

SECTION 321613 – CONCRETE CURBS AND GUTTERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification sections, apply to this section.

1.2 SUMMARY

- A. Provide all labor, materials and equipment as necessary to complete all work as indicated on the Drawings and specified herein.
- B. This section includes:
 - 1. Curb and gutters.
- C. Related sections include the following:
 - 1. Division 01 Section 015000-TEMPORARY FACILITIES AND CONTROLS
 - 2. Division 31 Section 312300-EARTHWORK
 - 3. Division 32 Section 321218-BITUMINOUS PAVEMENT
 - 4. Division 32 Section 321313-CONCRETE PAVEMENT

1.3 QUALITY ASSURANCE

- A. Provide the required testing and inspection as indicated in Division 01 Section “General Requirements - Temporary Facilities and Controls.” Concrete sampling, testing, and inspection shall conform to the requirements found in Division 32 Section “Concrete Pavement.”

1.4 SCHEDULE

- A. Concrete shall not be placed after October 15 without written permission from the Project Representative.

1.5 WARRANTY

- A. Furnish and sign 2 year written warranty (last page of this section) which shall cover cracking, spalling, settling, finishing and forming.

PART 2 - PRODUCTS

2.1 Refer to Division 32 Section “Concrete Pavement” for all products, except for the following:

- A. Reinforcement: Shall be No. 4 bar reinforcement of new billet stock of intermediate grade in accordance with ASTM A615.

PART 3 - EXECUTION

3.1 PLACING FORMS

- A. Steel or wood forms of an approved section shall be used throughout the construction. On radii 3 feet or less, 1/4-inch plywood or masonite shall be used. All forms shall have a height equal to concrete thickness. Built-up, battered, bent, twisted, or broken forms shall be removed from the work. Expansion joint materials shall not be used.
- B. Forms shall be so constructed and set as to resist, without springing or settlement, the pressure of the concrete. On curbs of sharp radius, plywood or other approved flexible material shall be used in sections short enough to form a smooth, uninterrupted curb which shall not vary from the true radius by more than 1/4-inch. Forms shall not deviate more than 1/8-inch in 10 feet from the true horizontal alignment and no more than 1/8-inch in vertical alignment.
- C. Where forms are set above general surrounding area, earth shall be placed along outside edges of forms to ensure stability.
- D. Forms shall be cleaned and oiled each time they are used.
- E. Forms must be approved by the Project Representative prior to placing concrete.

3.2 PLACING REINFORCEMENT

- A. Place 2 bars in gutter pan as specified in Drawings and in the following areas:
 - 1. Where curb crosses a recently filled trench and extending a minimum of 5 feet beyond trench wall.
 - 2. Where fill soil of 18 inches or more occurs.
 - 3. In all valley gutter pans. (exception – 3 bars as shown on the detail drawing)
 - 4. In all path ramps and extending a minimum of eighteen inches beyond the bottom of the curb taper or curb transition.
 - 5. As directed by the Project Representative.

3.3 PLACING CONCRETE

- A. Refer to Division 32 Section “Concrete Pavement.” However, the time restriction may be extended with the approval of the Project Representative.

3.4 JOINTING

- A. Control (contraction) joints shall be perpendicular to the curb edge, 1-1/2-inch deep, open and free of all excess concrete. Control joints shall be placed at intervals of not more than 10 feet as indicated on the Drawings.

- B. Expansion joints shall be placed at all points of curvature, tangency, and at intervals of not more than 100 lineal feet.

3.5 FINISHING

- A. Concrete shall be struck off true to cross section, after which it shall be finished smooth and even. Face forms, if used, shall be left in place until the concrete has set sufficiently so that they can be removed without injury to the curb. The remaining forms shall be rounded with an edging tool. No tool marks are to be left on exposed edges.
- B. A straight edge check is to be made while concrete is still plastic. Irregularities exceeding 1/8-inch shall be corrected. Finish surfaces shall not vary from the required cross section as indicated on Drawings by more than 1/8-inch. They shall not vary from the true horizontal alignment by more than 1/4-inch in 10 lineal feet. Sections exceeding those limitations are subject to rejection and replacing at Contractor's expense.
- C. Adding water to the surface of the concrete to assist in finishing operations is not permitted. If a finishing aid is permitted by the Project Representative, it shall only be an approved product for that intended purpose and then applied according to the product recommendations.
- D. For heated pavement (or snow melt) systems, the heated portion of the concrete shall be stamped with the words "Heated Walk Limit" at the edge of the heated pavement. If part of the system includes the curb or gutter, then the stamp shall be placed on the gutter pan. Stamp spacing shall be at approximately 20-foot increments and positioned exactly between each control joint. Stamp locations shall be approved by the Project Representative in advance. A stamp may be available for use from the Project Representative if arrangements are made in advance. Otherwise, the Contractor is responsible to secure a stamp that is approved by the Project Representative.

3.6 CURING AND ANTI-SPALLING COMPOUND APPLICATION

- A. Refer to Division 32 Section "Concrete Pavement."
(CONCRETE CURB AND GUTTER WARRANTY ON FOLLOWING PAGE.)

CONCRETE CURB & GUTTER WARRANTY

PROJECT:

CONTRACTOR:

**OWNER: BOARD OF TRUSTEES
MICHIGAN STATE UNIVERSITY**

We, the undersigned, herewith warranty all the work to be free from defective workmanship and/or materials for **two (2) years** from November 1st of the calendar year of the date written below, in accordance with the requirements set forth in the Drawings and Specifications for the above-named Project.

The Contractor agrees that by acceptance of this Work and in consideration thereof, for them and for each of their Subcontractors, binds themselves to all warranties called for. The Contractor shall warranty all work, except as noted elsewhere in these Contract Documents in which a longer warranty is specified. This shall include, but not be limited to, the following defects:

1. Cracking
2. Spalling
3. Settling
4. Finishing
5. Forming

If during the warranty period, it is found by the Owner's Representative, that the warranty Work needs to be repaired or replaced because of the use of materials, equipment, or workmanship which is inferior, defective, or not in accordance with the terms of Agreement, the Contractor, upon notification, shall promptly and without additional expense to the Owner:

- a. Place in satisfactory condition all of such warranted Work,
- b. Make good all damage to the project, or contents thereof, which is a result of such unsatisfactory warranted Work, and
- c. Make good any Work, materials and equipment that are disturbed in fulfilling the Warranty, including any disturbed work, materials and equipment that may have been warranted under another contract.

Should the Contractor fail to proceed promptly in accordance with the Warranty, the Owner's Representative may have such work performed at the expense of the Contractor and their surety.

CONTRACTOR: _____ DATE: _____

ADDRESS: _____

AUTHORIZED REPRESENTATIVE: _____
(Print) (Signature)

SUBSCRIBED AND SWORN TO BEFORE ME,

THIS _____ DAY OF _____

A.D. _____

NAME

MY COMMISSION EXPIRES

END OF SECTION 321613