

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 706 - HIGHWAYS

Transport - Roads

580TH - Tsing Yi North Coastal Road

Members are invited to recommend to Finance Committee the upgrading of **580TH** to Category A for the construction of the Tsing Yi North Coastal Road at an estimated cost of \$1,604.4 million in money-of-the-day prices.

PROBLEM

The capacity of the existing road network in north Tsing Yi is insufficient to cope with the additional traffic demand generated by the new Hong Kong International Airport and future developments on Lantau.

PROPOSAL

2. The Director of Highways, with the support of the Secretary for Transport, proposes to upgrade **580TH** to Category A at an estimated cost of \$1,604.4 million in money-of-the-day (MOD) prices for the construction of the Tsing Yi North Coastal Road (TYNCR).

PROJECT SCOPE AND NATURE

3. The proposed scope of this project comprises -

/(a)....

- (a) construction of a 2.2-kilometre long dual two-lane carriageway on viaducts, linking Lantau Link at Northwest Tsing Yi Interchange with Tsing Tsuen Road;
- (b) construction of 0.6-kilometre long slip roads to connect the TYNCR with the Tam Kon Shan Interchange;
- (c) construction of 0.7-kilometre long link roads to connect the TYNCR with the Tam Kon Shan Road;
- (d) construction of associated footpaths, pedestrian subways, noise barrier, noise semi-enclosure, noise reducing highway surfacing, lighting, drainage and landscaping works;
- (e) provision of a traffic control and surveillance (TCS) system comprising closed circuit television, automatic incident detection devices, lane use signals, variable message signs, emergency telephones, variable speed limit signs, operation and maintenance radio system and public address system to be integrated into the Tsing Ma Control Area¹ (TMCA) TCS system; and
- (f) provision of a sub-control centre near the Tam Kon Shan Interchange including recovery vehicles and operational equipment, areas for storage of broken down vehicles and associated parking facilities.

/ JUSTIFICATION....

¹ The TMCA has been established since 1997 to ensure safe and efficient traffic operations on the important strategic route and the only road access to the Airport. It covers a 17-kilometre long expressway stretching from Mei Foo, via Tsing Yi and Ma Wan to Yam O on northern Lantau Island, with a branch to Ting Kau. It comprises the Tsing Kwai Highway, the Rambler Channel Bridge, the Cheung Tsing Tunnel, the North West Tsing Yi Interchange, the Ting Kau Bridge, the Lantau Link and part of the North Lantau Highway. Vehicles using the Control Area are subject to rules and regulations made under the Tsing Ma Control Area Ordinance, Cap. 498.

JUSTIFICATION

4. The commissioning of the new Airport in July 1998 will generate substantial amount of traffic between Lantau and Tsuen Wan areas, routing through north Tsing Yi. The traffic volume will continue to grow with the gradual completion of Tung Chung and Tai Ho New Town developments on Lantau. The Commissioner for Transport forecasts that by 2001, the existing road junctions in north Tsing Yi will be operating at or beyond their capacities. Due to the unavailability of adjoining land, we are unable to improve these road junctions to meet the traffic demand.

5. We propose to construct TYNCR to divert the through traffic between Lantau and Tsuen Wan areas away from the local at-grade traffic in north Tsing Yi. The projected volume/capacity (V/C) ratios² of the existing road junctions in north Tsing Yi in 2002 with and without the TYNCR are as below -

Junction	V/C ratio	
	without TYNCR	with TYNCR
Tam Kon Shan Interchange	1.2	1.0
Tsing Yi Road West/Fung Shue Wo Road	0.9	0.8
Tsing Yi Road West/Liu To Road	1.0	0.8
Tsing Yi Road West/Ching Hong Road	1.2	1.0
Tsing Yi Road West/Cheung Tsing Highway	0.5	0.4

We expect the situation beyond 2002 will be even worse in the absence of the TYNCR. The over-saturated local junctions would cause unbearable queuing and

/ vehicular.....

² The capacity here refers to the design capacity of the road. A volume/capacity(V/C) ratio equal to or less than 1.0 means that the road has sufficient capacity to cope with the volume of vehicular traffic under consideration and the resultant traffic will flow smoothly. A V/C ratio above 1.0 indicates the onset of congestion; above 1.2 indicates more serious congestion with traffic speeds progressively deteriorating with further increase in traffic.

vehicular delay leading to gridlock of the local road network in Tsing Yi Island.

6. As the TYNCR will form an essential part of the strategic route to the new Airport, we intend to include it in the TMCA. We need to provide a TCS system on TYNCR for integration with that in the TMCA. This system will enable the management to efficiently deal with normal traffic operations and to exercise a high degree of management and control in case of incidents. The proposed sub-control centre will be under the control of the TMCA Operator to meet the rescue, operational and control requirements within the TMCA.

7. Because the presence of the TYNCR will render nearby residents exposed to traffic noise levels higher than the upper limits stipulated in the Hong Kong Planning Standards and Guidelines (HKPSG), we will provide mitigation measures in the form of noise barrier, noise semi-enclosure and noise reducing highway surfacing at proper locations along the TYNCR. The respective locations are shown in the enclosure.

FINANCIAL IMPLICATIONS

8. We estimate the capital cost of the project to be \$1,604.4 million in MOD prices (see paragraph 9 below), made up as follows -

	\$ million
(a) Viaducts	599.9
(b) Roadworks, drainage and earthworks	239.0
(c) Noise barrier, noise semi-enclosure and noise reducing highway surfacing	131.8
(d) Footpaths, pedestrian subways, lighting and landscaping works	27.4

/ (e).....

(e) Traffic control and surveillance system	93.5	
(i) equipment and installation	79.3	
(ii) consultants' fees for supervision	7.5	
(iii) resident site staff costs	6.7	
(f) Sub-control centre, recovery vehicles and operational equipment	9.4	
(g) Contingencies	99.5	
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	Sub-total	1,200.5 (at December 1997 prices)
(h) Inflation allowance	403.9	
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	Total	1,604.4 (in MOD prices)
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A breakdown of estimates for consultants' fees is at the Enclosure.

9. Subject to approval, we will phase the expenditure as follows -

Year	\$ million (Dec 1997)	Price adjustment factor	\$ million (MOD)
1998 - 99	0.6	1.06000	0.6
1999 - 00	268.4	1.14878	308.3
2000 - 01	278.1	1.24642	346.6

/ 2001.....

2001 - 02	318.8	1.35237	431.1
2002 - 03	173.4	1.46732	254.4
2003 - 04	111.4	1.59204	177.4
2004 - 05	49.8	1.72736	86.0
	1,200.5		1,604.4

10. We derived the MOD estimate on the basis of the Government's forecasts of trend labour and construction prices over the period 1998 to 2005. We will tender the works under a standard re-measurement contract because the extent of foundation works for the bridge structures, earth retaining structures and the quantities of earthworks will depend on the actual site conditions. The contract will also include adjustments to the tender price due to inflation because the contract period will exceed 21 months.

11. We estimate the annually recurrent expenditure arising from the proposed works to be \$1.9 million.

PUBLIC CONSULTATION

12. We consulted the Kwai Tsing District Board (KTDB) on 19 September 1996 and obtained members' support to the proposed works. We further consulted the Environmental & Planning Committee (EPC) of KTDB on 6 December 1996 regarding the environmental consequences of the project. The Committee supported the proposal in principle but expressed concerns over possible noise nuisance created by the proposed works and the existing traffic noise from Tsing Tsuen Road. We have considered the views of the EPC members carefully and have addressed their concerns by adopting the mitigation measures proposed in paragraph 14 below. The Committee was generally satisfied with the proposed mitigation measures at the meeting on 6 February 1998. However, they were still concerned with the lack of measures to mitigate traffic noise from the existing Tsing Tsuen Road as they believed the noise level from this road would be higher once TYNCR becomes operational. They

/ requested.....

requested the administration to provide suitable noise mitigation measures for Tsing Tsuen Road before the completion of TYNCR. We explained to the Committee that there will only be a slight increase in noise level of less than 1 decibel from Tsing Tsuen Road after TYNCR is operational. Moreover, the existing bridge structure of Tsing Tsuen Road has insufficient structural strength to withstand the additional loading caused by adding noise barriers or semi-enclosures on the bridge.

13. We gazetted the proposed works under the Roads (Works, Use and Compensation) Ordinance on 4 April 1997 and received one objection against the clearance of his clan graves. We explained to the objector that the proposed works will not affect his clan graves. The objector has since withdrawn his objection. The Secretary for Transport authorised the proposed works on 24 October 1997 without modification.

ENVIRONMENTAL IMPLICATIONS

14. We completed an EIA Study for the project in September 1997. The EIA study addressed air, noise, water, waste and ecological issues and recommended mitigation measures to ensure environmental performance of the project is within the established standards and guidelines. These mitigation measures include replanting of trees to minimise the loss of species, habitat and ecological function in the project area and the provision of noise semi-enclosure, noise barrier and noise reducing highway surfacing to mitigate the traffic noise impact from TYNCR. We propose to implement the following noise mitigation measures under the project -

- (a) erection of a noise semi-enclosure about 435-metre long over the TYNCR next to Cheung On Estate. It comprises a reinforced concrete roof about 22-metre wide and a 6-metre high acoustic panel completely enclosing the carriageway at the top and the side next to the Estate;
- (b) erection of a noise barrier along the slip road adjacent to Cheung On Estate. The barrier is about 400-metre long and 7-metre high with a 3-metre inclined cantilever over the slip road; and

/(c).....

- (c) provision of noise reducing highway surfacing on the entire TYNCR and the portion of Tsing Tsuen Road adjacent to Cheung On Estate.

15. We have also examined the practicability of extending the noise semi-enclosure to Tsing Tsuen Road but concluded that this proposal is structurally not feasible due to space and strength constraints. The Director of Environmental Protection is satisfied that the best practicable mitigation measures have been proposed and will be implemented in the project.

16. For short-term construction impact, we will control noise, dust and site runoff nuisances to comply with established guidelines and standards through the implementation of environmental pollution control measures and environmental monitoring and audit programme in the contract.

LAND ACQUISITION

17. The proposed road works will involve resumption of approximately 3,899 square metres of private land and clearance of approximately 276,000 square metres of government land. The clearance will affect 102 families and 281 persons. The Director of Housing will arrange rehousing for the affected families in accordance with the current clearance policy. We will charge land acquisition and clearance costs estimated at \$35.2 million to Head 701 - Land Acquisition Subhead **1100 CA** - 'Compensation and *ex-gratia* allowance in respect of projects in the Public Works Programme'.

BACKGROUND INFORMATION

18. We upgraded the project to Category B in September 1995 as **580TH**. In February 1996 we engaged consultants to undertake the Environmental and Drainage Impact Assessment Study for the project and charged the cost of \$1.2 million to Subhead **6100TX** "Highway works, studies and investigations for items selected in Category D of the Public Works Programme". We charged a cost of \$8.4 million to the same Subhead for the site investigation works to facilitate the detailed design of the civil works carried out in-house. In March 1997 we engaged consultants to undertake the investigation and detailed design of the TCS system and charged the cost of \$4.9 million also to the same Subhead.

19. We have substantially completed the detailed design and tender documents for the civil works of the project using in-house resources. We plan to start the construction works as soon as practicable after funding approval, in any case not later than January 1999. The works will take some 41 months inclusive from start to finish. We aim to complete the construction works by May 2002. The detailed design of TCS system is in progress. We plan to start the TCS installation works in June 2001 for completion in March 2002.

Transport Bureau
July 1998

(580TH.doc)

580TH - Tsing Yi North Coastal Road

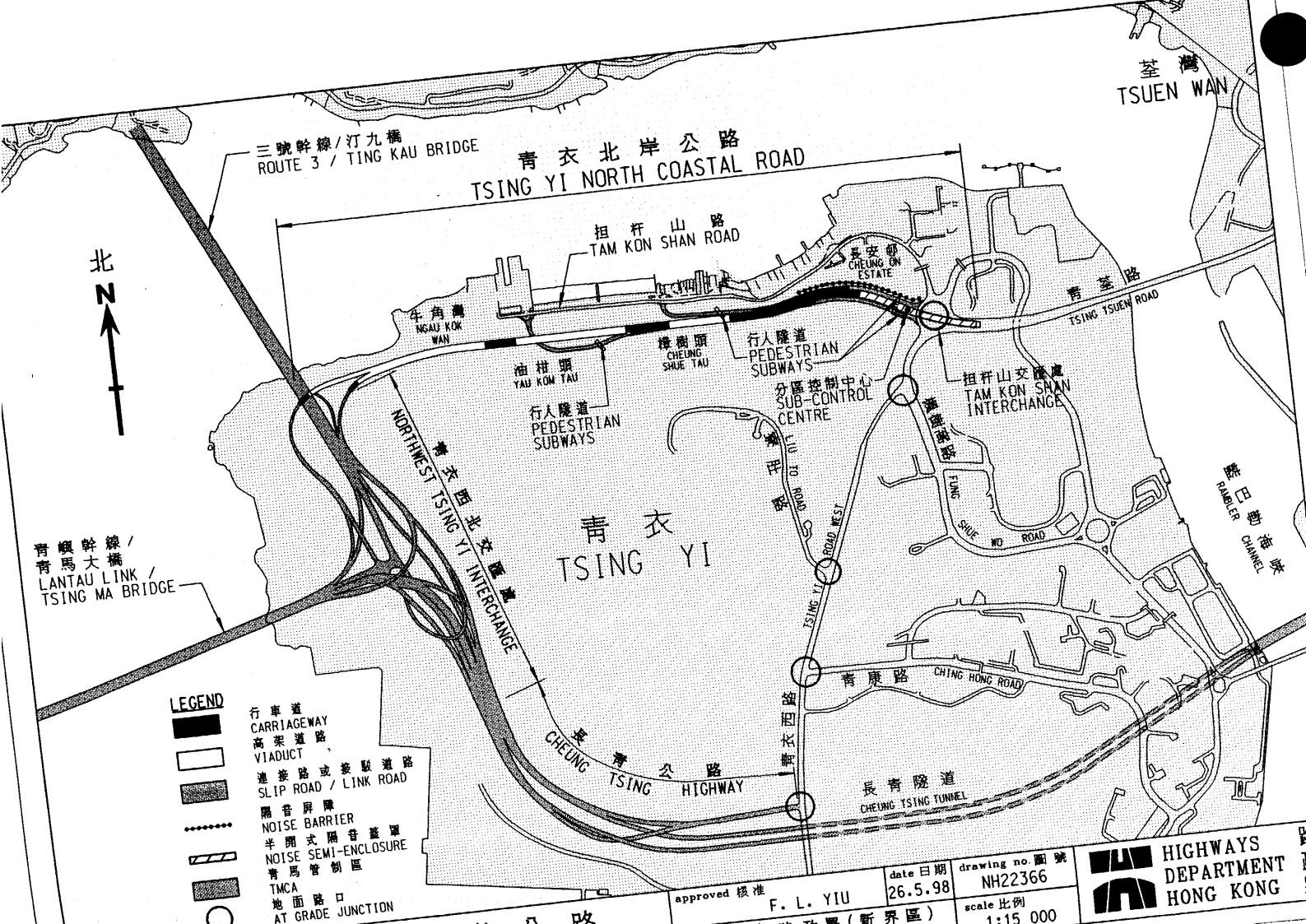
Breakdown of estimates for consultant's fees (at December 1997 prices)

			Estimated man- months	Average MPS* salary point	Multiplier factor	Estimated fee (\$ million)
Consultants' staff costs						
(a)	Project	Professional	28.0	40	3.0	5.0
	supervision at construction stage of the traffic control and surveillance system (TCS)	Technical	42.0	16	3.0	2.5
(b)	Site supervision	Professional	28.0	40	2.1	3.5
	of the construction of TCS by resident site staff employed by the consultants	Technical	76.0	16	2.1	3.2
Consultants' staff costs						14.2








*MPS = Master Pay Scale

Notes

1. A multiplier factor of 3 is applied to the average MPS point to arrive at the full staff costs including the consultants' overheads and profit, as the staff will be employed in the consultants' offices. (At 1.12.97, MPS pt. 40 = \$59,210 p.m. and MPS pt. 16 = \$19,860 p.m.). A multiplier factor of 2.1 is applied in the case of site staff supplied by the consultants.
2. The figures given above are based on estimates prepared by the Director of Highways. We will only know the actual man months and actual fees when we have selected the consultants through the usual competitive lump sum fee bid system.



LEGEND

-  行車道
CARRIAGEWAY
-  高架道路
VIADUCT
-  連接路或接駁道路
SLIP ROAD / LINK ROAD
-  隔音屏障
NOISE BARRIER
-  半開式隔音蓋罩
NOISE SEMI-ENCLOSURE
-  青馬管制區
TMCA
-  地面路口
AT GRADE JUNCTION

approved 核准
F. L. YIU

date 日期
26.5.98

drawing no. 圖號
NH22366

scale 比例
1:15 000

 **HIGHWAYS DEPARTMENT HONG KONG**