

**ITEM 10563.90 M - STRUCTURAL PRECAST CONCRETE PLATFORM
PANELS FOR LIRR**

DESCRIPTION

This work shall consist of furnishing and installing platform panels as shown on the plans. Contractor has the option of using precast panels or cast in place concrete which shall conform to the following provisions.

MATERIALS

Precast Concrete:

- 1) Portland Cement shall conform to ASTM C150, Type I, II, or III and meet the requirements of Subsection 701-01 of NYSDOT Standard Specifications. Use only one brand of cement throughout the project.
- 2) Concrete 28-day Compressive Strength shall be 35 MPa for all concrete work unless otherwise indicated on the contract drawings.
- 3) Aggregate shall conform to ASTM C33 and meet the requirements of Section 703 of NYSDOT Standard Specifications. The maximum size shall be 19 mm.
- 4) Water shall be clean, potable, and conform to the requirements of Subsection 712-01 of NYSDOT Standard Specifications
- 5) Air entraining admixtures shall conform to ASTM C260. The entrained air content shall be 6 percent \pm at the time concrete is placed in the forms. Water-reducing admixture shall conform to ASTM C494, Type A. Admixtures containing calcium chloride shall not be used. All admixtures shall conform to the requirements of Subsection 711-08 of NYSDOT Standard Specifications
- 6) Reinforcement shall be epoxy coated and conform to Section 556 of NYSDOT Standard Specifications.

Cast in Place Concrete (Optional):

- 1) Cast in Place Concrete shall conform to the requirements of Subsection 555 of NYSDOT Standard Specifications.
- 2) Concrete 28-Day Compressive Strength shall be 35 Mpa for all concrete work unless otherwise indicated on the contract drawings.
- 3) Reinforcement shall be epoxy coated and conform to Section 556 of NYSDOT Standard Specifications.

Connecting Materials:

- 1) Plates and bars shall be stainless steel AISI Type 316L.
- 2) Stud anchors, bolts, hex nuts and washers shall be stainless steel and conform to AISI Type 316.
- 3) Hot dip galvanizing shall conform to Type II ASTM A153M or ASTM A123M as applicable and meet the requirements of Subsection 719-01 of NYSDOT Standard Specifications.

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- 4) Provide clips, hangers, and other accessories required for installation of units and for support of subsequent construction or finishes. Lifting inserts shall be of the type indicated on the drawings.

Grout Materials (for patching):

- 5) Non-shrink:
Non-shrink grout containing no expansive cements or metallic powders.
- 6) Grout patch:
Non-shrink fast setting cement grout.
- 7) Epoxy grout:
Non-shrink 100% solids epoxy system and shall have the following properties:
 - a) Working life - 45 minutes minimum at 24 degrees C.
 - b) Compressive strength - 38 MPa at 1 day and 69 MPa at 7 days.

Reinforcement:

- 1) Reinforcing bars as indicated on the contract drawings shall be ASTM A615 Grade 400 epoxy coated and conform to Section 556 of the NYSDOT Standard Specifications.

Silicone Joint Sealants:

- 1) The sealant shall be a one part silicone appearing on the Department's Approved List of silicone joint sealants. The sealant shall be installed as per the manufacturer's instructions except as modified herein.
- 2) The silicone sealant shall be pumped directly from plastic pails or drums by compressed air powered extrusion pumps designed for moisture curing silicone sealants. Teflon seals and packing and teflon lined hoses are recommended to prevent moisture permeation. Sealant application nozzles shall be designed so that sealant is applied within the confines of the joint.
- 3) The sealant shall be applied so that it completely fills the width of the joint to a level below the surface of the slab.

Backer Rod:

- 1) The backer rod material for silicone joint sealants shall be closed cell polyethylene foam. The diameter of the backer rod shall be 25% greater than the width of the joint. When placed in the joint the backer rod shall: support the sealant at its proper depth, prevent the sealant from leaking around and underneath it, and allow the sealant to deform freely when the joint expands and contracts.

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Concrete Inserts:

- 1) Recessed channels for utility support:
Provide hot dip galvanized roll-formed channels conforming to ASTM A-153 with the dimensions as shown on the plans such as Unistrut Model P3353 or approved equal. Channels shall include end caps and closure pieces as shown on the drawing.

SUBMITTALS

The Contractor shall submit the following for approval:

- 1) Product data:
Submit manufacturer's specifications and instructions for manufactured materials and products. Include manufacturer's certifications and laboratory test reports as required by these specifications, as indicated on the Contract Drawings, and as requested by the LIRR Engineering Department, or its representatives, or the Engineer.
- 2) Compressive Strength Tests:
Six test cylinders, 150 mm in diameter and 305 mm long shall be taken per day shift, production run or as ordered by the LIRR Engineering Department or its representative. At least two cylinders will be broken immediately prior to form removal to insure minimum strength of $f'c = 35$ MPa. The remaining cylinders shall be tested 2 at 7 days and 2 at 28 days. Failure of any of the 28 day test cylinders to meet 90 percent of the minimum compressive strength or failure of the average to meet the full minimum compressive strength requirement, will be cause for rejection.
- 3) Shop drawings:
Shop drawings shall show complete information for fabrication and installation of precast concrete units, indicate member dimensions and cross section, location, size, and type of reinforcement, including special reinforcement, lifting inserts, and lifting devices necessary for handling and erection.
- 4) Structural calculations shall include analysis of lifting insert locations and special reinforcement required for handling of the precast units. Calculations shall be done by a structural engineer registered in New York State with his affixed seal and signature.
- 5) Fabricator's records:
Fabricator's records (laboratory reports, shipping reports, etc.) shall be referenced to
the piece identification number (PIC). Copies of these records shall be forwarded to the LIRR Engineering Department monthly.

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- 6) Lifting devices:
A complete set of lifting devices for each project location shall be provided to the Railroad. Lifting devices shall conform to devices approved during the shop drawing review. Eyebolts will not be approved or accepted by the LIRR as lifting devices for any lifting insert system.

CONSTRUCTION DETAILS

Fabrication:

Precast panels shall consist of precast units of monolithic concrete between structural supports and reinforced to suit specified loading. Maximum dead weight of panels shall not exceed 2.11 KN per square meter for 90 mm thick panels. In addition the panels shall be adequately reinforced to resist all handling stresses. Inserts shall be provided for utility support. A suitable finish shall be provided on top surface to receive concrete topping, where required or ordered.

Reinforcement for concrete panels shall be as required for loads hereinbefore specified. Positive and rigid spacing units shall be provided to properly maintain the reinforcement in position during the pouring of the concrete.

Curing of all precast concrete units shall be in accordance with the following provisions:

1. Curing of precast concrete units shall be accomplished by keeping the concrete damp for at least 7 days. The curing time shall be increased by 4 days for each decrement of 2.75 degrees below 20 degrees C. The units shall be entirely covered and fully cured under double-thickness of saturated burlap which shall be kept thoroughly saturated for the entire curing period.
2. Curing by high-pressure steam, steam vapor, or other accepted processes may be employed to accelerate the hardening of the cement and to reduce the time of curing; provided, however the compressive strength of the concrete is at least equal to that specified in paragraph 2 under Concrete in the Materials section.

Openings or holes in panel units for shear connectors, railing anchorage, drainage or attachment of suspended hangers or other items shall be made only in strict accordance with the manufacturer's recommendations.

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All precast concrete units shall be marked to identify the top side of the unit, the length, size and type of reinforcement and shall be identified for placement on the setting drawings.

Installation:

Precast panels shall be anchored and installed according to the manufacturer's recommendations and as approved by the Engineer. Placing shall be by experienced workmen in a manner to prevent excessive bending about axis. Panels shall be set to line with sides plumb. Damaged units will not be acceptable.

Panels shall be shimmed at their ends against the supporting steel girders to produce uniform nosing lines conforming to plan and profile called for by the contract drawings. After the resulting horizontal and vertical alignment has been approved by the Engineer, the Contractor shall grout the entire space between steel flange and panel, through the stud holes in the panel.

Grout for panels shall be a mixture of not less than 1 part cement to 3 parts fine sand. Joints shall be completely filled and excess grout shall be removed before it hardens.

Erection tolerance shall be shown on shop drawings and approved by the Engineer.

The provisions of §502-3.14 pertaining to sealing joints shall apply except for the modifications herein.

The contractor shall use silicone joint sealants. A 3/16" recess shall be provided.

Prior to sealing, backer rod shall be rolled into the joint in a manner that accurately sets the proper depth and does not rip, tear or puncture the rod surface. Premoulded joint filler shall be placed in the joint. Sealing shall only be performed when platform or ambient temperature are 5 degrees Celsius or above and rising. Sealing shall not be performed when moisture is present on the platform surface. To achieve the specified recess, sealant shall be either placed as such with self-leveling types or tooled with tooled types.

METHOD OF MEASUREMENT

Precast concrete panels will be measured per square meter incorporated in the completed work.

BASIS OF PAYMENT

Payment for precast concrete panels/cast in place concrete will be made at the Contract unit prices for the quantities determined as specified above and shall include the cost of all reinforcing steel, expansion joints, connecting materials, anchors, dowels, recessed channel concrete inserts, accesso-

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ries, joint connections, and cylinder tests for precast concrete panels/cast in place concrete, and test units not incorporated in the completed work.

The payment for protective non-slip membrane coating shall be included under the appropriate item.