

**SECTION 204 - EXCAVATION AND BACKFILL  
FOR MISCELLANEOUS FACILITIES**

**204.01 Description.** This section describes the following:

**(A)** Excavating and backfilling to depths and lines established for foundations of roadway and sign lighting standards, and traffic signal standards.

**(B)** Excavating and backfilling trenches for utilities pipes (including water, sewer, telephone, oil, and gas lines) and conduits (including roadway and sign lighting, traffic signal, and other communications systems).

**(C)** Excavating and backfilling for water and sewer manholes and appurtenances.

**(D)** Disposing of surplus material from excavations.

Excavating and backfilling for water and sewer pipes, manholes, and appurtenances are described further in Section 624 – Water System and Section 625 – Sewer System.

**204.02 Materials.**

|   |        |
|---|--------|
| Structure Backfill Material             | 703.20 |
| Trench Backfill Material                | 703.21 |
| Geotextiles for Underdrain Applications | 716.03 |
| Cullet and Cullet-Made Materials        | 717    |

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.

Trench gravel backfill material shall conform to AASHTO M 43, size number 67. When tested in accordance with AASHTO T 96, the LA abrasion shall not exceed 40 percent at 500 revolutions.

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.

## 202.02

47 Where CLSM is allowed, provide drainage system to accommodate underground  
48 water seepage. CLSM will not be allowed as trench backfill when installing  
49 aluminum and aluminum-coated pipe conduits.

50

51 Provide plastic marking tape that is acid and alkali-resistant polyethylene film,  
52 6 inches wide with minimum thickness of 0.004 inch. Provide tape with minimum  
53 strength of 1750 psi lengthwise and 1500 psi crosswise. Manufacture tape with  
54 integral wires, foil backing, or other means to enable detection by a metal detector  
55 when tape is buried up to 3-feet deep. Manufacture tape specifically for marking  
56 and locating underground utilities. Provide metallic core of tape encased in a  
57 protective jacket or provided with other means to protect it from corrosion. Tape  
58 shall conform to the following colors and shall bear a continuous printed inscription  
59 describing the specific utility: Red: Electric; Yellow: Gas, Oil, Dangerous Materials;  
60 Orange: Telephone, Telegraph, Television, Police, and Fire Communications; Blue:  
61 Water System; Green: Sewer Systems.

62

## 63 204.03 Construction.

64

### 65 (A) Structure and Trench Excavation.

66

67 (1) **General.** Notify the Engineer 10 working days before  
68 excavating for structures and trenches.

69

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

73

74 Excavate in such a manner as to prevent damage to  
75 pavements, sidewalks, structures, landscaping, and other  
76 improvements. Excavate immediately before installation of conduit  
77 and other appurtenances. Stockpile excavated material in a location  
78 that shall not cause damage, obstruct vehicular and pedestrian traffic,  
79 or interfere with surface drainage.

80

81 In excavation operations, do not disturb ground below  
82 elevations indicated in the contract documents. If ground below  
83 elevations indicated in the contract documents is disturbed, excavate  
84 disturbed ground until undisturbed ground is reached. Backfill this  
85 area with Class D concrete until required foundation elevation is  
86 reached.

87

88 Keep foundation excavation dry by draining, bailing, pumping,  
89 or driving sheathings.

90

91 When material from excavation does not meet quality  
92 requirements specified for backfill in accordance with Subsection  
93 204.02 – Materials, furnish conforming material, as required.

94

95 Deposit remaining structure or trench excavation material that  
96 is not used as backfill, in roadway embankments in accordance with  
97 Subsection 203.03(B)(1) – Selected Material. Dispose of surplus  
98 selected material in accordance with Subsection 203.03(B)(3) –  
99 Surplus Selected Material.

100  
101 **(2) Foundation Treatment.** When footing concrete or masonry is  
102 to rest upon rock, fully uncover rock and remove rock surface to a  
103 depth sufficient to expose sound rock. Roughly level rock surface or  
104 cut to steps; and roughen rock surface.

105  
106 Grout seams in rock under pressure. The Engineer will pay  
107 cost in accordance with Subsection 104.02 - Changes.

108  
109 While excavating for non-pile foundations where footing  
110 concrete or masonry is to rest on an excavated surface other than  
111 rock, do not disturb excavation bottom. Remove foundation material  
112 to final grade immediately prior to placing concrete or masonry.

113  
114 Complete driven pile foundation excavation to footing bottom  
115 before driving piles therein. Remove excess materials remaining in  
116 the excavation, after pile driving, to footing bottom elevation.

117  
118 In pile foundations, excavating a sufficient distance below  
119 footing bottom will be allowed, as indicated in the contract documents,  
120 at no increase in contract price or contract time. When ground  
121 surface has risen above plan grade after pile driving, remove surplus  
122 material at no increase in contract price or contract time. When  
123 ground surface is below plan grade after pile driving, backfill and  
124 compact to plan grade with acceptable material, at no increase in  
125 contract price or contract time.

126  
127 **(3) Inspection.** When the Engineer needs to determine character  
128 of foundation material, excavate test pits, drill test borings, and  
129 perform foundation bearing tests in accordance with Section 211 -  
130 Exploratory Work at Structure Footings.

131  
132 When structure excavation to foundation grade is completed,  
133 request that the Engineer inspect and accept foundation elevation and  
134 character before placing concrete or masonry and reinforcing steel in  
135 the footing.

136  
137 **(B) Structure and Trench Backfill.** Do not deposit fill material against  
138 back of foundations and manholes until test samples indicate that concrete  
139 has developed strength required in Subsection 503.03(E) – Loading.

140  
141

### 204.03

141 Cure test samples under conditions similar to those affecting the  
142 structure. Continue backfilling so that excessive unbalanced loads are not  
143 introduced against the structure.

144  
145 Place backfill material in uniform horizontal layers not exceeding 8  
146 inches in loose thickness, before compaction. Moisten and compact each  
147 layer of backfill until relative compaction of not less than 95 percent is  
148 achieved in accordance with Subsection 203.03(C)(2) – Relative Compaction  
149 Test. The Engineer may reduce 95 percent compaction requirement in  
150 situations where such compaction is not feasible.

151  
152 When the Engineer cannot use field density test, compact each layer  
153 of backfill with vibratory or other accepted equipment on granular backfill  
154 material.

155  
156 Compaction of backfill material by ponding or jetting will not be  
157 allowed.

158  
159 Where bottom of utility pipe is located within 12 inches or below  
160 normal ground water level, use trench gravel backfill material to at least 12  
161 inches above pipe or to bottom of pavement structure. Gravel material shall  
162 be completely encapsulated by geotextile conforming to Subsection 716.03 -  
163 Geotextiles for Underdrain Applications.

164  
165 When required, place sufficient fill at structures, utility pipes, and  
166 conduits ahead of other grading operations to permit public traffic to cross.

167  
168 Compact backfill material in the following areas to a relative  
169 compaction of not less than 90 percent:

- 170  
171 (1) Footings not beneath surfacing.  
172  
173 (2) Other locations where the contract documents indicate 90  
174 percent relative compaction for structure or trench backfill.

175  
176 Place plastic marking warning tapes for appropriate type of utility  
177 directly above pipe, within a depth of 3 feet from finish grade, unless  
178 otherwise indicated in the contract documents.

179

### 204.04 Measurement.

180

181  
182 (A) Trench excavation will be paid on a lump sum basis. Measurement for  
183 payment will not apply.

184  
185 (B) Trench backfill will be paid on a lump sum basis. Measurement for  
186 payment will not apply.

187

188

188 **204.05 Payment.** The Engineer will pay for the accepted pay items listed  
189 below at the contract price per pay unit, as shown in the proposal schedule.  
190 Payment will be full compensation for the work prescribed in this section and the  
191 contract documents.

192  
193 The Engineer will pay for each of the following pay items when included in the  
194 proposal schedule:

| Pay Item                   | Pay Unit |
|----------------------------|----------|
| Trench Excavation for_____ | Lump Sum |
| Trench Backfill for_____   | Lump Sum |

201  
202 The Engineer will pay for removal of material from depths greater than 3 feet  
203 below depths indicated in the contract documents in accordance with Subsection  
204 104.02 - Changes.

205  
206 The Engineer will not pay for trench excavation for roadway and sign lighting  
207 and traffic signal system conduits separately and will consider the cost for those  
208 items as included in the contract prices for the various contract pay items. The cost  
209 is for work prescribed in this section and the contract documents.

210  
211 The Engineer will not pay for structure excavation and structure backfill for  
212 miscellaneous facilities separately and will consider the cost for those items as  
213 included in the contract prices for the various contract pay items. The cost is for the  
214 work prescribed in this section and the contract documents.

215  
216 The Engineer will not pay for excavation and backfill for water and sewer  
217 manholes and appurtenances separately and will consider the cost for those items  
218 as included in the contract prices for the various contract pay items. The cost is for  
219 the work prescribed in this section and the contract documents.

220  
221  
222

**END OF SECTION 204**