

Technical Specification 016.01**CONCRETE CURBS, GUTTERS, DRIVEWAYS,
SIDEWALKS AND CATCH BASINS****1.0 General**

- a) It shall be the contractor's responsibility to furnish all plant, labor, equipment and materials, and for performing all related activities necessary for the construction and/or replacement of concrete curbs, gutters, sidewalks and driveways, and other related concrete structures shown on the contract drawing or as removed by the contractor during utility installation.

2.0 Materials

- a) All concrete used shall be a minimum 3,000 psi standard strength mixture at twenty-eight (28) days hydration.
- b) Reinforcement: Reinforcing will generally not be required unless the project plans call for reinforcing of a structure. In these situations reinforcement shall conform to the approved plans and specifications by the Engineer or will be reinforced at the direction of Brunswick County staff.

3.0 Alignment and Grade

- a) Alignment and grades for replacement structures shall conform to the adjacent structures unless otherwise specified by the Engineer and/or Brunswick County. Alignment and grades for new concrete structures shall conform to the plans and details designated on the drawings. Alignments and grades are the responsibility of the contractor utilizing industry standard approved methods or as directed by the Engineer. In the event any of the concrete structures placed are damaged from any cause or prove defective in any way, or is out of alignment or grade, the contractor shall remove such sections and replace at his own expense.

4.0 Excavation and Subgrade Preparations

- a) Excavation and subgrade preparation for all concrete structures shall be in strict compliance with the approved plans, Technical Specification 013.01-"Excavation, Grading, Trenching, and Backfilling", or as directed by the Engineer.

5.0 Replacement Sections

- a) Replacement concrete structures shall conform to the dimensions and shape of the existing remaining structures except as otherwise stated herein. New structures shall conform to the design and dimensions shown in the approved plans or as directed by the Engineer and / or County staff.

6.0 Sidewalks and Driveways

- a) All sidewalks shall be constructed or reconstructed to a minimum uniform thickness of four (4) inches and to the width of the sections being replaced or, for new sidewalks, to the width designated on the approved plans. All driveways shall be constructed to a minimum uniform thickness of six (6) inches including that section which crosses sidewalk areas, unless otherwise directed by the Engineer and / or County staff. The driveway flared section at the road shall conform to the exact dimensions and shape of that which was removed.

7.0 Construction Forms

- a) Concrete Curb and Gutter Forms: Wooden or steel forms, satisfactory to the Engineer, shall be used for the construction of curb and gutter. They shall be set true to alignment and grade as required by the Engineer and substantially braced. Metal templates, not more than three-sixteenth (3/16") inch in thickness, and manufactured in accordance with the curb and gutter section, shall be set in the places provided in the forms not more than ten (10') feet apart. The forms and templates shall be thoroughly cleaned and oiled after each operation. Templates shall be adjusted under the supervision of the Engineer so as to prevent short sections (less than 5 feet).
- b) When back and front forms have been set to exact grade and secured, the dividing plates shall be inserted and trued up. With these forms as templates, fine grading to exact subgrade elevation shall be completed by hand. Face forms shall then be set. The contractor shall use every effort to observe any possible misalignments in grades and shall call such to the attention of the Engineer promptly.
- c) Sidewalks and Driveways Forms: Forms shall be of wood or metal, straight and free from warp, and of sufficient strength to resist springing during the process of depositing and consolidation of the concrete. The width of the forms for sidewalk and driveways shall be equal to the full depth of the sidewalk or driveway. Forms shall be securely staked and braced true to the line and grade set by the Engineer in the approved plans. Suitable metal or wooden division plates shall be provided to completely separate adjacent slabs during construction. Forms shall be clean and well oiled before being set. Sidewalks shall be marked in sections with a proper lining tool to form squares the size of which will depend upon the width of the walks. The edges of driveways will be worked with an edging tool and will be sectioned into squares or marked as directed by the Engineer.
- d) Driveway construction joints shall not be spaced less than five (5) feet apart. In no case shall the next expansion joint on the remaining drive be closer than 5 feet from the new construction joint.

8.0 Construction

- a) Concrete shall not be placed in any forms until the forms and subgrade have been properly established per the approved plans.
- b) Concrete Curb and Gutter Construction:

- 1) The forms for curb and gutter shall be placed in accordance with the proper alignment and grade as directed by the Engineer in the approved plans, and all attachments, templates, stakes, bracings, etc., shall be securely set in place prior to depositing of concrete.
- 2) Careful check will be made of all forms prior to pouring and the contractor shall obtain a visual inspection and approval of all forms prior to pouring concrete therein.
- 3) When sufficient concrete has been placed in the forms, it shall be well spaded along areas in contact with the forms in order to eliminate all honeycombing and floated to the proper alignment and grade, after which it shall be toweled smooth and very lightly brushed. Templates shall be removed by stages, but not entirely until the concrete has become thoroughly hard. After removal of the templates, there must be a clear division throughout between these sections. Edging tools will be used to form an edge along the back and front form and at each template.
- 4) All concrete pours shall terminate at a template. If pouring is to be resumed within one hour or less, any excess concrete that exists after the template has been reached may be spread in the bottom two (2) inches of the gutter form adjoining the completed curb.
- 5) At catch basins, there will be a short section of gutter only, the curbing being replaced by the casting. The catch basin casting shall be parallel with, and on the grade of the back form of the curb and gutter section. The gutter area shall be so shaped and sloped as to increase in slope toward the curbing to an extent that when opposite the catch basin casting, it will provide a minimum of eight (8") inch clear opening below the casting top. This warped section at, and adjacent to, each catch basin shall have the exact same finish texture as that of the other curbing present and shall be poured at the same time where possible. A double ply of 30-pound building felt shall be inserted on all sides of catch basin casting covers that come in contact with any concrete. No felt shall be placed against catch basin leg castings.
- 6) The use of excessive grout (mud) continuously along the curb and gutter section will not be tolerated. The use of "mules" shall be limited to obtaining the desired finish - they should not be allowed to alter the section of the curb. No floating and little toweling should be necessary against the curb face in order to obtain a true and proper section. Such section should be obtained with the curb face form board, the alignment of which must be extremely good.
- 7) The curb and gutter at street corners shall be constructed on a thirty-five (35) foot radius unless otherwise instructed. At driveways the curb and gutter shall be constructed on a four and one-half (4 ½) foot radius unless otherwise directed by the Engineer.

- c) Sidewalks and Driveway Construction:
- 1) After the forms have been set, the contractor shall inspect the form for proper line and grade and shall check the subgrade for proper compaction before allowing any concrete to be placed.
 - 2) All materials incorporated in this concrete shall conform to the provisions as set out hereinbefore and shall be mixed and deposited in accordance with the requirements of these specifications.
 - 3) When sufficient concrete has been deposited in the forms it shall be well "spaded" along all areas in contact with the forms in order to eliminate all "honeycombing".
 - 4) Sidewalks shall be "scored" (1" deep) in sections six feet or less in width. If sidewalk is greater than six feet in width scoring shall be as directed by the Engineer. All "scores" shall be straight and rounded at the surface with the proper edging tool, or as directed by the Engineer.
 - 5) Expansion joints shall be installed for every 30 linear feet of sidewalk, against all structures, pavement and curbs, and at such other places as shown on the plans and details, or as directed by the Engineer.
 - 6) All concrete pours shall terminate at a template.
 - 7) If pouring is to be resumed within one hour or less, any excess concrete that exists after the template has been reached may be spread in the bottom two (2) inches of the adjoining sidewalk section.
 - 8) All driveways shall be re-constructed to previous widths, depths, and also with equal radii or angles at the street.