

## **ITEM 04594.10 M - GLULAM TIMBER BRIDGE DECK**

**DESCRIPTION** : The work shall consist of fabricating, furnishing, and installing a preservative treated, glue laminated, timber bridge deck, including all connections, and wearing surface, in the manner and at the locations shown on the contract plans.

Glulam - A generic term used herein to refer to an engineered product of a timber laminating plant consisting of assemblies of suitably selected and prepared wood laminations bonded together with adhesives.

Timber Bridge Deck - Glulam panels laid from stringer to stringer, perpendicular to the centerline of the structure.

Panel - Individual glulam component.

Panel Width - Dimension of a panel measured perpendicular to the centerline of bearing.

Panel Length - Dimension of a panel measured perpendicular to the centerline of structure.

Panel Thickness - Panel depth or thickness, in actual fabricated dimension, as shown on the contract documents.

Wearing Surface - Two strips of, 13 mm thick, 610 mm wide exterior grade plywood extending the length of the structure, to provide a wheel path for traffic, located as shown in the contract plans.

### **MATERIALS :**

1. Timber for glulam panels shall conform to the requirements of ANSI/ AITC (American Institute of Timber Construction) A190.1, Structural Glued Laminated Timber, latest edition. See contract documents for species, combination number and thickness. Appearance grade shall be industrial.
2. Steel bolts, nuts, and washers shall conform to ASTM A307 and washers shall be plain hardened. All bolts, nuts and washers shall be hot dip galvanized in accordance with Section 719-01 Type 1 of the NYSDOT Standard Specifications.
3. Adhesive for glulam fabrication shall be a wet use adhesive conforming to the requirements of ASTM D2559.
4. Dry blotter material shall be as specified in the contract documents.

## **ITEM 04594.10 M - GLULAM TIMBER BRIDGE DECK**

5. All fabricated panels shall be pressure treated using the empty cell process with creosote conforming to AWWA Standard P1, with the exception that xylene insolubles shall be limited to 0.5% for creosote in use ("Clean Creosote"). The treatment shall be in accordance with AWWA Standard C28 and, the net retention level shall be 192 kg/m<sup>3</sup>. Panels shall be free of excess preservative on the wood surface. The treating process shall include an expansion bath, steaming, and or dripping to ensure that preservative will not bleed. The minimum daily air temperature during treatment and post-conditioning should be 24°C.
6. Shop drawings shall be required and shall meet the requirements of the "New York State Steel Construction Manual", current edition. Any requirements not applicable to glulam timber fabrication may be disregarded.
7. Glulam fabrication, and quality control shall be performed in accordance with the requirements of the latest edition of ANSI/ AITC A190.1. A certificate of material conformance shall be submitted to the E.I.C.
8. The contractor shall be responsible for the acceptability of all fabricated products. Materials and fabricated products rejected by the inspector shall be repaired or replaced, to the satisfaction of the engineer, at the contractor's expense.
9. Inspection shall be as provided for by the provisions of The New York State Department of Transportation Standard Specifications, Metric Units, 1/2/95 edition, Section 594-2.04.
10. Shipping - The inspector's stamp of approval shall constitute acceptance for shipping. All preservative treated timber shall be wrapped for shipping, in accordance with good industry practice, to prevent damage.

### **CONSTRUCTION DETAILS:**

Field Inspection - All installation work at the project site shall be subject to the engineer's inspection. Materials and workmanship not required to be shop inspected will be field inspected by the engineer. Workmanship is defined as: dimensional accuracy, surface finish, camber and all other physical or mechanical properties which might be affected by fabrication and preservative procedures.

Certified copies of all tests conducted on the material shall be furnished to the engineer. Certification of the results of chemical and physical tests will be interpreted to mean that the product has been tested as required, results are accurate, and all specification requirements have been met.

Handling and Storage - Handling shall be performed with equipment that will not damage the material handled. No material shall be dropped, thrown or dragged upon the ground. All

## **ITEM 04594.10 M - GLULAM TIMBER BRIDGE DECK**

material shall be lifted, or rolled on dollies, or rollers, as practical. Lifting equipment shall employ fabric, or plastic belts, or other slings, which will not mar or dent the panels.

During storage, material shall be placed well off the ground on blocks and shall be done in such a manner that dimensional changes or warping will not occur. Individual members shall be separated so that air will circulate around their entire perimeters. Overnight and under the threat of precipitation, material shall be covered with a moisture-proof covering acceptable to the engineer. A ground cover of 2 layers of 150 micrometer poly sheets, with 0.33 m high beamed edges, shall be used under the stored timber to contain runoff.

After preservative treatment, glulam panels may continue to exude preservative and solvent volatiles. This may happen if there is a large upward temperature differential between time of treatment and time of field assembly. If so, storage time shall be allowed for excess material within the wood to evaporate. Deck material shall be stored where air can circulate freely around all surfaces. Dry blotter material shall be applied to absorb excess preservative, as directed by the Engineer. After the excess preservative has been absorbed to the satisfaction of the engineer, the blotter shall be removed and handled in accordance with the appropriate contract items. The contractor shall follow all rules and regulations of the United States Environmental Protection Agency, and/ or New York State Department of Environmental Conservation regarding creosote use.

Installation - An Installation Procedure Plan shall be developed by the contractor and be submitted to the engineer for approval. Shop drawing and plan submittal and approval procedures shall be in accordance with the requirements of the "New York State Steel Construction Manual". Requirements which only pertain to structural steel shall be ignored.

No installation work shall commence until the contractor has obtained written approval of the Installation Procedure Plan. Such approval shall not relieve the contractor of the responsibility for the safety of the methods and equipment selected, or for performing the work in accordance with the contract documents.

The engineer will inspect the decking components immediately prior to installation. Evidence of any of the following defects will be cause for non inclusion of the defective component in the work:

- a. Dimensional change
- b. Warping in any direction
- c. Delamination
- d. Cracking
- e. Insect attack
- f. Any condition that the engineer determines may prevent the component from performing as intended by the contract documents.

## **ITEM 04594.10 M - GLULAM TIMBER BRIDGE DECK**

Installation procedures shall be performed such that no distress to components shall occur prior to the component being properly in place and connected. A component that is deformed or damaged during installation shall be subject to the engineer's determination as to its acceptability and inclusion the work. Any repair or replacement work due to installation damage shall also be done at the contractor's expense.

The engineer will make the final determination on all components to be used. Any repair or replacement work shall be done at the contractor's expense.

### **METHOD OF MEASUREMENT:**

The decking will not be field measured, except to provide for progress payments. Payment will be made at the unit price bid per square meter, for the number of square meters installed, as shown on the contract plans. Progress payments will not exceed the total price bid.

### **BASIS OF PAYMENT:**

The unit price bid per square meter shall include the cost of all labor, tools, materials (including fabrication, preservative treatment, and plywood wearing strip), and equipment necessary to complete this item in accordance with the contract documents. Partial payment will be made in accordance with the terms of NYSDOT Standard Specifications subsection 109-04.