Section 2302. Portland Cement Concrete Widening

2302.01 DESCRIPTION.

Widen existing pavement with PCC according to the contract documents. This work may also involve flume removal, curb removal, and shoulder construction. Apply the appropriate provisions of Section 2301.

2302.02 MATERIALS.

A. Meet the requirements of the appropriate sections of Division 41.

B. Meet requirements for Class A or Class C concrete in Materials I.M. 529.

2302.03 CONSTRUCTION.

A. Maintenance of Traffic.
Unless indicated otherwise in the contract documents, maintain traffic through the project.

B. Flume Removal.
Remove flumes according to Section 2514.

C. Curb Removal.
Remove curb according to Section 2514.

D. Subgrade Preparation.

1. Cut a trench for the widening that is no less than 6 inches (150 mm) greater than the base width of the widening shown in the contract documents. If fixed forms are used, adjust the trench width to accommodate the forms.

2. Bring the subgrade to an elevation and cross section such that, after being rolled, the surface will be at the required elevation.

3. Correct depressions that develop during rolling. Continue rolling until the subgrade is uniformly firm, properly shaped and true to grade and cross section.

4. Remove material (other than sand) which will not readily compact under the roller. Replace with material which will compact readily, and roll that portion of the subgrade again.

5. Use a roller meeting the requirements of Article 2001.05. Adapt the roller to conditions affecting the work. The Engineer may direct the weight (mass) of the roller be reduced to the minimum to provide a smooth, firm subgrade.

6. Treat subgrade or subbase according to Article 2109.03, A. When plastic film is used, size it to be no less than the nominal width of the widening being constructed.

7. Provide ditches or drains to allow water to drain from the widening trench.

8. Complete subgrade in advance of PCC placement. For sections more than 800 feet (250 m) long, complete the subgrade no less than 800 feet (250 m) in advance of PCC placement.

9. Check finished subgrade with a template supported on the adjacent pavement surface.

10. Clean edge of the old pavement.

E. Portland Cement Concrete Widening Construction.
Construct PCC widening as follows:

1. Placing and Finishing.

a. After preparing subgrade, deposit concrete directly on subgrade without being dumped on the pavement.

b. Concrete may be placed and finished by use of fixed forms or slipform paver.

c. When a slipform paver is used, control the concrete consistency and the amount of vibration so that the full width and depth of the section is consolidated. Ensure no slump occurs after the sliding form has passed. For the slipform paver, provide a metal strike off plate no less than 3 feet (0.9 m) long and extending no more than 3 inches (75 mm) into the pavement surface being widened. Use a sliding form made of metal. To assure alignment, provide the sliding side form with adjustable rigid braces at intervals of no more than 4 feet (1.2 m).

d. Use mechanical vibrators to consolidate the concrete. Provide a sufficient number of vibrators to ensure adequate consolidation. Operate vibrators at an appropriate frequency, according to Article 2301.03, A, 6, a, which is independent of the forward speed of the paver.

e. Finish the concrete widening to be flush with the adjacent pavement surface without either edging or sealing the joint. When voids wider than 1 1/2 inches (40 mm), measured at right angles to the pavement edge, occur in the edge of the old pavement, fill them with concrete. Separate them from the widening with preformed mastic dummy joint 1/8 inch thick by 2 inches wide (3 mm thick by 50 mm wide). Install the preformed mastic dummy joint directly over the edge of the old pavement. When checked, correct high spots in excess of 1/4 inch on a 10 foot (6 mm on a 3 m) straightedge. Produce texture on the new concrete using a burlap or carpet drag.

f. When concrete widening intersects an approach road or driveway to a dwelling or business establishment, make provisions for access as follows:

1) Construct widening only halfway through the roadway or driveway access on the initial construction. Provide a suitable approach through the unpaved portion of the access. In no less than 4 working days, and no more than 7 working days, fill

gaps left open. A removable header board, equipped with keyway in lieu of dowel bars, may be used at these locations.

2) A temporary bridge, approved by the Engineer, may be provided for access from driveways to dwellings or to business establishments. This will permit the widening to be constructed continuously across the driveways. At the Contractor's option, concrete used to widen the pavement at driveways to dwellings or to business establishments may have 2 pounds (2 kg) of calcium chloride (solid form) per 100 pounds (100 kg) of cement added at the mixer for the full length of mixing cycle. When calcium chloride is used, the temporary bridges may be removed after 24 hours when suitable approaches are provided for the driveway.

2. Contraction Joints.

Construct transverse contraction joints as shown in the contract documents. This work will be considered incidental and shall not be paid for separately.

3. Protection and Curing.

a. Protect and cure freshly finished concrete as provided in Article 2301.03, K.

b. Construct earth check dams within 0.5 calendar days after placing concrete. This is to prevent water from flowing along the edge of the pavement to the extent that the edge of the slab may be undermined. Space earth check dams and construct them wide enough such that they do not provide an approach over which a vehicle may be driven onto the pavement.

F. Shoulders.

1. Unless otherwise specified, consider shoulder construction adjacent to pavement widening to be Type A, B, C, or D.

a. Type A Shoulders.
Blade over the foreslope both the soil excavated from the trench and material of the shoulder lying above the proposed, finished shoulder line.

b. Types B and C Shoulders.
Excavate material lying above the proposed shoulder line and haul and deposit it at the Engineer’s direction within a free haul limit of 1 mile (1.6 km).

c. Type D Shoulders.
Blade the soil excavated from the trench over the shoulder and shape the shoulders and slopes, the cost of which is included in the contract unit price for trench excavation.

2. Finish shoulders to a well defined shoulder line with uniformity in width, no abrupt changes in width, and smooth foreslopes.

G. Removal of Materials from Curbs and Flumes.

1. Unless provided otherwise, clean up all materials removed from curbs and flumes. Remove these materials according to Article 1104.08.

2. Deposit materials removed from curbs and flumes and designated for salvage in areas as designated in the contract documents. No overhaul will be allowed.

H. Limitations.

1. Unless the road is closed to traffic, construct pavement widening on only one side of the pavement at a time. Open the widened pavement on one side to traffic before removing the curb on the opposite side.

2. Place backfill material and compact the unfilled portion of trench excavation on one side of the pavement to provide a usable traffic surface before:

- Any work is done on the other side of the pavement, and
- Paving is opened to traffic.

3. Compaction required in this operation may be accomplished by rolling with a pneumatic tired roller which has a total weight (mass) of no less than 2000 pounds (900 kg).

4. At the end of the day, restore the shoulder disturbed in connection with curb removal to the general elevation of the pavement edge, unless protected by barricades.

5. Apply Articles 1107.08 and 1107.09.

I. Opening Widening to Traffic

Concrete widening may be opened to traffic as soon as the concrete has attained the age and flexural strength according to Article 2301.03, U and the shoulder backfill material has been placed.

2302.04 METHOD OF MEASUREMENT.

Measurement will be as follows:

A. Excavation, Class 13, for Widening.

Article 2213.04, C, applies.

B. Removal of Curb.

Article 2213.04, A, applies.

C. PCC Pavement Widening.

Square yards (square meters) shown in the contract documents. The thickness of the pavement will be determined as provided in Article 2301.04.

D. Shoulders.

1. Type A, B, and C Shoulders: stations (meters) shown in the contract documents.

2. Earth shoulder finishing: not measured separately, but will be incidental work included in construction of shoulders.

3. Type D shoulders: incidental to excavation and will not be measured for payment.

E. Removal of Flumes.
Article 2213.04, B, applies.

F. Portland Cement Concrete Pavement Samples.
Article 2301.04, G, applies.

2302.05 BASIS OF PAYMENT.
Payment will be contract unit price as follows:

A. Excavation, Class 13, for Widening.
Article 2213.05, C, applies.

B. Removal of Curb.
Article 2213.05, A, applies.

C. PCC Pavement Widening.

1. Per square yard (square meter) as provided in Article 2301.05.

2. Payment is full compensation for construction of the pavement widening and all other work not paid for under other items.

D. Shoulders.

1. Type A, B, and C Shoulders: per station (meter).

2. Type D shoulders: incidental to excavation and will not be measured for payment.

E. Removal of Flumes.
Article 2213.05, B, applies.

F. Portland Cement Concrete Pavement Samples.
Article 2301.05, G, applies.