Extruded Concrete Lining Method

Constructing high-quality linings / Providing high cost performance

Characteristics

Denser concrete with greater strength enables the construction of high-quality concrete linings.

This method enables rational construction of concrete linings according to the site condition such as reinforced concrete, nonreinforced concrete, fiber-reinforced concrete, steel-reinforced concrete and prestressed concrete linings.

Lining concrete is extruded, as the tunnel advances, by the pressure force corresponding to combined water and earth pressures. Thus, the deformation of the ground can be minimized.

Mechanism of tunnel driving

The type of lining can be selected according to the geological condition, and secondary lining can be eliminated depending on the use of the tunnel. Construction cost therefore can be reduced and construction period can be shortened.

Applications to actual tunneling

Construction of the second Shinano-gawa water tunnel
- Diameter: 8.40 m
- Construction length: 3,100 m
- Major soil type: Sandstone and siltstone
- Use: Waterway

Construction of the east side of the Akima Tunnel on the Hokuriku Shinkansen railway line
- Cross section: 10.70 m wide and 9.92 m high
- Construction length: 3,805 m
- Major soil type: Tuff
- Use: Railway

Konan shield tunneling
- Diameter: 6.60 m
- Construction length: 1,860 m
- Major soil type: Diluvial gravel layer
- Use: Floodway

Main civil engineering work as part of the construction of new Hidaka power plant
- Diameter: 3.99 m
- Construction length: 6,082 m
- Major soil type: Lava and mudstone
- Use: Utility conduit

Construction length: 3,100 m
- Major soil type: Sandstone and siltstone
- Use: Waterway