COMMERCIAL
PRODUCTS

SECTION 05 52 13
PIPE AND TUBE RAILINGS
TREX COMMERCIAL PRODUCTS
TREX SEATING RAIL™

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Trex Seating Rail system with base railing and integrated seats.

1. Self-rising Molded-plastic Stadium seats.

2. Bench seats.

1.2 RELATED SECTIONS

A. Section 05 52 00 – Metal Railings.

B. Section 05 70 00 – Decorative Metal.

C. Section 05 73 00 – Decorative Metal Railings.

D. Section 12 61 00 – Fixed Audience Seating.

1.3 REFERENCES

A. American National Standards Institute (ANSI)

1. A17.1 Accessible and Usable Buildings and Facilities.

2. A21.l Safety Requirements for Floor and Wall Openings, Railings and Toe Boards.

3. A58.l Minimum Design Loads in Buildings and Other Structures.

B. American Society for Testing and Materials (ASTM)

1. A240/A240M – Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.

2. A555 - Standard Specification for General Requirements for Stainless Steel Wire and Wire Rods.

3. A554 - Standard Specification for Welded Stainless Steel Mechanical Tubing.

4. A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip,

Plate, and Flat Bar.

5. B26/B26M - Standard Specification for Aluminum-Alloy Sand Castings.
6. B209 – Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
7. B210 – Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes.
8. B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
9. B247 - Standard Specification for Aluminum and Aluminum-Alloy Die Forgings, Hand Forgings, and Rolled Ring Forgings.
10. B429 - Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube.
11. E488 - Standard Test Methods for Strength of Anchors in Concrete and Masonry Elements.
12. E894 - Standard Test Method for Anchorage of Permanent Metal Railing Systems and Rails for Buildings.
13. E935 - Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings.

C. National Association of Architectural Metal Manufacturers (NAAMM):

1. AMP 500-505 – Metal Finishes Manual.
2. AMP 521 – Pipe Railing Systems.

D. Aluminum Association (AA):

1. ASD-1 Aluminum Standards and Data.
2. DAF-45 Designation System for Aluminum Finishes.
3. SAA-46 Standards for Anodized Architectural Aluminum.
4. ADM-2015 Aluminum Design Manual

E. American Welding Society (AWS):

1. ANSI/AWS D1.1/D1.1M Structural Welding Code - Steel.
2. ANSI/AWS D1.2/D1.2M Structural Welding Code - Aluminum.
3. ANSI/AWS D1.6/D1.6M Structural Welding Code – Stainless Steel.

F. Americans with Disabilities Act (ADA).

G. Americans with Disabilities Act Accessibility Guidelines (ADAAG).

H. International Code Council (ICC): International Building Code (IBC).

1. ICC 300 - Standard for Bleachers, Folding and Telescopic Seating And Grandstands.

I. National Fire Protection Association (NFPA)

1. 101 - Life Safety Code

2. 102 – Standard for Grandstands, Folding and Telescopic Seating, Tents, and Membrane Structures.

J. Business and Institutional Furniture Manufacturer's Association (ANSI/BIFMA):

1. X5.4 Lounge and Public Seating

1.4 PERFORMANCE REQUIREMENTS

A. General: Handrails, railings, & seats shall withstand structural loading as determined by allowable design working stresses of materials.

B. Structural Performance: Provide handrails, railings, & seats capable of withstanding effects of gravity loads and the following structural loads without exceeding allowable design working stress of materials for handrails, railings, seats, anchors and connections:

1. Top of Guards & Handrails:

a. Concentrated load of 200 lbf (0.89kN) applied at any point and in any direction.

b. Uniform load of 50 lbf/ft. (0.7kN/m) applied in any direction.

c. Concentrated and uniform loads need not be assumed to act concurrently.

2. Guards Infill Area:

a. Concentrated load of 50 lbf (0.22 kN) applied horizontally to a 1 sq. ft. (0.09 sq. m) at any point in system. Including panels, intermediate rails, balusters, or other elements composing infill area.

b. Infill load need not be assumed to act concurrently with other loads in determining stress on guard.

3. Seats: In addition to code required manufacturing loads, seats and railing system to withstand the following loads.

a. Self-rising stadium seat: 300 lbs per seat applied vertically on seat at center.

b. Bench bleacher seat: 158 plf applied vertically on seat at center.

4. Seat and railing loads (#1-2 & 3) are assumed to act concurrently.

5. Thermal Movements: Design handrails and railings to allow for movements resulting from 120 degree F (49 C) changes in ambient as required for exterior rail applications only.

6. Corrosion Resistance: Separate incompatible materials to prevent galvanic corrosion.

7. Wind Load: Provide handrails, railings, and seats capable of withstanding the project specific wind loads without exceeding allowable design working stress of materials for handrails, railings, seats

anchors, and connections.

1.5 SUBMITTALS

A. Submit under provisions of Section 01 33 00.

B. Product Data: Manufacturer's data sheets on each product to be used, including:

1. Preparation instructions and recommendations.

2. Storage and handling requirements and recommendations.

3. Installation methods.

C. Shop Drawings: Submit plan and typical section detail to depict the proper configuration, assembly, installation, and termination of each product specified in this section. Including: Section details, Mounting methods, Typical Elevations, and Key plan layout.

1. Seating layout: Show seating layout, aisle widths, aisle-end alignment or stepping, row-lettering and chair-numbering scheme, chair widths, and chair spacing in each row.

2. Verification Samples: For each finish product specified, two samples, representing actual product, color, and finish.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: All primary products specified in this section will be supplied by a single manufacturer with a minimum of five (5) years' experience.

1. Trex Commercial Products, 7008 Northland Drive North, Suite 150; Minneapolis, MN 55428; Toll Free Tel: 877-215-RAIL(7245); Email: info@trexcommercial.com.

B. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.

1. Finish areas designated by Architect.

2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.

3. Refinish mock-up area as required to produce acceptable work.

C. Railing System:

1. System components: Pre-engineered by registered Professional Engineer licensed in the State in which project is located.

2. Attachments to building structure: Pre-engineered by registered Professional Engineer licensed in State in which project is located.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store and dispose of hazardous materials, and materials contaminated by hazardous materials, in accordance with requirements of local authorities having jurisdiction.

C. Store products indoors in temperature-controlled facility.

1.8 PROJECT CONDITIONS

A. Field Measurements: Where handrails and railings are indicated to fit to other construction, check actual dimensions of other construction by accurate field measurements before fabrication.

B. Where field measurements cannot be made without delaying the railing fabrication and delivery, obtain guaranteed dimensions in writing by the Contractor and proceed with fabrication of products to not delay fabrication, delivery and installation.

C. Coordinate fabrication and delivery schedule of handrails with construction progress and sequence to avoid delay of railing installation

D. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.9 WARRANTY

A. At project closeout, provide to Owner or Owners Representative an executed copy of the manufacturer's standard limited warranty against manufacturing defect, outlining its terms, conditions, and exclusions from coverage.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Trex Commercial Products, 7008 Northland Drive North, Suite 150; Minneapolis, MN 55428; Toll Free Tel: 877-215-RAIL(7245); Email: info@trexcommercial.com.

B. Substitutions: Not permitted.

C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 MATERIALS

A. Aluminum:

1. Extruded Pipe: Alloy 6061-T6 or similar.

2. Extruded Bars, Shapes and Moldings: Alloy 6061-T6 or similar.

B. Steel:

1. Pipe: ASTM A 53

2. Castings: Iron meeting ASTM A 47 or A 48

C. Stainless Steel:

1. Tubing: ASTM A 554, Type 304 or 316.

2. Pipe: ASTM A 312/A 312M, Type 304 or 316.

3. Castings: ASTM A 743/A 743M, Grade CF 8 or CF 20 or CF 8M or CF 3M.

4. Sheet, Strip, Plate, and Flat Bar: ASTM A 666 or ASTM A 240/A 240M, [Type 304 or 316.

5. Bars and Shapes: ASTM A 276, Type 304 or 316.

2.3 Railing Components:

1. Posts:

   a. Material: **[Aluminum] [Steel].**
   b. Size: **[2 inch (50.8 mm) Square bar Alum] [2 inch (50.8 mm) Square Tube Steel]**.
   c. Height: As required.

2. Top rail:

   a. Material: **[Aluminum] [Steel].**
   b. Size: 2 inch (50.8 mm) Diameter Tube Alum.
   c. Height: 36 inch (914.4 mm).

3. Mid rail:

   a. Material: **[Aluminum] [Steel]**
   b. Size: 1.66 inch (42.2 mm) diameter pipe.
   c. Height: 18 inch (457.2 mm).

4. Baseplate:

   a. Material: Matches post material.
   b. Size: Sized appropriately for loading conditions.

5. Mounting method:

   a. Fascia.
   b. Floor.

2.4 **[Self-Rising Molded-plastic Stadium seat]**:

1. Material: Double-wall molded plastic.

   a. Back: Smooth
   b. Seat: Smooth

2. Seat Width: 16.5 inch (419.1 mm).

3. Back Height:15 inch (381 mm).

4. Back Pitch: 16 degrees.

5. Self-rising Seat Mechanism: Self-lubricating spring actuated passing ASTM F 851, positive internal stops cushioned with rubber.

6. Color: **[_____]**

7. Chair mounting Beam (pre-installed):

a. Material: **[Aluminum] [Steel]**
b. Size: **[2 inch (50.8 mm) Square tube Alum] [2 inch (50.8 mm) Square Tube Steel]**.

8. Chair mounting standard (pre-installed):

    a. Material: matches rail material
    b. Size: 1.25 inch (31.8 mm) gusset.

9. Chair mounting Beam (post-installed):

    a. Material: Steel
    b. Size: 2 inch (50.8 mm) Square Tube.

10. Chair mounting standard (post-installed):

    a. Material: Steel
    b. Size: 0.25 inch (6.4 mm) plates.

2.5 **[Bench seat]**:

1. Material: Extruded aluminum plank profile.

2. Seat Depth: **[9 inch (228.6 mm) Flat] [10 inch (254 mm) Flat] [11.5 inch (292.1 mm) Flat] [11.5 inch (292.1 mm) Contoured]**.

3. Seat Width: 19 inch (482.6 mm).

4. Back Height: No backrest.

5. Bench seat bracket: Formed Aluminum angle.

    a. Lift and pivot design.

2.6 Row-letter, Seat-Number and Team Logo Plates: Manufacturer's standard.

1. Material: Stainless steel with black embossed characters.

2. Location: As indicated on drawings

3. Attachment: Manufacturer's standard method

2.7 FASTENERS

A. Anchors: Select fasteners of type, grade and class required to produce connections suitable for anchoring handrails and railings to other types of construction indicated and capable of withstanding design loads.

B. Component Hardware: Type best suited to application, stainless steel.

2.8 FABRICATION

A. All mitered and welded corners shall be ground smooth to match finish.

B. Make exposed joints butt tight and flush.

C. Interior sleeves shall be used for typical splices.

D. Fabricate railings in accordance with approved Shop Drawings.

E. Shear and punch metals cleanly and accurately. Remove burrs from exposed cut edges.

F. Cut, reinforce, drill and tap components as indicated on drawings to receive finish hardware, screws and similar items.

G. Fabricate railings with joints tightly fitted and secured. Furnish fittings to accommodate site assembly and installation.

H. Accommodate for expansion and contraction of members and building movement without damage to connections or members.

2.9 FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for applying and designating finishes.

B. Appearance of Finished Work:

1. Variations in appearance of abutting or adjacent units are acceptable if they are within one-half of the range of approved samples. Noticeable variations in the same unit are not acceptable.

2. Variations in appearance of other components are acceptable if they are within the range of approved samples and are assembled or installed to minimize contrast.

C. Finish: Prepare, pre-treat, and apply coating to exposed metal surfaces to comply with manufacturer's written instructions.

1. Anodize: Clear Anodize AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker unless indicated otherwise.

2. Powder coat:

a. Material: AAMA 2604 - Polyester powder coating, 3 mil average film thickness
b. Color: [_____].

3. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A 153/A 153M for steel.

PART 3and iron hardware and with ASTM A 123/A 123M for other steel and iron products. **– EXECUTION**

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Coordinate post setting drawings, diagrams, templates, instructions, and directions for installation of anchorages. These include items such as sleeves, concrete inserts, anchor bolts, and miscellaneous

items having integral anchors that are to be embedded in concrete and masonry construction.

1. Coordinate delivery of anchorages to project site.

2. Coordinate that blocking is in place for all mounting fasteners.

B. Clean debris and dust from surfaces and embed holes thoroughly prior to installation.

C. Clean surfaces thoroughly prior to installation.

D. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

A. Install railing system in accordance with manufacturer's approved Shop Drawings and instructions.

B. Install components plumb and level, accurately fitted, free from distortion and defects.

C. Provide anchors for connecting railings to supporting construction.

D. Perform cutting, drilling, and fitting required for installation of handrails. Accurately set handrails in location, alignment, and elevation, measured from established lines and levels.

E. Fit exposed connections accurately together to form tight joints except as necessary for expansion.

3.4 PROTECTION

A. After installation, General Contractor or Owner shall be responsible for protection of railings during the balance of construction.

B. Touch-up, repair or replace damaged products before Substantial Completion.

C. When cleaning surfaces use plain water containing a mild soap or detergent. No abrasive agents or harsh chemicals shall be used.

END OF SECTION