Inspectors Guide
Pennsylvania 2018 IRC Code Adoption for Exterior Plaster R703.7

Exterior Plaster applies to hard-coat stucco. Adhered masonry veneer R703.1.2 will reference back so specific sections found in Exterior Plaster section

- Interpretations are those of the presenter.
- Local code jurisdictions will take precedence.
- Information highlighted in green is commentary by the author

E.R. LONG ASSOCIATES

2018 IRC Code Information

Pennsylvania is adopting the 2018 International Code Versions in 2022.

It has been voted to adopt these modified version of the 2021 IRC code sections of the Exterior Plaster Sections R703.7, R703.7.1, R703.7.1.1, R703.7.2, R703.7.3 water resistive barriers including R703.7.3.1 and R703.7.3.2.

Information included in this guide will highlight installation by this code

R703.7. Exterior plaster is the section we follow for Hardcoat Stucco .

R703.1.2 Adhered Masonry (thin stone veneer and thin brick) will refer to water resistive barrier and lathing provisions found in the R703.7 Exterior Plaster Section”

- R703.7 Exterior plaster (stucco). Installation of exterior plaster shall be in compliance with ASTM C926-2018B, ASTM CI063-2018B and the provisions of this code.

ASTM 1063 Standard specification for Installation of lathing and furring

ASTM 926 Standard specification for application of portland cement -based plaster

Our guide will review the Exterior Plaster Section of the code which applies to Hardcoat Stucco along with Exterior Plaster Sections which apply to Adhered Masonry (includes thin stone veneer) and The most important aspects of ASTMC926-2018B and ASTMC1063-208B That apply to stucco and adhered masonry veneer (thin stone and thin brick veneers most common adhered masonry veneers)

Adhered Masonry Veneer Section Found in IRC 2018
What Will Connect Back to the Pa Adopted Exterior Plaster Section

- **R703.12 Adhered masonry veneer installation. Adhered masonry veneer shall comply with the requirements of section R703.7.3 and the requirements in sections 12.1 and 12.3 of TMS 402/ACI530/ASCE5. Adhered masonry veneer shall be installed in accordance with section R703.7.1, Article 3.3C of TMS 602/ACI 530.1/ASCE6 or the manufacturers instructions**

- **Refers back to R703.7.3 which is the water resistive barrier section in Exterior Plaster Section**
- **Refers back to R703.7.1 which is the lath section of the Exterior Plaster Section and includes ASTMC1063 2018b (specification for installation of lathing and furring) and ASTMC926 2018b (specification for application of cement plaster)**
- **Article 3.3 gives guidance on applying the stone to backing / or use manufacturers instructions**
- **By definition the manufacturer is the one to tell you what backing is approved . Ex: Exterior plaster, masonry, concrete etc are approved. The manufacturer also is to instruct you on what type of an adhesive may be used to attach the stone as well, if other than Type S mortar. This should not be mistaken for the manufacturer dictating changes that are less stringent to the adhered Masonry Veneer Section or the Exterior Plaster Section of the code.**

In Pennsylvania under exterior plaster and adhered masonry veneer we follow these sections for the water resistive barrier “WRB” housewraps, building papers, fluid applied. Note that this is over wood sheathing. Foam in section 2 is regarding exterior foam sheathing which will not be covered in this guide. Please contact us for interpretation when using foam sheathing or covering wood sheathing with foam

Section R703.7.3.1

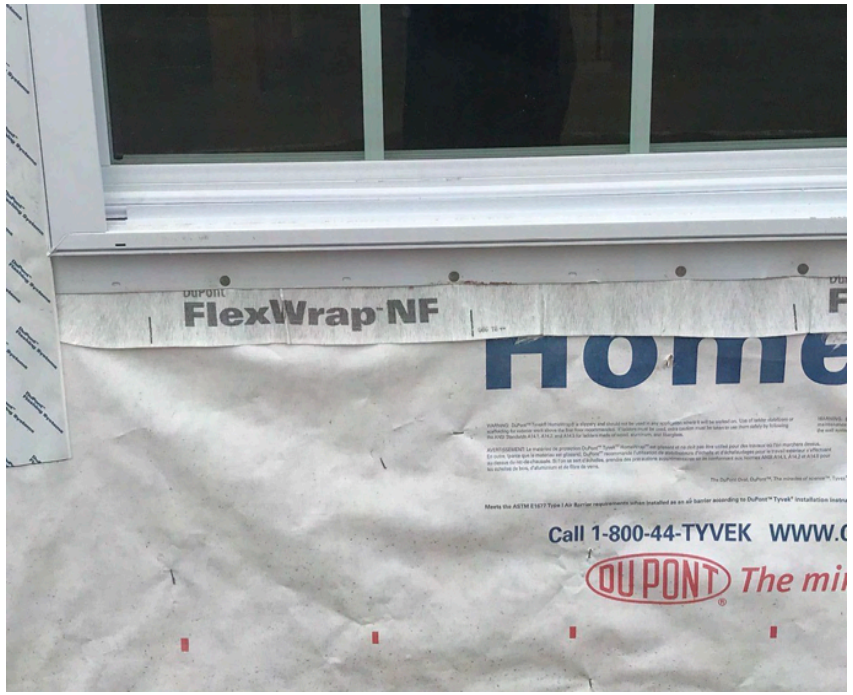
1. 1 The *water-resistive barrier* **shall be two layers** of **10-minute Grade D paper** or have a water resistance equal to or greater than two layers of a *water-resistive barrier* complying with **ASTM E2556, Type I**. The individual layers shall be installed independently such that each layer provides a separate continuous plane. Flashing installed in accordance with Section R703.4 and intended to drain to the *water-resistive barrier* shall be directed between the layers

2. The *water-resistive barrier* shall be **60-minute Grade D paper** or have a water resistance equal to or greater than one layer of a water-resistive barrier complying with **ASTM E2556, Type II**. The *water-resistive barrier* shall be separated from the stucco by a layer of foam plastic *insulating sheathing* or other non-water-absorbing layer, or a designed drainage space.

Section R703.7.3.2

1 In addition to complying with Section R703.7.3.l, **a space or drainage material not less than 3/16 inch (5 mm) in depth shall be added to the exterior side of the *water-resistive barrier***.

This means a drainage space 5mm or more must be used over the WRB to separate the plaster from the “WRB” such as Keene Rainscreen 020-1 which is 6mm



WRB 1 Layer or 2?

2 Layers

Must both have a water resistance of a Grade D Paper or ASTMD2556 Type 1

This is the minimum water resistance of a WRB, it is based on a 10 -minute rated water resistance test method ASTMD779 WRB. Permeability of 5 perms or more.

2 layers is confusing regarding how the flashing is installed. The code says to direct the water between the layers even though a rainscreen space is to be installed over top of the second layer.

More difficult for the installer to do it correctly.

1 Layer of WRB
Must have a water resistance of a Grade D 60- minute rated paper or ASTMD2556 Type II

- Grade D 60 minute is is the maximum water resistance test of a WRB ASTMD779. Permeability of 5 perms or more.
- 1 Layer is easier for the installer. The WRB and flashing details are installed by trades prior to those installing stucco or adhered masonry veneer.
- The Installer of stucco and or thin stone do not have to integrate a second layer which can be confusing.

Zip Wall

- Is currently rated is a Grade D equivalent10 minute water resistance and ASTMD2556 Type I WRB and must have a second layer applied prior to the Rainscreen drainage gap.

Zip Wall Requires Another Layer of minimum Grade D 10-Minute ASTME2556 type 1 Prior To Rainscreen

Fluid Applied WRB
Must meet water resistance of ASTMD2556 Type II (Test AATCC 127 55 cm hydrostatic head also known as column test)

- Fluid applied air and moisture barriers are relatively new to residential construction, but growing.

- Picture is home treated with Prosoco Spray Wrap MVP and Prosoco Fast Flash (liquid flashing). Meets the requirements of 1 layer.

Adhered Masonry Veneer (Weep Screed)

R703.12.1 Clearances. On exterior stud walls, adhered masonry veneer shall be installed :

- 1. Minimum 4 inches (102mm) above the earth.
- 2. Minimum of 2 inches (51 mm) above paved areas: or
- 3. Minimum 1/2" (12mm) above exterior walking surfaces which are supported by the same
- foundation that supports the exterior wall.

- R703.12.2 Flashing at foundation. A corrosion-resistant screed or flashing of a minimum 0.019-inch (0.48mm) or 26-gage galvanized or plastic with a minimum vertical attachment flange of 3 ½ inches (89mm) shall be installed to extend a minimum of 1 inch (25mm) below the foundation plate line on exterior stud walls in accordance with Section R703.4.

Exterior Plaster Section - Stucco

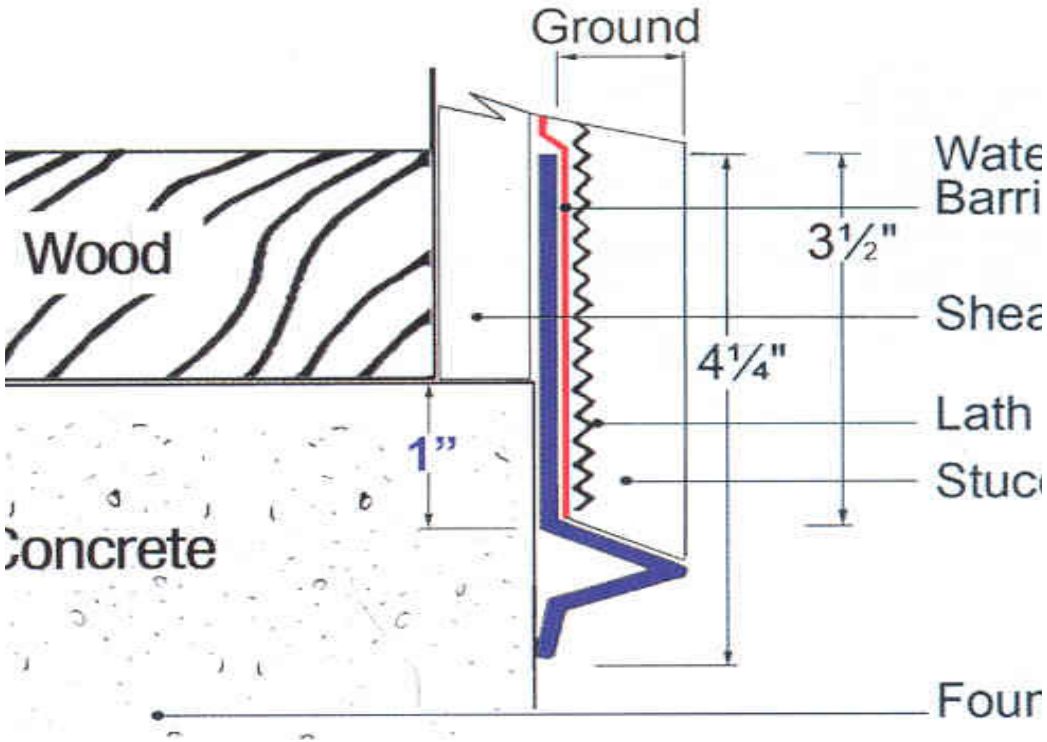
R703.7.2.l Weep screeds. A minimum 0.019-inch (0.5 mm) (No. 26 galvanized sheet gage), corrosion-resistant weep screed or plastic weep screed, with a minimum vertical attachment flange of 3 1/2 inches (89 mm), shall be provided at or below the foundation plate line on exterior stud walls in accordance with ASTM C926. **The weep screed shall be placed not less than 4 inches (l 02 mm) above the earth or 2 inches (51 mm) above paved areas and shall be of a type that will allow trapped water to drain to the exterior of the building. The weather-resistant barrier shall lap the attachment flange**. The exterior lath shall cover and terminate on the attachment flange of the weep screed.

A weep screed meets the detail at the bottom of the wall for stucco and for adhered masonry veneers

Lap the water resistive barrier over the leg of the weep screed.

ASTMC1861 Lathing accessories: Weep screed shall include a solid vertical attachment flange 31⁄2 in. (89 mm) long minimum, and a drainage surface that is sloped and either perforated or non-perforated

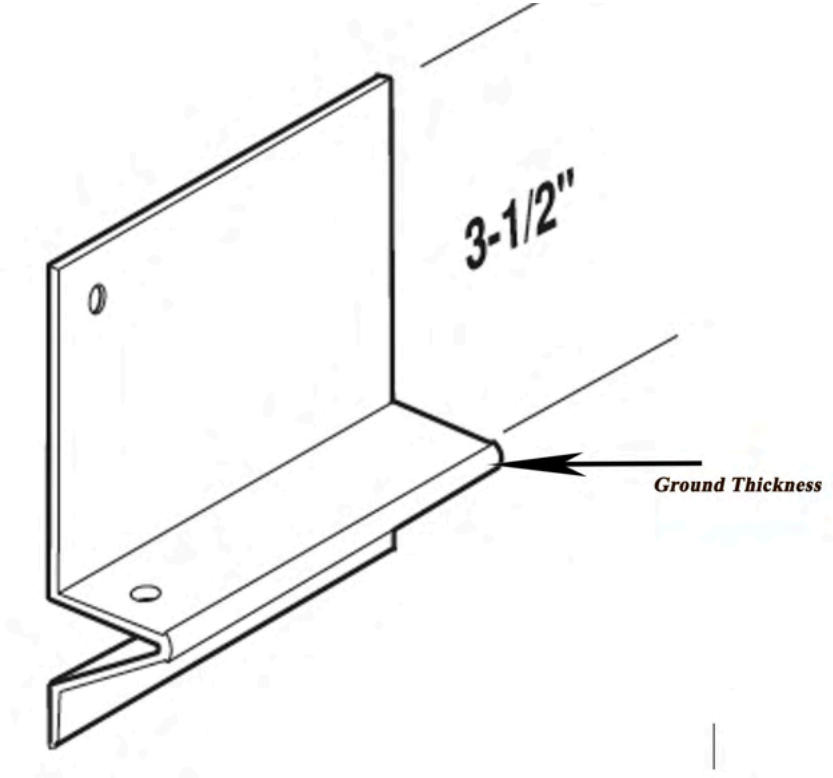
Weep Screed can have perforations or be solid

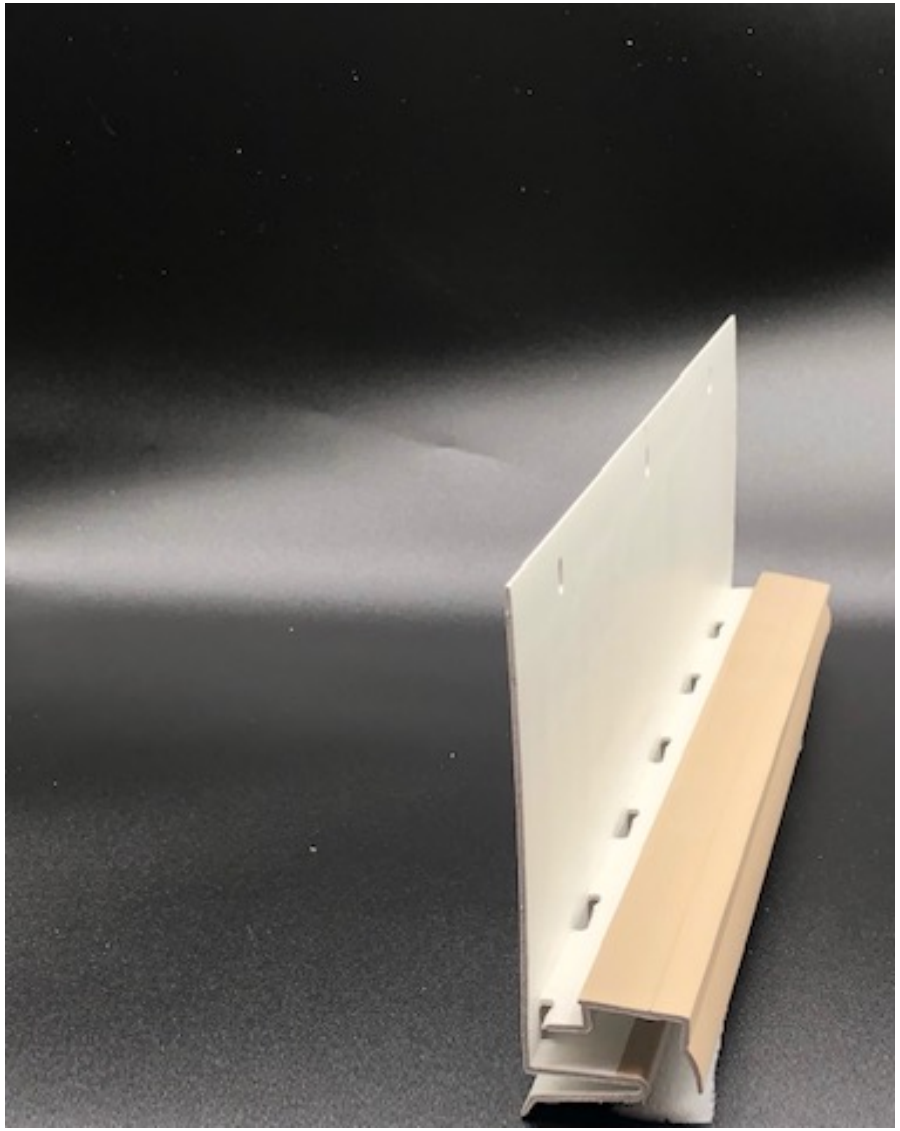


Lap the water resistive barrier over the leg of the weep screed.

ASTMC1861 Lathing accessories Weep screed shall include a solid vertical attachment flange 31⁄2 in. (89 mm) long minimum, and a drainage surface that is sloped and either perforated or non-perforated
Weep Screed can have perforations or be solid

- 7.11.4.1 Where a defined drainage space is provided "ground dimension of lathing accessories", **shall accommodate the defined drainage space dimension and specified cement plaster thickness**
- This means for 7/8" Stucco we need a minimum 5 mm (use ¼" drainage space) and minimum 7/8" for our stucco. Total ground thickness minimum 1 1/8" ground thickness.
- For Adhered Veneer we need a minimum 5 mm (use ¼" drainage space) minimum ½" for scratch coat. Total ground thickness minimum ¾".





Weep Screed Ground

- Lathing Accessories such as weep screed:
- Shall accommodate the defined drainage space dimension and specified cement plaster section.
- Adhered masonry veneer with 6mm (1/4” rainscreen) needs a ¾” Ground minimum. When installing a ½” scratch coat
- Stucco with a 6mm (1/4” rainscreen) Needs 1 1/8” ground such as Amico Drain Screed
- (See Picture) Can use Amico Drain Screed for Adhered Masonry Veneer and Stucco. Channel accepts a ¼” rainscreen and ground accepts a 7/8” thickness of stucco.

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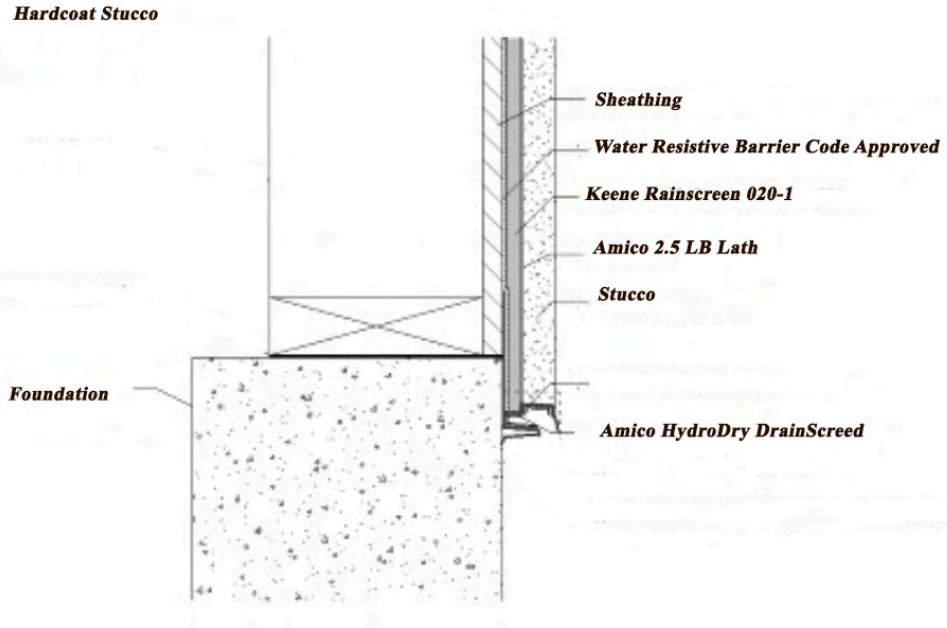
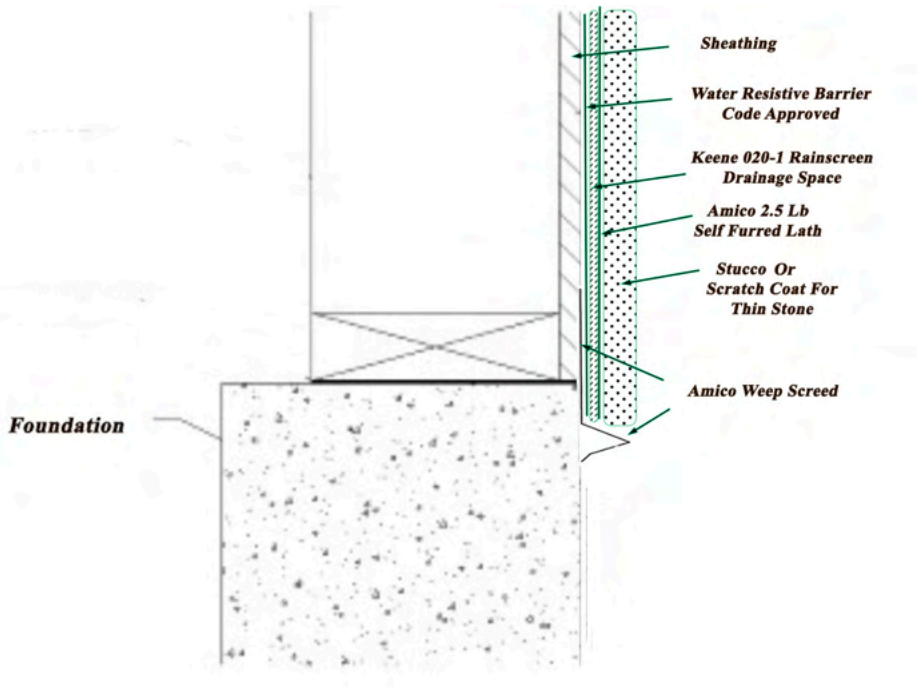
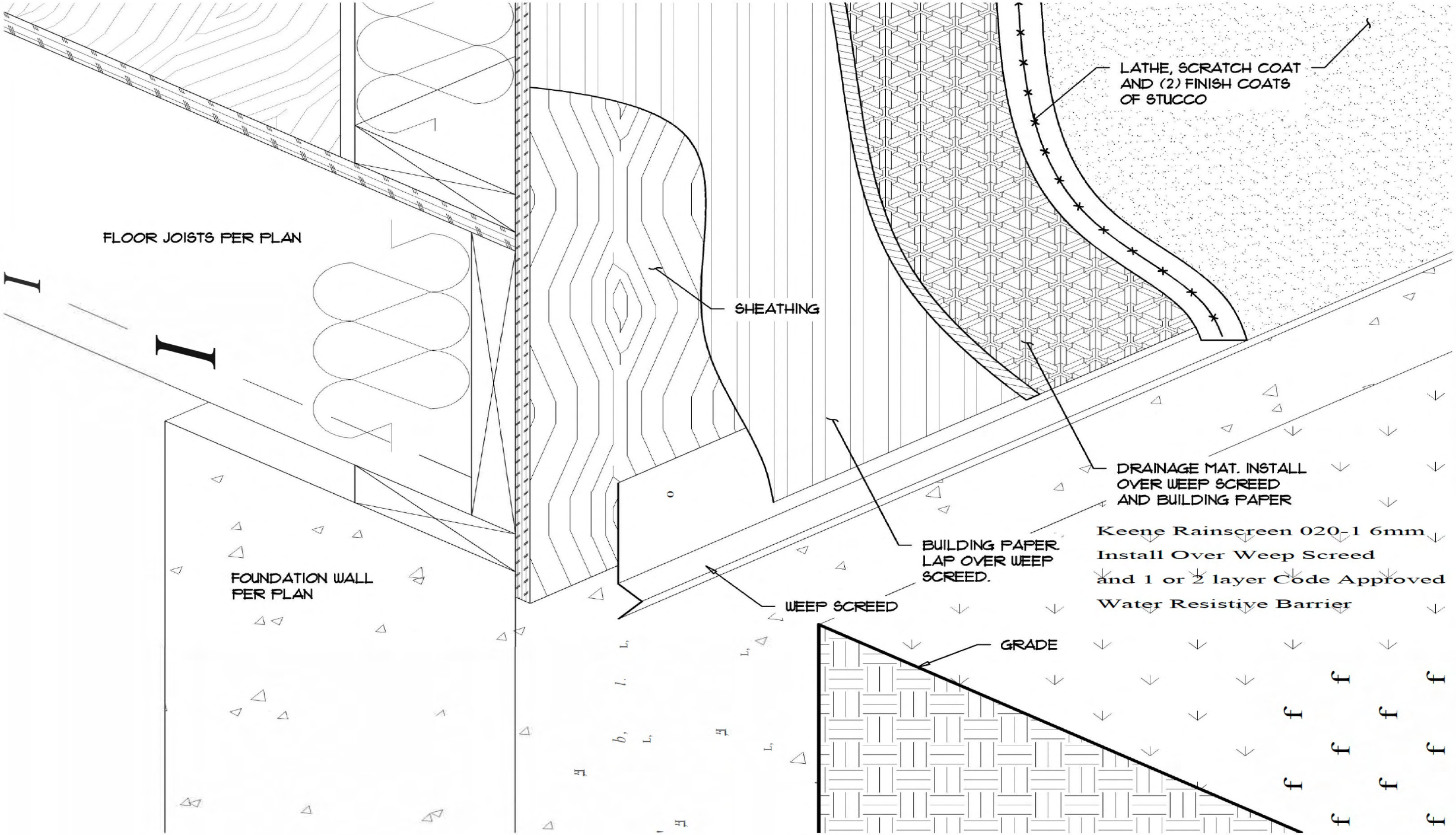
ASTMC1861 Lathing Accessories : Shall accommodate the defined drainage space dimension and specified cement plaster thickness

7/8” Hardcoat stucco needs ¼” for Rainscreen & 7/8” nominal for 3 coat stucco 1” & 1/8” minimum



Stone needs ¼” for Rainscreen and ½” for Scratch Coat ¾” minimum



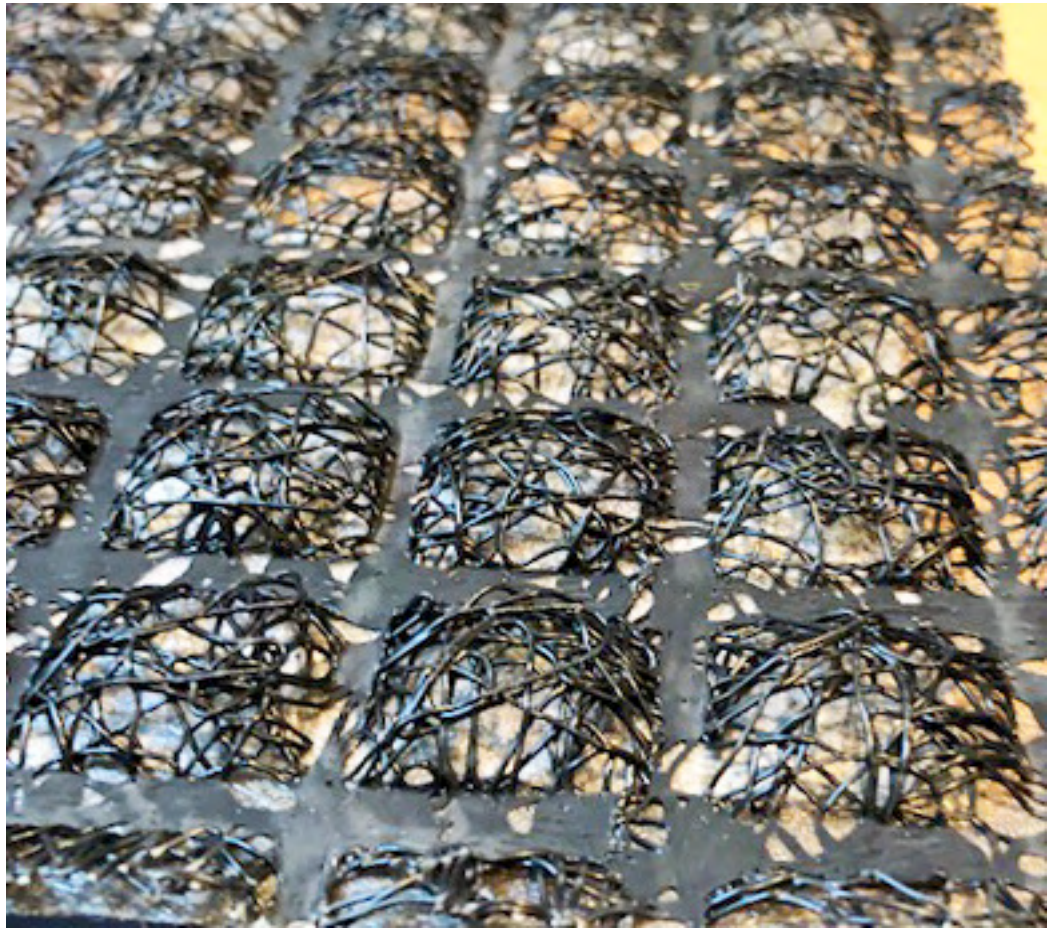

FLOOR JOISTS PER PLAN
SHEATHING
LATHE, SCRATCH COAT AND (2) FINISH COATS OF STUCCO
DRAINAGE MAT. INSTALL OVER WEEP SCREED AND BUILDING PAPER
Keene Rainscreen 020-1 6mm
Install Over Weep Screed
and 1 or 2 layer Code Approved
Water Resistive Barrier
BUILDING PAPER LAP OVER WEEP SCREED.
WEEP SCREED
FOUNDATION WALL PER PLAN
GRADE

Weep Screed provides a way for water to drain from the wall. Weep screed also provides a break at the foundation sillplate so moisture does not wick up into the sheathing and framing. Install weep screed not less than 1” down onto foundation

Code Violation

Code Compliant

Install Rainscreen such as **Keene Rainscreen 020-1 (6mm)** over the WRB with the fabric facing out to the exterior. Keene Rainscreen is an entangled net product which creates a drainage and air space



Rainscreen Drainage Gap
Keene Rainscreen 020-1 6mm

- Install over the code approved WRB and flashings discussed previously. Can use a hammer tacker, use as few fasteners as needed if lath is to be installed the same day or relatively soon after install.
- Otherwise check manufacturers recommendations.

- Fabric faces to the exterior. Butt the rainscreen at seams there is extra fabric at bottom of roll to cover seam.

Install Lath On Top of Keene Rainscreen

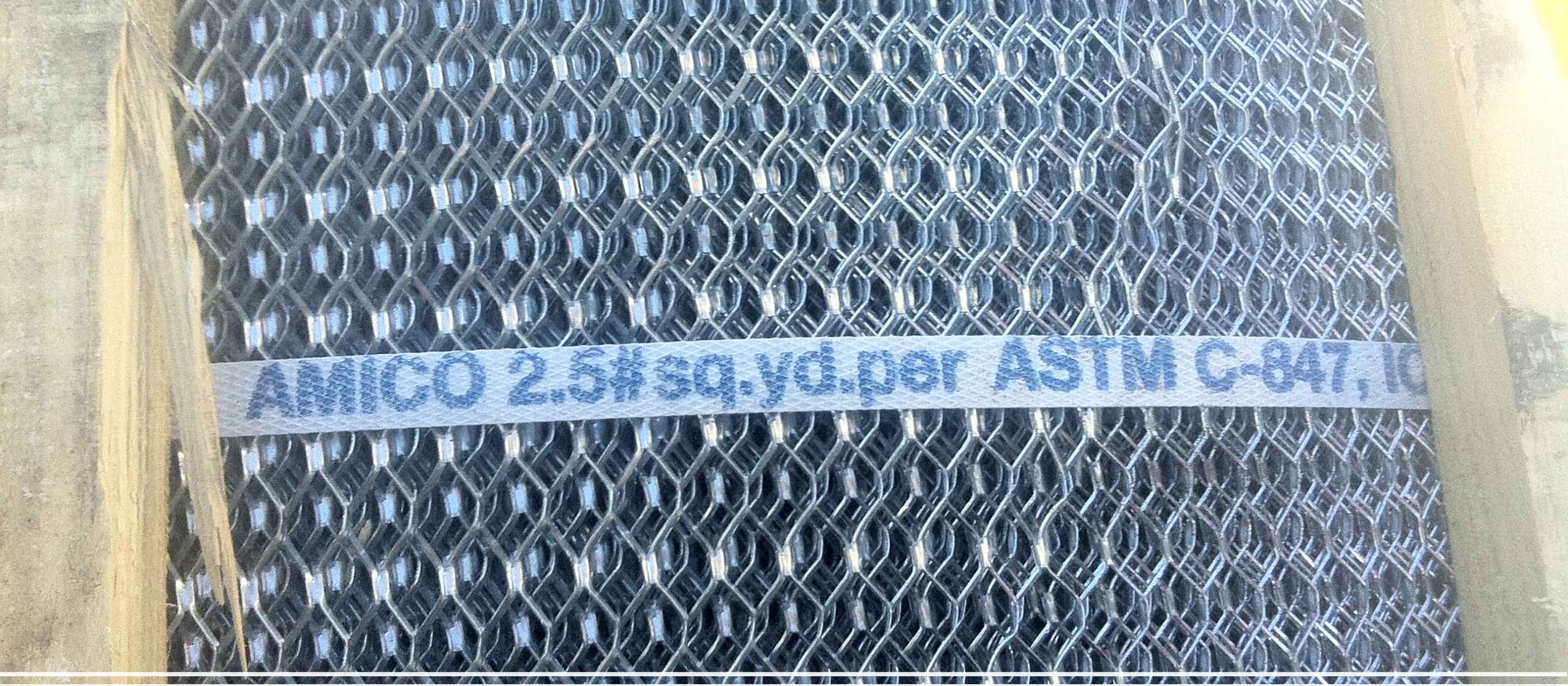
- Use 2.5 LB Self Furred lath (ASTMC1063). Fasteners should be attached every 7 “ vertically into the studs. Embed ¾” into the framing, add ½” for the sheathing along with ¼” for the rainscreen and that allows for 1 ½” fastener. Increase the length of the fastener accordingly if sheathing or rainscreen is thicker

Lath Section R703.7.1

- Fastening pattern is to be minimum every 7” vertically on the framing members. Which is a change from 2015 code.
- “Fastening between wood framing members shall not be prohibited”
- The code has recognized it is difficult not to fasten between framing members by accident. Good practice is to reduce amount of fastener holes by trying to avoid fastening between framing members.

Self furred lath- NOT FLAT

- Note dimples in the lath. Those dimples are to fur the lath ¼”. This allows the mortar to engage around the wire to protect and add structural integrity. Installation on walls must be furred lath not flat.



Amico metal self furred lath that is compliant. Has bands on each 10 pieces to ensure you know what is on the jobsite meets code with correct weight and ASTMC847 (Spec for lath)

Casing Beads Applies to Stucco and Adhered Masonry Veneer

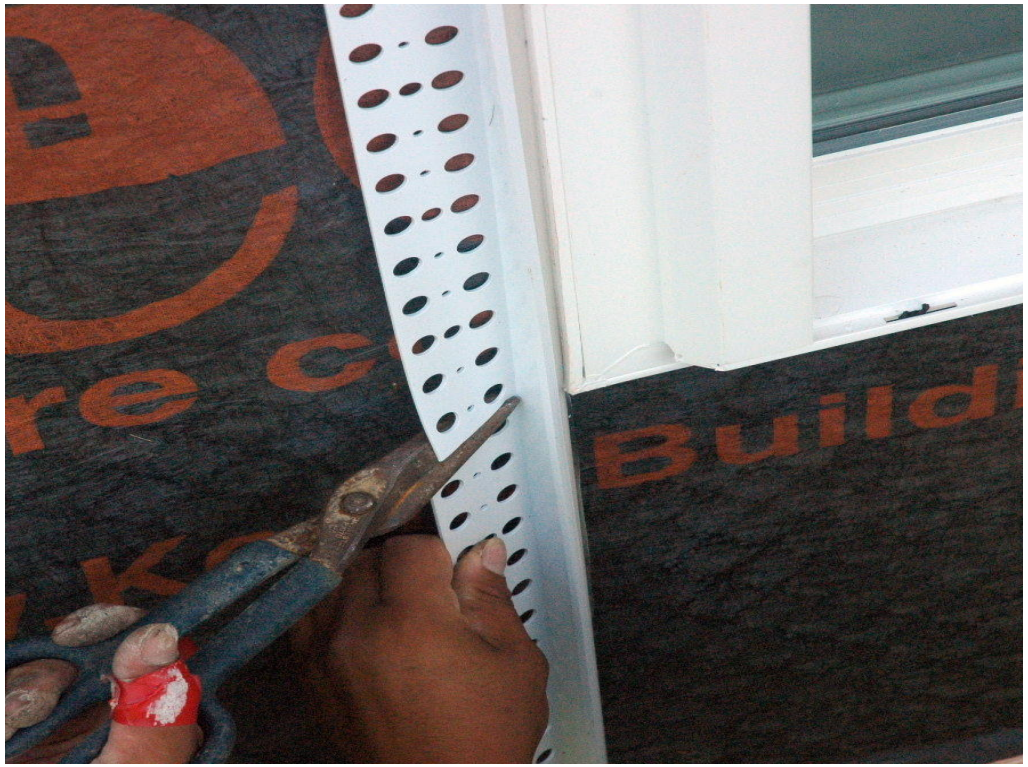
ASTM1063-18B

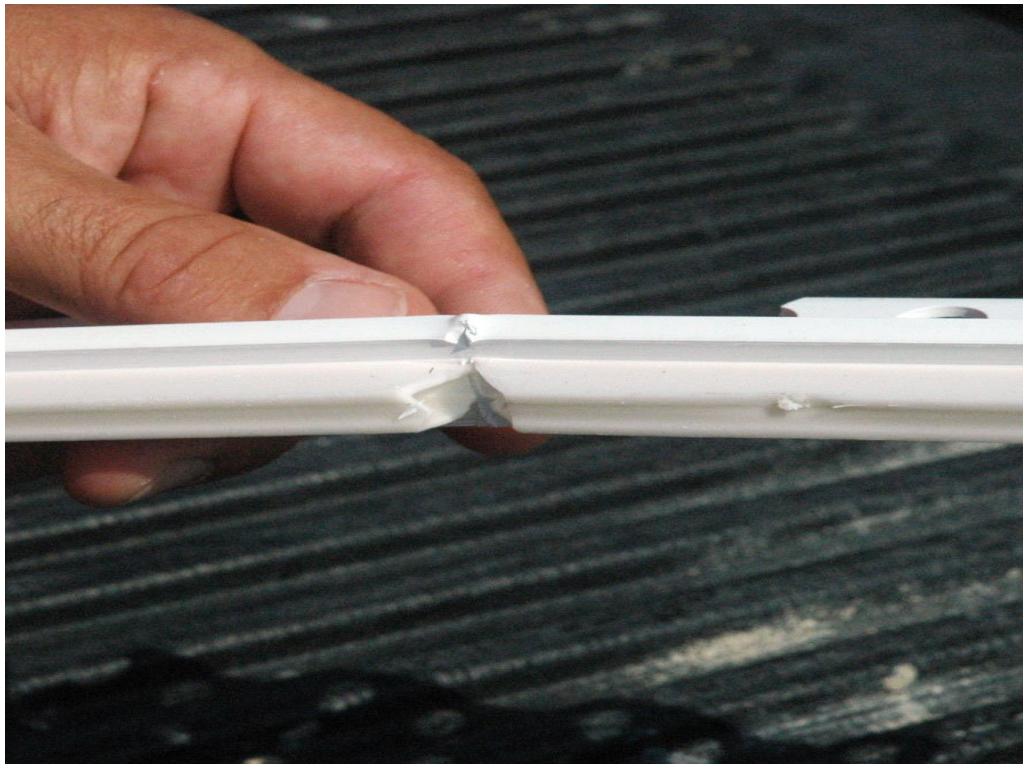
- 7.11.7 7 Casing Bead—Install a casing bead lathing accessory or other suitable means, at locations to separate cement plaster from dissimilar materials, penetrating elements, load bearing members and to avoid transfer of structural loads.

Casing beads and other accessories (that are not meant to facilitate drainage) and lath should be installed on top of the Rainscreen

Casing Bead Install Amico (E-Z Bead)

Amico E-Z bead is a casing bead with an expansion flange and bond-breaking tape that is ready to be caulked

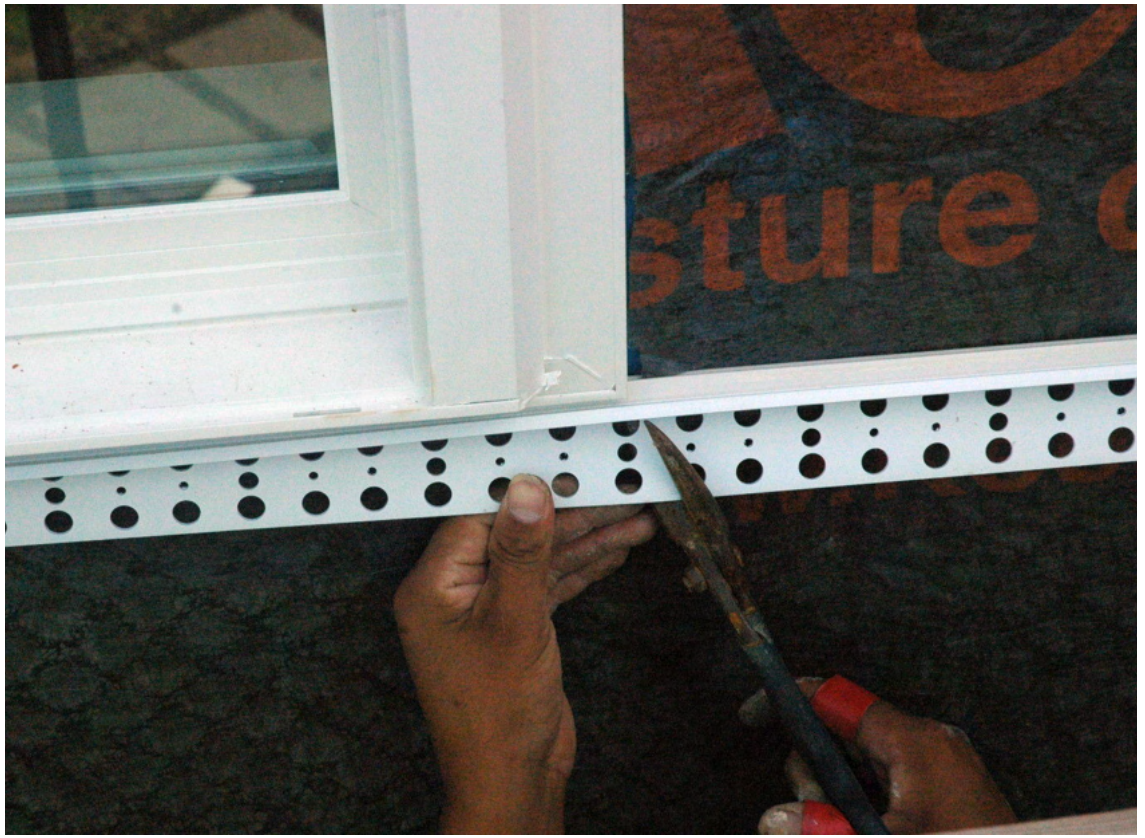




Install around window, doors and penetrations jambs and sill

Down the Jamb

Under the sill



Casing Bead/Amico E-Z Bead Install

Up opposite jamb

Bring last piece down jamb

Amico E-Z Bead installed under drip cap ready to be caulked

Head of window install a drip cap (Typically done by trades prior to stucco or stone installer)
Install a casing bead over top of drip cap to allow for drainage
and to separate from the drip cap – DO NOT CAULK GAP

- Use ½” minimum ground for adhered masonry veneer and 7/8” for 3 coat stucco.

- E-Z Bead is a traditional casing bead if you remove the expansion flange with a utility knife. DO NOT CAULK At the head of the window.

Lath installed into ground

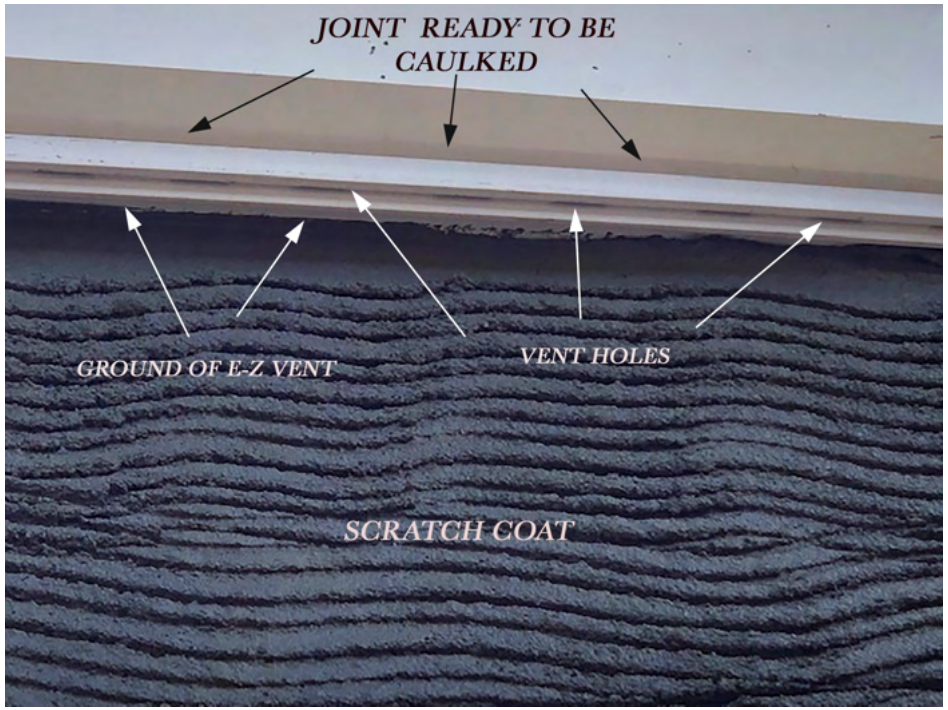
Integrate E-Z Bead under drip cap

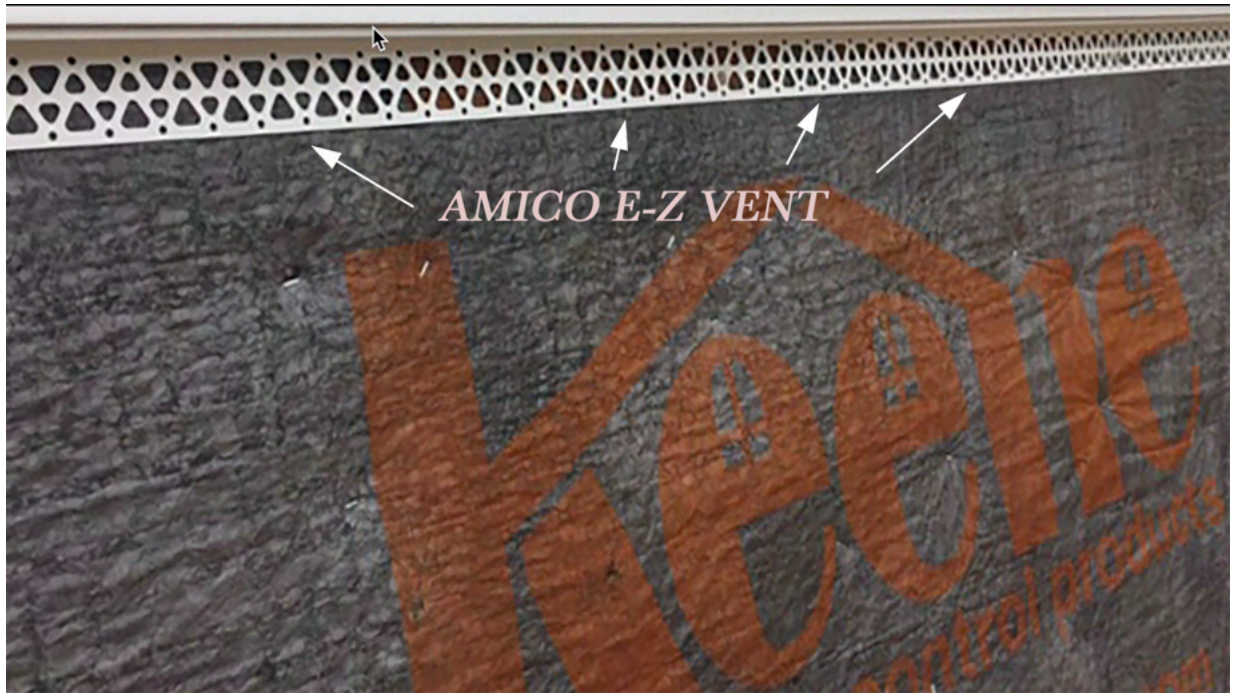
E-Z Bead/Casing Bead
Joint Ready To Be Caulked

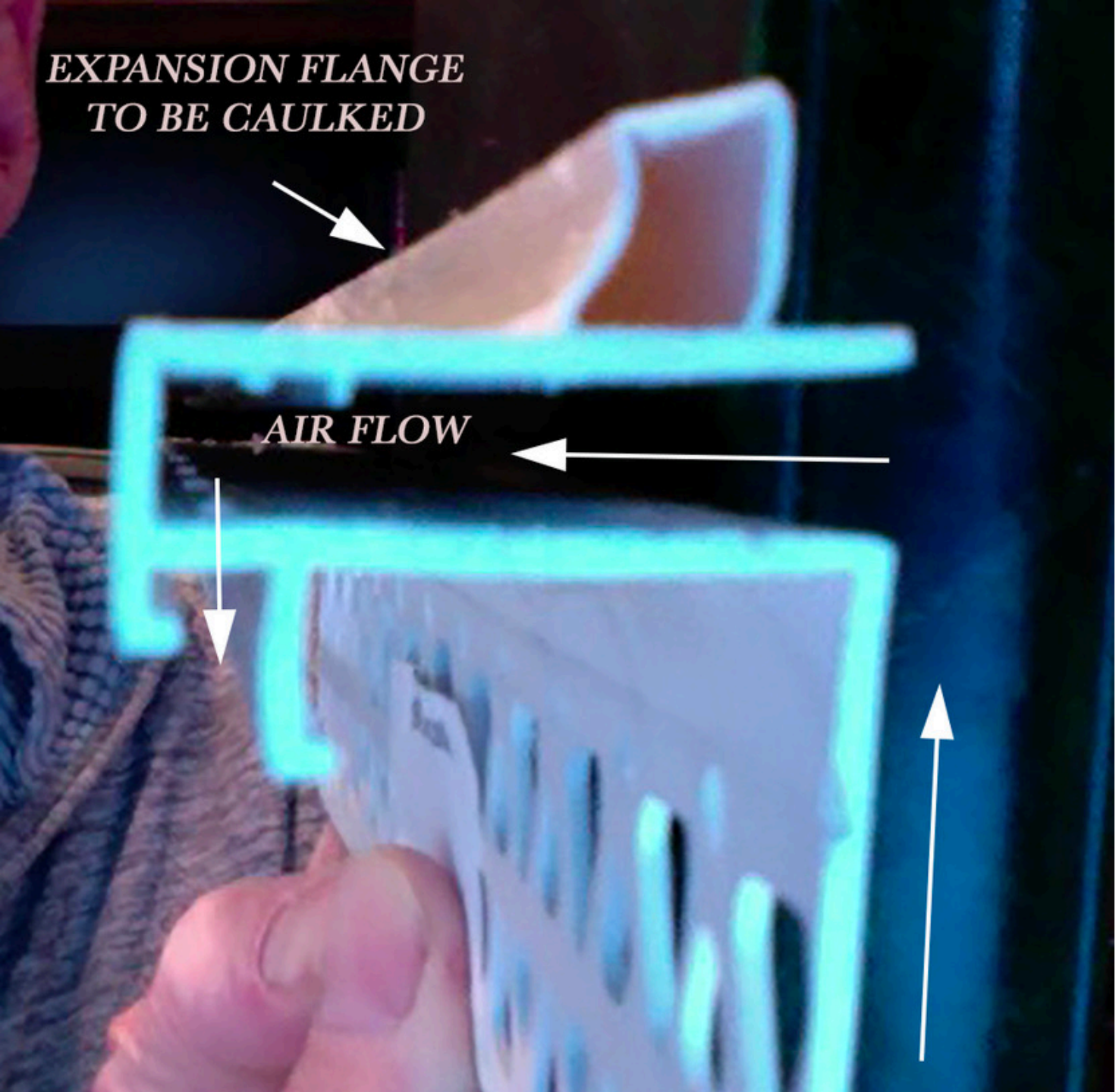
DO NOT CAULK HEAD OF WINDOW OR HEAD OF ANY PENETRATION .

Install E-Z Bead or E-Z Vent up to Trims and soffit channel and caulk

Amico E-Z Vent allows for full wall ventilation





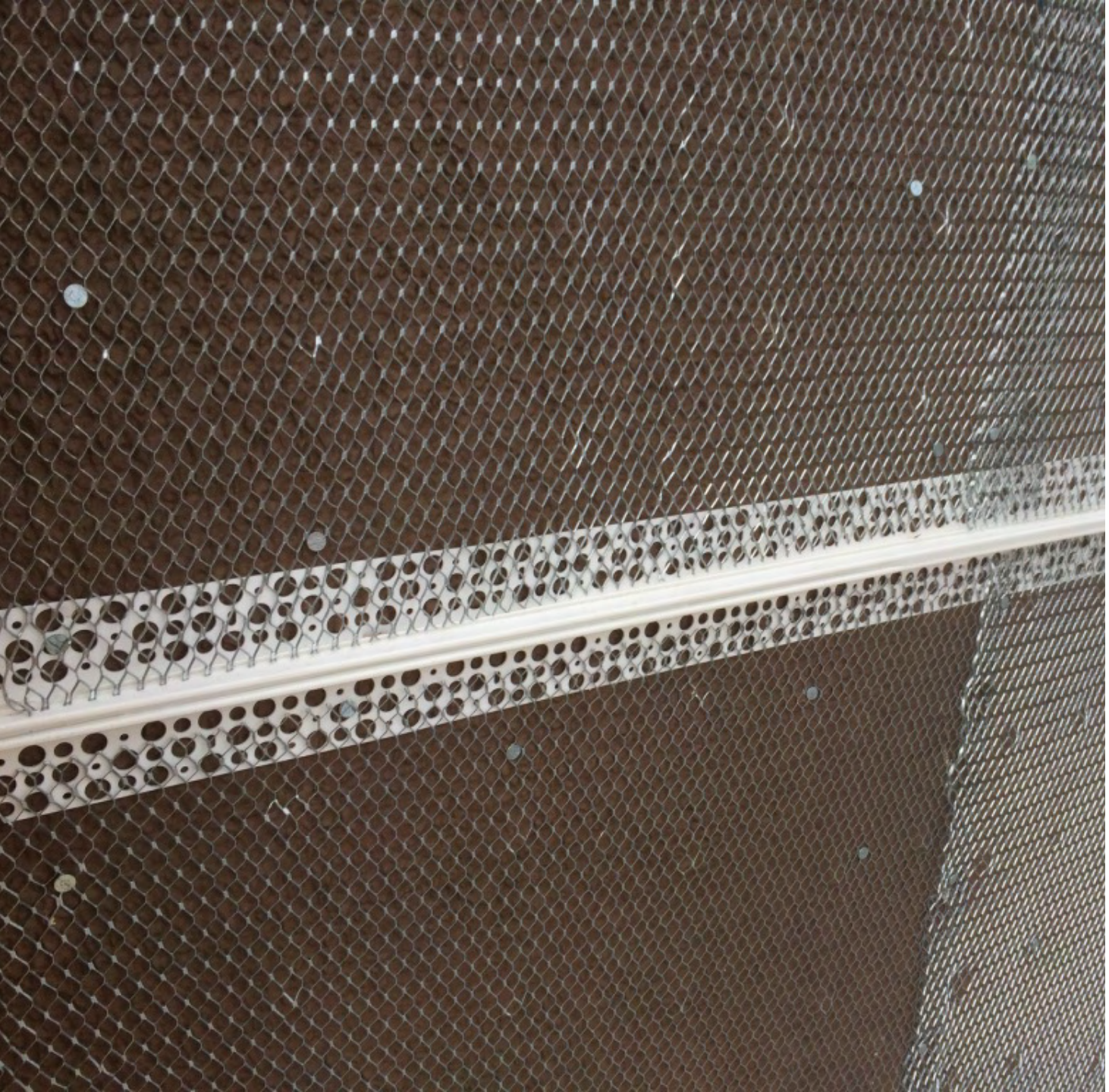


Amico E-Z Vent allows for full wall ventilation

Casing bead /Amico E-Z bead should be installed and caulked

Non Compliant

Code Compliant – Note Caulk Joint



- ASTMC1063 2018B 7.11.11.2 **Install control joint** lathing accessories at locations to delineate cement plaster panel areas of 144 ft2 (13 m2) maximum for walls and 100 ft2 (9 m2) maximum for horizontal installations, that is, ceilings, curves, or angle type structures.

Lath shall not be continuous through control joints

- The distance between control joints shall not exceed 18 ft in either direction or a length to width ratio of 2 ½ to 1
- Wall or partition height door frames shall be considered control joints.

- ASTM1063


Andersen
AW

Control joints and stone?

Control joints and stone?

Control Joints and stone has been a gray area in construction. Control joints in stucco were required so that when the stucco shrinks it has a plane of weakness to crack. The crack is aesthetic when using a control joint as opposed to cracking randomly without one.

Adhered masonry veneer is thicker and does not have the cracking issue that stucco does. Adhered veneer on large walls will at some point need an expansion joint to accommodate movement due to expansion and contraction of the wall during temperature changes and when two separate wall systems come together as will stucco. An expansion joint in the back up wall must follow through the veneer. Expansion joints are typically determined by the designer or engineer.

This is an explanation and should not be interpreted as guidance from the author.

Stucco 3 coat, Adhered Masonry Veneer 1 Scratch Coat

3/8” Scratch, Brown 38” 1/8” finish 7/8” nominal

3/8” Minimum Scratch Coat per 3.3C of TMS 602 Most Manufacturers Require ½” Good practice use ½” Scratch

Curing of stucco

- R703.7.5 **Curing.** The finish coat for two coat cement plaster shall not be applied sooner than seven days after application of the first coat. For three coat stucco cement plaster the second coat shall not be applied sooner than 48 hours after application of the first coat. The finish coat for three-coat cement plaster shall not be applied sooner than seven days after application of the of the second coat.

- This does not apply to adhered masonry veneers.

Adhered Masonry Veneer TMS402/602-16

- 12.3.2.1 Unit sizes- Adhered veneer units shall not exceed 2 5/8 in (66.7 mm) in specified thickness, 36 in. (914 mm) in any face dimension, nor more than 5 ft sq. (0.46 msq) in total face area, and shall not weigh more than 15 psf (75 kg/msq)
- 12.3.2.2 Wall area limitations – The height, length, and area of adhered veneer shall not be limited
- 12.3.2.3 Backing- Backing shall provide a continuous, moisture-resistant surface to receive the adhered veneer. Backing is permitted to be masonry, concrete , or metal lath and Portland cement plaster applied to masonry, concrete, steel framing , or wood framing.
- 12.3.2.4 Adhesion developed between adhered veneer units and backing shall have a shear strength of at least 50 psi (345 kPa) based on gross unit surface area when tested in

Adhered Masonry Veneer TMS402/602-16

- 3.3 C. Placing adhered veneer
- 1 Brush a paste of neat Portland cement on the backing and on the back of the veneer unit.
- 2 Apply Type S mortar to the backing and to the veneer unit.
- 3 Tap the veneer unit into place, completely filling the space between the veneer unit and the backing. Sufficient mortar shall be used to create a slight excess to be forced out between the edges of the veneer units. The resulting thickness of the mortar in back of the veneer unit shall not be less than 3/8 in (9.5 mm) nor more than 1 ¼ in . (31.8 mm).
- 4 Tool the mortar joint with a round jointer when the mortar is thumbprint hard.

Summary

The new ASTM Sections can be confusing. The author kept the installation as simple as possible to allow for less confusion with installation, and to include products that are readily available. Please feel free to contact Steve Long with any questions regarding the Pennsylvania exterior plaster code.

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Keene Building Products and

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