

SECTION 05 51 33.23- ALTERNATING TREAD ALUMINUM STAIRS

PART 1- GENERAL

1.1 SCOPE OF WORK

Fabricate and Install aluminum alternating tread stair assemblies in accordance with the requirements set forth in this section.

(Note: Terminology used for the component covered by this specification varies among the codes or standards that address the component. This specification uses the term alternating tread stair. MasterFormat uses the term alternating tread ladder. The International Building Code (IBC) and NFPA-101 (Life Safety Code) use the term alternating tread device.)

1.2 ADDITIONAL WORK INCLUDED IN THIS SECTION

Some items of work are usually specified in sections other than 05 51 33.23. If they are to be part of the metal alternating tread stair contractor’s work, they must be specified here.

***NOTE: Delete any sections below not relevant to this project; add others as required.*

- A. Field measurements of alternating tread device installation sites and verification of vertical distance between floors.
- B. Other as required _____

1.3 WORK SPECIFICALLY EXCLUDED IN THIS SECTION

The items in this section are not to be included in the metal stair contractor’s work:

- A. Temporary shoring or bracing.
- B. Demolition and removal of existing work.
- C. Clean up of site prior to installation.
- D. Concrete supports or other concrete work
- E. Cutting; preparation of pockets; setting of plates, inserts, adapters, or other hardware of built-in items
- F. Placement of wire mesh and re-bar for concrete fill
- G. Temporary lights or electricity.
- H. Temporary safety rails.
- I. Protection after erection.
- J. Wood trim or moldings, for treads or stringers.
- K. Rubber treads or carpets.
- L. Slip resistant concrete treatments.
- M. Field painting other than touch up of damaged surfaces.
- N. Final surface cleaning, passivation, or application of surface protectant after installation.

1.4 RELATED DOCUMENTS:

Project drawings and specifications and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

Cross over and landing platforms used with alternating tread stairs are addressed in section 05 51 36.

1.5 SUMMARY:

- A. Provide all material, labor, equipment and services and perform all operations necessary or required for the work of this section, in accordance with the Drawings and Specifications, and including fabrication and installation of alternating tread aluminum Stairs.
- B. Related work specified elsewhere includes but is not limited to:
 - 1. Metal Stairs per other Division 5 sections
 - 2. Metal Fabrications per other Division 5 sections
 - 3. Cross over and landing platforms used with alternating tread stairs are addressed in section 05 51 36.

1.6 REFERENCES

National Association of Architectural Metal Manufacturers (NAAMM)

- A. NAAMM, STANDARD AMP 510-92 Metal Stairs Manual 5th Edition

Aluminum Association

- A. Aluminum standards and data, latest Edition

American Welding Society

- A. AWS D1.2, Structural Welding Code, Aluminum

1.7 PERFORMANCE REQUIREMENTS:

- A. Alternating Tread Stair Treads: shall be capable of withstanding a single concentrated 1000 pound load without permanent deformation; or 100 pounds per square foot or 300 pounds on an area of 4 square inches without exceeding the allowable working stress of the material.
- B. Alternating Tread Stair Guard and Handrail: shall be capable of withstanding a single concentrated load of 200 pounds or a uniform load of 50 pounds per linear foot applied in any direction at any point on the rail without exceeding the allowable working stress of the material.
- C. Alternating Tread Stair Stringers: shall be capable of withstanding a single concentrated load of 1000 pounds at any point on the stair without permanent deformation; or a uniform live loading of 100 pounds per square foot applied in a downward direction to all tread surfaces or a 300 pound load on an area of 4 square inches without exceeding the allowable working stress of the material.

1.8 CONSTRUCTION REQUIREMENTS:

- A. Cast Aluminum Treads, Landings, and Mounting Base: shall be gas metal arc welded, shielded metal arc welded or other approved welding process to a rectangular HSS stringer.

- B. Tread Castings: shall have integrally cast handrail support arms which are precision machined and welded to continuous aluminum handrails.
- C. Landing and Tread Surfaces: shall be cast with skid resistant surfaces and all treads shall have upturned integrally cast skid barriers.
- D. Riser Spacing: shall be equally spaced to within 3/16" for adjacent and to within 3/8" for any two non-adjacent risers on a stair.
- E. Guards and Handrails: shall be contoured for body guidance and underarm support, and shall have inclined hand side portions for free sliding of the hands unimpeded by the handrail supports.
- F. Cast Aluminum Foot Divider: shall be an integral part of the landing and shall form a support for a rubber bumper strip.
- G. Rubber Bumper. A rubber bumper strip shall be attached or will be provided for field attaching to the center stringer.

1.9 DIMENSIONS:

- A. Alternating Tread Stair Angle: 68 degrees from horizontal as specified in the drawings.
- B. Vertical Drop: the change in elevation, as shown in the drawings, between the upper finished floor surface where the top landing will be attached and the lower finished floor surface where the base of the alternating tread stair will be secured.

1.10 SUBMITTALS:

Dimensional Prints: shall be submitted for approval prior to fabrication.

1.11 DELIVERY STORAGE AND HANDLING

- A. Deliver materials to the job-site in good condition and properly protected against damage to finished surfaces.
- B. Store material in a location and manner to avoid damage. Do not stack components. Lay out components on firm foundation material such that bending can not occur.
- C. Store metal components in a clean dry location, away from uncured concrete, cement, or masonry products, acids, oxidizers, rain water, or any other chemical or substance that might damage the material or finish.
- D. Plan work and storage locations to keep on-site handling to a minimum.
- E. Exercise particular care to avoid damage to material finishes or unprotected surfaces when handling.

PART 2-PRODUCTS**2.1 ACCEPTABLE MANUFACTURER:**

- A. Lapeyre Stair, Inc.
5117 Toler St.
Harahan, LA. 70123;
1-(800)-535-7631 or
1-(504)-570-6209.
LS.SALES@LAPEYRESTAIR.COM
WWW.LAPEYRESTAIR.COM
- B. Substitutions will not be considered.

2.2 MATERIALS:

- A. Landings, Treads and Foot Castings: Aluminum alloy F356F
- B. Guards/Handrails:
 - 1. 1-1/2" Φ x 1/8" Tube; Aluminum Alloy 6063-T4
- C. Central Stringer:
 - 1. HSS 1-3/4" x 4" x 1/8"; Aluminum Alloy 6063-T52
- D. Miscellaneous Materials
 - 1. Rubber Spine: Hollow Neoprene strip
 - 2. Bolts: Landing to Structure, ASTM F593, SS304, SS316 or 18-8 SS-bolts
 - 3. Nuts: ASTM 594, SS304, SS316 or 18-8 SS nuts
 - 4. Washers: ASTM F844 or F436

2.3 FINISH:

Natural Finish

2.4 FABRICATION:

- General: Fabricate alternating tread aluminum stairs to conform to performance and construction requirements, in accordance with approved shop drawings or dimensional prints. Fabricate and shop-assemble to greatest extent possible.
- A. Gas metal arc welded (GMAW/MIG) and/or gas tungsten arc welded (GTAW/TIG) using 4043, 4943 or other approved welding wire.

PART 3- EXECUTION:**3.1 PREPARATIONS:**

- A. Coordination: Coordinate start and installation of aluminum alternating tread stairs with all other related and adjacent work. Installation shall not start until the construction has progressed to the point that weather conditions and remaining construction operations will not damage stair installation.
- B. Verification: Verify that dimensions and angle are correct and that substrate is in proper condition for alternating tread stair installation. Do not proceed with installation until all necessary corrections have been made.

3.2 INSTALLATION:

- A. If bumper has not been installed at the factory, install the bumper in accordance with the manufacture's instructions
- B. Prepare mounting holes.
- C. Position alternating tread stair with top tread at same elevation as upper finished floor or roof surface.
- D. Secure alternating tread stair with not less than 2 bolts or studs at top and with not less than 2 at bottom of stair.

3.3 CLEAN-UP:

Leave work areas clean and free of debris.

END OF SECTION