

SECTION 02760
PAVING SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Paving restraint edging for straight-line and curvilinear borders between turf and asphalt pavement, masonry pavers/patio stones, and track/athletic surfaces.

1.02 RELATED SECTIONS

- A. Section 02780: Unit Pavers
- B. Section 02740: Bituminous Concrete Pavement
- C. Section 02740: Athletic Pavement

1.03 REFERENCES

- A. ASTM B 221 (ASTM B 221M): Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes.
- B. AAMA: American Architectural Manufacturer's Association for aluminum finishes.

1.04 SUBMITTALS

- A. Submit manufacturer's product data.
- B. Submit 3 inch (76 mm) long edging sample of specified size and colors.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver to location as instructed by Contractor in manufacturer's package showing no signs of damage to package or product.
- B. Investigate delivered damaged packages and if product is damaged, Contractor to not accept and have product returned and replaced. Store boxed products on flat surface and protect from water exposure.

1.06 WARRANTY

- A. 15-year limited material warranty from manufacturing defects in workmanship or material.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. PermaLoc Corporation, 13505 Barry St, Holland, MI 49424, USA, telephone: (800) 356-9660, (616) 399-9600, fax (616) 399-9770, e-mail - info@permaloc.com, web site: www.permaloc.com.

2.02 MANUFACTURED UNITS

A. Paver Restraint Edging.

Editorial Note for Paver (shown in italic): Shall be specified in its appropriate Unit Paver specification section and in Part 2 of that specification a cross reference as follows: "Paver Restraint Edging: Refer to Section 02760 Paving Specialties for products to be used for paver restraint edging."

1. Description: PermaLoc StructurEdge extruded aluminum paver restraint edging for straight-line and curvilinear applications in corrugated L-shaped profile. Horizontal base shall have holes spaced 4 inches (102 mm) apart along its length to receive spikes.
2. Size:
 - a. 3/32 inch (2.4 mm) x 1-5/8 inches (41 mm) high.
 - b. 1/8 inch (3.2 mm) x 1-5/8 inches (41 mm) high.
 - c. 3/16 inch (4.8 mm) x 1-5/8 inches (41 mm) high.
 - d. 1/8 inch (3.2 mm) x 2-1/4 inches (57 mm) high.
 - e. 3/16 inch (4.8 mm) x 2-1/4 inches (57 mm) high.
3. Thickness: 3/32 inch (2.4 mm) gage section shall have 0.170 inch (4.32 mm) thick exposed top lip, 1/8 inch (3.2 mm) gage section shall have 0.190 inch (4.83 mm) thick exposed top lip, and 3/16 inch (4.8 mm) gage section shall have 0.210 inch (5.33 mm) thick exposed top lip.
4. Length: 8 feet (2.44 meters).
5. Connection Method: Section ends shall splice together with horizontal 0.060 inch (1.52 mm) thick x 1 inch (25 mm) wide x 4 inches (102 mm) long aluminum sliding connector.
6. Finish:
 - a. Natural Mill Aluminum.
 - b. Black DuraFlex Painted: Electrostatically baked on acrylic paint, AAMA 2603, color #PPG UC88182.

B. Athletic Court/Track Restraint Edging.

Editorial Note for Rubberized Athletic Pavement (shown in italic): Shall be specified in its appropriate Athletic Pavement specification section and in Part 2 of that specification a cross reference as follows: "Athletic Restraint Edging: Refer to Section 02760 Paving Specialties for products to be used for athletic restraint edging."

1. Description: PermaLoc AthletEdge extruded aluminum edging in L-shaped profile. Horizontal base to have upward facing angle profile designed to integrate restraint and athletic court/track rubberized asphalt surfaces for straight-line and curvilinear applications. Section shall have holes in base spaced 4 inches (102 mm) apart along its length to receive spike anchors. Sidewall to have weepholes spaced approximately 2 feet (610 mm) on center allowing drainage from athletic surface.
2. Size:
 - a. 1-1/2" (38 mm) high by 2-1/4" (57 mm) base.
 - b. 2" (51 mm) high by 2-1/4" (57 mm) base.
 - c. 2-1/2" (64 mm) high by 2-1/4" (57 mm) base.
 - d. 3" (76 mm) high by 3" (76 mm) base.
 - e. 4" (102 mm) high by 3" (76 mm) base.
3. Thickness: 0.210 inch (5.33 mm) thick exposed top lip.
4. Length: 8 feet (2.44 meters).
5. Connection Method: Section ends shall splice together with horizontal 0.060 inch (1.52 mm) thick x 1 inch (25 mm) wide x 4 inches (102 mm) long aluminum sliding connector.
6. Finish:
 - a. Natural Mill Aluminum.
 - b. Black DuraFlex Painted: Electrostatically baked on acrylic paint, AAMA 2603, color #PPG UC88182.

C. Asphalt Restraint Edging.

Editorial Note for Asphalt Pavement (shown in italic): Shall be specified in its appropriate Asphalt Pavement specification section and in Part 2 of that specification a cross reference as follows: "Asphalt Restraint Edging: Refer to Section 02760 Paving Specialties for products to be used for asphalt restraint edging."

1. Description: PermaLoc AsphaltEdge extruded aluminum in L-shaped profile. Horizontal base to have upward facing angle profile designed to integrate restraint and asphalt surfaces for straight-line and curvilinear applications. Section shall have holes in base spaced 4 inches (102 mm) apart along its length to receive spike anchors.
2. Size:
 - a. 1" high (25 mm) x 2-1/4" (57 mm) base.
 - b. 1-1/2" (38 mm) high by 2-1/4" (57 mm) base.
 - c. 2" (51 mm) high by 2-1/4" (57 mm) base.
 - d. 2-1/2" (64 mm) high by 2-1/4" (57 mm) base.
 - e. 3" (76 mm) high by 3" (76 mm) base.
 - f. 4" (102 mm) high by 3" (76 mm) base.
3. Thickness: 0.210 inch (5.33 mm) thick exposed top lip.
4. Length: 8 feet (2.44 meters).
5. Connection Method: Section ends shall splice together with horizontal 0.060 inch (1.52 mm) thick x 1 inch (25 mm) wide x 4 inches (102 mm) long aluminum sliding connector. The 1 inch (25 mm) high landscape edging shall use a 0.530 inch (13.5 mm) wide x 4 inches (102 mm) long aluminum sliding connector.
6. Finish:
 - a. Natural Mill Aluminum.
 - b. Black DuraFlex Painted: Electrostatically baked on acrylic paint, AAMA 2603, color #PPG UC88182.

2.03 ANCHORS

- A. Anchor Types:
1. Spikes: 3/8 inch x 10 inches (9.5 mm x 254 mm) bright spiral steel spike. Use 3/8" (9.5 mm) plastic washers if desired.
 2. Concrete Nails: 3/16 inch x 1-1/2 inches (4.8 mm x 38 mm) or longer Ardox concrete nail.
 3. Drive-pin Fasteners: Hilti DX 40 powder actuated pin, Ramset Trakfast Automatic Fastening System pin, or equal. Fasteners shall be 3/4 inch (19 mm) to 2-1/2 (64 mm) inches long as recommended by fastener manufacturer for the application.

2.04 EDGING MATERIAL

- A. AthletEdge and AsphaltEdge: ASTM B 221 (ASTM B 221M), Aluminum 6005 alloy, T-5 hardness.
- B. StructurEdge: ASTM B 221 (ASTM B 221M), Aluminum 6063 alloy, T-6 hardness.

PART 3 EXECUTION

3.01 SITE PREPARATION

- A. Ensure that all underground utility lines are located and will not interfere with the proposed edging installation before beginning work.
- B. Locate border line of edging with string or other means to assure border straightness and curves as designed.

3.02 PAVER RESTRAINT EDGING INSTALLATION

Editorial Note (shown in italic): This article shall coordinate with the related Unit Paver specifications for paver base. The Unit Paver Specification Part 3 should provide a cross reference as follows: "Paver Base Installation: Refer to Section 02760 Paving Specialties for installation of paver restraint edging."

The following information for base preparation and installation shall be specified in applicable specification section for Paver and is recommended only as a generally accepted paver installation method. Professional assistance should be sought with respect to the specification and construction of a specific project:

Preparation of Base for Pavers: Remove excess soils and unstable subbase materials. Compact subgrade to 95% proctor density test.

Paver Base Installation: Backfill excavated area with appropriate depth aggregate material as specified in Unit Paver Section. Base shall be compacted in 2 to 3 lifts to achieve proper density. The base needs to extend 6" (152 mm) to 12" (305 mm) beyond the edge of paver installation. Screed sand (or equivalent material as specified) over base to uniform thickness of not less than 1 inch (25 mm) and not more than 1-1/4 (32 mm) inches.

After installation of restraint edging and pavers: Sweep fine sand (or equivalent material as specified) into joints. Make several passes with a plate compactor with no less than 3,000 - 5,000 lbs. (1,361 - 2,268 kg) centrifugal compaction force and operates at 80 to 90 hertz. Continue sweeping sand into joints. Make several passes alternating direction of compactor each time. Remove excess sand from paver installation.

- A. Preparation of Base: As specified in Unit Paver specification for pavers.
- B. Base Installation: As specified in Unit Paver specification for pavers.
- C. Edging Installation:
 - 1. Install edging with base resting on aggregate and facing [away from] [towards and under] paver.
 - 2. Drive spikes through holes in base of paver restraint edging at spaces for following applications:
 - a. Anchor each section end with spike.
 - b. Patios and Walkways: 12 inches (305 mm) to 24 inches (610 mm) on center.
 - c. Driveways: 4 inches (102 mm) to 12 (305 mm) inches on center.
 - d. Heavy Vehicular Loads: 4 inches (102 mm) on center.
 - 3. Securely connect sections in accordance with manufacturer's instructions. Provide additional spikes at closer spacing as necessary to firmly secure edging for permanent intended use.
- D. Paver Installation: Install pavers in accordance with Unit Paver Specification.

3.03 ATHLETIC RESTRAINT EDGING INSTALLATION

Editorial Note (as shown in italic): This article shall be coordinated with the related Athletic Pavement specifications for athletic pavement base. The Athletic Pavement Specification Part 3 should provide a cross reference as follows: "Athletic Pavement Base Installation: Refer to Section 02760 Paving Specialties for installation of athletic restraint edging."

The following information for base preparation and installation shall be specified in applicable specification section for Athletic Pavement and is recommended only as a generally accepted

pavement installation method. Professional assistance should be sought with respect to the specification and construction of a specific project:

Preparation of Base for Athletic Pavement: Remove excess soils and unstable subbase materials. Compact subgrade to 95% proctor density test.

Athletic Pavement Base Installation: A road gravel as recommended by project engineer meeting ASTM standards for road construction is ideal. Larger aggregate will make secure anchoring more difficult, causing undue twisting, leaning, or movement.

Rubberized Athletic Pavement Installation: Shall be specified as recommended by project architect or engineer in its' appropriate specification section.

- A. Preparation of Base: As specified in [Athletic Pavement] [Asphalt Pavement] [Cast-in-Place-Concrete] specifications.
- B. Base Installation:
 - 1. Install [aggregate base as specified in Athletic Pavement specification] [asphalt base as specified in Asphalt Pavement specification] [concrete base as specified in Cast-in-Place-Concrete specifications].
 - 2. Extend base at least 6 inches (152 mm) beyond edge of restraint edging.
 - 3. Base shall be consistently level immediately beneath restraint edging.
 - 4. If asphalt installation is over restraint edging, avoid excessive asphalt temperatures to minimize aluminum expansion.
- C. Edging Installation:
 - 1. Securely connect sections in accordance with manufacturer's instructions leaving 3/8" (9.5 mm) between sections for expansion of hot asphalt.
 - 2. Drive spikes through holes in base of restraint edging (or drive nails through aluminum base when using powder actuated fastening system) at spaces for following applications: *[Editorial note: Spacing depends on age, hardness, depth, and type of base material (aggregate, asphalt, or concrete), radius being formed, anchoring spacing, and lengths of anchors.]*
 - a. Anchor each section end with anchor.
 - b. Aggregate Base: Spiral steel spikes at 4 inches (102 mm) to 12 inches (305 mm) on center.
 - c. Softer or Thinner Asphalt Base: 3/8 inch x 10 inches (9.5 mm x 254 mm) spiral steel spikes at 4 inches (102 mm) to 12 inches (305 mm) on center spacing.
 - d. Older, Harder, or Thicker Asphalt Base: Hilti DX A41 Fully Automatic Powder Actuated Tool is desirable where sufficient hold can be obtained. Provide 1-1/2 inches (38 mm) to 2-1/2 inches (64 mm) nail at 4 inches (102 mm) to 12 inches (305 mm) on center spacing with applicable charge recommended.
 - e. Concrete Base: Hilti DX A41 Fully Automatic Powder Actuated Tool is desirable where sufficient hold can be obtained. Provide 3/4 inches (19 mm) to 1 inches (25 mm) nail at 4 inches (102 mm) to 12 inches (305 mm) on center spacing with applicable charge recommended. Anchor into outer 1 inch (25 mm) of base of restraint edging and not less than 2 inches (51 mm) from edge of concrete.
 - 3. Provide additional anchors at closer spacing as necessary to firmly secure edging for permanent intended use.
- D. Athletic Surface Installation:
 - 1. As specified in Athletic Pavement specification.

2. Lay finished athletic surface approximately 1/8 inch (3.2 mm) higher than top of restraint edging.

3.04 ASPHALT RESTRAINT EDGING INSTALLATION

Editorial Note (as shown in italic): This article shall be coordinated with the related Asphalt Pavement specifications for pavement base. The Asphalt Pavement Specification Part 3 should provide a cross reference as follows: "Asphalt Pavement Base Installation: Refer to Section 02760 Paving Specialties for installation of asphalt restraint edging."

The following information for base preparation and installation shall be specified in applicable specification section for Asphalt Pavement and is recommended only as a generally accepted pavement installation method. Professional assistance should be sought with respect to the specification and construction of a specific project:

Preparation of Asphalt Base: Remove excess soils and unstable subbase materials. Compact subgrade to 95% proctor density test.

Asphalt Pavement Base Installation: A road gravel as recommended by project engineer meeting ASTM standards for road construction is ideal. Larger aggregate will make secure anchoring more difficult, causing undue twisting, leaning, or movement.

Asphalt Pavement Installation: Shall be specified as recommended by project architect or engineer in its' appropriate specification section.

- A. Preparation of Base: As specified in [Asphalt Pavement] [Cast-in-Place-Concrete] specifications.
- B. Base Installation:
 1. Install [aggregate base as specified in Asphalt Pavement specification] [asphalt base as specified in Asphalt Pavement specification] [concrete base as specified in Cast-in-Place-Concrete specifications].
 2. Extend base at least 6 inches (152 mm) beyond edge of restraint edging.
 3. Base shall be consistently level immediately beneath restraint edging.
- C. Edging Installation:
 1. Securely connect sections in accordance with manufacturer's instructions leaving 3/8" (9.5 mm) between sections for expansion of hot asphalt.
 2. Drive spikes through holes in base of restraint edging at spaces (or drive nails through aluminum base when using powder actuated fastening system) for following applications: *[Editorial note: Spacing depends on age, hardness, depth, and type of base material (aggregate, asphalt, or concrete), radius being formed, anchoring spacing, and lengths of anchors.]*
 - a. Anchor each section end with anchor.
 - b. Aggregate Base: Spiral steel spikes at 4 inches (102 mm) to 12 inches (305 mm) on center.
 - c. Softer or Thinner Asphalt Base: 3/8 inch x 10 inches (9.5 mm x 254 mm) spiral steel spikes at 4 inches (102 mm) to 12 inches (305 mm) on center spacing.
 - d. Older, Harder, or Thicker Asphalt Base: Hilti DX A41 Fully Automatic Powder Actuated Tool is desirable where sufficient hold can be obtained. Provide 1-1/2 inches (38 mm) to 2-1/2 inches (64 mm) nail at 4 inches (102 mm) to 12 inches (305 mm) on center spacing with applicable charge recommended.
 - e. Concrete Base: Hilti DX A41 Fully Automatic Powder Actuated Tool is desirable where sufficient hold can be obtained. Provide 3/4 inches (19 mm) to 1 inches (25

mm) nail at 4 inches (102 mm) to 12 inches (305 mm) on center spacing with applicable charge recommended. Anchor into outer 1 inch (25 mm) of base of restraint edging and not less than 2 inches (51 mm) from edge of concrete.

3. Securely connect sections in accordance with manufacturer's instructions. Provide additional anchors at closer spacing as necessary to firmly secure edging for permanent intended use.

D. Pavement Installation:

1. If asphalt installation is over restraint edging, avoid excessive asphalt temperatures to minimize aluminum expansion.
2. Lay asphalt pavement adjacent to and approximately ½ inch (12.7 mm) over top of restraint edging, depending on expected compaction results. Then, compact first pass with desired equipment within 6 inches (152 mm) of restraint edging. "Pinch roll" to create a hard joint. Subsequent passes may be directly against or over top of edging to ensure complete compaction of asphalt pavement.
3. Finish pavement shall be compacted and level with, but not to exceed 1/4 inch (6.4 mm) above top of restraint edging.

3.05 BACKFILLING AND CLEANUP

- A. Backfill side of edging on turf side and compact backfill material along edging to provide top of edging at 1/2 inch (12.7 mm) above finish grade on turf side.
- B. Remove excess material from site.

END OF SECTION

May 1, 2003