

1 Make this Section a part of the Standard Specifications:  
2

3 **"SECTION 313 - CONTROLLED LOW STRENGTH MATERIAL (CLSM)**  
4 **FOR UTILITIES AND STRUCTURES**  
5

6 **313.01 Description.** This work includes furnishing and placing a CLSM as  
7 backfill material in utility trenches and other works where firm support is needed  
8 for pavements and structural elements.  
9

10 **313.02 Materials.** CLSM is a mixture of portland cement, aggregate, and  
11 water. The Contractor shall proportion the CLSM to produce a backfill material  
12 that is self-compacting and capable of being excavated later with hand tools.  
13 The proportions of the CLSM shall:  
14

15 (a) produce a uniform, flowable mixture that is essentially self-leveling  
16 when placed;  
17

18 (b) have a 28-day compressive strength of approximately 50 psi to 150  
19 psi; and  
20

21 (c) conform to Section 601 - Structural Concrete.  
22

23 Aggregates shall be from a source acceptable to the Engineer and  
24 conform to Subsection 703.01 - Fine Aggregate for Concrete. The Contractor  
25 may use aggregates that are different from Subsection 703.01 - Fine Aggregates  
26 for Concrete subject to acceptance by the Engineer. Aggregate shall stay in  
27 suspension in the CLSM to the extent required for proper flow.  
28

29 **313.03 Construction Requirements.**  
30

31 **(A) Placement.** Before placing any CLSM, thoroughly check the  
32 trench sides and bottom for cracks, voids, or other defects that may  
33 cause the flowable backfill to flow away from the trench. Plug or repair  
34 these defects. Do not place any flowable fill until the Engineer inspects  
35 the trench.  
36

37 Place the CLSM to the designated fill line or as specified by the  
38 Engineer without vibration or other means of compaction. Provide  
39 sufficient mixing capacity to allow the CLSM to be placed without  
40 interruption.  
41

42 Backfill the trenches to full depth minus the pavement thickness as  
43 shown in the contract or as specified by the Engineer. In pavement  
44 trenches, fill the pavement trenches so that the top of the flowable fill will  
45 not be beyond or higher than the bottom of any treated pavement  
46 structure.

47 The mixture shall fill all voids during the backfill operation. When  
48 drainage layers such as permeable bases and permeable separators are  
49 present, restore the drainage layers as part of the pavement structure.  
50

51 When backfilling pipe culverts, secure the pipes within the backfill  
52 area by means of straps, soil anchors, or other means of restraints.  
53 Inform the Engineer of the proposed method of holding the culvert at the  
54 plan grade.  
55

56 Seal the conduits as necessary to prevent grout getting into the  
57 conduits.  
58

59 Place the CLSM by chute, pumping, or other methods acceptable  
60 by the Engineer. During placement operations around manholes and in  
61 utility trenches, place the CLSM evenly to avoid dislocating any conduits  
62 due to fluid pressure from the flowable fill. Place in stages as  
63 necessary to prevent uplift of unanchored conduits.  
64

65 Pave or restore the pavement section no earlier than 8 hours after  
66 backfilling unless otherwise allowed by the Engineer. Protect the  
67 backfill material from traffic during the period before restoration of the  
68 pavement' section.  
69

70 Curing of the CLSM is not necessary.  
71

72 **(B) Acceptance.** Proportion and place the CLSM as specified  
73 herein. In general, the strength desired is the maximum hardness that  
74 can be excavated at a later date using conventional excavating  
75 equipment. Submit a manufacturer's certification of the CLSM and  
76 include the unconfined 28 day compressive strengths. The material  
77 certification shall include the actual test data for each mixture used.  
78

79 **313.04 Method of Measurement.** The Engineer will not measure CLSM for  
80 payment.  
81

82 **313.05 Basis of Payment.** The Engineer will not pay for CLSM separately  
83 and will consider the cost for CLSM as included in the contract prices of either  
84 Sections 206A – Excavation and Backfill for Miscellaneous Facilities, 206B -  
85 Excavation and Backfill for Bridge and Retaining Structures, or Excavation and  
86 Backfill for Drainage Facilities. The cost is for the work prescribed in this  
87 section and the contract documents."  
88  
89  
90

**END OF SECTION 313**