

**ITEM 10606.4771 M - STEEL BACKED TIMBER GUIDE RAIL WITH TIMBER POSTS
AND BLOCK-OUTS**

**ITEM 10606.4772 M - APPROACH ANCHORAGE UNITS FOR STEEL BACKED
TIMBER GUIDE RAIL WITH TIMBER POSTS AND BLOCK-OUTS**

**ITEM 10606.4774 M - STEEL BACKED TIMBER GUIDE RAIL WITH TIMBER POSTS AND
BLOCK-OUTS CONNECTION TO WALLS**

DESCRIPTION

The Contractor shall furnish and install steel backed timber guide rail, anchorage units, and connections to walls at the locations shown on the plans and where directed by the Engineer.

MATERIALS

General.

1. *Steel Rails and Hardware.* Steel rails, steel back-up plates, splice plates, and all accessory components and hardware shall be fabricated as shown on the plans. Bolt holes, as necessary, may be enlarged or slotted to permit expansion and contraction and to facilitate erection. The steel rails and steel plates shall be straight and of uniform section.

The steel rails and splice plates, shall meet the requirements of ASTM A588 M. Any portion of the steel which is to be buried in soil shall be galvanized. The galvanizing shall extend a minimum of 150 mm above the ground surface.

Bolts, nuts, washers, and lag screws shall conform to ASTM A325 M and shall be galvanized. All other fastener hardware shall conform to ASTM A325 M, and shall be galvanized.

Certified copies of the test results conducted by the manufacturer of the base metal for the physical and chemical requirements shall be furnished for all steel in the manner and form requested by the Department.

2. *Timber Rail, Block-outs, and Posts.* The timber rail, block-outs, and posts shall conform to AASHTO M168. The timber rail shall be fabricated from dry, well seasoned, and dressed rough saw Douglas Fir, Southern Pine, or other species having a stress grade of at least 10 MPa. Treat the rail and block-out elements with CCA, ACZA, or ACA preservative treatment conforming to AWPAC14 except the minimum retention shall be 9.6 kg/m³. A timber post that has a through check, shake, or end split in the same plane as, or a plane parallel to the bolt hole and extending from the top of the post to within 75 mm of the bolt hole will be rejected.
3. *Basis of Acceptance.* The Contractor shall certify that all wood rails, block-outs, and posts were fabricated from timber and lumber which was measured and inspected by an inspector of the appropriate inspection bureau. The lumber inspectors certificates for the timber and lumber used to fabricate the rails, block-outs, and posts shall also be furnished to the Engineer. A certificate of inspection from a recognized wood inspection service shall be furnished to the Engineer certifying that the preservative treatment of wood rails, block-outs, and posts conforms to the requirements of this specification .

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4. *Concrete.* Concrete shall meet the requirements specified for Class A Concrete in Section 501, "Portland Cement Concrete - General." If the concrete is precast, the concrete shall meet the requirements of Class A Concrete in Section 501, "Portland Cement Concrete General," except that the requirements for inspection facilities, automated batching controls and recordation do not apply. The batching, mixing, and curing methods and the inspection facilities shall meet the approval of the Department or its representative. The Contractor may submit, for approval by Deputy Chief Engineer, Technical Services, a mix at least equivalent to the specified Class A Concrete.
5. *Welding.* Fabrication welding shall comply with the subsection "Welding" in the New York State Steel Construction Manual, except that radiographic inspection will not be required.
6. *Galvanizing.* Galvanizing shall conform to Subsection 719-01. Galvanizing shall be Type 1, except for hardware which shall be Type 2.
7. *Preparation and Painting of Steel Components.* All materials used in the preparation and painting of galvanized components shall be as specified in the special note "Preparation and Painting of Steel Surfaces" found elsewhere in the proposal. The color of the topcoat shall be such that a properly prepared color chip shall be a reasonable visual match to Federal Color Standard No. 595, Color 20059. Viewing shall be done under North Standard Daylight.

Anchorage Units. Back-up plates shall be galvanized and shall conform to ASTM A36 M. Reinforcement for the anchor shall conform to Subsection 709-01, "Bar Reinforcement, Grade 420."

Connections to Walls. Galvanized steel pipes shall conform to ASTM A53. Structural steel tubes shall conform to ASTM A847.

CONSTRUCTION DETAILS

General.

All component parts shall be erected in the position and manner indicated on the plans and in a manner approved by the Engineer.

Wood posts shall be placed by excavating or by using vibratory driving or impact driving equipment approved by the Engineer. Post driving will be permitted only if alignment and grade tolerances are met and providing no damage is done to the posts during installation. Damaged or misaligned posts shall be removed and redriven or replaced by the Contractor as directed by the Engineer. To facilitate driving, the base of the wood posts may be tapered.

Post and anchor excavations shall be backfilled, and backfilled material compacted in accordance with Subsection 203-3.15 "Fill and Backfill at Structures, Culverts, Pipes, Conduits and Direct Burial Cables."

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All posts shall be aligned to a tolerance of 6 mm for plumb and grade line.

The timber rails shall be field cut to produce a fit at the joints as indicated on the plans. Treat field cuts with 2 coats of chromated copper arsenic.

In order to give the galvanized components a rustic appearance, all galvanized surfaces exposed to traffic shall be prepared and painted in accordance with the special note "Preparation and Painting of Steel Surfaces" found elsewhere in the proposal.

At the Contractor's option, the galvanized parts may be painted before installation and any damage to the exposed painted surfaces repaired after erection in accordance with the special note "Preparation and Painting of Steel Surfaces."

Upon completion of the installation of the guide rail components, the Contractor shall restore the area to its original state. This may require the Contractor to repave, resod, reseed and mulch all areas disturbed during the guide rail installation, including the areas adjacent to the anchor unit installation.

Connection to Walls.

Holes for the thru bolts shall be carefully drilled. Any damage caused to the wall shall be repaired by the Contractor to the satisfaction of the Engineer at no cost to the State.

After erection, any damage to any painted surfaces shall be repaired in accordance with the special note "Preparation and Painting of Steel Surfaces."

METHOD OF MEASUREMENT

Timber.

The guide rail will be measured by the number of meters, measured along the axis of the guide rail and between the limits shown on the plans.

Anchorage Units.

Anchorage units will be measured by the number furnished and installed.

Connections to Walls.

Connections to walls will be measured by the number furnished and installed.

BASIS OF PAYMENT

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The unit price bid for each item shall include the cost of all labor, materials, and equipment necessary to complete the work, including paint, concrete, reinforcement, excavation, backfill, and removal and replacement of damaged or misaligned posts.

Payment for Steel Backed Timber Guide Rail with Timber Posts and Block-Outs shall include the unit price bid and the measured quantity multiplied by the payment factor for post spacing listed in the following table:

PAYMENT FACTORS FOR STEEL BACKED TIMBER GUIDE RAIL

<u>Post Spacing Center to Center</u>	<u>Payment Factor</u>
3048 mm	1.0
1524 mm	1.8
762 mm	2.5

Unless otherwise indicated on the plans, the cost of restoring any disturbed areas, including paving, sodding, seeding, and mulching, shall be included in the unit price bid.

Progress payments will be made for linear meter items for Steel Backed Timber Guide Rail with Timber Posts and Block-Outs when the guide rail is erected in the position and manner indicated on the plans and in a manner approved by the Engineer, exclusive of restoration of disturbed areas and final alignment. Payment will be made, at the unit price bid, for 90% of the quantity erected. The balance of the quantity erected will be paid for upon proper repair of the disturbed areas and alignment of the guide rail to the specified tolerance