
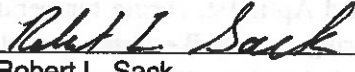


To: <p style="text-align: center;"><b>SUPERSEDED BY</b>  <b>EI 09-022</b>  <b>EFFECTIVE 11-18-09</b></p>		New York State Department of Transportation <b>ENGINEERING          INSTRUCTION</b>	<b>EI</b> <b>06-029</b>
<b>Title: REVISION TO STANDARD SPECIFICATIONS - §557-3.12. PROVISIONS FOR CONCRETING IN COLD WEATHER</b>			
Distribution: <input type="checkbox"/> Manufacturers (18) <input type="checkbox"/> Surveyors (33) <input checked="" type="checkbox"/> Local Govt. (31) <input checked="" type="checkbox"/> Consultants (34) <input checked="" type="checkbox"/> Agencies (32) <input checked="" type="checkbox"/> Contractors (39) <input type="checkbox"/> _____ ( )		Approved:  Robert L. Sack, Deputy Chief Engineer, Research <span style="float: right;">12 SEP 06 Date</span>	

**ADMINISTRATIVE INFORMATION:**

- This Engineering Instruction (EI) is effective upon signature.
- This EI revises the Standard Specifications of January 2, 2002, as modified by EI 04-021.
- This revision will be incorporated into a future update of the Standard Specifications.

**PURPOSE:**

- This EI issues a revision to §557-3.12. of the Standard Specifications of January 2, 2002.

**TECHNICAL INFORMATION:**

- This revision to §557-3.12. Provisions for Concreting in Cold Weather, provides additional information to clarify the intent of the specification as originally written.

**IMPLEMENTATION:**

- Main Office Design Quality Assurance Bureau will insert the standard specification shelf note beginning with projects submitted for the letting of 01/11/07.
- Engineers-in-Charge of ongoing contracts and those let prior to the inclusion of the shelf note in the contract proposal should file a copy of this EI in the contract records as documentation of the change in accordance with the Contract Administration Manual (CAM) §104-02.

**TRANSMITTED MATERIALS:**

This EI transmits standard specification shelf note Provisions for Concreting in Cold Weather.

**BACKGROUND:**

Standard specifications for §557 were re-written in 2004 to address a number of changes. Included in this specification were new requirements for cold weather concreting of superstructure slabs. The interpretation of this specification has varied across the State. The revised section provides greater details to clarify the intent of the 2004 specification. No new or additional requirements have been established. Some minor revisions to address conflicts between the specification and means of progressing work have been inserted.

**CONTACT:** Direct questions regarding this EI to Don Streeter of the Materials Bureau via e-mail at [dstreeter@dot.state.ny.us](mailto:dstreeter@dot.state.ny.us) or at (518) 457-4593.

## Provisions for Concreting in Cold Weather

Make the following changes to the Standard Specifications of January 2, 2002, as modified by EI 04-021:

**Delete** §557-3.12. Provisions For Concreting In Cold Weather and **Replace** it with the following:

**557-3.12 Provisions for Concreting in Cold Weather.** When permission is granted in writing by the Regional Construction Engineer for cold-weather concreting of superstructure slabs, between September 15th and April 1st, curing temperatures shall be maintained in accordance with §555-3.08C *Provisions for Curing in Cold Weather*, except as modified here:

- The curing duration shall be 14 days. Use of maturity methods approved by the Director, Materials Bureau, may be allowed to reduce the curing period. Conditions may occur which prevent an entire day from qualifying as a curing day, but do not prevent portions of that day from reaching temperatures that qualify as curing temperatures. If these conditions occur and with the Engineer's approval, the Contractor may aggregate curing hours. A curing hour is defined as any hour during which the curing temperature remains at, or above 7°C. An aggregation of 24 curing hours will be credited as one curing day. Aggregations of less than 24 curing hours will not be credited.
- If ambient air temperatures fall, or are expected to fall, below 7°C, as described in Table 555-2, *Cold Weather Curing Requirements*, the Contractor shall provide an enclosure to maintain an acceptable curing temperature. Materials and equipment necessary to erect an enclosure shall be present on the site or readily available. External heat to maintain curing temperatures may be required. Enclosures shall be constructed in such a way that all surfaces of the fresh concrete shall be maintained between 7°C and 30°C for the curing period. Enclosures may be removed to progress subsequent or incidental work during periods when the ambient temperature is above 7°C. If the Contractor expects to or will perform work when ambient temperatures are below 7°C, the enclosure shall be constructed in such a manner that work can be performed inside the enclosure without exposing any concrete to a temperature below 7°C. All concrete surfaces within heated areas shall be protected from drying by the use of live steam or use of continuously wetted burlap.
- Continuously recording thermometers shall be placed on both the top and underside of the deck to monitor areas where extreme cold or heat can be expected.
- The temperature differential between any two locations within the heated enclosure shall not be more than 15°C.
- When ambient temperatures are 7°C or greater, an enclosure may be removed for access to progress additional work during the work day providing the temperature difference between the air and the surface of the concrete is not more than 15°C. If temperature difference between the air and the surface of the concrete is greater than 15°C, temperatures shall be gradually reduced at a rate not to exceed 0.5°C/hr until the temperature difference is equal to or less than 15°C. If an enclosure is removed, all heating in other areas shall cease until such time that the enclosure is replaced. Upon completion of the incidental work and replacement of the enclosure, the Contractor shall reestablish acceptable curing temperature differentials, with a maximum temperature differential not more than 15°C between any two locations within the enclosure.

After seven (7) curing days, the Contractor may perform work on the structure to complete sidewalks, safety walks, curbs, and barriers. Work shall progress only when ambient temperatures are 7°C or greater or within the enclosure as described above.

After fourteen (14) curing days, the Contractor may perform work on the structure to progress sawcut grooving and sealing, provided the sawcut grooving does not cause damage to the structure. If chipping

or spalling of concrete at the sawcut edges occurs, the Contractor shall stop this work until the structure concrete is able to withstand damage from the sawcutting. This work shall progress when ambient temperatures are 7°C or greater or within the enclosure as described above. All concrete surfaces shall be kept reasonably dry during these operations, with use of any water kept to a minimum.

For all incidental work, the requirements of §557-3.14 *Loading Limitations for Superstructure Slabs*, shall apply.

Upon completion of curing, concrete shall be air dried for 14 days before being exposed to freezing temperatures. Drying shall be achieved by providing free air flow and maintaining temperatures between 7°C and 30°C to all concrete surfaces. Fascia forms shall be removed to allow for free air flow. Drying of the underside of the structure will not be required. Means of accelerating the drying process will be considered by the Director, Materials Bureau, to achieve an internal moisture content of 85% relative humidity or less, measured at a depth of 25 mm from any concrete surface. Once the drying period is complete, temperatures shall be gradually reduced at a rate not to exceed 0.5°C/hr until the temperature within the enclosure equals the temperature outside the enclosure.

Failure to complete acceptable curing and drying, as described above, will result in rejection of all concrete in the placement.