

1 **SECTION 626 – MANHOLES AND VALVE BOXES FOR WATER**
 2 **AND SEWER SYSTEMS**

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 4
 5 **626.01 Description.** This section describes constructing, reconstructing, and
 6 adjusting manholes and valve boxes for water and sewer systems.

7
 8 **626.02 Materials.**

9		
10	Structural Concrete	601
11		
12	Asphalt Filler	702.07
13		
14	Structure Backfill Material	703.20
15		
16	Trench Backfill Material	703.21
17		
18	Masonry Units	704
19		
20	Joint Filler	705.01
21		
22	Asphalt	705.06(C)
23		
24	Mortar for Manhole	705.08
25		
26	Reinforcing Steel	709.01
27		
28	Non-Shrink Grout	712.04(A)
29		
30	Precast Concrete Unit	712.06
31		
32	Frames, Grates, Covers and Ladder Rungs	712.07
33		
34	Pipe Collar for Valve Box	712.22
35		
36	Cullet Materials for Utility Structures	717.03
37		

38 If concrete in sewer structures will come in direct contact with sewage or
 39 sewage gases, modify proportioning of concrete in accordance with Subsection
 40 625.02 - Materials.

41
 42 **626.03 Construction.**

43
 44 Design precast units, or combination of precast units and cast-in-place units,
 45 to most current AASHTO Load and Resistance Factor Design Bridge Design
 46 Specifications with subsequent interims. Have all calculations and shop drawings
 47 stamped by Structural Engineer licensed in the State of Hawaii.

626.03

49 For cast-in-place method, construct concrete base and finish concrete while
50 still fresh. Allow concrete to set for at least 24 hours before removing forms and
51 constructing concrete walls.

52
53 Provide 1/4-inch thick preformed expansion joint filler, for full depth of joint
54 surrounding structures, when installing or adjusting structures in pre-cast concrete
55 sidewalks or portland cement concrete. Form construction joints between structure
56 extending through entire concrete sidewalk or portland cement concrete pavement.

57
58 Perform concrete construction in accordance with Section 503 – Concrete
59 Structures.

60
61 Perform reinforcing steel work in accordance with Section 602 – Reinforcing
62 Steel.

63
64 Use certified welder to perform shop and field welding in accordance with
65 Section 501 – Steel Structures.

66
67 For connection of pipe to manhole, provide oversized hole through concrete
68 wall and fill space around pipe with non-shrink grout or concrete of same psi as
69 manhole. No bricks and mortar permitted. Provide grout or concrete surrounding
70 pipe that is full wall depth and up to three inches in thickness.

71
72 Provide grout surrounding pipe that is full wall depth and up to three inches in
73 thickness. When space around pipe is greater than three inches in thickness, use
74 concrete of same psi as manhole.

75
76 **(A) Excavation and Backfill.** Excavate and backfill in accordance with
77 Section 204 – Excavation and Backfill for Miscellaneous Facilities.

78
79 **(B) Manholes.**

80
81 **(1) Concrete Manholes.** Provide concrete manholes as precast
82 units, or combined precast and cast-in-place units, or cast-in-place
83 units. For precast units or combination of precast and cast-in-place
84 units, submit shop drawings and calculations for acceptance by the
85 Engineer prior to construction.

86
87 **(2) Sewer Manholes.** Manhole walls may be constructed entirely
88 of brick, if following conditions are met:

89
90 **(a)** Vertical distance between invert to top of frame is 10
91 feet or less.

92
93 **(b)** Invert is not below ground water table.

94
95 **(c)** Sewer manhole is located in a dry area.

96

97 If conditions (b) and (c) above are met, upper 10 feet of sewer
98 manhole may be constructed of brick. Construct portion of sewer
99 manhole below 10 feet entirely of reinforced concrete.

100
101 Plaster outer portion of sewer manhole bricks with 1-inch
102 thickness of mortar. Plaster interior brick work to present smooth
103 surface.

104
105 Reinforce and construct precast concrete sewer manhole
106 sections in accordance with ASTM C 478.

107
108 Shape and finish sewer manhole inverts using mortar and by
109 employing cement finisher.

110
111 Dip brick in water prior to laying. Make joints full-mortar joints
112 not more than 1/2-inch wide. Strike joints visible from interior of
113 manhole.

114
115 **(3) Water Manholes.** Apply 5/8-inch minimum thick coat of mortar
116 to waterproof both faces of walls and vertical exposed face of footing
117 below 4-foot elevation, USGS datum, or ground water table for brick
118 manholes.

119
120 Extend waterproofing from 4-foot elevation or ground water
121 table:

122
123 **(a)** Down to bottom of floor slab on outside portion of
124 manhole.

125
126 **(b)** To top of floor slab on inside portion of manhole.

127
128 Leave space of at least 2 inches between brick and pipe barrel.
129 Fill upper half of space with asphalt filler. Fill bottom half of space
130 with asphalt filler or mortar. If shown in contract documents, install
131 reinforced concrete lintels, made from Class B concrete, in Type A
132 manholes.

133
134 Upon completion, clean manhole of debris and paint frame and
135 cover with one coat of asphaltum paint.

136
137 Dip brick in water prior to laying. Make joints full-mortar joints
138 not more than 1/2-inch wide. Strike joints visible from interior of
139 manhole.

140
141
142 **(C) Setting Frames.** Set frame in concrete, and tamp concrete around
143 frame.

144
145 For full mortar beds, bring mortar up around bottom of frame and set
146 frame.

626.03

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(D) Reconstructing Manholes. Reconstruct existing manholes to required elevations. Reconstruct manhole frames to required grade using same type of material used in its original construction. Remove, clean, and paint existing frames and covers with one coat of asphaltum paint before reinstallation.

(E) Adjusting Manhole Frames and Covers. Adjust existing manhole frames and covers to required elevations. Remove, clean, and paint existing frames and covers with one coat of asphaltum paint before reinstallation.

(F) Constructing and Adjusting Valve Boxes. Construct valve boxes to required elevations. Set and center 8-inch pipe collar plumb over valve stem. Provide pipe collar with ends having smooth, machined edges. Backfill around gate valve and pipe collar with trench backfill by hand to 8 inches below surface of ground. Upon completion, clean valve box of debris and paint frame and cover with one coat of asphaltum paint before installation.

Adjust existing valve boxes to required grade using same type of material used in its original construction. Remove, clean, and paint existing cast iron frame and cover with one coat of asphaltum paint. Cut existing pipe collar for downward adjustments, or install new pipe collar for upward adjustments. Place concrete slab and reinstall frame and cover.

626.04 Measurement. Pay items listed below will be paid on a lump sum basis. Measurement for payment will not apply.

626.05 Payment. The Engineer will pay for the accepted pay items listed below on a contract lump sum basis, as shown in proposal schedule. Payment will be full compensation for work prescribed in this section and in contract documents.

The Engineer will pay for each of the following pay items when included in proposal schedule:

Pay Item	Pay Unit
____ Manhole, ____ feet to ____ feet	Lump Sum
Reconstructing _____ Manhole, ____ feet to _____ feet	Lump Sum
Adjusting _____ Manhole Frame and Cover	Lump Sum
(_____) Standard Valve Box	Lump Sum
Adjusting (_____) Standard Valve Box	Lump Sum

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The Engineer will pay for excavation and backfill in accordance with and under Section 204 -- Excavation and Backfill for Miscellaneous Facilities.

END OF SECTION 626