

July 1, 2019

Approved: Division Administrator
By: Federal Highway Administration South Carolina Division

Delete Section **701.4.4.7 Mobile Concrete Mixing Plants** and replace it with the following:

701.4.4.7 Volumetric Concrete Mixers

Provide volumetric mixers with rating plates indicating that the performance of the mixer is in accordance with the Volumetric Mixer Manufacturer Bureau (VMMB). Ensure that mixers comply with ASTM C685. Unless otherwise specified, ensure that all mixing operations are in strict accordance with the manufacturer's recommended procedures. Provide such procedures to the RCE for review upon request.

Ensure that the concrete mixing truck is an auger-type continuous mixer used in conjunction with volumetric proportioning. Ensure that the mixer produces concrete, uniform in color and appearance, with homogeneous distribution of the material throughout the mixture. Establish the mixing time necessary to produce uniform concrete and comply with other requirements of these specifications. Only acceptable equipment capable of producing uniform results will be permitted.

Continuous volumetric concrete mixers may be used, with the approval of the RCE and State Materials Engineer, for non-structural concrete. Ensure that mix designs meet the requirements of Section 701.2.12.2 and all materials used meet the requirements of Section 701. Ensure that continuous volumetric concrete mixers are capable of combining aggregate, cement and/or fly ash, water and admixtures, into a uniform mixture within the specified mixing period. Ensure that all materials used are listed on the appropriate QPL (for example, fine aggregates, coarse aggregates, cement, fly ash, and admixtures).

Ensure that continuous volumetric concrete mixers meet the following additional requirements:

- A capacity to carry (in separate compartments for each ingredient) enough of each individual ingredient to produce a minimum of 6 cubic yards of concrete,
- A recording meter capable of measuring the cement as it is introduced into the mixture,
- An adjustable flow control valve capable of controlling the flow of water and admixture as they are introduced into the mixture,
- A water flow meter capable of indicating to the nearest 0.10 gallons, the quantity of gallons used,
- The capability of being calibrated to automatically proportion and blend all components of the concrete mixture on a continuous or intermittent basis, as required,
- Equipped with an onboard ticketing system that will electronically produce a record of all material used and their respective weights and total volume of concrete placed. Ensure that tickets also identify the following information at a minimum:
 - Contractor Name
 - SCDOT Project ID
 - Date
 - Truck No.

SUPPLEMENTAL SPECIFICATION

- Ticket No.
- Time start/end of pour
- Mix ID and description
- Aggregate moisture before mixing

Calibrate the continuous volumetric concrete mixer according to the manufacturer's recommendations. Provide the RCE with the means to verify the calibration of the continuous volumetric concrete mixer.

The RCE will allow operation of the continuous volumetric concrete mixer provided the concrete produced is within the limits of the specifications.

Tolerances in proportioning the various ingredients are as follows:

Cement, fly ash, mass %	0 to +4
Fine aggregate, mass %	±2
Coarse aggregate, mass %	±2
Admixtures, mass or volume %	±3
Water, mass or volume %	±1

Perform the calibration process of each volumetric mixer at least once every 12 months or any time materials change.

Upon written request, the use of volumetric mixers may be allowed on small quantities of structural concrete on case by case basis upon approval by the RCE (or RME as applicable), DOC office and State Materials Engineer.