

801 HYDRAULIC CEMENT/CEMENTIOUS MATERIALS**801.01 PORTLAND CEMENT**

- (A) **GENERAL.** Unless specified otherwise, portland cement shall be as specified in [801.01\(B\)](#), except that for sewer and water work, portland cement shall be as specified in [801.01\(C\)](#). The cement may be accepted on the basis of a manufacturer's certification furnished in accordance with the requirements of Section [106.13](#).

The temperature of the cement at time of delivery to the mixer shall not exceed 160°F.

Different brands of cement, the same brand of cement from different sources, or cements for which the chemical analysis indicates them to be of different types shall not be mixed for use on a project. Different brands of cement or the same brand of cement from different sources may be used alternately on a project only in case of an emergency and with the specific approval of the Chief Engineer.

For portland cement used in concrete with aggregates that are deleteriously reactive, the alkaline content of the portland cement shall not exceed 0.60 percent as described in optional requirements of AASHTO M 85.

- (B) **STANDARD PORTLAND CEMENT.** Standard portland cement shall meet the requirements of AASHTO M 85, Type I.
- (C) **MODERATE HEAT OF HYDRATION PORTLAND CEMENT.** Moderate heat of hydration portland cement for sewer and water work shall meet the requirements of AASHTO M 85, Type II.
- (D) **HIGH EARLY STRENGTH PORTLAND CEMENT.** High early strength portland cement shall meet the requirements of AASHTO M 85, Type III.
- (E) **WHITE PORTLAND CEMENT.** Portland cement for white portland cement concrete shall meet the requirements of AASHTO M 85, Type I, except that the cement shall contain not more than one half of one percent (0.50%) of Ferric Oxide (Fe_2O_3) by weight.

801.02 MASONRY CEMENT

Masonry cement shall meet the requirements of ASTM C 91, Type M unless otherwise specified.

Masonry cement may be accepted on the basis of a manufacturer's certification furnished in accordance with the requirements of Masonry Cement Mill Certification available from the Engineer of Materials and Research. Different brands of cement or the same brand of cement from different sources may be used alternately on a project in the case of emergency and with the approval of the Chief Engineer.

801.03 BLENDED HYDRAULIC CEMENT

Blended hydraulic cement shall conform to AASHTO M 240 for Type IS or IP. A manufacturer's certification shall be furnished indicating the source, amount, and composition of the blended cement, and indicate that the material was tested during production or transfer

in accordance with this specification, and a report of the test results shall be furnished at the time of shipment.

801.04 GRANULATED IRON BLAST FURNACE SLAG

Granulated slag, when used as a substitute for Portland Cement, shall conform to the requirements of ASTM C 989, Grade 120. When blended with Portland Cement, the blend shall meet the requirements of [801.03](#), AASHTO M 240, Type 1S. Certification requirements of ASTM C 989 apply.

801.05 FLY ASH USED IN PORTLAND CEMENT CONCRETE

Fly ash used in Portland Cement Concrete shall meet the requirements of AASHTO M 295, Class C or Class F, except that the maximum loss in ignition for Class C and Class F shall be 4.0 per cent. The supplemental requirements of Table 2A shall apply when required by the Chief Engineer. When blended with Portland Cement, the blend shall meet the requirements of [801.03](#), and AASHTO M 240, Type 1P.

Written certification is required that all pozzolan meets these specifications for physical and chemical requirements.