

**SECTION 206 - EXCAVATION AND BACKFILL
FOR DRAINAGE FACILITIES**

206.01 Description. This section describes the following:

(A) Excavating and backfilling to depths and lines established for drainage structure foundations.

(B) Excavating and backfilling trenches for culverts, structural plate culverts, culvert headwalls, grouted rubble paving, hand-laid and dumped rip-rap, and drainage structures.

(C) Disposing of surplus material from excavations.

206.02 Materials.

Structure Backfill Material	703.20
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Trench Backfill Material	703.21
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Cullet and Cullet-Made Materials	717
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Structure and trench backfill material shall include mixture of aggregate and cullet. When cullet is not produced on the project island, or material unit price of cullet is greater than material unit price of structure backfill or greater than material unit price of trench backfill, cullet may be excluded for that backfill application. Before excluding cullet, submit availability and pricing documentation.

Controlled Low Strength Material (CLSM) in accordance with Section 314 – Controlled Low Strength Material (CLSM) for Utilities and Structures may be used in place of trench and structure backfill material, subject to the Engineer’s acceptance. Where CLSM is allowed, provide drainage system to accommodate underground water seepage. CLSM will not be allowed as trench backfill when installing aluminum and aluminum-coated pipe culverts.

206.03 Construction.

(A) Structure and Trench Excavation.

(1) General. Notify the Engineer 10 working days before excavating for drainage structures and culverts.

The Contractor shall be responsible for the stability of temporary open cuts during construction of structures or trenches and shall take appropriate measures to meet OSHA requirements.

48 Keep foundation excavation dry by draining, bailing, pumping,
49 driving sheathings, or other methods accepted by the Engineer.

50
51 In excavation operations, do not disturb ground below bottom
52 of bed course material. If ground below bottom of bed course material
53 is disturbed, excavate disturbed ground until undisturbed ground is
54 reached. Backfill this area with Class D concrete to required bottom
55 elevation of bed course material.

56
57 Remove solid rock encountered during excavation from culvert
58 invert elevation to bottom grade of bed course material. Remove
59 saturated or organic material, material containing debris or trash, and
60 other unsuitable material, to width equal to culvert trench width and to
61 depth ordered by the Engineer. Backfill rock-removal and unsuitable
62 material excavation with bed course material in maximum 6-inch lifts,
63 and compact to relative compaction of not less than 95 percent.

64
65 When material from excavation does not meet quality
66 requirements specified for backfill in accordance with Subsection
67 206.02 - Materials, furnish conforming material, as required.

68
69 Deposit remaining structure or trench excavation material that
70 is not used as backfill, in roadway embankments in accordance with
71 Subsection 203.03(B)(1) - Selected Material. Dispose of surplus
72 selected material in accordance with Subsection 203.03(B)(3) -
73 Surplus Selected Material.

74
75 **(2) Culverts In Embankment Fill.** Except for structural plate
76 culverts, culverts installed above existing ground shall be considered
77 to be culverts placed in embankment fill and shall be installed in
78 accordance with requirements of this subsection.

79
80 When culverts are placed in embankment fill, excavate after
81 constructing embankment in accordance with Subsection 203.03(C) -
82 Embankment Construction and this subsection. Place embankment
83 material on each side of culvert for a distance of not less than 5 times
84 outside diameter or span, to height of either 0.5 times outside
85 diameter or rise of culvert, or to required finish grade elevation,
86 whichever is less.

87
88 Excavate culvert trench through constructed embankment.

89
90 **(3) Structural Plate Culverts in Embankment Fill.** Structural
91 plate culverts installed above existing ground shall be considered to
92 be structural plate culverts placed in embankment fill and shall be
93 installed in accordance with requirements of this subsection.

94
95

95 When structural plate culverts are placed in embankment fill,
96 construct embankment after assembling and installing culvert. Place
97 backfill material around culvert and above top of culvert. Construct
98 embankment to width on both sides of culvert equal to at least one
99 diameter or span of culvert. Perform embankment work in
100 accordance with Subsection 203.03(C) - Embankment Construction
101 and this section.

102

103 **(B) Structure and Trench Backfill.** For cast-in-place drainage
104 structures, do not deposit fill material against back of outside walls until test
105 samples indicate that concrete has developed strength required in
106 Subsection 503.03(E) - Loading.

107

108 Cure test samples under conditions similar to those affecting the
109 structure. Continue backfilling so that excessive unbalanced loads are not
110 introduced against the structure.

111

112 Place backfill material in uniform horizontal layers not exceeding 8
113 inches in loose thickness before compaction. Moisten and compact each
114 layer of backfill until relative compaction of not less than 95 percent is
115 achieved in accordance with Subsection 203.03(C)(2) – Relative Compaction
116 Test. The Engineer may reduce 95 percent compaction requirement in
117 situations where such compaction is not feasible.

118

119 When the Engineer cannot use field density test, compact each layer
120 of backfill with vibratory, or other equipment acceptable to Engineer, on
121 granular backfill material.

122

123 When compacting structure and trench backfill for metal pipes, do not
124 use water containing excessive quantity of salt or other deleterious
125 substances.

126

127 Compaction of backfill material by ponding or jetting will not be
128 allowed.

129

130 When required, place sufficient fill at culverts ahead of other grading
131 operations to permit public traffic to cross.

132

133 Compact backfill material in the following areas to a relative
134 compaction of not less than 90 percent:

135

136 **(1)** Cement rubble masonry and concrete headwalls.

137

138 **(2)** Drainage facilities in median areas or in traffic interchange
139 loops.

140

141

206.04

142 **206.04 Measurement.** Excavation will be paid for on a lump sum basis.
143 Measurement for payment will not apply.

144

145 **206.05 Payment.** The Engineer will pay for the accepted excavation on a
146 contract lump sum basis. Payment will be full compensation for the work prescribed
147 in this section and the contract documents.

148

149 The Engineer will pay for the following pay item when included in the proposal
150 schedule:

151

Pay Item	Pay Unit
Excavation for _____	Lump Sum

152

153
154
155
156 The Engineer will pay for removal of material from depths greater than 3 feet
157 below depths indicated in the contract documents in accordance with Subsection
158 104.02 - Changes.

159

160 The Engineer will not pay for structure and trench backfill for culverts and
161 structural plate culverts separately and will consider the cost for those items as
162 included in the contract prices for the various culvert contract pay items. The cost is
163 for the work prescribed in this section and the contract documents.

164

165

166

END OF SECTION 206