

Challenge:

Mount Fuji is one of Japan's most popular tourist destinations. In the nearby resort town of Izuyama, the cast iron sewage pipeline system was in desperate need of repair. The pipeline was built in the 1970s and serves the 12-story residential building complex Plaza Izuyama.

The cured-in-place pipe (CIPP) installations were blind end installations, meaning they could be accessed at only one end, either vertically or horizontally. The pipe configuration was quite complex – a vertical sewage pipe of 100 mm diameter extending from the building was connected to a horizontal pipe of 125 mm diameter with two 90° bends, two 45° bends and three tees in place.

This meant the pipe liner would need to be extremely flexible to navigate through multiple bends and pipes of different diameters.

In addition to the physical challenges in this project, there were also time constraints on the execution. The local contractor, Tokyo Tornado, was allotted 10 hours for the repairs to minimize inconvenience to residents. During this time, the project team would need to cut and isolate pipes, set up temporary

bypasses, clean and rehabilitate pipes, carry out CCTV inspections, and reinstate the system to resume activity as normal.

This meant that the allocated time for the execution of the rehabilitation was only four hours.



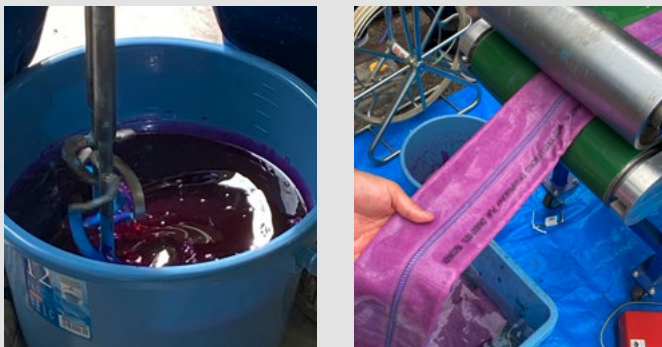
Our activities: Understanding the needs of the customer

A team of Trelleborg's CIPP engineers and experts from Hong Kong and Germany traveled to Japan eight months before the start of the project. Together with the local contractor, they assessed the site to



determine the most suitable solution, taking into account factors such as pipe structure, cost and rehabilitation times.

The project team decided to opt for Trelleborg MultiFlex Liner as the carrier material. The MultiFlex Liner is made from ultra-flexible materials for the rehabilitation of pipe sections with multiple bends. The liner could achieve a natural transition between the two pipe sections of 100 mm and 125 mm diameters and navigate through multiple 90° bends with ease.



To speed up curing in the limited time available for rehabilitation, the team selected Trelleborg Epoxy FC30 resin. With a pot life of 30 minutes and curing time of one hour, Trelleborg Epoxy FC30 would be the optimal tool for this project.

After months of planning, preparation and comprehensive training, the repair works were executed successfully. The rehabilitation of the pipes took less than three hours, including a curing time of one hour. The liner fit the original pipe seamlessly. The walls of the pipe were clean and water flowed through smoothly without affecting the speed.

The renovated pipes now have a service life of 50 years, offering the building management and residents a tension-free experience.

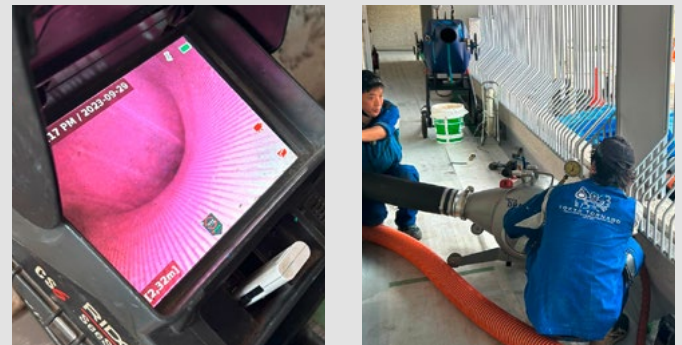
Solution details: Trelleborg MultiFlex Liner and Trelleborg Epoxy FC30

Trelleborg's trenchless pipe and sewer rehabilitation systems are a practical and cost-effective alternative

to traditional pipe rehabilitation methods which require digging and the complete replacement of a pipe or sewer through an open construction site over 3-6 months.

The Trelleborg MultiFlex Liner is an unbeatable choice for rehabilitating vertical and horizontal pipes in buildings. Made from ultra-flexible materials, it proved to be the ideal solution for the Plaza Mount Izu repair project. It can navigate multiple bends and is specially designed for the rehabilitation of pipe sections with multiple diameter changes.

Additionally, the Trelleborg MultiFlex Liner is suitable for ambient curing in buildings, alleviating the need to carry a steam generator or hot water boiler into areas where space is restricted.



This was complemented by Trelleborg Epoxy FC30, which is perfect for short rehabilitation distances and smaller pipe diameters. Importantly in this case, the tool alleviated the need for special curing equipment, helping speed up the entire rehabilitation process.

The combination of the Trelleborg MultiFlex Liner and Trelleborg Epoxy FC30 provided both quality and speed, and the overall execution of this project was hassle-free, swift and non-disruptive.



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