

CONSTRUCTION PROCEDURES HANDBOOK

SECTION VII	SUBSECTION E	DATE
CONSTRUCTION COMPLETION	ACCEPTANCE TESTING FOR CONCRETE STRENGTH	08/15/2023

1. Determination of Lot Size

- a. The maximum lot size is one day's production for each class of concrete. However, at the option of the RE, in consultation with the ME, any lot may be subdivided into two or more smaller lots.
- b. The quantity of each lot will be the plan quantity of the item that was placed, or the amount delivered and used. For example, if placing an entire footing with a plan quantity of 30 CY, the lot size will be 30 CY. If the entire item is not completed in one day, the lot size will be equal to the amount of concrete delivered and used (not counting any waste) each day except for the final day which will be equal to the difference between the plan quantity and the previous lots placed.

Example:

A retaining wall with a plan quantity of 130 CY is being placed over 3 days.

Day 1 - 45 CY delivered to project
Day 2 - 45 CY delivered to project
Day 3 - 45 CY delivered to project

The lot sizes will be as follows:

Day 1 - 45 CY
Day 2 - 45 CY
Day 3 - 130 CY - 45 CY - 45 CY (CY) = 40 CY

- c. Information for all concrete placements must be relayed to Regional Materials personnel. The RE will provide the following information for each lot to the Regional Materials Office, by 2:00 PM for concrete orders for the next day of work:
 - 1) Time
 - 2) Location of each placement location
 - 3) Concrete supplier and plant
 - 4) Class of concrete and additives to be used (indicate if a higher class than required is to be used)
 - 5) Item number and description for each location
 - 6) Pay quantity
 - 7) Day's quantity
 - 8) Pay unit of item

9) If additional cylinders are needed

For Field Inspection & Testing of Concrete see Materials Procedure MP1-08 @ [New Jersey Department of Transportation Materials Procedures \(njdot.lan\)](http://www.njdot.gov/transportation-materials-procedures)

2. Initial Acceptance Testing Results

- a. The initial strength testing results are evaluated for acceptance against the Mix Design Requirements listed in Table 903.03.06-3. The testing results will be compared to the Class Design Strength (CDS) of the specified mix.
- b. The test results are used to calculate an Average Lot Strength (ALS) and Standard Deviation (S) as described in 903.03.05E. The ALS and S values are then compared to the CDS of the specified mix to calculate a Quality Index (Q).
- c. The ALS, S, and Q values are calculated with the AASHTOWare Site Manager/LIMS software.
- d. The Q-value is used to determine the Percent Defective (PD) level with the NJDOT ST Statistical Tables

3. Percent Pay Adjustment (PPA)

- a. The PD level is used to determine the PPA with the equations listed in 903.03.05E4.
 1. If the PD is less than 50%, the lot receives a PPA calculated with Equation 1 is applied.
 2. If the PD is greater than or equal to 50%, the ME can re-evaluate with coring or other non-destructive testing (NDT).
- b. Re-evaluation with NDT is used only to determine what further action is to be taken.
 1. NDT methods utilized are not defined explicitly, however, use of a Swiss Hammer/Rebound Hammer is not permitted. NDT methods such as Ultrasonic Pulse Velocity (UPV) or Sonic Rebound are more accurate and correlate to concrete strength. The ME, Design Unit, and the RE may be consulted in selection of appropriate NDT methods. The ME will determine who will perform the testing when method is determined.
 2. If the results equal or exceed the CDS, the ME may accept the lot at 100% payment.
 3. If the results are less than the CDS, the ME may elect to core for further evaluation.
 4. If the results are less than the CDS, and the ME elects not to core, the contractor may core at their own expense, if approved.
 5. If no further action is taken, a PPA calculated with Equation 2 is applied.
- c. Re-evaluation with core results can be requested by the ME, or if approved, at the request of the contractor.
 1. Coring should be conducted as specified in Table 903.03.06-4. In general, coring operations should follow the provisions of AASHTO T24. The Contractor is to perform appropriate non-destructive investigations as necessary to ensure cores are located outside areas of reinforcement steel or other embedded metal. If embedded metal or reinforcement steel unintentionally winds up in a core, that core will not be used for determining strength of concrete and the Contractor will need to advise the RE how the affected concrete is to be repaired. Additionally, coring samples should meet the minimum size requirements specified in AASHTO T24 (minimum 3.70 in diameter with a length to diameter ration of 2:1).
 2. When it is impractical for certain items (sidewalk, curb, etc.), due to logistical circumstances, re-evaluation options may be limited.
 3. Cores must be taken within 90 days of concrete placement. Coring locations are determined by the ME, and coring drill operations are witnessed by the Department.
 4. Core samples are transported by the Department to the HQ lab for testing.

5. Core results are processed at HQ Lab and distributed to the Region.
- d. Core results determine the final disposition of the lot.
 1. If the PD is less than 75%, the PPA calculated is applied.
 2. If the PD is greater than or equal to 75% the ME will reject the lot.

4. Rejection of the Lot

- a. When the concrete lot is rejected, the options listed below should be discussed between the RME, Design and the RCE. The contractor should be notified of the decision in writing.
 1. The contractor is required to remove and replace the defective lot.
 2. The contractor can leave the defective lot in place and a PPA is applied with Equation 2.
 3. The contractor can submit a plan for corrective action to the RME for approval.
- b. If a plan for corrective action is submitted, the plan for corrective action can be accepted or the plan can be rejected. If the plan is rejected Options 1 or 2 above are to be selected.