

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
MATERIALS CONTROL, SOILS AND TESTING DIVISION

MATERIALS PROCEDURE

STANDARD METHOD OF TEST FOR DETERMINING THE QUALITY
OF WATER USED WITH HYDRAULIC CEMENT

1.0 PURPOSE

1.1 To establish a standard method of test and acceptance criteria to be used in determining the quality of water used with hydraulic cement.

2.0 PURPOSE

2.1 This procedure is applicable to untreated water sources used in combination with mixtures containing hydraulic cement. An untreated water source may be defined as a source other than a treated public water system.

2.2 Treated water systems may be used without testing.

3.0 APPLICABLE DOCUMENTS

3.1 MP 642.40.20

3.2 AASHTO T 106

3.3 AASHTO T 154

3.4 AASHTO T 162

4.0 PROCEDURE

4.1 Untreated water shall be tested at the source for pH. When the pH of the water is between 4.5 and 8.5 no further testing is necessary.

4.2 If the pH is less than 4.5 or more than 8.5, all tests listed in this procedure will be conducted.

4.3 A water source whose pH is determined to be within the limits defined above may appear to be contaminated with foreign material which could have an adverse effect on the portland cement concrete. If the sampler has reason to believe that this may be the case, a sample shall be forwarded to the Materials Division for further tests as defined below. The sample shall be accompanied with the required documentation indicating the samplers reasons for requesting test.

5.0 TEST METHODS

5.1 Total Solids Content

Test shall be conducted in accordance with MP 642.40.20.

5.2 Compressive Strength

The water under test shall be compared, in mortar, with distilled water. The proportions of dry materials in the mortar shall be 500 grams of Type III Cement, 1500 grams of graded OTTAWA sand and the amount of water sufficient to produce a flow of 110 ± 5 in 25 drops in accordance with AASHTO T 106 using the sample under test and compared to three specimens made using distilled water.

5.3 Time of Setting by Gillmore Needle

Time of set will be prepared with the test sample and Type III Cement in accordance with AASHTO T 154. A control specimen will be made with distilled water for basis comparison.

6.0 ACCEPTANCE CRITERIA FOR UNTREATED WATER SOURCES

Total Solids Content	2000 ppm*
Compressive Strength (Min% Control at 1 day)	90
Time of Set, (deviation from control)	-60 to +90
Minutes	

*Water containing more than 2000 ppm of total solids may be determined acceptable if compressive strength and time of set tests indicate that the solids will not adversely affect the concrete.



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