

# SECTION 12630 - STADIUM AND ARENA SEATING

## PART 1 - GENERAL

### 1.01 SUMMARY

- A. Section Includes: Fixed Legend (**SELECT**) plastic - padded plastic chairs with self-rising seat mechanisms, aisle and intermediate standards.
  - 1. Typical applications include the following: **ED. NOTE: REVISE FOLLOWING APPLICATION TO SUIT PROJECT.**
    - a. Straight stadium seating.
    - b. Redirected stadium seating.
    - c. Floor mounted chairs.
    - d. Riser mounted chairs.
  - 2. Special applications include the following: **ED. NOTE: REVISE FOLLOWING APPLICATION TO SUIT PROJECT.**
    - a.
    - b.
    - c.
- B. Alternates: This section specifies alternates for audience seating products. Refer to Part 2 products for alternate products, and to Division 1 Alternates sections and other bid documents, if any, for alternate requirements.
- C. Product Improvements: Hussey Seating Company strives to continuously improve its products and manufacturing methods. The company reserves the right to make changes without notice when, in the opinion of the company, such changes improve the product or its performance.

### 1.02 REFERENCES

- A. National Fire Protection Association (NFPA)
  - 1. NFPA 102 Standard for Assembly Seating, Tents and Membrane Structures.
- B. American National Standards Institute (ANSI).
- C. American Society for Testing Materials (ASTM)
  - 1. ASTM - Standard Specification for Properties of Materials.
- D. Americans with Disability Act (ADA)
  - 1. ADA - Standards for Accessible Design.

### 1.03 MANUFACTURER'S SYSTEM ENGINEERING DESCRIPTION

- A. 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 each audience seat unit.
- B. Manufacturer's System Design Criteria:
  - 1. Seats and Backs:

- a. Shall embody a timeless sculptured appearance to harmonize with any architectural form or room decor.
  - b. Shall exhibit moderate compound contours for supportive comfort avoiding excess anatomical pressures.
  - c. Seats shall be semi-cantilevered, self-centering, automatic three quarter (3/4) lift with over center retract feature, for ease of passage and janitorial access.
  - d. Seat shall be tested and professionally certified through an independent testing laboratory to support and withstand an evenly distributed 600 lb [272.1Kg] static load without failure or irregularities that would impair usefulness.
  - e. Self lifting seat shall be tested and professionally certified through an independent testing laboratory to withstand 350,000 operating cycles without added lubrication, spring fatigue, adjustment, or measurable bearing wear.
  - f. Seat shall be tested and professionally certified to withstand, without failure, 1000 impacts, of a 40 pound [18.14Kg] sandbag dropped on center of seat from each of the following heights of 6 inches [152mm], 8 inches [203mm], 10 inches [254mm], 12 inches [305mm] at a rate of 18 impacts per minute for a total of 4000 impacts.
  - g. Back shall withstand an evenly distributed front or rear static load of 450 lbs [204.1Kg].
  - h. Backs shall be tested and professionally certified to withstand, without failure, 40,000 swinging impacts each to the front and rear of the back by means of two opposing 40 pound [18.14Kg] sandbags. The sandbags shall be moved horizontally and equally for 10,000 cycles each at the following distances of 6 inches [152mm], 8 inches [203mm], 10 inches [254mm], and 12 inches [305mm] at a rate of 35 cycles per minute.
  - i. Horizontal Traverse Static Load to Back: Backs shall withstand an evenly distributed static load of 200 lbs [90.70Kg] to the top of the back at a 45 degree angle to the row of seats.
  - j. Armrests shall be tested and professionally certified to withstand an evenly distributed static load of 200 pounds [90.70Kg] applied perpendicular to the armrest.
2. Materials (Flammability) shall satisfy applicable test, codes, standards, or requirements as follows:
    - a. Polyethylene shall meet the Federal Motor Vehicle Safety Standard No. 302 which specifies a burning rate of less than 4 inches [102mm] per minute.

#### **1.04 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.

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2. Deviations: List of deviations from these project specifications.
- C. Shop Drawings: Indicate plastic chair seating layout. Show all equipment to be furnished with details of accessories to be supplied including necessary electrical service to be provided by others.
- D. 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.

## 1.05 QUALITY ASSURANCE

***ED. NOTE: THE FOLLOWING STANDARD MAY BE MORE STRINGENT THAN APPLICABLE BUILDING CODE REQUIREMENTS. COORDINATE WITH UBC, SBCCI, BOCA CODE REQUIREMENTS FOR FIXED SEATS.***

- 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. Welding Standards & Qualification: Comply with AWS D1.1 Structural Welding Code - Steel and AWS D1.3 Structural Welding Code - Sheet Steel.
- C. Insurance Qualifications: Mandatory that each bidder submit with his bid an insurance certificate from the manufacturer evidencing the following insurance coverage:
  1. Workers Compensation - including Employers Liability with the following limits:
    - a. \$500,000.00 Each Accident
    - b. \$500,000.00 Disease - Policy Limit
    - c. \$500,000.00 Disease - Each Employee
  2. Commercial General Liability - including premises/ operations, independent contractors and products completed operations liability. Limits of liability shall not be less than \$2,000,000.00
- D. Manufacturer Qualifications: Manufacturer who has ten (10) years of experience manufacturing spectator seating equipment.
- E. Installer Qualifications: Engage experienced Installer who has specialized in installation of audience seating similar to types required for this project and who is acceptable to, or certified by, spectator seating manufacturer.

- F. Engineer Qualifications: Engage 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.
- G. All seats are manufactured to exceed industry standards free from any defects (weld, splatter, paint runs, squeaks, etc.).

#### **1.06 DELIVERY, STORAGE AND HANDLING**

- A. Deliver audience 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.

#### **1.07 PROJECT CONDITIONS**

- A. Field Measurements: Coordinate actual dimensions of construction affecting audience 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.

#### **1.08 WARRANTY**

- A. Manufacturer's Product Warranty: Submit manufacturer's standard warranty form for fixed plastic chairs. This warranty is in addition to, and not a limitation of other rights Owner may have under Contract Documents.
  - 1. Warranty Period: One year from Date of Substantial Completion.
  - 2. Beneficiary: Issue warranty in legal name of project Owner.
  - 3. Warranty Acceptance: Owner is sole authority who will determine acceptance of warranty documents.

#### **1.09 MAINTENANCE AND OPERATION**

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

### **PART 2 - PRODUCTS**

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**ED. NOTE: MANUFACTURER DOES NOT RECOMMEND THE USE OF PHRASES "OR EQUAL"/"OR APPROVED EQUAL" BECAUSE OF DIFFERING INTERPRETATIONS BETWEEN CONTRACTING PARTIES. CONSIDER UTILIZING "ALTERNATE" METHOD OF SPECIFYING PRODUCTS FOR LISTING ALTERNATE MANUFACTURERS AND PRODUCTS. (SEE ARTICLE 2.02 HEREIN.)**

## 2.01 MANUFACTURERS

- A. Manufacturer: Hussey Seating Company, U.S.A.
1. Address: North Berwick, Maine, 03906
  2. Telephone: (207) 676-2271; Fax: (207) 676-9690
  3. email: info@hussyseating.com

**ED. NOTE: ADD SELECTIONS, FROM THE FOLLOWING, FROM MANUFACTURER'S LITERATURE AND COORDINATE SELECTIONS WITH DRAWINGS.**

4. Product: Hussey Fixed Plastic Chairs
    - a. Model: Legend.
    - b. Back Type: Plastic; Slatted.
    - c. Seat Type: Plastic; **(SELECT)** simulated slatted - padded.
    - d. Armrest Type: Integral scrolled cast iron.
    - e. Standards: Cast iron **(SELECT)** riser mount - floor mount, straight - redirected.
    - f. End Panels: **(SELECT)** Cast iron - Cast iron, with cast logo.
  5. Product Description/Criteria:
    - a. Number of Chairs: \_\_\_\_\_
    - b. Number of Rows: \_\_\_\_\_
    - c. Number of Wheelchair Locations: \_\_\_\_\_
    - d. Number of ADA Easy Access End Standards: \_\_\_\_\_
    - e. Row Spacing: \_\_\_\_\_
    - f. Rise: \_\_\_\_\_
    - g. Fabric: \_\_\_\_\_
  6. Product Accessories: **(SELECT)** Seat numbers, Row letters, Logos, Cupholders, & Companion chair, Roll Away chairs, Removable chairs.
- B. Other Acceptable Manufacturers:
1. Manufacturer/Product: **ED. NOTE: COMPLETE THE FOLLOWING, AS REQUIRED.** \_\_\_\_\_

## 2.02 ALTERNATES

**ED. NOTE: COORDINATE FOLLOWING ARTICLE WITH RELATED DIVISION 1 SECTION FOR ALTERNATES, AND BID DOCUMENTS AND BID FORMS FOR BID TYPE PROJECTS.**

- A. Base Bid: \_\_\_\_\_

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1. Base Bid Product:
  2. Base Bid Product Accessories:
- B. Alternate No. \_\_: In lieu of providing base bid product, provide the following:
1. Alternate Product:
  2. Alternate Product Accessories:
- C. Alternate No. \_\_: In lieu of providing base bid product, provide the following:
1. Alternate Product:
  2. Alternate Product Accessories:

## 2.03 MATERIALS

- A. Cast Iron: ASTM A48, and ASTM A536.
- B. Steel Plates, Shapes, and Bars: ASTM A570.
- C. Drilled-in Expansion Anchors: SAE grade 2
- D. Blow molded Plastic: Virgin high density polyethylene with a melt index of 0.40 per ASTM D1238.

## 2.04 FABRICATION

***ED. NOTE: COORDINATE FOLLOWING PARAGRAPHS WITH SELECTION MADE UNDER PRODUCT DESCRIPTION.***

- A. (Indoor) Open slat back shall be a one piece double wall blow molded polyethylene with anti-static compounds and a smooth surface for easy cleaning. Open slats shall span horizontally between each side of the back and be clearly open and separated from adjacent slots. Back shall have moderate compound contours for supportive comfort avoiding anatomical pressures. Back shall have nostalgic styling.
- B. (Outdoor) Open slat back shall be a one piece double wall blow molded polyethylene with smooth surface, anti-static compound, and ultra-violet light stabilizing additives. Open slats shall span horizontally between each side of the back and be clearly open and separated from adjacent slots. Back shall have moderate compound contours for supportive comfort avoiding anatomical pressures. Back shall have nostalgic styling.
- C. (Indoor) Simulated slat seat shall have a smooth surface for easy cleaning and be constructed of double wall blow molded polyethylene plastic with anti-static compounds. Seat shall have a nominal wall thickness of 0.125 inch [3mm] and be ergonomically contoured for posture and sitting comfort. The seat shall have simulated slats and nostalgic styling.
- D. (Outdoor) Simulated slat seat shall have a smooth surface for easy cleaning and be constructed of double wall blow molded polyethylene plastic with anti-static compounds and ultra-violet light stabilizing additives. Seat shall have a nominal wall thickness of 0.125 inch [3mm] and be ergonomically contoured for posture and sitting comfort. The seat shall have simulated slats and nostalgic styling.
- E. Seats shall be direct fastened to hinge arms by means of four threaded fastening screws. No exposed fasteners shall be located on seat surfaces.

- F. Back height to be 32 inches [813mm] from deck and extend below seat to afford chair occupant protection from rear and eliminate any pinching hazard. Back length shall not be less than 21 inches[533mm].
- G. Backs shall be recessed to receive aluminum number plates. Plates fitted in vandal resistant recess secured with two (2) rivets.
- H. Backs shall be fastened to standards at four (4) connection points, providing a back pitch of 15 degrees.
- I. Seat Hinge Arms.
  - 1. Seat hinge arms are recessed into both sides of the seat and follow the contour of the seat. The hinge arms provide the pivot connections and support the plastic seat.
  - 2. Seat hinge arm material shall be cast iron.
  - 3. Hinge arm shall be T.G.I.C. powder coated to match stanchion.
- J. Seat Hinge Mechanism.
  - 1. Each seat to be furnished with two (2) independent hinges and two (2) dual function spring lift mechanisms. Return lifter springs and stops shall be enveloped and concealed by the seat and seat hinge arms, to protect from dirt, dust, and not interfere with occupants' clothing, etc.
  - 2. Hinge arms shall rotate on pivot shaft fitted with permanently lubricated iron oil impregnated bearings.
- K. Cast Iron Standards:
  - 1. Standards shall be cast from Class 25 gray iron and be capable of withstanding American society of Testing Materials Transverse Test. Standards shall be designed to be fitted with decorative end panels in accordance with seating plan.
  - 2. Scrolled armrest shall be integral to the cast iron standard and shall have a smooth finished surface.
- L. Floor mount standards shall be rigidly attached to the floor at not less than two (2) mounting points and shall be designed to accommodate floor slopes, as required.
- M. Riser mount standards shall be rigidly attached to riser at not less than two (2) mounting points, and shall be designed to maintain a constant seat height from the floor. Proper back pitch shall also be maintained regardless of riser height.
- N. Redirected seating shall be achieved without the use of shims. Standards shall be cast with built in offset to direct the seat, back and seating hinge toward home plate.
- O. Finishes:
  - 1. Cast Iron Finish: Cast iron shall be pre-treated and have the primer applied through a 15-stage dip immersion process. Primer will be a cathodic epoxy electrodeposition coat (E coat) applied to a minimum dry film thickness of 0.8 mils. Powder topcoat will be suitable for exterior applications, contains ultra-violet light stabilizers and applied over primed cast iron. This powder will be TGIC polyester and properly cured per the manufacturer's recommendation to

- a minimum dry film thickness of 6.0 mils. The performance of the powder will pass the 2H Pencil Hardness test (ASTM D3363) and 1500 hours of Salt Spray (ASTM B117a).
2. (Indoor) Plastic: Shall be blow molded polyethylene plastic pigment in one of the manufacturer's twenty-two (22) standard color offerings.
  3. (Outdoor) Plastic: Shall be blow molded polyethylene plastic with ultra-violet light stabilizing additives pigmented in one of the manufacturer's twenty-two (22) standard color offerings.
  4. Color: Shall be per manufacturer's standards. Seating Contractor shall submit color samples for owner's approval prior to manufacture.

## 2.0 5 FASTENINGS

### A. Chair Assembly

1. All welds shall be made at the factory by welders that are certified on the equipment and process used.
2. (Indoor) All structural connections shall be made with S.A.E. stress rated zinc plated steel bolts, flat washers and lock nuts.
  - a. (Outdoor) All structural connections shall be made with 300 series stainless steel bolts, washers and nuts. Bolts shall be applied with a nylon patch lock to prevent loosening.

### A. Concrete Floor Attachment

1. Chair stanchions shall each be attached by means of two 1/4"[6mm] mechanical wedge anchors set in holes drilled to a minimum depth of 2"[50mm] in the concrete.
  - a. Wedge anchors shall be tested to ASTM E488 criteria and listed by ICBO and SBCCI. Wedge anchors feature a type 18-8 stainless steel split expansion ring and a threaded stud bolt body and integral cone expander, and a nut and washers. Stanchion shall be placed on the bolts, stanchions to be permanently secured with a flat washer, lock washer and nut.

### B. Concrete Riser Attachment

1. Chair stanchions shall each be attached by means of two 3/8"[10mm] threaded rods secured into concrete with a fast curing acrylic adhesive. Adhesive and rods are set in holes drilled to a minimum depth of 2 1/2"[64mm] in the concrete.
2. Threaded rods shall be of approved type with zinc-plate finish or made of stainless steel to suit environmental conditions.
3. Acrylic Adhesive shall be in conformance with ASTM Type IV, Grade 3, and covered by ICBO evaluation.
4. Stanchion to be placed on the bolts, stanchions to be permanently secured with a flat washer, lock washer and nut.

### C. Wood Floor Attachment.

1. Chair standards shall each be attached by means of four (4) 1/4 inch [6mm] x 1 3/4 inch [44mm] lag screws and flat washer set in holes drilled to a depth of not less than 1 1/2 inches [38mm] in the wood.

## 2.06 ACCESSORIES

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***ED. NOTE: SELECT ACCESSORIES, AS REQUIRED.***

- A. Chair numbers shall be black numerals etched on an elliptical aluminum plate. Number plates to be located in vandal resistant recess in the top of back, and secured using two (2) rivets.
- B. Row letters shall be black numerals etched on an elliptical aluminum plate. Letter plates shall be located on a raised and centered casting surface provided on the end standard for easy viewing. Letter plates shall be secured in a vandal resistant recess and secured using two (2) rivets.
- C. Integral Cast Logos: End standards are available with cast in place logos. Logo surfaces may be raised to multiple heights to facilitate painting with multiple colors.
- D. ADA Armless Standard (Floor Mount Stanchion only): End standard shall have no armrest to allow easy side access for disabled patrons. Armless standards shall be provided for 1% of the fixed seating capacity to meet the Americans with Disabilities Act (ADA). Available in floor mount standards only.
- E. Easy Access Armrest (Floor Mount Stanchion only): Armrest shall hinge on aisle end stanchions to allow easy side access for disabled patrons. Flip-up armrest stanchions shall be provided for 1% of the fixed seating capacity to meet the American with Disabilities Act (ADA). Each accessible chair shall include the universal handicap symbol on the end aisle stanchion for clear identification. Disperse easy access armrests throughout the seating as shown on the seating plans.
- F. Removable Chairs: Provide chairs to be floor mounted and ganged in groups of one, two, or three chair units for easy removal. Chair standards shall be mounted to a painted steel skid base. Skid base with chairs shall be easily removed from the concrete floor by means of flush mounted internally threaded expansion anchors positioned under each leg of the skid. When removed, the anchor holes are filled by flat head bolts to provide a flat surface and prevent dirt and debris from entering.
- G. Roll-Away Chairs: Provide removable two or three chair modules supported on a tubular steel support frame with heavy duty casters. Chair modules shall be easily removed and stored to create single and double wheelchair spaces respectively. Chairs shall utilize standard fixed seating seats and backs in order to maintain a consistent appearance along the seating row.

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

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

### **3.02 INSTALLATION**

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- 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.

### **3.03 ADJUSTMENT AND CLEANING**

- A. Adjustment: After installation completion, all equipment is to be adjusted for smooth and proper operation.
- B. Cleaning: Clean work area and remove debris from site.

### **3.04 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.
- B. Finish Touch-up: Touch-up original manufacturer's finish coating with an approved touch-up paint whenever damage has occurred during shipment or installation. Color match the original manufacturer's color.

END OF SECTION