

TO: ALL HQ and REGIONAL DIRECTORS  
ALL REGIONAL and DISTRICT MANAGERS

SUBJECT: **PROCEDURES FOR QUALITY ASSURANCE, WINTER ABRASIVE  
AGGREGATE PROCESSING**

**REFERENCE:** General Specifications  
Contract Agreement  
Road and Bridge Maintenance Standards  
Quality Assurance Program Manual  
Pit Development Plans

### **INTRODUCTION**

The Ministry has a gradation standard where the maximum size abrasive is specified. The material can either be screened or crushed to meet this standard, depending on the source material and pit development plan. While standards for quality control for gravel crushing exist (T-5-91), the purpose of this Circular is to establish the level of Quality Control and Quality Assurance that needs to be implemented to ensure that the aggregate used for Winter Abrasive meets MoTH standards.

### **DEFINITIONS**

1. Winter Abrasive Aggregate Material (refer to Maintenance Standards)

"All materials will be supplied and used by the (Maintenance) Contractor as follows:

The maximum allowable particle size for Winter Abrasive materials, and the mean Gradation limits for these materials when tested according to ASTM Designation C117, is as follows,

		<b>WINTER HIGHWAY CLASSIFICATION</b>		
		<u>Class A &amp; B</u>	<u>All Class C and Class D paved only</u>	<u>All Class D gravel Highways</u>
(i)	maximum particle size	12.5 mm	16 mm	19mm, and

(ii)	metric screen size			
	19mm	-	-	100
	16mm	-	100	-
	12.5mm	100	-	-
	9.5 mm	-	80 - 100	80-100
	4.75mm	50-95	50-95	50-95
	2.36mm	30-80	30-80	30-80
	0-.600mm	10-50	10-50	10-50
	0-.300mm	0-25	0-25	0-25
	0-.075mm	0-6	0-6	0-6

Note: the figures shown under section (ii) represent the percent of material which passes that particular screen size; "

## 2. Quality Control

Refers to the actions taken by the Maintenance Contractor to measure and regulate the manufacture of the material to ensure the contractual requirements are met. These actions may involve examination, measurement and testing of the product to determine contract compliance, regardless of who undertakes the required activities. The Contractor must certify to the ministry that the stockpiles meet specification prior to using any of these stockpiles as winter abrasive, and in a timely fashion. Finally, quality control is considered incidental to the supply of aggregates for winter abrasive usage.

## 3. Quality Assurance

Refers to planned and systematic actions taken by MoTH to provide confidence that the product will satisfy the specified requirements.

## **CURRENT REQUIREMENTS:**

Test for Maximum Size and Gradation, at the time of production (certification by qualified inspector)

## **PROCEDURE**

*Quality Control* is the responsibility of the Maintenance Contractor. It is required that

- 1) quality control be undertaken during production;
- 2) all sampling be done by qualified individuals; it may be required to split samples for quality assurance, at the request of the DHM, and in which case samples have to be adequate to meet ASTM C117 sample requirements;
- 3) all testing be done by a technically competent testing agency;

- 4) minimum testing during production shall include one wash test (ASTM C117) of a representative sample per shift, and a dry top size test<sup>3</sup> every hour;
- 5) should be done before adding any salt.
- 6) all records of quality control, including original production sieve analysis records and gradation curves, shall be made available to the Ministry Representative on request at all times.

### ***Quality Assurance***

Every stock pile should be assured. Quality Assurance is the responsibility of the District Highways Manager. Adequate sampling for use in standard ASTM C117 Test shall take place:

- i) randomly during production, and before salt is added, either by a MoTH representative or by properly splitting the sample taken by the Contractor's qualified representative, as required by the DHM. Testing for Quality Assurance shall be done according to ASTM C117.
- ii) randomly after production: whenever possible, the Regional Geotechnical and Materials Engineer shall, at the request of the DHM, obtain samples, test and produce gradation curves for every stock pile for use for winter abrasive. If an Area Manager is to obtain samples, it is recommended that appropriate training be obtained from the Regional Geotechnical and Materials Engineer, as required.

Samples should be analyzed in a timely fashion and results submitted to the District Highways Manager for file and/or for appropriate action. If the material is found to be out of specification, the recommendations from the Regional Geotechnical and Materials Engineer should be followed. The Ministry reserves the right to reject material proposed to be used for winter abrasive that fails quality assurance sieve analysis.

Note, product from slotted screens will be unacceptable if representative samples fail ASTM C117.

### **CONTACTS**

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cc ADM, Highway Operations  
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<sup>3</sup> The purpose of the dry top-size test is to ensure that 100% of the aggregate passes the 12.5mm screen. While it is recognized that this is a deviation from ASTM C136 to simply enforce a top size check, the contractor is encouraged to undertake required ASTM tests, depending on the volume produced per hour, the natural source, etc. The ultimate quality assurance test that must be passed is the ASTM C 117.



To: Joe Jensen, Regional Director, South Coast  
Keith Bespflug, Regional Director, Thompson Okanagan  
Gordon Sutherland, Regional Director, Kootenays  
Kathleen Miller, Regional Director, Central North East  
Dirk Nyland, Regional Director, North West Region  
Neville Hope, Regional Director, Vancouver Island

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### Winter Aggregate

Attached is a Technical Letter which specifies the amount of Quality Control and Quality Assurance that needs to be implemented immediately to ensure that the Winter Aggregate used in the coming winter, meets MoTH standards.

A recent study by the Maintenance Branch indicated that the Ministry was very lax in ensuring the quality of contractor winter aggregate. In most Districts there had been no request for Quality assurance testing by the MoTH Geotechnical staff. In many locations the Road and Bridge Contractor had passed test results to the ministry indicating out of specification materials but no action had been taken to correct the deficiencies. In some cases the contractor was taking his own samples and sending them to a lab for testing, this is not a problem unless they are selected samples hence there is a real need for MoTH Q.A.

It was contemplated that a move to a new specification of 9.0mm maximum size would be instituted but it now appears that a diligent effort to ensure a 12.5mm maximum size may be sufficient for the next season.

Your attention to this critical problem involving quality service to road users is requested.

Earl A. Lund  
Chief Highway Engineer

Attachment

EAL/gw