

Your Ref :  
Our Ref : (ND/2019/05)/M45/100/L00989

13 May 2021

**By Post**

Environmental Impact Assessment Ordinance Register Office  
Environmental Protection Department  
27/F, Southorn Centre,  
130 Hennessy Road, Wanchai,  
Hong Kong

Dear Sirs / Madame,

**Development of Kwu Tung North and Fanling North New Development Areas, Phase 1**  
**Contract No. ND/2019/04**  
**Fanling North New Development Area, Phase 1:**  
**Fanling Bypass Eastern Section (Shek Wu San Tsuen North to Lung Yeuk Tau)**

**Environmental Permit No. EP-473/2013/A**  
**Condition 2.8 – Submission of Detailed Design of Siu Hang San Tsuen Stream**

With reference to the captioned Environmental Permit(s) and Condition for the Project titled "Development of Kwu Tung North and Fanling North New Development Areas, Phase 1", and on behalf of the Permit Holder, Civil Engineering and Development Department (CEDD), I would like to submit the detailed design of Siu Hang San Tsuen Stream which had been certified by the ET Leader and verified by the IEC for the captioned Contract for your reference.

Yours faithfully,



Johnny Tang  
Chief Resident Engineer  
AECOM Asia Co. Ltd.

Encl.

c.c.	CEDD/NDO	–	Attn: Mr. LEUNG Wai-lok	
	Mott (IEC)	–	Attn: Mr. Thomas Chan	(electronic copy)
	Wellab (ET)	–	Attn: Dr. Priscilla Choy	(electronic copy)
	DCKJV	–	Attn: Mr. Bear Ding	(electronic copy)
	AECOM	–	Attn: Mr. Francis Leong/Mr. Alex Wong	

JT/VC/MF/KM/ckm  
9

**WELLAB 匯力**

consulting . testing . research

Our Ref: WMA20002/AECOM/kl210507

**AECOM**

8/F Grand Central Plaza Tower 2  
138 Shatin Rural Committee Road  
Shatin, Hong Kong

By Mail  
7<sup>th</sup> May 2021

Attn.: Mr. Chris Ho

Dear Mr. Ho,

Service Contract No. NDO 04/2019

Environmental Team for Environmental Monitoring and Audit Works in Construction Phase  
for the First Phase Development of Kwu Tung North and Fanling North New Development  
Areas

- Contract No.: ND/2019/04

Fanling North New Development Area, Phase 1:

Fanling Bypass Eastern Section between Shek Wu San Tsuen North and Lung Yeuk Tau

Environmental Permit No. EP-473/2013/A:

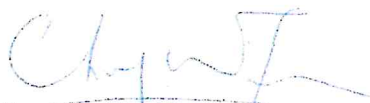
Detailed Design of Siu Hang San Tsuen Watercourse (Condition 2.8)

I refer to your letter dated 27<sup>th</sup> April 2021 (ref.: (ND/2019/04)/M45/010/L00900) and the revised submission of the Detailed Design of Siu Hang San Tsuen Watercourse (EP Condition 2.8) via email dated 7<sup>th</sup> May 2021.

I am pleased to inform you that I have no further comment and I hereby agree to certify the above document in accordance with the Environmental Permit (No. EP-473/2013/A), Condition 1.9 and 2.8.

If you need any further information, please call our Ms. Ivy Tam at 2151 2090 or me at 2151 2089.

Yours faithfully,  
WELLAB Limited



Dr. Priscilla Choy  
Environmental Team Leader

c.c. CEDD (Attn: Mr. FAN Kwok Shing, Felix)  
IEC - Mott MacDonald Hong Kong Ltd  
(Attn.: Mr. Thomas Chan)

By e-mail: felixksfan@cedd.gov.hk

By e-mail: Thomas.Chan@mottmac.com

WELLAB LIMITED

Room 1714, Technology Park, 18 On Lai Street, Shatin, N.T., Hong Kong.  
Tel : (852) 2898 7388 Fax : (852) 2898 7076 E-mail : wellab@wellab.com.hk  
Website : <http://www.wellab.com.hk>



AECOM  
8F, Tower 2, Grand Central Plaza  
138 Shatin Rural Committee Road  
Shatin, N.T. Hong Kong

Attention: Mr. Chris Ho

Your Reference

Our Reference  
EC/TC/df/414202/L0069

3/F International Trade  
Tower  
348 Kwun Tong Road  
Kowloon  
Hong Kong

T +852 2828 5757  
F +852 2827 1823  
mottmac.hk

Agreement No. CE 33/2019 (EP)  
Independent Environmental Checker for Environmental Monitoring and Audit Works in  
Construction Phase for the First Phase Development of Kwu Tung North and Fanling  
North New Development Areas – Investigation

Contract No. ND/2019/04 Fanling North New Development Area, Phase 1: Fanling  
Bypass Eastern Section between Shek Wu San Tsuen North and Lung Yeuk Tau -  
Environmental Permit No. EP-473/2013/A: Detailed Design of Siu Hang San Tsuen  
Watercourse (Condition 2.8)

10 May 2021  
BY EMAIL

Reference is made to AECOM's submission of the Detailed Design of Siu Hang San Tsuen  
Watercourse (EP Condition 2.8) of the captioned Contract (ND/2019/04) in accordance with  
the Environmental Permit (No. EP-473/2013/A) certified by the ET Leader on 7 May 2021.

We would like to inform you that we have no adverse comment on the captioned submission.  
Therefore, we write to verify the captioned submission in accordance with the requirement  
stipulated in Condition 1.9 and 2.8 of EP-473/2013/A.

Should you have any queries, please contact the undersigned at 2828 5967.

Yours faithfully,  
For and on behalf of the  
Mott MacDonald Hong Kong Limited

Ir Thomas Chan  
Independent Environmental Checker  
T +852 2828 5967  
Thomas.Chan@mottmac.com

c.c.  
CEDD  
Wellab Ltd.

Mr. Felix Fan	felixksfan@cedd.gov.hk
Dr. Priscilla Choy/	priscilla.choy@wellab.com.hk
Ms. Ivy Tam	ivy.tam@wellab.com.hk



土木工程拓展署

New Territories East Development Office

Civil Engineering and Development Department

Agreement No. CE 13/2014 (CE)

**Development of Kwu Tung North and Fanling North  
New Development Areas, Phase 1  
– Design and Construction**

**Detailed Design of Siu Hang San Tsuen Watercourse**

April 2020



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Figure 7	Permanent Fencing Arrangement
Figure 8	Permanent Fencing on Decking Structure
C1006	CEDD Standard Drawing – Chain Link Fence
H6120	HyD Standard Drawing – Boundary Fence

## 1 PURPOSE

- 1.1 The proposed Fanling Highway Bypass will span across the Siu Hang San Tsuen Watercourse.
- 1.2 To minimize impacts on Siu Hang San Tsuen Watercourse and stream fauna, the hydrological linkage between the stream and the Ng Tung River shall be maintained and a vegetated buffer zone of 10m wide on both sides of the stream within Open Space zone. The extend of Siu Hang San Tsuen Watercourse and corresponding vegetated buffer zone for Open Space zone are shown in **Figure 1**. The buffer zone requirement didn't apply for the underground section of the watercourse.
- 1.3 This submission shows the detailed design of Siu Hang San Tsuen Stream with a 10m wide vegetated buffer in Open Space Zone.

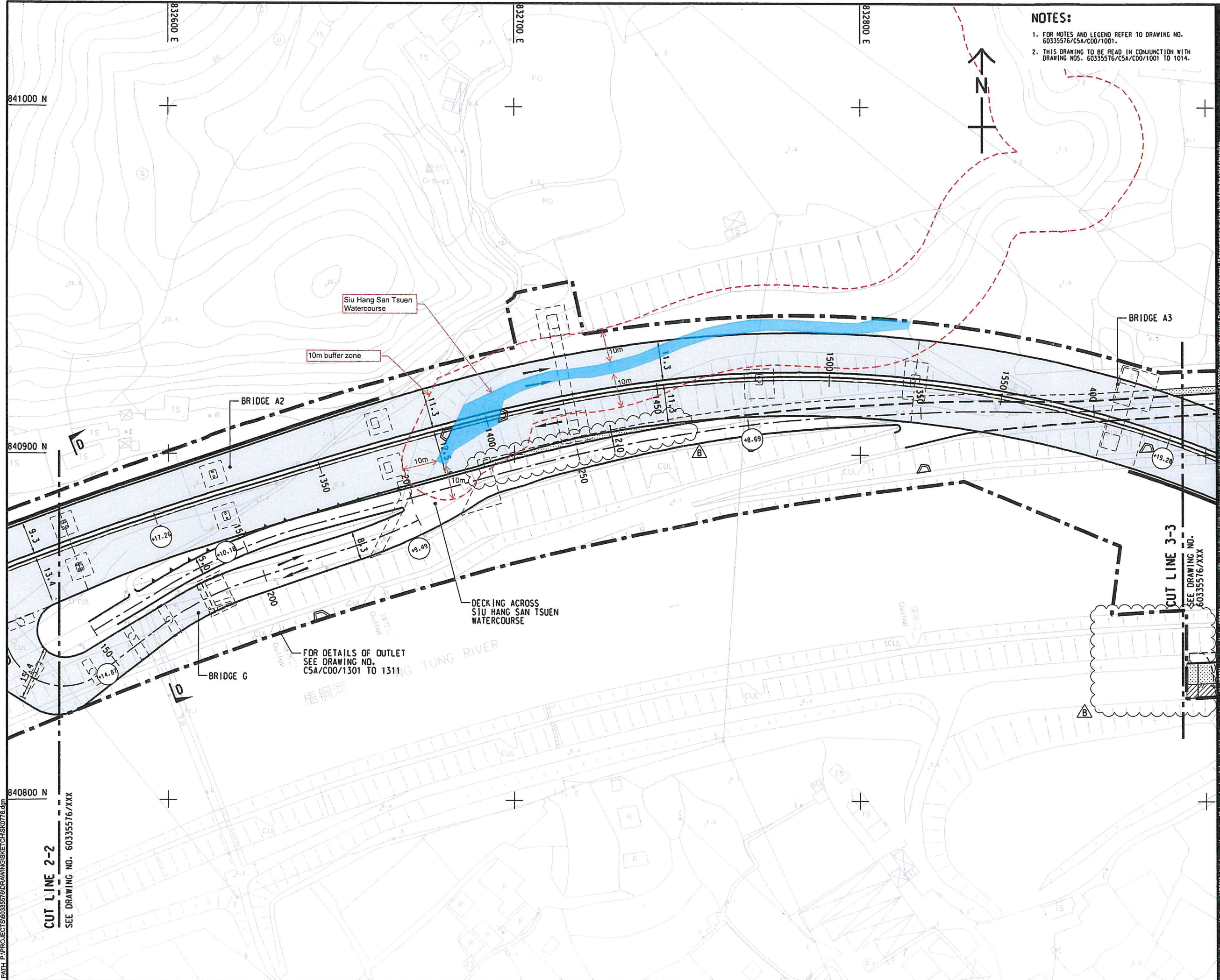
## 2 DETAILED DESIGN OF SIU HANG SAN TSUEN STREAM

- 2.1 Viaduct (namely Bridge A2) span above the Siu Hang San Tsuen Stream. The superstructure of bridge A2 is in the form of 2 continuous prestressed concrete box girder connected by in-situ stitches at cantilever wing. The bridge has a total length of 255m and has 5 spans. The length of each span varies from 45m to 55m, with the last 3 spans (Pier A2-02 to Pier A2-05M) spanning across the Siu Hang San Tsuen Stream. The bridge is more than 7m headroom above the stream and the width of the bridge segments varies from 9.79m to 14.56m. Box girders are supported by piers and portal columns varies from 2.5mx2m to 4mx4.5m in size. The piers and portal columns are outside of the 10m buffer zone for Siu Hang San Tsuen Stream, which are supported by 1.5m to 2m diameter bored pile foundations. The layout plan and elevation of Bridge A2 is shown in **Figure 2**.
- 2.2 A section of at grade road pass adjacent to the Siu Hang San Tsuen Stream and fall into 10m buffer zone. There are sloping river embankment at two side of Siu Hang San Tsuen Watercourse. To cater the level difference of slope, retaining structures (i.e. retaining structure and U-trough wall) are proposed to support the at grade road from the slope. For the section of road within the 10m buffer zone, decking structure is proposed to span across the buffer zone. The structural form of the deck will be six precast reinforced concrete beams with cast-in situ slab. The maximum span length is 26.75m and the span width varies from 14m to 18m approx. A 2m footpath is provided at one side. The precast reinforced concrete beams will be 1.45m deep to avoid contact with the 10m buffer zone at ground level and be constructed monolithically with abutments. Each end of the precast beams will be supported by the monolithic reinforced concrete abutment. The decking structure is supported by piled foundation to avoid differential settlement. The layout plan, elevation and sections of the decking structure are shown in **Figure 3 to 6**.
- 2.3 Temporary 2m high solid barrier will be designed and constructed by Contractor to prevent any construction or other materials being deposited in the stream.
- 2.4 Permanent fencing will be installed along the decking structure and Siu Hang San Tsuen Stream, as shown in **Figure 7 and 8**, to provide protection for the 10m wide vegetated buffer.

## Figures

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#### NOTES:

1. FOR NOTES AND LEGEND REFER TO DRAWING NO. 60335576/CSA/C00/1001.
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60335576/CSA/C00/1001 TO 1014.

**AECOM**

#### PROJECT

DEVELOPMENT OF  
KWU TUNG NORTH AND  
FANLING NORTH  
NEW DEVELOPMENT  
AREAS, PHASE 1 -  
DESIGN AND  
CONSTRUCTION

#### CLIENT

**CEDD** 土木工程拓展署  
Civil Engineering and  
Development Department

#### CONSULTANT

AECOM Asia Company Ltd.  
www.aecom.com

#### SUB-CONSULTANTS

#### ISSUE/REVISION

REV	DATE	DESCRIPTION	CHK.
1	APR-20	SUBMISSION TO EPD	RPCM

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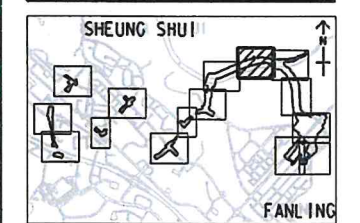
#### SCALE

A1 1: 500

#### DIMENSION UNIT

METRES

#### KEY PLAN



#### PROJECT NO.

60335576

#### CONTRACT NO.

CE 13/2014 (CE)

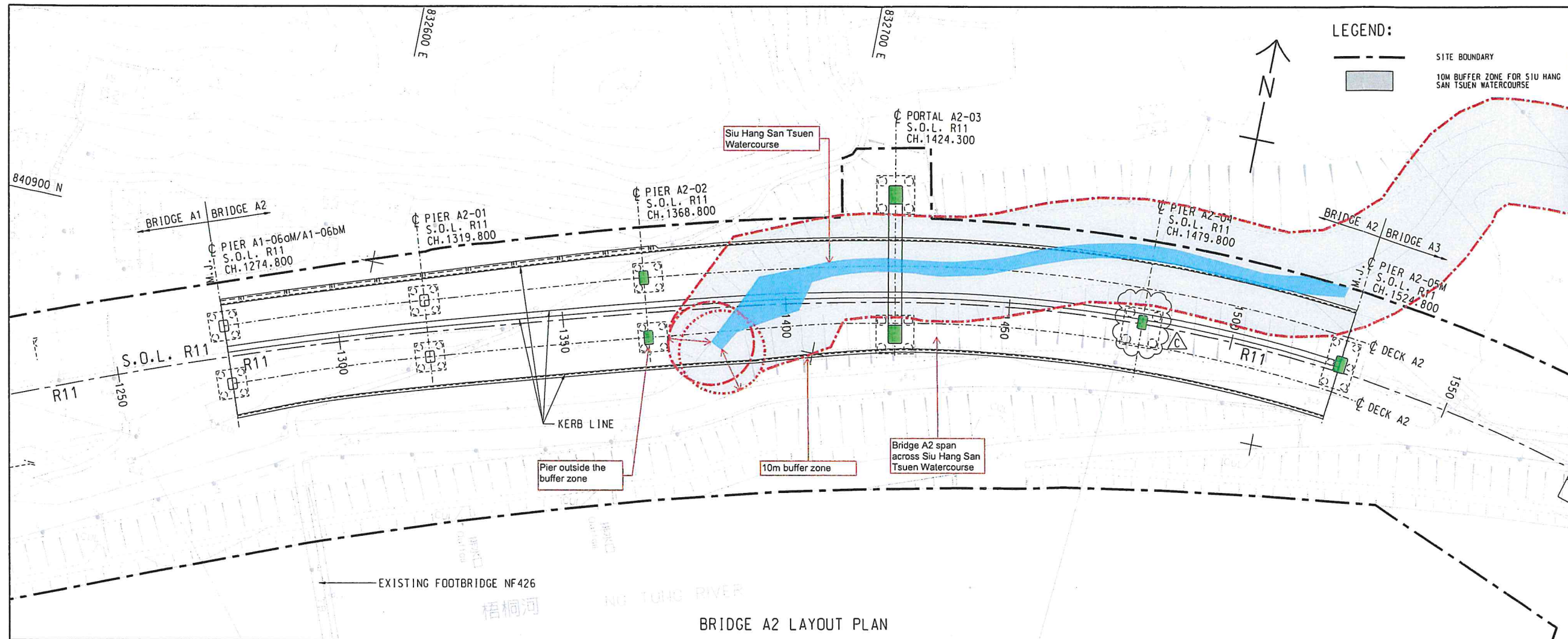
#### SHEET TITLE

GENERAL ARRANGEMENT AT SIU  
HANG SAN TSUEN WATERCOURSE

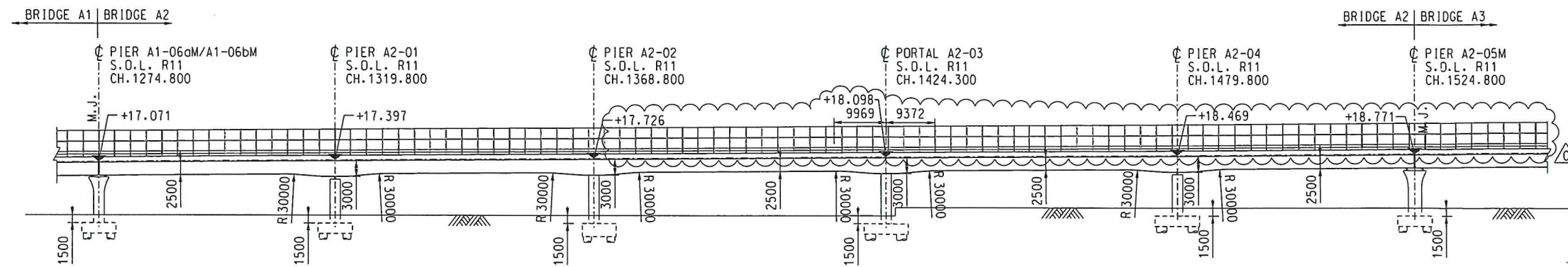
#### SHEET NUMBER

FIGURE 1





BRIDGE A2 LAYOUT PLAN



DEVELOPED ELEVATION OF BRIDGE A2

LEGEND:

--- SITE BOUNDARY  
10M BUFFER ZONE FOR SIU HANG SAN TSUEN WATERCOURSE

AECOM

PROJECT  
DEVELOPMENT OF  
KWU TUNG NORTH AND  
FANLING NORTH  
NEW DEVELOPMENT  
AREAS, PHASE 1

CONTRACT TITLE:

FANLING NORTH NEW  
DEVELOPMENT AREA, PHASE 1:  
FANLING BYPASS  
EASTERN SECTION  
(SHEK WU SAN TSUEN NORTH  
TO LUNG YUEK TAU)

CLIENT

CEDD 土木工程拓展署  
Civil Engineering and  
Development Department

CONSULTANT

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STATUS

STATUS

SCALE

A1 1: 500

KEY PLAN

KEY PLAN

PROJECT NO.

60335576

CONTRACT NO.

ND/2019/04

SHEET TITLE

BRIDGE A2 SPAN ACROSS SIU HANG  
SAN TSUEN WATERCOURSE

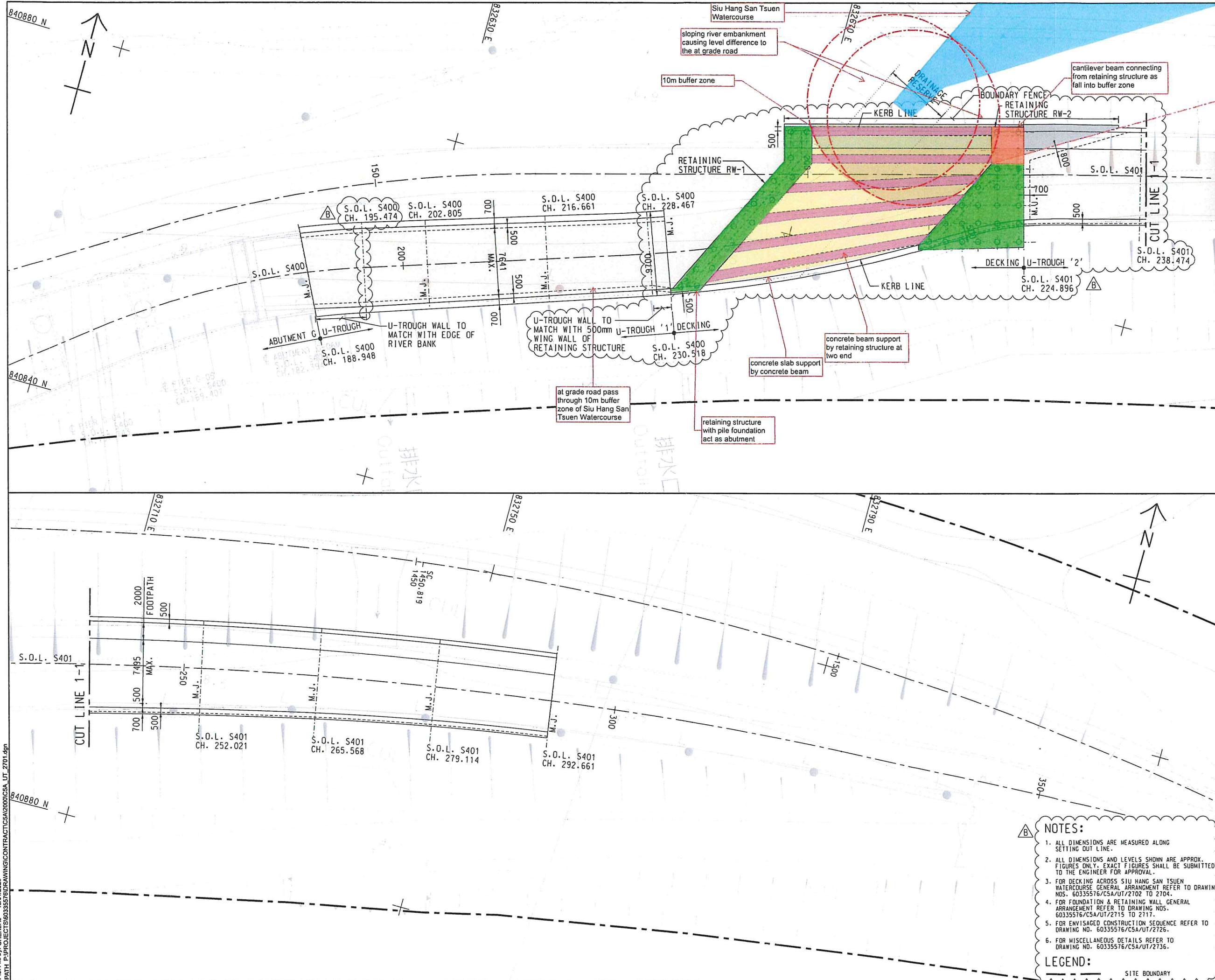
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FIGURE 2



ISO A1 594mm x 841mm  
Approved: IHWL  
Checked: CL  
Designer: DTPL  
Project Management Initials:

Plot File by: CHENLHJ 18/01/2020  
PATH: P:\PROJECTS\60335576\DRAWING\CONTRACT\CSA\2000\CSA\_UT\_2701.dgn



**NOTES:**

- ALL DIMENSIONS ARE MEASURED ALONG SETTING OUT LINE.
- ALL DIMENSIONS AND LEVELS SHOWN ARE APPROX. FIGURES ONLY. EXACT FIGURES SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
- FOR DECKING ACROSS SIU HANG SAN TSUEN WATERCOURSE GENERAL ARRANGEMENT REFER TO DRAWING NOS. 60335576/CSA/UT/2702 TO 2704.
- FOR FOUNDATION & RETAINING WALL GENERAL ARRANGEMENT REFER TO DRAWING NOS. 60335576/CSA/UT/2715 TO 2717.
- FOR ENVISAGED CONSTRUCTION SEQUENCE REFER TO DRAWING NO. 60335576/CSA/UT/2726.
- FOR MISCELLANEOUS DETAILS REFER TO DRAWING NO. 60335576/CSA/UT/2736.

**LEGEND:**

--- SITE BOUNDARY

**AECOM**

**PROJECT**  
項目  
**DEVELOPMENT OF KWU TUNG NORTH AND FANLING NORTH NEW DEVELOPMENT AREAS, PHASE 1**

**CONTRACT TITLE:**  
FANLING NORTH NEW DEVELOPMENT AREA, PHASE 1: FANLING BYPASS EASTERN SECTION (SHEK WU SAN TSUEN NORTH TO LUNG YUEK TAU)

**CLIENT**  
業主  
**CEDD** 土木工程拓展署  
Civil Engineering and Development Department

**CONSULTANT**  
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**STATUS**  
階段

**SCALE**  
比例  
A1 1:200

**DIMENSION UNIT**  
尺寸單位  
MILLIMETRES

**KEY PLAN**  
索引圖

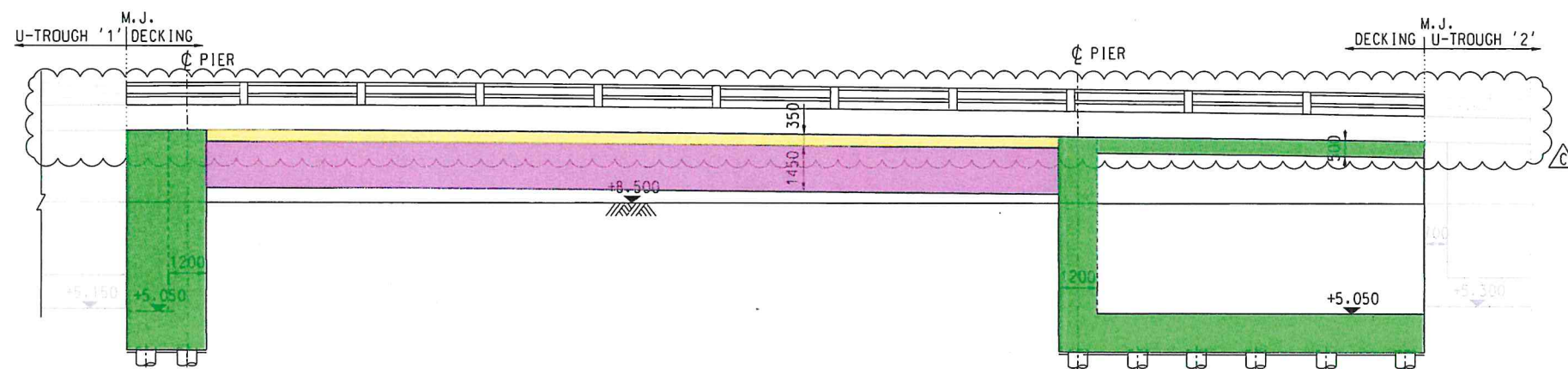
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60335576

**CONTRACT NO.**  
合約編號  
ND/2019/04

**SHEET TITLE**  
圖紙名稱  
DECKING ACROSS SIU HANG SAN TSUEN WATERCOURSE - GENERAL ARRANGEMENT

**SHEET NUMBER**  
圖紙編號  
FIGURE 3





## PLAN OF DECKING

1. ALL DIMENSIONS ARE MEASURED ALONG  
SETTING OUT LINE.
2. ALL DIMENSIONS AND LEVELS SHOWN ARE APPROX.  
FIGURES ONLY. EXACT FIGURES SHALL BE SUBMITTED  
TO THE ENGINEER FOR APPROVAL.
3. THIS DRAWING TO BE READ IN CONJUNCTION WITH  
DRAWING NOS. 60335576/CSA/UT/2702 TO 2704.
4. FOR BEAM ARRANGEMENT REFER TO DRAWING NO.  
60335576/CSA/UT/2710.

PROJECT  
項目

# DEVELOPMENT OF KWU TUNG NORTH AND FANLING NORTH NEW DEVELOPMENT AREAS, PHASE 1

CONTRACT TITLE:

FANLING NORTH NEW  
DEVELOPMENT AREA, PHASE 1:  
FANLING BYPASS  
EASTERN SECTION  
(SHEK WU SAN TSUEN NORTH  
TO LUNG YEUK TAU)

**CLIENT**  
業主



土木工程拓展署  
Civil Engineering and  
Development Department

CONSULTANT  
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STATUS  
開設

<b>SCALE</b> 比例	<b>DIMENSION UNIT</b> 尺寸單位
A1 1 : 100	MILLIMETRES

### KEY PLAN

<b>PROJECT NO.</b> 項目編號	<b>CONTRACT NO.</b> 合約編號
60335576	ND/2019/04

SHEET TITLE  
圖紙名稱

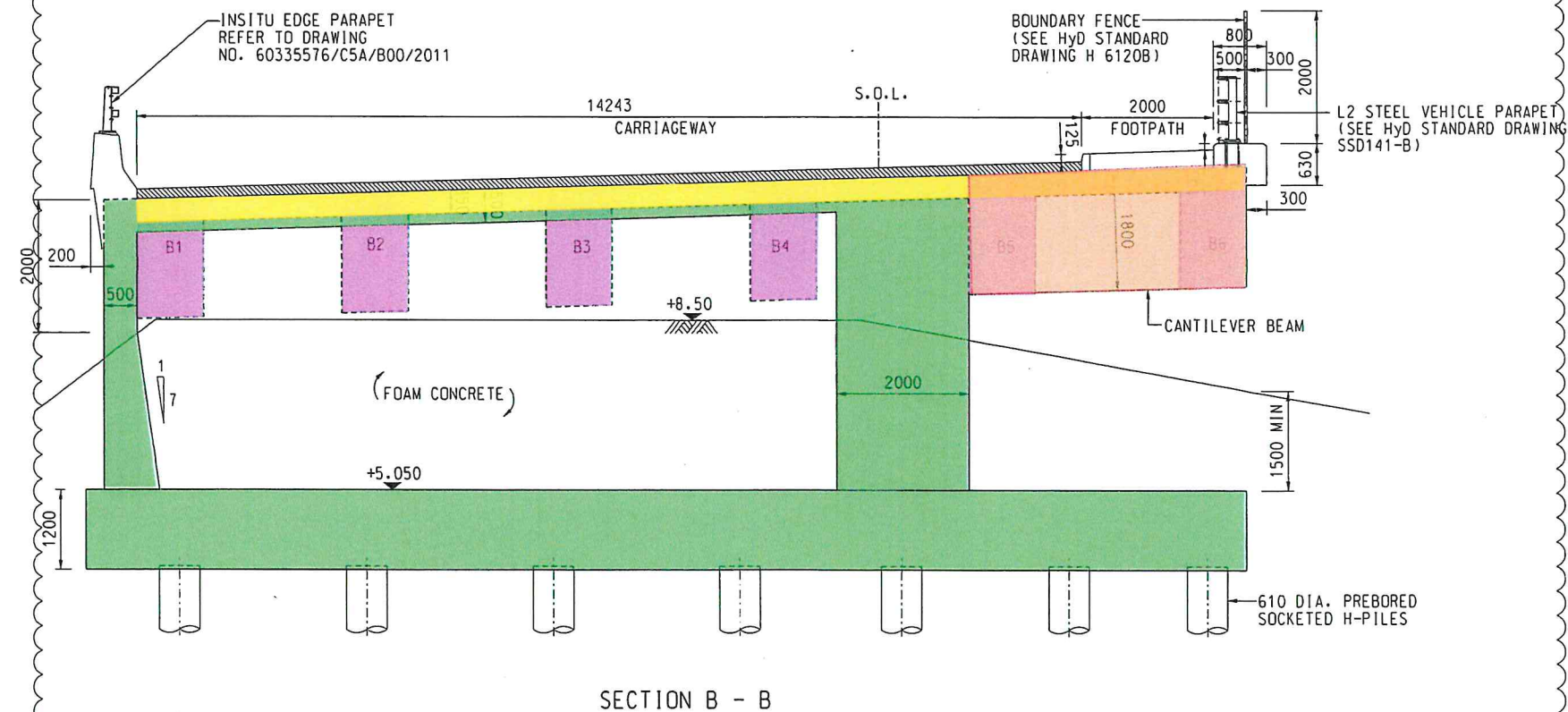
DECKING ACROSS SIU HANG SAN TSUEN  
WATERCOURSE -  
GENERAL ARRANGEMENT

**SHEET NUMBER**  
圖紙編號

FIGURE 4

All measurements must be obtained from the stated dimensions.







NOTE:

1. THIS DRAWING TO BE READ IN CONJUNCTION WITH  
DRAWING NOS. 60335576/C5A/UT/2702 TO 2704.

PROJECT  
項目

# DEVELOPMENT OF KWU TUNG NORTH AND FANLING NORTH NEW DEVELOPMENT AREAS, PHASE 1

CONTRACT TITLE:

FANLING NORTH NEW  
DEVELOPMENT AREA, PHASE 1:  
FANLING BYPASS  
EASTERN SECTION  
(SHEK WU SAN TSUEN NORTH  
TO LUNG YEUK TAU)

**CLIENT**  
業主



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Civil Engineering and  
Development Department

CONSULTANT  
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STATUS  
 附設SCALE  
比例

A1 AS SHOWN

**KEY PLAN**  
索引图

PROJECT NO. 715-0022

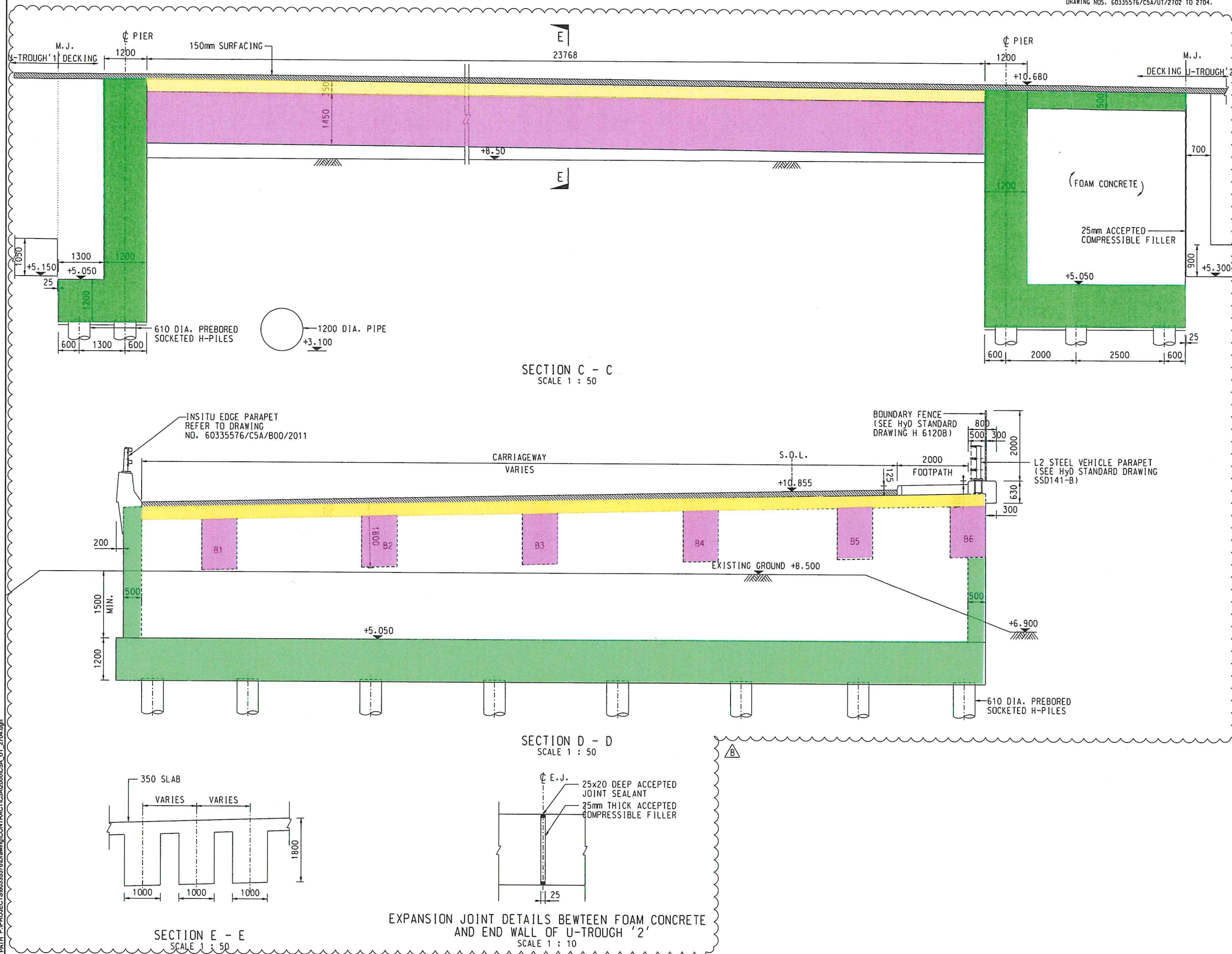
60335576

SHEET TITLE  
圖紙名稱

DECKING ACROSS SIU HANG SAN TSUEN  
WATERCOURSE -  
GENERAL ARRANGEMENT

**SHEET NUMBER**  
圖紙編號

FIGURE 6







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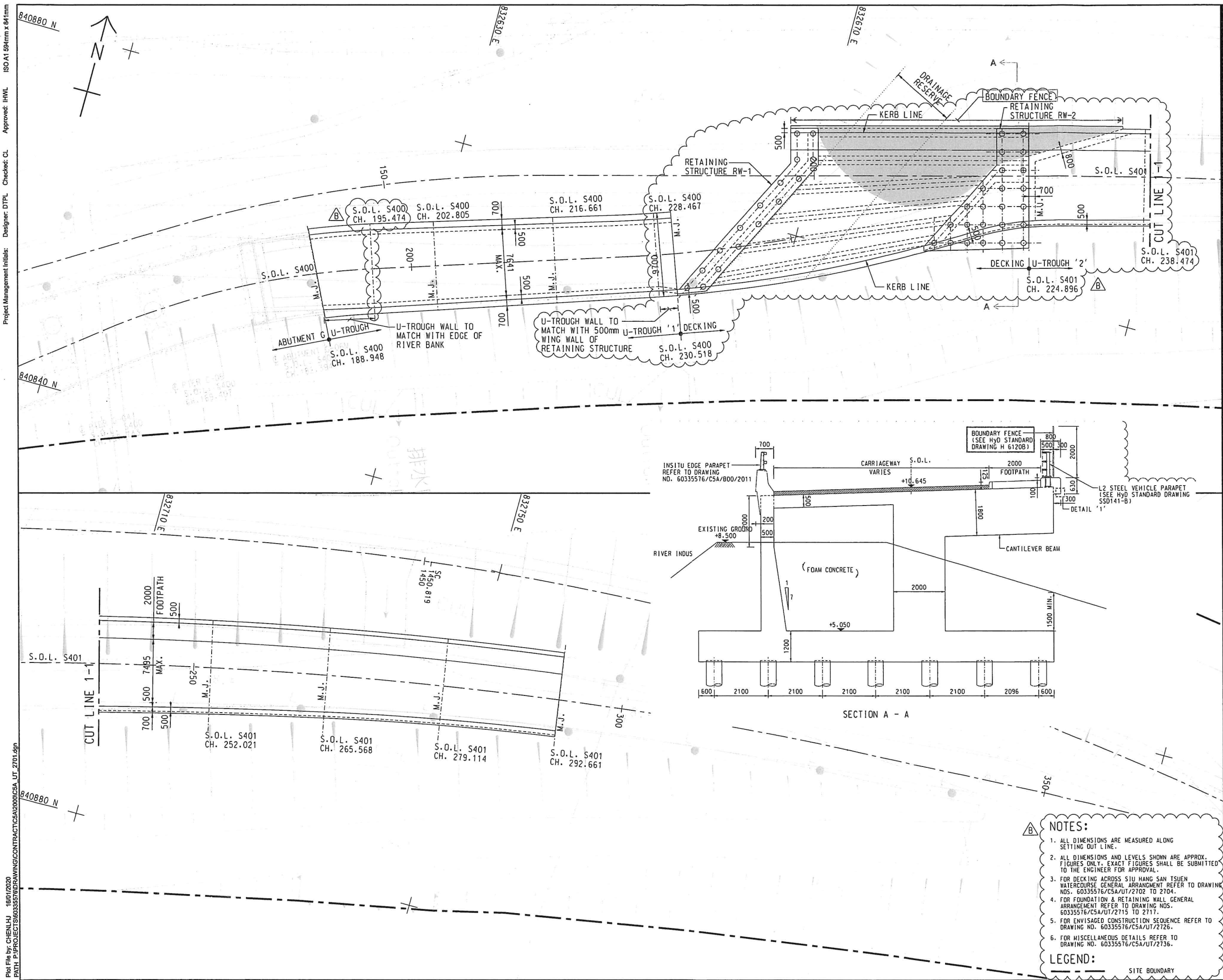
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比例	尺寸單位
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KEY PLAN
索引圖

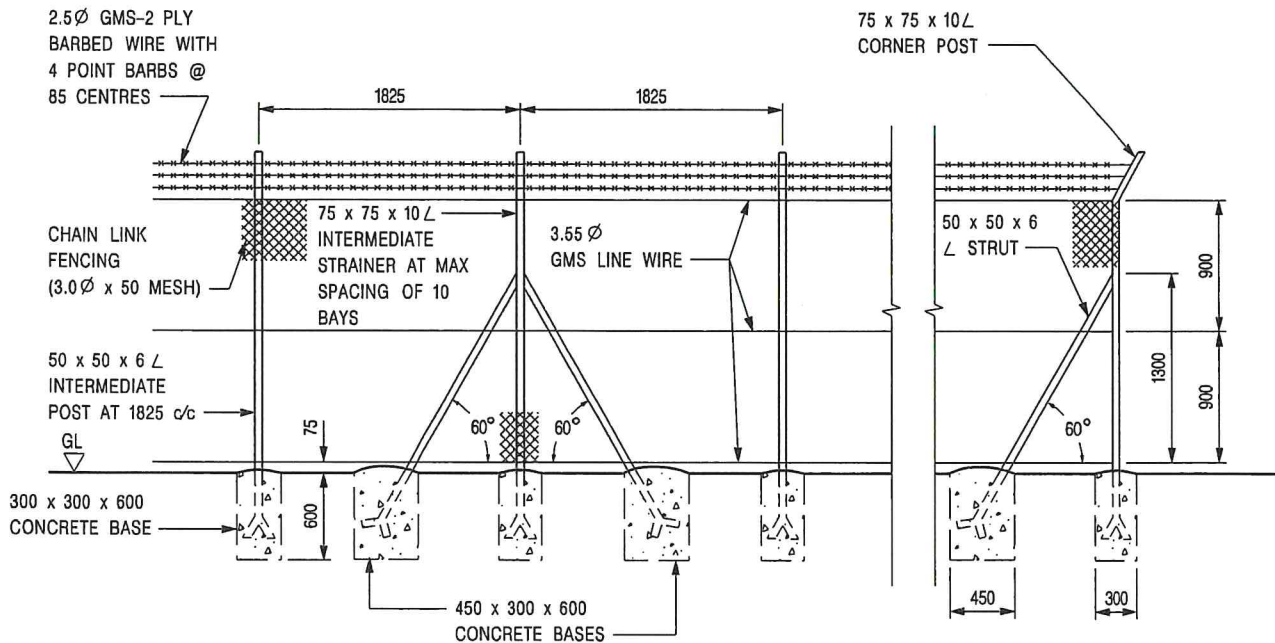
PROJECT NO.	CONTRACT NO.
項目編號	合約編號
60335576	ND/2019/04

SHEET TITLE
圖紙名稱
PERMANENT FENCING ON DECKING STRUCTURE

SHEET NUMBER
圖紙編號
FIGURE 8

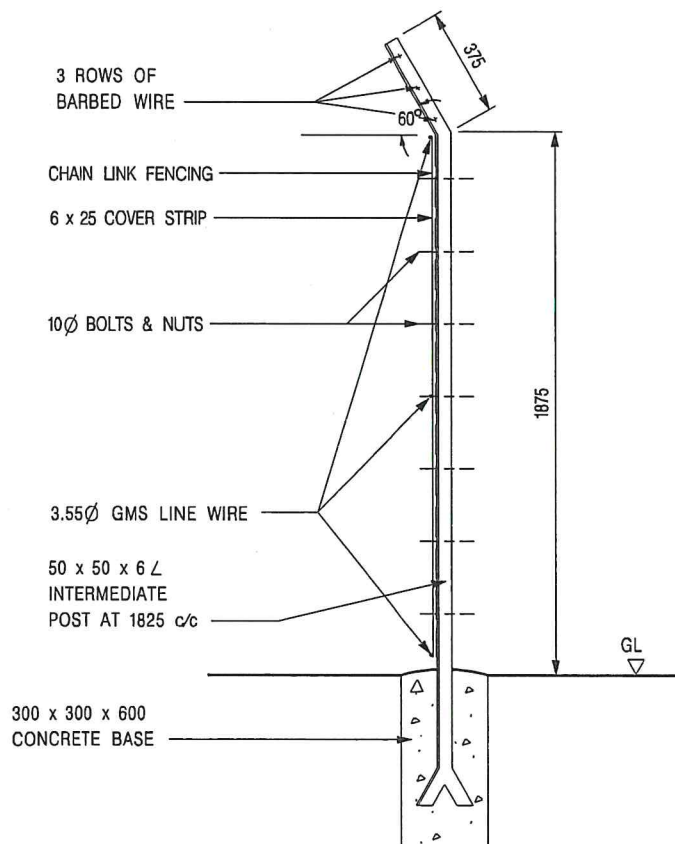


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Project Management Initials: Designer: HWL Checked: CL  
Approved: HWL  
ISO A1 594mm x 841mm



**ELEVATION OF INTERMEDIATE POST  
INTERMEDIATE STRAINER & CORNER POST**

(SCALE 1 : 50 )



**INTERMEDIATE POST**

(SCALE 1 : 25 )

**NOTATION :**

GMS - GALVANIZED MILD STEEL

**NOTES :**

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. ALL CONCRETE SHALL BE GRADE 20 /20. THE USE OF RECYCLED AGGREGATES SHALL BE CONSIDERED.
3. ALL POSTS AND FENCES SHALL BE HOT DIP GALVANIZED TO BS EN ISO 1461.
4. WELDS SHALL BE WIRE BRUSHED AND PAINTED WITH TWO COATS OF ALUMINIUM MASTIC PAINT.
5. ALL STEELWORK SHALL BE OF GRADE S275 TO BS EN 10025.

C	NOTE 5 AMENDED	Original Signed	09.2018
B	NOTE 3 AMENDED; NOTE 5 ADDED	Original Signed	03.2015
A	NAME OF DEPARTMENT AMENDED	Original Signed	02.2005
REF.	REVISION	SIGNATURE	DATE

**CHAIN LINK FENCE**



**CIVIL ENGINEERING AND  
DEVELOPMENT DEPARTMENT**

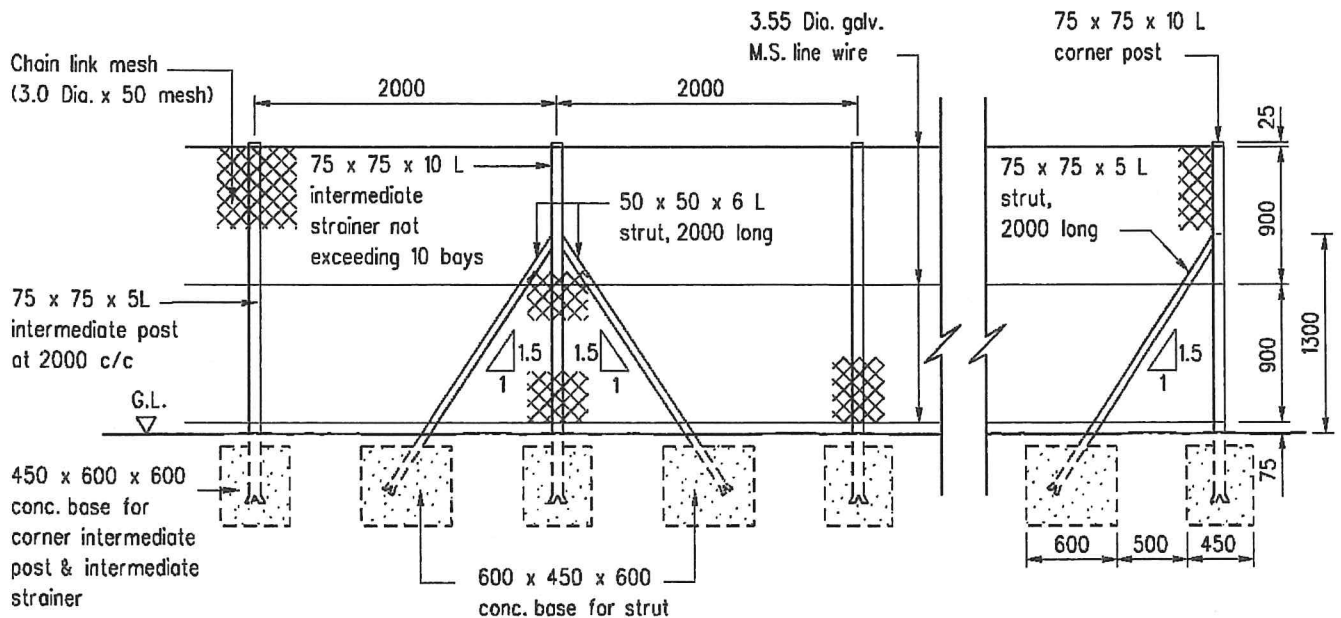
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**DRAWING NO.**

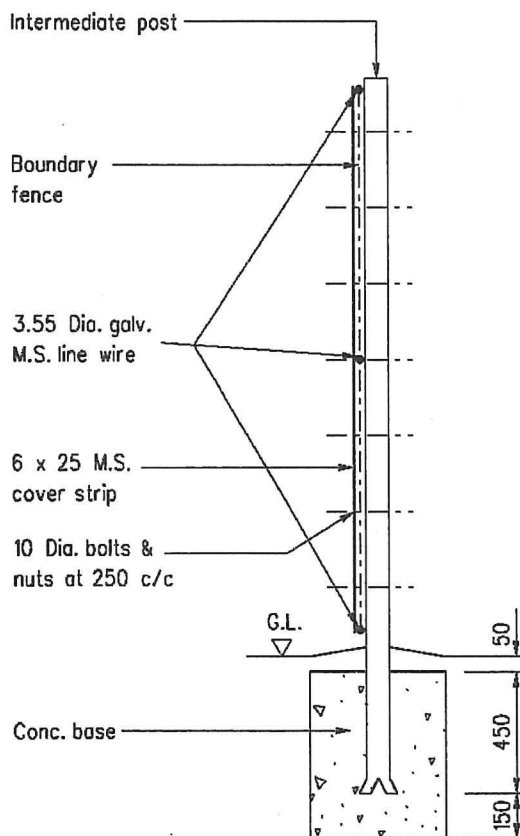
**DATE JAN 1991**

**C1006C**





## ELEVATION OF INTERMEDIATE POST INTERMEDIATE STRAINER & CORNER POST



### INTERMEDIATE POST

Scale 1:25

Scale 1:50

#### Notes :

1. Dimensions are in millimetres.
2. All welds to be ground smooth.
3. Steel to be grade 43 BS 4360.
4. All site welds to be treated with two coats of zinc rich paint before application of paint system.
5. Steelwork for fencing including wires to be hot dip galvanized to BS EN ISO 1461:1999.
6. Chain link mesh to be zinc coated type GLS180 of BS1722 Part 1.
7. Concrete to be grade 30/20.
8. Where the concrete footing is located in block paved footpath, the footing should be lowered to allow for the paving blocks and the sand course.

B	Note 5 updated		Sep 07
A	Note 8 added		Nov 99
	Former Drg. No. H6013 with general revision		Jun 94
REF.	REVISION	SIGNATURE	DATE

## BOUNDARY FENCE

### HIGHWAYS DEPARTMENT

REFERENCE

DRAWING No.

CAD

SCALE

As shown

H 6120B