

PRECAST CONCRETE PANEL GRADE CROSSING SURFACE

****From Berlin STP 2935(1)
Berlin NH STP 2938(1)
Berlin NH STP 2947(1)**

- xx. DESCRIPTION. This work shall consist of furnishing and installing a panelized precast concrete railroad grade crossing surface, including all hardware required to attach the panels at a rail-highway crossing, at the location indicated in the Plans, in accordance with the Contract Documents, and as directed by the Engineer.
- xx. GENERAL. This work includes furnishing and installing a new grade crossing surface consisting of precast concrete panels with elastomeric, non-conductive filler or boot along entire base and sides of rail and in the flangeway area for the full length of the crossing to insulate the rails from the concrete.
- xx. SUBMITTALS. The Contractor shall prepare and submit the following in accordance with the submittal requirements of Section 105 of the Standard Specifications:
- (a) Site specific work plan for work to be undertaken at each crossing, including construction staging, any proposed temporary paving or temporary detours, material storage sites, and compliance with the Maintenance of Traffic (MOT) Plan, if shown on the Plans.
 - (b) Fabrication Drawings showing details of crossing surface, and for other materials in related Sections and production quality control documentation.
 - (c) Documentation of approval from the Railroad to proceed with the work, including identification of any stipulations or requirements of the Railroad. Documentation shall include copies of any insurance certificates furnished to the Railroad.
 - (d) Procedures for inspection of track prior to placing in service for train operation.
- xx. MATERIALS. The precast concrete crossing panels to be furnished shall be an approved system cast by an approved manufacturer in accordance with the Contract Documents or as directed by the Engineer.

The Contractor shall provide and install lag-type shunt resistant precast concrete panels using a minimum of 6000 psi concrete and American Grade 72 reinforcement. Each panel shall have a 3 inch x 3 inch x ¼ inch angle with a 3 mil rust inhibitive coating.

Each panel shall be manufactured to meet HS20-44 loading in accordance with AASHTO *Standard Specifications for Highway Bridges*, with a 30% impact increment. Loadings shall be based on a single axel load of 32,000 lbs (16,000 lbs per side). Design calculations shall be certified by a Professional Engineer registered in the State of Vermont. Each panel shall have a non-skid surface and be protected from freeze/thaw cycles, deicers, and other contaminants using 4 to 6 percent air entrainment.

Each gauge panel shall be 50½ inches wide x 108 inches long manufactured to the correct height for the rail size specified. Gauge panels shall have a 3 inch gap at each end of the frame with a non-conductive polyethylene shield. The field panels shall be 26¼ inches wide x 108 inches long. They shall also have a deflector shield at each end. The dimensional tolerances for each panel shall be ±¼ inch.

The crossing panels shall be manufactured to be compatible with all rail fastening hardware and rail anchors.

The field and gauge panels shall have recessed timber screw holes to protect the timber screw heads from vehicular wheel impact. Each panel shall have two (2) galvanized recessed lifting eyes with a minimum of 4000 lbs lifting capacity.

A 1/8 inch elastomeric bearing pad shall be installed between the top of the timber cross tie and bottom of the concrete panels.

The manufacturer shall supply Fabrication Drawings detailing crosstie spacing and placing prior to installation. The manufacturer shall submit Fabrication Drawings within fourteen (14) working days after onsite field measurements are taken by the manufacturer. The Fabrication Drawings shall include a full cross section view of the panels on crossties, a plan view of panels in the track, and a detail of the flangeways. The Fabrication Drawings shall also indicate data on panel weights, loading specifications, lifting eye specifications, and any other applicable information.

The manufacturer shall verify that they have been actively involved in the manufacture of precast concrete grade crossing panels for a minimum of seven (7) years. The manufacturer shall provide the Owner and Engineer with a one (1) year manufacturer's limited warranty from date of installation.

Attached elastomeric flangeway filler shall be required for the grade crossing. The attached flangeway must be capable of being removed and replaced if damaged. The field side flangeway shall be 2½ inches ±¼ inch wide from the ball of rail to the panel. The filler shall be flush and level with the top of panel. The gauge flangeway filler shall be 2¼ inches to 3 inches maximum from the ball of rail to concrete panel in standard 56½ inch gauge track. It shall be able to accommodate rail anchors or clips.

xx. CONSTRUCTION REQUIREMENTS. Installation shall meet the following requirements:

- (a) The crossing shall be installed in accordance with AREMA, VTrans Specifications, and the Manual on Uniform Traffic Control Devices (MUTCD) Part VIII - Traffic Control Systems for Rail-Highway Grade Crossings.
- (b) Installation at highway grade crossings shall comply with the approved project traffic control plan and be performed as directed by the Engineer. The Contractor shall be responsible for providing flaggers and uniformed traffic officers in accordance with the Contract Documents and as necessary to perform the work in a safe manner or as directed by the Engineer.

- (c) Track work at highway grade crossings shall be closely coordinated with signal system installation and highway grading, drainage, and paving work, so that paving adjacent to tracks can be accomplished in a single operation with highway paving. Where required, conduits for signal wires and cables, and drainage pipes shall be installed within the track excavation as shown on the Plans.
 - (d) Crossing surface, widths, lengths, and locations shall be as shown on the Plans.
 - (e) Where necessary to open crossings to highway traffic before final panel installation and paving is completed, temporary panels and/or paving may be required. Ensure that temporary panels and pavement surfaces are properly maintained to avoid adverse highway traffic loads to the track structure. Completely remove temporary paving and restore surfaces before final paving.
 - (f) Grading shall progress in such a way as to avoid ponding of water. The Contractor shall construct any temporary ditching which may be needed.
 - (g) The subgrade surface shall be prepared to a relatively smooth surface, properly graded, and shall be free of obstructions, depressions, water, debris, and soft or low density pockets of material. Soft zones below the final subgrade shall be removed and replaced with compacted sand borrow. All stones larger than 6 inches shall be removed from the subgrade area.
 - (h) The subgrade surface shall be finished to within 0.1 foot of the staked elevations and shall not have depressions which pond water.
 - (i) Thread CWR onto ties in a manner that avoids damage to ties and lowers rail into rail seat area of tie or tie plate. Lay opposite CWR strings in manner that will result in a minimum 10 foot stagger of field welds, and that does not place a field weld within 10 feet of the edge of a highway crossing, or within 25 feet of a transition between types of track construction.
- xx. METHOD OF MEASUREMENT. The quantity of Special Provision (Precast Concrete Panel Grade Crossing Surface) at the location specified to be measured for payment will be on a lump sum basis for each crossing installed in the complete and accepted work.
- xx. BASIS OF PAYMENT. The accepted quantity of Special Provision (Precast Concrete Panel Grade Crossing Surface) at the location specified will be paid for at the Contract lump sum price. Payment will be full compensation for furnishing, transporting, handling, and installing the materials specified, including precast concrete panels with elastomeric flangeway filler, elastomeric bearing pads, and other track material; performing general cleanup and removal of materials from the site upon completion of the work; and for furnishing all labor, tools, equipment, and incidentals to complete the work.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
900.645 Special Provision (Precast Concrete Panel Grade Crossing Surface)(AARDOT 851-286U)	Lump Sum