THE HOBAS
PIPELINE
A PUBLICATION HIGHLIGHTING THE TECHNICAL AND PRACTICAL USES OF HOBAS PIPE
Hobas Pipe USA, Inc. JUNE 1998

Unique Thrust Restraint System Successful

Houston's new North MacGregor #1 Pump Station force main built using 5000 feet of 48" Hobas centrifugally cast fiberglass reinforced polymer mortar (CCFRPM) pipes achieved very successful results and included an innovative restraint system constructed at several elbows to resist the thrust forces.

Thrust Restraint Options

Since the City of Houston specs do not permit thrust blocks on force mains of this diameter, other means to resist the unbalanced forces at direction changes had to be used. Two methods ultimately were specified: tied (locking) joints for ductile iron or an axially reinforced concrete encasement for Hobas pipes, both extending for the restraint distances appropriate for their specific design.

Reinforced encasement at elbow provides economical thrust restraint

Fast insertion of Hobas pressure pipe into the bore hole

Multiple Criteria

Project consultants, WSBC Civil Engineers of Houston, faced several other important pipe design issues. Per Texas Natural Resources Conservation Commission (TNRCC) regulations, the system had to be rated at 150 psi minimum. The sewer environment demanded corrosion resistant products and cover depths up to 20 feet dictated structural requirements. Last, but certainly not least, the completed system had to pass a field hydrotest. Because of these criteria, the project specs allowed only ductile iron with exterior poly bags and polyethylene lining or CCFRPM (Hobas) pipes.

Economical & Versatile

The installation contractor, Boyer, Inc. of Houston, selected Hobas pipes foremost because the total installed cost, including the restraint system, was lower with Hobas. Other factors favorable to Hobas included the delivery schedule and the pipes' fabrication versatility. Boyer anticipated field changes due to unknowns that required a variety of elbow angles that were easily and quickly available with the Hobas mitered construction. Lastly, due past successes using Hobas, Boyer had a high comfort level with the product and company.

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INSIDE

THE HOBAS PIPELINE

Unique Thrust

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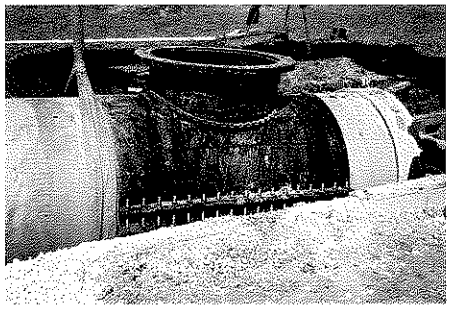
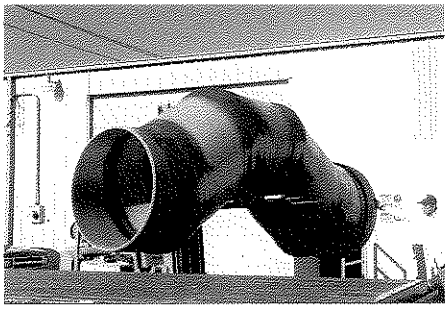


36"Full tapping sleeve provides strong tee connection.



Quadruple elbow section for fast installation to avoid obstruction.

Installation Success

The specified burial of embedment in fabric wrapped crushed rock was used for only half of the pipe. The remainder was grouted in a bored hole without the use of a casing. Both methods achieved excellent results as deflections for all of the pipes were low, easily meeting the 5% specification requirement. The unique reinforced concrete thrust restraints were designed three sided (top and both sides) for ease of construction and were built at 13 elbows. So successful was the project, the completed system not only passed the hydrotest, but was leak-free at 105 psi for 2 hours on the first attempt! Another Houston force main, the 60" Clinton Drive job, with similar specs, was also recently constructed using Hobas pipes and the same restraint system.