

ITEM 16557.0196 M - SUPERSTRUCTURE SLAB WITH INTEGRAL WEARING SURFACE, BOTTOM FORMWORK REQUIRED, CLASS HP, GALVANIZED REINFORCING

ITEM 16557.0596 M - SUPERSTRUCTURE SLAB WITH INTEGRAL WEARING SURFACE, BOTTOM FORMWORK NOT REQUIRED, CLASS HP, GALVANIZED REINFORCING

ITEM 16557.0796 M - SUPERSTRUCTURE SLAB WITH SEPARATE WEARING SURFACE, BOTTOM FORMWORK REQUIRED, CLASS HP, GALVANIZED REINFORCING

ITEM 16557.0996 M - SUPERSTRUCTURE SLAB WITH SEPARATE WEARING SURFACE, BOTTOM FORMWORK NOT REQUIRED, CLASS HP GALVANIZED REINFORCING

ITEM 16557.2096 M - STRUCTURAL APPROACH SLAB WITH INTEGRAL WEARING SURFACE, CLASS HP, GALVANIZED REINFORCING

ITEM 16557.2296 M - STRUCTURAL APPROACH SLAB WITH SEPARATE WEARING SURFACE, CLASS HP, GALVANIZED REINFORCING

DESCRIPTION. The work shall consist of furnishing and placing a superstructure slab of Class HP concrete with all slab reinforcement being galvanized bar reinforcement. Except as provided below, all reinforcement shall be cut and bent prior to galvanizing. Prestressed Concrete Form Units shall not be allowed.

MATERIALS.

A. Concrete. Concrete shall meet the requirements herein for Class HP:

The microsilica admixture shall be one appearing on the Department's Approved List. Only one brand shall be allowed for any structural element. The Manufacturer shall provide written certification that the supplied material meets the requirements of the procedural directives of the Materials Bureau. For each shipment supplied this certification shall list fineness, silica content, total chloride ion content, solids content for slurries, and moisture content for densified powders. Additionally, the Regional Materials Engineer shall take a minimum sample of one liter directly from the storage container, for each days placement of Class HP concrete, for testing by the Department.

If the microsilica admixture is supplied in the slurry form the slurry shall be maintained in storage above the temperature of 0°C. Slurries exposed to temperatures of 0°C or less shall be removed and replaced at no cost to the Department. The slurry shall be homogeneous and agitated as necessary to prevent separation. Class HP concrete shall consist of a homogeneous mixture of cement, fly ash, microsilica admixture, fine aggregate, coarse aggregate, air entraining agent, set retarding water reducing admixture and water which meets the requirements of the MIX CRITERIA table given below.

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MIX CRITERIA

Cement content (kg/m ³)	300
Fly ash content (kg/m ³)	80
Microsilica content (kg/m ³)	25
Sand percent total aggregate (solid volume)	40
Designed water/total cementitious content of 405 kg	0.40
Desired air content (%)	6.5
Allowable air content (%)	5.0 - 8.0
Desired slump (mm)	90
Allowable slump (mm)	75 - 100
Type of coarse aggregate gradation	CA 2

NOTE The criteria are given for design information and the data is based on a fine aggregate fineness modulus of 2.80. The mixture proportions shall be determined using actual conditions for fineness modulus and bulk specific gravities (saturated surface dry for aggregate). The proportions shall be computed according to Department written instructions.

The requirements of §501 shall apply, except as modified herein.

1. If a densified powder is used, the mass of the densified powder shall be measured cumulatively with the cement and fly ash. The densified powder shall be last in the measuring sequence and the tolerance for each material draw mass shall be based upon the total mass of cement plus fly ash plus densified powder. The batching tolerance for the cement plus fly ash plus densified powder shall be $\pm\frac{1}{2}\%$ by mass.
2. If a microsilica slurry is used, the slurry shall be added using proportioning equipment approved by the Regional Materials Engineer. The microsilica slurry admixture shall be added through an existing automation system or a two stop off-line automated batching system. The automated batching system shall meet the following requirements:

Delivery accuracy of $\pm 1\%$ (by volume)

Program quantity (liters, nearest tenth)

Batching tolerance $\pm 2.0\%$ (by volume)

System interlocks

Print requirements:

- a. Date and time
- b. Truck number (or alternate method relating microsilica to batch ticket)
- c. Delivered quantity (liters, nearest tenth)

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The control box/printer for a two stop off-line batching system shall be located at the batch plant operator's work station unless otherwise approved by the Regional Materials Engineer.

Calibration shall be in accordance with the procedures approved by the Regional Materials Engineer. Whenever any part or all of the off-line system is moved the entire system shall be recalibrated.

B. Other materials : These shall meet the following requirements:

Material	Requirement
All material listed under §555-2.01 shall apply	§555-2.01
Permanent Corrugated Metal Forms for Bridge Slabs	§736-01
Galvanized Bar reinforcement, Grade 400	§709-11
Tie Wire	Coated with a non-conducting material or galvanized.
Chairs	Galvanized in accordance with ASTM A153
Bar Splices	§709-10 except the coating shall be zinc applied in accordance with ASTM A153
Zinc Rich Paint	§709-11

CONSTRUCTION DETAILS. All the provisions of §557-3 and the following shall apply:

All reinforcing in the slab shall be cut and bent prior to galvanizing. Notwithstanding the foregoing, the EIC may allow up to 5% of the length of reinforcing to be field bent to replace misfabricated, damaged, or missing reinforcing.

Arc welded splices shall be made and inspected in accordance with the provisions of the SCM, Section 7, Part D. Prior to welding, the zinc shall be removed for the length to be welded plus a minimum of 150 mm on each side of the weld. After welding, the spliced area shall be cleaned and coated in accordance with the coating repair procedure.

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Damaged Galvanized Coating. The Contractor shall be required to repair minor damage to the galvanized coating and to replace any reinforcing exhibiting major coating damage. Major coating damage is defined as more than 2% of the surface area in any 0.3 meter length (e.g. 240mm² on a number 13 bar, 360mm² on a number 19 bar) . Minor damage is defined as all damaged coating discernable to a person with normal or corrected vision that does not exceed 2% of the surface area in a 0.3 meter length.

Coating Repair. The area shall be cleaned to a near white condition as defined by SSPC-SP10 using power disk, wire brush, abrasive blasting or other methods approved by the Engineer. The surface shall be clean, dry and free of oil, grease, and other contaminates. Apply a minimum of two coats of zinc rich paint by methods recommended by the manufacturer to obtain a minimum film thickness of 100µm.

METHOD OF MEASUREMENT. All the provisions of §557-4 shall apply.

BASIS OF PAYMENT. All the provisions of §557-5 shall apply.

Payment will be made under:

Item No.	Item	Pay Unit
16557.0196 M	Superstructure Slab with Integral Wearing Surface, Bottom Formwork Required, Class HP Galvanized Reinforcing	Square Meter
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