## ITEM 503.0101 11 M - PRECAST CROSSWALK PANEL

**DESCRIPTION:**

Furnish and install reinforced precast crosswalk panels as shown on the plans and in accordance with this specification. These are precast concrete pavement slabs with granite and special colored concrete surfaces.

**MATERIALS:**

Apply the Material Requirements in §704-03 with the following exceptions:

**a.** Provide coarse aggregate comprised of sandstone, granite, chert, basaltic traprock, or tailings, slag or other similar non-carbonate materials. Non carbonate particles are defined as those having a minimum acid insoluble residue content of 80%

**b.** Minimum compressive strength - 27.5 MPa at 28 days

Provide additional materials, listed below that meet the requirements of the following subsections and as specified on the Contract Drawings:

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|---|---|
| Stone Blocks (Granite) | 704-09 |
| Precast Concrete Pavers | 704-14 |
| Silicone Joint Sealants | 705-05 |

**Load Transfer Devices ( LTDs).** Obtain LTDs from a supplier appearing on the Approved List for §705-15, Transverse Joint Supports.
Use 450 mm long, 38 mm diameter, smooth, epoxy coated, Grade 420 steel dowels coated with a bond breaker. Use an epoxy coating appearing on the Approved List for "Epoxy Coatings for Longitudinal Joint Ties" or "Epoxy Coatings for Steel Reinforcing Bars" that is applied by an applicator appearing on the Approved List for "Applicators for Steel Reinforcing Bars".

At least 14 days before installing the precast panels, provide the Engineer:

- The name and address of the LTD supplier.
- Material certification from the supplier that dowels meet the "Tests" and "Material Requirements" portions of §705-15, except Grade 420 steel is supplied.
- Material certification from the rolling mill as to the type and grade of steel used.
- The brand of epoxy coating and the name and address of the Manufacturer.
- The name and address of the epoxy coating applicator.
- The brand of bond breaker and the name and address of the Manufacturer.
- Material certification from the epoxy coating applicator that the bars have been coated, tested, and meet the requirements of §705-14, Longitudinal Joint Ties.

The Department may perform supplementary sampling and testing of the bars and assemblies to ensure conformance with §705-14 and §705-15.

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**FABRICATION.** Fabricate crosswalk panels to the shape and size shown on the approved shop drawings unless otherwise shown on the contract drawings. Apply the Fabrication requirements contained in §704-03. In addition the following shall apply.

**A. Drawings.** Provide shop drawings that include the following:

1. A production note sheet defining material sources, mix design, concrete manufacturing equipment, strength requirements, casting methods and tolerances, curing and shipping techniques, ship-loose items, repair procedures, and any other data relevant to manufacture of the units in accordance with the project plans and specifications.
2. A layout drawing that shows the precise location of all panels.
3. Detailed drawings of each type of panel showing all required dimensions. Each panel shall be marked and numbered.
4. A table of units summarizing the quantity and the weights of all panels.
5. Provide details depicting how the precast slabs will be fully supported on the underlying subbase. These details are subject to the approval of the Engineer.
6. Provide details for load transfer including dowel size and spacing. Make sure all load transfer devices are installed parallel to the longitudinal joint.
7. Provide details for the size, shape and location of all shear keys.
8. Provide details for any **l**ifting inserts/rings. Provide any necessary hardware for attaching to a panel for lifting, including any cables, slings and shackles required for attachment to the piece lifting equipment.
9. Detail the location of any required grout holes that may be needed to sufficiently seat the precast pavement on the subbase.

**B. Precast Plant.** All panels shall be cast in a plant capable of producing slabs in accordance with 704-03. All panels shall be cast in rigidly constructed forms capable of being adjusted to the shape and dimensions shown on the approved shop drawings in accordance with the tolerances listed in this specification. All side rails of the form shall be square to the bed of the form. Each panel shall be marked with a label that clearly shows the job identification number, the cast date, and the unit mark number as shown on the approved shop drawings.

**C. Slab Finish.** The type of surface desired shall be clearly shown on the approved shop drawings.

Provide two identical samples (minimum 0.6-m by 0.6-m size) of the specified finish and submit them to the Engineer for approval. The Engineer shall return one sample to the precast plant where it will be kept throughout the production process for quality assurance purposes. Match the texture of the production precast slabs to the finish of the approved texture samples.

**D. Top Edges.** Round the top edges of all panels with a hand stone to prevent chipping during handling and installation. No chamfering on the top edge will be allowed.

**F. Tolerances.** Cast slabs to the following tolerances Length: +/- 4mm; Width: +/- 4mm; Thickness: +/- 4mm; Difference in diagonals not to exceed 4mm; Edge Squareness: 2mm in 250mm (in relation to top and bottom surfaces).

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**G. Transverse Dowel Bars.** Cast transverse dowel bars in the slab at the locations shown on the contract drawings. Orient the longitudinal axes of the protruding dowels parallel to the longitudinal joint and parallel to the pavement surface, and each other, ± 3 mm. The dowels shall protrude 220 – 230 mm, measured from the face of the precast slab. The exact locations transverse dowels shall be detailed on the approved shop drawings.

Alternative means of providing load transfer are subject to the approval of the Engineer.

**H. Lifting Inserts.** Design lifting inserts to lift slabs from the topside. Use galvanized coil threaded inserts and recess them 32 mm from the top of the slab. Provide a threaded plug which is to be installed once the panel is permanently set. The threaded plug should be recessed 6 mm below the pavement surface.

**I. Sampling and Testing.** Apply the Sampling and Testing requirements in §704-03

**J. Shipping.** Apply the Shipping requirements in §704-03

**CONSTRUCTION DETAILS.**

Hold a pre-paving meeting a minimum of 10 working days prior to beginning work at a site selected by the Engineer at a mutually agreed upon time and location. Familiarize all field personnel and inspection representatives of the Engineer with the technology, proper installation techniques and inspection of the precast paving slabs.

Set the precast pavement slab in a manner such that the slab contacts the fine graded surface uniformly to avoid disturbing the finished fine graded surface and to avoid damaging the edges of the concrete slab.

Use tie off ropes to avoid chipping or spalling edges of the new precast slabs. Use wood wedges or similar devices to guide the slab into the correct position. The use of steel pry bars that chip edges should be avoided. Repair chipped or spalled areas as required by the Engineer.

Apply form oil on all exposed dowel bars.

Ensure that the newly placed slab is within the allowable differential edge elevations of 4 mm or as specified in the Contract Drawings. Any panels with any edge difference exceeding the allowable difference will be removed and reset.

If an early traffic opening is required, protect any dowels that protrude from the end of a slab against bending or against damage to the coating by installing a protection precast slab provided by the fabricator. Alternative methods are subject to the approval of the Engineer.

Seal all longitudinal and transverse joints in accordance with §502-3.12B of the Standard Specifications except that sawcutting will not be required to form the reservoirs.

Install a threaded plug into all lifting holes such that the plug is readily removable should a panel have to be removed and replaced.

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**Repair of Damaged Sections.** Sections which cannot be satisfactorily repaired or do not meet dimensional tolerance as determined by the Engineer will be rejected.

Repair or replace panel sections that are damaged prior to acceptance of the Contract.

**METHOD OF MEASUREMENT:**

The work for precast crosswalk panels will be measured as the number of square meters of precast slab units satisfactorily furnished and installed.

**BASIS OF PAYMENT:**

Include the cost of all labor, materials and equipment necessary to satisfactorily complete the work.

Payment will be made under:

| Item | Description | Pay Unit |
|---|---|---|
| 503.0101 | 11 M - PRECAST CROSSWALK PANEL | Square Meter |

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