

Products In Action

Piping Products

Pipe Installed Under LAX Runways, Terminals with No Service Disruptions

The challenge was to rehabilitate a 2.5 mile sewer running under one of the busiest airports in the world without interrupting flight operations or vehicular traffic. The site was Los Angeles International Airport (LAX) — ranked fourth in the world for the number of passengers it handles. In 1999, that amounted to more than 64.3 million people while its air cargo system handled more than 2.1 million tons of goods. The central complex includes 123 gates in nine passenger terminals, connected by a U-shaped two-level roadway.

For several reasons, installer Colich & Sons of Gardena, Calif., chose Hobas Pipe of Houston for the challenging job. Although the typical flows were only one to two feet deep, if the sheet liners were used, an internal by-pass was mandatory to avoid interference with aircraft and vehicles on the surface. This would have been very expensive and cumbersome as well, so thin plastic liners were ruled out. To meet all the parameters, sliplining under live conditions was a must. But, HDPE profile wall pipe could not meet the ID requirements because the necessary ODs were too large. The stiffness of HDPE solid wall pipe was too low for safe annulus grouting and staging for the long pulls would have been nearly impossible.

The process of elimination pointed to Hobas Pipe, the only one stiff enough for easy grouting and strong enough for long pushes. Its thin-wall construction also provided large enough IDs to deliver the flow capacity with small enough ODs for insertion clearances. And it delivered extra savings because it could be installed without by-passing the flow and was easier to

handle in poor access areas. Live sliplining with Hobas CCFRPM pipe was the most practical and economical solution.

The city of Los Angeles' sanitary sewer renewal program reached new performance heights during this successful lining of the Lower Central Outfall Sewer (LCOS) which diagonally traverses LAX passing under several of its runways and terminals. The very difficult sliplining rehabilitation project utilized nearly 2.5 miles of 48-, 51- and 63-inch Hobas centrifugally cast, fiberglass-reinforced, polymer mortar (CCFRPM) pipe with flush joints. The constant OD of the Hobas gasket-sealed joints makes them well suited to sliplining installations of this type. The city specifications allowed several different methods and products to line the old brick interceptor, which consisted of an upstream 60-in. by 73-in. elliptical portion and 1.5 miles of circular host downstream. Most areas required a structurally rated repair because of cover depths up to 66 feet combined with live loads from aircraft and vehicles plus the static loads of buildings and other structures.

Two basic systems were included. One was a thin PVC or HDPE sheet liner anchored into five inches of annulus grout. The other was sliplining with HDPE or CCFRPM pipe.

Because of four large angle points of intersection and three diameter changes, Colich installed the pipe in five separate pushes and two winch pulls from five different pits. Insertion loads were low, reaching a maximum of only 80 tons. In fact, on the longest drive of 4,700 feet of 48-inch liner, less than 25 tons of insertion force was needed to push more than 500 tons of pipe. This is possible because of Hobas Pipe's constant OD, smooth exterior and suitable buoyancy and flow characteristics.

Nearly a mile long, the insertion also included a 2.3 degree angle at its midway point under the edge of a runway. To negotiate this turn, Colich used 10-ft. sections at the front of the push followed by 20-ft. pieces, so only the shorter pipes passed through the direction change. Pipe sections for the winch pulls were inserted through small pits located in the parking structures in the center of the LAX complex. Colich also used 10-ft. long pipes for this operation to minimize the shaft size and ease handling in the tight quarters. The installation was completed by one lift annulus grouting using a lightweight mix. Commonplace

The renewal of the LCOS without any disruption of flight schedules or essential airport services gratified both LAX and city officials. Such installation success with Hobas Pipe has become commonplace for Colich in the L.A. area; this is their eleventh Hobas project, the tenth Hobas job for the city, and one of more than 50 in the area. These sanitary sewer installations have included open cut, sliplining, jacking, microtunneling and tunnel lining.

For additional information, contact in — phone Hobas Pipe USA at 800-856-7473 or write in 1173 on this issue's Reader Service Card.



Using 25 tons of force to push 4,700 feet of 48-inch pipe in live flow.



The Colich & Sons crew prepares the next pipe section as a 747 completes its final approach.



The lightweight pipe being lifted with a small mobile crane.