SECTION 133423 - FABRICATED STRUCTURES

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 prefabricated steel control booths.

B. Related Sections:

1. Division 03 Section "Cast-in-Place Concrete" for installing anchor bolts.

C. ADA-ABA Accessibility Guidelines: U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines."

1.3 PERFORMANCE REQUIREMENTS

A. Structural Performance: Control booths shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated according to ASCE/SEI 7:

1. Dead Loads: Self Weight.
2. Live Loads: 50 psf.
3. Roof Loads: 20 psf.
4. Snow Loads: 25 psf.
5. Wind Loads: 90 psf.

B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for control booths.

B. Shop Drawings: For control booths. Include plans, elevations, sections, details, and attachments to other work.

C. Samples for Initial Selection: For control booths with factory-applied color finishes.

D. Samples for Verification: For exposed finishes, in manufacturer's standard sizes.

E. Delegated-Design Submittal: For control booths indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

F. Welding certificates.

G. Maintenance Data: For control booths to include in maintenance manuals.

H. Warranty: Sample of special warranty.

1.5 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
2. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum."
3. AWS D1.3, "Structural Welding Code - Sheet Steel."

B. Regulatory Requirements: Comply with applicable provisions in [the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines] [and] [ICC/ANSI A117.1].

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

D. Safety Glazing Products: Category II materials complying with testing requirements in 16 CFR 1201.

1. Subject to compliance with requirements, obtain safety glazing products permanently marked with certification label of [SGCC or another certification agency] [or] [manufacturer] acceptable to authorities having jurisdiction.

E. Preinstallation Conference: Conduct conference at [Project site] <Insert location>.

1.6 COORDINATION

A. Coordinate installation of anchorages for control booths. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair finish or replace wall panels that fail in materials or workmanship within specified warranty period.

1. Warranty Period: [Five] <Insert number> years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Aluminum: Alloy and temper recommended by aluminum producer and manufacturer for type of use and finish indicated, and as follows:

1. Sheet: ASTM B 209 (ASTM B 209M).
2. Extruded Shapes: ASTM B 221 (ASTM B 221M).
3. Rolled Tread Plate: ASTM B 632/B 632M, Alloy 6061-T4 or Alloy 6061-T6.

B. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, commercial quality, G90 (Z275) coating designation; mill phosphatized.

C. Galvanized, Rolled Steel Tread Plate: ASTM A 786/A 786M, rolled from steel plate complying with ASTM A 572/A 572M, Grade 55 (380); hot-dip galvanized according to ASTM A 123/A 123M.

D. Steel Structural Tubing: ASTM A 500, Grade B.

E. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

F. Steel Mechanical Tubing: ASTM A 513, welded steel mechanical tubing.

G. Zinc-Coated (Galvanized) Steel: Hot-dip galvanized according to ASTM A 123/A 123M.

H. Stainless-Steel Sheet: ASTM A 666, Type 304.

I. Insulating Glass: Units complying with ASTM E 774 for Class CBA and consisting of two lites of 2.5-mm-thick dark gray tinted float glass and dehydrated air space, with a total overall unit thickness of 7/16 inch (11 mm) and with manufacturer's standard dual seal.

J. Anchorages: Anchor bolts; stainless steel.

2.2 PREFABRICATED CONTROL BOOTHS, GENERAL

A. General: Provide a complete, integrated set of mutually dependent components that form a completely assembled, prefabricated control booth, ready for installation on Project site.

1. Building Style: Standard square corners.
2. Doors: Swinging door on end.

B. Horizontal Sliding Windows: Extruded-aluminum sash frames glazed with 3-mm-thick, clear tempered float glass. Equip windows with cam locks, weather stripping, and stainless-steel ball-bearing rollers.

1. Frame Finish: Clear anodic.
2. Corner Shape: Square.

C. Work Counters: Full width of control booth, reinforced; with an access opening for electrical cords at each rear corner of counter.

1. Material: 0.078-inch- (1.98-mm-) thick, stainless-steel sheet.
2. Depth: 22 inches (559 mm).

D. Electrical Power Service: See Drawings.

E. Lighting Fixtures: See Drawings.

F. Heating Unit: See Drawings.

G. Cooling Unit: See Drawings.

2.3 PREFABRICATED STEEL CONTROL BOOTHS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Keystone Structures, Inc.
2. Par-Kut International, Inc.
3. Porta-King Building Systems.

B. Structural Framework: Fabricated from 2-by-2-by-0.075-inch (50-by-50-by-1.90-mm) steel structural or mechanical tubing. Connect framework by welding.

C. Base/Floor Assembly: No perimeter frame, with finished floor fabricated from 0.108-inch (2.74-mm) nominal-thickness, galvanized, rolled steel tread plate.

D. Wall Panel Assembly: Assembly consisting of exterior face panel fabricated from 0.079-inch (2.01-mm) nominal-thickness, galvanized-steel sheet; and interior face panel fabricated from 0.064-inch (1.63-mm) nominal-thickness, galvanized-steel sheet; with 3-inch- (76-mm-) thick, rigid fiberglass or polystyrene board insulation in cavity between exterior and interior face panels.

1. Thermal Resistance Value (R-Value): R-10.

E. Roof/Ceiling Assembly: Consisting of exterior roof panels, interior ceiling panels, and insulation between exterior and interior panels; sloped to drain at booth perimeter.

1. Exterior Roof Panel: Fabricated from 0.079-inch (2.01-mm) nominal-thickness, galvanized-steel sheet; with EPDM membrane, continuously welded seams, and full-perimeter gutter.

2. Interior Ceiling Panel: Fabricated from 0.079-inch (2.01-mm) nominal-thickness, galvanized-steel sheet; with fiberglass insulation in cavity between ceiling and roof.

   a. Thermal Resistance Value (R-Value): R-19.

3. Canopy Fascia: Fabricated from 0.079-inch (2.01-mm) nominal-thickness, galvanized-steel sheet, of custom design indicated on Drawings.

4. Downspouts: Integral, extending 3 inches (76 mm) beyond booth walls.

F. Swinging Door: 1-3/4 inches (44 mm) thick; tubular-frame design fabricated from clear-anodized aluminum; with top half of door glazed. Equip door with deadlock, three butt hinges, closer, and full weather stripping.

1. Glazing: Fixed unit with 6-mm-thick, dark gray tinted tempered float glass.
2. Deadlock: Mortised, with lever handle and removable cylinder capable of being master keyed.

G. Finish: Finish exposed metal surfaces, including structural framework, walls, canopy, and ceiling with rust-inhibitive primer and one finish coat of industrial air-dry acrylic enamel.

1. Color: Camden Yards Green (Owner to provide color code).

2.4 FABRICATION

A. Fabricate control booths completely in factory.

B. Preglaze windows and doors at factory.

C. Prewire control booths at factory, ready for connection to service at Project site.

D. Fabricate control booths with removable lifting eye centered in roof.

E. Accessible Control Booths: Where indicated to be accessible, fabricate control booths as follows:

1. Provide service windows located no higher than 34 inches (865 mm) above exterior grade.
2. Provide door opening with minimum 32-inch (813-mm) clear width.
3. Provide minimum 60-inch (1525-mm) clear turning spacing within the booth.
4. Provide minimum 27-inch (685-mm) clearance beneath interior work surfaces. Locate work surfaces 28 inches (710 mm) minimum and 34 inches (865 mm) maximum above the floor.
5. Locate controls and operable parts no lower than 15 inches (381 mm) and no higher than 48 inches (1219 mm) above the floor where reach is unobstructed. Where side reach is

obstructed, locate controls and operable parts no lower than 15 inches (381 mm) and no higher than 46 inches (1219 mm) above the floor.

2.5 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.6 FINISHES

A. [Steel] [and] [Galvanized-Steel] Factory Finish: Immediately after cleaning and pretreating, apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat.

1. Color and Gloss: [As indicated by manufacturer's designations] [Match Architect's sample] [As selected by Architect from manufacturer's full range] <Insert color and gloss>.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install control booths according to manufacturer's written instructions.

B. Accessible Control Booths: Install with interior floor surface at same elevation as adjacent paved surfaces.

C. Set control booths plumb and aligned. Level baseplates true to plane with full bearing on concrete bases.

D. Fasten control booths securely to [cast-in anchor bolts] [concrete bases with expansion anchors].

E. Connect electrical power service to power distribution system according to requirements specified in Division 26 Sections.

3.3 ADJUSTING

A. Adjust doors, operable windows, and hardware to operate smoothly, easily, properly, and without binding. Confirm that locks engage accurately and securely without forcing or binding.

B. Lubricate hardware and other moving parts.

C. After completing installation, inspect exposed finishes and repair damaged finishes.

END OF SECTION 133423