Schlüsselbauer Technology GmbH & Co KG, 4673 Gaspoltshofen, Austria

Con Cast Pipe Starts Production of Customized Monolithic Monobases

Con Cast Pipe, an Ontario based company, is the first North American producer to manufacture the customized Perfect Monobases. With this strategic investment, Con Cast Pipe has reinforced its place as a leading innovator for the precast industry in Canada. The new Perfect Monobase products are manufactured with a homogenous concrete pour which includes benching and pipe connections. With the implementation of this new production technology, Con Cast Pipe has streamlined the production process for manufacturing prebenched monolithic manhole structures.

Con Cast Pipe's Oakville production facility was built in 2002, although, Con Cast Pipe has been operating in its Guelph, Ontario location sine 1990. Con Cast Pipe's newest production site in Oakville was originally equipped with two efficient automated plants from Schlusselbauer, Austria. For pipe production a fully automated Exact-2500 plant was installed. For the production of standardized prebenched manhole bases a Benchexact machine was implemented. Along with its production equipment in its Guelph, Ontario facility, Con Cast Pipe has many years of experience in the production of prebenched monobases and other precast concrete drainage products.

Over the years, an excellent working relationship has developed between Con Cast Pipe and Schlusselbauer. With this background, the experts from Con Cast Pipe and Schlusselbauer investigated the opportunities of the Perfect production system in the Ontario marketplace and discovered the opportunity for this technology which dovetailed well with Con Cast Pipe's long term market strategy. In February 2011, the first Perfect monobases were produced with the Perfect system. These Perfect monobases were manufactured to OPS specifications which incorporate the steel reinforcement requirements. Con Cast Pipe now has the ability to deliver the Perfect monobases in 1200 mm diameter manhole monobases up to 1.524 m monobase heights.

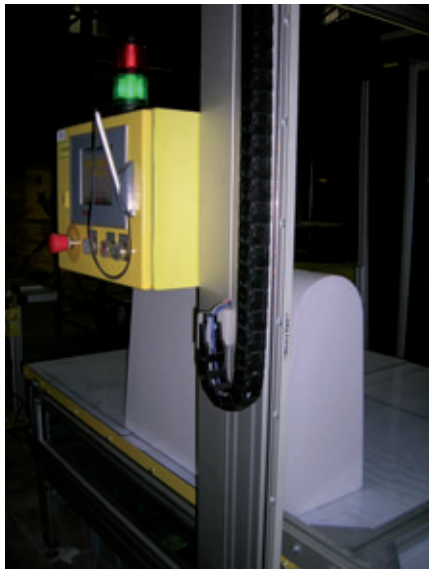
Con Cast Pipe's decision to incorporate the Perfect monobase system in to its product offering was developed to meet the needs of the installation contractors within the Ontario market. Con Cast Pipe's customer base within Ontario are relying more on the products offered by their supply chain to enhance the productivity on their jobsites. Until recently, the demand for prebenched monobases was satisfied by the laborious process of manipulating uncored monobases and incorporating secondary and tertiary processes to core and prebench monobases to be sent to site. With the new Perfect technology, the additional labour is not required and the product can be designed and manufactured in one fluid process eliminating the costly additional labour steps previously experienced in prebenching manhole structures.

Fabrication of the negative EPS mould elements

Prior to concrete placement, each mold must be prepared with channel alignments as a negative form. The so-called negative form (or block-out element) of the required channels forms a crucial part of this production process. At Con Cast Pipe, a laser-controlled check of the semi-finished channel

Only high quality steel moulds are used in the Perfect production system

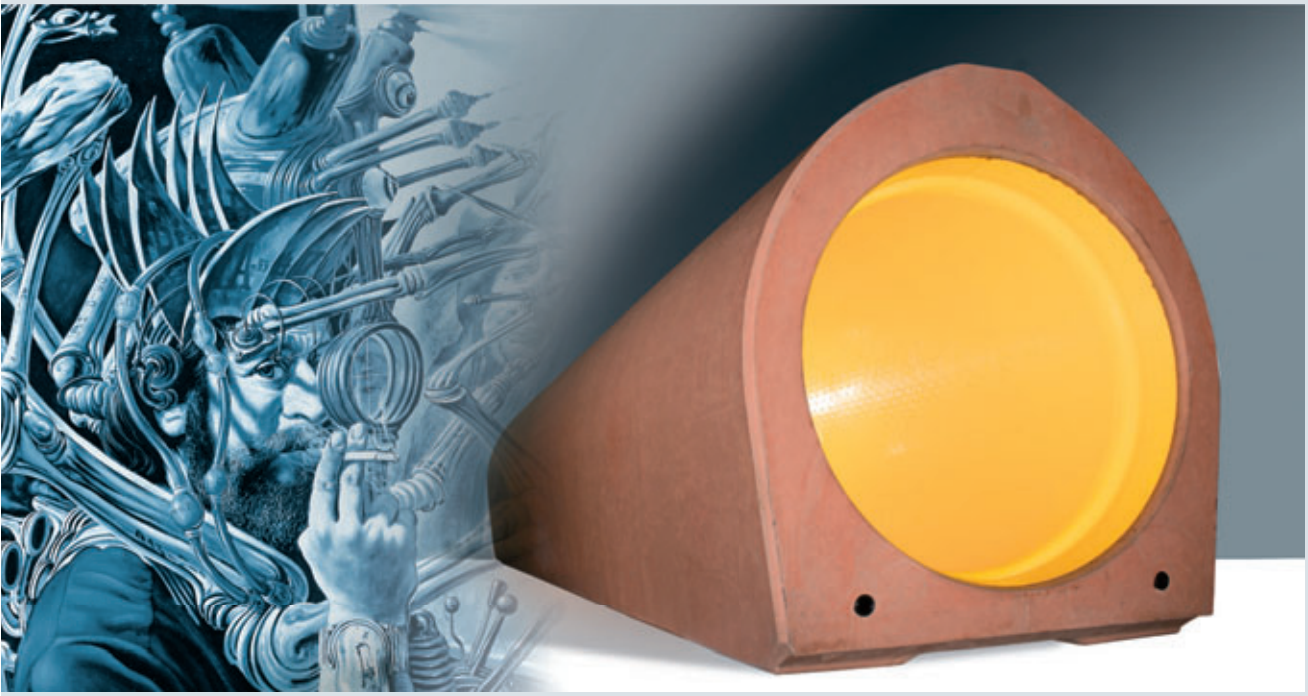
Perfect moulds installed in a stationary arrangement at Con Cast Pipe



Standard polysterene form parts are reduced to required length by hot-wire cutting.

SCHLÜSSELBAUER

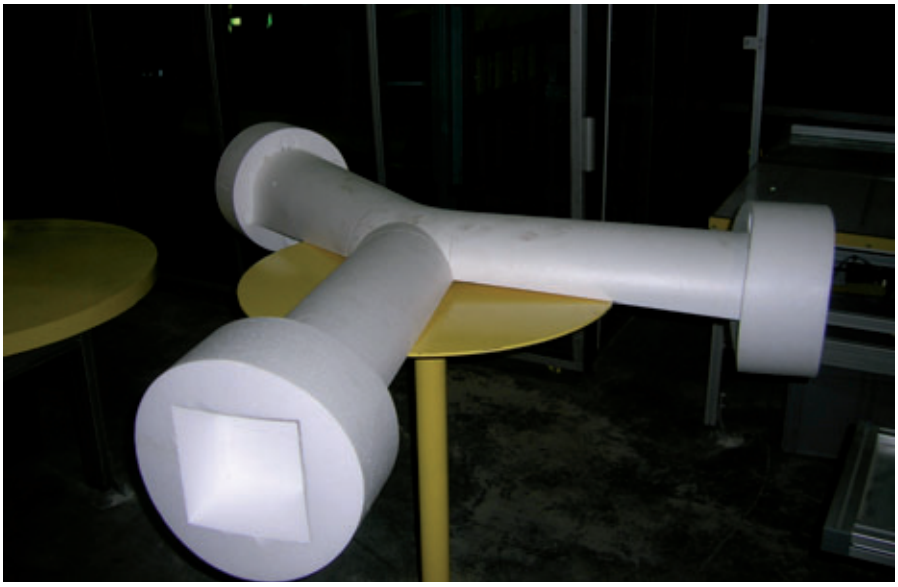
PERFECT·SYSTEMS



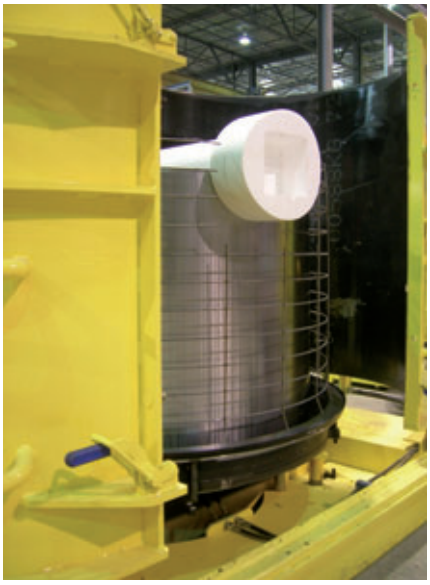
PERFECT PIPE+

THE SANITARY SEWER PIPE SYSTEM THAT STANDS THE TEST OF TIME

www.perfectsystem.us · sales@sbt-na.biz
www.perfectsystem.eu · www.sbm.at · sbm@sbm.at



The completed construction of a negative mould piece.



A prefabricated negative channel and a reinforcement cage are placed into the mould.

has been included in the manufacturing equipment. The Perfect software is an integral part of the system and is used to retrieve the manhole to be produced and displays the required bill of material listing for the polystyrene (EPS) channel negatives so that the operator is able to get all of the required channel components from the stock polystyrene supply. The software also stores production-related information such as date of manufacture and product dimensions for future reference, as required. Once the forms of the negative channels are available, the program defines the cutting work to be performed at the individual elements. The channels to be cut are transported onto the 2D saw. Using a hot-wire cutting process, the standard forms for the channels are reduced to the required length.

When the channel elements are placed on the laser projection board, the laser system provides an option to check the correct routing of the channels which significantly simplifies and automates the quality control process ensuring the highest degree of accuracy. In the next step, the channels are joined to assemble the final channel configuration. A controlled 3D saw utilizes curved cutting wires to sculpt the required channel diameters and also to add the required curvilinear cut to the side inlets. In this process, the curved cutting wire corresponds to the diameter of the main channel and the polystyrene channel is carved to the proper height. In the next step, the base gradient is inserted in to the form. To do so, the channel assembly is placed on a rotary plate that is sized equivalent to the manhole diameter. This ensures that the channels are matched to meet the proper gradients required (the standard bench slope is 1:6) in the cylindrical contact surface. The gradient is cut right into the pipe connection. The semi-finished part is then placed on the circular saw in order to accurately insert the outer radius (i.e. the manhole diameter). In the last automated step of the process, the inlet parts saw, which is adjusted to the proper height based on the channel configura-

The cured monolithic monobase is ready for de-moulding.

Manipulation of cured products by an existing overhead crane and a turning devise.

The turning devise is also used for de-moulding.

Demoulded products are turned in their assembly position.

tion, is used to cut the pipe connections to perfectly fit both the inlet and outlet of the required channel. These cuts also follow the radial mold shapes defined by the design of the manhole. Each of the saws are equipped with a small screen displaying the relevant parts and work steps, which serves as an additional means of quality verification. A glue gun is used to bond the polystyrene parts of the channel together. The negative form has now been completely prefabricated and ready for placement in the form prior to placement of concrete.

Monobases cast in one pour

At the Con Cast Pipe plant, the Perfect manhole monobase section moulds have been installed in a stationary arrangement. Each mold has its defined position where it is filled with concrete. Although this arrangement results in a lesser degree of automation, it makes the manufacture of special products easier. The prefabricated negative channels, consisting of polystyrene as well as the reinforcement cage, are placed into the steel mould. The contact edges are lined with a sealing strip in order to avoid the formation of burrs or grooves in the final

Cast in lifting achors for safe product hanling on the building site.

product. The application of wax to the polystyrene foam facilitates the removal of the negative form at time of demoulding.
The manholes are produced in an inverted arrangement. The two spherical shells of the steel mold are closed, and the self-compacting concrete is cast in one homogenous pour. The concrete is transported within the manufacturing facility via a bucket conveyor. The mix is then fed to an intermediate station (i.e. a feed hopper) by overhead crane which fills each Perfect monobase manhole mould with precisely batched concrete.
The Perfect monobases are demoulded on the following production day. The two-part mold is opened and the product is lifted from the steel mold by overhead crane. The monobase is inserted into the turning device, firmly held in place by this unit and turned by 180°. This means that the monobases are demoulded in their assembly position (i.e. no longer in an upside-down position). At this stage, the channel mould is removed and the resulting styrofoam residues are collected. Following a recycling step, this material can be fed back into the process at a later stage. The customized monobases are ready for shipment now.
This investment positions Con Cast Pipe to meet their customers requirements while reducing the labour component required in traditional prebenched monobase production. The Perfect production process provides Con Cast Pipe with the required manufacturing and design flexibility while optimizing the supporting hydraulic performance of the Perfect system by manufacturing premium precast monolithic structures in one homogenous pour.

FURTHER INFORMATION

CON CAST PIPE

Con Cast Pipe
641 Burloak Drive
Oakville, Ontario L6L 6V9, Canada
sales@concastpipe.com · www.concastpipe.com

SCHLÜSSELBAUER

Schlüsselbauer Technology GmbH & Co KG
Hörbach 4, 4673 Gaspoltshofen, Austria
T +43 7735 71440 · F +43 7735 714456
sbm@sbm.at · www.sbm.at · www.perfectsystem.eu

Pfeifer Seil- und Hebetechnik GmbH, 87700 Memmingen, Germany

Safe and economical transport of manhole elements

As a supplement to the lifting box system, Pfeifer have developed the SAS manhole lifting system for the lifting of vertical concrete manholes. Whereas the lifting boxes represent an inexpensive option for the transport of concrete manhole elements weighing less than 2 tonnes, the newly developed Pfeifer SAS manhole lifting system now covers load steps up to 5.2 tonnes.

The advantages of the new system lie in its simple and safe handling. The anchors can be built into the concrete manholes without extra reinforcement irrespective of the direction. The minimum reinforcement of the elements is sufficient. After the concrete has set, the manhole lifting loops are connected to the embedded anchors with the aid of the permanently attached bolts. It is now possible to transport the concrete manhole safely.

The lifters are intended for use along the entire transport chain. In other words, after bolting the parts on, they are not removed again until the element is at the intended place of use.

FURTHER INFORMATION

PFEIFER

PFEIFER Seil- und Hebetechnik GmbH
Dr.-Karl-Lenz-Strasse 66
87700 Memmingen, Germany
T +49 8331 937290 · F +49 8331 937342
info@pfeifer.de · www.pfeifer.de

Pfeifer manhole lifting system SAS