



## LOWER MANHATTAN

# WALL STREET

Lower Manhattan was just one of many areas ravaged by Sandy. When the storm surge from Sandy breached the sea wall in lower Manhattan it was a disaster, but far less dramatic than the scenes at the Jersey and New York shore lines. When the water in the streets finally receded there was a minimum of evidence as to the extent of the damage. The sea water in the basements and sub-basements was where the real impact of the storm was doing its worst. Unlike the Red Cross, we deal with industry's hard core electrical and mechanical infrastructure. While others were helping people survive, we were helping to bring buildings back to life.

On October 30, 2012, while Sandy was still winding down, Longo began allocating its assets to several customers in dire need to get their facilities repaired in spite of the flooding and power outages. A paper company, a waste water treatment plant and others were being evaluated as to their specific problems and what we could do immediately. Generally the overall damage was to the electrical distribution systems and pumping capabilities. One situation, in a way, mirrors how we attacked the aftermath of the storm.

A 40 story hi-rise in lower Manhattan/Wall Street was one of many that suffered flooding due to the storm. The water level at The Battery rose to 9.15 feet above the average high-tide line, for a total of 13.88 feet. The lobby was flooded with 4 feet of sea water which meant its entire basement system and all its equipment were flooded. With all equipment shut down there was no fire protection for the building. Having seen how fire destroyed over 80 homes in the Sea Bright section of Queens, New York during the middle of the storm, this situation was urgent. On Sunday, November 4, once the basement had been pumped out, Longo was contacted and we met with the building engineering and management personnel to determine the scope of the damage and the logistics for repair or replacement. With our experience we were able to provide the building engineer with an almost on the spot outline of what needed to be done and the logistics to make it happen.. We received approval to proceed that same day. Assets were allocated and we began the tear out and the ordering of needed components immediately.

At this time several teams of Longo technicians were already on site at several other locations throughout New Jersey and New York. The addition of out of state technicians meant we had the manpower to shift over to the Manhattan project and

keep it on schedule. Of the three fire pumps, we replaced a 5hp and a 200 hp and repaired a 75hp. Controllers could not be salvaged and new ones were special ordered and flown in on a special flight to meet a tight installation schedule. Two hundred feet of copper buss were removed and taken to our Wharton Servicenter where a team removed the salt water corrosion. These were then returned to the site for reinstallation. Installation of the pumps and the controllers took approximately 14 hours. Final setup and installation of the 6 switchgear units took an additional two days.

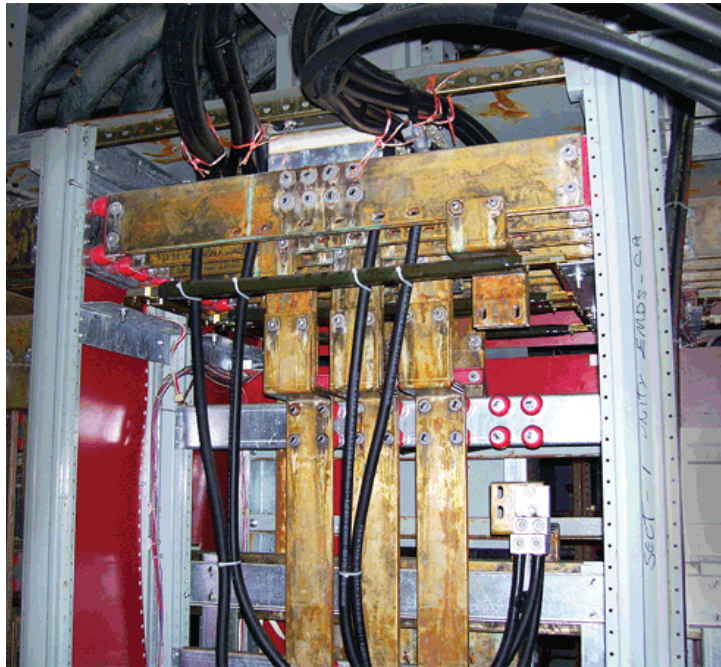
For now this building's fire protection is under control, but resolving the many other flood related issues



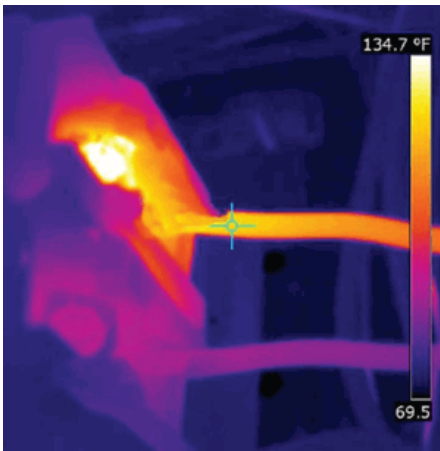
*75 HP pump that needed overhaul and went to our Wharton Servicenter.*



*Just a few of the buss bar pieces as the corrosion from the salt water had to be aggressively removed.*



*Even to the untrained eye, this corrosion is easy to spot. Extensive problems are simple to fix: complete replacement. Other situations are tempting to repair, but looks can be deceiving, spending time and money, only to have to come back and replace the unit anyway.*



*Just one out of all the various connections can be corroded and start up dangerous overheating.*

corroded wire may not suffice. In some instances an entire section of wire needs to be replaced to ensure all the corroded wire is removed. Even this small amount of corrosion can inhibit electrical conductivity and by doing that will cause the connections and the equipment to heat up. And as we all know, heat is the devil when it comes to electrical apparatus.

At first, we did try to clean the main components thinking that it would be faster than waiting for replacement components. Scrubbed, cleaned and dried we sent a few back into the field. However, in the field and under power, the residual corrosion led to heat build up that can destroy the equipment. In the beginning, it made sense as far as speed and cost to handle the clean up this way. And speed has been a priority from the beginning. Now that our suppliers have caught up with the demands of Sandy, it is much quicker and safer to replace the internal components, thus removing the threat of any corrosion from the equation.

will take months. In addition there were discussions about raising the power and distribution center to an upper floor. As with many of our other customers, the immediate problem is resolved as we move on to others still in need of help.

There are three other buildings in the area that we also have been able to help. Our work here has been primarily motor work along with starters and switchgear. Most of these buildings have their own electrical and maintenance crews so we provided the repairs where possible, replacement motors and related equipment and any installation assistance as needed.

## Can't you just wash 'em off?

After 3 or 4 days in salt water and a day or two in a salt water atmosphere, corrosion inside switchgear/controllers was obvious. Depending on the specific metal, it will be gray, green, black or some combination of these shades. At first it appears that a good scrubbing with some 3M pads will take care of the corrosion and you should be good to go...not quite. Salt or sodium chloride corrosion can literally get into the copper. For this reason a superficial scrubbing will more than likely not remove all the corrosion, even though it may appear so, and will remove any protective coating that was applied to the connections by the factory. Salt can even get under and inside wire insulation. So clipping off a half inch of exposed and

## Caution...

The demand for help, for repairs and replacement equipment has been extraordinary during this time. If your company is in this situation I am sure you are pressing for speed as well. Whether you are using inhouse maintenance and engineering staff or bringing in an outside company, like Longo, you need to proceed with caution as well as speed.

We would suggest you monitor your equipment, especially in the early days, after you are up and running. Corrosion of this type is sneaky. It may not show up and then again there might be a slight deviation. Small impediments can become serious problems down the road. Monitor, monitor, monitor, just to stay on the safe side.