

Tunnel Projects

Recent Japanese Road and Rail Tunnels

The Project:

The Hokuriku Shinkansen Iiyama Rail Tunnel

Length:	22.50 km at a depth of 325 metres
Date:	February 2001 – September 2004
Use:	Primary Lining
Dose:	9kg / m ³ (1.0%)
Fibre type:	Barchip M 30 mm
Volume:	51,992 m ³
Location:	Nagano Prefecture
Contractor:	Taisei / Obayashi JV
Client:	Rail Road Construction Co.

Construction on the Iiyama tunnel started in 2000. It forms part of the Hokuriku Shinkansen railway project, which will connect Tokyo and Osaka via the Japan Sea coast – a distance of about 590km. Ground conditions on the tunnel's alignment are affected by squeezing ground pressure. Construction is being carried out by full-face excavation with a short bench to keep ground-loosening to a minimum. The tunnel also has a fairly large cross-section (estimated at about 150m²) to allow for primary support deformation, and where necessary the need for secondary support.

The Project:

Mitoyo Tunnel

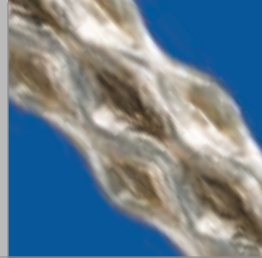
Date:	March - April 2004
Use:	Secondary Lining
Dose:	3 kg / m ³ (0.3%)
Fibre:	Barchip 4350 48 mm
Volume:	1750 m ³
Contractor:	Shimiz JV
Client:	Hokkaido Development Board

The Project:

Mino Tunnel / Shaft

Date:	January 2003 – October 2003
Use:	Secondary Lining
Dose:	3 kg / m ³ (0.3%)
Fibre:	Barchip 4350 48 mm
Volume:	3510 m ³
Location:	Osaka Prefecture
Contractor:	Kajima / Taisei / Toa / Mitsui JV
Client:	Road Construction Co.





The Project: Hisami Tunnel

Date:	March - May 2004
Use:	Secondary Lining
Dose:	3 kg / m ³ (0.3%)
Fibre:	Barchip 4350 48 mm
Volume:	1,244 m ³
Location:	Okayama Prefecture
Contractor:	PS Mitsubishi, Koji JV
Client:	Japan Highway Board



The Project: Hakkôda Tohoku Shinkansen High Speed Rail Tunnel

Length:	26.45 Km
Depth:	540m double track
Date:	July - November 2003
Location:	Aomori Prefecture
Dose:	9 kg / m ³ (1.0%)
Fibre type:	Barchip M 30 mm
Use:	Primary Lining
Volume:	2083 m ³
Contractor:	Sato Industries JV
Client:	Rail Road Construction Co.

On the 81.2 km long section of the Tohoku Shinkansen between Hachinohe and Shin-Aomori there a total of 18 tunnels being constructed, including the Hakkôda Tunnel.

The **26.5 km long Hakkôda Tunnel, will be the world's longest on land tunnel in rock.** The twin-track tunnel is being excavated by drill and blast with a vaulted cross-section of 70m².

The Project: Kanigasawa Tunnel

Date:	May- December 2003
Use:	Primary Lining
Dose:	9 kg / m ³ (1.0%)
Fibre type:	Barchip M 30 mm
Volume:	3,350 m ³
Location:	Yamagata Prefecture
Contractor:	Toa Construction
Client:	The Forestry Agency

This drainage tunnel is 1900 metres long with an interior cross section of 9 m². It was completed as part of the emergency works for disaster relief to channel heavy rains away from an embankment to prevent slippage.



The Project:

Kyogoku Tunnel

Date:	September 2003
Use:	Primary Lining
Dose:	9kg m ³ (1.0%)
Fibre type:	Barchip M 30 mm
Volume:	395 m ³
Contractor:	Hokkaido / Kajima JV
Client:	Hokkaido Development Board

The Project:

Kyogoku Power plant

Date:	July 2003- August 2004
Use:	Primary Lining
Dose:	9 kg / m ³ (1.0%)
Fibre type:	Barchip M 30 mm
Volume:	4524 m ³
Contractor:	Hokkaido / Taisei JV
Client:	Hokkaido Development Board

The Project:

Kasahara Tunnel

Date:	February – May 2004
Use:	Primary Lining
Dose:	9 kg / m ³ (1.0%)
Fibre type:	Barchip M 48 mm
Volume:	2083 m ³
Location:	Gifu Prefecture
Contractor:	Bairin and Keikon JV
Client:	Japan Highway Board

The Project:

Gohara Tunnel – Japan Railway Geibi Line

Date:	July- September 2004
Use:	Secondary Lining
Dose:	3 kg / m ³ (0.3%)
Fibre:	Barchip F (30 decitex)
Volume:	1000 m ³
Location:	Hiroshima Prefecture
Contractor:	Kosei Construction
Client:	Japan Railway Board (West Japan)





The Project:

Tomei Meishin Expressway

The Tomei Meishin Expressway is the largest motorway scheme in the Japan roads programme with a total route length of 502km. The work is being undertaken for the Japan Highway Board.

The New Tomei Expressway is a 330km long highway connecting Tokyo and Nagoya, and the New Meishin Expressway is 174 km which connects Nagoya and Kobe. It is anticipated that the new expressway will be able to provide a mutually supplementary function to the existing expressway, especially at times of road works and emergencies, and so preserve traffic capacity on the Tokyo-Kobe route.

The whole expressway is scheduled to be completed between 2007 and 2009.

Tunnels on route:

The route of the new expressway passes through considerably more mountainous terrain than the existing expressway. A total of 167 tunnels are planned with a combined length of 224 km, which is 25% of the total length of the new expressway carriages.

Tunnels on the New Tomei Expressway will accommodate wide space 3-lane carriageways for improved road drivability and safety, and have a very large excavated cross section of approximately 190 m².

1. Shimizu No 4 Tunnel - Tomei Expressway

Date:	September and October 2004
Use:	Secondary Lining
Dose:	3 kg / m ³ (0.3%)
Fibre:	Barchip 4350 48 mm
Volume:	2,725 m ³
Location:	Shizuoka Prefecture
Contractor:	Obayashi JV

Twin tubes, 1,120 m-long each 15 m-wide with three 3.75 m-wide lanes plus 2.5 and 1.25 m-wide shoulders. Pilot tunnel driven by 5 m-diameter TBM prior to drill/blast enlargement. Excavated cross section of about 200 sq m.

2. Inasa Tunnel - Tomei Expressway

Date:	August – October 2004
Use:	Primary Lining
Dose:	9 kg / m ³ (1.0%)
Fibre type:	Barchip M 30 mm
Volume:	1625 m ³
Location:	Shizuoka Prefecture
Contractor:	Shimiz JV

3. Shimada No 5 Tunnel - Tomei Expressway

Date:	September and October 2004
Use:	Secondary Lining
Dose:	3 kg / m ³ (0.3%)
Fibre:	Barchip 4350 48 mm
Volume:	2,169 m ³
Location:	Shizuoka Prefecture
Contractor:	Okumurra JV

4. Konan Tunnel - Meishin Expressway

Date:	January - October 2004
Use:	Secondary Lining
Dose:	3 kg / m ³ (0.3%)
Fibre:	Barchip 4350 48 mm
Volume:	34,230 m ³
Location:	Shiga Prefecture
Contractor:	Taisei / Goyo / Fujita JV



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