

# SAN DIEGO INTERNATIONAL AIRPORT STORM DRAIN EXPANSION

*APWA Project of the Year Award Winner*

## Overview

The San Diego County Regional Airport Authority recently won the Project of the Year award from the American Public Works Association's (APWA) San Diego/Imperial Chapter, for its Northside Utilities Storm Drain Project at the San Diego International Airport. The project installed over 8,000 feet of storm drain piping within the airport operations area, including a micro tunnel bore beneath an active taxiway.

San Diego, California had a prominent start in aviation, serving as the manufacturing and test flight grounds for Charles Lindbergh's Spirit of St. Louis. In 1927, he took off from San Diego with stops in St. Louis and New York before his historic transatlantic flight to Paris. Shortly thereafter on August 16, 1928, the City of San Diego dedicated Lindbergh Field at the San Diego Municipal Airport. In 1942, the 8,750-foot runway was added to accommodate the heavy bombers manufactured in San Diego that were departing for World War II battle fronts. This runway made it one of the first airports prepared for commercial jet airliners. It's now the busiest single runway airport in the nation.

Because the airport is only three miles from downtown San Diego and is hemmed in by the San Diego Bay, Interstate 5 and the Marine Corps Recruit Depot, space is at a premium. The airport authority needed to improve its ability to capture and redirect storm runoff. The plan designed by Kimley-Horn required a new pump station in conjunction with new 35-inch gravity lines and 30-inch force mains that would tie back into an existing 60-inch storm water line. All work was to be completed either adjacent to or underneath the active runway and taxiways. In addition, a 900 foot microtunnel bore was needed to cross beneath one of the taxiways.



Fusible PVC® pipe laid out alongside active runway

## Pipeline Details and Project Summary

<b>Project:</b>	Northside Utilities Storm Drain Project
<b>Location:</b>	San Diego, California
<b>Length and Pipe Size:</b>	4,000 LF 30-inch DR 32.5 Fusible PVC® pipe
<b>Length and Casing Size:</b>	900 LF 42-inch steel
<b>Installation:</b>	Casing/carrier slipline, open-cut
<b>Owner:</b>	San Diego County Regional Airport Authority
<b>Engineer:</b>	Kimley-Horn and Associates, Inc.
<b>Contractor:</b>	Orion Construction Corporation



View of Fusible PVC® pipe in background alongside runway

Orion Construction of Vista, California was awarded the project, and elected to use Fusible PVC® pipe for several portions since it was permitted for use wherever PVC was specified in the plans. A micro tunnel boring machine crossed under the taxiway at a depth of 15 feet to install a 42-inch steel casing. A 30-inch Fusible PVC® pipe was then fused in the same pit and pulled through as each joint was completed. Casing spacers were added between the Fusible PVC® carrier pipe and the steel casing as well as a low-density cellular grout to lock the carrier in place.

The rest of the pipe was installed in open-cut trenches. Because the Airport sits next to the San Diego Harbor at an average elevation of 17 feet, managing the shallow water table was a constant challenge. Additionally, while many of the existing utilities were mapped, Orion Construction encountered several that were unknown.

Orion Construction again chose Fusible PVC® pipe for the portions of the force main that required restrained joints. Orion used the fully restrained, fusion-joined Fusible PVC® pipe joints instead of expensive, metallic, mechanical restraint harnesses, which require extensive protection in areas susceptible to corrosion.

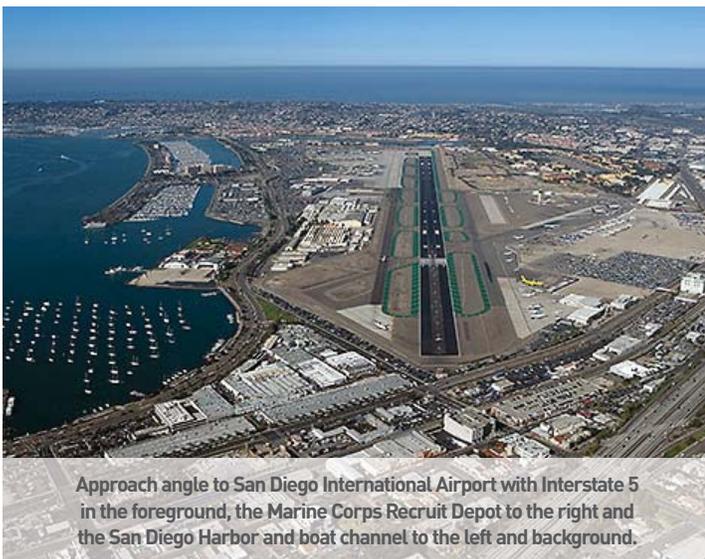
Despite the active airfield work environment, high water table and extensive utilities encountered, the project was very successful and was awarded the APWA's Project of the Year for 2016, in large part because of the effective planning and communication between the Airport Authority, Kimley-Horn and Orion Construction.



Early stages of the launching pit used for the micro tunnel boring machine as well as for fusion.

“This project provided some unique challenges working within the airport operations area. We also had some difficulty with the high-water table and several unknown utility crossings. Underground Solutions worked well with us on both the micro tunnel and open-cut portions of the project, solving any issues as they arose. Ultimately, we ended up with a great project and we’re very proud that it won the APWA’s Project of the Year.”

*Jason Arme, Project Manager  
Orion Construction Corporation*



Approach angle to San Diego International Airport with Interstate 5 in the foreground, the Marine Corps Recruit Depot to the right and the San Diego Harbor and boat channel to the left and background.

Underground Solutions, Inc. provides infrastructure technologies for water, wastewater and power cable conduit applications. Underground Solutions' Fusible PVC® pipe products, including Fusible C-900® pipe and FPVC® pipe, utilize patented technology to produce a fused monolithic, fully-restrained, gasket-free, leak-free piping system ideal for trenchless (horizontal directional drilling, pipe bursting and sliplining) or conventional "open-cut" installations and are available in 4-inch to 36-inch diameters. The combination of standard fittings and lower weight with higher flow for a given pressure class versus other thermoplastic pipes ensures that Fusible PVC® pipe brings greater economy to most pipeline projects.



**Underground Solutions, Inc.**  
**858.679.9551**  
[www.undergroundsolutions.com](http://www.undergroundsolutions.com)