

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

MATERIALS PROCEDURE

GUIDE FOR QUALITY CONTROL PLANS
FOR ASPHALT CONCRETE

1. PURPOSE

- 1.1 This procedure presents uniform Quality Control (QC) guidelines for Contractor (and/or Producer(s)) to develop their QC Plan. All items listed are believed necessary to assure adequate product QC.
 - 1.2 This procedure also creates a more uniform process for District Materials to review and approve Quality Control Plans for use on projects.
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2. SCOPE

- 2.1 This Material Procedure (MP) is applicable to, but not limited to the following Asphalt Concrete Items:
 - a. Base
 - b. Wearing
 - c. Patching and Leveling Courses
 - d. All P.W.L. Items
 - e. Skid
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3. GENERAL REQUIREMENTS

- 3.1 As stated in the Specifications, a QC Plan must be developed by the producer and submitted to the Engineer prior to construction. Acceptance of the Quality Control Plan by the Engineer will be contingent upon its concurrence with these guidelines. For this reason, the plan should clearly describe the methods by which the Quality Control Program will be conducted. For example, the items to be controlled, tests to be performed, testing frequencies, sampling locations and techniques all should be included and each item should be listed separately. Also, a detailed plan of action regarding disposition of non-specification material should be included. Such a plan should provide for immediate notification of all parties involved in the event non-conforming situations are detected. Attachment #1 may be used as an example Quality Control Plan for plant operations using all items that are applicable to the specific type of plant items produced. Attachment #2 may be used as an example Quality Control Plan for field operations using all items that are applicable to field work.

- 3.2 Inspection and testing records shall be maintained, kept current, and made available for review by the Engineer throughout the life of the contract. All other documentation, such as date of inspections, tests performed, temperature measurements, and any accuracy, calibration, or re-calibration checks performed on production or testing equipment should be recorded.
- 3.3 The Contractor shall maintain standard calibrated equipment and certified personnel in accordance with contract and specification requirements for the item(s) being produced.
- 3.4 The Division reserves the right to review all pertinent documents concerning equipment calibration used for testing and proof of certified personnel performing tests.

4. MASTER QUALITY CONTROL PLAN

- 4.1 The intent of a Master QC Plan is to facilitate the approval process in a more uniform manner. The contractor may submit a Master QC when their workload in a given District is routinely repetitive for the year.
- 4.1.1 The Contractor may submit a new Master QC Plan each year to each District in which they have or expect to have work. If the Contractor does not have work or does not have a history of work in a given District for the year, then a Master Field QC Plan shall not be submitted to that District. This is to prevent “blanket” submissions of QC Plans to Districts in which a Contractor doesn’t typically have work.
- 4.1.2 The District will review the submitted Master QC Plans to see if they meet the requirements for the Asphalt Items in the QC Plan. If accepted, the District shall assign a laboratory reference number to the Master QC Plan for future referencing. The District will acknowledge approval of each Master QC Plan to the Contractor by letter (see Attachment #3 for an example), 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.
- 4.1.3 Once a project has been awarded, if a Contractor elects to use the approved Master QC Plan on that project, the Contractor shall submit a letter requesting to use the Master QC Plan for that project. This letter must be on the Contractor’s letterhead, be addressed to the District Engineer/Manager or their designee, and contain the following information: project number, CID#, project description, type of QC Plan, and the laboratory reference number for the Master QC Plan. (See Attachment #4a and 4b for Plant and Field operations respectively for examples.)
- 4.1.4 The District shall review the referenced Master QC Plan to ensure it covers all items in the project. If the referenced Master QC Plan is found to be insufficient for some items on the project, the District shall request the Contractor to submit additional information for QC of those items as an addendum on a project specific basis. When the District is satisfied with the QC Plan for this project, a letter shall be sent to the Contractor acknowledging approval (see Attachment #5 for an example), with the following attached: the Contractor’s project QC Plan request letter and the Master QCP approval letter. This shall then be placed in the project’s incoming-mail mailbox in ProjectWise.

- 4.1.5 A Master QC Plan that has been approved for project use shall be good for the duration of that project, even if that project continues into future calendar years.
- 4.1.6 For the use of District 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, etc.
- 4.1.7 The Master QC Plan shall be valid for the duration of one calendar year beginning on January 1st and ending on December 31st.


5. ASPHALT CONCRETE FOR MAINTENANCE

- 5.1 The provisions of this MP will also apply to asphalt concrete plant run purchase orders that is picked up at the plant by the Division's Maintenance forces. Yearly Master Plant and Field QCP's apply to Laydown Asphalt Concrete Purchase Orders awarded to vendors. Exceptions to this are as specified in the Purchase Order Maintenance Contract.

6. ACCEPTANCE PLAN

- 6.1 The Asphalt Concrete Material shall be accepted in accordance with material's specific MP and the Standard Specifications.
- 6.2 Key Dates for Site Manager
- 6.2.1 Once the Quality Control Plan is approved for the project the key date shall be entered into the current ASSHTOWare software by the appropriate District Materials personnel. The first date entered shall be the date the Project Quality Control Plan letter is received. The second date shall be when the District approves the Quality Control Plan for use on the project.

DocuSigned by:



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Ronald L. Stanevich, P.E.

Director

Materials Control, Soils and Testing Division

RLS: CBe
ATTACHMENTS

ATTACHMENT #1 – EXAMPLE QC PLAN FOR PLANT OPERATIONS

Mr./Ms./Mrs _____
West Virginia Division of Highways
District: _____ Engineer/Manager
_____, West Virginia

Dear Mr/Ms./Mrs _____

Subject: Asphalt Concrete Yearly
Master Quality Control
Plan for Plant Operations

We are submitting our asphalt concrete hot-mix asphalt Quality Control Plan, developed in accordance with Section 401 of the _____ Standard Specifications, the _____ Supplemental Specifications, MP 401.03.50 and the _____ Special Provisions.

- | 1. <u>Make of Plant</u> | <u>Type</u> | <u>Location</u> |
|--|-------------|-----------------|
| <hr/> | | |
| 2. The Quality Control program is under the direction of _____ to be contacted at Plant/Office in person, by telephone # and /or email address: _____ | | |
| 3. Sampling and testing will be performed by qualified personnel as per WVDOH Specification Section 106 Control of Materials. | | |
| 4. The types of asphalt paving materials to be produced and controlled are as follows: | | |
| a. _____ | | |
| b. _____ | | |
| c. _____ | | |
| d. _____ | | |
| e. _____ | | |
| f. _____ | | |
| 5. Prior to production of the items, we will submit (on Division Form T-400) our plant mix formula for each type of mix. Only approved materials will be incorporated in the mix. | | |
| 6. During the production operations of the asphalt concrete we will perform at a minimum Quality Control tests in accordance with the attached schedule. | | |
| 7. All testing and evaluation will be completed within 24 hours of sampling and all documentation will be completed and submitted to the Division on approved processing forms within 72 hours or production will be halted until these items are current. | | |

ATTACHMENT #1 – EXAMPLE QC PLAN FOR PLANT OPERATIONS (CONTINUED)

8. Material found to be noncomplying shall not be incorporated into the roadway. In the event that non-specification material is incorporated into the project, the Division of Highways District Materials Supervisor will be notified immediately.
9. We will notify all appropriate Division of Highways personnel at least 24 hours before the scheduled work is to begin.
10. (Statement of disposition of nonconforming material)

Very truly yours,

Company Representative

ATTACHMENT #1 – EXAMPLE QC PLAN FOR PLANT OPERATIONS (CONTINUED)

GUIDE FOR QUALITY CONTROL PLANS FOR ASPHALT CONCRETE

TEST OR ACTION	FREQUENCY	TEST METHOD	METHOD OF DOCUMENTATIO
Construction of stockpile to prevent segregation intermingling	Constant	Visual	Diary
Coarse aggregate unit weight	One test before start of operation	AASHTO T19	T304
Stockpile & cold bin gradations	Plant setup and as needed to control production	AASHTO T27 and T11	T300
Calculate % aggregate from each bin, calibration cold bin	Plant setup		T415
Check feeder gate output at gate setting to be used	Plant setup. If bins overflow or run dry.		Plant Inspection Form and Diary
Select screen sizes	Plant setup		Plant Inspection Form
Determine hot bin gradation, calculate combined gradations	Weekly during production	AASHTO T27 and T11	T300 and T415
Calibrate hot bins, select gate openings, and calculate batch weights	Plant setup and change in material source		Plant Inspection Form and Diary
Check accuracy of scales	Plant setup and weekly accuracy checks. Zero balance and sensitivity each ½ day of operation	Construction Manual – 700 Series	Plant diary and T603
Calibrate asphalt pump, calculate settings	Plant setup		Plant Inspection Form
Check metering pump at setting to be used	Plant setup and monthly		Plant Inspection Form and Diary
Reset metering pump to compensate for temperature change	Plant setup and each temperature change of 10 °F (6 °C)		Plant Inspection Form and Diary
Adequate heated storage for liquid asphalt	Plant setup		Plant Inspection Form

ATTACHMENT #1 – EXAMPLE QC PLAN FOR PLANT OPERATIONS (CONTINUED)
GUIDE FOR QUALITY CONTROL PLANS FOR MARSHALL DESIGNED ASPHALT CONCRETE

TEST OR ACTION	FREQUENCY	TEST METHOD	METHOD OF
Calculating mixing time	Plant setup and when paddle pitch or dam gate changed		Plant Inspection Form and Diary
Ross Count (degree of coating)	Only if mixing time is less than 45 seconds	AASHTO T195	Diary
Coarse aggregate face fracture (Gravel only)	One test before start of operation Every 10,000 ton (9,000 Mg) thereafter	MP 703.00.21	T302
Complete mix face fracture (When using gravel)	One per week	MP 703.00.21	T302
Check moisture content of aggregate	Plant setup and daily		Diary
Temperature check	Minimum of one check of mix per hour at plant		Plant Control Chart and Diary
Asphalt Content	In accordance with WVDOH MP 401.02.27	AASHTO T308 (Method A)	T417, T423 and Control Charts
Aggregate Gradation (cold feed, hot bins, or completed mix)		AASHTO T27 plus T11 or AASHTO T30	T300, T404, or T417 Plus T425
Daily Mix Property Testing: Stability and Flow, % Air Voids, and % Voids-in-Mineral Aggregate (VMA)		AASHTO T245 or ASTM D5581, AASHTO T269, T166, T209, and MS-2 Manual	T406 and T423

ATTACHMENT #1 – EXAMPLE QC PLAN FOR PLANT OPERATIONS (CONTINUED)

**GUIDE FOR QUALITY CONTROL PLANS FOR
 SUPERPAVE DESIGNED ASPHALT CONCRETE**

TEST OR ACTION	FREQUENCY	TEST METHOD	METHOD OF DOCUMENTATIO
Calculating mixing time	Plant setup and when paddle pitch or dam gate changed		Plant Inspection Form and Diary
Ross Count (degree of coating)	Only if mixing time is less than 45 seconds	AASHTO T195	Diary
Coarse aggregate face fracture (Gravel only)	One test before start of operation Every 10,000 ton (9,000 Mg) thereafter	ASTM D5821	T302
Complete mix face fracture (When using gravel)	One per week	ASTM D5821	T302
Check moisture content of aggregate	Plant setup and daily		Diary
Temperature check	Minimum of one check of mix per hour at plant		Plant Control Chart and Diary
Gyratory Compaction	In accordance with WVDOH MP 401.02.29	AASHTO TP4	T419
Aggregate Gradation		AASHTO T30	T417 and T425
Asphalt Content		AASHTO T308 (Method A)	T417 and Control Charts
Percent Air Voids		AASHTO T166, T209, and T269	T419 and Control Charts
Percent Voids in Mineral Aggregate (VMA)		AASHTO PP-28	
Percent Voids Filled With Asphalt (VFA)		AASHTO PP-28	

ATTACHMENT #2 – EXAMPLE QC PLAN FOR FIELD OPERATIONS

Mr./Ms/Mrs _____
West Virginia Division of Highways
District: _____ Engineer/Manager
_____, West Virginia

Subject: Asphalt Concrete Yearly
Master Quality Control
Plan for Field Operations

Dear Mr./Ms/Mrs. _____

We are submitting our asphalt concrete hot-mix asphalt Quality Control Plan, developed in accordance with Section 401 of the _____ Standard Specifications, the _____ Supplemental Specifications, MP 401.03.50 and the _____ Special Provisions.

1. The field operation is under the direction of _____ by telephone # and /or email address: _____
2. _____ will be responsible for insuring that all items of work will comply with Division specifications.
3. During the placement operation of the asphalt concrete pavement we will perform, at a minimum, Quality Control tests as per the attached schedule. Sampling and testing will be performed by qualified personnel as per WVDOH Specification Section 106 Control of Materials.
4. All sampling and testing will be completed within the time limits specified by the Division or work will be halted.
5. Material found to be non-complying shall not be incorporated into the roadway. In the event that non-specification material is incorporated into the project, the Division representative will be notified immediately.
6. We will notify all appropriate Division personnel at least 24 hours before work is scheduled to begin.

Very truly yours,

Company Representative

ATTACHMENT #2 – EXAMPLE QC PLAN FOR FIELD OPERATIONS (CONTINUED)

GUIDE FOR QUALITY CONTROL PLANS FOR FIELD

TEST OR ACTION	FREQUENCY	TEST METHOD	METHOD OF DOCUMENTATION
Temperature of mix	1 per hour	Section 401 of Standard Specifications	Diary
Temperature of base	1 per hour	Section 401 of Standard Specifications	Diary
Temperature of mat	1 test per hour of placement	Section 401 of Standard Specifications	T401
Density	5 tests per 1000 feet (300 meters) of paving width or rollerpass when applicable.	Section 401 of Standard Specifications	T401 or T407
Tack/Prime Application Rate	Each load or per ½ day of operation whichever occurs first	Section 408/409 of Standard Specifications	Diary
Calibration of Nuclear Gauge	As per MP 717.04.21	As per MP 717.04.21	Factory Data Sheet
Distribution of Test Data	Within 24 hours of completion of testing of a Lot	As per MP 717.04.21	As per MP 717.04.21

ATTACHMENT #3 – MASTER PLAN ACCEPTANCE FOR CONSTRUCTION SEASON

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

RE: Asphalt Items Master QC Plan
Description: (Year) Construction Season

Dear Mr./Ms/Mrs. _____,

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

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,

Title

ATTACHMENT #4A – REQUEST TO USE MASTER QC FOR PLANT

Mr./Ms/Mrs. _____
WV Division of Highways
District ___ Engineer
_____, WV _____

RE: Asphalt Concrete Quality Control plan for Plant - Project

Fed. Project No. _____

State Project No. _____

Contract ID No. _____

County : _____

Description _____

Dear Mr./Ms/Mrs. _____,

We would like to use our approved Master Quality Control Plan, reference number _____ for the project referenced above.

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 email account _____

Very Truly yours,

Company Representative

ATTACHMENT #4B – REQUEST TO USE MASTER QC FOR FIELD

EXAMPLE

Mr./Ms/Mrs _____
WV Division of Highways
District ___ Engineer
_____, WV _____

RE: Asphalt Concrete Quality Control plan for Field - Project

Fed. Project No _____

State Project No. _____

Contract ID No. _____

County : _____

Description _____

Dear Mr./Ms/Mrs. _____,

We would like to use our approved Master Quality Control Plan, reference number _____ for the project referenced above.

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 project, by telephone _____ or at email account _____.

Very Truly yours,

Company Representative

ATTACHMENT #5 – DISTRICT ACCEPTANCE OF MASTER QC PLAN FOR SPECIFIC PROJECT

THE ACME COMPANY INC.
20 First St.
Somewhere, WV XXXXX

RE: _____ Asphalt Items QC Plan

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

Dear Mr./Ms/Mrs. _____,

Your request to use your Master Asphalt Items Quality Control Plan (**M# - #####**) for Asphalt Items on the project referenced above, has been reviewed and found to be acceptable for the following items:

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/District use

The Master Quality Control Plan can be reviewed in Projectwise at this Link:

WVDOT ORG>D0#>year>MASTER QC PLANS>Contractors or Plant>Contractor Name>Name of Quality Control Plan

Very Truly Yours,

Title