THE PERILS OF THE PARAPET CAP

It rains in the Northwest. No really, it rains in the Northwest a lot. As a result we may be just a little more sensitive than contractors in Scottsdale or Palm Springs, to elements of the exterior envelope that seem to represent a repetitive source of water intrusion when not installed or maintained properly. We understand that when it rains in Scottsdale it can come down in buckets, and that is not good, but then there is a really, really nice period of drying that extends from January 1st to December 31st. When it rains up here everything stays wet from October 11th through July 27th. It's that constant wetting and lack of drying that can make even the smallest penetration a catastrophe in a short amount of time.

Our residential architecture compensates for this constant wetting by using pitched roofs with nice overhangs that afford a significant amount of protection from the elements. Our commercial structures are not afforded that luxury. There are very few multi-story commercial buildings with a nice pitched roof and large overhangs. Ninety-nine percent of commercial buildings have a semi-flat roof which means that there are no overhangs. Instead of those great overhangs, one of the first and very important lines of defense against water intrusion is that disreputable metal parapet cap. I firmly believe that of all building elements the parapet cap is often the most responsible for extensive water intrusion.

This can be very frustrating, especially to the stucco contractor. Generally one of the last flashing elements to go onto the structure is the parapet cap. One of the least maintained and often poorly designed elements is also the parapet cap. If there is a water intrusion issue it is generally blamed on the roofing contractor or if it appears to be originating at the wall assembly, the blame goes to the cladding or stucco contractor. You know, that little hairline crack that is barely noticeable must be the culprit. After all, it's a crack in the cladding and we all know that a crack means that it must be the source of the copious amounts of water intrusion.

It always starts out that way. What the property owner fails to understand are a couple of facts. The first being that the amount of moisture that can pass through a hairline crack in stucco is generally insignificant and if water were to penetrate the stucco cladding the *water-resistive barrier* would provide a pathway for the incidental water to drain from the system without any detrimental affects to the envelope or structure.

The real problem arises when a flashing element fails and allows copious amounts of water to enter behind the stucco cladding. Our standard three coat stucco over building paper has been proven to perform very well when incidental moisture penetrates the system. But none of the elements within a stucco assembly can be expected to perform as designed when extreme water intrusion occurs.

NORTHWEST WALL & CEILING BUREAU
2825 Eastlake Ave E. Suite 350 | Seattle, WA 98102 | **tel** 206.524.4243 | fax 206.524.4136 | info@nwcb.org
www.nwcb.org

One example of this is the venerable 30 or 60 minute building papers. The building papers perform as designed unless they are subjected to prolonged exposure to water. When prolonged exposure occurs the building papers begin to break down. One of the worst cases I've seen was behind a vinyl sided building where the constant exposure to moisture rendered the building paper to mere remnants. I guess you could say that the building paper failed, but really it did not fail. It was subjected to conditions beyond its designed performance capabilities.

Let's take a look at a few examples of ***why stucco leaks***.

Photo 1 shows the parapet condition when the stucco contractor was called to the project to explain why his stucco system wasn't performing properly. Really?

Photo 1

Photo2 below shows the condition of the head of wall when the parapet cap was removed. Note the condition of the wood and, of course, the absence of flexible flashings. The wood was not rotted because the water would drain down into the wall and would have somewhat of an opportunity to dry. The parapet cap clips are meant to hold the cap in place but at some point this cap became dislodged from the clips. The solution, as you can see in photo 1 was to nail the cap to the head of wall.

Photo 2

In photo 4 you can get an idea of just how far the return of the cap is from the stucco and between this photo and photo 1 you can see how short the return leg on the cap is. And of course there was no sealant between the stucco and the cap.

Photo 3

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As you can see in photo 4 the maintenance crew was diligent in caulking the intersections of the flashing to the stucco. Evidently the term "saddle flashing" meant nothing to those that either designed or fabricated the cap.

Photo 4

What would you say if you saw the condition in photo 5 on your building? Some would say that the stucco failed and allowed sufficient water to enter through the crack to the extent that rusting of the lath or accessories occurred.

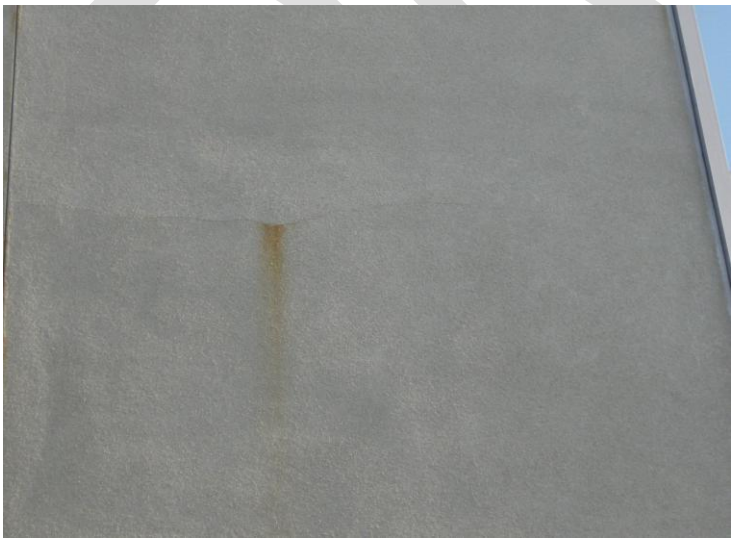

Photo 5

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In reality what has occurred is that a short distance above this crack was the parapet cap. The cap was in such poor condition that during prolonged periods of wind driven rain, water was forced under the parapet cap where it concentrated and began running down between the WRB and the back side of the stucco. The amount of water intrusion was so great, remember this is Washington, that the system was unable to properly drain or allow for periods of drying, and consequently rusting began to occur. The source of water intrusion was not the crack, the crack was a source of expulsion. The rusty water clearly indicates that the rust was occurring above the crack and then being flushed out of the crack.

Again, was the rust caused by a failure of improper accessories or poor galvanizing or….? Again I would contend that the cause was an improperly installed or maintained parapet cap that allowed concentrations of water into the assembly beyond the designed capabilities of the stucco assembly elements. Had the parapet performed properly and prevented water intrusion the paper would have never failed, the rusting would have never occurred, the crack, which likely occurred from frozen water behind the stucco, would not have formed and the stucco contractor would not have wasted his or her time and money defending the installation or components.

So what is the answer? Do we design our assemblies anticipating that other components will fail or do we hold those actually responsible for the failure, responsible? I guess it's pretty obvious where I stand, accountability. We can continue to make a better mousetrap but these bigger and better mousetraps come at a higher cost. That's all fine. Let the designer and owner decide what system they want and how much protection from the ***"elements"*** the want to design for. But we also need to remember that even though there will always be good, better, and best, ***good really does work*** when everyone does their job correctly.

Terry Kastner
Technical Consultant CSI, AIA
Northwest Wall & Ceiling Bureau
www.nwcb.org