Improved Technique for Flashing and Anchoring Stone Coping

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UNTIL RECENT IMPROVEMENTS IN METAL flashing, sealants and stone anchoring, the details for coping on parapet or screen walls remained unchanged for more than a century.

For several generations of architects, stonemasons and bricklayers, metal flashing under stone coping was reserved only for very high-end projects. These typically lead, copper or occasionally stainless steel flashings were complex, expensive to fabricate and not easy to install in the field. Lapping deformed metals has historically required field soldiering or use of low-tech lap sealants such as roofing tar. Further compounding the problem, designs did not take into consideration the need for expansion and contraction of the stone coping. A full bed and head of mortar were used to bond units to each other and to the parapet. Unfortunately, this method further exacerbated the problem by eliminating space for expansion and contraction, restricting the necessity for the coping to move independently (along the horizontal plane) from the wall below. Immediately following completion, head and bed joints begin to separate allowing water to infiltrate, accelerating the cycle of deterioration.

Anchoring coping in the traditional manner is simple in theory but difficult in practice. It requires two or more holes for each piece of stone to be drilled through the metal flashing into the parapet below with corresponding holes drilled into the bottom of each piece of stone (Figure A). Lining up holes with dowels requires precision drilling while lifting and setting each piece of stone up and over the set dowels is cumbersome and risky. Performance of the system is diminished with holes drilled through the flashing that is intended to keep water out.

Fortunately there is a high performance, economical and field friendly detail to flash and anchor traditional stone coping on modern masonry wall systems. It reflects a compilation of input from numerous designers and craftsman including brick and stonemasons from throughout our market area. Their experience and wisdom continue to propel grass root changes improving the performance and economy of traditional unit masonry.

This straightforward detail addresses moisture, expansion and contraction anchoring and labor concerns that have eluded designers for nearly a century (Figure B).

Metal flashing for this updated detail incorporates standard 28 gauge (0.015″) type 304 stainless steel. Stainless provides a very long life while eliminating the risk of staining on the masonry below caused by copper oxidation. Fabricated from flat stock in 10′-0″ length pieces, the ½″ 45° hemmed drip edge serves to deflect water away from masonry below the flashing, while the underside of the drip is a perfect

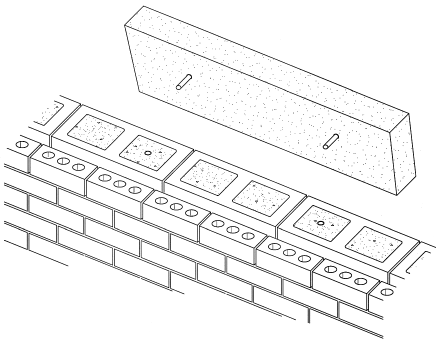

Figure A

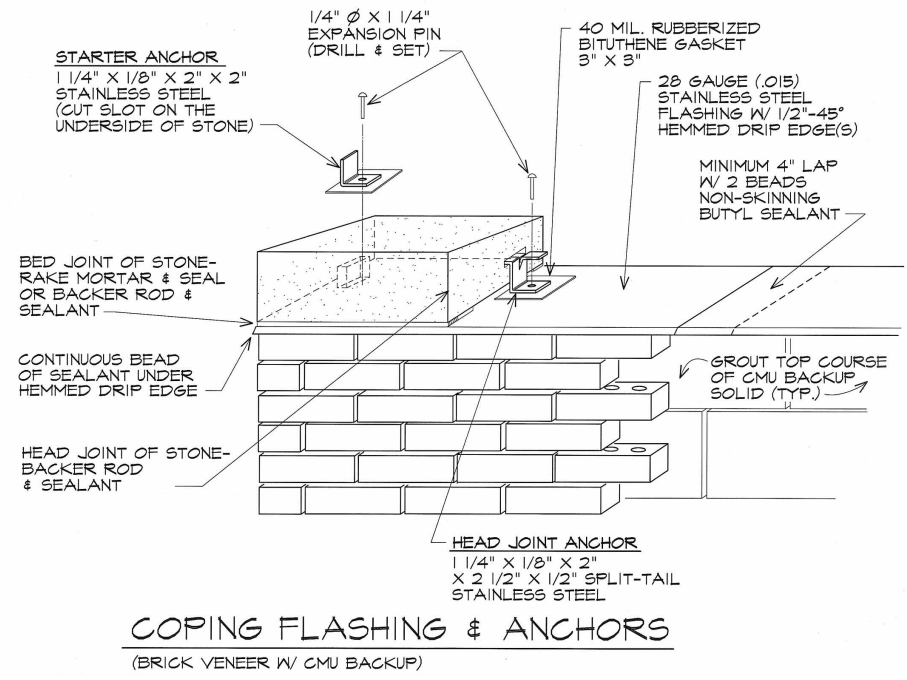

Figure B

receiver for polyurethane sealant that prevents water from migrating up and under the flashing (Figure C). A drip edge is necessary on the inside and outside of finished faces of high parapet and screen wall copings to deflect water away from masonry below. Inside the face of the parapet, metal flashing can alternatively be fabricated to lap or clip over the roofing counter flashing in lieu of a drip edge (Figure D).

It is important to lap the metal flashing sections a minimum of 4″ using two beads of non-skinning butyl sealant to the face of the drip edges. Non-skinning butyl remains pliable and watertight allowing metal to expand and contract with the coping. Sealants are available in colors to match stainless steel or other prefinished metals.

Stone copings, available in a variety of sizes and shapes, are to be set in a bed of mortar or dry laid on plastic shims. Mortarless installations of stone copings are gaining in popularity. Mortar in this updated detail serves solely as a means to level and plumb the stone. Head joints between each piece of stone need to be cleaned and remain clear down to the metal flashing to allow for maximum expansion and contraction of each piece of coping. Expansion joints are later filled with backer rod and polyurethane sealant. If coping is laid in mortar, simply rake it back ⅜″ to receive the sealant at a later time. Treat copings set on shims like head joints later filled with backer rod and sealant.

After the top course of CMU on the parapet is grouted solid, it is ready to receive the metal flashing. When flashing a cavity wall that includes insulation and an air space, it may be necessary to bridge the space with a light gauge angle fastened to the top of the CMU (Figure E). The wall is now ready to install the flashing in 10′-0″ lengths with the minimum 4″ laps over a double bead of non-skinning butyl sealant. A continuous bead of butyl sealant may also be placed on top of the inner and outer face shell prior to setting the metal flashing, helping to hold it in place while waiting to set coping. The alternative method of sealing the flashing, mentioned above, incorporates the 45° drip edge as a receiver for the post installed polyurethane sealant.

Prior to setting each stone anchor, center a 3″ square rubberized asphalt gasket on the drill location. Drill each hole to tightly fit a ¼″ diameter x 1¼″ expansion pin. Near the end of the first piece of stone,

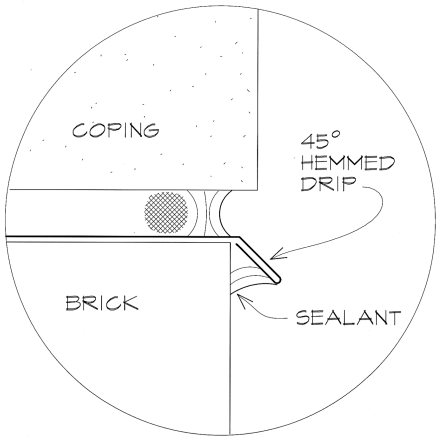

Figure C

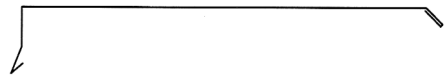

Figure D

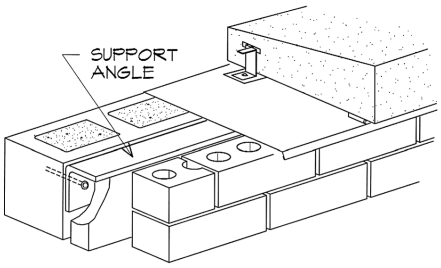

Figure E

Figure F.
Split-tail
anchor

a starter anchor is fastened on top of the flashing and fit into a slot cut into the underside of the stone. The vertical leg of the anchor should reach at least 1″ into the underside of the stone. Anchors made of type 304 stainless steel are the right choice regardless of the type of natural or manufactured stone selected. Exterior coping conditions have the highest moisture exposure warranting the use of stainless steel for all metallic accessories. The first piece of stone is now ready for placement on a bed of mortar or set and leveled with plastic shims.

This updated method of anchoring stone coping recognizes the importance of minimizing penetrations through the flashing and reduces the time and labor to set each piece of coping in half. Repeat these steps setting split-tail anchors in every head joint of the coping course (Figure F). Utilizing a single stainless steel split-tail anchor in every head joint radically improves the sequence of installation. To accommodate expansion, slot depth on ends of stone should be deep enough to prevent the split-tail from touching the stone. Each piece of stone simply slides into position to fit into the previously anchored split-tail. One split-tail anchors the matching head of two pieces of stone.

Once the coping is in place, the head and bed joints are ready for backer rod and sealant. Carefully follow the stone suppliers recommended cleaning method to avoid streaking or staining if mortar is the bedding choice. The mortarless system eliminates the need to chemically clean the coping and the wall is finished.

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