

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

**914.02 Portland Cement Concrete Design, Control and Acceptance Testing Requirements.**

**B. Proportioning And Verification.**

THE FOLLOWING IS ADDED AFTER THE FIRST LINE:

For concrete pavement repair, Department personnel shall witness the results of two complying 6.5-hour flexural tests from an approved laboratory. Each test shall consist of one 150 by 150 by 525-millimeter concrete beam.

THE FOLLOWING IS ADDED TO THIS SUBSECTION:

The Contractor/Producer shall have his concrete quality control technician on site for the first full day of production and be available as required by the Engineer.

**F. Acceptance Testing for Strength for Non-Pay-Adjustment Items.**

THE FOLLOWING IS ADDED:

In addition to the above compressive strength requirements, VES Concrete must meet flexural strength requirements. If any of the flexural beams in the lot of VES Concrete fails to obtain the required flexural strength at 6.5 hours, the concrete repair will not be opened to traffic. A retest will be performed at 8 hours maturity. If any of the flexural beams in the lot of VES Concrete fails to obtain the required flexural strength at 8 hours, the roadway may be opened to traffic at 8 hours maturity and the VES Concrete in the lot will be removed and replaced within one week of placement.

**914.04 Sampling And Testing Methods.**

THE FOLLOWING IS ADDED AFTER LINE 4 UNDER THE HEADING AASHTO:

T 97 Flexural Strength Of Concrete (Using Simple Beam With Third-Point Loading)

**914.05 Tables.**

THE FOLLOWING IS ADDED TO TABLE 914-1 REQUIREMENTS FOR ROADWAY CONCRETE ITEMS:

<b>Concrete Class</b>	<b>Slump (mm)</b>	<b>Percent Air Entrainment for Coarse Aggregate Size Number 57</b>
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**Cast-in-Place Items**

Concrete Pavement Repair    VES                      200 Max.                      6.0 +/- 1.5

The following note is added at the end of Table 914-1:

Note 3: For concrete pavement repair a Type F water-reducing, high-range admixture shall be used in accordance with Subsection 905.02 and Subsection 914.02, Subparts B and C. When a Type F admixture is used, the Table Slump and Air Content values for the given concrete item shall be changed as follows:

Slump:                      150 <sup>+</sup>/<sub>-</sub> 50 millimeters  
 Air Content:            Increase both the target value and tolerance percentages by 0.5.

THE FOLLOWING IS ADDED TO TABLE 914-3, MIX DESIGN REQUIREMENTS.

	<b>Class Of Concrete VES</b>
Class Design Strength	
Compressive Strength (28 days, MPa)	26.0
Flexural Strength (6.5 hrs., MPa)	2.40
Verification Strength	
Compressive Strength (28 days, MPa)	31.0
Flexural Strength (6.5 hrs., MPa)	2.70
Maximum Water/Cement Ratio	
kg/kg	0.370 (Note 4)
L/bag	16 (Note 4)
Minimum Cement Content	
kg/m <sup>3</sup>	390

NOTE 2 IS CHANGED TO:

Note 2: The maximum water/cement ratio for all classes of concrete, except VES, when a Type F, water-reducing, high-range admixture is used in accordance with Tables 914-1 and 914-2, shall be 0.40 kg/kg (17.0 L/bag).

NOTES 4 AND 5 ARE ADDED:

Note 4: In order to achieve the water/cement ratio for VES concrete, an approved Type F, water-reducing, high-range admixture shall be used.

Note 5: For VES concrete, a non-chloride set or hardener accelerator in combination with Type I or Type III Portland cement shall be used.

THE FOLLOWING IS ADDED TO TABLE 914-4 LOT SIZES, SAMPLING RATES, RETEST AND REJECTION LIMITS:

**Class Of Concrete**

**VES**

Lot Size, Maximum

One Day's Production

**Pay Adjustment Items**

Initial Sample Rate	--
Compressive Retest Limit, MPa (28 Days)	21
Retest Sampling Rate, minimum	6/Lot
Rejection Limit, percent	10

**Non-Pay Adjustment Items**

Initial Sample Rate	2/Lot
Compressive Retest Limit, MPa (28 Days)	25
Flexural Retest Limit, MPa	2.40 (Note 8)

THE FOLLOWING NOTE IS ADDED RELATING TO CLASS VES CONCRETE:

Note 8: The initial flexural strength test shall be performed at 6.5 hours. Each individual test from the lot must meet the flexural retest limit. If any test fails to meet the flexural retest limit at 6.5 hours, a second beam shall be tested at 8 hours. The flexural beams shall be field cured in accordance with AASHTO T23, Subsection 9.4.