

## C2 SHINJUKU ROUTE (YAMATE TUNNEL), NORTH TOKYO, JAPAN

### OVERVIEW

**LOCATION:** NORTH TOKYO, JAPAN  
**SCOPE:** INTRA-URBAN  
**TRANSPORT MODE:** ROAD  
**PRINCIPAL CONSTRUCTION:** TUNNEL  
**NEW LINK:** YES

### PRINCIPAL OBJECTIVES

**LOCAL TRANSPORT LINK**  
**CONGESTION RELIEF**  
**EMERGENT OBJECTIVE:**  
**LOCAL ECONOMIC DEVELOPMENT**

### PRINCIPAL STAKEHOLDERS

**PLANNING AUTHORITY:**  
TOKYO METROPOLITAN GOVERNMENT  
**MAIN CONSTRUCTOR/OPERATOR:**  
METROPOLITAN EXPRESSWAY PUBLIC CORPORATION (LATER METROPOLITAN EXPRESSWAY CO LTD)  
**SUPERVISOR:**  
MINISTRY OF CONSTRUCTION  
**FUNDING:**  
METROPOLITAN EXPRESSWAY CO LTD/  
JAPAN EXPRESSWAY HOLDINGS & DEBT REPAYMENT AGENCY

### PLANNING AND IMPLEMENTATION

**PLANNING START DATE:** 03/1970  
**CONSTRUCTION START DATE:** 08/1992  
**OPERATION START DATE:** 12/2007  
**MONTHS IN PLANNING:** 269  
**MONTHS IN CONSTRUCTION:** 184  
**PROJECT COMPLETED:**  
**18 MONTHS BEHIND SCHEDULE**

### COSTS (IN 2010 USD)

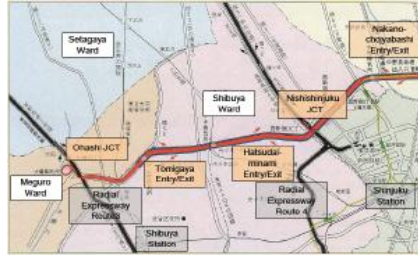
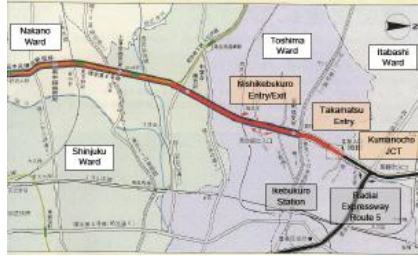
**PREDICTED COST:** 5.50BN  
**ACTUAL COST:** 5.45BN  
**PROJECT COMPLETED:**  
**1% UNDER BUDGET**  
**FUNDING:** 57% PRIVATE : 43% PUBLIC

### INFRASTRUCTURE QUANTITIES

**LENGTH (IN TUNNEL):** 6.7KM  
**NUMBER OF JUNCTIONS:** 3  
**COST PER KM (2010 USD):** 0.81BN

### PATRONAGE & REVENUE

**FORECAST TRAFFIC (2005):**  
49,000-80,000 VPD  
**ACTUAL TRAFFIC (2008):**  
34,000 VPD



### INTRODUCTION

The C2 Shinjuku Route (known as the Yamate Tunnel), a 6.7km road tunnel from Nishishinjuku Junction to Kumanochi Junction in north Tokyo, opened in December 2007. It is part of the Metropolitan Expressway Network C2 route, the second circular route around the city, which provides connections to inter-urban expressways. The Network is financed by road tolls.

### BACKGROUND

The legislative basis for tolled roads in Japan was established in 1952 and the Metropolitan Expressway Public Corporation (MEPC) was established in 1959 to build a tolled road network to relieve congestion in the city.

The main objective of the C2 Shinjuku Route (and of the C2 route as a whole) was to relieve growing congestion on the existing radial expressway, forecast to result from its connection to express inter-urban highways. The need for such a route was recognised soon after the MEPC was established, and it was included in a plan to extend the Network in 1968, and in the national government's development plan in 1970. As regional and local plans are expected to reflect the national plan, the city government has been under pressure to develop the route since then.

Three enabling mechanisms provide the legal authority for the project to proceed: a City Planning Decision by the relevant local authority, giving land acquisition powers and restricting other development in the area; a Basic Plan by the Minister of Construction<sup>1</sup>, outlining the project's scope and construction cost; and the Minister's validation of MEPC's construction work plan, which allows construction to begin. The Minister then validates the tolling regime, allowing MEPC to begin collecting tolls. Both validations also require the local authority's consent.

Tokyo Metropolitan Government (TMG) and MEPC were the promoters of the route, but progress was constrained by local concerns about the environmental impacts in the 1970s and 1980s, and opposition to road-building from Tokyo's Governor (1967-79). During the 1980s, TMG advocated the role of the route in promoting the economic development of the subcentres in Ikebukuro, Shinjuku

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### TIMELINE

**CONTEXT: 1952: ACT ESTABLISHES LEGAL BASIS FOR TOLLED ROADS**

**CONCEPTION: 1953: FIRST NATIONAL PLAN FOR EXPRESSWAY NETWORK**

**CONCEPTION: 1959: METROPOLITAN EXPRESSWAY PUBLIC CORPORATION FORMED TO BUILD TOLLED ROADS IN TOKYO**

**DELAY: 1967-79: TOKYO GOVERNOR ANTI-ROADS, STOPS EXPRESSWAY CONSTRUCTION**

**CONCEPTION: 1968: C2 ROUTE INCLUDED IN PLAN TO EXTEND EXPRESSWAY NETWORK**

**CONCEPTION: 1970: C2 ROUTE PROMOTED IN NATIONAL DEVELOPMENT PLAN**

**CONTEXT: 1979: NEW TOKYO GOVERNOR ELECTED, ROAD BUILDING IS ALLOWED AGAIN**

**CONTEXT: 1982: FIRST SECTION OF C2 ROUTE OPENED**

**INCEPTION: 1982: C2 ROUTE INCLUDED IN CITY GOVERNMENT LONG-TERM PLAN**

**INCEPTION: 1988: LOCAL CONSULTATION ON DETAILED ROUTE PROPOSALS – TUNNEL OPTION CHOSEN**

**INCEPTION: 1990: ENVIRONMENTAL IMPACT ASSESSMENT REPORT, CITY PLANNING DECISION & BASIC PLAN**

**INCEPTION: 1991: PROJECT VALIDATION BY MINISTRY, LAND ACQUISITION BEGINS**

**DELAY: 1991: NEGOTIATIONS WITH LANDOWNERS COMPROMISED BY COLLAPSE OF BUBBLE ECONOMY**

**CONSTRUCTION: 1992 (AUG): CEREMONY TO START CONSTRUCTION**

**INCEPTION: 1993: CITY PLANNING DECISION (FINAL SECTION)**

**INCEPTION: 1994: PROJECT VALIDATION BY MINISTRY (FINAL SECTION)**

**CONSTRUCTION: 1999: MEPC ADOPTS SHIELD TUNNELLING METHOD**

**CONTEXT: 2005: PRIVATISATION OF MEPC & OTHER HIGHWAY CORPORATIONS**

**DELIVERY: 2007 (DEC): ROUTE OPENED TO TRAFFIC**

and Shibuya. In 1988, a tunnel solution was adopted in order to resolve environmental concerns.

An Environmental Impact Assessment and local public consultation were incorporated into the City Planning Decision process, the latter leading to re-siting and redesign of ventilation systems.

### CHARACTERISTICS

The decision to adopt a tunnel solution increased the cost greatly. Escalating land values during the late 1980s ‘bubble economy’ also contributed to cost increases as, when the bubble economy collapsed, many landowners insisted on getting the same prices for their land. The actual cost, JPY 460bn in 2006 (USD 5.45bn at 2010 prices)<sup>ii</sup>, was in line with the budget of JPY 458bn (USD 5.50bn at 2010 prices) set in 1992.

The widening of the 6th Circular Highway (‘Yamate Dori’) from 22m to 40m enabled the C2 Shinjuku Route to be built under the road. The tunnel is one of the world’s longest in an urban area, runs alongside major utility infrastructure and is crossed by eleven rail lines. The shield tunnelling method was used to minimise noise and other impacts, and a U-turn technique was developed to optimise the use of tunnelling machines and so reduce costs.

The construction was divided into 17 civil engineering components, let in separate contracts primarily to joint ventures of Japanese companies including Kumagai, Nishimatsu and Obayashi.

### TIMELINE ISSUES

Public and political opposition during the 1970s and 1980s caused a 20-year delay in securing approval for the project. Construction also progressed slowly, due to the technical complexity of tunnelling in densely populated urban areas and the need to develop new technological solutions such as shield tunnelling.

### FUNDING

MEPC was privatised in 2004 and is now known as Metropolitan Expressway Co Ltd. It leases highway assets from the Japan Expressway Holdings & Debt Repayment Agency (JEHDRA) and collects road tolls from users. JEHDRA also accepted USD 2bn of the project debt (approximately 43% of the total cost).

<sup>i</sup> The Ministry of Construction subsequently became the Ministry of Land, Infrastructure and Transport

<sup>ii</sup> Costs have been converted to USD at 2010 prices, using historic inflation rates and current exchange rates, to allow comparison between projects.