



Technical Bulletin #8

VALLEY METALS

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One of the most hotly debated issues regarding roof tile installation has always been - what is the best way to prepare and install the valley sections. Nearly every experienced tile roofer has had the opportunity to deal with valley related roof leaks and each will have an opinion about which is the proper method of application to prevent problems. The interesting aspect of this debate is how so many good roofers could disagree so vehemently on such a common detail. Should the felt be applied over or under the valley metal? Should the tiles be cut close together or wide apart? How are the cut tiles fastened?

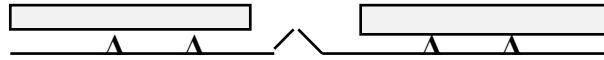
Since the valley is probably the most critical portion of the roof surface in terms of water volume and velocity, we feel it demands special attention to avoid the types of problems that are experienced.

The most common type of valley metal used on most tile roofs is the standard 'W' flashing that features a single diverter at the center and either a standing crimp or rolled hem at the outside edges. This metal evolved from the type used with wood or asphalt shingles and is only different in that it is usually wider (24 inches) and features the outside edge crimp. Unfortunately, the flat surface allows tiles to lie directly onto the path of water flow and create blockage and lateral diversion. At recent WSRCA / NTRMA tile committee meetings, it was agreed that other styles of valley flashing might be better suited to handle the unique application of tile roofs.

The basic function of valley metal is to collect a concentrated flow of water and direct it off the roof. For this to work, it is best that the valley trough be unobstructed and of adequate dimension to handle the volume of water that may be expected. At no time should water be allowed to escape or be diverted off of the valley metal. Unfortunately, that is precisely what does happen in many cases where the tile or underlayment are not properly installed. Perhaps the most common source of roof leaks is water diverted off of valley metal that spreads across the roof, beneath the tile, until it finds a hole in the underlayment. Felt, battens or tile lugs that extend into the valley may all contribute to water diversion that may result in leaks.

To prevent the diversion of water, new tile specific valley metals have been created that feature built in support ribs that support battens or tiles that protrude onto the valley metal. These support ribs also create defined trough areas that control water flow and prevent lateral diversion of water. The size and frequency of these ribs varies dependent on the length of the valley, volume of water expected and the type of tile installation.

RIBBED VALLEY



With this style of valley, water can pass uninhibited beneath the tile or batten.

Basic rules for tile valley installation:

- Code requires that a sweat sheet be installed between the roof deck and the valley metal. This is done to prevent condensation on the underside of the metal from damaging the wood deck.
- Valley metal should be minimum No.28 gauge, corrosion -resistant metal in UBC and No.26 gauge in all others. Sheet steel should have a G-90 zinc coating. Other materials such as lead, copper, aluminum-zinc coated steel may offer superior corrosion resistance if desired. No.24 gauge metal is recommended in areas subject to snow or ice accumulation.
- The width of the valley metal is related to the length of the valley, the tributary area it serves and the configuration of the metal. The UBC stipulates that flat, standard valley flashing extend 11 inches from the center line, but studies have shown that narrower dimensions work equally as well when vertical ribs are added to the design.
- Valley sections are typically lapped 6 inches although the UBC allows as little as 4 inches. Basically, the size of the headlap becomes more critical as the roof slope decreases. At very low slopes (< 3:12) it may be wise to seal the laps with lap cement.
- The roof underlayment may be installed under or over the valley metal. When the felt is woven across the valley, it is important that it is formed tightly to the roof deck to prevent tearing from foot traffic at the valley. Care should be taken to prevent loose nails or debris from trapping beneath the metal since they could cause punctures if stepped on.
- If felt is lapped onto the metal, it should be kept away from the water flow area and the top corner of each sheet should be angle-cut to avoid lateral diversion of water.
- In either case, the edge of the metal may be sealed as a precaution against water intrusion.
- Tiles may be cut to the center of the valley (closed valley) but cut tiles should be supported by batten extenders or tile ribs built into the valley metal.
- An open valley is created when the tiles are cut to create an open trough down the center of the valley. This open trough can provide a clear flow for water but still can collect debris in wooded areas. In areas subject to ice damming the open valley should be cut in a taper to widen as it approaches the down-slope eave (typically 1/8" per foot of run).
- In many countries it is common practice to fill the void beneath the cut valley tiles with mortar or other similar closure material. This provides a finished appearance and well-defined valley trough that prevents debris accumulation.
- Cut tiles should be fastened in all cases but should never be fastened through the valley metal. Cut tile clips, wire and /or adhesive should be used to hold cut tiles in place.