

SECTION 32 16 13

Concrete Curbs and Gutters

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Cast-in-place concrete curbs, and concrete curb and gutter.

B. Related Sections

1. Section 32 11 23 – Aggregate Base Course
2. Section 32 12 16 – Flexible Paving
3. Section 32 13 14 – Concrete Walks, Medians, and Driveways.

1.02 REFERENCES

A. North Dakota Department of Transportation “Standard Specifications for Road and Bridge Construction” 2022 Edition

1. Section 550 – Portland Cement Concrete Pavement
2. Section 748 – Curb and Gutter
3. Section 802 – Portland Cement Concrete
4. Section 808 – Concrete Admixtures
5. Section 810 – Concrete Curing Materials
6. Section 816 – Aggregates
7. Section 820 – Fly Ash
8. Section 826 – Joint Materials
9. Section 836 – Reinforcing Steel

B. American Society of Testing Materials (ASTM)

1. C260 – Air-Entraining Admixtures for Concrete.

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.

C. Submit one 7-day and two 28-day concrete cylinder test results for concrete pours in any given day.

1.04 SEQUENCING AND SCHEDULING

- A. Install concrete curb and gutter within 1 week after aggregate base has been completed and approved.
- B. Concrete curb and gutter construction precedes installation of pavement.

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.

PART 3 EXECUTION

3.01 GENERAL

- A. Provide copies of batch tickets for concrete mix at the time of material delivery to Site.
- B. Construct concrete curb and gutter at the locations and elevations indicated on the Drawings.
- C. Construct intersection curb radii and transitions sections to conform to the detail on the Drawings.
- D. Construct transition sections at inlet structures to conform to the detail on the drawings.
- E. Construct concrete curb ramp depressions to conform to the detail on the drawings.
- F. Construct curb transitions for driveways to conform to the detail on the Drawings. Locations to be verified by Engineer at the time of construction.
- G. 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.
- H. Retempering of the concrete which has partially hardened with or without additional materials or water is prohibited.

3.02 FOUNDATION PREPARATION

- A. Support on a compacted aggregate base
 - 1. Conform to typical sections as shown on the Drawings.
 - 2. Conform to Section 32 11 23.

3.03 FORMS

- A. Construct curb and gutter using a slip-form machine or full depth fixed forms.

3.04 JOINT CONSTRUCTION

- A. Maximum spacing of expansion joints for slip formed shall be 200 feet.

3.05 METAL REINFORCEMENT

- A. Conform to NDDOT Spec section 836.
- B. Install two No. 4 steel reinforcing rods in lower portion of the curb section with a minimum of 2-inch coverage on all sides.
 - 1. Reinforcing required at all catch basins and shall conform to the details on the Drawings.

3.06 PLACING AND FINISHING

- A. The top surface of the curb and gutter shall have a brush finish at right angles to the curb line.

3.07 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.

