

Planning, Preparation Pays Off in Indianapolis

PROJECT:
Stormwater Management, Water Quality and Deicing Runoff Controls Pump Stations for the New Indianapolis International Airport, Indianapolis

FIRM:
Wessler Engineering, Indianapolis

At 1.2 million square feet, there is nothing small about the Indianapolis International Airport's Midfield Terminal. The massive construction project was so complex that planning for the original design began more than 30 years ago. It wasn't until 1999 that Wessler Engineering was given the green light to move forward on an ambitious effort to cost-effectively manage water-quality treatment and aircraft deicing for the facility.

Its roles were largely twofold:

As the project's stormwater master planner, Wessler was charged with developing drainage guidelines and a stormwater management plan. The firm also was responsible for the evaluation, design, construction administration and part-time inspection of deicing controls and water-quality treatment for airside drainage.

By 2008, the facility was fully operational and accommodating clean stormwater, as well as stormwater runoff contaminated with aircraft and pavement deicing fluids. The

firm employed a dual-collection system that segregates gate area runoff—where primary aircraft deicing often occurs—from the remainder of the ramp. Stormwater runoff is treated by two massive water-quality systems; it then flows to a diversion mechanism that directs the runoff to either high-concentrate storage, low-concentrate storage or the receiving waterway.

A 12,400-gallon-per-minute pump station transfers contaminated runoff from an underground storage facility to a lined, covered storage facility in the airfield. From this facility, runoff is pumped to another control facility before being discharged to the city of Indianapolis sanitary sewer system.

The underground facility is up to 40 feet deep at its base and is strong enough to support the weight of aircraft activity overhead. To accommodate the necessary depth and groundwater conditions, engineers designed thicker concrete walls and placed shear keys along its length to increase the structure's dead load.

Designing the stormwater retention and diversion facility and necessary infrastructure was no small feat. "The underground facility is the size of a football field," says Wessler President Brent Siebenthal.

The facility was sized using 30 years of hourly precipitation data. The stormwater and runoff facilities also are equipped with a supervisory control and data acquisition system for remote control and monitoring. "Wessler led a team of 15 consultants during design and construction and coordinated stormwater design efforts for the entire project," says Bill Leber, Wessler project manager.



Designed by Wessler Engineering, the underground stormwater diversion and retention facility at the Indianapolis airport is the size of a football field.



Brent Siebenthal



Bill Leber