Quality Assurance Testing and Referee Testing - Concrete and Component Materials

1350.07 PRODUCTION

1350.07.05 Material Sampling and Testing

1350.07.05.02 Sampling of Water, Admixtures, and Cementing Materials

Clause 1350.07.05.02 of OPSS 1350 is deleted in its entirety and replaced by the following:

The Contractor shall obtain samples of all cementing materials, admixtures, and water (when other than municipal drinking water is used) according to the frequencies specified by Table 8, for testing by the Owner.

The Contractor shall deliver samples of admixtures and water to the Regional Quality Assurance laboratory.

The Contractor shall deliver samples of cementing materials to:

Head, Concrete Section
Ontario Ministry of Transportation
Room 15, Building C
1201 Wilson Avenue,
Downsview, ON M3M 1J8

Samples of admixtures and water shall be protected from freezing and high temperatures. Cementing materials samples shall be protected from moisture.

1350.08 QUALITY ASSURANCE

1350.08.04 Acceptance of Admixtures

Subsection 1350.08.04 of OPSS 1350 is deleted in its entirety and replaced by the following:

1350.08.04 Acceptance of Water, Admixtures, and Cementing Materials

1350.08.04.01 General

Concrete made with admixtures, water or cementing materials that do not meet the specified requirements is unacceptable, and may be subject to financial penalty or removal if there is potential for the short-term or long-term performance of the concrete to be adversely affected.

1350.08.04.02 Admixtures

Air entraining admixtures shall be tested by the Owner for pH and relative density. Chemical and superplasticizing admixtures shall be tested by the Owner for relative density and non-volatile content. Testing shall be according to LS-413, LS-414, and LS-415, as applicable.
One 750 ml admixture sample shall be used for acceptance testing. The other 750 ml admixture sample shall be reserved for referee testing.

Individual test results shall be forwarded to the Contractor as they become available. Admixture represented by sample test results that fail to fall within the specified tolerances for pH, relative density, or non-volatile content shall be deemed unacceptable and shall not be used for making concrete.

Referee testing of admixtures may only be invoked by the Contractor within 5 business days of receiving the test results. Referee testing shall be carried out on the reserved referee sample.

The referee laboratory shall be designated by the Owner based on the applicable roster. Referee samples shall be transported from the Regional Quality Assurance laboratory to the Referee Laboratory by the ministry, and testing shall be carried out according to LS-413, LS-414 and LS-415, as applicable. Referee test results shall be forwarded to the Contractor as they become available.

The referee test results shall replace the original result.

The cost of referee testing shall be as specified in the Contract Documents. When the referee results indicate that the refereed sample is acceptable, the Owner shall bear the cost. When the referee results indicate that the refereed sample is not acceptable, the Contractor shall be charged the cost of the admixture referee testing.

1350.08.04.03 Water Other than Municipal Drinking Water

Samples of water other than municipal water shall be tested by the Owner according to OPSS 1302.

One 1-litre water sample shall be used for acceptance testing. The other 1-litre water sample shall be reserved for referee testing.

Individual test results shall be forwarded to the Contractor as they become available. Water that fails the requirements of OPSS 1302 shall be deemed unacceptable and the source of water represented by the failed samples shall not be used for making of concrete.

Referee testing of water may only be invoked by the Contractor within 5 business days of receiving the test results. Referee testing shall be carried out on the reserved referee sample.

The referee laboratory shall be designated by the Owner based upon the applicable roster. Referee samples shall be transported from the Regional Quality Assurance laboratory to the Referee Laboratory by the ministry, and testing shall be carried out according to OPSS 1302. Referee test results shall be forwarded to the Contractor as they become available.

The referee test results shall replace the original result.

The cost of referee testing shall be as specified in the Contract Documents. When the referee results indicate that the refereed sample is acceptable, the Owner shall bear the cost. When the referee results indicate that the refereed sample is not acceptable, the Contractor shall be charged the cost of the water referee testing.

1350.08.04.04 Cementing Materials

Cementing materials shall be tested by the Owner for fineness, soundness by autoclave, initial time of set, compressive strength, and slag activity index or pozzolanic strength activity index, as applicable, according to CSA A 3000.
One 10-kilogram sample shall be taken and divided into two 5-kilogram samples. One 5-kilogram sample shall be used for acceptance testing. The second 5-kilogram sample shall be reserved for referee testing.

Individual test results shall be forwarded to the Contractor as they become available. Cementing materials that do not comply with the requirements of OPSS 1301 and CAN/CSA A3001 shall not be used for making of concrete.

Referee testing of cementing materials may only be invoked by the Contractor within 5 business days of receiving the test results. Referee testing shall be carried out on the reserved referee sample.

Referee testing shall be carried out according to CSA A 3000, by the Owner’s laboratory or an independent laboratory acceptable to the Contractor and the ministry, in the presence of the contractor or his designate. Referee results shall be reported to the Contractor as they are available.

The referee test results shall replace the original result.

The cost of referee testing shall be as specified in the Contract Documents. When the referee results indicate that the refereed sample is acceptable, the Owner shall bear the cost. When the referee results indicate that the refereed sample is not acceptable, the Contractor shall be charged the cost of the cementing material referee testing.

OPSS 1350 is amended by the addition of Table 8, Admixtures, Water, and Cementing Materials - Minimum Frequencies for Sampling and Testing.
### TABLE 8
**Admixtures, Water, and Cementing Materials – Minimum Frequencies for Sampling and Testing**

<table>
<thead>
<tr>
<th>Material</th>
<th>Use or Type of Construction</th>
<th>Minimum Sampling Frequency (Note 1)</th>
<th>Minimum Sample Size (Note 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air entraining and chemical and superplasticizing admixtures</td>
<td>All concrete</td>
<td>One sample to be taken at the beginning of concrete placement in each calendar year, no more than 30 days prior to concrete placement. One additional sample to be taken during the calendar year.</td>
<td>Two samples to be taken. Each shall be at least 750 ml.</td>
</tr>
<tr>
<td>Water other than municipal drinking water</td>
<td>All concrete</td>
<td></td>
<td>Two samples to be taken. Each shall be at least 1 l.</td>
</tr>
<tr>
<td>Cementing Materials: Portland cement, ground granulated blast furnace slag, fly ash, and blended silica fume cement</td>
<td>Concrete pavement and base</td>
<td>One sample per Contract or one sample per each 10,000 m$^3$ of concrete, whichever is more frequent.</td>
<td>10 kg of each cementing material used.</td>
</tr>
<tr>
<td></td>
<td>Precast components</td>
<td>One sample per calendar year.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>All other concrete</td>
<td>One sample per Contract or one sample per each 5,000 m$^3$ of concrete, whichever is more frequent.</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1. Additional samples shall be taken every time there is a change in material source.
2. Admixture and water samples to be contained in a 1 litre bottle of a suitable plastic, with a lid. Cementing material samples to be contained in a canvas bag with plastic insert, accompanied by MTO form PH-CC-340.