SECTION 323125 – WOOD COMPOSITE FENCES AND GATES

ALL LIBRARIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Wood composite fences.
2. Wood composite swing gates.
3. Excavation for steel posts.
4. Concrete steel post foundations.

B. Related Sections:

1. Section 033000 “Cast-In-Place Concrete” for post concrete fill.
2. Section 055000 “Metal Fabrications” for steel post and horizontal steel angle rails.
3. Section 061000 “Rough Carpentry” for treated wood rails attached to steel rails.
4. Section 099113 “Exterior Painting” for painting of steel post and rails, and treated wood rails.
5. Section 312000 "Earth Moving" for site excavation, fill, and backfill where composite wood fences and gates are located.

1.3 REFERENCES

A. ASTM International (ASTM):

1. C94 – Standard Specification for Ready-Mixed Concrete.
2. C177-04 – Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus.
3. D143-94 (2000) – Standard Test Method for Small Clear Specimens of Timber.
4. D198-05 – Standard Test Methods of Static Tests of Lumber in Structural Sizes.
5. D1037-06 – Standard Test Methods for Evaluating Properties of Wood-Base Fiber and Particle.
6. Panel Materials.
7. D1413-05 – Standard Test Method for Wood Preservatives by Laboratory Soil-Block Cultures.
8. D1761-06 – Standard Test Methods for Mechanical Fasteners in Wood.

9. D1929-96 (2001) – Standard Test Method for Determining Ignition Temperature of Plastics.
10. D2047-04 – Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring.
11. Surfaces as Measured by the James Machine.
12. D2394-05 – Standard Methods for Simulated Service Testing of Wood and Wood-Base Finish.
13. Flooring.
14. D2395-06 – Standard Test Methods for Specific Gravity of Wood and Wood-Based Materials.
15. D4761-05 – Standard Test Methods of Mechanical Properties of Lumber and Wood-Base Structural Materials.
16. E84-07 – Standard Test Method for Surface Burning Characteristics of Building Materials.
17. 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.

1.4 SYSTEM DESCRIPTION

A. Design Requirements: Design fence system to withstand Miami/Dade County 110 MPH steady wind and 130 MPH gusting wind tests.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: For gates. Include plans, elevations, sections, details, and attachments to other work.

C. Samples: For each fence material and for each color specified.

1. Provide Samples 12 inches (300 mm) in length for linear materials, illustrating each size, profile, color and surface finish.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: Manufacturer's instruction on care and cleaning of wood composite products in maintenance manuals.

1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver, store, and handle wood composite in accordance with manufacturer's instructions.

B. Do not stack wood composite over 12 feet high.

C. Cover wood composite with waterproof covering, vented to prevent moisture buildup.

1.8 WARRANTIES

A. Furnish manufacturer's 10-year commercial warranty providing coverage against checking, splitting, splintering, rotting, structural damage from termites, and fungal decay of wood composite.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Wood Composite:

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 x 10-6 to 42.7 x 10-6.
2) Length: 16.1 x 10-6 to 19.2 x 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.

2.2 MANUFACTURERS

A. Wood Composite Fences: Comply with light industrial (commercial) application (class) unless otherwise indicated.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings, Seclusions privacy fence system, by Trex Decking Products, or comparable product by one of the following:

a. Trex Decking Products.

2.3 COMPONENTS

A. Fence System: Seclusions Privacy Fence System.

1. Fence height: 6 feet.
2. Components:

a. Metal fence posts, see drawings for sizes.
b. Postcaps: Rounded concrete.
c. Metal top rails, see drawings for sizes.
d. Metal intermediate rails, see drawings for sizes.
e. Metal bottom rails, see drawings for sizes.
f. Wood composite fencing. See drawings for gap sizes between boards.

3. Surface texture: Smooth.
4. Color: Winchester Grey.
5. Size: 1 inch by 6 inch, nominal, square edge.

2.4 MISCELLANEOUS MATERIALS

A. Fasteners: 1-5/8 inch Galvanized or corrosion-resistant coated steel.

B. Concrete: Normal-weight, air-entrained, ready-mix concrete complying with requirements in Section 033000 "Cast-in-Place Concrete" with a minimum 28-day compressive strength of 3000 psi (20 MPa), 3-inch (75-mm) slump, and 1-inch (25-mm) maximum aggregate size or dry, packaged, normal-weight concrete mix complying with ASTM C 387 mixed with potable water according to manufacturer's written instructions.

2.5 SWING GATES

A. Gate Configuration: Double leaf, as indicated.

B. Gate Frame Height: 96 inches, as indicated.

C. Gate Opening Width: As indicated.

D. Steel Frames and Bracing: Fabricate members from steel channel 1-1/2 by 1-1/2 inches (38 by 38 mm) with 1/8-inch (3.2-mm) wall thickness.

E. Additional Rails: Provide as indicated, complying with requirements for fence rails.

F. Infill: Comply with requirements for adjacent fence.

G. Picket Size, Configuration, and Spacing: Comply with requirements for adjacent fence.

H. Hardware: Latches permitting operation from both sides of gate, hinges, and keepers for each gate leaf more than 5 feet (1.52 m) wide. Provide cane bolts for pairs of gates.

I. Safety Chains: Grade 1, suitable for exterior use.

1. Function: To prevent gate from swinging open past 180 degrees.
2. Material: Malleable iron.

J. Hinges: BHMA A156.1, Grade 1, suitable for exterior use.

1. Function: 39 - Full surface, triple weight, antifriction bearing.
2. Material: Stainless Steel.

K. Cane Bolts: Provide for inactive leaf of pairs of gates. Fabricated from 3/4-inch- (19-mm-) diameter, round steel bars, hot-dip galvanized after fabrication. Finish to match gates. Provide galvanized-steel pipe strikes to receive cane bolts in both open and closed positions.

L. Finish exposed welds to comply with NOMMA Guideline 1, Finish #4 - good-quality, uniform undressed weld with minimal splatter.

M. Steel Finish: Primed.

2.6 STEEL FINISHES

A. Surface Preparation: Clean surfaces according to SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."

B. Primer Application: Apply zinc-rich epoxy primer immediately after cleaning, to provide a minimum dry film thickness of 2 mils (0.05 mm) per applied coat, to surfaces that will be exposed after assembly and installation, and to concealed surfaces.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for site clearing, earthwork, pavement work, construction layout, and other conditions affecting performance of the Work.

B. Do not begin installation before final grading is completed unless otherwise permitted by Architect.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Stake locations of fence lines, gates, and terminal posts. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.

3.3 INSTALLATION

A. Install fences according to manufacturer's written instructions.

B. Install fences by setting posts as indicated and fastening rails and infill panels to posts.

C. Post Excavation: Drill or hand-excavate holes for posts in firm, undisturbed soil. Excavate holes to a diameter of not less than 4 times post size and a depth of not less than 24 inches (600 mm) plus 3 inches (75 mm) for each foot (300 mm) or fraction of a foot (300 mm) that fence height exceeds 4 feet (1200 mm).

D. Post Setting: Set posts in concrete at indicated spacing into firm, undisturbed soil.

1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
2. Concrete Fill: Place concrete around posts and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.

   a. Concealed Concrete: Top 2 inches (50 mm) below grade as indicated on Drawings to allow covering with surface material. Slope top surface of concrete to drain water away from post.

3. Cut and drill wood composite using carbide tipped blades.

4. Space post as indicated on the drawings.

5. Attached fence brackets to posts as indicated on the drawings.

6. Position metal angles rails as located on the drawings.

7. Attached treated rails to angles as noted on the drawings. Install fence pieces with gap as noted on the drawings with 1-5/8 inch long exterior screws

3.4 GATE INSTALLATION

A. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.

3.5 ADJUSTING

A. Gates: Adjust gates to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.

B. Lubricate hardware and other moving parts.

3.6 CLEANING

A. Clean wood composite to remove stains:

1. Mold, mildew, and berry and leaf stains: Clean surfaces with conventional deck wash containing detergent or sodium hypochlorite.
2. Rust or 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 323125