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Principals, building contractors and manufacturers likewise benefit from high installation performance of prebed concrete pipe wet-cast in large scale production lines

Do we install sewerage pipe properly, or quickly? 'Both', is the genuine response of more and more concrete pipe manufacturers when asked by their customers or contractors. For example, in spring 2013 in Baden-Württemberg, Germany, it was decided, to incorporate a new concrete pipe system into a project judged suitable on a trial basis in discussion with the designer and contractor. Even at that time, spontaneous feedback from everyone involved was very positive. When it came to installation of additional sewerage lines in 2014, it was decided that this concrete base pipe should be the system of choice again. To be precise, the Perfect Pipe concrete-plastic-composite-pipe had been chosen once again. In autumn 2014, more than 1600 linear metres of Perfect Pipe with a nominal width of DN250 were put in place for the collecting sewer main required in a housing development. For the local authority and the building contractor, the biggest gain was that the installation team was able to lay up to 90 metres a day!

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Several of the design features of this innovative pipe make it feasible to maintain the quality of installed piping alongside high laying performance. First, there is the robust, rigid concrete pipe which, due to the material, has high static load-bearing capacity and is well-suited to be used in the tough conditions on construction sites. Then there is the pipe geometry, which is particularly important – Perfect Pipe is frequently supplied to sites as a prebed pipe. The flat bottom of the pipe simply requires a compacted ground on which to lay the pipe, taking into account the required gradient. A recess in the centre of the base ensures that the pipe is put down on the bedding as if 'on rails', avoiding any point loads in the middle of the bottom. Recesses for bells are also a thing of the past along with the previously required compaction of the typical

bottom gap of round shaped pipe, which in most cases was not fully manufactured anyway. So this addresses one of the two key factors for speeding up pipeline construction. The pipe geometry, with an almost perpendicular outer wall, allows the contractor to actually fill and compact a few layers of the embedment without any gap, as well as using the excavated material to backfill, depending on local conditions. Aside from this, the maximum requirement for filling the embedment is a grain size of 0/45.

Acceleration factor II – sealed pipe connectors

A continuous corrosion protection system in solid-wall plastic pipe is often produced by welding the pipe ends on site. This is a step that often has to be carried out by certified third-party companies, and always hinders the progress of pipeline construction. The concrete and HDPE composite Perfect Pipe

developed by Schlüsselbauer now has continuous corrosion protection built in: the pipe can be jointed using plastic connectors, in the open trench, without wasting any time. Each connector has two KLP seals on the outside which act as a double joint in the pipe connection. By the way – the same efficient and easy to do pipe joint is available for pipe jacking also.

No compromise: Installation performance and safety on site

Sturdy reinforced or non-reinforced concrete pipe have per se a greater weight per linear meter than other pipe materials. So, particularly as Perfect Pipe is designed as a base pipe, manufacturers of Perfect Pipe place great emphasis on workplace safety in the production, transport and installation of the product. At the plant, as a general rule, almost all production stages are fully automated once the HDPE liner has been

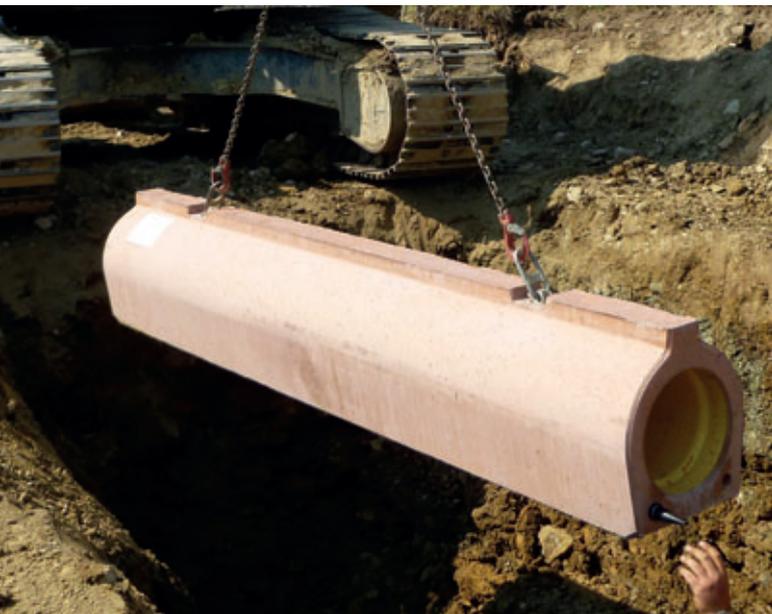


A typical on-site storage set up for Perfect Pipe DN250 in Endingen, Baden-Württemberg



The pipe can be moved to the site with simple equipment

fabricated, so that the workers are simply running checks and carrying out easy manual work. In one operation, for example, lifting anchors are manually fixed into the concrete moulds. These anchors are firmly embedded in the concrete once the pipe is cured and provide a basis for unloading safely on site and controlling how the pipe is lifted into the trench. The base pipe geometry makes both transport and on-site storage easier. The pipe can be stored under stable conditions. Employee safety is also taken into account where laying is concerned. A positioning tool shows workers the ideal position for the connector when jointing the pipe and also allows them to guide the pipe into place perfectly while protecting their hands. The fact that concrete pipe manufacturers are building targeted measures into their new processes to increase safety at work for all those involved with production and installation is another factor appreciated by customers and contractors likewise.



Lifting the prebed pipe into place using the lifting anchors permanently embedded in the concrete



The simple positioning tool is removed once pipe have been jointed



Connecting pipe to manhole is also easy using connectors and shear load pins

Prebed pipe as a factor for added value at concrete precast plants

For concrete pipe manufacturers, the versatility, installation efficiency, load-bearing capacity and cost efficiency of concrete base pipe represent a level of potential that could not be fully realised before today. By using easy- or self-compacting concrete and putting in place cost-effective large scale production lines, manufacturers of precast concrete components can increase added value in their own plants. Even more so if wastewater market segments in the many countries where the use of concrete pipe is otherwise declining can be served by the production of the concrete-plastic-composite Perfect Pipe. And even though this report is pointing towards a focus on

higher installation performance and more rapid construction progress etc. also, it is also clear that aspects such as design quality and safety for the people involved must not suffer as a consequence. Perfect Pipe – the concrete pipe with HDPE liner is particularly well-suited to lines where increased chemical attack is anticipated, such as long distances and/or low gradients or a long-term unpredictable stress scenario.

Over the last years, Schlüsselbauer Technology has equipped a number of plants with production systems for wet-cast concrete elements. Regarding design of wet-cast concrete pipe the engineers in charge had to provide a high static load-bearing pipe geometry, and durable, tight connections, and corrosion protection – either sep-

arately or in combination. Feedback on the new pipe from both users and manufacturers is consistently positive. Perfect Pipe meets all the demands of today's sewerage systems.

FURTHER INFORMATION

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Equipment for large scale production of wet-cast concrete pipe



Concrete base pipe up to DN1200 are manufactured in various geometries which depend partly on nominal width