*New Jersey Department of Transportation*
1035 Parkway Avenue, PO Box 600, Trenton, New Jersey 08625-0600

# *Baseline Document Change Announcement*

**Blended Hydraulic Cement**

**BDC03S-15**

**November 24, 2003**

**SUBJECT: Revisions to Subsection 919.07 of the *2001 Standard Inputs* and Section 914 heading, Subsections 914.01, 914.02, 919.11, 919.18, & 919.19 of the *2001 Standard Specifications in English and Metric units***

The heading of Section 914 of the *2001 Standard Specifications* has been revised to include "Blended Hydraulic Cement". Also, Subsection 919.07 of the *2001 Standard Inputs* and Subsections 914.01, 914.02, 919.11, 919.18, and 919.19 of the *2001 Standard Specifications* have been revised to permit the use of Blended Hydraulic Cement.

The following revisions have been incorporated in the English Unit Standard Input SI2001E1 dated November 24, 2003.

## SECTION 914 - PORTLAND CEMENT CONCRETE, MORTAR, AND GROUT

SECTION IS RENAMED TO:

## SECTION 914 - PORTLAND OR BLENDED HYDRAULIC CEMENT CONCRETE, MORTAR, AND GROUT

**914.01 Composition of Portland Cement Concrete.**
SUBSECTION IS RENAMED AND CHANGED TO:

**914.01 Composition of Portland or Blended Hydraulic Cement Concrete.**

Portland cement concrete shall be composed of portland cement or blended hydraulic cement, coarse aggregate, fine aggregate, admixtures, and water. Portland cement concrete except white concrete may include fly ash, Ground Granulated Blast Furnace Slag or Silica Fume. Materials shall conform to the following Subsections:

Aggregates.....901.12
Admixtures:
Air-Entraining .....905.01
Chemical.....905.02

Mineral
Fly Ash ..... 919.07
Silica Fume ..... 919.10(b)
Ground Granulated Blast Furnace Slag ..... 919.18
Portland Cement ..... 919.11
Water ..... 919.15

Chemical admixtures conforming to the requirements of Subsection 905.02 may be used in the mix design of structural concrete items.

**914.02 Portland Cement Concrete Design, Control, and Acceptance Testing Requirements**
SUBSECTION IS RENAMED TO:

**914.02 Portland or Blended Hydraulic Cement Concrete Design, Control, and Acceptance Testing Requirements**

## SECTION 919 – MISCELLANEOUS

**919.07 Fly Ash.**
THE FIRST PARAGRAPH IS CHANGED TO:

Fly ash for portland cement concrete shall conform to ASTM C 618, Class C or Class F except that the loss on ignition shall not be more than three percent. Fly ash used to control alkali-silica reactivity shall be Class F. Before each source of fly ash is approved, certified results of tests conducted by a testing agency shall be submitted to and verified by the Department. Accompanying the certification shall be a statement from the supplier listing the source and type of coal, the methods used to burn, collect, and store the fly ash, and the quality control measures employed.

**919.11 Portland Cement**
SUBSECTION IS RENAMED AND CHANGED TO:

**919.11 Portland or Blended Hydraulic Cement**
Portland cement shall conform to the following:

Masonry Cement ..... ASTM C 91
Portland Cement, Type I, II, and Type III (see Note 1) ..... ASTM C 150
White Portland Cement, Type I and III (see Note 2) ..... ASTM C 150
Blended Hydraulic Cement (see Note 3) ..... ASTM C 595

Note 1: Type III may be used only for prestressed or precast items.

Note 2: Shall not contain more than 0.55 percent by weight of ferric oxide ($Fe_2O_3$).

Note 3: Only types IS, I(PM), and I(SM) may be used. Portland cement, may be pre-blended with a maximum of 15 percent fly ash, by weight, or a maximum of 10 % silica fume by weight, or with a maximum of 50% GGBFS by weight. If more than 30% GGBFS is used, a scaling test conforming to ASTM C 672 must be completed on the mix design and the concrete must have a visual rating less than 3 as based on ASTM C672 10.1.5 after 50 cycles.

When blended portland cement is used, no additional mineral admixtures shall be added.

Different brands of cement, the same brand of cement from different mills or different types of cement shall not be mixed.

Suitable means shall be provided for storing and protecting the cement against dampness. Cement which for any reason has become partially set or which contains lumps of caked cement will be rejected. The temperature of the cement at the time of delivery to the mixer shall not exceed 160 °F.

**919.18 Ground, Granulated Blast Furnace Slag.**
THE SECOND PARAGRAPH IS CHANGED TO:

Ground, granulated blast furnace slag may be used as a replacement for portland cement as specified in Subsection 919.11 up to a maximum replacement level of 50 percent by weight. Replacement of portland cement greater than 30 percent will require a scaling test on the mix design conforming to ASTM C 672 with a visual rating less than 3.

**919.19 Sampling and Testing Methods**
Sampling and testing will be performed according to the following:
THE FOLLOWING IS ADDED:

Mineral Admixtures ..... 8 pounds from each source
Blended Hydraulic Cement..... ASTM C 595

The following revisions have been incorporated in the Metric Unit *Standard Input SI2001M1* dated November 24, 2003.

## SECTION 914 - PORTLAND CEMENT CONCRETE, MORTAR, AND GROUT

SECTION IS RENAMED TO:

## SECTION 914 - PORTLAND OR BLENDED HYDRAULIC CEMENT CONCRETE, MORTAR, AND GROUT

**914.01 Composition of Portland Cement Concrete.**
SUBSECTION IS RENAMED AND CHANGED TO:

**914.01 Composition of Portland or Blended Hydraulic Cement Concrete.**
Portland cement concrete shall be composed of portland cement or blended hydraulic cement, coarse aggregate, fine aggregate, admixtures, and water. Portland cement concrete except white concrete may include fly ash, Ground Granulated Blast Furnace Slag or Silica Fume. Materials shall conform to the following Subsections:

Aggregates ..... 901.12
Admixtures:
- Air-Entraining ..... 905.01
- Chemical ..... 905.02
- Mineral
  - Fly Ash ..... 919.07
  - Silica Fume ..... 919.10(b)
  - Ground Granulated Blast Furnace Slag ..... 919.18

Portland Cement ..... 919.11
Water ..... 919.15

Chemical admixtures conforming to the requirements of Subsection 905.02 may be used in the mix design of structural concrete items.

**914.02 Portland Cement Concrete Design, Control, and Acceptance Testing Requirements**
SUBSECTION IS RENAMED TO:

**914.02 Portland or Blended Hydraulic Cement Concrete Design, Control, and Acceptance Testing Requirements**

## SECTION 919 – MISCELLANEOUS

**919.07 Fly Ash.**
THE FIRST PARAGRAPH IS CHANGED TO:

Fly ash for portland cement concrete shall conform to ASTM C 618, Class C or Class F except that the loss on ignition shall not be more than three percent. Fly ash used to control alkali-silica reactivity shall be Class F. Before each source of fly ash is approved, certified results of tests conducted by a testing agency shall be submitted to and verified by the Department. Accompanying the certification shall be a statement from the supplier listing the source and type of coal, the methods used to burn, collect, and store the fly ash, and the quality control measures employed.

**919.11 Portland Cement**
SUBSECTION IS RENAMED AND CHANGED TO:

**919.11 Portland or Blended Hydraulic Cement**

Portland cement shall conform to the following:

| | |
|---|---|
| Masonry Cement | ASTM C 91 |
| Portland Cement, Type I, II, and Type III (see Note 1) | ASTM C 150 |
| White Portland Cement, Type I and III (see Note 2) | ASTM C 150 |
| Blended Hydraulic Cement (see Note 3) | ASTM C 595 |

Note 1: Type III may be used only for prestressed or precast items.

Note 2: Shall not contain more than 0.55 percent by weight of ferric oxide ($Fe_2O_3$).

Note 3: Only types IS, I(PM), and I(SM) may be used. Portland cement, may be pre-blended with a maximum of 15 percent fly ash, by weight, or a maximum of 10 % silica fume by weight, or with a maximum of 50% GGBFS by weight. If more than 30% GGBFS is used, a scaling test conforming to ASTM C 672 must be completed on the mix design and the concrete must have a visual rating less than 3 as based on ASTM C672 10.1.5 after 50 cycles.

When blended portland cement is used, no additional mineral admixtures shall be added.

Different brands of cement, the same brand of cement from different mills or different types of cement shall not be mixed.

Suitable means shall be provided for storing and protecting the cement against dampness. Cement which for any reason has become partially set or which contains lumps of caked cement will be rejected. The temperature of the cement at the time of delivery to the mixer shall not exceed 71 °C.

**919.18 Ground, Granulated Blast Furnace Slag.**
THE SECOND PARAGRAPH IS CHANGED TO:

Ground, granulated blast furnace slag may be used as a replacement for portland cement as specified in Subsection 919.11 up to a maximum replacement level of 50 percent by weight. Replacement of portland cement greater than 30 percent will require a scaling test on the mix design conforming to ASTM C 672 with a visual rating less than 3.

**919.19 Sampling and Testing Methods**

Sampling and testing will be performed according to the following:
THE FOLLOWING IS ADDED:

| | |
|---|---|
| Mineral Admixtures | 4-kilograms from each source |
| Blended Hydraulic Cement | ASTM C 595 |

**Distribution and Announcement Access Information:**

This announcement is being distributed electronically to our in-house staff and various public agencies based on our distribution list maintained by the Engineering Documents Unit (EDU).

Internet access to this BDC Announcement can be downloaded and viewed from the following New Jersey Department of Transportation Web Page:

http://www.state.nj.us/transportation/cpm/BaselineDocuments

These revisions have been incorporated in the *Standard Inputs SI2001E1* and *SI2001M1* Dated 11/24/03 from the following New Jersey Department of Transportation Web Page:

http://www.state.nj.us/transportation/cpm/StandardInputs/standardinputs.htm

Hard copies are available on a limited basis by contacting EDU at the following address:

Engineering Documents Unit
E&O Building, 1st Floor
1035 Parkway Avenue, PO Box 600
Trenton, New Jersey 08625-0600
Phone: (609) 530-5587
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**Implementation Code R (ROUTINE)**

Changes must be implemented in all applicable Department projects scheduled for Final Design Submission at least one month after the date of the BDC announcement. This will allow designers to make necessary plan, specifications, and estimate/proposal changes without requiring the need for an addenda or postponement of advertisement or receipt of bids.

**Recommended By:**

ORIGINAL SIGNED

Brian Strizki
Director,
Quality Management Services

**Approved By:**

ORIGINAL SIGNED

F. Howard Zahn
Assistant Commissioner,
Capital Program Management

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