



**The Kodiak 2400 Seating System by Royal Stewart Ltd.:**

**PART 1 GENERAL**

**1.1 Description**

Telescopic Bleacher Seating includes either manually or electrically operated systems of multiple tiered seating rows including seat, deck components & understructure that permits the opening and closing without requiring dismantling.

**1.2 Related work by others**

- A. Adequate floor levelness and strength for smooth operation of telescopic system. Flooring shall be level and rear wall plumb within 1/8" (3 mm) in 8' (2438 mm).
- B. Adequate wall strength for attachment and operation of wall attached telescopic system.
- C. Electrical wiring within the building as required for power operated telescopic seating.

**1.3 References**

- A. National Fire Protection Association (NFPA)
- B. American Welding Society (AWS)
  - a. AWS D1.1 Structural Welding Code – Steel
  - b. AWS D1.3 Structural Welding Code – Sheet Steel
- C. Americans with Disability Act (ADA)

**1.4 System Description**

A. Structural Performance: Engineer, fabricate and install telescopic gym 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 gym seat unit. Comply with NFPA 102, Standard for Assembly Seating, Tents and Membrane Structures," specifically with Chapter 5, "Folding and Telescopic Seating," except where other requirements are indicated by the Architect/Owner.

- B. Design Criteria: Telescopic bleachers shall be designed to withstand the following loads and forces in addition to their own weight:
  - a. Seat and footboards shall be designed to withstand a vertical live load of 120 lbs. per lineal foot (178 kg/m) or 100 lbs. per square foot (488 kg/sq. m) whichever is greater, front to rear sway in excess of 10 lbs per lineal foot and a parallel sway load in excess of 24 lbs per lineal foot per row.

- b. Handrails shall be designed and constructed for a concentrated load of 200 lbs (890 N) applied at any point and in any direction. A uniform load of 50 lbs per ft (730 N/m) applied in any direction. The concentrated and uniform loading conditions shall not be required to be applied simultaneously.
- c. End and back rails shall withstand an outward force of 50 lbs per lineal ft (730 N/m) at the top rail. A concentrated load of 200 lbs (890 N/m) applied at any point and in any direction along the top rail.

### 1.5 Submittals

- A. Submittals to indicate telescopic gym seat assembly layout, show seat heights, row spacing and rise, aisle widths and locations, assembly dimensions, anchorage to supporting structure, material types and finishes.
- B. Wiring diagrams (if applicable) for electrically operated seating systems.
- C. Graphics (if applicable) showing pattern of contrasting seat colors.
- D. Samples of seat materials and color finish as selected by Architect/Owner.
- E. Warranty: Standard warranty documentation.

### 1.6 Quality Assurance

- A. NFPA Standard: comply with current NFPA 102 Standard for Assembly seating, tents and membrane structures, and specifically with Chapter 5 Folding and Telescopic seating, 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. Manufacturer Qualifications: Manufacturer who has a minimum of twenty years of experience with manufacturing of telescopic gym seats.
- D. Installer Qualifications: Engage experienced installer who has specialized in installation of telescopic gym types similar to types required for this project and who is acceptable to, or certified by the telescopic gym seat manufacturer.

### 1.7 Warranty

Standard 5 year warranty: The manufacturer supplied materials will carry a warranty of 5 years against faulty materials and workmanship. This warranty excludes any parts determined to have been subject to accident, abuse, misuse or neglect. An annual inspection and required maintenance must be performed to sustain this warranty.



## PART 2 PRODUCTS

### 2.1 Product: The Kodiak Seating System (by Royal Stewart Ltd.)

### 2.2 Supply and Install the following materials: (copy and paste for multiple banks)

- A. Bank Length: (As per Drawings) (not including end rails) \_\_\_\_\_ (feet)  
\_\_\_\_\_ (inches)
- B. Rows: (tiers) \_\_\_\_\_
- C. Row Rise: 9 5/8" (245 mm), 11 5/8" (294 mm) or higher (custom)  
\_\_\_\_\_
- D. Deck Spacing: 22" (558 mm), 24" (609 mm), 26" (660 mm), (custom)  
\_\_\_\_\_
- E. Open Dimension: \_\_\_\_\_
- F. Closed Dimension: \_\_\_\_\_
- G. Overall unit height: \_\_\_\_\_
- H. Operation: Manual, Power Assist or Electric: \_\_\_\_\_
- I. Type: Wall Attached / Floor attached / Recessed / Reverse Fold / Portable:  
\_\_\_\_\_

### 2.3 Accessories: (select from the following by omitting accessories not required)

- A. Foot level aisles: Provide footrest level aisles as per applicable codes and requirements.
- B. Intermediate aisle steps: Standard aisle steps shall be provided as per applicable code requirements.
- C. Front steps shall be removable for easy storage when not in use and supplied as per applicable code requirement.
- D. Non slip tread shall be provided on steps as per applicable code requirements.
- E. End Rails: Self storing end rails must be designed to integrate with the decking and understructure. Rails shall meet all national codes. All rails will be made from 1" (25 mm) OD cold rolled 14 gauge round.
- F. Non removable folding aisle handrails shall be provided. Aisle railings shall be permanently attached to the mounting pocket and allow railings to pivot and fold sideways and down for storage. Aisle railing shall be an individual rail design, located on every other row starting at row two (2). Railings to be constructed of 1.5" (38 mm) round stainless steel tubing. Aisle rails that require removal are not acceptable. For safety, rails that protrude beyond the face of the bleacher while in the closed position or railings with blunt, non turned ends will not be allowed. To prevent chipping occurring, rails finished in a powder coated or painted finish will not be allowed.

- G. End Panels to enclose the space between the wall and the back of the self storing end rails up to the 96" level, (not available with vinyl end curtains) finish to match the deck panels.
- H. ADA truncations required as per ADA code. ADA rails to be provided as per ADA code. All ADA cutouts to have closure panels as required.
- I. Scorer's table.
- J. Vinyl End Curtains (not available with end panels) made of 18 oz vinyl material.
- K. Seat Numbers.
- L. Aisle Letters.

#### 2.4 Understructure Fabrication

- A. All bleacher wheels shall be a minimum 4" (102 mm) in diameter with 1 ¼" (32 mm) soft, non marring face for floor protection.
- B. Each row shall be outfitted with a minimum of eight (8) of the above wheels.
- C. Bleacher uprights shall be made of square and rectangular tubing. All bleacher leg tubing to be minimum 1.5" (38 mm) x 3" (76 mm) rectangular hollow structural tube (min. 125 wall). Tubing will be manufactured to B.W.G. specifications using S.A.E. 1010 steel. Structural "C" formed steel is not acceptable.
- D. All wheel channels to be 11-gauge steel.
- E. All bleacher slide arms to be 10-gauge steel.
- F. All bracing to be angle iron. Flat bar or formed steel bracing is not acceptable.
- G. Travel distance of each row shall be determined by the steel horizontal members under each row (or deck) and also by the mechanical trip-locks at the bottom of each upright. All row locks must be a minimum ¼" (6 mm) steel.
- H. Decking: all deck boards shall consist of 19/32" nominal Douglas Fir CC grade plywood with exterior glue and solid cross bands. An extruded aluminum H clip shall be placed between the sections. Exposed wear surfaces shall be finished with a layer of high density polyethylene plastic (panel am) .025 - .030 thick. Deck finishes, such as clear coat or paint are not acceptable.
- I. Deck shall be supported over full length by rear and front channels. In addition, front and back supports will be supplied as required. Rear and front channels shall be 14 gauge galvanized steel.
- J. Sections exceeding 20' (240"/6096 mm) in length will have an additional rear stiffener channel (min 14 gauge) to bridge the extended span.
- K. All hardware shall be plated and stress rated.

#### 2.5 Finishes

- A. All steel framing shall be finished Flat Black.
- B. Rear and front channels shall be 14 gauge galvanized.

## 2.6 Seating Fabrication

A. 10" x 18" seat modules to be High Density Polyethylene (HDPE) in choice of standard colors. Custom colors available. Each module shall interlock to the adjacent module both around the perimeter and along the internal ribs to eliminate pinching hazards and assure proper alignment. Multi part seats or seats with no interlock are not acceptable. A steel to steel attachment of each module to a galvanized steel nose beam shall be provided for maximum rigidity. All seat module brackets must be double through bolted into the deck structure. Must meet ASTM D2483, ASTM D635 and ASTM D1929.

a. End Caps are to be provided at all ends, aisle ways and ADA locations.

B. 12" x 18" seat modules to be High Density Polyethylene (HDPE) in choice of standard colors. Custom colors available. Each module shall interlock to the adjacent module both around the perimeter and along the internal ribs to eliminate pinching hazards and assure proper alignment. Multi part seats or seats with no interlock are not acceptable. A steel to steel attachment of each module to a galvanized steel nose beam shall be provided for maximum rigidity. All seat module brackets must be double through bolted into the deck structure. Must meet ASTM D2483, ASTM D635 and ASTM D1929.

b. End Caps are to be provided at all ends, aisle ways and ADA locations.

C. 4/4" Wood Seats to be Southern Yellow Pine with rounded edges. Sanded with a minimum 2 coats of clear polyurethane finish on top and sides.

## 2.7 Propulsion

A. Manual Operation: Furnish 1 pair of operating handles to attach under the first row for manual operation.

B. Electric Operation: Friction Drive System, all motors shall be ½ HP instant reversing 120 vac. All wheels in the system must be mounted "free floating" to the first row of the bleacher and grade 5 hardened steel through bolts. The number of tractors and added weight is to be determined by requirements based on the number of rows and type of seating. The system will operate with a pendant control which plugs into the front of the first row. The pendant control operation will ensure full visual control of the seating bank. Systems offering "steering options" are not acceptable.

C. The manufacturer will provide all wiring from power source within the bleacher systems including the pendant controller (1 per room). The power requirements are to be determined by the seating manufacturer depending on the number of power units required. Power source to terminate in surface mounted junction box above the floor. The electrical contractor is to perform all connections to the seating equipment at the junction box.

## **PART 3 EXECUTION**

### **3.1 Inspection**

- A. An inspection is required to verify the areas to receive the telescopic bleachers are the adequate dimension.
- B. Final field measurements are to be taken prior to production and installation of the telescopic seating.
- C. Do not commence work until all building conditions are satisfactory.

### **3.2 Installation**

- A. Install telescopic seating in accordance with manufacturer's instructions and approved submittal drawings.
- B. Installer is to provide necessary anchors, fasteners, inserts and other items for installation of telescopic gym seats and for permanent attachment to adjoining construction as site conditions require.
- C. After installation is complete, lubricate, test and adjust each telescoping seating assembly to ensure it operates in compliance with manufacturers operation manual.
- D. Clean installed telescoping gym seats on both exposed and semi-exposed surfaces. Touch up finishes to restore damage or soiled surfaces.

### **3.3 Protection**

- A. The manufacturer's representative shall transmit instruction in both operation and maintenance to the owner.
- B. Maintenance and operation of the telescopic seating system shall be the responsibility of the owner and shall include the following:
  - a. During operation of the telescopic seating system, the opening and closing shall be supervised by responsible personnel who will assure that the operation is in accordance of the manufacturer's instructions.
  - b. Only attachments specifically approved by the manufacturer for the specific installation shall be attached to the telescopic seating system.
  - c. An annual inspection and required maintenance of all telescopic seating systems shall be performed to assure safe conditions.

The manufacturer reserves the right to incorporate design changes and material substitutions as it sees fit to improve the overall product.