

## **CONSTRUCTION UPDATE**

**IN 2008**, the discovery of deteriorated corners of the foundation of the lighthouse behind the rip rap was made while climbing around the rocks. Additionally the landing platform had started to crumble and become undermined on the northeast and east side. Going thru the history in the National Archives some reports by keepers going back to the very beginning of the commissioning of the lighthouse that there was not enough rip rap placed around the lighthouse and especially the landing platform area and the back facing Huntington/Lloyd Harbor were discovered. The landing platform changed in design many times over the years and eventually became a poured concrete slab on top of rip rap. Not a wise choice as rip rap shifts.

When it came to the damage on the two corners that were able to be partially seen, a marine contractor had come to analyze the cause and degree of damage. After all, the Lighthouse was almost 100 years old and the upper structure masonry had been repaired once already, what could the foundation be like? This area of deterioration was under water much of the day and exposed to a different type of monster.

**OVER THE YEARS** the rip rap had shifted due to wave action, mild changes in the seabed, ice and so on. The big stone would chip the corners eventually allowing salt water to permeate into the concrete foundation and eventually reaching the rebar. When the rebar was exposed to the salt water for a bit of time, it would start to rust, therefore expanding times 10 and further breaking away concrete. This would continue on and on. The big question became how far had it expanded and damaged the foundation behind the rip rap where it couldn't be seen!

Marine contractors, who are specialists with under water foundations such as bridge work, were brought in to examine and render opinions. Several engineers that had experience with work similar to this were also consulted. The challenge began and the projected bill grew!

Estimate number one to repair the two corners and protect another, add some stone to the landing deck side and repair the landing deck was approximately \$220,000.00. This needed grant money! The first attempt at securing a NYS Matching \$250,000.00 grant was rejected.

Then a shocking surprise! The Caumsett Foundation who had been awarded a NYS grant decided they would not be using the funding and NYS advised the Lighthouse that they were going to award the requested \$250k grant! Lighthouse personnel were thrilled beyond comprehension.

At high speed, hardcore plans were started for the work by excavating rock away from a corner to examine the foundation up close and personal and get a better idea of what was being faced. This required the mobilization of a barge and a huge grapple in the dead of winter. This will never be forgotten because this was done between Christmas and New Years and it was freezing out there as those involved climbed around the rocks near the open corner to see the extent of the damage. The discovery - it was bad, but could have been a lot worse! Little did was it known that this corner would remain exposed without the rock around it for the next two years as the additional funding needed was raised. The exposed corner was a larger than life visual as tourists got off the boat when visiting the lighthouse. It was advantageous for them to see what was being faced!

There were three ways to address the foundation repairs:

1. The cheap way of just doing the corners - \$300-\$350,000.00
2. The much better middle of the road way - about \$615,000.00. (Repair three sides and repair the existing landing platform)
3. The complete and proper way - approximately \$1,000,000.00 \*\*\*. (Completely encase the lighthouse 360 degrees with steel sheeting and build a new landing platform). Add rock but most likely the original estimate of 650 tons might not be needed if done this way (The rock would be an additional \$175k)

Each way of repairing required the following:

- Removal of the rip rap (either corners or sections etc. depending upon which of the three solutions for the repairs we were going with)
- Examine the foundation, cleaning, removing unstable concrete and compromised rebar.
- Repairing salvageable rebar thru grinding and epoxy coating.
- Installing new rebar where needed in the foundation and building up all new rebar for the new expanded foundation.
- Placing new corrugated steel sheeting around the lighthouse that interlocks together.
- Moving stone back to the base of the sheeting for further support and backfilling it with concrete.
- Coating the steel with a protective paint that also helped covered the black steel sheeting so it aesthetically blended in with the existing foundation and stone. Then painstakingly restack the rock back around the foundation. Rock by rock.
- Additionally in all of these proposals another 650 tons of rip rap was needed to further protect a few sides of the lighthouse after the work was done. (A mix of 2-6 tons of boulders)

After the price tags caused some breath holding, the middle of the road - three sides solution - was embarked upon. This would total out at approximately \$785,000.00 including the rip rap.

**Construction started in June of 2016** with the mobilization of two large barges and lots of excavation equipment. It was originally estimated to be 4 months! Two years later, almost to the day and many issues along the way we have finished!

**During the summer of 2017** while they came across the homestretch (the 3rd side and last side) when removing the rip rap at the end towards the corner, the domino effect suddenly happened! Half of the landing platform on the fourth side (which was already in bad shape and in need of repair) collapsed leaving no way to board the lighthouse!

Finishing the project now had to be the "Rolls Royce" way - the million dollar way. There was complete panic wondering where the money would come from in such a short amount of time - a month!

Solution - a matching grant that had been applied for with the Gardiner Foundation for \$145,000.00 was able to be revised. Most of the match had already been obtained. The lighthouse

lovers went into high speed over drive and bingo....Success! Construction continued without a break!

Construction was continuous with many breaks for weather in the two years not to mention some vandalism. Both winters provided long breaks due to ice, severe winds and cold. This caused removing the barges for the safety of residents and staff many, many times...sometimes stuck in the only suitable safe haven within close proximity for two months until they could be taken back out to the lighthouse. Thank you Wincoma!

Although the shock of being moved up to the Rolls Royce solution for the repairs was hard to swallow - it was the right and only proper way to go about it so that she can stand tall for the next 100 years!

The foundation repairs with the new encasement of steel sheeting and concrete have been completed 360 degrees around the lighthouse. A new landing platform was built on top of helical piles with rip rap stacked underneath. The Lighthouse is accessible and opened to the public! So what's left to do? To complete the foundation plans in total, it is required to add approximately another 350 tons of rip rap as soon as possible to further protect the areas that are lacking in stone.

Anything else you ask? New windows, upper structure masonry work and then surely the list will grow but nothing as large as the project just completed! After all, it is a house and like yours, will always need work. It's just a little more complicated by the fact that it sits in the middle of the water!