

PRODUCT GUIDE SPEC INTRODUCTION

greenscreen® is a welded wire panel system used for trellising, fencing, architectural screening and vertical plant support applications. When the panel is combined with twining or climbing vines, **greenscreen®** forms a structural wire panel plant support system that defines or encloses space, provides privacy screening, and offers shading for more sustainable construction.

DRAWING COORDINATION: Show location and size of panels and, if used, posts and planters. In most projects, **greenscreen®** can be installed in accordance with manufacturer's instructions and it is not necessary to locate mounting hardware. If, however, location or configuration of mounting hardware is crucial to coordination with other work or to convey design concept, locations, type and details should be shown in construction documents.

SPECIFICATION COORDINATION: Edit this guide specification to meet project requirements. Remove language that is not applicable and add additional language as required. Coordinate work of this section with other sections of specifications.

MASTERFORMAT COORDINATION: The first three section titles and numbers listed below are recommended for data filing and for building mounted installations; those below are for optional usage. Titles and numbers comply with MasterFormat 2016. Edit footer as necessary to reflect applicable titles and numbers.

SECTION 32 94 55 – EXTERIOR PLANTING SUPPORT STRUCTURE (Green Facade)

SECTION 10 82 00 – GRILLES AND SCREENS/TREILLAGE

SECTION 32 94 50 – WELDED WIRE PANEL PLANT SUPPORT SYSTEM

SECTION 09 77 53 – VEGETATIVE WALL SYSTEMS

SECTION 32 31 16 – WELDED WIRE FENCES AND GATES

SECTION 32 31 19 – DECORATIVE METAL FENCES AND GATES

SECTION 32 31 26 – WIRE FENCES AND GATES

SECTION 32 31 26.13 – WIRE FENCES WITH STEEL POSTS

SECTION 32 35 13 – SCREENS AND LOUVERS

SECTION 32 33 33 – SITE MANUFACTURED PLANTERS

PLANTING COORDINATION: Choosing appropriate plant material for **greenscreen®** requires consideration of climate, sun and wind exposure, soil, size of container, fertilization, plant spacing and desired visual effect. Twining, climbing, curling, and tendril vines are more suitable than vines that cling by aerial roots or suckers. Herbaceous vines with flexible stems are most appropriate for weaving into panels.

DESIGN ASSISTANCE: Details in the **greenscreen®** technical manual and at www.greenscreen.com describe design and installation requirements for most applications. For special requirements, please contact **greenscreen®** at 800-450-3494 or sales@greenscreen.com.

END OF INTRODUCTION

[SECTION 32 94 50 – WELDED WIRE PANEL PLANT SUPPORT SYSTEM]

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. Welded wire grid panels, including gate panels.
2. Panel channel and angle trim.
3. Panel posts.
4. Necessary clips, straps and spacers.
5. Powdercoat finish.

- B. Sustainable Design Intent: Comply with project requirements intended to achieve sustainable design, measured and documented according to the LEED Green Building Rating System, of the US Green Building Council. Refer to **[Section 018110, SUSTAINABLE DESIGN REQUIREMENTS]** for certification level and certification requirements.

1.3 RELATED WORK

- A. Examine Contract Documents for requirements that affect work of this Section. Other Specification Sections that directly relate to work of this Section include, but are not limited to:
 1. Section 03 30 00, CAST-IN-PLACE CONCRETE; Concrete footings.
 2. Section 32 93 00, PLANTS; Furnishing and installing related plants.

1.4 SUBMITTALS

- A. Product Data: Provide manufacturer's standard catalog details for specified products demonstrating compliance with referenced standards. Provide list of fittings being provided with descriptions and either photographs or drawings for each type.
- B. Shop Drawings: Submit Shop Drawings for fabrication and installation. Include the following:
 1. Plans, elevations, and detail sections showing sizes, critical dimensions, panel layout constraints using a 2 x 2 inch modular grid, and details and locations of accessories.
 2. Indicate materials, methods, finishes, fittings, fasteners, anchorages, and accessory items.

C. Verification Samples: Two samples representing actual products and finishes as follows:

1. Welded wire grid panel, 6 in. x 6 in., with one edge of channel trim and one edge of angle trim, all as one unit.
2. Color Submittals: Submit metal chips, 2 in. x 3-1/2 in. minimum, showing color and texture to be provided.

D. LEED Submittals:

1. A completed LEED Reporting Form (LRF) with a separate line item completed for each LEED Focus Materials (LFM).
2. Product cut sheets for each LFM confirming that the submitted products are the products installed as part of the Work.
3. Validation: Provide validation for the LFMs according to the Action Submittals requirements of **[Section 01 8113 “Sustainable Design Requirements”]** <Insert specification section number and title.>
 - a. Recycled Content
 - b. Regional Materials.
4. Materials Resources Certificates:
 - a. Certify source and origin for salvaged and recycled products.
 - b. Certify source for regional materials and distance from Project site.
5. Product Cost Data: Submit cost of products to verify compliance with Project sustainable design requirements. Exclude cost of labor and equipment to install products. Provide cost data for the following products:

1.5 LEED FOCUS MATERIALS

A. LEED Focus Materials (LFMs) for this Section:

1. Steel products

1.6 ENVIRONMENTAL REQUIREMENTS

- A. Building product disclosure and optimization – environmental product disclosures (Credit MRc2): Option 1: Products with a publicly available, critically reviewed life-cycle assessment conforming to ISO 14044 that have at least a cradle to gate scope are valued as one quarter (1/4) of a product for the purposes of credit achievement calculation.
- B. Building product disclosure and optimization - sourcing of raw materials (Credit MRc3.): Recycled Content: Provide products manufactured from recycled content as specified, to be measured and documented according to the LEED Green Building Rating System.

1. Recycled Content:
 - a. Indicate recycled content; indicate percentage of pre-consumer and post-consumer recycled content per unit of product.
 - b. Indicate relative dollar value of recycled content product to total dollar value of product included in project.
 - c. If recycled content product is part of an assembly, indicate the percentage of recycled content product in the assembly by weight.
 - d. If recycled content product is part of an assembly, indicate relative dollar value of recycled content product to total dollar value of assembly.

C. Building product disclosure and optimization - sourcing of raw materials (Credit MRc3.): Regional Materials: Provide materials or products that have been extracted, harvested, or recovered, as well as manufactured, within 100 miles of the project site.

D. Building product disclosure and optimization – material ingredients (Credit MRc4): Option 1: The end use product has a published, complete Health Product Declaration with full disclosure of known hazards in compliance with the Health Product Declaration open Standard.

1.7 QUALITY ASSURANCE

A. Manufacturer: Minimum 10 years experience in manufacturing and supplying welded wire panel systems of the type required for this Project.

1.8 DELIVERY, STORAGE AND HANDLING

A. Protect materials from damage. Store panels flat. Provide edge protection when strapping is used. Do not apply loads to panel edges.

B. Inspect products upon delivery in order to submit timely freight claim for any damaged materials.

C. Store products in manufacturer's packaging until ready for installation.

D. Handle and store products according to manufacturer's recommendations. Leave products wrapped or otherwise protected and under clean and dry storage conditions until required for installation.

E. Exercise care not to scratch, mark, dent, or bend metal components during delivery, storage, and installation.

1.9 PROJECT CONDITIONS

A. Verify actual openings by field measurements before fabrication; show recorded measurements on shop drawings.

B. Coordinate field measurements and fabrication schedule with construction progress to avoid construction delays.

PART 2 - PRODUCTS

2.1 SUSTAINABILITY CHARACTERISTICS

- A. The welded wire panel plant support system and accessories shall have completed an ISO Compliant 14040/44, third party verified Life Cycle Assessment (LCA).

2.2 ACCEPTABLE MANUFACTURER

- A. **greenscreen®**, 725 S. Figueroa St. Suite 1825, Los Angeles, CA 90017; Tel: 1-800-450-3494; sales@greenscreen.com, www.greenscreen.com.

2.3 PANELS

- A. Panels shall be rigid, three dimensional welded wire grid fabricated of 14 gauge galvanized steel
 - 1. Metallic-Coated Steel Wire: Welded-wire, galvanized in accordance with ASTM A641.
- B. Face Grid: Wires shall be welded at each intersection to form a 2 x 2 inch face grid on the front and back of panels,
- C. Trusses: Face grids shall be separated by bent wire trusses spaced at 2-inch centers and welded to front and back face grids at each truss apex.
- D. Thickness: **[3 inches.] [As shown on Drawings.]**
- E. Length and Width: As indicated on the Drawings.
- F. Tolerance: 1/8 inch in width and 1/8 inch in length.

2.4 ACCESSORIES

- A. Trim:
 - 1. Fabricate from 20-gauge ASTM A879 galvanized steel.
 - 2. Types:
 - a. Channel Trim: Thickness of panel x ½ inch legs.
 - b. Angle Trim: ½ inch x ½ inch legs.
 - 3. Locations:
 - a. As indicated on the Drawings.
- B. Clips and Straps: Provide manufacturer's standard types of clips and straps suitable for mounting conditions. Fabricate from ASTM A879 galvanized steel. Adjustable clips shall have ¼ inch diameter 18-8 stainless steel bolt, washer, and nut.

- C. Plastic Spacers: Provide ½ inch thick black Ultra High Molecular Weight polyethylene (UHMW) washers [to hold clips away from mounting surface].
- D. Fence Posts: 3-inch [2-7/8" OD ASTM A500] [square ASTM A500, Grade B] steel tube. The steel strip used in the manufacture of the post shall conform to ASTM A1011. Minimum yield strength shall be 45,000 psi. **[Provide steel post caps.]** Overall post length shall be as indicated on the Drawings.
- E. Fasteners for Mounting Clips to Fence Posts: Self drilling, self tapping hex washer head screws, with strength of Type 410 stainless steel, and corrosion resistance of Type 304 stainless steel.
- F. Fasteners for Attachment to Structure Pull Out Value:
 - 1. To Concrete or Masonry: [480 lbs.].
 - 2. To Structural Steel: [480 lbs.].
 - 3. To Light-Gauge Steel Framing: [480 lbs.].
 - 4. To Wood Framing: [480 lbs.].
- G. Planter: [_____].

2.5 FABRICATION

- A. Cut to size.
- B. Weld trim to panels and grind smooth exterior surfaces of welds.
- C. Curved Panels: All curved panels shall be fabricated in the factory using approved “Cut-to-Curve” or “Crimped-to-Curve” procedures as recommended by manufacturer for diameter of curve and conditions of use prior to application of powder coat finish to ensure that all wire edges are coated and protected. The use of “Cut-to-Curve” or “Crimped-to-Curve” fabrication technique is dependent on the specific radius and the direction of the curve relative to the flat panel layout.

2.6 FINISH

- A. Metal components (except fasteners) shall receive commercial grade finish system after fabrication.
- B. Finish System:
 - 1. Pretreat with general purpose, alkaline, water based cleaner / degreaser applied at 240 degrees F.
 - 2. Prime with fusion bond epoxy powder coat.
 - 3. Topcoat with [TGIC] polyester or polyester-urethane powder coat with a minimum total dry film thickness of not less than **[6 mils (0.15 mm)]**.

- C. Salt Spray Resistance: Finish shall remain rust free when tested 1680 hours in accordance with ASTM B117.
- D. Finish and Color: [Textured Green.] [Textured Black.] [Silver.] [Bronze.] [Terra] [Gloss White.] [Color selected by [Architect] from manufacturer's standards.] [RAL [Classic] [Design] color [_____].] [Custom color to match [_____].]
- E. Touch-Up Paint: Provide high quality, exterior-grade spray paint suitable for conditions of use.

2.7 WARRANTY

- A. Standard 1 year warranty is available from the date of substantial completion or 18 months from the date of shipment, whichever comes first. greenscreen® warrants against defects in workmanship and materials that would result in failure under intended application and use as exterior fabricated wall grillage. "Failure" is defined as structural failure of the wire of sufficient incidents in any panel that would result in the panel not performing in a structural or safe manner under the intended application and use. Installation is excluded. Contact greenscreen® for further information, and extensions.

2.8 MISCELLANEOUS MATERIALS

- A. Concrete: Refer to Section 03 30 00, CAST-IN-PLACE CONCRETE.
- B. Concrete: Normal-weight, air-entrained, ready-mix 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].

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 and posts]. Do not exceed intervals of 500 feet (152.5 m) or line of sight between stakes. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.

1. Construction layout and field engineering are specified in Division 01 Section "Execution".
- B. Verify alignment, support dimensions, and tolerances are correct.
- C. Inventory components to ensure all required items are available for installation. Inspect components for damage. Remove damaged components from site and replace.

3.3 INSTALLATION - GENERAL

- A. Spans: For freestanding fences and screens, span between structural supports should not exceed 8' for 3" thick panels without thorough review of specific site conditions and mounting details. For overhead horizontal or inclined panels span between structural supports should not exceed 4'. All curved panel spans should be reviewed based on specific panel radius and center to center of proposed structural support spacing.
- B. Install panels plumb and square, centered within area designated for panels, and aligned to maintain modular grid.
- C. Avoid cutting panels in field. Where field cutting is essential, clean and dry area and apply touch-up paint to cut edges.
- D. Install securely with fasteners located **[as shown on Drawings.] [To meet manufacturer's requirements.]**
- E. Repair bent or damaged panels. If panels cannot be repaired to satisfaction of **[Architect]** [_____], remove from jobsite and replace with new panels.

3.4 INSTALLATION

- A. Install welded wire panel plant support system according to manufacturer's written instructions.
- B. Install welded wire panel plant support system by setting posts as indicated on the Drawings and fastening panels to posts according to manufacturer's written instructions.

3.5 ADJUSTING AND CLEANING

- A. Remove temporary coverings and protection of adjacent work areas. Clean installed products in accordance with manufacturer's instructions before Owner's acceptance.
- B. Do not use abrasive cleaners.
- C. Remove from project site and legally dispose of construction debris associated with this work.

3.6 PROTECTION

- A. Protect installed products until completion of Project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

- C. Protect installed products and finished surfaces from damage during construction.
- D. Replace defective or damaged components as directed by Architect.

3.7 PLANT INSTALLATION

- A. Refer to Section 32 93 00, PLANTS.

END OF SECTION 32 94 50