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I. SCOPE

This Quality Management System (QMS) describes the procedures for the quality assurance sampling and testing of Portland cement, blended cement and other single and/or combinations of cementitious materials and supplementary pozzolanic mineral admixtures. These procedures are designed to allow Manufacturers to produce materials conforming to Department specifications under their own quality control and assurance procedures and to supply the materials to Department work on the basis of a certification of compliance. This program is attained by Manufacturers who can demonstrate and maintain a history of satisfactory conformance with Department specifications and requirements.

II. GENERAL METHOD

This method encompasses a system that a Manufacturer or Supplier, upon application evaluation, is approved by the Materials Bureau to produce and/or supply, stock and ship cementitious materials or mineral admixtures under a program of evaluation, inspection and testing performed by the Department and/or its representatives. Upon demonstration of satisfactory conformance with Department specifications and procedures, the approved Manufacturer and/or Supplier will be authorized to manufacture and/or supply their tested materials with minimal Department inspection. This includes the ability to make shipments to Department work documented with a certification of compliance to Department specifications.

The Manufacturer and/or Supplier tests each lot for all specified properties and certifies test results to the Materials Bureau. The Manufacturer and/or Supplier send monthly spreadsheets (or a statistical fingerprint) of its testing to the Department. Under the Materials Bureau direction, periodic split sample testing is accomplished with cooperation of the Manufacturing and/or Suppliers facilities to monitor their quality program and verify their testing capabilities utilizing reproducibility limits. In addition, random destination samples and other pertinent information are obtained at the Supplier’s production location, terminals, concrete batching plants or other concrete mixing facilities and submitted to the Materials Bureau for testing and/or evaluation.

WARNING:
A Manufacturer and/or Supplier may remain on the Approved List until such a time it may be removed for one of the following reasons or other reasons determined by the Department:

1. Any action or inaction that may affect the quality of the product, the integrity of the test result(s) or the applicable quality assurance plan.
2. Failure of the product to meet appropriate specifications.
3. Failure of the Manufacturer and/or Supplier or its counterparts to submit or adhere to its quality control plan and/or quality system manual.
4. Failure of the Manufacturer and/or Supplier or its counterparts to communicate issues that relate to the supply of their product and compliance to our specifications.
5. Falsification of information supplied on a certificate of analysis or bill of lading.
6. Lapse of supply to any local government or Department project in excess of 3 years.
7. Failure to provide samples, test results, supply information including bills of lading or any pertinent information requested by the Department.

Once removed, the Manufacturer and/or Supplier and their product(s) may only be reinstated after a minimum period of three months after removal. The requalification of their product(s) must be satisfactorily demonstrated to the Materials Bureau and the Department that their product is in compliance with specifications and corrective measures have been implemented to prevent similar and/or future issues.
III. DEFINITION OF TERMS

1. **Cementitious Materials** - Of or relating to a chemical precipitate, especially of carbonates, having the characteristics of cement. In this method Portland cement, blended cement and slag cement (GGBFS) are considered cementitious materials.

2. **Supplementary Cementitious Materials** – A pozzolanic material which is used in replacement of cement to enhance or supplement the properties of the concrete. Some typical enhancements from the addition of these materials are concrete durability and strength. In this method fly ash, silica fume and high reactivity pozzolans are considered supplementary cementitious materials. *Although slag cement (GGBFS) is allowed for use as a supplementary material for NYSDOT it is not outlined as such in this document.*

3. **Portland Cement (NYSDOT Standard Specification 701-01)** – hydraulic cement produced by pulverizing clinker consisting essentially of hydraulic calcium silicates, usually consisting of one or more of the following: water, calcium sulfate, limestone and processing additions.

4. **Blended Cement (NYSDOT Standard Specification 701-03)** – A hydraulic cement which contains two or more inorganic constituents (at least one of which is not Portland cement or Portland cement clinker) which separately or in combination contribute to the strength-gaining properties of the cement (made with or without other constituents, processing additions and functional additions by intergrinding, mechanical blending or other process that has been proven to keep material identity through the process).

5. **Fly Ash (NYSDOT Standard Specification 711-10)** - The finely divided residue that results from the combustion of ground or powdered coal and that is transported by flue gasses.

6. **Pozzolan** – A siliceous or siliceous and aluminous material, which in itself possesses little or no cementitious value, but which will, in finely divided form and in the presence of moisture, chemically react with calcium hydroxide at ordinary temperatures to form cementitious hydrates.

7. **Slag Cement (NYSDOT Standard Specification 711-12)** – A cementitious or supplementary cementitious material consisting of ground granulated blast furnace slag (GGBFS). A glassy granular material that is formed when molten blast furnace slag is rapidly chilled, as by immersion in water. Material is then processed by grinding to a fine powder. *Although slag cement (GGBFS) is allowed for use as a supplementary material for NYSDOT, for ease of explanation of this method, it is not outlined as such in this document.*

8. **Silica Fume (Standard Specification 711-11)** – a very fine pozzolanic material, composed mostly of amorphous silica produced by electric arc furnace as a by-product of the production of elemental silica or ferro-silicon alloys.

9. **Highly Reactive Pozzolan (Standard Specification 711-14)** – an amorphous silica of high silica content and purity possessing high pozzolanic activity. Materials such as metakaolin, rice hull ash, zirconium fume and ultra fine fly ash are examples of high reactivity pozzolans.
10. **Mill** – A facility owned and operated by a Manufacturer for production of materials at a specific location. *In the case of fly ash, a Supplier may lease property from a power plant to provide its product.*

11. **Manufacturer** – A company responsible for the manufacturing of the product. In the case of pozzolans, slags and similar items, the material provided is a processed by-product of a power plant or manufacturing facility. The company responsible for providing and certifying this by-product will be considered the Supplier in these instances.

12. **Distribution Terminal** – A storage and shipment facility located off the Mill or Supplier's property used by the Manufacturer and/or the Supplier for distribution of its product. Such a facility has no manufacturing or production capabilities.

13. **Department** – The New York State Department of Transportation.

14. **Materials Bureau** – The main office unit of the New York State Department of Transportation, which is referenced in this document, and may be contacted as follows:

   **DIRECTOR OF MATERIALS BUREAU**
   50 WOLF ROAD MAILPOD 5-1
   ALBANY, NY 12232
   518-457-3240
   518-457-8171 (FAX)

15. **Materials Bureau Laboratory** – The section of the main office unit of the Materials Bureau in which samples are sent for physical and chemical testing, which can be addressed as follows:

   **MATERIALS BUREAU**
   NEW YORK STATE DOT LABORATORY
   7 HARRIMAN CAMPUS ROAD
   ALBANY, NY 12206

16. **Inspection Authority** – An office designated by the Materials Bureau for inspection control on behalf of the Department.

17. **Inspectors** – An individual employed by the Department and/or an Inspection Authority and approved by the Materials Bureau for inspection control on behalf of the Department at mills, distribution terminals or destination sites such as batching/mixing facilities.

18. **Destination Inspectors** – The Department representative or individual employed by an Inspection Authority that will be responsible for the Department’s Quality Assurance Program at the terminal, concrete batch or mixing facilities.

19. **Qualified Laboratory** - A laboratory employed or contracted by the Manufacturer and/or the Supplier which meets the Department’s criteria with regards to AASHTO certification and/or participation in the applicable Cement and Concrete Reference Laboratory (CCRL) proficiency sampling program.

20. **Quality System Manual** – A written document that describes the overall quality control operating procedures of a Supplier or Manufacturer.
21. **Random Sampling** – A sampling procedure whereby each sample obtained from a lot has equal probability of being selected. The use of ASTM D3665 can be utilized when a prescribed method is not outlined but is needed.

22. **List of Approved Suppliers** – A listing posted by the Materials Bureau (on Department website or by publication) indicating all firms that have been approved as Manufacturers and/or Suppliers of products for Department work.

23. **Manufacturer or Supplier Certifications** - Paperwork supplied by an Approved List Manufacturer or Supplier to confirm compliance to the Department's specifications and the pertinent material item. This paperwork is specific for each material type and can be traced to any storage, testing or production data as needed. Representatives of the Manufacturer's and/or Supplier's firm must sign and date all certifications. These must also be provided to the Department in a timely manner upon request.

24. **Forms** – The following forms are published and issued by the Department, for use by their designated representatives:
   
   a. **BR-280a** – Cementitious Shipment Certification: This form is executed by a Manufacturer and/or Supplier of Portland, blended or slag cement which accompanies all shipments from a firm approved to produce and supply under a certification program and certifies that all materials in the shipment were tested for and conforms to Department specifications. Detailed instructions for proper completion and transmittal are contained in Materials Procedure, “Quality Assurance Procedure for Standard Specifications, Construction and Materials Section 700 - Materials and Manufacturing”, Appendix F. Automated substitutions of this form will only be allowed when information provided has been reviewed and approved by the Department.
   
   b. **BR-284** – Mill Certification form required by the Department for Portland and blended cement Suppliers to report chemical, physical and processing addition test results for the production lot and/or period.
   
   c. **NYSDOT Verification Sample Submittal Form** – Form used by Manufacturers and Suppliers, for samples sent from these locations, to provide Department with minimum information for the evaluation and analysis of periodic split sample verification testing.

25. **ASTM** – American Society for Testing and Materials is an international standards organization that develops and publishes voluntary consensus technical standards for a wide range of materials, products, systems, and services.

26. **AASHTO** – American Association of State Highway and Transportation Officials is a standards setting body which publishes specifications, test protocols and guidelines which are used in highway design and construction throughout the United States.

27. **NCHRP** – National Cooperative Highway Research Program is a division under the umbrella of the Transportation Research Board and the Federal Highway Administration which was formed to conduct research in acute program areas that effect highway planning, design, construction, operation and maintenance nationwide.
IV. PROCEDURE FOR APPROVED LIST APPLICATION

Every Manufacturer and/or Supplier will submit to the Materials Bureau a report detailing their quality system manual including the manufacturing and distribution characteristics. The report is a prerequisite for consideration of approval of supply under this method. This report needs to be developed to be consistent with the requirements of AASHTO R38. Upon addition to the approved list, the report must be updated annually to reflect any changes. Additionally, every three years a complete report will be required to be forwarded in its entirety. Items listed in *italics* apply to **first time applications** to the Approved List of Suppliers and do not need to be included nor considered for annual reporting requirements. The report will contain the following:

1. A written application on company letterhead to the Materials Bureau Director indicating intent to manufacture and/or supply product to Department work. The application should contain a written policy or mission statement. The application should include the name, position, telephone, email and fax number of the individual(s) who will be coordinating the inspection, sampling and testing for the Supplier in coordination with the Materials Bureau. All application information must be provided in English.

2. A detailed Quality System Manual (or facility report) including the following:
   a. Manufacturing or Suppliers facility and listing of products
      - The facility address and phone number
      - A standard listing of the materials being produced
      - Facility layout or a schematic representation
      - Digital photographs of facility including major production areas
      - Digital photographs with detailed descriptions including the make, model and location of the auto sampler used (only in the case of Portland, Blended, and Slag cements.) and other sampling areas that are used in QC/QA that conform to the applicable specifications.
   b. Applicable specifications (AASHTO, ASTM, other) and any terms or definitions in which establish a uniform understanding of concepts.
   c. Quality Control System Roles and Responsibilities
      - Quality control organization, manager, technicians and any production personnel responsible for quality.
      - QC personnel qualification requirements
      - Contact information for the primary and secondary personnel responsible for quality including their address, email and phone number.
d. Quality Control Laboratories
   - Laboratory name, address and contact(s) including email and phone number.
   - A statement as to participation of its quality control laboratory in the inspection of laboratories and proficiency sample program(s) of the Cement and Concrete Reference Laboratory (CCRL) of the National Institute of Standards and Technology (NIST) and when applicable include a copy of the most recent proficiency results while addressing any deficiencies found in any CCRL inspection report or CCRL proficiency sample testing. (See Table 2 in Appendix to reference for applicable programs.)
   - Testing equipment used in the quality control assessment of the applicable product(s) including photographs of the test facility and equipment.
   - The description of any other accreditation bodies (i.e. ISO 17025, 9000, etc.), round robin programs, or comparison testing your firm is involved in.

e. Pre-production materials control
   - Constituent material types and sources of supply
   - Visual inspection, control and testing of constituent materials
   - Constituent materials storage
   - If applicable, a geographical description of quarries

f. Quality control during production of cementitious materials
   - Lot and sub lot sizes
   - QC visual inspection
   - Random sampling plan including how sample is tested, documented and recorded for conformance to specifications or if a selective sampling plan is used and how product is sampled and tested
   - Standard identification system, type of sample and size utilized in testing
   - Standard QC inspections, sampling and testing methods (AASHTO, ASTM, or other) including any Manufacturer or Supplier developed test procedures
   - QC sample storage and retention procedures
   - QC inspection and test result reporting
   - Use of control charts and the control chart limits or process parameters used to control the product (include tolerance limits)
   - Statistical analysis of test results for any historical data from the previous 12 months of supply
   - QC sample storage and retention procedures.
   - Resolution or Standard Operating Procedure (SOP) of non-conforming inspection or test results. An indication how material not conforming to the specification will be administered and disposed of. The disposal shall follow the applicable regulations and requirements of its specific locality.

g. Post production QC activities
   - Marking, storage, shipping, and handling of product.
   - Terminal locations and contact information for each terminal.
   - Materials supplied at each terminal and any QC/QA programs used to confirm product identity, when applicable.
• Quality control records
• Retention of inspection and test results and product traceability for the facility and any of the terminals.
• The distribution characteristics such as shipped by truck, rail car, barge, etc.
• The Suppliers marketing information, including all materials and geographical areas marketed.
• A copy of the Materials Safety Data Sheet (MSDS) for each product.

h. Issuance of the materials certificate of compliance
• An example of the firm’s certification of compliance statement that will accompany the material in shipment, indicating your product will meet the applicable Department specifications. For some materials a certification will suffice. For Portland, blended, and slag cements the BR280a (or pre-approved substitute) will satisfy this documentation need. For other materials, the specific test data may be part of the required documentation. This certification should not contain proprietary information so that it may be shared on the Approved List webpage for the particular material.

i. Agency Access to Manufacturer Facilities
• The Manufacturer shall sign a statement which allows state agency inspectors, or their designated agents, to enter any manufacturing plant or QC laboratory, unannounced (when feasible), to observe the manufacturing process, review inspection, testing and associated records, obtain samples or to inspect testing facilities, product storage, handling or transport. In facilities under Homeland Security restrictions (i.e. MARSEC Security), a means of access will be worked out with the Manufacturer or Supplier.

j. Identification of a NYSDOT contract or pin number in which you plan on providing the material to or references from at least two local firms which plan on utilizing your product on NYSDOT projects.

The Materials Bureau will evaluate the application and advise the Supplier of adequacy of their application or if additional information is necessary. The Materials Bureau will conduct verification split sample testing with Supplier to evaluate the material and the applicants testing capabilities. The Materials Bureau, at times, will conduct an on-site inspection when details indicate further consideration of the application. The Materials Bureau will provide inspectors and any training of inspectors or facility personnel, when applicable. The Materials Bureau will complete final evaluation. If application is rejected, the Manufacturer and/or Supplier will be notified and the Department will terminate the application request.

For approved applications, the Materials Bureau will inform Manufacturer and/or Supplier in writing, of acceptance to the Departments Approved List. The Supplier will be added to the Approved List under the applicable material designation at the next update on the Department’s web page. Any necessary terminal(s) can be added at this time or at a later date to complete the requirements of shipment and storage of the intended materials. The Manufacturer and/or Supplier cannot provide material to NYSDOT work or projects during evaluation until written approval is obtained.
V. Program of Certification (Portland, Blended, and Slag Cements)

The following steps apply only to Suppliers authorized to supply Portland, blended, and slag cements (GGBFS).

<table>
<thead>
<tr>
<th>Responsibility</th>
<th>Action</th>
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<tbody>
<tr>
<td>Mill</td>
<td>Provides annual reporting requirements upon request to the Materials Bureau as outlined in Section IX. Continued participation in the CCRL proficiency sample programs as outlined in Appendix Table 2 is a continued requirement of its qualified laboratory.</td>
</tr>
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</table>

Manufactures/produces cementitious material(s) to meet all applicable Department specifications. Conducts any necessary testing to determine full conformance with the Department specifications.

a. Strength test determinations will be limited to 7 day strength results for Portland and blended cements for reporting purposes. Must provide any optional chemical and physical testing as outlined in the annual report letter or specifications.

Maintains separate silo storage of each NYSDOT/AASHTO Approved type (i.e. Type II (MH), Type IP, Grade 100, etc.) of tested materials. Certifies a complete record of test results for each silo, production lot and/or storage vessel of cementitious material. Independently provides a complete tabular summary and/or spreadsheet of the test data (or standard deviation values for specific testing) electronically on a monthly basis or other agreed upon frequency to the Department.

Mill and/or Distribution Terminal

Maintains the identity of its material. Material can not be contaminated with any production lots of differing types of material. Identity must be maintained through all transporting vehicles between multiple storage points. The Supplier and terminals are responsible for assuring identity of material throughout transfer and to final shipment to a concrete batching/mixing facility processing Department work. All storage terminals must also be pre-approved and listed on the Approved List of Suppliers for Portland, Blended and Slag cements.

Loads vehicle or shipment vessel for shipment and executes the Cementitious Shipment Certification Form BR280a (or a Department approved substitute), in duplicate for each shipment distributed as follows:

a. Original with shipment vehicle.

b. Copy is maintained in chronological order of shipment accessible for review or forwarding by Department representatives at any time.

c. The BR280a (or substitute) is completed for each change of shipment vessel until its final destination.
### A. Mill Verification Testing  
**Portland, Blended, and Slag Cement**

<table>
<thead>
<tr>
<th>Role</th>
<th>Description</th>
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<tbody>
<tr>
<td>Materials Bureau</td>
<td>Determines the frequency of random verification sampling as outlined in Table 3 of the Appendix. This frequency may change at any time, as per directives of the Materials Bureau. Materials Bureau outlines responsibilities, frequency and other directives to the Supplier.</td>
</tr>
<tr>
<td>Mill</td>
<td>The sample shall be collected, combined and split into two parts by mill personnel (In the case of slag cement, a separate reference cement sample will be split for comparative testing with the split sample of slag cement). The reference cement may be purchased for this use and therefore does not have to be produced by the Supplier. The split sample should be representative of the intended production and taken in accordance with AASHTO T-127 (cement and blended cement) and/or AASHTO M302 (slag cement). This includes the criteria for homogenizing, splitting and proper sample containers. Material should completely fill the container in an effort to eliminate any excess air space in the sample to avoid oxidation of the material during transit. Sampling schedule should follow outline of Table 3 on page 20.ˈ</td>
</tr>
<tr>
<td></td>
<td>Completes the “NYSDOT Verification Sample Submittal Form” on page 18 (for each material type). This form can be provided electronically upon request. The Mill keeps one set of the split sample for its testing purposes. The Mill seals the sample intended for the Materials Bureau with taped seals spaced approximately 120 degrees around the perimeter of the container and lid. The Mill packages the sample with the form in a box or carton for transmittal to the Materials Bureau. The Mill personnel seals the box or carton to ensure safe delivery and forwards the sample to the Materials Bureau Laboratory at the Manufacturer’s expense. Repeated reminders for sampling or any lapse in sampling will be cause for the Materials Bureau to re-evaluate the ability of supplier to follow Department QA process.</td>
</tr>
<tr>
<td></td>
<td>Performs full physical and chemical tests including any optional testing as outlined by the Department. Forwards the certified test results with a copy of the submittal form. The receipt of the mill certified test results should follow time guidelines of AASHTO T-127. (Strength tests for reporting purposes are limited to the 7 day results for cement and blended cements).</td>
</tr>
<tr>
<td><strong>Materials Bureau</strong></td>
<td>Ensures sample has not been tampered with and performs all physical and chemical tests required. Compares the results with the mill’s certified test results utilizing between lab precision values developed by NCHRP Research Result Digest #342 and the Materials Bureau. If the results are within the bias and precision requirements and meet all specifications, the evaluation will be complete. <strong>No further action is necessary.</strong></td>
</tr>
<tr>
<td><strong>Supplier and Materials Bureau</strong></td>
<td>If there is a significant difference between test results of the Materials Bureau and the Mill test results, the Mill and the Materials Bureau will be required to retest. If a difference still exists, referee testing will be performed by an AASHTO qualified laboratory of the Departments choosing. The Mill will be required to provide any additional information as requested. The Mill will be required to review its procedures, implement corrective action and report to the Department its findings, should it find its testing values to be in error.</td>
</tr>
<tr>
<td><strong>Materials Bureau</strong></td>
<td>If the Mill testing and/or subsequent explanations are found unsatisfactory in any manner by the Department, the Mill will be put under a monitoring program. If satisfactory, no actions will be required.</td>
</tr>
</tbody>
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**B. Random Destination/Field Sampling**  
*(Portland Cement, Blended Cement, Slag Cement, Fly Ash)*

| **Materials Bureau** | Establishes sampling guidelines for obtaining destination samples. Inspectors will be instructed for sampling locations and minimum frequencies. NYSDOT Regions are encouraged to take samples as often as deemed necessary. Materials Bureau will be responsible for guidance on sampling. Samples will be forwarded to the Materials Bureau for testing with appropriate paperwork. |
| **Mill/Supplier/Terminals** | Provides the plant person, when requested, to obtain representative sample from shipping vehicles or storage vessels (i.e. truck, silo, railcar, barge). Follows the appropriate specifications for representative sampling. **Samples must be witnessed by the Department personnel.** |
| **Concrete or Precast Mix Facility** | Provides the plant person, when requested, to obtain representative samples from shipping vessels (i.e. truck, silo, railcar, etc.). Follows appropriate specifications for representative sampling. **Samples must be witnessed by Department personnel.** |
Inspector
Witnesses the mill, supply or plant person obtain a sample of material following AASHTO T-127 (AASHTO M302 for slag cement, ASTM C311 for fly ash). Plant personnel are responsible for the representative sample. Sample size should follow guidelines of Table 3 on page 20. Oversized samples should be avoided. Sample containers should be clean and dry. Containers should be marked with date, type of material and manufacturer. When able, the corresponding SiteManager number should be labeled on sample container for transmittal of each sample to the Materials Bureau Laboratory. Department Inspectors should follow the QRG “Quality Reference Guide” that can be found in SiteManager for guidance on sampling and transmittal.

Forwards samples within two business days of sampling to Materials Bureau Laboratory.

Materials Bureau
Performs required tests on sample(s) to determine compliance of material with Department specifications. Compares test results with Department specifications to determine compliance.

When necessary compares the test results with the monthly spreadsheets or the submitted Supplier analysis as certified with this shipment.

a. If test results are in compliance, then no further action is needed. A transmittal letter is provided to regions upon request.
b. Unsatisfactory test results or any discrepancy from the Supplier’s test analysis will cause further investigation of the supply source by the Materials Bureau. Unsatisfactory test results will be reported to the Supply source and the Manufacturer for each instance.
c. A maximum of three separate sample failures taken at on separate instances at any individual terminal, ready mix or precast facility upon evaluation could result in removal of the Supplier, terminal or facility from the Department's Approved List of Plants and/or Suppliers.
VI. **Program of Certification for Fly Ash**

The following steps apply only to Suppliers authorized to supply Fly Ash to program.

<table>
<thead>
<tr>
<th>Responsibility</th>
<th>Action</th>
</tr>
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</table>
| Supplier             | Provides annual reporting requirements upon request to the Materials Bureau as outlined in Section VIII. Participates in the CCRL proficiency sample programs as outlined in Appendix Table 2.  
                        | Supplies fly ash to meet Department specifications. Conducts testing to determine full conformance with Department specifications.  
                        | Certifies a complete record of test results for each truck, rail car, silo, production lot or other storage vessel of fly ash. Provides a tabular summary and/or spreadsheet of shipping information and test data electronically on a monthly basis to the Department. |
| Supplier or Distribution Terminal | Maintains compliance of Department designated fly ash distribution related to the original certified test data at all storage points as well as in all transporting vehicles between multiple storage points. Supplier is responsible for assuring identity of material throughout transfer and to its final shipment destination which is generally a concrete batching, mixing or precast facility processing Department work. |
| Supplier or Distribution Terminal | Executes a certified letter stating the fly ash meets the requirements of NYSDOT Standard Specification Item 711-10. This certification must be signed by an authorized representative of the firm. The certification must reference the bill of lading number. The accompanying bill of lading or the certification must also contain the following:  
                        a. Class of fly ash  
                        b. Manufacturing Source and location  
                        c. Shipping origin  
                        d. Lot quantity and identity  
                        e. Date and identifying bill of lading number  
                        These documents must accompany the shipment vehicles and are to be available at any time by request of the Department (or its representative) in chronological order. As a reminder, only Approved Listed terminals can be used for intermediate storage. |
A. Verification Testing for Fly Ash (at Power Plant locations)

Supplier

Once monthly, or at regular intervals, grab samples will be collected from the production line, multiple consecutive trucks or rail cars during a normal production day. The split samples should be representative of intended production and taken in accordance with ASTM C-311. This includes the criteria for homogenizing, splitting and proper sample containers. Material should completely fill the container in an effort to eliminate any excess air space in the sample to avoid oxidation of material during transit.

Samples are combined, homogenized and split into three-1 gallon samples. One 1-gallon sample will be for the NYSDOT Laboratory to test, one 1-gallon sample will be for the Supplier to test and the last will be labeled and stored at the facility for the 6 month or 2000 ton composite.

Fills out the “Verification Sample Submittal Form” located in the FORMS section of this document on page 18. The Supplier’s representative will make sure to complete the form with the necessary information and to include whether the sample should be listed as “Monthly” or “400 ton”. This form is placed inside a legal envelope and may be placed inside one of the three containers or taped to the outside of the container for forwarding to the Materials Bureau laboratory. Replace the lids of the containers and seal the sample container bound for NYSDOT and the sample that will be stored onsite with the supplier by placing taped seals at least 120 degree intervals around the container and lid. Identified the three samples with the date and any other identifying information. Places the sample in a box or carton for transmittal to the Materials Bureau. Seals the box or carton to ensure safe delivery.

The representative or plant person will ship the container(s) **every month** to the NYSDOT Laboratory, 7 Harriman Campus Road, Albany NY 12206.

Supplier

Performs at the plant site the abbreviated physical and chemical tests for moisture content, loss on ignition and 45uM Fineness and any other tests that are predetermined by the Department. Sends the test results referencing the site and the date of sampling from the split electronically or by US Mail @ NYSDOT, 50 Wolf Road MP51, Albany, NY 12232) within a week of the sampling.

At the beginning of sixth months the plant person will take the monthly sample the same as outlined above. After the completion of the monthly sample process, he/she will obtain the previously 5 stored and sealed monthly samples and the 6th month sample that was set aside. **These 6 samples comprise the 6 month composite sample.**
Supplier

The plant person will then combine and homogenize the 6-one gallon samples to obtain 2-2 gallon samples for full testing by the Supplier and the NYSDOT laboratory.

Packages and seals the sample intended for the Materials Bureau as explained previously with the sample submittal form (except 6 month or 2000 ton composite will be noted on form) and encloses in an envelope. Places the envelope in a box or carton for transmittal to the Materials Bureau. Seals the box or carton to ensure safe delivery.

The Supplier’s split of the sample will be tested at their lab (or their approved consultant lab) for full physical and chemical testing according to ASTM C618 including the optional 28 day available alkali testing or any other testing deemed needed by the Department. The sample results will again be forwarded electronically to the Materials Bureau referencing information from the form within 2 months of the sampling.

Materials Bureau

Ensures sample seals are intact and performs all physical and chemical tests required on the received sample. Compares the results with the Supplier’s certified test results utilizing between lab precision values per ASTM C311. If results are within precision requirements and meet all specifications, evaluation will be complete. No further action is necessary.

Supplier and

If a significant difference exists between the test results of the Materials Bureau and the Supplier test results, the Supplier and the Materials Bureau will be required to retest to confirm original results. If a difference still exists, referee testing will be performed by an AASHTO qualified laboratory. The Supplier will be required to provide any additional information as needed. The Supplier may be required to review its procedures, implement corrective action and/or report to the Department its findings, should it find its testing values in error.

Materials Bureau

If the Supplier testing and/or explanation are found unsatisfactory in any manner by the Department, the Supplier may be removed from the Approved List or some other program of intensive monitoring may be developed in response. The Supplier will be notified by writing if any action is necessary. If satisfactory, no action will be required.

B. Random Destination Field Sampling (Flyash)

Follow the guidelines for Portland, blended and slag cement (GGBFS) destination sampling excerpt on page 11 of this method. Sampling should follow guidelines of ASTM C311.
VII. Program of Certification for Silica Fume and High Reactivity Pozzolans

The procedure and instruction for the sampling and testing of silica fume and high reactivity pozzolans can be found in Materials Procedure 90-1, the Manual of Uniform Record Keeping and the “Quality Assurance Procedure for Standard Specifications, Construction and Materials Section 700 - Materials and Manufacturing”, NYSDOT Quality Assurance Procedure.

Responsibility | Action
--- | ---
Suppliers | Forwards a tabulated summary and/or spreadsheet of testing information and shipping documentation to the Department on a monthly basis. Annual Reporting requirements will apply. The random sampling will be performed as directed by Department.

VIII. Annual Reporting (All)

Each approved Supplier on the Department's Approved List for Cementitious and Supplementary Cementitious Materials are required by this method to submit to the Materials Bureau an annual update on the Quality System Manual Report in the first quarter of the year. A yearly letter will be generated by the Department reviewing the annual requirements with any changes. Every three years the Department will ask for the Quality System Manual in its entirety. This report updates and/or details manufacturing, quality control, and distribution characteristics as outlined on page 6 of the Procedure for Application in Section IV.

Manufacturers and/or Suppliers Mill Report Requirements:

Important updates should always include any changes in the Quality System Manual including:

1. All updated contact information of the individual(s) coordinating with the Materials Bureau on the inspection, sampling, and testing of product for the Supplier.
2. Any changes in materials, production, processes or equipment.
3. Any changes in Suppliers Quality Control Program.
4. Any changes in production and supply locations and capacities. The amount of material produced for NYSDOT projects since the last report and what is expected to be produced for NYSDOT projects in the next year.
5. Any changes in storage facilities including the contact information or changes in the terminals or terminal contacts.
6. A statement as to the participation in the inspection of laboratories and proficiency sample program of the Cement and Concrete Reference Laboratory (CCRL) of the National Institute of Standards and Technology (NIST) and the results of the most recent CCRL testing.
   a. The Department expects your company’s CCRL test results to have ratings of 2 or more. Each approved laboratory receiving ratings less than 3 are to be evaluated to determine the reason(s) for the deviation from results of the other participating laboratories. Please review your results and provide written documentation of your evaluation for the results that have a rating of less than 3 and explain the corrective action taken to address the testing deficiency.
7. An example of the written statement indicating and certifying your product will meet applicable Department specifications which will accompany all shipments.
8. An updated Material Safety Data Sheet (MSDS) must be included for all types of applicable product that your company supplies.

IX. FORM EXAMPLES

The following are examples of various material forms used with cementitious and supplementary cementitious materials. Substitutions for Department recommended forms may be used upon review and pre-approval of the Department.

![BR280a (7/10) CEMENTITIOUS SHIPMENT CERTIFICATION](image)

BR280 Cementitious Shipment Certification
NYSDOT Verification Sample Submittal Form (For Suppliers)

Please PRINT all information. Examples or directions are provided. Upon completion, please provide copies to accompany sample, to be submitted electronically with results, and for your records.

### NYSDOT Item Number and Verification Sample Type:
Circle the applicable materials listed below

<table>
<thead>
<tr>
<th>701-01 Portland Cement</th>
<th>With limestone additions (MH) or No limestone</th>
</tr>
</thead>
<tbody>
<tr>
<td>701-03 Blended Portland Cement</td>
<td>(IT, IS, IP, IL, MS Blend)</td>
</tr>
<tr>
<td>711-10 Fly Ash</td>
<td>400 ton or Monthly, 2000 ton or 6 month Composite</td>
</tr>
<tr>
<td>711-12 GGBFS</td>
<td>GGBFS Reference Cement</td>
</tr>
</tbody>
</table>

#### Date Sampled (mm/dd/yy)

#### If Cement, Type Supplied:
- I, I/II, II, III, VI, IP, IS, IT, IL and if MH

#### If Fly Ash, Class Supplied:
- C or F

#### If GGBFS, Grade Supplied:
- 100 or 120

#### Company Name: Acme Cement Co.

#### Location Name: City, State

#### Mill or Manufacturer’s Test Date

#### Lot Number or Identification

#### Lot Size: Quantity in Lot (English Units)

#### Sampled From: Autosampler receptacle/composite, Silo #5, truck #, etc.

#### Sampled By: First and Last Name (Please Print)By:

Signature:

FOR NYSDOT USE ONLY

Date Received

LIMS No.
# X. Appendix Tables

## Table 1. Applicable Split Sample Size Information

<table>
<thead>
<tr>
<th>PROGRAM</th>
<th>CEMENT/ BLENDED CEMENT</th>
<th>POZZOLAN/ FLYASH</th>
<th>DENSIFIED SILICA FUME/ MICROSIlica</th>
<th>HIGHLY REACTIVE POZZOLAN</th>
<th>SLAG/ GGBFS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application</td>
<td>2 gallons (20 lbs.) (9,000 g.)</td>
<td>2 gallons (20 lbs.) (9,000 g.)</td>
<td>2 gallons (50 lbs.) (22,500 g.)</td>
<td>2 gallons (50 lbs.) (22,500 g.)</td>
<td>2 gals. (20 lbs.) (9,000 g.) Slag + 2 gals. (20 lbs.) (9,000 g.) Reference Cement</td>
</tr>
<tr>
<td>Certification</td>
<td>2 gallons (20 lbs.) (9,000 g.)</td>
<td>“Monthly or 400 ton” 1 gallon (10 lbs.) (4,500 g.) and/or “6 month or 2000 ton” 2 gallons (20 lbs.) (9,000 g.)</td>
<td>1 gallon (10 lbs.) (4,500 g.)</td>
<td>1 gallon (10 lbs.) (4,500 g.)</td>
<td>2 gals. (20 lbs.) (9,000 g.) Slag + 2 gals. (20 lbs.) (9,000 g.) Reference Cement</td>
</tr>
<tr>
<td>Destination (Field)</td>
<td>1 gallon (10 lbs.) (4,500 g.)</td>
<td>1 quart (2.5 lbs.) (1150 g.)</td>
<td>1 quart (2.5 lbs.) (1150 g.)</td>
<td>1 quart (2.5 lbs.) (1150 g.)</td>
<td>1 quart (2.5 lbs.) (1150 g.)</td>
</tr>
</tbody>
</table>

**NOTES:**

1. This table is intended as a guide for the quality assurance sampling and testing of cementitious products for compliance with the Department’s specifications. Sampling frequencies are outlined and determined by the Department for obtaining samples at the production facility, during transportation and at the destined ready mix or precast facility.

The sampling and analysis procedures given in this Method should be incorporated with the Department’s Quality Assurance Program in Materials Procedure “Quality Assurance Procedure for Standard Specifications, Construction and Materials Section 700 - Materials and Manufacturing” and in accordance with the Department’s “Standard Specifications” which will result in a comprehensive quality assurance monitoring plan.
The sample size represented in these tables represents half of the split sample. Samples that are homogenized and split will be at least double this size and will include the sample to be tested by Supplier.

Table 2. Applicable CCRL Proficiency Program Participation

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>CCRL PROGRAM</th>
<th>LAB INSPECTION</th>
<th>SAMPLE PAIRS PER YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cement</td>
<td>Cement</td>
<td>Yes</td>
<td>2</td>
</tr>
<tr>
<td>Blended Cement</td>
<td>Blended Cement</td>
<td>Yes</td>
<td>1</td>
</tr>
<tr>
<td>Pozzolan (Flyash)</td>
<td>Pozzolan</td>
<td>Yes</td>
<td>1</td>
</tr>
<tr>
<td>Slag (GGBFS)</td>
<td>Cement</td>
<td>Yes</td>
<td>2</td>
</tr>
<tr>
<td>Microsilica (Silica Fume)</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>High Reactivity Pozzolan</td>
<td>Pozzolan</td>
<td>Yes</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 3. Quality Assurance Certification (A) Program Sampling

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>QUARTERLY SPLIT</th>
<th>MONTHLY SPLIT</th>
<th>6 MONTH SPLIT</th>
<th>YEARLY</th>
<th>DESTINATION (FIELD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cement/Blended Cement</td>
<td>2 gallons</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>1 gallon</td>
</tr>
<tr>
<td>Pozzolan (Flyash)</td>
<td>NA</td>
<td>1 gallon(^3)</td>
<td>2 gallons(^4)</td>
<td>NA</td>
<td>1 quart</td>
</tr>
<tr>
<td>Slag (GGBFS)</td>
<td>2 + 2 gallons (slag and reference cement)</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>1 quart</td>
</tr>
<tr>
<td>Microsilica (Silica Fume)</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>1 gallon</td>
<td>1 quart</td>
</tr>
<tr>
<td>High Reactivity Pozzolan</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>1 gallon</td>
<td>1 quart</td>
</tr>
</tbody>
</table>

NOTES:
1. This table is intended as a guide for the quality assurance sampling and testing of cementitious products for compliance with the Department’s specifications. Sampling frequencies are outlined
and determined by the Department for obtaining samples at the production facility, during transportation and at the destination ready mix or precast facility.

The sampling and analysis procedures given in this Method should be incorporated with the Departments Quality Assurance Program in Materials Procedure “Quality Assurance Procedure for Standard Specifications, Construction and Materials Section 700 - Materials and Manufacturing” and in accordance with the Departments “Standard Specifications” which will result in a comprehensive quality assurance monitoring plan.

2 The sample size represented in these tables represents half of split sample. Sample that is homogenized and split will be at least double in size and will include the sample to be tested by the Supplier.

3 Certification Program for Fly Ash also allows for sampling at 400 tons of production or 1 month.

4 Certification Program for Fly Ash also allows for sampling at 2000 tons of production or 6 months.

5 Conversions for sample sizes to pounds and/or grams can be found in Table 1.

XI. NOTES ON SAFETY

This Materials Method may require the use of hazardous materials and safety sensitive procedures. This Method does not address any of the safety problems associated with its use. It is the responsibility of the user of this Method to establish appropriate safety and health practices and determine the applicability of regulatory limitations before use.
Supplier provides a signed letter of intent on company letterhead for the intended material and item for the addition to the Approved List.

Department replies to the Supplier with the needs for required documentation and split sample for testing.

Supplier provides the Quality System Manual and other documentation to the Department. Supplier also provides split sample to the Department Laboratory.

Department reviews the documentation and evaluates. It also has the Department Laboratory test the split sample for full testing properties.

Supplier tests the split sample for full testing properties and forwards the certified results to the Department for specification compliance and verification of Suppliers testing.

Department then evaluates certified results and compares to Department Laboratory results utilizing developed precision and bias values.

Department completes final evaluation of documentation, split sampling and any other chain of custody issues. Additional requirements may be requested as needed for final evaluation.

Supplier is provided a letter of their addition to the Approved List under Certification and is added to web site in next update. Supplier is instructed to follow a program defined by the Department.

Addition to Approved List
Supplier follows schedule of verification testing for particular material. Supplier obtains, homogenizes and split samples. Supplier fills out “Verification Sample Submittal Form” to accompany sample. Supplier forwards half of sample to Department Laboratory. Supplier tests other half of sample and forwards certified results to Department Laboratory. Department Laboratory receives sample and tests for required test properties. Department Laboratory forwards test results to Analysts for evaluations.

Department evaluates testing of lab and Supplier for specification compliance and testing verification utilizing Department developed precision and bias values.

**Sampling and Testing Conform?**

- **YES**
  - Lab reviews and retests.
  - Supplier reviews and retests.

- **NO**
  - Department Reviews Testing and Procedures of both parties and evaluates. Third party testing is done when necessary.

**Conformance?**

- **YES**
  - Material under evaluation or removed from list

- **NO**
  - Annual Letter and Reporting requirements

**Within Required Time Period?**

- **Material Dependent**
  - Monthly or Quarterly