

## **Taking PVC-Alloy Pipe Culvert Lining Technology to a New Level**

Historically there were concerns about the memory ability of deform and reform pipes. However, due to a unique PVC-Alloy formula, a rehabilitation product has been developed with a lower and more consistent lassing state. This ensures a new and stable memory is formed when the product is shaped tight to the inside of a host pipe. The patented compound used in Thermoform liners is significantly more flexible and ductile than standard PVC pipe, reducing the risk of cracking. The compound allows for steam to penetrate the material quickly resulting in greater diameters of pipe being processed at lower pressure than standard, expanding further with greater flexibility to form to even the most complex shapes of host pipes. This means you can benefit from faster processing times and install diameters up to and including 900mm. Thermoform is manufactured in a factory-controlled environment, ensuring that the consistency and quality of the material is maintained throughout its production. Quality assurance is important and therefore the material is subjected to rigorous testing to make sure it conforms to and exceeds the standards expected. The fact that Thermoform is factory made ensures quality assurance in the same way as standard PE and PVC pipes. All design criteria can be carefully monitored within the factory and confirms that the moduli, wall thickness and corrosion resistance are consistent – all of which will give what is necessary for performance life predictability. Unlike CIPP lining materials, Thermoform is almost completely unaffected by field personnel, who have less influence upon the design compliance. There is no on-site chemistry required and Thermoform does not rely upon a chemical reaction for it to work. Thermoform is extruded in the same way as conventional PVC pipe however whilst still hot it is folded into a C or H shape and rapped onto a transportation coil. The coil is delivered to site and the material is ready to install. Warming of the material with steam caused it to soften to the point where it is pliable enough to be winched through the host pipe. Once the material has been inserted it is again heated with steam and pressurized causing it to expand and form a tight fit to the host pipe. The material will lock itself into any imperfections within the pipe. In the unlikely event that the Thermoform liner must be removed, it can be by simply re-steaming the material and extracting it from the pipe. Clearwater Structures Inc has been installing this technology in culverts on MTO projects and will illustrate the unique installation abilities through several case studies.