



Kelly

This fire hydrant is designed to withstand harsh coastal conditions and deter would-be vandals.



## New Generation of Fire Hydrants Secure Against Multiple Threats

**L**ong Beach is a coastal city in Nassau County, N.Y., located on Long Beach Barrier Island, which is the westernmost of the outer barrier islands off Long Island's South Shore. It's a beautiful place to live with the Atlantic Ocean to the south and Reynolds Channel to the north. A playground for those who like to swim, fish, or go boating, Long Beach has been a popular and desirable location for many in the New York City area for a long time.

Being in a coastal town, one of the ongoing challenges faced by the Long Beach Water District (LBWD) is dealing with the corrosive effects of the salty air and water from the Atlantic Ocean on the town's fire hydrants. Because hydrants are predominantly made of metal, are above ground, and exposed to the elements, and their primary function is to deliver water, they are prone to rust and corrosion. This can quickly lead to hydrants being inoperable or in a state of disrepair if an aggressive maintenance program is not regularly exercised.

### NEW HYDRANT TO THE RESCUE

With 600 hydrants to maintain, Long Beach was looking for help. It found a company<sup>1</sup> that redeveloped and reengineered the conventional fire hydrant to make it less maintenance intensive and more resistant to corrosion.

The first thing LBWD's superintendent Chris Windle noticed about this hydrant was that it looked different (see the photograph above). The operating nut, which typically protrudes from the top of the hydrant, was not exposed but rather shielded inside the hydrant body. This feature not only

helps prevent the nut from being stripped by vandals using the wrong type of wrenches; it also provides an added layer of security to the system by limiting access to the water supply to authorized personnel only. The pumper nozzle and side caps were also redesigned to have no protruding nuts or chains, leaving fewer hydrant parts exposed and vulnerable to unauthorized users as well as the harsh coastal environment.

In addition to the obvious external design changes made to the new tamper- and weather-resistant hydrant, there was substantial internal reengineering as well such as a new tri-arm valve top plate that provided increased stability and flow while the hydrant was operational. Enhancements were made to the saturation distribution plate and drain ring that allowed for distributed drainage, eliminating soil undermining during pressure drain.

In order to combat the corrosive effects of water and air on the hydrant, the company chose materials and coatings that were the most anticorrosive and cost effective in the industry. The body was made from ductile iron instead of gray cast iron, and the entire hydrant was coated inside and out with a zinc primer and powder-coated finish. Stainless steel instead of carbon steel throughout the inside of the hydrant and a military-grade copolymer instead of rubber for the lower valve made this new generation of hydrant resistant to corrosion and easy to operate.

### **MOTHER NATURE'S SUPER-SIZE TEST**

After carefully considering all of the features and benefits of the new hydrant, LBWD decided to replace 40 older hydrants with the new models.<sup>2</sup> These new models were put to the test almost immediately when Super Storm Sandy hit Long Island head on in October 2012, leaving the entire town of Long Beach under four feet of saltwater for several hours. The devastation was well documented as thousands were left homeless or without power and freshwater for weeks.

As the town started to get back on its feet and regular public services were restored, LBWD began flushing the distribution system. Immediately the workers noticed that many of the conventional hydrants that had been under water during the storm were showing signs of accelerated deterioration, seizing, and increased breakdown rates, whereas all of the reengineered models<sup>2</sup> performed flawlessly. The resulting evidence in the aftermath of Sandy was proof positive that the new-generation hydrant was a great choice for Long Beach, which has since doubled the number of these hydrants in the town. This model of hydrant costs approximately 30% more than a conventional hydrant does; however, the savings realized from decreased maintenance, repairs, labor, and painting can add up to several thousand dollars during the life of the hydrant.

### **ILLINOIS TOWN PROTECTS A KEY WATER SUPPLY**

The company that provided the new hydrants to Long Beach also makes a high-security model with all of the same innovations and material upgrades as the standard base model, with the addition of a locking security cap that protects the front pumper nozzle. Pete Cajigas, the water supervisor for Franklin Park, Ill., was looking for a high-security hydrant to protect an important cross-connection access point between Franklin Park's system and neighboring River Grove. His primary concern was protecting the integrity of the two water systems at this cross connection to ensure that only authorized personnel would be able to open the hydrant and flush the dormant lines so that both towns would continue to get clean drinking water. The security cap on this new, high-security model of hydrant requires a special opening tool that applies 3,000 pounds of pressure on a pin that disengages the cap, allowing it to open. The result for Franklin Park is a secure hydrant that protects the supply line that delivers drinking water.

Legislative action at the close of 2013 exempted fire hydrants from compliance with the Reduction of Lead in Drinking Water Act. This followed a surprise guidance modification by the US Environmental Protection Agency in October 2013 that would have required compliance after January 4, 2014. This in turn would have relegated utilities' spare parts and stockpiles to the scrap yard at a significant economic loss. However, this wouldn't have been an issue for these two newly designed fire hydrants because they conform to low-lead testing requirements under NSF 61/372.

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### **FOOTNOTES**

<sup>1</sup>Sigelock Systems LLC, Oceanside, N.Y.

<sup>2</sup>Sigelock Spartan, Sigelock Systems LLC, Oceanside, N.Y.

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