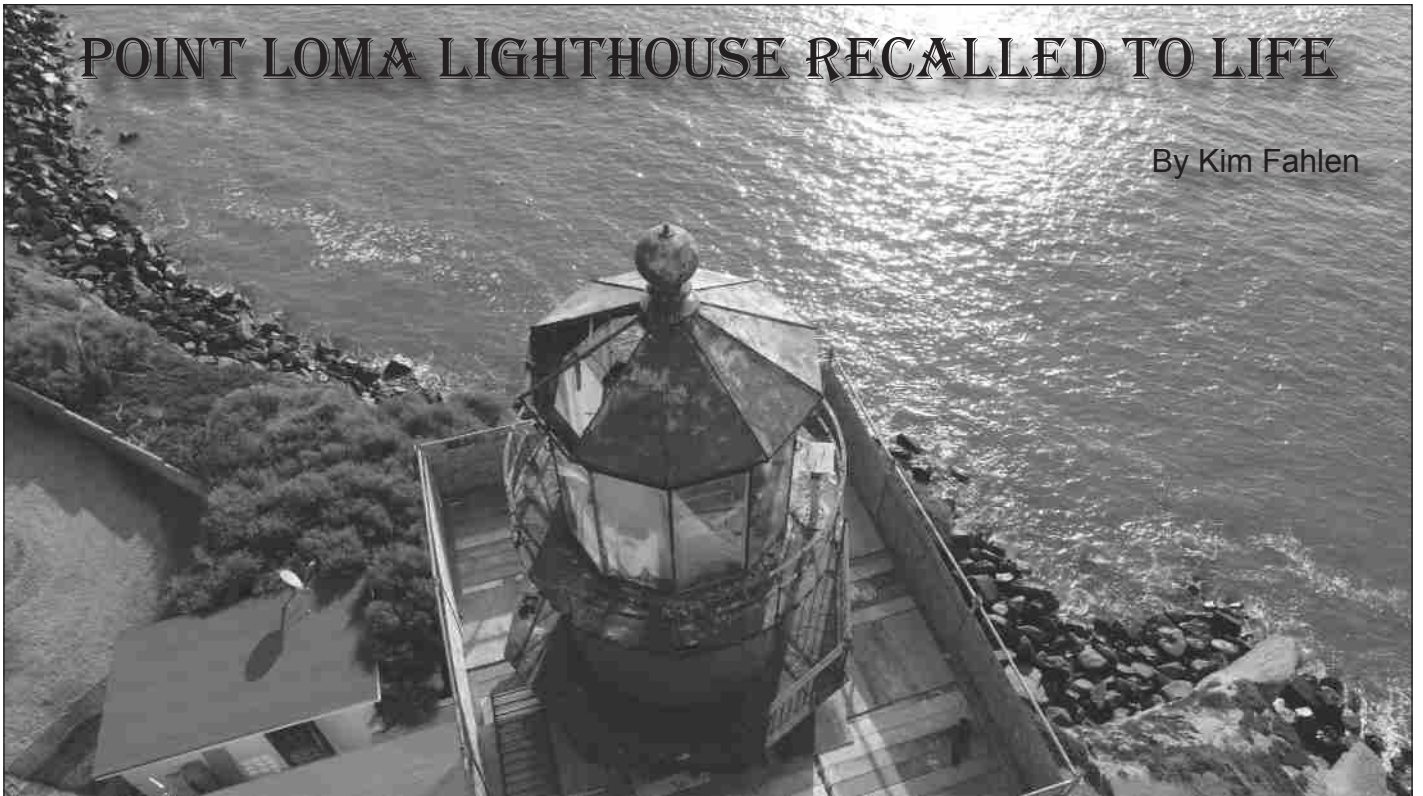


POINT LOMA LIGHTHOUSE RECALLED TO LIFE

By Kim Fahlen



Early demolition reveals why the original USCG assessment and scope of work would be significantly altered. Drone image courtesy of Ryan Strack.

It's a gift. A job like this is a gift." So uttered the contractor in December 2019 nearing the end of a project his company had undertaken just over two years before.

J. Neil Gardis, vice president and project superintendent of 'Ohana Industries, Ltd., and Mary Ann Gardis, company president, were awarded the prime contract for restoration of the lighthouse at the Point Loma Light Station in San Diego, California.

Seems Gardis was the gift to San Diego. As a diversified federal contractor, Gardis's lighthouse restoration experience has come by way of the Hawaiian lighthouses of Barbers Point (Oahu), Makapu'u (Oahu), Kalaupapa (Molokai), and Kilauea Point (Kauai).

Before going on, let us be clear that the lighthouse involved here is the 1891 (hardly "new"), still-active, skeletal-style lighthouse on the low tip of Point Loma known as Pelican Point—not the 1855, Cape Cod-style lighthouse called the Old Point Loma Lighthouse belonging to Cabrillo National Monument.

After years of fearing it would never happen, somehow, funding was granted by the U.S. Coast Guard (USCG) to



Right: The lantern comprises two levels. The upper "lens room" is now removed, leaving the barrel of the "watch room." Drone image courtesy of Ryan Strack.



Left: Before its removal, damage shown here on the underside of lantern gallery decking is typical of the condition of much of the cast iron of the lighthouse. Restoration required an estimated 20,000 pounds of recast iron components. Courtesy of Ryan Strack.

Below: Now see the striking finish of the recast deck plates as Ryan Strack and Kevin Goodman apply the final coating. Two scaffolding levels are gone so the beautiful lantern is finally exposed! Photo by Kim Fahlen.



Below: With lantern removed, deterioration is impressive. This cracked top level of the rusty white stair cylinder will be replaced. Stairs lead to the lantern watch room where just one floor plate remains. Support beams still carry the lower gallery deck plates, all of which will be recast. Courtesy of Ryan Strack.



Above left: Revert to the watch room floor, sans black barrel, circled by lower exterior gallery plates. Looking at the central support column left of Ryan Strack's head, note the fracture (close-up left) where it separates from the deck. The circle above it is the footprint of the Fresnel lens pedestal. Courtesy of Neil Gardis.





Above left: Easing into its mate underneath is the first recast cylinder wall plate. Note stairs on right, which soon will be encircled and out of view from outside after five companion wall plates are bolted together. Courtesy of Kim Fahlen



Above right: Recast stair cylinder wall panels are in place and new architrave (support) beams are accepting the new deck plates. Courtesy of Ryan Strack.

restore its Point Loma Lighthouse. Why? How? Perhaps, and with respect, it could be said “location” and “command.”

The initial USCG assessment for restoring the lighthouse had called for abrasive blast cleaning of rust and old coatings on the entire tower, repainting, and removal and replacement of a few random components.

Multilevel scaffolding was constructed around the lighthouse tower, which for many months was wrapped in plastic sheeting that enclosed the blasting particulate. Blasting work was subcontracted to the R.W. Little Company of San Diego. Then the prepared surfaces were given a sacrificial generic paint to avoid “flash rust” during structural and cosmetic repairs. A second round of abrasive blasting was performed before the final coatings were applied. Ultimately, the entire structure received multiple layers of marine epoxy prime, intermediate, and finish coatings.

As Gardis and his crew, Ryan Strack and Nick Bliler of San Diego, began lantern disassembly, it became evident that the condition was far beyond USCG anticipation and that the Scope of Work was significantly incomplete. Gardis sent a quantitative report with a Revision of Work to the USCG design office. There was no mechanical way to replace just some of the 16 exterior gallery deck plates. A multitude of cast-iron components would require complete replacement—be “recast” as the terminology goes—about 20,000 pounds of it.

Of course, this added delay, just as rain did for two winters. The multiple coatings required specific temperatures, humidity, and time to cure.

The entire lantern—watch room and lens room—demanded complete disassembly and nearly all new castings. Also recast was



At least 100 new castings were created for renovating the lighthouse tower. Nick Bliler and Ryan Strack are about to uncouple from the crane another exterior gallery plate. Each weighs roughly 180 pounds and there are 16 of them. Photo by Kim Fahlen.



Above: Architrave now seen from underside with its striking white against the black. Photo courtesy of Kim Fahlen.

Top left: Old support beams are in process of being removed and replaced, one at a time. Ruddy coloration is a temporary protective coating applied to most of the structure following the initial blasting that removed old coatings and rust.

Left: For many months the scaffolded structure was enclosed with plastic sheeting, looking like a big marshmallow from across the city. Here are the new beams and corner castings of the architrave, now dressed in primer. Photos courtesy of Ryan Strack.

Top right: Ryan and Nick steady the roof frame as Neil drives it to the waiting crane. The top chimney section is original, as can be recognized by pockmarking around it.

Facing page, top: Looking tiny in the air, the roof frame is about to meet its 10 upright rods. Some uprights were fractured but reusable after repair in Neil Gardis' Morena workshop. Last two photos courtesy of Kim Fahlen.

Facing page, bottom: Contractor Neil Gardis is prepared to ascend with the fine copper vent ball and its lightning rod, which Nick and he will soon happily install on the rooftop. Courtesy of Karen Scanlon.



What a day when the lighthouse was finally crowned with its copper roof and ventilator system! No longer needing roof ventilation of long-ago-used oil lamps, the opening was sealed. Tower doors were then given “shutters” to allow air circulation. The shiny copper began overnight to oxidize in the sea air, returning the illusion of a painted black roof. Photo courtesy Kim Fahlen.



the top echelon of the stair cylinder. Castings were fabricated by Gary and Eric Knappenberger in Jacksonville, Florida. It is an exhaustive, time-gobbling process requiring wood patterns and sacrificial sand molds for every piece. Fortunately, the original architectural drawings exist, so dimensions were taken from these. Delivery of castings was bit by bit, the last not until mid-2019.

It was important to USCG for restoration to conform to the original. Overall, it did. Minor changes were inevitable. The who-knows-when-it-was-added, ugly, and dangerous ladder for upper gallery access was not returned. Instead, a single-panel glass door in the upper lantern was created in a window slot for access. Originally, a 20-inch railing wrapped the upper exterior gallery. At some point in time, another section was added to heighten it to 40 inches. This was duplicated for safety. The prettiest bit is the return of white paint below the lantern, as it contrasts with the black of the lantern.

Study the images as they best describe various stages of work involved.



So tidy! Abrasive blasting away of old coatings and rusted surfaces have given way for today's sophisticated coatings. Inside the cylinder, stairs bolt to walls and central support, which before electricity, served as the clockwork-operated weight drop for Fresnel lens rotation. Photo courtesy of Kim Fahlen.



Replacing footings was the most difficult aspect of restoration. Once the weight of the lantern was gone, the foundation base plates were jacked, one by one in turn, but only by $\frac{1}{4}$ inch. More than that could not be trusted. It took 40- and 60-pound air hammers and a 1,000-pound "Come Along" to break and heave away the disk plates. Concrete under them had to be dug out in order to drill in three-foot steel anchors, which were then epoxied. Photo courtesy of Ryan Strack.

What were the most difficult aspects of the project? Engineering from experience, the team was more than aware of lantern precariousness. Periodic movement as the lantern was disassembled gave quiet concern, so mechanical impact and personnel movement had to be limited.

The base plate castings gave the greatest challenge. How do you get enough lift of the "Tinkertoy"-like legs to get old, corroded castings out and the new in? By trusting structural engineering calculations.

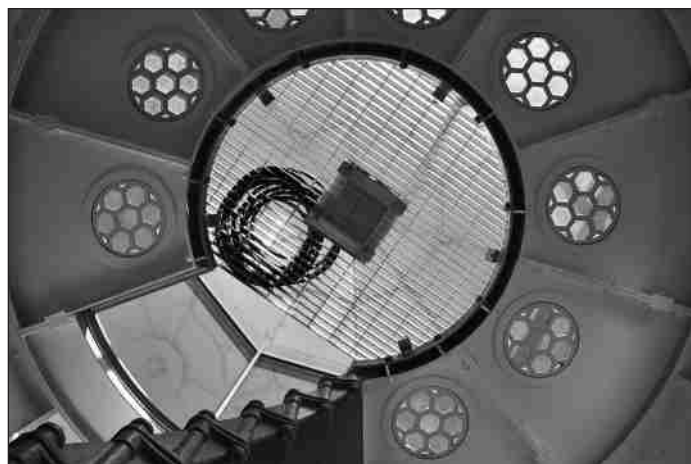
Asked why his ambivalence at the notion of a celebratory event for the lighthouse restoration completion, Gardis's thoughts wander to, "For many reasons, I've already enjoyed it. It's been a real neat challenge—the technical and logistics challenges from the beginning to now. We had to fill in the blanks. I'm not giddy, I had the right people working with me."

Though the project took two and a half years instead of six months, and \$2.1 million, the end result of this massive undertaking is a structurally sound, nearly new looking, and functioning Point Loma Lighthouse. On March 4, 2020 the ATON team, Sector San Diego, began installation of the solar-powered, eight-tiered LED array, VLB-44. Though hardly needing the lantern space once required by its big brother 3rd Order Fresnel lens, as of March 5—from inside the lantern—the handsome little optic shouts one white flash every 15 seconds. Point Loma Lighthouse is truly recalled to life!

Photos on back cover: Tension rods, turnbuckles, and struts. Some were recast, others, to a degree, were usable. They had to experience torturous blasting and wait for curing of multiple coatings to come to this.



Our feet would hurt and we'd lean, too, if standing in shoes worn as these! Deterioration of the foundation disk plates was severe and added to a three-degree lean of the tower. But somehow, it was a really sorry thing to witness these—and all the other cast away castings—in the boneyard after their 128 years of service.



Just as crowning the roof with the vent ball on the exterior gave a meaningful sense of pride of accomplishment, so, too, the seating of the deck prisms in the interior. Some original amethyst glass prisms could be saved and reinstalled in their circular frames. Many were too chipped and cracked to salvage, others were missing, so new prisms were fabricated. The coiled cable awaits USCG installation of the LED array. Then it will be a real lighthouse again! Photos courtesy of Kim Fahlen.

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