

## 1. Development of Continuous Compaction System for Tunnel Lining Concrete

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Concrete lining is performed by means of pumping and flowing from the tunnel crown in a standard tunneling practice. Compaction of concrete is difficult due to narrow spaces available. Excessive or insufficient compaction may cause non-uniform quality of concrete and leave voids behind the lining. As a solution to the said problem, a continuous compaction system has been developed. The system is featured with a new type of vibrator whose connecting cable can be retracted corresponding to places of concrete pouring at sidewall, arching part and end form. Another feature is a concrete pressure control method to keep the pressure of concrete filled within limits. A model experiment and field verification tests have been conducted to establish construction management approach and ensure dense concrete free from voids.

**Key words** : tunnel, lining concrete, compaction, pressure control