

## MnDOT Guidance for Curing Standard Strength Concrete Cylinders (10/29/2023)

This document provides guidance to Engineers and Inspectors when administering MnDOT Contracts using the MnDOT Standard Specifications for Construction, 2020 Edition. MnDOT Specification 2461.3G.5.b, Standard Strength Cylinders defines the requirements for curing, handling, and transporting standard strength cylinders.

### STANDARD STRENGTH CYLINDERS:

The Engineer will use “**Standard strength**” test specimens (cylinder or beams) to verify if a concrete mixture meets minimum compressive strength or flexural strength requirements.

- Cast (3) three 4” by 8” standard strength test cylinders all made from the same concrete sample. The same applies to sets of 6 in x 12 in cylinders.
- The strength specimens are most often cured and tested 28-days from the date made. However, some mix designs require curing/testing out to 56-days after the date of casting.
- White is MnDOT’s standard color for concrete cylinder mold & cylinder mold covers. Use of flat cylinder mold covers.
- For concrete to develop its full-strength potential, ensure the standard strength test specimens are stored in a moist condition within specified temperature range and transported with care.

### CASTING STANDARD STRENGTH CYLINDERS:

When making the test specimens:

- Sample minimum 1 cubic foot (around 150 pounds) concrete sample and remix sample prior to making standard strength cylinders.
- Place molds on a level, firm foundation in a sheltered place where they can remain undisturbed and protected from direct sunlight and maintained at temperatures of 60 - 80°F [16 - 27°C] for the initial 16-48 hours. See Spec 2461.3G.5.b(3)
- The supporting surface on which specimens are stored shall be level to within,
- **¼ in. per linear foot.**
- If specimens cannot be molded at the place where they will receive initial curing, immediately after finishing move the specimens to an initial curing place for storage. **NOTE: you may move the cylinders up to 15 minutes after casting.**

### MNDOT DEFINED CURING PERIODS FOR STANDARD STRENGTH CYLINDERS:

The Concrete Engineer has broken down the curing requirements into three curing/time periods:

1. Initial Curing Period
2. Intermediate Curing Period
3. Final Curing Period / Lab Curing Period

A simplified flow chart is presented below which explains the process for curing standard strength cylinders.

