

**Tennessee Department of Transportation  
Division of Materials and Tests**

**Procedure for Obtaining, Handling, and Testing  
Concrete Cores for Acceptance (SOP 4-2)**

Purpose- The purpose of this document is to establish the Tennessee Department of Transportation (TDOT) procedures for sampling, handling, and acceptance testing of concrete cores that will be used for the acceptance of concrete strength. The requirements in the TDOT Standard Specifications are not waived and must also be achieved. This policy supplements the Construction Circular Letter 604.21-01, Evaluation of Low Strength Concrete

Background- TDOT Standard Specifications permit concrete cores to be taken if the compressive strength results of acceptance cylinders fail to meet specified strengths. The strength of the concrete cores will become the strength of record and any price adjustments will be determined by using the concrete core results.

Precast/prestressed concrete products will be accepted in accordance with other departmental procedures.

Policy- If the acceptance cylinder results do not meet the specified design strength per Contract Plans, the Contractor will have the option to request a structural evaluation to determine the minimum allowable compressive strength for acceptance at a reduced price or to core the structural members in question.

If the Contractor chooses to have the concrete cored for strength testing, the results of the cores' strength tests will become the strength of record, whether higher or lower than the cylinders. Cores for acceptance shall be taken from the location indicated on the [DT-0062](#): Concrete Cylinder/Core Test Report form for the concrete in question.

Procedure- If the Contractor chooses the core option, the Headquarters Materials and Tests Division (HQMT) must be formally notified at least two (2) days prior to the core samples being taken. This notification must be submitted to [tdot.concrete.email@tn.gov](mailto:tdot.concrete.email@tn.gov). This request will be coordinated with the Regional Materials and Tests section to ensure a member of TDOT is onsite.

A TDOT representative shall be onsite to obtain immediate possession of the cores for transporting the cores to the HQMT laboratory. The cores shall be taken in general locations directed by TDOT to be representative of the concrete in question. The Contractor, or the coring sub-contractor, shall use a pachometer, or other electronic/magnetic means, and the steel placement layout in the plans, to best determine the location of reinforcing steel to ensure it can be avoided when coring.

The Contractor shall obtain a maximum of three (3) cores, per failing concrete acceptance cylinders, in a timely manner so testing can be completed within fifty-six (56) days of placement. Immediately after coring, the Contractor shall turn the cores over to TDOT for transporting to the (HQMT) laboratory for testing. The TDOT Standard Specification, Section 604.15 will govern the strength requirements depending on the age of the cores at the time of testing.

All cores shall be clearly identified and submitted with a completed [DT-0062](#) form cross referencing the failed concrete cylinder numbers. The date obtained and location of the cores shall be noted on the form. Core diameters shall be between 3.75 and 4.00 inches, and desired core lengths are 7.5 to 8.0 inches. The desired core length/diameter (l/d) ratio is 1.9-2.1, but in no case shall it be less than 1.0. Any cores, after capping, with a l/d ratio 1.75 or less will have a correction factor applied to the strength in accordance with AASHTO T 24. The HQMT laboratory will prepare the cores for testing and test in an “as delivered” moisture condition. Two (2) cores shall be taken, and the average will be used to determine strength.

The Contractor shall take all risks associated with delays to the construction project, cracking, and damage caused to reinforcing steel, strands, or any other structural objects which would warrant the concrete unacceptable.

All core holes must be repaired with a non-shrink cementitious grout/epoxy/polymer type material approved in the TDOT Qualified Product List (QPL). Special precautions may be necessary if the core hole is located over a travel lane.

The cores to be tested should not have any reinforcing steel; however, TDOT will test the cores in an “as delivered” state.

The Contractor will be responsible for providing any necessary traffic control in accordance with the Manual of Uniform Traffic Control Devices (MUTCD).

Core Number		Core Number	
Core Length (inches)		Core Length (inches)	
#1		#1	
#2		#2	
#3		#3	
Average Length = $\ell$		Average Length = $\ell$	
Core Diameter (inches)		Core Diameter (inches)	
#1		#1	
#2		#2	
#3		#3	
Average Diameter = d		Average Diameter = d	
$\ell/d$ ratio		$\ell/d$ ratio	
Correction Factor		Correction Factor	
Strength (psi)		Strength (psi)	
Corrected Strength (psi)		Corrected Strength (psi)	