



SECTION 11060

THEATER AND STAGE EQUIPMENT

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PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Stage Platforms
- B. Stage Supports.
- C. Seating Risers and Support Systems.
- D. Guardrails.
- E. Lighting.
- F. Crowd Control Barriers.
- G. Stair Units.
- H. Storage Carts.

1.2 RELATED SECTIONS

- A. Section 16100 - Wiring Methods: Electrical wiring for lighting devices.
- B. Section 16500 - Lighting: Interior and exterior luminaries.

1.3 REFERENCES

- A. Aluminum Association (AA): AA DAF-45 Designation System for Aluminum Finishes.
- B. American Institute of Steel Construction (AISC): AISC Manual of Steel Construction.
- C. APA - The Engineered Wood Association: U.S. Product Standard PS 1-83.
- D. ASTM International (ASTM):
 - 1. ASTM A 36 - Standard Specification for Carbon Structural Steel.
 - 2. ASTM A 500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.

3. ASTM A 501 - Standard Specifications for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
 4. ASTM A 513 - Standard Specification for Electric-Resistance-Welded Carbon and Alloy Steel Mechanical Tubing.
 5. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
- E. American Welding Society (AWS):
1. ANSI/AWS D1.1/D1.1M Structural Welding Code - Steel.
 2. AWS D1.3 Structural Welding Code - Sheet Steel, Second Edition.
- F. Americans with Disabilities Act (ADA).
- G. International Code Council (ICC): International Building Code.
- H. National Fire Protection Association (NFPA): NFPA 102 Standard for Grandstands, Folding and Telescopic Seating, Tents, and Membrane Structures.
- I. Underwriters Laboratories, Inc. (UL): UL 94 Flammability Tests for Flammability of Plastic Materials for Parts in Devices and Appliances.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
1. Preparation instructions and recommendations.
 2. Storage and handling requirements and recommendations.
 3. Installation methods.
- C. Shop Drawings: Submit plan, section, elevation and perspective drawings as necessary to depict the proper configuration, assembly and installation and termination of each product specified in this section.
- D. Verification Samples: For each finish product specified, two samples, representing actual product, color, and finish.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: All primary products specified in this section will be supplied by a single manufacturer with a minimum of ten (10) years experience.
- B. Installer Qualifications: All products listed in this section are to be installed by a single installer with a minimum of five (5) years demonstrated experience in installing products of the same type and scope as specified.
- C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
1. Finish areas designated by Architect.
 2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
 3. Refinish mock-up area as required to produce acceptable work.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store and dispose of hazardous materials, and materials contaminated by

hazardous materials, in accordance with requirements of local authorities having jurisdiction.

- C. Store products indoors in temperature controlled facility.

1.7 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.8 WARRANTY

- A. At project closeout, provide to Owner or Owners Representative an executed copy of the manufacturer's standard limited warranty against manufacturing defect, outlining its terms, conditions, and exclusions from coverage.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Staging Concepts, which is located at: 7008 Northland Dr. Suite 150 ; Brooklyn Park, MN 55428; Toll Free Tel: 800-337-5339; Tel: 763-533-2094; Fax: 763-533-2096; Email: [request info](#); Web: www.stagingconcepts.com
- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 APPLICATIONS/SCOPE

- A. Steel Structures: All steel structures must be designed in accordance with standards found in the current edition of the AISC Manual of steel construction and welded in accordance with ANSI/AWS D1.1/D1.1M and ANSI/AWS D1.3.
- B. Platforms: Interlocking, lightweight modular stage platforms.
 - 1. Configuration: Single tier.
 - 2. Configuration: Multiple tiers.
 - 3. Configuration: As noted on the Contract Drawings.
 - 4. Live Load: not less than 125 psf (610 kg/sm).

2.3 PLATFORMS

- A. Plywood Subfloor: SC90 - 1 inch (25.4 mm) thick CDX span rated sheathing in accordance with APA 1-83.
 - 1. Surface Material: Poly Vinyl - Color: Black.
 - 2. Surface Material: Poly Vinyl - Color: Gray.
 - 3. Surface Material: Plyron.
 - 4. Surface Material: Carpet - Color: Black.
 - 5. Surface Material: Carpet - Color: Gray.
 - 6. Surface Material: Plywood - Unfinished
 - 7. Surface Material: Plywood - Painted
 - 8. Surface Material: Plywood - recessed for floor finish by others
 - 9. Surface Material: Opaque Acrylic.
 - 10. Surface Material: Clear Acrylic.
 - 11. Frame: 4 Inch (102 mm) extruded 6105-T5 aluminum frame with 1 inch (25mm) protective edge.

- a. Finish: Mill.
 - b. Finish: Clear anodized.
 - c. Finish: Black powder coat
 - d. Finish: Black anodized.
- B. Aluminum Subfloor: SC97 - 0.090 inch (2.3 mm) 6105-T5 aluminum, non-slip ribbed planks finished to AA DAF-45.
- 1. Surface Planks: 6 inches x 1 3/4 inches (152mm x 45mm).
 - 2. Surface Planks: 8 inches x 1 3/4 inches (203mm x 45mm).
 - 3. Surface Planks: 10 inches x 1 3/4 inches (254mm x 45mm).
 - 4. Surface Planks: 12 inches x 1 3/4 inches (305mm x 45mm).
 - 5. Frame: 4 3/4 Inch (121 mm) extruded 6105-T5 aluminum frame with 1 3/4 inch (45mm) protective edge.
 - a. Finish: Mill.
 - b. Finish: Clear anodized.

2.4 SUPPORTS

- A. Bridge Support: SC9600 Bridge support system with threaded adjustable-leveling foot.
- 1. Material: Aluminum
 - 2. Finish: Mill.
 - 3. Finish: Clear anodized.
 - 4. Finish: AAMA 2604 Powder coat - Color: Black.
 - 5. Height Range: 24 inches - 36 inches (610mm - 914mm).
 - 6. Height Range: 36 inches - 54 inches (914mm - 1372mm).
 - 7. Height Range: 48 inches - 76 inches (1219mm - 1931mm).
 - 8. Adjustment Increments: 4 inches (102mm) minimum.
- B. Leg Supports: SC90 deck support system.
- 1. Leg Type: Fixed
 - 2. Leg Type: Adjustable.
 - 3. Material: Aluminum
 - 4. Finish: Mill.
 - 5. Finish: Clear anodized.
 - 6. Finish: AAMA 2604 Powder coat - Color: Black.
 - 7. Height Range: 8 inches - 12 inches (203mm - 305mm).
 - 8. Height Range: 12 inches - 16 inches (305mm - 406mm).
 - 9. Height Range: 16 inches - 24 inches (406mm - 610mm).
 - 10. Height Range: 24 inches - 36 inches (610mm - 914mm).
- C. Frame Supports: SC 100 folding bridge supports.
- 1. Material: Steel
 - 2. Leg Type: Fixed
 - 3. Leg Type: Adjustable
 - 4. Finish: AAMA 2604 Powder Coat - Color: Black
 - 5. Finish: Zinc Plating
 - 6. Height Range: 16 inches - 22 inches (406mm - 559mm).
 - 7. Height Range: 18 inches - 24 inches (457mm - 610mm).
 - 8. Height Range: 24 inches - 32 inches (610mm - 812mm).
 - 9. Height Range: 32 inches - 42 inches (812mm - 1066mm).
- D. Adjustable Height Folding and Rolling Stage System: SC2003 Rolling Stage Support.
- 1. Dimensions: 8 feet x 12 feet (2438mm x 3658mm).
 - 2. Height Range: 36 inches - 50 inches (914mm - 1270 mm)
 - 3. Height Range: 48 inches - 72 inches (1219mm - 1829 mm).

- E. Fixed Height Folding and Rolling Stage System: SC9000 EZ Stage.
 - 1. Dimensions: 6 feet x 8 feet (1829mm x 2438mm).
 - 2. Height: 12 inches (305mm).
 - 3. Height: 16 inches (406mm).
 - 4. Height: 24 inches (610mm).

2.5 SEATING RISER SUPPORT SYSTEM

- A. Vertical Members: 2 inch (51mm) O.D. ASTM A 513 carbon steel tubing with urethane-coated leveling foot.
 - 1. Height Adjustment Increments: 3 inches (76 mm) maximum.
 - 2. Finish: Black zinc plating.
 - 3. Finish: Clear zinc plating.
 - 4. Finish: AAMA 2604 Powder coat - Color: Black.
- B. Horizontal Members: 2 inch by 2 inch (51mm x 51mm) ASTM A 500 square carbon steel tubing.
 - 1. Finish: Black zinc plating.
 - 2. Finish: Clear zinc plating.
 - 3. Finish: AAMA 2604 Powder coat - Color: Black.
- C. Cross Bracing: 1 inch (25mm) ASTM A 36 carbon steel HR flat bar.
 - 1. Finish: Black zinc plating.
 - 2. Finish: Clear zinc plating.
 - 3. Finish; AAMA 2604 Powder coat - Color: Black.
- D. Pivot Connection: Aluminum casting, 380 aluminum alloy, with grade 5 pivot pins.
- E. Casters: Retractable with lever handle, meeting OSHA requirements of 60 pounds-force (2.873 kPa).
- F. Seating Risers: SC2000 Folding Seating Risers.

2.6 GUARDRAILS

- A. Railings:
 - 1. Railing Type: SC90 Standard 2-Line Guardrail.
 - 2. Railing Type: SC90 IBC Guardrail.
 - 3. Vertical Post Spacing: In accordance with all federal, state and local building codes having jurisdiction, but in no case greater than 4 inches (102mm).
 - 4. Post and Rail Diameter: 1.66 inches (42mm).
 - 5. Guardrail Height: 30 inches (762mm).
 - 6. Guardrail Height: 36 inches (914mm).
 - 7. Guardrail Height: 42 inches (1067mm).
 - 8. Toeboard: 4 inch (102 mm) ASTM B 209 extruded aluminum.
 - 9. Finish: Mill.
 - 10. Finish: Anodized.
 - 11. Finish: AAMA 2604 Powder coat
 - a. Color: Black
 - b. Color: Silver.
- B. Hardware: Tamperproof socket-head cap screw and connectors.

2.7 ACCESSORIES

- A. Fixed Stair Units: Heavy gauge ASTM A 501 steel tube with Black AAMA 2604 powder coat finish.

1. Treads:
 - a. Tread Depth: 11 inches (279mm).
 - b. Tread Width: 36 inches (914mm).
 - c. Tread Width: 44 inches (1118mm).
 - d. Tread Finish: To match platform decks.
 2. Risers: Maximum height: 7 inches (178mm), unless otherwise specified.
 3. Handrails: 1.66 inch (42mm) diameter posts and rails in accordance with all federal, state and local building codes having jurisdiction.
 - a. Finish: Mill.
 - b. Finish: Anodized.
 - c. Finish: AAMA 2604 Powder coat - Color: Black.
 4. Hardware: Tamperproof socket-head cap screw and connectors.
- B. Adjustable Stair Units:
1. Handrail Finish: Mill.
 2. Handrail Finish: Anodized.
 3. Handrail Finish: AAMA 2604 Powder coat - Color: Black.
 4. Stair Tread: 12 inches (304mm) deep by 36 inches (914mm) wide. Material and finish to match platform panels.
 5. Height Range: 16 inches to 24 inches (406mm - 610mm).
 6. Height Range: 24 inches to 36 inches (610mm - 914mm).
 7. Height Range: 36 inches to 56 inches (914mm - 1422mm).
 8. Height Range: 48 inches to 72 inches (1219mm - 1829mm).
 9. Handrails: 1.66 inch (42mm) diameter posts and rails in accordance with all federal, state and local building codes having jurisdiction.
 - a. Finish: Mill.
 - b. Finish: Anodized.
 - c. Finish: AAMA 2604 Powder coat - Color: Black.
 10. Hardware: Tamperproof socket-head cap screw and connectors.
- C. Aisle Lights: UL approved 0.375 inch (9.5 mm) low voltage rope lighting, with 3 inch (76 mm) bulb spacing, complete with transformer and wiring.
1. Voltage: 12 volt.
 2. Voltage: 24 volt.
 3. Bulbs: Clear.
- D. Crowd Control Barricades: 4 foot by 4 foot (1219mm x 1219mm) interlocking ASTM A 501 tubular steel sections with steel mesh face panels and black AAMA 2604 powder coat finish.
- E. Chair Stops: Extruded aluminum rectangular tubing.
1. Height: 2.188 inches (55.6 mm).
 2. Finish: Mill.
 3. Finish: Anodized.
 4. Finish: AAMA 2604 Powder coat - Color: Black.
- F. Closure Panels:
1. Material: 1 inch (25mm) APA 1-83 CDX plywood sheathing. Includes quick-locking mechanism. Finish: To match platform panel.
 2. Material: 1/8 inch (3mm) or 3/16 inch (4.5mm) aluminum sheet. Includes quick locking mechanism. Finish: Anodized.
- G. Skirting: Fire retardant pleated fabric in accordance with NFPA 701, with reinforced webbing at top and hook and loop attachment material. Includes extruded drapery attachment clip.
1. Height: Fixed - _____ inches (____ mm).
 2. Height: Adjustable.

3. Color: Black.
 4. Color: As selected by Architect from manufacturer's standard color offerings.
 5. Color: _____.
- H. Storage Carts: Heavy gauge ASTM A 501 steel tube with Black AAMA 2604 powder coat finish.
1. Cart Type: Arena Cart:
 - a. Deck Capacity: 15.
 2. Cart Type: Vertical Platform Cart.
 - a. Deck Capacity: 4 - (20 1/2 inches wide).
 - b. Deck Capacity: 6 - (28 1/2 inches wide).
 - c. Deck Capacity: 7 - (34 1/2 inches wide).
 - d. Deck Capacity: 8 - (38 1/2 inches wide).
 - e. Deck Capacity: 10 - (47 inches wide).
 3. Cart Type: Stackable Platform Single Cart.
 - a. Deck Capacity: 10.
 4. Cart Type: Stackable Platform Stacked Cart.
 - a. Deck Capacity: 20.
 5. Cart Type: 34 inch Wide Guardrail Cart.
 - a. Guardrail Capacity: 12
 6. Cart Type: 44 inch Wide Guardrail Cart.
 - a. Guardrail Capacity: 16
 7. Cart Type: Support Cart.
 - a. SC9600 Supports.
 - b. SC100 Supports.
 8. Casters: Two (2), 8 inch (203mm) diameter fixed and two (2), 8 inch (203mm) diameter swivel type.
 9. Casters: Four (4), 8 inch (203mm) diameter swivel type.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

3.4 PROTECTION

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

END OF SECTION