

McNICHOLS ECO-MESH®

Plant Screen Specifications

SECTION 02823 – PLANT SCREENING SYSTEM

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract apply to this Section.

1.2 SUMMARY

- A. This Section includes but is not limited to the following:
 - 1. Standard Plant Screen Systems
 - 2. Radius Plant Screen Systems
 - 3. Custom Plant Screen Systems
 - 4. Plants screen wire and crimps
 - 5. Miscellaneous Trim, Clips and Fasteners.
- B. Products furnished, but not installed, under this Section include the following:
 - 1. Tube steel supports, weld plates, anchor bolts, steel pipe sleeves, and wedge-type inserts indicated to be cast into concrete or built into unit masonry.

1.3 PERFORMANCE REQUIREMENTS

- A. Thermal Movements: Provide plant screen structure and related metal fabrications that allow for thermal movements that result from the following maximum change (range) in ambient and surface temperatures. Installer shall prevent buckling, opening of joints, overstressing of components, failure of connections, reduced connections and any other effects during installation that is detrimental to the integrity of the planting screen system. Expansion and contraction calculation shall be based on surface temperatures of materials due to both solar heat gain and night time-sky heat loss and calculated by a licensed structural engineer.

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1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces. [**specifier to verify**]

1.4 SUBMITTALS

- A. Shop Drawings: McNICHOLS to show fabrication and installation details for plant screen systems.
 1. Include plans, elevations, sections, and details of plant screen system and relevant connections. Indicate foundation connections.
 2. Provide base weld plates or templates for anchors and bolts specified for installation under other Sections.

1.5 QUALITY ASSURANCE

- A. Welding: Qualify procedures and personnel according to the following:
 1. AWS D1.1, "Structural Welding Code--Steel."

1.6 PROJECT CONDITIONS

- A. Field Measurements: To be field verified existing before fabrication of plants screen systems. Indicate measurements on Shop Drawings.
 1. Established Dimensions: Where field measurements cannot be use established dimensions and proceed with fabricating planting screen system based on reviewed shop drawings. Coordinate wall and other contiguous construction as required to ensure that actual dimensions correspond to established dimensions and the context of the existing conditions.

1.7 COORDINATION

- A. McNICHOLS to coordinate installation of weld base plates and system anchor age. Furnish templates, layout drawings and directions for installing anchorage system, including sleeves, concrete inserts, anchor bolts, weld plates and items with integral anchors, that are to be embedded in concrete or masonry.

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PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. Provide: **McNICHOLS ECO-MESH® Modular Façade and Trellis System** as manufactured by **McNICHOLS CO.**, PO BOX 30300, TAMPA, FL, 33630-3300 Telephone: 800-237-3820, Fax: 813-288-1828, sales@mcnichols.com

2.2 METALS, GENERAL

- A. Metal Surfaces, General: Provide materials with smooth, flat surfaces, unless otherwise indicated and consistent with the design intent of the system.

2.3 FERROUS METALS

- A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- B. Steel Tubing: ASTM A 500, cold-formed steel tubing.
- C. Steel Pipe: ASTM A 53/A 53M, standard weight (Schedule 40), unless another weight is indicated or required by structural loads.

2.4 PLANT SCREEN PANELS

- A. Standard Panel:
 - 1. Size: in one-foot increments from 2' wide to a maximum of 6' wide and 2' high to a maximum of 8' high.
 - 2. Wire diameter: .120, 11 gauge; .135, 10 gauge; .148, 9 gauge.
 - 3. Bridge wire diameter: .105, 12 gauge; .120, 11 gauge; .135, 10 gauge.
 - 4. Bridge wire spacing: 12", 24"
 - 5. Wire centers: 2" x 2", 3" x 3" maximum
 - 6. Weave: Intercrip is standard

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7. Material: Carbon steel or Galvanized
 8. Finish: Bare (unfinished to be weathered), powder coated, galvanized
- B. Radius Panel:
1. Size: in one foot increments from 1'-6" wide to a maximum of 10' wide and 1' high to a maximum of 40' high.
 2. Wire diameter: .120, 11 gauge; .135, 10 gauge; .148, 9 gauge; .162, 8 gauge; .177, 7 gauge; .192, 6 gauge; .250, 3 gauge.
 3. Bridge wire diameter: .105, 12 gauge; .120, 11 gauge; .135, 10 gauge; .148, 9 gauge; .162, 8 gauge; .177, 7 gauge; .192, 6 gauge; .250, 3 gauge.
 4. Bridge wire spacing: 12", 24"
 5. Wire centers: 2" x 2", 3" x 3" maximum
 6. Weave: Intercrip is standard
 7. Material: Carbon steel, Galvanized, Stainless steel and Aluminum
 8. Finish: Natural finish, unfinished to be weathered, powder coated, galvanized
 9. Diameter minimum: 1'-0"
- C. Custom Panel:
1. Size: 1'-6" wide to a max of 10' wide and 1' high to a max of 40' high.
 2. Wire diameter: .120, 11 gauge; .135, 10 gauge; .148, 9 gauge.; .162, 8 gauge; .177, 7 gauge; .192, 6 gauge; .250, 3 gauge.
 3. Bridge wire diameter: .105, 12 gauge; .120, 11 gauge; .135, 10 gauge; .148, 9 gauge; .162, 8 gauge; .177, 7 gauge; .192, 6 gauge; .250, 3 gauge.
 4. Bridge wire spacing: From wire centers to 24"

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5. Wire centers: 1" x 1" min, 1.5" x 1.5", 2" x 2"; 3" x 3" maximum
6. Weave: Intercripp is standard
7. Material: Carbon steel, Galvanized, Stainless Steel and Aluminum
8. Finish: Natural finish, unfinished to be weathered, powder coated, galvanized
9. Custom shape: [specifier to verify]

2.5 TRIM

- A. Edge trim channel shall be the panel width with 1" returns, 16 gauge Carbon Steel, Galvanized, Stainless Steel or Aluminum sheet welded to the wire frame panels with all exterior surfaces ground smooth. Finish to match wire.

2.6 CLIPS

- A. All mounting clips shall be fabricated from minimum 12 gauge to 16 gauge, metal to match screen wire. All bending, forming and drilling shall be done prior to powder coat finish. All (2) piece mounting clips are to be joined with 3/8" diameter x 1.5" stainless steel round head hex bolt with nylon lock hex nut and washers.

2.7 POSTS

- A. Posts shall be 4" diameter ASTM A-500 or 4" square x 3/16" thick tube steel, as indicated, with commercial grade finish to match panels, natural finish or powder coated. Overall post length should be verified, based on panel size, post spacing, wind load requirements and soil conditions.

2.8 FASTENERS

- A. Stainless Steel Fasteners: Provide Type 304 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633, Class Fe/Zn 5, at exterior walls.
 1. Provide stainless-steel fasteners for fastening aluminum. Provide fasteners for type, grade, and class required.

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- B. Steel Bolts and Nuts: Round head hexagon bolts, ASTM A 307, Grade A; with nylon lock hex nuts, ASTM A 563; and flat washers.
- C. Anchor Bolts: ASTM F 1554, Grade 36.
 - 1. Provide hot-dip or mechanically deposited, zinc-coated anchor bolts where item being fastened is indicated to be galvanized. Size and length of bolts to be varied based on structural requirements.
- D. Eyebolts: ASTM A 489.
- E. Machine Screws: ASME B18.6.3.
- F. Plain Washers: Round, ASME B18.22.1.
- G. Lock Washers: Helical, spring type, ASME B18.21.1.
- H. Cast-in-Place Anchors in Concrete: Anchors capable of sustaining, without failure, a load equal to four times the load imposed, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.
 - 1. Threaded or wedge type; galvanized ferrous castings, either ASTM A 47/A 47M malleable iron or ASTM A 27/A 27M cast steel. Provide bolts, washers, and shims as needed, hot-dip galvanized per ASTM A 153/A 153M.
- I. Expansion Anchors: Anchor bolt and sleeve assembly with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.
 - 1. Material for Anchors in Interior Locations: Carbon-steel components zinc-plated to comply with ASTM B 633, Class Fe/Zn 5.
 - 2. Material for Anchors in Exterior Locations: Alloy Group 1 (A1) stainless steel bolts complying with ASTM F 593 and nuts complying with ASTM F 594.

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2.9 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
- B. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyl primer complying with MPI#79.
 - 1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.
- C. Galvanizing Repair Paint: High zinc-dust content paint for re-galvanizing welds in steel, complying with SSPC-Paint 20.

2.10 FABRICATION, GENERAL

- A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
- B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32". Remove sharp or rough areas on exposed surfaces.
- C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing the material.
- D. Form exposed work true to line and level with accurate angles and surfaces and straight edges.
- E. Weld corners and seams continuously to comply with the following:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

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- F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) screws or bolts, unless otherwise indicated. Locate joints where least conspicuous.
- G. Fabricate seams and other connections that will be exposed to weather in a manner to exclude water. Provide weep holes at 12" o.c. where water may accumulate.
- H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.
- I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.
 - 1. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors, 1/8" by 1-1/2", with a minimum 6" embedment and 2" hook, not less than 8" from ends and corners of units and 24" o.c., unless otherwise indicated.

2.11 MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.
- B. Fabricate units from steel shapes, plates, and bars of welded construction, unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction retained by framing and supports. Cut, drill, and tap units to receive hardware, hangers, and similar items.

2.12 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Commercial Grade Finish - all panels, trim, posts, caps plus miscellaneous clips shall be fabricated, cut, bent and drilled prior to receiving a multi-grade

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phosphate wash, a thermally set epoxy primer and a thermally set powder paint finish, black (gloss or wrinkle) finish color.

- C. Weathered finish

PART 3 – EXECUTION

3.1 INSTALLATION, GENERAL

- A. General: Install framing and supports to comply with requirements of items being supported and requirements indicated on Shop Drawings.
- B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing plant screen structures and panels. Set plant screen structures accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels. Field verify all condition prior to installation.
- C. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections. At areas of removed finished, provide touch-up finish to match existing.
- D. Field Welding: Comply with the following requirements:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. At exposed connections, finish exposed welds and surfaces smooth and blended, so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- E. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction.

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Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag bolts, wood screws, and other connectors.

3.2 ADJUSTING AND CLEANING

- A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
 - 1. Apply by brush or spray to provide a minimum 2.0 mil dry film thickness.
- B. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Division 9 Painting Sections.

END OF SECTION 02823