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Individual Thanks to Flexible Production: Monolithic Concrete Manhole Bases from PCS in Canada

■ Mark Küppers, CPI worldwide, Germany

Family company PCS Les Produits de Ciment Sherbrooke Ltée has been producing concrete pre-cast components for waste water and infrastructure projects in the Canadian city of Sherbrooke, Quebec, since 1944. With an experienced team, the company uses both wet-cast and dry-cast methods in its production and is one of the most important suppliers in Quebec. With the start-up of Perfect concrete manhole base production from Schlüsselbauer Technology in Austria, the company has put down a clear marker for the coming years. Monolithic concrete manhole bases with individual channels and pipe connections are gaining in significance in Canada, and PCS is equipped to supply high-quality products to this growing market.

PCS Les Produits de Ciment Sherbrooke Ltée manufactures its products in line with the strict standards of the Bureau de Normalisation du Québec (BNQ) in order to be able to offer its customers products that meet even the most challenging requirements.

Whether relating to the wide range of stock items or a customer-specific product, PCS tasks itself with providing fast delivery of high-quality products in compliance with the applicable standards. In this process, it is supported by a team of long-standing employees who have a wealth of experience in the area of concrete pre-cast component production. The company prides itself on its excellent staff retention level, and this is reflected in the informal atmosphere in the production halls.

However, it is not just the employees who value their employer—numerous customers also appreciate the product quality and reliability of the family company and have been doing so for many years or even generations.

Celebrating the 75th Anniversary with Customers and Employees

PCS can look back with pride on its 75-year success story, and fitting celebrations were held to mark the anniversary this year



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with numerous longstanding customers and the employees. This was, of course, used as an opportunity to look back at the most important steps in the company's development.

The recent investment in the Perfect production method from Schlüsselbauer Technology and the associated entry into the monolithic concrete manhole base market is definitely another milestone in the company's history.

The Perfect Concrete Manhole Base

Leakproof, Reliable, High Load Capacity

The use of self-compacting concrete produces a component quality that stands apart from conventionally manufactured products. Monolithic and produced in one pour, giving a consistently leakproof concrete structure—all features of these state-of-the-art modern manhole bases. In addition, customized product requirements can be implemented using

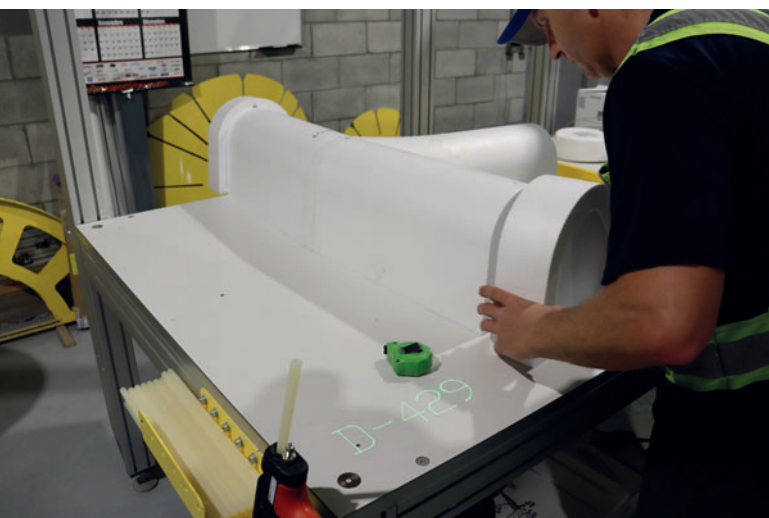
economical and sustainable manufacturing, with quick and reliable availability. With Perfect, new quality standards can be set for surface drainage and waste water systems.

The entire structure of the monolithic manhole base (the base, wall, and channel/berm) and even the pipe connections are reliably leakproof, and the channels and pipe connection are precisely shaped.

The smooth change in angle and incline of all inlets ensures optimal flow behavior along the entire length of the channel. Stagnant areas and unfavorable swirling can be avoided using a constant gradient throughout the entire channel section.

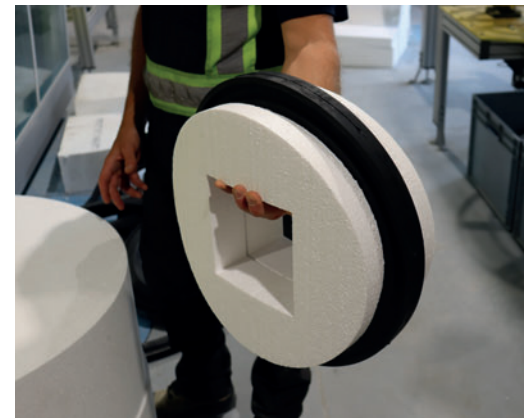
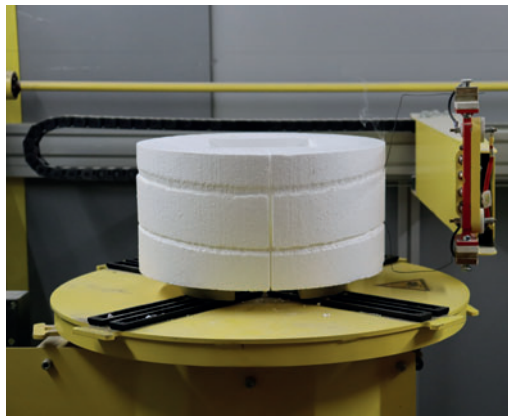
Tailor-Made Channel

After a Perfect manhole base is planned on the computer using the configurator, the first step is to produce negative



The individual channel parts can easily be assembled into one unit by an employee using hot adhesive.

A laser fitted above the work station ensures that the individual parts are positioned accurately.



Individual recess bodies for pipe connections with integrated gasket are produced using an additional hot wire saw.

moulds from polystyrene hard foam, which are subsequently used to produce the channel. The individual moulded parts required are cut to size from prefabricated base elements using two- and three-dimensional hot wire saws. In this case, the individual channel and pipe connection components are cut so precisely that they can be easily put together into one unit by an employee using hot adhesive. In order to ensure the individual parts are accurately positioned, a laser fitted above the work station continuously displays all of the inverse lines of the manhole on the table.

Individual Pipe Connections with Integrated Gasket

Often, moulded pipe connection components with applied gaskets are used in order to be able to produce manhole bases with integrated gaskets for the pipe connections. These moulded pipe connection components with applied gaskets are either supplied prefabricated or can be produced individually at PCS.

An additional hot wire saw has been installed for this purpose for the production of these individual recess bodies. These hot wire saws use a cylindrical moulded part made of polystyrene hard foam to produce a two-piece connection element, which can receive the gasket with a perfect fit in a way that won't damage materials, i.e. without the use of force.

A recess ring is cut roughly in the middle of the cylinder so that the reduced diameter of the cylinder in this area matches the inner diameter of the intended gasket. In order to then be able to mount the gasket easily, the body is divided through the tapering. On a polystyrene rigid foam base, the desired gasket is then inserted with perfect fit, then the second part is applied and adhered to the other half again in order to form one unit.

These integrated gaskets are later cast with concrete with the channel in a joint work step, thus forming a fixed connection with the component. No installation is required on the construction site when using integrated gaskets. This ensures leakproof and durable connections between the pipe and manhole base.

Simple Installation

The finished negative channels can then be integrated into the steel moulds. In Canada, it is also not uncommon to apply negative bodies for pipe connections with integrated gasket directly onto the steel core of the mould. This means that in these cases, water does not subsequently flow directly into a channel, but instead drips or flows onto the manhole base from a defined height.

The structural height of the manhole parts can be easily adjusted in the mould equipment using an adjustable height ring.

The moulds have a two-piece mould shell and can be pulled apart symmetrically. This means that the surfaces are easy to access for cleaning and preparation. Once the negative channel and pipe connections have been secured, the mould halves are pushed back together again.

The employee can quickly and easily seal the mould using the closing mechanism. The magnet technology used holds the negative body made of polystyrene hard foam in position, preventing any upward lifting when the moulds are subsequently filled with self-consolidating concrete.

Easy Handling with Turning Device

The monolithic concrete manhole bases usually harden in the mould for one day and can be removed and demoulded on the following day. The concrete monoliths, which are produced upside down, also still need to be turned 180° into the subsequent installation position. PCS in Sherbrooke also has a Schlüsselbauer turning device, which was included in the scope of delivery, to perform this task.

The turning device is suspended in the hooks of the crane rail for this purpose. Using the grippers of the turning device, the manhole base is encircled using force-fitting and then lifted from the core of the steel mould. The turning process is then carried out during transport to the set-down position. A label with all of the relevant details and parameters is applied to



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The finished negative channels are secured using magnet technology.



The negative bodies for pipe connections with integrated gasket can also be applied directly onto the steel core of the mould.

the manhole element, which is also marked with an identification using spray paint. This ensures that the tailor-made monolith can always be precisely identified right up until it is installed.

As a final step, the negative channel made of polystyrene hard foam is removed and collected for external recycling.

The Targets Set Have Been Achieved

“The decision to invest in the Perfect method aimed to further improve our position as a producer of concrete pre-cast components and achieve even higher product quality whilst also having maximum individuality”, summarizes Jean-Francois Trudeau, who has been in control of the company’s destiny as Managing Director for three years. “We wanted to open up new markets and be the best in the process. And we have achieved that. The high utilization of the new Perfect method is evidence of this.”



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