

SECTION 05 55 17

PHOTOLUMINESCENT ALUMINUM STAIR NOSINGS

******* Balco, Inc. manufacturers numerous metal fabrications for the construction industry including gratings, trench covers, stair nosing, expansion joint assemblies, Fire Barriers in 2, 3 and 4 hour ratings, and floor grids and mats. In 2005 Balco, Inc. introduced a new line of photoluminescent exit path marking products consisting of stair nosing, handrail illumination strips, demarcation way finding strips, obstacle markers, and directional signs in conformance with the requirements of the International Building Code 403.16 Section 1024, NFPA 101 Life Safety Code and New York City Reference standard RS 6-1 and 6-1A (pre-2014 Code Buildings). Photoluminescent products have the advantage of providing highly visible emergency signage and lighting that is non-electric, non-radioactive, durable, maintenance-free, weather-resistant, and UV stable. Balco's photoluminescent products can be used in combination to provide a visible Exit Path Marking System for safe emergency egress after a power failure. These products recharge in daylight or interior lighting and glow safely for over 24 hours.**

This guide can be used to specify IllumiTread™ Stair Nosing, Balco's extruded aluminum stair nosing with an integral photoluminescent strip.

These products can be used in combination with IllumiTread™ Handrail Illumination Strips, IllumiTread™ Demarcation Way Finding Strips, IllumiTread™ Obstacle Markers, IllumiTread™ Directional and Door Signs to provide a visible Exit Path Marking System for safe egress after the loss of electrical power. In addition, Balco, Inc. manufactures photoluminescent aisle markers for theaters and other performance facilities. These products can be specified using Balco Product Specification SECTION 10 14 44 - PHOTOLUMINESCENT AISLE MARKERS.

The specifier will need to edit this product specification to reflect the options and applications being used. Most editing can be accomplished by deleting unnecessary requirements.

Balco, Inc. IllumiTread™

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PART 1 — GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions, Supplementary Conditions and Division-1 General Requirements, apply to the work of this section.

1.02 WORK INCLUDED

- A. Furnish and install complete Balco, Inc. IllumiTread™ Photoluminescent Stair Nosing.
 - 1. Retrofit Stair Nosing
 - 2. Single Component Stair Nosing
 - 3. Two-Component stair Nosing

1.03 RELATED WORK

- A. Related work which is specified elsewhere.
 - 1. Concrete work: Section 03 30 00.
 - 2. Metal Stair construction: Section 05 51 00

1.04 REFERENCES

- A. Publications listed herein are part of this specification to the extent referenced. The criteria established in the specifications shall take precedence over the standards referenced herein. (Examples of reference standards are given below.)
 - 1. American Society for Testing and Materials (ASTM):
 - a. ASTM B 221, Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes and Tubes.
 - 2. International Organization for Standardization (ISO):
 - a. ISO 17398, Safety Colors and Safety Signs – Classification, Performance and Durability of Safety Signs.
 - b. ISO 7010 (2003-10-01), Section E001, E002, E005, E006: Graphical Symbols – Safety Colors and Safety Signs – Safety Signs Used in Workplaces and Public Areas
 - 3. American National Standards Institute (ANSI):
 - a. ANSI Z535.1-2002, American National Standard for Safety Color Code

4. Underwriters Laboratories
 - a. UL 410 – Standard for Slip Resistance of Floor Surface Materials.
 - b. UL 1994 - Standard for Luminous Egress Path Marking Systems

1.05 SYSTEM DESCRIPTION

- A. Photoluminescent strips shall be 1" wide and form an integral part of the stair treads and leading edge of all landings Stair nosing assemblies shall be **[anchored to substrate] [cast-in-place]**.
 1. Mechanical fasteners shall be used to anchor stair nosing to the substrate.
 2. Adhesives may be used in conjunction with mechanical fasteners to affix stair nosing to the substrate.
 3. Adhesives may not be used as the sole means for affixing stair nosing to the substrate.
 4. Stair nosing treads shall be abrasive filled or shall have serrated surfaces to improve slip resistance.
 5. Stair nosing tread surfaces shall be slip resistant as defined by UL 410.
 6. Stair nosing treads shall meet OSHA Barrier-Free Code requirements for stair design in public buildings.

1.06 QUALITY ASSURANCE

- A. Manufacturer: Obtain stair nosing assemblies through one source from a single manufacturer.
 1. Manufacturer shall be listed with an independently recognized testing laboratory for compliance and on-going certification that photoluminescent performance complies with UL 1994.
 2. Manufacturer shall be ISO 9001 Certified.
 3. Manufacturer shall have a minimum of ten (10) years of experience in the fabrication of stair nosing systems..

1.07 SUBMITTALS

- A. Submit manufacturer's specifications and technical data, including Safety Data Sheets, installation instructions, as required, and catalog cuts and templates where required to explain construction and to provide for incorporation into the project.
- B. Submit certificates and/or copies of third-party listings independent test reports and research reports showing compliance with specified performance requirements.
- C. Submit shop drawings showing complete fabrication details for all stair nosings, research reports re including required anchorage to surrounding construction.
- D. Submit three (3) 3" samples of the specified system.

1.08 DELIVERY, STORAGE AND HANDLING

- A. The manufacturer shall fill Two Component stair nosing sub-channels with a protective material to provide protection during construction.
- B. For Single Component Nosings, the manufacturer shall cover the stair nosing photoluminescent strip and abrasive ribs with protective tape to eliminate concrete infiltration and staining.
- C. Deliver the stair nosing assemblies to jobsite in new, clean, unopened crates of sufficient size and strength to protect materials during transit.
- D. Store components in original containers in a clean, dry location.

1.09 WARRANTY

- A. Submit manufacturer's warranty that materials furnished will perform as specified for period of not less than one (1) year when installed in accordance with manufacturer's recommendations.
- B. Submit manufacturer's letter of certification that they have used only legal pigments, with an anticipated 25 year lifespan, purchased through licensed distributors of Nemoto & Co., LTD of Tokyo, Japan or Honeywell International (Nemoto's licensee) in manufacturing photoluminescent strips.

PART 2 — PRODUCTS**2.01 MANUFACTURERS**

- A. Basis of Design: IllumiTread™ Photoluminescent Stair Nosing as manufactured by Balco, Inc., 2626 S. Sheridan, Wichita, KS 67217; phone: 800-767-0082 or (316) 945-9328; fax: (316) 945-0789, and serves as the standard of quality upon which other products will be judged.

- B. Stair nosing system, **[Manufacturer's model number]**:

No. 4120: 2 3/8 inches (60 mm) wide, surface mounted nosing with 1 inch (25 mm) wide photoluminescent insert, 3/4 inch (19 mm) abrasive tape, and tapered back.

No. 4120L-PL-100: 2 3/8 inches (60 mm) wide, surface mounted nosing with 1 inch (25 mm) wide photoluminescent insert, 3/4 inch (19 mm) abrasive tape, 1-1/8" (29 mm) front lip, and tapered back.

No. P-3310-PL-100: 3 inches (76 mm) wide, concrete embedded nosing with 1 inch (25 mm) wide photoluminescent insert, 3 abrasive treads, with continuous anchor.

No. R-315L-PL-100: 3 inches (76 mm) wide, concrete embedded nosing with 1 inch (25 mm) wide photoluminescent insert, 3 abrasive treads, and strap anchors at approximately 12 inches (305 mm).

No. DXH 330-PL-100: 3-1/4 inches (82 mm) wide, two component, concrete embedded nosing with 1 inch (25 mm) wide photoluminescent insert, abrasive fill, sub-channel, and anchor bolts.

No. RS-405L-PL-100: 4 inches (102 mm) wide, surface mounted nosing with 1 inch (25 mm) wide photoluminescent insert, 3 abrasive treads, and 1-3/8 inch (35 mm) front lip.

No. RS-405LP-PL-100: 4 inches (102 mm) wide, surface mounted nosing with 1 inch (25 mm) wide photoluminescent insert, 3 abrasive treads, and 1-3/8 inch (35 mm) 80 degree front lip.

No. R-300-PL-100: 3 inches (76 mm) wide, concrete embedded nosing with 1 inch (25 mm) wide photoluminescent inerts, 3 abrasive treads, and strap anchors at approximately 12 inches (305 mm).

2.02 MATERIALS

- A. Aluminum: ASTM B 221, alloy 6063-T5
- B. Photoluminescent: Phosphorescent pigment, Strontium Aluminate Oxide, combined with a carrier/fixer that is applied to an aluminum substrate. PVC based systems shall not be acceptable. Conforms to the following requirements:
- C. Abrasive: Two part Epoxy combined with aluminum oxide grit.
- D. Fasteners required for complete installation to manufacturer's instructions.
 - 1. Retrofit Stair Nosing: **[Concrete Anchors, plugs and screws] [Wood Screws] [Sheet Metal Screws] [Other].**
 - 2. Single Component Stair Nosing: **[Standard, Strap] [Standard, Continuous] [Other].**
 - 3. Two Component Stair Nosing: **[Standard, Cap Screws and Hex Jamb Nuts] [Other]** and tread plate securing screws.

2.03 FABRICATION

- A. Fabricate stair nosing assemblies as detailed. Provide anchors and accessories indicated in the installation instructions and necessary for complete installation.
 - 1. Provide abrasive treads of the specified color.
 - 2. Provide specified anchors and where required, tread plate securing screws.
 - 3. Surfaces to be embedded in concrete shall be coated with a clear acrylic lacquer.

2.04 FINISHES

- A. Aluminum sub-channels and tread plates shall be:
 - 1. [Mill] [Class II, clear anodized] finish.
 - 2. Clear acrylic lacquer coated for components to be embedding in concrete.
- B. Slip resistant surfaces shall be:
 - 1. Serrated Aluminum OR
 - 2. Abrasive ribs shall be: **[Black] {Approved Color selected from manufacturer's standard colors} [Other, as selected and approved by the architect].**

PART 3 — EXECUTION

3.01 EXAMINATION

- A. Installer shall examine conditions under which work is to be performed and shall notify the contractor in writing of unsatisfactory conditions. Installer shall not proceed until unsatisfactory conditions have been corrected in a manner acceptable to the installer.
- C. Verify that when installed the photoluminescent surfaces of the stair nosing will be exposed to sufficient activating illumination (a minimum of 1 foot-candle) to ensure the photoluminescent strip will be effectively charged and will meet the required brightness rating.

3.02 INSTALLATION

- A. Install stair nosing in accordance with the governing regulations, the industry standards applicable to the work, and the manufacturer's written installation instructions.
 - 1. Sub-channels of two component stair nosing shall be installed with the concrete pour.
 - 2. Tread plates of two component stair nosing shall be installed in the final stages of construction.
- B. Work shall be aligned plumb, level and, where required, flush with adjacent surfaces and rigidly anchored to the substrate.
- D. Stair and Leading Edge Nosing shall be rigidly anchored to the substrate and cover the full length of each step and landing edge.

3.03 CLEANING

- A. Clean exposed surfaces as recommended by the manufacturer.

3.04 PROTECTION

- A. Advise the contractor of procedures required to protect the finished work from damage by work of other Sections during the remainder of the construction period.
- B. Finished units shall be without damage. Units damaged during shipping or construction shall be repaired by the contractor at the expense of the party damaging the material, in accordance with the contract requirements.

End of Section