Chapter 5

Field Testing
Sampling Procedures
Field Testing Procedures

The following guidelines are provided to help maintain snow & ice material testing, sampling accuracy and consistency, when conducted by field personnel. If there are any concerns with vendor provided material, certain procedural documentation is necessary to ensure compliance with the current roadway snow & ice control products contract.

Procedures Checklist:

A copy of the sampling procedures checklist (Page 5-6) needs to be kept at all locations receiving material deliveries. The checklist may be needed along with the product sampling transmittal form (Page 5-4) in case of disputes with lab findings or to determine the extent of product/s failures. Keep extra copies of the forms on hand. File completed transmittal forms at the maintenance area office.

Field Inspection:
Before allowing any product to be unloaded, it is necessary to adhere to the following procedures.

1. Document and maintain records on all deliveries, including those that are rejected. This may include the following:
   
a) Date of the order  
b) Date and time of delivery  
c) Field Order Number  
d) Verification of advance delivery notification  
e) Name of trucking company and license plate numbers  
f) Product being delivered is what you ordered  
g) Copies of all required delivery paper work, are complete, and legible

2. Visually inspect the load to determine if there are any obvious reasons why the load should be rejected.

3. No excess foreign material, gradation or excessive moisture should be accepted. Any problems must be noted at the point of delivery. Notification must be relayed as soon as possible to area management and headquarters.

4. If all required information meets the requirements and the product appears to be correct as ordered, document the amount of product currently in storage and begin the unloading process.
When to take a deicer sample:

**Liquid Deicer:**

Take a one-gallon sample from the tanker truck for every load of liquid chemical deicer received. Retain all samples at the delivery location/s until headquarters request them. Clearly label all sample containers with the required information. In the case the product is out of specification, take 2 one-gallon samples, retain one, ship the other sample to headquarters. Keep the back-up material samples on-site for future availability testing (tort liability). For liquid samples, it is recommended that a plastic container with a small lid be used to minimize product leakage.

**Specific Gravity:** For liquid products, the specific gravity needs to be checked prior to unloading, to verify compliance with specifications. If the delivery truck has the ability to circulate the load, do so for five minutes prior to pulling the sample. Specific gravity, weights and concentrations for liquid products are found on page 5-9.

**Acceptable Limits:** The state contract allows the concentration limits, to vary plus or minus one percent. If the load is not within the specification, you should take a second sample. If the second sample fails, notify the vendor and discuss with your supervisor whether you should accept or reject the load.

**Unloading Issues:** Visually inspect the delivered product while unloading. If problems are noted that are cause for rejection of the load, immediately halt the unloading process. Take photos if applicable, document any other pertinent information.

**Salt Brine:**

Maintenance facilities that manufacturer salt brine, need to keep a documented “batch log”. The log should include the date of the batch/s, the quantities of active ingredients used and a hydrometer reading of the finished product. At the first of every month during the winter season, send a one-gallon sample to headquarters for testing. Salt brine samples should be taken and retained each time a new batch of brine is manufactured. Take a one-gallon sample and clearly label the sample containers with the required documentation. For liquid samples, it is recommended that a plastic one-gallon container with a small lid be used to minimize product leakage. All samples (each winter season) need to be retained on site. At the completion of the season HQ will notify regions when they can discard stored samples.

**Solid Deicer:**

For dry samples, a wide-mouth one-gallon plastic container should be used. Clearly label all samples with the required information. Salt samples should be collected at the beginning of the winter season, mid-season and at the end of the season. Store material samples on-site for future availability testing (tort liability). Do not send any samples until they have been requested by headquarters. In the case that product is out of specification, take 2 one-gallon samples, retain one and send the second sample to headquarters. Notify your supervisors of any problems immediately, have someone from the affected maintenance area contact Jim Andersen or Jay Wells at headquarters (360-705-7850) to notify them that an out of specification sample has been collected and is being sent in for testing.
In the case of any disputes with laboratory findings:

Archived samples will help to determine the extent of product failure. If sample failures start to occur, specific sites will be asked to send additional samples. If the failed samples continue, notification will be sent to all areas using that “failed” product. Additional lab testing may be needed to confirm the initial test and ensure that appropriate corrective action has been taken.

Conduct the following procedures if the material is to be rejected:

1. If there is a problem and reloading can't be accomplished, (mixed with previous material) note the amount of product prior to unloading currently in storage and total product now present.

2. Take 2 one-gallon samples of the out of specification material.

3. For liquid products, check and record the specific gravity of the sample/s.

4. Secure the product as needed, to assure its integrity. Determine if all products on hand will have to be removed.

5. Contact Jim Andersen or Jay Wells (360)705-7850 at headquarters.

6. Advise the Region Purchasing officer as soon as possible of any ordering, delivery, storage or product quality issues.

Rejecting Loads:

The level of authority permitted to reject a load should be decided at the start of the season before deliveries commence. If the decision is made to reject a load, notify the vendor and the Region’s Purchasing Officer as soon as possible.

Shipping:

Sample containers must be properly labeled, packaged and secured before shipment to prevent contamination and spillage. The deicer transmittal form (page 5-4) must be filled out and included with all material samples.
Deicer Sample Transmittal Form

Contracts: #02714 “Roadway Snow and Ice Control Products”

Lab ______________________________

Lab Charge Codes: MS 4929, Group 01, Work Op: 6099, Org code: 343022

Sampling Person:___________________________ Date:______________________

Location:__________________________________ Region:____________________

Contact Person:____________________________ Phone:_____________________

Chemical Deicers (Check One):

Category 1 (Magnesium Chloride): Meltdown/ FreezGard ________________

Category 2 (Calcium Chloride): Calcium Chloride w/Boost ________________

Category 8 (Uninhibited Sodium Chloride): Salt ________________________

Salt Brine or Other Material Category:_____________________________________

Additional information required from maintenance area:

Product Tested:____________________________ Quantity Delivered____________

Date of Order:____________________________ Date of Delivery:______________

Advance Delivery Notification? Yes____ No____

Was Time of Delivery Acceptable? Yes____ No____

Lot Number________________________

Vendors Name:__________________________________________________________

Trucking Company:________________________ License Plate #:__________________
Deicer Sample Transmittal Form Continued

1. The tester has a copy of the current procedures on hand? Yes___ No___

2. Has the material been circulated (if applicable)? Yes___ No___

3. Specific gravity or weight verified before unloading? Yes___ No___

4. Specific gravity of sample: _________________________________
   First Attempt: Pass____ Fail____    Second Attempt: Pass____ Fail____

5. Sample size meets agency requirements (one-gallon) Yes ___ No___

6. Location of tank or stockpile where the product is off loaded: ____________

7. Sample labeled as required? Yes ___ No___

Signature of tester_________________________ Date______________

Comments / observations:
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________

Send samples to the headquarters: Attention: Jay Wells or Jim Andersen

Samples via WSDOT Courier: Mail Stop 47358
Samples by U.S. Postal Service: PO Box 47358, Olympia, WA 98504 (or)
Sending by Fed X or UPS: 310 Maple Park Avenue SE Olympia WA 98504-7358
Sample Procedures Checklist

Visual inspection of delivered loads: Prior to unloading or accepting the shipment:

- For liquid products, take specific gravity reading.
- Verify that there is no product separation.
- Verify that there are no precipitates or foreign objects floating in solution or settled on the bottom of the container.
- For dry solid products, look for foreign material, out of specification gradation, or excess moisture.
- If material appears out of specification, it should not be accepted. Prior to rejecting the load contact maintenance supervisor for direction.

Sample requests / procedures:

Dry Bulk Solid Deicing Materials: Samples of the materials should be obtained from a complete cross section of the load. Samples should be taken from the delivered load prior to it being added to the stockpile. The sample should be made up of at least three increments taken from the top third, the midpoint and the bottom third of the load using a sampling tube. Sampling tubes are typically constructed of P.V.C pipe 1 ½ diameter and no less than 20” long with a tapered 45-degree edge on one end.

The sample should be placed into a clean and dry wide mouth one-gallon container with a screw top lid. The lid should be sealed with electrical tape to avoid exposing the sample to moisture. It is important to obtain a complete and representative sample each time.

Liquid Deicing Materials: A one-gallon sample need to be taken from the transfer hose in three equal parts. Each part will be compositely mixed together with the other parts to make up a sample. The sample will be collected during the unloading of the delivered product by taking a sample from the first third, second third and last third of the load.

- Store samples in your maintenance area until they are requested by headquarters.
- Random samples will be called for by headquarters throughout the winter season.
- Ship random samples: to Jay Wells or Jim Andersen at headquarters.
Problems with loads: In the case of out of specification material, take 2 one-gallon samples, retain one and send the second sample to headquarters. Notify your supervisors of any problems immediately, have someone from the affected maintenance area contact Jim Andersen or Jay Wells at headquarters (360-705-7850) to notify them that an out of specification sample has been taken and is being sent in for testing.

Mark sample containers: Use a black felt tip pen and write legibly

State Contract Number # 02714
Product Name:
Date Sample Taken:
Lot Number:
Specific Gravity:
Sampling Person
Phone Number:
Sampling Location:

Product Analysis:

Once the laboratory has completed their tests, headquarters will notify the affected area/s and vendor of the lab results. If there are product compliance issues, headquarters will work with the Department of Enterprise Services (DES), Purchasing Materials Management Office (PMMO) and the affected areas to facilitate possible liquidated damages.

Send Samples to Headquarters: Attention: Jay Wells or Jim Andersen

Samples via WSDOT Courier:  Mail Stop 47358
Samples by U.S. Postal Service:  PO Box 47358, Olympia, WA 98504
Sending by Fed X or UPS:  310 Maple Park Avenue SE Olympia WA 98504-7358
Deicing Product Sampling Containers

**Dry bulk solid deicing products:** 1 Gallon wide mouth containers

For assistance contact your Regional Purchasing Office.

**Liquid deicing products:** 1 Gallon narrow mouth containers

For assistance contact your Regional Purchasing Office.

**Hydrometers:** VWR Catalog Number 34640-003

**Hydrometer Cylinders:** VWR 24661-255

**Sampling Product Suppliers:**

ULINE Contact Information: 1-800-958-5463

VWR Contact Information: 1-800-932-5000

Label Master Labels: 1-800-621-5808
<table>
<thead>
<tr>
<th>Vendor</th>
<th>Contact Phone Number</th>
<th>Chemical Name</th>
<th>Product</th>
<th>Percent Concentration</th>
<th>Specific Gravity Specifications</th>
<th>Weight Specifications Lbs/Gallon</th>
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<tr>
<td>Roadwise</td>
<td>888-530-6033</td>
<td>Magnesium</td>
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<td>Target Limit 10.85</td>
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<td></td>
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<td>Upper Limit 11</td>
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<td>800-577-5346</td>
<td>Calcium</td>
<td>Meltdown</td>
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<td>Lower Limit 1.28</td>
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<td>Target Limits 11.2</td>
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<td>888-547-5475</td>
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