



Proof of Headworks MS[®] Bar Screen's Exceptional Durability

Introduction

Approximately 14 years ago the City of Dallas started work on retrofitting one of the largest pump stations in Texas, the Cadiz Street Pump Station. The project developed into one of the most exciting projects Headworks has ever had the opportunity to work on. The project also proves that although many competitors claim to be able to build bar screens which can handle extraordinary flows.

Although the almost 100 year old pump station was originally scheduled to be decommissioned in approximately five years from the start of the project, it still operates to this day. It is a lovely historic pre-war building built in 1915 originally operated as a steam pump station fueled by coal.

Cadiz Street Pump Station collects wastewater from downtown Dallas in two 60 inch pipes and pumps it under the Trinity River to the City's Central Wastewater Treatment Plant and is a critical point of operation for Dallas's wastewater system. When the specification for the project's screening equipment was published by the City, Headworks Inc. and U.S Filter were the two approved screen suppliers.

On bid day, our team was disappointed to learn that U.S Filter had offered the lower price. Their screens were therefore selected and installed in 1999. Just a short nine months after screen startup, though, we received a call from the City and their engineers. Bless their heart, both U.S Filter screens had had a catastrophic failure which flooded not only the pump station, but also the Trinity River, fresh water source for many communities including Houston downstream.

QUALITY THAT NEVER QUILTS™

Customer: Cadiz Street Pump Station
Industry: Pump Station for Wastewater

KEY FACTS

Two MS[®] Bar Screens

- **Specific Flow:** max. 3.5 m³/s (80 MGD)
- **Screen:** 13 m long (44 ft)
2.5 m wide (8.3 ft)
5,597 kg heavy (12,340 lb)
- **Water Depth:** max. 4.6 m (15 ft)
- **Channel:** 2.6 m wide (8.5 ft)
10.8 m deep (35.5 ft)
- **Bar Spacing:** 25 mm (1 in)

Challenges

The new consultant appointed by the City was tasked with urgently researching potential suppliers whose screens could be installed at a 90 degree angle and withstand the massive hydraulic forces experienced at the pump station. Headworks was naturally included in the consultant's thorough review of all available screening equipment suppliers on the market. Although the equipment which had failed was chain driven as is the Headworks Bar Screen, after in-depth technical discussions, reference calls and installation visits by the City, their team elected to sole-source Headworks Bar Screens.

There were several challenges associated with the installation beyond the 90 degree installation requirement. The building was not crane accessible and site constraints required that the two 44 ft (15 m) long bar screens each be supplied and installed in three sections into the two 8.5 ft (2.6 m) wide channels. As a further safety mechanism, the screens were our first to be designed with a patented integral bypass system giving the screens the capability to protect the pump station from flooding should they cease to function for any reason such as electricity outages during storm events.

Result

Our screens have now been running at Cadiz Pump Station for nearly 13 years and have been running day in

and day out without problem. Assistant Plant Manager, Mr. Dan Halter, said:

“ Our facility has over 4,500 pieces of equipment being tracked in our asset management program and these two bar screens operate in the worst environment we have, yet over the last 12-years they have been one of the least discussed in our out of service meetings. Wish I had more! ”

- Mr. Dan Halter

*Assistant Plant Manager,
Cadiz*

The screens were designed with 1 inch (25 mm) bar spacing and each screen handles flows up to 80 MGD (300,000 m³/d) with a max water depth of 15 ft (4.6 m). The rapid five second cleaning cycle interval prevents the station from flooding while passing maximum flows with very little headloss.

As a precaution, the city requested biannual preventive maintenance inspections by our company for the first five years. This inspection contract allowed us to collect very useful performance data on our units, one of which was the performance of the lower sprocket and bearing assembly. The data substantiated that the bearing assembly showed virtually no wear and tear, even after 5 years of service.

After 13 years of operation, the bypass capability has never been required by the operators. Even more impressive is that over time each screen has occasionally handled flows up to 120 MGD (440,000 m³/d), 50 % higher than the original design capacity! Once again Headworks Bar Screens have handled conditions where other screens have failed and proven that we provide quality that never quits.



Headworks Bar Screen installed at the Cadiz Street Pump Station