

## **Attachment 10**

### **Abrasive A - Detailed Specifications**

**Group 33700 IFB 23330**

**Aggregates (Abrasive, Crusher Run, Geotechnical Fill) (Statewide)**

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**ABRASIVES – GRADATION A–SPECIFICATION****SCOPE**

This specification covers the material requirements and basis of acceptance for abrasives used to treat snow and ice on pavements.

**MATERIAL REQUIREMENTS**

Material for use as Winter Abrasives may be either

1. Natural Sand; or
2. Manufactured Sand, including sand made from crushed stone, crushed gravel, ore tailings, crushed slag, lightweight aggregate, or other suitable material.

All abrasives shall consist of hard, strong, durable particles which are free from a coating or any injurious material and injurious amounts of clay, loam or other deleterious substances.

Abrasives meeting specification will be accepted unless the Resident Engineer/Authorized User representative (or his/her designee), using test results or service records, determines that

1. Material contains sufficient unsound or undesirable material to be harmful.
2. Particles degrade due to weathering either in storage or in service, so as to be ineffective.

The method of accounting for delivery (in US Tons) involves collecting weight tickets from scales that have been certified by the appropriate Municipal jurisdiction and are signed by deliveries of less than 200 tons are ordered, all material must be delivered as a single (multiple trailer) bulk delivery. Deliveries should consist of not more than 1,000 tons per day. Deliveries will be accepted between the hours of 7:30 a.m. and 3:00 p.m. only, unless exceptions are specifically granted by the Resident Engineer/Authorized User representative (or his/her designee).

If the Resident Engineer/Authorized User representative (or his/her designee), as a result of visual inspection, suspects that abrasives being delivered may not be within the specification limits, he/she should immediately notify the supplier of the nature of the suspected problem(s) both verbally and in writing. Upon receipt of notification the supplier shall cease making deliveries until it informs NYS Office of General Services and the NYS Department of Transportation (NYSDOT) of the issue and until the Resident Engineer/Authorized User representative (or his/her designee) has had 3 working days (not counting the day of notification) to sample and test the suspect material. The supplier may request permission to continue deliveries after notification, and the Resident Engineer/Authorized User representative (or his/her designee) may approve the request at his/her discretion. However, any material delivered after notification must be stockpiled separate from earlier deliveries. Any action deemed necessary by the test results will be applicable to the Lot delivered the day of notification and to any subsequent Lots delivered during the 3-day testing and sampling period.

**GRADATION (Particle Size/Shape)**

The gradation requirements for the various items in this Invitation for Bids are listed in the Gradation Reference Chart in this specification. **NOTE:** The Specification Gradation Column is to be used for bidding purposes. The Rejection Gradation Column will only be used at the time of delivery to determine the acceptability of the load.

Gradation acceptance at the final point of sampling (which depending upon the production operation could be the Producer’s Stockpile, the Production Operation or Pit, or the Delivery Location) may be measured against the Rejection Gradation. Material which falls between the Specification Gradation and the Rejection Gradation will be paid at a reduced rate. The reduced price may be based upon the average values of at least two samples representing a pit location, lot, stockpile, or process. Material which is found to fall outside the Rejection Gradation on one or more sieve sizes may be rejected, and no payment will be due the contractor for such rejected material.

If, after delivery, the sand gradation is found to be out of tolerance, a deduction from the price may be made based on the following:

$$\text{Reduced price/ton} = \text{delivered contract price} \times (1.00 - X)$$

X = decimal equivalent of the total % out of gradation less the tolerance. The % out of tolerance for each sieve may be to the nearest 1%. The total of the individual sieve tolerance deviations shall be used as X.

**GRADATION ACCEPTANCE**

Gradation acceptance of abrasive material shall be based on the condition that the material meets the specification requirements. Acceptance shall be determined at the final point of sampling. Depending on the production operation and uniformity of delivered material, the final point of acceptance sampling could be the producer’s stockpile, production operation, pit or a lot of delivered material. Depending on the production operation, NYSDOT may require that exclusive stockpiles be built, tested and approved prior to delivery. If the material deviates from the specification gradation requirements shown in the Gradation Reference Chart, an adjusted price may be paid for the material. The adjusted price may be based on the average values of at least two samples representing a pit location, lot, stockpile or process.

**GRADATION REFERENCE CHART**

Gradation Reference	Sieve Size	Specification Gradation (% passing by wt.)	Rejection Gradation (% passing by wt.)
A	1/2"	100	100
A	3/8"	100	95 – 100
A	#4	80 – 100	70 – 100
A	#50	0 – 18	0 – 22
A	#200	0 – 3	0 – 5

## SAMPLING

Sampling will be performed by NYSDOT personnel or their representatives and will depend on the operation of the successful awardee(s). Where stockpiles exist, the material will be sampled in the stockpiles prior to delivery. Where material is being processed shortly in advance or at the time of delivery, the process will be sampled. Where the material is unprocessed, specific working areas of the source will be sampled prior to delivery. All delivered materials are subject to random and/or specific sampling if a problem is suspected. Sampling methods, locations and point of final acceptance will be determined by the NYS Department of Transportation.

## TESTING METHOD

Gradation testing may be performed on samples by sieving in conformance with NYSDOT Materials Bureau Test Methods 703-1P and 703-2P. Moisture content shall be determined by AASHTO Test Method T-255.

## REJECTED MATERIALS

When materials are rejected, they must be removed by the Contractor within ten (10) calendar days of notification of rejection. Rejected items not removed by the Contractor within the said ten (10) calendar days may be regarded as abandoned by the Contractor. The Resident Engineer/Authorized User representative (or his/her designee) then may have the right to dispose of said abandoned material as its own property by virtue of the contractor's failure to facilitate timely removal. The Contractor shall promptly reimburse the Resident Engineer/Authorized User representative (or his/her designee) for any and all costs incurred in effecting such disposal.

## WEIGHT/VOLUME CONVERSION

Locations (delivery sites) where volumetric delivery is acceptable may be specifically identified in the Bid Proposal. These are typically areas where certified scales and weigh masters are not available within a reasonable distance of the delivery site. In those cases, the weight/volume conversion ratio shall be determined by the NYS Department of Transportation with assistance from the Regional Materials Group as necessary. There are two acceptable methods for establishing weight/volume conversion:

### **Method 1**

Each delivery truck may have its "level struck" (all material in the dump body being level with the top of the sides of the dump body); volume determined by the Resident Engineer/Authorized User representative (or his/her designee). This will be the payment volume for each load delivered. A representative of the Resident Engineer/Authorized User representative (or his/her designee) should record each load delivered and certify that the truck contained at least the payment (level struck) volume.

Equipment required for Method

- 1 – ¼ cu. ft. container (typically used for measuring the air content of plastic concrete)
- 1 – 20 oz. rubber mallet
- 1 – straight-edge suitable for striking the abrasive level with the top of the container.
- 1 – smooth working surface.
- 1 – scale having a minimum 40 lb. capacity and accuracy of  $\pm 0.3$  lbs.
- 1 – flat shovel

### **Method 1 Sampling of Abrasives**

A representative sample of about ½ cu. ft. of abrasives shall be obtained from a prepared stockpile according to procedures found in the Materials Method 9.1 "Plant Inspection of Portland Cement Concrete" (referenced in Appendix A of the Materials Method 9.1) prior to delivery.

**Testing the Sample for Unit Weight**

1. The sample shall be air or oven dried until it is visibly dry.
2. Thoroughly mix the “room temperature” sample into a pile on the smooth surface with a flat shovel and “quarter” the pile.
3. Remove about 1/16 cu. ft. (about two quarts) of material from one of the quarters. Place it in the ¼ cu. ft. container and roughly level it off.
4. Strike the container firmly three items about midway on the side at one point. Repeat the striking procedure at three more points about 90 degrees apart on the container.
5. Repeat steps 3 & 4 three more times with material from each of the remaining three “quarters” of the same pile. Be sure that ¼ cu. ft. container is “overfull” after material from the fourth quarter of the sample pile is placed in it.
6. Screen the material level with the top of the container.
7. Weight the “level full” container on the scales and record the weight in pounds.
8. Subtract the weight in pounds of the empty ¼ cu. ft. container from the weight recorded from step #7 above. This is the weight, in pounds, of ¼ cu. ft. of the abrasive material. To obtain the weight, in tons, of 1 cu. yd. of the abrasive material, multiply the weight of the ¼ cu. ft. by 0.054.

**Method 2**

Each delivery truck may have its “level struck” weight of abrasives determined by a weigh master on a certified weight scale. This is obtained by subtracting the empty weight of the truck from the certified loaded “level struck” weight. As in Method 1, each load delivered should be recorded by a representative of the Resident Engineer/Authorized User (or his/her designee) and be certified that the truck contained at least the same volume of the “level struck” weight previously recorded.

**DELIVERY LOT**

A delivery lot should be the total of one eight-hour day’s delivery during normal Resident Engineer/Authorized User representative (or his/her designee) working hours.

**SUSPECTED PROBLEMS DURING DELIVERY**

If the Resident Engineer/Authorized User representative (or his/her designee), as a result of visual inspection, suspects the abrasives being delivered are not within specification limits, they should immediately notify the supplier of the nature of the suspected problems(s) verbally and in writing. At that point, all deliveries from that supplier will cease until the Resident Engineer/Authorized User representative (or his/her designee) has had reasonable opportunity to sample and test the suspect material (3 working days, not including the date of written notification). If the supplier requests to continue delivering material after notification in writing, the Resident Engineer/Authorized User representative (or his/her designee) may approve that request in writing. However, the material delivered after notification must be kept separate from that which was delivered prior to notification. The action deemed necessary by the test results may be applicable to the lot delivered the day of notification and any subsequent lots delivered during the three day testing and sampling period. This process may be utilized at any time when deliver of out of specification material is suspected.

**ADJUSTED BID PRICE AND REJECTION RELATIVE TO GRADATION**

The bid price may be adjusted for any delivered material outside the limits given under “Specification Gradation” and within the limit of the “Rejection Gradation”. Any material that has one or more sizes that fall outside the Rejection Gradation limits may be rejected and no payment will be made for that material.

**Example of Bid Price Adjustment of Out of Gradation Material**  
**Percent Passing by Wt.**

<u>Sieve</u>	<u>Example Specification Gradation</u>	<u>Example Rejection Gradation</u>	<u>Example Penalty Factor</u>
½”	100	100	
3/8”	100	95 to 100	1
#4	80 to 100	70 to 100	1
#50	0 to 18	0 to 22	2
#200	0 to 3	0 to 5	5

Reduced price per ton = contract price times (1.0-X)

The percent out of tolerance may be to the nearest 1%. The sum of the individual sieve tolerance deviations (%) times the appropriate penalty factors divided by 100 shall be used as “X”.

**EXAMPLE:** Sand delivered was bid at \$5.00 per ton and is satisfactory in passing the 3/8” and #4 sieve but has 22% passing the #50 sieve and 4% passing the #200 sieve. The reduced price is computed as follows:

$$X = (30\% - 22\%) \times 2 + (4\% - 3\%) \times 5 = 21\% = 0.21$$

$$\text{Reduced price per ton} = \$5.00 \times (1.00 - 0.21) = \$3.95$$

**ADJUSTED BID PRICE AND REJECTION RELATIVE TO MOISTURE CONTENT**

Excessive moisture content has a significant negative impact on mixing, stockpiling, and storage operations. Abrasives when delivered shall have a maximum moisture content not exceeding 7.0% as determined by AASHTO Test Method T-255 (Moisture Content of Fine and Coarse Aggregate). Abrasives delivered which are found to have moisture content in excess of 7%, but less than 10% may be rejected, or they will be accepted at a reduced unit price (see below). Abrasives found to have moisture content greater than 10% will be rejected.

Material with a moisture content from

7.01% to 8.00% may be accepted and paid for at the unit price less 10%;

8.01% to 9.00% may be accepted and paid for at the unit price less 20%; and

9.01 to 9.99% may be accepted and paid fore at the unit price less 30%