

SECTION 32 13 14

Concrete Sidewalks and Driveways

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Cast-in-place concrete sidewalks and driveways.

B. Related Sections

1. Section 31 23 00 – Excavation and Fill
2. Section 31 23 13 – Subgrade Preparation
3. Section 32 11 23 – Aggregate Base Course
4. Section 32 16 13 – Concrete Curbs and Gutters
5. Section 32 12 03 – Flexible Paving

1.02 REFERENCES

A. North Dakota Department of Transportation “Standard Specifications for Road and Bridge Construction” 2014 Edition, As Revised

1. Section 550 – Portland Cement Concrete Pavement
2. Section 802 – Portland Cement Concrete
3. Section 808 – Concrete Admixtures
4. Section 810 – Concrete Curing Materials
5. Section 816 – Aggregates
6. Section 820 – Fly Ash
7. Section 826 – Joint Materials
8. Section 836 – Reinforcing Steel

B. American Society of Testing Materials (ASTM)

1. C33 – Standard Specification for Concrete Aggregates
2. C150 – Standard Specification for Portland Cement
3. C260 – Standard Specification for Air-Entraining Admixtures for Concrete.
4. C390 – Standard Specification for Liquid Membrane-Forming Compounds for Curing concrete.
5. A615 – Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
6. D6690 – Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements.

1.03 SUBMITTALS

- ###### A. Submittals shall conform to Section 01 33 00.

- B. Contractor shall provide submittals on the following items:
 - 1. NDDOT approved Concrete Mix Design
 - 2. Joint Filler/Sealer
 - 3. Fly Ash Certification (if used).
 - 4. Steel Reinforcing Certification and shop drawings from the manufacturer.

1.04 QUALITY ASSURANCE

- A. The Contractor shall hire an independent testing laboratory approved by the Engineer to design NDDOT approved Concrete Mix Design.
- B. The Contractor shall hire an independent testing laboratory approved by the Engineer to perform the work listed below.
 - 1. Test the concrete in the field for air and slump
 - 2. Cast test cylinders in the field for compression tests.
 - a. 1 cylinder for 7 day break for concrete pours in any given day.
 - b. 1 cylinder for 28 day break for concrete pours in any given day.
 - c. Contractor may choose to cast more cylinders at Contractor's expense.

PART 2 PRODUCTS

2.01 CONCRETE

- A. Concrete to conform to NDDOT Spec 802, except as modified below:
 - 1. Concrete shall be class AE3: 6 sacks (94lb) per CY.
 - 2. Minimum compressive strength shall be 4000 psi at 28 days.

2.02 AGGREGATE

- A. Fine Aggregate
 - 1. Conform to NDDOT Spec Section 816.01
- B. Coarse Aggregate
 - 1. Conform to NDDOT Spec Section 816.02, Size No. 3.

2.03 WATER

- A. Water for concrete shall be clean potable water, free of contaminants.

2.04 FLY ASH

- A. Fly Ash will be permitted for use up to a maximum of 20 percent by weight.

2.05 ADMIXTURES

A. Air Entrainment

1. Conform to ASTM C260
2. Air entrainment shall be targeted for 6 percent with a range of 5 – 8 percent.

B. Chemical Admixtures

1. Conform to AASHTO M 194

2.06 REINFORCING STEEL

A. Conform to NDDOT Spec Section 836.

B. Reinforcing shall be as shown on the Drawings

2.07 CONCRETE CURING MATERIALS

A. Conform to NDDOT Spec Section 550.04 K.3.

2.08 JOINTING MATERIAL

A. Conform to NDDOT Spec Section 826.

B. Silicone Sealants can be used.

2.09 TRUNCATED DOME PANELS

A. East Jordan Iron Works, Neenah Foundry Company, or approved equal.

PART 3 EXECUTION

3.01 GENERAL

A. Concrete sidewalks shall conform to the typical section shown on the Drawings.

B. All sidewalks and driveways shall be reinforced with number 4 rebar spaced at 2 feet in each direction.

C. The completed concrete work shall give the appearance of uniformity in surface contour and texture, and shall be accurately constructed to line and grade. The required joints, edges, and flow lines shall show neat workmanship.

3.02 FOUNDATION PREPARATION

- A. The foundation shall be excavated, shaped, and compacted conforming to the planned section and grade.
 - 1. Unsuitable subgrade soils shall be removed and replaced.
 - 2. A minimum of 4" aggregate base class 5 shall be furnished, placed, and compacted. All labor and materials, including the base material shall be included in the price bid for concrete sidewalk.
 - 3. Aggregate base class 5 shall conform to table in NDDOT Spec Section 816.03B.

3.03 FORMS

- A. Concrete shall be placed in forms and consolidated without causing segregation.

3.04 JOINT CONSTRUCTION

- A. Panels shall be square where possible.
- B. Joints shall be perpendicular to the finished surface.
- D. All joints and edges shall be rounded with a ½ inch radius edging tool.
- E. Contraction joints shall extend to at least 1/3 the concrete thickness and shall be approximately 1/8 inch wide.
- F. Expansion joints shall be ½ inch wide and shall extend the full depth and width of the concrete.
 - 1. Expansion joint filler material shall be securely fastened to the surface of existing concrete before subsequent concrete is cast against the joint.

3.05 CONCRETE CURING AND PROTECTION

- A. Coat all surfaces with membrane curing compound within 30 minutes after finishing at the specified rate.
- B. Cold Weather curing, when temperatures fall below 40 degrees F during placement or within the following 24 hours, provisions shall be made to keep concrete temperature at 55 degrees for the first three days. Concrete must be kept at 40 degrees or above for an additional two days.
- C. The freshly finished surface shall be protected, surfaces pitted by rain will be considered unacceptable.

D. Removal and replacement of any concrete section damaged by traffic, rain, cold weather, or other causes occurring prior to final acceptance shall be the responsibility of the Contractor.