

SECTION 12 93 40 OUTDOOR FURNISHINGS

PART 1 GENERAL

1.1 SECTION INCLUDES:

1. Outdoor tables and seating
2. Umbrellas
3. Benches
4. Litter Receptacles
5. Planters and landscape features.

1.2 RELATED SECTIONS

1. Section 077600 - Pavers

1.3 REFERENCES

1. ASTM Testing Standards:
 - a. ASTM B 117 – Standard Practice for Operating Salt Spray (Fog) Apparatus.
 - b. ASTM D 256 – Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics.
 - c. ASTM D 522 – Standard Test Methods for Mandrel Bend Test of Attached Organic Coatings.
 - d. ASTM D 523 – Standard Test Method for Specular Gloss.
 - e. ASTM D 570 – Standard Test Method for Water Absorption of Plastics.
 - f. ASTM D 638 – Standard Test Method for Tensile Properties of Plastics.
 - g. ASTM D 696 – Standard Test Method for Coefficient of Linear Thermal Expansion of Plastics Between -30°C and 30°C With a Vitreous Silica Dilatometer.
 - h. ASTM D 790 – Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
 - i. ASTM D 2247 – Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity.
 - j. ASTM D 2583 – Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor.
 - k. ASTM D 2584 – Standard Test Method for Ignition Loss of Cured Reinforced Resins.
 - l. ASTM D 2794 – Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).
 - m. ASTM D 3359 – Standard Test Methods for Measuring Adhesion by Tape Test.
 - n. ASTM D 3363 – Standard Test Method for Film Hardness by Pencil Test.
 - o. ASTM E 84 – Standard Test Method for Surface Burning Characteristics of Building Materials.

- p. ASTM G154 - Standard Practice for Operating Fluorescent Light Apparatus for UV Exposure of Nonmetallic Materials.
 - q. ASTM G 155 – Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials.
2. B. ISO Testing Standards:
- a. ISO 1520 – Paints and Varnishes – Cupping Test.
 - b. ISO 2215 – Impression Hardness – Buchholz Test.
 - c. ISO 2815 – Paints and Varnishes – Buchholz Indentation Test

1.4 SUBMITTALS

- 1. Product Data: Submit manufacturer's product data, storage and handling requirements and recommendations, installation methods and available colors, styles, patterns and textures.
- 2. Shop Drawings: Submit manufacturer's shop drawings, including plans, elevations, and details as needed to confirm proper furnishings are utilized.
- 3. Samples: Submit manufacturer's samples of materials, finishes, and colors.
- 4. Warranty: Three (3) years from date of invoice.

1.5 QUALITY ASSURANCE

- 1. Manufacturer's Qualifications: Manufacturer regularly engaged in manufacture of site furnishings for minimum of 10 years.
- 2. Product Support: Products are supported with complete engineering drawings and design patents.
- 3. Production: Orders are filled within a 40-day schedule.
- 4. Facility Operator: Welders and machine operators are certified.

1.6 DELIVERY, STORAGE, AND HANDLING

- 1. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- 2. Storage: Store materials in clean, dry area in accordance with manufacturer's instructions. Keep materials in manufacturer's original, unopened containers and packaging until installation.
- 3. Handling: Protect materials and finish during handling and installation to prevent damage.

1.7 WARRANTY

- 1. Products will be free from defects in material and/or workmanship for a period of three years from the date of invoice.
- 2. The warranty does not apply to damage resulting from accident, alteration, misuse,

tampering, negligence, or abuse.

3. Should furnishings arrive on-site damaged or defective, manufacturer shall repair, replace, or refund the purchase price of any items following inspection by service representative and owner's representative.
4. Purchasers should be aware that normal use of these high quality products can result in superficial damage affecting the finish. Scratches, nicks, and dents are to be considered normal wear and tear, and are not the responsibility of the manufacturer.

PART 2 PRODUCTS

2.1 MANUFACTURER

1. Basis of Design:
2. Landscape Forms, Inc., 7800 E. Michigan Ave, Kalamazoo, Michigan 49048. Phone: (800) 521-2546. Fax (269) 381-3455. Website www.landscapeforms.com E-mail: specify@landscapeforms.com
3. Or approved equal.

2.2 CAROUSEL TABLES

1. Seating:
 - a. Table style: Dining height, four-seat unit
 - b. Seat style: backed metal grid
2. Tabletop: Steelhead 42in diameter with wood insert
 - a. Wood species: Ipe
3. Umbrella Hole: 2" dia hole, with grommet installed for use with 1-1/2" dia pole. Hardware for securing the umbrella to the table support shall be included.
4. Material
 - a. Seat
 1. Metal Grid: Steel wire grid panel of 3/16-inch perimeter and reinforcing bars 2 inches O.C. with 1/8-inch cross wires 3/8 inch O.C. Welded in 7/8-inch O.D. by 0.120-inch-wall tubular steel frame.
 - b. Tabletop:
 1. Steelhead: Set in 1-1/2-inch O.D. tubular frame reinforced with steel channels beneath top. Three seat unit also receives a 19in square x 3/16" thick carbon steel adapter plate.
 2. Wood: 2-7/8in w x 3/4" thick boards, eased edges, attached to 10-gauge carbon steel sheet with flanged hex head Magni-coated screws.
 3. Supports: Steel Tubing: 2-inch O.D. by 0.120-inch wall thickness.
 4. Wood: 2-7/8in w x 1-3/16" thick boards, glued construction, radius corners, eased edges, with powder coated 3/16" carbon steel plate for support.

5. Finishes
 - a. Finish on Carbon Steel: "Pangard II" (based on Landscape Forms).
 1. Primer: Rust inhibitor.
 2. Topcoat: Thermosetting polyester powdercoat. UV, chip, and flake resistant.
 3. Test Results: "Pangard II".
 4. Gloss, Garner 60 Degrees, ASTM D 523: Plus or minus 5.
 5. UV Resistance, Color and Gloss, ASTM G 155, Cycle 7: Delta E less than 2 at 2.0 mils and less than 20 percent loss.
 6. Cross-Hatch Adhesion, ASTM D 3359, Method B: 100 percent pass.
 7. Flexibility Test, Mandrel, ASTM D 522: 3 mm at 2 mils.
 8. Erichsen Cupping, ISO 1520: 8 mm.
 9. Impression Hardness, Buchholz, ISO 2815: 95.
 10. Impact Test, ASTM D 2794: 60 inches/pound at 2.5 mils.
 11. Pencil Hardness, ASTM D 3363: 2H minimum.
 12. Corrosion Resistance, 1,500-Hour Test, ASTM B 117: Max undercutting 1 mm.
 13. Humidity Resistance, 1,500-Hour Test, ASTM D 2247: Max blisters 1 mm
 14. Tabletop Color: Ipe (P)
 15. Seat Color: as selected by architect from full range of colors
 16. Support Color: as selected by architect from full range of colors
 - b. Finish on Wood:
 1. Wood for Exterior Use: Sealed with per manufacturer recommendations.

2.3 UMBRELLAS

1. "SHADE":
 - a. Size: 78-7/8" x 79-1/8"
 - b. Surface Mount Stand:
 1. Diameter: 14 inches
 2. Height: 26-3/4 inches
 - c. Clearance Under Shade Panels: 6' 2"
 - d. Pole: 1-1/2" diameter
2. Mounting: Stainless steel hardware for securing umbrella to table and stand is included. Umbrella must be secured.
 - a. Table Mount
3. C. Durability:
 - a. Tested to a sustained wind speed of 70 mph with no damage.
 - b. Tested to a distributed snow load requirement of 40 lbs. per square foot.
4. Materials:
 - a. Shade Panels: Perforated Shade Panels: Constructed from .090 thick 3003-H14 aluminum, perforated with .188 dia. holes.
 - b. Gusset Assemblies: Constructed from .25 thick 6061-T6 aluminum.
 - c. Panel Connectors, End Caps, and Top Cap: Cast 319 aluminum.
 - d. Panel Edge Extrusions: Constructed from extruded 6063-T5 aluminum.

- e. Main Support Extrusion: Constructed from Extruded 6105-T5 aluminum.
 - f. Fasteners: All fasteners are stainless steel.
 - g. Pole Assembly: carbon steel DOM tubing, 1-1/2" o.d., 0.120" wall thickness
 - h. Optional Surface Mount Stand: Steel plate is 14" diameter; 5/8 " thick. Steel tube is 2" o.d.; .120 wall thickness; 26-3/4" high, with black plastic grommet.
 - i. Options:
 - 1. Anchoring hardware for surface mount stand: not included. Corrosion-resistant recommended.
5. Recycled Content
- a. Umbrella With Aluminum Panels:
 - 1. Post-Consumer Material Content: Minimum 31 percent.
 - 2. Pre-Consumer Material Content: Minimum 27 percent.
 - 3. Recyclable: 100 percent.
6. Fabrication
- a. Assembly: Shop assembled products.
7. Finishes
- a. Finish on Metal: Landscape Forms, Inc. "Pangard II".
 - 1. Primer: Rust inhibitor
 - 2. Topcoat: Thermosetting TGIC polyester powder coat. UV, chip, and flake resistant.
 - 3. Test Results: "Pangard II".
 - 1) Gloss Consistency, Gardner 60 Degrees, ASTM D 523: Plus or minus 5 percent from standard.
 - 2) UV Resistance, Color and Gloss, ASTM G 155, Cycle 7: Delta E less than 2 at 2.0 mils and less than 20 percent loss.
 - 3) Cross-Hatch Adhesion, ASTM D 3359, Method B: 100 percent pass.
 - 4) Flexibility Test, Mandrel, ASTM D 522: 3 mm at 2 mils.
 - 5) Erichsen Cupping, ISO 1520: 8 mm.
 - 6) Impression Hardness, Buchholz, ISO 2815: 95.
 - 7) Impact Test, ASTM D 2794: 60 inch-pounds at 2.5 mils.
 - 8) Pencil Hardness, ASTM D 3363: 2H minimum.
 - 9) Corrosion Resistance, 1,500-Hour Test, ASTM B 117: Max. undercutting 1 mm.
 - 10) Humidity Resistance, 1,500-Hour Test, ASTM D 2247: Max. blisters 1 mm.
 - 4. Color: Loll Leaf Green

2.4 BENCHES

- 1. Style: "STAY"
- 2. Length: 68-1/2 inches, backed
- 3. Mounting: surface
- 4. Divider Option
 - a. With divider

5. Arm Option
 - a. End Arms
6. Materials
 - a. Supports: End supports and center dividers are type 319 ASTM B 26 aluminum sand castings.
 - b. Frame: Front seat rail is 1.5" OD x .120" wall normalized 4130 welded steel tubing with type 304 ASTM A 276 stainless steel threaded inserts welded inside each end. Rear seat rail is 1.5" OD x .120" wall ASTM A 513 type 1 steel tubing. Seat panel connections are .250" x .75" x .80" type 304 ASTM A 276 stainless steel flat bar welded to rails. Upper and lower back rails are 6061-T6 or 6005A-T5 ASTM B 211 aluminum extrusions. Upper rail is 1.375" dia.; lower rail is .875" dia.
 - c. Seat and Back Panels: Seat panel is .120" thick ASTM A 1011 hot rolled pickled and oiled commercial steel type B perforated and formed.
 1. Seat panel connections are .188" x 1" x 1.5" type 304 ASTM A 276 stainless steel flat bar welded to panel.
 2. Back panel is .125" thick 3003-H14 ASTM B 209 aluminum sheet perforated and formed. Back panel is welded to back rails.
 - d. Surface Mount Hardware: Plates are .375" thick 6061-T6511 ASTM B 221 aluminum flat bar. Anchors are 3/8-16 internal thread adhesive grip concrete anchors, zinc-plated steel, with 3/8-16 x 1-3/8" long hex bolt with Magni-coat, and 3/8" washers with Magni-coat.
 - e. Fasteners: All threaded fasteners are stainless steel or Magni 565 coated carbon steel. Seat dividers are attached with nylon shoulder and flat washers to protect the seat panel finish.
7. Recycled Content
 - a. Stay Backed Benches:
 1. Post-Consumer Material Content: Minimum 38 percent.
 2. Pre-Consumer Material Content: Minimum 25 percent.
8. Fabrication
 - a. Shop assembled products.
9. Finishes
 - a. Finish on Metal: Landscape Forms, Inc. "Pangard II".
 1. Primer: Rust inhibitor.
 2. Topcoat: Thermosetting polyester powder coat. UV, chip, and flake resistant.
 3. Test Results: "Pangard II".
 - 1) Gloss, Garner 60 Degrees, ASTM D 523: Plus or minus 5.
 - 2) UV Resistance, Color and Gloss, ASTM G 155, Cycle 7: Delta E less than 2 at 2.0 mils and less than 20 percent loss.
 - 3) Cross-Hatch Adhesion, ASTM D 3359, Method B: 100 percent pass.
 - 4) Flexibility Test, Mandrel, ASTM D 522: 3 mm at 2 mils.
 - 5) Erichsen Cupping, ISO 1520: 8 mm.
 - 6) Impression Hardness, Buchholz, ISO 2815: 95.
 - 7) Impact Test, ASTM D 2794: 60 inches/pound at 2.5 mils

- 8) Pencil Hardness, ASTM D 3363: 2H minimum.
- 9) Corrosion Resistance, 1,500-Hour Test, ASTM B 117: Max. undercutting 1 mm.
- 10) Humidity Resistance, 1,500-Hour Test, ASTM D 2247: Max. blisters 1 mm.
4. Color: Mercury Metallic

2.5 LITTER RECEPTACLES

1. Style: "MultipliCITY"
 - a. Double unit
 1. Bin one opening: 5in hole opening
 2. Bin two opening: 10in hole opening
2. Mounting
 - a. Embedded: Does not include rotomolded base. Includes (4) 3/8-16 threaded rods for embedding
3. Liner Color: Black
 - a. Freestanding / Surface mount base color, if applicable: Black
4. Options
 - a. Locks. Keyed alike, 2 keys per lock.
5. Material
 - a. Frame: cast aluminum
 - b. Bin and freestanding/surf mt base: Rotationally molded linear medium density polyethylene.
 - c. Lid: 6061 aluminum plate
 - d. Bag Hanger: 304 stainless steel bar.
6. Recycled Content
 - a. All units are 100% recyclable

	Post-Consumer Content	Pre-Consumer Content
single litter, hole, freestanding	2%	2%
single litter, hole, embed	3%	2%
double unit, freestanding	8%	6%
double unit, embed	16%	9%

7. Fabrication
 - a. Shop assembled litter receptacles.
8. Finishes
 - a. Finish on aluminum components:
 1. Clear Anodized
 2. Powder coat : Landscape Forms, Inc. "Pangard II".
 - 1) Primer: Rust inhibitor.
 - 2) Topcoat: Thermosetting TGIC polyester powder coat. UV, chip, and flake resistant.
 - 3) Test Results: "Pangard II".
 - a) Gloss Consistency, Gardner 60 Degrees, ASTM D 523:

- Plus or minus 5 percent from standard.
- b) UV Resistance, Color and Gloss, ASTM G 155, Cycle 7: Delta E less than 2 at 2.0 mils and less than 20 percent loss.
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- g) Impact Test, ASTM D 2794: 60 inch-pounds at 2.5 mils.
- h) Pencil Hardness, ASTM D 3363: 2H minimum.
- i) Corrosion Resistance, 1,500-Hour Test, ASTM B 117: Max. undercutting 1 mm.
- j) Humidity Resistance, 1,500-Hour Test, ASTM D 2247: Max. blisters 1 mm
- 4) Color: Titanium Metallic

PART 3 EXECUTION

3.1 EXAMINATION

1. All site furnishings
 - a. Examine areas to receive tables.
 - b. Notify Architect prior to installation of furnishings for layout of units. Provide layout drawing of all site furnishings coordinated with other plaza elements.
 - c. Verify that substrates are stable and capable of supporting the weight of items covered under this section. Verify that substrates have been adequately prepared to securely anchor those items that will be surface mounted.
 - d. Notify Architect of conditions that would adversely affect installation or subsequent use.
 - e. Do not begin installation until unacceptable conditions are corrected.

3.2 INSTALLATION

1. All site furnishings shall be installed as follows:
 - a. In accordance with manufacturer's instructions at locations indicated on the coordination drawings.
 - b. Plumb and level.
 - c. Anchored securely in place.

3.3 ADJUSTING

1. Finish Damage: Repair minor damages to finish in accordance with manufacturer's instructions and as approved by Architect or Owner's representative.
2. Component Damage: Remove and replace damaged components that cannot be successfully repaired as determined by Architect or Owner's representative.

3.4 CLEANING

1. Clean promptly after installation in accordance with manufacturer's instructions.
2. Do not use harsh cleaning materials or methods that could damage the finish.

3.5 PROTECTION

1. Protect installed items to ensure that, except for normal weathering, items will be without damage or deterioration at time of Substantial Completion.

END OF SECTION 12 93 23