husseyseating
YOUR PARTNER FOR SEATING SOLUTIONS

SECTION 12 63 00
QUANTUM

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Fixed polymer chairs with gravity tilt seat mechanisms and mounted to continuous beam at fully adjustable, uniform seat centers. Available for indoor and outdoor applications.
   1. Floor mounted chairs.
   2. Riser mounted chairs.
   3. Special Application: _____.

1.2 REFERENCES

A. American Institute of Steel Construction (AISC):
   1. AISC - Design of Hot Rolled Steel Structural Members.

B. American Iron and Steel Institute (AISI):
   1. AISI - Design Cold Formed Steel Structural Members.

C. American National Standards Institute (ANSI).

D. American Society for Testing Materials (ASTM):
   1. ASTM - Standard Specification for Properties of Materials.

E. Americans with Disability Act (ADA):
   1. ADA - Standards for Accessible Design.

F. National Fire Protection Association (NFPA):
   1. NFPA 102 Standard for Assembly Seating, Tents, and Membrane Structures.

1.3 SUBMITTALS

A. Section Cross-Reference: Submit required submittals in accordance with "Conditions of the Contract" and Division.
   1. General Requirements sections of this "Project Manual."

B. Project Data: Manufacturer's product data for each system. Include the following:
   1. Project list: Ten (10) seating projects of similar size, complexity and in service for at least five (5) years.
   2. Deviations: List of deviations from these project specifications.

C. Shop Drawings: Indicate polymer chair seating layout. Show all equipment to be furnished with details of accessories to be supplied.

D. Verification Samples: Seat materials and color finish as selected by Architect from manufacturers standard color finishes.

E. Manufacturer Qualifications: Certification of insurance coverage and manufacturing experience of manufacturer.

F. Installer Qualifications: Installer qualifications indicating capability, experience, and manufacturer acceptance.

G. Engineer Qualifications: Certification by a professional engineer registered in the state of manufacturer that the equipment to be supplied meets or exceeds the design criteria of this specification.

H. Operating/Maintenance Manuals: Provide to Owner maintenance manuals. Demonstrate operating procedures.

I. Warranty: Manufacturers standard warranty documents.

1.4 QUALITY ASSURANCE

A. NFPA Standard: Comply with current NFPA 102 Standard for Assembly Seating, Tents, and Membrane Structures, except where additional requirements are indicated or imposed by authorities having jurisdiction.

B. Insurance Coverage:
   1. Manufacturer's Certification of $5,000,000 or more.
   2. Errors and Omissions: $3,000,000 or more.

C. Installer Qualifications: Company specializing in performing Work of this section with documented experience for projects of similar scope and complexity.
   1. Factory trained and certified by the Manufacturer.

D. Engineer Qualifications: Engage a professional licensed engineer experienced in providing engineering services of the kind indicated that have resulted in the successful installation of audience seating similar in material, design, fabrication, and extent to those types indicated for this project.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver seating in manufacturers packaging clearly labeled with manufacturer name and content.

B. Handle seating equipment in a manner to prevent damage.

C. Deliver the seating at a scheduled time for installation that will not interfere with other trades operating in the building.

1.6 PROJECT CONDITIONS

A. Field Measurements: Coordinate actual dimensions of construction affecting seating installation by accurate field measurements before fabrication. Show recorded measurements on final shop drawings. Coordinate field measurements and fabrication schedule with construction progress to avoid delay of work.

1.7 WARRANTY

A. Manufacturer's Product Warranty: Submit manufacturer's standard warranty form for fixed chairs for warranty details. This warranty is in addition to, and not a limitation of other rights Owner may have under Contract Documents.
   1. Warranty Period: Contact manufacturer for detailed warranty information.
   2. Beneficiary: Issue warranty in legal name of project Owner.

3. Warranty Acceptance: Owner is sole authority that will determine acceptance of warranty documents.

1.8 MAINTENANCE AND OPERATION

A. Instructions: Both operation and maintenance will be transmitted to the Owner by the manufacturer of the seating or their representative.

B. Service: Maintenance and operation of the seating system will be the responsibility of the Owner or his duly authorized representative, and will include the following:
1. Only attachments specifically approved by the manufacturer for the specific installation are to be attached to the seating.
2. An annual inspection and required maintenance of each seating system is to be conducted to ensure safe conditions. At least biannually an inspection is to be performed by a professional engineer or factory qualified service personnel.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Hussey Seating Co., which is located at:
38 Dyer St. Ext.
North Berwick, ME 03906
Toll Free Tel: 800-341-0401
Tel: 207-676-2271
Fax: 207-676-2222

B. Substitutions: Not permitted.

C. Requests for substitutions will be considered in accordance with the provisions of Section 01 60 00.

2.2 PERFORMANCE AND DESIGN REQUIREMENTS

A. Embody a contemporary sculptured appearance to harmonize with any architectural form or room decor.

B. Exhibit compound contours for supportive comfort avoiding excess anatomical pressures.

C. Structural Performance: Engineer, fabricate, and install stadium and arena seating to the following structural loads without exceeding allowable design working stresses of materials involved, including anchors and connection. Apply each load to produce maximum stress in each respective component of the seating unit.

D. System Design Criteria:
1. Chair Module Assembly: Test and certify using an independent testing laboratory to EN 12727 Level 4 "Furniture - Ranked Seating - Test methods and requirements strength and durability".
1) Method 1 - En 12727 "The chair is tested and complies to En 12727 Level 4"
a) Seat Static Load (front edge of seat) 200 Kg [440 lbs.]
b) Back Static Load (forward) 75 Kg [165 lbs.]
c) Seat Cyclic Load (SLP) 95 Kg [210 lbs.] applied 300,000 times.
d) Back Cyclic Load (BLP) 33 Kg [75 lbs.] applied 300,000 times.
e) Arm Static Load (Vertical) 100 Kg [220 lbs.]
f) Arm Static Load (Horizontal) 90 Kg [200 lbs.]
Test incorporates and exceeds AS 4438 - Level 6 and BS 4875 – Level 4

2) Method 2 - Tested and Complies to Drop Impact Test [Sandbag to Seat SLP]
   a) Load 40 lbs. Height 6" - 25,000 Cycles
   b) Load 40 lbs. Height 8" - 25,000 Cycles
   c) Load 40 lbs. Height 10" - 25,000 Cycles
   d) Load 40 lbs. Height 12" - 25,000 Cycles
   Total Number Loads 100,000 Cycles

3) Method 3 - Tested and complies with Oscillating Impact Test [Sandbags to back@ BLP)]
   a) Load 2 x 40 lbs. Distance 6" - 15,000 Cycles
   b) Load 2 x 40 lbs. Distance 8" - 15,000 Cycles
   c) Load 2 x 40 lbs. Distance 10" - 15,000 Cycles
   d) Load 2 x 40 lbs. Distance 10" - 15,000 Cycles
   Total Number Loads 60,000 Cycles

4) Method 4 - Standard Test Method for Self-Rising Seat Mechanisms ASTM 851 - 87
   a) Passed 100,000 Cycles

2. Material Flammability: Satisfy applicable test, codes, standards, or requirements.
   a. Copolymer Polypropylene, ASTM 635, Burn Rate: 1 inch (25 mm) or less.
   b. Glass reinforced polyamide re, ASTM 635, Burn Rate: 1 inch (25 mm) or less.

2.3 FIXED POLYMER CHAIRS

A. Basis of Design: Hussey Fixed Polymer Chairs.

B. Supply chair as a complete chair module, the side supports, back and seat do not require any field assembly aside from mounting to the beams with two factory installed toggles.

C.
1. Basis of Design: Model: Quantum
2. Chair Size: 19 inches (483 mm) Seat Center to Seat Center
3. Chair Size: 20 inches (508 mm) Seat Center to Seat Center
4. Chair Size: 21 inches (533 mm) Seat Center to Seat Center
5. Chair Size: 22 inches (559 mm) Seat Center to Seat Center
6. Chair Size: 23 inches (584 mm) Seat Center to Seat Center
7. Back Type: Polymer.
8. Seat Type: Polymer.
9. Beam Support Brackets: Riser mount.
10. Beam Support Brackets: Floor mount.
11. Product Description/Criteria:
    a. Number of Chairs: _____.
    b. Number of Rows: _____.
    c. Number of Wheelchair Locations: _____.
    d. Number of ADA Access Arms: _____.
    e. Row Spacing: _____.
    f. Rise: _____.
12. Product Accessories:
    a. Padded seat.
    b. Padded back.
    c. Removable chairs.
    d. Seat numbers.

e. Row letters.
f. ADA easy access armrest.
g. Cup Holders.
h. Embossed Cast logo.
i. Graphic logo.
j. Debossed logo (Padded Back)
k. Arm Styles

2.4 MATERIALS

A. Extruded Aluminum: Aluminum alloy 6351 T6 or T6005 T5, clear anodized to 20µm.

B. Injection Molded co-polymer polypropylene.

C. Injection Molded glass reinforced polyamide black in color and contains ultraviolet inhibitors.

D. Drilled-in Expansion Anchors or Adhesive Anchors: SAE grade 2 or 304 Stainless.

2.5 FABRICATION

A. Assembled Chair with seat toggles/clamps must be able to slide past beam support brackets without removing chair from the beam for ease of adjustment of the chair location.

B. Polymer Backs: Quantum.
1. Surface: Smooth for easy cleaning.
2. Construction: Injection molded polypropylene.
a. Additives: Anti-static compound and ultra-violet light stabilizer.
3. Back Height: 850mm (33 inches from floor and extend below the seat to afford chair occupant protection from rear and minimize any pinching hazards.
4. Back Shape: Three shapes to choose from: Round, Square and Slat Back
a. All back types extend below the seating surface to provide foot protection.
b. The upper face (sitting surface) is free of fasteners and textured to minimize slipping, and capable of accepting a factory fitted upholstery pad (except the Slat back) or retrofitted later.
c. Rear face is free of dirt or water traps, smooth, with minimal texture.
d. Back is available in 19 standard manufactured seat colors. Custom color is available.
e. Indoor or outdoor fabrics are available from manufacturers standard fabrics.

C. Polymer Seats: Quantum
1. Surface: Smooth for easy cleaning.
2. Construction: Injection molded polypropylene.
a. Additives: Anti-static compound and ultra-violet light stabilizer
3. Seat Depth: 420mm (16.5 inches from the front edge of the seat to the lumbar point of the backrest.
4. Faces:
a. Upper Face (sitting surface) is free of fasteners and textured to minimize slipping, and capable of accepting an upholstery pad on delivery or retrofitted later.
b. Lower face is free of dirt traps, smooth and with minimal texture.
c. The leading edge of the seat includes an angled recessed location for seat number.
d. Compact Seat style for full fold is available with spring assist seat return.
e. Seat is available in 19 standard manufactured seat colors. Custom color is available.
f. Indoor or outdoor fabrics are available from manufacturers standard fabrics.

D. Standards (Side Supports):
   1. Injection molded glass reinforced polyamide black in color and contains ultraviolet inhibitors.
   2. Provides tamper resistant quick action attachment to the beam, allowing reconfiguration of seating without disturbance of anchors, substrate or building finishes.
   3. Connection of supports to backrest is via two vandal proof corrosion resistant screws.
   4. The side supports provide connections for armrests which may be installed on delivery or retrofitted later (for armrest details refer to Accessories)

E. Seat Hinge Mechanism.
   1. Injection molded glass reinforced polyamide black in color and contains ultraviolet inhibitors.
   2. Hinge / pivot mechanism return seat to a 3/4 position automatically through a gravity tilt counter-weight system, requiring no adjustment or lubrication for the life of the installation.
   3. Counterweight is fully enclosed in rear of seat component.
   4. No spring return systems are used on standard mechanisms.
   5. Hinge mechanisms perform to the requirements of ASTM F851-83 (remain operational after 100,000 cycles of operation).

F. Beam:
   Clear-Anodized 6351-T6 or 6005A-T5 Aluminum alloy extrusion. Supplied in 18'-2 ½" lengths. The beam must be a size of 3 ½" x 3" with a nominal thickness of 0.10 inches. Beam end caps are black, glass-filled nylon and held in place with internal ribbed features and secured with two pan-head M4 x 16mm (#8 x 5/8") self-drilling screws.

G. Finish:
   1. Mounting Beam:
      a. anodize in accordance with Aluminum Association Architectural Class II Clear Anodized finish.
      b. Thickness minimum of 20µm.
   2. Polymer:
      a. Injection molded polypropylene ultra-violet light stabilizing additives.
      b. Color: One of the Manufacturer's nineteen standard colors.
      c. Per manufacturer's standards. Seating Contractor will submit color samples for Owner's approval prior to manufacture.
   3. Support Brackets:
      a. Hot Dip Galvanized
      b. Bath composition: 98% Zinc minimum
      c. Coating Thickness: minimum of 70µm.

2.6 FASTENINGS

A. Chair Module Assembly:
   1. Structural Connections: Stainless steel bolts and mechanically galvanized coated washers, and nuts.
      a. Bolts are to be applied with a nylon patch lock to prevent loosening.

B. Concrete Floor Attachment:
   1. Support Brackets: Attached by means of two 3/8 inch (10 mm) mechanical wedge anchors set in holes drilled to a minimum depth of 2 inches (51 mm) in the concrete.
   2. Wedge Anchors: To meet ASTM E488 criteria and listed by ICC. To be of approved type of stainless steel to suit environmental conditions.
   3. Support Brackets are placed over the bolts and permanently secured with a flat washer, lock washer and nut.

C. Concrete Riser Attachment:
   1. Chair Stanchions: Attached by means of two 3/8 inch (10 mm) threaded rods secured into concrete with a fast-curing adhesive.
      a. Adhesive and Rods: Set in holes drilled to a minimum depth of 2.5 inches (64 mm) in the concrete.
   2. Threaded Rods: To be of approved type with zinc-plate finish or stainless steel to suit environmental conditions.
   3. Acrylic Adhesive: Conforming with ASTM Type IV, Grade 3, and covered by ICC evaluation.
   4. Stanchions are placed over the bolts and permanently secured with a flat washer, lock washer, and nut.

2.7 ACCESSORIES

A. Rear Mounted Polymer Cup Holder: Rear-mount Cup-holders are designed specifically for attachment to the chair to enhance aesthetics & function. The plastic is injection molded co-polymer polypropylene and is compounded with ultra-violet inhibitors for outdoor applications prior to the manufacturing process. Typically, the color will match the seat and backrest. As an option the color may contrast with the seat & back rest. The rear cupholders attach without any tools in the field and slide onto factory installed brackets on the chair module.

   Arm mount cup-holders are designed especially for attachment to the Quantum arm. These cup-holders are used in the front rows and companion chairs. The cup-holder is of injection molded Polyamide, black to match the arms and contains ultraviolet inhibitors.

   Rail and wall mount cupholders are available with additional mounting options.

B. Seat Number Plates: Seat Numbers snap into front edge of seat and angle upward with an option to have a mechanical attachment if required. Seat number insert is black with white numbering and provides for up to 3 digits 12 mm {1/2”} in height.

C. Row Identification: Row Number disc is adhesive backed with black background & white numbering. The disc provides for up to 3 digits 30mm {1 ¼”} in height.

D. Padded Polymer Backs: Back pad is secured at no less than five (5) positions, one (1) in each corner and an additional center front securing point. Pad is constructed of injection molded polypropylene inner with a 6 mm [1/4”] bonding foam covering.

   Cover is upholstered in an easy clean UV Stabilized marine grade vinyl suitable for indoor and outdoor applications. Fabric to client’s requirements may be specified for indoor applications.

E. Padded Polymer Seat: Seat pad is secured at no less than five (5) positions, one (1) in each corner and an additional center front securing point. The pad is constructed of injection molded polypropylene inner with a 25mm [1"] molded open cell polyurethane foam cushion.

   Cover is typically upholstered in an easy clean UV stabilized marine grade vinyl suitable for indoor and outdoor applications. Fabrics to client’s requirements may be specified for indoor applications.

F. ADA Easy Access Armrest: Hinge on aisle end armrest allowing side access for disabled patrons. Provide for 1 percent of fixed seating capacity to meet the American with Disabilities Act (ADA). Disperse armrests throughout the seating as shown on the seating plans.
   1. For Each Accessible Chair: Include the Universal Handicap Symbol on the end aisle stanchion for clear identification.

G. Removable Chairs: Floor mounted. Ganged in groups of 1,2, or 3 chairs to ease removal.

1. Chair Modules mounted to anodized aluminum beam and hot dip galvanized floor mount support brackets. Mounted on hot dip galvanized steel skid bases when used outdoors.
2. Skid Bases with Chairs: Removed from concrete floor with flush mounted internally threaded expansion anchors positioned under each skid leg.
    a. Fill anchor holes with flush mount bolts to create a flat surface and prevent dirt from filling the hole.

H. Arm Styles Available: Black only.
    a. Quantum Arm: Polymer arms, 25% glass-reinforced.
    b. Filgree: Web infill
    c. Filgree with Logo Recess: Available on row ends, or Intermediate as option.

I. Spacers: 20mm (.78”) Fiberglass-reinforced nylon, black only Installed between the side support and arm, increasing the overall chair-module width. Spacers can easily be removed or added in the field (not to exceed 2 per arm).

J. Logo Options: Integral molded logo, available on slat, round and square back in middle of upper back. Oval adhesive on Filigree Panel Arm, molded integral logo in Filigree Panel Arm, Circular adhesive 9mm diameter resin dome full color, Fabric Options: embroidered logo or debossed logo on vinyl only.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verification of Conditions:
1. Verify areas to receive audience seating are free of impediments interfering with installation.
2. Verify the condition of installation substrates are acceptable to receive audience seats in accordance with seating manufacturer's recommendations.
3. Do not commence installation until conditions are satisfactory.

3.2 INSTALLATION

A. Manufacturer's Recommendations: Comply with seating manufacturer's recommendations for product installation requirements.

B. General: Install fixed audience seating in accordance with manufacturer's installation instructions and final shop drawings. Provide accessories, anchors, and assembly hardware for installation of seating and for permanent attachment to adjoining construction.

3.3 ADJUSTMENT AND CLEANING

A. Adjustment: After installation completion, seating systems are to be adjusted for smooth and proper operation.

B. Cleaning: Clean the work area and remove debris from the site.

3.4 PROTECTION

A. General: Provide final protection and maintain conditions, in a manner acceptable to manufacturer and installer to ensure audience seats are without damage or deterioration at time of substantial completion.

END OF SECTION