

HOBAS® Case Study

July 2007

HOBAS® PIPE AT SUFFOLK DOWNS – FIGHTING CORROSION TO PRESERVE HISTORIC RACETRACK

The 2007 Kentucky Derby was one of the most emotional events in horseracing history. When management discovered that site drainage work was required, they knew that the construction would have to be completed quickly. The track has been in operation since 1935, and would have to be ready for opening day of the live racing season and simulcast of the Kentucky Derby on May 5th, 2007.

The Department of Conservation and Recreation's Planning and Engineering Division funded and oversaw the contract for the € 5.14 million project, Sales Creek Culvert Replacement, Drainage Restoration and Dredging. The general contractor, Revoli Construction Co., Inc., of North Reading, Mass. and its subcontractors, completed the work. Hatch Mott MacDonald is the Engineering Consultant.



The scope of the work included installation of approximately 610 m of DN 2400 CC-GRP (Centrifugally Cast Glass Fiber Reinforced Plastics) SewerLine® Systems supplied by HOBAS Pipe USA in Houston, Texas. The pipe was placed as twin culverts at three different locations around the Suffolk Downs facility in Revere and East Boston. Two of the lines traveled directly under the racetrack surface with the third running under the main entrance road.

Phase one included restoring the hydraulic capacity of the drainage system at the two uppermost locations to restore hydraulic capacity and remove blockages. Phase two included replacing the downstream twin DN 1500 HDPE (High Density Polyethylene) Pipes with DN 2400 CC-GRP Pipes, as well as channel and lagoon dredging. Pini said, "The DN 1500

HDPE Pipes were a temporary emergency repair done a few years ago after the collapse of the existing 270 cm corrugated line. The corrosion from the soils and tidal location cut through the corrugated pipe like a razor blade. We knew we would come back with a permanent fix.”

HOBAS CC-GRP was the only material specified for the storm drainage improvement piping because of its resistance to corrosion, hydraulic capacity and the abrasion resistance. Detailed material specification also included specifics on the interior surface of the CC-GRP Pipe requiring a 50 percent elongation on the resin used. This was required to achieve the necessary abrasion resistance. Proof of prior performance of the pipe product was required. A five-year history and a list of 152,000 m of installed pipe were required with the submittal package. Since timing was critical the project specifications included a guaranteed pipe delivery time frame.

“Work can be performed only in the off-season for the track between December 1st, and March 1st,” said Shawqi Alsarabi, president of Revoli Construction Company. A tight schedule was caused by the fact that work involved removing and replacing a building and two sections of Suffolk Downs track.



HOBAS worked with the contractor and designer to provide installation recommendations for the tricky twin barrel installation submerged in flowable fill by direct bury. The 6.4 m trench width allowed for only a 61 cm clear space between pipes and a 46 cm clear space to the trench wall. The native

soil material at the 3.6 m cover depth had a constrained modulus of only 4.8 MPa (Standard Penetration Test $N = 2$ blows per 30 cm minimum). To combat the properties of the poor native materials and to minimize settlement, a flowable fill was specified for the embedment material. The fill installed with strength was allowed to develop before the cover material was placed. “We worked in a tight trench to minimize the amount of soil removed and to save on flowable fill,” said Alsarabi. “The SN 10000 pipe stiffness provided by HOBAS performed well even in difficult conditions.”

Much of the work on the project was performed in a storm water drainage channel and is subject to storm conditions and fluctuations in water levels. The contractor was required to provide a means to work in the presence of water in the channel, storm events and tidal impacts.

Given the geography of the area, installers constantly battled the storm surge. “We had (an obstacle with) the tide gates during heavy rain and the high tide which made our bypass ineffective during those events especially during the second phase,” said Alsarabi. Even given the difficult conditions and quick timing, he added, “The pipe performed well.” This was his testament to the ease of installation, engineering and customer support produced by HOBAS. “This was the first time Revoli installed HOBAS pipe and the first time we installed this size pipe.”

Speaking for Suffolk Downs Pini said, “With the project completed, we are looking forward to opening day for the 2007 live racing season on May 5th.”

Year of Construction	2006-2007
Duration of Construction	8 months
Length of Pipes Laid	610 m
Diameter	DN 2400
Stiffness Class	SN 10000
Installation Method	Open trench
Application	SewerLine®
Client	Suffolk Downs in East Boston
Contractor	Revoli Construction Co., Inc., of North Reading, Mass.
Advantages	high corrosion resistance, high abrasion resistance, high hydraulic capacity

For further information:

Alexandra Dobnigg
HOBAS Engineering GmbH
Pischeldorferstraße 128
9020 Klagenfurt
Austria
Tel.: +43/463/48 24 24 38
Fax: +43/463/48 21 21

E-mail: alexandra.dobnigg@hobas.com