309-R-793 LEAN CONCRETE BASE

(Adopted 01-16-25)

The Standard Specifications are revised as follows:

SECTION 309, BEGIN LINE 1, INSERT AS FOLLOWS:

SECTION 309 – LEAN CONCRETE BASE

309.01 Description

This work shall consist of placing Lean Concrete Base, LCB, material on subgrade as the subbase material in accordance with 105.03.

MATERIALS

309.02 Materials

Materials shall be in accordance with the following:

Admixtures.....912.03*
Calcium Chloride, Type L.....913.02
Concrete Coarse Aggregate
*Size No. 8, Class A or Higher**.....ITM 226, 904*
Fine Aggregate, Size No. 23.....904.02(a)
Portland Cement, Type IL or Type III.....901.01(b)
Water.....913.01

* *Other admixtures that improve flowability or decrease setting time may be used as approved by the Engineer.*

** *Crushed stone only.*

309.03 Lean Concrete Base Mix Design

The LCB mix shall be proportioned to produce a workable mixture with the properties listed in the table below. Aggregate weights shall be based on saturated surface dry, SSD, conditions. The batch water shall be adjusted to account for moisture in the aggregates. The mix design shall be submitted a minimum of 7 calendar days prior to the trial batch and include the following:

(a) list of all materials
(b) source of all materials
(c) batch weights
(d) names of all admixtures.

Materials and Properties	*Requirements*
Portland Cement Content, lb/cu yd	*155 max.*
Fine Aggregate, lb/cu yd	*1,744*
Coarse Aggregate, lb/cu yd	*1,931*
Water, lb/cu yd	*195*
High Range Water Reducing Admixture, Type F	*Dosage as required to achieve flow for placement*
Entrained Air, %	*9 - 15*
Compressive strength @ 28 days, psi, ASTM C39	*150 min. – 600 max.*

Slump, in.	*As required for placement*

309.04 Trial Batch

A trial batch shall be produced by the Contractor and will be tested to verify that the mix design meets the criteria as stated in 309.03.

The trial batch shall be of sufficient quantity to allow the Department to perform all required tests from the same batch. The LCB material shall be batched within the proportioning tolerances of 508.02(b) except that admixture dosages may be modified from the targets shown on the mix design submittal to achieve the target air content and desired flow consistency.

The mixture may be tempered with admixtures shown on the mix design within 30 minutes of the original batch time. The LCB mixture shall flow freely from the truck by gravity with a minimum of three chutes. Flow consistency will be based on visual assessment and as needed for field placement.

The Department will determine the test results for air content of the plastic mixture and 28-day compressive strength of the hardened LCB. A minimum of four 6 in. by 12 in. cylinders will be made and tested in accordance with 702.24. The cylinders will be cured in standard conditions in accordance with AASHTO R 100, Section 10.1. All test results will be provided to the Contractor.

309.05 Job Control

LCB material will be tested for air content once per 50 cu yds. One set of three 6 in. by 12 in. cylinders for compressive testing at 28 days will be made during each day of production. The cylinders will be cured in standard conditions in accordance with AASHTO R 100, Section 10.1. The Engineer will notify the Contractor when test results for air content or compressive strength are outside the requirements of 309.03.

CONSTRUCTION REQUIREMENTS

309.06 Placement

Prior to placement, the Contractor shall ensure that the total depth of the patch area is sufficient to allow for placement of the depths for both the LCB material and overtopping material. The subgrade shall be sufficiently damp prior to placement. Dry subgrade material shall be wetted to a damp condition without creating ponding of water or mud. LCB material shall not be placed in standing water or on frozen ground and shall be protected from freezing for 72 h or until the overtopping material is placed.

The LCB material shall be placed to a depth of 9 in. When directed by the Engineer to perform additional undercutting below 9 in. due to unsuitable existing subgrade material, the maximum depth of the additional undercutting will be 6 in. The Contractor shall ensure that there is sufficient depth remaining above the LCB surface to accommodate the required thickness of the overtopping material. During placement, the LCB material shall be compacted with internal vibration. After placement, a liquid membrane forming curing compound shall be applied within 30 minutes in accordance with 702.22(b) and shall have a final appearance similar to a white sheet of paper.

Plastic sheeting, a minimum of 3 mils thick, shall be placed on the LCB surface as a debonding layer between the LCB and the overtopping material.

The overtopping material may be placed on top of the LCB as soon as placement can be performed without deformation of the LCB.

309.07 Method of Measurement

Lean concrete base will be measured by the square yard.

309.08 Basis of Payment

Lean concrete base will be paid for at the contract unit price per square yard, complete in place.

Payment will be made under:

Pay Item	***Pay Unit Symbol***
Lean Concrete Base, 9 in.	*SYS*

The cost of variations in admixture dosage rates, the addition of calcium, other changes to the production mix that occur after the trial batch, liquid membrane forming compound, plastic sheeting, and all other incidentals necessary to construct the LCB shall be included in the cost of the LCB pay item.

The cost of excavation, disposal of existing materials, and preparation of the subgrade prior to placement of the LCB shall be included in the cost of the LCB pay item.

When directed by the Engineer, LCB areas requiring excavation between 9 in. and 15 in. depth will be paid for by multiplying the quantity for LCB, 9 in. by 1.5.

LCB placed thicker than 9 in. due to variations in depth of excavations by the Contractor, will only be paid for at the initial 9 in. depth. Any additional thickness will not be paid.

SECTION 609, BEGIN LINE 25, INSERT AS FOLLOWS:

609.03 General Requirements

Subgrade shall be prepared in accordance with 207. Subbase shall be prepared in accordance with 302. Geotextile shall be installed in accordance with 214. *LCB when shown on the plans shall be in accordance with 309 and as follows.*

Two layers of polyethylene plastic sheeting shall be placed on top of the LCB as a debonding layer between the LCB and the RCBA. Preformed expansion joint filler 3 in. in thickness shall be placed along the notch between the sloped edge of LCB and the thickened portion of the RCBA. The RCBA may be placed on top of the LCB as soon as placement of the reinforcing steel and concrete can be performed without deformation of the LCB. When the LCB is placed adjacent to semi-integral or fully integral end bents, 3 in. of preformed expansion joint filler shall be placed between the bent and the vertical edge of the LCB.