

Environmental
Resources
Management

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28 September 2005

CCECC & CRWJ Joint Venture
PO Box No. 214
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Hong Kong

Attn: Mr Y C Tang, Project Manager (By Fax 2988 1601 & Post)

Our ref: 0019715_let_certify_detailed design 4.1 & 4.2_280905.doc



Dear Sirs,

Contract No. HY/2003/19
Improvement to Tung Chung Road between Lung Tseng Tau and Cheung Sha
Environmental Permit No. EP_170/2003
Condition 4.1 - Detailed Design of Wildlife Tunnels and
Condition 4.2 - Detailed Design of Animal Escape Ramps or Similar Structures

We refer to the captioned document prepared by Mott Connell under cover of letter ref: KWL/TI/MK/mk/C203358/M45/900/L3017. We are pleased to provide our certification for the document pursuant to Conditions 4.1 and 4.2 of Environmental Permit (EP) No. EP-170/2003.

Yours faithfully
For ERM Hong Kong, Ltd

Marcus Ip
Environmental Team Leader

Direct Tel: (852) 2271 3102
E-mail: marcus.ip@erm.com

- | | | | |
|----|-------------------|---------------------------|-----------------|
| cc | Mott Connell | (Attn: Mr KW Lee) | (Fax 2827 1823) |
| | Meinhardt-Mouchel | (Attn: Ms Helen Cochrane) | (Fax 2807 1577) |
| | CCECC & CRWJ JV | (Attn: Mr Mr Frankie Lui) | (Fax 2988 1677) |
| | CCECC & CRWJ JV | (Attn: Mr Winston Yeung) | (Fax 2827 4313) |



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Hong Kong



INDEPENDENT ENVIRONMENTAL CHECKER CHECK CERTIFICATE

Contract No. HY/2003/19
Improvement to Tung Chung Road between
Lung Tseng Tau and Cheung Sha
Condition 4.1 of EP-170/2003/A – Detailed Design of Wildlife Tunnels

We confirm having used reasonable skill and care in the checking of this report and we certify that we can verify the report.

Signed: *H. J. Cochrane*
Independent Environmental Checker
H. J. Cochrane
Director and IEC

Date: 28/9/05

**Improvement to Tung Chung Road between Lung Tseng Tau and Cheung Sha
Environmental Permit No. EP-170/2003
Condition 4.1 – Wildlife Tunnels**

1. FUNCTION AND PURPOSE

In accordance with the EIA Report, wildlife tunnels to be provided to mitigate the barrier effects of the road to the movement of larger mammals and herpetofauna between areas of suitable habitat bisected and fragmented by the road. It is therefore required to allow mammals and herpetofauna to have the opportunity to traverse the road safely.

For further information please refer to Section 8.8.3 and Table 8.30 of the EIA Report.

2. LOCATIONS OF THE TUNNELS

In accordance with the recommendation of the EIA Report, wildlife tunnels have been provided under the new road at 3 locations shown in Figure 8.21

Location A (Chainage 4700) – since there is already a bridge at this location, a tunnel is not provided as the bridge crossing itself provides a corridor to allow mammals to cross safely beneath the road (see drawing 203358/U/2596)

Location B (Chainage 6750) – (see drawing TCR/SK/0155)

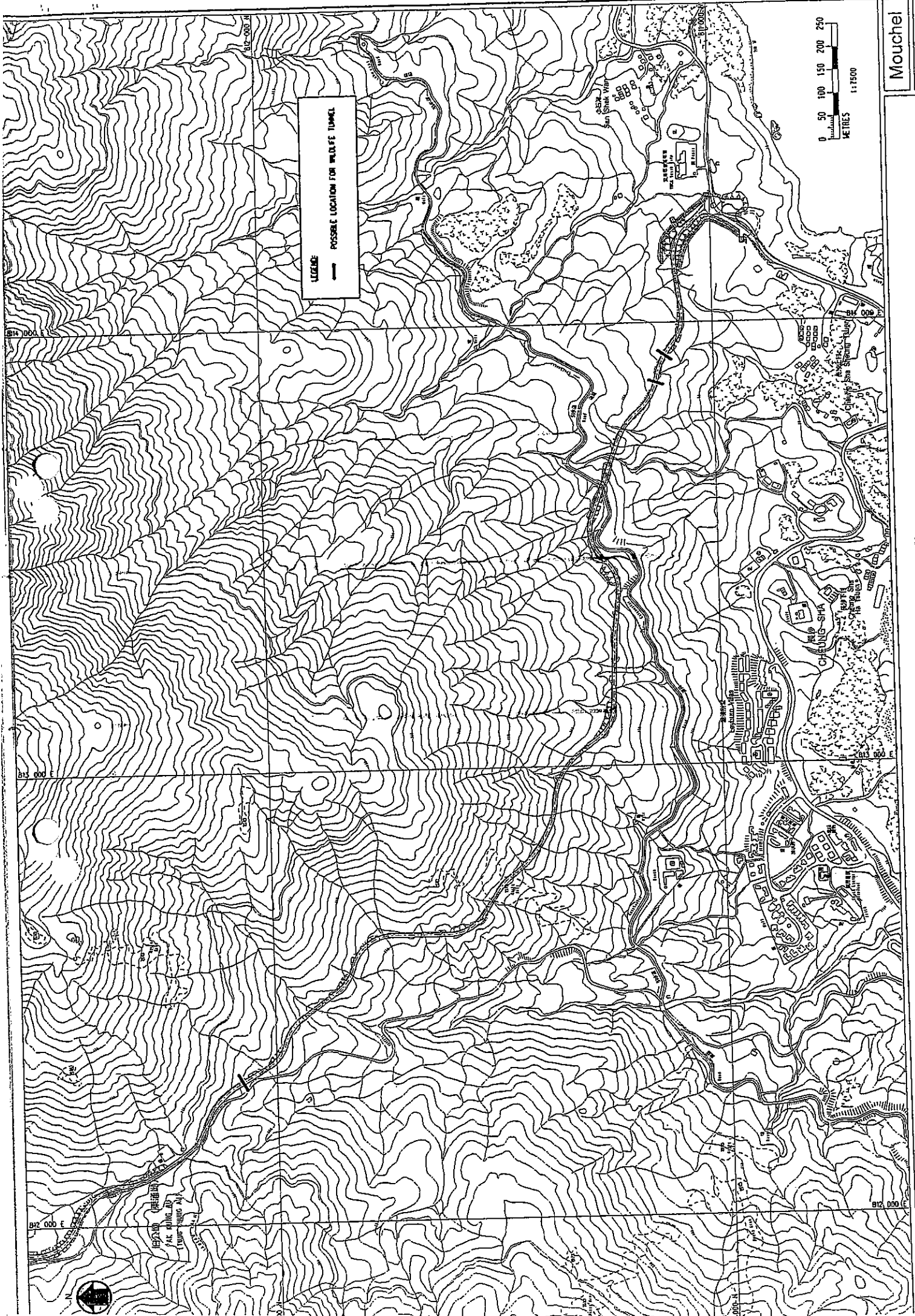
Location C (Chainage 6850) – (see drawing TCR/SK/0156)

3. RATIONALES OF POSITIONING THE TUNNELS AT THOSE LOCATIONS

The rationales for positioning the tunnels at those locations are set out in the EIA Report, refer Section 8.9.2, Table 8.33 and Figure 8.21

4. DESIGN FEATURES INCORPORATED IN THE TUNNELS TO FACILITATE/ENHANCE THE FUNCTION

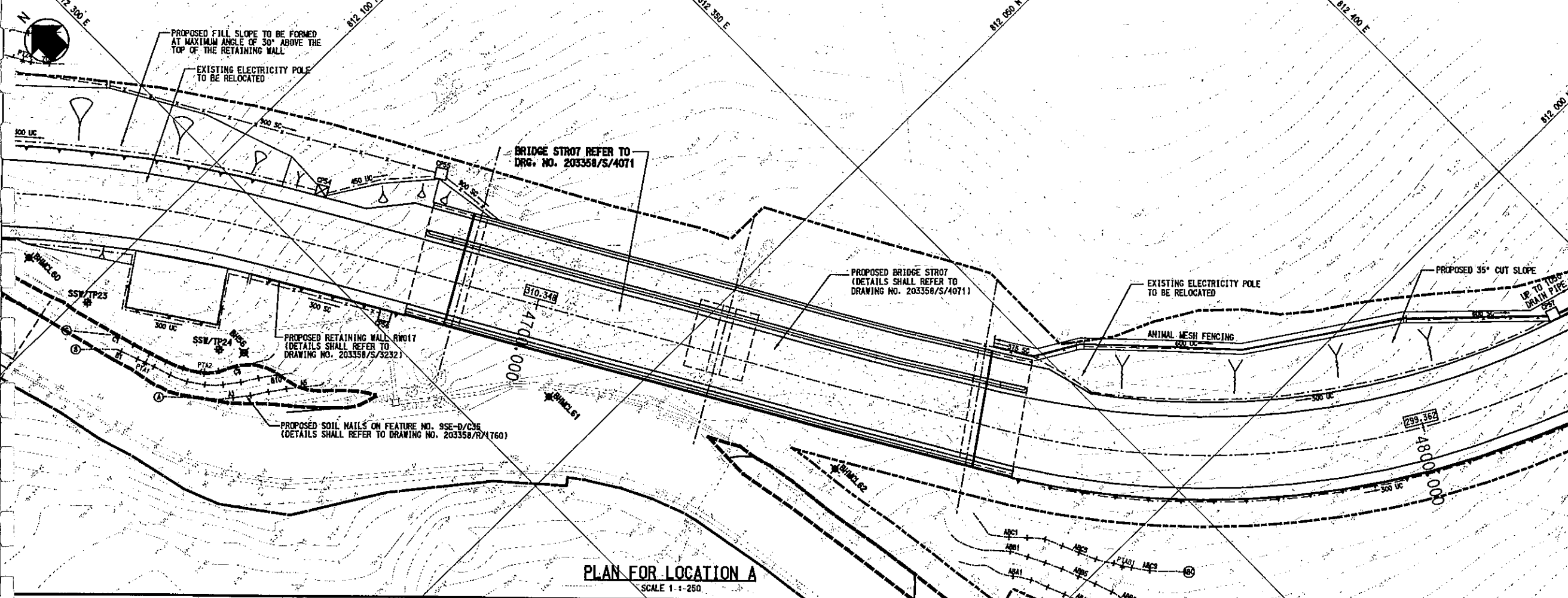
- EIA Section 8.9.2.2 states that the wildlife tunnels should comprise relatively narrow (0.5m) tunnels that pass under the road.
- The passageways are placed at certain angles to direct wildlife towards it.
- Tunnels are located above the level of surface drains and crowned longitudinally to ensure they do not become flooded.
- Animal mesh fencing provide to help guide the animals to the passage system as well as preventing them from crossing the road
- Fences appropriately designed so that the animals cannot slip through the fence
- Escape ramps appropriately designed to permit the animals to climb out of the channels



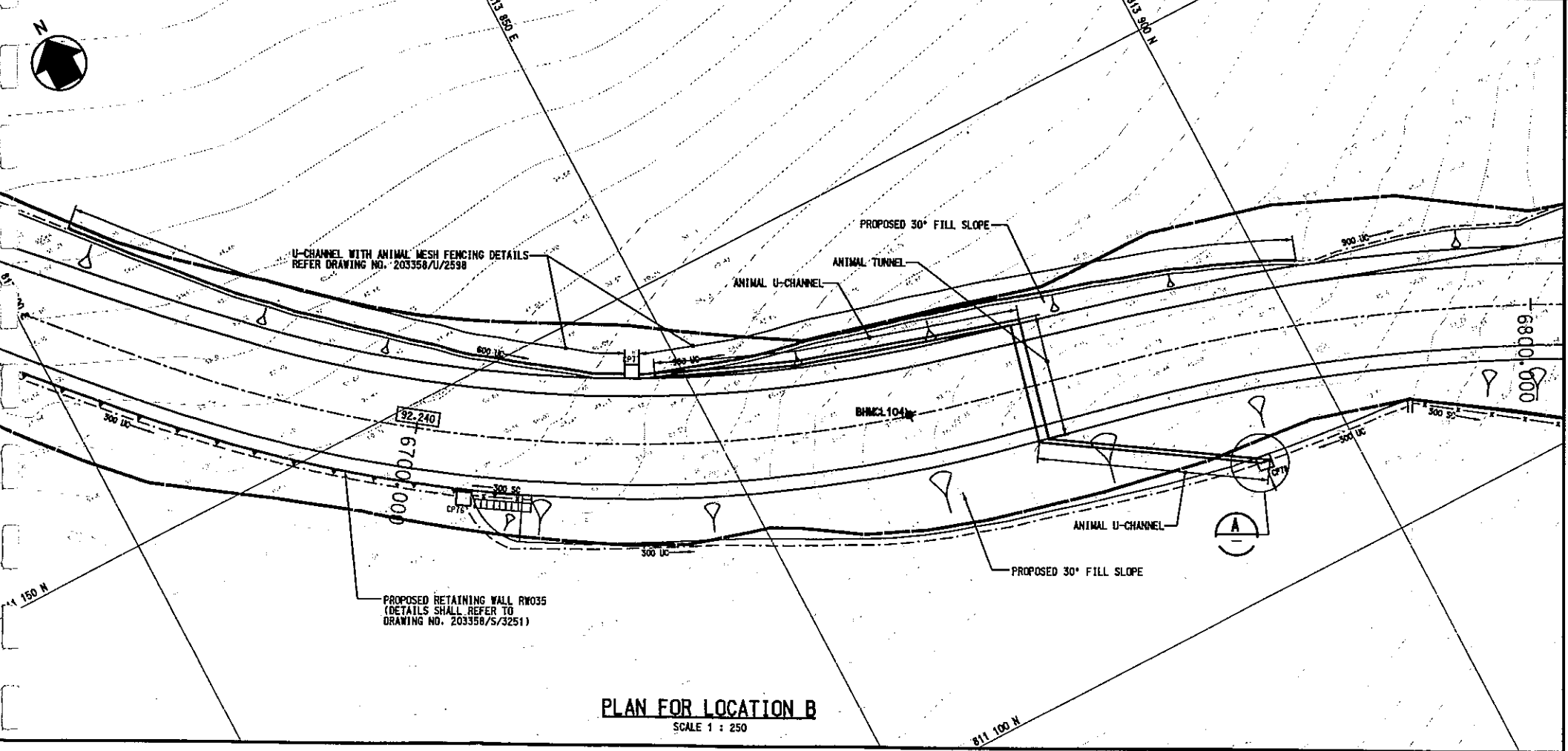
- NOTES:**
- ALL LEVELS ARE IN METRES AND REFER TO PRINCIPAL DATUM.
 - CONSTRUCTION JOINTS SHOWN THUS C.J.
 - ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED.
 - ALL SPLAYS AND CHAMFERS TO BE 25x25 UNLESS OTHERWISE SHOWN.
 - CONCRETE GRADES SHALL BE AS FOLLOWS :

(a) ALL CONCRETE EXCEPT BLINDING	40/200
(b) BLINDING CONCRETE	10/20
 - REINFORCEMENT

(a) BAR MARKS SHOWN THUS	
22 No	T 20 13 150 B
	TYPE DIA. MARK SPACING LOCATION
(b) HIGH TENSILE(T) AND MILD STEEL(R) REINFORCEMENT TO BE IN ACCORDANCE WITH CS2:1995 : "CARBON STEEL BARS FOR THE REINFORCEMENT OF CONCRETE."	
(c) ABBREVIATIONS	
T	TOP
B	BOTTOM
NF	NEAR FACE
FF	FAR FACE
EF	EACH FACE
ABR	ALTERNATE BARS REVERSED
ABS	ALTERNATE BARS STAGGERED
AP	ALTERNATE PLACED
V	VARIES
(d) UNLESS OTHERWISE SHOWN ALL LAPS BETWEEN REINFORCEMENT BARS ARE TO BE FULL TENSION LAPS AND ALL ANCHORAGE LENGTHS ARE TO BE FULL TENSION ANCHORAGE LENGTHS IN ACCORDANCE WITH BS5400.	
 - UNLESS OTHERWISE STATED, COVER TO REINFORCEMENT SHALL BE 40mm.
 - FOR HIGHWAY LAYOUTS AND SETTING OUT LINES SEE DRAWING NO. 203358/U/2597 TO 2598.
 - CONSTRUCTION JOINTS OTHER THAN THOSE INDICATED SHALL BE SUBJECT TO THE ENGINEER'S APPROVAL.
 - UNLESS OTHERWISE STATED ALL STAINLESS STEEL SHALL BE GRADE 316S33 IN ACCORDANCE WITH BS970 PART 1.



PLAN FOR LOCATION A
SCALE 1:1-250



PLAN FOR LOCATION B
SCALE 1:250

Rev.	Date	Drn.	Description	Dgn.	Chd.	App'd.
A	JUN 04	GYZ	ISSUED FOR CONSTRUCTION, IDENTICAL TO TENDER DRAWING REVISION 01			
Designed:	WICWJL	Date:	AUG 03	Checked:	SLL	
Drawn:	GYZ	Date:	AUG 03	Checked:	WICWJL	
Approved:	KWL	For MCL	Date of Issue:	OCT 2003		

Client
The Government of the Hong Kong Special Administrative Region
Highways Department

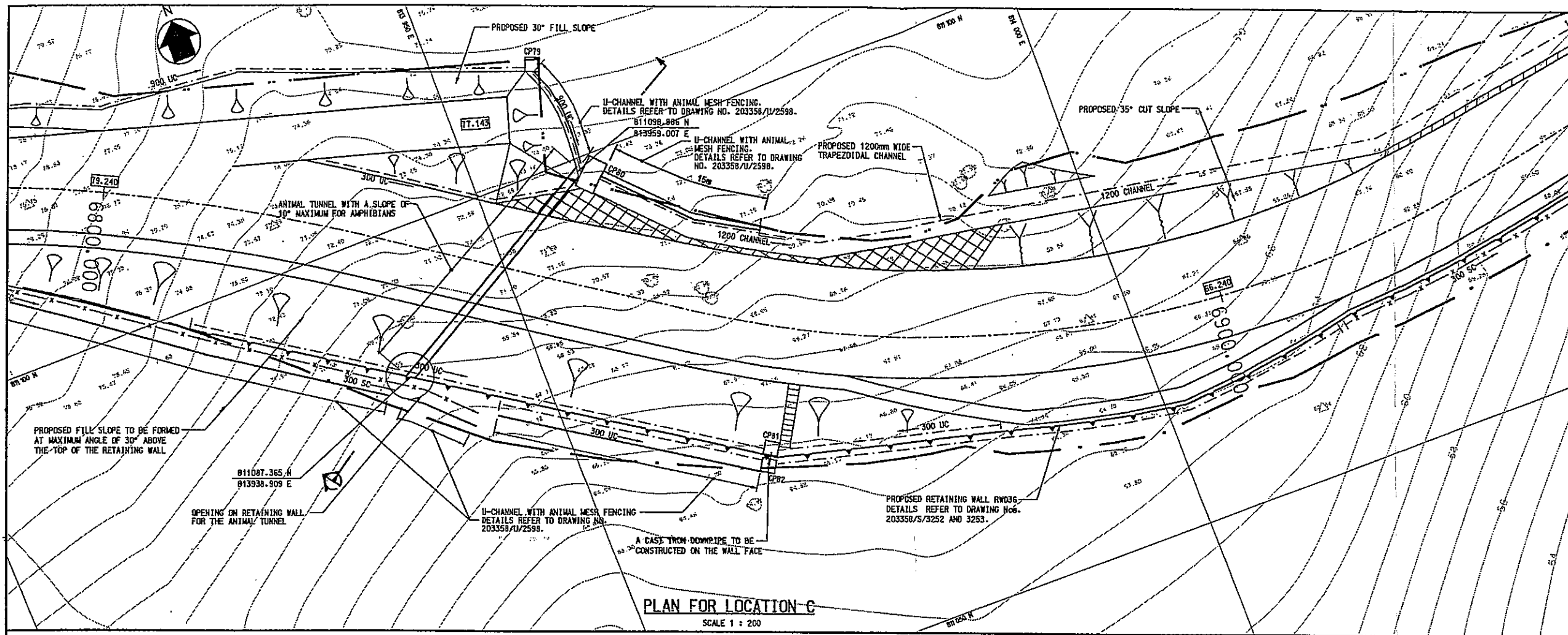
Consulting Engineers
Mott Connell Ltd.
In Association with
Halow China Ltd MVA Hong Kong Ltd Urbis Ltd
Miflich & Co Archaeological Assessments IIDS Preston Ltd

Project
Improvement to Tung Chung Road between Lung Tseng Tau and Cheung Sha

Title
ECOLOGICAL DESIGN MEASURES- WILDLIFE TUNNELS

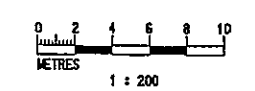
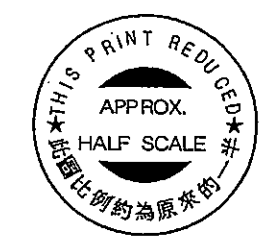
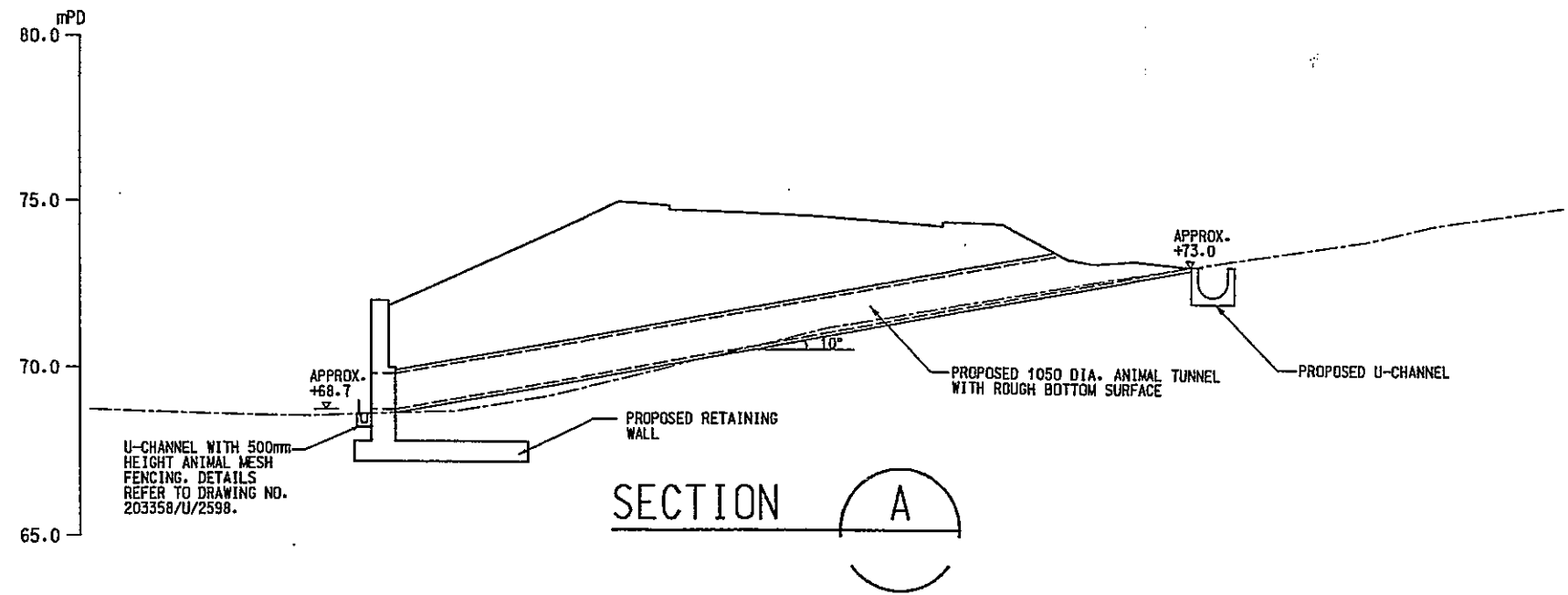
SHEET 1 OF 3



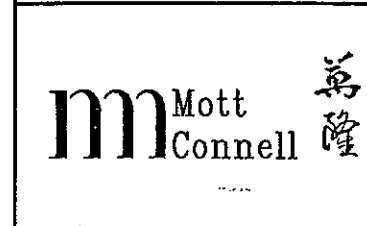


NOTES:
FOR GENERAL NOTES, REFER TO DRAWING No. 203358/U/

- LEGEND:**
- PROPOSED R.C. RETAINING WALL
 - PROPOSED CARRIAGEWAY
 - PROPOSED FILL SLOPE
 - PROPOSED CUT SLOPE
 - PROPOSED FINAL FORMATION LEVEL AT CENTRE LINE OF CARRIAGEWAY
 - PROPOSED CATCHPIT WITH PRECAST CONCRETE COVERS
 - PROPOSED CATCHPIT WITHOUT PRECAST CONCRETE COVERS
 - PROPOSED 300mm U-CHANNEL
 - PROPOSED 450mm STEPPED CHANNEL
 - PROPOSED 600mm WIDE CONCRETE MAINTENANCE STAIRWAY
 - PROPOSED FILL PLATFORM



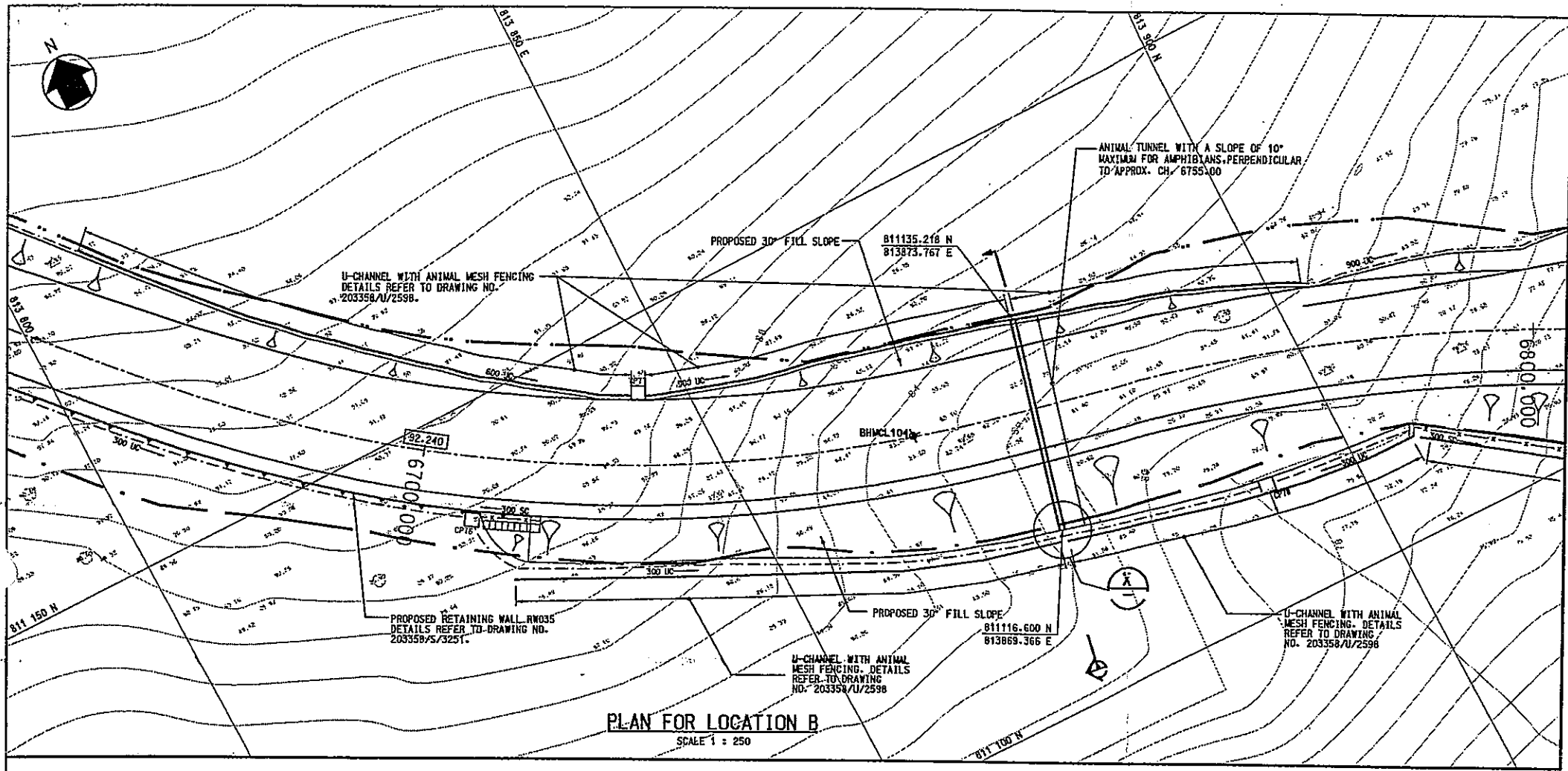
AFFECTED DRAWING No. 203358/U/2597



CONTRACT NO. HY/2003/19
IMPROVEMENT TO TUNG CHUNG ROAD
BETWEEN LUNG TSENG TAU AND CHEUNG SHA

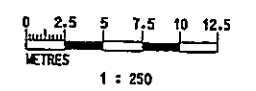
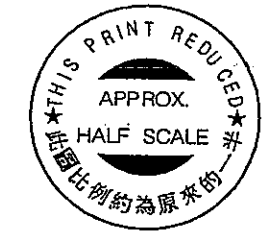
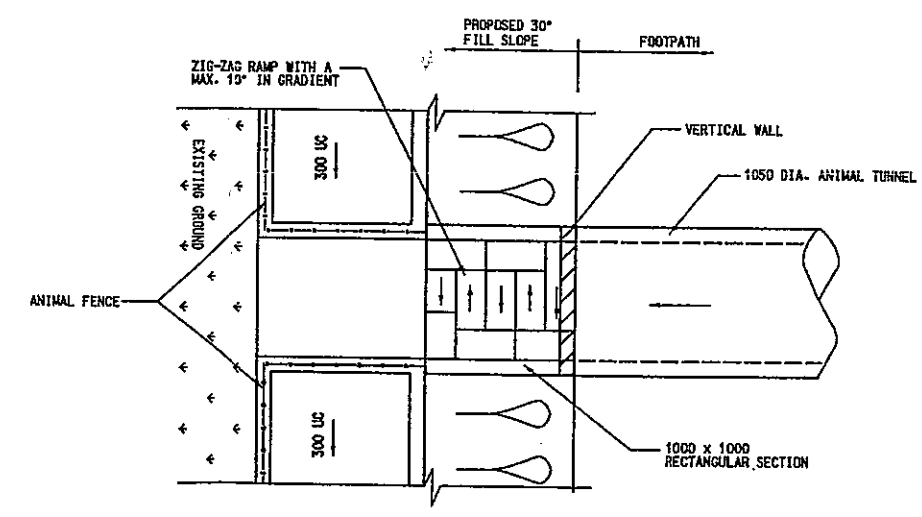
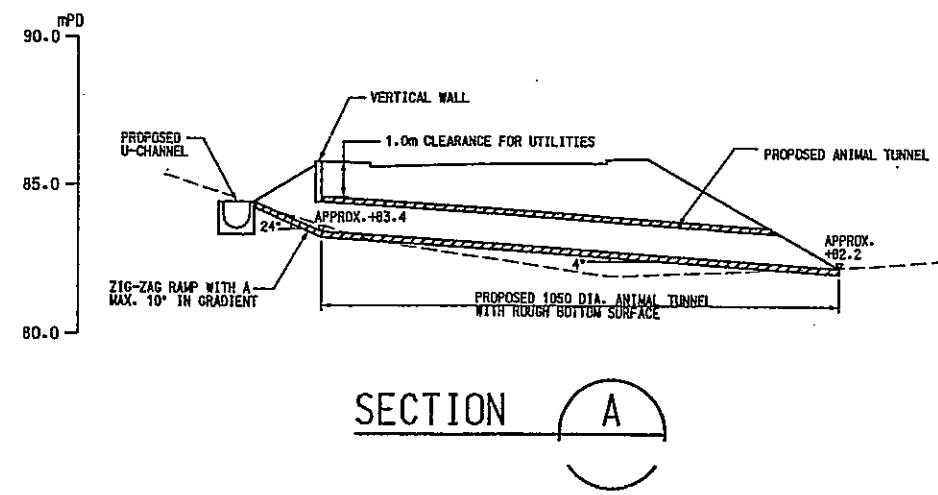
Title : ECOLOGICAL DESIGN MEASURES AT APPROX. CH. 6860

Date : APRIL 2005	Drawn : LTC	Scale : AS SHOWN
Designed : PT	Checked : WL	Approved : HPH
Sketch No. : TCR/SK/0156		Rev. : A



NOTES:
FOR GENERAL NOTES, REFER TO DRAWING NO. 203358/U/2596

- LEGEND:
- PROPOSED R.C. RETAINING WALL
 - PROPOSED CARRIAGEWAY
 - PROPOSED FILL SLOPE
 - PROPOSED CUT SLOPE
 - PROPOSED FINAL FORMATION LEVEL AT CENTRE LINE OF CARRIAGEWAY
 - PROPOSED CATCHPIT WITH PRECAST CONCRETE COVERS
 - PROPOSED CATCHPIT WITHOUT PRECAST CONCRETE COVERS
 - PROPOSED 300mm U-CHANNEL
 - PROPOSED 450mm STEPPED CHANNEL
 - PROPOSED 600mm WIDE CONCRETE MAINTENANCE STATION



AFFECTED DRAWING No. 203358/U/2596

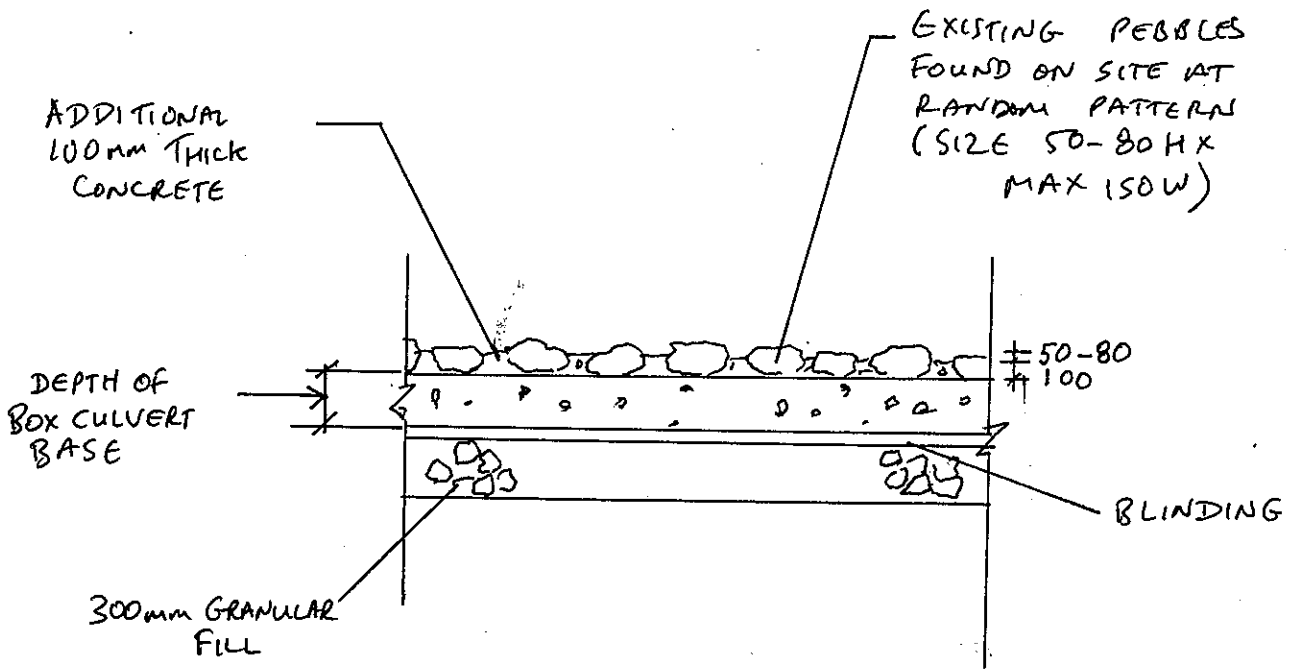
CONTRACT NO. HY/2003/19
IMPROVEMENT TO TUNG CHUNG ROAD
BETWEEN LUNG TSENG TAU AND CHEUNG SHA



Title :

ECOLOGICAL DESIGN MEASURES AT APPROX. CH. 6755

Date : APRIL 2005	Drawn : LTC	Scale : AS SHOWN
Designed : PT	Checked : WL	Approved : HPH
Sketch No. : TCR/SK/0155		Rev : A



DETAILS OF RIDGED FLOORS AT CULVERT