

# **Automatic Internal Lining System**

## Polyurea NNT Method

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### Background

The sewage system's shield tunnel is conventionally applied with secondary concrete coverings. However in recent times it has become increasingly clear that this technique's corrosion -resistant function is insufficient at preventing concrete corrosion from hydrogen sulfide. Therefore a new technique called the "internal lining method", which replaces the second concrete coverings with an anti -corrosion lining that covers the internal segment, is attracting interest and its application is increasing. The internal lining method is an exciting new technique that extends the life of sewage tunnels and pipes, reduces excavation cross section areas and has the potential to significantly cut job times.

### Outline of Method

"Polyurea NTT Method" is a technique jointly developed by Taisei Corporation, Nippon Kokan Koji Co.,Ltd. and Nippon Paint Co., Ltd, and is an internal lining method for sewage shield tunnels stated above. It employs an automatic internal lining device that thinly layers (about 3 mm in thickness) and uniformly covers the internal concrete primary segment with non-solvent polyurea resin at the site.

The new equipment, Automatic Lining System, has a computer-programmed spray gun installed on the whirling motion ring and operates within the shield tunnel at sewage sites. At present, we have completed all experimental works with the prototype equipment and have just moved onto the operational suitability trial stages.