GWF

GREENWOODFENCE

Greenwood Fence Commercial Modular Fence System

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Advanced Composite Series - Engineered for High - Performance Applications

The Greenwood Fence Commercial Modular Fence System is a premium, high-performance fencing solution specifically engineered for commercial, institutional, municipal, and high-demand residential environments. Built on a durable modular framework, the system offers broad design flexibility — from solid privacy to decorative or semi-private configurations — while maintaining structural integrity and clean, modern aesthetics.

This commercial-grade system features 4" × 4" chambered aluminum posts with a 1/8" wall thickness and a 12-foot length, supporting fence heights up to 8 feet above grade. Combined with tongue-and-groove interlocking aluminum rails **and** wood-plastic composite (WPC) boards, Greenwood Fence delivers a long-lasting, low-maintenance architectural fencing solution suitable for high-exposure installations.

KEY BENEFITS

- Structural Performance – Engineered aluminum posts with 1/8" wall thickness support 8 ft heights and resist deflection under wind loads
- Architectural Appeal – Modern, horizontal design with matte-finished boards on both sides for a sleek, balanced look
- Modular Flexibility – Standardized components enable multiple configurations: full privacy, semi-private, decorative
- Low Maintenance – WPC boards and powder-coated aluminum frame resist rot, corrosion, UV fading, and insect damage
- Sustainability – Manufactured using recycled content and low-VOC materials, suitable for LEED and green building projects

TECHNICAL SUMMARY

- System Type: Modular Horizontal Privacy Fence
- Components: Composite WPC Boards + Chambered Aluminum Posts + Interlocking Aluminum Rails
- Posts: 4" × 4" (100 mm × 100 mm) | Wall Thickness: 1/8" | Length: 12 ft
- Rails: Aluminum, non-chambered, with integrated tongue-and-groove channels for board interlock
- Boards: 72" (1,830 mm) length composite infill
- Fence Height: 8 ft above grade (with 42" in-ground embedment)
- Nominal Post Spacing: 75” center-to-center
- Applications: Commercial, Institutional, Municipal, Multi-Family Residential

Specifications:
CSI Division: 32 31 23 – Plastic Fences and Gates Classified under Exterior Improvements – suitable for horizontal composite fencing

Disclaimer:
All information provided in this document is subject to the terms and conditions outlined in the legal disclaimer on the final page.

COMMERCIAL FENCE SPECIFICATIONS

Height: 96 Inches (Nominal)

Width: 75 Inches (Nominal)

Weight (Assembled Panel): 160 lb

Ideal Applications:

Commercial, Institutional, High-Performance Residential Applications

1. Material Composition

Composite Core Material: Wood-Plastic Composite (WPC)

- Comprised of eucalyptus wood fiber and high-density polyethylene (HDPE), enhanced with additives for performance and durability.
- Features a full 360° co-extruded polymer cap for resistance to moisture, UV degradation, and staining.
- Designed for dimensional stability, surface integrity, and low-maintenance outdoor use.

WPC Core Formulation Table :

Component	Percentage (%)	Description
Wood Fiber	58.00%	60 mesh eucalyptus wood fiber
PE (Polyethylene)	27.00%	PE polymer particles
Talcum Powder	10.00%	1000 mesh talcum powder
Compatibilizer	3.00%	SM-3 (no precipitation)
Lubricant	1.80%	Compound type 610
Color Master Batch	0.20%	N326

2. Composite Board Dimensions

Parameter	Value
Length	1830 mm (72.05 in)
Width (face)	158 mm (6.22 in)
Width (with tongue)	166 mm (6.54 in)
Thickness	19.7 mm (0.78 in)
Weight	~9–9.5 lb per board

3. Composite Performance Testing

All testing conducted by SGS-CSTC Standards Technical Services (SGS).

Property	Test Standard	Result
Linear Thermal Expansion	ASTM D696-16	4.092×10^{-5}/°C
Flexural Strength	ASTM D790-17	29.7 MPa
Flexural Modulus	ASTM D790-17	3450 MPa
Deflection Temp. Under Load (HDT)	ASTM D648-18	77.2°C @ 1.82 MPa
Creep-Recovery	ASTM D7031-11	82.0% recovery after 24h
Moisture-Based Expansion	ASTM D1037-12	0.004% change in length

4. Environmental Compliance (Composite)

All environmental and emissions testing conducted by SGS-CSTC Standards Technical Services (SGS).

Compliance Area	Test Standard	Result
Lead (Pb)	ASTM D3335	Not Detected (<100 mg/kg)
Cadmium (Cd)	ASTM D3335	Not Detected (<300 mg/kg)
Total VOCs	ASTM D5116	37.7 µg/m^3
Formaldehyde	ASTM D5197	Not Detected
Acetaldehyde	ASTM D5197	Not Detected

California Proposition 65 Compliant

5. Fire Rating (Composite Boards)

Tested by SGS (Société Générale de Surveillance) using ASTM E84.

Property	Result
Flame Spread Index (FSI)	70
Smoke Developed Index	400
Classification	Class B – Interior Wall/Ceiling Use

Class B rating meets most residential and commercial building codes; verify with local jurisdiction for specific use cases.

6. Aluminum Structural Frame Details

Commercial Posts:

Parameter	Value
Material	Aluminum Alloy 6063 T5
Dimensions	4 in x 4 in x 141.75 in (L)
Wall Thickness	3 mm (0.125 in)
Weight	45 lb per post
Finish	Matte black powder-coated, RAL 9011

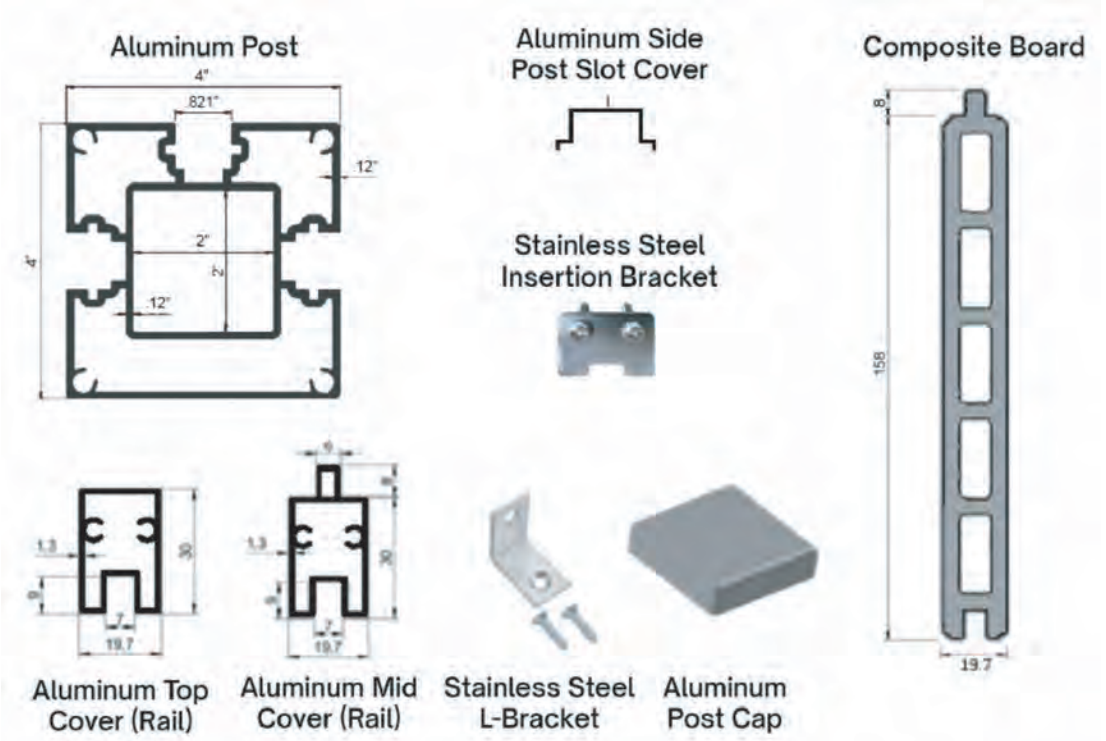
Rails:

Parameter	Value
Material	Aluminum Alloy 6063 T5
Top Rail Dimensions	1.18 in x 0.79 in x 72 in (L)
Middle/Bottom Rail Dimensions (incl. tongue)	1.50 in x 0.79 in x 72 in (L)
Rail Body (excl. tongue)	1.18 in x 0.79 in
Wall Thickness	0.0625 in
Weight	2.2 lb per rail
Finish	Matte black powder-coated, RAL 9011

7. Aluminum Alloy Selection: 6063 T5 Rationale

- Enhanced Strength: Offers high tensile and yield strength, ideal for structural fence applications.
- Corrosion Resistance: Magnesium and silicon alloying enhances outdoor durability.
- Workability & Finish: Superior surface quality allows for precise manufacturing and powder coating.
- Environmental Performance: Suitable for coastal, high-UV, and high-wind environments.

8. Fence Components Diagrams



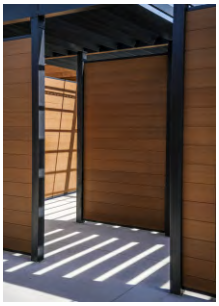
- Aluminum Post: Support structure, anchoring the fence and bearing the brunt of external forces.
- Aluminum Side Cover: Filler piece specifically designed to cover any unused slot openings in the fence posts.
- Aluminum Top Cover: Secondary support structure, providing additional stability by connecting the posts and supporting the fence panels.
- Aluminum Bottom Cover: Secondary support structure, providing additional stability by connecting the posts and supporting the fence panels.
- Insertion Bracket: Support bracket designed to attach to ends of fence rail and slide into interior channels of post slots.
- L-Bracket: Right-angle support bracket designed to securely connect fence rails to posts.
- Aluminum Post Cap: Finished cap for post top.
- Composite (WPC) Slats: Infill board featuring a tongue-and-groove design for easy stackable installation.

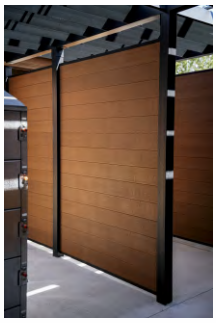
9. Installation Instructions

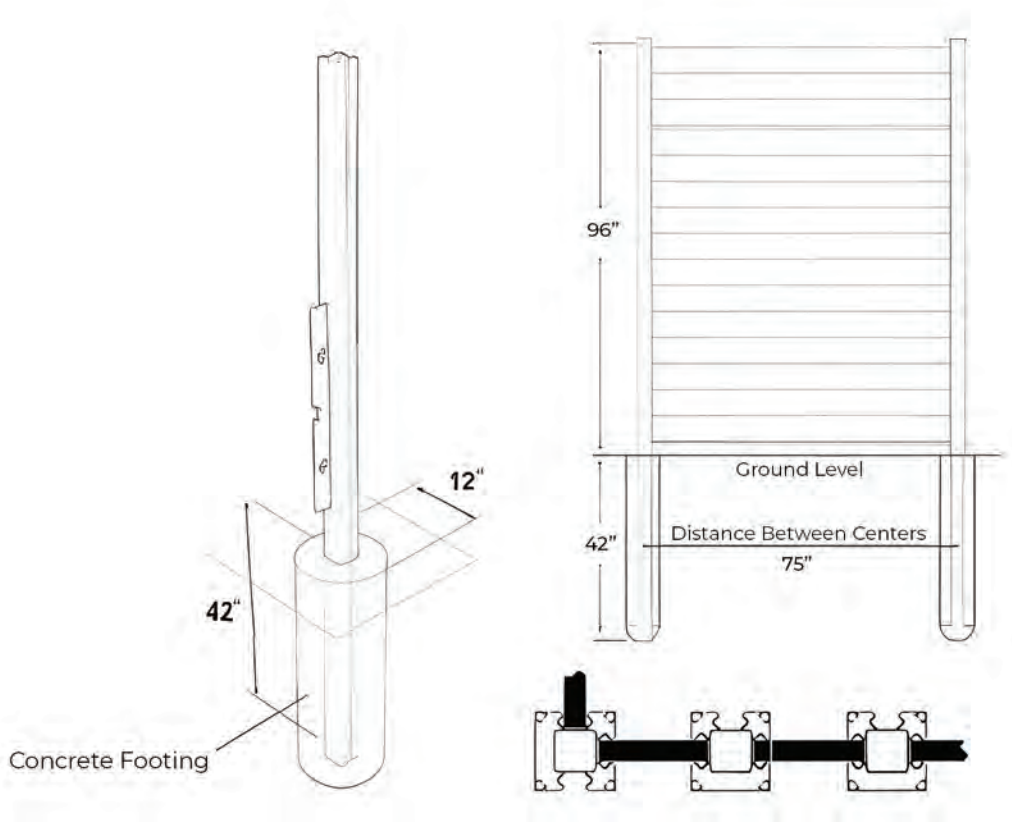
- Post Depth: 42 inches, with a 12-inch diameter hole, secured in concrete.
- Post Spacing: 75 inches center-to-center.

Installation Steps:

1. Mark Post Locations: Measure and mark post locations at 75-inch intervals.
2. Dig Holes: Dig 42-inch deep holes with a 12-inch diameter.
3. Set Posts: Insert posts into holes and secure with concrete. Ensure posts are level and aligned.
4. Attach Rails and Boards: Secure rails to posts and attach composite boards.







Tip:

Ensure concrete is fully cured before attaching rails and boards to achieve maximum stability.

10. Wind Load Performance (Reference Only)

The Greenwood Fence system is modular by design, offering a range of configurations, from solid privacy to decorative and semi-private styles. Many of these design elements, such as open infills or spaced slats, allow for increased wind flow and reduced surface resistance. To establish a reliable structural benchmark, a 6 ft (72") solid privacy configuration was tested under uniform static pressure conditions. This represents the most structurally demanding design in the Greenwood Fence system.

Test Method: ASTM E330 – Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference

Test Setup:

- Configuration: 6 ft (H) x 6 ft (W) fully assembled fence section
- Mounting: Posts installed into ground at a depth of approximately 500 mm (20 in)
- Load Duration: 30-second sustained pressure
- Result: No failure or permanent deformation at 110 mph wind load equivalent
- Laboratory: Intertek

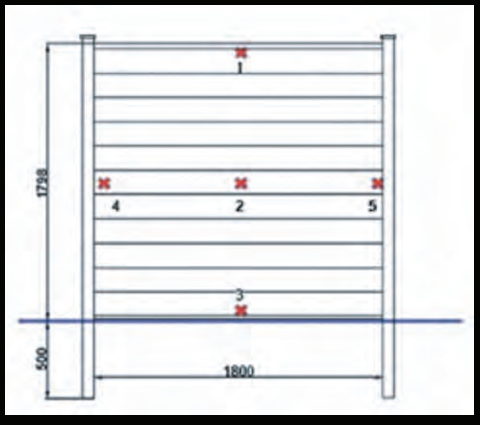
Note: *This test was conducted using residential-grade 10 ft aluminum posts with a 1.4 mm wall thickness. Greenwood Fence's current commercial system uses 12 ft posts with a 3 mm wall thickness, significantly increasing the structural capacity of the system. Therefore, the test results provide a conservative benchmark.*

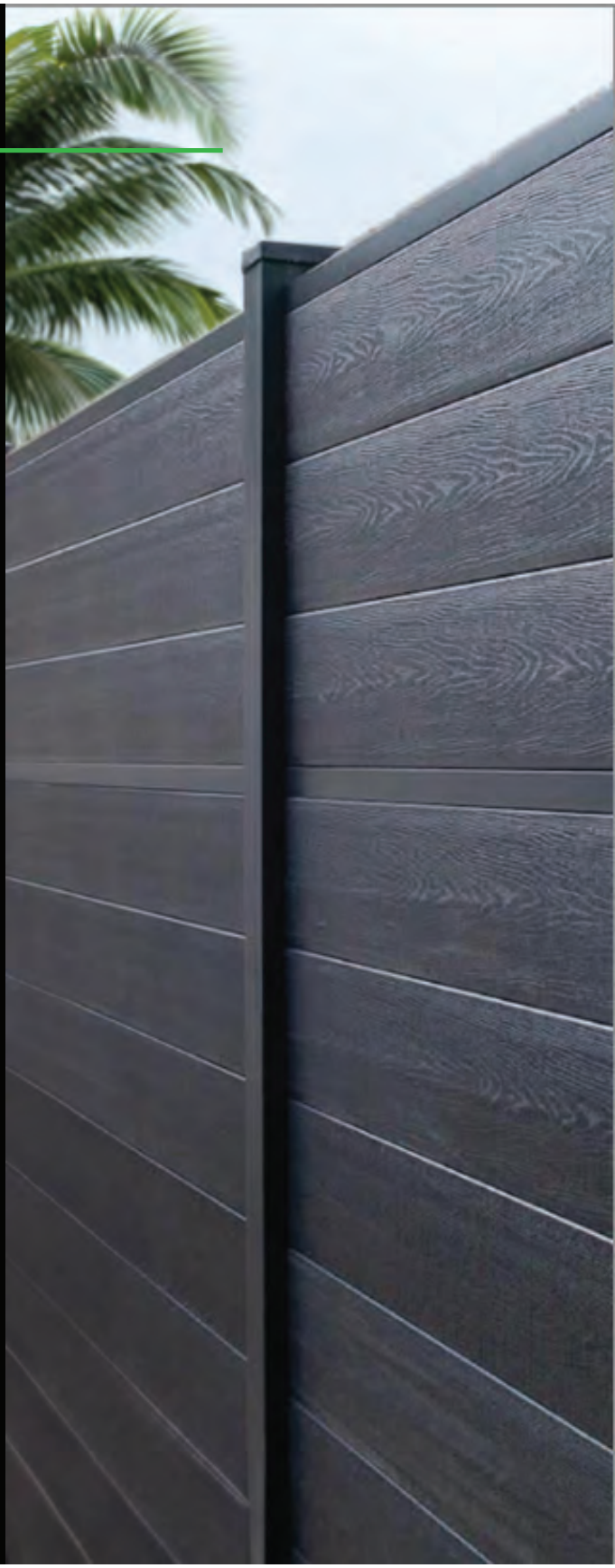
Actual wind load performance may vary depending on fence height, panel configuration, substrate type (e.g., soil, concrete, or decking), and mounting method (e.g., surface-mounted vs. in-ground footing depth). Always consult a licensed structural engineer to verify suitability for project-specific wind load and code compliance.

Wind Speed	Duration	Max Deflection (Inches)				
		1	2	3	4	5
50 mph	72 sec	0.69	0.64	0.24	0.17	0.16
56 mph	65 sec	0.9	0.83	0.3	0.22	0.22
0 mph	Permanent Set	0.07	0.1	0.1	0.09	0.04
69 mph	52 sec	1.32	1.13	1.13	0.74	0.53
80 mph	45 sec	1.99	1.77	0.78	0.54	0.53
90 mph	40 sec	2.04	2.04	0.99	0.67	0.62
0 mph	Permanent Set	0.21	0.32	0.32	0.08	0.07
110 mph	33 sec	No damage was observed during test				

RESULT: SPECIMEN SUSTAINED MAXIMUM WIND LOAD OF 110 MPH AND NO DAMAGE DURING TEST

The Position of Transducers





11. Recommended Applications

- Residential or commercial privacy fencing
- Municipal perimeter and screening applications
- Projects located in freeze/thaw, coastal, or high-sun exposure zones
- Sustainable builds requiring recycled and low-VOC materials

12. Performance Summary

- SGS-certified composite and aluminum materials
- Class B fire rating (ASTM E84)
- Low thermal and moisture expansion
- Powder-coated 6063 T5 structural aluminum framing
- Engineered for ease of installation and long-term durability
- Powder coating meets Qualicoat Class 2 / AAMA 2604 standards

13. Maintenance Guidelines

- **Frequency:** Bi-annual cleaning recommended
- **Method:**
  - **Composite Boards:** Use gentle dish soap, hot water, and a soft, non- abrasive bristle brush or cloth.
  - **Aluminum Posts and Rails:** Clean with a sponge using the same solution.
  - **Pre-Cleaning:** Hose down any surface debris before cleaning.

14. Warranty Information

- **Warranty Period:** 10-year commercial limited warranty
- **Coverage:** Defects in materials
- **Exclusions:** Normal wear and tear, improper installation, or damage caused by external factors

GWF Recommended Commercial Post Setting Depths for Aluminum Posts in Composite Fencing

For optimal structural integrity and long-term performance, Greenwood Fence recommends installing 4 in. x 4 in. aluminum posts (3 mm wall thickness) at a depth of 42 to 47 inches below grade, where ground conditions permit. This depth is designed to:

Exceed Frostline Requirements: Prevent frost heave by setting posts below regional frost lines. For reference, frost depths range from approximately 12 inches in southern states (e.g., Florida) to 36–48 inches in northern states (e.g., Minnesota). Consult local building codes or geotechnical professionals for region-specific frost depths.

Enhance Wind Resistance: Increase lateral load capacity for 8-foot fence heights, particularly important in open or high-exposure areas where wind speeds exceed 90 mph.

Maximize Leverage: Improve moment resistance and overall anchoring strength, especially for composite systems with heavier panel assemblies.

Installation Methods

Concrete Footings: Preferred for maximum stability. Use a 12-inch diameter footing with 3,000 psi concrete and a 6-inch gravel base to ensure proper drainage and prevent frost heave.

Direct Burial: Suitable for stable, well-drained soils such as sandy loam. Backfill with compacted native soil or gravel to reduce the risk of settling.

Avoid shallow installations: Depths less than 36 inches reduce load-bearing capacity and increase risk of movement under wind or thermal expansion.

Soil Type Considerations

Clay Soils: Expand and contract with moisture. Increase embedment depth to 47 inches and consider using wider footings (14 inches) to improve stability.

Sandy Soils: Typically allow for 42-inch depth. Ensure proper compaction during backfill to prevent future settling.

Rocky Soils: If subsurface obstructions prevent target depth, consult a local engineer. Alternative anchoring options, such as surface-mounted base plates with mechanical fasteners, may be appropriate.

Cost and Practicality

- In low-frost regions, a 36-inch depth may be sufficient for lighter 6-foot fence applications under moderate wind conditions (<80 mph). This can reduce material and labor costs by approximately 20%.
- However, the recommended 42 to 47-inch range provides consistent durability across diverse climates, making it the preferred choice for commercial-grade projects.
- Estimated cost increase for deeper installation: $10–15 per post (materials and labor), typically offset by reduced maintenance and improved long-term stability over a 20–30 year lifespan.

Note: *Always evaluate site-specific conditions such as high water tables, compacted fill, or unstable soils prior to installation. Where conditions allow, deeper post embedment will significantly enhance structural performance. For additional support, contact Greenwood Fence at support@greenwoodfence.com*

Contact Information

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For More Comprehensive Technical Details: If you require more detailed information, such as advanced testing data, specific load-bearing capacities, or architectural integration details, please contact our technical support team. We can provide additional resources. Contact us today to discuss your project's needs.

Legal Disclaimer

This specification sheet is provided for general informational purposes only. While Greenwood Fence has made every effort to ensure the accuracy and completeness of the information contained herein, the company assumes no responsibility for errors or omissions. The information provided is not intended as a warranty or guarantee of product performance and should not be construed as such. It is the responsibility of the user or installer to ensure that the product is suitable for the intended application and that it is installed in accordance with all applicable laws, regulations, and industry standards. Greenwood Fence assumes no liability for the use or misuse of the product, or the information contained in this document.

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