



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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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.

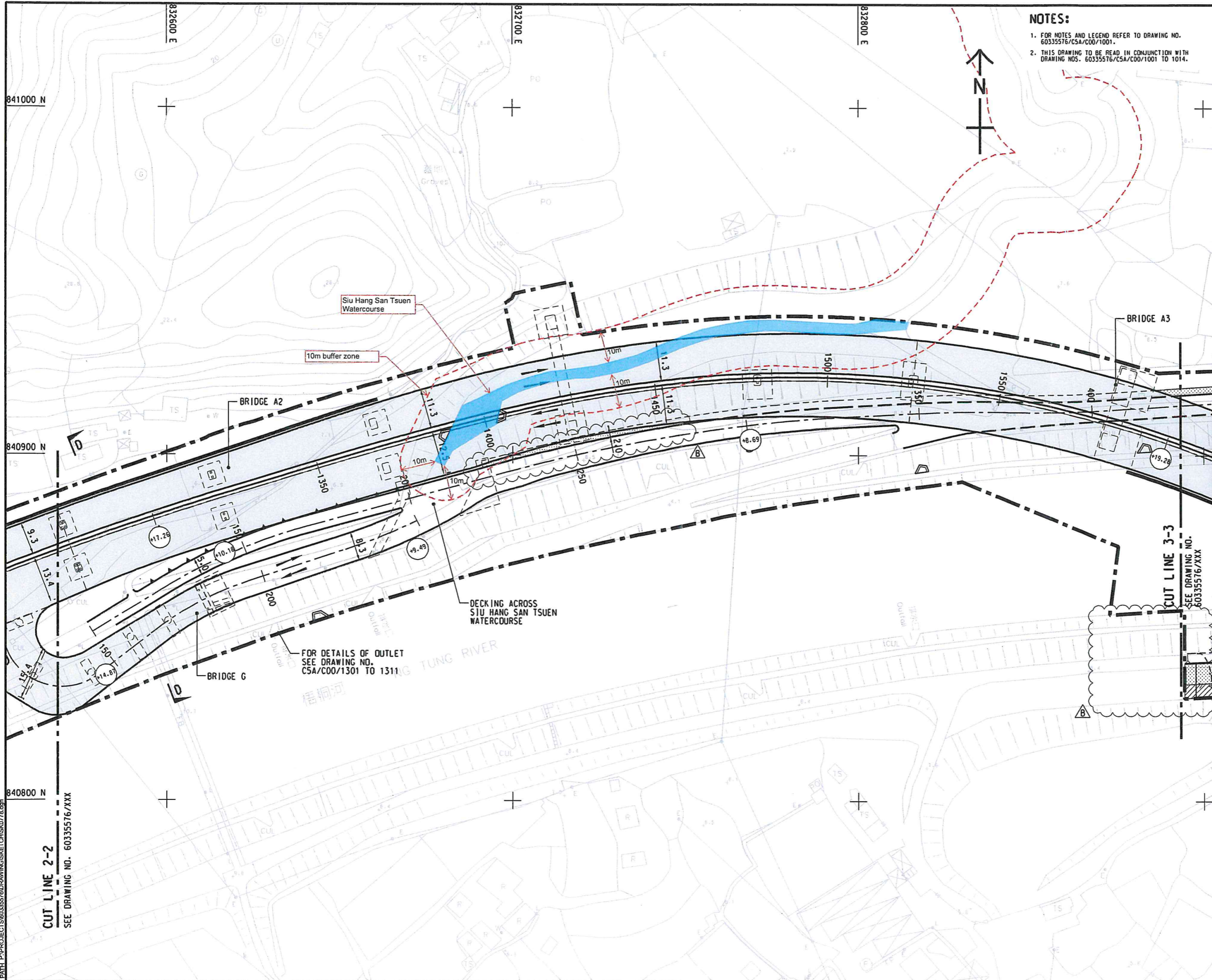
2 DETAILED DESIGN OF SIU HANG SAN TSUEN STREAM

- 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

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

Pld File by: YangJ2
 2020/04/25
 PATH: P:\PROJECTS\60335576\DRAWINGS\SET\CH\SK0778.dgn



NOTES:
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 2. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60335576/CSA/C00/1001 TO 1014.

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

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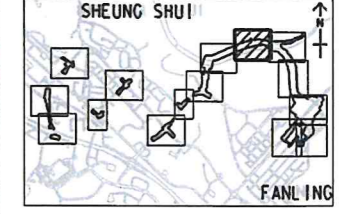
NO.	DATE	DESCRIPTION	CHK.
1	APR-20	SUBMISSION TO EPD	RPCM

STATUS
 狀態

SCALE
 比例: A1 1: 500

DIMENSION UNIT
 尺寸單位: METRES

KEY PLAN A1 1: 70000



PROJECT NO.
 項目編號: 60335576

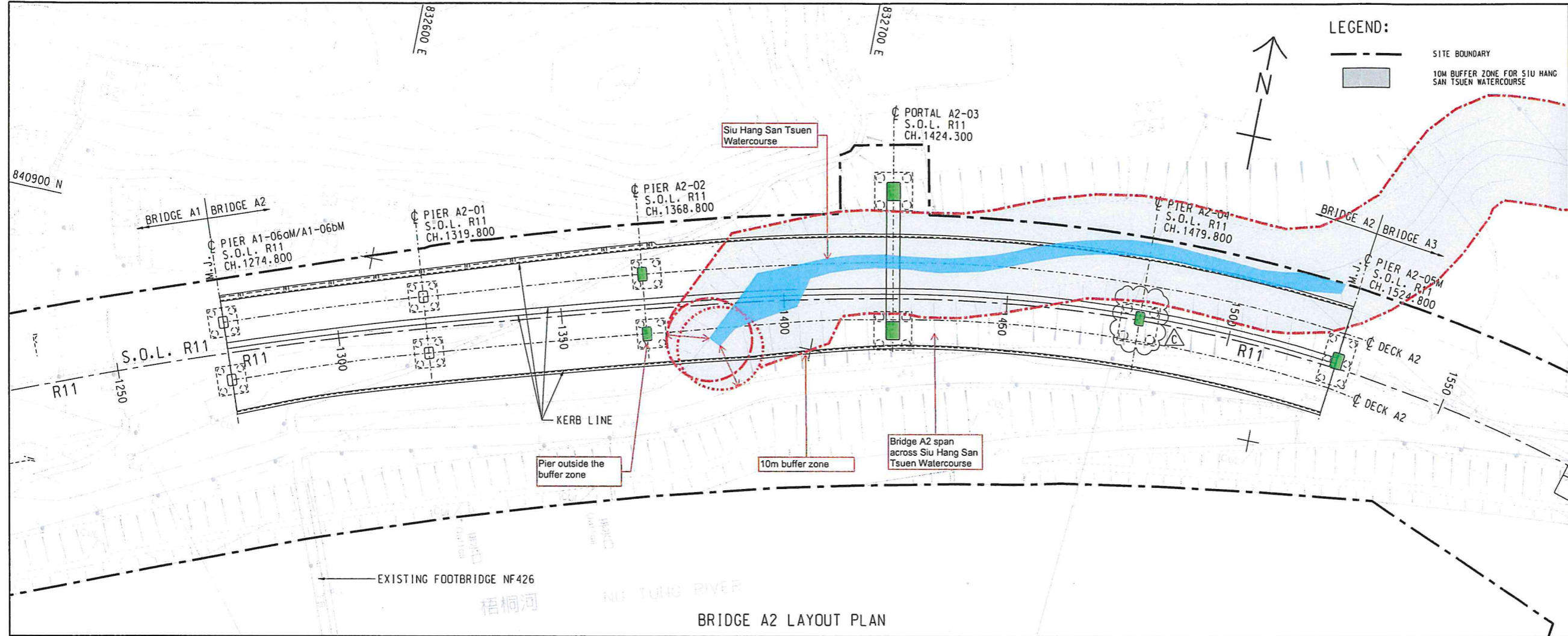
CONTRACT NO.
 合約編號: CE 13/2014 (CE)

SHEET TITLE
 圖紙名稱: GENERAL ARRANGEMENT AT SIU HANG SAN TSUEN WATERCOURSE

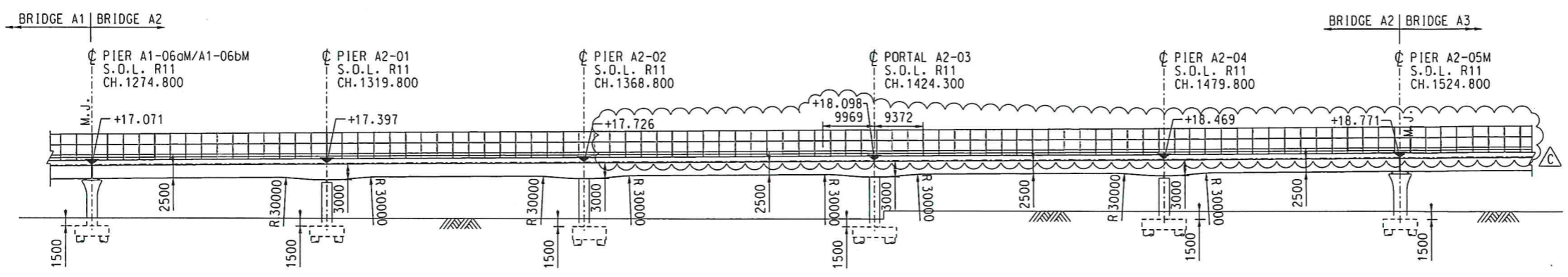
SHEET NUMBER
 圖紙編號: FIGURE 1

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ISO A1 594mm x 841mm
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 Designer: DTP
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 2020/04/2
 Yeng J2
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BRIDGE A2 LAYOUT PLAN



DEVELOPED ELEVATION OF BRIDGE A2

LEGEND:

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

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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 YEUK TAU)

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CONTRACT NO.
 合約編號: ND/2019/04

SHEET TITLE
 圖紙名稱: BRIDGE A2 SPAN ACROSS SIU HANG SAN TSUEN WATERCOURSE

SHEET NUMBER
 圖紙編號

FIGURE 2

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 比例
 A1 1:200

DIMENSION UNIT
 尺寸單位
 MILLIMETRES

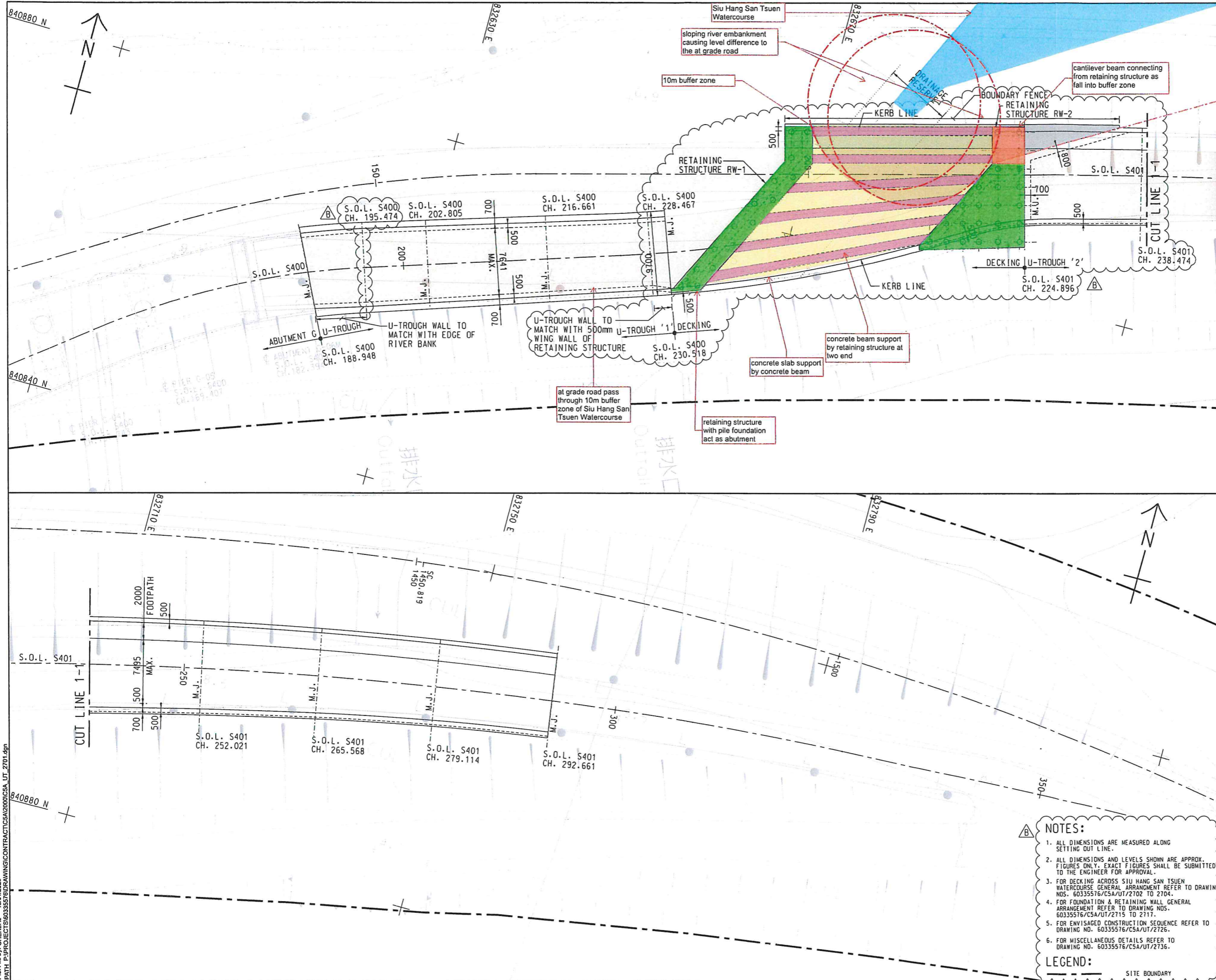
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PROJECT NO.
 項目編號
 60335576

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
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 FIGURE 3



- NOTES:**
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 - 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

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 Project Management Initials: Designer: DTPJ Checked: CL
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 4. FOR BEAM ARRANGEMENT REFER TO DRAWING NO. 60335576/CSA/UT/2710.

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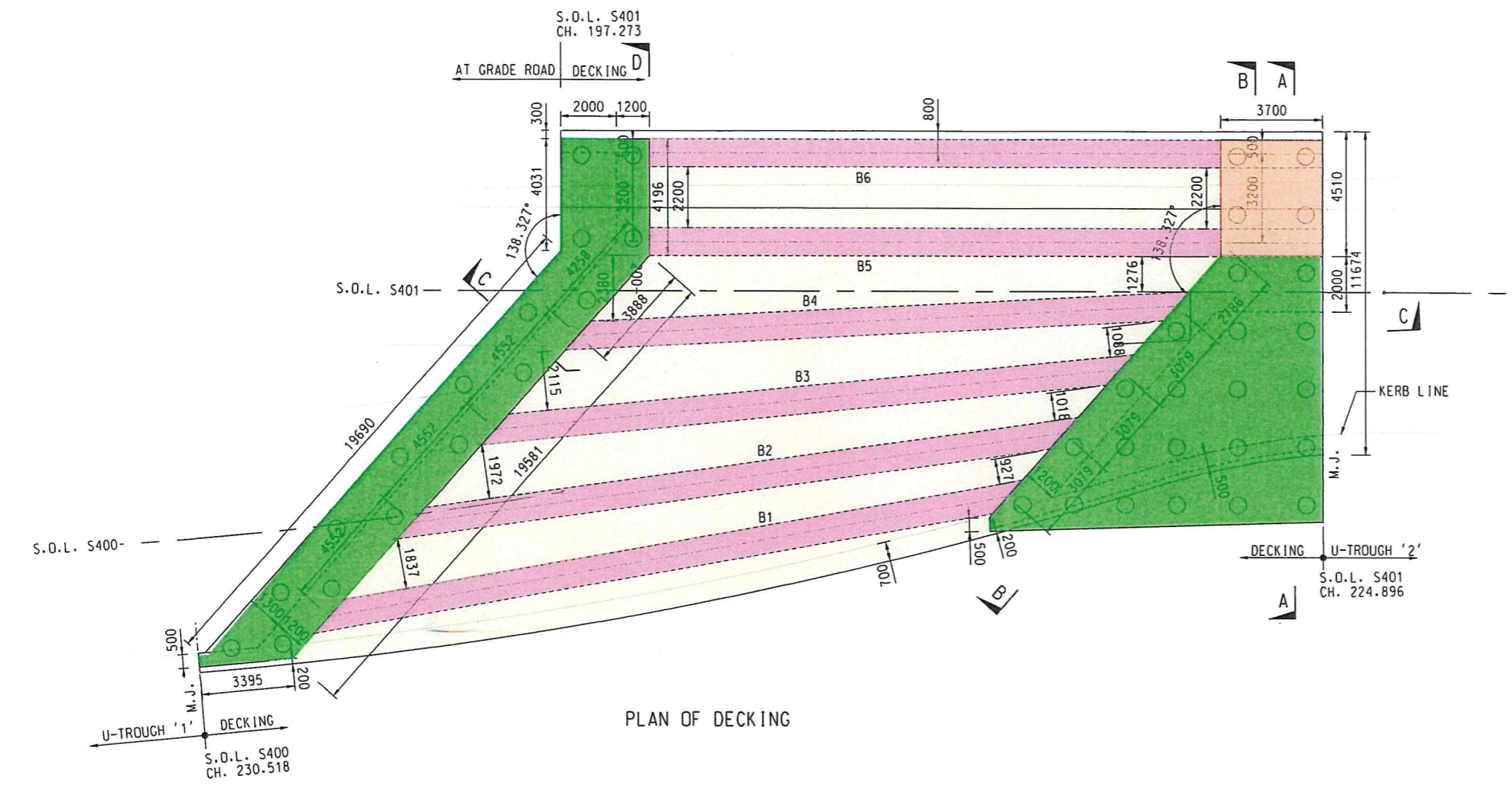
PROJECT
 DEVELOPMENT OF KWU TUNG NORTH AND FANLING NORTH NEW DEVELOPMENT AREAS, PHASE 1

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

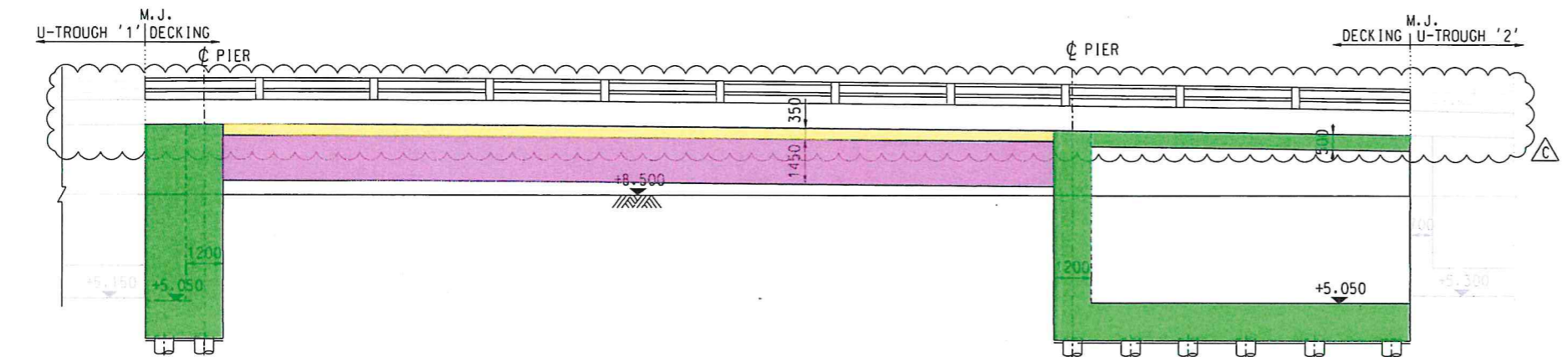
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PLAN OF DECKING



ELEVATION OF DECKING

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SCALE
 比例: A1 1: 100

DIMENSION UNIT
 尺寸單位: MILLIMETRES

KEY PLAN
 索引圖

PROJECT NO.
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FIGURE 4

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 ISO A1 854mm x 841mm

NOTE:

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

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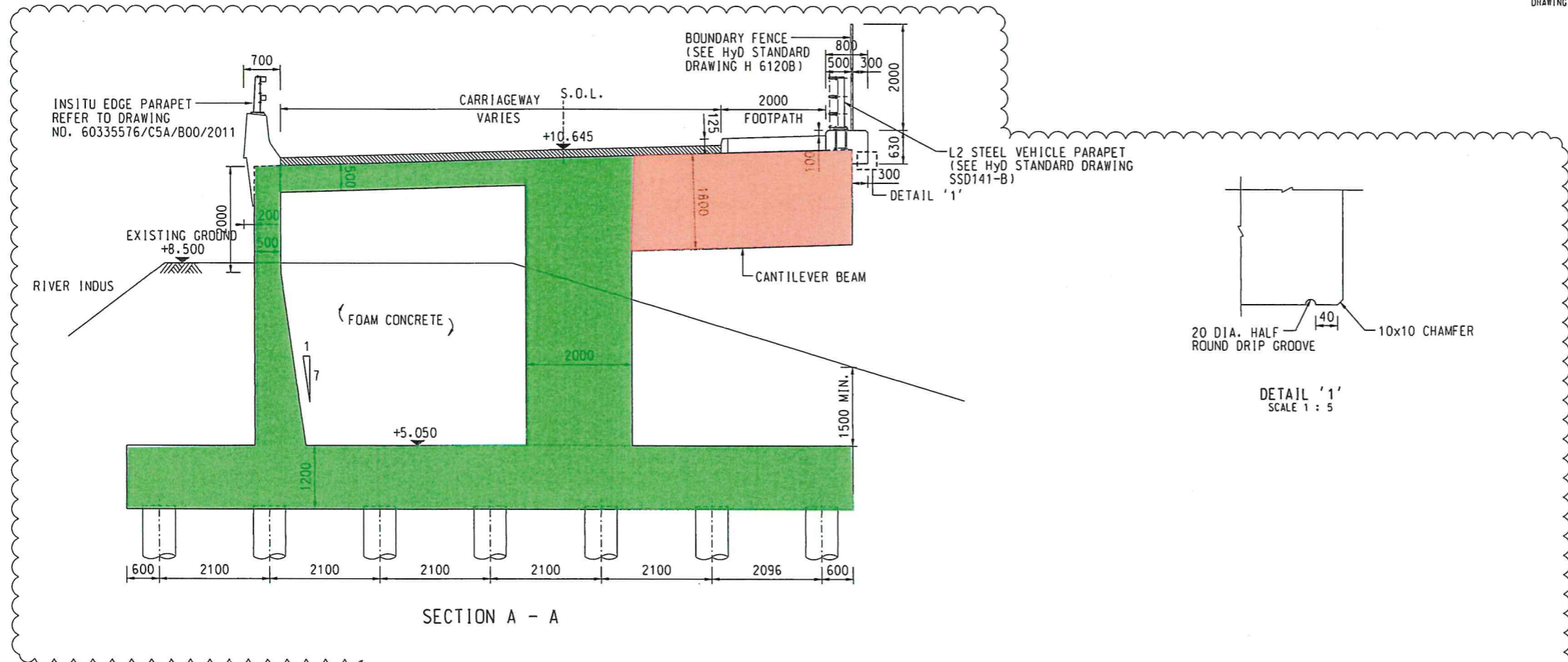
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 尺寸單位: MILLIMETRES

KEY PLAN

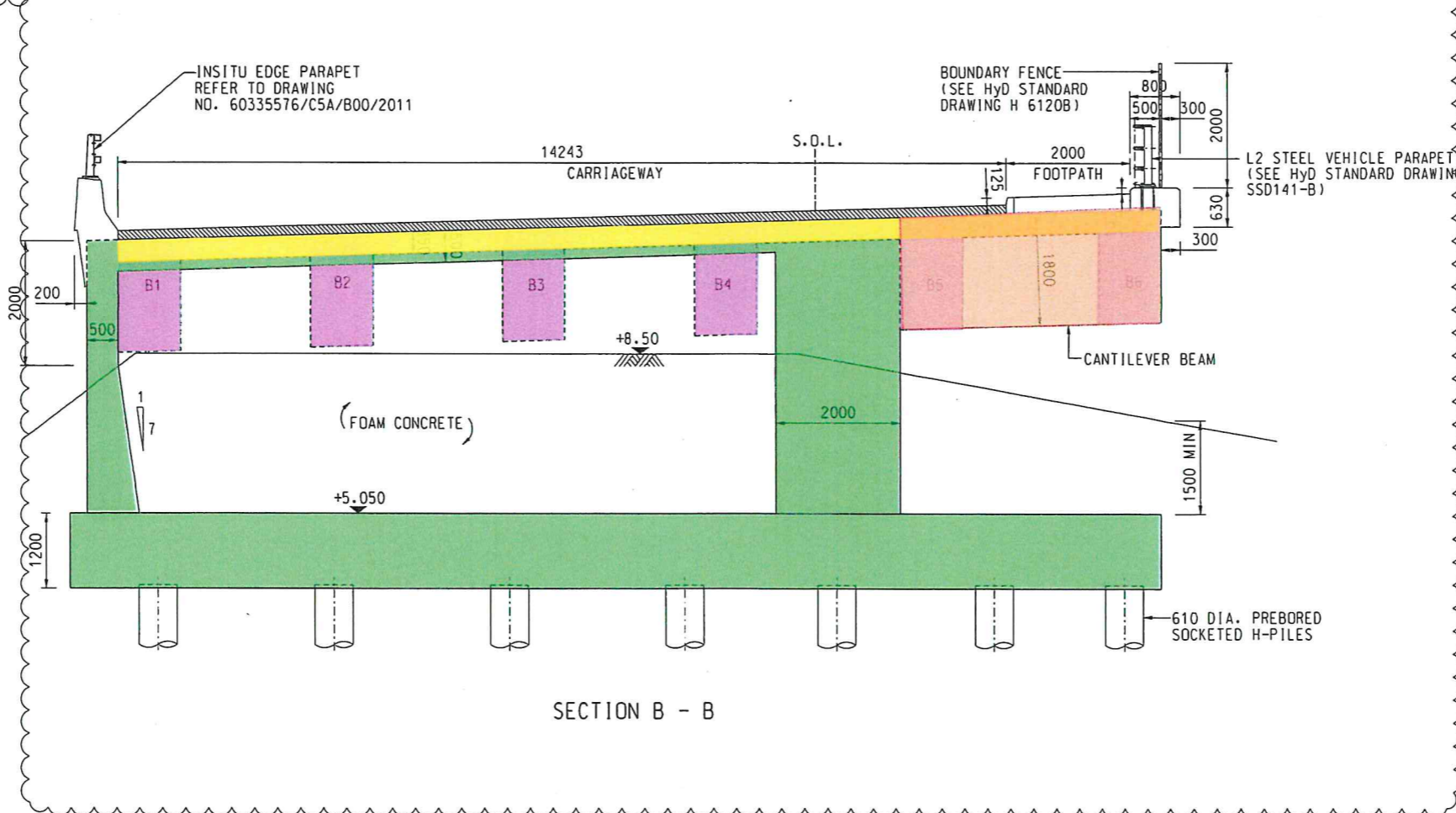
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SHEET TITLE
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SHEET NUMBER
 圖紙編號: FIGURE 5



SECTION A - A



SECTION B - B

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

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

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STATUS
 狀態

SCALE
 比例
 A1 AS SHOWN
DIMENSION UNIT
 尺寸單位
 MILLIMETRES

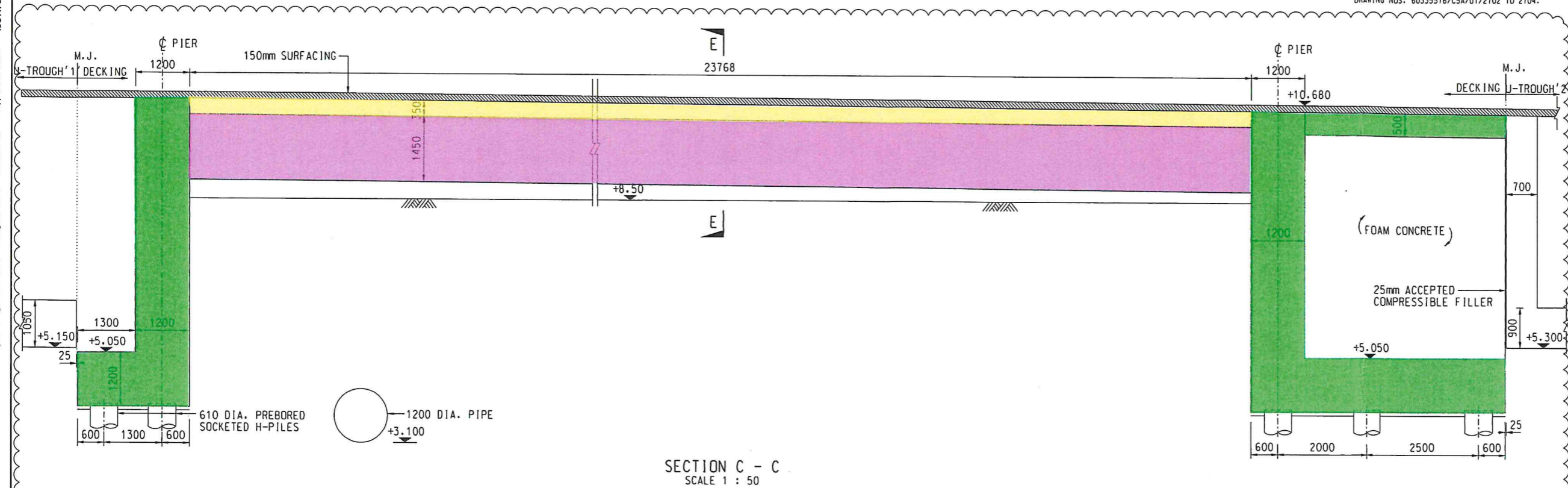
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 索引圖

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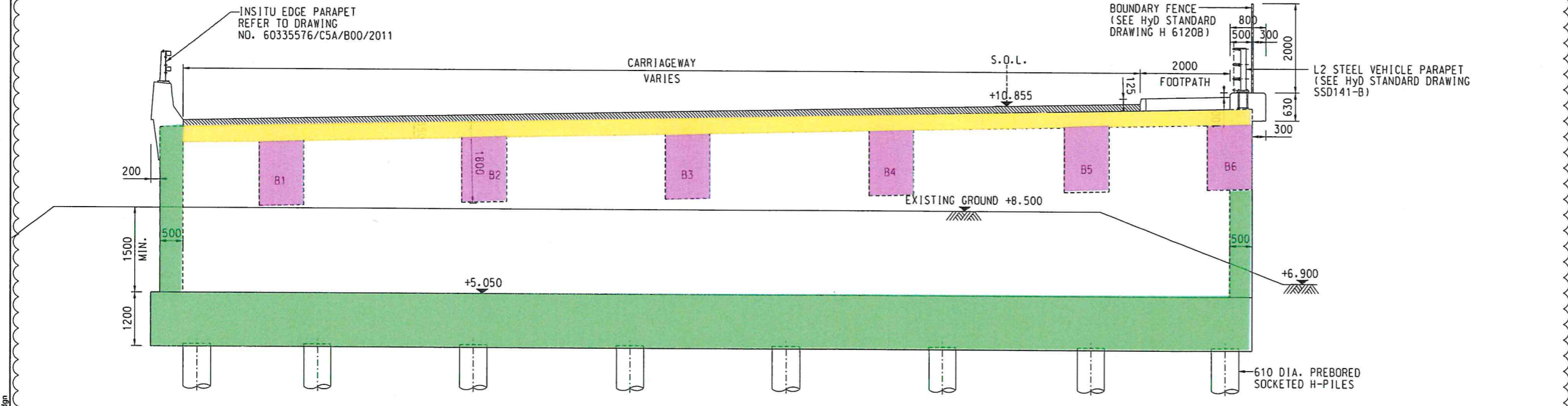
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SHEET NUMBER
 圖紙編號

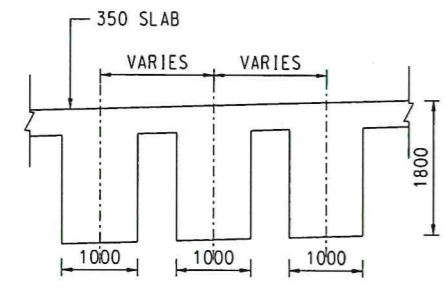
FIGURE 6



SECTION C - C
 SCALE 1 : 50



SECTION D - D
 SCALE 1 : 50



SECTION E - E
 SCALE 1 : 50

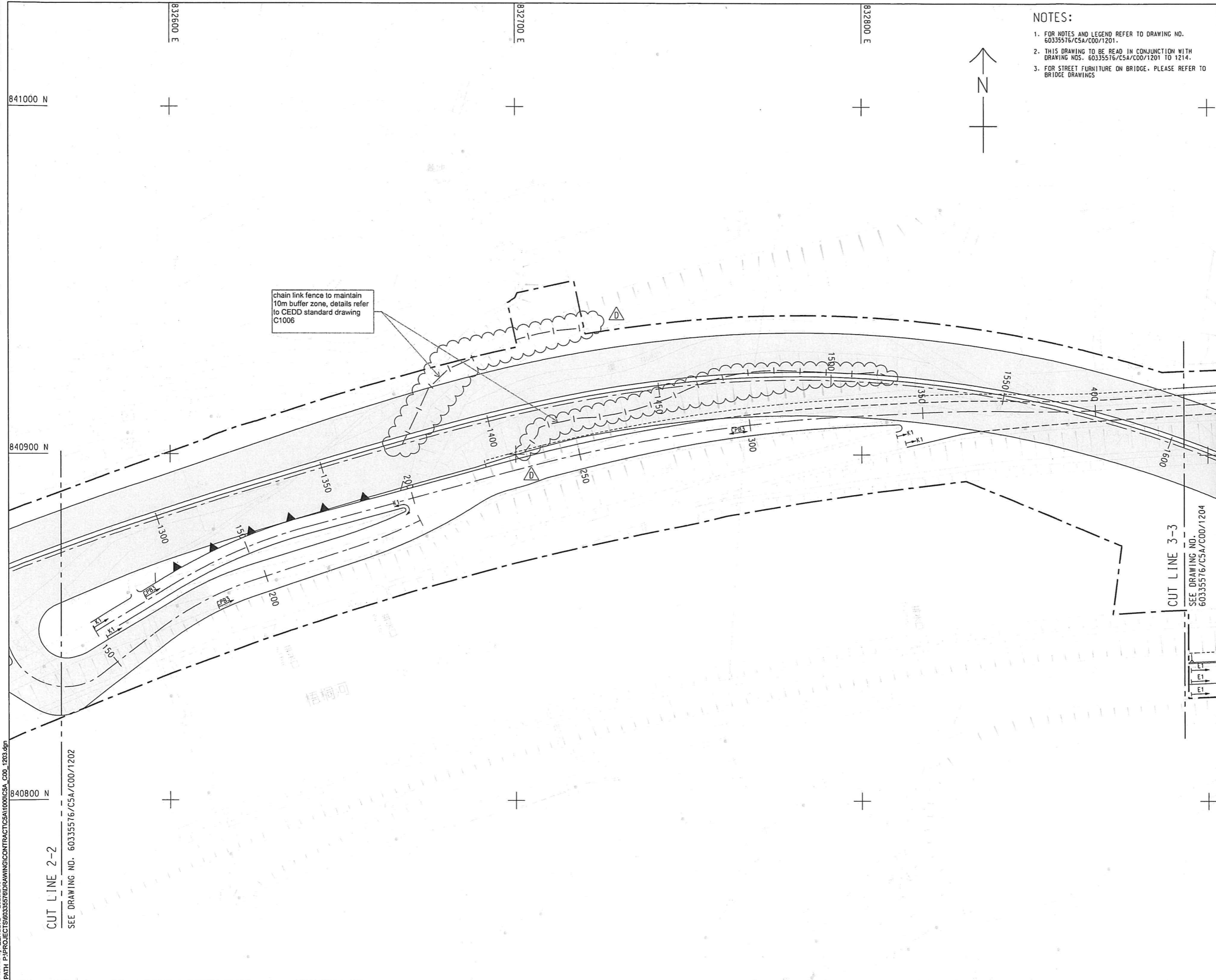
EXPANSION JOINT DETAILS BETWEEN FOAM CONCRETE AND END WALL OF U-TROUGH '2'
 SCALE 1 : 10

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 ISO A1 594mm x 841mm

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chain link fence to maintain 10m buffer zone, details refer to CEDD standard drawing C1006

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PROJECT
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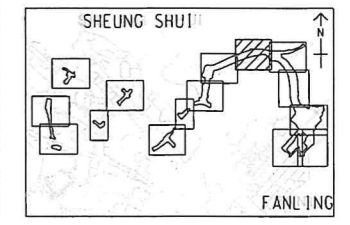
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STATUS
 備註

SCALE
 比例
 A1 1 : 500

DIMENSION UNIT
 尺寸單位
 METRES

KEY PLAN A1 1 : 70000



PROJECT NO.
 項目編號
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CONTRACT NO.
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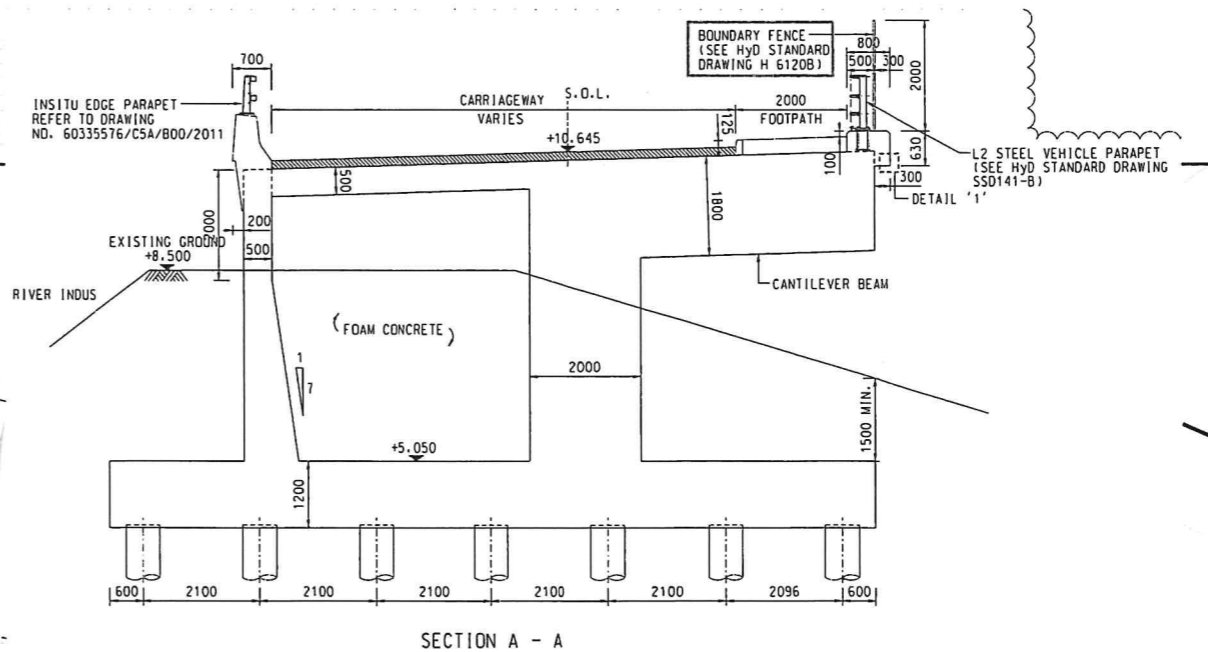
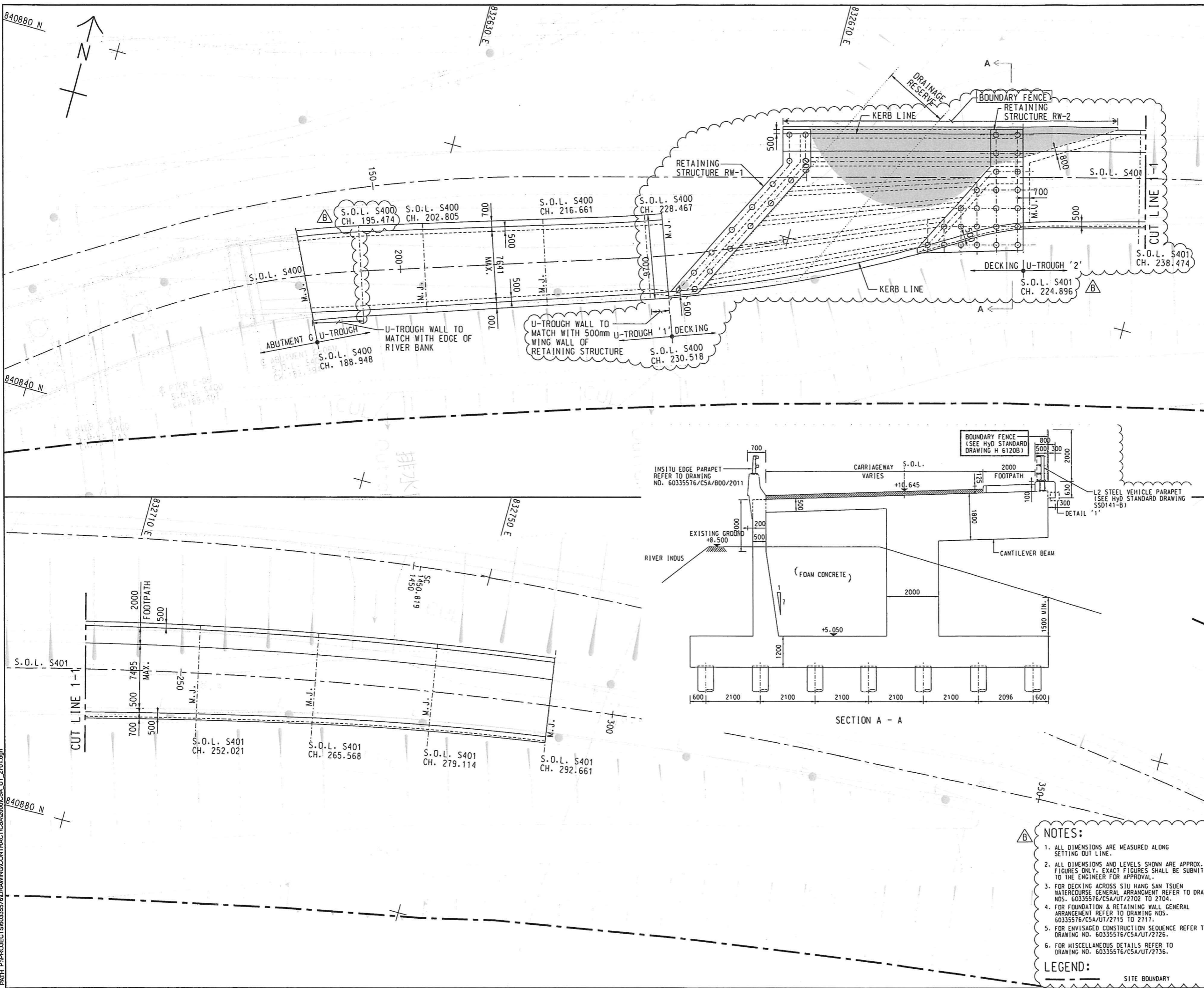
SHEET TITLE
 圖紙名稱
 PERMANENT FENCING ARRANGEMENT

SHEET NUMBER
 圖紙編號
 FIGURE 7

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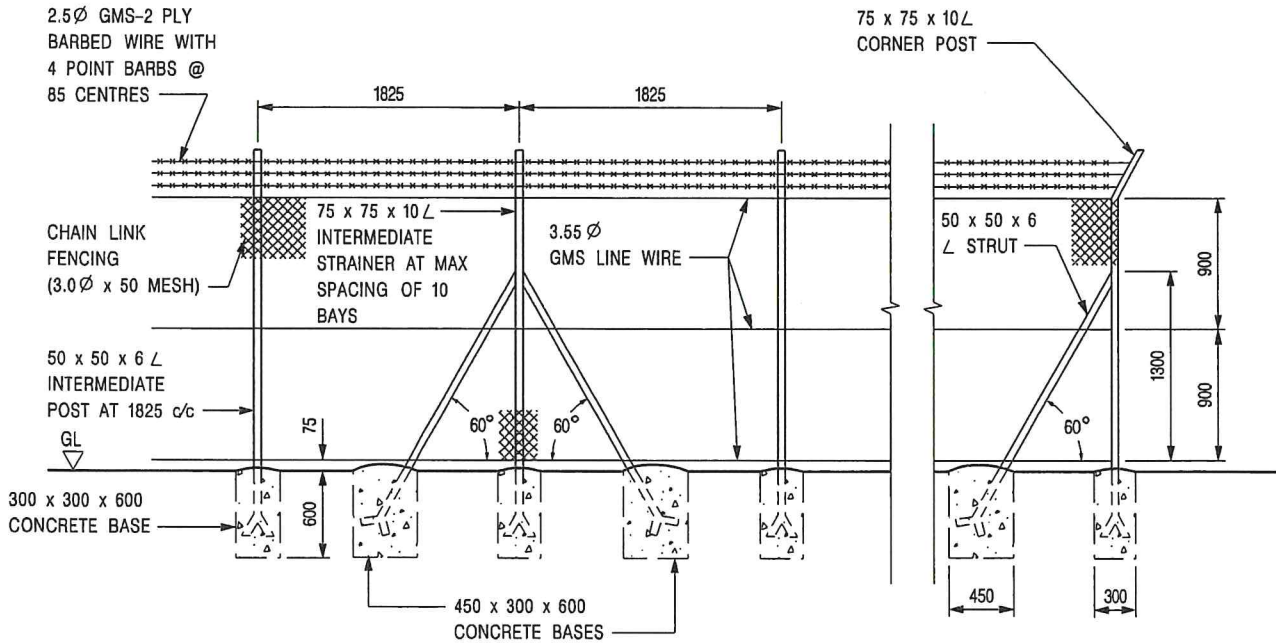


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- FOR ENVISAGED CONSTRUCTION SEQUENCE REFER TO DRAWING NO. 60335576/CSA/UT/2726.
- FOR MISCELLANEOUS DETAILS REFER TO DRAWING NO. 60335576/CSA/UT/2736.

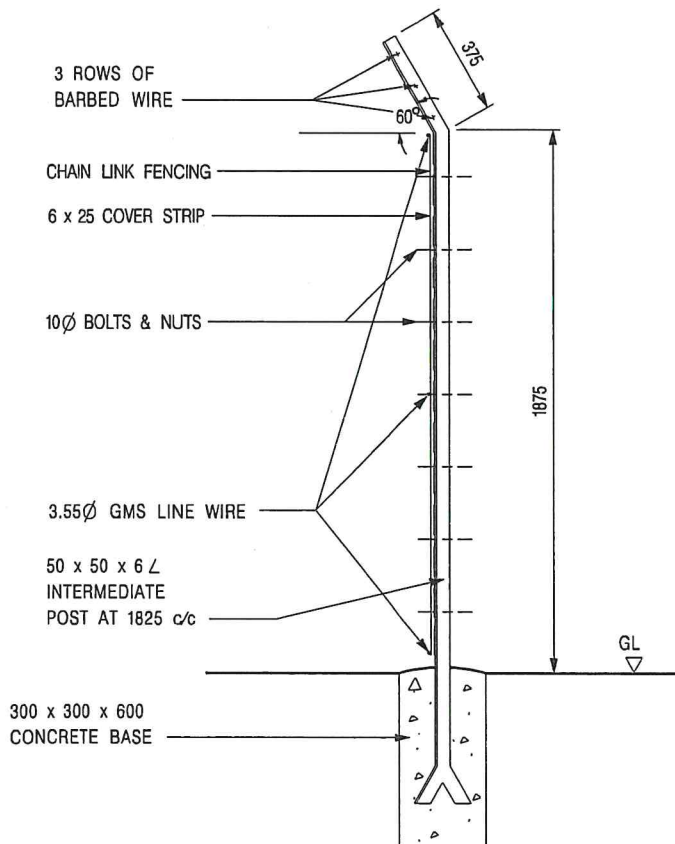
LEGEND:
SITE BOUNDARY

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**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



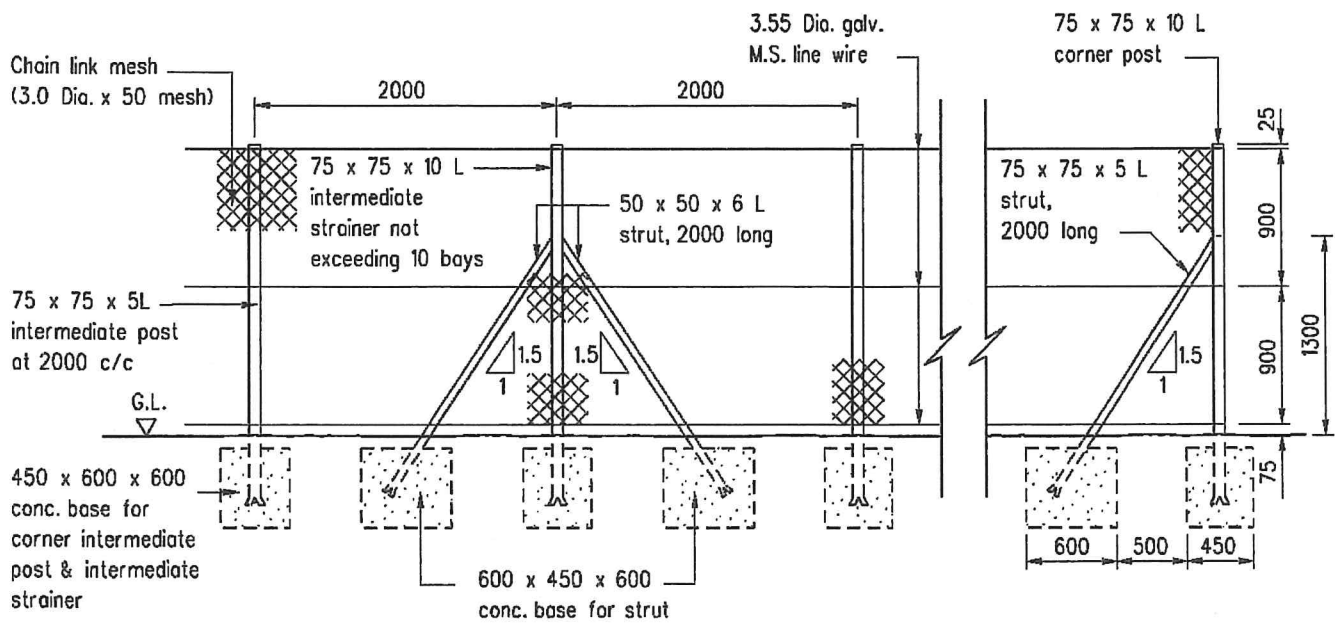
**CIVIL ENGINEERING AND
DEVELOPMENT DEPARTMENT**

SCALE AS SHOWN

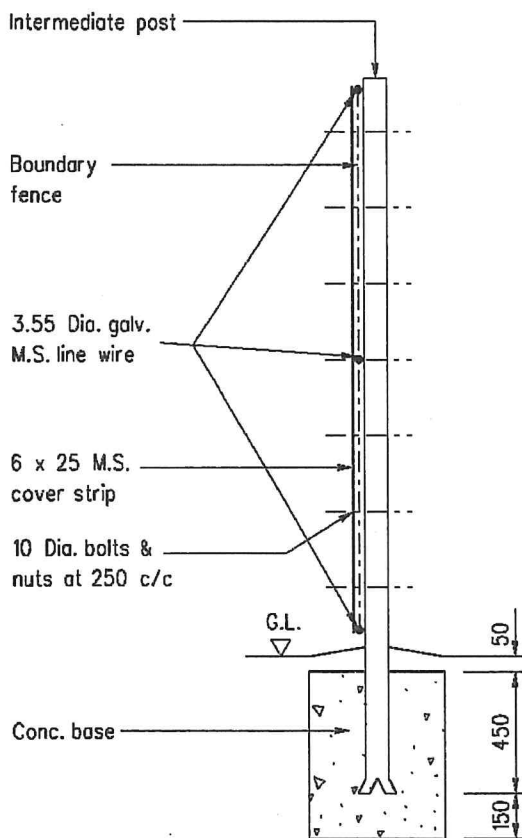
DRAWING NO.

DATE JAN 1991

C1006C



ELEVATION OF INTERMEDIATE POST INTERMEDIATE STRAINER & CORNER POST



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.

INTERMEDIATE POST

Scale 1:25

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	H 6120B	
As shown		