

## **ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE**

### **HEAD 706 - HIGHWAYS**

#### **Transport - Roads**

#### **706TH - Highway between Shap Pat Heung Interchange and Pok Oi Interchange - remaining works**

Members are invited to recommend to Finance Committee the upgrading of **706TH** to Category A at an estimated cost of \$260.8 million in money-of-the-day prices for the construction of a carriageway connecting Pok Oi Flyover and Yuen Long Highway near Shap Pat Heung Interchange.

### **PROBLEM**

The section of highway between the Shap Pat Heung Interchange of Yuen Long Highway and the Pok Oi Flyover has insufficient capacity to cope with the future traffic demands.

### **PROPOSAL**

2. The Director of Highways, with the support of the Secretary for Transport (S for T), proposes to upgrade **706TH** to Category A at an estimated cost of \$260.8 million in money-of-the-day (MOD) prices for the construction of a dual 2-lane carriageway connecting Pok Oi Flyover and Yuen Long Highway near Shap Pat Heung Interchange (SPHI).

**/PROJECT .....**

## **PROJECT SCOPE AND NATURE**

3. The scope of this project comprises the following -
- (a) construction of a dual 2-lane trunk road, including a 540 metres long embankment section and a 595 metres long depressed road section, connecting Pok Oi Flyover and Yuen Long Highway near Shap Pat Heung Interchange;
  - (b) construction of two 7.3 metres wide 2-lane vehicular bridges each of approximately 30 metres in length at Shap Pat Heung Interchange;
  - (c) construction of two 4 metres wide pedestrian subways below the proposed trunk road to connect with the existing subways leading to Tai Kei Leng and Sheung Yau Tin Tsuen;
  - (d) construction of a 10.6 metres wide combined vehicular/pedestrian underpass below the proposed trunk road to connect with the existing underpass leading to Sheung Yau Tin Tsuen; and
  - (e) associated drainage, road lighting, slope, fire services waterworks, landscaping works, erection of noise barriers, emergency telephones and foundations for the future closed circuit television (CCTV) system.

## **JUSTIFICATION**

4. The Commissioner for Transport completed a traffic survey in 1996 and found that the commissioning of Route 3 Country Park Section (CPS) in 1998 and the continued developments<sup>1</sup> in the North West New Territories would introduce tremendous traffic pressure on the Pok Oi Interchange (POI) and the SPHI because all traffic between Route 3 Country Park Section and Yuen Long/Tuen Mun would have to pass through these two interchanges. To cope with the projected increase in traffic demand, we have decided to implement two phases of road improvements to

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<sup>1</sup> Major developments in the North West New Territories will include the development of Tin Shui Wai New Town and various public housing/residential developments in Yuen Long South, Yuen Long Area 12 and Area 15. We anticipate that the population in North West New Territories will increase from 869 000 in 1999 to 1 129 000 in 2006.

provide a dual 2-lane route to bypass the two interchanges for through traffic. We completed the first phase improvement in February 1999 under **644TH** for the construction of Pok Oi flyover across the POI.

5. We now need to commence the second phase improvement under **706TH** for SPHI. This project will provide the remaining section of the dual 2-lane trunk road, running beneath SPHI, which is now operating at 92% of its design capacity, to link up Pok Oi Flyover with the Yuen Long Highway. The predicted operating conditions with and without improvements for SPHI and the proposed trunk road section, expressed as a percentage of design capacity, are shown as follows -

	2002		2006		2011 <sup>2</sup>	
	Without improve- ments	With improve- ments	Without improve- ments	With improve- ments	Without improve- ments	With improve- ments
	%	%	%	%	%	%
SPHI	147	38	252	69	316	111
SPHI Underpas s	-	64	-	78	-	81

6. As part of this second phase improvement, we need to modify two short sections of SPHI into vehicular bridges to enable the proposed trunk road crossing underneath. We will also incorporate two pedestrian subways and one pedestrian/vehicular underpass across the proposed trunk road, at locations connecting with existing crossing facilities.

7. To enable effective monitoring of traffic conditions and identification of incidents, we plan to install a CCTV system comprising 14 cameras along the Yuen Long Highway, 3 of which will be situated along the proposed trunk road under **706TH**. To reduce operational complexity, we plan to install the whole

/system .....

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<sup>2</sup> Based on the traffic forecast, we anticipate that SPHI will be over-saturated by 2011. In the ongoing North West New Territories Development Study to be completed by early 2000, we have been re-examining the projected population distribution as well as the need and timing to provide east-west links between SPHI and the Kam Tin strategic growth area.



system under a separate project **721TH**<sup>3</sup>. We will however construct the necessary foundations for the CCTV system along the proposed trunk road in this project.

8. As a result of the proposed improvement works and the eventual increase in traffic flow, some residents along the new trunk road will be exposed to noise levels higher than the upper limits stipulated in the Hong Kong Planning Standards and Guidelines. We will provide noise barriers along relevant parts of the new road section to mitigate traffic noise.

## **FINANCIAL IMPLICATIONS**

9. We estimate the cost of the project to be \$260.8 million in MOD prices (see paragraph 10 below), made up as follows -

	<b>\$ million</b>	
(a) Roadworks, drainage and earthworks	111.1	
(b) Noise barriers	10.1	
(c) Bridges and underpasses	70.0	
(d) Landscape works	5.8	
(e) Consultants' fees	23.3	
(i) construction stage	1.5	
(ii) resident site staff	21.8	
(f) Contingencies	22.0	
	242.3	(at December 1998 prices)
Sub-total		

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<sup>3</sup> We have included **721TH** - 'Widening of Yuen Long Highway between Lam Tei and Shap Pat Heung Interchange' in Category B with an estimated cost of \$806 million in December 1998 prices. We will commence the detailed design of the project in 2000 and start construction in 2002 for completion in 2004.

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(g) Provision for price adjustment	18.5	
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Total	260.8	(in MOD prices)
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A breakdown by man-months of the estimates for consultants' fee is at the Enclosure.

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

Year	\$ million (Dec 1998)	Price adjustment factor	\$ million (MOD)
1999 - 2000	39.1	1.02625	40.1
2000 - 2001	93.8	1.06217	99.6
2001 - 2002	86.0	1.09934	94.5
2002 - 2003	23.4	1.13782	26.6
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	242.3		260.8
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11. We have derived the MOD estimate on the basis of Government's latest forecast of trend labour and construction prices over the period 1999 and 2003. We will tender the works under a standard re-measurement contract because the extent of foundation works for the bridges, subways and underpass and the quantities of earthworks will depend on the actual site conditions. The contract will include provisions for price fluctuation because the contract period will exceed 21 months.

12. We estimate the additional annually recurrent expenditure arising from the proposed works to be \$3.1 million.





## **PUBLIC CONSULTATION**

13. We consulted the Traffic and Transport Committee of the Yuen Long Provisional District Board on 3 March 1998 and the Shap Pat Heung Rural Committee on 6 August 1998. The two committees support the proposed works.

14. We gazetted the proposed road scheme under the Roads (Works, Use and Compensation) Ordinance on 31 July 1998 and received no objections. S for T authorised the execution of the proposed works on 8 December 1998.

## **ENVIRONMENTAL IMPLICATIONS**

15. The project is a designated project under Schedule 2 of the Environmental Impact Assessment (EIA) Ordinance and an environmental permit is required for the construction and operation of the project. An EIA study to assess the environmental impacts due to the construction and operation of the project was completed in April 1997. The Advisory Council on the Environment endorsed the EIA study findings in May 1997. We have taken into account the findings of the EIA in the design, construction and operation of the project. The EIA recommended erection of noise barriers as direct mitigation measures for traffic noise. We will implement the recommended environmental mitigation measures, monitoring and auditing programme during the project construction and operation period to ensure compliance with established environmental standards.

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 an environmental monitoring and audit programme in the contract.

17. We estimate the cost of implementing the environmental mitigation measures to be \$10.1 million, including an estimated cost of \$1 million for the environmental monitoring and audit programme. We have included this cost in the overall project estimate.

## **LAND ACQUISITION**

18. The project does not require any land resumption and clearance.

## **BACKGROUND INFORMATION**

19. We upgraded **706TH** to Category B in August 1997. In November 1997, we engaged consultants to undertake the detailed design work for the project and charged the estimated cost of \$1.95 million to Subhead **6100TX** "Highway works, studies and investigations for items in Category D of the Public Works Programme". We completed the detailed design and drawings for the project in March 1999. We plan to start construction works in September 1999 for completion in February 2002.

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Transport Bureau  
May 1999

**706TH - Highway between Shap Pat Heung Interchange and Pok Oi Interchange - remaining works**

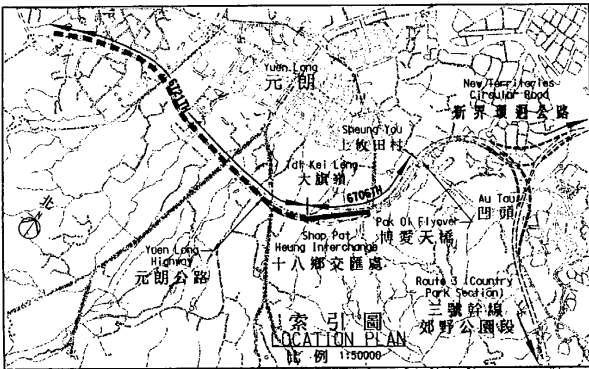
**Breakdown of estimates of consultants' fees**

			<b>Estimated man months</b>	<b>Average MPS * Salary Point</b>	<b>Multiplier Factor</b>	<b>Estimated Fee (\$million)</b>
<b>Consultants' staff cost</b>						
(a)	Project administration at construction stage	Professional	6	40	2.4	0.9
		Technical	12	16	2.4	0.6
(b)	Site supervision by resident site staff employed by the consultants	Professional	40	40	1.7	4.3
		Technical	490	16	1.7	17.5
<b>Total consultants staff cost</b>						23.3

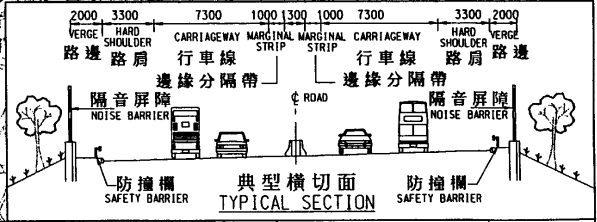
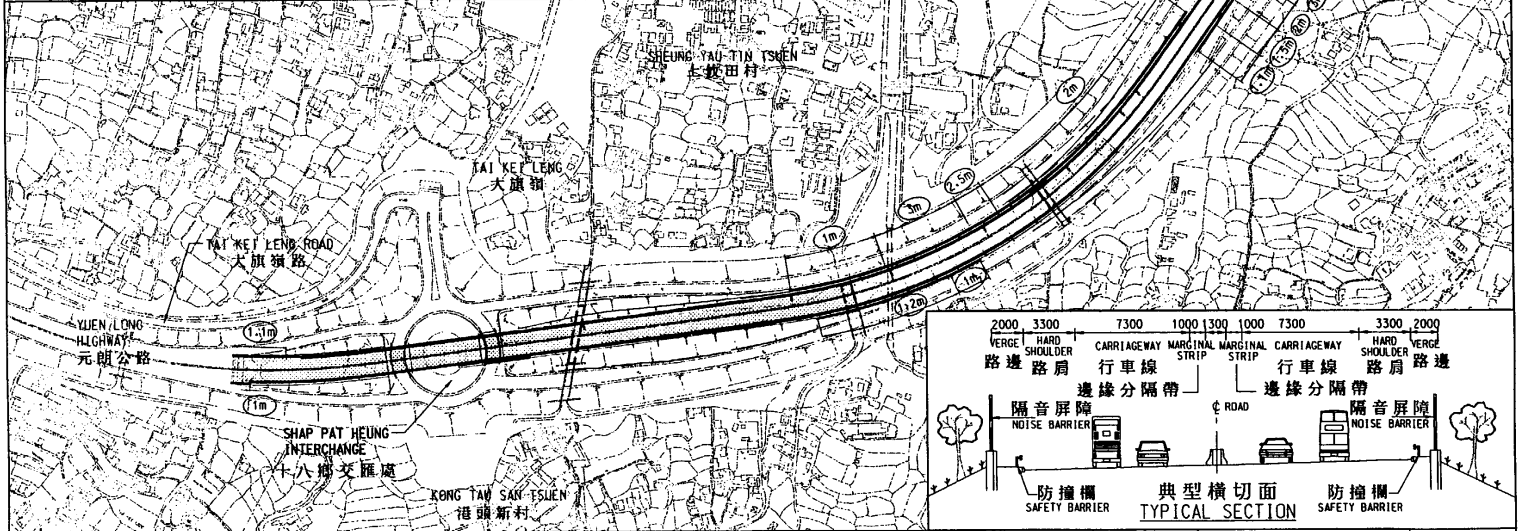
\* MPS=Master Pay Scale


**Notes**

1. A multiplier factor of 2.4 is applied to the average Master Pay Scale (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 1.4.1998, MPS pt. 40=\$62,780 p.m., and MPS pt. 16=\$21,010 p.m.). A multiplier factor of 1.7 is applied in the case of site staff supplied by the consultants.
2. The consultants' fees for work in the construction stage is a provisional part of the lump sum price quoted by the selected consultants under Agreement No. CE35/97 " Design and construction assignment for highway between Shap Pat Heung Interchange and Pok Oi Interchange - remaining works" which is available for acceptance by Government subject to approval of upgrading of **706TH** to Category A.



- 圖例**  
LEGEND:
- 擬建橋樑  
PROPOSED VEHICULAR BRIDGE
  - 擬建行人隧道  
PROPOSED PEDESTRIAN SUBWAY
  - 擬建隔音屏障  
(1米高)  
PROPOSED NOISE BARRIER  
(1m HIGH)
  - 擬建道路(路堤)  
PROPOSED ROAD (EMBANKMENT)
  - 擬建道路(低於地面)  
PROPOSED ROAD (DEPRESSED)
  - 擬建行人/行車隧道  
PROPOSED PEDESTRIAN /  
VEHICULAR UNDERPASS
  - 消防水管  
FIRE WATERMAIN



<p>Drawing Title 圖則名稱</p> <p>HIGHWAY BETWEEN SHAP PAT HEUNG INTERCHANGE AND POK OI INTERCHANGE - REMAINING WORKS</p> <p>十八鄉交匯處至博愛交匯處之公路—餘下工程</p>	<p>Drawn by</p> <p>BINNIE BLACK &amp; VEATCH HONG KONG LTD.</p>	<p>Date</p> <p>02/99</p>	<p>Drawing No. 圖號</p> <p>NH22123</p>	<p>Scale 比例</p> <p>1:5000</p>
	<p>Approved by</p> <p>K. C. CHU</p>	<p>Date</p> <p>02/99</p>	 <p>HIGHWAYS DEPARTMENT NT REGION 路政署 / 新界區</p>	