

Sherman-Dixie Concrete Industries, Inc. Nashville Tennessee, USA

Enhancing concrete pipe producer's mission to recapture market share

By installing an Exact 2500 concrete pipe plant and Ringmaster in a new production facility in Lexington, Sherman-Dixie has responded in full force to the threat by high density polyethylene and corrugated metal pipe producers to control

the Kentucky storm sewer market. Manufactured by Schlüsselbauer Technology GmbH & Co KG, the fully robotic equipment will help prove that concrete pipe market share for storm sewers and culverts can be regained and held.



Twin production of the new 600 mm pipes

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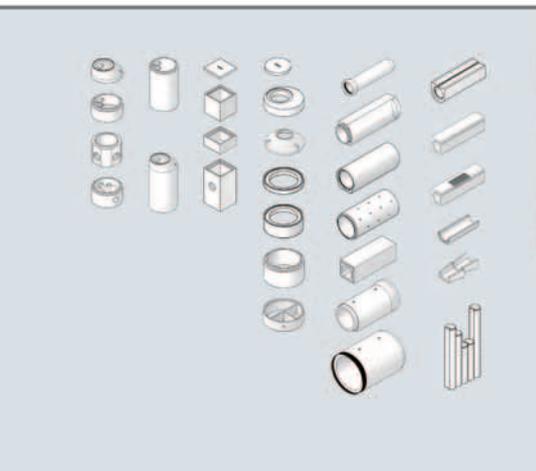
After viewing the Schlüsselbauer equipment at Bauma '98, management began touring facilities in the United States, Canada and Europe to learn how advanced automation would help them build the most user-friendly pipe for installers of storm sewers and culverts. While producing pipe for storm sewers, they would be in a better position to supply concrete pipe for sanitary sewers to local sewer district officials through increased awareness of the quality and performance of their pipe.

The ideal concrete pipe plant would improve upon the brute strength of concrete and offer an advanced pipe design. Searching for an equipment manufacturer to help develop the design of concrete pipe joints to make it easier and more economical for the contractor to install storm sewer pipe was key to sourcing such a

supplier. By developing the technology for an integral bell gasket and producing pipe with straight walls, the contractor should be able to reduce labor costs attributed to hand forming bell bedding and installing gaskets on site. In addition to providing user-friendly pipe for immediate benefits to customers, Sherman-Dixie is anticipating stronger enforcement of storm water management regulations through local best practices imposed by cities and states, as well as the Environmental Protection Act. High quality gasketed pipe joints are likely to be called for in project specification to conserve and manage storm water. Sherman-Dixie's integral bell gaskets will meet such legislated or mandated requirements for pipe used for both storm and sanitary sewers.

Holistic approach to produce user-friendly pipe

The search ended with Schlüsselbauer, as the company was able to offer an holistic



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Production plants for pipes, manhole components and special parts

approach to produce user-friendly pipe. The company became much more than an equipment supplier. A strong relationship was built and trust established to the point where both companies worked as a team with available resources to deliver a total package to the pipeline design engineer and contractor. Schlüsselbauer staff worked with the owner's representative to source other manufacturers' equipment and advise on any facilities manufactured on-site. Schlüsselbauer heavy industrial equipment greatly improves operations to facilitate the production of concrete products, while contributing to the management of a workplace environment that easily accommodates health and safety standards. Owners of such automated plants often see a rapid return on investment and greater control of overhead costs.

Six years after their search had begun, and after successfully working with Schlüsselbauer equipment at their Franklin Tennessee facility, ground was broken in August 2004 for a new facility in Lexington. Schlüsselbauer had worked at the packerhead plant in Franklin to improve production and pipe quality by adding modules such as a Cagemaster (a robot designed for the placement of reinforcement cages in pipe), an off-bearing robot, depalletizing area where the product is separated from the header and pallet, cleaning and oiling stations, and a robot to install and remove retainer caps. During this period, Schlüsselbauer staff had become known as problem solvers that understood the business of pipe pro-



Bottom pallets with the new integrated gasket

duction using high quality heavy industrial equipment.

The Lexington facility was commissioned and producing pipe by March 2005. Pipe is produced to ASTM C76-05a Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe through the requirements of ASTM 655 with joints exceeding C443-05 Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets. ASTM C 655 Reinforced Concrete D-Load Culvert, Storm Drain, and Sewer Pipe is used for sizes 12-inch through 144-inch diameters designed for specific D-load strength. The properties of

the pipe are similar to ASTM C 76 pipe except that the pipe may be designed for a specific D-load strength and the design accepted based on a statistical analysis of test specimens. The facility was also pre-qualified through the Q-Cast quality assurance program of the American Concrete Pipe Association. Pipe is produced as close to a performance standard as possible, thereby moving far beyond industry prescription standards. On-site testing facilities and a laboratory are routinely used to carry out tests such as three-edge bearing, hydrostatic, vacuum tests and sieve analyses. Product is ready for shipment soon after curing and random



EXACT 2500 pipe production

PRECISE pipe production

PRECISE handling equipment for pipes

BIGEXACT production of pipes and manhole components

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Automatic pipe handling

testing. The entire facility operates with a maximum eight people and a plant manager.

The Exact 2500 allows the pipe producer to broaden its product offerings and compete directly with flexible pipe producers on critical pipe performance features such as strength and joints of the concrete pipe, as well as installation costs. All pipe produced in the Lexington facility has an integral bell gasket. Pipe with 12-inch, 15-inch and 18-inch diameters have a very small bell, while pipe with 24-inch and larger diameters is straight walled. With the Exact 2500, gaskets can be incorporated into the bells and pipe produced with straight walls that eliminate the need for contractors to shape the bedding to accommodate the traditional bell feature of small diameter concrete pipe. Staff at Sherman-Dixie is now able to promote its concrete pipe as the most user-friendly pipe on the market. Along with staff at Schlüsselbauer, the in-house Sherman-Dixie team involved in the design of the straight-wall pipe with the incorporated bell gasket was Earl Knox, Bill Thompson, Al Hogan and Michael Scalf.

Precast concrete grade rings are needed to complete the adjustments of manholes and catch basins so that the covers are flush with roadway pavement. Manholes and catch basins are required components of storm and sanitary sewer systems. There is plenty room for improving the quality of grade rings in the market areas of all Sherman-Dixie facilities, so the

Ringmaster plant was introduced to produce rings with repeated precision and consistency through an industrial process. The plant can vertically stack product that is immediately ready for sale and dispatch.

New 37,000 square-foot facility

The original Lexington packerhead pipe plant, built in the 1960s, was acquired in 1999. It was capable of producing only 12-inch to 36-inch diameter round pipe. To be competitive, a larger pipe diameter was required. After razing all but the aggregate tower at the old pipe plant, the

new 37,000 square-foot facility, complete with new mixer, cage machine, electric carts for moving product and depalletizing station and product conveyor, now produces pipe ranging in size from 12 inches to 60 inches in diameter. The facility's computer system is linked to the equipment supplier by a digital subscriber line (DSL), which is a fast method for moving data over regular phone lines. Schlüsselbauer technicians and technologists can monitor production in real time and help problem-solve during the shifts. They are on-call 24/7/365.

There was a very strong design, construction and management team set in place for the construction and commissioning of the new facility. Thomas A. Higgins Jr., P.E. with Thomasson Services Company (Nashville, TN) managed the project for Sherman-Dixie and I.C. Thomasson Associates, Inc. of Nashville, TN., was the consulting civil engineering company on the project. The general contractor was Bacar Constructors, Inc. of Nashville, TN. involved in the plant construction were Earl Knox, Marcus Barnett and Michael Scalf. Schlüsselbauer was well represented on the project with staff on site for the equipment installation and commissioning, as well as production staff training.

The new facility is poised to grow market share as demand for user-friendly quality pipe product grows, and contractors and engineers become more aware of the total package of products and services available. The Lexington facility enables the pipe producer to be a full service



Curing chambers for efficient curing of the pipes

resource to the civil engineering community as well as contractors. The Exact 2500 and Ringmaster are both capable of operating on a 24-hour cycle.

Sherman-Dixie's concrete pipe and grading facility in Lexington is open for tours. Through its boardroom window overlooking the production floor, and from an

observation platform attached to the batching tower, visitors can see the latest developments in robotic technology for precast concrete products. Since the late 1990s, when Schlüsselbauer began introducing its technology into the North American market, precast concrete producers have quickly realized that market share can be increased or regained with an offering of high quality product that is efficiently produced with fully robotic or semi-automated facilities. ■



Pete DeLay (in the middle) and his most user-friendly pipe

Further information:

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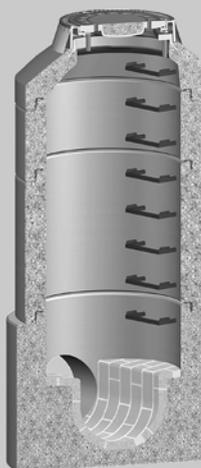
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