

Visit report 11/10/16: Permanent Canal Closures & Pumps

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During the morning on our fourth day in New Orleans we visited the Permanent Canal Closures & Pumps project. After we arrived on the project location we were introduced into the project by civil engineer and project manager Brad Drouant during a presentation. He works within the team of the US Army Corps of Engineers, the client of the project. After the presentation, we were guided through the project sites.

Firstly, the occasion of the hurricane. A part of New Orleans was hurt by hurricane Katrina on August 29 2005, which was a category 3 hurricane when it passed the city. Although the force of such a hurricane is not extreme compared to other typical hurricanes with significantly more force, the size was an important determining factor of the caused damage. Hurricanes rated at a higher category may have less impact. After the hurricane passed the New Orleans area, the rise of the sea level was not directly experienced on the coast. A few moments later, the city was hit by a tidal wave, to surprise of the inhabitants. Lower level areas were flooded, while some dikes were able to hold the water outside the diked area, because of a different design.

The aim of the project is to reduce the total length of dikes, which are a potential danger, by the closure of the three main canals in the system using pump stations. The design consists of three pump stations of different sizes, with the largest complex able to fill an Olympic size swimming pool in seven seconds. A comparison was made with the Amsterdam Arena which would be filled in less than 85 minutes. All pump stations are able to run continuously for five days without refuelling and on average, twelve people are required on the stations for operation. During the five days' time, it is aimed to solve logistical problems such as fuel shortage. The system is prepared to operate during a once per hundred year storm. However, the objective is to provide enough time to leave the city during flooding. The saving of lives cannot be guaranteed when inhabitants would stay in the area. Evacuation possibilities are required and provided by the system, which was a main problem after the event of hurricane Katrina.

During the excursion on the project site we visited the three pump stations: 17th Street, London Avenue and Orleans Avenue. The first stop was at the 17th Street Canal Pump Station where the compartment with the installed generators was shown. A total of fifteen generators was installed, the largest number compared to the other pump stations. When in operation, the generators produce much noise and heat. The area will be cooled using added cooling systems. On the Orleans Avenue site, the large pumps were shown. It was visible that all elements are standardized throughout the three pump stations which make maintenance or failure solving less complicated. The last stop was at the London Avenue station where the electronic systems and the outlets were shown. On the sites, it was remarkable to see the sheet pile configuration, which was executed in an arch with flat piles, instead of the traditional S-shaped piles using a girder to anchor the construction. According to the staff, this way of construction was new in the USA.

The project is contracted by the US Army Corps of Engineers and financed on Federal level. However, the local or state authorities are responsible for the operation and maintenance costs of the system. It was explained that the design was made by multiple firms and that a Design and Built contract would not have been suitable because of the complexity of the plan. Standardized designs are more suitable to have on a D&B contract according to Drouant. However, he added that the US Army Corps is a conventional organisation. Although the main elements of the pump stations have a lifespan of 100 years, some parts are sufficient for 50 years. A 100 years lifespan is less obvious compared to

other civil construction projects, such as the IHNC Lake Borgne Surge Barrier, where 50 years is usual. The main inspection of the system is conducted just before the hurricane season. In this way, it is possible to observe damage caused by the storm, which is funded by the government instead of damage with a different cause.

The excursions brought us both technical as organisational information which made it interesting for each of the backgrounds.