815 - STORM SEWER INLETS, MANHOLES AND JUNCTION BOXES

815.1 DESCRIPTION

Storm sewer inlets, manholes, and junction boxes shall be constructed to the lines, grades, and dimensions shown on the Drawings.

815.2 MATERIALS

a. Mix Designs

All concrete used in construction of storm sewer structures shall be KCMMB 4K.

b. Concrete Structures

(1) Concrete structures shall be constructed of reinforced concrete as specified in "Concrete Construction".

(2) The entire surface of all steel frames shall be thoroughly cleaned and hot dip zinc galvanized in accordance with the latest edition of ASTM A 123.

c. Gray-Iron Castings

Gray-iron casting shall conform to ASTM A 48.

d. Steel Castings

Steel castings shall conform to ASTM A 27, Grade 65-35, fully annealed.

e. Structural Steel

All structural steel shall conform to ASTM A 36.

f. Reinforcing Steel

Reinforcing steel used in inlets and manholes shall be ASTM A 615 grade 40.

g. Steps

Steps used in inlets and manholes shall conform to ASTM C 478

h. Shop Drawings

The details for storm sewer inlets, manholes, and junction box and all other cast structures, either site constructed or pre-cast, shall be submitted to the City Engineer for approval.

815.3 CONSTRUCTION REQUIREMENTS

a. Curb Inlets

Curb inlets shall be set back from the normal curb line one foot and the top of the slab for the curb inlet shall be at the same elevation as the top of the curb.

Curb inlets shall have a ten-inch opening per the current Standard Detail and a minimum size horizontal bar of three-quarters inch diameter approximately centered in the opening. Where warranted by special engineering conditions, the City Engineer may approve the use of a six-inch opening steel frame, in which case the inlet will not be set back from the curb line. The top of the curb inlet shall be cast in place and anchored to the walls. All curb inlet tops shall include an access manhole frame,cover, and "No Dumping" imprint. Access cover design shall be submitted for approval by the City Engineer.

The bottom of the curb inlet shall have concrete so placed that the invert through the curb inlet will conform in shape and slope to that of the storm sewer, and the minimum thickness of the invert shall be four inches, or two inches below the bottom of the lowest pipe.

The curb inlet shall be constructed on a reinforced concrete slab at least eight inches thick.

The curb shall transition to the inlet in ten feet on the upstream side and five feet on the downstream side; inlets located in a sump condition shall have both transitions five feet in length.

b. Area Inlets

Area inlets shall be constructed the same as stipulated under curb and gutter inlets where applicable, with the following additional items:

Area inlets shall be of the side opening type with a frame. Each side of the area inlet with a frame shall have a minimum two feet concrete apron with vertical wing walls to contain grade around the inlet.

The City Engineer may approve area inlets with a top inlet grate where warranted by special engineering conditions. The top inlet grate shall be heavy cast iron, or fabricated steel and as manufactured for this particular purpose. The fabricated steel grate shall be hot dip zinc coated in accordance with the latest edition of ASTM A 123-02.

Area inlets shall be located and designed to adequately convey and transport the storm water into the storm sewer system.

c. Manholes and Junction Boxes.

Manholes and junction boxes shall be constructed the same as stipulated under curb inlets where applicable. Manholes shall also conform to the latest edition of ASTM C478. Manholes and junction boxes shall be constructed in accordance with the following additional items:

Manhole and junction box frames and covers shall be heavy duty where located in streets and trafficways. Access cover design shall be submitted for approval by the City Engineer.

Manholes shall be equipped with eccentric cones, except that flat slab tops may be used in shallow structures as approved by the City Engineer.

Junction boxes may be used with pipe sizes of any diameter.

Minimum inside diameter of manholes shall be four feet for pipe size 24 inches or less. When pipe size exceeds 24 inches in size, junction boxes shall be used. Where warranted by special engineering conditions, the City Engineer may approve junction boxes or manholes with alternate design elements.

d. Structure Connections

Pipes connected to structures shall be cut parallel with the inside face of the structure. For poured in place structures, the pipe shall extend to and be flush with the inner face of the structure wall. For precast structures, the pipe projection beyond the inside face of the wall shall be not less than 2 inches and no more than 4 inches except where prior approval is given by the City.

815.4 MEASUREMENT AND PAYMENT

The Engineer will measure each inlet, manhole and junction box of the specified size and type.

Payment for “Inlet”, “Junction Box” ,“Manhole”, “Inlet Remove and Replace w/o Floor”, “Inlet Type I Repair” and “Grate Inlet Repair” at the contract unit prices bid is full compensation for the specified work.

All storm sewer structures used on this project shall be of precast concrete, or poured in place concrete type. If precast concrete structures are used, the tops shall be poured in place, and a minimum of 6 inches of the wall steel shall be left exposed, and poured into the tops. Precast shop drawings shall be submitted and approved by the Engineer. All pipes entering or exiting precast structures shall be encased in a minimum of 6 inches of concrete all around the pipe for a distance of 24 inches adjacent to each structure.

The Engineer will measure each reconstruction of existing structure or connection to proposed storm sewer systems.

Payment for “Modification of Structure” at the contract unit price bid is full compensation for the specified work.