

Materials Procedures Committee Meeting

Meeting Date: 2/25/2020 - 1:00 PM

Materials Procedures Committee Meeting					Votes						
Meeting Date: 2/25/2020 - 1:00 PM					Up for Vote?	MCST	CA	TED	OPP	EGR	p/f
MP Number	Champion	MP Title									
1*	106.03.50 - Attachment	Dan Brayack	WEST VIRGINIA TECHNICIAN INSPECTOR CERTIFICATION PROGRAM HANDBOOK		y						
2*	700.00.06	Dave Matics	AGGREGATE SAMPLING PROCEDURES		y						
3&	707.04.10	Mike Mance, Michael Perrow	GUIDE FOR APPROVAL OF SUPPLEMENTARY CEMENTITIOUS MATERIALS (SCMs)		n						
	*Up for Vote										
	&New										

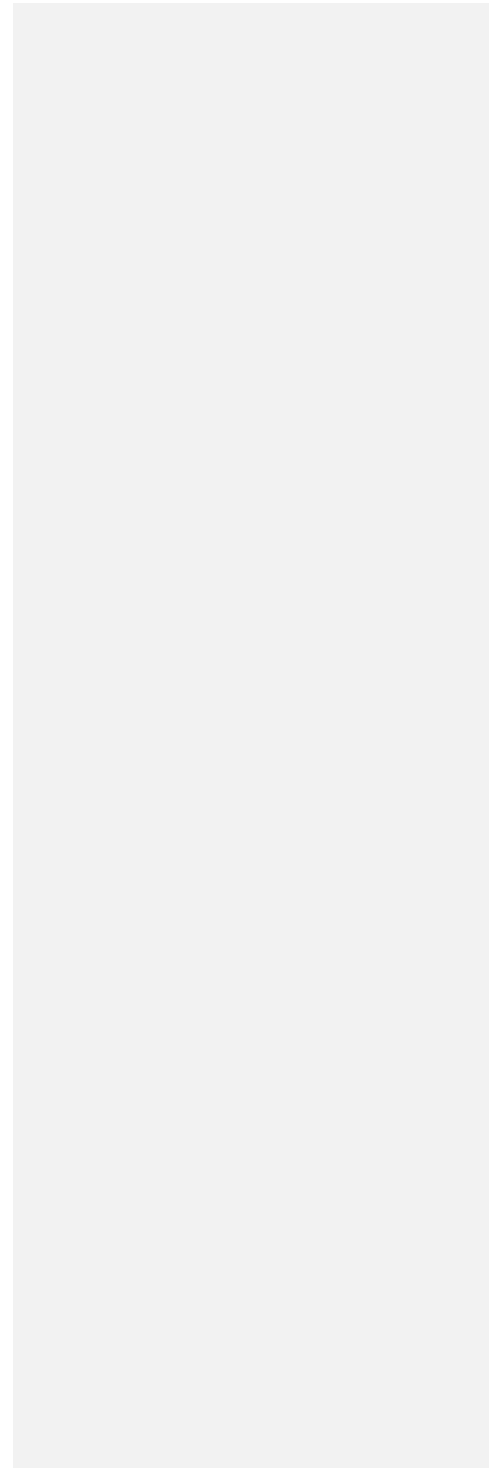
MP 106.03.50 Attachment

ISSUED: XX XX, 20XX

PAGE 1 OF 11

WEST VIRGINIA
TECHNICIAN INSPECTOR
CERTIFICATION PROGRAM
HANDBOOK

Photo/graphic removed to save inbox space



1. INTRODUCTION

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

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

This document, along with MP 106.03.50, is applicable to all requirements, guidelines, and other support documents of the Division of Highways that reference conditions, methods, and levels of qualification specific to the Division of Highways training and certification program.

There are **often** changes and additions to the TICP, so please, thoroughly review this document as well as the Materials Division **Website** to find out about any changes that may pertain to you

2. CERTIFICATION BOARD

As per MP 106.03.50 the certification board members shall be as follows:

1. ~~State Highway Engineer Human Resources Director~~
2. Materials Control Soils & Testing Director
3. Quality Assurance Training Program Administrator
4. Applicable Materials Control Soils and Testing Group Supervisor's

Deleted: ¶

3. APPLICATION AND CLASS SIGN-UP INSTRUCTIONS

For course registration, instructions, please visit the WVDOH MCST Webpage¹ for Instructions:

Commented [WTJ1]: Kind of confusing. Assume application means applying for an exam, but what does sign-up mean?

Commented [DB2R1]: Fixed, does that make sense Ted?

4. CERTIFICATIONS

The TICP offers certification classes in the following disciplines:

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

Deleted: ¶

Deleted: Soils & Aggregate Compaction Technician

Deleted: &

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

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

Deleted: <#>Asphalt Field & Compaction Technician Asphalt Plant Technician

5. CLASS SUPPLY LIST

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

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

Deleted: 2 -#2 Pencils

6. SPECIAL NEEDS AND REQUESTS

Applicants with special needs should notify the Training Certification Program coordinator prior to the class to ensure that the training location is prepared to accommodate their needs.

Deleted:

Deleted: insure

7. RECIPROCAL CERTIFICATIONS

The West Virginia Division of Highways may recognize reciprocity certifications from other states. Please see MP 106.03.51 for detailed instructions.

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

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

8. TRAINING

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

² <https://transportation.wv.gov/highways/contractadmin/specifications/Pages/default.aspx>

preparation for these exams.

The purpose of the schools is to provide helpful information and instruction for persons preparing to take the technician/inspector examinations. These courses are designed to provide instruction for persons with a basic foundation in the subject matter.

9. CERTIFICATIONS

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

Deleted: Following

10. AGGREGATE CERTIFICATIONS

10.1 Aggregate Technician

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

1. Specifications
2. Aggregate Specifications and Procedures
3. Aggregate Fundamentals
4. Sampling, Control, and Inspection of Aggregates
5. Aggregate Testing
6. Gradations
7. T11 Wash Test

After successful completion of the written examination, the applicant will be required to pass a practical examination consisting of his/her demonstration of testing common to normal aggregate quality requirements. Certification as an Aggregate Technician qualifies the employee, either Industry or Division, to perform sampling and/or testing of aggregates relevant to the quality control program or acceptance program respectively.

10.2 Aggregate Sampling Inspector

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

1. Specifications
2. Sampling Fundamentals
3. Sampling Methods and Equipment

There is no in-person class for the Aggregate Sampling Inspector Certification; the class is online-only and on-demand. The Aggregate Sampling Inspector Certification requires the successful completion of the examination. Certification as an Aggregate Sampling Inspector qualifies the

employee, either Industry or Division, to perform sampling of aggregates relevant to the quality control program or acceptance program respectively.

The test will be available online throughout the year, but may only be attempted twice per year. A score of 70 is required for passing.

11. COMPACTION CERTIFICATIONS

11.1 Soils & Aggregate Compaction Technician (SACT) - The written examination for the Soils & Aggregate Compaction Technician consists of the following areas:

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

After successful completion of the written examination, the applicant will be required to pass a practical examination demonstrating his/her proficiency in using the testing equipment. Certification of the Compaction Technician qualifies the employee, either Industry or Division, to conduct tests on all soil construction materials that require compaction testing.

12. CONCRETE CERTIFICATIONS

12.1 [Portland Cement Concrete Technician](#),

The written examination for a [Portland Cement Concrete Technician](#) consists of the following areas:

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

The [Portland Cement Concrete Technician certification](#) requires only the successful completion of the written examination; no practical examination is required. Certification of the [Portland Cement Concrete Technician](#) qualifies the employee, either Industry or Division, to make plant and mix adjustments, proportioning, and other duties.

12.2 [Portland Cement Concrete Inspector](#),

The written examination for a [Portland Cement Concrete Inspector](#) consists of the following areas:

Deleted: <#>

Asphalt & Field Compaction Technician (AFCT) – The written examination for the Asphalt & Field Compaction Technician consists of the following areas:

→

→ Specs

→ Compaction Test Procedures

→ Rad Safety

→ Test Procedures

→ Etc.

Deleted: Concrete Technician

Deleted: Concrete Technician

Deleted: Concrete Technician

Deleted: Concrete Technician

Deleted: Concrete Inspector

Deleted: Concrete Inspector

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

After successful completion of the written examination, the applicant will be required to pass a practical examination demonstrating his/her proficiency in conducting tests common to concrete quality control. Certification as a [Portland Cement Concrete Inspector](#) qualifies the employee, either Industry or Division, to perform sampling and/or testing of concrete relevant to the quality control program or acceptance program respectively.

Deleted: Concrete Inspector

13. ASPHALT CERTIFICATIONS

13.1 Asphalt Plant Technician

The written examination for the Asphalt Plant Technician consists of the following areas:

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

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

Deleted: <#>MIXTURE CERTIFICATIONS

Deleted: ¶

13.2 Asphalt Field and Compaction Technician (AFCT)–

The written examination for the Asphalt Field and Compaction Technician consists of the following areas:

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

After successful completion of the written examination, the applicant will be required to pass a practical examination demonstrating his/her proficiency in using the testing equipment. Certification of the Asphalt Field & Compaction Technician qualifies the employee, either Industry or Division, to conduct tests on all asphalt materials that require compaction testing.

Commented [JSD3]: Should be Asphalt Field & Compaction Technician

Formatted: Heading 2

Commented [JSD4]: Again, Asphalt Field & Compaction Technician

14. **EXAMINATIONS**

All participants shall be required to furnish their own laptop or tablet to take the final course exams. Examinations, both written and practical, will be coordinated by the Materials Control, Soils & Testing Division of the Division of Highways. The locations and dates of the examinations will be announced at least two weeks prior to being given. The examinations may be held on a regional basis when feasible. All written examinations will be a one-part, 'open-book' type, with a time limit. If the applicant does not pass the examination the first time, a re-test may be attempted. If the re-test examination is not passed, the applicant may not take another test in the 12-month period without first attending the certification school. Practical examinations require performance of the tests required by the specifications for the material type involved.

After the applicant passes the written examination, they will be granted two attempts within a 12-month period to pass the practical exam. All practical examinations are pass / fail. If an applicant fails the practical twice, the applicant may not take another practical test in the same 12 month period without first attending the certification school. The scheduling of the practical examination and re-examination is to be established by the section running the certification class.

If a technician who possesses an active certification fails an exam or practical for re-certification during their active period, this does not revoke or void their current certification.

15. **COURSE PRE-REQUISITES**

~~It is highly recommended that courses be attended in sequence, with all pre-requisites fulfilled, before the applicant attends the next course in a series.~~

Deleted: ¶

Deleted: four

Deleted: An applicant may only test twice per certification class attendance

Commented [MMA5]: Might need to add language about when the re-test may be attempted. We need to be consistent.
For example:
1. Next regularly scheduled test session shown on the certification calendar
2. Same day

Commented [WTJ6]: "in the same Calendar year" or "less than 12 months after the date of the first attempt"?

Deleted: There will be a minimum two written examinations per certification topic.¶

Commented [WTJ8]: This is saying two different things. 2 attempts within the current calendar year or 2 attempts within a 12 month period? Maybe say 2 attempts within 12 months of the date that the written exam was taken?

Deleted: calendar year

Commented [MMA9]: exam

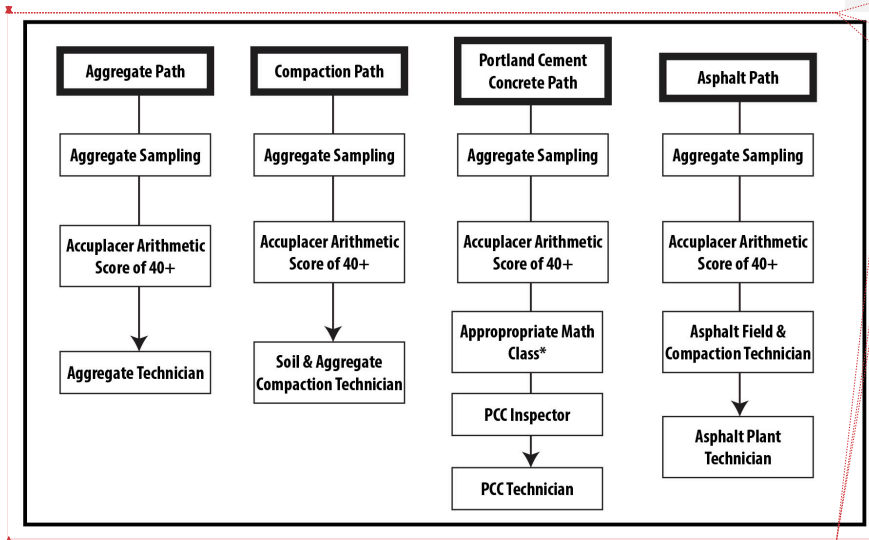
Commented [WTJ10]: "in the same Calendar year" or "less than 12 months after the date of the first attempt"?

Commented [WTJ11]: Just to verify, if they fail the practical 2x and have to attend the cert school again, they don't have to retake the written exam, or do they?

Deleted: the entire class must be repeated.

Formatted: Strikethrough

15.1 RECOMMENDED PRE-REQUISITES AND CLASS ORDER



1. It is highly recommended that Agg. Sampling & Agg. Tech. are taken before any other certification classes.
2. *MATH 115 or a College Level (100 level) math class should be taken before PCC Technician.

The Aggregate Sampling is an online exam. The exam can only be attempted two times per year. In order to keep the certification the aggregate sampling exam must be taken every three years and a score of 70% is required for passing.

16. CERTIFICATION AND RECERTIFICATION

16.1 Certification

An individual must pass the examination in each level for which they are requesting certification. Unless otherwise noted, to pass the written examinations, the applicant must obtain minimum score of 70 percent. If an applicant fails to receive a minimum score of 70% on the first exam, they will be given another attempt to score a 70%. If they fail to receive a 70% on the second exam attempt, they may not take another exam for the respective certification less than 12 months after the date of the first attempt without first taking the respective certification class.

Upon successfully completing the requirements for certification, the applicant may print their certification card from the divisions web-site.
<http://dotftp.wv.gov/materialsdir/>

Deleted: ¶
 Formatted: Font: Arial, Strikethrough
 Formatted: Strikethrough
 Commented [DB12]: Update this chart to remove the college level stuff.
 Can require some TC3 classes etc.
 Formatted: Strikethrough
 Formatted: Strikethrough

Commented [DB13]: Possible remove.
 Formatted: Strikethrough
 Formatted: Strikethrough
 Deleted: class
 Formatted: Strikethrough
 Deleted: class-
 Formatted: Strikethrough
 Formatted: Strikethrough
 Commented [MMA17]: Note at the bottom of page 6 says it must be re-taken every year.
 Deleted: class-
 Formatted: Strikethrough
 Formatted: Strikethrough
 Formatted: Strikethrough
 Formatted: Strikethrough
 Deleted: attend the training and
 Deleted: T
 Commented [MMA18]: Can they re-take the test on the same day?
 Deleted: will be required to repeat the entire training course

This certification is not transferable. A certification shall be valid for Three years and expire December 31, of the 3rd year of certification.

16.2 **Re-Certification**

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

Applicants will be given two attempts to pass the recertification exam and one attempt to pass the practical exam (each, respectively). Any applicant that fails to acquire a minimum score of 70% on a recertification exam or who fails the subsequent practical exam, will not have their certification renewed. The applicant may not take additional recertification or practical exams for the failed certification(s) again less than 12-months after the failed exam without first taking the respective certification class.

Virtual practicals are permissible and preferable, but not required. If a virtual practical is chosen by the applicant, setup including equipment, material and location of virtual practicals is the responsibility of the applicant. Audio, video and other tech support issues are also the responsibility of the applicant.

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

The certification holder shall be responsible updating their personal information on the online learning website.
<http://www.onlinelearning.wv.gov/student/home.html>

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

If an applicant seeking recertification disagrees with a recertification decision, they may file a written appeal with the board. (See Appealing a Decision).

17. **TESTING PROTOCOL**

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

18. **I.A. PROFICIENCY TESTING**

Requirements are under review and will be posted as they become available.

19. **REVOCATION OF CERTIFICATION**

WVDOT TICP grants certification upon satisfactory completion and

Commented [DB19]: Add another header?

Deleted: <#>The renewal of all certifications shall require a written exam and a hand on practical exam, where applicable. All applicants are also required to be actively working in the field for which they are seeking to be re-certified. All applicants are also required to be actively working in the field for which they are certified.

Deleted: one

Deleted: a

Deleted:

Deleted: -

Deleted: must retake the entire course and practica

Deleted: l

Deleted: insur

Deleted: ing

Deleted: highways

maintenance of certain conditions and may be revoked upon any breach of these conditions.

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

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

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

20. APPEALING A DECISION

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

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

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

21. THE LENGTH OF REVOCATION SHALL BE AS FOLLOWS:

21.1 First Offense

Deleted: ¶

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

Deleted: May

Deleted: retaking

Deleted: the

Deleted: classes and any practical's.

21.2 Second Offense

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

Deleted: May

Deleted: may obtain recertification by retaking the classes and any practical's.

Commented [WTJ20]: Or should they be required to start over new by taking the class?

21.3 Third Offense

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

Deleted: May

22. CONTACT INFORMATION

If you have any questions about our program or need more information. Please contact: Qaschoolscoordinator@wv.gov

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

MATERIALS PROCEDURE

AGGREGATE SAMPLING PROCEDURES

1. PURPOSE

- 1.1 To provide a uniform procedure for obtaining aggregate samples.
-

2. SCOPE

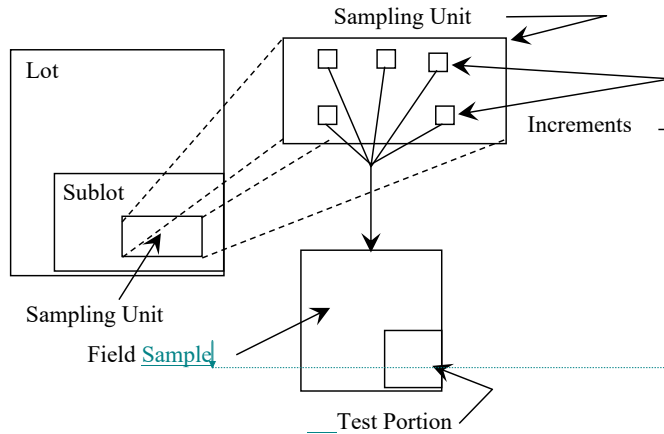
- 2.1 This procedure shall apply to the following:
- (a) Process Control sampling by the Contractor.
 - (b) Acceptance Sampling by the Division.
 - (c) Independent Assurance Sampling by the Division.
 - (d) Record Sampling by the Division.
-

3. GENERAL

- 3.1 Taking a good sample is just as important as conducting a good test. The sampler must use every precaution to obtain samples that will show the true nature and condition of the material they represent.
- 3.2 Most aggregates are mixtures of various particle sizes, which tend to separate, or segregate, during transporting or stockpiling. For this reason, aggregate samples should be obtained at the last practical point before the material is incorporated into the finished product or before compaction.

3.3 Frequency of sampling will be in accordance with the applicable directives for the type sample being procured.

4. DEFINITION OF TERMS



Deleted: Portion

4.1 Lot: The quantity of material represented by an average test value, not to exceed five individual test values, calculated in accordance with MP 300.00.51.

Deleted: .

Deleted:

4.2 Sublot: The quantity of material represented by a single test value. In the case where only one sample is needed for the total plan quantity, the subplot may be considered the Lot.

4.3 Sampling Unit: The quantity of material within the subplot from which increments are obtained to be combined into a field sample.

4.4 Increment: The portion of material removed from the sampling unit to be combined into a field sample.

- 4.5 Field Sample: A composite of increments.
- 4.6 Test Portion: The material split from the field sample to be used in performing a specific test.
- 4.7 Random Location: A location whose position depends entirely on chance. In other words, one location has as good a chance being selected as any other.

5. CONTRACTOR RESPONSIBILITY

- 5.1 ~~The Contractor shall provide all reasonable facilities and furnish the Division the information, assistance and samples required by the Engineer and Inspector for proper inspecting or testing of materials and workmanship.~~
- 5.2 ~~All materials and each part or detail of the work shall be subject to inspection by the Engineer. The Engineer or a representative shall be allowed access to all parts of the work and shall be furnished with such information and assistance by the Contractor as is required to make a complete and detailed inspection. To facilitate the inspection of materials, all delivery tickets shall contain as a minimum the information required in MP 700.00.01.~~

Deleted: The Contractor shall provide suitable equipment needed for proper inspection and sampling, including required access and any special equipment necessary to comply with the appropriate sampling techniques outlined herein. (See Section 105.5 (5th Paragraph) and Section 105.11 (1st Paragraph) of the 2000 Standard Specifications for Roads and Bridges.)...

6. SAMPLING PROCEDURES

- 6.1 There are four general areas from which aggregate samples are usually obtained. These include (1) Sampling from the roadway after the aggregate has been placed, but prior to compaction, (2) Sampling from a conveyor belt, (3) Sampling from a flowing stream of aggregate, and (4) Sampling from stockpiles.

6.1.1 Sampling from the roadway (e.g., bases and subbases)

The first step in obtaining a roadway sample is to locate the subplot. This is usually the quantity of material that will be represented by the one sample and is defined as a section of roadway of given width and length.

The next step is to randomly locate a sampling unit within the subplot. A sampling unit is defined as an area having dimensions of approximately 12 feet by 12 feet, or an area of approximately 144 square feet, in locations having any dimension less than 12 feet. Locating the sampling unit is accomplished by use of

Deleted: feet²

random numbers contained in Attachment I. Any pair of numbers (decimals) may be used to locate a sampling unit within the subplot. To locate the sampling unit in a subplot defined by area, the length of the area, in feet, is multiplied by one decimal of the pair, and width is multiplied by the other decimal. The resulting distances are to be measured from one end and one side of the area.

For example, a subplot of material consists of base course aggregate 26 feet wide from Station 956+00 to 965+00. The total length in feet is thus 96,500 minus 95,600, or 900 feet. A pencil tossed on Attachment I points to the pair of decimals 0.115 and 0.447. To locate the sampling unit, the first decimal is multiplied by the length of the subplot, and the companion decimal is multiplied by the width. The length value will be measured from Station 956+00 and the width value from the left-hand edge of the base. Thus, 900 multiplied 0.115 equals 104, and 26 multiplied by 0.447 equals 12, so the sampling unit would be located at Station 956+00 plus 1+04, or 957+04 at 12 feet from the left edge. This point could define the center or any corner of the sampling unit. If we use the center, a 12-foot by 12-foot sampling unit would fall between Stations 956+98 and 957+10 with longitudinal boundaries at 6 feet and 18 feet from the left edge of the base.

Five approximately equal increments are then located within the sampling unit. This is also best accomplished by means of the random numbers in Attachment 1. Procedures to follow are essentially the same as those set forth for locating the sample unit. The five increments are taken from the sampling unit and combined to form a field sample whose weight equals or exceeds the minimum recommended in Table 1. All increments shall be taken from the roadway for the full depth of the material being sampled, care being taken to exclude any foreign material which may have been incorporated during the normal construction process. The specific areas from which each increment is to be removed shall be clearly marked; a metal template placed over the area is a definite aid in securing approximately equal increment weights.

6.1.2 Sampling from a Conveyor Belt

The first step in obtaining a sample from the conveyor belt is to define the subplot. This is generally defined as a unit of time, i.e., a half-day or a day's production. The next step is to randomly locate a sampling unit within the subplot. A sampling unit in this case is generally considered to be the material contained within the length of the conveyor. Locating the sampling unit is accomplished by use of the random numbers contained in Attachment I. Any number may be used to locate a sampling unit within the subplot. To locate the sampling unit in a subplot defined by time, the length of time, usually in minutes, is multiplied by the random decimal obtained from Attachment I.

For example, a subplot of material consists of concrete aggregate used in a half-day's production estimated to be between 8:00 a.m. and 12:00 noon. A pencil

Deleted: ee

Deleted:

Deleted: times

Deleted: times

Deleted:

Deleted: 12 foot

Commented [W2]: All lengths have been switched from the metric system to the English system. (meters to feet)

Formatted: Indent: Left: 0.75", First line: 0.25", No bullets or numbering

tossed on Attachment I points to decimal 0.279. Thus, the sampling unit would be located somewhere within the four-hour period (8:00 a.m. to 12:00 noon). Four (hours) multiplied by 60 (minutes per hour) multiplied by 0.279 equals 67 minutes. The sampling unit would be located 67 minutes after the 8:00 a.m. startup; or at 9:07 a.m. (or as soon thereafter as practical).

Five randomly located, approximately equal increments are obtained from the sampling unit and combined to form a field sample whose weight equals or exceeds the minimum recommended in Table 1. The location of the five increments is determined by multiplying the length of the belt by five random numbers. The conveyor belt is stopped while the increments are being obtained. Two templates, conforming to the shape of the belt and spaced such that the material contained between them will yield an increment of the required size, are inserted into the aggregate stream on the belt. All material between the templates is carefully scooped into a suitable container, including all fines on the belt collected with a brush and dustpan.

6.1.3 Sampling from a Flowing Aggregate Stream (bin or belt discharge)

Definition of the subplot and location of the sampling unit is generally identical with sampling from a conveyor belt, with the exception that the sampling unit in this case is defined as that material which will flow during a five-minute period. Once the sampling unit is located, five approximately equal increments, randomly spaced, are obtained and combined to form a field sample whose weight equals or exceeds the minimum recommended in Table 1. Each increment is taken from the entire cross-section of the material as it is being discharged. It is usually necessary to have a special device constructed for use at each individual plant. This device will consist of a pan of sufficient size to intercept the entire cross-section of the discharge stream and hold the required quantity of material. A set of rails may be necessary to support the pan as it is passed under the discharge stream. If the sampling pan overflows, it should be struck level so that only material that is within the pan is retained.

6.1.4 Sampling from a Stockpile

If possible, stockpile sampling should be avoided when sampling to determine the gradation of an aggregate. However, circumstances sometimes make it necessary, and when this occurs a sampling plan and the number of samples to be taken must be considered for each specific case. Stockpiled aggregates tend to segregate with the coarser particles rolling to the outside base of the pile, which makes gradation representation difficult. Because of this, every effort should be made to enlist the services of power equipment (such as a front-end loader) to develop a separate

Deleted: four hour

Deleted: times

Deleted: times

Deleted:

Deleted: .

Deleted:

Formatted: Indent: Left: 0.75", No bullets or numbering

Deleted: five minute

Deleted: particular

Deleted: .

Formatted: Indent: Left: 0.75", No bullets or numbering

Deleted:

small sampling pile composed of material taken from various levels and depths in the main stock pile. Increments from this pile may be combined, thoroughly mixed, and reduced by quartering and/or sample splitter to obtain the field sample. Methods for quartering and splitting samples are given in AASHTO R76. If power equipment is not available, hand sampling may be employed to obtain at least three increments per sample: One increment taken from the top one third of the pile, one from the middle and one from the bottom third. When hand sampling, the outer layer of the pile should be removed (scraped away with the shovel) at the point prior to sampling.

Deleted:

Deleted: T248

Deleted:

7. WEIGHTS REQUIRED

7.1 Field Sample Weights

Field sample weights as listed in Table I are minimum values. Actual weights required must be predicated on the type and number of tests to which the material is to be subjected. The amounts specified in Table I will provide adequate material for routine gradation and quality analysis.

Deleted: ¶

¶
¶
¶
¶
¶
¶

Deleted: Generally speaking, t

7.2 Test Portion Weight

The weight of the test portion to be obtained from the field sample for a specific test will be defined in the Standard Procedures of the test involved. Reduction of the field sample into test portions is done with a sample splitter. The weight of test portion recommended for gradation testing is given in Table II.

Deleted: particular

8. TRANSPORTING SAMPLES

8.1 Testing at Site of Sampling

Samples taken for testing in the field may be placed in any suitable clean container of appropriate size which is secure enough to prevent loss of material when transporting the sample to the testing location.

8.2 Samples to be Shipped from Site of Sampling

Samples to be shipped should be placed in standard sampling sacks. If the sample contains an appreciable quantity of fine material, a plastic liner should be put in the sack to prevent loss of the fines. Each sack must be securely tied to prevent loss of material in transit. It is also essential that sample identification be maintained from the field to the testing site. Each sack must have appropriate indelible identification attached and enclosed so that field reporting, laboratory logging, and test reporting may be facilitated.

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

Attachments

Deleted:
Deleted: ¶

Deleted:

Deleted: :w

TABLE I
WEIGHT OF SAMPLES

<u>NOMINAL MAXIMUM SIZE OF PARTICLES*</u>	<u>MINIMUM WEIGHT OF FIELD SAMPLES</u>	
<u>Sieve Size</u>	<u>Kilo</u>	<u>lb</u>
No. 8	10	25
No. 4	10	25
3/8 in.	10	25
1/2 in.	15	35
3/4 in.	25	55
1 in.	50	110
1 1/2 in.	75	165
2 in.	100	220
2 1/2 in.	125	275
3 in.	150	330
3 1/2 in.	175	385

*The nominal maximum size of particles is defined as the largest sieve size listed in the applicable specifications upon which any material is permitted to be retained. Exception: If the specification tolerances are such that no sieve listed has a range of X-100 percent passing, then the next smallest standard sieve, as listed in Table I, and below that sieve which 100 percent must pass will be considered the nominal maximum size.

Commented [W3]: All sieve sizes have been changed from millimeters to inches or U.S.A. Standard Test Sieve size designations.

Commented [W4]: Pounds have added to the minimum weight of field sample

MP 700.00.06
REPLACES: ML-26
ORIGINAL ISSUANCE: MARCH 1968
REVISED: DECEMBER 1988
REISSUED: JANUARY 1995
REVISED:
PAGE 9 of 10

TABLE II
TEST PORTION FOR GRADATION

<u>NOMINAL MAXIMUM SIZE OF PARTICLES</u>	<u>MINIMUM WEIGHT OF TEST PORTION</u>	
	<u>Kilo</u>	<u>lb</u>
Sieve Size		
No. 8	0.1	0.3
No. 4	0.5	1.0
3/8 in.	1.0	2.0
1/2 in.	2.0	4.0
3/4 in.	5.0	11.0
1 in.	10.0	22.0
1 1/2 in.	15.0	33.0
2 in.	20.0	44.0
2 1/2 in.	35.0	77.0
3 in.	60.0	130.0
3 1/2 in.	100.0	220.0

Commented [W5]: Same changes made as in Table 1

MP 700.00.06
REPLACES: ML-26
ORIGINAL ISSUANCE: MARCH 1968
REVISED: DECEMBER 1988
REISSUED: JANUARY 1995
REVISED:
PAGE 10 of 10

ATTACHMENT I

RANDOM NUMBERS

.858	.082	.886	.125	.263	.176	.551	.711	.355	.698
.576	.417	.242	.316	.960	.879	.444	.323	.331	.179
.587	.288	.835	.636	.596	.174	.866	.685	.066	.170
.068	.391	.139	.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	.589	.751	.308	.025	.836	.200	.055	.510	.656
.608	.910	.944	.281	.539	.371	.217	.882	.324	.284
.215	.355	.645	.450	.719	.057	.287	.146	.135	.903
.761	.883	.711	.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
.269	.707	.372	.486	.340	.680	.928	.397	.337	.564
.338	.917	.942	.985	.838	.805	.278	.898	.906	.939
.130	.575	.195	.887	.142	.488	.316	.935	.403	.629
.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

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

MATERIALS PROCEDURE

GUIDE FOR APPROVAL OF SUPPLEMENTARY CEMENTITIOUS MATERIALS (SCMs)

1. PURPOSE

- 1.1 To set forth the Division's approval procedures for Supplementary Cementitious Materials (SCMs) used in portland cement concrete.
-

2. SCOPE

- 2.1 This procedure will apply to all SCMs used in portland cement concrete that are used on West Virginia Division of Highways projects.
-

3. INITIAL APPROVAL

- 3.1 In order for a SCM to be initially approved for use, the producer of the SCM shall first submit a certified statement to the Materials Control, Soils and Testing (MCS&T) Division that all SCMs shipped to Division projects will conform to the applicable specification requirements. The certified statement shall be signed by a representative of the producer having legal authority to bind the company.
- 3.2 The producer shall also submit, to MCS&T Division, quality control test data on the SCM to be certified. This data shall consist of test results developed from production samples during the last six months. There shall be at least one set of quality control test data for each month in that six-month period. These test results shall include results of all tests that are required by the specifications.
- 3.3 After the Producer has completed Sections 3.1 and 3.2, and if all test data submitted in Section 3.2 meet the applicable specification requirements, a representative of MCS&T Division shall obtain a sample of the SCM from the source of production. The MCS&T Division shall test this sample, and if it meets specification requirements, a representative of the MCS&T Division shall obtain a second sample of the SCM from the source of production or distribution (i.e. terminal). The MCS&T Division shall then test this second sample.
- 3.3.1 If either of the two samples obtained in Section 3.3 does not meet specification requirements, the SCM will not be approved. If, at this time, the producer still seeks Division approval of the subject SCM, a minimum of ninety calendar days (from the date the non-conforming sample was obtained) must elapse before the approval process may begin again (starting with Section 3.1).
- 3.4 If the second sample obtained in Section 3.3 also meets specification requirements, the SCMs will be placed on the Division's approved list and the producer may begin to supply the subject material for use on Division projects.

4. APPROVED LIST

- 4.1 Once each quarter, or any time the list is updated, the MCS&T Division shall provide a list of all currently approved SCMs.
- 4.2 The producer and the District Materials Sections will be notified of any changes in the approved status of a SCM.
- 4.3 No SCM may be used in portland cement concrete that is supplied to West Virginia Division of Highways projects unless it is on the Division's approved list of SCMs.

5. MAINTAINING APPROVED STATUS

- 5.1 In order to maintain approved status of the subject SCM, the producer shall submit test data on a monthly basis in the same manner as described in Section 3.2.
- 5.2 Also, Division representatives from each District Materials Section shall obtain samples of the subject SCM at every point of use (i.e. ready-mix plants, etc.) that is located within their District. A minimum of one sample shall be obtained from each particular location every six (6) months. Within one week of obtaining these samples, the District personnel shall forward them to the MCS&T Division, where they shall be tested.
 - 5.2.1 If any of the samples, obtained by District Personnel as outlined in Section 5.2, fail to meet the specification requirements, personnel from the MCS&T Division shall immediately obtain a sample of the subject material at the source of production or distribution (i.e. terminal). The MCS&T Division shall then test this sample.
 - 5.2.2 If the sample obtained in Section 5.2.1 meets specification requirements, personnel from the MCS&T Division shall obtain a second sample at the source of production or distribution (i.e. terminal). If this second sample meets specification requirements, no further action is required, and the subject source may remain on the Division's approved list.
 - 5.2.3 If either of the samples obtained in Sections 5.2.1 or 5.2.2 do not meet specification requirements, the subject material shall be removed from the Division's approved list.
 - 5.2.4 If, within a twelve-month period, two or more samples obtained as outlined in Section 5.2 (of the same material from the same approved source) fail to meet specification requirements, personnel from the MCS&T Division shall conduct an investigation into the possible reasons for the non-specification material. If the outcome of this investigation indicates a problem with material from the subject approved source, removal of that source from the approved list shall be permitted.
 - 5.2.5 If a SCM is removed from the approved list, it may be reinstated at the discretion of the Division when sufficient sampling and testing (at the source of production or

distribution) has been conducted to ensure that material being produced is once again within the limits of the specifications.

- 5.3 If, in a two-year period, no samples from an approved source of a SCM, as outlined in Section 5.2, are received by MCS&T from the Districts, then that source of SCM shall be considered as inactive, and it may be removed from the Division's approved list of SCMs.
- 5.3.1 If the Division elects to keep an inactive source of SCM on the approved list of SCMs, then MCS&T shall obtain additional samples at that source, as outlined in Sections 3.3 and 3.4.

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

RLS:M