



Working with contractor Mike Vilegi and the DEC, in May 2019 the Friends of St. Regis Mt. Fire Tower completed a project to replace all 24 cross braces on the tower.

Restoration 2015 - 2016



In 2016, 1½ years after the Friends adopted the tower it was opened for the first time in 26 years. In retrospect, after opening the tower we discovered that many people thought we were done with the restoration. The fact that the braces were in poor condition meant that the tower still needed major work and could be closed again if deemed unsafe.

DEC Inspection Report – 2013



24 braces = 48 ends
46 ends in failure

The 2013 DEC Inspection Report identified the problem, but did not detail the extent of the issue.

The Friends originally planned to have the DEC undertake the brace replacement project, but due to issues such as bidding and sole source contracting it became apparent that it would not be a speedy process. Thus, the Friends decided to take it on. Note from this slide that the brace failure is directly related to an original manufacturing error in which the steel within the folded ends did not receive proper galvanization.

Nuts & Bolts



Hot Dipped Galvanized

A325 Structural – Engineer Recommended
Readily available - **\$110**

Grade 5 Square Head – Region Requested
Custom tapped and hot dipped - **\$1,282**

In the Inspection Report, the DEC engineer recommended using Structural bolts and nuts which are readily available.

At the 2016 FFLA conference a representative from Region 5 informed us that Grade 5 square head bolts and nuts should be used in order to duplicate the original hardware. At the same time he acknowledged that such hardware may not actually exist as a hot dipped galvanized item.

After a number of months researching the availability of square head stock we determined that the items would likely need to be custom made.

The options were presented to the Region as we moved forward with determining how to accomplish the project.

Seeking a Turnkey Solution



2017 Grant Application Parks & Trails New York

General Project Information

Project Name

Replacement of Diagonal Angle Steel Structure Members on
St. Regis Mountain Fire Tower

Not Awarded

The Friends Board had a tentative bid for a contractor to do the entire project. Both fabricating and installing the braces.

We did not have the necessary funding so we applied for a grant. The grant was not received.

Find a Less Expensive Alternative

- DEC purchased steel, galvanization, nuts & bolts
- Cloudsplitter grant for fabrication
- Anonymous donation for installation
- Small general donations
- Volunteer assistance



Fabrication

Factory
VS
Small Shop

Without the funds necessary for a turnkey solution we needed to find a different way to accomplish the project.

We found another contractor for the installation and he help us identify a small shop that could fabricate the braces.

Samples were made and presented to the DEC for approval.

Previous samples from a larger factory had not been acceptable.

We pieced the funding together through multiple sources.

Fabrication



Custom Made Jig



First Bend



Final Bend



Bent to Spacer

Fabrication involved making a jig, heating and bending to a spacer which was used to maintain a gap ensuring that zinc would flow into the bend upon hot dipped galvanizing.

Fabrication



Gap for Galvanization



Oversize Holes

DEC Inspection Report

- 3/16" angle steel to replace 1/8" originals
- Hole drilled in one end

Pros & Cons

The original braces were 1/8" thick angle steel. The engineer recommended using 3/16" thickness. With correct fabrication the extra thickness is probably unnecessary. The thicker folds in the new braces provided less area to drill holes and required longer bolts.

As recommended only one hole was drilled before galvanization. The other holes were drilled and cold galvanized on site. With careful measurements and original braces used as templets all holes could probably be drilled during fabrication.

All holes drilled before galvanization need to be oversized.

Transportation of Materials



Mission Cancelled

The braces were completed and delivered to the DEC by the end of August 2018. Due to fire suppression activities earlier in 2018 there was no helicopter time available. Thus, the mission was scheduled to be part of a larger supply flight to the backcountry. The flight was to take place on October 30th, so Friends volunteers crossed the lake in the dark on a cold snowy morning to hike up and meet the load. We waited on the summit for four hours before the mission was cancelled due to weather.

Transportation of Materials



Mission Complete

The flight did take place on October 31st. The Friends volunteers hiked up the next day to take care of the tools, equipment and materials. Other hikers were also recruited to help.

Installation

First Attempt - 11/4/18
Postponed the next day
To be resumed in May



Lessons Learned

The contractor arrived on the site a few days later, set up camp and started to install the braces. The following day winter set in and the job was postponed until spring. However we did learn that we need longer bolts. Fortunately we were using readily available Structural bolts and not custom made stock.

Installation

Equipment & Site Check
Sunday - 5/5



Work Resumed
Wednesday - 5/8

On May 5, 2019 the contractor and volunteers hiked to the summit to check on the equipment and prepare to start the project again. After 2 days of heavy rain the brace replacement resumed.

Installation

Work Continued
Saturday - 5/11



Work Completed
Sunday - 5/12

After two days of more heavy rain the work was continued and completed.

Installation

The Job Site

Trail Length – 3.5 miles
Elevation Gain – 1,260 feet



**Contractor hiked
35 miles & 6,300 feet of elevation**



**Working long days
Starting and ending in the
dark
Deteriorating trail
conditions**

The contractor did not camp during the spring work, choosing to hike up and down in the dark on trails that got wetter everyday.

It takes special workers to put up with these conditions and preform work which requires hanging off a tower on top of a mountain. Mike Vilegi and his crew did an outstanding job, it was a pleasure to work with them.

Removal of Materials



Materials and equipment were staged for removal. A local Ranger hiked to the summit to band the old braces and prepare for the flight. He recruited a group of hikers to help. After one delay the mission was accomplished. The cooperation and expertise of the State Police Aviation unit, the DEC Forest Rangers and DEC Foresters is vital to making projects like this possible.



For further information contact Doug Fitzgerald at friendsofstregis@gmail.com