

One-piece control joints are used in cement plaster assemblies to relieve stress and establish plaster thickness. ASTM C1063 is a standard referenced by building codes to provide guidance on placement, spacing, and attachment of lath and trims. The following are guide recommendations on one-piece control joints from the SMA with options as allowed by Section 104 of the International Building Code. Installation shall be per the designer of record, approved by the local Building Official, and not in violation of manufacturer recommendations. One-coat stucco shall have control joints installed per that system's manufacturer recommendations/requirements and its current Evaluation Report.

GENERAL INFORMATION: Control joints allow for minimal stress relief in one direction to help reduce hairline cracking in cement plaster. Using control joints and following ASTM C1063 is no guarantee of crack-free cement plaster. The occasional hairline crack in a cement plaster is not detrimental, nor should it be considered a defect. Designers should be allowed some flexibility with design options concerning one-piece control joints. Some designs are not conducive to using control joints. For example, a Spanish or Tuscan-style home with control joints could be aesthetically unappealing. In some cases, a hairline crack relieving minor stress would be preferred. The designer of record is allowed to make a design decision, and building code (Section 104) specifically allows for "Alternative materials, design and methods of construction" as approved by the local building official.

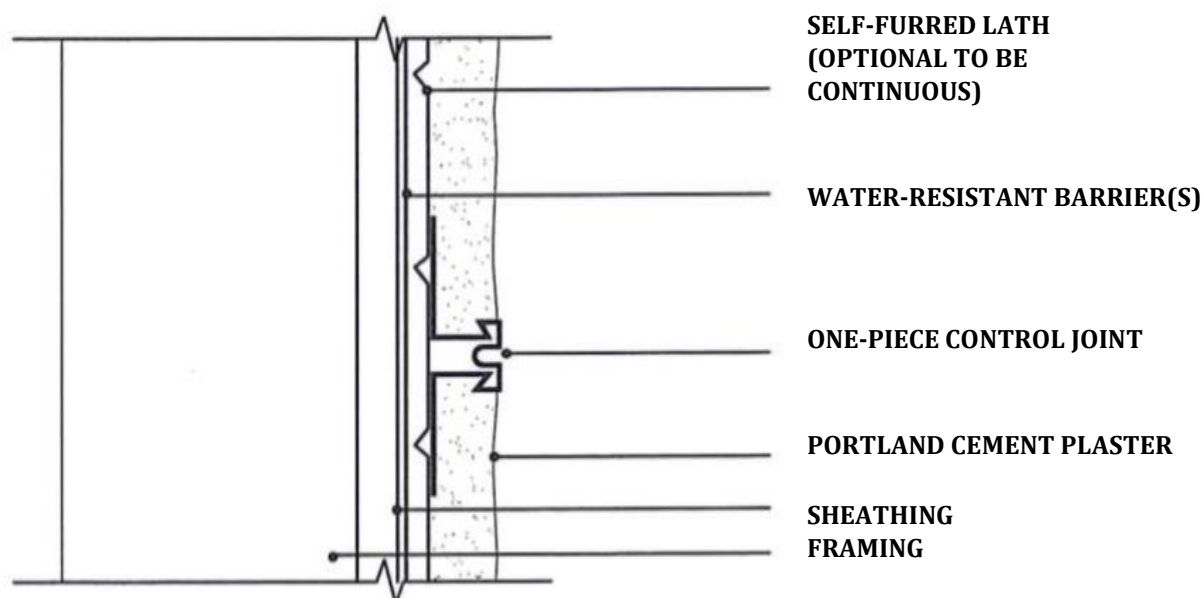


FIG 1: Typical One-Piece Control Joint

ONE-PIECE CONTROL JOINT

SPACING: ASTM C1063-19a Section 7.4.10.2 states, “Install control joint(s).....at locations to delineate...areas of 144 ft² (13 m²) maximum for walls...”. Section 7.4.10.3 “...delineate cement plaster panel areas of 18 ft. (5 m) maximum dimension.... or a maximum length-to-width ratio of 2 ½ to 1”. The SMA supports a designer's option of larger panels when using fibered or engineered basecoat mixes. Panels should be kept as square as possible. The designer must provide direction to the contractor during the bid phase. Generally, designers are the most qualified to determine the need and spacing of control joints for stucco. The designer of record must graphically depict the locations of one-piece control joints on the elevations per ASTM C1063.

MATERIAL: Control joints are metal, zinc, or plastic. Control joints come in a variety of styles and configurations. Some materials and styles are regionally preferred. It is recommended to use only control joints designed explicitly for use in cement plaster (stucco) assemblies.

- GALVANIZED STEEL: Common in stucco
- ZINC: More resistant to corrosion, softer, and subject to damage
- PLASTIC: Will not rust or corrode, available in colors

INSTALLATION: Control Joints shall be installed per the elevations as directed by the Designer. Contractors must notify the design team of a joint in the substrate not being honored in the cement plaster membrane.

KEY FACTORS

- Ground depth shall align with other trim grounds (contractors responsibility)
- The water-resistant barrier(s) shall be continuous behind control joints.
- Vertical control joints are generally continuous through horizontal control joints
- Vertical control joints shall terminated at horizontal expansion joints
- Additional flashing strips (optional) are best installed in “shingle-fashion.”
- ASTM C 1063-19a Section 7.3.1.5 states “Lath shall not be continuous through control joints...”. Most manufacturers and the SMA allow the lath to be continuous behind one-piece control joints as a proven option. Discontinuous lath at vertical control joints require proper backing/framing for lath terminations.
- Attachment of a control joint may be by nail, staple, or screw to framing. The optional method is to wire tie to properly secured lath. Fastening shall secure joint to not move during the application of plaster. Terminations, joints, and miters are recommended to be sealed to prevent water entry on walls in Moist A or Marine C zones (see Fig 2).

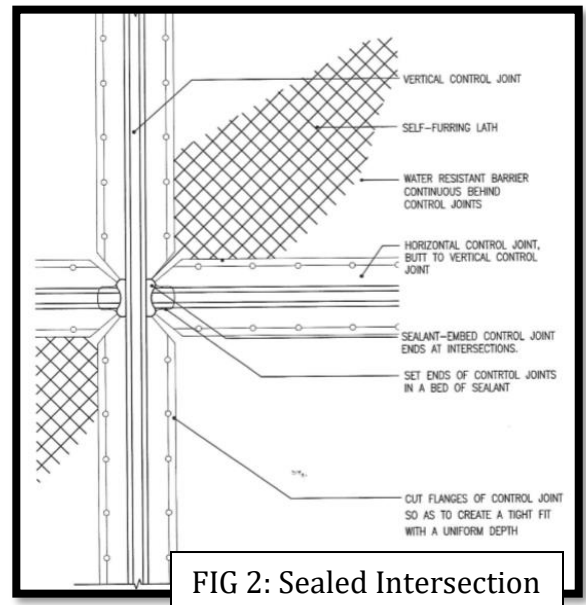


FIG 2: Sealed Intersection

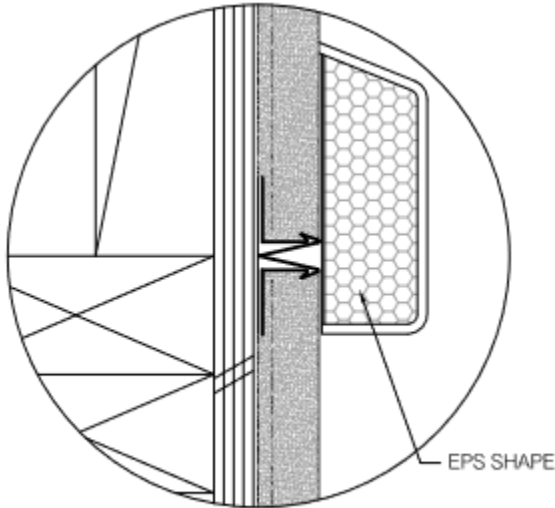


Fig 3: Concealed Control Joint

FOAM SHAPES: One-piece control joints allow for minimal movement; Expanded Polystyrene (EPS) decorative foam shapes also allow for minimal movement and may be placed over control joints.

Horizontal Joints: The lower section (edge) may be left unattached (FIG 3) if the joint is in the lower section of the EPS shape.

Vertical Joints: The top or upper edge should be sealed to prevent water entry behind the foam shape, and the bottom or lower section should be left open to allow any incidental water to weep/drain from behind the foam shape.

FIRE: Control joints spaced farther than ASTM guidelines will not devalue the fire rating of the assembly. Plastic joints should be avoided in fire-rated assemblies where the fire protection is dependent on the cement plaster membrane or provide additional backing behind the PVC joint.

CHANGE ORDERS: There should be no charge to move or relocate control joints before their installation over continuous lath. Discontinuous lath may require additional framing and may incur additional charges. Adding linear footage of control joints beyond what was graphically depicted on the elevations is a valid Change Order item. Adding control joints during the construction phase to meet ASTM is not an error or omission by the architect.

ALTERNATES: An optional method to reduce cracking in cement plaster many believe superior to control joints is using a base & mesh system (refer to SMA Technical Bulletin "Base & Mesh Systems for Crack Reduction"). Fiberglass mesh is embedded in a skim coat of polymer enriched cement over the brown coat. Properly installed, a base & mesh system is robust, flexible, vapor permeable and proven to reduce cracking beyond shrinkage/curing in cement plaster without negatively impacting the assembly. This lamina is an upgrade and is not part of a traditional cement plaster assembly.

Tip: Designers can request a square foot price for the base & mesh system as an alternate when collecting stucco bids. This "alternate bid item" price would be valid only when installed over the brown coat during the initial construction phase. The base and mesh may be added over the finish coat, but this may require re-mobilization and possible re-scaffolding charges, etc. Always follow manufacturer recommendations for the use of all products. Ensure finish and skim coats are compatible.

The SMA is an industry-wide not-for-profit trade association dedicated to promoting and educating the stucco industry. Designers are encouraged to contact SMA for clarification on design, product selection or installation regarding one-piece control joints. Due to circumstances beyond our control, the SMA can provide no warranty, express or implied. Graphics are courtesy of the TSIB and the NWCB.