SECTION 12610

FIXED AUDIENCE SEATING

PART 1: GENERAL

1.01 SUMMARY

A. Section Includes: Fixed upholstered chairs with self-rising mechanisms, aisle and intermediate standards.

1. Typical applications include the following:
   a. Floor mounted chairs.
   b. Refer to drawings for various options to the chairs.

1.02 REFERENCES

A. American Welding Society (AWS):

1. AWS D1.1 Structural Welding Code – Steel.

2. AWS D1.3 Structural Welding Code – Sheet Steel.

B. American Institute of Steel Construction (AISC):

1. AISC – Design of the Hot Rolled Steel Structural Members.

C. American National Standards Institute (ANSI).

D. American Iron & Steel Institute (AISI):

1. AISI – Design Cold Formed Steel Structural Members.

E. Aluminum Association (AA):

1. AA – Aluminum Structures, Construction Manual Series.

F. American Society for Testing materials (ASTM):

1. ASTM – Standard Specification for Properties of Materials.

G. National Forest Products Association (NFPA):

1. NFPA – National Design Specification for Wood Construction.

H. National Bureau of Standards/Products Standard (NBS/PS):

1. PSI – Construction and Industrial Plywood.

I. American with Disability Act (ADA):

1. ADA – Standards for Accessible Design.

1.03 MANUFACTURER'S SYSTEM ENGINEERING DESCRIPTION

A. Structural Performance: Engineer, fabricate and install fixed audience 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 décor.
   b. Shall exhibit moderate compound contours for supportive comfort, avoiding excess anatomical pressures.
   c. Seat 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 Kg] 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 failure of seat mechanism or measurable component wear.
   f. Seat shall be tested and professionally certified to withstand 10,000 impacts of a 40 lb. [18 Kg] sandbag dropped on the center of the seat from each of the following heights: 6" [152 mm], 8" [203 mm], and 12" [305 mm]. The rate of impacts shall be approximately 18 per minute with the total quantity of impacts equaling 40,000.
   g. Back shall withstand an evenly distributed front or rear static load of 450 lbs. [205 Kg].
   h. Back 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 lb. [18 Kg] sandbags. The sandbags shall be moved horizontally and equally for 10,000 cycles each at the following distances: 6" [152 mm}, 8" [203 mm], 10" [254 mm] and 12" [305 mm] at a rate of 35 cycles per minutes.
   i. Back shall withstand, without failure, an evenly distributed Horizontal Traverse Static Load of 200 lbs. [90.70 Kg]. The load shall be applied to the top of the back at a 45-degree angle to the row of seats.

j. Armrest shall be tested and professionally certified to withstand, without failure, a 200 lb. [91 Kg] static load applied both perpendicular to and vertically down on the arm.

2. Materials (Flammability) shall satisfy applicable test, codes, standard, or requirements as follows:
   a. Copolymer polypropylene shall have a burn rate of 1 inch or less per ASTM 635.

   b. Upholstery materials shall meet requirements as set forth in the State of California Bureau of Home Furnishings Technical Bulletin 117.

   c. Fire-performance Characteristics of Seat Padding: Provide seating that complies with test method: California Technical Bulletin 117.

   d. Cushioning and padding shall be self-extinguishing as defined in the requirements as set forth in the State of California Bureau of Home Furnishings Technical Bulleting117.

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.

   2. Deviations: List of deviations from these project specifications.

C. Shop Drawings: Indicate fixed upholstered 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 manufacturer's standard color finishes.

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

F. Install 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 manual. Demonstrate operating procedures.

I. Warranty: Manufacturer's standard five-year warranty documents.

1.05 QUALITY ASSURANCE

A. Welding Standards & Qualification: Comply with AWS D1.1 Structural Welding Code – Steel and AWS D1.3 Structural Welding Code – Sheet Steel.

B. 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.

C. Manufacturer Qualifications: Manufacturer who has ten (10) years of experience manufacturing spectator seating equipment.

D. Installer Qualifications: Engage experienced Installer who has specialized in installation of audience seating similar to type required for this project and who is acceptable to, or certified by, fixed upholstered chair seating manufacturer.

E. Engineer Qualifications: Engage professional licensed engineer experienced in providing engineering services of this 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.

1.06 DELIVERY, STORAGE AND HANDLING

A. Deliver fixed upholstered chair seating in manufacturer's 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 fixed upholstered chair 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 upholstered chairs. This warranty is in addition to, and not a limitation of other rights Owner may have under Contract Documents.

1. Warranty Period: Five (5) years 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: An operation and maintenance manual 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. Periodic annual inspections and required maintenance of each seating system shall be performed according to the Operations Manual to assure safe conditions.

PART 2: ___PRODUCTS

2.01 MANUFACTURERS

A. Manufacturer: Hussey Seating Company, U.S.A.

1. Address: 38 Dyer St Ext., North Berwick, Maine, 03906

2. Telephone: (207) 676-2271; FAX: (207) 676-9690

3. Email: info@husseyseating.com

4. Product: Hussey Quattro Chair System
   a. Model: ***Quattro S3H3A***
   b. Black Foam Type: 2" [51 mm].
   c. Seat Type: Standard Upholstery
   d. Armrest Type: Plastic
   e. 15 Degree Back Pitch

f. Standards: Floor Mount. Steel – Base Price
g. Cast Aluminum Standards – Auditorium Seating Alternate One
h. End Panels: None in Base
i. Plastic laminate End Panels – Auditorium Seating Alternate Two

5. Product Description/Criteria:
   a. Number of Chairs: 310
   b. Number of Rows: 18
   c. Number of Wheelchair Locations: 6
   d. Number of ADA Easy Access End Standards: 3
   e. Row Spacing: 2'8"
   g. Fabric: Standard (2) colors used within room. Architect to select which colors.

6. Product Accessories:
   a. End Panels (as an add alternate)
   b. Row Letters – Ecoglow
   c. Seat Numbers
   d. ADA Easy Access End Standards
   Row numbers and seat numbers shall be provided on chairs as part of the base bid.

7. Approved Seating Companies:
   a. Irwin Seating Company – Marquee
   b. KI – Aria

8. Seating Summary:
   (310 total seats) Various sizes of seats shall be used within the seating design. The following tabulation shall be considered a minimum.

21" Seats	175 Units
22" Seats	99 Units
23" Seats	31 Units
24" Seats	5 Units

2.03 MATERIALS

A. Cast Aluminum: ASTM B85 (Add Alternate)

B. Steel Tubing: ASTM A513 (Base Bid)

C. Steel Sheet/Coil: ASTM A670

D. Drilled-in Expansion Anchors: SAE Grade 2

E. Exposed Hardwood Lumber: Hardwood Species: Grasswood

F. Concealed Plywood: Hardwood Plywood ANSI/APVA-1 2000, Poplar

G. Exposed Plywood: Hardwood Plywood ANSI/HPVA-1 2000, Poplar

H. Medium Density Fiberboard: ANSI A208-2-1986

I. Plastic Laminate: NEMA LD3.1-1985, GP 48

J. Polyurethane Foam Padding: ASTM D-3574

K. Fabric: 100% Marquesa Lana continuous filament Olefin in the following standard selections:

1. Fabric shall have 13 fill picks per inch, 13 warp ends per inch, weighing 16 oz. [454 grams] per linear yard including backing.

2. Fabric shall have 13 fill picks per inch, 13 warp ends per inch, weighing 18 oz. [510 grams] per linear yard including backing.

3. Fabric shall have 16 fill picks per inch, 19 warp ends per inch, weighing 12 oz. [340 grams] per linear yard including backing.

L. Injection Molded Plastic: Virgin high-density polypropylene or nylon 6/6.

2.04 DESIGN AND CONCEPT

A. Auditorium chairs shall be designed to exhibit a modern appearance that will enhance any auditorium's décor. Seats, backs, and standards shall complement each other without the need for end panels or other adornments. Superior comfort will be derived through careful ergonomic engineering, selection of materials and design of supportive structures.

2.05 FABRICATION

A. Upholstered Seats:

1. The seat assembly shall consist of a stylish padded and upholstered top surface, polypropylene bottom shell with dual contours, and a dual spring lifting mechanism. Seat shall have the ability to achieve a full fold position when rearward pressure is applied. Superior comfort shall be derived through careful ergonomic engineering.

2. Upholstery Pad: The upholstered seat topper shall consist of a 5/8" thick molded ply form base with contoured molded polyurethane foam padding and fabric upholstered cover. Seat padding shall be properly contoured to support the body without causing discomfort. The upholstered seat cover shall exhibit a high degree of tailoring and will be affixed to the base with upholstery staples.

3. Seat Mechanism: Seat lifting mechanism shall use lubricated lifting springs to provide whisper quiet fail-safe operation. The seat structure shall rotate on a ¾" [19mm] spanner bar to assure shaft alignment and eliminate binding due to

irregular floor conditions. Seats shall be certified to withstand 350,000 lifting cycles and a 600 lb static load without failure.

4. Standard Bottom Cover: Seat shell/bottom shall be constructed of polypropylene plastic to provide a durable yet aesthetic design. The cover shall protect the mechanical parts of the lifting hinge and upholstered cover. The shell/bottom shall compliment the overall design of the chair.

5. Waterfall seat cover tailoring.

6. The seat foam option will be Plush.

B. S3 Soft Square (36") Upholstered Backs:

1. Soft Square 36" Upholstered Backs shall be upholstered and padded with a decorative outer panel. The top of the back is radiused for stylish looks and a timeless appearance. The back shall be compound contoured and will conform to the proper posture of a seated individual. Overall back height is 36" above the floor allowing proper shoulder support of the chair occupant. The 29" outer panel extends below the seat pan to protect the occupant form the rear.

2. The inner upholstered panel shall be 5/8" [15 mm] 9 ply thick formed hardwood with multiple ergonomically engineered contours. The wings for attachment of chair back to standard shall be not less than 14 gauge [1.9 mm] and will be attached via concealed fasteners. Wings shall position the chair back at one of three positions: 15, 18, or 21 degrees. There shall be no exposed fasteners above the chair landing bracket. Chair back upholstery shall exhibit a high degree of workmanship and customization.

3. The outer back panel shall be constructed of polypropylene plastic. The panel shall be no less than 29" in length and will protect the rear of the upholstered inner panel as well as the chair occupant.

4. Back Foam Type: 2" [51 mm] cut

5. Back Cover Tailoring: A-Waterfall

6. The inner upholstered panel shall be 5/8" [15 mm] 9 ply thick formed hardwood with multiple ergonomically engineered contours. The wings for attachment of chair back to standard shall be not less than 14 gauge. [1.9 mm] and will be attached via concealed fasteners. Wings shall position the chair back at one of three position: 15, 18, or 21 degrees. There shall be no exposed fasteners above the chair landing bracket. Chair back upholstery shall exhibit a high degree of workmanship and customization.

7. The outer back panel shall be constructed of polypropylene plastic. The panel shall be no less than 29" in length and will protect the rear of the upholstered inner panel as well as the chair occupant.

8. Outer Back Panel Material: Polypropylene Plastic

9. Back Foam Type: 2" [51 mm] cut

10. Back Cover Tailoring: A-Waterfall

C. Steel Standards: Auditorium Seating Base Bid

1. Standards shall be 1" [25 mm] x 3" [76 mm] x 16 gauge [1.5 mm] seamless oval mechanical tubing. Standards utilizing an open seam (not welded) shall be considered unacceptable.

2. The top of the standard shall provide for vandal resistant attachment of the armrest, without the use of exposed fasteners on the surface of the arm.

3. Floor mounted standards shall have a 14 gauge [1.9 mm] formed steel foot. The formed foot shall be full perimeter welded to the upright tubular member. The floor mount standards shall be manufactured to match floor inclines in order to maintain proper seat height and angle.

4. Riser mounted standards shall have a 7 gauge [4.5 mm] steel plate slotted to allow lateral adjustment during installation, and shall be full perimeter welded to the tubular standards.

5. Standards shall be designed to be fitted with decorative end panels in accordance with seating plan.

D. Cast Aluminum Standards: (Auditorium Seating Alternate One)

1. Standards shall be die-cast Aluminum AA380 grade. Cast Aluminum Standards shall be an integral aesthetic part of the chair's appearance and do not require the use of end panels.

E. Seat Hinges:

1. Seat hinges shall be fully contained within the seat pan and fitted with a pair of independent nylon bushings

2. Each of the independent seat hinges shall be fitted with double acting, self-centering, pre-loaded coiled seat return springs.

3. Seat hinge and spring installation shall be designed not to require periodic adjustment or lubrication.

F. Finish:

1. Steel Finish: Metal shall be chemically cleaned in an iron phosphate wash system, then applied with an electrostatically sprayed high solids enamel to yield a minimum dry film thickness of 1.5 mils. Enamel shall be baked 15 minutes in a 300-degree oven.

2. Cast Aluminum Finish: Casting shall be pre-treated in an iron phosphate wash system prior to finish application. Finish shall be a specially blended polyester T.G.I.C./Epoxy powder coating with a minimum dry film thickness of 1.5 mils.

3. Injection Molded Polypropylene or Nylon: Shall be pigmented in one of manufacturer's standard colors and have a textured surface.

4. Fabric: Upholstery material shall be 100% Marquesa Lana continuous filament Olefin yarn with one of the manufacturer's standard fabric offerings.

5. Color: Shall be per manufacturer's standards. Seating Contractor shall submit color samples for Owner's approval prior to manufacture.

2.06 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. All Structural connections shall be made with S.A.E. stress rated zinc plated or, black oxide steel bolts, washers and nuts.

B. Concrete Floor Attachment:

1. Chair standards shall each be attached by means of two ¼ "- [6 mm] expansion bolts set in holes drilled to a depth of not less than 1 ¾" [44 mm] in the concrete.

2. Expansion bolts shall be of approved type lead drive anchor comprised of the following components:
   a. Bolt – ¼" [6 mm] x 3" [76 mm] expansion anchor
   b. Sleeve – ¼" [6 mm] I.D. x 1" [25 mm] lead (commercially known as 2% antimony lead) with one end recessed to fit cone. One sleeve per bolt.
   c. Cone – Cast hard metal and steel setting washer; one setting washer per bolt.
   d. Standard to be placed on the bolts. Standards to be permanently secured with a flat washer, lock wash and nut.

2.07 ACCESSORIES:

A. Armrest: Injection Molded Plastic: Armrests shall be of injection molded, leather textured polypropylene. Armrest to be secured to standard with concealed fasteners.

B. ADA Easy Access Armrest: Armrest shall hinge on end standards to allow equal access for disabled patrons. Swing-up end arms shall be provided for one percent of fixed seating capacity to meet the Americans with Disabilities Act (ADA). Each accessible chair shall include the universal handicap symbol on the end aisle standard for clear identification.

C. End Panels: Plastic Laminate: End panels to be ½" [13 mm] MDF, finished with laminated plastic. End panels to be furnished per Plan of Seating.

D. Row Letters: Black text on an 18.5 mm x 56.5 mm ECOGLO Plate. Plate fitted in a vandal resistant recess located in rear of armrest and secured with adhesive.

E. ECOGLO Chair Numbers: Black text with pale green background on 23/32" x 27/32" [18.5mm x 56.5] elliptical Aluminum plate with photo luminous coating. Plate fitted in vandal resistant recess located in front edge of plastic seat cover and secured with two aluminum pop rivets.

PART 3: EXECUTION

3.01 EXAMINATION

A. Verification of Conditions: Verify area to receive fixed upholstered chair 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

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

B. General: Install fixed upholstered chair system in accordance with manufacturer's installation instructions and final shop drawings. Provide accessories, anchors, fasteners, inserts and other items 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 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.

End of Section 12610