6-10.1 General

Good quality, properly constructed concrete curb and gutter, true to line and grade, is essential to the overall functioning of any construction project of which this item is a part. Storm water runoff from the adjacent pavement as well as from side streets, alleys, entrances, and abutting properties is conveyed by the curb and gutter to inlets, storm sewers, or ditches where the drainage can be disposed of.

The curb serves as a means of traffic control at intersections and at traffic islands, delineating the limits of the traveled way and preventing encroachment of traffic onto sidewalks, medians, refuge areas, and the like. The curb also serves as an effective means of entrance control for both the width and location of the entrance. It lends a finishing touch to the pavement and enhances total appearance of the project.

The engineer and project staff members responsible for the construction layout, and staff should become totally familiar with the drainage layout, the curb and the gutter, the storm sewer system and appurtenances, and the curb ramp locations as shown on the plan. All aspects of surface drainage affecting the project should be carefully reviewed and inspected during the field staking, and necessary revisions should be made in grade to accommodate actual field drainage conditions. The correct and final location of inlets should also be determined during the staking.

Depressions in the curb to accommodate ramps for handicapped persons as required at street corner radii should also be located and referenced. Ramps must be at locations shown on the plan in accordance with plan details.

6-10.2 Setting Line and Grade

Generally, the procedures for running line and setting grade for concrete curb and gutter are similar to those for concrete pavement as covered in CMM 7-30. Survey hubs should be established at radius points where the points are accessible and the curves have small radii. These hubs allow for rapid establishment of line and for checking of forms at the returns. Where the radius point is inaccessible the curve can be staked by offsets from the chord.

Grade lines for curb and gutter should be established as far in advance of construction as possible to allow grade comparison and adjustment. Grade of the curb should be approximately parallel with grade on the highway centerline. When possible, top of curb should be lower than the adjacent sidewalk or adjacent ground.

Tilting or warping of the curb and gutter or of driveways, berms, and sidewalks may be necessary to maintain drainage. In urban areas, the curb and gutter should be checked to ensure drainage away from foundations and garages. Minimum desirable gutter grade is 0.5%, and absolute minimum gutter grade is 0.3%, as drainage is not guaranteed at a flatter grade due to tolerances in workmanship, settling, etc. While ensuring positive gutter drainage by meeting a minimum gutter grade, provide flatter gutter cross slope at curb ramps per plan and the standard detail drawings toward meeting ADA requirements.

6-10.3 Foundation

Maximum care should be used to secure a uniformly compacted subgrade for the work. Inadequate or nonuniform compaction may allow the curb or curb and gutter to settle when in service, resulting in a drainage problem, bad appearance, and maintenance expense.

6-10.4 Forms

Clean, straight forms in good condition are necessary for the work. Forms set true to line and grade, and adequately staked and braced to prevent movement when concrete is placed, will produce a product of uniform cross-section and good appearance. In order to obtain a smooth appearance in sharp radii curves of 100 feet or less, flexible radius forms must be used. The forms should be carefully inspected before and during concreting operations and realigned if necessary.

6-10.5 Placing and Finishing Concrete

The use of a curb and gutter machine that extrudes curb or curb and gutter is subject to the approval of the engineer, based upon results achieved. It is essential for concrete used in these machines to have a very low slump and uniform consistency. The resulting curb or curb and gutter should meet or exceed quality of that produced by formed method, per standard spec 601.3.4. All curb and gutter dimensions on the plans and details must be met.

When the contract contains a concrete pavement item, curb and gutter may be slip-formed integrally with the pavement unless prohibited by the special provisions. The operations of placing and consolidating the concrete

must be coordinated with the finishing operations. In the event that proper finishing cannot be secured, placement operations should be suspended or curtailed until finishing operations have returned to normal. The flow line of the gutter should be checked with a straightedge and level, especially in areas of minimal grades, before the concrete has set. Any irregularities must be corrected. In areas of minimal flow line fall, the use of curb and gutter poured separately from the pavement and with an independent grade line may handle runoff better than integral curb and gutter.

Only cast-in-place tie bars can be used to connect new curb and gutter to new concrete pavement. Driven tie bars must be used to tie new curb and gutter to existing concrete pavement, per standard spec 601.3.4.

Expansion joints must be placed in concrete curb or curb and gutter constructed adjacent to asphaltic surfacing as provided in standard spec 601.3.6.

Expansion joints must be placed in concrete curb or curb and gutter constructed adjacent to concrete pavement, to match the location of any expansion joints in the abutting pavement. The joints should be of the same type and width as joints in the abutting pavement.