



**Ballast Paver
Guide for Applicator and Designers**

October 2022

NOTE: The contents of this guide are considered accurate at time of posting. All information contained within should be validated for accuracy as it relates to specific project conditions or requirement. Specific codes, uplifts or other factors may result in changes to the information contained within this document. Validate all specific conditions with a Regional Technical Coordinator prior to its use.

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Product Information

Product Description (Meets or exceeds all SPRI requirements)	
Size	8 1/2" x 16" x 1 1/2"
Weight	13.75 ± 0.5 lb/ft ²
Compressive Strength	Minimum 5000 psi @ 28 days cure
Density	125 pcf minimum
Water Absorption	5% nominal
Packaging	Palletized, banded, stretched wrapped, labeled
Pieces per Square	105 paver per square
Pieces per Pallet	200 pavers per pallet

Product Benefits

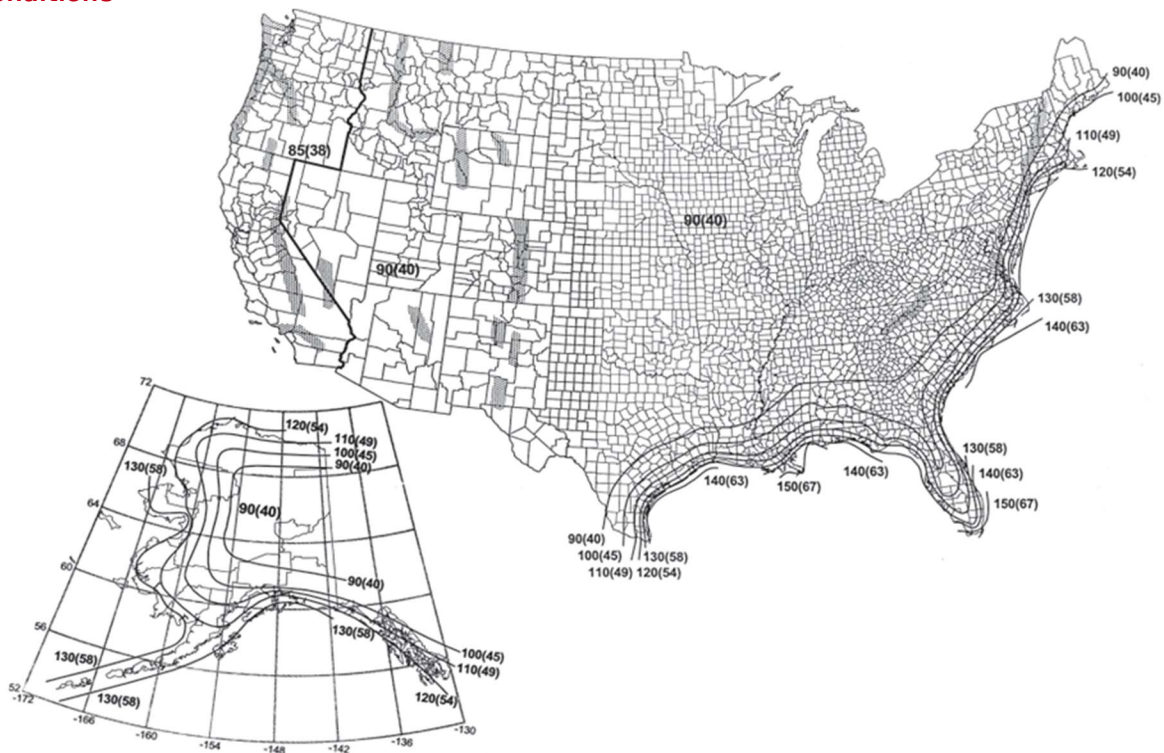
- Interlocking design provides superior wind resistance
- Easiest paver to install
- Four-way drainage
- Smooth, rounded bearing pads protect the membrane from abrasion
- Durable
- Fireproof
- Freeze/Thaw resistant

Approvals and Performance

Meets or exceeds the guidelines and criteria established by:

- Factory Mutual
- Underwriters Laboratories
- ICC-ES
- SPRI Paver Specifications
- SPRI Wind Design Guide

Design Conditions



NOTE: The map above is shown for example purposes only. Refer to the projects local design requirements and the appropriate code requirements for further information. This may include the relevant versions of the International Building Code and ASCE 7 documents.

Location	V mph	(m/s)
Hawaii	105	47
Puerto Rico	145	65
Guam	170	76
Virgin Islands	145	65
American Samoa	125	56

NOTE:

1. Values are 3-second gust speeds in miles per hour (m/s) at 33' (10 m) above ground for Exposure C category and are associated with an annual probability of 0.02.
2. Linear interpolation between wind speed contours is permitted.
3. Islands and coastal areas shall use wind speed contour of coastal area.
4. Mountainous terrain, gorges, ocean promontories, and special wind regions shall be examined for unusual wind conditions.
5. Regarding Alaska- For coastal areas and islands, use nearest contour.

Terrain Exposures (ASCE / SEI 7-10)

Exposure	Definition
B	For buildings with a mean roof height of less than or equal to 30 ft (9.1 m), Exposure B shall apply where the ground surface roughness, as defined by Surface Roughness B, prevails in the upwind direction for a distance greater than 1,500 ft (457 m). For buildings with a mean roof height greater than 30 ft (9.1 m), Exposure B shall apply where Surface Roughness B prevails in the upwind direction for a distance greater than 2,600 ft (792 m) or 20 times the height of the building, whichever is greater.
C	Exposure C shall apply for all cases where Exposures B or D do not apply.
D	Exposure D shall apply where the ground surface roughness, as defined by Surface Roughness D, prevails in the upwind direction for a distance greater than 5,000 ft (1,524 m) or 20 times the building height, whichever is greater. Exposure D shall also apply where the ground surface roughness immediately upwind of the site is B or C, and the site is within a distance of 600 ft (183 m) or 20 times the building height, whichever is greater, from an Exposure D condition as defined in the previous sentence.

NOTE: For sites located in a transition zone between exposure categories, the category with the largest wind forces shall be used.

Surface Roughness Categories (ASCE / SEI 7-10)

Surface Roughness	Definition
B	Urban and suburban areas, wooded areas, or other terrain with numerous closely spaced obstructions have the size of single-family dwellings or larger.
C	Open terrain with scattered obstructions having heights generally less than 30 ft (9.1m). This category includes flat open country and grasslands.
D	Flat, unobstructed areas and water surfaces. This category includes smooth mud flats, salt flats and unbroken ice.

Ballast Paver System Design

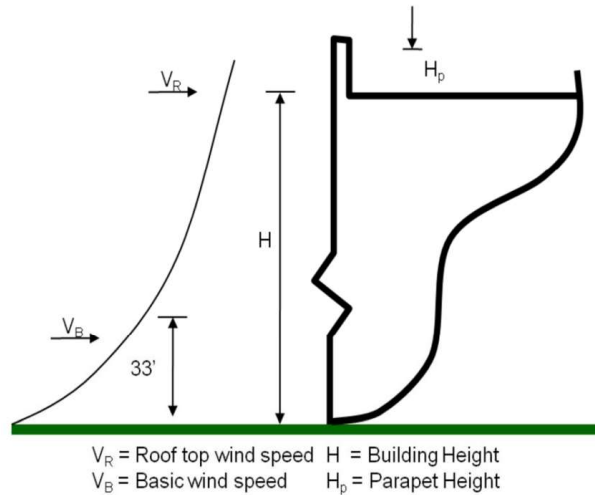
System Design	Definition
3	Urban and suburban areas, wooded areas, or other terrain with numerous closely spaced obstructions have the size of single-family dwellings or larger.
4	Open terrain with scattered obstructions having heights generally less than 30 ft (9.1m). This category includes flat open country and grasslands.

The following wind speed tables indicate the maximum building design heights based on varying design wind speeds, parapet heights, and exposures when the Elevate Ballast Paver system is used in System Designs #1, 2, 3, and 4. For building heights in excess of 250 ft., contact Holcim Building Envelope Division.

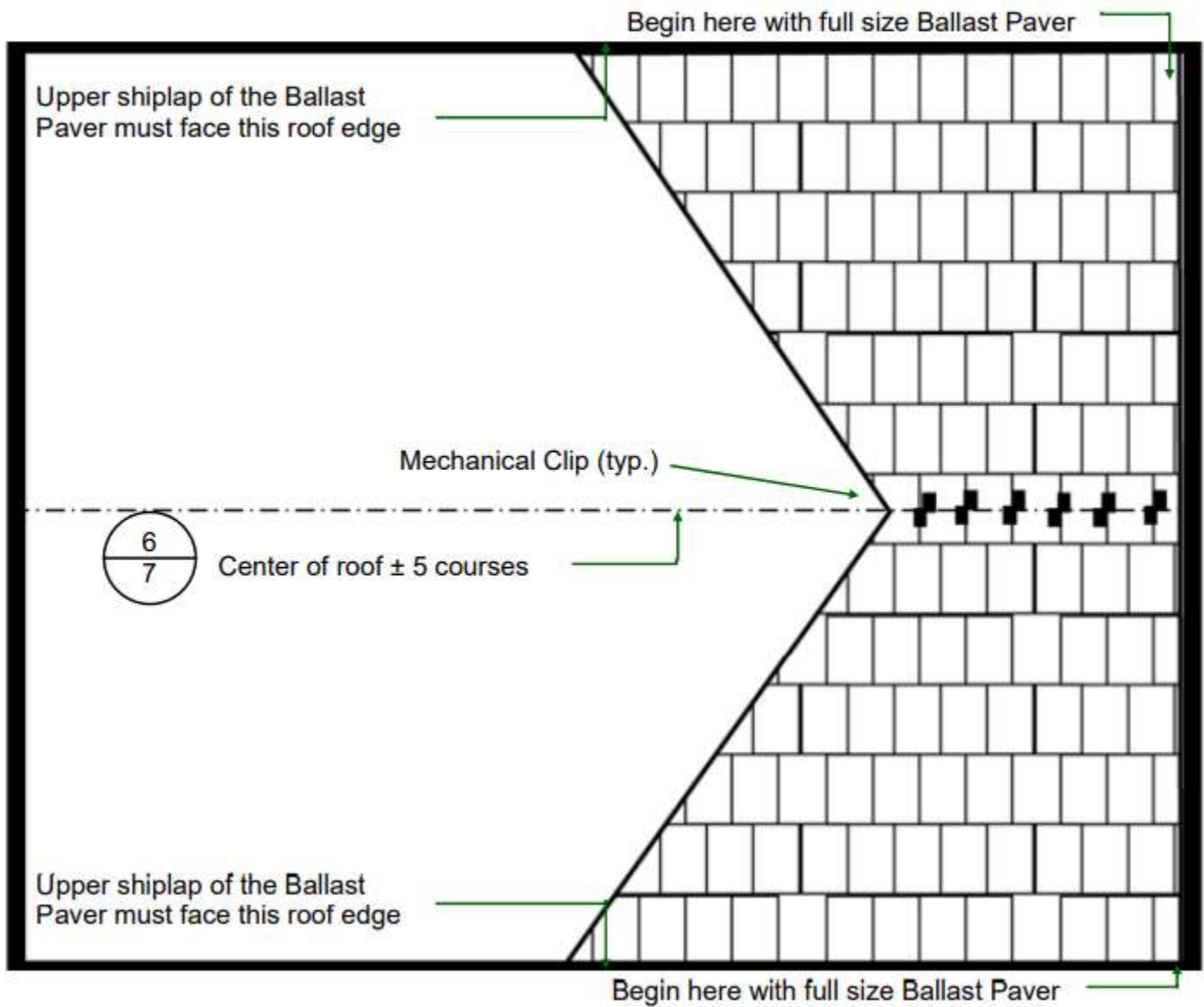
Basic Wind Speed (mph)	Terrain Exposure B (System Design)		Terrain Exposure C (System Design)	
	3	4	3	4
70	250	250	250	250
80	250	250	250	250
90	218	250	129	250
100	116	250	48	250
110	62	250	16	250
120	34	250	---	250

NOTE:

1. For wind speed and exposure areas see Chapter 23 of the Uniform Building Code and ASCE7-10.
2. Design wind speeds are at 10 meters above ground level and produce increased wind speeds at various roof top elevations.
3. Parapet heights noted in these tables are the parapet projections above the Ballast Paver surface.
4. Independent test data available (CSU project 2-96460 - Nov. 1985, CSU Project 2-96970 - March 1987 and CSU Project 2-98070 - June 1990 revised Sept. 1990. CSU Design Recommendations - April 2005 revision.
5. Linear interpolation for System 2 is acceptable.



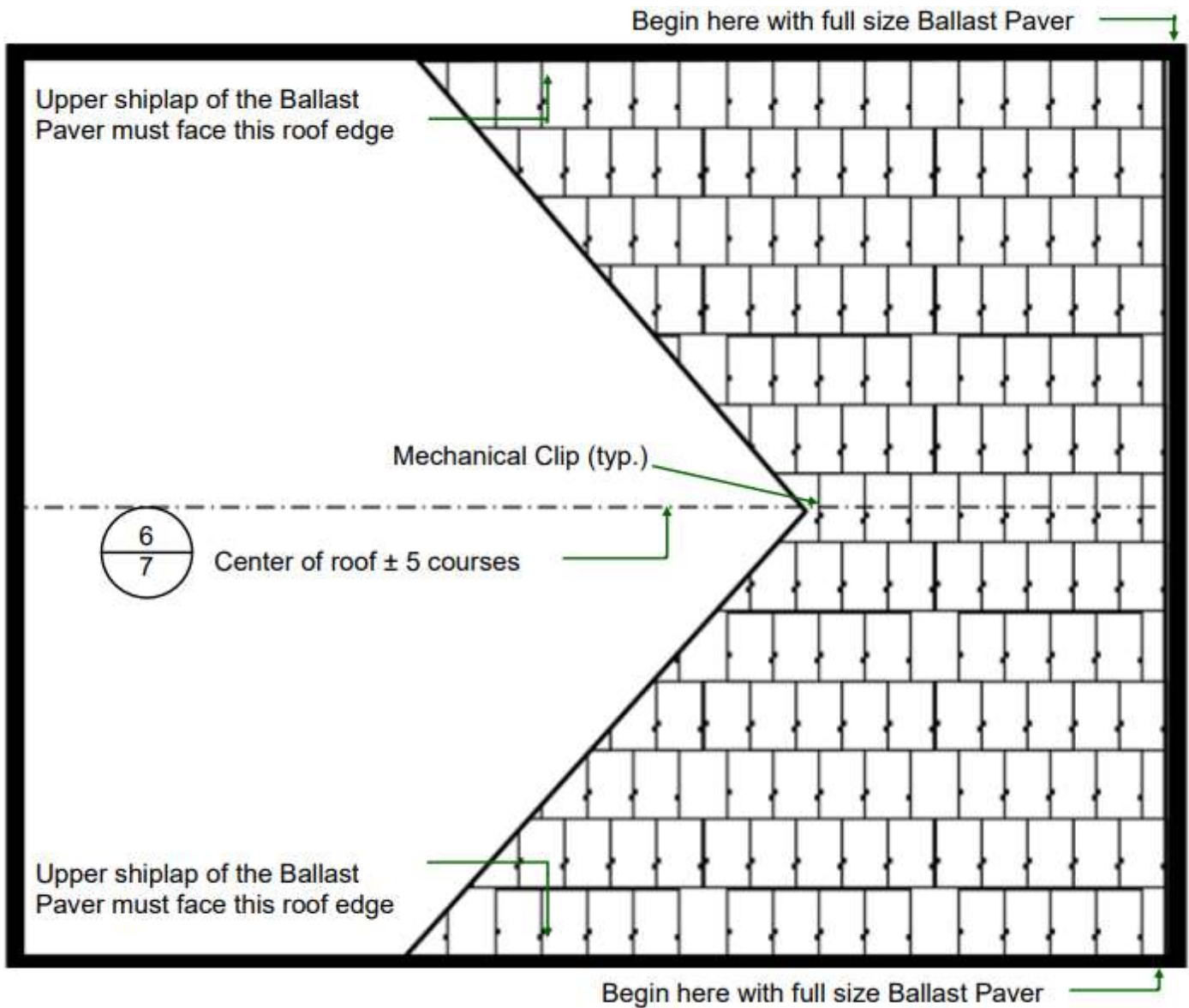
Ballast Paver System Design #3 – Pavers in Staggered Bond with Perimeter Attachment



NOTE:

1. Maintain 1 1/4" max. distance between the upper shiplap and or the 11-3/4" dimension of the Ballast Paver where they meet the first roofing element.
2. Install Mechanical Clips or a one part urethane adhesive where pavers meet any roof protrusions (H.V.A.C. equip. roof drains, structural members, roof curbs, etc.) and where there are any pavers less than full size. Mechanical Clips or adhesive must also be installed in-between the first two courses of pavers where the 11 3/4" dimension of the pavers meet the roof edge. (See detail 13/9)
3. Install Elevate protection mat or an approved equal between the pavers and membrane at designated areas of foot traffic and where mechanical clips are used. (See detail 12/9)
4. Install an approved perimeter attachment around the entire perimeter of the Ballast Paver System. (See details 3/6, 4/6, 5/6)
5. Pavers may run one direction when they intersect with a headwall (8 ft. or greater).

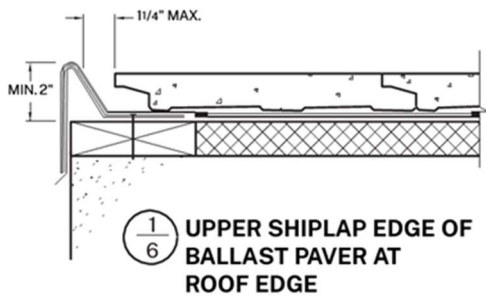
Ballast Paver System Design #3 – Pavers in Staggered Bond with Perimeter Attachment



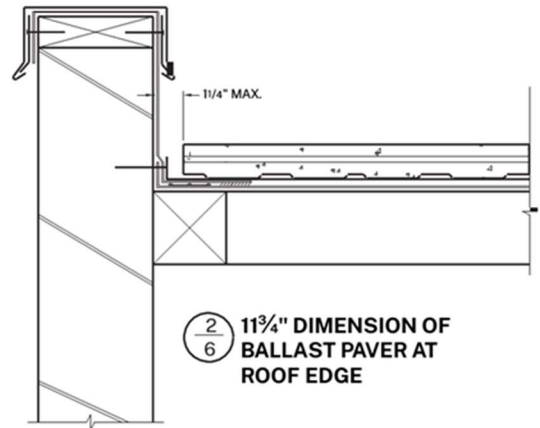
NOTE:

1. Maintain 1 1/4" max. distance between the upper shiplap and or the 11 3/4" dimension of the Ballast Paver where they meet the first roofing element.
2. Install Mechanical Clips or a one part urethane adhesive in between all pavers. (See detail 13/9)
3. Install Elevate protection mat or an approved equal protection mat under the entire Ballast Paver installation.
4. Install an approved perimeter attachment around the entire perimeter of the Ballast Paver System. (See details 3/6, 4/6, 5/6)
5. Pavers may run one direction when they intersect with a headwall (8 ft. or greater)

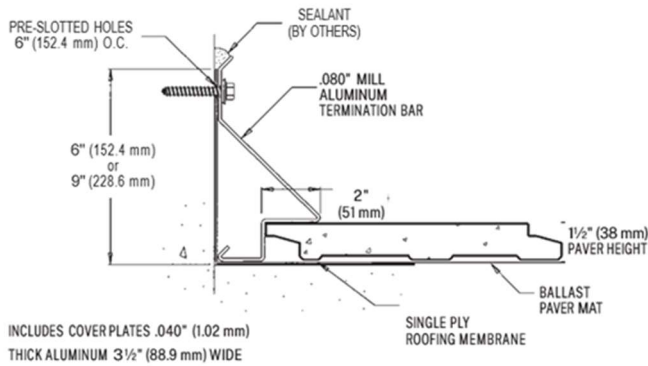
Ballast Paver Details



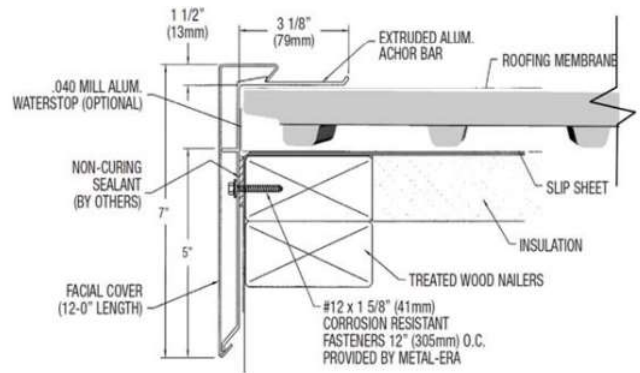
1/6 UPPER SHI LAP EDGE OF BALLAST PAVER AT ROOF EDGE



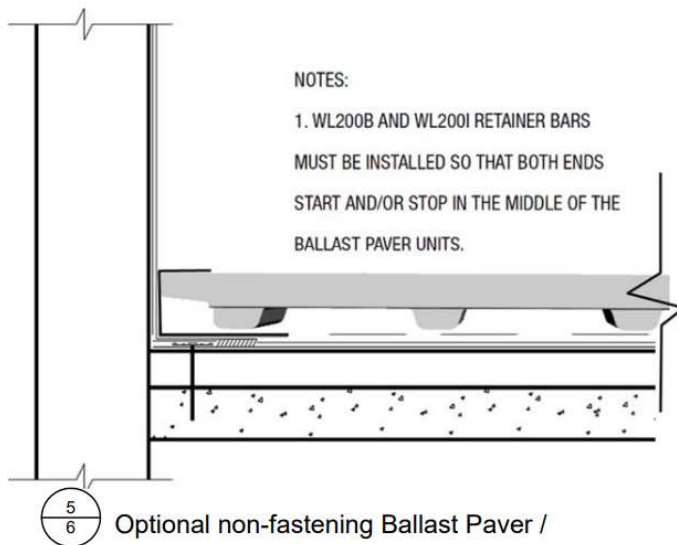
2/6 1 1/4" DIMENSION OF BALLAST PAVER AT ROOF EDGE



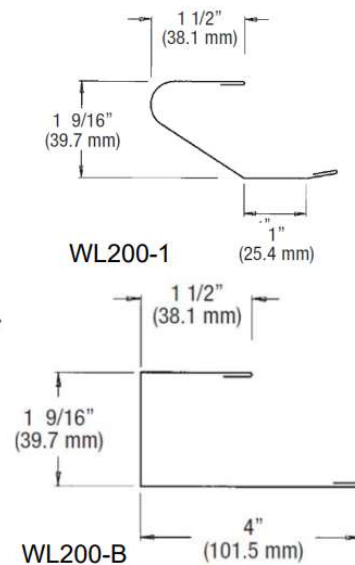
3/6 BALLAST PAVER/TERMINATION BAR

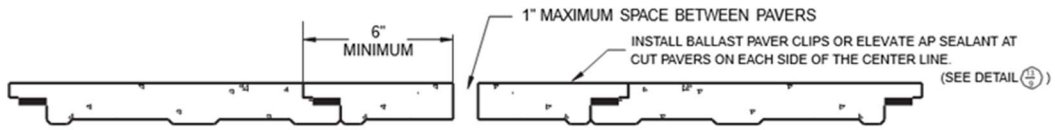


4/6 Ballast Paver / fascia system WL100 By Metal Era or approved equal

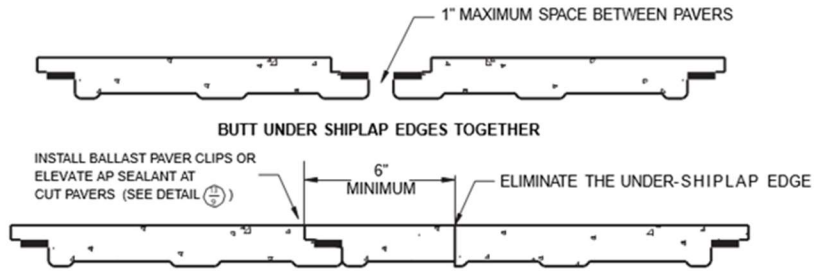


5/6 Optional non-fastening Ballast Paver /





CUT TO MATCH METHOD #1

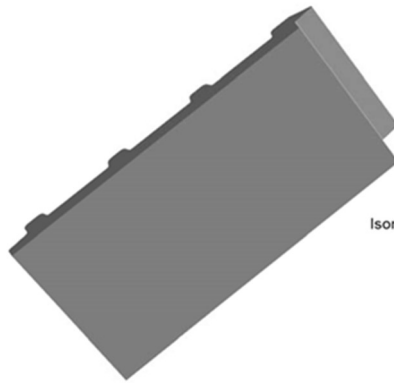


CUT TO MATCH METHOD #2

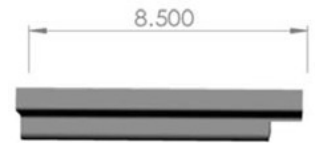
6/7 BALLAST PAVER CENTER COURSE PROCEDURES



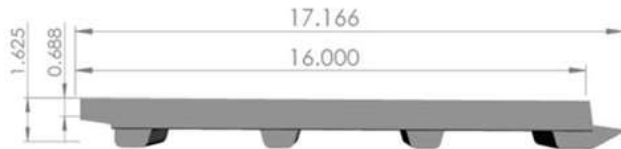
Bottom



Isometric

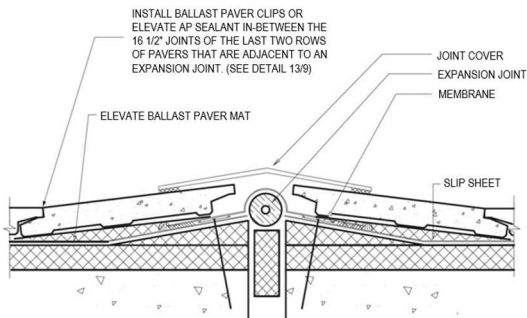


End

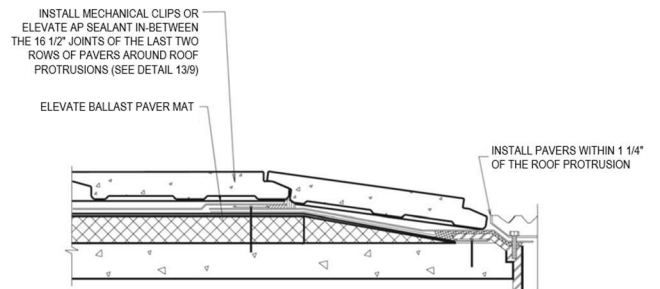


Side

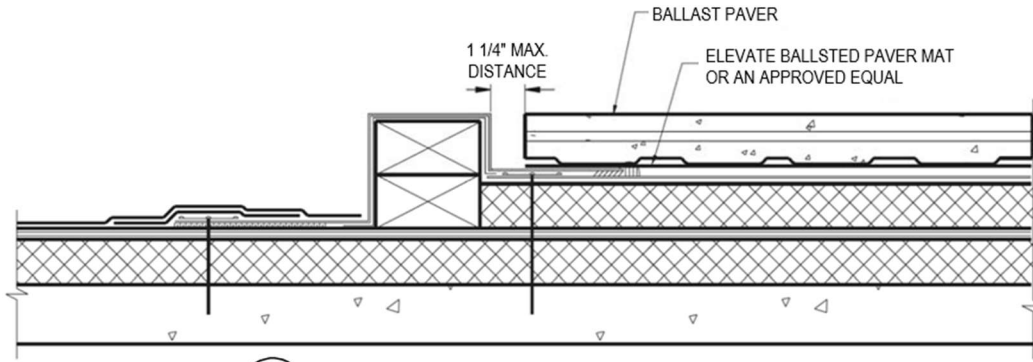
7/7 Elevate Ballast Paver views and dimensions



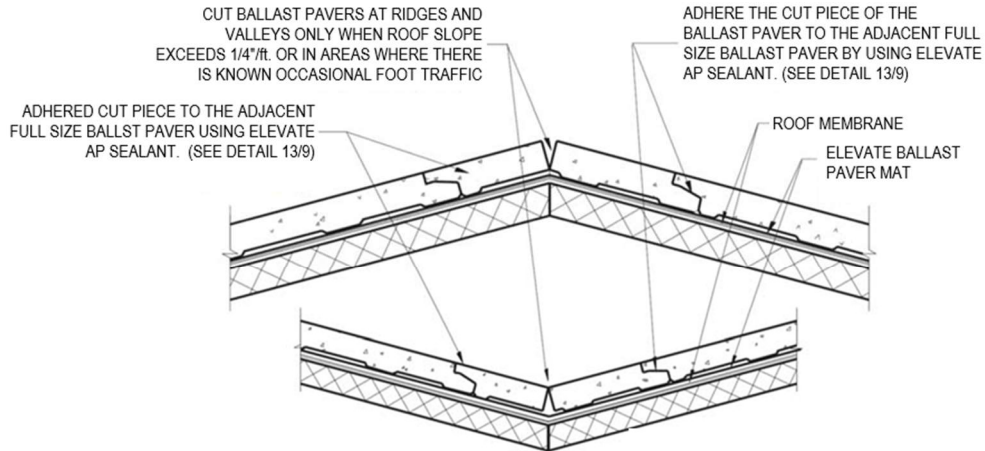
8/8 BALLAST PAVER AT EXPANSION JOINT



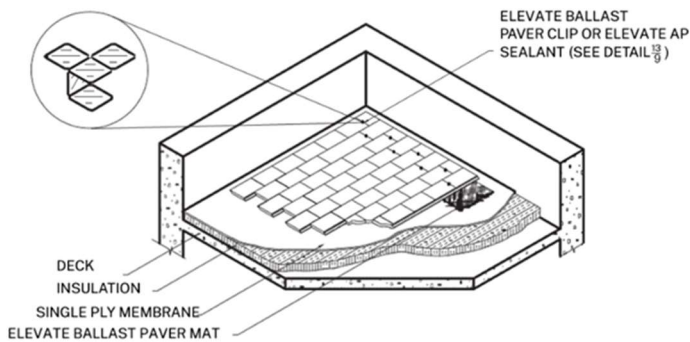
9/8 BALLAST PAVER AT ROOF PROTRUSIONS (INCLUDES VENTS, STRUCTURAL MEMBERS, DRAINS, AND GENERAL DECK PROTRUSIONS)



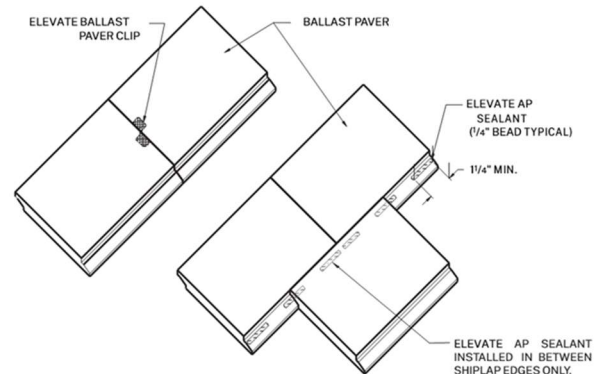
10
8 **BALLAST PAVER AT TIE-IN TERMINATION**



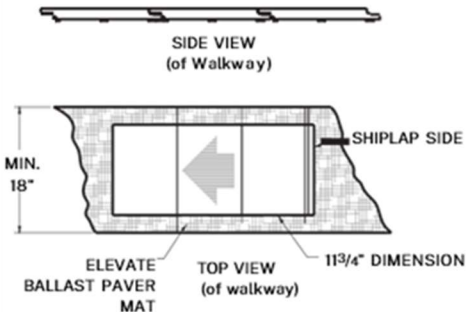
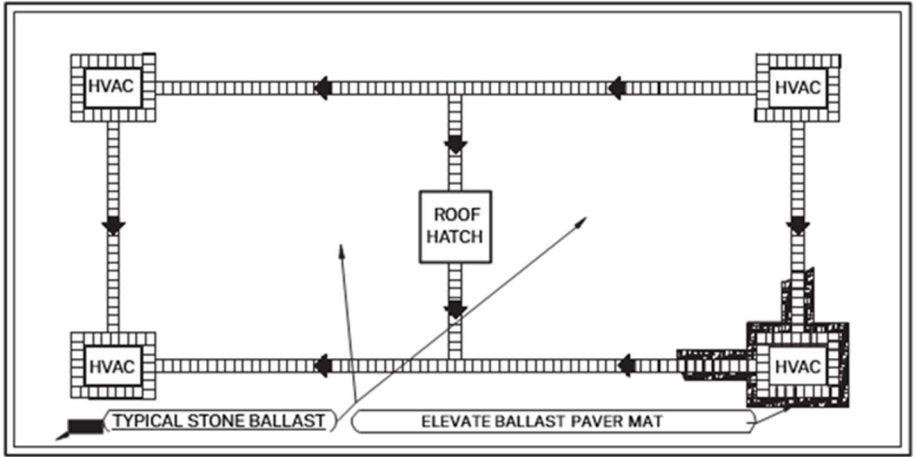
11
9 **CUTTING BALLAST PAVER AT RIDGES AND VALLEYS**



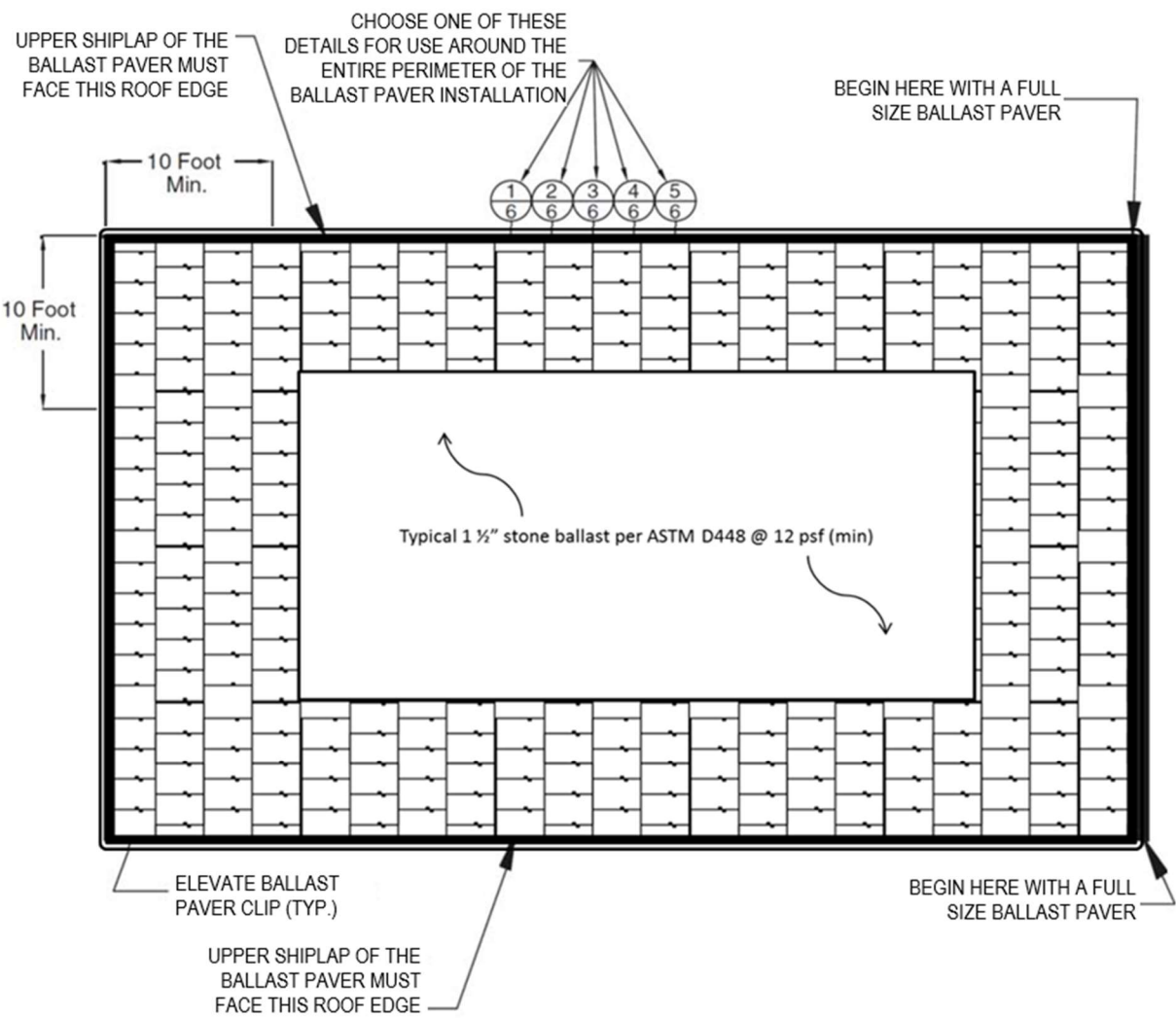
12
9 **MECHANICAL CLIP & PROTECTION MAT**



13
9 **BALLAST PAVER MECHANICAL CLIPS AND OR ADHESIVE**



BALLAST PAVER WALKWAY



**Composite Application
(Perimeter Pavers with Stone Ballast Interior)**

Short Form Guide Specifications – Section 07555 Roof Ballast/Pavers

Part 1 – General

1.01 Scope of Work

- A. Furnish and install an Elevate Ballast Paver system in accordance with specifications as provided by Holcim.

1.02 Related Sections

- A. Section 07555; Membrane Roofing
- B. Section 07220: Roof Insulation
- C. Section 07715: Fascia

1.03 References

- A. Applicable American Society for Testing and Materials (ASTM) Standards

1.04 System Description

- A. See appropriate system for complete description. (Pages 4-5)

1.05 Submittals

- A. Submit manufacturer's installation specifications.
- B. Submit two copies of Holcim's warranty.
- C. Submit performance testing

1.06 Quality Assurance

- A. Water absorption to be 5% nominal.
- B. Compressive strength to be 5,000 psi at 28 days cure
- C. Flexural strength to be 400 lb
- D. Meets or exceeds SPRI guide for concrete pavers, 1995

1.07 Delivery, Storage, and Handling

- A. Deliver materials on manufacturer's unopened stretch wrapped pallet with labels intact and legible.
- B. Store materials on raised platforms.
- C. Handle materials to prevent damage.
- D. Do not exceed the structural capacity of deck if placing Ballast Paver units on the roof.
- E. Protect membrane and installed areas of Ballast Paver from damage when transporting pallets of Ballast Paver or other material. Place 3/4" plywood sheets in traffic path and use carts with pneumatic tires.

1.08 Warranty

- A. Elevate Red Shield 10-year Warranty Body Content

Part 2 – Products

2.01 Manufacturer Address

- A. Elevate Ballast Paver
8311 W. Carder Ct. Littleton, CO 80125
800-433-8453

2.02 Materials

- A. Elevate Ballast Paver

2.03 Related Materials

- A. Ballast Paver Clips or Elevate AP Sealant
- B. Protection Mat: Elevate Ballast Paver Mat or an approved equal.
- C. Metal terminations used to retain or secure Ballast Paver units shall be manufactured by Holcim Solutions and Products US, LLC.
- D. Stone ballast used in Elevate's Composite Ballast Paver System shall be approved by Holcim prior to installation. Holcim recommends the use of ASTM D448 size #4 stone.

Part 3 – Execution

3.01 Preparation of Surface

- A. Comply with manufacturer's instructions for preparation of substrate to receive membrane roofing system. Install roof membrane, flashings, and insulation in accordance with manufacturer's instructions.
- B. Install Elevate Ballast Paver Mat between the roofing membrane and Ballast Paver, including vertical flashings.

3.02 Ballast Paver System Designs

- A. System design #1
- B. System design #2
- C. System design #3
- D. System design #4
- E. Composite system
- F. Walkway System

3.03 Installation of Ballast Paver Systems

- A. A. Must be in accordance with Holcim's current installation guidelines

Warranty

Elevate Ballast Pavers are warranted against material failure for 10 years from the date of installation when installed in accordance with the details and instructions in the Elevate Technical Guide. See the actual warranty for full details and limitations.

An Elevate Ballast Paver Limited Wind Uplift Warranty is available for purchase in a 5, 10, or 15-year period; please consult your Elevate representative or Roofing Solutions (www.PinAdminHP@holcim.com) for more details.

This guide is meant to highlight Elevate products and specifications provided by Holcim Solutions & Products US, LLC and is subject to change without notice. Holcim takes responsibility for furnishing quality materials which meet published Elevate product specifications or other technical documents, subject to normal roof manufacturing tolerances. Neither Holcim nor its representatives practice architecture. Holcim Solutions & Products US, LLC offers no opinion on and expressly disclaims any responsibility for the soundness of any structure. Holcim accepts no liability for structural failure or resultant damages. Consult a competent structural engineer prior to installation if the structural soundness or structural ability to properly support a planned installation is in question. No Holcim representative is authorized to vary this disclaimer.