

Tile Re-Roofing Flashing Details

Replacing an existing asphalt shingle, cedar or pine shake, or other type of short service life roofing material with a long service life concrete roof tile is becoming very common. When a homeowner has a concrete tile roof system installed, they are actually having two complete roofs installed. The membrane, flashing, counter-batten and batten understructure being one completely integral roof; and concrete roof tile with a second layer of roof flashings and vent flashings being another completely integral roof system. Compared to a typical single material roof system, there are twice as many flashings and it is very important that the proper installation methods be used when installing these flashings.

For re-roofing applications, it is important that the existing step and wall flashings in particular are carefully left in place during the roof stripping process. These pre-existing flashings are already installed under the wall cladding material whether wood, fiber cement or vinyl siding, stucco, brick, stone, or some other cladding material that you would prefer not to remove. As well it is quite common to re-use the plumbing stack and bathroom/kitchen fan goosenecks again under the tile at the membrane level.

Once the old roof material has been stripped off, it is a good roofing practice to run your new membrane well under the step and wall flashings at the roof level. All plumbing stack flashings, goosenecks, B-Vents, etc. should be shingled into the membrane for proper drainage, with the top of the flashings covered by the membrane and the bottom of the flashings left on top on the membrane. A layer of peel and stick membrane can then be used as an additional membrane safeguard around the top and sides of these vents. An additional layer of peel and stick (about 18" wide) should be worked under the step and wall flashings and be stuck onto the top of the other membrane layer - that has already been worked under these pre-existing flashings. The step flashing should then be carefully nailed in place on top of this peel and stick layer, starting at the bottom and adjusting any pieces that have slipped down the roof to ensure proper head lap coverage is maintained up the entire side of the roof slope. The wall flashing should also be nailed down into the peel and stick membrane to keep it tight to the roof deck.

All pre-existing roof air-vent holes into the attic should be sealed off with either plywood or a suitable metal cover and then covered with membrane. They will not be of use in the re-roofing project as they will be in the wrong place and will be the wrong size for the under-tile vent collars. New air vent holes will be cut into the membrane level and the under-tile collars shingled into the membrane once the strapping is completed and the tile is in place up to the air vent level. These air vent collar holes (usually a 4"x20" hole – 55sq.in net free ventilation) are not cut into the roof until ready to tile over them, to avoid moisture directly entering them before they are covered with tile during a rain storm. They are usually cut into the roof between the top batten and the one below it or else between the second from the top batten and the one below. The air is vented from the attic cavity through these under-tile attic vent collars – which are not visible except from the attic once the tile is completed. The air is then vented from the under-tile rain screen batten space into the atmosphere through either a proper tile vent which replaces one tile, and is usually installed beside rather than directly over these under-tile collars, or through a ridge ventilation system such as Flex Vent. This would be installed by being attached to each side of the field tile with a butyl peel and stick tape and run over the 2x2 ridges or hip boards build up. The ridge or hip cap is then installed over it with each cap piece being caulked onto the one

below it and nailed in place over the Flex Vent. The gaps between the caps and the field tile will then serve as the second tile air vent.

The membrane level gooseneck flashing top will be cut off leaving a 1" flange when tiling up to that level, and then a proper lead based tile level gooseneck flashing will be installed directly over this vent. The insulated pipe from the kitchen or bathroom fan or the dryer should be well attached at the sheathing level and come into this second vent. Remember, all tile roof protrusions need two vents; one at the underlay level and a proper lead based tile vent flashing at the tile level over the bottom flashing. Always use proper lead based soldered tile vents at the tile level, and proper shingling type vent collars at the membrane level. Attempting to adapt vent flashings not designed for a tile roof such as neoprene or aluminum plumbing boots, regular non-lead based B-Vents, cutting a hole in a piece of lead and caulking around the plumbing stack, etc. shows poor judgment and will result in a needless maintenance item or worse down the road.

The membrane level step and wall flashing will have already been completed using the old pre-existing flashings as described above, and then a re-roof channel flashing is usually used on top of the old step flashing. It will be installed at the deck level and then the field tile will be carried over it, leaving a 2" channel from the wall clear. On re-roofing applications a shorter channel flashing (usually 3" up the wall) with a gum lip bend to receive the caulking is generally used. This is caulked to the existing wall cladding material, and then a re-roof counter flashing is attached over this caulked joint and attached to the wall only. This counter-flashing is also caulked on the top edge for double caulking protection. It is very important that a wall counter-flashing be used at this point as the movement differential between the wall and the roof deck will likely crack the gum lip caulking seal on the channel flashing, and the counter-flashing also protects the channel gum lip caulking from the sun's UV rays. The same counter-flashing procedure applies to the wall flashing when re-roofing. Also, on Estate tile roofs a vented estate wall flashing filler is used to vent the under tile area and to keep vermin out. Always remember the minimum lap when adding a second piece of valley or channel flashing or for a transition flashing is 6" (150mm).

On non-rake tile installations, a gable parapet wall is sometimes used, and a 17" long step flashing is then installed over the tile and up the parapet wall. The parapet wall is then counter-flashed. Lead or Flex Flash (a butyl backed peel and stick coloured aluminum flashing) can also be used for tile step flashing. With any tile step flashing system, the exposed portion of the tile step flashing should be over bent to form a tight connection to the tile, then caulked to the tile and step flashings should always be counter-flashed.

Valley flashing for tile is usually deep trough valley flashing, having a minimum step height of $\frac{3}{4}$ " (20mm), a minimum lower deck level contact width of 6" (150mm) from the valley centre line to the step on each side (12" total) and a minimum overall width of 18" (450mm). It should be laid directly on the 36" peel and stick laid under it and supported by the 1x4 valley support battens run parallel to the centre line on each side of the valley. Tile should be cut back a minimum of 2" from each side of the valley flashing centre line (4" total clearance. Great care should be taken not to cut into the valley flashing when cutting the tile with a diamond blade.

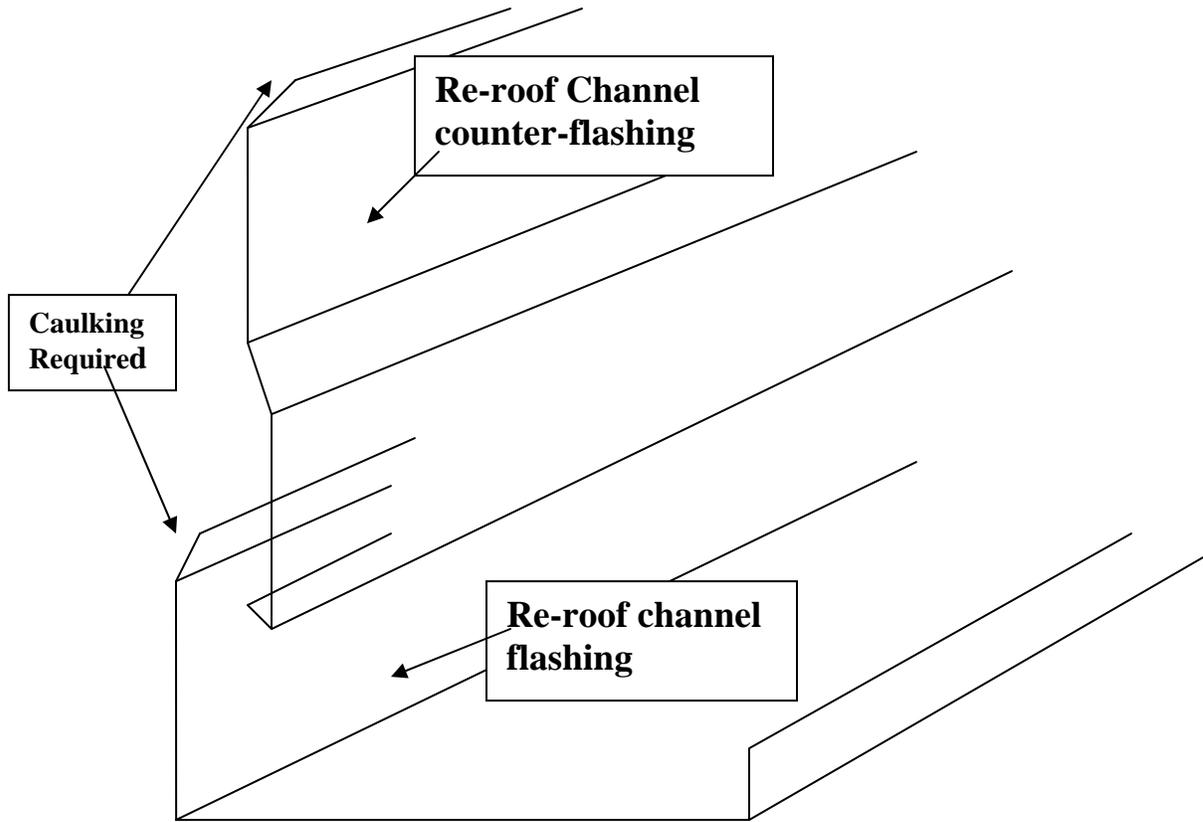
Starter flashing should always go completely unblocked around the entire eaves of the roof. Once it is installed against the 2x2, it can be cut back where it rises off the roof and folded under channel and valley flashings, but the bottom section that rests on the roof deck and the lower lip that goes into the eaves trough should not be cut. On Estate vented starter flashing, it is designed to be started about $\frac{3}{4}$ " past the right gable end. This will allow for a full tile to go up the gable without projecting past the gable and interfering with the rake tile installation. When joining these vented starter flashings, it is very important that an accurate 30cm spacer be used to ensure that there are exactly 300 mm between the last tile stop point on the attached piece and the first tile stop point on the piece you are installing and laying out.

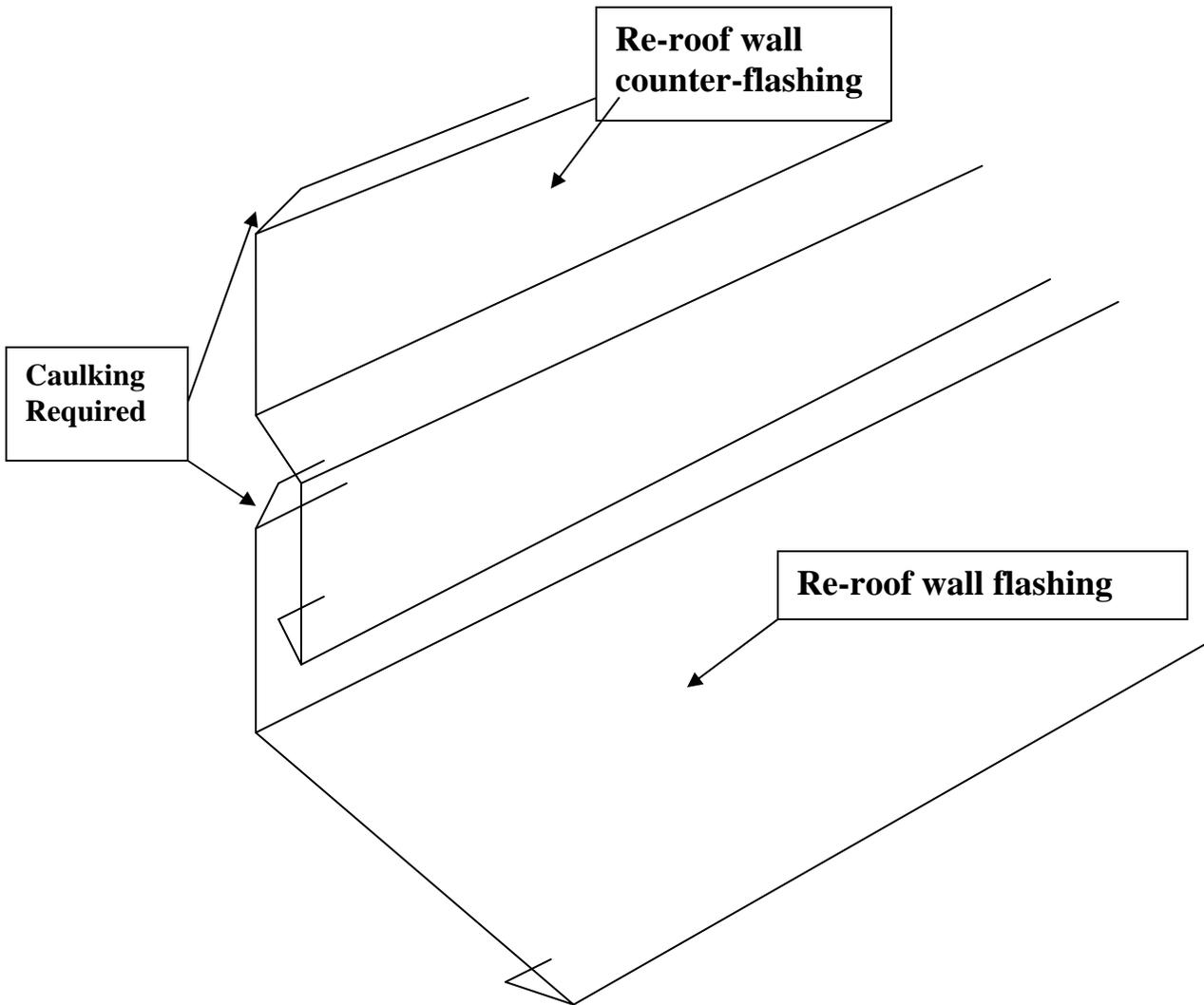
Any channel, or valley flashings that do not drain off the roof into the eaves trough (always remember to cut a "kick" into the bottom of your channel or step flashing), will require a lead or butyl backed metal transition flashing to take the water from the roof deck level up onto the tile level below it. This is especially important at the bottom corners of chases and where a wall ends with a canopy coming across it. Channel and Valley flashings should be stopped well before the corner to allow room to ramp up the lead transition from the deck level to the top of the tile level (about 3" higher). The lower the slope the larger transition area needed. It is also very important to place support blocking under these transition flashings. Building a ramp with a small piece of 1x4 or caulking some loose tile pieces in place under the lead to prevent the lead from sagging over the years is the most common method. Also ensure that the under-tile edge of the transition flashing has been folded up the keep the drainage water from spilling over the side of the lead and onto the roof deck level rather than onto the tile level as intended. Always picture pouring a pitcher of water above the transition flashing to make sure you have achieved appropriate drainage.

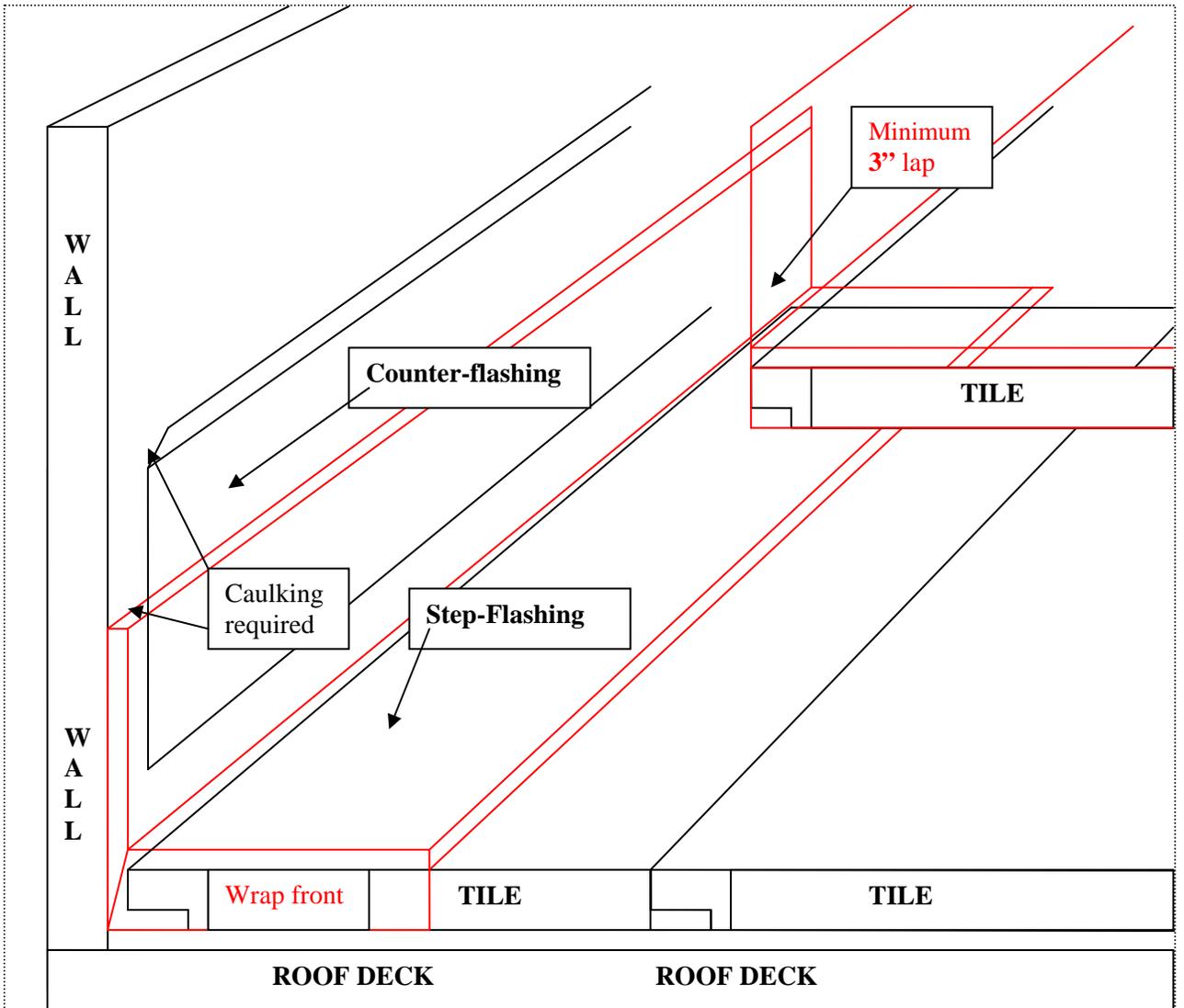
When installing a back pan behind a chase or other trouble area, always ensure that it goes high enough up the roof so that if a level were to be taken from the back edge of the back pan to the back of the chase it would be at least 6" up the chase on a chase width up to 3' and then add an extra 1" per extra 6" of chase width to this calculation. (E.g. 4 ft. chase width = 8" height up the chase back). Also ensure that the Back pan flashing extends at least 6" past the edge of each side of the chase.

When using Estate or Lightweight Estate tile and coming to a gable end, if the tile ends up with a down-slope that drains into the gable, a piece of rake channel should be used to drain any potential water leakage away from the 2x2 and off the roof into the eaves trough. This is usually on the left side of the roof, as you will have started with a whole tile at the right side of the roof. Rake channel flashing should also be used when you encounter a flared gable (small overhang at the bottom and larger overhang at the top) as the rake tile will not fit on top of the tile in this situation and you will have a space between the rake tile and the field tile. This space should drain into the rake channel flashing and off the roof into the eaves trough.

Diagrams of various re-roofing flashings:







When using a step flashing type detail with tile; flashing must go at least 4" up wall if counter-flashing or 6" if covering with membrane and cladding, go 6" wide over the tile, and up over the entire tile surface and wrap down the front of the tile. Wall side must be either covered by cladding or counter-flashed, and tile portion must be tight to tile and caulked to tile surface. The next tile is then installed with the code minimum 3" overlap which thereby insures at least a 3" flashing overlap when the next layer of step flashing is installed on the next tile.

For additional information on Unicrete Concrete Roof Tiles Contact please the Unicrete office.