

CONCRETE AND MORTAR

CEMENT

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1. PORTLAND CEMENT

1.01 This section provides information concerning the cement to be used in preparing concrete and mortar for underground construction purposes.

1.02 All cement used in underground construction shall be portland cement and shall conform to the specifications for portland cement of the American Society for Testing Materials.

1.03 There are three different types of portland cement which may be used for underground construction. These types include normal cement, high early strength cement and sulfate-resisting cement.

2. NORMAL CEMENT

2.01 Normal cement, which is the type in general use, shall be used for all concrete or brick masonry construction unless otherwise indicated on the detail plans or authorized by the inspector or supervisor.

3. HIGH EARLY STRENGTH CEMENT

3.01 The use of high early strength cement may be required when it is necessary to remove forms or barricades and open the structure to traffic at an early date after the concrete

has been placed. Refer to G45.150.1 for the minimum curing time to be allowed concrete made with normal or high early strength cement before subjecting it to load. Its use may also be indicated for construction work during low temperatures, as described in G45.170.1. High early strength cement is also recommended for use in the mortar for mortar bandage joints to improve the workability of the mix and the bonding characteristics of the bandage.

4. SULFATE-RESISTING CEMENT

4.01 Sulfate-resisting cement has certain characteristics which help it to withstand exposure to severe alkali conditions. Its use will be indicated for underground construction only under special conditions. Its setting characteristics are the same as for normal portland cement.

5. CEMENT STORAGE

5.01 Cement shall be kept dry at all times prior to use in order to prevent deterioration. It shall be stored in a building or on a platform raised off the ground and covered with tarpaulins.

6. DAMAGED CEMENT

6.01 No cement shall be used which contains lumps that will not pulverize readily in the hand. The presence of such lumps indicates that the cement has absorbed moisture and has consequently deteriorated.