

SECTION 633

CONCRETE GUTTER, INVERT PIPE GUTTER, OR DUMPED ROCK GUTTER

633.1-DESCRIPTION:

This work shall consist of the construction of open flow-ways for surface drainage, using concrete, dumped rock, or invert pipe sections of cast iron, corrugated metal, precast concrete, or vitrified clay, in accordance with these Specifications and in reasonably close conformity with the lines, grades, dimensions, and cross sections shown on the Plans or established by the Engineer.

633.2-MATERIALS:

Materials shall conform to the following Subsections of Division 700, except as modified:

MATERIAL	SUBSECTION
Dumped Rock Gutter	704.4
Expansion Joint Material (Preformed)	708.1, 708.2
Joint Sealing Material	708.3
Reinforcing Steel	709.1, 709.4
Waterstops (Elastomer Materials)	708.10

Class B concrete for gutters shall meet the requirements of 601.

Invert pipe gutter shall be of the shape, size and materials shown on the Plans, conforming as nearly as practicable to the Specifications for whole pipe of similar radius and material.

CONSTRUCTION METHODS

633.3-GENERAL:

Excavation for all gutters shall be made to the required depth. For invert pipe and concrete gutters, the base upon which the gutter is to be constructed shall be compacted to a firm, even surface. All soft and unsuitable material shall be removed and replaced with suitable material which shall be thoroughly compacted. Where the location of any gutter falls on rock of a suitable nature, the Engineer may eliminate the gutter within the limits of the rock. When necessary, the rock shall be shaped to direct the flow of water back to the gutter beyond the limits of the rock.

633.4-CONCRETE GUTTER:

633.4.1-Forms: Forms shall be of wood or metal of sufficient strength to retain the concrete and shall be set and securely fastened in place, true to the lines and grades given.

633.4.2

633.4.2-Placing and Finishing Concrete: Class B concrete shall be placed and screeded true to profile and contour either by hand or machine methods. The surface finish shall be a wood float finish when placed by hand methods. When placed by machine method, the hand finishing shall be held to the minimum required to attain the Plan profile and cross section.

633.4.3-Joints and Cut-Off Walls: Expansion joints of the type and thickness specified on the Plans shall be installed at intervals not to exceed 50-ft unless otherwise shown. If adjacent to a pavement in which joints have been used, expansion joints shall be placed opposite those in the pavement. Contraction joints shall be provided at approximately 12½ ft. (4 meter) intervals. Contraction joints shall have a minimum depth of one-fourth of the specified gutter thickness plus ¼ in. (6 mm) tolerance, shall be ⅛ in. (3 mm) (nominal) in width, and shall be formed by using removable templates, scoring, sawing, or other methods approved by the Engineer. No filler material will be required for construction or contraction joints.

A concrete cut-off wall, reinforced as detailed on the Plans, shall be constructed at the beginning and at the end of each gutter and at locations designated on the Plans or by the Engineer. Cut-off walls shall be constructed at approximately 150 ft. (45 m) intervals along the gutter for grades 5 to 25 percent and at approximately 50 ft. (15 m) intervals for grades greater than 25 percent.

633.4.4-Curing: The concrete gutter shall be protected and cured by wetting for a period of three days after placing, or it shall be cured by white membrane curing materials in accordance with [501.14.4](#).

633.4.5-Waterstops: Waterstops shall be placed at all expansion joints in the gutter and where a concrete gutter abuts a proposed structure. Provisions shall be made to properly place the waterstop in the structure. In case of a concrete gutter which abuts an existing structure, a groove ¾ in. (20 mm) by 2 in. (50 mm) shall be left and filled with joint sealer. Waterstops shall conform to the requirements shown on the Plans.

633.5-INVERT PIPE GUTTER:

Sections of gutter of the type called for on the Plans, conforming to the segment of circular arc of the dimensions designated, shall be set in a manner conforming to the applicable requirements of [604](#), unless otherwise modified by the Engineer. If set in concrete, the base shall be of Class C concrete of the dimensions and sections shown and shall be cured as specified for concrete gutter.

633.6-DUMPED ROCK GUTTER:

Dumped rock gutter may be dumped from trucks and bulldozed into place in a manner similar to the placing of rock fill. Hand placement will not be required. The rock gutter shall be constructed to the thickness and grade shown

on the Plans. A thickness deficiency in excess of 10 percent will not be permitted.

The dumped rock gutter may be obtained from the unclassified excavation. If suitable material is not available from the unclassified excavation, it shall be the responsibility of the Contractor to furnish this material at no additional cost. Locations of probable sources for dumped rock gutter will be listed in the Plans.

633.7-METHOD OF MEASUREMENT:

The quantity of work done for "Concrete Gutter" will be measured in square yards (meters), complete in place and accepted, determined by the length, measured along the centerline, time the width. All measurements will be made on the surface of the gutter.

The quantity of work done for "Invert Pipe Gutter" will be measured in linear feet (meters), complete in place and accepted, measured along the centerline and upon the surface of the gutter.

The quantity of work done for "Dumped Rock Gutter" will be measured in cubic yards (meters), complete in place and accepted, determined by the dimensions shown on the Plans or established by the Engineer. No excess thickness will be measured for pay quantity.

Cut-off walls at the beginning and end of the concrete gutter, those cut-off walls constructed on steep grades (five percent or over) in accordance with these specifications and any other cut-off walls designated on the Plans will not be measured separately but will be included in the cost of the gutter. If additional cut-off walls are required by the Engineer during construction, they will be paid for as square yards (meters) of concrete gutter; the area will be measured on the vertical face of the cut-off wall and will be the area bounded by the lower extremity of the gutter and the sides and bottom of the wall.

633.8-BASIS OF PAYMENT:

The quantities, determined as provided above, will be paid for at the contract unit prices bid for the items listed below, which prices and payments shall be full compensation for furnishing all the materials, including reinforcing steel, expansion joint material, joint sealer, waterstops, concrete base for invert pipe gutter when called for on the Plans, and all labor, tools, equipment, supplies, and incidentals necessary to complete the work. The cost of all excavation will be paid for as "Unclassified Excavation".

633.9-PAY ITEMS:

ITEM	DESCRIPTION	UNIT
633001-*	CONCRETE GUTTER	SQUARE YARD (METER)
633002-*	"size" INVERT PIPE GUTTER, TYPE "type"	LINEAR FOOT (METER)
633003-*	DUMPED ROCK GUTTER	CUBIC YARD (METER)

* Sequence number