

Fixed AUDITORIUM SEATING

Section 12 61 00: Fixed Audience Seating

PART 1 GENERAL

1.1 SUMMARY

- A. Work Included in this section: Provision of cushioned floor-mounted or riser-mounted fixed auditorium seating including attachment, or other work required for installation unless otherwise noted.
- B. Related Sections
 - 1) Section 26 00 00: Electrical.
 - 2) Floor-mounted anchors are included for installation on standard floor conditions.
 - 3) Data/Communications cabling and jacks not included.

1.2 SUBMITTALS

- A. Product Data including manufacturer's assembly instructions.
- B. Code Requirements - Compliance with the required local and national building and safety codes is the sole responsibility of the Owner/Architect/Contractor. Shop drawings are based on code requirements for assembly seating as found in IBC (International Building Code). Code information above is offered for informational purposes only and strictly as a courtesy to the Owner/Architect/Contractor. This is in no way an assumption of duty on the part of Southwest Solutions Group relative to code interpretation and compliance. Southwest Solutions Group personnel are not trained for, nor are they experts at code compliance or interpretation.
- C. Field Verification - Shop drawings incorporate building information compiled from various sources associated with this project and deemed as reliable. Conditions directly affecting the product or its installation must be field verified.
- D. Drawing Review - Shop drawings are produced to assure compliance with the contract. Drawings must be reviewed by the Owner/Architect/Contractor, or other appropriate owner's representative. If drawings are correct, mark them as such; if incorrect, note corrections to be made and return to Southwest Solutions Group for corrections. Any deviations from the contract included in the shop drawing must be approved in writing from the Owner/Architect/Contractor. Drawing must be signed by authorized personnel including title, company or affiliation, and date. When power is specified, all locations of electrical and data infeeds must be verified and approved by a signature on the drawings by the responsible party. Manufacture of product shown is not scheduled until drawing review is complete and an authorized signature is received.

1.3 DELIVERY, STORAGE, AND HANDLING

- A. Store delivered in clean, safe, dry area.

1.4 SCHEDULING

- A. Schedule installation of items to occur after application of exposed finishes wherever installation will not damage exposed finish surfaces and completion of finishes will not impede installation.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Basis of Design: Products are based upon fixed auditorium seating provided by Southwest Solutions Group. 1.800.803.1083 Craig Crock ccrock@southwestsolutions.com
- C. Product: Fixed Auditorium Seating
- Approved Alternates: www.ki.com

2.2 DESCRIPTION

- A. Seating must be floor mounted, or riser mounted, with common upright support assemblies with upholstered seat and back cushions. The fixed back accommodates three pitch positions at 16°, 20° and 24°. The back cushion is protected by an injection-molded polypropylene back shroud. The seat cushion is counter-balanced with a gravity lift to insure an automatic return to vertical position when the seat is unoccupied. Sloped floors will be accommodated.
- B. Product Benefits:
- Gravity-lift seat return maintains constant seat return with no springs to fatigue or fail.
 - Six seat-spacing widths are available for comfort and sight lines (19", 20", 21", 22", 23" and 24").
 - 2" or 3" seat and back foam options for a choice in comfort.
 - 34" back height provides upper back support in addition to lumbar support.
 - Polypropylene seat and back shrouds provide maximum strength and durability. Optional wood back panels enhance aesthetics.
 - Three sizes of one-motion tablet arms (small, medium & large) provide safety and ease in exiting.
 - Power & Data or Power & USB module and distribution system provides convenient Power & Data or Power & USB access directly underneath the armcap for lap top users. All wiring is enclosed in tamper-resistant shrouds. Power & Data or Power & USB system is retrofittable at a later date if needed.
 - Powder-coated frames provide maximum durability.

2.3 CONSTRUCTION

- A. Seating will be manufactured in three seat and back widths to accommodate six seat spacings of 19", 20", 21", 22", 23", and 24" seat centers. Sight lines will be accommodated as indicated on the seating plans. Seating with left- or right-hand tablet uprights will be manufactured to accommodate 20", 21", 22", 23", and 24" seat center spacings.
- B. Back Cushion Assembly
- Structural back is constructed of a 7-ply, 7/16" molded plywood inner structure bonded to 2" or 3" urethane foam. Foam density is 3.0 lb per cubic foot, 38 lb I.F.D. for 2" and 1.8 lb per cubic foot, 36 lb I.F.D. for 3". The upholstery fabric will be bonded to the foam and attached through C-Gex® upholstery methods. Adhesion of fabric to foam is dependent upon fabric type. An injection-molded polypropylene back shroud wraps around the edge of the inner structure board and the foam. The fixed back assembly with integral shroud is mounted to the uprights by four screws bolted through the structural 11-gauge steel inner back brackets. The 20", 22" and 24" backs include a plastic spacer mounted between the back bracket and the uprights, and are held in place with rivets.
- An optional wood back panel is 3/8" thick, with Gum veneer core and 1/16" Maple veneer faces. The back panel will attach to the inner structure board and the foam with hidden keyhole slot brackets and 1/4-20 x 1-1/4" Torx screws. The wood back panel assembly attaches to the uprights by four screws bolted through the structural 11-gauge steel back brackets. The 20", 22" and 24" backs include a plastic spacer mounted between the back bracket and the uprights and held in place with rivets. The wood back extends

above the upholstered foam cushion thereby protecting the fabric, and extends below the seat at the bottom to protect the seat cushion and allow for Power & Data or Power & USB distribution when required.

Note: Natural wood and wood veneers may have variations in pattern, grain, and coloring that can produce inconsistencies in the finished product. The inconsistencies may show up as dark patches or lines, color variations between light and dark, and various grain patterns. These variations are normal and cannot be avoided.

C. Seat Cushion Assembly

The seat assembly is constructed of a compound curve inner structure consisting of a 7-ply, 7/16" molded plywood board with waterfall. The seat board counterbalance will be bolted in place inside the seat assembly. The seat board is bonded to a 2" or 3" urethane foam cushion. Foam density is 3.0 lb per cubic foot, 30 lb I.F.D. for 2" and 1.8 lb per cubic foot, 35 lb I.F.D. for 3". The upholstery fabric will be attached through C-Gex® upholstery methods. The bottom is covered by an injection-molded polypropylene seat shroud. All pivoting and positioning to be accomplished within the seat cushion assembly, thereby eliminating all pinch points.

An optional acoustical seat shroud consists of an injection-molded polypropylene seat shroud with 0.50" diameter holes spaced 1" apart on the center, flat portion of the shroud. A polyether convoluted foam is placed between the inner structural board and the outer acoustical seat shroud for sound absorption. The foam will be nominal 1/2" to 1" thick and "charcoal" in color. The NRC rating is .050.

Flammability Rating

Concerto upholstered products are manufactured to meet TB 117-2013 flammability testing requirements. Products will be labeled to indicate if flame retardant chemicals are used in the fabrics and foam.

Concerto products can be manufactured to meet TB-133 flammability testing requirements. Changes in materials may be made and restrictions placed on fabric selection and product options. Products manufactured with this option will be labeled accordingly.

D. Seat Pivot Assembly

Seat pivot is an integral part of the seat assembly. Pivot includes a full-width axle of 5/8" diameter cold-rolled steel, with welded 12-gauge drawn steel pivot stop cams and 10-gauge formed steel end brackets. The seat pivots on self-aligning acetal bearings, joined to the seat board by die-formed 14-gauge steel housings. Brackets made of 12- and 10-gauge formed steel and welded to the upright tubes support the seat assembly. Seat assembly is fastened to the upright brackets by two screws per seat.

E. Uprights

Floor-mounted uprights are constructed of 16-gauge steel round dual supports, 1.5" diameter, welded to an 11-gauge steel, 2-5/8" x 10-1/8" floor plate by a concealed weldment. Finish to be powder-coat painted according to standard color offerings. Riser-mounted uprights are constructed of 14-gauge steel round dual supports, 1.5" diameter, welded to a 3" x 5-1/2" x 1/4" steel riser plate. Finish to be powder-coat painted according to standard color offerings. Riser-mounted uprights are not available with Power & Data or Power & USB options.

F. Armcap

Plastic armcap is mounted on a 14-gauge steel support, 2-5/8" wide by 10-1/8" long and welded to the upright by a concealed weldment. Armcap is injection-molded engineering grade thermoplastic, 2-7/8" wide by 10-3/8" long and attaches to the armcap support with two concealed screws. A flatter armcap with the same dimensions as above will be specified with the large tablet arm. Optional wood armcaps will be machined 2-3/4" wide by 10-1/4" long and are attached to the armcap support with two concealed screws. Wood armcaps can be specified with tablet arms.

- G. **Cupholder Armcap - Plastic**
Plastic cup holder is constructed of high-density polyethylene, 2" x 13-1/4" with a 3-3/4" diameter cupholder, molded into one integral unit. Will be sized to accept standard cup sizes and 12oz. cans with bottom element for support. Cannot be specified with tablet uprights, Power & Data or Power & USB options.
- Cupholder Armcap - Wood**
Wood cup holder is constructed of solid Maple or Oak wood species, 4" x 14" with a 2.69" diameter cupholder, formed into one integral armcap unit. Will be sized to accept standard cup sizes and 12oz. cans. Cannot be specified with tablet uprights, Power & Data or Power & USB options. Cannot be specified with tablet arms, Power & Data or Power & USB options.
- H. **Tablet Arm - Large**
Tablet unit is self-storing, one-motion tablet arm, consisting of a storable writing surface constructed of a core of 13-ply, 18 mm thick Baltic Birch plywood core, .040" high-pressure laminate on the face and a .040" HPL backer sheet measuring 11-1/2" x 15-1/4" (202 sq. in.) capable of supporting a laptop computer. Minimum row-to-row spacing is 38". The tablet arm mechanism will consist of a pivot arm, pivot mount bracket and support bracket constructed of 7-gauge steel with controlled 90° side-to-side rotation and 84° up-and-down rotation. Tablet arm will store underneath the seat at a slight angle, without interfering with the seat.
- Tablet Arm - Medium**
Table unit is self-storing, one-motion tablet arm, consisting of a storable writing surface constructed of a core of 13-ply, 18 mm thick Baltic Birch plywood core, .040" high-pressure laminate on the face and .040" HPL backer sheet measuring 10-1/2" x 13-1/4" (159 sq. in.) capable of supporting a laptop computer with a 6-5/8" radius on outside corner to allow a minimum row-to-row spacing of 36". The tablet arm mechanism will consist of a pivot arm, pivot mount bracket and support bracket constructed of 7-gauge steel with controlled 90° side-to-side rotation and 84° up-and-down rotation. Tablet arm will store underneath the seat at a slight angle, without interfering with the seat.
- Tablet Arm - Small**
Tablet unit is self-storing, one-motion tablet arm, consisting of a storable writing surface constructed of 13-ply (18 mm) Baltic Birch plywood core, .040" high-pressure laminate on face and a .040" HPL backer sheet, measuring 9-1/2" x 10-3/8" (122 sq. in.) (capable of supporting a laptop computer) with a 6" radius on outside corner to allow a minimum row-to-row spacing of 34". The tablet arm mechanism will consist of a pivot arm, pivot mount bracket, and support bracket constructed of 7-gauge steel with controlled 90° side-to-side rotation and 84° up-and-down rotation. Tablet arm will store underneath the seat at a slight angle, without interfering with the seat.
- I. **Aisle Light**
LED aisle lights are mounted to the underside of the armcap support (with or without an end panel). Aisle light wiring is routed through the upright (down one of the vertical tubes and then up through the foot plate). Aisle light is hard wired to the building source by a certified electrician.
- A 12VDC class II power supply is required for the LED aisle lights. Southwest Solutions Group provides two power supply options: A 30 watt transformer that can support a minimum of four aisle lights and a maximum of 112 aisle lights, and a 60 watt transformer that can support a minimum of eight aisle lights and maximum of 225 aisle lights. A 12VDC light dimmer, that works with both the 30 watt and 60 watt transformers, is available as well.
- Note:** When aisle lights are used with tablet arms, the tablet arm will block the light when the tablet is in the in-use position.

Available with LED light tubes.

LED Aisle Light

Light Size = 3" long

Voltage = 12 VDC

Current per lamp = 0.02 amps

Lamps per aisle light = 3

Power per aisle light = .24 watts

LED Color Temperature = 6250k Cool White

Operating lamp life = 40,000 hours

Wire: 22-gauge, 2-conductor multi-strand copper, black jacket, copper+ and silver-, 72" long.

Candlepower

At floor, under light = 2.4

- J. Decorative End Panels
Optional laminate end panel consists of 1/2" thick particleboard core with .040" high-pressure laminate on both sides, attached to uprights with six 16-gauge clips and six screws.

Optional wood end panel will have same construction as laminate panel, with veneer over particle core.

Optional steel end panel are 16-gauge steel welded to uprights and painted to match. Not available with Power & Data or Power & USB options.
- K. Seat Numbers
Adhesive-backed elliptical shaped seat numbers, 0.78" tall by 1.18" wide, are available for application into elliptical shaped recesses on the front lips of the plastic seat shrouds. Adhesive-backed seat numbers are available in a Lexan film material in cool grey color, aluminum in silver color, or aluminum in gold color.
- L. Row Markers for Plastic Armcaps
Adhesive-backed elliptical shaped row markers, 0.78" tall by 1.18" wide, are available for application into elliptical shaped recesses atop plastic arm caps. Adhesive-backed row markers for plastic armcaps are available in a Lexan film material in cool grey color, aluminum in silver color, or aluminum in gold color.
- M. Row Markers for Wood Armcaps
Elliptical shaped row markers, 0.78" tall by 1.18" wide, are available for application atop wood armcaps. When applicable, the wood armcaps will have two pilot holes for securing the row markers with two small brads. Row markers for wood armcaps are available in aluminum in silver color, or aluminum in gold color.
- N. Designated Aisle Seat - ADA Swing Arm
Armcap support is hinged at the rear to allow armrest to flip up, providing easy access for limited mobility occupants. Includes marker with ADA symbol mounted on upright.
- O. ADA Removable Units
Chairs requiring mobility for handicapped access are mounted to a 7-gauge welded frame and include four glides per upright. One-, two- and three-seat units are available. Not available with power or aisle light options.

P.

Power & Data Module and Distribution System

Product is designed to bring Power & Data from the building power source to a position directly below the armcap to accommodate the requirements of notebook computers in a temporary use situation. The receptacle and data port(s) do not extend beyond the width of the armcap and will not interfere with the seat return. All wires and cables will be concealed with plastic covers. Wires are routed to the module through the center of an upright, concealed with plastic side covers and connected to the 5-wire, three-circuit harness system (each circuit provides 20 amps). Fully enclosed wireway covers protect all wires at the bottom of the back shroud as they are routed and connected to each seat. The module accommodates one simplex receptacle and a mounting bracket for one or two data jacks per seat. The data jack bracket accommodates various connectors (data jacks are not provided). One distribution harness is designed to feed two seats. A data infeed side cover is provided to conceal the entry of data wires. All electrical components are to be installed on site with hardware provided. Power & Data system is UL Listed as an accessory for use with Concerto auditorium seating.

- 1) **Power & Data Module**
The receptacle and single data port module are constructed of a molded polycarbonate body, riveted to a galvanized steel top-mounting bracket. The placement is at a slight angle toward the seat to allow easy plug in and removal of plugs. A second data port can be specified which will be located directly below the first data port. Data ports accommodate various data connectors. The data jacks must be provided by the customer. Power & Data outlets are located on the right-hand side only (when seated).
- 2) **5-Wire Harness - Power & Data**
The 5-wire distribution harness distributes power between the Power & Data modules as well as accept an infeed harness. Each harness consists of a three-way housing on one end and a single connector on the other end. All harnesses and connections will be fully enclosed in plastic troughs.
- 3) **Wireway Cover - Power & Data**
The harness is to be enclosed in the plastic cover mounted at the bottom of the back shroud. The wireway covers are constructed of vacuum-formed polystyrene. The cover is attached to the bottom of the back shroud with two #8 x 1/2" screws provided. The cover measures a minimum of .056" thick meeting U.L. 94HB. The trough accommodates twenty-four Category 5 or Category 7 four-pair twisted wires.
- 4) **Half- and Full-Height Side Covers - Power & Data**
Half-height side covers are provided for uprights between seats to conceal wires to Power & Data modules. Side covers are constructed of vacuum-formed polystyrene and measure a minimum of .056" thick, with a UL94-HB minimum rating. Half-height side covers are 16" high leaving 6-1/4" of open space above the bottom-mounting (foot) plate, on a level surface. Full-height side covers of the same construction are provided at power infeed locations and data infeed locations. Side covers are attached with two or four #8 x 3/8" screws as provided. Optional full-height side covers can be specified at aisle ends.
- 5) **Power Infeed - Power & Data**
The 5-wire power infeed harness with 3-way modular connector end consists of three 12-gauge hot wires, one 12-gauge ground wire and one 10-gauge neutral wire encased in flexible conduit with a 30" length of five exposed wires. The harness with exposed wires originates from the seat wireway, routes into the end upright between an end side cover and power infeed side cover, goes through a 90° metal connector inside the covers and out through a 1/2" rigid straight coupler at the left-hand, exterior of the power infeed side cover (when seated). A 24" length of 1/2" liquid-tight conduit is supplied (to be cut to size) to house the wires and connect between the rigid straight coupler and the building source power junction box on the floor, under the seat. The building source power junction box must be located under the end seat, ideally 10" to 16" from the end upright, and 2" to 4" from the front-to-back centerline of the upright base. One Power infeed can support up to three circuits and 39 seats, with a maximum of 13 seats per circuit, depending on the available power source (estimated usage of 1.25 amps per outlet). End panels are required on aisle ends when Power & Data modules are specified.
- 6) **Retrofit of Power & Data**
The Power & Data system is retrofittable to Concerto product shipped after March, 1998.

Q.

Power & USB Module Distribution System (810 System)

Product is designed to bring Power & USB from the building power source to a position directly below the armcap, to accommodate the requirements of notebook computers in a temporary use situation. The Power & USB module will not extend beyond the width of the armcap and is mounted at an angle so plugs will not interfere with the occupant. All source power wires and cables are concealed with plastic covers. Wires are routed to the module through an infeed channel attached to an upright, concealed with plastic side covers and connected to the 8-wire, four-circuit harness system (each circuit provides 20 amps). Fully enclosed wireway covers protect all wires at the bottom of the back shroud as they are routed and connected to each seat. One distribution harness is designed to feed two seats. Power & USB option is available on all seat sizes. All electrical components are installed on site with hardware provided.

1) Power & USB Module (810 System)

The Power & USB module is 4.05" tall by 2.77" deep by 1.69" wide. The module is constructed of polycarbonate and polypropylene with a 5VA flammability rating per UL 746C. Metal parts are pre-galvanized steel. The module has one 15-amp simplex receptacle and two 2.1 amp USB ports. The placement will be at a slight angle away from the seat to allow easy plug in and removal of plugs. The power & USB modules are located on the right-hand side only (when seated).

2) 8-Wire Electrical Harness - Power & USB

The 810 8-wire distribution harness of flexible conduit distributes power between the power & USB modules as well as accept a power infeed harness. Each infeed harness and module consists of single housing on one end and the jumper harness consist of single housing on both ends. A four-way connector (quad block) is used to connect the infeed, jumper harness and module. The harness(s) will be enclosed in an extruded plastic wireway. All harnesses and connections will be fully enclosed in plastic troughs.

3) Wireway Cover - Power & USB

The harness is to be enclosed in the plastic cover mounted at the bottom of the back shroud. The wireway covers are constructed of vacuum-formed polystyrene. The cover is attached to the bottom of the back shroud with two #8 x 1/2" screws provided. The cover measures a minimum of .056" thick meeting UL 94-HB. The trough accommodates twenty-four Category 5 or Category 7 four-pair twisted wires.

4) Half- and Full-Height Side Covers - Power & USB

Half-height side covers are provided for uprights between seats to conceal wires to Power & USB modules. Side covers are constructed of vacuum-formed polystyrene and measure a minimum of .056" thick, with a UL94-HB minimum rating. Half-height side covers are 16" high leaving 6-1/4" of open space above the bottom-mounting (foot) plate, on a level surface. Full-height side covers of the same construction are provided at power infeed locations and data infeed locations. Side covers are attached with two or four #8 x 3/8" screws as provided. Optional full-height side covers can be specified at aisle ends.

5) Power Infeed (810 System) - Power & USB

The 810 8-wire power infeed harness with single modular connector end consists of four 12-gauge hot wires, two 12-gauge ground wires and two 10-gauge neutral wires encased in flexible conduit with a 30" length of five exposed wires. The harness with exposed wires originates from the seat wireway, routes into the end upright between an end side cover and power infeed side cover, goes through a 90° metal connector inside the covers and out through a 1/2" rigid straight coupler at the left-hand, exterior of the power infeed side cover (when seated). A 24" length of 1/2" liquid-tight conduit is supplied (to be cut to size) to house the wires and connect between the rigid straight coupler and the building source power junction box on the floor, under the seat. The building source power junction box must be located under the end seat, ideally 10" to 16" from the end upright, and 2" to 4" from the front-to-back centerline of the upright base. One Power infeed will typically support up to four circuits and 52 seats, with a maximum of 13 seats per circuit, depending on the available power source (estimated usage of 1.25 amps per outlet). End panels are required on aisle ends when Power & USB modules are specified.

- 6) Retrofit of Power & USB
The Power & USB system is retrofittable to Concerto product shipped after March, 1998.

Note: Power & Data and Power & USB systems are not interchangeable and cannot be used together.

- 2.4 FINISHES
Powder-coated finish is standard on all frames. Standard fabrics available; COM (customer's own material) fabrics require factory approval. All finishes and colors to be selected by architect. Refer to Color Addendum for standard finishes. Custom colors and finishes available; contact factory.

- 2.5 COMPLIANCE
"Concerto" seating is designed and manufactured in compliance with the intent of ANSI/BIFMA X5.4. Seating will exceed all applicable BIFMA performance criteria. Concerto Seating is "UL Classified for Electrical Hazards Only" in the Commercial Seating category per UL 1286 and CAN/CSA C22.2 No. 203. Concerto is SCS Indoor Advantage Gold Indoor Air Quality Certified.

PART 3 EXECUTION

3.1 PREPARATION

- A. Coordination details with other work supporting, adjoining, or otherwise contracting items as required to insure proper installation.
- B. Examine construction to verify that:
- 1) Dimensions are correct to manufacturer's specifications.
- C. Do not install items until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install items in strict accordance to manufacturer's Assembly Instructions and approved Shop Drawings.

B. FLOOR MOUNTING REQUIREMENTS

Minimum Floor Construction Required for Upright Installation

- 1) Concrete Floors
 - 3000 psi concrete compressive strength
 - 3" thick free of obstructions for 1-1/2"
 - 4" thick free of obstructions for 2-1/2" for riser mount
 - Riser to be plumb within 1/8 degree
 - Minimum anchor embedment 1-1/2" for floor mount or 2-1/2" for riser mount
- 2) Wood Floors
 - Minimum two layers of 3/4" thickness tongue & groove
 - APA rated grade plywood
 - Allow minimum embedment 1-1/2" with lag screws
 - Use toggle bolt if less than 1-1/2" embedment
- 3) Raised-Access Floors
 - Minimum rating of 125 PSF
 - Must be installed with grade 3 or better 3/8" diameter bolt, washers and nuts

Note: Warranty null and void if product is installed on flooring not meeting minimum structural requirements stated above. For non-typical floors not stated above, contact Southwest Solutions Group.

Floor Fastener Requirements

- 1) Concrete Floors
 - 1/4" x 2-5/8" Hilti KH-EZ
 - Max. torque: 18 ft. lbs.
 - Two anchor assemblies required per base
- 2) Concrete Riser Mount
 - 1/4" x 3" Hilti KH-EZ
 - Max. torque: 18 ft. lbs.
 - Two anchor assemblies required per plate
- 3) Wood Floors
 - 3/8" x 2-1/2" Hex washer head tapping screw
 - Two screw assemblies required per base
- 4) Raised-Access Floors
 - 3/8-16 x 2-1/2" Grade 3 bolt (2-1/2" minimum length), 3/8" Grade 3 washer (quantity of 2), 3/8" Grade 3 lock washer, 3/8-16 Grade 3 nut
 - Two bolt assemblies required per base

Note: Floor mounting anchors are provided as specified with every order.