

**PART 1 GENERAL**

## 1.1 SCOPE:

- A. This Section covers work necessary for the construction of curbs, gutters, and combination curb and gutter.
- B. See Standard Detail Nos. 4100-1, 4100-2, 4100-4 and 4100-5.

**PART 2 PRODUCTS**

## 2.1 GRADING AGGREGATES:

- A. Aggregate for grading shall be 1-inch minus as specified in Section 2300 of these Specifications.
- B. Aggregate materials for base, foundation courses, leveling courses, and/or bedding shall conform to 1-inch minus as specified in Section 2300, or as shown on the Plans.

## 2.2 CONCRETE:

- A. Concrete for new curbs and/or curbs & gutters shall be 3,500-psi redi-mix, ASTM C94 as specified in Section 2000.
- B. Slump tolerance shall not exceed  $\pm 1.0$ -inch of the submitted and approved mix design.

## 2.3 EXTRUSION MACHINES:

- A. Formless concrete extrusion machines may be used for constructing curb and curb and gutter. Machines shall be of suitable design for the intended use, in proper operating condition and capable of maintaining form, alignment and grade.

## 2.4 FORMS:

- A. Prefabricated steel forms may be used.
- B. Lumber used in forms shall be of 2-inch material dressed to a uniform thickness, and of good sound material, free from loose knots or other defects. Lumber once in forms shall be thoroughly cleaned before being used again. Re-use of forms and form lumber will be permitted only if their condition is approved by the Engineer.

## 2.5 PREMOLDED JOINT FILLER:

- A. When required, Pre-molded joint filler shall conform to Section 2000 CAST IN-PLACE CONCRETE (2.8).

**2.6 CONCRETE CURING COMPOUND:**

- A. Curing material shall conform to Section 2000 CAST IN-PLACE CONCRETE (2.9).

**2.7 WEEP HOLE PIPE:**

- A. Weep hole pipe shall be schedule 40 PVC, minimum.

**PART 3 EXECUTION****3.1 EXCAVATION:**

- A. Excavation shall be unclassified and shall include all excavation for curb and gutter and such trimming as may be necessary in the area between the curb and property line, as shown on the Plans or as directed by the Engineer. Excavation for curbs and gutter shall be done in conjunction with the excavation of the street.
- B. Any portion of the curb and gutter subgrade excavated below grade shall be corrected with gravel backfill. Where directed by the Engineer, suitable material as approved by the Engineer may be used for backfill. Such material must be compacted in lifts with mechanically operated tampers. Tamping shall be such that no settlement will occur.

**3.2 FOUNDATION STABILIZATION:**

- A. Where soft, spongy or other unstable material is found in the subgrade, the Engineer shall require that excavation be carried to firm, solid foundation material, which in his opinion is deemed satisfactory. The subgrade shall then be backfilled to the required grade with gravel for backfill as specified in Section 4200. This item shall include the excavation necessary to provide space for the foundation stabilization material.

**3.3 FORMS:**

- A. Forms shall conform to the shape, lines, grades and dimensions of the concrete as hereinafter provided for or as called for on the Plans. The inside of forms shall be coated with a light, non-staining mineral oil. Forms shall be held firm and rigid to permit thorough consolidation (i.e. tamping or mechanical vibration) of the concrete.
- B. Curb, and Curb and Gutter Forms. The finished curb will conform to the curb and curb and gutter detail on the Standard Street and Drainage Details drawing. Horizontal and vertical alignment of forms shall be such that the finished surface shall not vary more than 1/4-inch from the established grade. Scored plywood may be used to affect the short radius bends required for curb and gutter returns.

**3.4 EXTRUSION MACHINES:**

- A. Curb extrusion machines shall be operated by experienced, competent persons in such a manner that the finished curb will conform to the Standard Detail Sheet as shown on the Plans.

Horizontal and vertical alignment shall be maintained such that the finished surface shall not vary more than 1/8-inch from the established grade.

### 3.5 EXPANSION/CONTRACTION JOINTS:

- A. Shall be installed and located where curbs or curbs & gutters are in contact with structures of dissimilar size, grade and/or material and as called for on the plans or as directed by the Engineer.
- B. Expansion joints shall be constructed of pre-molded joint filler and shall be placed in the forms in the proper position before concrete is poured. Nails at approximately 1-foot on centers shall be driven through the filler so as to extend into the concrete when it is poured and hold the filler in position. Joints shall be installed in curb and gutter at the ends of all returns and at not more than 15-foot intervals.
- B. Joint filler shall extend 1-inch above curb line and through the entire cross section of the curb and gutter. Joints shall be properly finished on both the face of the curb and on the top of the curb and gutter. After curing of the concrete has been completed, the joint filler shall be cut flush with the adjoining surfaces.

### 3.6 CONSTRUCTION JOINTS:

- A. Curbs shall have approved joints at the ends of all curb returns and at not more than 15-foot intervals or as directed by the Engineer.

### 3.7 PLACING CONCRETE:

- A. Before depositing of concrete will be permitted, the work crew and all equipment and tools must be on the job site. Before depositing concrete, all debris shall be removed from the space to be occupied by the concrete. The base shall be thoroughly wetted, but no pools of water will be permitted.
- B. Concrete shall be deposited in its proper place without delay in a continuous operation. An interval of more than 45-minutes between any 2 consecutive batches or loads, or a placing rate of less than 8-cubic yards of concrete per hour, shall constitute cause for a construction joint at the location and of the type directed by the Engineer in the concrete already placed.
- C. In extremely hot weather, concrete in place shall be protected until final finishing can be completed. With a hot, dry breeze, windbreaks may be erected, or fog nozzles may be used. Curing operation should begin as soon as concrete has set enough to avoid surface damage.

### 3.8 FINISH:

- A. Curbs and/or curb & gutter faces shall be broom finished and in directions shown on Plans.

**3.9 REMOVAL OF FORMS:**

- A. The form on the front of the curb or wall shall be removed in not less than 2-hours nor more than 6-hours after the concrete has been placed. Forms on the back of curbs and walks shall remain in place for at least 1-day, but in no event shall the form be removed if the concrete has not reached its initial set.
- B. Point or patch all exposed faces for holes left after the removal of form ties. Patching mixture shall consist of one part cement and two parts mortar sand. In general, it is not anticipated that patching will be required. Plywood or metal forms shall be used to produce a uniformly smooth surface on the exposed face. The use of form ties buried in the curb and gutter or wall must have the prior approval of the Engineer, and then only to suit a special forming problem, or as part of the integral design of a prefabricated and manufactured standard curb and gutter form. The interior of the catch basin shall be smooth.
- C. Grinding exposed faces with carborundum stones shall not be allowed. Substandard finishing and the presence of rock pockets shall be sufficient cause for rejection by the Engineer.

**3.10 CURING OF CONCRETE:**

- A. Protection against loss of moisture shall be accomplished by keeping the surface continuously wet for 7-days, or by application of an approved curing compound applied immediately after completion of the finishing.

**3.11 WEEP HOLES:**

- A. Weep holes shall be constructed through curbs to the gutter line as shown on the Standard Details.
- B. See Standard Detail No. 4100-3.

**3.12 MEASUREMENT AND PAYMENT:**

- A. Payment will be based up the unit price in the Bid for work completed and measured in the field to the nearest 0.1-linear foot.

**PART 4 TESTING****4.1 GENERAL:**

- A. At the direction of the Engineer a sample of the material shall be taken and tested by a qualified testing laboratory for gradation, density, compaction and/or other properties as specified herein.

END OF SECTION