FLYGT
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Case study

Addressing Chronic Flooding in El Paso, TX

Flygt high volume, low head propeller pumps combined with Formed Suction Intakes solve stormwater flooding issues for the Chihuahuita historic district

The city of El Paso, Texas lies on the tip of the Chihuahuan desert, and it is not uncommon for a year's worth of rain to occur in a matter of days during the summer. These rain events have caused serious damage throughout the city for years, and the flooding has always been particularly bad in the Chihuahuita historic district. In 2006, after a 100-year flood, Chihuahuita formed a stormwater utility to address the flooding issues and hired an engineering firm, CEA Group, to conduct a drainage study with the goal to reduce the impact of these storm events.

Scope

CEA Group determined that the flooding in El Paso was directly linked to high water levels in the Rio Grande River during heavy rains. Storm sewer inlets that were added in the past in an attempt to drain the area were connected to a system that drained a watershed at a higher elevation, causing the runoff from upstream storms to create a backup in the drainage system, flooding the Chihuahuita neighborhood.

A new pump station was determined to be the best solution to control the river water level and subsequently prevent the flooding. However, the solution would be difficult because the neighborhood did not have the footprint or the funding for a conventional stormwater pumping station.

The stormwater utility required the pump station to function both while the river is low (or at normal level) and also while the river is at the flood stage.

The design would need to be able to overcome these restrictions by utilizing a siphon when the river is low and the full pump horsepower while the river is at its normal level.

Flygt pumps ready for installation at the Chihuahuita Storm Sewer Pump Station

End user:	City of El Paso, TX
Client:	Chihuahuita Storm Sewer Pump Station
Product:	PL7061 with FSI
Order date:	2011
Completion:	2012

Completed pump station in El Paso, TX

In 2012, a representative from Flygt distributor James, Cooke and Hobson, Inc. (JCH), contacted Flygt for assistance. With input from CEA Group, JCH and Flygt engineers, a pump station design was developed that could function properly when the space requirements were less than the recommended Hydraulic Institute Standards for high volume pump stations.

Solution

The project required the design of a pump station that would be able to efficiently transport the stormwater and utilize the smallest footprint possible. The Flygt axial flow propeller pumps PL7061 were selected due to their high efficiency and low power consumption. The design also utilized Flygt Formed Suction Intake (FSI) devices to ensure optimal pump inlet hydraulic conditions. In addition, this configuration allowed a more constant pumping condition regardless of the river level.

The Flygt FSI is an inlet device that provides optimal inflow to the axial flow propeller pump by gradually accelerating and redirecting the flow toward the pump inlet. Its primary function is to condition the incoming flow into a uniform profile and redirect it. By providing a reliable pump intake in limited space, the Flygt FSI is able to achieve a more economical pump station solution with a smaller footprint and better hydraulic performance than with standard inlet devices.

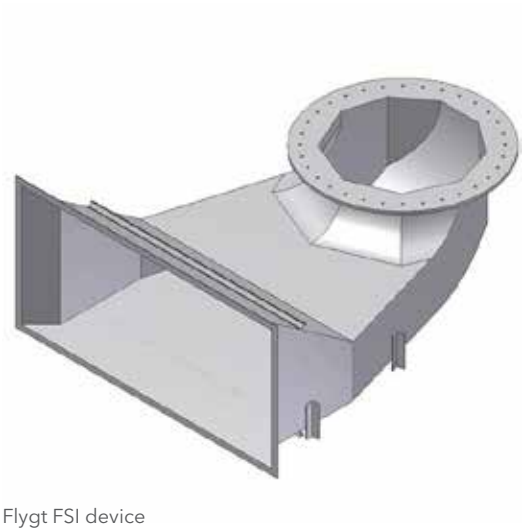
With a pumping capacity of 27,000 gallons per minute (GPM), the station can handle 100-year storm events. By utilizing siphoning methods, the city was able to accommodate the large swing in river elevations, allowing the station to operate at both high and low river levels.

The pump station project included storm drain improvements and the relocation of numerous existing water and sewer lines serving the downtown area.

Result

In 2012, torrential rains hit the Chihuahuita historic district of El Paso, and this time the results were different. With the new pump station in place and functioning well, flooding was not an issue, bringing much-needed relief to this historic area.

Pump station model/image



Flygt FSI device

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