

SPECIFICATIONS



PUB 408/2016
(Initial Edition,
effective April 1, 2016)

SECTION 703—AGGREGATE

703.1 FINE AGGREGATE—

(a) General. Fine aggregate is natural or manufactured sand consisting of hard, durable, and uncoated inert particles reasonably free from clay, silt, vegetation, and other deleterious substances such as reactive chert, gypsum, iron sulfide, amorphous silica, and hydrated iron oxide. Substances that are present in amounts large enough to cause inconsistent performance in the properties of bituminous concrete or plastic or hardened Portland cement concrete are considered deleterious. Spent foundry sand may be used as fine aggregate in asphalt concrete and flowable fill.

Obtain fine aggregate with physical properties conforming to Table A from a source listed in Bulletin 14 or approved by the LTS before use.

1. Natural Sand. Natural sand is fine aggregate resulting from glacial or water action. Fine aggregate produced simultaneously with gravel coarse aggregate may contain crushed particles.

2. Manufactured Sand. Manufactured sand is fine aggregate from the controlled mechanical breakdown of rock, air-cooled blast furnace slag, or air-cooled steel slag into sound, approximately cubical particles. The Department will accept manufactured sand only if it is the primary product of the crushing operation and sized by a sand classifier. However, for fine aggregate used in bituminous concrete mixtures, a sand classifier is not required.

Fine aggregate manufactured from limestone may not be used in concrete wearing surfaces.

Fine aggregate manufactured from steel slag may not be used in cement concrete or mortar mixtures. Steel slag fine aggregate may only be used in bituminous wearing courses with the approval of the LTS; however, do not use steel slag fine aggregate in conjunction with steel slag coarse aggregate. Provide steel slag fine aggregate that is uniform in density and quality. Cure steel slag fine aggregate according to the following procedure:

- After gradation preparation, place steel slag fine aggregate, whether reclaimed from an old stockpile or processed directly from the steel-making process, in a controlled stockpile. Limit the stockpile size to a maximum of 30, 000 tons. Completely soak the steel slag fine aggregate with water before or during stockpiling. Submit the method of constructing and controlling the stockpile to the Representative for review.
- Maintain the stockpile in a uniform moist condition for a period of not less than 6 months. After the minimum cure period, the Representative will sample and test the stockpile for expansive characteristics according to PTM No. 130. The Representative will approve the stockpile for use if the average total volumetric expansion according to PTM No. 130 is less than 0.50%.
- If the stockpile fails expansion criterion, continue curing the stockpile for a minimum of two additional months. The Representative will resample and retest the stockpile after the required additional cure period.

The LTS will evaluate the quality of fine aggregates by conducting petrographic analysis according to PTM No. 518 and other tests necessary to demonstrate that required construction of acceptable durability can be achieved.

(b) Production Testing.

1. Personnel and Equipment. Provide and assign to the work a PennDOT Certified Aggregate Technician who will test fine aggregate at the source according to the requirements listed in Bulletin 14.

Provide equipment for acceptance testing and for developing and maintaining a QC program to ensure compliance with specification requirements during production as required in Bulletin 14:

2. Testing and Documentation. Perform tests as required by Bulletin 14. Evaluate the test results to ensure the quality requirements are met.

Document the results of tests made during production and make them available to the Department upon request.

(c) Grading and Quality Requirements.

1. Gradation. Table A lists the extreme limits for determining the suitability of supply sources.

Control the grading of Type A Fine Aggregate so that the fineness modulus of at least nine out of ten consecutive test samples from a single source delivered to a project or plant varies less than ± 0.20 from the average fineness modulus of the consecutive test samples. Determine the fineness modulus according to PTM No. 501.

For bituminous mixtures:

- If directed, vary the gradations within the limits listed in Table A.
- A blend of fine aggregates may be used if the proposed gradation limits for blending are approved by the District Executive in writing.
- If filler is required, provide fine aggregate conforming to the gradation of Table A and use cement, cement dust, fly ash, or fines from the crushing of stone, gravel, or slag that are reasonably free of clay.

2. Material Finer than the 75 μm (No. 200) Sieve. Determine the loss by washing according to PTM No.100.

3. Minimum Strength Ratio. Determine the organic impurities in fine aggregate (Type A and Type C only) according to AASHTO T 21. If the color value result is greater than Organic Plate No. 3, determine the minimum strength ratio according to AASHTO T 71 and use fine aggregate meeting the strength ratio requirements of Table A.

4. Soundness Test. Determine the percentage loss after five cycles of immersion and drying using a sodium sulfate solution according to PTM No. 510.

5. Specific Gravity and Absorption. AASHTO T 84.

Sieve Size	Cement Concrete Sand	Bituminous Concrete Sand Type B			Mortar Sand
	Type A	#1	#3	Filler	Type C
9.5 mm (3/8-inch)	100	100	100	—	—
4.75 mm (No. 4)	95-100	95-100	80-100	—	100
2.36 mm (No. 8)	70-100	70-100	65-100	—	95-100
1.18 mm (No. 16)	45-85	40-80	40-80	—	—
600 μm (No. 30)	25-65	20-65	20-65	100	—
300 μm (No. 50)	10-30	7-40	7-40	95-100	—
150 μm (No. 100)	0-10	2-20	2-20	90-100	0-25
75 μm (No. 200)	—	0-10	0-10	70-100	0-10
Material Finer Than 75 μm (No. 200) Sieve Max. Percent Passing	3	—	—	—	—
Strength Ratio Min. Percent	95	—	—	—	95
Soundness Test Max. Loss Percent	10	15	15	—	10
Fineness Modulus	2.30-3.15	—	—	—	1.6-2.5

703.2 COARSE AGGREGATE—

(a) General. Coarse aggregate consists of hard, tough, durable, and uncoated inert particles reasonably free from clay, silt, vegetation, and other deleterious substances such as reactive chert, gypsum, iron sulfide, amorphous silica,

and hydrated iron oxide. Substances that are present in amounts large enough to cause inconsistent performance in the properties of bituminous concrete or plastic or hardened Portland cement concrete are considered deleterious.

The LTS will evaluate the quality of coarse aggregates by conducting petrographic analysis according to PTM No. 518 and other tests necessary to demonstrate that required construction of acceptable durability can be achieved.

Furnish coarse aggregate crushed and prepared from one of the materials described below with physical properties conforming to Tables B, C, and D. Obtain coarse aggregate from a source listed in Bulletin 14 or approved by the LTS before use.

1. Stone. Durable stone free from slate texture or cleavage planes.

2. Gravel. Durable gravel particles. For use in cement concrete, wash thoroughly during production. For use in all bituminous wearing courses, unless otherwise specified, a minimum of 85% crushed particles with at least two faces resulting from fracture is required. For use as No. OGS, a minimum of 75% crushed particles with at least three faces resulting from fracture is required. For all Type A use, the maximum allowable absorption determined according to AASHTO T 85 is 3.0%; however, this restriction does not apply to dredged river gravel used in Portland cement concrete. For all Type B use, the maximum allowable absorption determined according to AASHTO T 85 is 3.5%.

3. Blast Furnace Slag. By-product of a pig-iron making process. Tough, hard, and durable pieces of air-cooled blast furnace slag. Blast furnace slag is excluded from the abrasion requirements. The density (unit weight) of blast furnace slag cannot be less than 70 pounds per cubic foot.

4. Steel Slag. By-product of a steel making process. Tough, hard, and durable pieces of steel slag reasonably uniform in density and quality. After crushing, grading, and forming a stockpile, take a sample from the stockpile and submit it to the LTS for testing of expansive characteristics. The LTS will accept the stockpile for use if the total expansion determined according to PTM No. 130 is less than 0.50%. Once a stockpile is accepted, do not add to it if it is for Department use. Limit the stockpile size to a maximum of 30,000 tons. If the stockpile fails expansion requirements, cure the aggregate stockpile as follows:

- Rework the stockpile and soak the aggregate completely with water.
- Submit the proposed method of constructing and controlling the stockpile during the cure period for review and acceptance.
- Maintain the aggregate in a uniformly moist condition in the stockpile for a period of at least 6 months. Take a sample after this curing period and submit it to the LTS for testing according to PTM No. 130.
- The Representative will accept the stockpile for use if the total expansion is less than 0.50%. If the stockpile still fails the expansion requirement, continue curing for at least two additional months before resampling and retesting.

Aggregate manufactured from steel slag is not acceptable for pipe or structure backfill or in cement concrete. Steel slag may be used for subbase, selected granular material, shoulders, selected material surfacing, and in bituminous surface courses.

5. Granulated Slag. By-product of an iron-making process. Granulated blast furnace slag is the granular glassy material formed when molten slag from iron-making is rapidly quenched by immersion in water and contains not more than 3% total iron reported as Fe_2O_3 . Provide material containing not more than 20% by mass (weight) of substances that are not granulated slag. Use material with a dry rodded density (unit weight) determined according to AASHTO T 19 of not more than 80 pounds per cubic foot. Provide uniform material having a maximum size of 50 mm (2 inches) and not more than 20% passing the 150 μm (No. 100) sieve. Granulated slag may only be used for subbase material as specified in Section 350.

6. Lightweight Aggregate. Acceptable types of lightweight aggregate are as follows:

- Aggregate prepared by expanding, pelletizing, or sintering products such as blast-furnace slag,

diatomite, fly ash, clay, shale, or slate.

- Aggregate prepared by processing natural materials such as pumice, scoria, or tuff.

Furnish lightweight aggregate conforming to AASHTO M 195, the soundness and abrasion limits for Type A aggregate as specified in Table B, and the following durability requirements.

- Aggregate Absorption Factor (PTM No. 526) Max. % 2.5
- Freeze-Thaw Resistance of Concrete, Decrease of Dynamic Modulus at 300 Cycles (AASHTO T 161, Procedure B, except that after 14 days of moist cure, dry the beams 3 inches by 4 inches by 16 inches at 72F ± 3F and approximately 50% relative humidity for 14 days. Then soak the beams in water for 3 days before starting the freezing and thawing test.) Max. % 60
- Freeze-Thaw Resistance of Aggregate (PTM No. 525) Max. % 25

TABLE B
Coarse Aggregate
Quality Requirements

	Type A	Type B	Type C
Soundness, Max. %	10	12	20
Abrasion, Max. %	45*****	45*****	55*****
Thin and Elongated Pieces, Max. %	15	20	—
Material Finer Than 75 µm (No. 200) Sieve, Max. %	*	*	10
Crushed Fragments, Min. %	55**	55**	50
Compact Bulk Density (Unit Weight), lbs./cu. ft.	70	70	70
Deleterious Shale, Max. %	2	2	10
Clay Lumps, Max. %	0.25	0.25	3
Friable Particles, Max. % (excluding shale)	1.0	1.0	—
Coal or Coke, Max. %	1	1	5
Glassy Particles, Max. %	4 or 10***	4 or 10***	—
Iron, Max. %	3*****	3*****	3*****
Absorption, Max. %	3.0****	3.5****	—
Total of Deleterious Shale, Clay Lumps, Friable Particles, Coal, or Coke Allowed, Max. %	2	2	15

* See Section 703.2(c)4.

** See Section 703.2(c)5.

*** See Section 703.2(c)10.

**** Gravel only. See Section 703.2(a)2.

***** See Section 703.2(c)11.

***** Blast Furnace Slag excluded. See Section 703.2(a)3.

7. Recycled Concrete. Salvaged and crushed concrete pavements and concrete highway structures from Department, county, or municipal projects for use as aggregate in subbase only. Other recycled concrete may be used in subbase if the concrete was made using materials approved by the Department. Provide recycled concrete conforming to Table B and Table C, except soundness testing is not required.

(b) Production Testing.

1. Personnel and Equipment. Provide and assign to the work a PennDOT Certified Aggregate Technician who will test coarse aggregate at the source according to the requirements listed in Bulletin 14.

Provide equipment for acceptance testing and for developing and maintaining a QC program to ensure compliance with specification requirements during production as required in Bulletin 14.

2. Testing and Documentation. Perform tests as required by Bulletin 14. Evaluate the test results to ensure the quality requirements are met.

Document the results of tests made during production and make them available to the Department upon request.

(c) Quality Requirements. The following notes are applicable to Table B.

1. Soundness. Determine the percentage loss after five cycles of immersion and drying using a sodium sulfate solution according to PTM No. 510. The LTS may accept aggregate failing the test if it can be demonstrated in writing that the aggregate has a satisfactory service record in both pavements and structures. Acceptable aggregate produced from recycled concrete need not conform to soundness requirements since cementitious material cannot be evaluated with this test.

2. Abrasion. Determine the percentage of loss according to AASHTO T 96.

3. Thin and Elongated Particles. ASTM D 4791, Method B, using the material retained on the 4.75 mm (No. 4) sieve. Measuring the ratio of 5:1, comparing the length to the thickness of the aggregate particles. Calculate the percentage of flat and elongate particles by mass.

TABLE C
Size and Grading Requirements for Coarse Aggregates
(Based on Laboratory Sieve Tests, Square Openings)

AASHTO Number	Total Percent Passing													
	100 mm (4")	90 mm (3 1/2")	63 mm (2 1/2")	50 mm (2")	37.5 mm (1 1/2")	25.0 mm (1")	19.0 mm (3/4")	12.5 mm (1/2")	9.5 mm (3/8")	4.75 mm (No. 4)	2.36 mm (No. 8)	1.18 mm (No. 16)	150 μm (No. 100)	75 μm (No. 200) ***
1	100	90-100	25-60		0-15		0-5							
3			100	90-100	35-70	0-15		0-5						
467				100	95-100		35-70		10-30	0-5				
5					100	90-100	20-55	0-10	0-5					
57					100	95-100		25-60		0-10	0-5			
67						100	90-100		20-55	0-10	0-5			
7							100	90-100	40-70	0-15	0-5			
8								100	85-100	10-30	0-10	0-5		
10									100	85-100			10-30	
2A**				100			52-100		36-70	24-50	16-38*	10-30		
OGS**				100			52-100		36-65	8-40		0-12		

* Applies only for bituminous mixtures.

** PennDOT Number – Only Type C will be listed in Bulletin 14.

*** For 75 μm (No. 200), see Table D.

Note A: A combination of No. 7 and No. 5 may be substituted for No. 57, provided that not more than 50% or less than 30% of the combination is No. 7 size.

Note B: Provide No. OGS material that has a minimum average coefficient of uniformity of 4.0. The average coefficient of uniformity is defined as the average of the sublots within each lot. Determine the coefficient of uniformity according to PTM No. 149 each time the gradation is determined. The required minimum coefficient of uniformity for individual samples is 3.5. If the coefficient of uniformity of any sample falls below 3.5, reject the lot. Do not use the coefficient of uniformity in the multiple deficiency formula.

4. Material Finer than the 75 μm (No. 200) Sieve. Determine the loss by washing according to PTM No. 100 and Table D.

This test is not required for aggregate processed through a mechanical dryer for use in bituminous concrete; however, the aggregate is required to be clean and free of fines that would adversely affect the coating of the aggregate with bituminous material.

This test is not required for AASHTO No. 10 aggregates.

TABLE D
Material Passing the 75 μm (No. 200) Sieve —
(Based on Laboratory Sieve Tests, Square Openings)

Section	Specification	% Maximum
350	Subbase (No. 2A)	10
350	Subbase (No. OGS)	5
430	Bit. Wear. Crse. FB-2	2
431	Bit. Bind. Crse. FB-2	2
439	Bit. Wear. Crse. FB-1	2
440	Bit. Bind. Crse. FB-1	2
441	Bit. Bind. Crse. CP-2	2.0
450	Bit. Bind. Crse. DP-1	2.0
470	Bit. Seal Coat	1.0
471	Bit. Seal Coat w/ Precoat. Aggr.	2.0
480	Bit. Surf. Treatment	1.0
704	Cement Concrete	1
—	All other uses	2

5. Crushed Fragments. ASTM D 5821

6. Deleterious Shale. Determine the percentage of deleterious shale by four cycles of wetting and drying according to PTM No. 519. The LTS will use petrographic analysis to confirm the results.

7. Friable Particles. Percent loss according to PTM No. 620.

8. Coal or Coke. Determine the percentage of mass (weight) by visual identification and hand separation. If required, the LTS will use petrographic analysis to confirm the results.

9. Glassy Particles. Determine the percentage of mass (weight) by visual identification and hand separation. Pieces of slag containing more than 50% glass are considered to be glassy particles. Waste glass is also considered to be glassy particles. For coarse aggregate used in cement concrete, the maximum percentage of glassy particles allowed is 4%. For other uses, the maximum percentage of glassy particles allowed is 10%. Coarse aggregate containing glassy particles consisting of waste glass may not be used in cement concrete or bituminous wearing courses.

10. Metallic Iron. The LTS will use petrographic analysis to determine the content of metallic iron. Pieces of slag containing metallic iron are considered to be metallic iron. This requirement is waived when aggregate with metallic iron is used in bituminous mixtures or subbase. PTM No. 518.

11. Clay Lumps. Determine the percentage of mass (weight) by visual identification and hand separation. If required, the LTS will use petrographic analysis to confirm the results.

12. Specific Gravity and Absorption. AASHTO T 85.

13. Bulk Density (Unit Weight) and Voids. AASHTO T 19.

(d) Testing and Acceptance. Section 703.5(b)

703.3 SELECT GRANULAR MATERIAL (2RC)—

(a) General. Select granular material consists of durable bank or crushed gravel, stone, or slag mixed or blended with suitable filler materials to provide a uniform mixture. Obtain select granular material from a source listed in Bulletin 14. Stockpile, sample, and test material before it is used to ensure reasonable uniformity and acceptability. Use material free from vegetable or organic matter, lumps, or an excessive quantity of clay or other objectionable or foreign substances, and not more than 10% deleterious shale by mass (weight).

(b) Gradation. Conforming to the following gradation, determined according to AASHTO T 27:

- Passing 50 mm (2-inch) sieve—100%
- Passing 4.75 mm (No. 4) sieve—15% to 60%
- Passing 150 μ m (No. 100) sieve—0% to 30%

703.4 ANTI-SKID MATERIAL—

(a) General. For use on ice or snow-covered pavement surfaces, furnish anti-skid material conforming to Table E from a producer or agent listed in Bulletin 14. Do not use material containing metal, glass, or substances that may be harmful to automotive equipment and vehicles. Use material reasonably free of deleterious substances or foreign materials including, but not limited to, dirt, shale, slate, incinerated bituminous coal mine waste, and within the maximum limits of the individual deleterious and total deleterious materials as specified in Section 703.2(a), Table B, Type C.

(b) Description.

1. Type AS1. Either natural sand, manufactured sand (except slag aggregates), or a combination of the two conforming to the following requirements:

- Bulk Density (Unit Weight). Minimum 70 pounds per cubic foot and not exceeding 110 pounds per cubic foot determined according to AASHTO T 19.
- Crushed Fragments. If natural sand is furnished, not less than 35% of the fragments retained on the 2.36 mm (No. 8) sieve are required to be crushed fragments, determined according to ASTM D 5821.
- Iron. Total of individual anti-skid particles containing metallic iron may not exceed 1.0% by mass (weight) of material, determined by dividing the mass (weight) of such particles retained on the 4.75 mm (No. 4) sieve by the total dry mass (weight) of the sample.

2. Type AS2 and AS3. Crushed stone or crushed gravel conforming to the following requirements:

- Bulk Density (Unit Weight). Minimum 70 pounds per cubic foot and not exceeding 105 pounds per cubic foot determined according to AASHTO T 19.
- Los Angeles Abrasion. Abrasion loss not exceeding 55%, determined according to AASHTO T 96, Gradation D.
- Crushed Fragments. If crushed gravel is furnished, not less than 60% of the fragments retained on the 4.75 mm (No. 4) sieve are required to be crushed, one face, determined according to ASMT D 5821.
- Iron. Total of individual anti-skid particles containing metallic iron may not exceed 1.0% by weight of material, determined by dividing the mass (weight) of such particles retained on the 4.75 mm (No. 4) sieve by the total dry mass (weight) of the sample.

3. Type AS4. Crushed slag conforming to the following requirements:

- Bulk Density (Unit Weight). Minimum 70 pounds per cubic foot and not exceeding 105 pounds per cubic foot determined according to AASHTO T 19.
- Los Angeles Abrasion. Abrasion loss not exceeding 55%, determined according to AASHTO T 96, Gradation D.
- Iron. Total of individual anti-skid particles containing metallic iron may not exceed 1.0% by mass (weight) of material, determined by dividing the mass (weight) of such particles retained on the 4.75 mm (No. 4) sieve by the total dry mass (weight) of the sample.

(c) **Gradations.** Conforming to Table E.

TABLE E
Anti-Skid Gradation

Anti-Skid Type	Maximum Percent Passing Sieve								
	31.5 mm (1 1/4")	19.0 mm (3/4")	12.5 mm (1/2")	9.5 mm (3/8")	4.75 mm (No. 4)	2.36 mm (No. 8)	300 µm (No. 50)	150 µm (No. 100)	75 µm (No. 200)*
Type AS1				100	60-100	0-80		0-8	0-5
Type AS2				100	35-80	0-45		0-6	0-3**
Type AS3			100	90-100		0-30		0-8	
Type AS4				100		0-30		0-8	0-5

* Determined by PTM No. 100.

** If the total percent passing the 2.36 mm (No.8) sieve is less than 25%, then the total percent passing the 75 µm (No. 200) sieve is allowed to be 0-5.

(d) **Testing.** If shipping, test material for moisture content according to PTM No. 513. A minimum of two tests per day is required. If conditions exist that would cause a change in moisture content, conduct additional tests. A Department representative will verify the test results.

Document tests at the end of delivery quantity at the end of the day and determine the average moisture content. The Department will adjust the delivery quantity by deducting the average moisture content from the aggregate quantity shipped. Payment is based on the calculated oven dry mass (weight).

703.5 ACCEPTANCE OF CONSTRUCTION AGGREGATES—

(a) **General.** The following describes the certification acceptance of construction aggregates. Accept AASHTO No. 1 Coarse Aggregate as specified in Section 850.2(a)1.

(b) **Testing and Acceptance.** Certify each day's shipment of aggregate as specified in Section 106.03(b)3.

1. **QC.** Section 106.03(b)2 and as follows:

- Submit for annual review a QC Plan conforming to the minimum Department requirements for aggregate suppliers.
- Establish and positively identify aggregate stockpiles that have been tested according to the approved QC Plan and conform to Department Specifications. Material may be added to or shipped from stockpiles at the producer's discretion.

2. **Source Verification Samples.** Under the direction and supervision of the Representative, obtain a verification sample (n=3) from each stockpile to be tested. Obtain the sample from the stockpile according to AASHTO T 2 or from a mini-stockpile. If the mini-stockpile method is chosen, obtain the sample according to the

following procedure:

- Place approximately 10 tons of aggregate into a mini-stockpile on a suitable surface. Use a loader to strike off the top of the mini-stockpile.
- Obtain sufficient material for sampling from random locations on the mini-stockpile using a square faced shovel.

Immediately deliver the sample to the Representative for testing using the equipment provided as specified in Sections 703.1(b) and 703.2(b). The Representative will test all three increments for compliance with Tables A, B, C, and D, as applicable. If the test results verify that the material conforms to the specifications, use the material under certification.

If the material does not conform to the specifications, the Representative will determine the percent within tolerance (PWT) according to Section 106.03(a)3. If results indicate a PWT for the material of less than 90, the Representative will reject the stockpile.

If a stockpile is rejected, increase QC testing according to the reviewed QC Plan. Construct another stockpile of the aggregate to be tested consisting of 300 tons to 500 tons of material or the remainder of the quantity identified for Department projects, whichever is less. The Representative will accept the material under certification if test results verify that the material from the new stockpile conforms to the specifications.

3. Project Verification Samples. Under the direction and supervision of the Inspector, obtain verification samples (n=3) according to Table F for each type of aggregate at the point of placement (loose aggregate sample immediately before compaction):

TABLE F
Verification Samples

Aggregate Quantities	Number of Samples (n=3)
500 tons or more, but less than 2,000 tons	1
2,000 tons or more, but less than 10,000 tons	2
10,000 tons or more, up to 25,000 tons	3
Each additional increment of 25,000 tons	1

The Inspector will select sample locations according to PTM No. 1.

Under the direction and supervision of the Inspector, immediately deliver the sample(s) to the test site at either the producers' location or the project site. The Inspector will test the sample(s) using the equipment provided as specified in Sections 703.1(b) and 703.2(b). The Inspector will test all three increments for compliance with Tables C and D, plus the Crushed Fragments Test of Table B when applicable. The Department will continue to accept material under certification if test results verify that the material conforms to the specifications.

If the material does not conform to the specifications, the Inspector will determine the average PWT of the material as specified in Section 106.03(a)3. If results indicate a PWT for the material of less than 90, immediately obtain an additional verification sample (n=3) at the project site from the next 150 tons of material.

Discontinue all operations using that type of aggregate until the results of the second verification sample are evaluated. If results indicate a PWT of 90 or more, resume operations using the evaluated aggregate. If the results indicate a PWT of less than 90, conduct acceptance testing at the point of placement according to the following procedure:

- Provide a separate field laboratory as specified in Section 609 at no additional expense to the Department. Do not resume operations using the material until the field laboratory is in place at the project site.
- Under the direction and supervision of the Inspector, obtain an acceptance sample (n=3) at the point of placement (loose aggregate sample immediately before compaction) for each day's placement. The Inspector will select sample locations according to PTM No. 1. Immediately

transport the sample from the sampling point to the testing site. The Inspector will test all three sample increments for compliance with Section 703.2(c), Tables C and D.

- The Department will continue project acceptance testing until ten consecutive day's placements are accepted with no rejected material. The Contractor will be charged \$200 per day, for each day the material is placed, for project acceptance testing performed by the Department.
- For test values not conforming to the specifications, the Department will determine the PWT according to Section 106.03(a)3. If results indicate a PWT for the material of less than 90, remove and replace the material at no additional cost to the Department.

4. QA Samples. ISSD QA samples (n=3) may be taken at the source of supply or at the point of placement on the project. Submit samples to the LTS for testing. If results for any type of material indicate a PWT of less than 90, the District will immediately obtain an additional verification sample (n=3) at the appropriate site (project or source). The Department will test all three sample increments at either the producer's location or at the project site and determine the PWT for the material. If results indicate a PWT for the material of less than 90, obtain source verification samples and project verification samples as specified in Section 703.5(b)2 and Section 703.5(b)3.

(c) Weighing Responsibilities. Prepare weight slips and certifications attesting to the accuracy of the weights recorded and ensuring conformance with Section 107.23(b). Designate a licensed weigh person(s) to act as the Contractor's agent. Ensure that scales are calibrated annually by an independent agency acceptable to the Department. A Department Inspector may provide random checking.

Weigh empty trucks used to haul material measured by mass (weight) daily unless otherwise directed. If the invoice mass (weight) exceeds the net mass (net weight) determined by a Department mobile weigh team by more than 3%, the Department will consider the deviation to be excessive. Take immediate corrective action upon notification of an excessive deviation. Within 30 days of notification, provide the District Executive with a written description of corrective actions and safeguards and the time that they were implemented.

703.6 CERTIFICATION OF AGGREGATES AT BITUMINOUS AND CEMENT CONCRETE PLANTS—

(a) Certification. Certify aggregate at bituminous and cement concrete plants yearly for quality requirements as specified in Section 106.03(b)3 using Form CS-4171 or another acceptable form.