

SECTION 2100 CONCRETE CURB AND CURB AND GUTTER

2101 SCOPE. This section governs the furnishing of all labor, equipment, tools, and materials and the performance of all work necessary to construct or reconstruct curbing and/or curb and gutter.

2102 MATERIALS. All items of material included in this section shall conform to Section 2000 except as follows:

- A. Concrete Mix. Any substitute mix design shall be approved by the Engineer.
- B. Expansion Material. Expansion material shall be a preformed, one-piece, non-extruding material such as "Bondex" No. 941 pre-formed rubber joint, "Rubatex" both manufactured by Rubatex Co., or "Homex" as manufactured by Homasote Co. or equal. Any substitute material requires the approval of the Engineer.
- C. Joint Sealer. Joint sealer shall be a one component, gun-grade, moisture cured epoxy or urethane such as "Vulcum 45" as manufactured by Maneco International, "Sidaflex 1-A" by Sika Chemical Corporation or "Pecora CG-9" by Pecora Co., or equal as approved by the Engineer.
- D. Curing Membrane. Curing membrane shall be as specified in Section 2003 (F).

2103 CONSTRUCTION DETAILS. The curbing shall be constructed or reconstructed to the configuration and to the lines and grades shown on the plans. Generally the curbing shall be placed prior to the placement of pavement or sidewalk sections, except when curb and gutter is integral with the pavement, and as directed by the Engineer.

- A. Removal of Existing Curbing for Reconstruction. Existing curbing shall be totally removed to the nearest contraction or expansion joint or with the approval of the Engineer it may be sawed provided no free section is left that is less than 5 lineal feet in length, and provided the entire curbing section is sawed a minimum of 2 inches below top of pavement elevation.
- B. Grading and Subgrade Preparation. All excavation or embankment shall conform to Section 1000, Site Preparation and 1200, Subgrade Preparation; and as follows:

The top 6 inches of the subgrade shall be compacted to obtain a density of 95 percent of the maximum in conformance with Section 1205(A).

If during reconstruction operations, additional fill material is needed beneath the curb, it shall be of crushed limestone, placed in lifts of 4 inches not to exceed 12 inches maximum thickness, moistened if necessary, and compacted by mechanical tampers to a density of 95 percent of the maximum.

- C. Forms. All forms shall be in good condition, clean, and free from imperfections. Each form shall not vary more than 1/4 inch in horizontal and vertical alignment for each 10 feet in length.
 - 1. General. Face forms will be used with all curb standards as applicable.

Forms shall have a height equal to or greater than the height of the curb section.

The forms shall be set true to line and grade and shall be supported to stay in position while depositing and consolidating the concrete. The forms shall be designed to permit their removal without damage to the concrete. The forms shall be lubricated.

2. Curb Machine. A slip-form curb machine may be used in lieu of forms. The machine must be equipped with mechanical internal vibrators and be capable of placing curb to the correct cross section, line and grade within the allowable tolerances.

2104 JOINTS. The joints shall be formed at right angles to the alignment of the curbing and to the depth specified by the appropriate standard or as modified by the plans.

- A. Expansion Joints. Expansion joints shall be placed at all radius points, driveways, curb inlets, or where directed by the plans or Engineer. In no case shall expansion joints be placed more than three hundred (300') apart.

1. Material. Expansion joints shall be formed by a one piece 3/4 inch thick preformed joint filler cut to the configuration of the correct curb section.
2. Stability. Expansion joints shall be secured in a manner so they will not be disturbed by depositing and consolidation of concrete.
3. Edging. The edges of the joints shall be rounded with an edging tool of 1/4 inch radius.

- B. Contraction Joints. Curbing shall have contraction joints formed at intervals of not less than 10 feet. They shall extend through the entire curb section from the top of the curb to a depth 1 inch below curb surface for tooled joints and 2 inches for sawed joints.

1. Method. Contraction joints may be formed by a template, tooling, or sawing.
 - a. Templates. Templates shall be 1/8 inch metal cut to the configuration of the curbing section. The templates shall be secured at the proper locations so that they will not be disturbed by the depositing of concrete. The templates shall be removed as soon as the concrete has attained its initial set and finished as outlined below.
 - b. Tooling. Tooling of contraction joints will be permitted if done to the depths specified on the appropriate standard. Tooled contraction joints shall be constructed with a 1/4 inch radius on all exposed edges.
 - c. Sawing. Sawing of contraction joints is permitted only when a curb

machine has been used. The sawing of joints must be completed within 24 hours of the placing of concrete.

2. Joint Sealer. Joint sealer is not required on contraction joints.

2105 CONCRETE WORK. Concrete for curbing shall be placed in accordance with the requirements of MCIB Standard Concrete Specifications. Expansion and contraction joints shall be constructed as shown on the plans, standards, or where directed by the Engineer.

- A. Concrete Placement. Concrete shall be mechanically vibrated when directed by the Engineer and shall not be allowed to extrude below the forms to cause an irregular alignment of the abutting street pavement.
- B. Finishing. After placing and initial strike-off the curb shall be tooled to the required radii. If the surface of the concrete is sufficiently wet that a ridge is formed at the inside of the radius tool, finishing will cease until the excessive moisture has evaporated.

After initial set, the face forms and templates, if used, shall be removed and the surface finished to the required dimensions. No water, dryer, or additional mortar shall be applied to the free surface of the concrete.

The finished surface of the concrete shall be broomed with a clean broom to provide an antiskid surface.

In all cases the finished curb shall have a true surface, free from sags, twists, or warps, and shall have a uniform color and appearance.

- C. Curing. As soon as practical after the concrete is finished it shall be cured with one of the acceptable liquid curing membranes applied according to the manufacturer's directions.

If front and/or back forms are removed from finished curbing within a period of 72 hours of placement these surfaces shall also be cured.

Wet burlap, cotton mat, waterproof paper, polyethylene sheeting or earth backfill is not an acceptable curing method for curbing.

- D. Protection. The Contractor shall protect the concrete work against damage or defacement of any kind until it has been accepted by the City. Concrete which is damaged or defaced, shall be removed and replaced, or repaired to the satisfaction of the Engineer, at the expense of the Contractor.
- E. Temperature Limitations. Concrete work shall be placed in accordance with requirements of Section 2009 and 2010.

2106 BACKFILL. A minimum of 24 hours shall lapse before forms are removed and curb sections are

backfilled unless otherwise approved by the Engineer. Backfill shall be accomplished in accordance with Sections 1100 and 1200 entitled "Site Preparation" and "Subgrade Preparation".

The Contractor shall be responsible for the repair of any street pavement disturbed by the construction to the satisfaction of the Engineer.

2107 JOINT SEALING AND CLEAN-UP. Only the sidewalk portion of the curbing will require joint sealing. An approved joint sealer shall be applied in accordance with the manufacturer's directions within 7 days of the placement of the concrete.

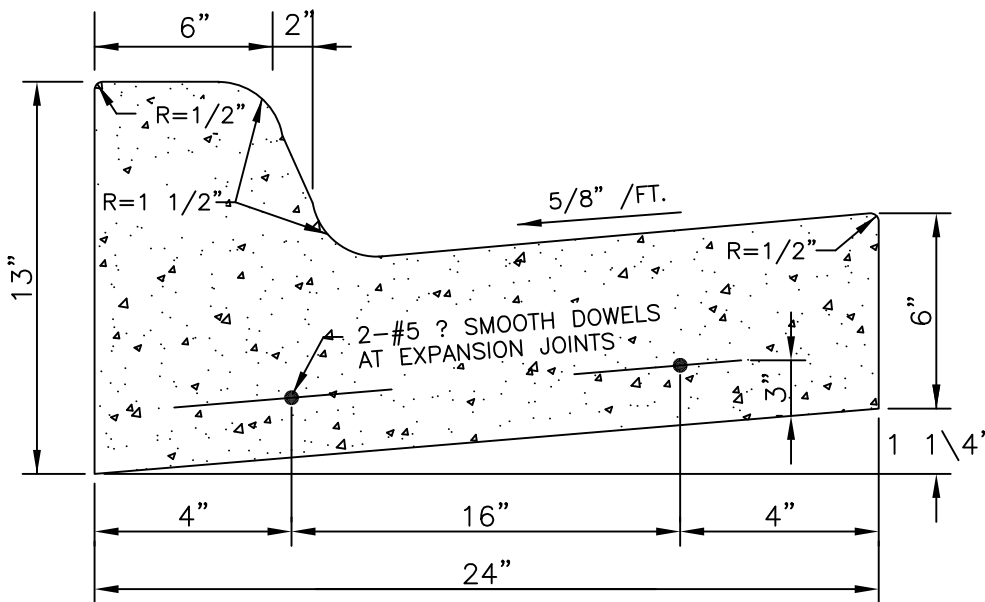
The Contractor shall be responsible for the removal of excess dirt, rock, broken concrete, concrete splatters and overspray from the area of construction.

2108 SURFACE TOLERANCES. Curbing shall have a surface tolerance of 1/4 inch in 10 feet when checked with a ten foot straightedge.

2109 REINFORCEMENT (CURB AND GUTTER). Reinforcement for concrete curb and gutter shall be as designated on the Standard Details. The exception to this shall be when the curb and gutter is to be constructed on an asphaltic concrete base with a minimum depth of three (3) inches. In this case, no reinforcement shall be required unless otherwise determined by the City Engineer.

NOTES:

1. EXPANSION JOINTS SHALL BE FORMED BY A ONE-HALF (1/2) INCH THICK PREFORMED JOINT FILLER, CUT TO THE CONFIGURATION OF THE FULL SIZE OF THE CURB AND GUTTER SECTION AND BEING SECURED SO THAT THEY ARE NOT MOVED BY DEPOSITING AND COMPACTING THE CONCRETE AT THESE JOINTS. THE EDGES OF THESE JOINTS SHALL BE ROUNDED WITH AN EDGING TOOL ONE-EIGHTH (1/8) INCH RADIUS.
2. EXPANSION JOINTS SHALL BE PLACED WHERE CURB AND GUTTER ABUTS OTHER STRUCTURES AND AT ALL TANGENT POINTS TO CURBS. EXPANSION JOINTS SHALL NOT BE SPACED MORE THAN 50 FEET APART ON STRAIGHT RUNS FOR HAND LAID CURB AND GUTTER AND NOT MORE THAN 100 FEET APART FOR MACHINE LAID CURB AND GUTTER PROVIDED 3/4 INCH THICK JOINT FILLER IS USED. ALL JOINTS SHALL BE FORMED AT RIGHT ANGLES TO THE ALIGNMENT OF THE CURB AND GUTTER.
3. CONTRACTION JOINTS SHALL BE CONSTRUCTED BY SAWING THROUGH THE CURB AND GUTTER TO A DEPTH OF NOT LESS THAN ONE AND ONE-FOURTH (1 1/4) INCHES BELOW THE SURFACE AND TO A WIDTH NOT TO EXCEED THREE-EIGHTHS (3/8) INCH OR THEY MAY BE FORMED BY INSERTING A REMOVABLE METAL TEMPLATE IN THE FRESH CONCRETE, OR BY OTHER METHODS APPROVED BY THE ENGINEER. SEALING OF JOINTS IS NOT REQUIRED. CONTRACTION OR CONSTRUCTION JOINTS SHALL BE LOCATED APPROXIMATELY 10 FEET APART.



STRAIGHT - BACK

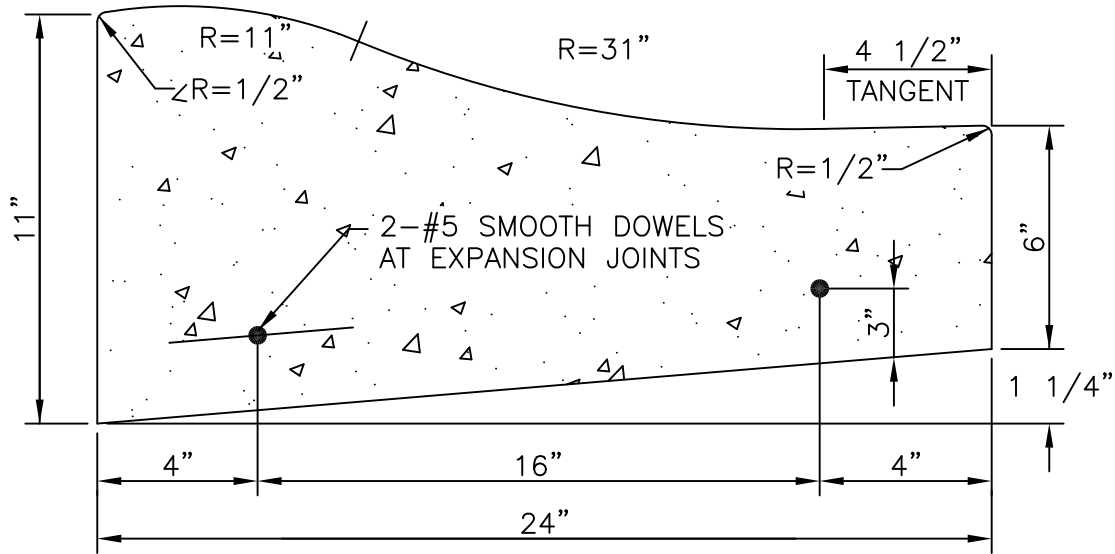
REV 2009



CITY OF LIBERTY, MO
DEPARTMENT OF
PUBLIC WORKS

TYPE "CG-1"
CURB & GUTTER
DETAILS

D21-1

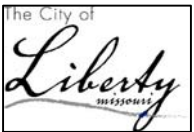


ROLL BACK

NOTE:

1. EXPANSION, CONTRACTION, OR CONSTRUCTION JOINTS ARE TO BE SAME AS NOTED ON TYPE "CG-1" CURB AND GUTTER DETAIL.
2. REBAR IS NOT REQUIRED FOR CURB CONSTRUCTION ON A MINIMUM OF 3" ASPHALT.

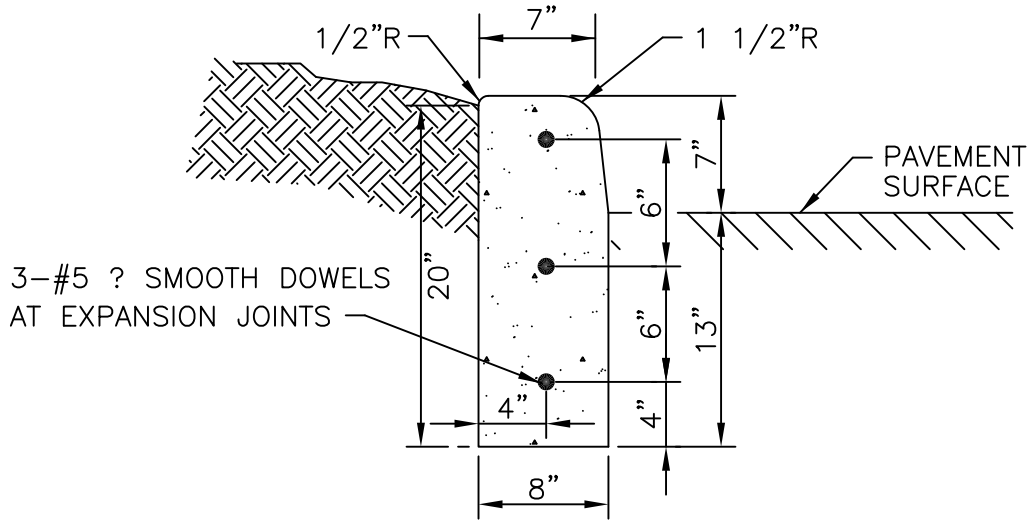
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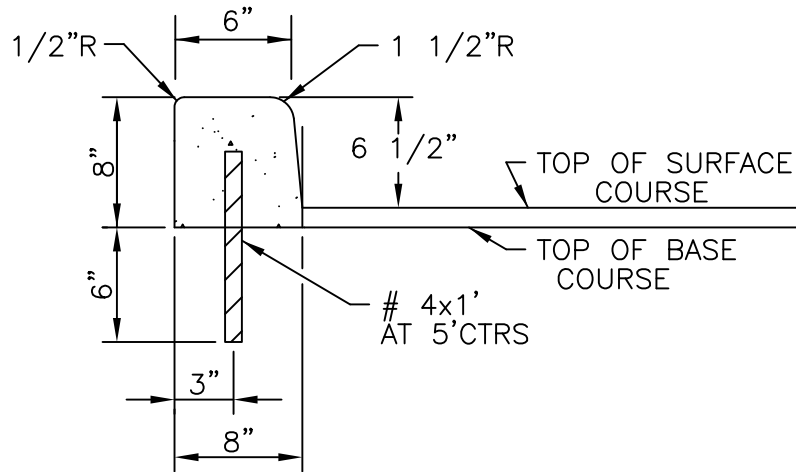
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DEPARTMENT OF
PUBLIC WORKS

TYPE "CG-2"
CURB & GUTTER
DETAIL

D21-2



TYPE "C-1"

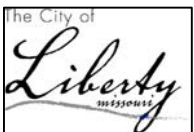


TYPE "DC"

NOTE:

1. EXPANSION, CONTRACTION, OR CONSTRUCTION JOINTS ARE TO BE SAME AS NOTED ON TYPE "CG-1" CURB AND GUTTER DETAIL.
2. ALL CURBS MUST BE CAST IN PLACE.
3. TYPE "CG-1" CURB & GUTTER CAN ALSO BE USED IN PARKING LOT CONSTRUCTION.

REV 2009



CITY OF LIBERTY, MO
DEPARTMENT OF
PUBLIC WORKS

TYPE
"C-1" & "DC"
CURB

D21-3