

**State Preservation Board**

**Texas Capitol Roof Replacement and Rehabilitation Update 5/2/2023**

The gutter at the center and south wings is largely done.

Certified solderers are carefully sealing each joint in the metal to make them watertight.



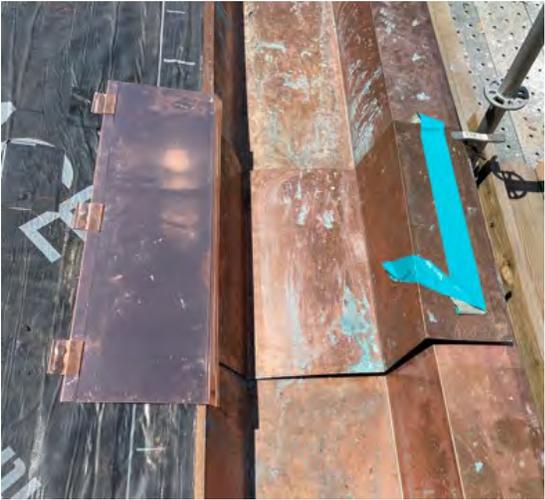
Much of the gutters are being soldered in pre-formed in jigs off the roof, to minimize fire risk from being soldered directly on the historic wood deck.



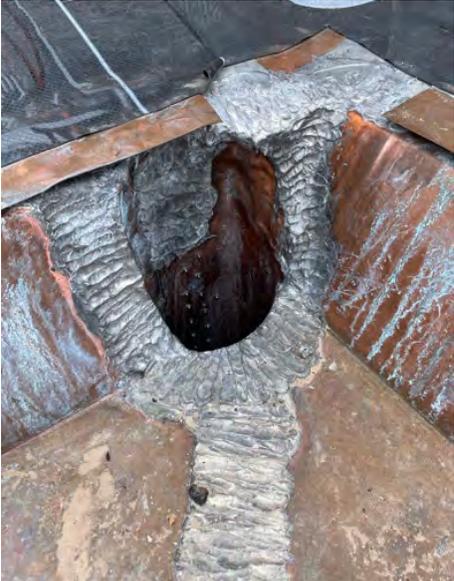
The outside edge of the gutter will be slightly lower in profile than the 1949 roof.



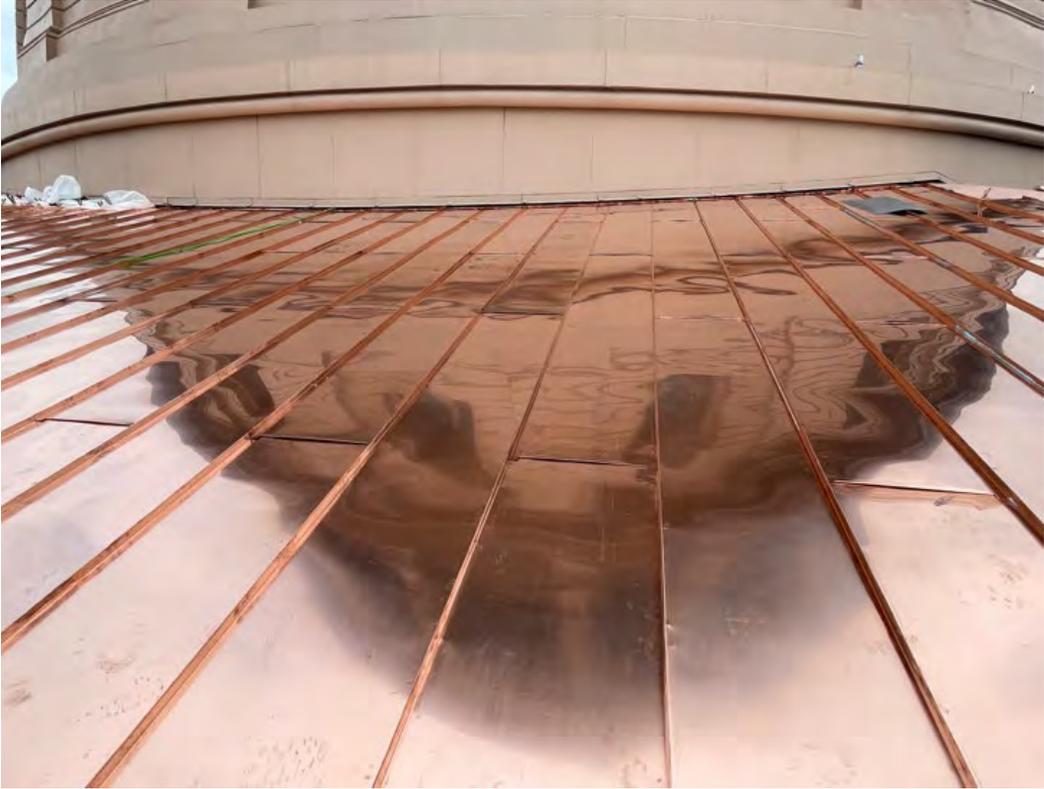
Special joints are required in the gutter to allow for movement, since adding downspouts in the historic granite walls is not feasible. These are being protected from UV, hail, and pests with removable covers which allow for inspection. These are expected to last 25-50 years, but will be one element of the roof requiring replacement before the rest of the copper roof.



Some of the downspouts fall in inconvenient locations relative to the gutter, requiring custom fabrication at each location to tie them in.



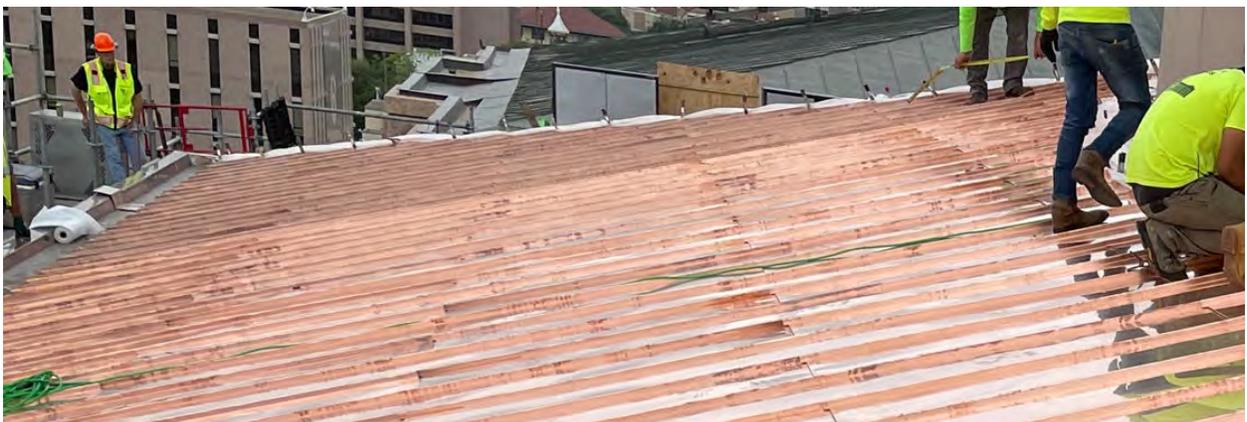
Standing seam roofing is being placed at the west side of the dome, and will continue around the dome in the coming weeks.



The copper is darkening quickly. Rain and dew is accelerating the process. In the image below, the shiny section beyond was placed in the afternoon after a rain. The darker section in the foreground was placed that same morning.



The darker section can be seen in the distance, here, to see the difference one rain event makes.



It is important to note that modern detailing in the copper roofing industry was just beginning to be standardized and documented in the 1940's, while the last roof was placed. The new roof applies modern technologies that will change the appearance slightly.

The new standing seams will be about ¼" taller than those on the 1949 roof, on average, to meet modern industry standards and prevent water from penetrating these mechanically closed joints. The older joints have also been bent and beaten down by 75 years of foot traffic and hail. That difference is more noticeable than the other main difference: that the current pans are 18" wide, while the 1949 pans were 21" wide. Again this applies modern standards for a more durable roof. (The 1888 pans were 24" wide, which may be part of the reason the roof leaked on opening day.)



The new standing seams are being wrapped with an overlap to seal them from wind-blown rain,



An improvement on the 1949 roof, which left open gaps at the end of each seam.



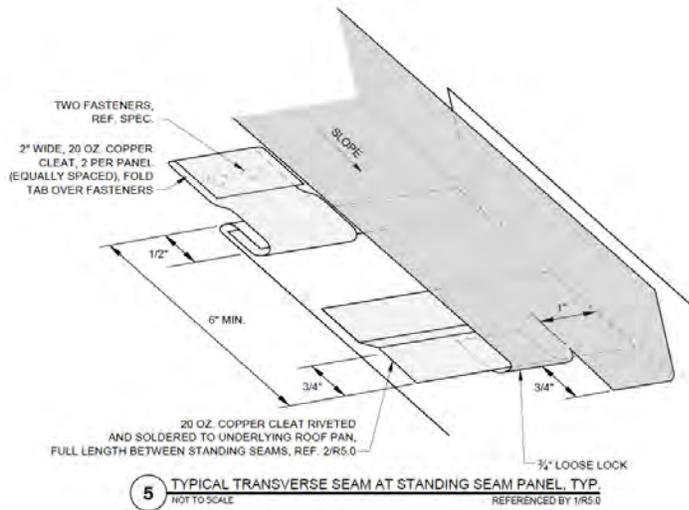
The “transverse seams” (perpendicular to the standing seams) will be more pronounced than in the 1949 roof, which had very tight, 3/4” flat seams.



The new seams are 6” deep and slightly open to allow for movement, while still preventing wind-blown rain from penetrating the metal sheathing.



While these look like open gaps, they have a fully soldered cleat  $\frac{3}{4}$ " inside the seam, raised and clamped seams at the sides, and 6 inches of space to capture any water that may be driven in the narrow gap at the sides.

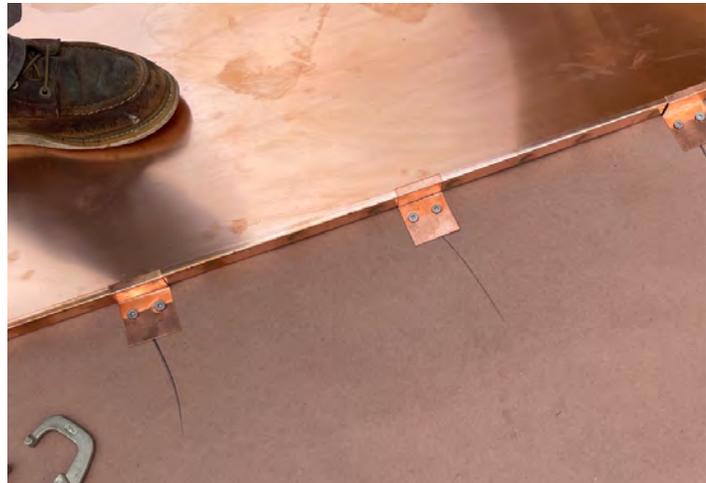


Each 10 feet length of metal “pan” can expand and contract up to  $\frac{1}{4}$  inch in temperature extremes, which adds up to a lot of movement on a roof this size between a 0 degree day and a sunny summer day when the roof surface can reach 150 degrees. Some of the “cleats” which hold the standing seam to the deck will allow the roof to slide underneath, others will hold the pans tight to the deck, to control the direction of movement. Locations of fixed cleats were carefully selected to allow the large planes of roofing to move in a controlled way to minimize warping or “oilcanning” of the sheet metal, and minimize stress on soldered joints, as the roof moves around in temperature extremes.

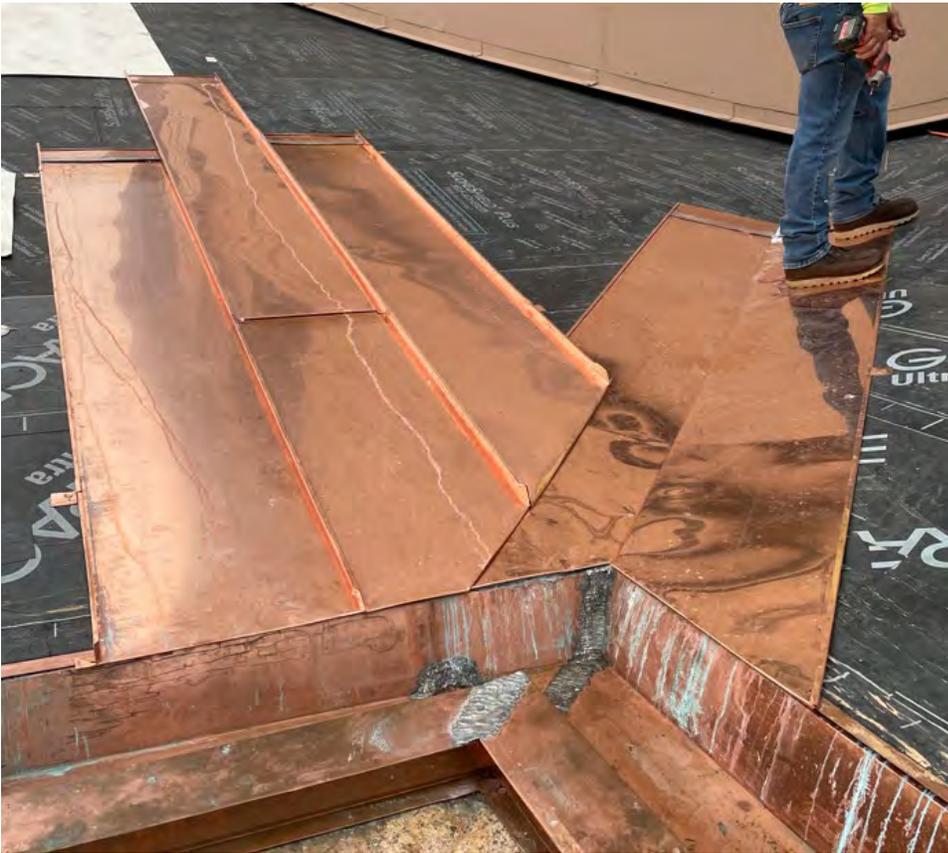
Expansion cleats:



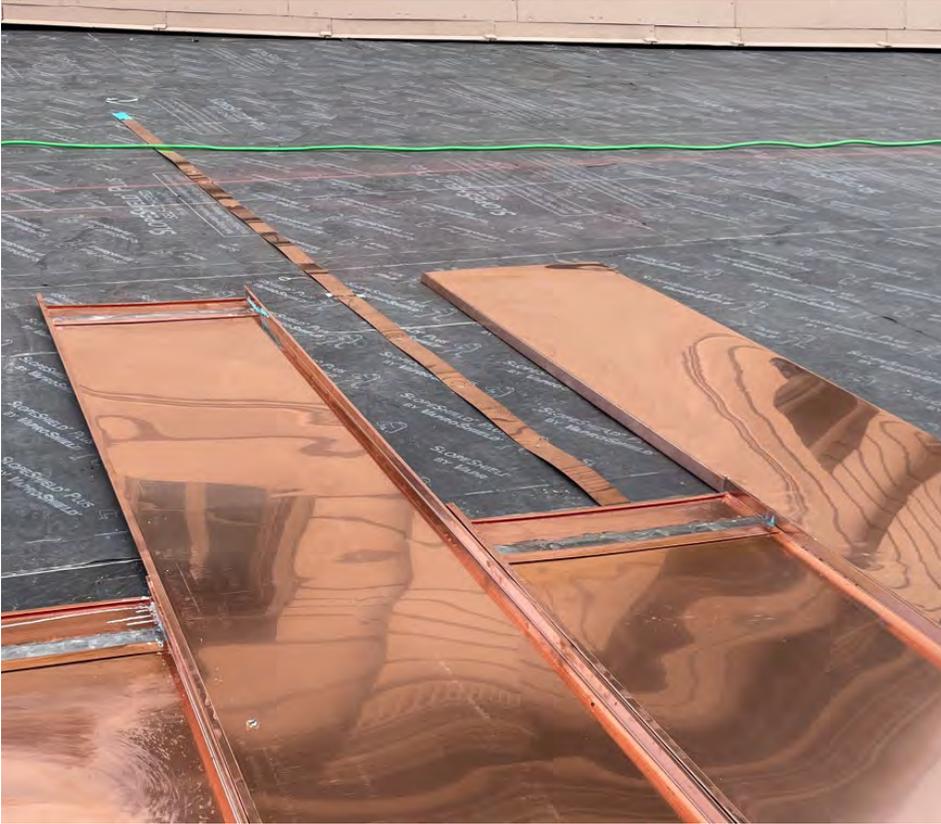
Fixed cleats:



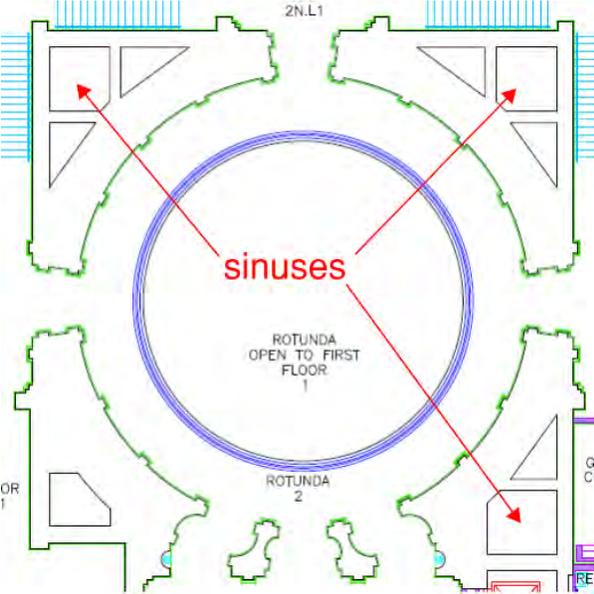
The work will continue to wrap around over valleys and ridges, which have been mocked up.



To ensure the roof copper is electrically grounded, properly bonded copper strips are being placed under the standing seam roof, passing through the roof deck at key locations.



After passing through the roof, the leads will be tied to vertical grounding wires inside the hidden corners, or “sinuses,” of the stone walls of the rotunda, which provide a straight path to solid ground, with the path protected by stone on all sides.



Fall protection elements are being incorporated into the roof for the first time, allowing for safe and regular inspections and gutter cleanings, and more affordable access for repairs.



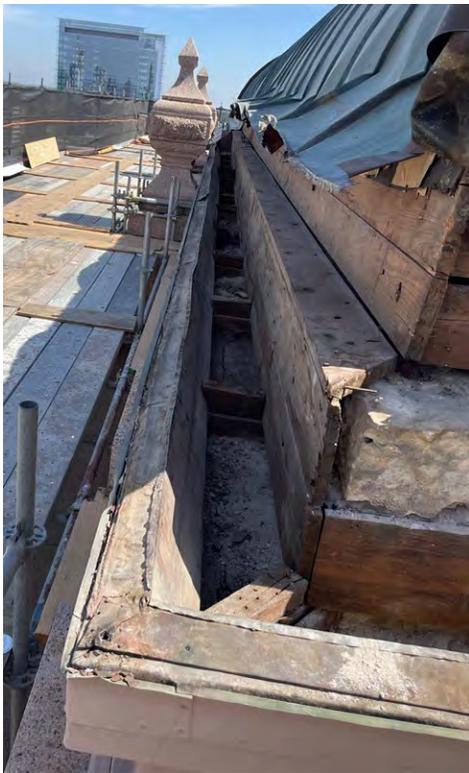
These anchors are being installed from below the roof, allowing them to be built into the historic wrought iron roof structure in a way that provides sufficient load capacity for their function. The anchors are removable, and the attachment points will be covered with low-profile caps when not in use, to minimize their visual impact.



The east wing has been fully scaffolded and work should begin there in about a month. Details are being finalized for the unique geometry of the four corner pavilions, or “louvre domes” as E.E. Myers called them in 1882. Their unique shape is one of the character defining features of the Capitol roof, reflecting echoes of the building’s original Second Empire design style.



The opportunity is being taken to improve uplift resistance on the structure, which currently is 1888 wood framing in rubble limestone masonry.



Also, a rare opportunity will be taken to restore the corner pavilions to their 1915 appearance, which is the historic “period of significance” of the Capitol, when it still retained its original design features but had early design details added throughout the Victorian period.

Original detailing, 1888-1948:



Courtesy of the Texas State Library and Archives  
TSLA\_1\_103-46\_West\_Facade\_c1888-1891.tif

Current, simplified design from 1949

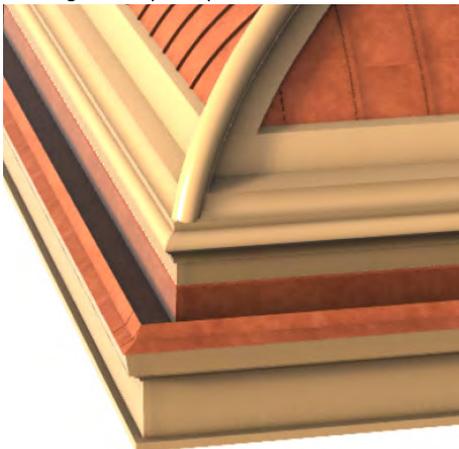


Effect of the painted trim:



Courtesy of the Austin History Center  
AHC\_C1040\_PICA\_06327\_Aerial\_of\_Cpitol\_c1925.tif

3D design mockup of replacement trim:



Stay tuned for future updates!