

## **Section 7.1**

# **INSPECTION OF TIMBER PRODUCTS**

### **7.1.1 PURPOSE**

To provide the Department of Transportation with a guide to the standardization of the inspection and acceptance of timber products. It is also intended to ensure that timber products are produced and accepted in compliance with the plans, standard index, approved drawings and all applicable contract specifications, including Standard Specifications for Road and Bridge Construction.

### **7.1.2 AUTHORITY**

*Sections 334.048 (2), (4), (10), (a), Florida Statutes, Powers and Duties of the Department. Florida Department of Transportation Standard Specification for Road and Bridge Construction, Section 6, Control of Materials and Division III, Materials.*

### **7.1.3 SCOPE**

This procedure establishes the Department's requirements and activities for the inspection of timber products. These requirements and activities pertain to the inspections necessary to substantiate materials conformance to the contract requirements. The Department's inspection program will be designed with the objective of assuring that the Producer's Quality Control Plan is providing finished products that meet the specified quality.

### **7.1.4 GENERAL INFORMATION**

Timber products include but are not limited to: Guardrail posts and blocks, fence posts, and fender systems and pilings for marine applications.

References to American Wood Preserver's Association (AWPA), Southern Pine Inspection Bureau (SPIB), or ASTM designations are to the latest publication or as stated in the text.

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## **7.1.5 DEFINITIONS**

- (A) Order: The amount of materials produced by one plant for one job.
- (B) Producer/treater: The firm responsible for the appropriate treatment of timber products.
- (C) Assay: Chemical tests to measure the retention and composition of preservatives used in the treatment of timber.

## **7.1.6 RESPONSIBILITIES**

### **7.1.6.1 District Materials Office**

Personnel from the District Materials Office shall, upon request, inspect any prospective production/treatment facility to confirm that facility's potential for supplying timber products to the Florida Department of Transportation (FDOT) is in compliance with Standard Specifications numbers 536, 951, 952, 953, 954, and/or 955. Such request must be made a minimum of two (2) weeks prior to the date requested for inspection. Upon completion of this inspection, the District Materials Engineer shall make recommendations to the State Materials Engineer regarding approval status based on the results of the inspection. For out-of-state inspections, commercial inspectors may be utilized at the discretion of the District Materials Engineer. During the facility approval process the District Materials Engineer will approve a producer/treater quality control plan and producer markings based on the Guidelines for Quality Control Plan outlined in this section. It shall be the responsibility of the District Materials Engineer to investigate the facility and its quality control procedures regarding areas of non-compliance and/or unacceptable materials. In any case, the District Materials Office shall reserve the right to inspect the facility and/or its quality control procedures at any time. The District Materials Office will support, educate, and monitor field personnel regarding jobsite acceptance.

### **7.1.6.2 State Materials Office**

Personnel from the State Materials Office will provide independent monitoring of facilities producing timber products, monitor jobsites for any substandard materials being produced, and provide training to District Personnel as needed. The State Materials Office shall be responsible for issuing notice of approval (or disapproval) to all facilities inspected by District Materials personnel or their representative. A current list of approved facilities and a pictorial record of approved producer markings will be maintained at the State

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Materials Office. Information regarding specification changes and inspection procedures shall be provided to the District Materials Office by the State Materials Office. The State Materials Engineer and staff will coordinate with the producer/treater, District Materials personnel, and Construction personnel to resolve problems regarding the manufacturer of timber products. The State Materials Office will pre-approve all commercial organizations performing out-of-state inspections for the District or Quality Control functions for a producer/treater.

#### 7.1.6.3 District Construction Office

The Project Engineer accepts only timber products meeting the acceptance criteria as described in Section 7.1.8. The Project Engineer rejects any product that has incurred damage. Timber related issues that cannot be resolved at the construction site will be referred to the District Construction Office. For materials related issues, the District Construction Office may consult with District Materials Office. Any material that doesn't meet specifications requires the approval of the State Construction Office.

### 7.1.7 GUIDELINES FOR QUALITY CONTROL (QC) PLAN

This section outlines guidelines for a producer/treater Quality Control Plan. The plan shall describe the plant location, personnel and equipment. An individual shall be identified as responsible for the quality control of the production of timber products. This individual can be an employee of the producer/treater or an inspector from an approved commercial testing agency. The minimum qualification for this individual shall be two years experience in grading and treating timber products.

The QC Plan shall describe how each individual timber product is produced, treated and inspected. The inspection guidelines, shown in this Section as questions shall be employed as the basis for the quality control plan. These guidelines shall also be used when initial and periodic inspections are conducted by the District Materials Office or their representative.

The QC Plan shall also indicate the type of marking to be used on timber products shipped to FDOT. The mark shall be unique and peculiar to that specific facility and quality control inspector. (A hammer mark will suffice this requirement).

#### 7.1.7.1 Inspection Guidelines for Timber Fence Posts and braces

- (A) 954-1: Are the materials of Southern Pine?

- (B) 954-2: Are the posts:
- (1) All round or square for each individual job?
  - (2) Cut from sound and solid trees and free of unsound knots?
  - (3) Cut sufficiently above the ground swell?
  - (4) Are the butts sawed square?
  - (5) Are the tops cut neatly and at right angles to the vertical axis of the posts?
- (C) 954-3: Are the knots:
- Sound and measure no greater than one third the diameter of the piece at the point where it occurs?
- (D) 954-3: Are the posts:
- (1) Free of decayed wood and rot?
  - (2) Free of red heart?
  - (3) Free of ring shakes and season checks which penetrate at any point more than one-fourth the diameter of the piece or greater than 6 mm (1/4 in.) wide?
- (E) 954-4: Are posts peeled their entire length with remaining inner bark not more than 13 mm (1/2 in.) wide or 76 mm (3 in.) in length?
- (F) 954-5: Is the straightness of the posts such that for any 2.4 m (8 ft.) post section, the central axis does not fall out more than 51 mm (2 in.)?
- (G) 954-6: Are dimensions of:
- (1) Line posts 2.4 m (-25 mm + 51 mm), (8 ft. (-1 in. + 2 in.)) or as specified?
  - (2) Corner posts 2.6 m (-25 mm + 51 mm), (8 ft. 6 in. (-1 in. + 2 in.)) or as specified?

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- (3) Braces as required by plans?
  - (H) 954-6.2: Are cross sections of:
    - (1) Round line posts min. 102 mm (4 in.) diameter or as specified?
    - (2) Round braces, corner and pull posts min. 127 mm (5 in.) diameter or as specified?
    - (3) Square line posts nominal 102 x 102 mm (4 x 4 in.) or as specified?
    - (4) Square braces, corner and pull posts nominal 127 x 127 mm (5 x 5 in.) or as specified?

#### 7.1.7.2 Inspection Guidelines For Single And Dual Treatment Pilings

- (A) 953-1: Is the wood sound and solid?
- (B) 953-1: If Southern Pine, does the piling have at least 30% Summerwood?
- (C) 953-1: Are piles cut above the ground swell?
- (D) 953-1: Are piles within  $\pm 152$  mm ( $\pm 6$  in.) of specified length?
- (E) 953-2: Does the butt measure a minimum of 305 mm (12 in.) in diameter at 914 mm (3 ft.) from the end?
- (F) 953-2: Is the butt less than 508 mm (20 in.) diameter?
- (G) 953-2: For piling up to 15.2 m (50 ft.), are tips minimum 203 mm (8 in.) (or as required by plans)?
- (H) 952-2: For piling up in excess of 15.2 m (50 ft.), is the tip reduction less than 25 mm (1 in.) for each 3.0 m (10 ft.) over 15.2 m (50 ft.) up to 21.3 m (70 ft.) or as required by plans)?
- (I) 953-3: Is the vertical axis of the piling on center within 1% of the length of the pile?
- (J) 953-3: Are kinks less than 25 mm (1 in.) in 1.5 m (5 ft.)?
- (K) 953-4: Are all knots trimmed close?

- (L) ASTM D-25, Are unsound knots no larger than one half the permitted size of a sound knot and penetration not more than 38 mm (1-1/2 in.)?
- (M) 953-5: Is the diameter of sound knots not greater than one third the diameter of the pile at the point of occurrence?
- (N) 953-5: Are defects or injuries or combination of same no greater than the maximum allowable knot?
- (O) 953-6: Are timber sheet piles sawed square and free of worm holes, loose knots, wind shakes, decay or unsound portions and other strength reducing defects?
- (P) 953-5: Are turpentine single cuts less than one half the circumference of the pile and is the length of the cut no more than 15% of the length of the pile?
- (Q) 955-8: Was each pile appropriately branded approximately 1.8 m (6 ft.) from the butt?

#### 7.1.7.3 Inspection Guidelines For Guardrail Posts And Block (pre-treatment)

- (A) Is the material of Southern Yellow Pine
- (B) Are the following SPIB requirements for No. 1 Timbers met?
  - (1) Decay - in knots only
  - (2) Slope of Grain - 25 mm (1 in) in 279 mm, (11 in.)
  - (3) Holes - medium if well scattered
  - (4) Knots - not exceeding table values shown in SPIB
  - (5) Manufacture - Standard E (see paragraph 722(e))
  - (6) Shakes, checks, splits - splits not longer than the thickness of piece;
  - (7) Shakes and surface checks not deeper than 1/3 thickness if not dry and 3/8 thickness if dry
  - (8) Skips - hit or miss dressing
  - (9) Wane - to occupy not more than 1/6 width of face and 1/3 length

- (10) Warp - very light (see paragraph 752)
- (C) Standard Index No. 400 - sheets 11 and 12. Is the bolt hole located on the central axis 178 mm (7 in.) from the top +or- 6.4 mm (1/4 in.)?
- (D) Article 536-2.2.2, 536-2.4: Are posts and blocks within specified dimensions (posts -152 x 203 x 1981 +or- 25 mm (6 in. x 8 in. x 6.5 ft. +or- 1 in.) length, blocks - 152 x 203 x 356 +or- 6.4 mm (6 in. x 8 in. x 14 in. +or- 1/4 in.) length?
- 7.1.7.4 Inspection Guidelines For Structural And Specification Grade Timber And Lumber

Does the material meet the appropriate requirements of SPIB, i.e., knots, checks, splits, waness, slope of grain, shakes, and decay? (Refer to appropriate grading table.)

### **7.1.8 ACCEPTANCE CRITERIA**

Acceptance of timber products shall be based on producer's/treater's certification that the product meets the requirements of the appropriate specification and on the placement of the producer's/treater's identification mark on every item delivered to the job site. Each order/shipment to the job site must be accompanied with a notarized certification indicating compliance to the appropriate specifications. The certification shall include the project/order number, charge numbers, and assay retention results. Any timber materials found to be unacceptable at the job site will be returned to the producer/treater at no cost to the Department.

### **7.1.9 TRAINING**

Questions regarding the application of this procedure should be addressed to the State Materials Office in Gainesville.

### **7.1.10 FORMS**

There are no forms associated with this document.