

RAILING DESIGN

General Information

1. This catalog provides general guardrail configurations and components to the requirements of the latest edition of B.O.C.A. National Building Code.
2. The ability of supporting floor and wall structures to resist the effects of loads of these components alone or in combination with other loads and effects remains the sole responsibility of the project architect / engineer.
3. The complete design and preparation of shop drawings for the aluminum railing system and all related items are designed for each individual project. Posts and anchorage vary in size and quantity for each type of guardrail and shall be the manufactures responsibility that the design requirements are met.
4. The manufacture and installation of guardrails and their components shall be strict in accordance with shop drawings and specifications prepared by Greco Aluminum Railings.
5. Greco's shop drawings are sealed by a qualified Professional Engineer who specializes in our welded aluminum railing systems. Shop drawings prepared for projects in other jurisdictions will comply with their respective building codes.

Standards

- B.O.C.A. National Building Code
- State or local building codes
- American Welding Society - AWS D1.2
- Aluminum Association -ASD-1 "Aluminum Standard and Data"
- American National Standards Institute (ANSI) -A 21.1 "Safety Requirements for Floor and Wall Openings, Railings and Toe Boards"
- AAMA 2603-98 "Voluntary Specifications, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels"
- American Society for Testing and Materials
 - -E 985 "Specifications for Permanent Metal Railing Systems and Rails for Buildings"
 - -E 935 "Standard Test Methods for Performance of Metal Railing Systems and Rails for Buildings"
 - -E 894 "Standard Test Methods for Anchorage of Permanent Metal Railings Systems and Railing for Buildings"

Greco manufactures aluminum railing systems to the highest industry standards and to the applicable building code. For further information, contact Greco Aluminum Railings.

Material Specifications / Fabrication

Materials

Aluminum: Alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, with not less that the strength and durability properties of the alloy and temperer designated below for each aluminum form required:

- Structural extrusions such as post shall be 6361-T6.
- All custom extrusions such as top rails, and pickets shall be 6005A-T6.
- Aluminum sheet or corrugated panels shall be series 5052 H4 aluminum alloy.
- Fasteners for Anchoring Railings to other construction: Only stainless steel type #304 shall be used for anchoring railings to other types of construction and capable of withstanding design loadings.
- Fasteners for Interconnecting Railing Components: Fasteners shall be self drilling, corrosive resistant screws.
- Corrosion Protection: Powder coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood or dissimilar metal with polyster powder coating finish.
- Glass Panel: All glass panels shall be 1/4" thick, tempered glass (clear or standard tint).

Fabrication

- Railing shall be shop fabricated and assembled per approved shop drawings to the greatest extent possible.

- Assembly shall be in a neat, craftsmanship manner in accordance with the highest industry standards.
- All posts shall be structurally welded to Top Rail and Lower Horizontal Members to assure fixed fastening for the life of the railing.
 - Corners shall be fitted by mitre and further welded as required to obtain maximum assurance of strength through the railing's useful life.
 - End connections required to fasten to the building structure require either a welded rail end sleeve or bracket.
 - Provide weep holes or other means to exit entrapped water from hollow sections of railing members exposed to exterior condensation, or moisture from other sources.
 - Verify dimensions on site prior to shop fabrication.
 - Welding operators and procedures used are qualified to AWS D1.2
 - Robotic welding and procedures are qualified to AWS D1.2
 - Assembly shall be in a neat workmanlike manner using MIG Welding Processes as required.
 - Glass panels to be field glazed using PVC glazing gasket.
 - Expansion joints shall be provided as needed to allow for thermal expansion or contraction.

SECTION 05720 RAILING AND HANDRAILS

PART I - GENERAL

1.01 Work Included

Furnish and install pre-engineered welded aluminum railings and components.

1.02 Related Work

Section 03000 - Concrete
Section 04200 - Unit Masonry Systems
Section 06100 - Rough Carpentry
Section 08800 - Glazing: Glass

1.03 Reference Standards

Aluminium Associations (AA)

- ASD-1 Aluminum Standards and Data
- B.O.C.A. National Building Code
- American Welding Society -ASD-1 "Aluminum Standards and Data"
- American National Standards Institute (ANSI) AZ1.1 "Safety Requirements for Floor and Wall Openings, Railings and Toe Boards"
- AAMA 2603 98 "Voluntary Specifications Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels."
- American Society for Testing and Materials
 - E985 - "Specifications for Permanent Metal Railing Systems and Railings for Buildings"
 - E935 - "Standard test methods for performance of Permanent Metal Railing Systems and Rails for Buildings"
 - E894 - "Standard test methods for Anchorage or Permanent Metal Railing Systems and Rails for Buildings"

1.04 System Performance Requirements

Structural Performance of Railing Systems:

- Engineer, fabricate, and install railing system to withstand the following structural loads without exceeding the allowable design working stress of the materials for railing system, anchors and connections.

1.05 Submittals

- Shop drawings showing Welding, Fabrication, Installation or railing system including all plans, sections, detail of connections and components.

- Where installed products are indicated to comply with certain design loadings, include structural computations, material properties and other information needed for structural analysis review by the design architect and/or engineer of record.
- Submit 6 prints of all shop drawings, signed and stamped from a professional structural engineer registered in proper jurisdiction.

1.06 Quality Assurance

- Single Source Responsibility: Obtain railing systems from a single fabricator/manufacturer.
- Engineering Responsibility: Engineer railing systems by the fabricator/manufacturer unless sizes and configurations are specifically called out on architect/engineer.

1.07 Storage

- Store railing systems in clean, dry location, away from uncured concrete and masonry, protected against damage.

1.08 Project Conditions

- Field Measurements: Where railings are indicated to fit to other construction, check accurate dimensions of other construction by accurate field measurements before fabrication. coordinate fabrication schedule with construction progress to avoid delay of work.

PART II - PRODUCTS

2.01 Manufacturers

- Acceptable Manufacturer: Products specified as a standard of quality are fabricated by
GRECO ALUMINUM RAILINGS
2051 Ambassador Drive, Windsor, Ontario, Canada N9C 3R5
Telephone: (519) 966-4210 Fax: (519) 966-4901 Email: info@greco railings.com
(Contact us for a local representative in your area)

2.02 Metals

- Aluminum: Alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, with not less than the strength and durability properties of the alloy and temper designated below for each aluminum form required:
 - Structural extrusions such as posts shall be 6361 T6 alloy/temper
 - All custom extrusions such as top rail and pickets shall be 6005AT6
 - Aluminum sheet or corrugated panel shall be series 5052 H4 alloy

2.03 Fasteners

- Fasteners for Anchoring Railings to other Construction: For aluminum railing installation, only stainless steel anchors Type 304 are to be used.
- Fasteners for Interconnecting Railing Components such be corrosive resistance or stainless steel screw

2.04 Fabrication

- Fabricate railing system to comply with requirements indicated on approved shop drawings for design, dimensions, details, finish and member sizes, including wall thickness of hollow members, post spacings, and anchorage.
- Assembly shall be in a neat workmanlike manner using MIG Welding Processes as required.
- All posts shall be structurally welded to top rail and lower horizontal members to assure fixed fastening for the life of the railing.

- Corners shall be fitted by mitre and further welded as required to obtain maximum assurance of strength through the railing's useful life.
- End connections required to fasten to the building structure require either a welded end rail sleeves or bracket.
- Provide weep holes or other means to exit entrapped water from hollow sections of railing members exposed to exterior, condensation, or moisture from other sources.
- Close exposed visible ends of top rails by use of flat cap welded to end.
- Verify dimensions on site prior to shop fabrication.

2.05 Finish

- All aluminum railings to receive a baked on painted finish over full multi-stage pretreatment process.
- E.S.P. applied thermosetting T.G.I.C. polyester powder paint over pretreatment bond coating. Paint to be similar to Tiger Drylac Series 49.
- Selection to be available in standard colors by Greco and Manufactures standard colors only.
- Finish shall be in exterior quality powder coating applied in accordance with A.A.M.A. 2603-98
- Color matched will be done with high solid polyester powder to meet A.A.M.A. 2603-98

PART III - EXECUTION

3.01 Preparation

- Coordinate drawings, instructions and directions for installation of railing system, anchors and miscellaneous items.
- Coordinate delivery of such items to project site

3.02 Installation

- Install in accordance with shop drawings and manufacture's instructions.
- Erect work square, level and free from distortion or defects detrimental to appearance or performance.
- Expansion joints shall be provided as needed to all for thermal expansion or contraction.

3.03 Cleaning and Touch-Up Painting

- As installation is completed, clean aluminum with plain water containing a mild detergent.
- Touch-up minor scratches with touch-up paint provided by manufacturer to recommended instructions.