



SECTION 05 73 00
PRE-ASSEMBLED ALUMINUM RAILING SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Pre-assembled aluminum railings.

1.2 RELATED SECTIONS

- A. Section 03 30 00 - Cast-in-Place Concrete.
- B. Section 06 10 00 - Rough Carpentry.

1.3 REFERENCES

- A. American Architectural Manufacturers Association (AAMA):
 - 1. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix).
 - 2. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix).
- B. American National Standards Institute (ANSI):
 - 1. ANSI Z 97.1 - Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test.
- C. ASTM International (ASTM):
 - 1. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes.
 - 2. ASTM E 894 - Anchorage of Permanent Metal Railing Systems and Rails for buildings.
 - 3. ASTM E 935 - Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for buildings.
 - 4. ASTM E 985 - Specification for Permanent Metal Railing and Rails for Buildings.
- D. British Columbia Building Code, 2012.
- E. Canadian National Building Code, 2010 (CBC).
- F. Council of American Building Officials (CABO): CABO A117.1 - Accessible and Usable buildings and Facilities.
- G. Florida Building Code, 2010 Including High Velocity (FBC).
 - 1. High Velocity Hurricane Zone (HVHZ).
- H. International Building Code, 2006, 2009, 2012 (IBC): Section 1607.7.7.1, Handrails and Guards.
- I. International Code Council (ICC): ICC-ES AC273 - Acceptance criteria for handrails and guards.

- J. International Organization for Standardization (ISO): ISO 17025 - General requirements for the competence of testing and calibration laboratories.
- K. International Residential Code, 2009, 2012 (IRC).
- L. Ontario Building Code, 2012 (OBC).

1.4 SUBMITTALS

- A. Submit under provisions of Section 01 30 00 - Administrative Requirements.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Manufacturer's printed installation instructions, showing required preparation and installation procedures.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
 - 4. Cleaning and maintenance instructions.
- C. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work. Provide templates for anchors and bolts specified for installation under other Sections.
- D. Closeout Submittals: Documentation of manufacturer's warranty.

1.5 QUALITY ASSURANCE

- A. Installer: Minimum 2 years experience with similar railing products.
- B. Pre-Installation Meetings: Conduct pre-installation meetings to verify project requirements, substrate conditions, construction documents, details and manufacturer's warranty requirements.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials in manufacturer's original, unopened, undamaged rolls/pallets with identification labels intact.
- B. Storage and Protection: Store materials protected from exposure to harmful environmental conditions and at temperature and humidity conditions recommended by the manufacturer.

1.7 PROJECT CONDITIONS

- A. 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 recommended limits.

1.8 WARRANTY

- A. Manufacturer's Warranty: Manufacturer's standard 15 year limited warranty.
 - 1. PRODUCTS

1.9 MANUFACTURERS

- A. Acceptable Manufacturer: Ultralox, which is located at: 2955 Lone Oak Dr. Suite 180; Eagan, MN 55121; Toll Free Tel: 888-685-4005; Tel: 612-999-1115; Fax: 855-742-7245; Email:[request info \(info@ultralox.com\)](mailto:requestinfo@ultralox.com); Web:ultralox.com
- B. Acceptable Dealers:
 - 1. Colorado: Rolling Ridge Deck Co Inc., 1232 Bergen Parkway, Suite 101 Evergreen, Colorado

- 80439, rollingridgedeck.com
2. Colorado: Moore Lumber and Hardware, 1335 Park Street Castle Rock, Co 80109, moorelbr.com
 3. Georgia: Tek-Rail, 320 Temple Ave, Newnan, GA 30263, tek-rail.com
 4. Illinois: InnoTech Manufacturing, 901-1005 South 13th Street, Mount Vernon, IL 62864, <http://innotechmfg.com/>
 5. Indiana: Tri-Corp 4515 O'Hara Drive, Evansville, IN 47711, tricorpcoating.com
Iowa: Lovewell Fence & Deck, 21060 Holden Drive, Davenport, IA 52806, lovewellfence.com
 6. Kansas: Kansas City Building Supply, 7600 Wedd St., Overland Park, KS 66024, kcbuilding.com
 7. Maryland: Capital Railing, 1954 Halethorpe Farms Road, Halethorpe, MD 21227, capitalrailing.com
 8. Maryland: Fence & Deck Connection, 8057 Veterans Hwy, Millersville, MD 21108, fenceanddeckconnection.com
 9. Michigan: Eclipse Distributing, 702 Hall St SW, Grand Rapids, MI 49503, eclipsedistributing.com
 10. Minnesota: Ultralox, 2955 Lone Oak Drive, Suite 180, Eagan, Minnesota 55121, ultralox.com
 11. Minnesota: ProDeck Supply, 2123 Broadway Street NE, Minneapolis, MN 55423, prodecksupply.com
 12. Minnesota: Twin Cities Railing, 6220 178 Lane NW, Ramsey, MN 55303, twincitiesrailing.com
 13. Nebraska: Millard Lumber, Inc., 12900 I Street, Omaha, NE 68137, millardlumber.com
 14. New Jersey: Phoenix Manufacturing, Ocean Township, NJ 07712, phoenixpvcrails.com
 15. New Jersey: Great Railing, 1085 North Black Horse Pike, Williamstown, NJ 08094, greatrailing.com
 16. New York: Old Dutchman Wrought Iron, Inc., 2800 Miller Sport Highway, Getzville, NY 14068, olddutchman.com
 17. North Carolina: Royal Oak Stairs, 3201 Wellington Court, Unit 104 Raleigh, NC 27615, royaloakstairs.net
 18. Oregon: Adrian's Quality Fence & Deck, 3115 SW Avenue, Beaverton, OR 97003, adrians.com
 19. Rhode Island: Railing Pro, 135 Teft Hill Trial, Exeter, RI 02822, railingpro.com
 20. Washington: Volkan Railing, 20215 Cedar Velley Rd, Lynwood, WA 98036, volkanrailings.com

21. Wisconsin: Cardinal Fabricating Corporation, 2021 S. Lenox Street, Milwaukee, WI 53207, cardinalfab.com
22. Wisconsin: Primrose Custom Design, 22429 Wisconsin 78 South, Mount Horeb, WI 53572, primrosedesigns.com
23. Canada, Ontario: Vision Outdoor products, 625 Zenway Boulevard Unit 2, Woodbridge, Ontario L4H 4J8, visionoutdoorproducts.com

- C. Substitutions: Not permitted.
- D. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

1.10 PRE-ASSEMBLED ALUMINUM RAILINGS

- A. Materials:
 1. Configuration and Profiles: Refer to the Drawings.
 2. Aluminum: ASTM B 221, alloy and temper as recommended by manufacturer.
 3. Finish: Textured powder coating complying with AAMA 2604.
 4. Finish: Textured powder coating complying with AAMA 2605.
 5. Color: Black.
 6. Color: White.
 7. Color: Bronze.
 8. Color: As selected by Architect.

1.11 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Design, fabricate and install handrail and railing systems in accordance with ASTM E 985 for structural performance based on testing performed in accordance with ASTM E 894 and E 935.
- B. Provide handrails and railings capable of withstanding the following structural loads without exceeding allowable design working stress of material for the handrails, railings, anchors and connections.
 1. Top Rail:
 - a. Concentrated applied load of 200 lbs (90.7 kg). at any point in any direction in accordance with 1607.7.1.1 of IBC. Concentrated load need not be assumed to act concurrently with uniform loads.
 - b. The top rail and the structural supported post subjected to a concentrated load of 500 lbs (226.8 kg) applied at the following locations:
 - 1) Horizontal at the center of the guardrail.
 - 2) Horizontal at the top of support post; 42 in (1067 mm) above surface of deck.
 - c. Uniform Load Test: The top rail of the system subjected to a single test where a maximum uniform load of 125 lbs per ft (186 g per m) applied vertical and in an outward direction at a 45 degree angle from the horizontal plane.
 2. Handrails not serving as top rails:
 - a. Concentrated applied load of 200 lbs (90.7 kg) at any point in any direction in accordance with 1607.7.1.1 of IBC. Concentrated load need not be assumed to act concurrently with uniform loads.
 - b. Uniform load of 50 lbs per linear foot (74.4 kg per linear m) applied in any direction in accordance with 1607.7.1.1 of IBC.
 3. Infill area of rail systems:
 - a. Capable of withstanding a horizontal load of 50 lbs. applied to one square foot

- (22.68 kg per 0.093 sq m) at any point in the system in accordance with 1607.7.1.2 of IBC. Load is not to be assumed to act concurrently with loads on top rails of railing systems in determining stress on guards.
- b. The required safety factor for glass used in handrails and guards is 4 in accordance with 2407.11 of IBC.
 - c. The required safety factor for assemblies is 2.5 in accordance with 1714.3.1 of IBC.
 - d. In-fill Load Test: A load consisting of 200 lbs over a 1 sq. ft. (90.7 kg per 0.093 sq m) normal to the infill in a worst-case scenario.
- C. Aluminum railing systems are to have been successfully tested by third-party ISO 17025 testing laboratories in accordance with the following:
- 1. British Columbia Building Code, 2012.
 - 2. Canadian National Building Code, 2010.
 - 3. Florida Building Code, 2010 Including High Velocity (FBC).
 - 4. Hurricane Zone for Colonial and Victorian Series(HVHZ).
 - 5. ICC-ES AC273 - Acceptance criteria for handrails and guards.
 - 6. International Building Code, 2012 (IBC):
 - a. Section 1607.7.7.1, Handrails and Guards.
 - 7. International Residential Code, 2012 (IRC).
 - 8. International Building Code, 2009 (IBC).
 - 9. International Residential Code, 2009 (IRC).
 - 10. Ontario Building Code, 2012.
 - 11. EXECUTION

1.12 EXAMINATION AND PREPARATION

- A. If preparation is the responsibility of another installer, notify Architect in writing of deviations from manufacturer's recommended installation tolerances and conditions.
- B. Do not proceed with installation until substrates have been properly prepared and deviations from manufacturer's recommended tolerances are corrected. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

1.13 INSTALLATION

- A. Install railings in accordance with manufacturer's written instructions and recommendations as applicable to specified application.
- B. Install products in strict accordance with manufacturer's instructions, approved submittals.

1.14 CLEANING AND PROTECTION

- A. Protect installed railings from damage during application and remainder of construction period, per manufacturer's written instructions.

END OF SECTION