



AMERICAN INSTITUTE OF TIMBER CONSTRUCTION

7012 South Revere Parkway, Suite 140 · Centennial, Colorado 80112 · Telephone 303-792-9559

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RECOMMENDED PRACTICE FOR PROTECTION OF STRUCTURAL GLUED LAMINATED TIMBER DURING TRANSIT, STORAGE AND ERECTION

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1. INTRODUCTION

- 1.1. Factory-applied protection for glued laminated timber structural members include end sealers, surface sealers, and wrapping. These materials offer a degree of protection, but they do not necessarily preclude damage resulting from negligence and other factors beyond the control of the laminator during shipment, handling, storage and placement.
- 1.2. The protection specified should be commensurate with the end use and final finish of the member. It may also vary with the method of shipment and with exposure to climatic and other conditions before construction is completed.
- 1.3. These recommendations are for the guidance of the designer to ensure that the product will have protection consistent with the intended use of the member at appropriate cost. The designer should specify the desired protection to establish a clear understanding between the buyer and the seller. *These recommendations contain alternatives from which the specifier must make selections to suit the particular job.*
- 1.4. Experience has shown that the types of protection , outlined in sections 2, 3, 4, and 5, have a sufficient range to fulfill normal requirements. The designer should select the types of protection best suited to the particular job and include them in the project specifications.

2. END SEALERS

- 2.1. End sealers retard moisture transmission and minimize end checking. Their use is recommended when end checking is of primary consideration due to aesthetic requirements.

2.2. Recommended Specifications.

A colorless sealer shall be applied to ends of members after end trimming for ends which will be exposed to view in the completed structure.

3. SURFACE SEALERS

3.1. Surface sealers increase resistance to soiling, control grain raising, minimize checking, and serve as a moisture retardant. Surface sealers fall into the two following classifications:

3.1.1. Translucent Penetrating Sealers. Translucent penetrating sealers have low solids content. They provide limited protection and are suitable for use when final finish requires staining.

3.1.1.1. Recommended Specifications: *A translucent penetrating sealer shall be applied to all surfaces prior to shipment.*

3.1.2. Primer and Non-Penetrating Sealer Coats. Primer and non-penetrating sealer coats have higher solids content than penetrating sealers and provide maximum protection by sealing the surface of the wood. Primer and non-penetrating sealer coats should not be specified when final finish requires a natural or stained finish.

3.1.2.1. Recommended Specifications: *A non-penetrating sealer (or primer) coat shall be applied to all surfaces prior to shipment.*

4. WRAPPING

4.1. Protection During Transit. Wrapping the member with water-resistant covering for shipment provides additional protection from moisture, soiling and damage in handling. Wrapping is recommended when appearance is of primary importance and additional protection is desired. Bundle or load wrapping may be specified in lieu of individual wrapping when further utilization of wrap after delivery is not desired. Time of removal of factory wrap is optional, but, it must be emphasized that factory-applied wrapping provides additional protection from damage in handling and in transit only. If further utilization of the wrap is desired for protection after shipment, the members should be inspected and provided with additional protection as necessary.

4.2. Protection During Construction. Individually wrapped members may have their wrapping left in place until the members are enclosed within the building. If wrapping must be removed at certain connection points during erection, it should be replaced after the connection is made to prevent sun bleaching or water staining of the member. In order to avoid uneven discoloration, whenever a portion of a member's wrapping must be removed, all wrapping from that member should be removed. Individual wrapping should be slit or punctured on the lowest side to prevent moisture accumulation inside the wrapping.

4.3. Recommended Specifications:

4.3.1. Individual Wrapping.

4.3.1.1. *Members shall be individually wrapped, covering all surfaces, with water-resistant wrapping.*

4.3.1.2. *Wrapping shall be secured to the member by staples, tape or other suitable fastenings that do not damage surfaces that will be exposed to view in the structure.*

4.3.1.3. *Seams of wrapping shall inhibit the passage of moisture.*

4.3.1.4. *Wrapping left in place on individually-wrapped members during job-site storage and construction shall be slit or punctured on the lowest side to prevent moisture accumulation inside the wrapping.*

4.3.2. Bundle Wrapping:

4.3.2.1. *Members shall be bundle wrapped, totally enclosing the members with water-resistant wrapping.*

- 4.3.2.2. *Convenience in handling shall determine the size of the bundle.*
- 4.3.2.3. *Wrapping shall be secured to the bundle by staples, tape or other suitable fastenings that do not damage member surfaces that will be exposed to view in the structure.*
- 4.3.2.4. *Seams of wrapping shall inhibit the passage of moisture.*
- 4.3.2.5. *Wrapping left in place on bundle-wrapped members during job-site storage and construction shall be slit or punctured on the lowest side to prevent moisture accumulation inside the wrapping.*
- 4.3.3. Load Wrapping:
 - 4.3.3.1. *Members shall be load-wrapped, enclosing the top, sides and ends, with water-resistant wrapping.*
 - 4.3.3.2. *Wrapping shall extend to the bottom of the members included in the load.*
 - 4.3.3.3. *Wrapping shall be secured to the load by staples, tape or other suitable fastenings that do not damage member surfaces that will be exposed to view in the structure.*

5. PROTECTION FOR PRESERVATIVE TREATED MEMBERS

- 5.1. Preservative treatment of glued laminated timber can be divided into three general categories:
 - (a) Treatments of members after bonding, such as pentachlorophenol (penta) in heavy oil;
 - (b) Treatments of members after bonding such as penta in light solvent
 - (c) Treatments of laminations prior to bonding with penta in solvent or with waterborne preservatives .
- 5.1.1. Protection of glued laminated members receiving heavy treatments is generally limited to end sealers. Surface sealers may be recommended if the members are to be stored in an arid climate prior to treatment. If protection during transit and storage is desired, load wrapping should be satisfactory.
- 5.1.2. Protection of glued laminated members receiving light treatments is more critical since the members are generally intended for use where appearance is important. End sealers should be applied at the time the end cuts are made *and* following treatment to minimize end checking. Surface sealers may be recommended if the members are to be stored in an arid climate prior to treatment. Surface sealers may also be applied to the members after treatment for the same reasons they are applied to untreated members.
- 5.1.3. Protection of glued laminated members made from pre-treated laminations is generally the same as for untreated members.

6. SHIPPING AND HANDLING

- 6.1. Laminated timbers must be handled with care to avoid causing aesthetic or structural damage. Damage can be caused by dragging or dropping members, allowing members to bend excessively or bounce, or using inappropriate handling equipment.
- 6.2. If a member is dropped or otherwise damaged during shipping or handling, the details of the incident should be recorded and the member should be inspected and evaluated by a qualified structural engineer.
- 6.3. If significant damage to a member is noted by the inspecting engineer, AITC quality marks stamped on the member should be removed. The determination of suitability for further use of the member is solely the decision of a qualified structural engineer and subject to acceptance by the engineer of record and governing code agencies.
- 6.4. Damage to members due to improper handling will generally void any warranty offered by the manufacturer.

6.5. Recommended Specifications:

- 6.5.1. *Laminated members shall not be dragged or dropped. Care shall be taken in handling to prevent damage to finished surface. Cable slings or chokers shall not be used to handle laminated materials unless adequate blocking is provided between the cable and the wood member to prevent surface damage . Padded or non-marring slings shall be used. Web belting-type slings are recommended. Protection cleats or blocking shall be applied at pickup points to protect corners.*
- 6.5.2. *Spreader bars of suitable length shall be used when lifting long members to reduce the probability of damage. The method of erection and handling shall not overstress the member.*
- 6.5.3. *Members shall be lifted on edge whenever possible.*
- 6.5.4. *Care shall be taken to minimize impact forces during lifting.*

7. JOB SITE STORAGE

7.1. Proper job site storage is important when appearance, checking considerations, raised grain and soiling are of important. Though job site storage is generally *not* the responsibility of the manufacturer, these recommendations are included as a guide to the specifier and contractor to minimize appearance and other damage.

7.2. Recommended Specifications:

- 7.2.1. *Laminated material stored at the job site shall be treated with care. A level area is required to avoid warping. Members shall be supported with blocking so spaced as to provide uniform and adequate support. If covered storage is not available, the material shall be blocked well off the ground at a well drained location. Stored members shall be separated with stickers arranged vertically over the supports so that air can circulate around all four sides of each member. The top and all sides shall be covered with moisture-resistant covering. If a paved surface is unavailable, the ground under the material shall be covered with polyethylene film. Clear polyethylene film shall not be used. Individual wrappings shall be slit full length or punctured on the lower side to permit drainage of water.*

<p>NOTE: A gradual seasoning period at moderate temperature should be provided to acclimate members to the final environment. Heat should not be fully turned on as soon as the structure is enclosed to avoid excessive checking due to rapid lowering of the relative humidity of the building.</p>
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