

SECTION 06 8100

COMPOSITE WOOD RAILINGS

This section includes editing notes to assist the user in editing the section to suit project requirements. These notes are included as hidden text, and can be revealed or hidden by one of the following methods:

Microsoft Word: From the pull-down menus select TOOLS, then OPTIONS. Under the tab labeled VIEW, select or deselect the HIDDEN TEXT option.

Corel WordPerfect: From the pull-down menus select VIEW, then select or deselect the HIDDEN TEXT option.

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Composite wood railings.
 - 2. [Glass infill panels.]
- B. Related Sections:
 - 1. Division 01: Administrative, procedural, and temporary work requirements.
 - 2. Section [08 8000 - Glazing:] [_____ - _____:] Glass infill panels.

1.2 REFERENCES

- A. ASTM International (ASTM):
 - 1. C177-04 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus.
 - 2. D143-94(2000) - Standard Test Methods for Small Clear Specimens of Timber.
 - 3. D198-05 - Standard Test Methods of Static Tests of Lumber in Structural Sizes.
 - 4. D1037-06 - Standard Test Methods for Evaluating Properties of Wood-Base Fiber and Particle Panel Materials.
 - 5. D1413-05 - Standard Test Method for Wood Preservatives by Laboratory Soil-Block Cultures.
 - 6. D1761-06 - Standard Test Methods for Mechanical Fasteners in Wood.
 - 7. D1929-96(2001) - Standard Test Method for Determining Ignition Temperature of Plastics.
 - 8. D2047-04 - Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine.
 - 9. D2394-05 - Standard Methods for Simulated Service Testing of Wood and Wood-Base Finish Flooring.
 - 10. D2395-06 - Standard Test Methods for Specific Gravity of Wood and Wood-Based Materials.
 - 11. D4761-05 - Standard Test Methods for Mechanical Properties of Lumber and Wood-Base Structural Material.
 - 12. E84-07 - Standard Test Method for Surface Burning Characteristics of Building Materials.
 - 13. F1679-04 Standard Test Method for Using a Variable Incidence Tribometer (VIT).
- B. American Wood Preservers Association (AWPA) E1-06 - Standard Method for Laboratory Evaluation to Determine Resistance to Subterranean Termites.

1.3 SUBMITTALS

- A. Submittals for Review:
 - 1. Product Data: Indicate sizes, profiles, surface finishes, and performance characteristics.
 - 2. Samples: [12] [___] inch long samples illustrating each size, profile, color, and surface finish.
- B. Sustainable Design Submittals:
 - 1. Recycled Content.
 - 2. Regional Materials.

- C. Closeout Submittals:
 - 1. Maintenance Data: Manufacturer's instructions on care and cleaning of composite wood products.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, and handle composite wood in accordance with manufacturer's instructions.
- B. Store composite wood level and flat, off ground or floor, with supports at each end and maximum 24 inches on center.
- C. Do not stack composite wood over 12 feet high.
- D. Cover composite wood with waterproof covering, vented to prevent moisture buildup.

1.5 WARRANTIES

- A. Furnish manufacturer's 25 year warranty providing coverage against checking, splitting, splintering, rotting, structural damage from termites, and fungal decay of composite wood.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Contract Documents are based on products by Trex Company, Inc.
- B. Substitutions: [Under provisions of Division 01.] [Not permitted.]

2.2 MATERIALS

- A. Composite Wood:
 - 1. Reclaimed wood and plastic with integral coloring; free from toxic chemicals and preservatives.
 - 2. Characteristics:
 - a. Abrasion resistance: 0.01 inch wear per 1000 revolutions, tested to ASTM D2394.
 - b. Hardness: 1124 pounds, tested to ASTM D143.
 - c. Self ignition temperature: 743 degrees F, tested to ASTM D1929.
 - d. Flash ignition temperature: 698 degrees F, tested to ASTM D1929.
 - e. Flame spread rating: 80, tested to ASTM E84.
 - f. Water absorption, 24 hour immersion, tested to ASTM D1037:
 - 1) Sanded surface: 4.3 percent.
 - 2) Unsanded surface: 1.7 percent.
 - g. Thermal expansion coefficient, 36 inch long samples:
 - 1) Width: 35.2×10^{-6} to 42.7×10^{-6} .
 - 2) Length: 16.1×10^{-6} to 19.2×10^{-6} .
 - h. Fastener withdrawal, tested to ASTM D1761:
 - 1) Nail: 163 pounds per inch.
 - 2) Screw: 558 pounds per inch.
 - i. Static coefficient of friction:
 - 1) Dry: 0.53 to 0.55, tested to ASTM D2047.
 - 2) Dry: 0.59 to 0.70, tested to ASTM F1679.
 - 3) Wet: 0.70 to 0.75, tested to ASTM F1679.
 - j. Fungus resistance, white and brown rot: No decay, tested to ASTM D1413.
 - k. Termite resistance: 9.6 rating, tested to AWPA E-1.
 - l. Specific gravity: 0.91 to 0.95, tested to ASTM D2395.
 - m. Compression:
 - 1) Parallel: 1806 PSI ultimate, 550 PSI design, tested to ASTM D198.
 - 2) Perpendicular: 1944 PSI ultimate, 625 PSI design, tested to ASTM D143.
 - n. Tensile strength: 854 PSI ultimate, 250 PSI design, tested to ASTM D198.

- o. Shear strength: 561 PSI ultimate, 200 PSI design, tested to ASTM D143.
- p. Modulus of rupture: 1423 PSI ultimate, 250 PSI design, tested to ASTM D4761.
- q. Modulus of elasticity: 175,000 PSI ultimate, 100,000 PSI design, tested to ASTM D4761.
- r. Thermal conductivity: 1.57 BTU per inch per hour per square foot at 85 degrees F, tested to ASTM C177.

2.3 COMPONENTS

- A. Railing System: Artisan Series.
 - 1. Components:
 - a. Top and bottom rails.
 - b. Rail gaskets.
 - c. Balusters.
 - d. Baluster spacers.
 - e. Post caps.
 - f. Post skirts.
 - g. Support brackets.
 - h. Post sleeves.
 - 2. Surface texture: Smooth.
 - 3. Color: White.
- B. Wood Rail Posts: Preservative treated, nominally 4 x 4 inches.
- C. Glass:
 - 1. Nominally 1/4 inch thick [clear] [tinted] [_____]; specified in Section 08 8000.
 - 2. Glass edge trim: Railing manufacturer's standard.

**** OR ****

2.4 COMPONENTS

- A. Railing System: Designer Series.
 - 1. Components:
 - a. Top rails: [Flat] [Pyramid] profile.
 - b. Bottom rails.
 - c. [Rail posts.]
 - d. [Post skirts.]
 - e. Balusters.
 - f. Post caps.
 - g. Support brackets.
 - h. Post sleeves.
 - 2. Surface texture: Smooth.
 - 3. Color: [Saddle.] [Winchester Grey.] [Madeira.] [Woodland Brown.] [Cayenne.] [Burnished Amber.]
- B. Wood Rail Posts: Preservative treated, nominally 4 x 4 inches.

**** OR ****

2.5 COMPONENTS

- A. Railing System: Traditional Series.
 - 1. Components:
 - a. Hand rail: Nominally 5/4 x 6 inches.
 - b. Top and bottom rails: Nominally 2 x 4 inches.
 - c. Post caps: [Flat] [Pyramid] profile.
 - d. Rail posts.

- e. Post skirts.
- f. Balusters.
- g. Fascia: Nominally [1 x 8] [__ x __] inches.
- 2. Surface texture: Smooth.
- 3. Color: [Saddle.] [Winchester Grey.] [Madeira.] [Woodland Brown.] [Cayenne.] [Burnished Amber.]

2.6 ACCESSORIES

- A. Fasteners: Galvanized or corrosion-resistant coated steel.
- B. Adhesive: Construction adhesive of type recommended by railing manufacturer.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install railings in accordance with manufacturer's instructions.
- B. Cut and drill composite wood using carbide tipped blades.
- C. Install wood posts at maximum [6] [8] feet on center. Attach to joists with 1/2 inch diameter carriage bolts spaced minimum 5-1/8 inches apart. Place top bolt minimum 2 inches below top of decking and bottom bolt minimum 1 inch from bottom of post.
- D. Remove screw tabs from post skirts and slide over posts, resting flush on decking.
- E. Slide post sleeves over posts, resting on decking inside post skirt.
- F. Place railing support brackets at 4-5/8 and [35] [41] inches from deck surface using railing assembly tool. Screw to posts with 2-1/2 inch long drive screws.
- G. Cut top and bottom rails to required lengths, leaving 1/16 inch gap at each end. [For stair railings, cut rails to match slope of railing.]
- H. Place gaskets on each end of bottom rail. Position bottom rail and screw attach to bottom brackets with 1-1/2 inch diameter self-tapping screws. Place screw protectors over screw heads.
- I. Cut 4 inch long support blocks from full-size baluster. Place between decking and bottom rail at maximum 18 inches on center. Secure with adhesive.
- J. Cut baluster spacers to same length as rails, ensuring that baluster holes in top and bottom spacers align vertically.
- K. Snap bottom baluster spacer onto bottom rail. Place top baluster spacer over bottom baluster spacer with snap edge facing up.
- L. Pass balusters through top baluster spacer and into bottom baluster spacer.
- M. After all balusters are positioned, raise top baluster spacer to 1/2 height to stabilize balusters.
- N. Place gaskets on each end of top rail. Position top rail and screw attach to top brackets with 1-1/2 inch diameter self-tapping screws. Place screw protectors over screw heads.
- O. Raise top baluster spacer and snap into place.
- P. Place second post skirt upside down over post and secure with four screws.

- Q. Snap post cap over post skirt.

3.2 INSTALLATION

- A. Install railings in accordance with manufacturer's instructions.
- B. Cut and drill composite wood using carbide tipped blades.
- C. Install wood posts at maximum [6] [8] feet on center. Attach to joists with carriage bolts spaced minimum 5-1/8 inches apart. Place top bolt minimum 2 inches below top of decking and bottom bolt minimum 1 inch from bottom of post.
- D. Remove screw tabs from post skirts and slide over posts, resting flush on decking.
- E. Slide post sleeves over posts, resting on decking inside post skirt.
- F. Place railing support brackets at 4-5/8 and [35] [41] inches from deck surface using railing assembly tool. Screw to posts with drive screws.
- G. Cut top and bottom rails to required lengths, leaving 1/16 inch gap at each end. [For stair railings, cut rails to match slope of railing.]
- H. Place gaskets on each end of bottom rail. Position bottom rail and screw attach to bottom brackets. Place screw protectors over screw heads.
- I. Cut 4 inch long support blocks from full-size baluster. Place between decking and bottom rail at maximum 18 inches on center. Secure with adhesive.
- J. Position glass edge trim over top and bottom edges of glass, for full length of glass. Cut off excess trim flush with vertical edge of glass.
- K. Place glass in bottom rail, centered between posts.
- L. Cut four panel support moldings to same length as glass. Push panel support moldings into rails with lower rail having edge resting on top of rail and upper rail snapping into rail.
- M. Cut baluster spacers into four lengths equal to distance between glass and posts. Snap into bottom and top rails.
- N. Place gaskets on each end of top rail. Position top rail and screw attach to top brackets. Place screw protectors over screw heads.
- O. Raise top baluster spacer and snap into place.
- P. Place second post skirt upside down over post and secure with four screws.
- Q. Snap post cap over post skirt.

3.3 INSTALLATION

- A. Install railings in accordance with manufacturer's instructions.
- B. Cut and drill composite wood using carbide tipped blades.
- C. Install posts at maximum 6 feet on center. Attach to joists with 1/2 inch diameter carriage bolts spaced minimum 5-1/8 inches apart. Place top bolt minimum 2 inches below top of decking and bottom bolt minimum 1 inch from bottom of post.
- D. Slide post sleeves over posts.

- E. Slide post skirts over posts, resting flush on decking.
- F. Place railing support brackets at 4 and [35-1/2] [41-1/2] inches from deck surface using railing assembly tool. Screw to posts with 2-1/2 inch long drive screws.
- G. Cut top and bottom rails to required lengths. [For stair railings, cut rails to match slope of railing.]
- H. Assemble Baluster Sections:
 1. Place bottom rail on its side with lipped edge facing up.
 2. Position baluster assembly tool next to bottom rail and place balusters in each slot.
 3. Place top rail over balusters.
 4. Align balusters with equal distance from each end of top and bottom rails.
 5. Predrill holes in bottom of bottom rail and attach to each baluster with No. 8 x 2 inch screws.
 6. Slide baluster assembly tool next to top rail.
 7. Secure top rail to each baluster with 2 inch x 16 gage nails driven through [one side] [both sides] of top rail.
 8. Cut 4 inch long support blocks from full-size baluster. Place in bottom rail at maximum 18 inches on center. Secure with 2 inch x 16 gage nails driven through side of bottom rail.
- I. Place assembled baluster sections on between posts. Screw attach to top brackets with two 1-1/2 inch diameter self-tapping screws and to bottom brackets with two 1-1/2 inch diameter self-tapping screws or 16 gage finish nails.
- J. Place post caps over post tops and secure with four screws.

3.4 INSTALLATION

- A. Install railings in accordance with manufacturer's instructions.
- B. Cut and drill composite wood using carbide tipped blades.
- C. Install posts at maximum 6 feet on center. Attach to joists with 1/2 inch diameter carriage bolts spaced minimum 5-1/8 inches apart. Place top bolt minimum 2-1/2 inches below top of decking and bottom bolt minimum 1 inch from bottom of post.
- D. Slide post skirts over posts, resting flush on decking.
- E. Cut rails to required lengths. Where rails abut end-to-end, center joint over posts.
- F. Attach hand rails to posts with two No. 12 x 3 inch screws spaced 2 inches apart.
- G. Attach top and bottom rails with two No. 12 x 3 inch screws spaced diagonally 2 inches apart.
- H. Attach handrail to top rail with No. 12 x 3 inch screws spaced 12 inches on center.
- I. Place balusters vertically, spaced maximum 5 inches on center. Secure to top rail and to bottom rail or fascia with two No. 10 x 2-1/2 inch screws each at top and bottom. [Bevel bottom ends of balusters.]
- J. Place post caps over post tops and secure with four screws.

3.5 CLEANING

- A. Clean composite wood to remove stains:
 1. Mold, mildew, and berry and leaf stains: Clean surfaces with conventional deck wash containing detergent or sodium hypochlorite.
 2. Rust and ground-in dirt: Clean surfaces with cleaner containing oxalic or phosphoric acid.
 3. Oil and grease: Clean surfaces with detergent containing degreasing agent.

END OF SECTION