

HIGH PERFORMANCE CONCRETE, MASS POUR****From Bethel BRF 022-1(14)**

- xx. DESCRIPTION. This work shall consist of furnishing and placing high performance Portland cement concrete at the locations indicated in the Plans and as directed by the Engineer.

The work under this Section shall be performed in accordance with these provisions, the Plans, and Section 501 of the Standard Specifications.

- xx. MATERIALS. Coarse aggregate gradation shall meet the following requirements:

COARSE AGGREGATE GRADATION REQUIREMENTS

Standard Stone Size	#467*
Min to Max	4.75 mm to 37.5 mm (3/16 inch - 1 1/2 inch)
Sieve Size	Percentage by Weight Passing
63 mm (2 1/2 inch)	--
50 mm (2 inch)	100
37.5 mm (1 1/2 inch)	95-100
25.0 mm (1 inch)	--
19.0 mm (3/4 inch)	35-70
12.5 mm (1/2 inch)	--
9.5 mm (3/8 inch)	10-30
4.75 mm (No.4)	0-5
2.36 mm (No.8)	--
1.18 mm (No.16)	--
300 µm (No.50)	--

* If blending of 2 or more stockpiles of different gradations is needed to create the #467 gradation requirement, then it shall be done with a method approved by the Structural Concrete Engineer.

- xx. CLASSIFICATION AND PROPORTIONING. Proportioning of High Performance Concrete, Mass Pour shall meet the following requirements:

HPC Class	Req.** Cem. Mat. kg/m ³ (lbs./cy)	Maximum Water- Cem. Mat. Ratio	Max. Slump mm (inch)	Air Content (%)	Coarse Aggregate Gradation Table	28-Day* Comp. Strength Mpa (psi)	28-Day** Modulus of Rupture Mpa (psi)
Mass Pour	335 (564)	0.49	180 (7)	7.0 ± 1.5	Above	25 (3500)	4.14 (600)
<p>* The listed 28-day compressive strength or modulus of rupture will serve as the basis of designing or approving the concrete mix.</p> <p>**If the initial trial batch indicates that the 28 day compressive strength cannot be obtained at the required cementitious content, then the Contractor may increase the cementitious content by the minimum needed to obtain the 28 day compressive strength, as proved by a successive trial batch. Permeability cylinders will not be required.</p>							

The blending proportions of the coarse aggregate stockpiles may need to be adjusted from the previously submitted and approved mix design based on the gradations to be used for the placement on that day. The Structural Concrete Engineer shall be notified as soon as possible and a new mix design submitted before or immediately after for review and approval of the proportioning change.

- xx. CEMENTITIOUS MATERIALS. The Contractor shall substitute a mineral admixture of either 20 percent fly ash or 25 percent ground granulated blast furnace slag (GGBFS) at a rate of 1 unit of mineral admixture for 1 unit of cement. The Contractor may also include silica fume substitution in conjunction with one of the selected mineral admixtures at a substitution rate of 24 kilograms (40 pounds) of silica fume for 24 kilograms (40 pounds) of cement. A pre-approved blended cement, cement blended with one or more mineral admixtures, may also be used.

If bagged silica fume is being used, the total number of bags for the batch shall be the least number of whole bags required - round fractional numbers of bags required down to the next whole number.

- xx. METHOD OF MEASUREMENT. The quantity of Special Provision (High Performance Concrete, Mass Pour) to be measured for payment will be the number of cubic meters (cubic yards) of concrete placed in the complete and accepted work, as determined by the prismatic method using dimensions shown on the Plans or as directed by the Engineer, including the volume of superstructure precast concrete stay-in-place forms, but excluding the volume of steel or other stay-in-place forms and form filling materials. No deductions will be made for the volume of concrete displaced by steel reinforcement, structural steel, expansion joint material, scuppers, weep holes, conduits, tops of piles, scoring, chamfers or corners, inset panels of 38 mm (1 1/2 inches) or less in depth, or any pipe less than 200 mm (8 inches) in diameter.

- xx. BASIS OF PAYMENT. The accepted quantity of Special Provision (High Performance Concrete, Mass Pour) will be paid for at the Contract unit price per cubic meter (cubic yard). Payment will

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be full compensation for performing the work specified, including designing the mix, satisfactory finishing and curing, and for furnishing all forms, materials, including joint filler and bond breaker, labor, tools, admixtures, equipment, including automatic temperature recording units, trial batches, and incidentals necessary to complete the work.

The cost of heating materials and protecting the concrete against cold weather, and any additional cost for cement, will not be paid for separately but will be considered incidental to Special Provision (High Performance Concrete, Mass Pour).

The cost of furnishing testing facilities and supplies at the batch plant, and the setting of inserts and bench marks will not be paid for separately but will be considered incidental to Special Provision (High Performance Concrete, Mass Pour).

Costs for all materials, labor, and incidentals for steel or other stay-in-place forms and form filling materials will not be paid for separately, but will be considered incidental to Special Provision (High Performance Concrete, Mass Pour).

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
900.608 Special Provision (High Performance Concrete, Mass Pour)	Cubic Meter (Cubic Yard)