The 3rd Training course
TUNNELLING IN URBAN AREAS
Prague, 4-5th May 2007

Epping to Chatswood Rail Link

TRAINING MATERIAL PREPARED BY

The Robbins Company, Ohio, USA
&
Odd G. Askilsrud, P.E.
Introduction

Chapter 1 : Means and Methods

Chapter 2 : TBM Excavation Scheme

Chapter 3 : Environmental and Community Issues

Results and References
Introduction

Epping to Chatswood Rail Link
Introduction

Tunnel Plan – Tunnelling started in M2 shaft
First Phase: 6.7 km to Epping
Second Phase: 5.3 km to Chatswood
Geology: Hawkesbury Sandstone

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Chapter 1: Means and Methods

Shop Assembly at Forgags Shipyard, New South Wales

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Chapter 1: Means and Methods

Cutterhead and Cutterhead Support, Ring Beam Erector, Roof Drills/Probe Drills

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Chapter 1: Means and Methods

Lowering TBM Down the Shaft

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Chapter 1: Means and Methods

Cutterhead in Shaft Area

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Chapter 1: Means and Methods

TBM Key Data

• Boring Diameter: 7.2 m
• Total Length: 210 m
• Total Weight: 460 t TBM + 600 t Back-up
• Cutterhead Power: 2300 kW
• Total Power: 3200 kW
• Max. Thrust Force: 1400 t
Chapter 1: Means and Methods

TBM Layout

- TBM: approx. 25 m
- Bridge: approx. 25 m
- Back-up: approx. 160 m
  - Equipment Decks (#1-8) 60 m
  - California Decks (#9-11) 85 m
  - Service Decks (#18 + 19) 15 m
Chapter 2: Excavation Scheme

• Epping to Chatswood Video
Crown-Mounted Conveyor – 1.8 m diameter ventline, concrete invert and utilities

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Concrete Truck – 5m³ capacity
Chapter 2: Excavation Scheme

Rubber Tired Agitator Truck – Detail of Sliding Deck

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Chapter 2: Excavation Scheme

Turntable on back-up

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Chapter 3: Environmental / Community Issues

Probe Drill Pattern for Consolidation Grouting

Epping to Chatswood Rail Link
EPPING TO CHATSWOOD RAIL LINK
Sydney, Australia
METERS PER WEEK

Epping to Chatswood Rail Link
Breakthrough at Epping

Epping to Chatswood Rail Link
Results and References

ITA Paper
By Odd G. Askilsrud, P.E.
Tunnel Engineering and Applications, Inc.

ITA-AITES World Tunnel Congress – Prague, Czech Republic

Training Course
MECHANIZED TUNNELLING IN URBAN AREAS – CASE HISTORY
Prague 4-5th May 2007

The Robbins Company

Solon, Ohio, USA

Training Material Prepared By
Odd G. Askilsrud, P.E.

Epping to Chatswood Rail Link
Results and References

1. Robbins in-house documentation.

2. Tunnels & Tunnelling International

3. Tunnelling & Trenchless Construction

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