645	.460	.719	.057	.237	.146	.135	.903
.761	.883	.771	.388	.928	.654	.815	.570	.539	.600
.869	.222	.115	.447	.658	.989	.921	.924	.560	.447
.562	.036	.302	.673	.911	.512	.972	.576	.838	.014
.481	.791	.454	.731	.770	.500	.980	.183	.385	.012
.599	.966	.356	.183	.797	.503	.180	.657	.077	.165
.464	.747	.299	.530	.675	.646	.385	.109	.780	.699
.675	.654	.221	.777	.172	.738	.324	.669	.079	.587
.279	.707	.372	.486	.340	.680	.928	.397	.337	.564
.338	.917	.942	.985	.838	.805	.278	.898	.906	.939
.316	.935	.403	.629	.130	.575	.195	.887	.142	.488
.011	.283	.762	.988	.102	.068	.902	.850	.569	.977
.683	.441	.572	.486	.732	.721	.275	.023	.088	.402
.493	.155	.530	.125	.841	.171	.794	.850	.797	.367
.059	.502	.963	.055	.128	.655	.043	.293	.792	.739
.996	.729	.370	.139	.306	.858	.183	.464	.457	.863
.240	.972	.495	.696	.350	.642	.188	.135	.470	.765

EXAMPLE 1~~I ENGLISH~~

Length of test section = 100 ft Width of section = 10 ft
Number of tests required = 5
4 equal subsections 100/5 = 20 ft
Test section starts at station 5+46

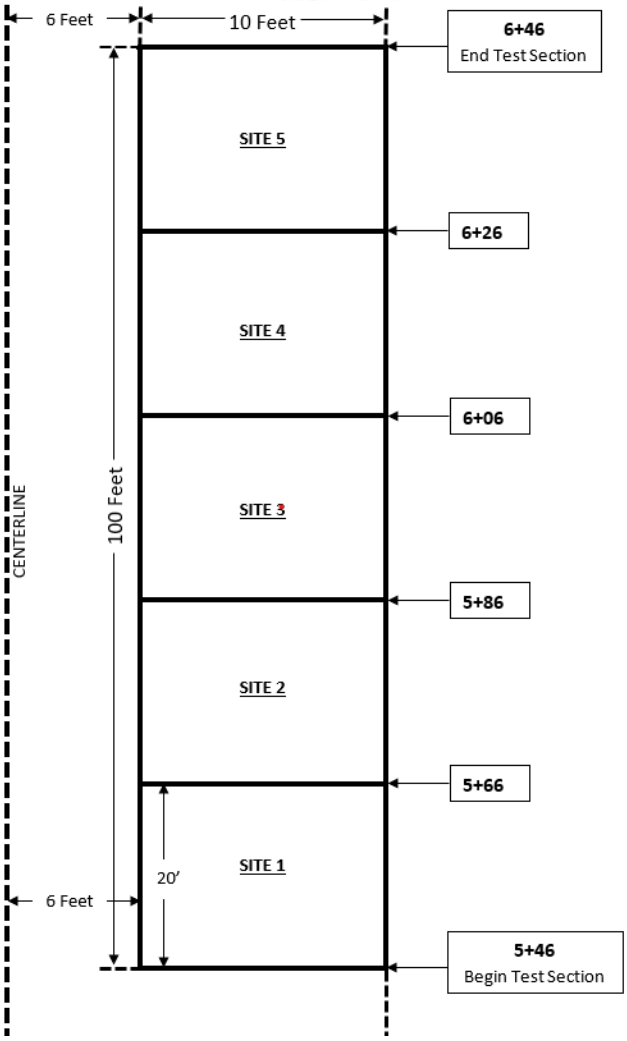
Station number at the beginning of each subsection
A. 5+46
B. 5+46 + 20 = 5+66
C. 5+66 + 20 = 5+86
D. 5+86 + 20 = 6+06
E. 6+06 + 20 = 6 +26

Random Numbers

	Length	Width
A.	.869	.222
B.	.562	.036
C.	.481	.791
D.	.599	.966
E.	.464	.747

Multiply the length of each subsection by the random numbers for the length.
A. 20 x .869 = 17
B. 20 x .562 = 11
C. 20 x .481 = 10
D. 20 x .599 = 12
E. 20 x .464 = 9

Add the values to the beginning station numbers of each subsection to determine the station number for each test.
A. 5+46 + 17 = 5+63
B. 5+66 + 11 = 5+77
C. 5+86 + 10 = 5+96
D. 6+06 + 12 = 6+18
E. 6+26 + 9 = 6 +35



Multiply the width of each subsection by the random numbers for the width.
A. 10 x .222 = 2
B. 10 x .036 = 0
C. 10 x .791 = 8
D. 10 x .966 = 10
E. 10 x .747 = 7

Add the values to the constant distance the test section is from the centerline and label the values as right of centerline .
A. 6 + 2 = 8 ft right of centerline
B. 6 + 0 = 0 ft right of centerline (Test shall still be taken fully in the sublot)
C. 6 + 8 = 14 ft right of centerline
D. 6 + 10= 16 ft right of centerline
E. 6 + 7 = 13 ft right of centerline

Metric example deleted

EXAMPLE 2

The shaded area designates the lift to be tested. For this example, 2 sublots are required with 1 test in each sublot.

Since the area to be tested is not rectangular in shape, place the smallest rectangle around the area that will include all the shaded area.

Divide the rectangle into 2 equal areas (160 feet long by 90 feet wide).

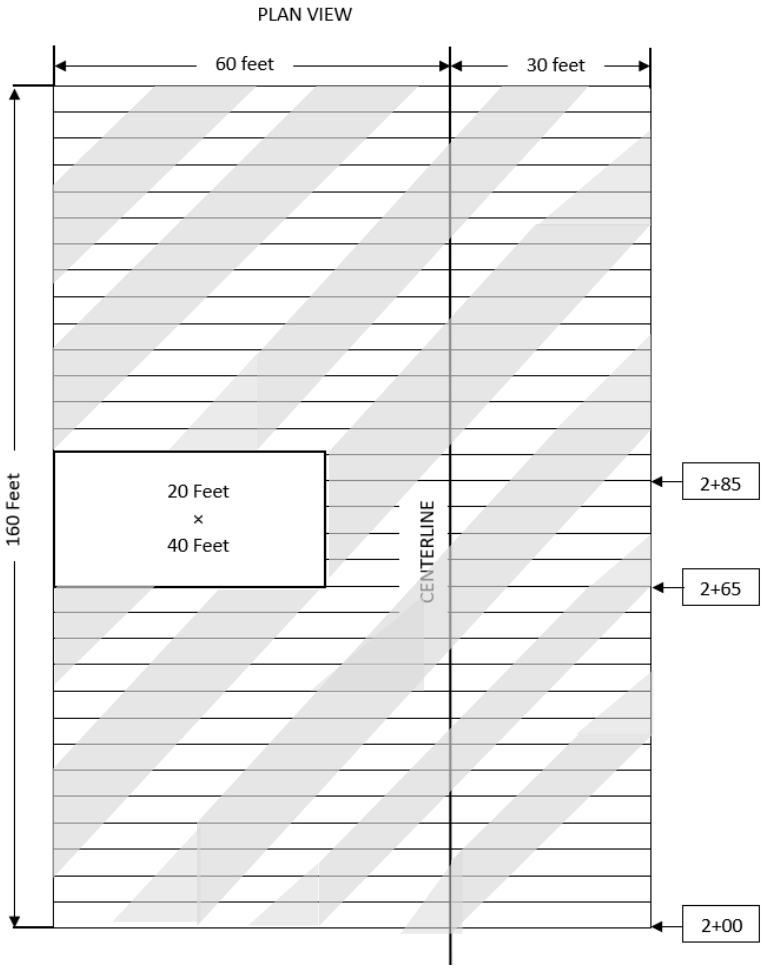
Since the centerline is located within the area to be tested, the offset can be calculated and measured from either side.
For this example, work from the right side.

Determine the station number for the beginning of each sublot.

Sublot No. 1 2+00
Sublot No. 2 2+00 + 80 = 2+80

Random Numbers
Since there is the possibility that the location of a test site may fall outside the area to be tested, an additional set of random numbers was selected.

	Length	Width
A.	.902	.850
B.	.275	.023
C.	.794	.850



Multiply the random number by the length of the sublot (80 x .902 = 72 feet). Add the value of the beginning station number (2+00 + 72 = 2+72). Multiply the width of the sublot by the random number (90 x .850 = 76 feet). By working from the right side, it is 30 feet to the centerline, therefore the test site is 76 – 30 = 46 feet to the left of centerline. The test site falls outside the test area.

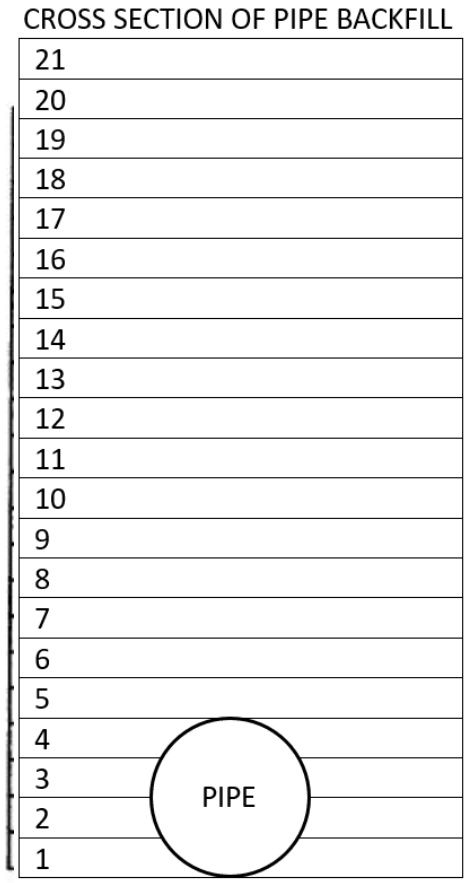
By using the next set of random numbers, calculate the test site location.
80 x .275 = 22 feet
2+00 + 22 = 2+22
90 x .023 = 2 feet
30 – 2 feet = 28 feet right of centerline

The test site for sublot 1 now falls within the test area.

Calculate the test location for sublot 2.
80 x .794 = 64 feet
2+80 + 64 = 3+44
90 x .850 = 76 feet
76 - 30 = 46 feet left of centerline

Metric Example Removed

EXAMPLE 3



21 lifts of material are required to backfill the pipe.

All of the backfill material is included in 1 lot. There are 5 tests required with 1 test in each sublot.

Divide the number of lifts by the number of sublots to determine the number of lifts in each sublot (21/5 = lifts with 1 lift left over). This includes the lift in sublot number 1.

Sublot Number 1	Lifts 1 – 5
Sublot Number 2	Lifts 6 - 9
Sublot Number 3	Lifts 10 - 13
Sublot Number 4	Lifts 14 - 17
Sublot Number 5	Lifts 18 – 21

Random numbers

A. .599
B. .464
C. .675
D. .279
E. .338

Multiply the number of lifts in the sublot by the random numbers.
The values determine which lift in each sublot to test.

A.	5 x .599 = 3	Test lift 3 in sublot number 1, Lift number 3
B.	4 x .464 = 2	Test lift 2 in sublot number 2, Lift number 7
C.	4 x .675 = 3	Test lift 3 in sublot number 3, Lift number 12
D.	4 x .279 = 1	Test lift 1 in sublot number 4, Lift number 14
E.	4 x .338 = 1	Test lift 1 in sublot number 5, Lift number 18

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

MATERIALS PROCEDURE

PROCEDURE FOR DETERMINING A REDUCED UNIT PRICE TO BE PAID FOR SELECT MATERIAL FOR BACKFILLING WHICH DOES NOT CONFORM TO GRADING REQUIREMENTS OF GOVERNING SPECIFICATIONS

1. PURPOSE

1.1 To define a range of nonconformance in the grading of aggregates used for Select Material for backfilling which would require a special investigation (DMIR) of the aggregate ~~necessitate~~or ~~–~~its removal from the ~~project, and~~project and provide a procedure for reducing the price to be paid for said aggregate. When more than one sample is taken in succession, this procedure is applicable to MP 300.00.51: "Procedural Guidelines for Maintaining Control Charts". In some cases, however, because of the nature of the item, only one sample is taken. In this regard a control chart may not be ~~necessary~~necessary, and conformance will be based on the results of the single sample.

2. SCOPE

2.1 This procedure shall apply only to those aggregates specified for use as Select Material for Backfilling.

3. REFERENCED DOCUMENTS

3.1 ~~Add the MPs in here as well.~~ MP: 300.00.51

~~2.1~~3.2 WV DOH Standard Specifications section 212

~~3.~~4. DEFINITION OF TERMS

~~3.1~~4.1 LOT - The quantity of material represented by an average test value.

~~3.2~~4.2 Sublot - The quantity of material represented by a single test value.

~~3.3~~4.3 In those cases where only one sample is taken to represent the total quantity the sublot and LOT will be considered the same.

Commented [DB1]: Jive this with 712.21.26

Commented [RTJ2]: The definitions are in accordance with section 212.2.5.2 and do not need changed.

~~4.~~5. DESIGNATION OF QUANTITIES FOR EQUITABLE PRICE ADJUSTMENT

~~4.1~~5.1 When an average gradation test value, or three individual test values, fall outside the limits of the Specifications, the LOT of material represented thereby is considered to be nonconforming to the extent that the last of its sublots is nonconforming. When a lot of material is nonconforming, then the last sublot contained therein shall have its price adjusted in accordance with Table ~~1~~212.2.5.3 of the Standard Specifications.

In

no event, however, shall a sublot of material have its price adjusted more than once, and the first adjustment which is determined shall apply.

4.25.2 When only one sample is taken to represent the total quantity of material used, and any sieve value falls outside the limits of the specification, the material represented thereby is considered to be nonconforming. This material shall have its price adjusted in accordance with Table 1.

5.6. DEGREE OF NONCONFORMANCE

5.16.1 When a sublot of material is to have its price adjusted, the percentage point difference between the nonconforming test value and the specification limit shall be determined for each sieve determined to be nonconforming (nonconforming as described in 4.1 above), and this value shall be compared to Table 212.2.5.31. The total measure of the degree of nonconformance is, therefore, the sum of nonconformance on the two sieve sizes of the sublot.

Table 1

Degree of Nonconformance	Percent of Contract Price to be Reduced
to 3.0	2
3.1 to 5.0	4
5.1 to 8.0	7
8.1 to 12.0	11
Greater than 12.0	*

6.7. DETERMINATION OF EQUITABLE ADJUSTMENT

6.17.1 When the total degree of nonconformance has been established and it is 12.0 or less, the designated action shall be initiated from Table 212.12.1 of the Standard Specifications 1. When the degree of nonconformance for a sublot is greater than 12.0, a special investigation (DMIR) shall be performed within 14 calendar days of determining the degree of nonconformance. If the special investigation is not performed in 14 calendar days, said sublot will not be incorporated into the project, and in fact, removed from the project as soon as possible.

7.8. METHOD OF ACCOUNTING AND CHANGE ORDER PREPARATION

7.18.1 Equitable reductions for nonconformance will be determined, for each lot or sublot. These adjustments may be processed with a single change order when the item is complete by tabulating the data for all nonconforming sublots, and preparing the change order for the total dollar adjustment shown on the tabulation. A copy of the tabulation should accompany and be made a part of the change order.

7.28.2 Dollar reduction shall be calculated by (A) quantity ×x (B) % reduction from Table 1 ×x (C) unit contract price. (A sample tabulation sheet is attached).

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MP 212.02.20 Steward – Aggregate & Soils Section
RLS:M
ATTACHMENT

Equitable Reduction Procedure

TABULATION OF EQUITABLE REDUCTIONS (partial)

Sublot Identity (Note 1)	Quantity (A)	Degree of Nonconformance	Price Reduction (B)	Unit Contract Price (C)	Dollar Reduction From Contract (A)×(B)×(C)
	800 FT^3	7.5	7%	3.50	196.00
	200 FT^3	2.6	2%	3.50	14.00
	500 FT^3	5.0	4%	3.50	70.00
				Subtotal (1) (Note 2)	$280.00
	1000 FT^3	1.2	2%	3.50	70.00
	1000 FT^3	11.7	11%	3.50	385.00
				Subtotal (2) (Note 2)	$455.00
				Total Reduction (Note 3)	$735.00

Note 1: Station numbers may also be used to identify sublots.

Note 2: These subtotals should be made at the end of contract pay periods, and the subtotal amounts deducted from contract payments on a current basis.

Note 3: This total reduction should be processed in one change order when the construction of the item is complete.

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

MATERIALS PROCEDURE

PREPARING, RECORDING AND TRANSMITTING INFORMATION ON APPROVED LIST OF WELDED STUD SHEAR CONNECTORS

1. PURPOSE

1.1 To establish a system whereby manufacturers may prequalify their welded stud shear connectors for use on Division of Highways projects.

1.2 To establish a procedure for maintaining a record of such information.

1.3 To establish a procedure for transmitting such information to the Districts and to the Contractor on Division of Highways projects.

2. SCOPE

2.1 Certified test reports.

2.2 Valid age of tests.

2.3 Record keeping.

2.4 Transmittal of information.

3. REFERENCED DOCUMENTS

~~2.4~~3.1 West Virginia Division of Highways Standard Specifications Roads and Bridges

3.2 American Welding Society D1.5 Bridge Welding Code

3.3 Materials Procedure 106.00.02 - Procedure for Evaluating Products/Processes for Use in Highway Construction.

~~3.~~4. PROCEDURE

~~3.1~~4.1 Certified test reports.

~~3.1.1~~4.1.1 The manufacturer shall furnish certified copies of test reports to the ~~Central Laboratory~~Materials Control Soils and Testing Division (MCS&T) ~~Lab in Charleston~~, ~~certified copies of test reports of all pertinent required tests of the Division of Highways of West Virginia, Standard Specifications for Roads and Bridges, Section 615.3.3, Welded Stud Shear Connectors~~.

~~3.2~~4.2 Valid Age of Tests

~~3.2.1~~4.2.1 The tests submitted shall be valid until such time as the manufacturer makes any change in the base stud, the flux, or the arc shield, which may ~~effect~~affect the welding characteristics.

~~3.2.2~~4.2.2 The manufacturer may submit certified reports of tests at any time.

~~3.2.3~~4.2.3 The manufacturer may request removal of his name from the approved list at any time.

~~3.3~~4.3 Record Keeping

~~3.3.1~~4.3.1 As certified reports of tests are received, they shall be reviewed, and the approved manufacturer's name listed and filed together with the test data. A separate file shall be kept of those failing to qualify for the approved list, together with the reason for failure.

~~3.4~~4.4 Transmittal of Information

~~3.4.1~~4.4.1 As soon as a manufacturer has been placed on the approved list this information shall be promptly sent to all District Materials ~~Engineers and/or~~ Supervisors.

~~3.4.2 Additional copies of the approved list shall be sent to all District Materials Engineers and/or Supervisors on request.~~

~~3.4.3~~4.4.2 Additions to or deletions from the list shall immediately be sent to all District Materials ~~Engineers and/or~~ Supervisors who in turn~~who turn~~ shall notify any Contractors using such materials.

~~3.4.4~~4.4.3 This approved list of manufacturers of welded stud shear connectors shall be available to all Contractors on Department of Highways projects by navigating to the WVDOH MCS&T Webpage[1].

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MP 615.20.01 Steward – Metals Section
RLS:H

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

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

MATERIALS PROCEDURE

QUALITY ASSURANCE OF FERTILIZER AT SOURCE FERTILIZER ACCEPTANCE CRITERIA

1. PURPOSE

1.1 To provide an interpretation of existing specifications governing fertilizers used on Division projects.

1.2 The interpretation set forth herein shall apply to all fertilizer operations.

1.3 Provide instructions for use by Division field personnel as to acceptance and documentation of material.

2. REFERENCED DOCUMENTS

2.1 West Virginia Fertilizer Law, West Virginia Department of Agriculture, Agricultural Materials : West Virginia Department of Agriculture (wv.gov), WV State Code - Chapter 19, Article 15, West Virginia Code (wvlegislature.gov).

2.2 West Virginia Division of Highways Standard Specifications for Roads and Bridges, Section 715.26 - Fertilizers.

3. CRITERIA FOR ACCEPTANCE

3.1 Specifications governing fertilizers as set forth in ~~West Virginia Division of Highways Standard Specifications for Roads and Bridges~~ Section 715.26.~~?~~ shall be interpreted to mean that all fertilizers utilized on Division projects shall be a commercial fertilizer meeting the definitions and requirements of the West Virginia Fertilizer Law as well as any applicable federal laws and regulations.

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4. DOCUMENTATION

4.1 Coverage for fertilizers shall be obtained by entering the type, quantity, and brand on the HL-440.

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RLS:Mp

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

MATERIALS PROCEDURE

PROCEDURE FOR APPROVING PAINT FORMULATIONS AND PRODUCTION BATCHES

1. PURPOSE

1.1 To establish a procedure for approving paint formulations and to set forth procedures for sampling, testing, and shipping of batches once the formulation is approved.

1.2 This procedure shall apply to manufacturers who furnish paint to the Division.

2. REFERENCED DOCUMENTS

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

Commented [1]: This is not referenced directly in the spec book any longer. But 711.0 says coatings shall conform to the general requirements of these specs. So, we think we can either mention Section 711 in this MP or just not reference the spec book at all in this MP.

Commented [2]: Not in the spec

3. FORMULATION QUALIFICATION

3.1 The manufacturer shall have test equipment and qualified personnel necessary to test the material for compliance with the Specifications.

3.2 The manufacturer shall submit the Division of Highways a one ~~liter~~ quart sample of each formulation. The sample should be sent to:

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

3.2.1 Accompanying the sample shall be one ~~liter~~ quart of thinner for each product, along with product data sheets and material safety data sheets for each.

3.2.2 The appropriate specification number should be identified for each material submitted.

3.2.3 The color of top coats shall be one of those specified in WVDOH Spec~~Subsection~~ 711.~~20~~22.4. Each color or shade of top coat shall constitute a separate formulation.

3.2.4 The formulation will be tested in accordance with Section 711 by the ~~Division of Highway's~~Materials Control, Soils and Testing Division (MCS&T) laboratory. The Division will notify the manufacturer of the results.

Commented [3]: Be more specific

4. BATCH APPROVAL

4.1 Unless otherwise specified, paints will be tested and approved on a batch-to-batch basis. Each batch that meets the specification requirements will receive an individual approval number.

4.2 Sampling shall be conducted in accordance with ASTM D3925. Tests shall be conducted in accordance with M~~aterials P~~~~roceedure~~ 711.00.20. It is the paint manufacturer's obligation to notify the Division when a batch will be ready for sampling.

4.2.1 Process control tests such as weight per gallon, viscosity, and grind are to be witnessed by the Division~~'s representative~~ prior to shipment of samples to the ~~Division of Highways'~~MCS&T laboratory. Failure of any of these tests will result in the batch being rejected at the manufacturer's facility. The batch will then have to be reworked and assigned a revised batch number prior to sampling.

4.2.2 Two one-~~liter~~ quart samples of each batch will be obtained by the ~~Division's representative~~Division. One is to be retained by the sampler at a location away from the manufacturing facility. The other is to be submitted by the ~~representative~~ Division to the address in Section 4.~~2~~3.2 of this Materials Procedure.

4.2.3 The retained sample may be disposed of once the approval has been obtained on the batch. Disposal is to be in accordance with the local Environmental Protection Agency's policies.

5. APPROVAL OF SMALL QUANTITIES

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

6. PROCEDURES FOR SHIPPING

6.1 The manufacturer shall include the following information on each shipping document: name and location of the company, type of material, quantity, date shipped, approval number issued by MCS&T Division, batch number, and date of manufacture.

6.2 A copy of the shipping document shall be submitted to the Division of Highways at the address shown in Subsection ~~4.2~~3.2 of this Materials Procedure.

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

RLS:Mp

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

MATERIALS PROCEDURE

TEST METHODS FOR WOOD CELLULOSE FIBER MULCHES

Commented [1]: CP to check with DS if we can change this over to American units

Commented [2]: We feel it would be better to keep the units in metric. When using graduated cylinders, it is easier and more precise to measure in mL. Also, the MP has 3 calculations and 2 of those calculations will give a percentage which will be unit less any ways.

1. PURPOSE

1.1 This procedure was developed to establish standard test methods to determine the moisture content, net dry weight (mass), water holding capacity, pH, and color of wood cellulose fiber mulch as packaged.

1.2 This procedure is applicable to all wood cellulose fiber mulches used for vegetation establishment.

2. APPARATUS AND EQUIPMENT

2.1 Scale capable of weighing 50 kg accurately to the nearest 50 grams.

2.2 Scale capable of weighing accurately to the nearest 0.1 gram.

2.3 Oven capable of maintaining a temperature of 100 ± 2ºC.

2.4 Three 4-liter containers.

2.5 Three pieces of 75 µm (No. 200) mesh of sufficient size to cover containers.

2.6 One 75 µm (No. 200) standard 203.2 mm (8 inch.) diameter sieve.

2.7 Aluminum foil to be used to cover sieve.

2.8 One 1-liter graduated glass beaker.

2.9 Pan of sufficient size and depth to partly submerge the 203.2 mm (8 inch.) diameter sieve.

2.10 Demineralized water.

2.11 Sink and draft free area to drain sample.

2.12 One 250 mL beaker.

2.13 One 100 mL graduated cylinder.

2.14 Wooden tongue depressors.

3. PROCEDURES

3.1 Moisture Content

3.1.1 Weigh the unopened container (bag) of mulch as received and record the weight. This weight will be used to determine the Net Dry Weight (43.2.2). The moisture content shall be reported as the average of three samples from a single mulch container (bag). One sample will be taken from the top, center, and bottom of the bag.

3.1.2 For each sample, loosely fill a 4 liter container of known weight with mulch to approximately 25 mm (1") from the top.

3.1.3 Weigh each sample immediately and cover the containers with a piece of 75 µm mesh to prevent loss of mulch from container while drying.

3.1.4 Dry all samples in the oven at 100 ± 2ºC until constant weight is achieved.

3.1.5 Cool the samples to room temperature, then remove the 75 µm mesh from each sample and weigh containers and mulch.

3.1.6 The percent (%) moisture (as received) for each sample is determined by the following formula:

$$\% \text{ Moisture} = (A - B / B - C) \times 100$$

where: A = original weight of container and mulch (grams)
B = weight of container and dry mulch (grams)
C = weight of empty container (grams)

3.1.7 Final percent moisture is reported as the average of the three samples.

3.2 Net Dry Weight

3.2.1 The Net Dry Weight (NDW) of the packaged mulch is determined by the following formula:

$$NDW = X - [(X \cdot Y) / 100]$$

where: X = weight of packaged mulch as determined in Section 43.1.1.
Y = percent average moisture as determined in Section 43.1.7

3.2.2 Compare the calculated NDW with the net dry weight printed on the mulch container.

3.2.3 If the NDW is less than the net dry weight as recorded on the mulch container, the contractor shall supply extra material to make up the difference.

3.3 Water Holding Capacity

3.3.1 Determine the average percent moisture content in accordance with Section 43.1.

3.3.2 Obtain and weigh-out a quantity of "as received" mulch equivalent to 12.0 grams of oven-dry mulch. The weight of the "as received" mulch is determine by the following formula:

"as received" weight = 12.0 / [1 - (% Average moisture / 100)]

3.3.3 Weigh "as received" mulch to the nearest 0.1 gram and place mulch in a 1-liter beaker. Add 800 ml of demineralized water (room temperature) to the beaker. Stir until the mulch is thoroughly mixed with the water. Allow to stand for 30 minutes.

3.3.4 Thoroughly wet a clean 75 µm (No. 200) 203.2 mm (8 inch.) standard diameter sieve. Cover the top of the sieve with aluminum foil or other material to prevent evaporation. Prop (or lean) the sieve up against something at an angle of 30º to 45º and allow to "drain" for 10 minutes, after which remove the aluminum foil cover and wipe any excess water from the outside of the sieve and weigh immediately to the nearest 0.1 gram.

3.3.5 Place the sieve in a pan of sufficient depth to allow enough water to be added to cover mesh area. Pour the beaker contents onto the sieve. Use additional water to remove any mulch as necessary from the beaker. To the pan add water as needed to float the mulch inside of the sieve, being careful not to lose any mulch over the side of the sieve. Stir so the mulch will form a uniform mat over the mesh area upon removal from the pan. Carefully cover the sieve with aluminum foil to prevent evaporation and remove sieve from pan.

3.3.6 As before, prop or lean the sieve at an angle of 30º to 45º and allow to "drain" for 10 minutes. Remove cover and wipe any excess water from the outside of sieve and weigh immediately to the nearest 0.1 gram.

3.3.7 Obtain the weight of the wet mulch by subtracting the sieve weight (43.3.4) from the total weight (43.3.6).

3.3.8 Calculate the percent water holding capacity by using the following formula:

% Water Holding Capacity =
[(Weight of Wet Mulch - 12) / Weight of Wet Mulch] x 100

3.4 Potential of Hydrogen (pH)

3.4.1 The pH of the mulch will be determined using a pH meter and electrode capable of determining pH to 0.1 units and having automatic temperature compensation.

3.4.2 For each sample, weigh 10 ± 0.1 grams of mulch into a 250 mL beaker. Measure 100 mL of demineralized water with the graduated cylinder and pour into beaker containing the mulch.

3.4.3 Using a wood tongue depressor, press the mulch into the water so that the mulch has absorbed the water.

3.4.4 Let set for approximately one hour.

3.4.5 Calibrate the pH meter as per the manufacturer's instructions, place the electrode into the wet mulch and record the pH after the reading has stabilized.

3.5 Color

3.5.1 The determination of mulch color will be by visual inspection only. The color will be recorded on the laboratory worksheet to the nearest primary or secondary color.

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Environmental and Coatings Section
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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
MATERIALS CONTROL, SOILS & TESTING DIVISION

MATERIALS PROCEDURE

SEED ACCEPTANCE CRITERIA

1. PURPOSE

1.1 To provide an interpretation of existing Specifications governing seed used on Division projects.

1.2 The interpretation set forth herein shall apply to all seeding operations.

1.3 To provide instructions for use by Division field personnel as to acceptance and documentation of material.

2. REFERENCED DOCUMENTSs

2.1 West Virginia Division of Highways Standard Specifications for Roads and Bridges, Section 715.28 - Seed.

2.2 West Virginia Seed Law, West Virginia Department of Agriculture, Agricultural Materials. Agricultural Materials : West Virginia Department of Agriculture (wv.gov) West Virginia Code Chapter 19, Article 16 - West Virginia Seed Law. West Virginia Code | §19-16 (wvlegislature.gov)~~WVDOH Specifications:715.28 Seed Calvin, clean this up.~~

~~WV Division of Agriculture (List this?) State Code? Webpage~~.

2. CRITERIA FOR ACCEPTANCE

2.1 Specifications governing seed varieties as set forth in the West Virginia Division of Highways Standard Specifications Roads and Bridges shall be interpreted to mean that all seeds utilized on Division projects shall be a commercial variety meeting the definitions and requirements of the West Virginia Seed Law as well as any applicable ——Federal laws and regulations.

2.2 Each container of any variety of seed used on Division projects will bear a "vendors tab" of analysis. Said tag will contain such information as LOT number, germination, purity, weed seed, etc.

2.3 Seed bearing a vendor tag with a test analysis date in excess of twelve (12) months (excluding the month of test) is not to be used and shall be removed from the project.

2.4 All stored material shall be inspected. Those containers exhibiting improper storage shall not be used and are to be removed from the project.

2.5 If the claimed analysis, listed on the vendors tag, is below that set forth in Specification requirements, then adjustments to the application rate shall be made. Such adjustments shall be in accordance with ~~Paragraph 4~~Section 3.

3. ADJUSTING FOR APPLICATION RATE

3.1 Subsequent to receipt of seed at job site, the project engineer or supervisor will compare the test results shown on the vendor tags with those of the governing Specification requirements.

3.1.2 If the percent germination and/or percent purity of each seed is below that of the project Specification requirements, the seed weight per ~~hectare~~ acre shall be computed for adjustments as follows. (The equation yielding the maximum ~~kilos~~ pound of ~~s~~peed per acre shall govern).

3.1.2.1 $\frac{(GS)\ (WS)}{Gt} = Wn$

GS = Percent germination specified.

Gt = Percent germination on vendor tag.

WS = ~~Kilo~~ Pounds of seed per ~~hectare~~ acre as specified on plans, or special provisions.

Wn = The required p~~kilos~~ ounds of seed per acre.

3.1.2.2 $\frac{(PS)\ (WS)}{Pt} = Wn$

PS = Percent purity specified.

Pt = Percent purity on vendor tag.

WS = ~~Kilos~~ Pounds of seed per ~~hectare~~ acre as specified on plans or special provisions.

Wn = The required ~~kilos~~ pound of seed per ~~hectare~~acre.

3.1.3 If the percent germination and percent purity indicated on the vendor tags exceed the governing Specification requirements, the above formula does not apply.

3.1.4 If a maximum percent weed seed content is specified, and the percent weed seed stamped on the vendor tag exceeds the specified limit, the seed is not to be used, and shall be removed from the project.

4. CRITERIA FOR ACCEPTANCE

4.1 Coverage for seed shall be obtained by entering the following information from the vendors tag on Form HL-440.

4.1.1 Name of vendor.

4.1.2 Lot number.

4.1.3 Type of Seed.

4.1.4 Quantity.

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

MATERIALS PROCEDURE

QUALITY CONTROL OF STEEL FENCE POST STUDDED TEE

1. PURPOSE

1.1 This document provides acceptance procedures for certified and non-certified sources of studded tee type steel line fence posts for use with farm field fence.

2. SCOPE

2.1 This procedure is applicable to studded tee type steel fence posts.

3. REFERENCED DOCUMENTS

3.1 *WVDOH Specifications Roads and Bridges*, Section 709.46

3.2 Materials Procedure 106.00.02 - Procedure for Evaluating Products/Processes for Use in Highway Construction.

3.3 Materials Procedure 700.00.01 - Sampling and Testing of Materials at the Source.

4. GENERAL

4.1 To become a Division Approved Source, it is the manufacturer's responsibility to maintain a Quality Control System assuring only material meeting the governing specification is supplied.

4.2 When fence posts are obtained from a supplier rather than the producer, the responsibility for maintaining the Quality Control System is not relieved and is still considered the responsibility of the manufacturer.

5. MANUFACTURER'S CERTIFICATION

A prospective manufacturer shall submit their product to the Materials Control, Soils and Testing Division using the HL-468 form as per MP 106.00.02[1].

[1] https://transportation.wv.gov/highways/TechnicalSupport/specifications/Documents/2023_Standard_%2812-16-22%29.pdf
https://transportation.wv.gov/highways/mcst/Pages/newproduct_evaluationprocedure.aspx

A manufacturer that has demonstrated, via test data developed by the Division, the ability to supply specification fence posts on a regular basis will be considered for certification.

When a manufacturer has met the above criteria, personnel from the Division (or their representative) will visit and inspect the complete manufacturing process. At that time, the manufacturer will randomly sample and test at least one galvanized post. This sample will be taken and tested in the presence of the Division's representative. Additional samples may also be taken and tested by the Division as deemed necessary.

Tests to be conducted: AASHTO M 281 and M 111.

When the manufacturer's Quality Control Program is approved, a laboratory number will be issued for that manufacturer and placed on the Division's Approved Product List[2].

5.1.1 After certification (approval), the Division may request the manufacturer to submit randomly selected test data representing material shipped.

5.1.2 Division representatives will visit the manufacturer at least once ~~a year~~every two years, at which time a sample will be chosen at random for a test. ~~At the discretion of the Division this~~

5.1.3 At the discretion of the Division the sample may be tested at the manufacturing site and observed by the Division, or the sample may be tested at the Division's facilities.

5.1.4 Any deviation of test results from the specifications will require additional sampling and testing. This may be considered cause to remove the manufacturer from the certified status.

After certification, the manufacturer submits with each shipment to a project or supplier, a document identifying the manufacturer, the approved source laboratory number, length of posts, quantities, and project number. When a supplier receives fence posts from an approved source, the supplier must identify the manufacturer and the approved source laboratory number shipping documents to the project.

~~Upon receipt at the project, the project will record the following on Form HL- 440:~~

Commented [BDA1]: What does the project do with this? Submit to MCST or put in the P/W folder?

Commented [BDA2]: What/where is this document? Show link or include as attachment.

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

~~1. Material - Studded Tee Posts with Accessories~~

~~2. Quantity - For each length •~~

~~3. Name of certified source.~~

~~4. Approved Source Laboratory Number - In effect when the material was received.~~

Commented [BDA3]: Do you mean where the product was shipped from? (The producer/supplier?)

Commented [BDA4]: Perhaps just remove?

6. NON-CERTIFIED MANUFACTURERS

Non-certified manufacturers or other suppliers may supply studded tee posts to the Division from approved LOTs only. Each shipment must be sampled, tested, and identified in accordance with ~~MP 700.00.01[3]~~ MP 700.00.01[4]. A sample for each shipment will be randomly selected by the Division or their representative. In the event of failure, two samples will be selected and tested. Should one of these samples fail, the LOT shall be rejected. Documentation for acceptable posts will be in accordance with MP 700.00.01.

7. DIVISION DOCUMENTATION

Project personnel will review all shipping documents to ensure quantities are correct and all information is included. The posts must be inspected for damage. Damage Material shall be rejected.

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MP 709.46.50 Steward – Metals Section
RLS:Hd

[4] https://transportation.wv.gov/highways/mcst/Pages/MP-700s.aspx

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

MATERIALS PROCEDURE

PROCEDURAL GUIDELINES FOR MAINTAINING CONTROL CHARTS FOR PORTLAND CEMENT CONCRETE

1. PURPOSE

1.1 To establish guidelines for developing and maintaining control charts to evaluate consistency, percent entrained air, strength characteristics, and the Ttotal ~~solids~~Solids ~~A bar~~ Ā or optimized aggregate gradation of portland cement concrete.

2. SCOPE

2.1 These procedures shall be applicable in all instances in which they can be reasonably and logically applied. For consistency, air, and strength, the applicability will normally depend on the quantity of material used, the continuity of delivery, etc. Control charts for Ttotal Ssolids Ā ~~A~~ or optimized aggregate gradation shall be maintained for all concrete designs used on state work by a concrete producer.

3. REFERENCED DOCUEMENTS

~~2.1~~3.1 ~~Add here.~~MP 601.03.50 Guide for Quality Control and Acceptance Requirements for Portland Cement Concrete

~~3.~~4. GENERAL PROCEDURE

~~3.1~~4.1 ~~Control charts will be maintained at locations where the test samples are taken.~~

Control charts shall be maintained at the project office or at the testing site where applicable.

~~3.2~~4.2 ~~Control charts will be prepared on a 10 x 10 cross section paper with a width of approximately 560 mm for the sheet presenting the charts for consistency, percent entrained air, and strength characteristics. A separate sheet of sufficient width shall be used to accommodate the control charts for the total solids A for concrete mix designs. A chart length of approximately 760 mm should be displayed at all times. When standard cross section sheets are used, the most recent sheet will be displayed and the previous sheets will be placed chronologically in a holder.~~

Charts for consistency, air, and strength shall have the item number and/or description of the material noted on the top of the chart and will be visible at all times. Charts will have the design number and class of concrete visible at all times.

~~3.3~~4.3 ~~Charts for consistency, air, and strength shall have the item number and/or description of the material noted on the top of the chart and will be visible at all times. charts will have the design number and class of concrete visible at all times.~~

Commented [DB1]: The purpose of the MP change is to include the guidelines for the preparation of control charts when using computers or as deemed appropriate by the Division. The last time this MP updated was in 1995 when only paper charts were in practice.

Commented [DB2]: Boggs - Add computer generated example in the attachment.

Commented [DB3]: DB to cleanup track changes on this document

Commented [DB4]: Check reference or use symbol for it.

~~4.~~5. CHART PREPARATION

4.~~1~~5.1 ~~At the beginning and end of each sheet (or the length of the displayed portion), vertical red lines will be drawn between the limits of the specification or tolerance; an arrow will be placed at the end of the vertical lines; the specification limits will be written above and below the arrows and the name of the property being graphed and the scale will be indicated between the limits on the left edge of the chart. See Appendix Attachment 1 and 2 for typical arrangements.~~

Control charts may be prepared by hand on paper, computer generated, or as deemed appropriate by the Division.

~~4.1.1~~5.1.1 When standard cross section sheets are used, the most recent sheet will be displayed, and the previous sheets will be placed chronologically in a holder.

~~4.1.2~~5.1.2 At the beginning and end of each sheet (or the length of the displayed portion), vertical red lines will be placed between the limits of the specification or tolerance; an arrow will be placed at the end of the vertical lines; the specification limits will be noted above and below the arrows and the name of the property being graphed and the scale will be indicated between the limits on the left edge of the chart. See ~~Appendix~~ Attachments ~~1 and 2~~ for typical arrangements.

4.~~2~~5.2 **~~Scale~~ Hand Drafted Charts**

4.~~2.1~~5.2.1 ~~Consistency - One division of vertical scale will represent 5.0 mm of slump, or 5.0 mm of ball penetration (25 mm - 50 mm).~~

Hand drafted charts will be prepared on a 10 x 10 grid with a width of approximately 22 in for the sheet presenting the charts for consistency, percent entrained air, and strength characteristics. A separate sheet of sufficient width shall be used to accommodate the control charts for the Total Solids Ā ~~total solids A~~ or optimized aggregate gradation for concrete mix designs. A chart length of approximately 30 in should be displayed at all times.

4.~~2.2~~5.2.2 ~~Air Content - One division of vertical scale will represent one-tenth of a percentage point of entrained air (25 mm - 1%).~~

The general construction of the control charts shall be the same as described in section 4.4 and 4.5.

4.~~2.3~~5.2.3 ~~4.2.3 Strength - One division of vertical scale will represent 1 MPa (25 mm = 10 MPa) compressive or 69 KPa (25 mm = 1 MPa) flexural strength.~~

4.~~2.4~~5.2.4 ~~4.2.4 Total solids A - One division of vertical scale will represent .01 (25 mm = 0.1) when the coarse aggregate size is 57, 7, 78, or 8 and .02 (25 mm = 0.2) when the coarse aggregate size is Number 3.~~

4.~~3~~5.3 **~~Plotting Test Data~~ Computer Generated Charts**

~~4.3.1~~5.3.1 ~~Symbols and Color Code - Individual test values will be plotted in blue using the symbol " o ", with the circle being approximately 2.5 mm in diameter. Average test values for consistency, percent air, and strength as well as the averages of consecutive five test values for total solids A shall be plotted in red using the symbol " o ", with the square being approximately 2.5 mm on each side. Independent Assurance test values developed by the Division, including record samples, will be plotted in green using the symbol " r " with the sides of the triangle being approximately 2.5 mm.~~

Standard computer-generated charts allowing hand plotting, or computer plotting of individual data may be used.

~~4.3.2~~5.3.2 ~~Arrangement of Data - All data developed on a production day will be plotted on one heavy, vertical line, however, when two or more individual test values developed on the same production day have the same magnitude, the symbols may be plotted side-by-side on the same horizontal division line. All test data for a characteristic developed on a production day, exclusive of any independent testing conducted by the Division, will be averaged, and the average value plotted on the same vertical line as the individual test values. When an average value and an individual test value have the same magnitude, the plotted symbols may be superimposed.~~

When charts are computer generated, they shall be printed in color with data plotted to scale; and displayed as described in 4.4 and 4.5 except it shall be printed on 8 ½ "x11" paper.

~~4.3.3~~5.3.3 ~~When individual test values fall outside the specification limits, an arrow will be placed on the plotted symbol pointing in the direction of the specification limit.~~

~~4.3.4~~5.3.4 ~~As test data are developed on following production days, it will be plotted on successive heavy vertical lines, 25 mm apart, progressing from left to right across the control chart. As successive averages for consistency, percent air, and strength characteristic are plotted, the symbol " o " will be connected with a heavy red solid line. For total solidsA control chart the moving average is the average of five consecutive test values and is determined by starting with the fifth test value and averaging it with the four preceding test values. The moving average of five symbol " o " will be connected with a heavy red solid line. Individual test values will have the symbol " o " connected with a dashed blue line.~~

~~4.3.5~~5.3.5 ~~At the bottom of the cross section paper and immediately to the left of the heavy vertical line on which the test data are plotted, the date of sampling and initials of the individual plotting the test data will be recorded.~~

~~4.4~~5.4 Scale

~~4.4.1~~5.4.1 Consistency - One division of vertical scale will represent $^1/_4$ in. of slump ($^1/_{10}$ in. - ¼ in.)

~~4.4.2~~5.4.2 Air Content - One division of vertical scale will represent one-tenth of a percentage point of entrained air (1 in. - 1%).

~~4.4.3~~5.4.3 Strength - One division of vertical scale will represent 100 PSI (1 in. = 1000 PSI) compressive or 10 PSI (1 in. = 100 PSI) flexural strength.

5.4.4 ~~Total~~ Total Solids Ā or optimized aggregate gradation - One division of vertical scale will represent .01 (1 in. = 0.1) when the coarse aggregate size is 57, 7, 78, or 8 and .02 (1 in. = 0.2) when the coarse aggregate size is Number 3.

~~4.4.4 solids A or optimized aggregate gradation - One division of vertical scale will represent .01 (1 in. = 0.1) when the coarse aggregate size is 57, 7, 78, or 8 and .02 (1 in. = 0.2) when the coarse aggregate size is Number 3.~~

~~4.5~~5.5 Plotting Test Data

~~4.5.1~~5.5.1 Symbols and Color Code - Individual test values will be plotted in blue using the symbol "O", with the circle being approximately 0.1 in. in diameter. Average test values for consistency, percent air, and strength as well as the averages of consecutive five test values for Total Solids Ā ~~total solids A~~ shall be plotted in red using the symbol, "□" with the square being approximately 0.1 in. on each side. Independent Assurance test values developed by the Division, including record samples, will be plotted in green using the symbol "△" with the sides of the triangle being approximately ~~0.~~1 in.

~~4.5.2~~5.5.2 Arrangement of Data - All data developed on a production day will be plotted on one heavy, vertical line, however, when two or more individual test values developed on the same production day have the same magnitude, the symbols may be plotted side-by-side on the same horizontal division line. All test data for a characteristic developed on a production day, exclusive of any independent testing conducted by the Division, will be averaged, and the average value plotted on the same vertical line as the individual test values. When an average value and an individual test value have the same magnitude, the plotted symbols may be superimposed.

~~4.5.3~~5.5.3 When individual test values fall outside the specification limits, an arrow will be placed on the plotted symbol pointing in the direction of the specification limit.

~~4.5.4~~5.5.4 As test data are developed on following production days, it will be plotted on successive heavy vertical lines, 1 in. apart, progressing from left to right across the control chart. As successive averages for consistency, percent air, and strength characteristic are plotted, the symbol "□" will be connected with a heavy red solid line. For total solids ĀA control chart the moving average is the average of five consecutive test values and is determined by starting with the fifth test value and averaging it with the four preceding test values. The moving average of five symbol "□" will be connected with a heavy red solid line. Individual test values will have the symbol "O" connected with a dashed blue line.

~~4.5.5~~5.5.5 At the bottom of the cross section paper and immediately to the left of the heavy vertical line on which the test data are plotted, the date of sampling and initials of the individual plotting the test data will be recorded.

~~5.~~6. FAILING TESTS

~~5.1~~6.1 When individual test values fall outside the specification limits, this information will immediately be made available to the supervisory personnel of both the Contractor and the Division.

~~5.2~~6.2 Should the moving average of any five consecutive gradation tests of the ~~total solids have an~~ Total Solids Ā ~~A~~ ~~fall~~ outside the specified design mix A tolerance, action required by the Specification will be taken. When appropriate action has been taken to bring the Total Solids Ā ~~A~~ back within tolerance, the first individual production sample that is within tolerance shall be used to start a new moving average.

5.2.1 Should the moving average of any five consecutive combined aggregate gradation tests have a working range outside of the limits sets forth on Table 601.3.2.4.1B, action required by the Specification will be taken. When appropriate action has been taken to bring the working range back within tolerance, the first individual production sample that is within tolerance shall be used to start a new moving average.

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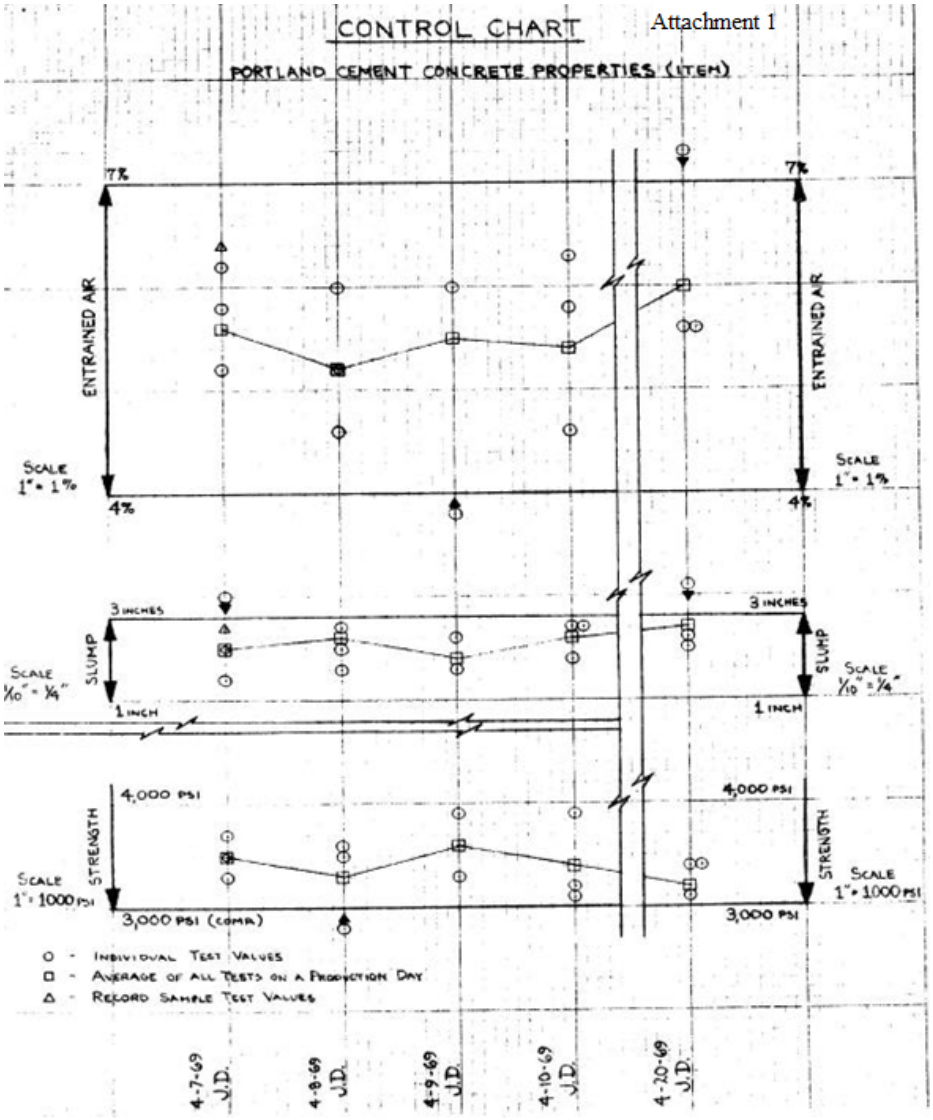
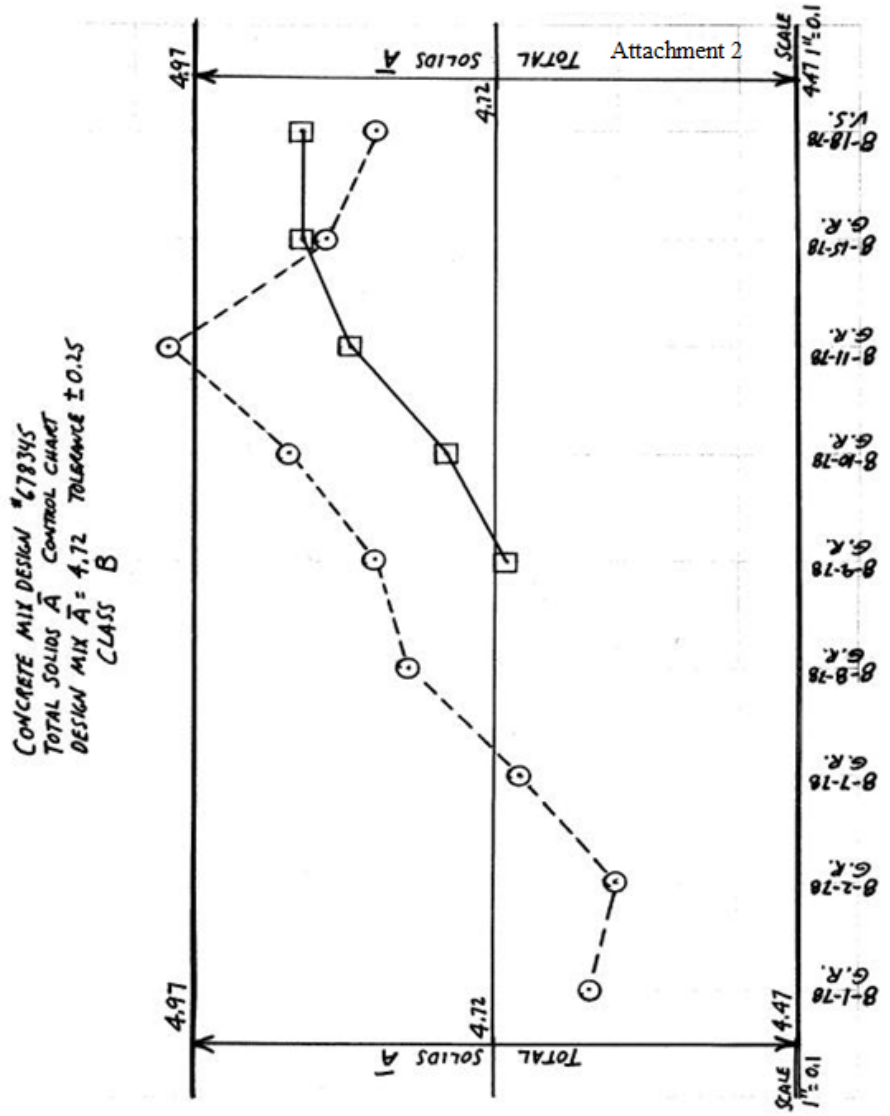
MP 601.03.52 Steward – Cement and Concrete Section
RLS:TT
ATTACHMENT

Hand Drafted Charts

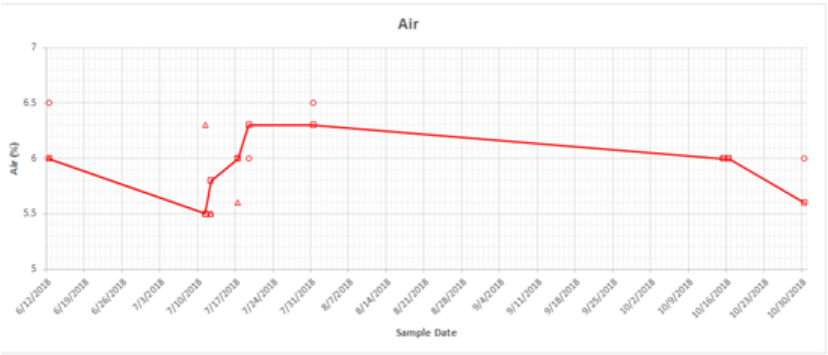


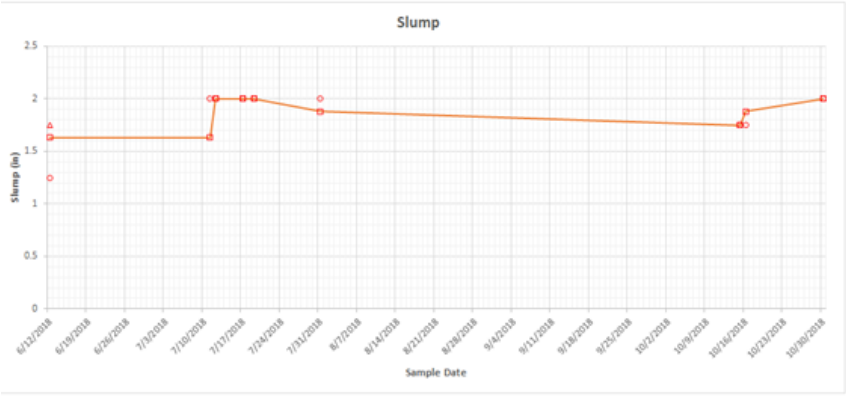
<Image has changed>

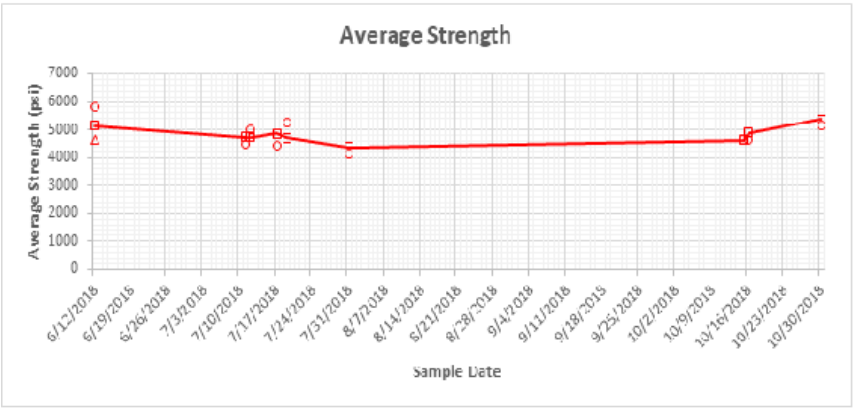


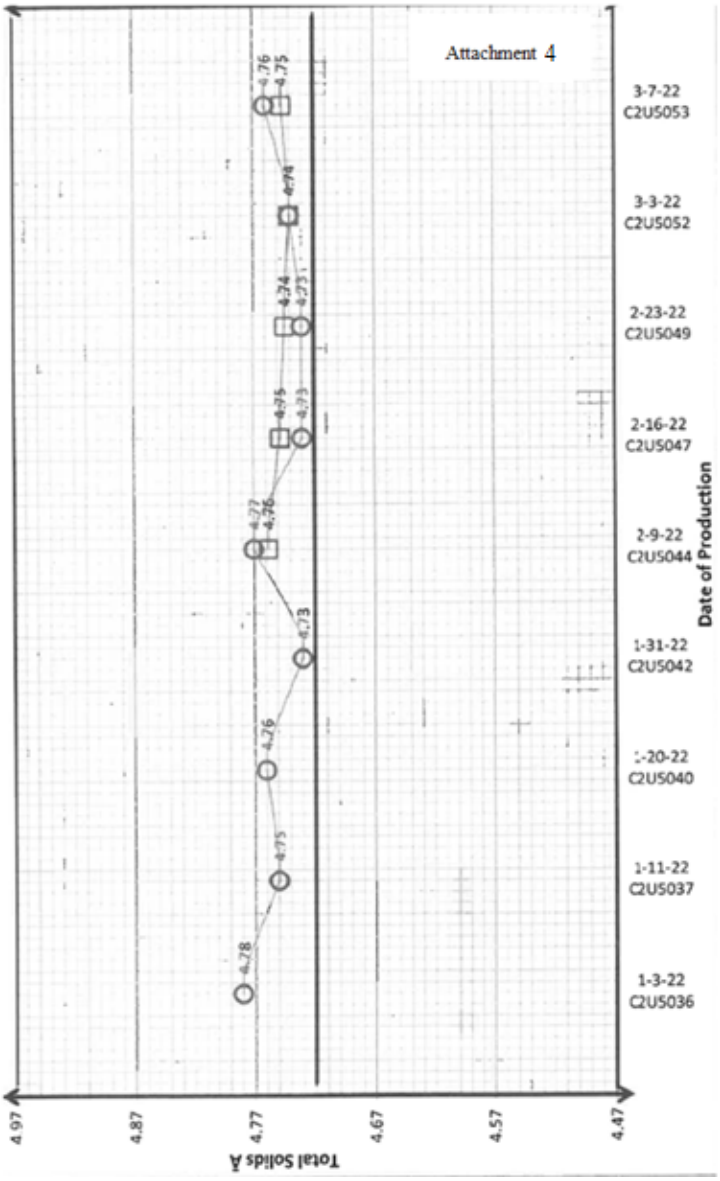
Computer Generated Charts

Attachment 3





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C2U5053
3-3-22
C2U5052
2-23-22
C2U5049
2-16-22
C2U5047
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C2U5044
1-31-22
C2U5042
1-20-22
C2U5040
1-11-22
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C2U5036
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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
MATERIALS CONTROL, SOILS AND TESTING DIVISION

MATERIALS PROCEDURE

GUIDELINES FOR ESTABLISHING AND MAINTAINING APPROVED PRODUCT LISTS OF MATERIALS, SYSTEMS AND SOURCES

1. PURPOSE

1.1 To establish general guidelines for establishing and maintaining approved product lists of material producers, distributors and sources, commonly known as the Approved Product List (APL), which are frequently on WVDOH projects.

1.2 This Materials Procedure (MP) is distinguished from MP 106.00.02 "Procedure for Evaluating Products/Processes for Use in Highway Construction" which outlines the procedure for considering completely new products that have not yet been specified, considered in construction plans, notes, or other construction documents. This MP outlines the creation of an APL for a material which ~~has~~ already ~~had~~ has significant usage on construction projects and have been accepted using other methods as defined further in this document.

2. SCOPE

2.1 This procedure shall apply to all sources and materials that are suitable for acceptance with a reduced testing frequency. Because of the uniqueness or complexity of some products, additional MPs may be necessary to supersede the requirements of this procedure.

3. REFERENCED DOCUMENTS

3.1 West Virginia Division of Highways Standard Specifications, Roads, and Bridges.

3.2 Materials Procedure 106.00.02 - Procedure for Evaluating Products/Processes for Use in Highway Construction.

~~3.3 DD-105 - Specification, Publication, and Material Procedures Approval.~~

4. DEFINITIONS

~~4.1 Champion: This is typically the appropriate Materials Control Soils and Testing (MCS&T) Division Group Supervisor or their designee. Champions may originate from other DOH Organizations/Agencies if applicable. They shall put forth and recommend the new APL to the Director of MCS&T or their designee.~~

4.~~2~~4.1 ST-1: Special Testing Form 1, this is the acceptance method for a material which does not otherwise have an acceptance method such as being on an APL, be designate by the Specifications, or a MP.

4.2 Historic Usage: Documentation of a positive acceptance record of the product via the usage of ST-1.

4.3 AASHTO: American Association of State Highway and Transportation Officials

4.34.4 AASHTO Product Evaluation and Audit Solutions, formerly known as NTPEP.

5. REQUISITES FOR THE CREATION OF AN NEW APL

5.1 A clear acceptance criterion, such as those listed in the following sections shall be established to govern the acceptance of the product. In order for a product or system to be considered as a candidate for a new APL, one or more of the following acceptance criteria shall be met:

5.1.1 WVDOH Specifications, Materials Procedures or other State Acceptance Criteria.

5.1.2 Approval by a WVDOH Committee, or Applicable Task Force, such as the "Roadway Departure Task Force."

5.1.3 Testing and or approval via information gathered from national testing or auditing agencies ~~such as NTPEP~~.

5.1.4 Historic usage and approval on projects by ST-1s, special provisions, etc.

5.1.5 Consistent satisfactory compliance of the product with the WVDOH Specifications.

6. APPROVAL CRITERIA

6.1 Approval shall be granted by the Director, to a material or source providing at least one of the following criteria are met:

6.1.1 The manufacturer of the material has developed and operates under a Division approved Quality Control Plan that sufficiently controls the quality of the material to the extent that the possibility of a substandard material being produced and shipped is substantially reduced, if not eliminated.

6.1.2 The record of Specification compliance of the material or source is satisfactory to the Division.

6.1.3 The manufacturer has successfully undergone an evaluation of manufacturing and quality control processes that has led to certification or accreditation by a Division recognized accreditation agency.

6.1.4 Acceptance or approval of a particular material by an AASHTO national and/or regional test program.

~~6.1.3.1~~6.1.4.1 In the instance where a producer/supplier has a product which has a satisfactory audit from AASHTO Product Evaluation and Audit Solutions, has national usage and the test data falls within the applicable specification limits of ASTM or AASHTO, at the discretion of the Director, this product may be added to its respective approved product list.

~~6.1.4~~6.1.5 Acceptable evaluation by field-testing of a material or product design analysis.

6.2 Unless otherwise directed by the Director, acceptance criteria shall be documented and maintained by the Materials Lab Coordinator~~, or Materials Control Group~~. This acceptance criteria shall be available in the MCS&T ProjectWise folder so other employees will be able to consistently review the approval criteria and duplicate ~~approval~~the approval process.

7. RETENTION OF APPROVED STATUS

7.1 All approved materials or sources shall be subject to validation through periodic inspection and/or review to determine if the approved product(s) ~~are maintaining~~maintains the same characteristics and quality as those originally approved.

7.1.1 This inspection and validation shall be performed at a frequency determined by ~~either the~~the respective MCS&T ~~Champion~~ Section Supervisor~~of the material specific MP~~. Once the process has been completed, each re-approved source shall retain its issued approval/lab number unless the product has changed from its original state enough to warrant a new number (For example, a new, updated version of the product.)

7.1.2 If a product is not validated within the guidelines established above, the product will be removed from the APL and a letter issued to the company.

7.1.3 Re-approval verification shall be based on one or more of the following criteria:

7.1.3.1 Satisfactory results from testing random samples collected at the source, supplier, or from a Division project.

7.1.3.2 Re-inspection of the manufacturing and quality control processes.

7.1.3.3 Satisfactory statistical evaluation of routine quality control test data supplied by the manufacturer.

7.1.3.4 Certified statement from the manufacturer that the approved product is being manufactured under the same design, formulation, manufacturing process and quality control processes that were in effect when product or source was originally approved.

7.1.3.5 Continued presence on an accepted national/regional program such as ~~NTPEP~~APEAS.

7.2 In the instance where a company has changed its name, but retains the originally approved product, including the same design, formulation, manufacturing process and quality control processes, the product shall retain the original approval number. The WVDOH Approved Product List shall be updated to include the new name with the original approval number.

~~7.1.4~~7.2.1 If the product is changed in any physical way (aside from a different name label or stamp), the product shall be treated as a completely new product.

8. DOCUMENTATION AND AVAILABILITY OF APLS

8.1 The new or updated APL shall be submitted to the Director for approval. Once approved, the APL will be uploaded to the MCS&T Webpage[1] and distributed to the District Materials Supervisors and any other interested parties.

8.1.1 All manufacturers or distributors of approved materials shall be required to reference their approval/lab number on the shipping documents (typically invoices) that accompany the approved material to the project.

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

RLS:B

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

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

MATERIALS PROCEDURE

CHEMICAL ANALYSIS ~~FOR pH~~ OF SOIL

1. PURPOSE

~~1.1~~ To provide methods for ~~establish a procedure to perform~~ the chemical analysis of soil.

~~1.2~~1.1 ~~To establish a procedure to determine its pH and organic contents.~~

2. REFERENCED DOCUMENTS

a. Standard Methods of Chemical Analysis, F.J. Welcher, Editor, Latest Edition. Standard methods of chemical analysis : Furman, N. Howell (Nathaniel Howell), 1892-1965, ed : Free Download, Borrow, and Streaming : Internet Archive

b. Research Methods in Plant Sciences: Allelopathy, Volume -1 Soil Analysis, S.S. Dahiya and J.P. Sing, Editors, Latest Edition. (PDF) ALLELOPATHY AND SOIL ANALYSIS (researchgate.net)

c. ASTM G51 - Standard Test Method for Measuring pH of Soil for Use in Corrosion Testing.

d. ASTM D6276 - Standard Test Method for Using pH to Estimate the Soil-Lime Proportion Requirement for Soil Stabilization.

3. CHEMICAL ANALYSIS TESTING PROCEDURE

3.1 The referenced documents shall be used for the chemical methods of soil.

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

MP 207.06.20 Steward – Environmental and Coatings Section
RLS:P

Commented [1]: We think the title should go back to just Chemical Analysis of Soil.

Commented [2]: Is there a newer version of this document? New Edition?

Commented [3]: Link to this book

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).

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.

~~2.2~~2.3 MP 100.00.02: Method Of Evaluation Of Non-Standard Or Non-Conforming Materials In Construction Via St-1

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.

4. SUBMISSION OF PRODUCT

4.1 Consideration for new product evaluation shall be requested through completion by the MS&Ps of West Virginia Division of Highways (DOH) Form HL-468, "Preliminary Information for New Product Evaluation". Once completed, DOH Form HL-468 shall be submitted to the Materials Control, Soils and Testing Division (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.

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

5. REVIEW OF SUBMMITED PRODUCT

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

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

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

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

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

5.3 If the reviewing entity determines that the WVDOH does not currently have any specifications for the submitted product, a "No-APL" letter shall be issued~~, which is a non-approval~~. The issuance of this letter does not mean the product cannot be used on a project, but rather, another acceptance method shall be used to accept the material. The acceptance criteria in this case is typically an ST-1 as described in MP 100.00.02.[2]

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

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

~~5.4~~

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

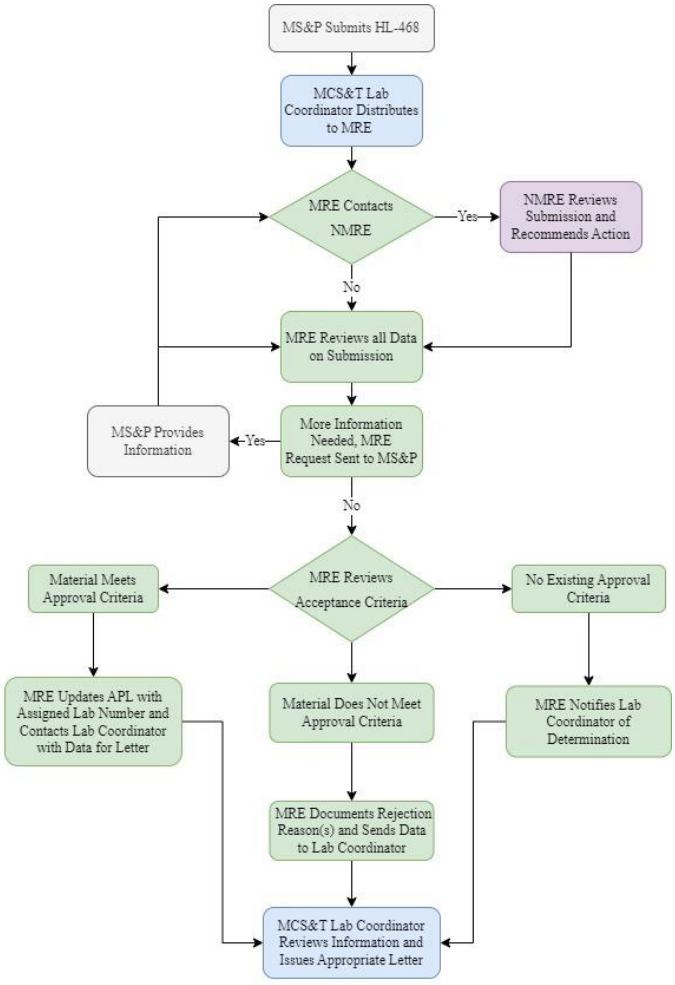
5.6 In the instance where a product has significant approved usage, the Director (or their Designee) of MCS&T may add a product to either a new or existing APL as per MP 106.00.03. If a product is a candidate for being added to the APL in this manner, the MCS&T Lab Coordinator shall contact the MS&P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

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

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

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

Figure 1: Flow Chart for Approved Products List Process.



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

6. DOCUMENTATION OF APPROVED PRODUCTS

6.1 MCS&T shall maintain a directory on the Division's APL Webpage[3] listing all the current approved products.

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

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

7. REMOVAL OF PRODUCT FROM APL

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

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

8. BUY AMERICA

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

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

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

8.2 A notarized CoC shall contain the following information:

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

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

8.2.3 The date of the application

8.2.4 A company statement that demonstrates compliance with Buy America.

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

8.2.6 Signature of the Company Official and date.

8.3 The document must be notarized.

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

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

MP 106.00.02 Steward – Lab Support Section
RLS:B
ATTACHMENTS

ATTACHMENT 1 - SAMPLE HL-468 FORM

<For Committee, No Changes to this Form>

See https://transportation.wv.gov/highways/mcst/Pages/tbox.aspx

Attachment 2: Sample APL Response Language

1. NO APL RESPONSE:

The West Virginia Division of Highways (WVDOH) has evaluated your submittal of <Product Name>, <Product Material> as per Materials Procedure MP 106.00.02. The WVDOH does not currently have a specification which applies to your product and therefore cannot approve this product on an "Approved Product List.

We do feel that the product may be beneficial for use on WVDOH projects. The inclusion of the material into project designs does not rest with this Division, but we have no objections to it being specified by WVDOH Designers or requested to be used by Contractors. If a contractor would propose to use it on a WVDOH project, or if the product is specified in WVDOH Contract Documents, this product may be used, pending evaluation.

2. NON-APPROVAL RESPONSE

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

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

3. APPROVAL RESPONSE

West Virginia Division of Highways (WVDOH) Laboratory Approval Numbers 2XXXXXX has been issued to your company <Name of Company >, for the above-mentioned product. The approval number, effective Date 15, 20XX, must appear on all shipping documentation for said product supplied to the West Virginia Department of Transportation (WVDOT), Division of Highways projects.

ATTACHMENT 3: SAMPLE COMPLIANCE FORM

Certification of Buy America, Build America Compliance For Source Approval

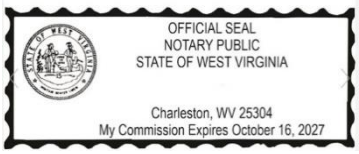
Acme Manufacturing Company
123 Main Street
Charleston, WV
25302

HL 468 Submission Date: 10/31/2022

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

This Certification of Compliance is for the material listed below:

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



Jonathan Doe, Quality Assurance Manager

WVDOH Use Only

Reviewed by: Reviewed Date: Status:

2023 07 10 – QC Updates

Text update to the following QC MPs:

307.00.50

401.03.50

601.03.50

717.04.21

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1. ABSENT TESTING OF MATERIAL

1.1 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.

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

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

MATERIALS PROCEDURE

GUIDE FOR QUALITY CONTROL AND ACCEPTANCE REQUIREMENTS FOR PORTLAND CEMENT CONCRETE

1. PURPOSE

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

2. SCOPE

2.1 This Materials Procedure (MP) is applicable to all Portland Cement Concrete (PCC) items, and it outlines the quality control procedures for both plant and field operations and includes procedures for approving and using Master and/or Project Specific QC Plans. This procedure also aids in documentation and retention of QC Plans in ProjectWise.

3. REFERENCED DOCUMENTS

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

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

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

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

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

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

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

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

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

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

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

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

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

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

o. West Virginia Department of Transportation, Division of Highways, Standard Specifications Roads & Bridges

4. GENERAL REQUIREMENTS

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

5. QUALITY CONTROL PLAN

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

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

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

5.2 Quality Control Plan Guidelines

5.2.1 The Plan shall identify the personnel responsible for the Contractor's quality control. This should include the company official who will act as the liaison with Division personnel, as well as the Certified Portland Cement Concrete Technician who will direct the inspection program at the plant or in the field depending on if it is a plant or field QC Plan. Their phone number and email address must also be included as a means for contact by the Division personnel.

5.2.2 All classes of concrete and corresponding mix design numbers, which may be used, shall be listed on the Plant QC Plan. All classes of concrete, which may be used, shall be listed on the Field QC Plan.

5.2.3 Process control sampling, testing, and inspection should be an integral part of the contractor's quality control system. In addition to the above requirements, the Contractor's QC Plan should document the process control requirements shown in Table 1 of Attachment 1. The process control activities shown in Table 1 are considered to be normal activities necessary to control the production and placement of a given product or material at an acceptable quality level. To facilitate the Division's activities, the Contractor, as per ML-25, shall retain all completed gradation samples until further disposition is designated by the Division.

5.2.4 All sampling and testing shall be in accordance with the methods and procedures required by the Specifications. Measuring and testing equipment shall be standard and properly calibrated as per the specified test procedures. If alternative sampling methods, procedures, and inspection equipment are to be used, they shall be detailed in the QC Plan. Any QC testing that is not performed in accordance with the methods and procedures required by the Specifications shall be considered an invalid test, and the applicable penalty for the cost associated with that test, in accordance with MP

109.00.~~20~~21, will be assessed to the contractor, along with the applicable price adjustment in Section 105.3. The test specimen(s) represented by an invalid test shall be considered as not meeting Specifications and documented accordingly. The Division may, however, use the results of an invalid test to determine if material may be accepted and allowed to remain in place and if payment may be made for the material represented by the invalid test.

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

5.2.4.2 Any Laboratory which tests the hardened concrete cylinders for the Contractor, for quality control purposes, shall be listed in the Contractor's QC Plan for field operations. This Laboratory shall provide evidence that it meets the applicable requirements in ASTM C1077, pertaining to testing hardened concrete cylinders, for a concrete testing laboratory, including curing facilities, testing equipment, technician proficiency, participation in the Cement and Concrete Reference Laboratory (CCRL) Concrete Proficiency Sample Program (PSP), Quality Management System documentation, and recordkeeping. The only test required for these laboratories, in the CCRL Concrete PSP, is ASTM C39 (AASHTO T 22), but it is recommended that the laboratory perform all the field test portions of these Proficiency Samples and maintain the results of these tests, in order to evaluate any root cause issues pertaining to compressive strength. Each Laboratory shall be inspected and evaluated initially, and at least once every regular inspection tour cycle (approximately 30 months) by the CCRL. The ASTM standards pertaining to testing concrete cylinders, with which the subject laboratory must comply, include ASTM C39 (AASHTO T 22), ASTM C617 (AASHTO T 231) or ASTM C1231, and ASTM C511 (AASHTO M201). The Personnel Qualification requirements in Section 6 of ASTM C1077 regarding PE direction, Laboratory Supervisors, and concrete laboratory personnel testing certifications also apply, except that a Laboratory Supervisor with at least five years' experience in construction materials testing shall be a permissible substitution for the licensed professional engineer. Subsequent documentation shall be provided to the Division showing that the subject Laboratory and personnel meet the applicable requirements of ASTM C1077, pertaining to testing concrete cylinders, for a concrete laboratory.

5.2.4.3 Any Laboratory which desires to test Contractor hardened concrete QC specimens on WVDOH projects shall submit the evidence/documentation, required in Section 5.2.4.2, confirming compliance with ASTM C1077, with regards to testing concrete cylinders, to MCS&T Division at the following e-mail address: DOHMCSnTconcretelab@wv.gov. MCS&T Division will review this submittal. In this submittal, the subject Laboratory shall also explain how all deficiencies noted in the CCRL Laboratory Inspection Report have been addressed. All deficiencies noted in the CCRL Laboratory Inspection Report shall be resolved to the satisfaction of the Division within 90 days from the date of the CCRL Laboratory Inspection Report. Once MCS&T Division determines that the subject Laboratory is in compliance with th

e 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. 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.

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

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

Where:

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

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

5.2.6 Miscellaneous Concrete:

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

5.2.6.1 Miscellaneous concrete shall be defined as relatively small quantities, not exceeding 25 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

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

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~~

5.2.6.2 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.

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

5.2.7 Documentation:

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

5.2.8 Charts and Forms:

All conforming and non-conforming inspections and test results shall be kept complete and shall be available at all times to the Division during the performance work. Forms shall be on a computer-acceptable medium where required. Batch ticket data shall be documented in accordance with the applicable section of MP 601.03.50, with a copy to be submitted to the District Materials Section within 72 hours of the concrete placement. Gradation data shall be documented on WVDOH form T300 using the material codes listed in the online computer systems user guide. The original gradation data shall be submitted to the District Materials Section within 72 hours of obtaining the gradation sample. Test data for (PCC) shall be charted in accordance with the applicable requirements of MP 601.03.52. Gradation test data shall be plotted in accordance with the applicable requirements of MP 300.00.51. The Contractor may use other types of control charts as deemed appropriate by the Division. It is normally expected that testing and charting will be completed within 48 hours after sampling. The Contractor shall also ensure that all Material Suppliers prepare and submit the HL-441 form (weekly supplier report) in a timely manner

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

5.2.9 Batch Tickets

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

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

1. Producer/Supplier Code
2. Producer/Supplier Name
3. Producer/Supplier Location
4. Mix Design Laboratory Reference Number
5. Date
6. Sequence Number
7. Volume (yd^3)
8. Time Batched
9. Time Unloaded

10. Contract Identification Number (CID #)
11. Federal Project Number (If applicable)
12. State Project Number
13. Material Code
14. Material Name
15. Water Allowed (Gallon)
16. Water at Plant (Gallon)
17. Weight of Ice at Plant (lb.)
18. Water at Job (Gallon)
19. Weight of Cement (lb.)
20. Supplementary Cementitious Material(s) (SCM) (lb.)
21. Weight of Fine Aggregate (lb.)
22. Weight of Coarse Aggregate (lb.)
23. Admixture Name(s) and Dose (ounces)
24. Temperature (^{o}F/)
25. Cylinder I.D.
26. Initial Counter
27. Final Counter
28. Target Consistency (in)
29. Actual Consistency (in)
30. Target Air (%)
31. Actual Air (%)
32. License Number of Haul Unit.

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

1. Producer/Supplier Name
2. Mix Design Laboratory Reference Number
3. Date
4. Sequence Number
5. Volume (yd^3)
6. Time Batched
7. Time Unloaded
8. CID#
9. Federal Project Number (If applicable)
10. State Project Number
11. Material Code
12. Material Name
13. Water Allowed (Gallon)
14. Water at Plant (Gallon)
15. Weight of Ice at Plant (lb.)
16. Weight of Cement (lb.)
17. Weight of SCM (lb.)

18. Weight of Fine Aggregate (lb.)
19. Weight of Coarse Aggregate (lb.)
20. Admixture Name(s) and Weight(s) (ounces)
21. Temperature (^{o}F/)
22. Target Consistency (in)
23. Actual Consistency (in)
24. Target Air (%)
25. Actual Air (%)
26. License Number of Haul Unit.

5.2.9.3 The batch ticket in the case of either type of concrete shall be a batch ticket prepared by the plant. This ticket must be computer generated with blank fields provided in which all of the required data shall be recorded. The data items listed above that are completed in the field (such as Time Unloaded, Actual Consistency, etc.) must have a field on the batch ticket for completion. Volume is to be reported to the nearest 0.01 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).

5.2.9.4 As per the requirements of Section 109.20.1 of the Specifications, an e-ticket shall be provided to meet these requirements.

5.2.10 Corrective Action:

The Contractor shall take prompt action to correct conditions, which have resulted, or could result, in the submission to the Division of materials and products, which do not conform to the requirements of the Contract documents.

5.2.11 Non-Conforming Materials:

4.2.11.1 The Contractor shall establish and maintain an effective and positive system for controlling non-conforming material, including procedures for its identification, isolation and disposition. Reclaiming or reworking of non-conforming materials shall be in accordance with procedures acceptable to the Division. All non- conforming materials and products shall be positively identified to prevent use, shipment, and intermingling with conforming materials and products. Holding areas, mutually agreeable to the Division and the Contractor shall be provided by the Contractor.

5.2.12 Types of QC Plans:

5.2.12.1 QC Plans which are intended for use on more than one project shall be defined as Master QC Plans. Section 5.3 outlines the procedures for Master QC Plan submittal and approval.

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

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

5.2.12.4 Once any QC Plan is approved for a 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

5.3.1 The intent of Master QC Plans is to facilitate the approval process in a more uniform manner. Master QC Plans can be submitted to the Division by the Contractor when their workload in a given District is routinely repetitive for the year.

5.3.2 The Contractor shall submit a Master Field QC Plan yearly to each District in which they have work (see Attachment 2). If the Contractor does not have work in a given District for the year, then a Master Field QC Plan does not need to be submitted to that District.

5.3.3 The Producer/Supplier shall submit a Master Plant QC Plan at the beginning of each year to the District in which their plant is located (see Attachment 3).

5.3.4 The District will review the submitted Master QC Plans to see if they meet the applicable requirements of Sections 5.2 thru 5.2.11.1 and assign a Laboratory Reference Number to each QC Plan upon approval, for future referencing. The District will acknowledge approval of each Master QC Plan to the Contractor and/or Producer/Supplier by letter (see Attachment 4), which will include the Laboratory Reference Number and a copy of the approved Master QC Plan. This will then be scanned and placed in ProjectWise under the appropriate District's Org for that Contractor and/or Producer/Supplier.

5.3.5 Once a 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).

5.3.6 The Master Field and Plant QC Plans shall be valid for the duration of one calendar year beginning on January 1st and ending on December 31st. The Master Plant QC Plan will also cover maintenance purchase order concrete for the year.

6. ACCEPTANCE SAMPLING AND TESTING

6.1 Acceptance sampling and testing is the responsibility of the Division. Quality control tests by the Contractor may be used for acceptance.

6.2 The Division shall sample and test for applicable items completely independent of the contractor at a frequency equal to approximately ten (10) percent of the frequency for testing given in the approved QC Plan. Witnessing the contractor's sampling and testing activities may also be a part of the acceptance procedure, but only to the extent that such tests are considered "in addition to" the ten (10) percent independent tests.

6.3 Results from independent tests conducted by the Division for gradation, entrained air, consistency, and strength will be plotted on the Contractor's quality control charts with a red circle but are not to be included in the moving average. When the Contractor's tests are witnessed, the results are circled on the control chart in red and are to be included in the moving average calculations.

6.4 Results from both independent tests and witnessed tests will be evaluated in accordance with MP 700.00.54. If a dissimilarity is detected, an investigation shall be immediately initiated to determine the cause of the dissimilarity.

7. ABSENT TESTING OF MATERIAL

7.1 If the Contractor fails to perform testing of the material in accordance with the Contractor's Division Approved Quality Control Plan, payment for the portion of the item represented by the absent test shall be withheld, pending the Engineer's decision whether or not to allow the material to remain in place. Testing includes both performing the test and submitting the results as per MP 109.00.21.

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

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

MP 601.03.50 Steward – Cement and Concrete Section
RLS:Tt
Attachments

TABLE 1
CONTRACTORS PROCESS CONTROL REQUIREMENTS
STRUCTURAL CONCRETE AND
PORTLAND CEMENT CONCRETE PAVEMENT

	Minimum frequency*
A. PLANT AND TRUCKS	
1. Mixer Blades	Prior to Start of Job and Weekly
2. Scales	
a. Tared	Daily
b. Calibrate	Prior to start of Job
c. Check Calibration	Weekly
3. Gauges and Meters-Plant and Truck	
a. Calibrate	Yearly
b. Check Calibration	Weekly
4. Admixture Dispenser	
a. Calibrate	Prior to Start of Job
b. Check Operation and Calibration	Daily
B. AGGREGATES	
1. Fine Aggregate	
a. Gradation	Per section 601.3.2.4 of the Specifications
b. Moisture	Daily

2. Coarse Aggregates

a. Gradation	Per section 601.3.2.4 of the Specifications
b. Percent passing No. 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 ~~T 23~~ R 100 and MP 601.04.20. They shall be tested in accordance with AASHTO T 22 and the applicable section of the Standard 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 WVDOH 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 project.

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

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

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

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

Reclaiming or reworking of non-conforming materials shall be in accordance with procedures acceptable to the Division.
Our company will specify and provide holding areas, which shall be mutually agreeable by the Division and Contractor.

Very Truly Yours,

_____
Company Official, Title

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

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

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

Dear Sir,

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

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

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

Very truly yours,

_____
Name, Title

Example
COMPANY LETTERHEAD

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

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

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

Dear Mr./Ms./Mrs. _____,

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

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

Very truly yours,

_____

Company Representative

Example
COMPANY LETTERHEAD

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

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

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

Dear Mr./Ms./Mrs. _____,

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

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

Very truly yours,

_____

Company Representative

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

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

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

Project CID#: ########
Fed/State Project #: NHPP- ## - ####-##
Description: Falling Slide
County: 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:

WVDOT 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

MATERIALS PROCEDURE

STANDARD METHOD FOR DETERMINING THE STABILITY OF PORTABLE SIGN STANDS

1. PURPOSE

1.1 To establish a procedure for determining the stability (acceptable wind resistance) for portable sign stands.

2. SCOPE

2.1 This procedure shall apply to all portable sign stands submitted for inclusion on the Division's Approved Products List (APL).

2.2 This testing shall be done in addition to the MASH testing as described in the Specifications.

3. REFERENCED DOCUMENTS

3.1 MP 106.00.02 - Procedure for Evaluating Products/Processes for Use in Highway Construction.

3.2 MP 106.00.21 - Acceptance Procedure for Mash Compliant Roadside Departure Hardware.

4. TESTING PROCEDURE

4.1 The manufacturer's portable sign stand shall be assembled according to the manufacturer's instructions on a firm concrete or asphalt surface.

4.1.1 The testing technician shall inspect the device to ensure that it is functioning properly as per the manufacturer's standards.

4.2 A 36"x36" or 48"x48" diamond warning sign or other temporary sign shall be placed in the stand according to manufacturer's instructions.

4.3 Stands shall be secured such that there is no potential for sliding. This securing mechanism shall in no way alter the stability of the stand.

4.4 Attach the dynamometer force gauge to the top of the sign stand. With an even motion, parallel to the ground surface at a 90-degree angle to the back of the sign, measure the force required to "tip-over" the sign.

4.4.1 A final pulling for shall be recorded as the maximum force exerted before the sign becomes unstable and falls.

4.5 Repeat the above step two more times and calculate the average of the 3 readings.

4.6 The acceptable minimum value shall be XX lbs.

5. APPROVAL OF PORTABLE SIGN STANDS

5.1 The results of the described test as well as the MASH testing results shall be presented to the Roadway Departure Task Force. The approval of these items shall be at the discretion of this Task Force as described in MP 106.00.21.

Signature Block

RLS:Bm

Specification Change:

715.9.6.1-Product Submission and Approval: Stands to be considered for inclusion on the Division's Approved Products List (APL) shall be submitted to the Materials Division following the current procedures specified in MP 106.00.02. The Division maintains an APL of MASH compliant stands only. Stands utilized based on compliance with NCHRP-350 are not required to be listed on an APL.

The manufacturer should include all relevant documentation and information, including but not limited to Product Data Sheets, Product Flyers, Manufacturer Product Specifications, Product Bulletins, Engineering Drawings, and crash testing performance documentation. The crash testing performance documentation to be submitted shall be in accordance with official guidance issued by the WVDOH.

The stands shall be evaluated as per MP 715.09.20, "Standard Method for Determining the Stability of Portable Sign Stands."

Approvals of stands may be rescinded based on performance on Division projects determined to be non-compliant with these specifications.

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 Sections 2.2, 2.3 and 2.4 of this document.

2. REFERENCED DOCUMENTS

2.1 WVDOH Standard Specifications, Current Edition.

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

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

2.4 Build America, Buy America Act, Section 70914.

2.5 Office of Management and Budget (OMB) Memorandum M-22-11, dated April 18, 2022.

~~2.5~~2.6 West Virginia Notary Handbook, Current Edition.

3. ACCEPTANCE OF MATERIALS

3.1 This procedure applies to the following:

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

3.2 Unless there is an approved exception as outlined in this MP, all applicable materials on construction projects shall conform to the requirements of Section 106.1 of the WVDOH Standard Specifications.

3.3 Buy America Requirements only apply to articles, materials, and supplies that are permanently incorporated into the project. It does not apply to materials brought to the construction site, and removed at, or before the completion of the infrastructure project, such as tools, equipment, temporary scaffolding, or traffic control devices.

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

3.5 Steel and Iron.

3.5.1 Pursuant to Buy America Requirements, all manufacturing processes for steel and iron materials must take place in the United States. This includes all processes from the initial melting stage through application of coatings.

3.6 Manufactured Products.

3.6.1 Pursuant to Buy America Requirements, all Manufactured Products must be produced in the United States, and the cost of the components of the Manufactured Product that are mined, produced, or manufactured in the United States shall be greater than 55 percent of the total cost of all components of the Manufactured Product.

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

3.7 Construction Materials.

3.7.1 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.

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

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

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

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

3.8 Buy America Certification.

3.8.1 When Buy America Requirements apply, the Contractor shall furnish a notarized Certificate of Compliance signed by a company 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.

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

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

3.8.3.1 Title: Buy America Certification of Compliance.

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

3.8.3.3 The Name of the Customer.

~~3.8.3.4 The shipping date of the material.~~

~~3.8.3.5~~3.8.3.4 A company statement that demonstrates compliance with Buy America Requirements.

~~3.8.3.6~~3.8.3.5 The statement: "In the event where a supplied material does not meet applicable Buy America Requirements, any payments made for the associated material shall be returned to the Division."

~~3.8.3.7~~3.8.3.6 The Contract ID for the Material (if applicable).

~~3.8.3.8~~3.8.3.7 Both the Federal and State Project Number for the Material (if applicable).

~~3.8.3.9~~3.8.3.8 The name of the material and/or material code reference in the Certificate of Compliance. This material name shall be a clear, common name of the material that is comparable to the AWP Material Name. Part Numbers, etc., may also be on the document if the company wishes.

~~3.8.3.10~~3.8.3.9 The Line Item for the Material (if applicable).

~~3.8.3.11~~3.8.3.10 The Quantity of the Material. ~~Shipped.~~

~~3.8.3.12~~3.8.3.11 Signature of the Company Official and date.

~~3.8.3.13~~3.8.3.12 The document must be notarized as per the "West Virginia Notary Handbook."

3.8.4 Attachment 1 shows a sample Certificate of Compliance.

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

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

4. BUY AMERICA MINIMAL USE EXCEPTIONS

4.1 Steel and Iron Materials.

4.1.1 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."

4.1.2 Authority for determining applicability and issuance of a minimal use exception for steel and iron materials has been delegated to the West Virginia Department of

Transportation through its Stewardship and Oversight Agreement with the FHWA West Virginia Division Office.

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

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

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

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

4.2 Steel Products.

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

4.2.2 Procedure for granting a minimal use exception from West Virginia domestic steel requirements.

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

4.2.2.2 If the District Construction Engineer determines a minimal use exception is applicable and appropriate, they will draft a letter to the director of Purchasing Division requesting the minimal use exception. The letter shall demonstrate that the cost of the foreign steel products to be incorporated into the project do not exceed one-tenth of one percent (0.1 percent) of the total contract cost or $2,500, whichever is greater. Attached to the letter shall be documentation (e.g., invoices) which demonstrates that the cost of the foreign steel products requested to be used is the cost of the materials as they are delivered to the project.

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

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

4.3 Construction Materials.

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

5. BUY AMERICA WAIVERS

5.1 Steel and Iron Materials.

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

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

6. BUY AMERICA MATERIALS

6.1 Attachment 1 includes a sample Certificate of Compliance

6.2 Attachment 2 includes a list of materials and products used in WVDOH construction projects and the applicability of Buy America Requirements.

6.2.1 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.

6.2.2 Attachment 3 includes OMB Memorandum M-22-11, dated April 18, 2022, for additional guidance.

7. NON-COMPLIANCE

7.1 In the event of non-compliance, the material shall be removed and replaced at the Contractor's expense.

7.2 The project shall withhold payment for the portion of the item represented by the material until the Certificate of Compliance is provided.

~~6.3~~7.3 No item or material may be "non-participated" to avoid Buy America, Build America project compliance.

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

MP 106.10.50 Steward – Materials Control Section
RLS:B
ATTACHMENTS

Buy America Certification of Compliance

Acme Manufacturing Company
123 Main Street
Charleston, WV 25302

Customer
Stark Construction Company
413 Kanawha Boulevard
Charleston, WV 25305

Ship Date: 10/31/2023

The below listed materials and products meets all the requirements of all Federal and State Laws for Buy America, including but not limited to: Chapter 5, Article 19 and Chapter 5A, Article 3 Section 56 of the West Virginia Code; 23 U.S.C. 313 Buy America, 23 CFR 635.410 Buy America Requirements, and Build America, Buy America Act, Section 70914. In the event where a supplied material does not meet applicable Buy America Requirements, any payments made for the associated materials shall be returned to the Division.

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

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

Line: 0020	526.003.004 - Widget, Part Qi	500 Cubits
Line: 0025	596.003.004 - Widget, Part Hr	300 Cubits

Jonathan Doe, Quality Assurance Manager

Attachment 2: A sample from M-22. Full document is available at the WVDOH MCST Toolbox[1].

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

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

DOH-M-22 WVDOH Buy America Requirement Materials

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

DOH-M-22 WVDOH Buy America Requirement Materials

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

DOH-M-22 WVDOH Buy America Requirement Materials

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

DOH-M-22 WVDOH Buy America Requirement Materials

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

DOH-M-22 WVDOH Buy America Requirement Materials

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

DOH-M-22 WVDOH Buy America Requirement Materials

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

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

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

Note: AWP Material Code is for internal use only.

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

MATERIALS PROCEDURE

CRITERIA TO APPROVE MANUFACTURERS OF ALUMINUM SHEETING FOR TRAFFIC SIGNS

1. PURPOSE

1.1 To establish a procedure for approving manufacturers of aluminum sheeting acceptable for use on West Virginia Division of Highways (WVDOH) projects.

1.2 To establish a procedure for maintaining a record of such information.

2. SCOPE

2.1 This procedure shall apply to all aluminum sheeting used in the manufacturing of traffic signs for use on West Virginia Division of Highways (WVDOH) projects.

3. APPLICABLE DOCUMENTS

3.1 WVDOH Specifications for Roads and Bridges Section 661

3.2 WVDOH Approved Products List (APL) for Aluminum Sheeting for traffic signs

3.3 ASTM B209

3.4 WVDOH Form HL-468

4. ACCEPTANCE PROCEDURE

4.1 For aluminum sheeting to be evaluated for acceptance, the manufacturer must comply with the specifications given in section 661 of the WVDOH Specifications for Roads and Bridges.

4.2 In order for a manufacturer to be considered as an approved source on the WVDOH Approved Products List (APL) for Aluminum Sheeting, they must first submit a new product evaluation request. This request may be completed by submitting Form HL-468 “Preliminary Information for New Product Evaluation”. This form can be found on the MCS&T Division’s Materials Procedure Webpage. Once completed, Form HL-468 shall be submitted to the Materials Control, Soils and Testing (MCS&T) Division via email to the New Products Evaluation email address: DOHNewProducts@wv.gov

4.3 After receipt of the completed Form HL-468, MCS&T Division shall distribute the information to applicable parties for evaluation. This preliminary evaluation shall determine the need/usefulness of the product in WVDOH projects.

4.3.1 If the preliminary review indicates that the manufacturer meets specifications, MCS&T Division will sample the material at the manufacturer and perform an evaluation. The sampling will include but may not be limited to: one 12-inch by 12-inch sample of each alloy being supplied. The evaluation will consist of a review of product specifications, certified test data, and manufacturer quality control (QC) procedures.

4.3.2 If the test results from the sample(s) or the evaluation indicate that the manufacturer or material do not meet specifications, the manufacturer will be notified by MCS&T. The manufacturer will be reconsidered for approval once proof of compliance and corrections are supplied to MCS&T Division.

4.4 Once the manufacturer and product have been deemed compliant and approved for use in WVDOH projects, MCS&T Division will add the manufacturer to the APL as per MP 106.00.03. The manufacturer will be given written notification of this approval, along with their assigned Lab Number showing their company has been deemed compliant and approved to provide aluminum sheeting to WVDOH projects. This approval will remain valid for two years.

4.5 Two years after the initial acceptance and addition of the manufacturer to the APL, and randomly if deemed necessary, MCS&T Division will reevaluate/review the manufacturer to determine if their product still meets the applicable WVDOH specifications

4.5.1 MCS&T Division will contact manufacturers currently listed as approved sources on the APL to discuss and set up on-site random sampling of approved products. Product samples needed for review are as follows: one 12-inch by 12-inch sample of each alloy being supplied by the approved source to WVDOH projects. Each sample must be in compliance with the criteria given in section 661 of the WVDOH Specifications for Roads and Bridges.

4.6 If the review indicates that the product is in compliance with specifications, it will be accepted without further evaluation. The manufacturer will receive written notification that they have been deemed compliant and that they will remain as an approved source on the APL until the next review. Included in this letter will be the new Lab Number that reflects the year the review was completed.

4.7 If the review indicates that the product was not compliant with specifications, then MCS&T Division will notify the manufacturer, and further testing and/or evaluation will be performed by MCS&T Division. The manufacturer will receive instructions regarding any additional necessary submittals. This evaluation and submittals will include but not limited to further sampling, certified test data, and proof of quality control procedures.

4.7.1 If the manufacturer has been deemed compliant even after this further evaluation, the manufacturer will be notified. Written notification will be sent to the manufacturer, as outlined in Section 4.6, notifying them that they will remain on the APL.

4.7.2 If the manufacturer has been deemed non compliant even after further evaluation, the manufacturer will be notified. Written notification will be sent to the manufacturer notifying them that they are being removed from the APL and explaining the reason for this revocation decision. The manufacturer will be reconsidered for re-approval once proof of specification compliance and corrections are supplied.

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

RLS:Hd

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

MATERIALS PROCEDURE

CRITERIA TO APPROVE FENCE PRODUCER/SUPPLIERS AND THEIR MATERIALS.

1. PURPOSE

1.1 To establish procedures for qualifying Producer/Suppliers of fence materials acceptable for use on West Virginia Division of Highways (WVDOH) projects.

1.2 To establish a procedure for maintaining a record of such information.

1.3 To establish a procedure for transmitting such information to the WVDOH Districts and contractors on WVDOH projects.

2. SCOPE

2.1 This procedure shall apply to all suppliers who supply fence materials such as chain link fence, farm field fence, fence posts, tie wire, bolts, nuts, gate latches, barb wire, and other related fence materials.

2.2 This procedure shall apply to all fence products used by WVDOH projects unless project plans state otherwise.

3. APPLICABLE DOCUMENTS

3.1 WVDOH Standard Specifications for Roads and Bridges and Supplemental Specifications.

3.2 UL - Underwriters Laboratories Specifications

4. ACCEPTANCE PROCEDURE

4.1 With each shipment of fence material to a WVDOH project, the fence Supplier shall provide shipping documents which contain an APL source number reflecting materials meeting quality specified by the WVDOH.

5. ACCEPTANCE PROCEDURE (APPROVED SOURCE)

5.1 For a Producer/Supplier to be considered an approved source of fence items as stated in Section 2.1 the supplier must comply with the following requirements where applicable.

5.2 The Producer/Supplier is to complete and submit form HL-468 attainable from the website[1] and be submitted to the WVDOH Materials Control, Soils and Testing Division(MCS&T).

5.3 Once form HL-468 form is correctly submitted, an on-site investigation evaluation will be conducted by an Evaluator from the WVDOH at the supply distribution location, to determine if the proposed location should be listed as an approved source for fence items.

5.4 The initial evaluation and yearly renewal of the Producer/Supplier shall be conducted using guidelines set forth in Attachment 1 where applicable. Each supplier's approval status will be analyzed at the time of APL reapproval.

5.5 At the initial and subsequent annual investigation evaluations, all appropriate management, sales, and warehousing personnel will be made aware of specifications, shipping policies and requirements to sell and ship fence materials to WVDOH projects.

5.6 After the initial investigation evaluation has been completed, ~~the WVDOH~~ MCS&T personnel ~~evaluator~~ shall document the findings in an inspection report, indicating~~e~~ that the location was evaluated and whether it met the criteria to be included on an APL for fence items. If the report notes that the Producer/Supplier didn't meet the required criteria, then the reasons why will be stated in the inspection report.

5.7 Providing the evaluation was found to meet specifications, the inspection report shall be signed by ~~the~~ MCS&T personnel ~~Evaluator~~ and shall be given a laboratory approval number. This laboratory approval number will be the APL number used by the WVDOH. An example of the inspection report can be seen in Attachment 2.

5.8 The signed inspection report is a certification from MCS&T Division ~~the Evaluator~~ that the Producer/Supplier has met the criteria to be included on the APL for Fence Producer/Suppliers. This report will be filed under the Producer/Supplier's name in the WVDOH electronic filing system.

5.9 Once the above requirements are met, Producer/Supplier approval status can be verified by accessing the WVDOH online APL for fence items.

5.10 If a Producer/Supplier is removed from approved source status for not meeting specification requirements, then the Producer/Supplier will be removed from the APL listing for one year. After a year, the Producer/Supplier may be reevaluated to ensure corrective measures have been met.

6. ACCEPTANCE PROCEDURES (NON-APPROVED SOURCE)

6.1 Any fence materials not supplied by an approved source are to be accepted or rejected by the direct coverage process.

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

6.2 If direct coverage inspection is required, the inspection or evaluation will conclude with a 7-digit Laboratory reference number indicating approval or rejection.

7. DOCUMENTATION REPORT

7.1 The approved source list for Producer/Suppliers of fence items used on WVDOH projects may be updated at any time with the addition of a new facility, or with the removal of a facility.

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

MP 712.05.57 Steward – Metals Section
RLS:H
ATTACHMENTS

Attachment 1

Below is a summary of topics that the prospective Producer/Supplier of fence materials will be evaluated in accordance with.

1 To ascertain if the supply location is a business or a storage lot, meaning is the location a bare storage lot with material or a location with an office building with salespeople.

2 To determine if the location is an industrial Producer/Supplier or a homeowner quality Producer/Supplier. Meaning does the location supply for industrial applications or residential applications.

3 To determine if the location is a wholesaler/retailer or just a retailer, meaning does the location provide material to business or to retail customers.

4 To inform sales personnel that materials supplied such as barbed wire, chain link fence, farm field fence, steel posts, post braces, gate frames come from established APL lists, and where to find them online if necessary. All gates must have padlock hardware equipped prior to shipment.

5 To inform sales personnel of shipping procedures, meaning documents must have lab numbers, CID numbers, if direct coverage. If shipped from an approved source, then sales tracking numbers and APL numbers must be listed for WVDOH District personnel.

6 Informing sales personnel of what materials are covered under buy American requirements and what materials are not subject to buy American. This is done mostly during the outdoor evaluation at inventory during the initial evaluation.

7 An outside and inside inventory evaluation of materials describing what materials have their own APL and what do not. Informing what materials are not covered by locations with anAPL number.

8 Discuss with sales personnel how to ship backorder material and partial material, also drop shipped materials, or how materials may be obtained by other sources, such as other approved sources or other non-approved sources.

9 Discuss with sales personnel about grounding kits, and that they are to be approved by location APL and not by other means.

10 Discuss with sales personnel that all items shall be coated by hot dip galvanizing or may be aluminumized by deposit coatings, all requiring 20 yr. minimum guarantee unless project plans indicate otherwise

11 All right of way fence shall meet requirements of WVDOH Specification Section 608.

12 Discuss with sales personnel that silt fence is not covered by location APL but is covered by other means.

13 Discuss with sales personnel that all right of way fence posts, braces and grate frames shall meet AASHTO M181 requirements and be on their own APL number covered by other means.

14 Discuss with sales personnel that all studded tee posts shall meet AASHTO M281/ASTM A702 requirements and be approved on their own APL number

15 Discuss with sales personnel that bolts and hardware must be hot dipped galvanized or be cadmium coated to ASTM B766 specifications. And be of industrial quality.

16 Discuss with sales personnel that chain link fence shall be approved only if material meets AASHTO M181

17 Discuss with sales personnel that all barbed wire shall meet AASHTO M280 for the correct classification of barbed wire, class 1 unless otherwise specified by contractor.

Attachment 2

Below is an example of the report from the evaluator to certify that the location is suitable to be included on an APL for fence materials.

REPORT NUMBER	1112458
LOCATION EVALUATION REPORT	
SUBJECT:	Location evaluation of: Wombat Fence Products, Producer/Suppliers of fence items, located in Metropolis, Illinois
DATE OF REPORT:	October 27, 2021

1. INTRODUCTION

1.1 The purpose of this evaluation is to affirm confidence in the ability of Wombat Fence Products, of Metropolis, Illinois to supply industrial fence materials in accordance with WVDOH and ASTM international standards used in West Virginia Department of Transportation, Division of Highways (WVDOT/DOH) construction projects.

2. INVESTIGATION

2.1 In January 2022, Mr. Brice Banner of the WVDOH Materials Control, Soils and Testing Division traveled to Wombat Fence Products, in Metropolis, Illinois, to meet with Mr. Cecil Kent, General Manager, and Billy Wayne industrial sales coordinator, to discuss specifications and supply demands required by the WVDOH Additionally, an extensive evaluation tour of the entire manufacturing facility was conducted.

3. CONCLUSION

3.1 After the meeting and the supply location evaluation were completed, it was determined that fence materials provided by Wombat Fence Products, of Metropolis Illinois, did meet the requirements for fence materials used in highway construction on WVDOH projects where specified and the criteria noted in Attachment 1 of MP 712.05.57. It is recommended that Wombat Fence Products be added to the approved source list (APL) for fence materials.

Nicholas Fury
Evaluator

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

MATERIALS PROCEDURE

PERCENT OF SOLIDS IN THE LATEX USED IN LATEX MODIFIED COMPOSITIONS

1. PURPOSE

1.1 To set forth a procedure for determining the solids content of the latex for use in latex modified compositions.

1.2 This procedure shall be used to determine the solids content of all latex materials used in latex modified compositions.

2. EQUIPMENT

2.1 Aluminum weighing dishes (approximately six centimeters in diameter and two centimeters deep), Fisher 8-732 or equivalent.

~~2.2~~ A one dram glass lip vial with a cork stopper. ~~Glass vials with cork stoppers, (one dram capacity), Owens-Illinois 60900 or~~

~~2.3~~2.2 ~~equivalent.~~

~~2.4~~2.3 Analytical balance (accurate to 0.1 milligram).

Commented [1]: Ron's comment was correct the Owens-Illinois 60900 or equivalent is no longer available. The one dram is a capacity. So, we do not need to specify buying this glass vial from a specific company any longer. They can be bought on the internet on quite a few websites.

3. PROCEDURE

3.1 Weigh three aluminum dishes individually to 0.1 milligram. This is weight A.

3.2 Mix sample thoroughly.

3.3 Place sample into three vials, fill to approximately 2/3 of capacity, stopper immediately.

3.4 Weigh each vial and stopper. This is weight B.

3.5 Place approximately one gram of sample from the vial into the pre-weighed dish. Care should be taken to avoid getting the sample on outside of vial.

3.6 Immediately reweigh the vial and stopper. This is weight C.

3.7 Place samples in the oven at 141 + 20C for two hours.

3.8 Place samples in desiccator to cool.

3.9 Reweigh samples. This is weight F.

4. CALCULATIONS

$D = B - C$

Where D = sample weight

4.1 $E = F - A$

Where E = weight of solids

4.2 $S = \frac{E}{D} \times 100$

Where S = total solids in percent

4.3 The solids content of the sample is the average of the three tests.

4.4 If the range of the three tests exceeds 1.00 percent, repeat the test procedure.

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

RLS:Pj