

Challenges & Changes

TUNNELLING ACTIVITIES IN JAPAN 1990

JAPAN TUNNELLING ASSOCIATION

CONTENTS

	Page
Preface	1
Current Topics	2
General Aspects of Tunnelling in Japan	27
Japan Tunnelling Association	28
List of Members	29

PREFACE

It is my great pleasure to send you greetings on the occasion of the 1990 edition of "Tunnelling Activities in Japan—Challenges and Changes". The last edition being in 1988, this edition includes up-to-date information about projects of tunnelling and underground space use, approved or commenced during these two years.



As a major part of the integration of infrastructures in the society, the implementation of a project of this kind must contribute to promote the public welfare. Because of a complex and weak geology of Japan, the tunnelling and underground development activities have not been able to keep pace with the rapid progress of commerce and industry. But now, these delays are steadily being caught up by the efforts made to develop techniques capable of overcoming such difficult geological conditions.

Tunnels and underground space thus constructed cannot be rebuilt, and are our legacy to the people of the 21st century. That is the reason why such constructions must be superb in quality and must maintain their faculty for a long time. I am persuaded that the projects appearing in this booklet are planned and implemented with this philosophy in mind.

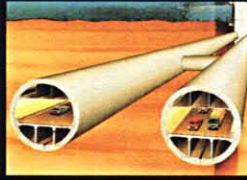
Shin-ichiro ASAI

President
Japan Tunnelling Association

CURRENT TOPICS

Long Highway Shield under Tokyo Bay Starts

3



New Underground Railway reaches Tokyo Station

5



Metro with Linear Motor Driven Vehicles Operates

7



Double-O-Tube Shield Tunnelling

9



Toward the Dream of a Shield Robot

11



Underground Crude Oil Storage Facilities

13



TBM for 52.5° Penstock Shaft

15



Road Tunnel through Volcanic Zone

17



Flat Three-Lane Tunnel for Expanding Expressway Function

19



Under-road Regulation Pond for Eliminating Flood Damage

21



Osaka Harbor Undersea Tunnel for Highway and New Transportation

23



Shinkansen Climbs Steep Pass with Long Tunnels

25

