

## **ITEM 05608.9301 M - COLOR-TINTING CONCRETE**

**DESCRIPTION:** This work shall consist of construction of color-tinted Portland cement concrete facilities as shown in the Contract Documents and as directed by the Engineer.

**MATERIALS:** Materials shall meet the requirements specified in the following subsections of Section 700, Materials:

Portland Cement	- 701-01
Fine Aggregate	- 703-01
Coarse Aggregate	- 703-02
Concrete Sand	- 703-07
Premoulded Resilient Joint Filler	- 705-07
Wire Fabric for Concrete Reinforcement	- 709-02
Water	- 712-01

**Concrete.** The material requirements and composition of concrete shall comply with the specifications for Class A Concrete in Section 501-02, Portland Cement Concrete - General and as specified for Class A Concrete in Table 501-3, Concrete Mixtures. The use of Type 6 cement (white) will be permitted to reduce the quantity of color additive necessary to achieve the designated color. No additional payment will be made for Type 6 cement.

**Color-Tinting Agents.** Color-tinting shall be achieved by using a color-conditioning, pigmented, normal or retarded-set additive introduced directly into the mixer drum along with the aggregate, cement and water.

The concrete shall be tinted to the color(s) specified on the plans and the color additive shall be applied at the rates specified by the color manufacturer.

**Caulking Compound.** A polyurethane caulking compound color-matched to the concrete shall be applied over the top surface of the premoulded resilient joint filler imbedded in the colored concrete.

**CONSTRUCTION DETAILS:** The general construction details for the manufacturing, transporting, and placing of concrete shall meet the requirements of Section 501, Portland Cement Concrete - General, except for the following modifications:

Admixtures such as air-entraining agents, normal or retarded-set agents, or water-reducing agents may be used in the concrete, but calcium chloride or admixtures containing calcium chloride shall not be used. Admixtures shall be added in the same proportions to all loads of concrete.

The following are the general construction details to be used when using concrete which is colored with a truck-mixed additive:

All subgrade preparation (which includes excavation, grading, compaction, setting of forms, etc.) shall be completed prior to the placing of any color-tinted concrete.

Wire fabric for concrete reinforcement shall be embedded at mild-depth in the sidewalk slab. The wire fabric shall consist of W2.9 or W3 wire at 150mm centers transversely and

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longitudinally.

The color additive shall be introduced into the mixer drum in a manner recommended by the manufacturer, and the mixer shall be operated at a charging speed which will ensure sufficient mixing of the color with the aggregate, cement and water. The quantity of concrete being mixed shall be no less than one-third of the capacity of the mixing drum and shall be in full cubic meter increments.

Prior to placing the colored concrete, all adjacent surfaces and structures shall be protected from spatters. If the concrete is to be pumped, the pump and hoses shall be primed with a slurry that is colored to match the desired concrete tint. The colored concrete shall then be placed in one course to the depths shown on the plans. Once a portion of the batch has been placed, no water shall be added to the remaining batch.

Transverse construction joints shall extend to the full depth of the slab at the locations shown on the plans. A premoulded resilient joint filler, set 10mm below the finished concrete elevation, shall be installed at all construction joints in the colored concrete. A polyurethane caulking compound color-matched to the concrete shall be applied over the top of the resilient joint filler and flush with the finished concrete elevation. When the locations of the joints are not specified on the plans, the Contractor and the Engineer shall agree on the proper locations of such joints to minimize the possibilities of cracking.

The placed concrete shall be screeded to the finished grade and wood floated to a uniform surface. After the placed concrete has reached a point where no excess moisture shows at the surface, it shall be trowel finished. Consistent finishing practices shall be used on all concrete areas to insure uniformity of color. Water shall not be sprinkled or otherwise added to the concrete surface during the finishing process.

A sample segment of concrete (measuring approximately 9 square meters) shall be constructed in a portion of the flatwork area to determine the suitability of the color. If the sample segment is satisfactory to the Engineer and Regional Landscape Architect, it shall become part of the finished flatwork. If unsatisfactory, it shall be removed and a new segment constructed. There will be no limitation of the number of sample segments required before approval is given.

**METHOD OF MEASUREMENT:** Color-tinting concrete shall be measured by the number of cubic meters of Portland cement concrete color-tinted and placed to the satisfaction of the Engineer. The quantity shall be as computed from payment lines shown on the plans or as ordered by the Engineer.

**BASIS OF PAYMENT:** The unit price bid per cubic meter shall include the cost of preparing the subgrade, color tinting materials, caulking compounds, test panels and all other materials, equipment, and labor necessary to complete the work as specified, except that any necessary excavation and subbase courses will be paid under their appropriate items.