# An in-situ alternative to hauling large-diameter pipe

What's New

On many remote projects requiring large-diameter concrete pipe, plant-produced units are just too heavy to haul economically. Rather than allowing pipelines to be designed with other materials, concrete producers can suggest a pipe construction system designed for fast, flexible installation.

Inventors Anton Majnaric of Copley, Ohio, and William Bjerke of Hudson, Ohio, have devised a field solution with their patented "Concrete Pipes and Methods for the Manufacture Thereof," now assigned to Majnaric Technologies Inc. of Copley.

Precast pipe sections are usually limited to 8 feet in length and diameter to reduce the chance of breakage during shipment. The disadvantage of current precast piping systems is in the overall cost of transporting short, heavy sections of pipe to the location, preparing a proper bed for all the joint locations, and joining the short lengths to one another.

To overcome these problems, the inventors have developed an *in situ* concrete pipe system that allows much longer lengths. Aside from the obvious cost reductions in transporting and handling large pipe sections, the great functional advantage is the reduction in the number of joints in a network.

The pipe has an inner and outer sleeve separated by a spacer ring, which creates a void between the sleeves (Figure 1). Concrete placed in the void creates the pipe structure. The spacer ring has a number of interlocking ring forms with nesting members to allow for interconnection.

In an alternative embodiment, interlocking forms shape both the inner and outer surface of the pipe. These alternative forms provide convex nesting embers. In turn, these embers form internal conduits between the inner and outer surfaces that accept reinforcing members or connection members to interlock the forms together. Concrete fills in these conduits and between the void of the inner and outer surfaces to solidify the pipe. Both embodiments may employ a plurality of elbow forms to form a bell mouth, which connects with the end of an adjacent pipe.

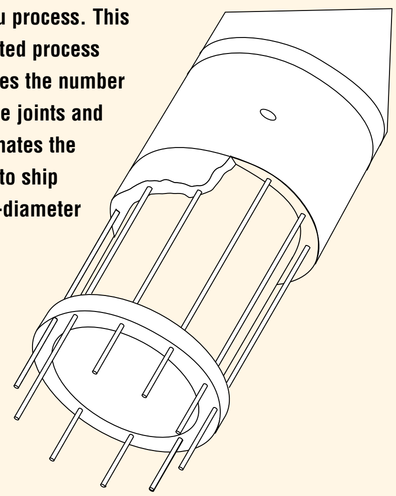

**Figure 1. Sectional perspective of concrete pipe made using a patented in-situ process. This patented process reduces the number of pipe joints and eliminates the need to ship large-diameter pipe.**

Both pipe styles may be joined with cast-in-place concrete collars and sealing rings, or by banded gaskets, such that the pipe may be free to change length and pivot in the joint. Alternatively, an elbow form (Figure 2) may be used. The pipe section fits between the inner and outer surface of the pipe. The angle section provides a transition from the pipe section to the coupling section, which fits over the end of an adjacent pipe.

Interestingly, the patent specifies that the reinforcing element may be reinforcing rods, cable, wire, or rebar. Although not specifically spelled out in the patent document, when cable is used for the reinforcing member it may be possible to add cable tensioners to prestress the concrete for load-bearing applications.

Also interestingly, the patent does not suggest or recommend a maximum feasible length. Therefore, any length up to what is feasible to pour is probably possible, but perhaps the location of joints that still need to be placed in the event of a future failure and replacement need will determine pipe length.

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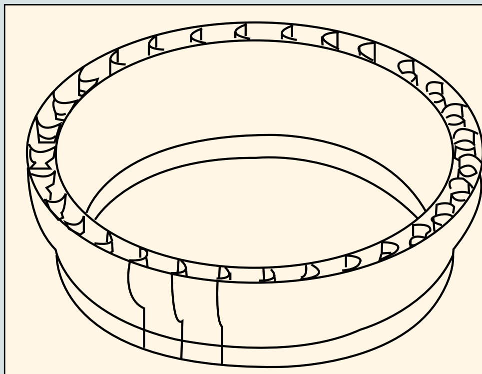

**Figure 2. Top perspective of a bell mouth formed by a number of elbow forms. This connects with the end of an adjacent pipe.**

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