

Appendix 13.2

ACABAS

BY HAND

Secretary of ACABAS
10th Floor, Tower 1, Cheung Sha Wan Plaza
833 Cheung Sha Wan Road
Lai Chi Kok, Kowloon

Attn: Mrs Nicolson, Sr Landscape Architect 3

Level 5 Festival Walk
80 Tat Chee Avenue
Kowloon Tong
Kowloon
Hong Kong
t +852 25283031
d +852 22683536
f +852 22683955

siu-yuen.chan@arup.com
www.arup.com

5 June 2012

Dear Madam

Agreement No. CE 43/2008 (HY)
Cross Bay Link, Tseung Kwan O – Investigation
Submission Ref. 266: Southern Bridge Preliminary Design Revised ACABAS
Submission

We attach ten copies of the Revised Southern Bridge Preliminary Design Revised ACABAS submission for discussion at the forthcoming ACABAS meeting to be held on the 19th June 2012.

Should you have any queries then please do not hesitate to contact the undersigned on tel. 2268 3536.

Yours faithfully



S Y Chan
Project Manager

Enc 209506-REP-096-03

cc CE/NTE1, CEDD - Mr W M Wong (w/e) (3 copies - By hand)



土木工程拓展署
Civil Engineering and
Development Department

新界東拓展處
New Territories East
Development Office

Agreement No. CE 43/2008 (HY)
Cross Bay Link, Tseung Kwan O -
Investigation

**Southern Bridge Preliminary Design
Revised ACABAS Submission**

(Ref: 266)

June 2012



Civil Engineering and Development
Department

**Agreement No. CE43/2008(HY),
Cross Bay Link, Tsueng Kwan O -
Investigation**

Southern Bridge Preliminary Design
Revised ACABAS Submission

209506-REP-096-03



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Ove Arup & Partners Hong Kong Ltd
Level 5 Festival Walk
80 Tat Chee Avenue
Kowloon Tong
Kowloon
Hong Kong
www.arup.com

This report takes into account the particular
instructions and requirements of our client.
It is not intended for and should not be relied
upon by any third party and no responsibility is
undertaken to any third party.

Job number 209506



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1 INTRODUCTION

1.1 Background

The “Feasibility Study for Further Development of Tseung Kwan O (TKO)”, which was commissioned by Civil Engineering and Development Department (CEDD) in July 2002 and substantially completed in 2005, recommended a new external road network comprising the Cross Bay Link (CBL) and Tseung Kwan O – Lam Tin Tunnel (TKO-LTT) should be provided to meet the anticipated traffic flow.

CBL is a dual two-lane carriageway of approximately 1.8 km long across Junk Bay mainly on viaduct, connecting TKO-LTT to Wan Po Road at the south-eastern part of TKO. The viaduct section of CBL has a cycle track and a footpath in addition to the road carriageway.

In addition to CBL two new footbridges located at the Eastern Channel, Southern Bridge (SB) and Northern Bridge (NB), are being planned. Since CBL is in close proximity to SB and NB, the three bridges could be viewed as a family of bridges and the coherency in their design will greatly enhance the townscape of the area.

1.2 The Assignment

The outlined scope of the assignment includes:

- A dual 2-lane carriageway of approximately 1.8 km long across Junk Bay mainly on viaduct;
- Associated civil, structural, marine, ship impact protection, geotechnical, landscape, fire services installation, lighting (including road lighting and architectural lighting), traffic control and surveillance system, signing, traffic aids, electrical & mechanical, and environmental protection and mitigation works, and other related works;
- The alternative design options of the Southern Bridge (SB) which are compatible with that for the CBL in terms of structural form, aesthetic design and appearance, taking into account of the site constraints and with reference to the information provided by HyD (whom are the work agents for SB).

The overall objective of the Assignment is to determine a Recommended Scheme for the Project, meeting all statutory and Government requirements and accepted by all stakeholders, and to work out the details of the Recommended Scheme to such an extent to enable the Employer to take forward the Project to the detailed design and construction stages.

Southern Bridge is the proposed footbridge at the mouth of the Eastern Channel to the north of Junk Bay, and it will provide east to west access across the channel.

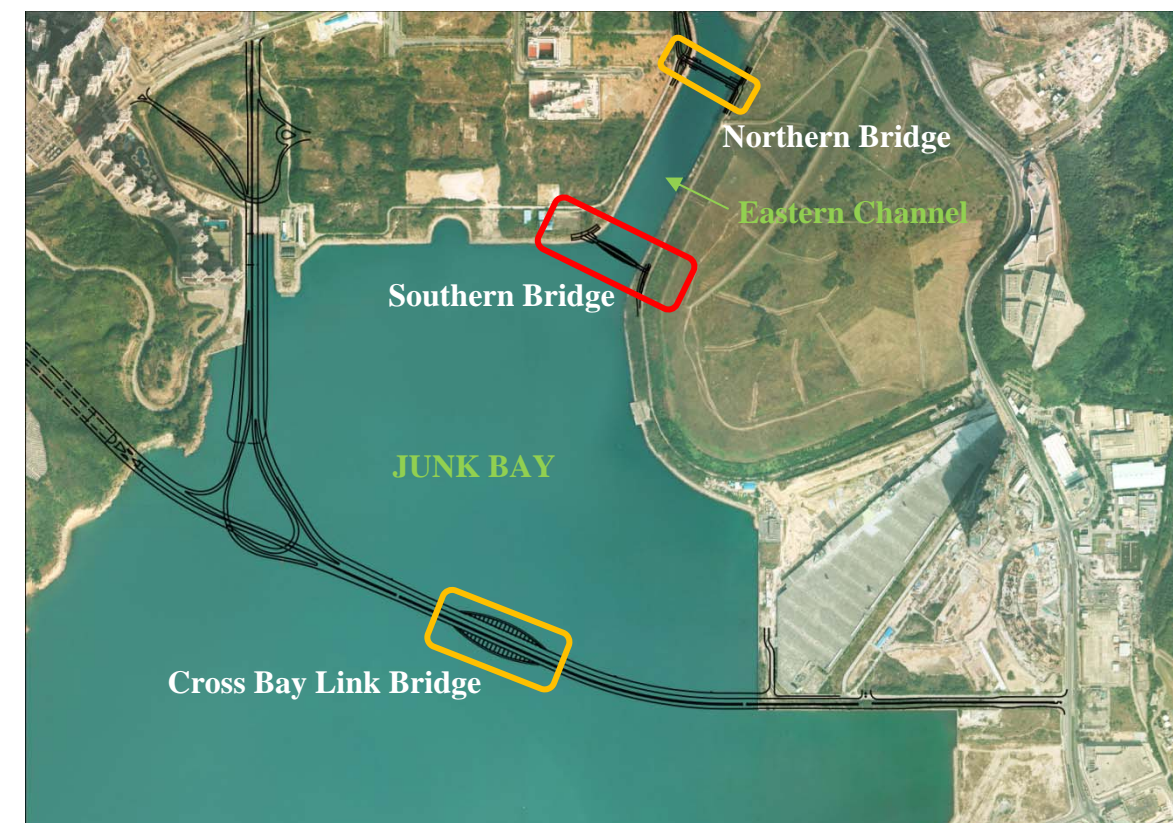


Figure 1.1 - Project Location

As suggested by the Advisory Committee on the Appearance of Bridges and Associated Structures (ACABAS) in the 251st ACABAS meeting held on 21st December 2004, it is necessary to match the design of Cross Bay Link, Southern Bridge and Northern Bridge in respect of their aesthetic appearance and structural form. Northern Bridge has already been tendered and will visually appear as an arch bridge with the arch member under the deck. Cross Bay Link is also going to be an arch bridge. Therefore the concept for the Southern Bridge is for it to form part of a natural progression of the arch, with the arch shape moving from beneath the deck of the Northern Bridge to high above the deck of the Cross Bay Link. As indicated in the following sketch, Southern Bridge forms an intermediate step with a flatter arch rising above the deck surface. This concept was presented to ACABAS at the 315th ACABAS meeting on the 20th April 2010.

The aesthetic review with overall concept and design theme for the preliminary design of the proposed Southern Bridge was first presented to ACABAS at the 326th ACABAS meeting on the 15th March 2011. Following this meeting, comments of 326th meeting were considered and a revised presentation was made to ACABAS at the 330th ACABAS meeting on the 19th July 2011. Based on the information submitted, the Committee considered the submission acceptable. To address the Committee’s comments during 330th meeting satisfactorily, a further revised presentation was made at the 339th ACABAS meeting on the 15th April 2012. The Committee reiterated the acceptance of the proposal, and required a further submission and proposal to address all of their comments.

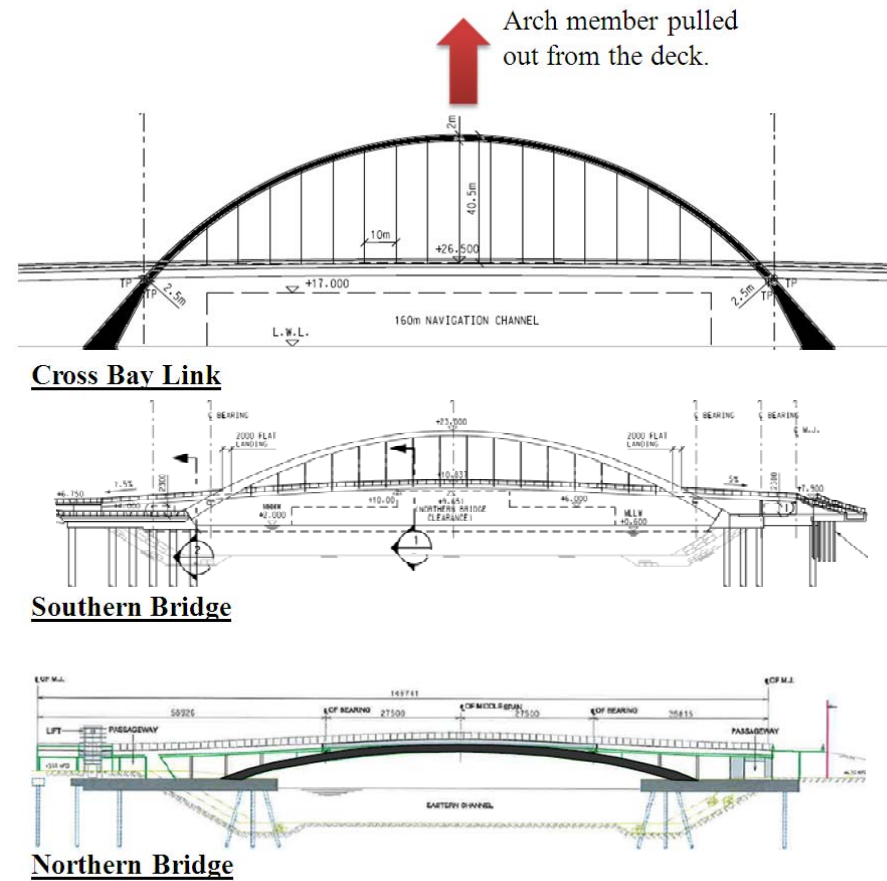


Figure 1.2 - Theme of progression

1.3 Objective of this Submission

The purpose of this submission is for the aesthetic review of the preliminary design of the proposed Southern Bridge. The report will present the overall concept and design theme for the proposed footbridge and address the comments received from ACABAS members at the 339th ACABAS meeting on the 15th April 2012.

The agreement of the ACABAS members are sought for the footbridge and landscaping.

2 SOUTHERN BRIDGE

2.1 Location and arrangement of proposed footbridge

Southern Bridge is located at the mouth of the Eastern Channel to the north of Junk Bay, and it will provide east to west pedestrian access across the channel.

The bridge has a clear span of 108m. The arch rise above deck level is about 12m.

The overall width of the footbridge is 6m, with a minimum 2 x 2 m walkways, which provides a pedestrian flow capacity of 80-100ped/min. The remainder of the space is allocated to parapets, greening and street furniture. The location and general arrangement of the footbridge is shown in the attached drawings.

The scope of this submission is inclusive of associated infrastructure at either end of the footbridge. At the western end of the footbridge there will be a raised section of promenade with ramps running down to the general level of the promenade. There will also be a viewing platform at a lower level which is integral with the bridge abutment structure. At the eastern end of the footbridge there will be a staircase and ramp structure between the high level bridge and the waterfront footpath.

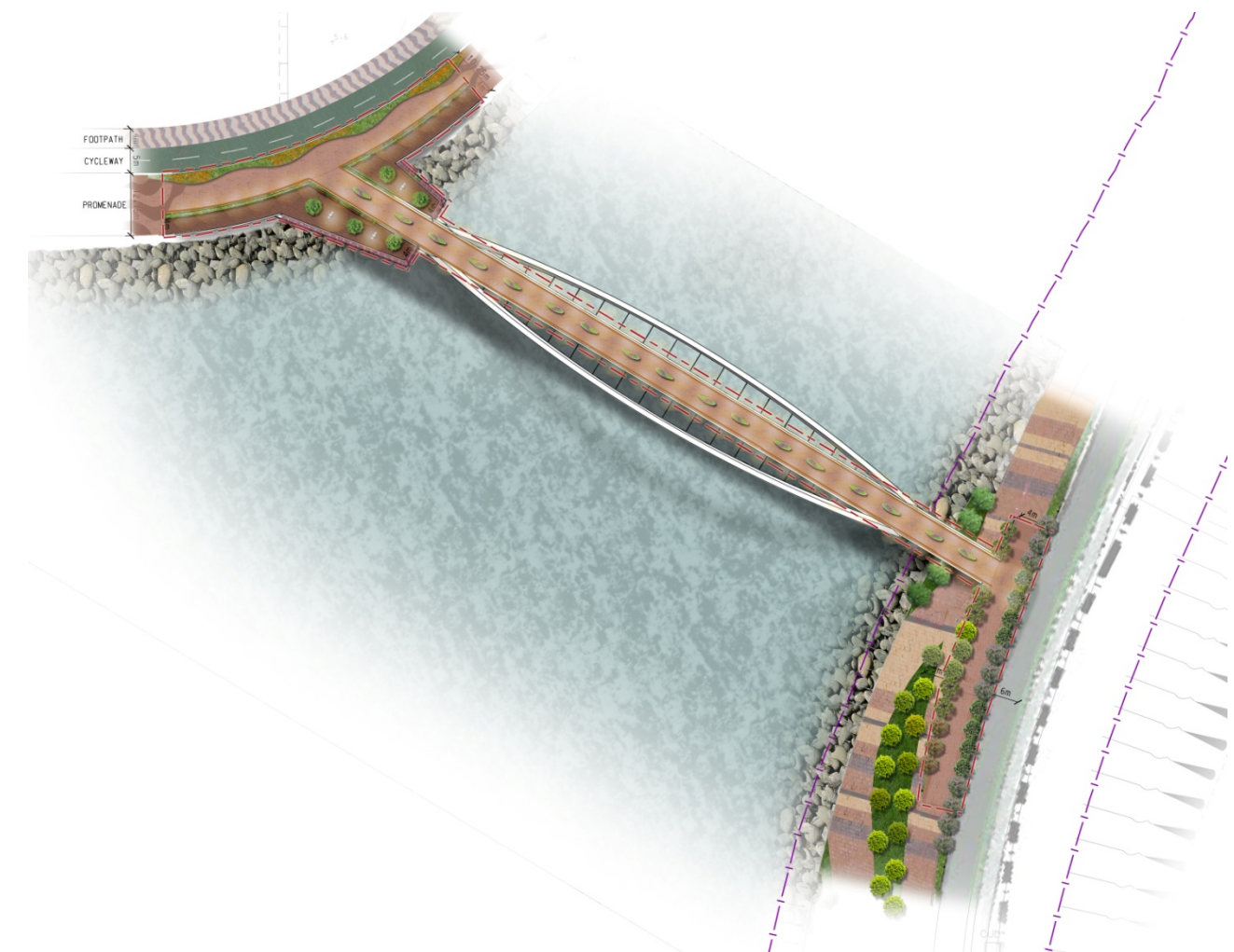


Figure 2.1 - Bridge Plan

2.2 Design theme for form

A theme of progression or development as illustrated in Fig 1.1 is adopted. The arch of the Northern Bridge can be shown to be progressively pulled out until it is the full size arch of CBL.

The Southern Bridge will be an outwardly leaning arch bridge. This shape of arch offers the greatest sympathy with CBL, whilst providing a structure that is aesthetically pleasing – the public preference survey for CBL has confirmed that the public like this form of bridge. The outwardly leaning arches are open and inviting due to lean out nature of the arches and show a natural cohesion with the abutment structure as illustrated below.

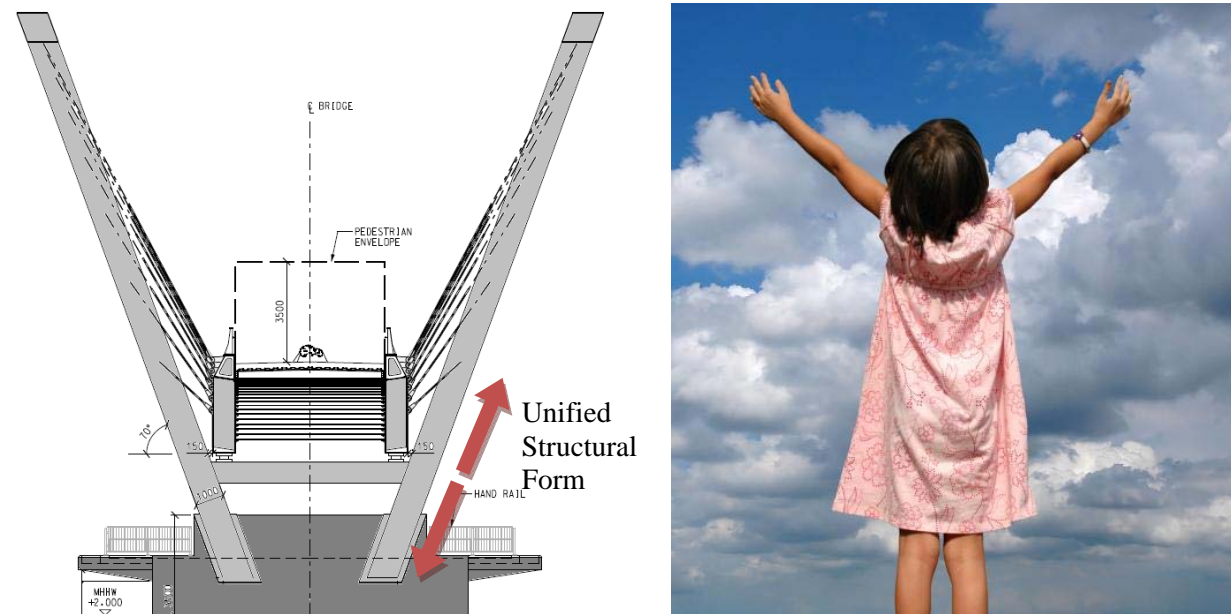


Figure 2.2 - Unified arch shape

2.3 Structural form

The design of the arch and deck sections has been optimized to achieve an elegant footbridge. The lightweight and slender deck section is unobtrusive and pleasing to the eye, while the tapering sections of the arches create a smooth shape and blends well with the surrounding hills.

2.4 Landscaping

A 1200mm zone in the middle of the bridge has been allocated for greening purposes. It is essential that the bridge fits in with the wider landscaping master plan for the area and there will be continued coordination to ensure there are no obvious visual discontinuities.

This is a long span footbridge, so greening and landscaping features on the bridge need to be more modest than would normally be expected on a short span footbridge. As such there will be discrete planting features along the length of the bridge. This plan works well with a desire to provide places where people can stand and watch events on the channel without any obstruction. The general principle is shown on the following sketch;

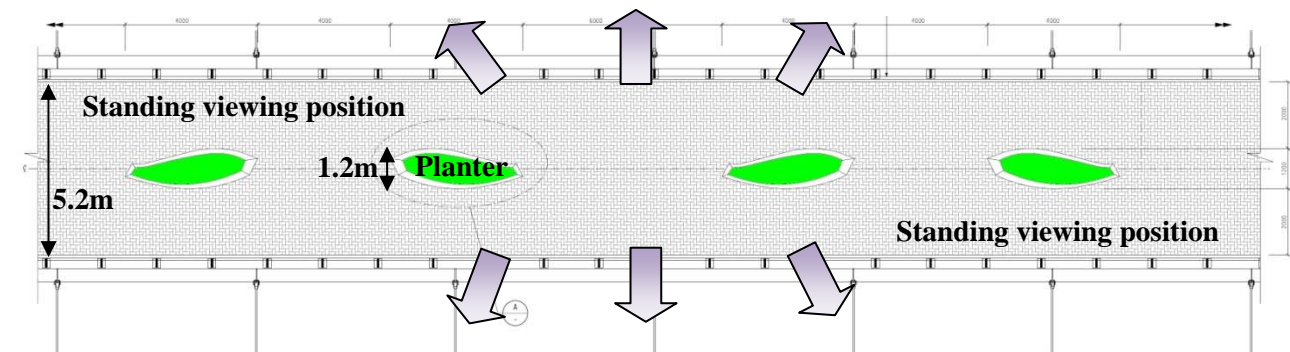


Figure 2.3 - Planter arrangement

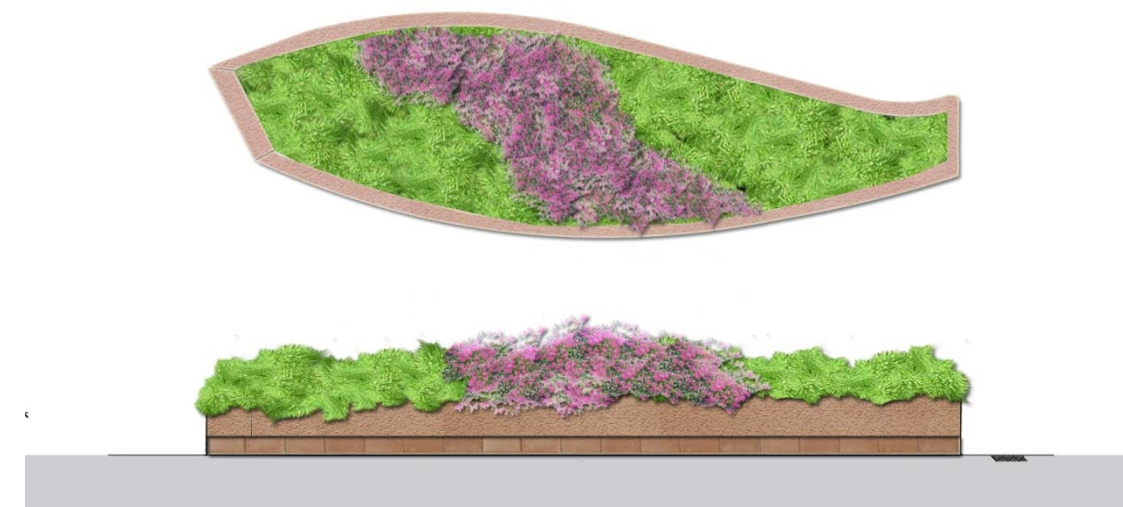


Figure 2.4 - Planter in plan and elevation

The walls of the ramp structures at east and west banks will incorporate greening features such as creeper and climber plants as shown below;



Figure 2.5 - Sample climbers and creepers

2.5 Riverside access

Through the public consultation exercise there has been a desire to maximise riverside access, and in particular, allow people to get close enough for fishing, observing water sports events, and other activities. The Southern Bridge presents an opportunity to provide a platform or boardwalk structure to get people close to the water and add further interest to the overall waterfront environment.

Furthermore, the planned Northern Bridge will adopt platform structures on each bank that extend into the Eastern Channel. To provide a similar concept at the Southern Bridge would provide a common language between the two bridges.

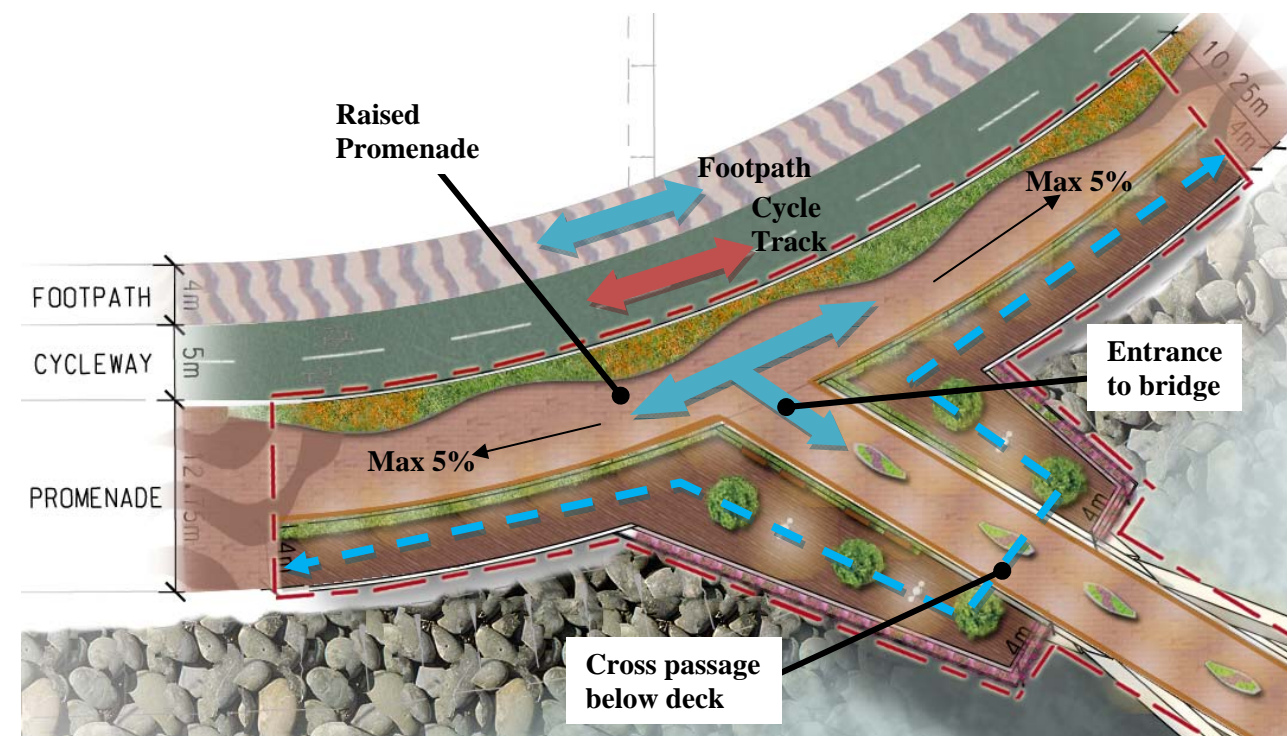


Figure 2.6 - Pedestrian movements at the western abutment

The viewing platform on the West Bank of Southern Bridge will have greening features on parapets to create a soothing environment and to create harmony with the adjacent channel. For those who would like to use this facility at night, sufficient lighting will be employed on the platform to create a leisurely environment to enjoy the night view of the Junk Bay with its landmark bridges.



Figure 2.7 – The viewing platform

2.6 Approach ramps

Approach ramps are provided on both sides of the Southern Bridge, to provide step-free access to the bridge from the promenade. The walls of the approach ramps on the eastern bank will have greening to soften the visual impact. A matching pavement will be adopted on the ramps to enhance the overall landscape of the area.

Trees shall be provided on both sides of the Eastern ramp bridge, and climbers and shrubs shall be planted beneath the ramp and the staircase. Through these measures and an appropriate finishing, the ramp structure shall have a very natural, green and eye-pleasing appearance.



Figure 2.8 – Eastern ramp bridge

2.7 Materials and finishes

- The bridge deck is cast in-situ concrete with painted steel edge beams. A block pavement will match the surfacing of the surrounding waterfront area.
- The support structure on the west bank and the wall on the east bank will be an F5 painted concrete finish.
- The walls of ramp structures will have natural granite finishes with creeper/climber plants.
- The steel arches will be painted in a white or grey colour to match the grey colour of the concrete support piers.
- The hangers and pedestrian parapets will be in silver/grey colour.

2.8 Drainage

Deck surface runoff will be collected via drainage holes that will direct the water to the carrier pipe and on to the piers. Through drainage pipes concealed in the piers, the water will be discharged into the Eastern Channel.

Free draining surfaces are provided to the arch and abutments.

To prevent unsightly water staining on concrete, drip grooves shall be provided where necessary.

3 Response to Comments

A response to comment table is provided in Appendix C to provide our responses to Committee's comments received at the 339th ACABAS meeting on the 15th April 2012.

Appendix A

Visualisations

A1 View from the Ocean Shores Development looking eastwards



A2 View on the bridge deck looking eastwards



A3 View of the Southern Bridge looking eastwards from the viewing platform



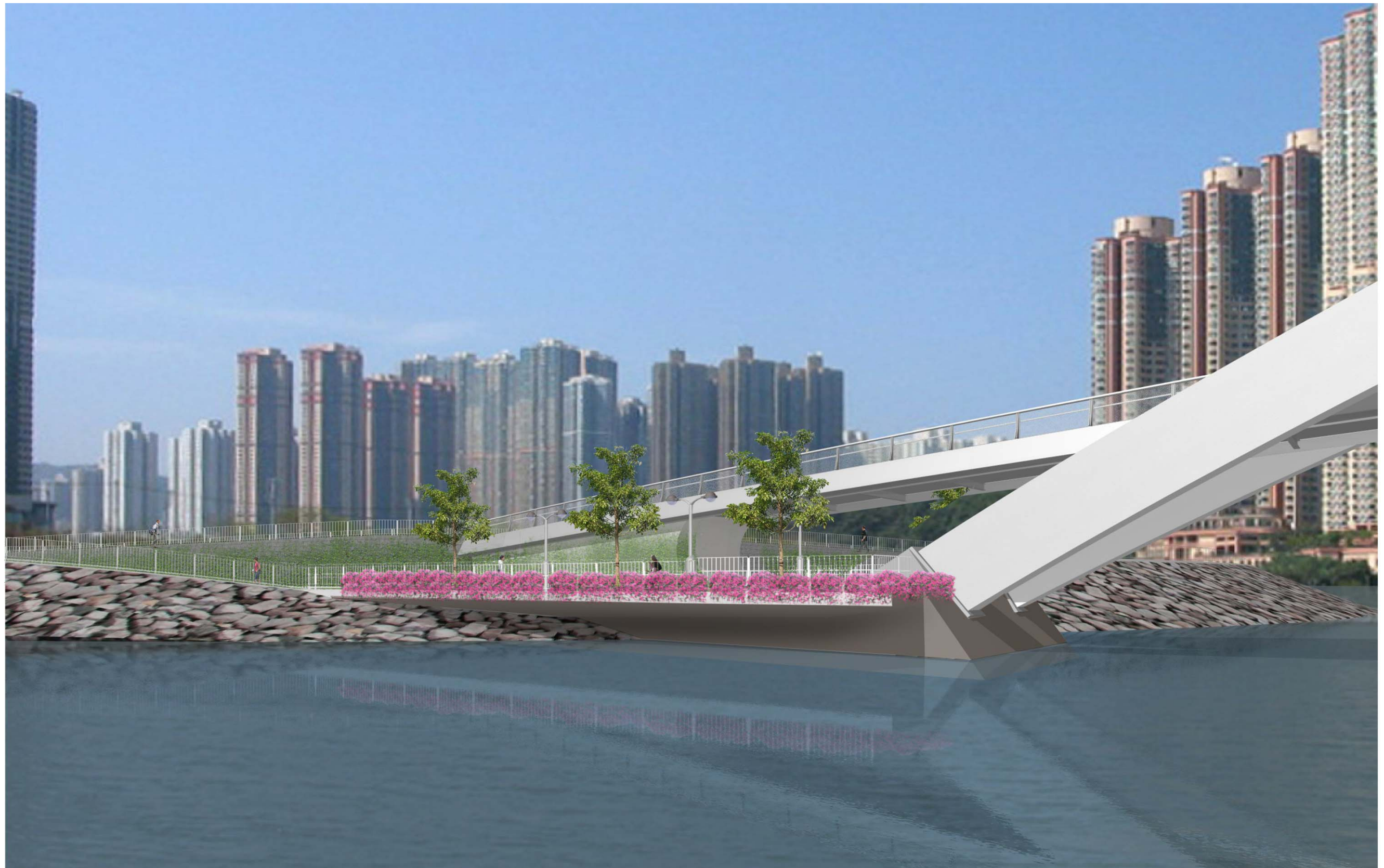
A4 View from Town Centre South promenade looking southwards



A5 View from Oscar by the Sea development viewed southwards

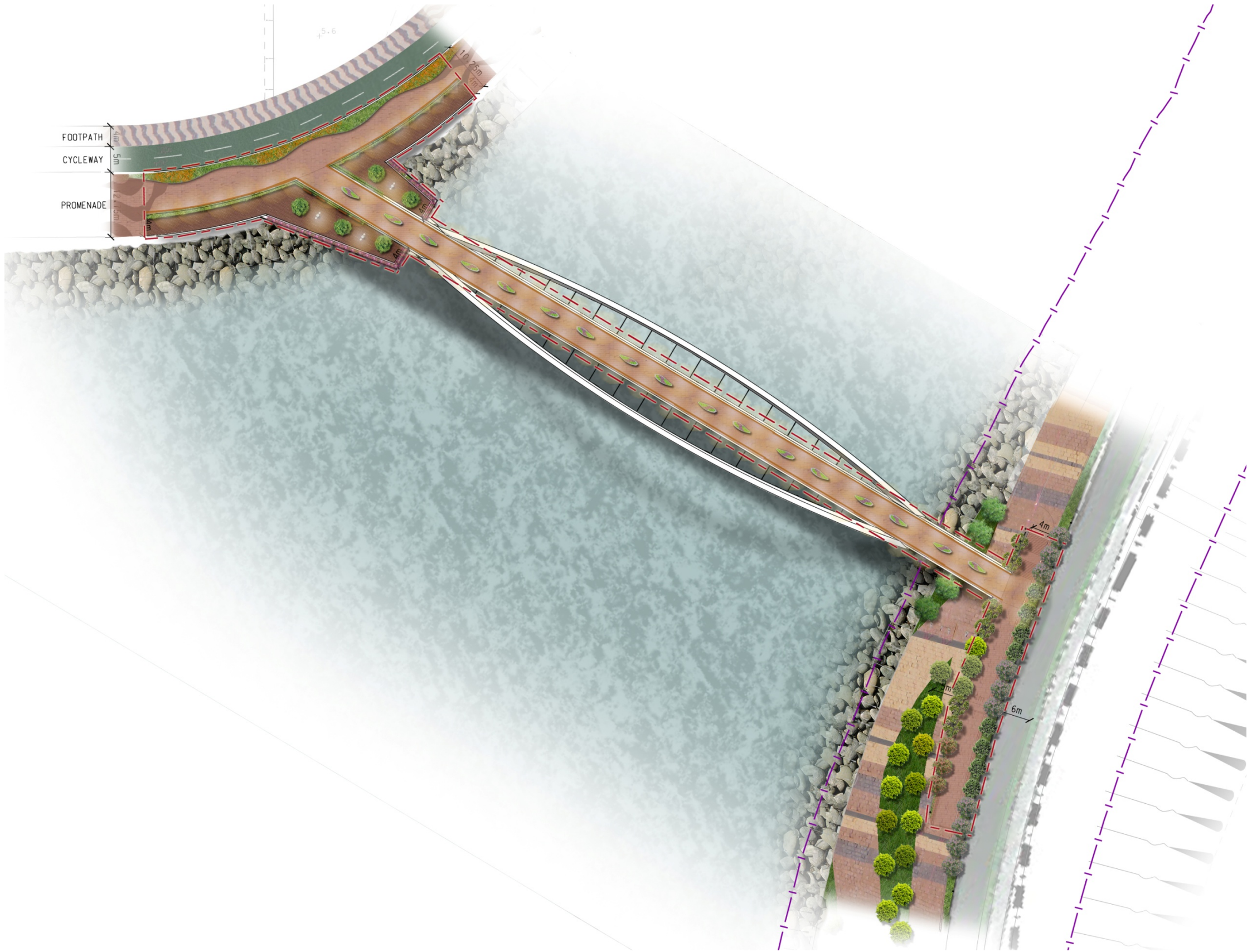


A6 View from a boat in the Eastern Channel looking towards the western abutment



A7

Landscape layout plan



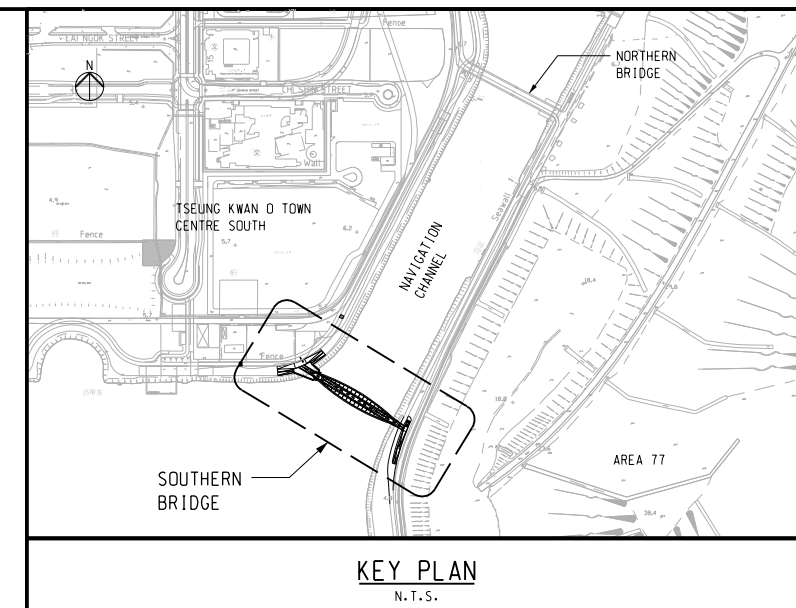
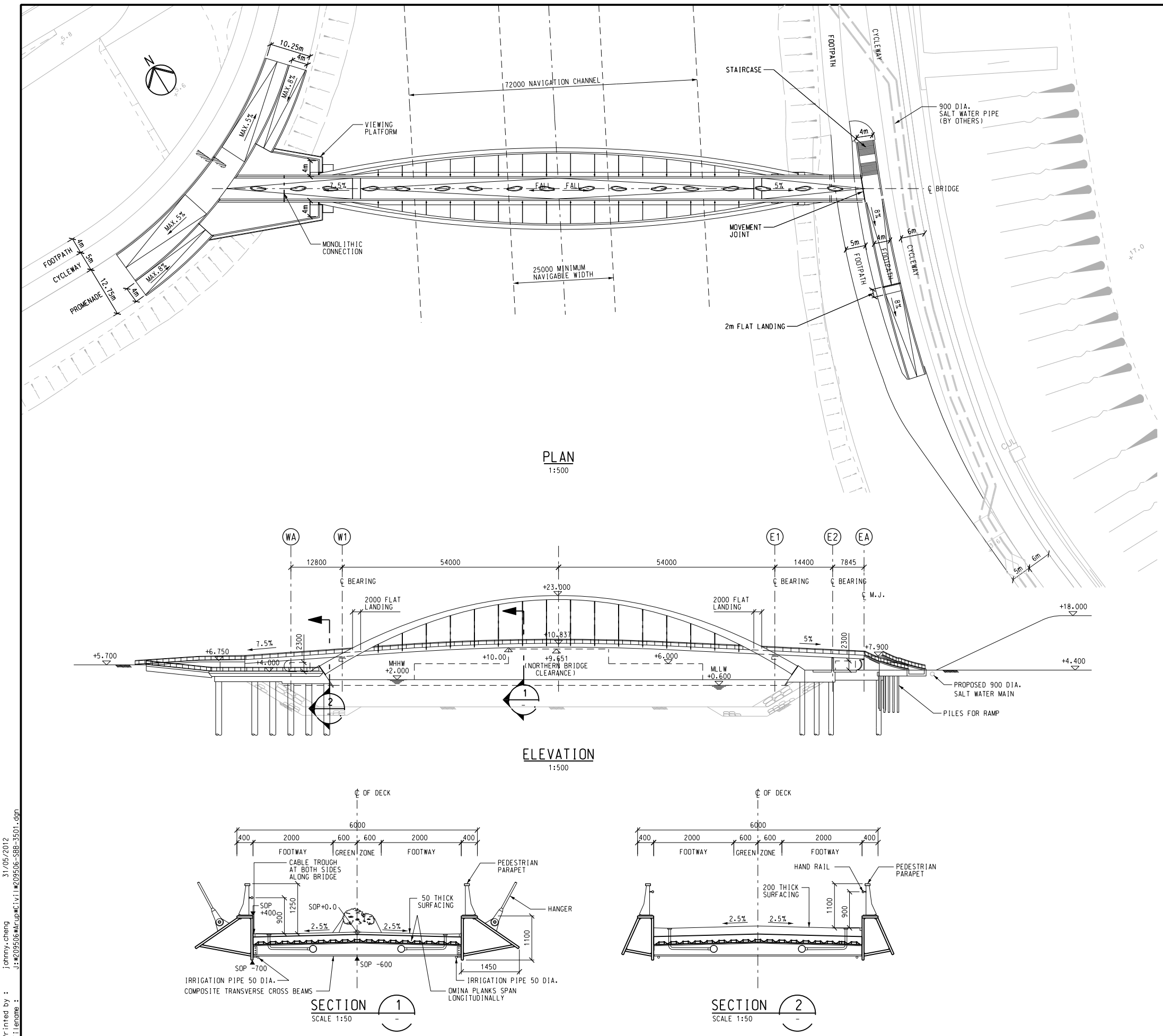
Appendix B

Drawings

B1

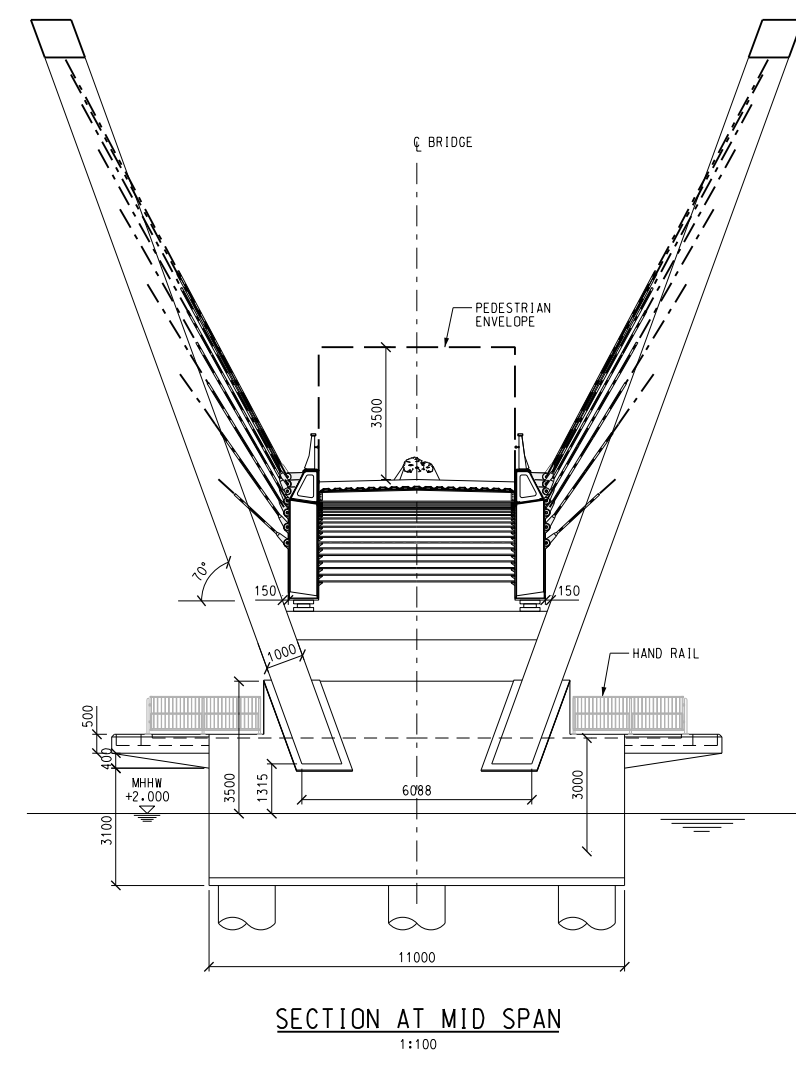
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SBB/3502	A	SOUTHERN BRIDGE, ADDITIONAL SCHEME DECK
SBB/3503	A	SOUTHERN BRIDGE, ADDITIONAL SCHEME ARCH
SBB/3504	A	SOUTHERN BRIDGE, WEST ABUTMENT, SHEET 1
SBB/3505	A	SOUTHERN BRIDGE, WEST ABUTMENT, SHEET 2
SBB/3506	A	SOUTHERN BRIDGE, WESTERN RAMP
SBB/3507	A	SOUTHERN BRIDGE, EAST ABUTMENT, SHEET 1
SBB/3508	A	SOUTHERN BRIDGE, EAST ABUTMENT, SHEET 2
SBB/3509	A	SOUTHERN BRIDGE, EASTERN RAMP, SHEET 1
SBB/3510	A	SOUTHERN BRIDGE, EASTERN RAMP, SHEET 2
SBB/6501	A	SOUTHERN BRIDGE, LANDSCAPE, KEY PLAN
SBB/6502	A	SOUTHERN BRIDGE, LANDSCAPE, GENERAL LAYOUT PLAN, SHEET 1
SBB/6503	A	SOUTHERN BRIDGE, LANDSCAPE, GENERAL LAYOUT PLAN, SHEET 2
SBB/6504	A	SOUTHERN BRIDGE, LANDSCAPE, GENERAL LAYOUT PLAN, SHEET 3
SBB/6505	A	SOUTHERN BRIDGE, LANDSCAPE, GENERAL LAYOUT PLAN, SHEET 4
SBB/6506	A	SOUTHERN BRIDGE, LANDSCAPE, SECTION
SBB/6507	A	SOUTHERN BRIDGE, LANDSCAPE, PARTIAL PLAN, SHEET 1
SBB/6508	A	SOUTHERN BRIDGE, LANDSCAPE, PARTIAL PLAN, SHEET 2
SBB/6509	A	SOUTHERN BRIDGE, LANDSCAPE, VIEWING PLATFORM LAYOUT PLAN



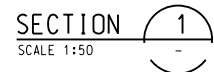
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1. ALL 1.1m HIGH PEDESTRIAN PARAPETS ON RAMPS STAIRCASE AND VIEWING PLATFORM TO MATCH PARAPETS PROVIDED FOR THE SURROUNDING PROMENADE UNDER CONTRACT NO. HY/2009/05.



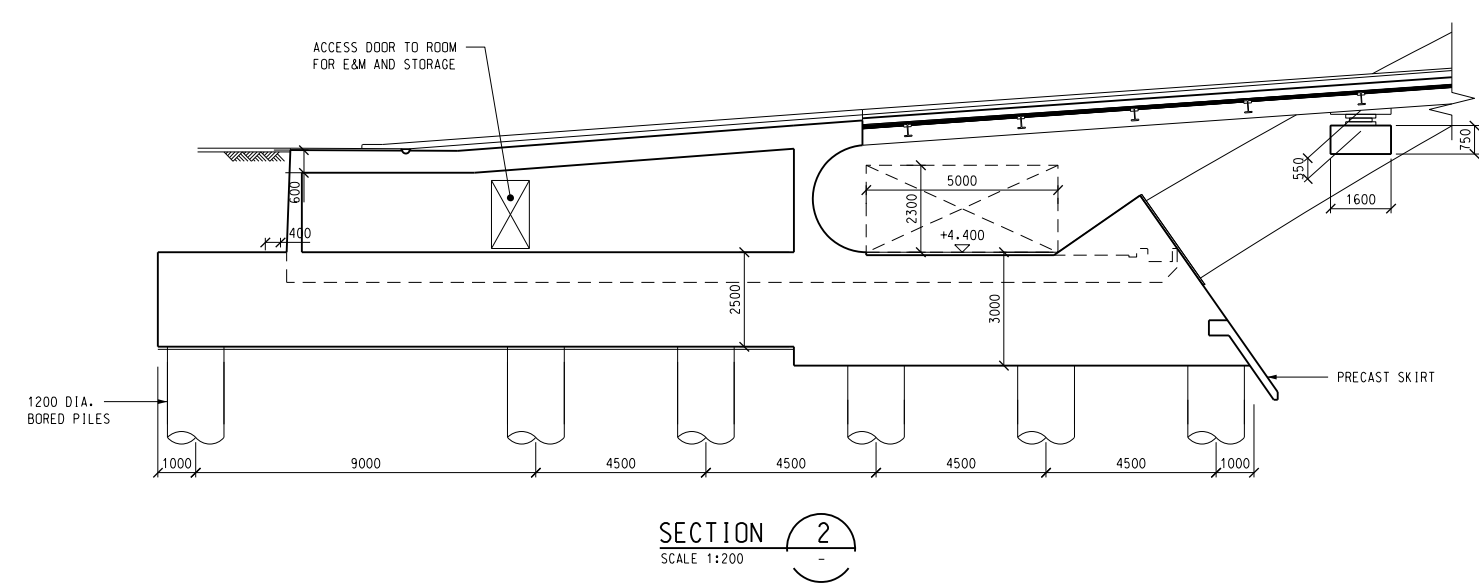
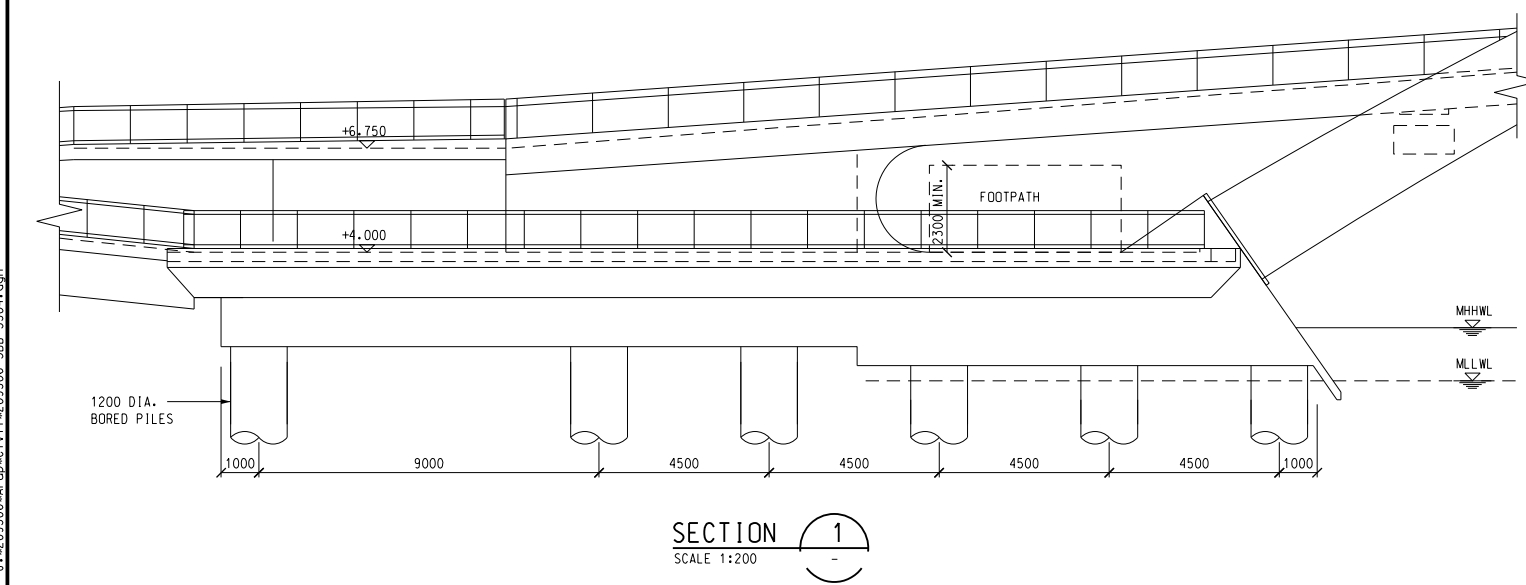
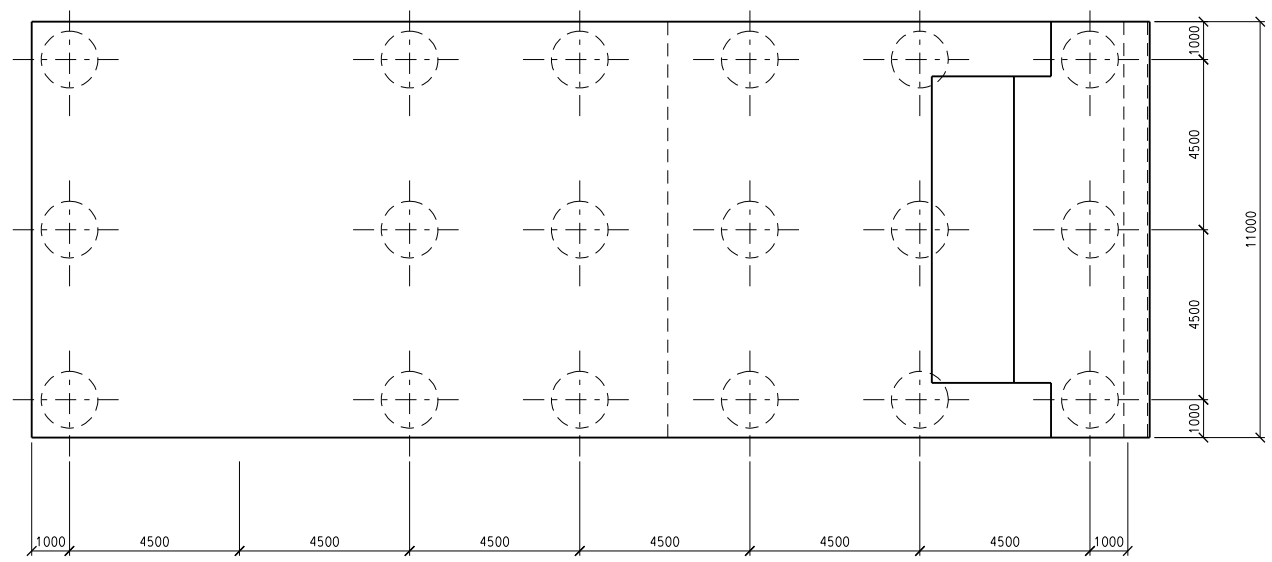
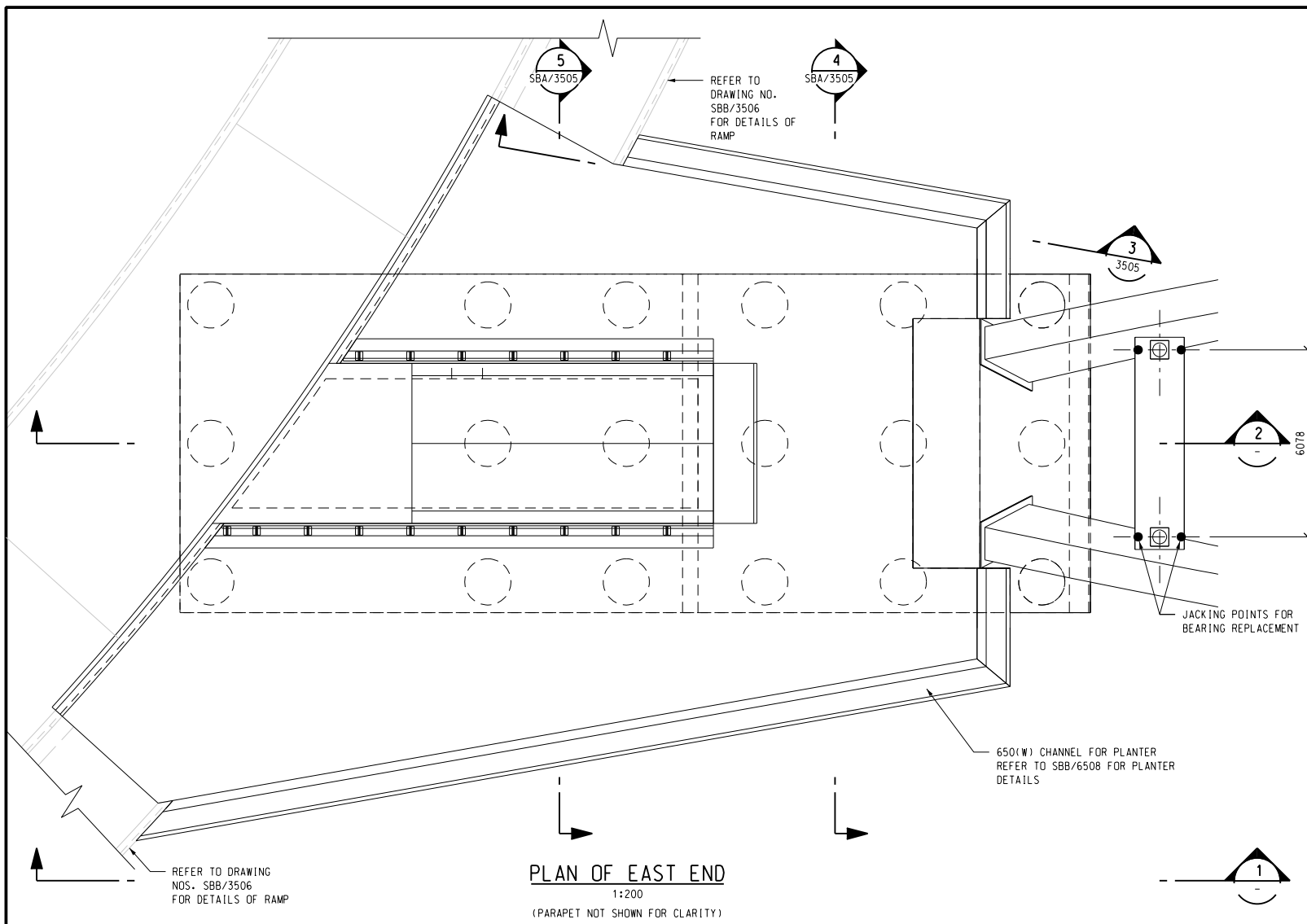
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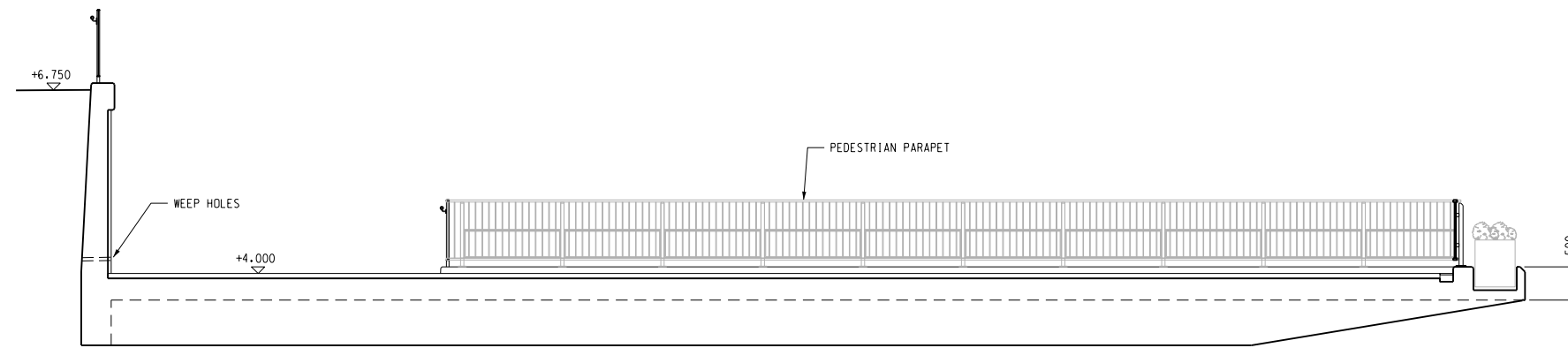


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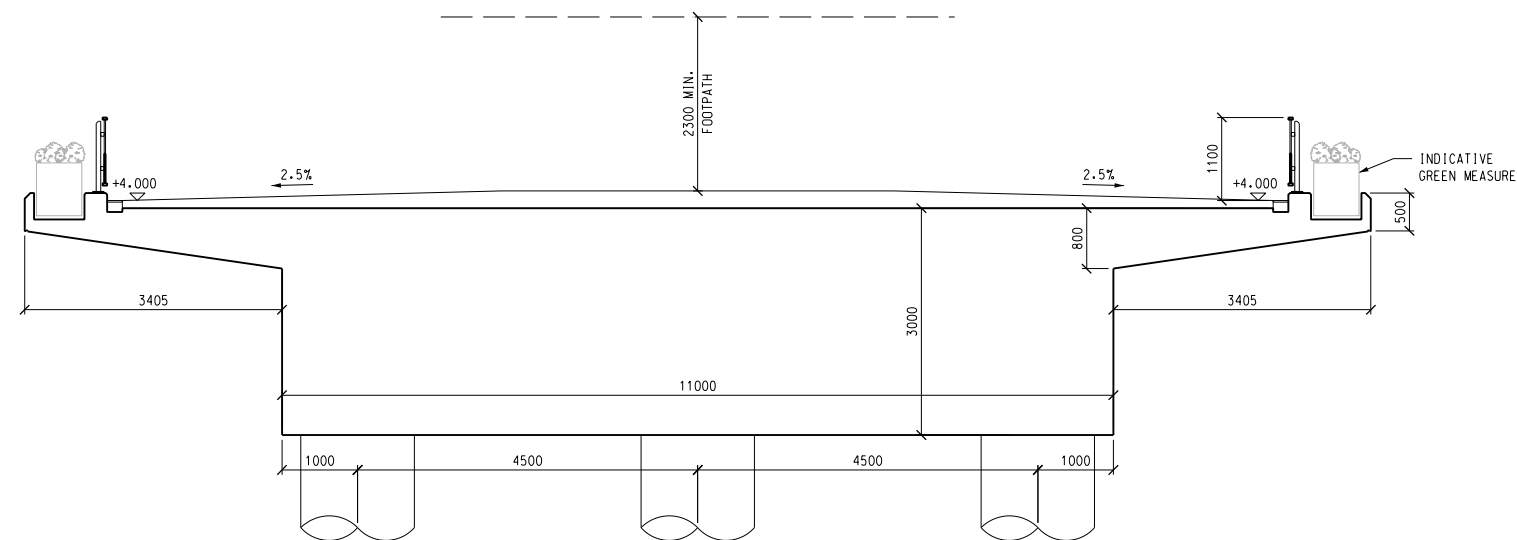
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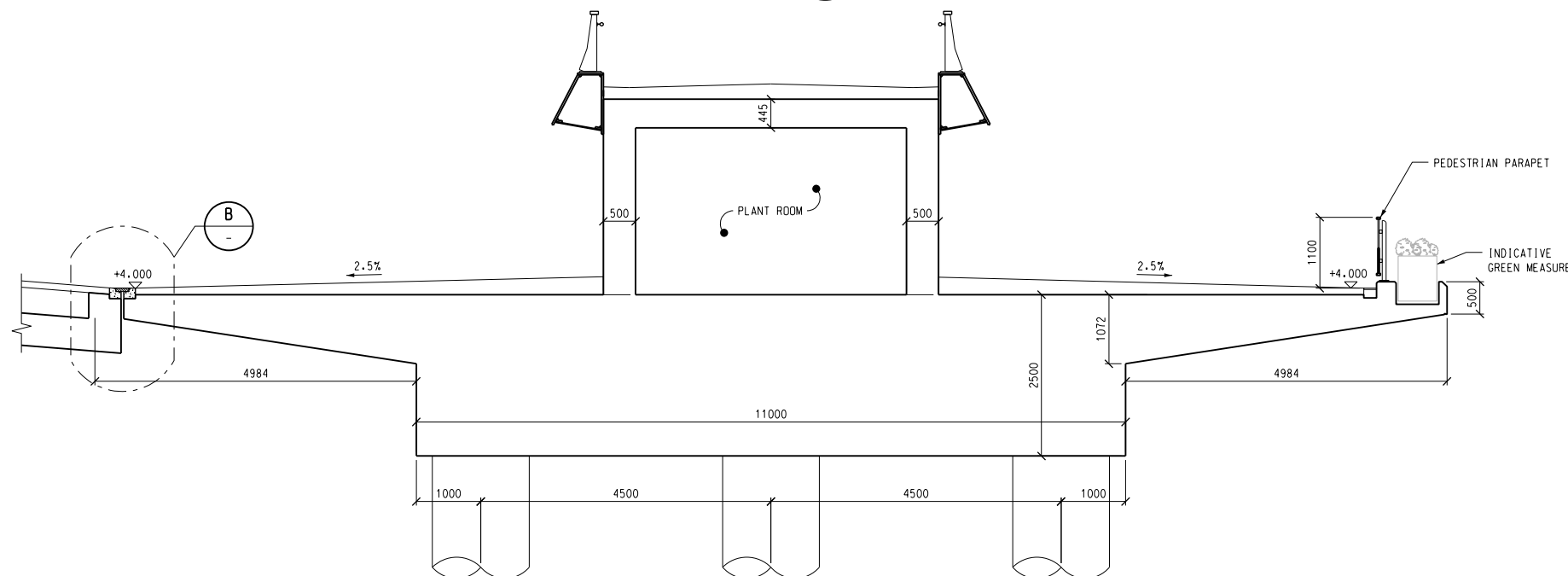
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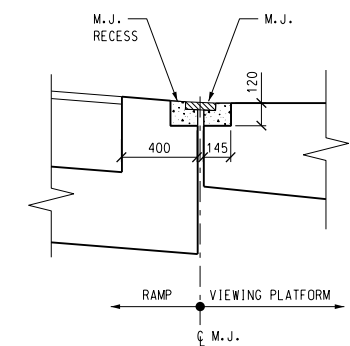
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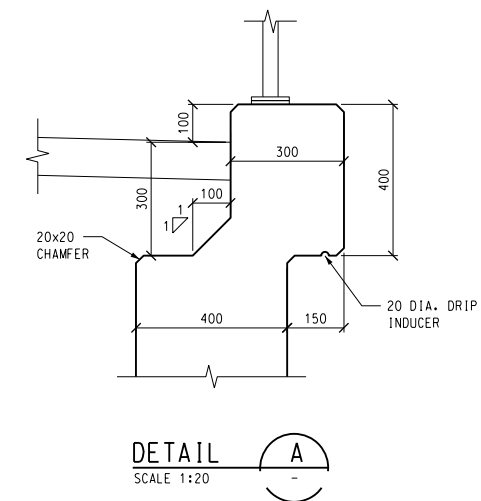
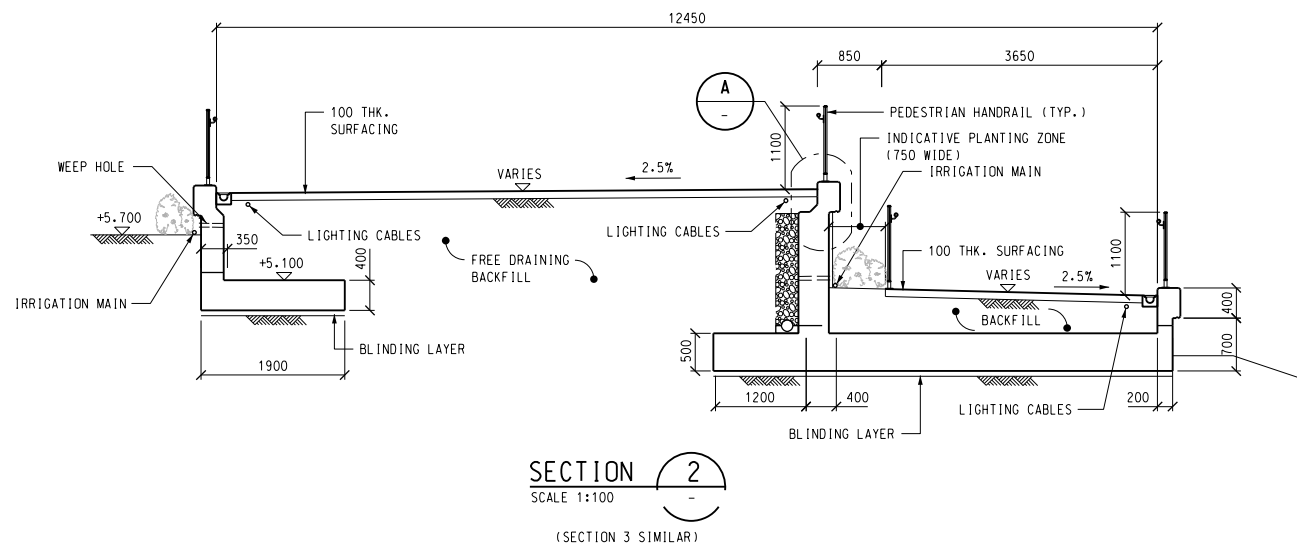
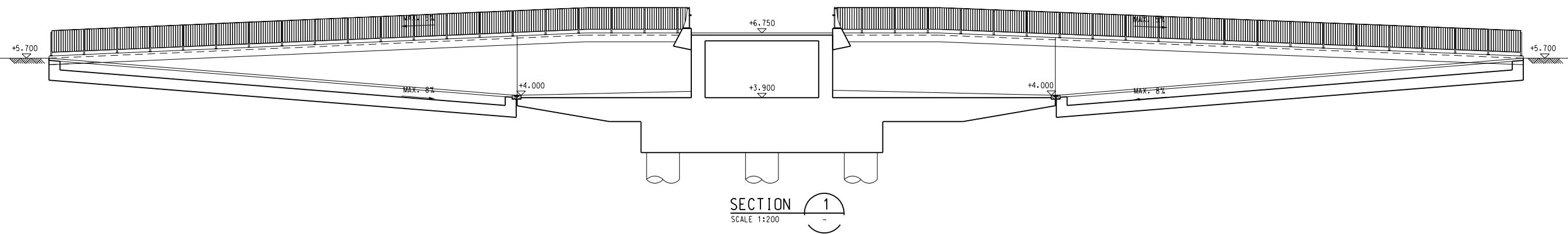
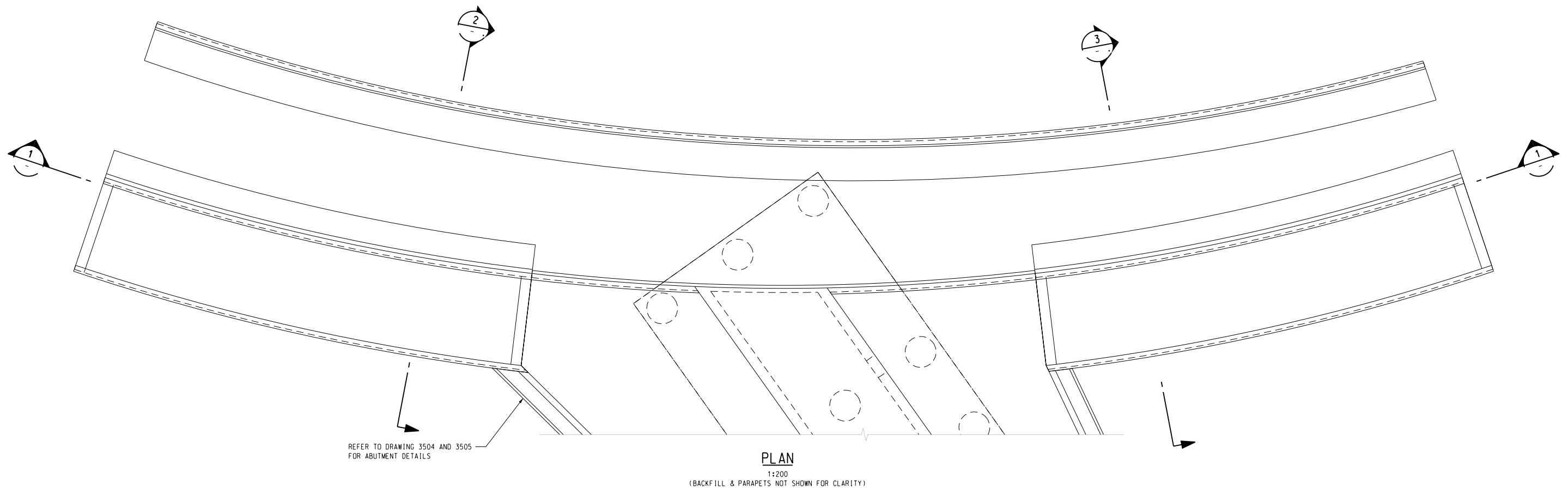
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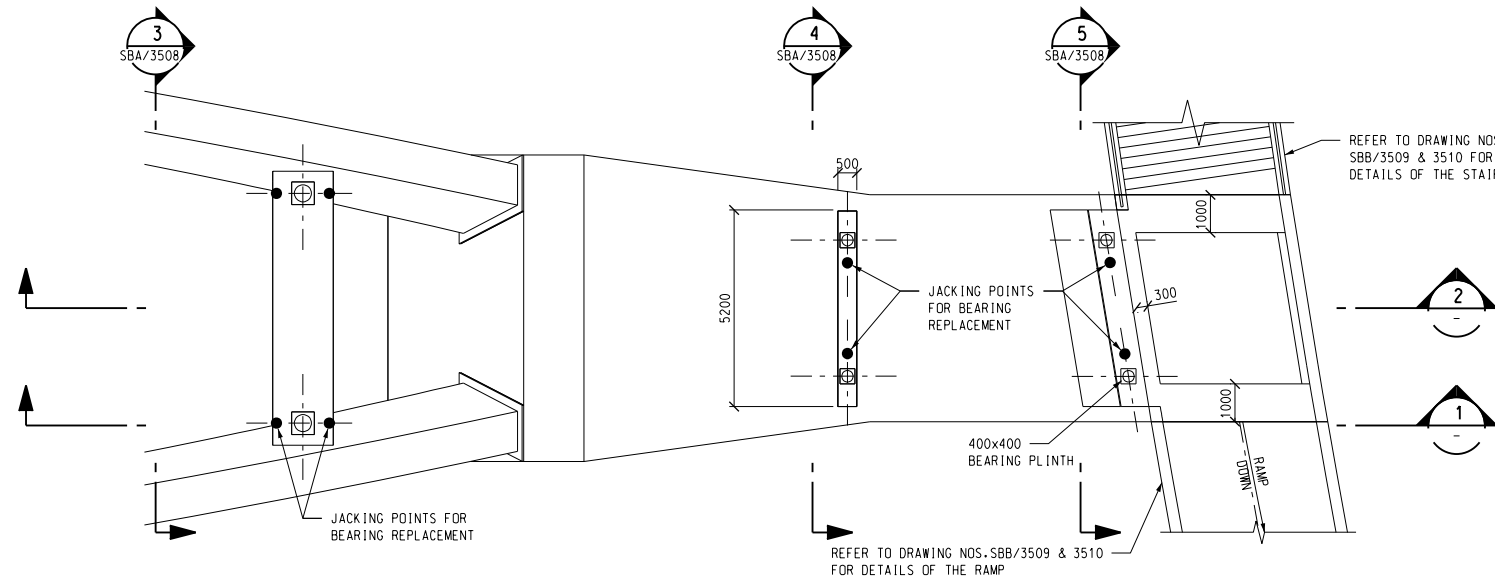
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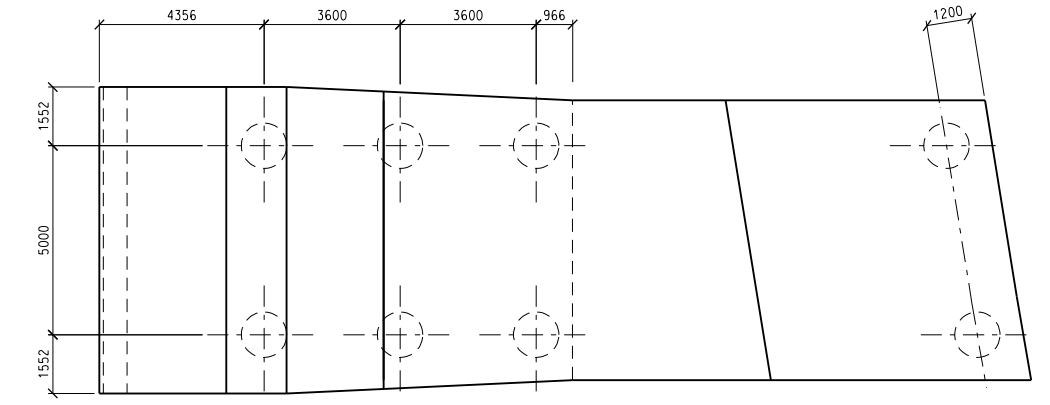
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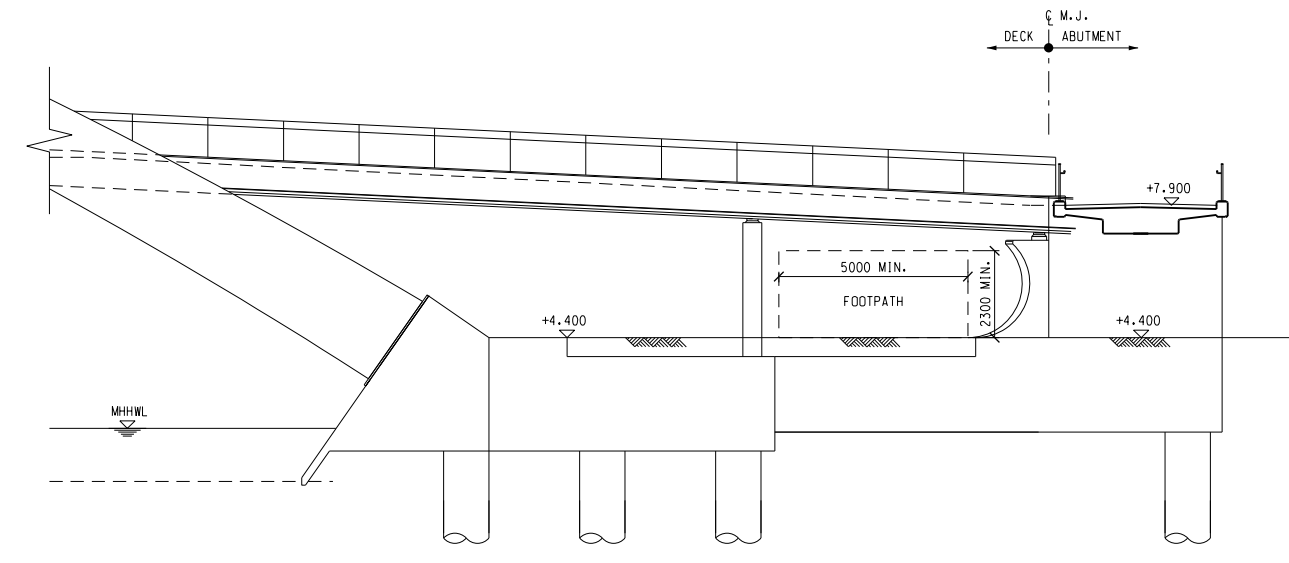
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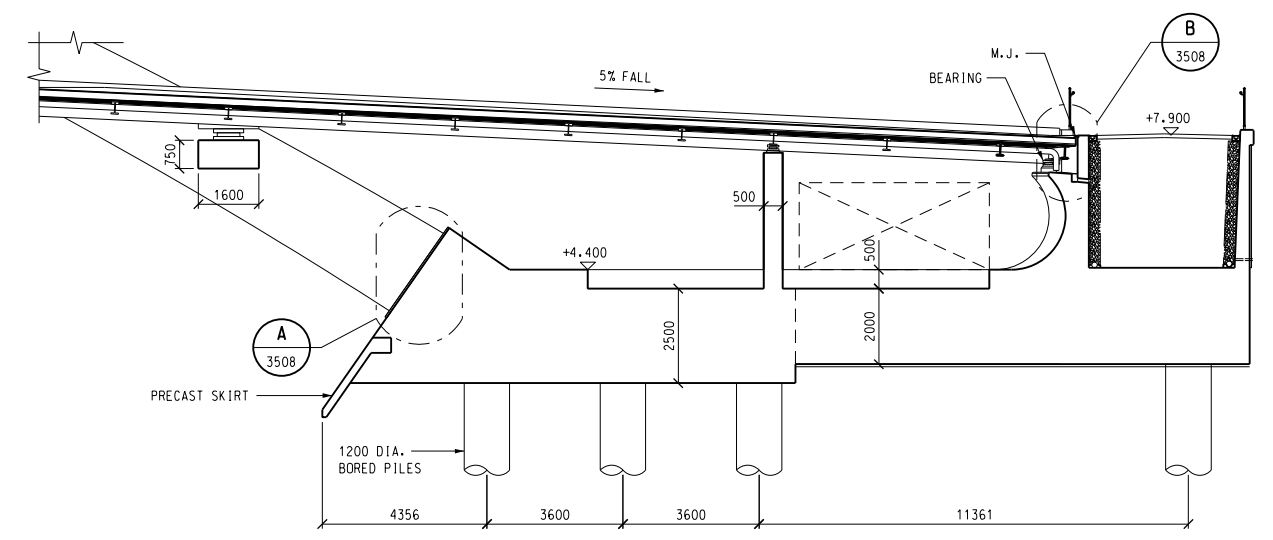
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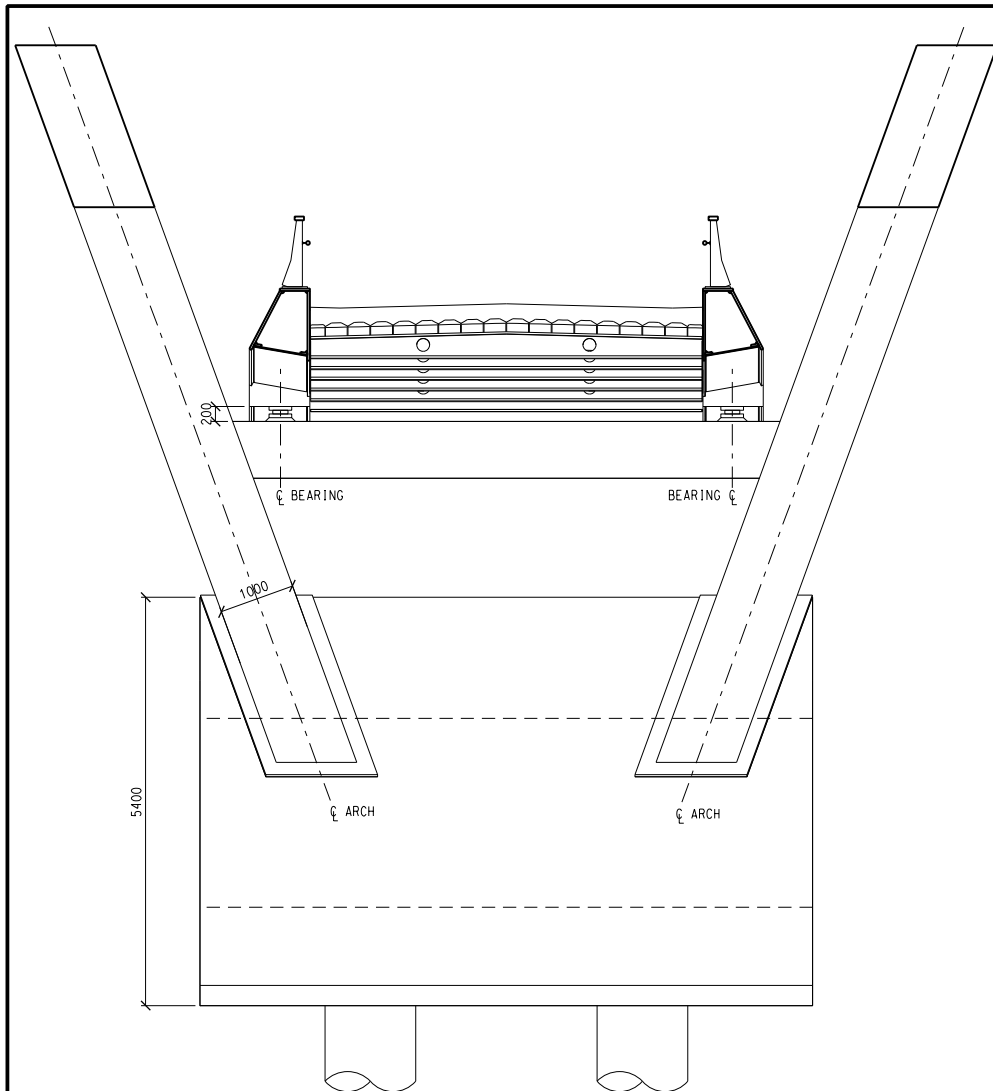


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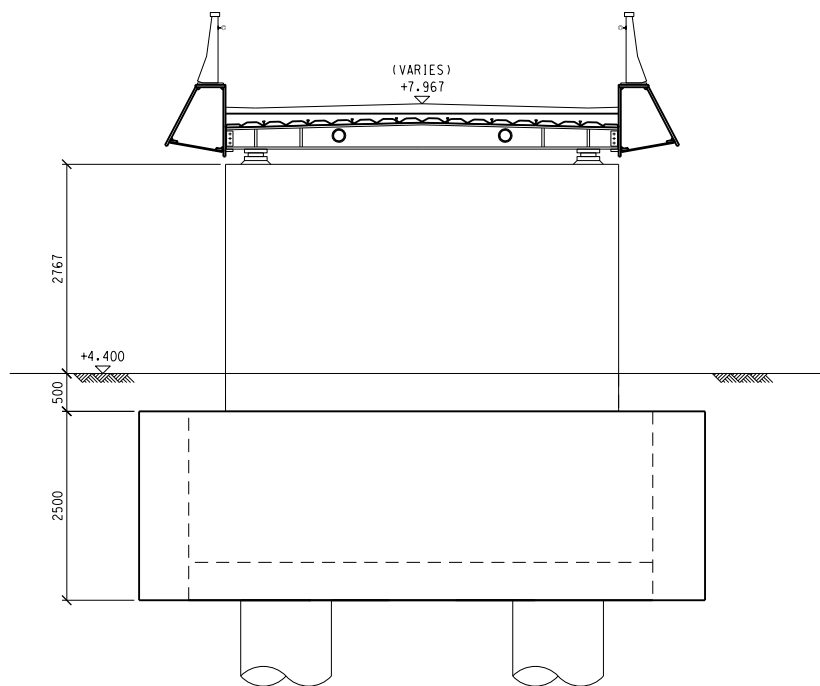
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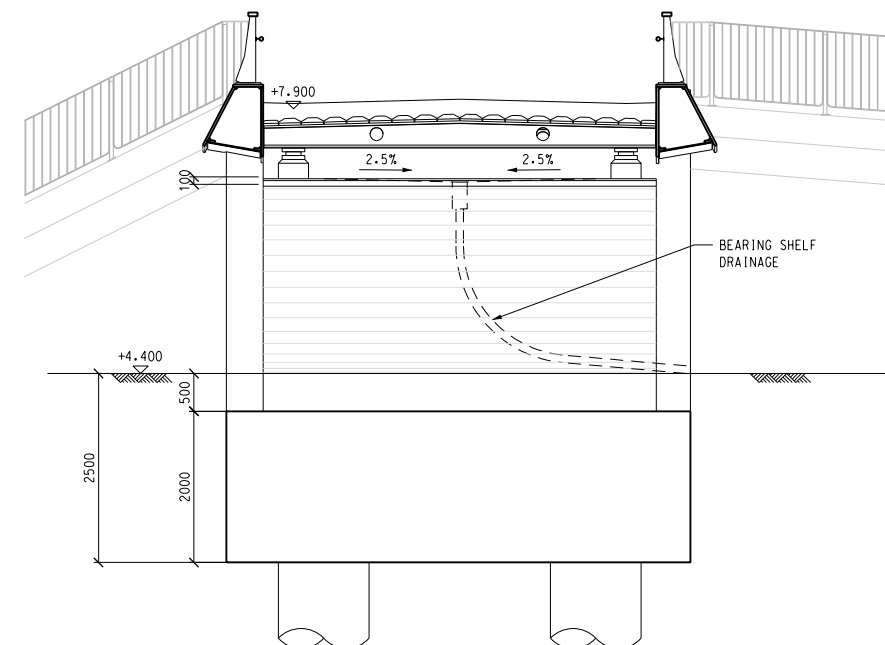
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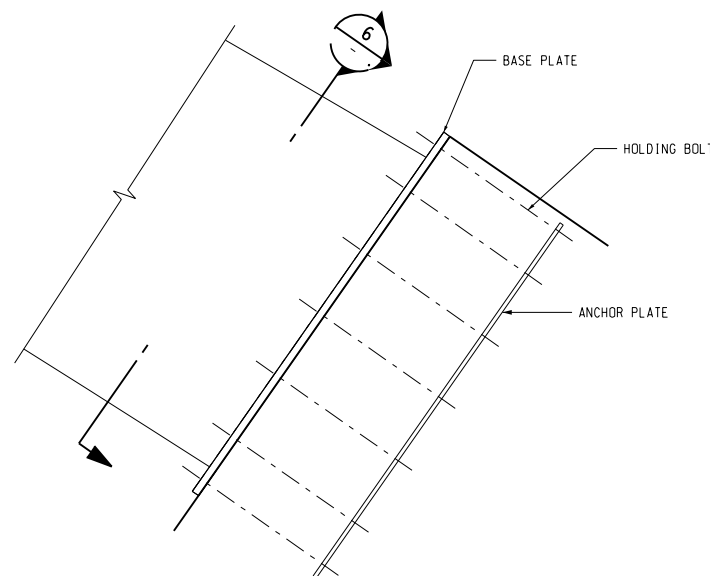
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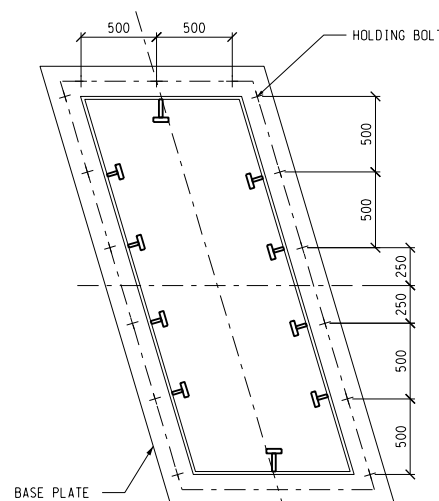
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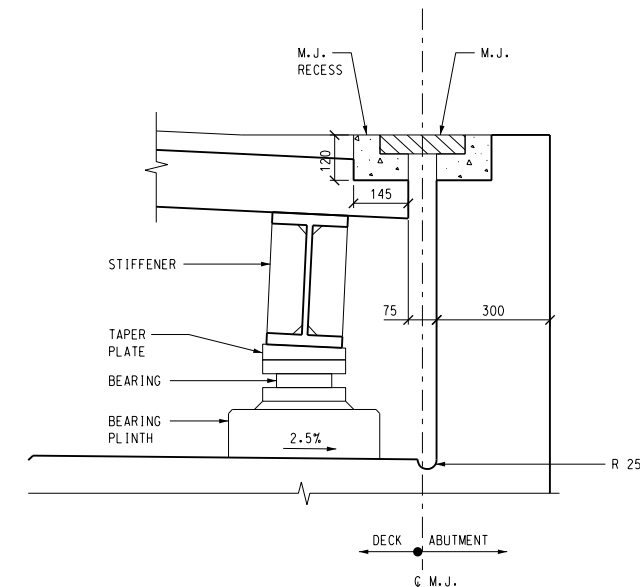
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Development Department

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Job Title

Agreement No. CE 43/2008(HY)
Cross Bay Link, Tseung Kwan O – Investigation

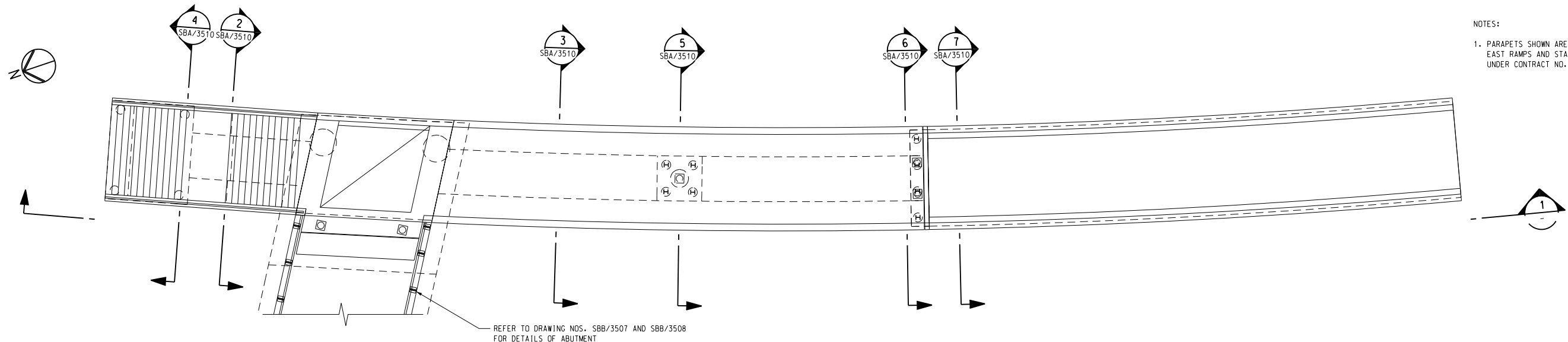
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SOUTHERN BRIDGE
ADDITIONAL SCHEME
EAST ABUTMENT – SHEET 2

Rev.	Description	Date
A	FIRST ISSUE	06/12

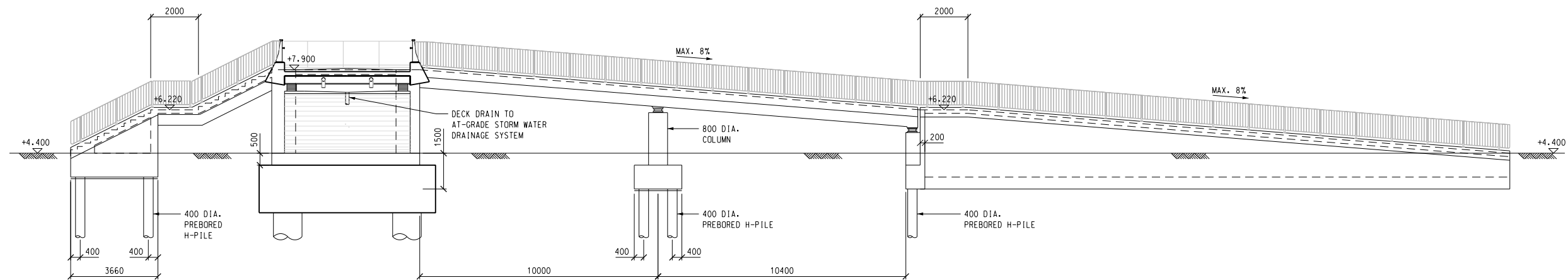
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Rev.	A

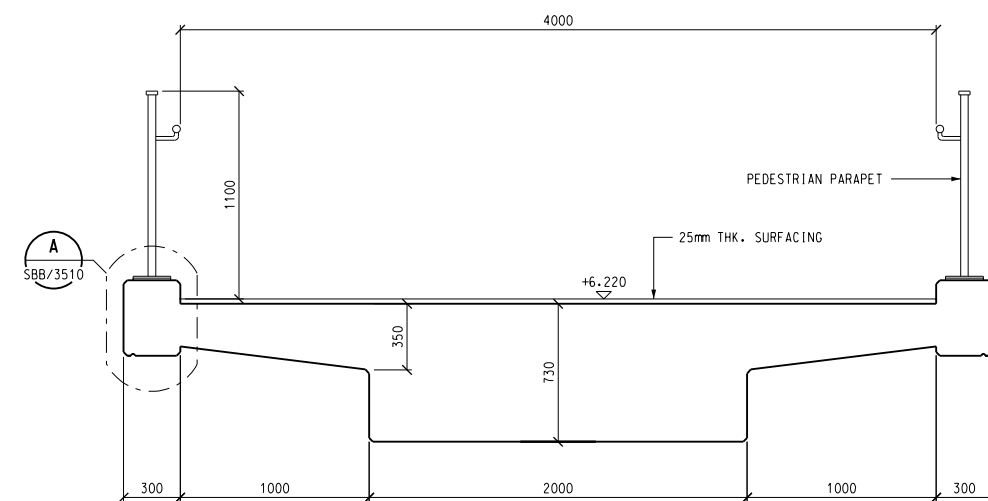


PLAN
1:200

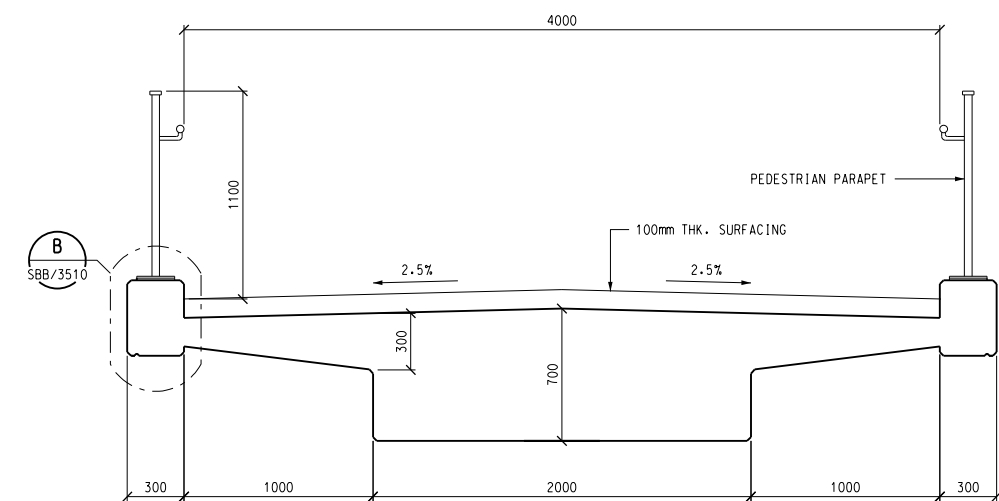
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1. PARAPETS SHOWN ARE INDICATIVE ONLY. PARAPETS ON EAST RAMP AND STAIRCASE TO MATCH ADJACENT WORKS UNDER CONTRACT NO. HY2009/05.



SECTION 1
SCALE 1:200



SECTION 2
SCALE 1:40



SECTION 3
SCALE 1:40

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Civil Engineering and
Development Department

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Hong Kong Limited

Job Title

Agreement No. CE 43/2008(HY)
Cross Bay Link, Tseung Kwan O – Investigation

Drawing Title

SOUTHERN BRIDGE
ADDITIONAL SCHEME
EASTERN RAMP – SHEET 1

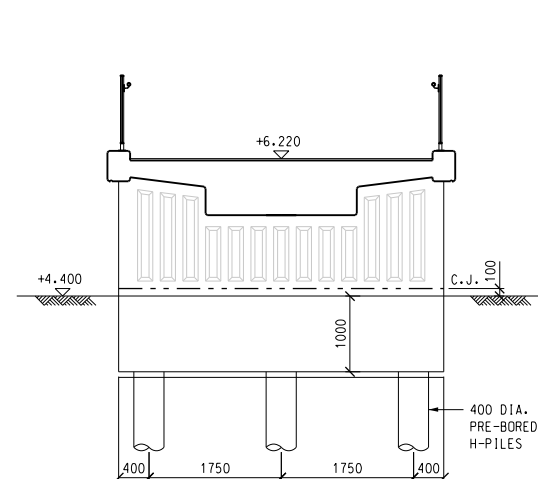
Rev.	Description	Date
A	FIRST ISSUE	06/12

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Checked	P1	Approved	SYC
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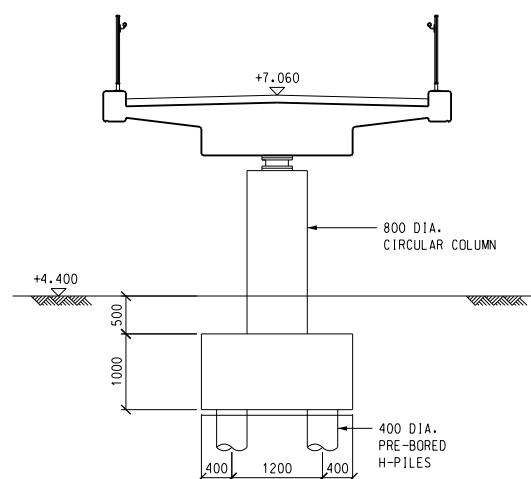
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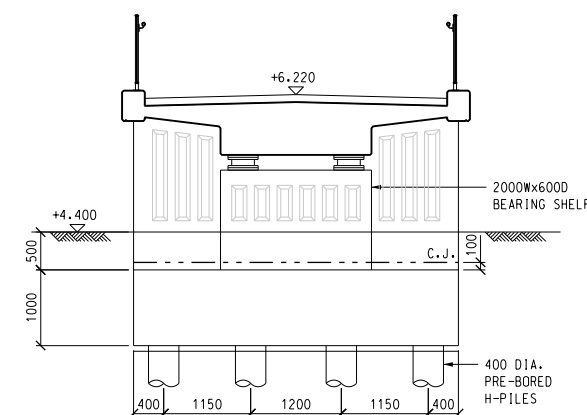
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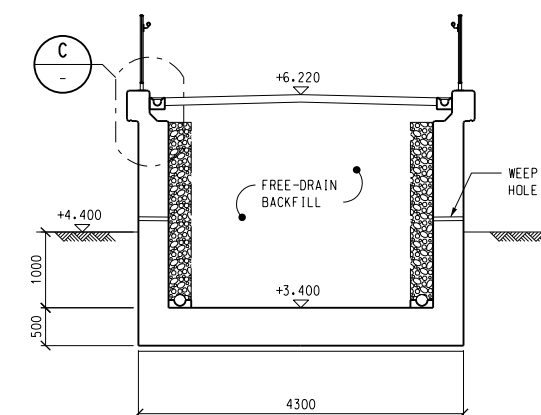
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SBA/3509



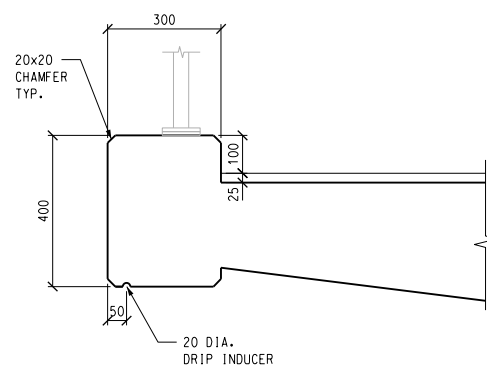
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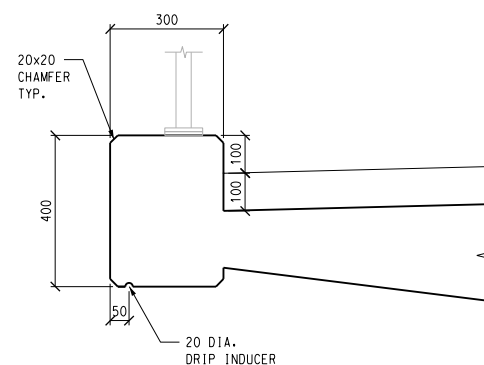
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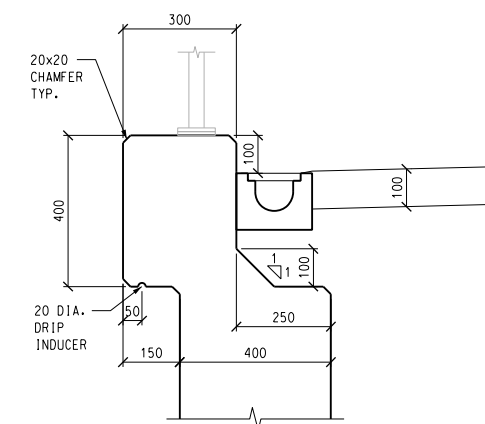
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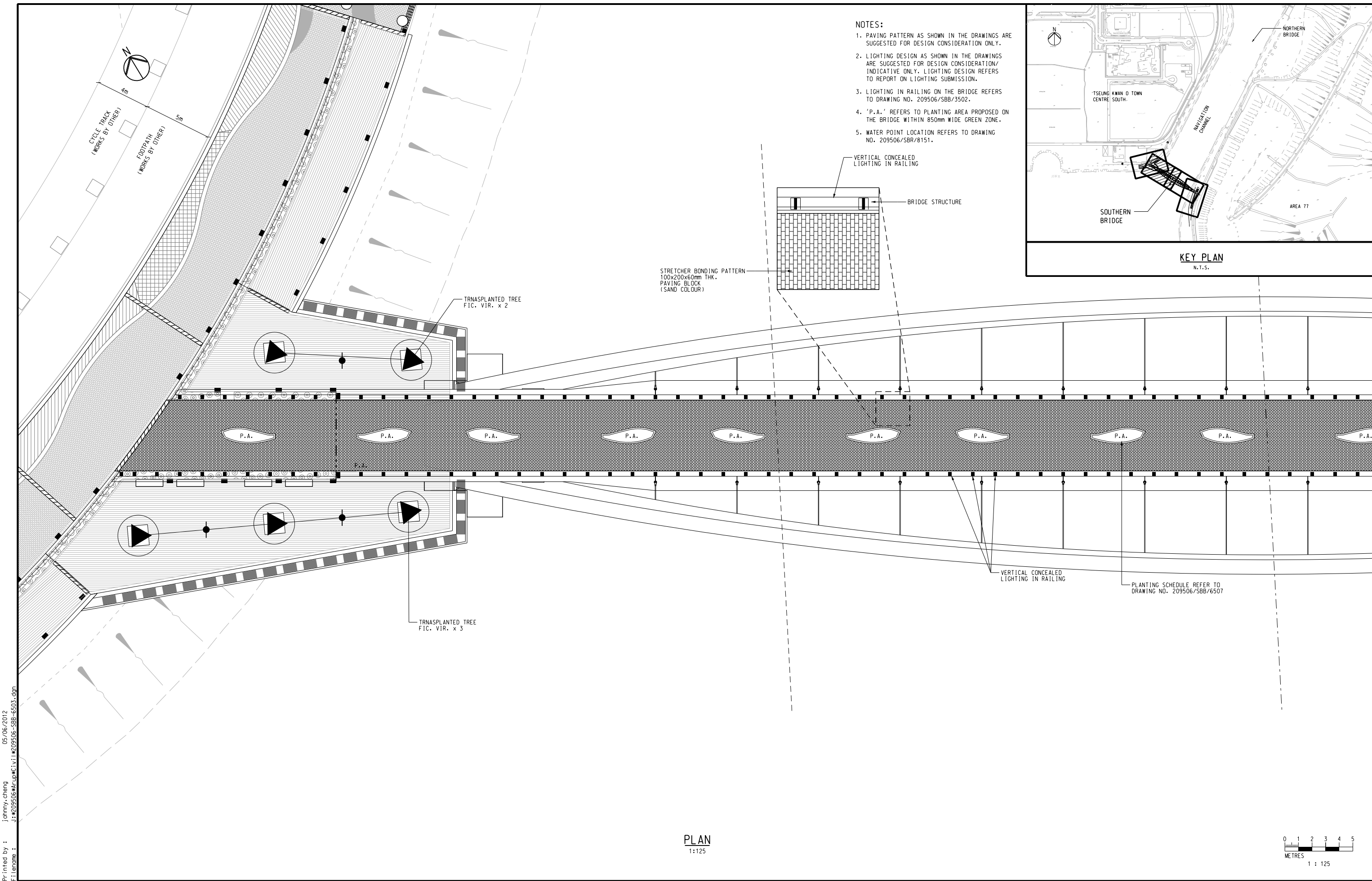
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SBA/3509



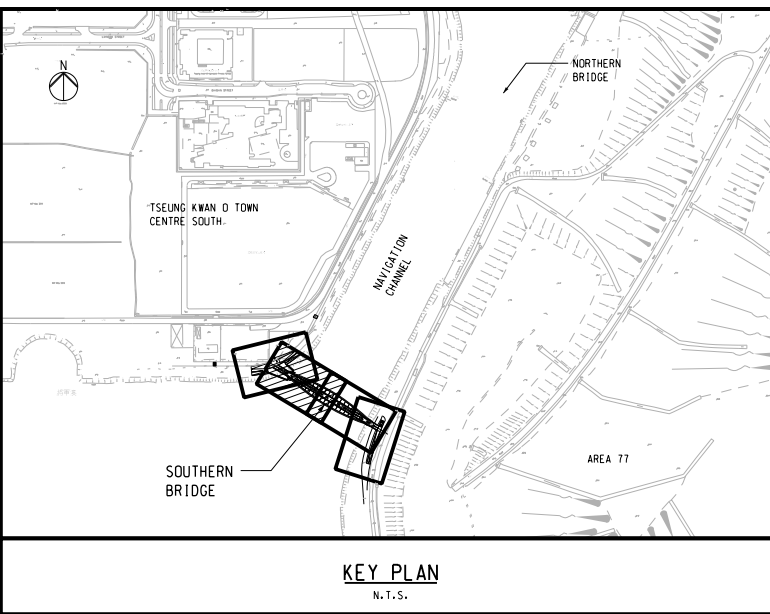
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SBA/3509



DETAIL C
SCALE 1:20
SBA/3509





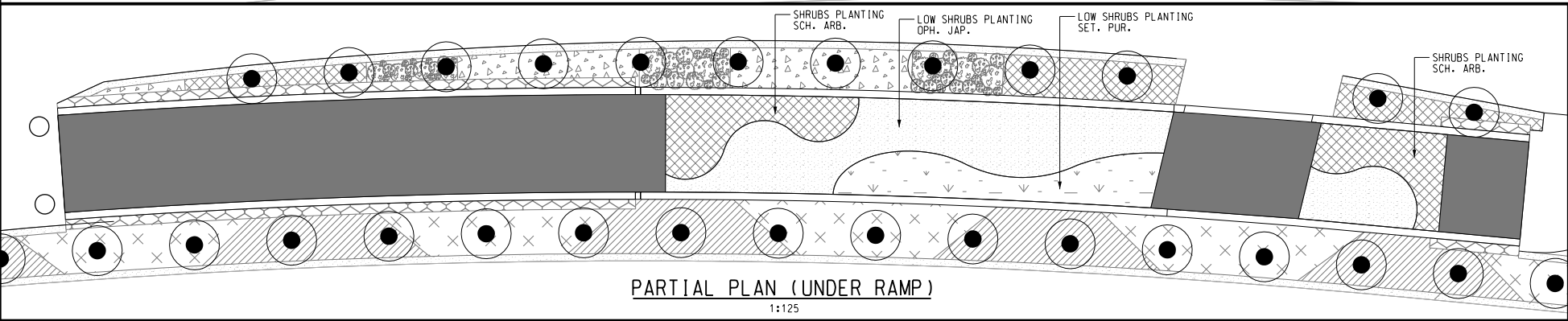
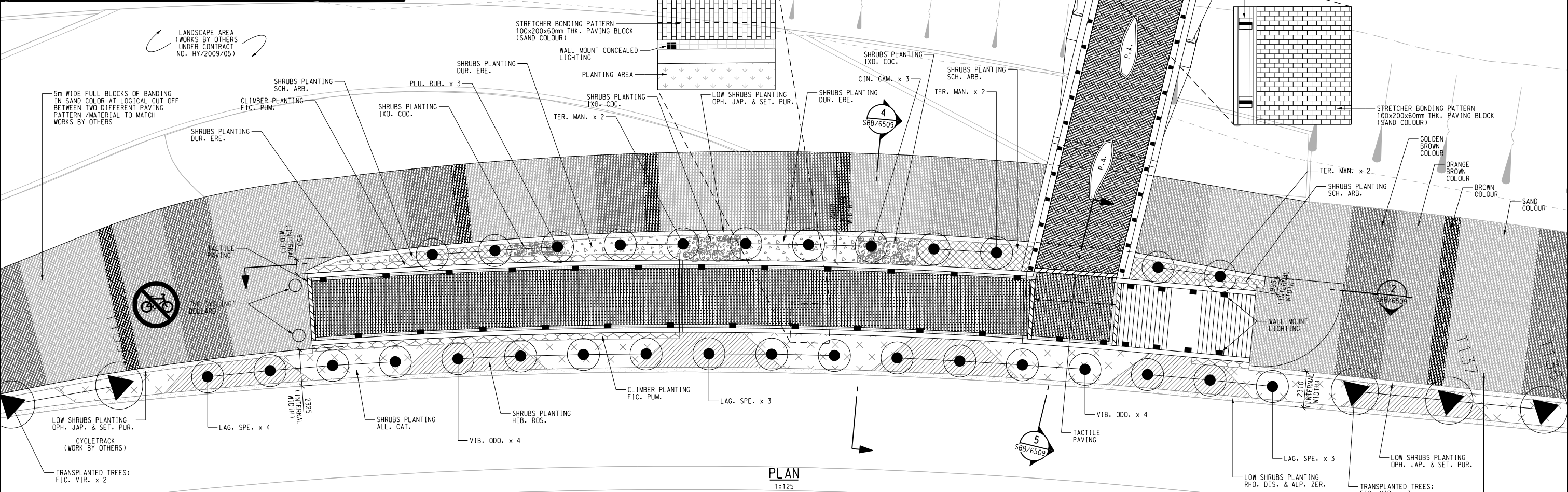
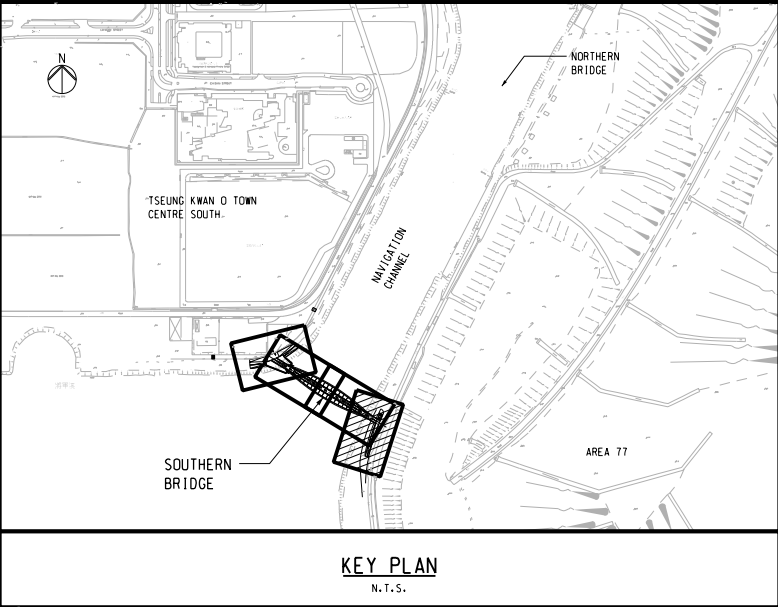
- NOTES:
- 1. PAVING PATTERN AS SHOWN IN THE DRAWINGS ARE SUGGESTED FOR DESIGN CONSIDERATION ONLY.
 - 2. LIGHTING DESIGN AS SHOWN IN THE DRAWINGS ARE SUGGESTED FOR DESIGN CONSIDERATION/INDICATIVE ONLY. LIGHTING DESIGN REFERS TO REPORT ON LIGHTING SUBMISSION.
 - 3. LIGHTING IN RAILING ON THE BRIDGE REFERS TO DRAWING NO. 209506/SBB/3502.
 - 4. 'P.A.' REFERS TO PLANTING AREA PROPOSED ON THE BRIDGE WITHIN 850mm WIDE GREEN ZONE.
 - 5. WATER POINT LOCATION REFERS TO DRAWING NO. 209506/SBR/8151.



PLAN
1:125

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05/06/2012

 <div>土木工程拓展署 Civil Engineering and Development Department</div>	 <div>Ove Arup & Partners Hong Kong Limited</div>	Job Title Agreement No. CE 43/2008(HY) Cross Bay Link, Tseung Kwan O – Investigation	Drawing Title SOUTHERN BRIDGE LANDSCAPE GENERAL LAYOUT PLAN (SHEET 2 OF 4)				Drawn	MAN	Date	05/12	Drawing No.						
										Checked	TL	Approved	SYC	209506/SBB/6503			
				A	FIRST ISSUE				06/12	Scale		AS SHOWN on A1		Status	DRAFT	Rev.	A
				Rev.	Description				Date								



PLANTING SCHEDULE:					
Abbreviation	SCIENTIFIC NAME	CHINESE NAME	SPACING (mm)	SIZE (HTxSPREAD)mm	REMARKS
Tree Planting:					
CIN. CAM.	Cinnamomum camphora	樟	AS SHOWN	STANDARD	BALL & BURLAP
VIB. ODO.	Viburnum odoratissimum	珊瑚樹	AS SHOWN	STANDARD	BALL & BURLAP
LAG. SPE.	Lagerstroemia speciosa	大花紫薇	AS SHOWN	STANDARD	BALL & BURLAP
PLU. RUB.	Plumeria rubra	雞蛋花	AS SHOWN	STANDARD	BALL & BURLAP
TER. MAN.	Terminalia mantaly	細葉欖仁	AS SHOWN	STANDARD	BALL & BURLAP
Shrubs Planting:					
ALL. CAT.	Allamanda cathartica	軟枝黃蟬	400	500x400	POTTED
HIB. ROS.	Hibiscus rosa-sinensis	大紅花	400	500x400	POTTED
IXO. COC.	Ixora coccinea	龍船花 (橙紅)	300	400x300	POTTED
DUR. ERE.	Duranta erecta	假連翹	300	400x300	POTTED
SCH. ARB.	Schefflera arboricola	八葉木	400	500x400	POTTED
Climber Planting:					
FIC. PUM.	Ficus Pumila	薛荔	800	MIN. 1000L	POTTED, MIN. 3 SHOOT PER PLANT
Low Shrubs/Groundcover for edge planting:					
SET. PUR.	Setcreasea purpurea	紫鸚鵡草	150	250x300	POTTED
OPH. JAP.	Ophiopogon japonicus	麥冬/沿階草	150	200x200	POTTED
RHO. DIS.	Rhoeo discolor	紫萼萬年青/蚌花	150	250x200	POTTED
ALP. ZER.	Alpinia zerumbet cv variegata	花葉薑山薑	250	350x300	POTTED
Transplanted Tree:					
FIC. VIR.	Ficus virens	大葉榕	5m	REFER TRANSPLANT TREE SCHEDULE	DWG. CBL/6014

- NOTES:
- PAVING PATTERN AS SHOWN IN THE DRAWINGS ARE SUGGESTED FOR DESIGN CONSIDERATION ONLY.
 - LIGHTING DESIGN AS SHOWN IN THE DRAWINGS ARE SUGGESTED FOR DESIGN CONSIDERATION/INDICATIVE ONLY. LIGHTING DESIGN REFERS TO REPORT ON LIGHTING SUBMISSION.
 - LIGHTING IN RAILING ON THE BRIDGE REFERS TO DRAWING NO. 209506/SBB/3502.
 - 'P.A.' REFERS TO PLANTING AREA PROPOSED ON THE BRIDGE WITHIN 850mm WIDE GREEN ZONE.
 - WATER POINT LOCATION REFERS TO DRAWING NO. 209506/SBR/8151.

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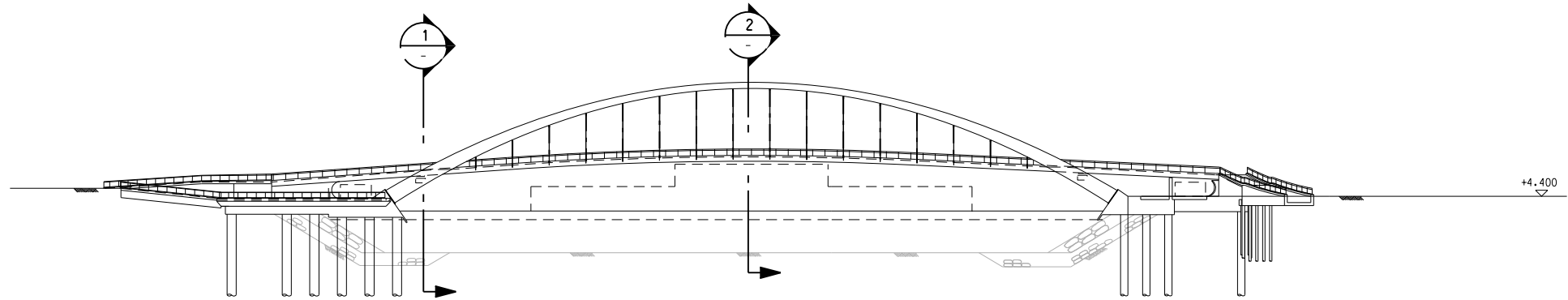
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Job Title
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Cross Bay Link, Tseung Kwan O – Investigation**

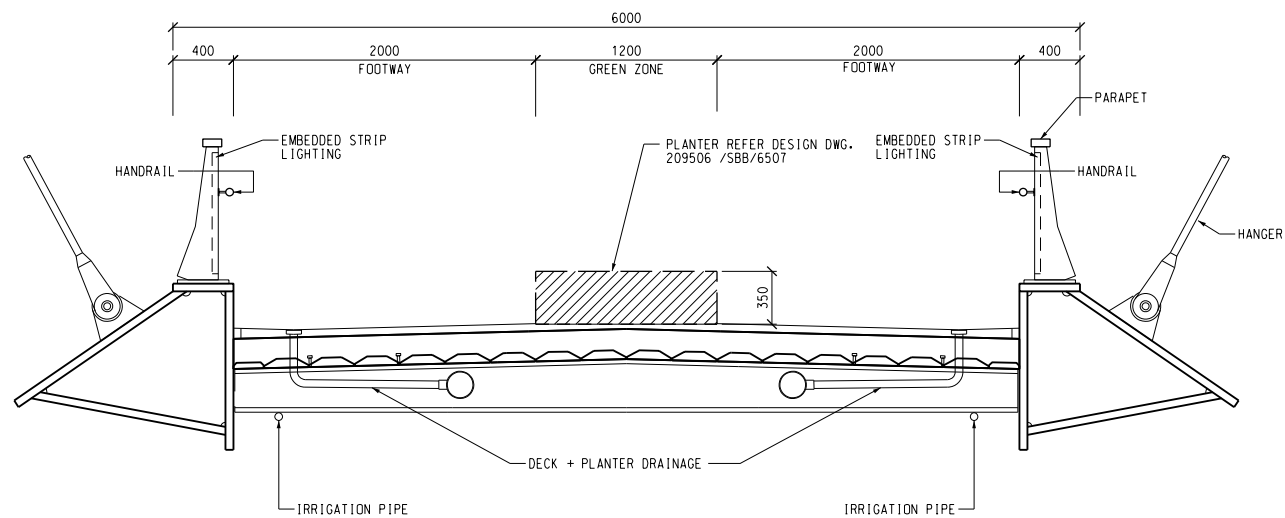
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GENERAL LAYOUT PLAN
(SHEET 4 OF 4)**

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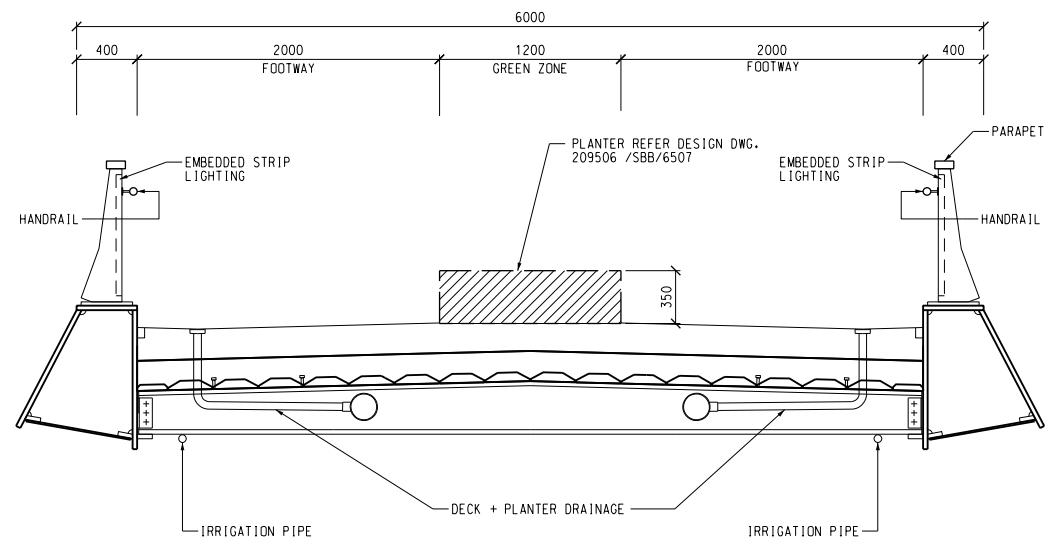
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 2. LANDSCAPE GENERAL LAYOUT PLAN REFER TO DRAWING NO. 209506 /SBB/6503, 6504 & 6507.
 3. BRIDGE DECK DESIGN SECTION REFER TO DRAWING NO. 209506 /SBB/3501.
 4. WATER POINT LOCATION REFERS TO DRAWING NO. 209506 /SBR/8151.



ELEVATION
1:500



SECTION 1
SCALE 1:25



SECTION 2
SCALE 1:25

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Job Title

Agreement No. CE 43/2008(HY)
Cross Bay Link, Tseung Kwan O – Investigation

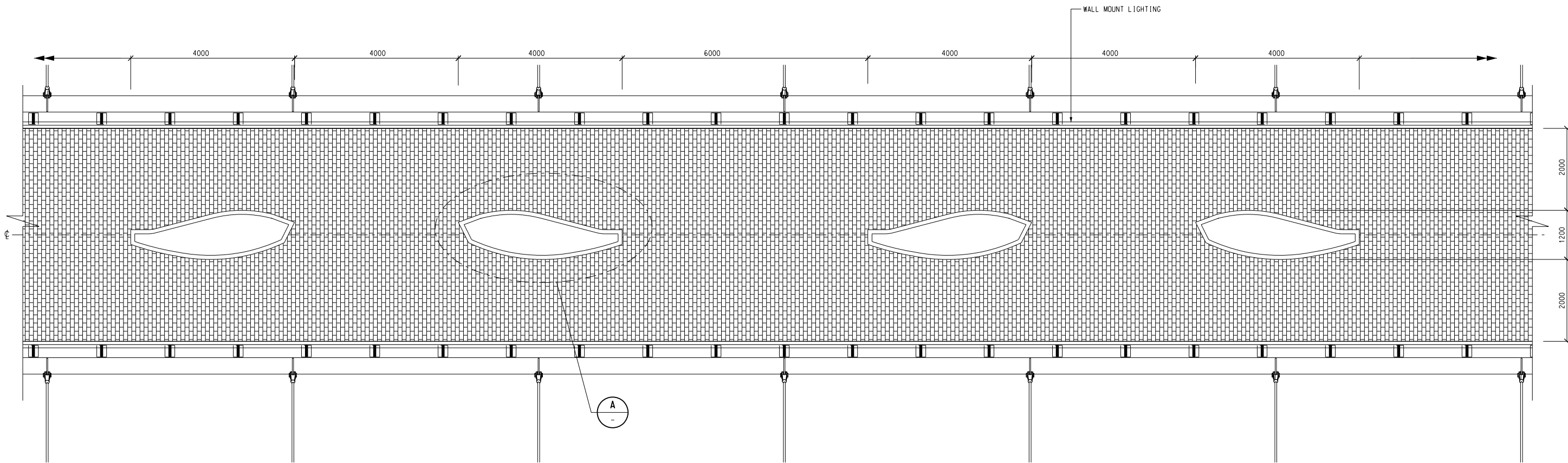
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SOUTHERN BRIDGE LANDSCAPE
SECTION

Rev.	Description	Date
A	FIRST ISSUE	06/12

Drawn	MAN	Date	05/12
Checked	TL	Approved	SYC
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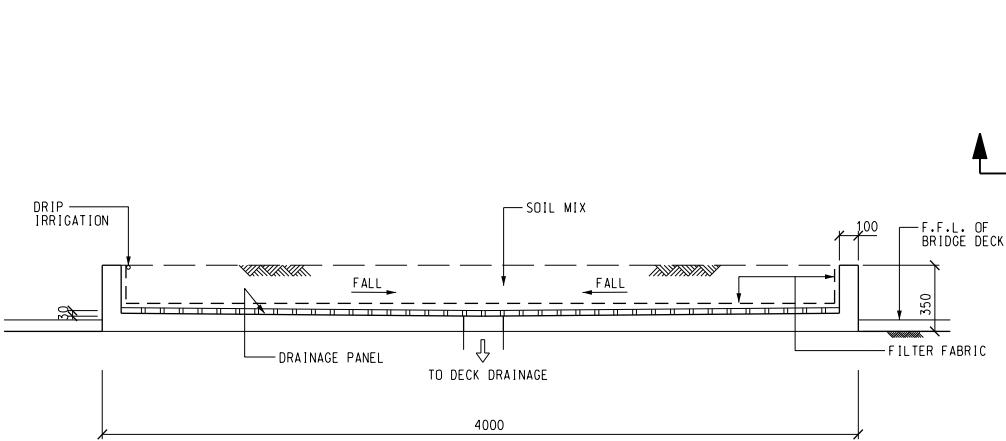
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Rev.	A		



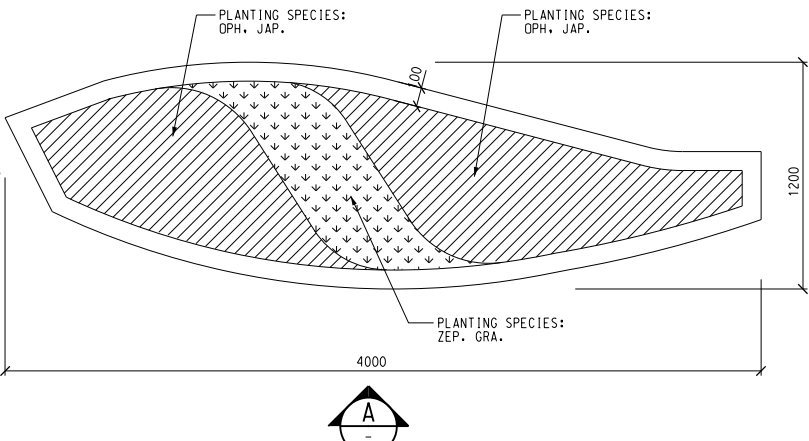
PLANTING SCHEDULE:					
Abbreviation	SCIENTIFIC NAME	CHINESE NAME	SPACING (mm)	SIZE (HTxSPREAD)mm	REMARKS
Low Shrubs / Groundcover Planting on the bridge:					
ZEP. GRA.	Zephyranthes grandiflora	韭蓮/風雨花	150	200x200	POTTED
OPH. JAP.	Ophiopogon Japonicus	沿階草	150	200x200	POTTED

PARTIAL PLAN
1:50

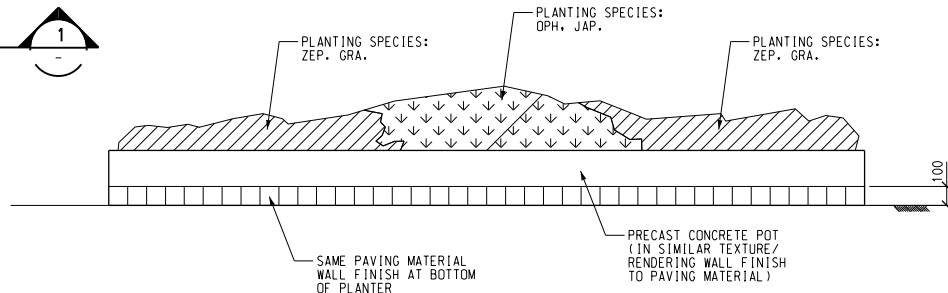
- NOTES:
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 - LIGHTING IN RAILING ON THE BRIDGE REFERS TO DRAWING NO. 209506/SBB/3502.
 - 'P.A.' REFERS TO PLANTING AREA PROPOSED ON THE BRIDGE WITHIN 850mm WIDE GREEN ZONE.
 - WATER POINT LOCATION REFERS TO DRAWING NO. 209506/SBR/8151.



PLANTER
SECTION 1
SCALE 1:20



PLANTER TOP VIEW
DETAIL A
SCALE 1:20



ELEVATION A
1:20

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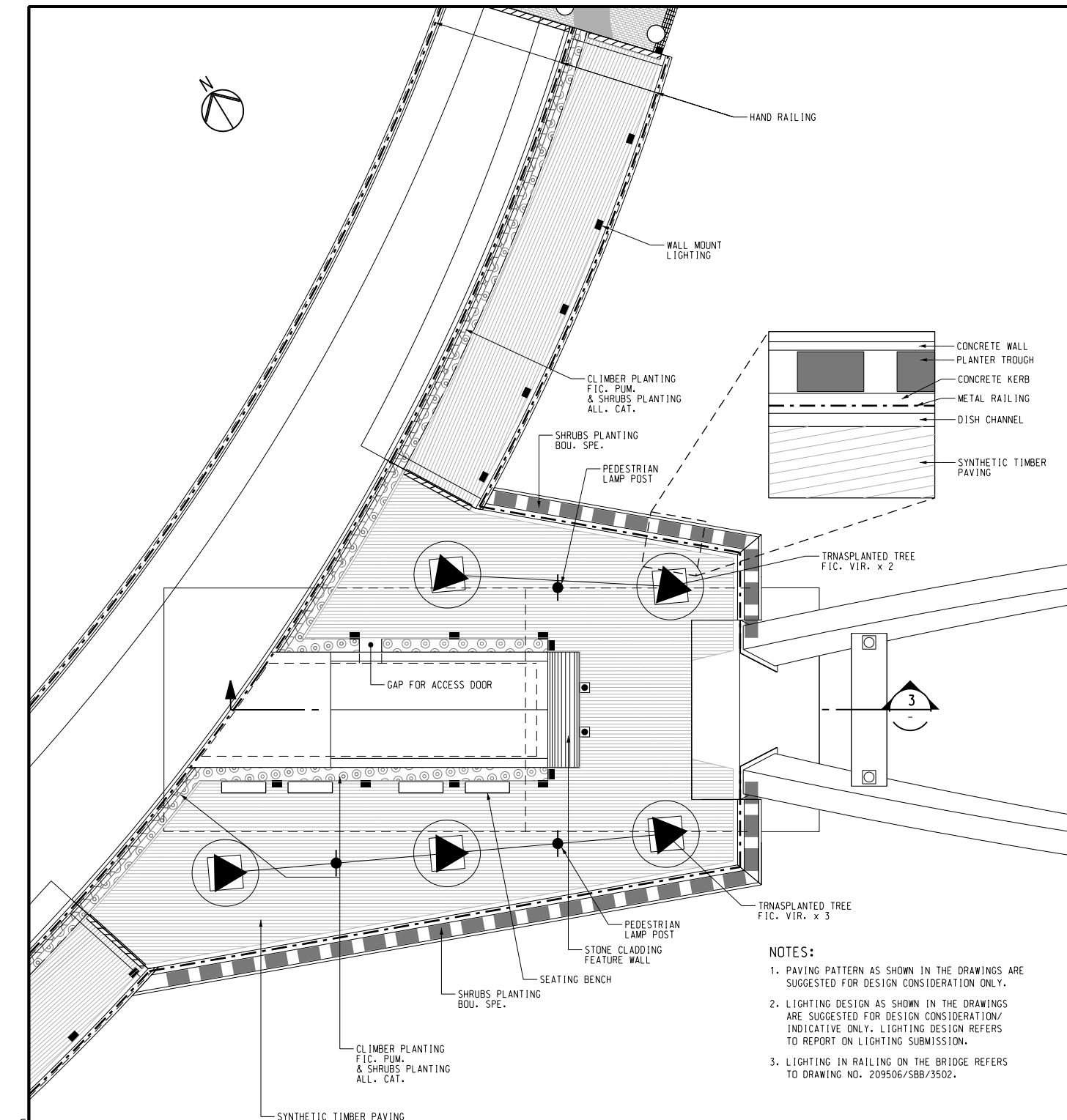
Job Title
**Agreement No. CE 43/2008(HY)
Cross Bay Link, Tseung Kwan O – Investigation**

Drawing Title
**SOUTHERN BRIDGE LANDSCAPE
PARTIAL PLAN**

Rev.	Description	Date
A	FIRST ISSUE	06/12

Drawn	MAN	Date	05/12
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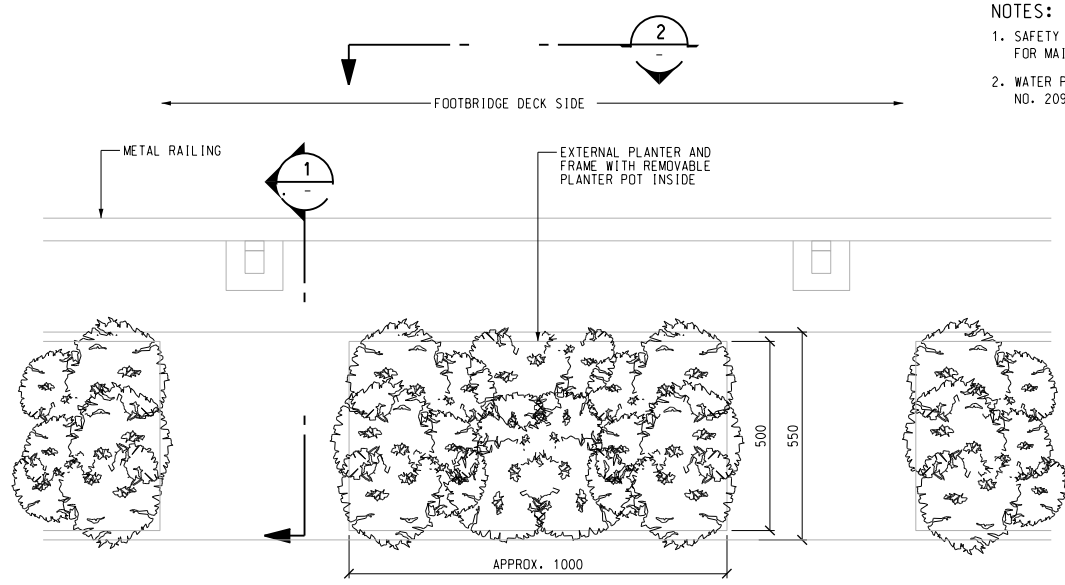
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PLAN
(WEST ABUTMENT)
1:125

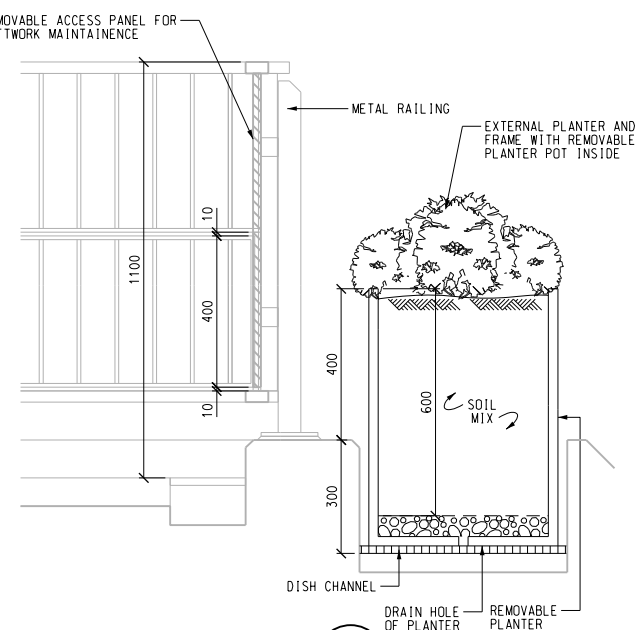
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 3. LIGHTING IN RAILING ON THE BRIDGE REFERS TO DRAWING NO. 209506/SBB/3502.

PLANTING SCHEDULE:					
Abbreviation	SCIENTIFIC NAME	CHINESE NAME	SPACING (mm)	SIZE (HTxSPREAD)mm	REMARKS
Shrubs Planting:					
ALL. CAT.	Allamanda cathartica	軟枝黃蟬	400	500x400	POTTED
BOU. SPE.	Bougainvillea spectabilis cv variegata	花葉勒杜鵑	400	250HT, MIN. 1000L	POTTED, MIN. 3 SHOOT PER PLANT
SCH. ARB.	Schefflera arboricola	八葉木	400	500x400	POTTED
Climber Planting:					
FIC. PUM.	Ficus Pumila	薊蘿	AS SHOWN	MIN. 1000L	POTTED, MIN. 3 SHOOT PER PLANT
Transplanted Tree:					
FIC. VIR.	Ficus virens	大葉榕	5m	REFER TRANSPLANT TREE SCHEDULE	DWG. CBL/6014

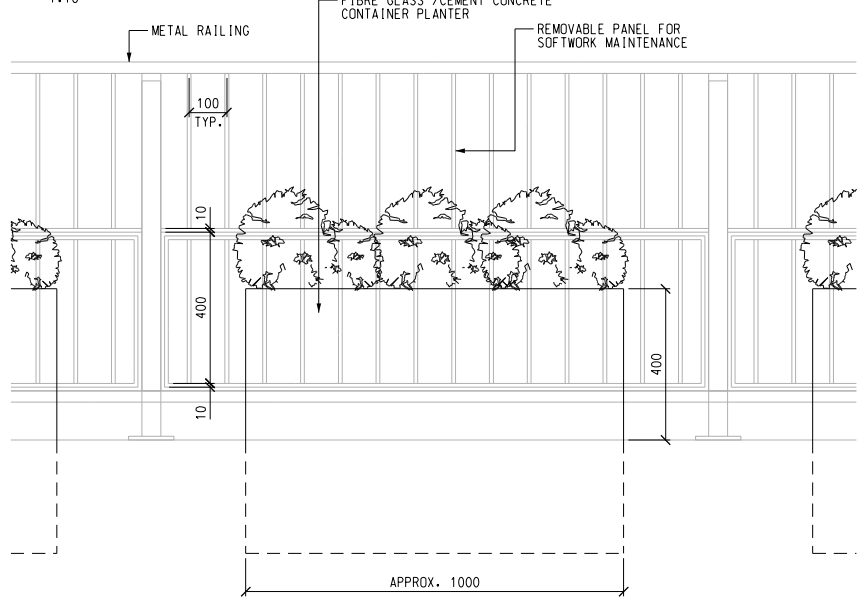


PLAN
1:10

- NOTES:
1. SAFETY HARNESS CAN BE FIXED TO METAL RAILING FOR MAINTENANCE PURPOSE.
 2. WATER POINT LOCATION REFERS TO DRAWING NO. 209506/SBR/8151.



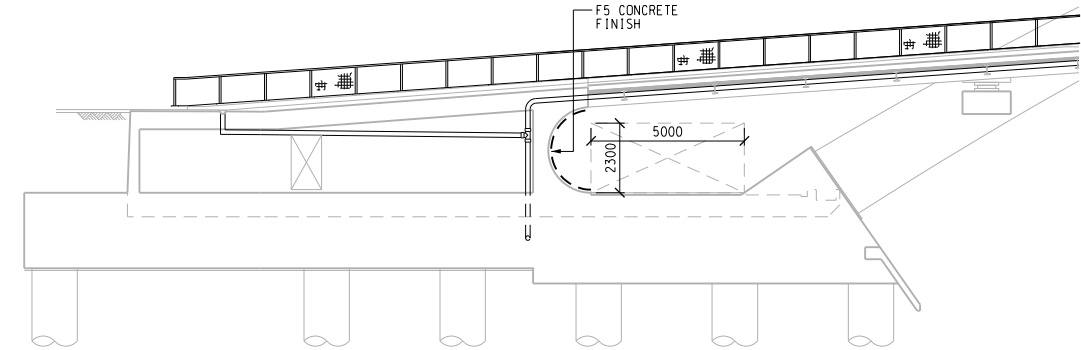
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SCALE 1:10



SECTION 2
SCALE 1:10

NEW STRUCTURE PLANTING PLATFORM WITH
PLANTER BOXES OUTSIDE METAL RAILING

FRONT ELEVATION



SECTION 3
SCALE 1:125

WEST ABUTMENT

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File name : 02/06/2012



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Civil Engineering and
Development Department



Job Title
**Agreement No. CE 43/2008(HY)
Cross Bay Link, Tseung Kwan O – Investigation**

Drawing Title
**SOUTHERN BRIDGE LANDSCAPE
VIEWING PLATFORM LAYOUT PLAN**

Drawn		MAN	Date	05/12	Drawing No.		209506/SBB/6508	
Checked		TL	Approved	SYC	Status		DRAFT	
Rev.		Description		Date	Scale		AS SHOWN on A1	
A		FIRST ISSUE		06/12	Rev.		A	

Appendix C

Table of Responses to
Comments

Comments received:	Responses:
<p>(1) From Chairman, ACABAS, Highways Department</p> <p>Date: 7 May 2012</p> <p>Ref: (32NR) in HyD LU/14-1/2</p> <p><u>Advisory Committee on the Appearance of Bridges and Associated Structures</u> <u>Minutes of the 339th Meeting</u></p> <p>The Committee had the following comments:</p> <p><u>Primary comment:</u></p> <ol style="list-style-type: none">1. The Committee commented that the revised planter design on the new footbridges still appeared as retrofitted element. Project team was required to review the planter layout for more integrated design and update the drawings accordingly.2. The Committee commented that other options of the planter location should be explored. Project team was required to review the planter layout and explore other options.3. Project team was required to simplify the design for paving pattern. The Committee commented that the colour should not be too pale as the sunlight reflection might be a problem in sunny days. Project team was required to review the colour scheme and design for the paving pattern.4. The Committee commented that other options of the demarcation treatment at cycle park area should be explored. Project team was required to review the layout of cycle park area and include other details requiring cyclists to dismount at the entrance to the footbridge area. <p>CONCLUSION: Based on the information submitted, the Committee considered the submission <u>acceptable in principle</u>. Further submission and presentation to address all comments by the Project team would be required.</p>	<p>Planter design and planter layout have been reviewed and revised in order to provide an integrated design with the bridge and the deck as per comment. Wavy & asymmetric shaped planter provides a natural and coherent design with the surrounding and paving design. Please refer to attached revised photomontages and drawings.</p> <p>Another option of planter location has been provided as per comment. Revised planters have been relocated from the edge of bridge to the centre of it in order to avoid people climbing over the bridge. Revised wavy & asymmetric shaped planters have been arranged in order to create natural repeated pattern and rhythm to enhance visual interest with tidiness for the deck of footbridge, evergreen colourful low shrubs and groundcover are proposed for greening and beautification of the deck.</p> <p>Paving pattern has been simplified to provide a natural paving design and transition between two different paving patterns of both landings of the bridge. Paving colour have been reviewed and designed in same colour palette with two different paving of adjacent landscape areas. Paving colour has been chosen to avoid sunlight reflection problem in sunny days.</p> <p>Hand railing of the cycle park area has been changed to linear planter in order to provide more greening and natural soft landscape planting buffer between footpath and cycle parking space to dismount cyclists riding towards the footbridge and footpath of promenade.</p>

BY HAND

Secretary of ACABAS
10th Floor, Tower 1, Cheung Sha Wan Plaza
833 Cheung Sha Wan Road
Lai Chi Kok, Kowloon

Attn: Mrs Nicolson, Sr Landscape Architect 3

5 September 2011

Dear Madam

Agreement No. CE 43/2008 (HY)
Cross Bay Link, Tseung Kwan O - Investigation
Submission Ref. 218: Cross Bay Link ACABAS Submission

Level 5 Festival Walk
80 Tat Chee Avenue
Kowloon Tong
Kowloon
Hong Kong
t +852 25283031
d +852 22683536
f +852 22683955

siu-yuen.chan@arup.com
www.arup.com

Further to our earlier ACABAS submission at the 328th ACABAS meeting held on 17th May 2011, we attach ten copies of the Cross Bay Link ACABAS submission for presentation at the forthcoming ACABAS meeting to be held on the **20th September 2011**.

Should you have any queries then please do not hesitate to contact our Martin Hooton on tel. 3447 6313.

Yours faithfully



S Y Chan
Project Manager

Enc 209506-REP-109-02

cc CE/NTE1, CEDD - Mr W M Wong (w/e) (3 copies - By hand)



土木工程拓展署
Civil Engineering and
Development Department

新界東拓展處
New Territories East
Development Office

Agreement No. CE 43/2008 (HY)
Cross Bay Link, Tseung Kwan O -
Investigation

Cross Bay Link ACABAS Submission
(Ref: 218)

September 2011



Civil Engineering and Development
Department

**Agreement No. CE43/2008(HY),
Cross Bay Link, Tseung Kwan O -
Investigation**

Cross Bay Link ACABAS
Submission

209506-REP-109-02




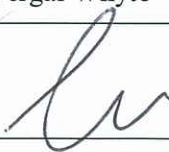
Issue 3 | September 2011

Ove Arup & Partners Hong Kong Ltd
Level 5 Festival Walk
80 Tat Chee Avenue
Kowloon Tong
Kowloon
Hong Kong
www.arup.com

This report takes into account the particular
instructions and requirements of our client.
It is not intended for and should not be relied
upon by any third party and no responsibility is
undertaken to any third party.

Job number 209506



Job title		Agreement No. CE43/2008(HY), Cross Bay Link, Tsueng Kwan O - Investigation		Job number 209506	
Document title		Cross Bay Link ACABAS Submission		File reference 4.17	
Document ref		209506-REP-109-02			
Revision	Date	Filename			
00	31/03/11	Description	First issue (for CEDD comment only)		
			Prepared by	Checked by	Approved by
		Name	Martin Hooton	Matt Carter	Fergal Whyte
		Signature			
01	29/04/11	Filename	CBL ACABAS Submission – draft01		
		Description	2 nd issue		
			Prepared by	Checked by	Approved by
		Name	Martin Hooton	Matt Carter	Fergal Whyte
02	05/09/11	Filename	CBL ACABAS Submission – draft01		
		Description	3 rd issue		
			Prepared by	Checked by	Approved by
		Name	Martin Hooton	Matt Carter	Fergal Whyte
		Signature			
		Filename			
		Description			
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		Name			
		Signature			
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1 Introduction

1.1 Background

The “Feasibility Study for Further Development of Tseung Kwan O (TKO)”, which was commissioned by the Civil Engineering and Development Department (CEDD) in July 2002 and substantially completed in 2005, recommended a new external road network, comprising of the Cross Bay Link (CBL) and Tseung Kwan O – Lam Tin Tunnel (TKO-LTT).

CBL is a dual two-lane carriageway of approximately 1.8 km long across Junk Bay, mainly on viaduct, and connecting TKO-LTT to Wan Po Road at the south eastern part of TKO. The viaduct section of CBL has a cycle track and a footpath in addition to the road carriageway.

The proposed CBL is in relatively close proximity to the proposed Northern Bridge (NB) and Southern Bridge (SB), which will be located at the Eastern Channel of TKO. As suggested by the Advisory Committee on the Appearance of Bridges and Associated Structures (ACABAS) in the 251st ACABAS meeting held on 21st December 2004, it is necessary to match the design of CBL, SB and NB in respect of their aesthetic appearance and structural form.

The CBL project is a designated project under Schedule 2 of the EIA Ordinance. An EIA Study Brief was issued by the Director of Environmental Protection on 26th August 2008 to CEDD for an EIA Study of the CBL project.

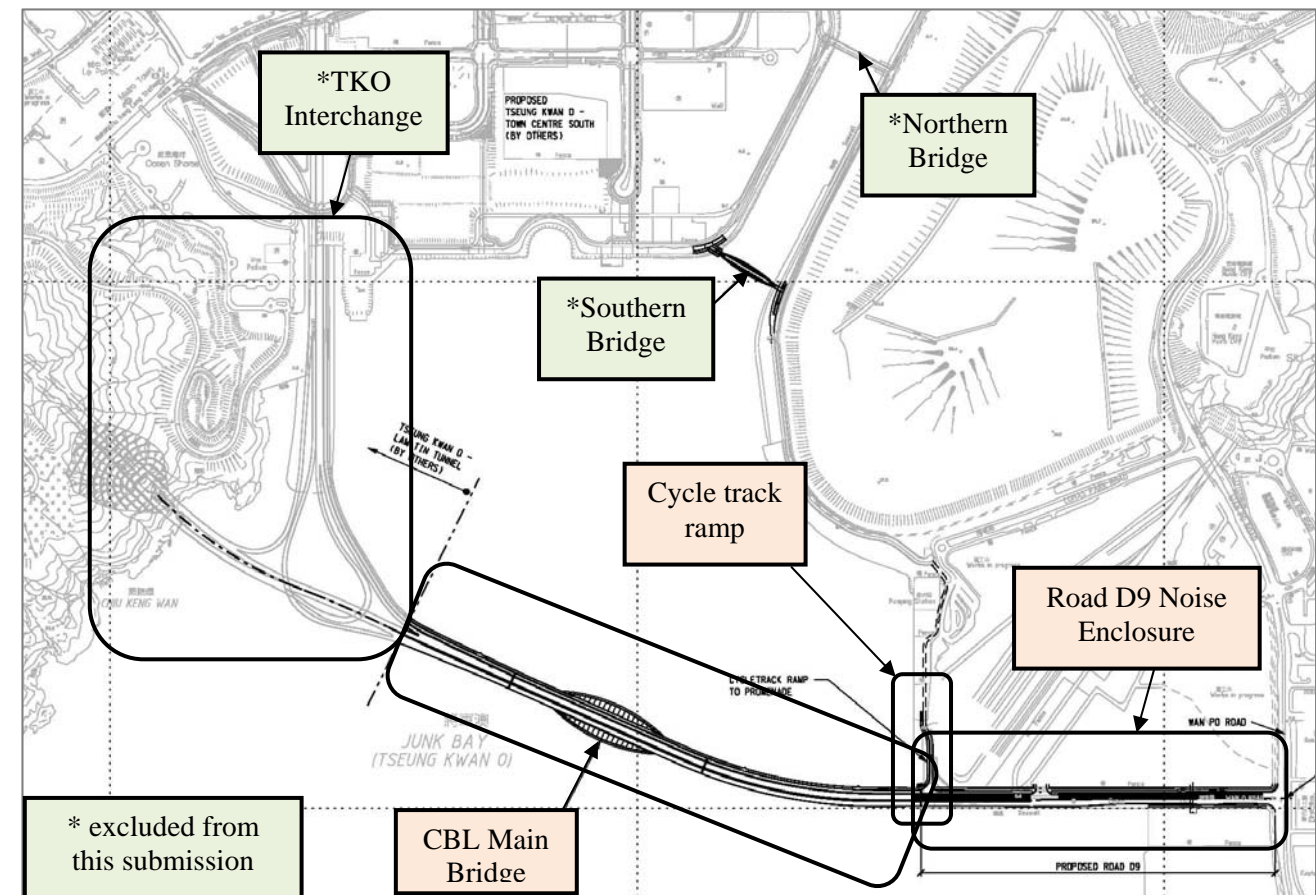
On 9th March 2009, CEDD commissioned Ove Arup & Partners Hong Kong Ltd as their Consultant to undertake the Investigation Assignment of Cross Bay Link, Tseung Kwan O under Agreement No. CE 43/2008 (HY) with commencement date of 16th March 2009.

1.2 The Assignment

The outlined scope of the assignment includes:

- A dual 2-lane carriageway of approximately 1.8 km long across Junk Bay, mainly on viaduct, with the associated slip roads and junction improvements;
- Associated civil, structural, marine, ship impact protection, geotechnical, landscape, fire services installation, lighting (including road lighting and architectural lighting), traffic control and surveillance system, signing, traffic aids, electrical & mechanical, and environmental protection and mitigation works, and other related works;
- The alternative design options of the SB which are compatible with that for the CBL in terms of structural form, aesthetic design and appearance, taking into account the site constraints and with reference to the information provided by HyD, whom are the work agents for the SB.

The general layout of the Project is shown.



Site Plan

1.3 Objective of this Submission

The purpose of this submission is for the aesthetic review of the preliminary design of the proposed Cross Bay Link and the Road D9 noise enclosure.

Cross Bay Link was previously presented to ACABAS as two options for the feature bridge on the 14th May 2010. Since then, the Eternity Arch was confirmed as the preferred option for CBL. The Eternity Arch has two relatively low-profile outwardly leaning steel arches. The key feature is that the main piers are carefully sculpted to visually join together the two arches at their bases and thus create the never ending double loop.

Connecting to the Cross Bay Link is the Tsung Kwan O Interchange, which is being developed under a separate consultancy. The interchange has been included in our visualisations for completeness; however the consultants for the interchange will be making a separate submission to ACABAS.

The report has been split into three sections for easier reference:

- Section 2 presents the CBL main bridge including the feature bridge and the approach viaducts.
- Section 3 presents the cycle track ramp area including the down ramp to the promenade, the lift and staircase, and the general abutment area.
- Section 4 presents the noise enclosure along Road D9.

1.4 Previous ACABAS Submissions

Meeting	ACABAS Comment	Response to Comments
<u>251st Meeting</u> 21 st December, 2004	Cross Bay Link, Southern Bridge and Northern Bridge should have matching design in terms of aesthetic appearance and structural form.	The bridges around Junk Bay have been presented as a family of arch bridges with the arch member rising upwards when viewed looking southwards from TKO town centre. A visualisation has been prepared showing this effect.
<u>315th Meeting</u> 14 th May, 2010	Project team shall take into consideration the following through preparation of photomontage in their further selection process:- a. View from Chai Wan b. Views showing all 3 proposed bridges (i.e. CBL, Southern Bridge and Northern Bridge) c. View show the image of TKO Lam Tin Tunnel would facilitate the review.	New visualisations have been prepared showing the view of all three bridges and the view from Chai Wan. Where relevant, the TKO interchange and tunnel portal have been added to the visualisations. These works are shown for completeness, but are subject to a separate ACABAS submission under a different consultancy.
	For option 5, refinement would be required in order to reduce the bulkiness of the proposed arch.	Section 5.1 discusses the options to reduce the bulkiness of the arches at deck level.
<u>328th Meeting</u> 14 th June, 2011	Full comments and responses are provided in the Appendix C.	

2 Cross Bay Link Main Bridge

2.1 General Location

The proposed CBL is a dual two lane carriageway running east-west across Junk Bay to connect the proposed TKO-LTT in the west and Area 86 developments in the east. CBL will form a vital alternative route between southeast TKO and Kowloon via TKO-LTT, by-passing TKO town centre.

CBL will be a prominent feature seen by the developments around Junk Bay including Area 86 and TKO town centre south, the latter being one of the locations where the next phase of development in TKO will take place.

Junk Bay is a quiet bay located to the east of Victoria Harbour. In addition to CBL two new footbridges located at the Eastern Channel, Southern Bridge (SB) and Northern Bridge (NB), are being planned. Since CBL is in close proximity to SB and NB, the three bridges could be viewed as a family of bridges and the coherency in their design will greatly enhance the townscape of the area.

The investigation assignment provided an opportunity to develop a feature bridge design for CBL and to become a landmark for TKO.

2.2 Architectural Theme

The concept for the Eternity Arch is to create an object with a strong symbolic identity. The symbol of infinity is a well known expression of eternity or never-ending, like the proposed cycle track around Junk Bay. The cables attaching the deck to the arch will be invisible to distant observers, therefore the arch leaps across the channel with an energetic movement frozen in time, which reinforces the concept of eternity. The continuous curved shape of the arch fits in well with the organic shapes of the surrounding hills. The arch is not a high arch yet it still gives the sense of unity and harmony as though it were an extension of the hillside. V-shaped piers are adopted in the approaches to the navigation bridge in sympathy with the base of the arch to create a continuous aesthetic theme for the entire crossing.

2.3 General Arrangement and Structural Form

The feature navigation span will be a tied arch supported on the inclined main bridge piers. The arch members lean outwards and the hangers support the deck in the plane of the arch. There is a 200m main span which is continuous with two 100m back spans. This option has a single corridor with the deck supported along its outer edges by hangers at 10m spacing. The overall deck width of the navigation span is approximately 38.9m wide and the arches are approximately 70m high above water level. The superstructure of the navigation bridge is of all steel construction.

The approach viaducts are made up of multiple prestressed concrete box girders with a typical span length of 75m and a structural depth of 3.5m. The approach deck width is approximately 36m. The span length gradually reduces to 50m towards the eastern abutment. The structural depth tapers down to 2.5m at the eastern abutment to ensure sufficient headroom over the promenade. This tapering has had the effect of reducing the height of the landing structure at Area 86.

2.4 Landscaping Design

As CBL will be a future landmark and part of a walking and cycling route around Junk Bay, significant greening features are proposed on the bridge deck. The plants and shrubs will be in sealed troughs on the bridge deck. For the concrete viaducts the troughs will form an integral part of the structure. On the steel deck, access for inspection is required to all parts and so the planters will need to be removable.



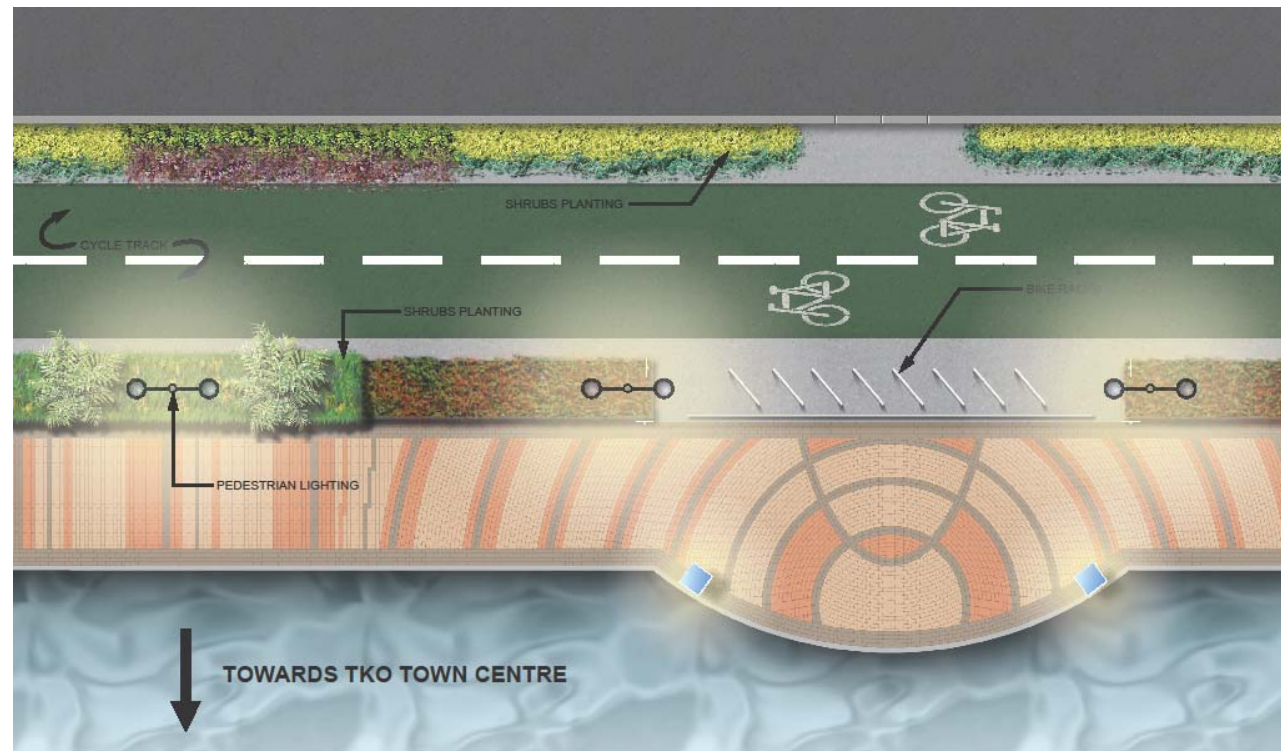
Bridge deck section with indicative greening features

2.5 Viewing Platforms

There has been a desire on this project, from the public consultation exercise, to provide balconies, comprising of a local widening of the deck. The purpose of these balconies is to:

- Break up the long linear nature of the pedestrian corridor by creating nodes/focal points.
- To create added interest for pedestrians over the 1km long crossing.
- To permit longitudinal views along the elevation of the bridge.
- To provide vantage points for observing activities within Junk Bay.

The viewing platforms are proposed on the approaches at selected pier locations facing towards TKO town centre at footway level.



Plan view of the viewing platform (tile pattern indicative)

At each viewing platform a gap in the central planter is provided. The purpose of these gaps is to:

- Allow emergency services to access the footpath via the doors in the isolation panel.
- Allow bridge maintenance staff to access the deck access hatches from the highway without long detours.
- To create space for cycle racks so that cyclists can rest and enjoy the use of the viewing platform.
- To break up the linearity of the central planter.

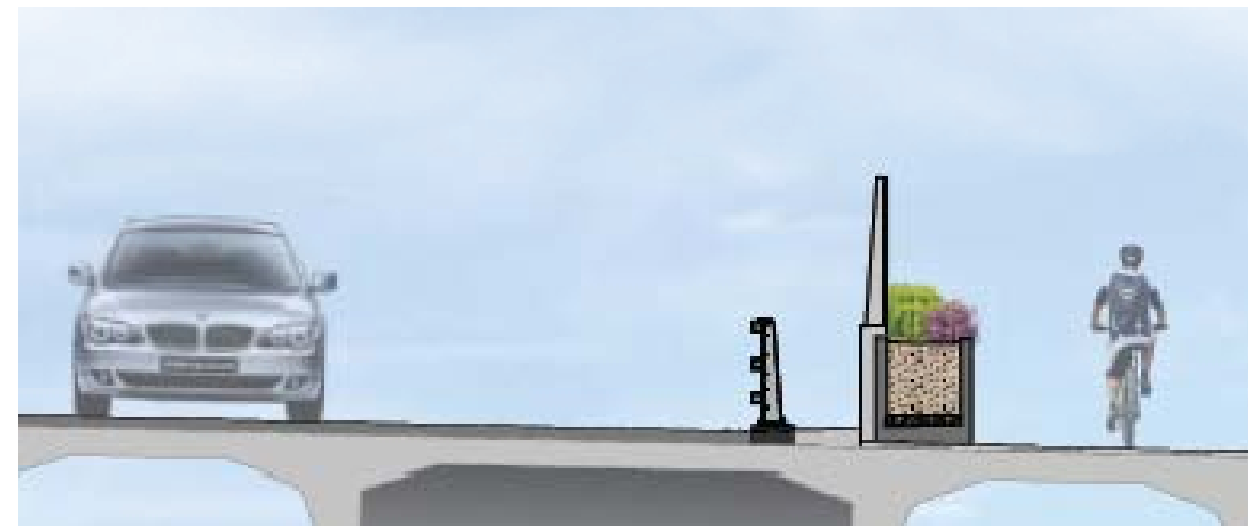
Gaps in the central planter will ultimately create a space where cyclists could get onto the footpath. This presents a potential hazard to pedestrians from cyclists illegally using the footpath. However from a cyclist's point of view, the cycle track is the most desirable place to be cycling because:

- The cycle track is much wider and there are fewer obstacles i.e. no slow moving pedestrians.
- The surfacing of the cycletrack is more suited to cycling.
- The footpath offers no more direct route than the cycletrack.

Nevertheless, “no cycling” signs, railings and bollards are proposed to deter cyclists from using the footpath. No matter what measures are taken, the most determined cyclists will always be able to get onto the footpath. By making the cycle track a better place to cycle, and by providing deterrent features that lets cyclists know that they are doing wrong, then the two facilities can exist side by side.

2.6 Isolation Panel

The cycle/footway is adjacent to a two lane carriageway. Without an isolation panel the experience for pedestrians would be unsettling and vehicle noise would reduce the destination appeal of the bridge to pedestrians. A 2.5m high isolation panel has been provided between the highway and the cycleway to provide separation. The isolation panel is transparent to enhance security on the cycletrack and allow emergency services to see where incidents occur on the cycletrack.



Deck Isolation Panel

2.7 Materials and finishes

- The steel arches will be painted in a white or grey colour to match the grey colour of the concrete support piers.
- Similarly, the steel deck will be painted in a white or grey colour to match the grey colour of the concrete approach viaduct decks.
- The hangers and pedestrian parapets will be in silver/grey colour.
- Exposed piers will be a smooth F4 finish. The surface will be unpainted due to the difficulty of access to the piers over water.
- The cycletrack is surfaced with a high friction coating to provide proper grip to cyclists. Edge strips are provided to keep cyclists away from the edge planters. The cycle track is a “leaf green” colour to match the adjacent contracts.
- The footpath will have a tiled finish with a pattern to match the overall aesthetic master plan. Indicative colours and patterns are shown in section 2.9.
- The abutment will have an F5 finish and painted to provide a consistent appearance.

2.8 Drainage

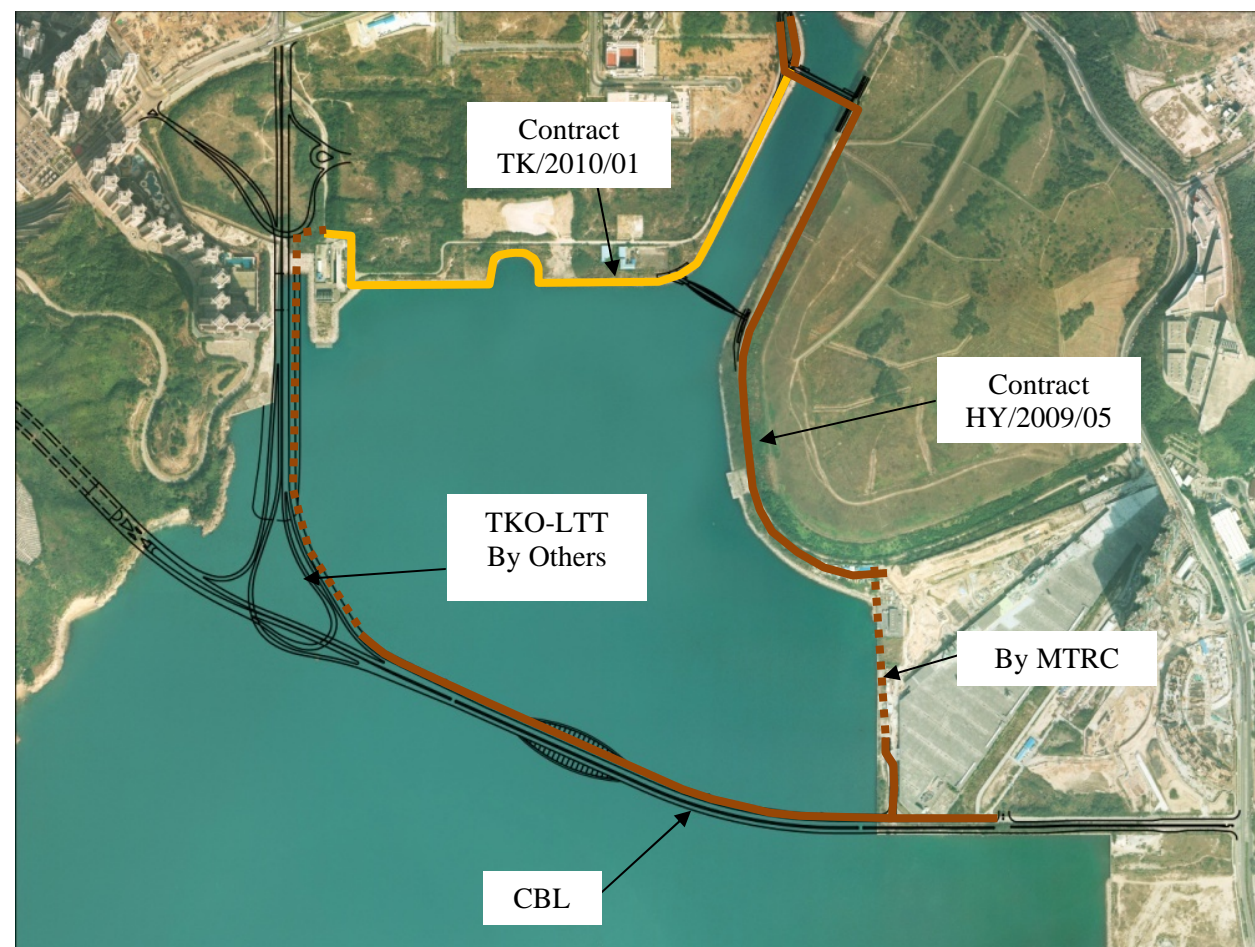
A highway deck drainage system will be provided to serve the Cross Bay Link. For the sections of the bridge over water, runoff will be collected by road side gullies at intervals of 5 to 10 metres to carrier drains with diameter ranging from 250 to 500mm which are located within the box girders. Downpipes of 150 to 600mm diameter inside the piers will be used to directly discharge the runoff to Junk Bay, subject to final approval from relevant departments.

The cycletrack and footpath will be provided with a drainage system that collects the water to the highway drainage system. Free draining surfaces are provided to the arch and abutments. To prevent unsightly water staining on concrete, drip grooves shall be provided where necessary.

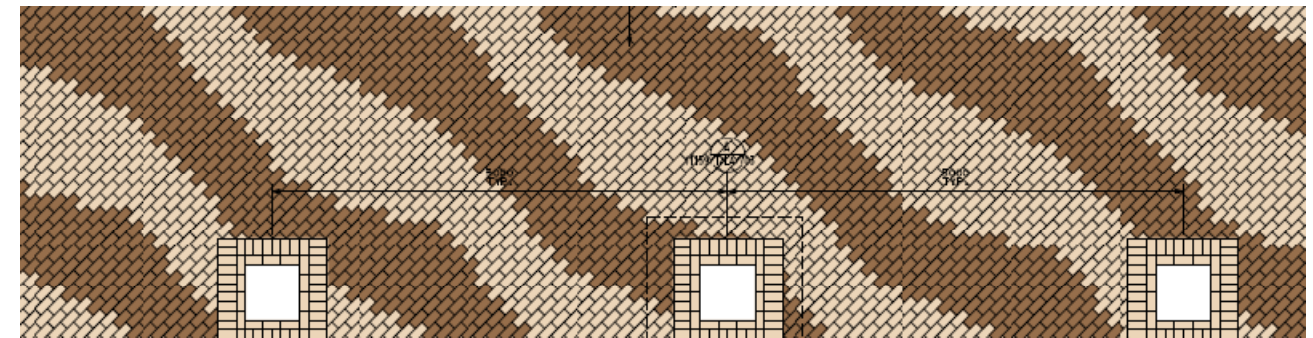
2.9 Paving Pattern

The footpath of Cross Bay Link will form part of a walking loop around the shores of Junk Bay. There are a number of interfacing projects that form part of this loop with implementation programmes ahead of Cross Bay Link. The proposed paving pattern for CBL takes into consideration the adjacent tiling pattern of Contract HY/2009/05. Adjustments are made to the tiling pattern to take account of the circular shape of the CBL balcony and to make a focal point in the pattern at these nodes of interest.

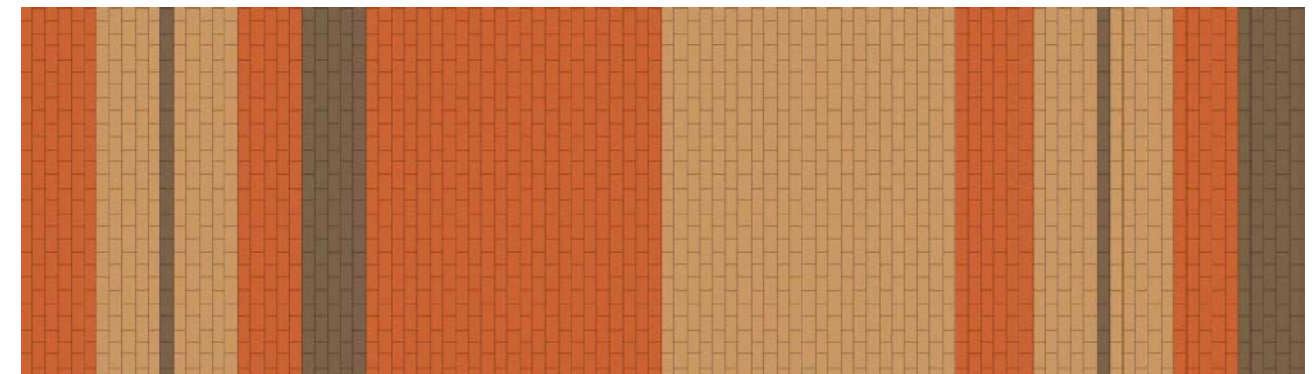
At this stage all paving patterns are indicative and are subject to ongoing development during detailed design where a separate ACABAS submission will be made.



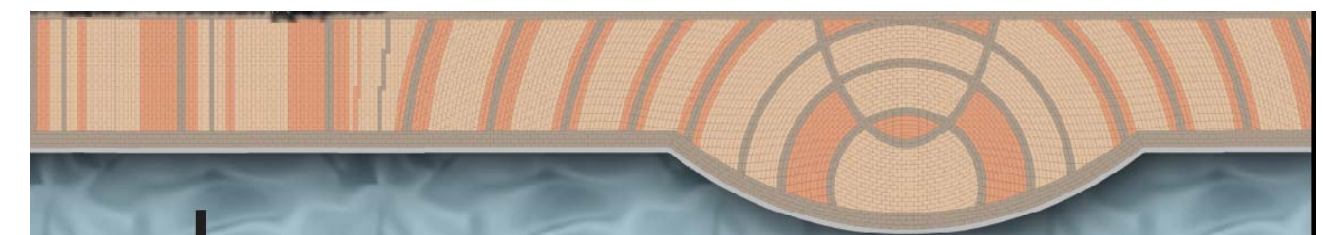
Junk Bay Paving Patterns



Paving pattern for Contract No. TK/2010/01, Cycle Tracks and Associated Facilities along the seafront at Tseung Kwan O Town Centre South



Paving pattern for Contract No. HY/2009/05, Tseung Kwan O Further Development Design and Build of Infrastructure Works for TKO 1 Landfill Site (Phase1)



Linear Pattern Transition Circular Pattern
← similar to Contract HY/2009/05 →
Indicative paving pattern for Cross Bay Link

2.10 Architectural Lighting

The principles of the architectural lighting are identified in this report, but details shall be developed during the course of the project and with consultation with the relevant departments.

The Cross Bay Link will be visible from a distance at various directions within the bay; i.e. by residents within the high rise apartments, as well as by visitors of the bay side waterfronts. These ‘viewers’ will experience the Cross Bay Link in its full glory: they have an open view of the Central Arches, as well as the piers - lifting the roadway deck up for boats leading towards the Arches.

The feature architectural lighting scheme needs to cater for aesthetically pleasing effects for both viewing perspectives: for the remote onlookers around the bay looking at the CBL from the outside, as well as drivers and pedestrians crossing the bridge that experience the bridge from the deck.

To cater for both, the scheme will incorporate lighting principles that will allow for the outer faces of the arches to be lit up, as well as for the faces visible from within to be illuminated.

2.11 Design Themes

The following themes are interpretations of the main features of the bridge to guide the design development of the lighting scheme.

- Theme 1 - “*Focus*” - The Eternity arches will be the focal point of the architectural lighting scheme; they will be considered as the central pieces on “stage”, or to be the pearl in the oyster. The lighting scheme will emphasize “Focus” by applying the strongest feature lighting elements to this core.
- Theme 2 - “*Connectivity*” - From a distance, the Eternity Arch can be interpreted to form a loop expressing the idea of infinity, eternity or continuous connectivity; for instance between east and west, the mainland and the many islands of Hong Kong, between the inhabitants and its visitors, between its high-tech developers and its heritage craftsmen. The loop emphasizes this continuous meeting of minds, ideas, ambitions, cultures, technologies and businesses. The lighting scheme will emphasize the merger of the two piers into the bridge structure, and the continuous loop of the Eternity arches as a metaphorical expression of this theme.
- Theme 3 - “*Prosperity*” - The architectural lighting scheme will also celebrate Hong Kong’s continuous success, being a flourishing and thriving economy, and radiate good fortune for the city in the future. The lighting scheme will express this thought by allowing for a degree of sparkle, of excitement at certain times.

2.12 Architectural Lighting Concept

The feature lighting scheme will exist out of two main principles: “Mood Glow” and “Festivity Sparkle”



Lighting Schemes - Mood Glow (left) and Festive Sparkle (right)

- Principle 1- Mood Glow

The Cross Bay Link will be visible at night because of the functional (road) lighting masts, positioned at regular spacing along the deck.

To allow for a more atmospheric visual image of the Cross Bay Link, the Mood Glow lighting principle is introduced. This principle will allow for a more mysterious presence of the CBL, with the arches and V-shaped piers standing out.

This mysterious effect is achieved by controlled projection of coloured light onto the internal faces of the arches and V-shaped piers. Due to the three-dimensionality of the piers and arches, these internal faces seem to appear and disappear depending on the location of the distant viewer. The coloured projected light on selective surfaces will enhance the 3-dimension modelling of the bridge.

A car driver or pedestrian passing the bridge will experience the arches from within; they will be briefly embraced when passing by. This effect will be strengthened with coloured projected light.

The Mood Glow principle will also create soft reflections onto the water surface, which will allow the visual impact of the Eternity Arch to be further accentuated. Refer to Figure 1 in Appendix B.

- Principle 2- Festivity Sparkle

The initial Mood Glow principle can be reinvigorated by means of LED modules located on the outer faces of the arches. These luminaries will allow for a strong, sparkling effect for onlookers at a distance, complemented by a generous halo of light onto the outer surface of the spine. Refer to Figure 2 in appendix B.

2.13 Lighting Scenarios

The two dynamic lighting principles are introduced - Mood Glow and Festivity Sparkle - can be controlled and combined in various ways. In this section, three scenarios are suggested that connect to the themes of eternity, connectivity and prosperity as described below. Refer to Figure 3 in Appendix B.

- Scenario 1 - Flow of Cultures

To celebrate successful interaction between various eastern and western cultures represented in Hong Kong. A sequence of contrasting colours flows towards and merges into the eternity arches. Refer to Figure 4 in Appendix B

- Scenario 2 - Flow of Ideas

This will celebrate sprouting, growth and successful implementation of ideas by individuals, collectives or the city of Hong Kong. Each of these will be represented by a colour, which will

gradually appear on the CBL outskirts. It will then flow towards the Eternity Arch where it will be projected at full intensity. Refer to Figure 5 in Appendix B

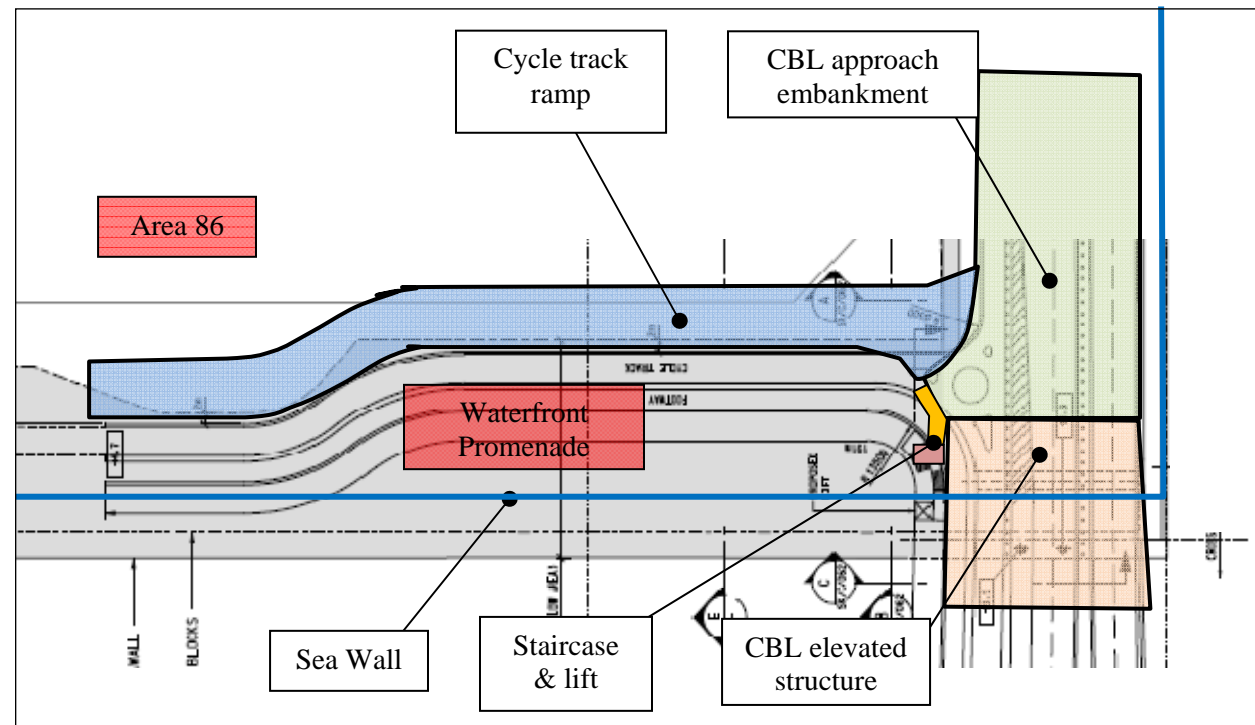
- Scenario 3 - Flow of Prosperity

This will celebrate the prosperity of Hong Kong; its business, its culture, its people, its knowledge, its spirit. At special events or celebrations, this scenario of golden lit piers, and sparkling arches, is activated to celebrate prosperity. Refer to Figure 6 in appendix B.

3 Cycle Track Ramp Area

3.1 Location and arrangement

The ramp structure connecting Cross Bay Link to the Area 86 promenade is a 150m long elevated bridge structure. The ramp connects the footpath and cycletrack at bridge level down to the cycletrack and footpath at promenade level.



Cycle track ramp area plan

3.2 Design Theme

The focus of the project is the Eternity Arch so the aim of the cycle track ramp and the CBL approach abutment is to have minimal visual impact. The cycle track ramp is visually a barrier between the Area 86 developments and the promenade area. A solid wall ramp has been avoided here and a shallow bridge structure has been adopted to make the area feel more open and less visually obtrusive.

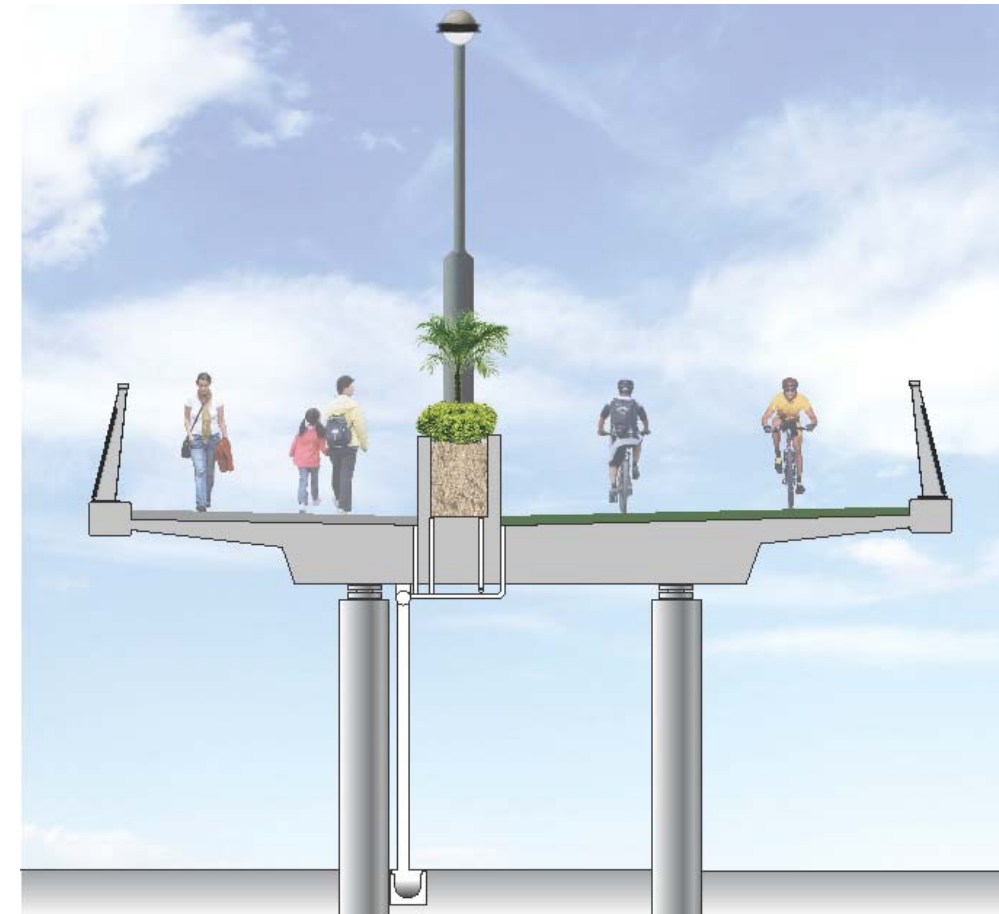
A compact staircase is proposed by have the flights of stairs returning on themselves. This minimizes its visual impression. The proposed lift structure is a steel frame with glazed infill to give the lift a light feel and futuristic look.

3.3 Structural form

A shallow cast in-situ reinforced concrete deck with a structural depth of 700mm is proposed to reduce the visual impact of the cycle track deck element. Regular small columns were chosen rather than a heavier deck structure. The spans are typically 10m. A lift is provided to take people down from the high level to promenade level. A staircase is also provided.

3.4 Landscaping

MTRC, the developers for Area 86 will landscape the promenade area in front of the cycletrack ramp. For the cycletrack ramp itself a planter is provided between the cycle track and the footpath to improve the ramp structure visually and to separate cyclists from pedestrians.



Cycle track ramp section

3.5 Materials and finishes

- The deck and piers will have an F5 finish and painted to a blemish free colour. A higher specification of surface finish is proposed due to the proximity of pedestrians.
- Similar surfacing details to CBL are provided on the footpath and cycletrack to ensure a coordinated effect.
- The lift is clad in a transparent glazing to minimize its visual impact and to distinguish it from the noise barriers.

3.6 Drainage

The cycle track ramp has drainage to gullies at regular intervals to collect the water. A downpipe is provided to take the water to the carrier drain, which is slung underneath the deck. The carrier drain takes the water to a downpipe attached to the outside of the piers and then on to the local drainage system.

4 Road D9 Noise Enclosures

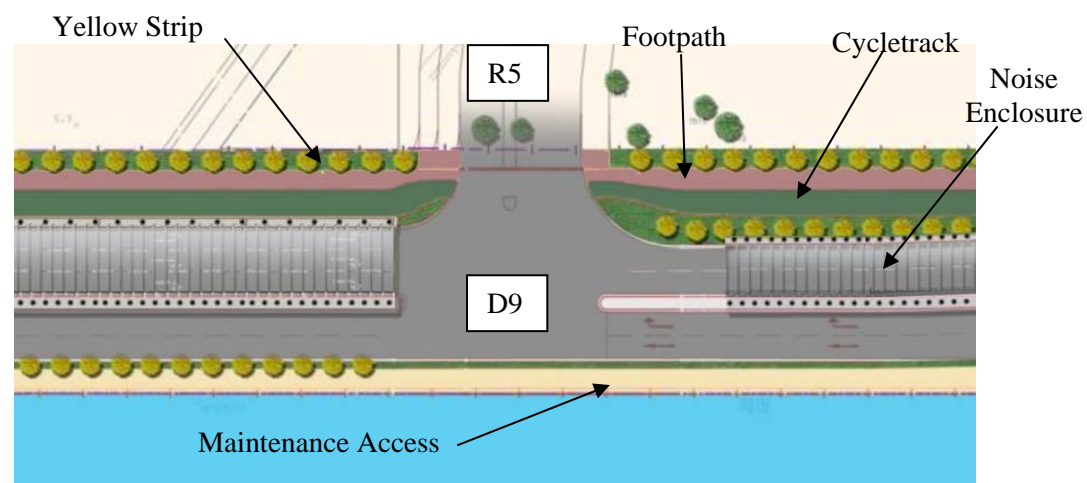
4.1 Location and arrangement

The future upgraded Road D9 will be a dual-carriageway connecting the proposed Cross Bay Link in the west with Wan Po Road in the east. The Road D9 also forms an at-grade junction with Road R5 which branches into the Area 86 site.

The 3m yellow strip indicated on the drawings between the footpath and the LOHAS development is the responsibility of MTRC, whom are the developers of the Area 86 site. In the planning conditions for Area 86 this strip is designated as a greening strip. Whilst the design of this is not part of the submission, its provision will enhance the overall streetscape in this area and so indicative greening is shown for completeness.

A 3.5m-wide footpath has been provided along both sides of the main section of Road D9 up to the bus stops, but only the footpath at the northern side will extend west connecting to the footpath at Cross Bay Link. A 4.0m-wide cycle track has been allocated along the northern side of Road D9 which will be directly connected with the cycle track at Cross Bay Link. Crossing facilities have been provided at the road junctions for pedestrians and cyclists.

Noise barriers are required along Road D9 to provide noise attenuation to the residents of LOHAS Park. The extent of the noise enclosure cladding and the compactness of the structure has been optimised in order to limit the visual impact of the structure and to maximise the space around the road for greening features.



Plan at the Road D9 and R5 junction

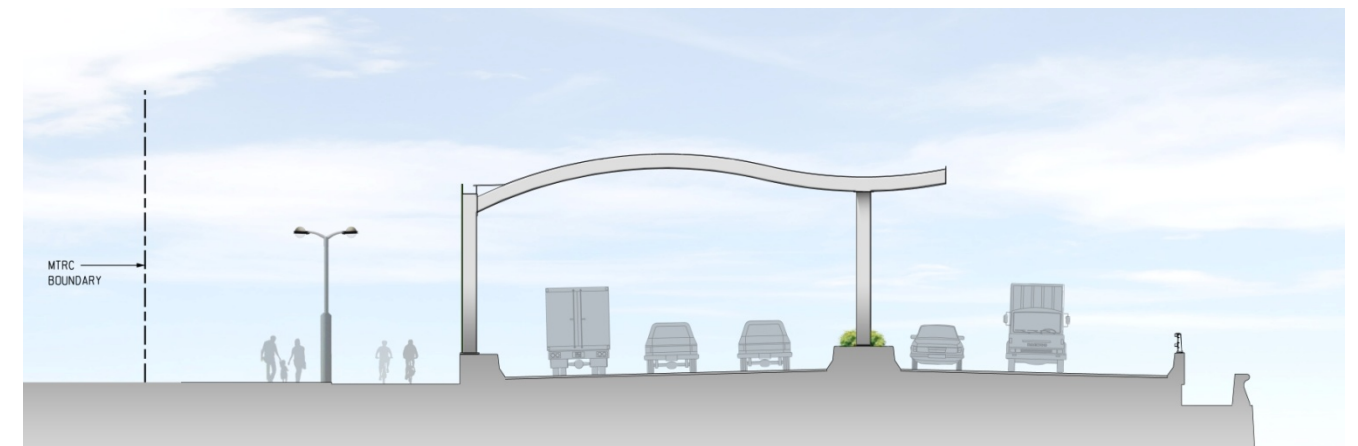
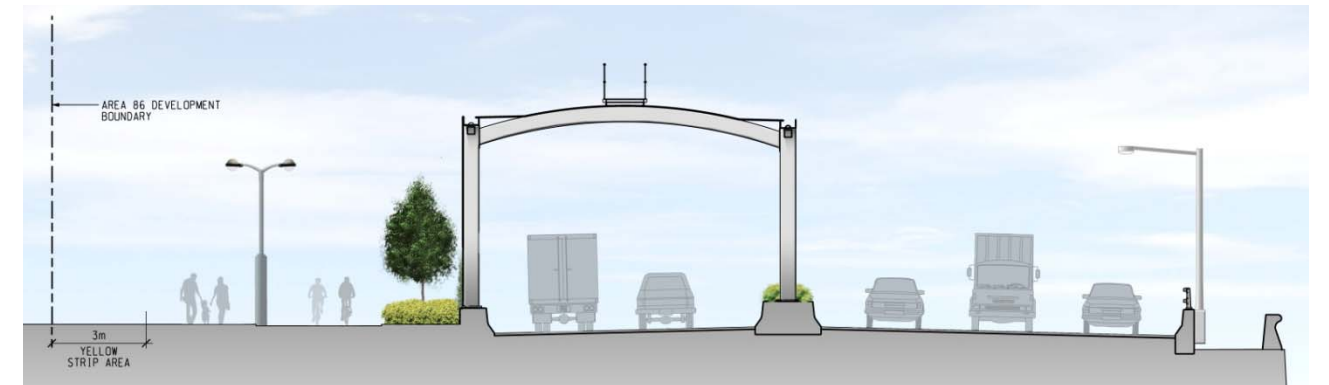
4.2 Architectural Theme

The noise barriers are being developed as part of an overall aesthetic master plan, which will ensure a coordinated aesthetic concept between CBL, Road D9 and the bridges in the Eastern Channel (Southern Bridge and Northern Bridge). The choice of materials and greening features is reflected to match the other items provided on the project.

For the design of the noise barriers the aim has been to minimise the size and extent of the noise barriers in order to reduce its visual impact. Efforts have been made to hide drainage details and to adopt transparent cladding, which helps to reduce its visual bulk. One side of the noise barrier has been kept open to allow motorists to take in the view of Junk Bay.

4.3 Structural form

A semi-enclosure type noise barrier is proposed to meet the requirements for attenuating noise. A typical steel portal frame is provided at 2m centers with partial coverage of the frame with transparent cladding panels. The profile of the noise barrier has been chosen to introduce a flowing curve, which is in keeping with the flowing curves of the main bridge.



* Plant species are subject to landscape design and shown for indication only.

Noise Enclosure Form

4.4 Landscaping

The road is constrained by the LOHAS park development on one side and the sea on the other. Where space permits greening features have been added to improve the streetscape for pedestrians and includes creepers to mask the noise barrier.

4.5 Materials and finishes

- The steel frame will be painted in a light grey colour so as not to detract from the colorful cladding or the views beyond, where applicable.
- The noise enclosure will be clad in a transparent green material with gradual change of colour and opacity as indicated. A transparent material has been chosen to maximize the light on the road and to create a more open structure.



Noise Barrier Colour scheme

4.6 Drainage

The rainfall on a semi-enclosure can result in large drainage gullies on the visually sensitive outer edges of the noise barrier. The central notch of the noise enclosure provides a space to collect rain water and channel it away in a less visually obtrusive manner. Down pipes will be provided at regular intervals in the central reservation to the local drainage system.

5 Response to Comments

A response to comments table is provided in Appendix C for your further consideration. Selected comments are discussed in more detail within this report.

5.1 Comment 7 - Bulkiness of the Arch

“Previous comment “to reduce bulkiness of the proposed arch” would still be valid. Project team was required to address the comment accordingly.”

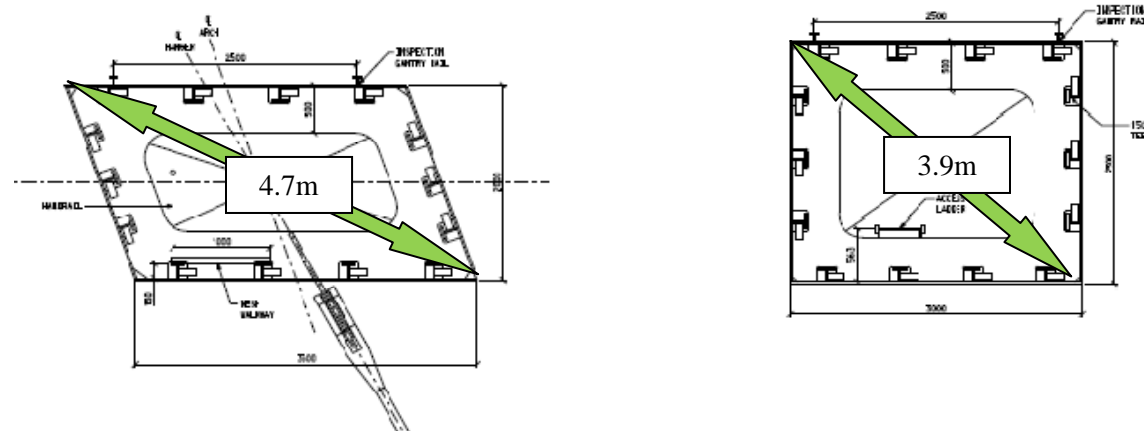
Response

On long span arch bridges the arch member sizes can appear massive when viewed from deck level. This has common been the case on arch and cable stayed bridges as indicated in the following images. The deck view visualisation shows this effect and this was what raised the comment from the ACABAS committee.



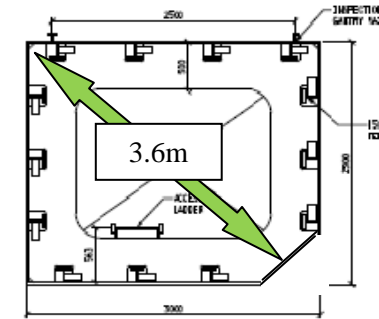
Examples of arches viewed from deck level

There is a minimum structural demand that has to be achieved, however the cross section of the arch varies in response to the structural demand, which minimises the over specifying of the cross section at deck level. As shown the diagonal dimension at the base of the arch is less than at the top, which has the effect of reducing its visual bulk.



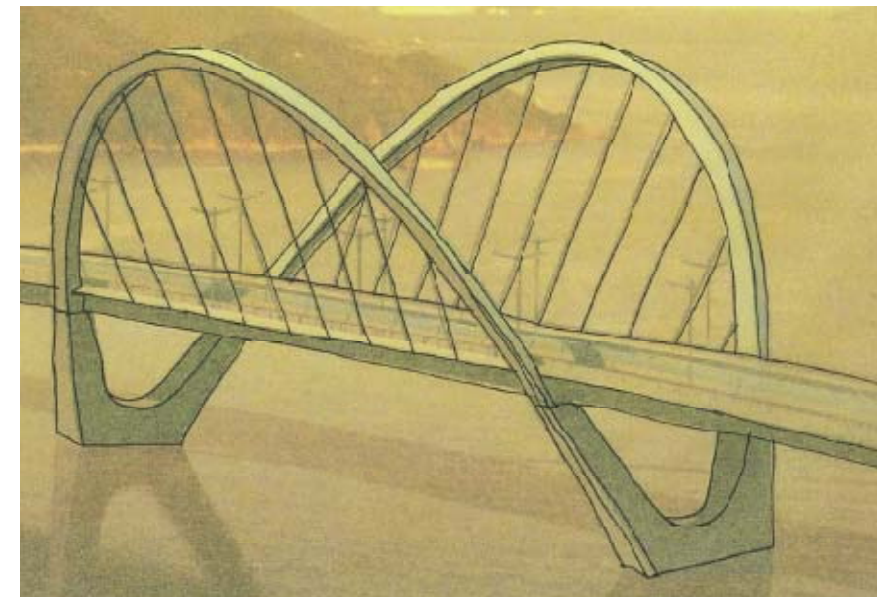
Arch cross-section at the top (left) and the base (right).

An option to minimise the diagonal dimension is to introduce a chamfer to the section.



Arch section with a chamfer

This option has a slight effect on the aesthetics but the introduction of the chamfer would alter the overall aesthetics of the arch. Furthermore, it would be logical to run the chamfer down into the piers, which would create a significantly different effect as illustrated.



Visual effect of the chamfer on the piers.

The other option considered was to introduce a feature that would break up the continuous open surface of the arch shape. The option to use greening to hide the arch at the base was not considered further due to concerns on the maintenance and inspectability of the arch surface. The arch requires rails to be mounted on the upper surface of the arch to allow for future inspection using a demountable inspection gantry. The addition of these rails has the effect of breaking up the surface and reducing its impression of bulkiness as indicated in the following figure. Since the provision of these rails is an essential requirement, then this option was chosen because it avoids altering the appearance of the Eternity Arch.



1) Original Visualisation with the visual bulkiness where the arch meets the deck.



2) Chamfer added to the arch section to reduce the viewed elevation



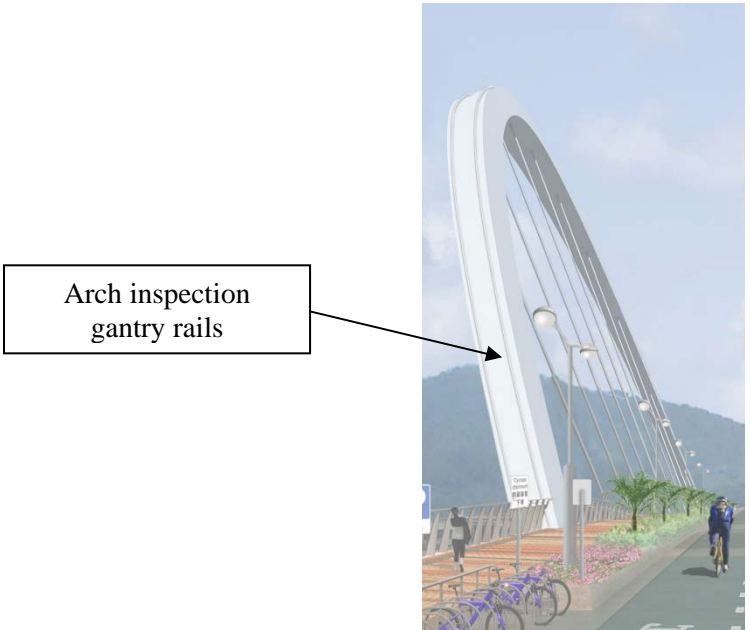
3) Arch Inspection gantry rails added.

5.2 Comment 7 - Maintenance Requirements

“Project team should carry out discussion with the maintenance office for the proposed elements.”

Response

For bridges of this scale the maintenance and inspection issues are an essential aspect to be considered. The relevant government departments are consulted on this aspect of the design and the Operation and Maintenance Report was circulated on the 28th June 2011. We have added to the visualisation the access facilities that may influence the overall aesthetics. In particular, the rail of the demountable inspection gantry has been added and the underbridge inspection gantry in its parked position is also added.



Appendix A

Visualizations

A1 Image Location



A2 Image 1 - View from TKO Town Centre



A3 Image 2 - View from Oscar by the Seas development



Cross Bay Link is in the distance, Northern Bridge in the foreground and Southern Bridge in the middle. Northern and Southern Bridge are not included in this ACABAS submission.

A4 Image 3 - View from Chai Wan



A5 Image 4 - View from the Wilson Trail



A6 Image 5 - Deck view looking eastwards towards the Eternity Arch



Paving design is indicative and subject to final landscape design. Solar powered streets subject to acceptance from relevant departments.

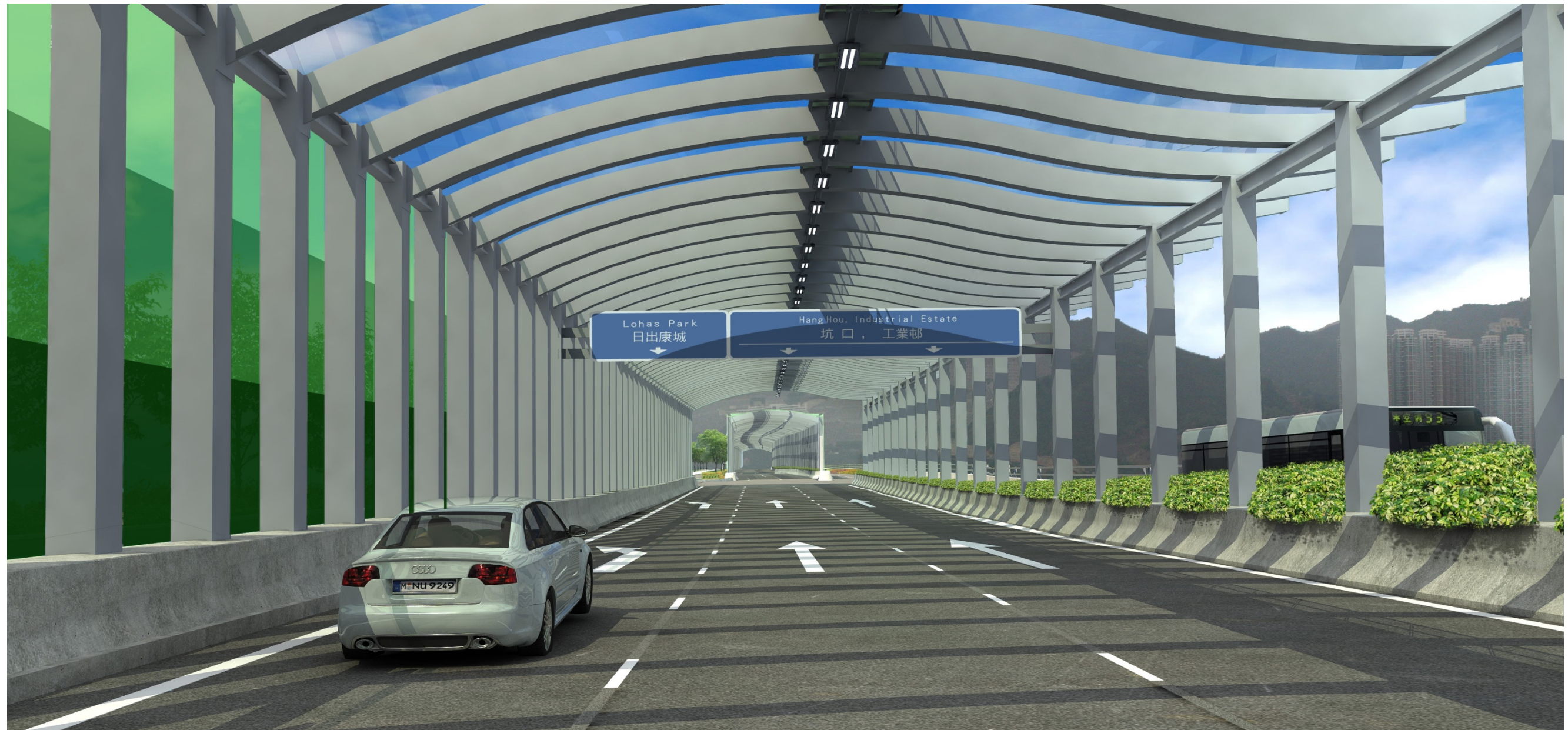
A7 Image 6 - Deck View looking eastwards towards the Road D9 noise enclosure



A8 Image 7 - View from LOHAS Park



A9 Image 8 - Car view inside the noise enclosure



A10 Image 9 - View from the footpath along Road D9



A11 Image 10 - View from Waterfront Promenade towards Staircase and Lift



A12 Image 11 - Architectural Lighting - Mood Glow Effect



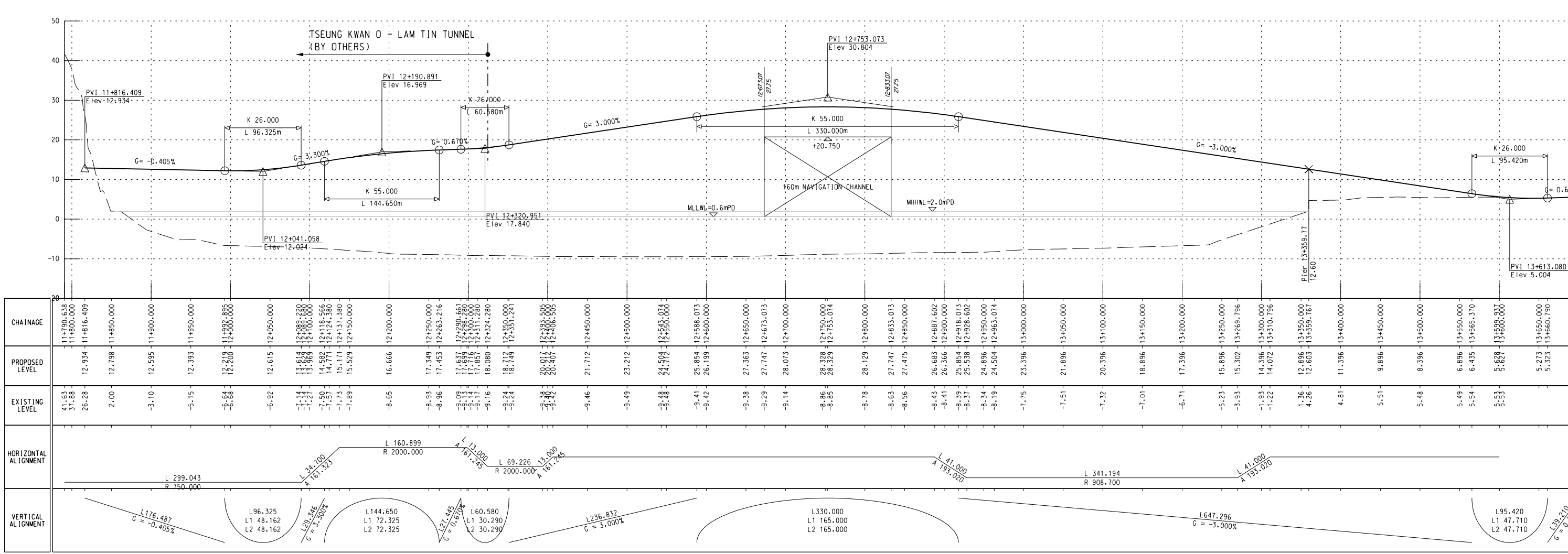
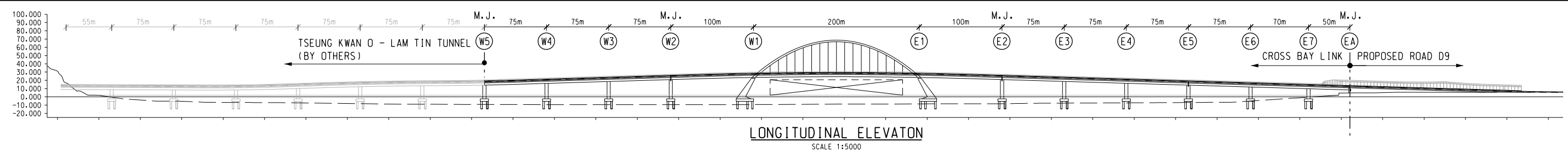
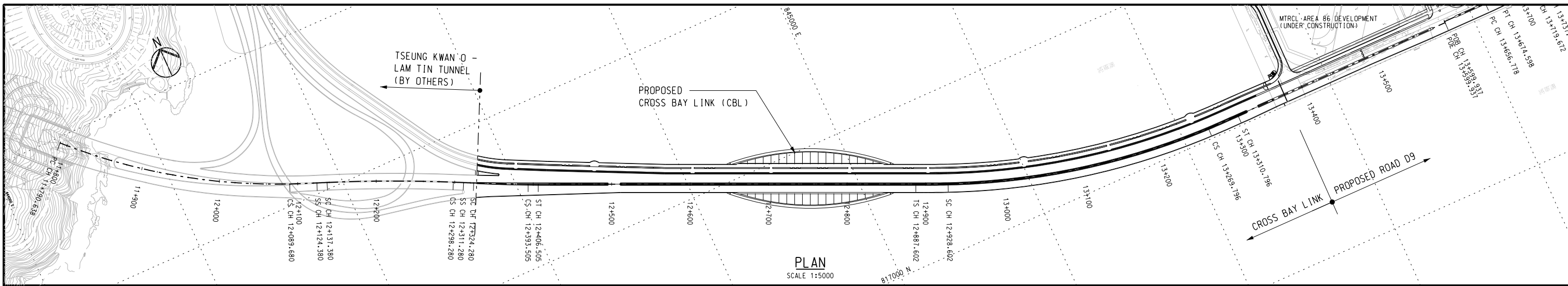
A13 Image 12 - Architectural Lighting - Festivity Sparkle Effect



Appendix B

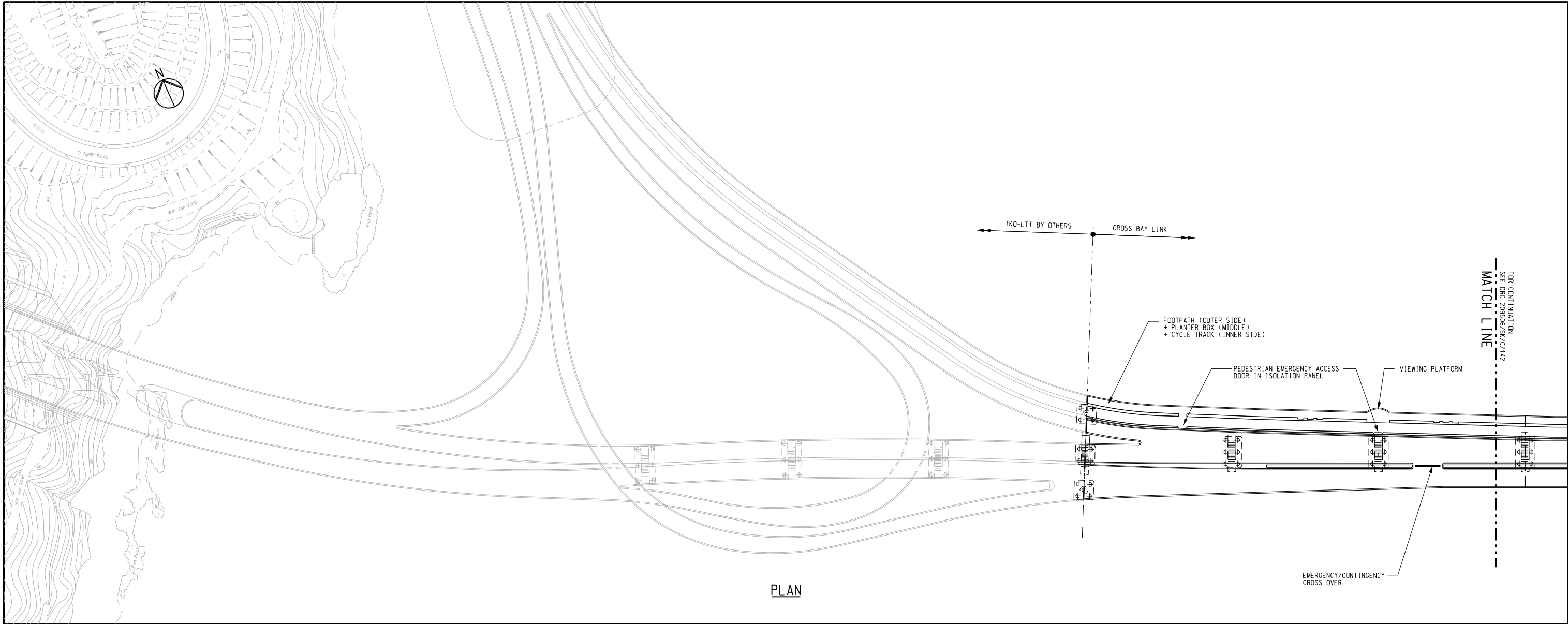
Drawings / Figures

DRAWING NO.	TITLE
CBL/2001	SITE PLAN
CROSS BAY LINK MAIN BRIDGE	
CBL/3001	MAIN BRIDGE, GENERAL ARRANGEMENT, SHEET 1
CBL/3002	MAIN BRIDGE, GENERAL ARRANGEMENT, SHEET 2
CBL/3003	MAIN BRIDGE, GENERAL ARRANGEMENT, SHEET 3
CBL/3004	MAIN BRIDGE, GENERAL ARRANGEMENT, SHEET 4
CBL/3005	MAIN BRIDGE, GENERAL ARRANGEMENT, SHEET 5
CBL/3042	MAIN BRIDGE, CBL AND RD D9 INTERFACE ARRANGEMENT
CBL/6001	CBL LANDSCAPE, KEY PLAN
CBL/6002	CBL LANDSCAPE, GENERAL LAYOUT PLAN, SHEET 1
CBL/6003	CBL LANDSCAPE, GENERAL LAYOUT PLAN, SHEET 2
CBL/6004	CBL LANDSCAPE, GENERAL LAYOUT PLAN, SHEET 3
CBL/6005	CBL LANDSCAPE, GENERAL LAYOUT PLAN, SHEET 4
CBL/6006	CBL LANDSCAPE, DETAIL, SHEET 1
CBL/6007	CBL LANDSCAPE, DETAIL, SHEET 2
CBL/6008	CBL LANDSCAPE, DETAIL, SHEET 3
CBL/6009	CBL LANDSCAPE, DETAIL, SECTION 1
CYCLE TRACK RAMP AREA	
CBL/3101	CYCLE TRACK RAMP, GENERAL ARRANGEMENT
CBL/3104	LIFT AND STAIRCASE, SHEET 1
CBL/6010	CBL LANDSCAPE, CYCLE TRACK RAMP
ROAD D9 NOISE ENCLOSURE	
CBL/3201	NOISE BARRIERS, GENERAL ARRANGEMENT
CBL/3202	NOISE BARRIERS, ROAD LEVEL PLAN
CBL/3203	NOISE BARRIERS, SECTIONS, SHEET 1
CBL/3204	NOISE BARRIERS, SECTIONS, SHEET 2
CBL/3205	NOISE BARRIERS, DETAILS, SHEET 1
CBL/6011	ROAD D9 LANDSCAPE, GENERAL LAYOUT PLAN, SHEET 1
CBL/6012	ROAD D9 LANDSCAPE, GENERAL LAYOUT PLAN, SHEET 2
CBL/6013	ROAD D9 LANDSCAPE, SECTION
ARCHITECTURAL LIGHTING	
FIG. 1	LIGHTING PRINCILPLE 1 - MOOD GLOW
FIG. 2	LIGHTING PRINCIPLE 2 - FESTIVITY SPARKLE
FIG. 3	LIGHTING PROPOSAL SCENARIOS
FIG. 4	LIGHTING PROPOSAL SCENARIO 1
FIG. 5	LIGHTING PROPOSAL SCENARIO 2
FIG. 6	LIGHTING PROPOSAL SCENARIO 3

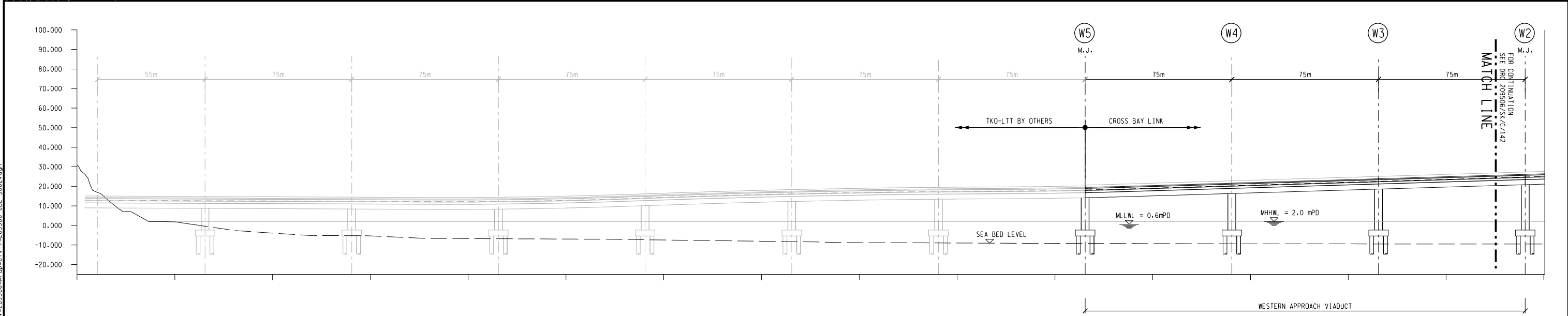


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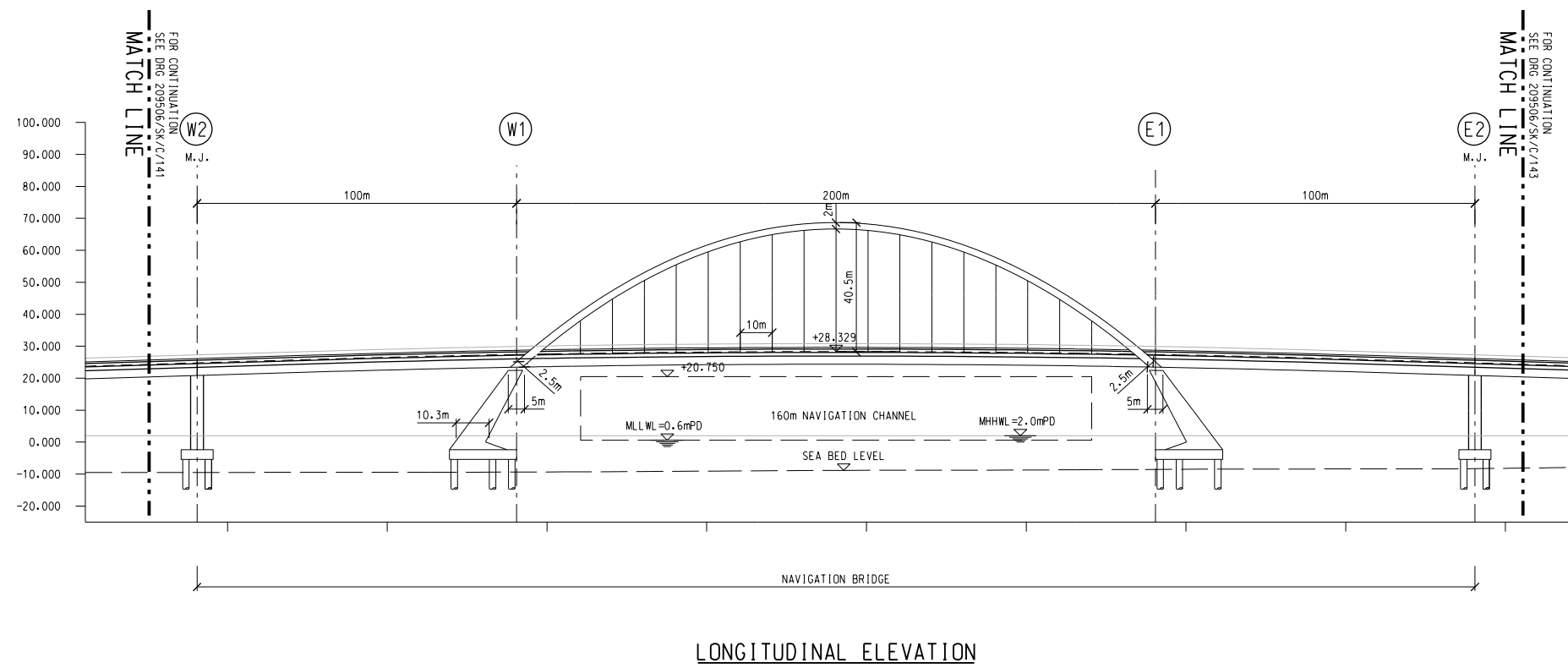
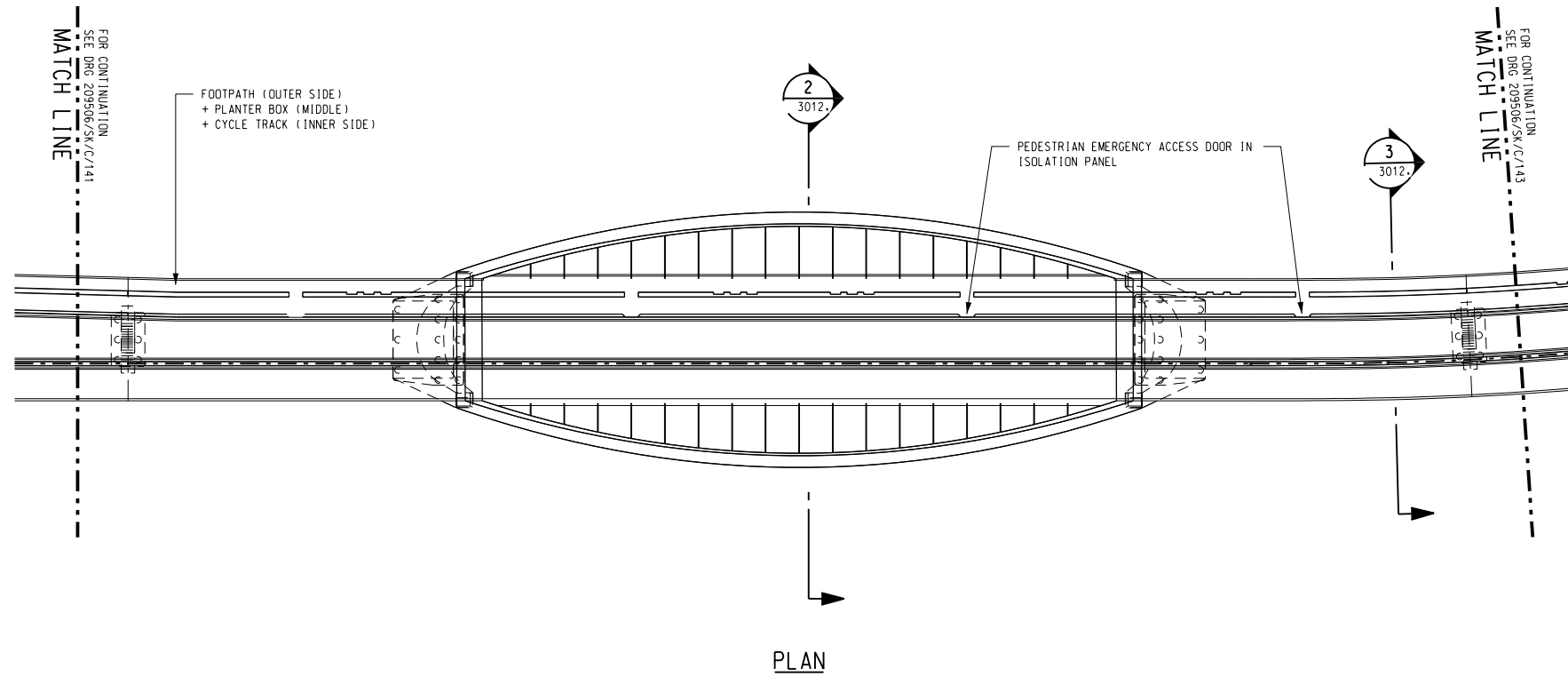
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PLAN



LONGITUDINAL ELEVATION



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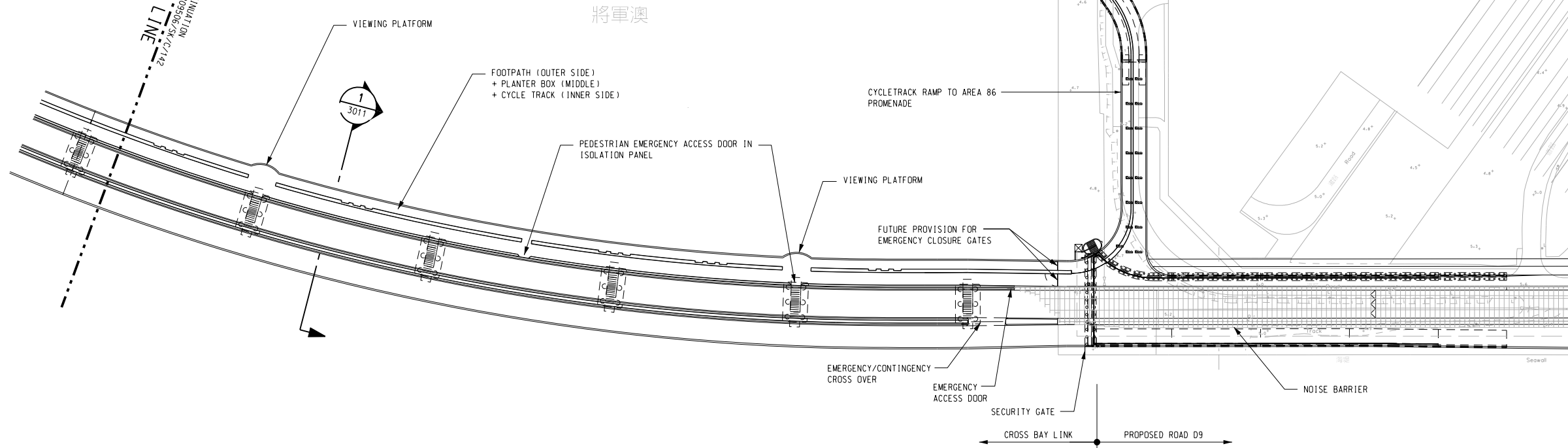
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MAIN BRIDGE
GENERAL ARRANGEMENT
SHEET 3

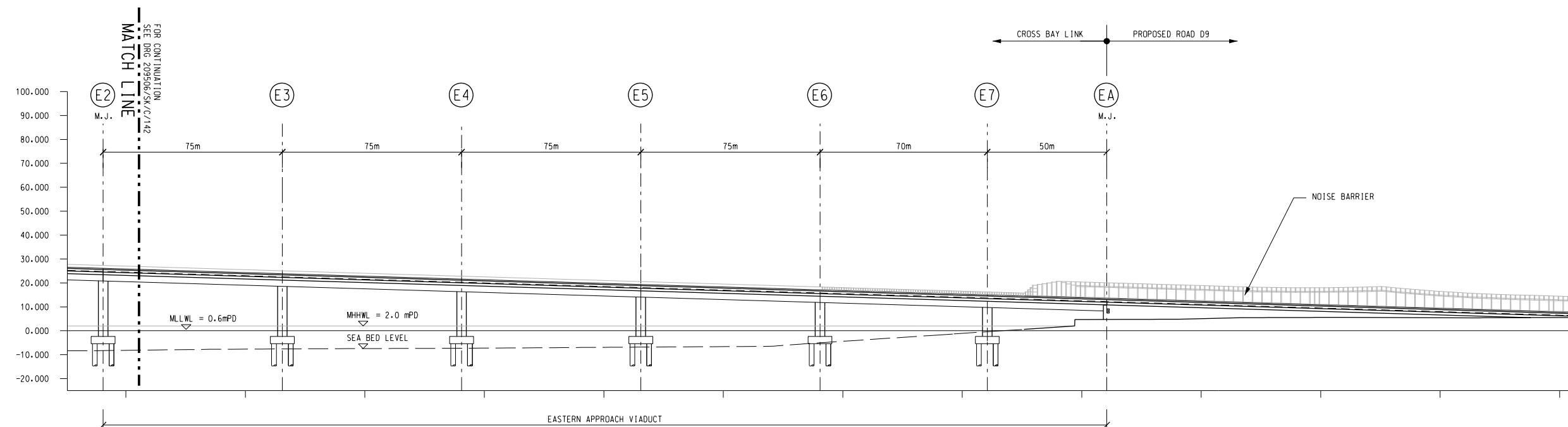
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Rev.	B		



PLAN



LONGITUDINAL ELEVATION

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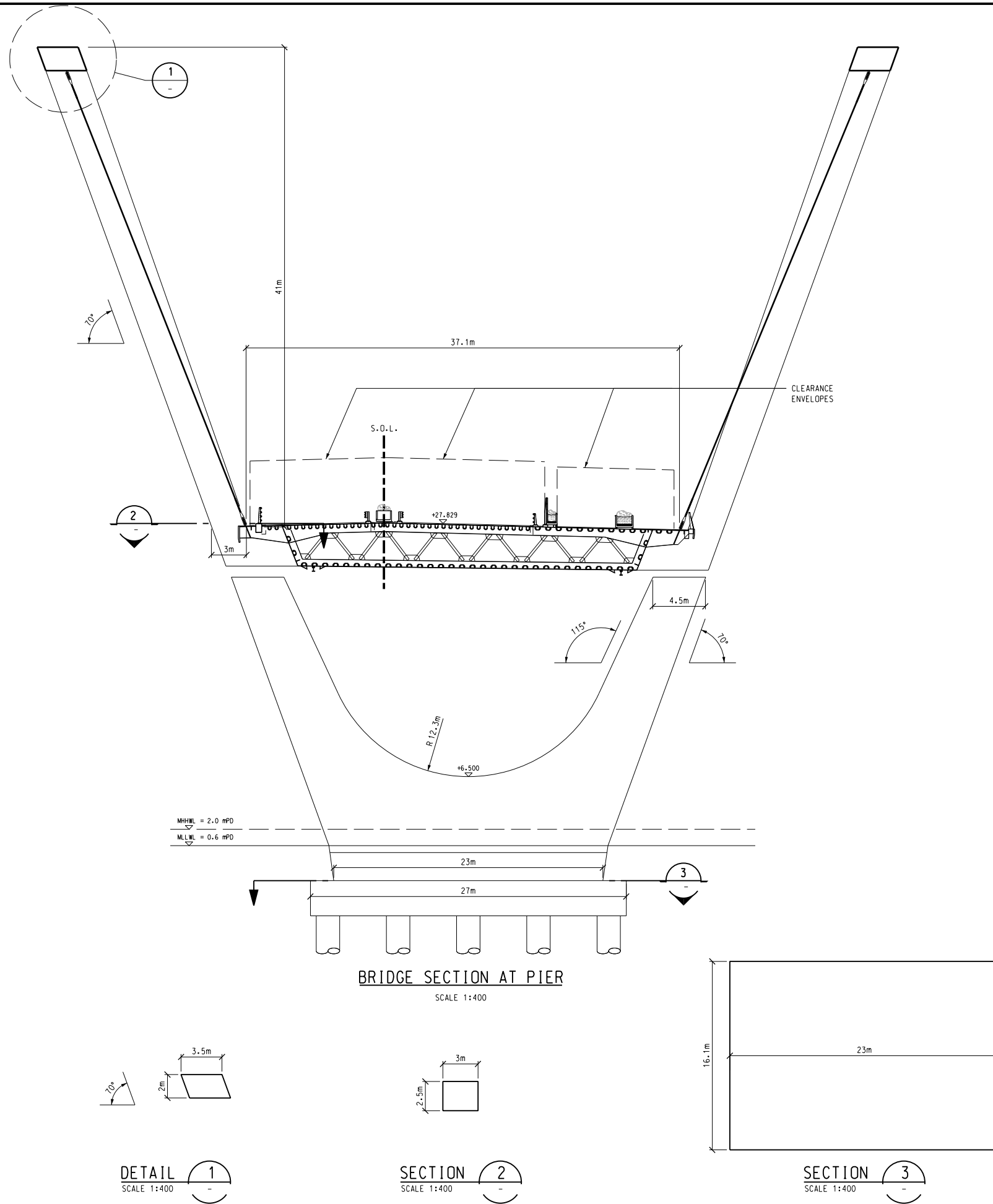


Job Title
**Agreement No. CE 43/2008(HY)
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Drawing Title
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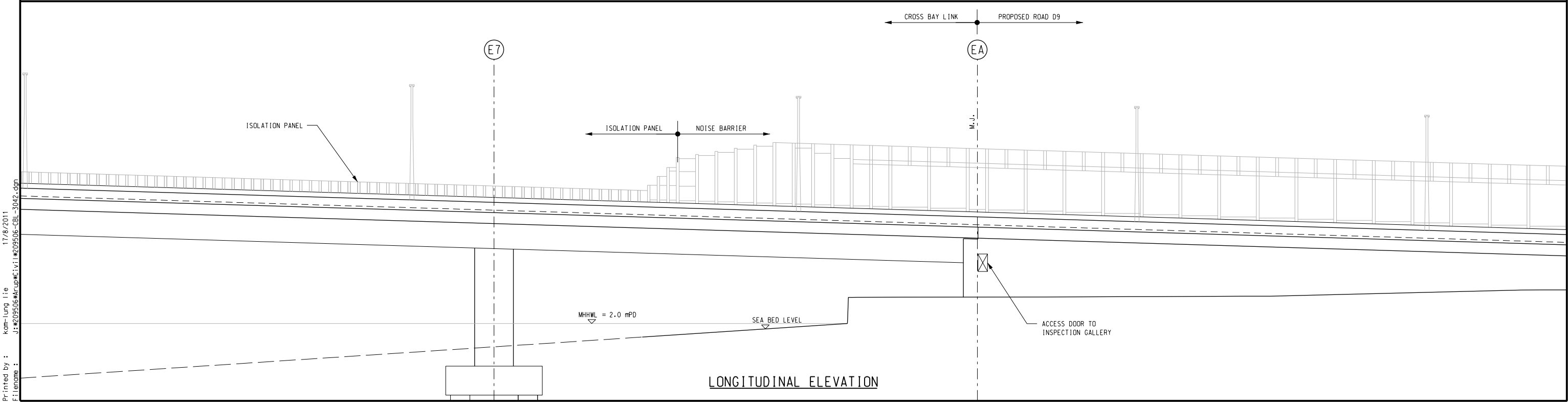
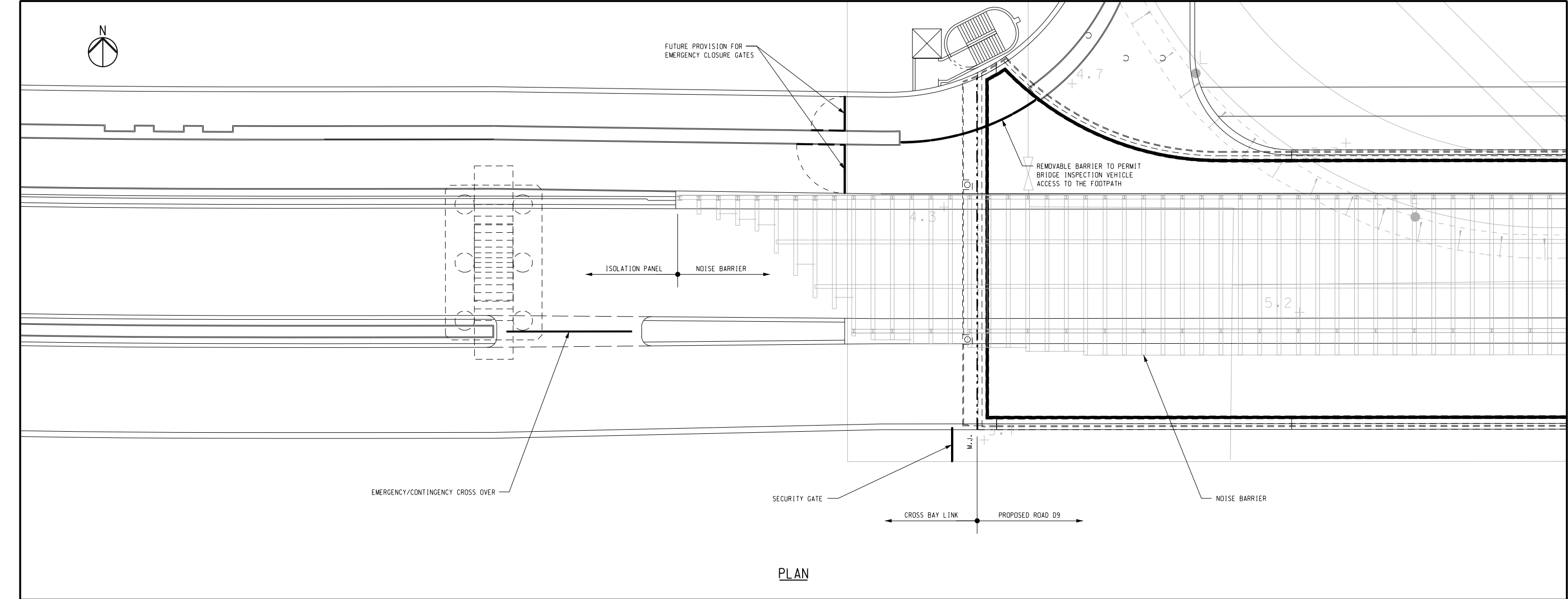
Drawing Title

MAIN BRIDGE
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SHEET 5



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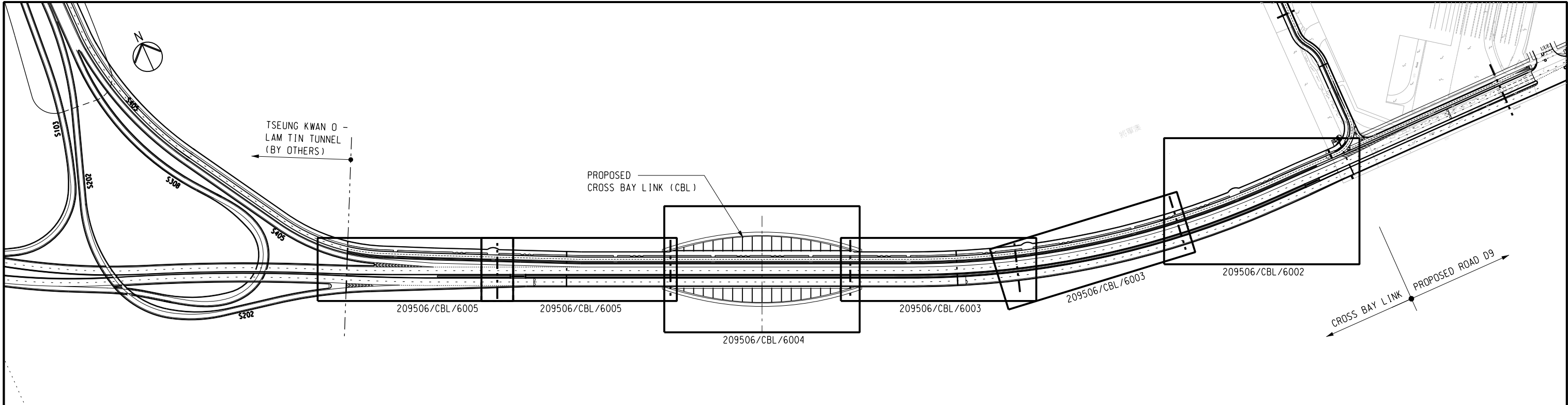
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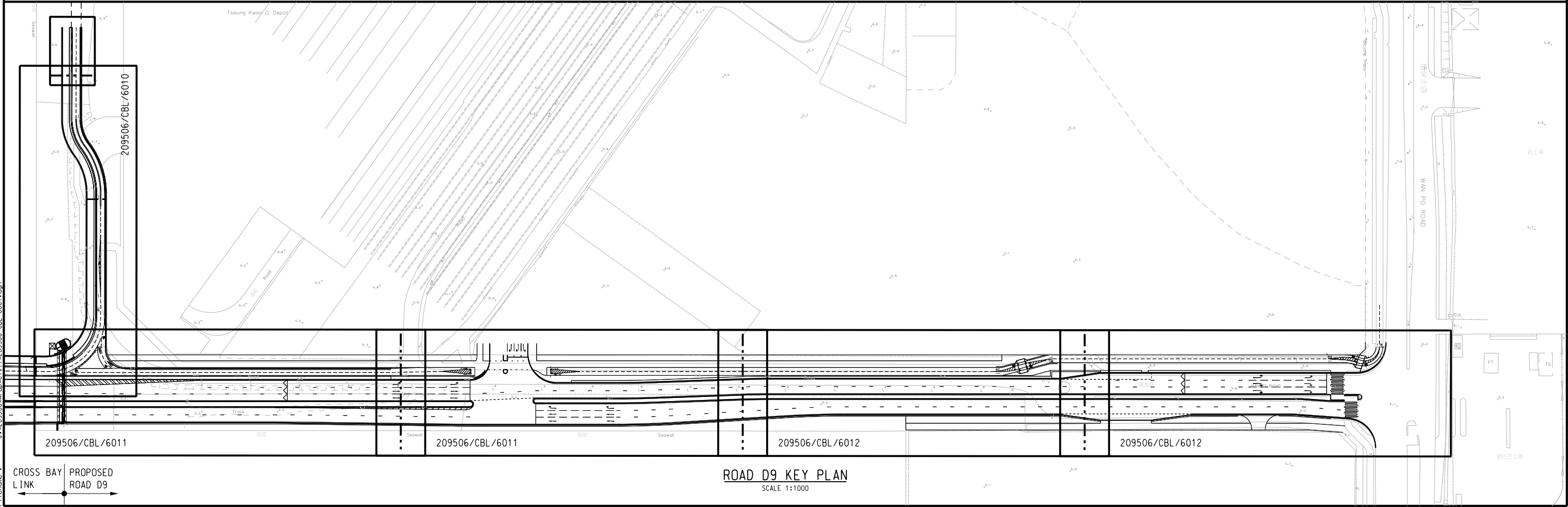


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						Checked	Approved			
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Rev.		Description		Date						





CBL KEY PLAN
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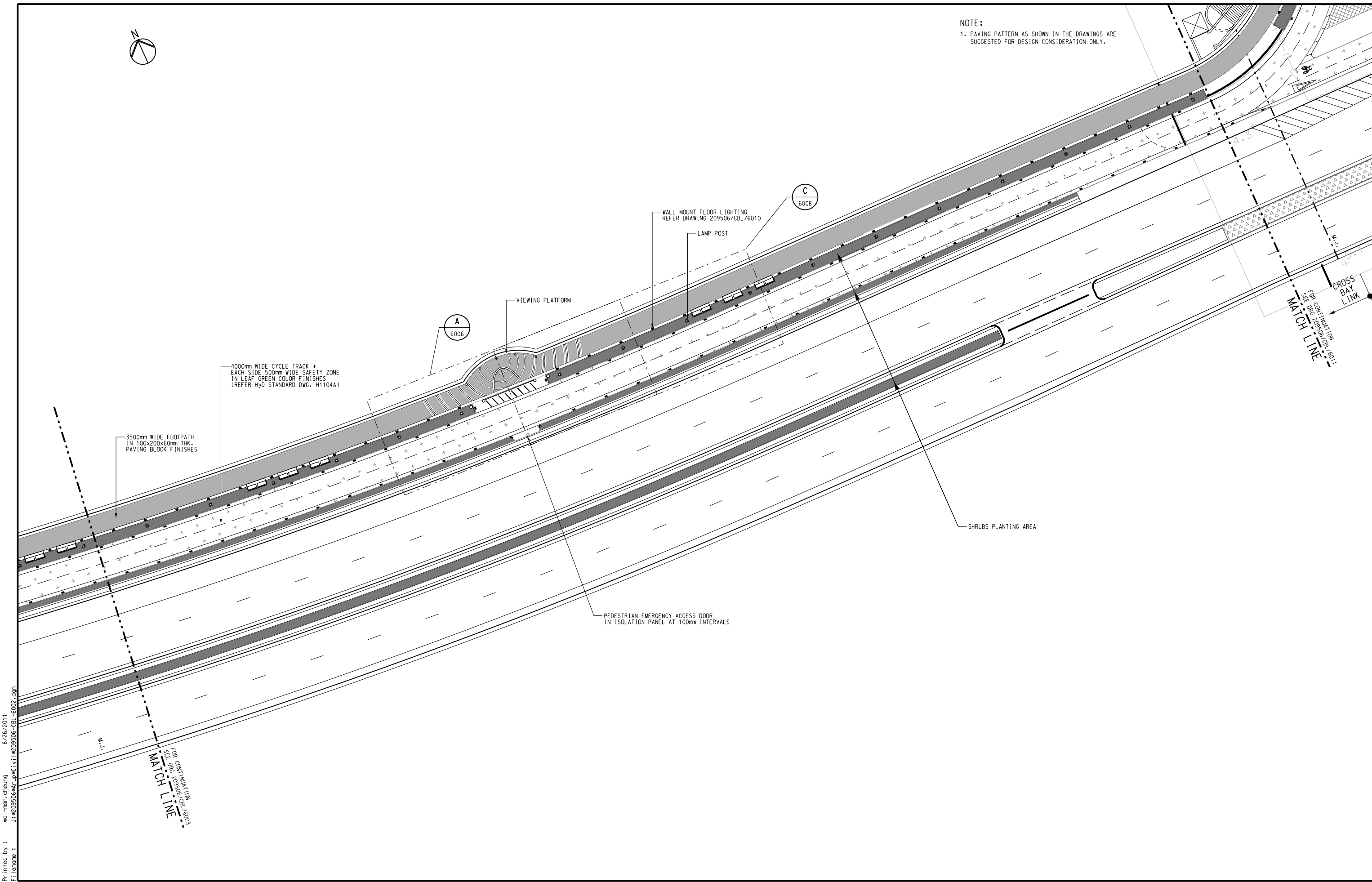
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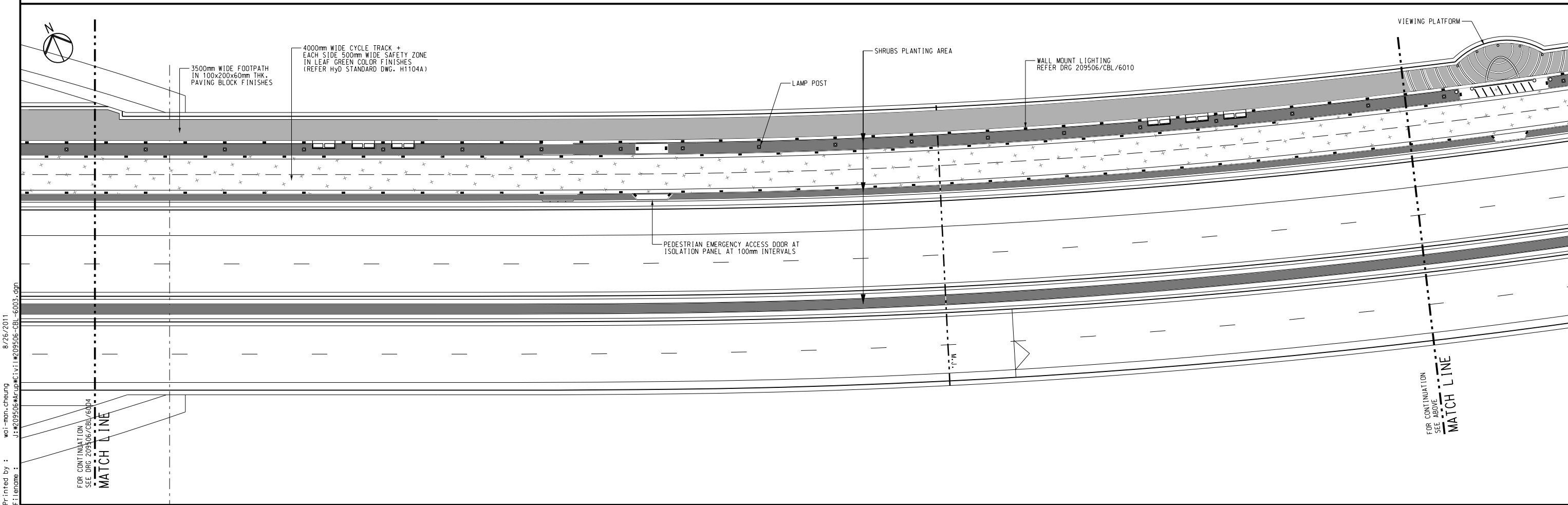
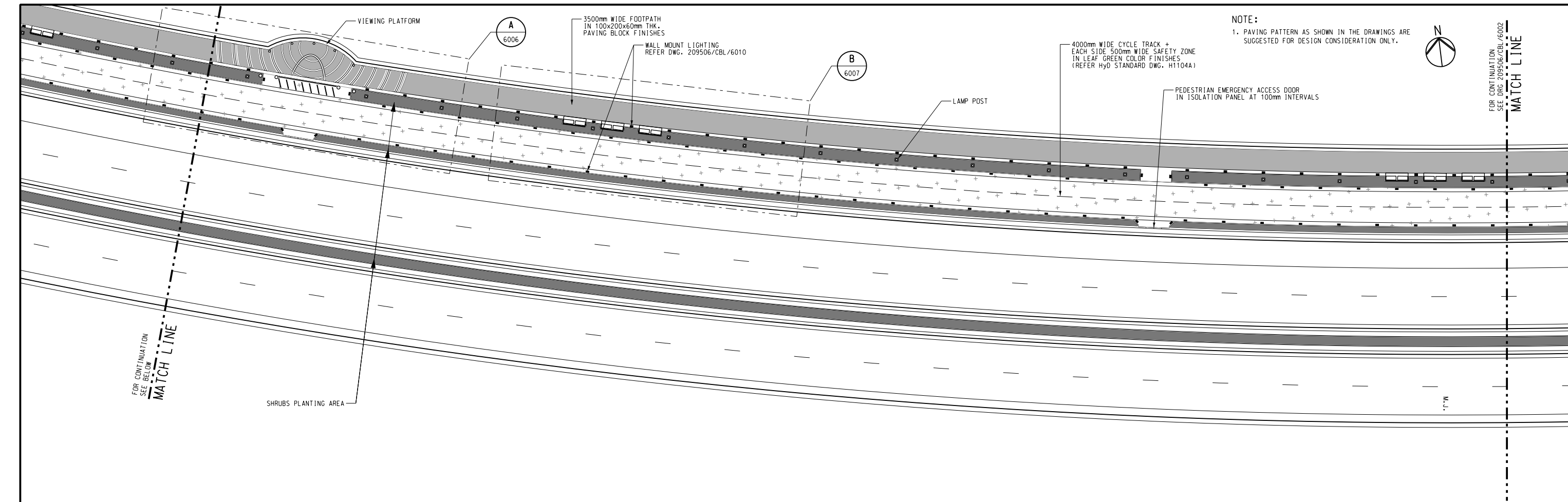
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Cross Bay Link, Tseung Kwan O – Investigation**

Drawing Title
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GENERAL LAYOUT PLAN
SHEET 1**



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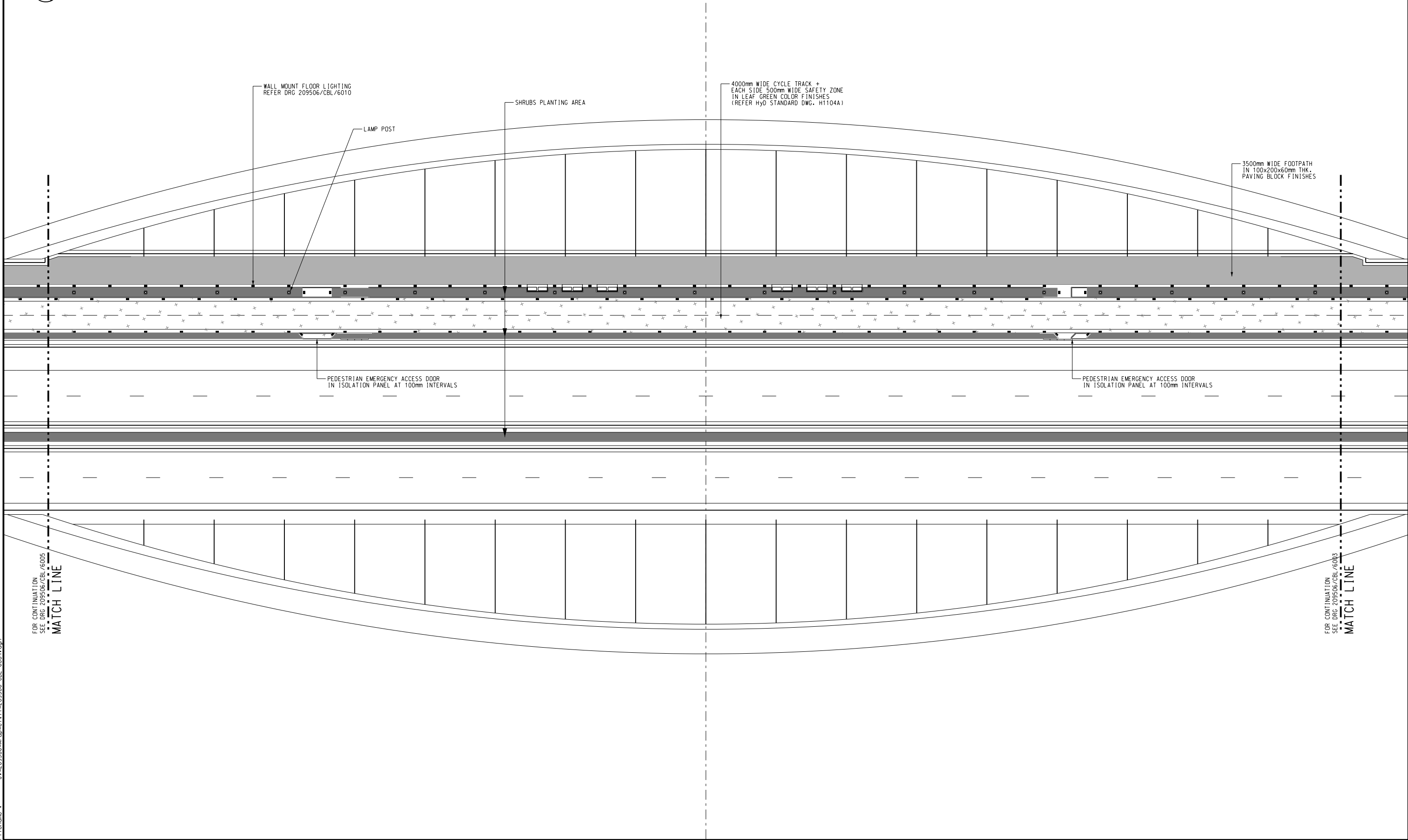


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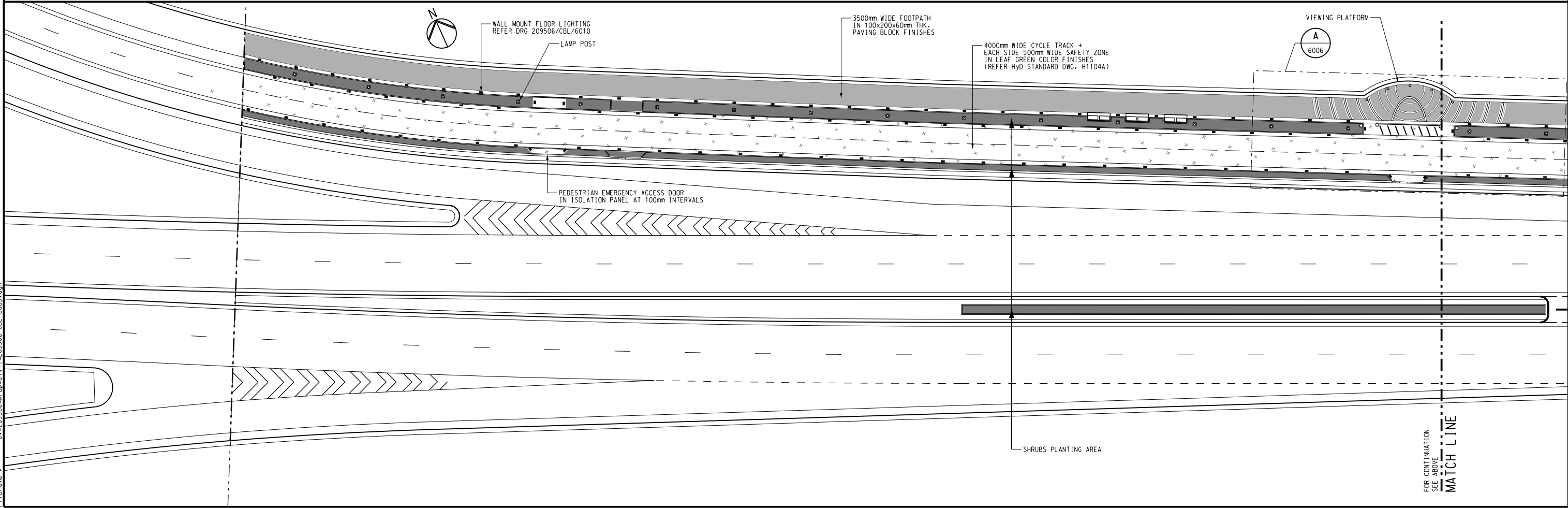
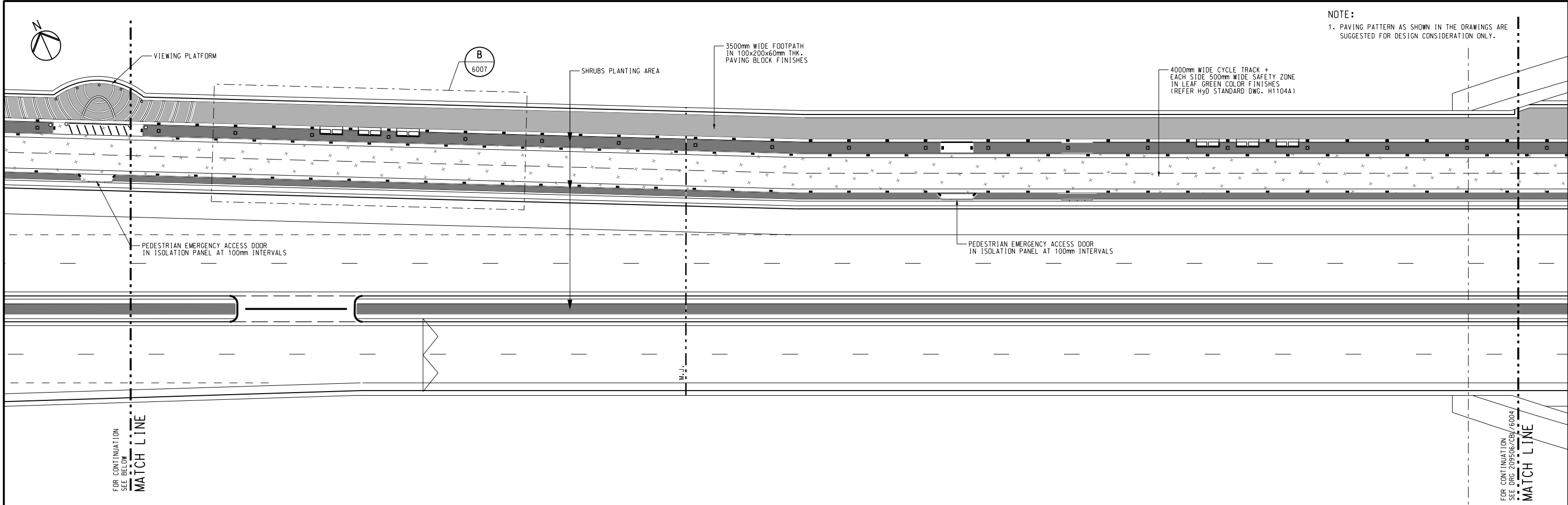
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Cross Bay Link, Tseung Kwan O – Investigation**

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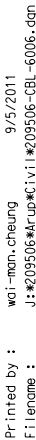
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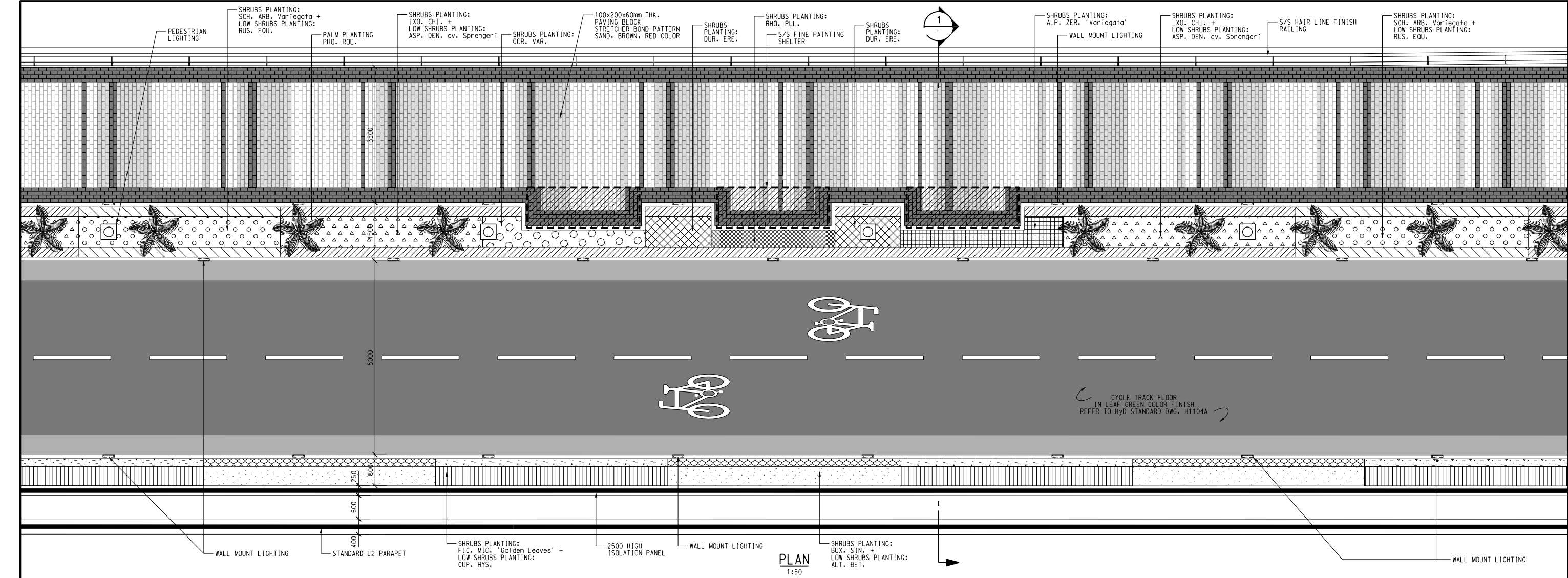
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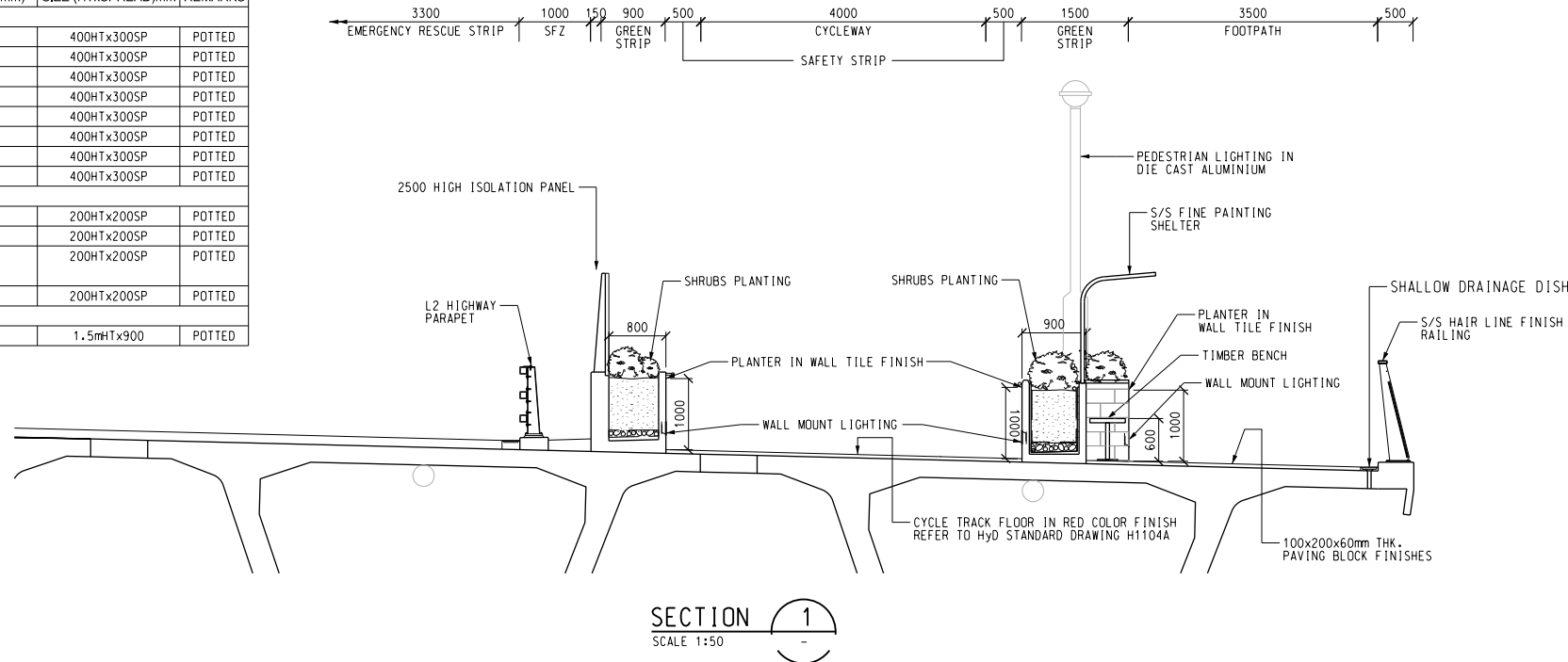
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PLANTING SCHEDULE:

Abbreviation	SCIENTIFIC NAME	CHINESE NAME	SPACING (mm)	SIZE (HTxSPREAD)mm	REMARKS
Shrubs Planting:					
ALP. ZER. 'Variegata'	Alpinia zerumbet 'Variegata'	花葉山薑	300	400HTx300SP	POTTED
BUX. SIN.	Buxus sinica	黃楊	300	400HTx300SP	POTTED
COR. VAR.	Codiaeum variegatum	洒金榕	300	400HTx300SP	POTTED
DUR. ERE.	Duranta erecta	假連翹	300	400HTx300SP	POTTED
FIC. MIC. 'Golden Leaves'	Ficus microcarpa 'Golden Leaves'	細葉榕(黃金榕)	300	400HTx300SP	POTTED
IXO. CHI.	Ixora chinensis	仙丹花	300	400HTx300SP	POTTED
RHO. PUL.	Rhododendron pulchrum	錦繡杜鵑	300	400HTx300SP	POTTED
SCH. ARB. Variegata	Schefflera arboricola variegata	八葉木(花葉)	300	400HTx300SP	POTTED
Low Shrubs/ Groundcover Planting:					
ALT. BET.	Alternanthera bettzickiana	錦繡莨(紅草)	200	200HTx200SP	POTTED
ASP. DEN. cv. Sprengeri	Asparagus densiflorus cv. Sprengeri	非洲天門冬	150	200HTx200SP	POTTED
CUP. HYS.	Cuphea hyssopifolia	細葉等距花 (細葉雪茄花)	200	200HTx200SP	POTTED
RUS. EQU.	Russelia equisetiformis	爆仗竹(吉祥草)	150	200HTx200SP	POTTED
Palm Planting:					
PHO. ROE.	Phoenix roebelenii	軟葉刺葵	3m	1.5mHTx900	POTTED



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3. WATER POINT LOCATION REFERS TO DRAWING NO. 209506/CBL/8151-8153.

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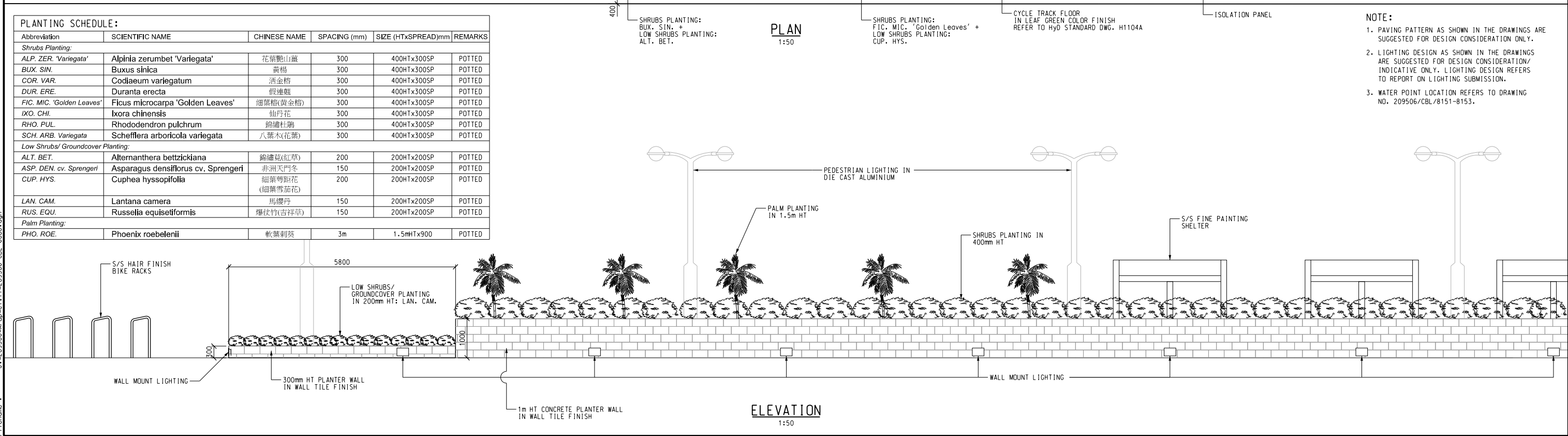
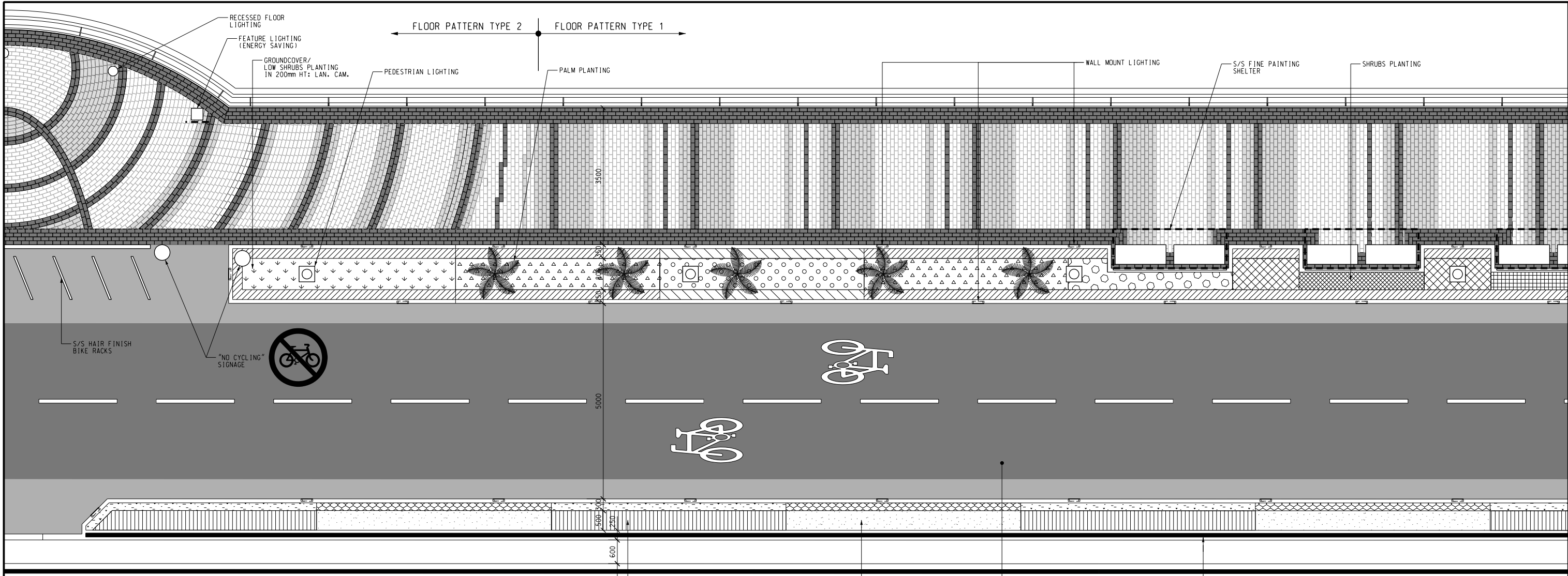
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DETAIL
SHEET 2

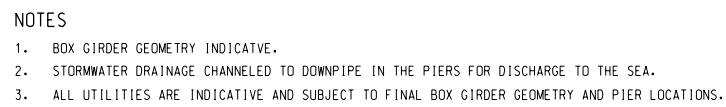
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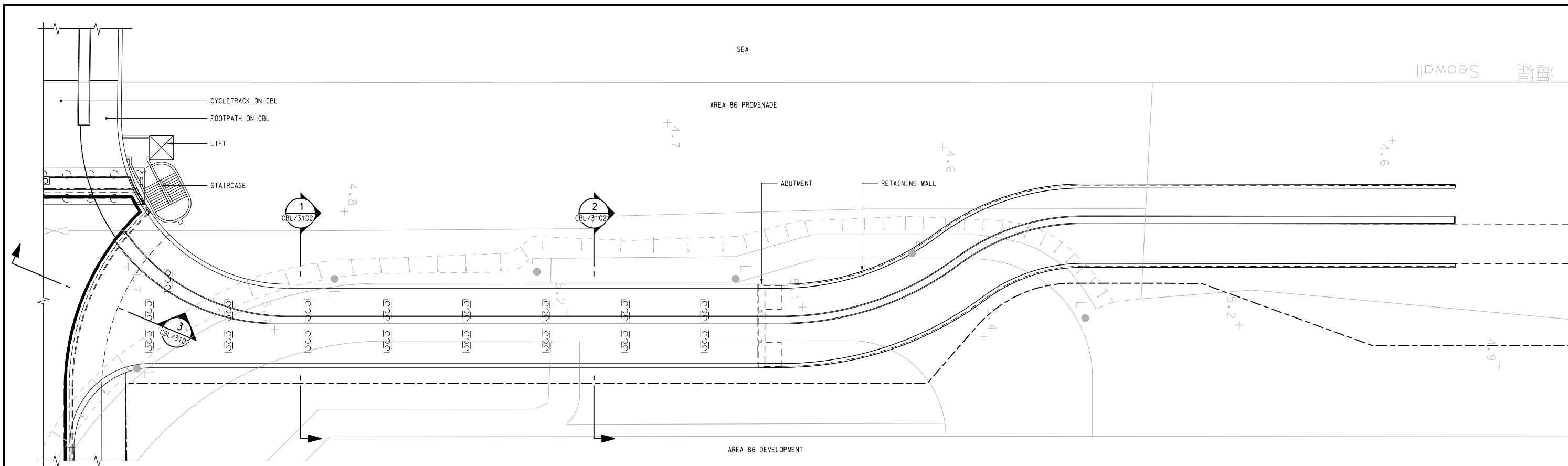
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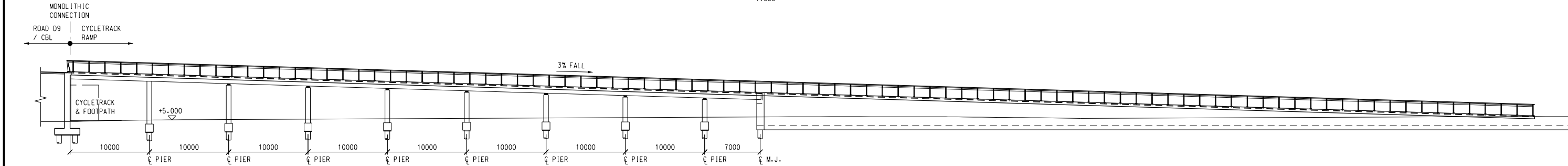
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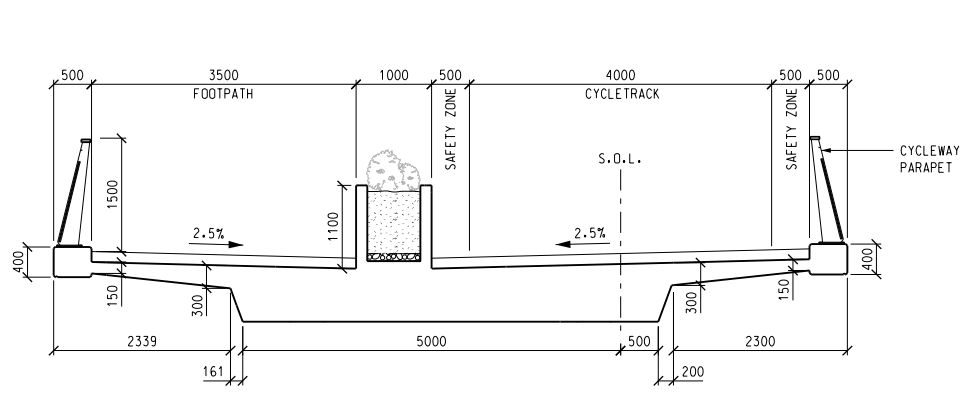
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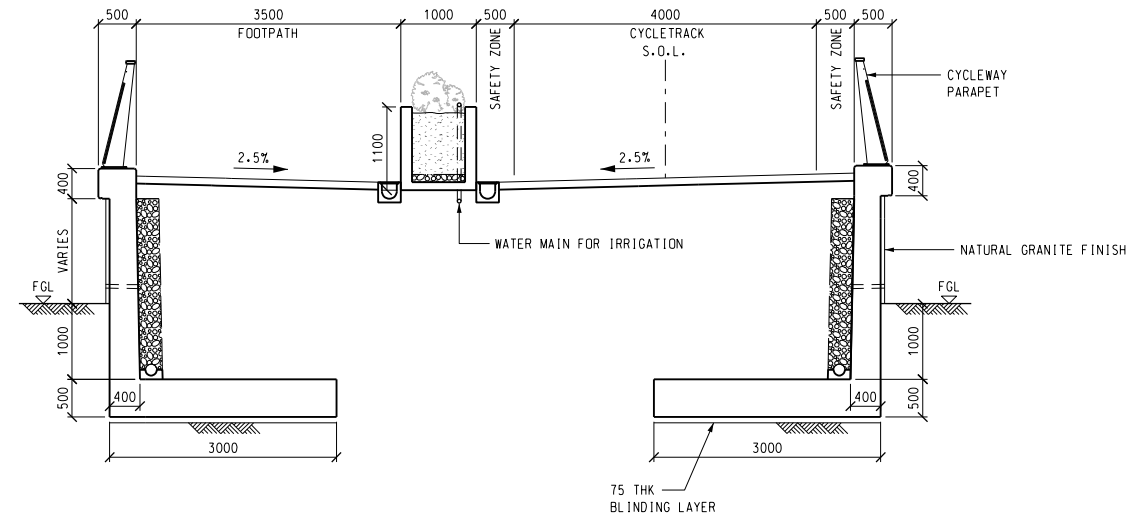
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ELEVATION
1:500





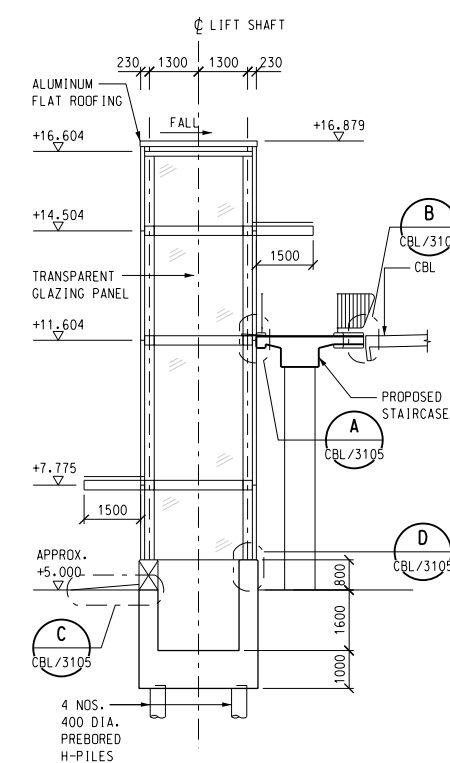
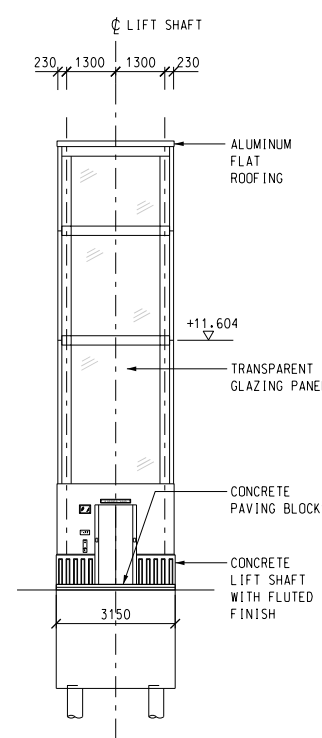
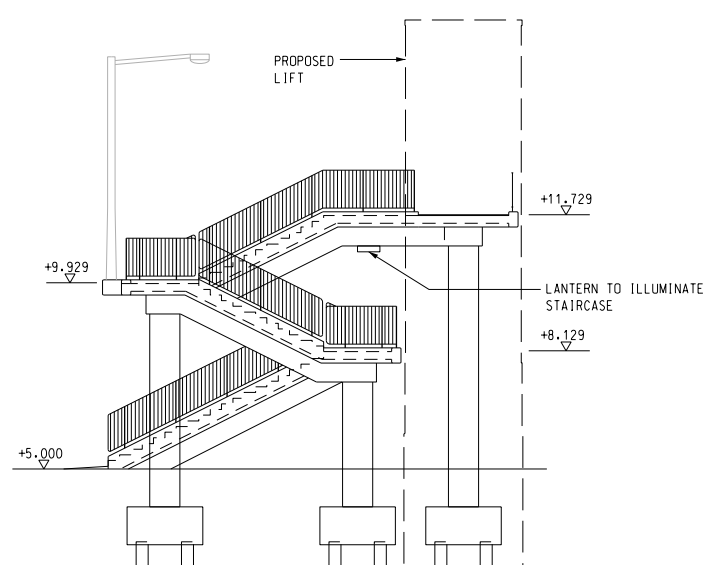
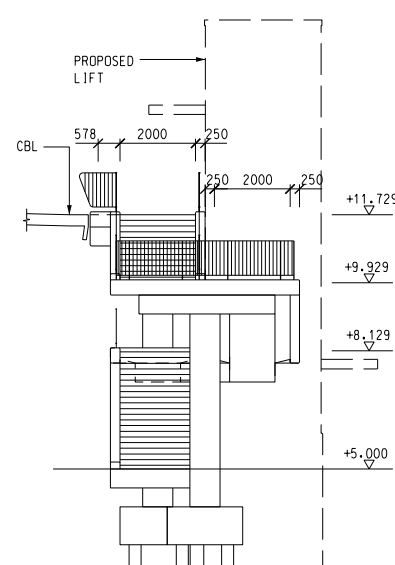
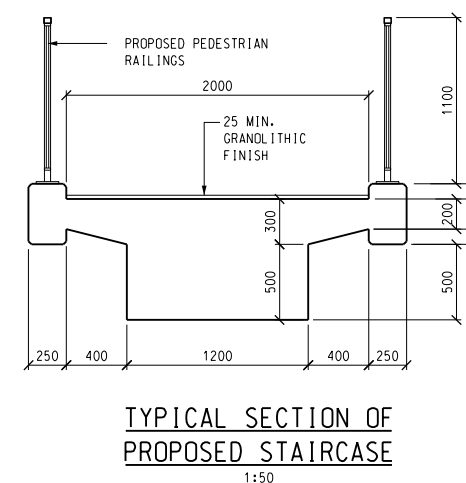
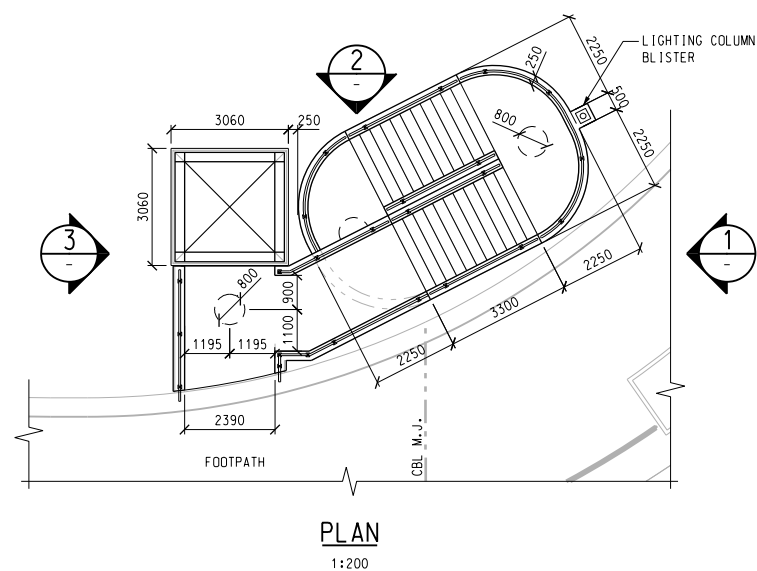
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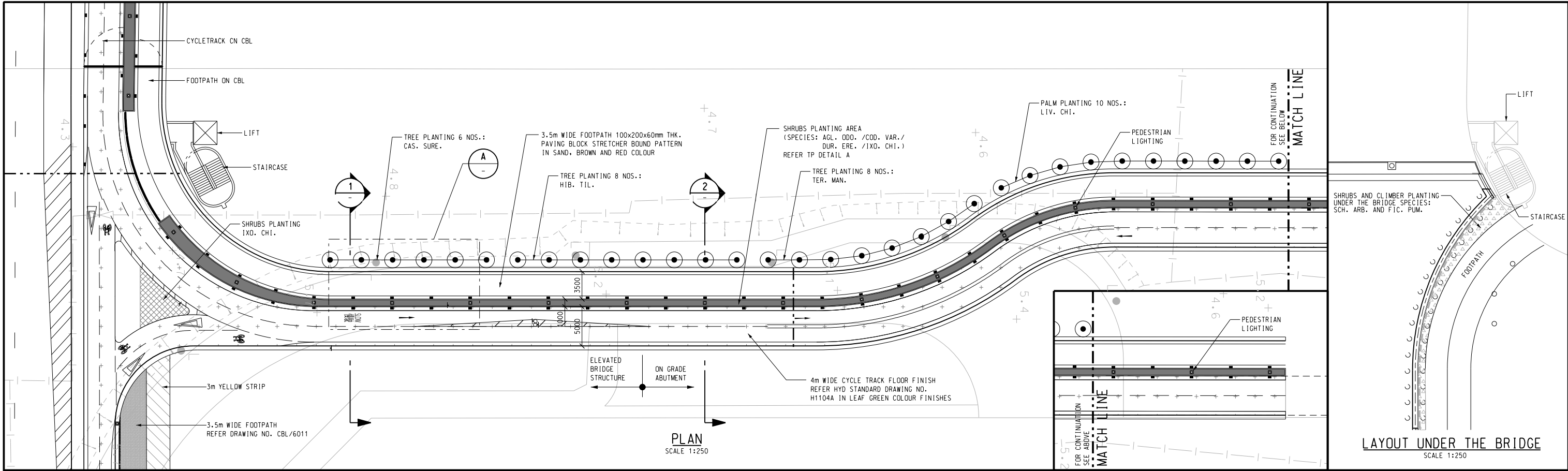


TYPICAL RETAINING WALL SECTION
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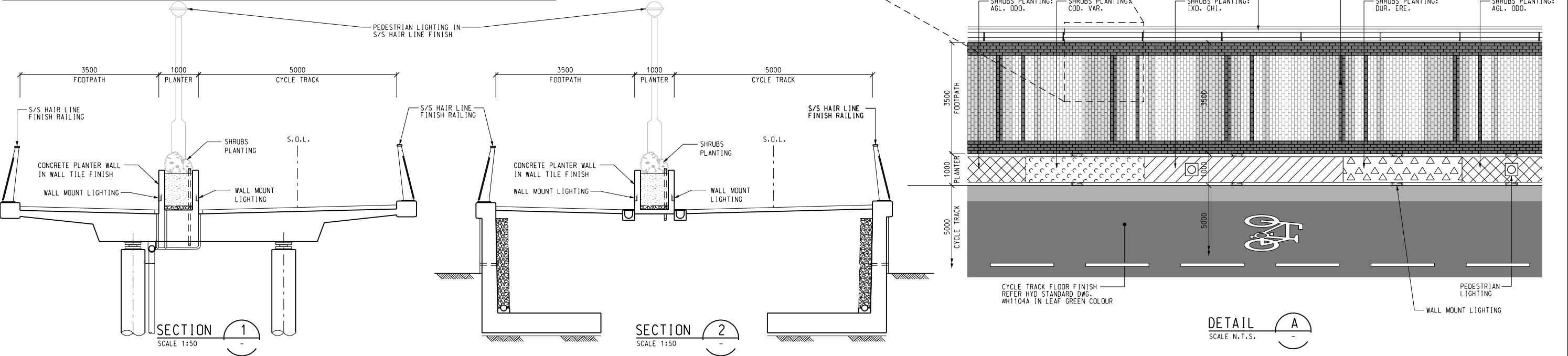


PLANTING SCHEDULE:

Abbreviation	SCIENTIFIC NAME	CHINESE NAME	SPACING (mm)	SIZE (HTxSPREAD)mm	REMARKS
Shrubs Planting:					
AGL. ODO.	<i>Aglia odorata</i>	米仔蘭	300	400HTx300SP	POTTED
COR. VAR.	<i>Codiaeum variegatum</i>	洒金榕	300	400HTx300SP	POTTED
DUR. ERE.	<i>Duranta erecta</i>	假連翹	300	400HTx300SP	POTTED
IXO. CHI.	<i>Ixora chinensis</i>	仙丹花	300	400HTx300SP	POTTED
SCH. ARB. Variegata	<i>Schefflera arboricola variegata</i>	八葉木(花葉)	300	400HTx300SP	POTTED
Climber Planting:					
FIC. PUM.	<i>Ficus pumilia</i>	薊荔	800	1000L	MIN. 3 SHOOTS PER PLANT
Tree Planting:					
CAS. SIA.	<i>Cassia surattensis</i>	黃槐	400	HEAVY STANDARD	BALL & BURLAP
HIB. TIL.	<i>Hibiscus tiliaceus</i>	黃槿	400	HEAVY STANDARD	BALL & BURLAP
TER. MAN.	<i>Terminalia mantaly</i>	細叶欖仁	400	HEAVY STANDARD	BALL & BURLAP
Palm Planting:					
LIV. CHI.	<i>Livistona chinensis</i>	蒲葵	400	STANDARD	POTTED

NOTE:

1. PAVING PATTERN AS SHOWN IN THE DRAWINGS ARE SUGGESTED FOR DESIGN CONSIDERATION ONLY.



Printed by : wai-man, cheung
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9/5/2011
File name :



土木工程拓展署
Civil Engineering and
Development Department

ARUP
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Hong Kong Limited

Job Title

Agreement No. CE 43/2008(HY)
Cross Bay Link, Tseung Kwan O – Investigation

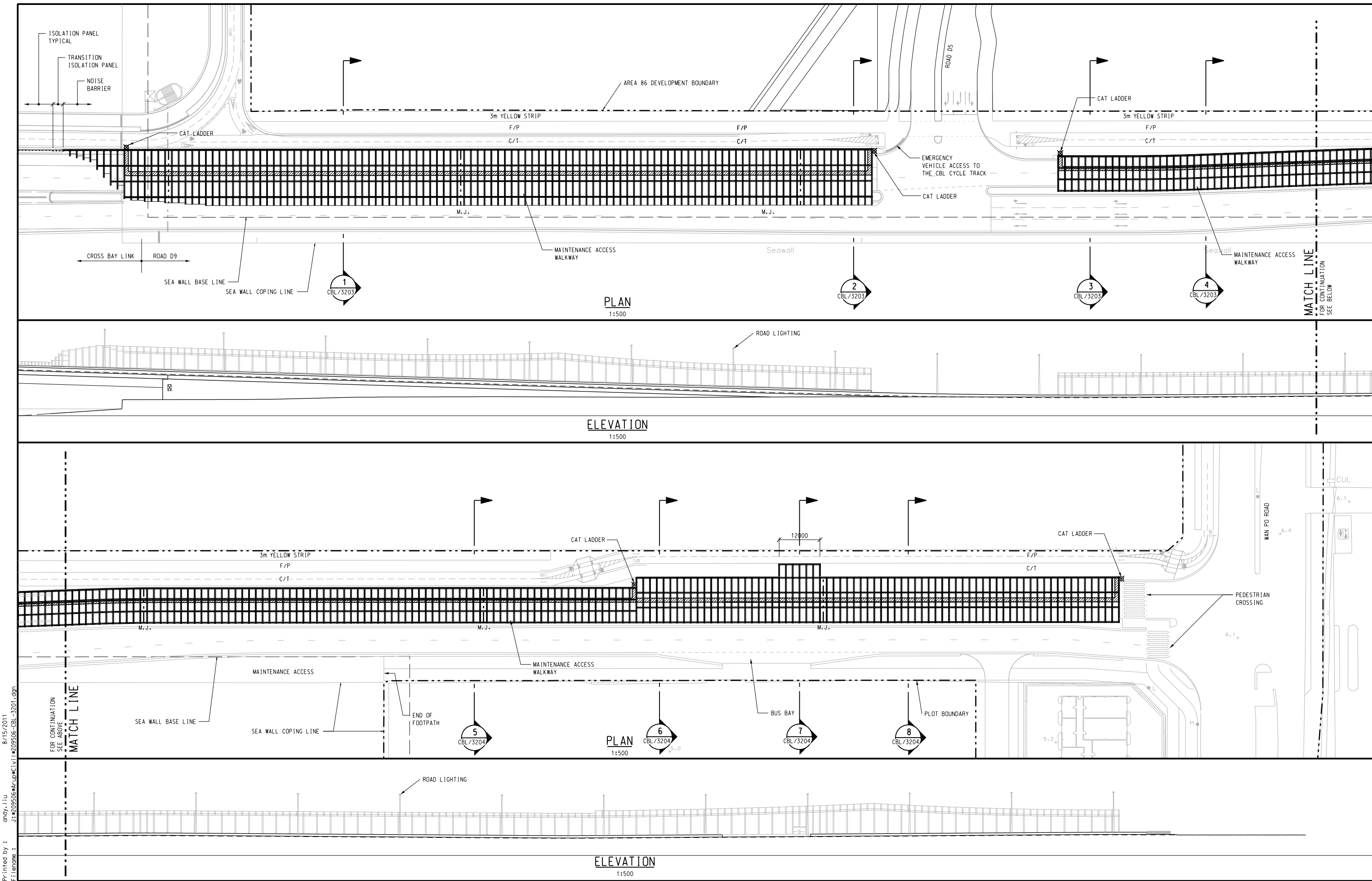
Drawing Title

CBL LANDSCAPE
CYCLE TRACK

B	SECOND ISSUE	07/11
A	DRAFT	04/11
Rev.	Description	Date

Drawn	MAN	Date	04/11
Checked	TL	Approved	SYC
Scale	AS SHOWN @A1	Status	DRAFT

Drawing No.	209506/CBL/6010
Rev.	B



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Job Title

Agreement No. CE 43/2008(HY)
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Drawing Title

NOISE BARRIERS
GENERAL ARRANGEMENT

Rev.	Description	Date
B	SECOND ISSUE	08/11
A	FIRST ISSUE	04/11

Drawn	AL	Date	04/11
Checked	MH	Approved	SYC
Scale	1:1000 on A3		

Drawing No.	209506/CBL/3201	
Status	DRAFT	
Rev.	B	



SCALE 1:400



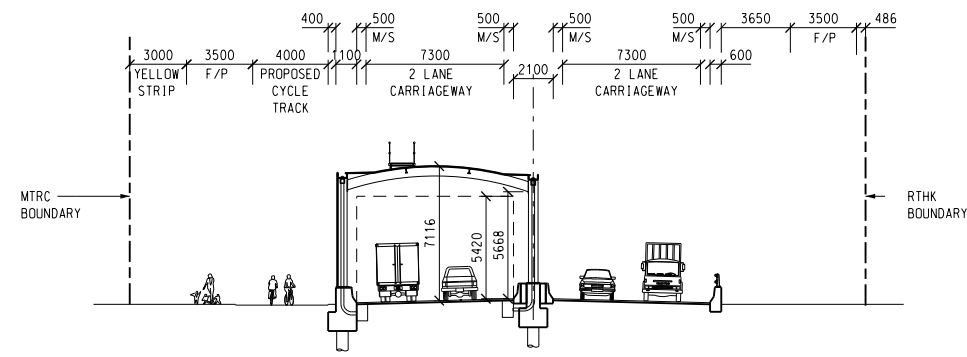
SCALE 1:400



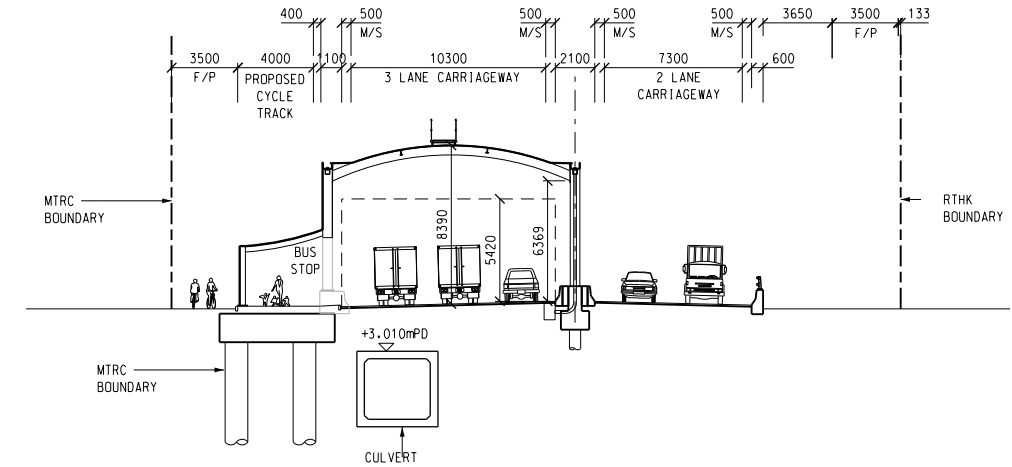
SECTION



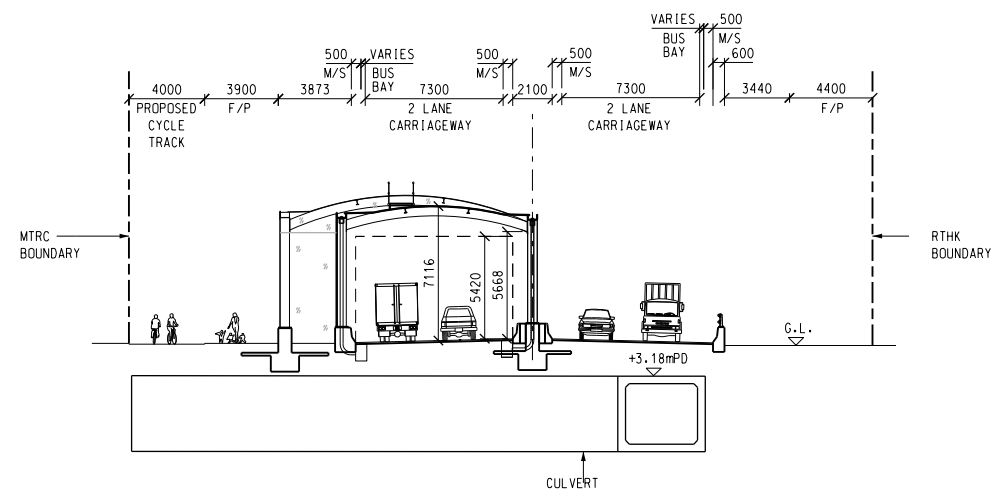
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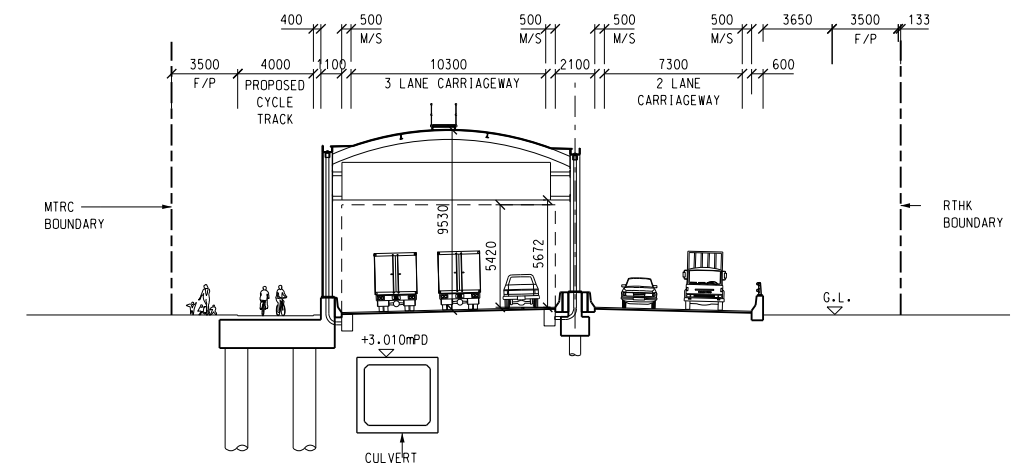
SECTION 5
SCALE 1:400
CBL/3201



SECTION 7
SCALE 1:400
CBL/3201



SECTION 6
SCALE 1:400
CBL/3201



SECTION 8
SCALE 1:400
CBL/3201

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Filename : J:\209506\Map\Map\Civil\209506-CBL-3204.dgn
1/8/2011



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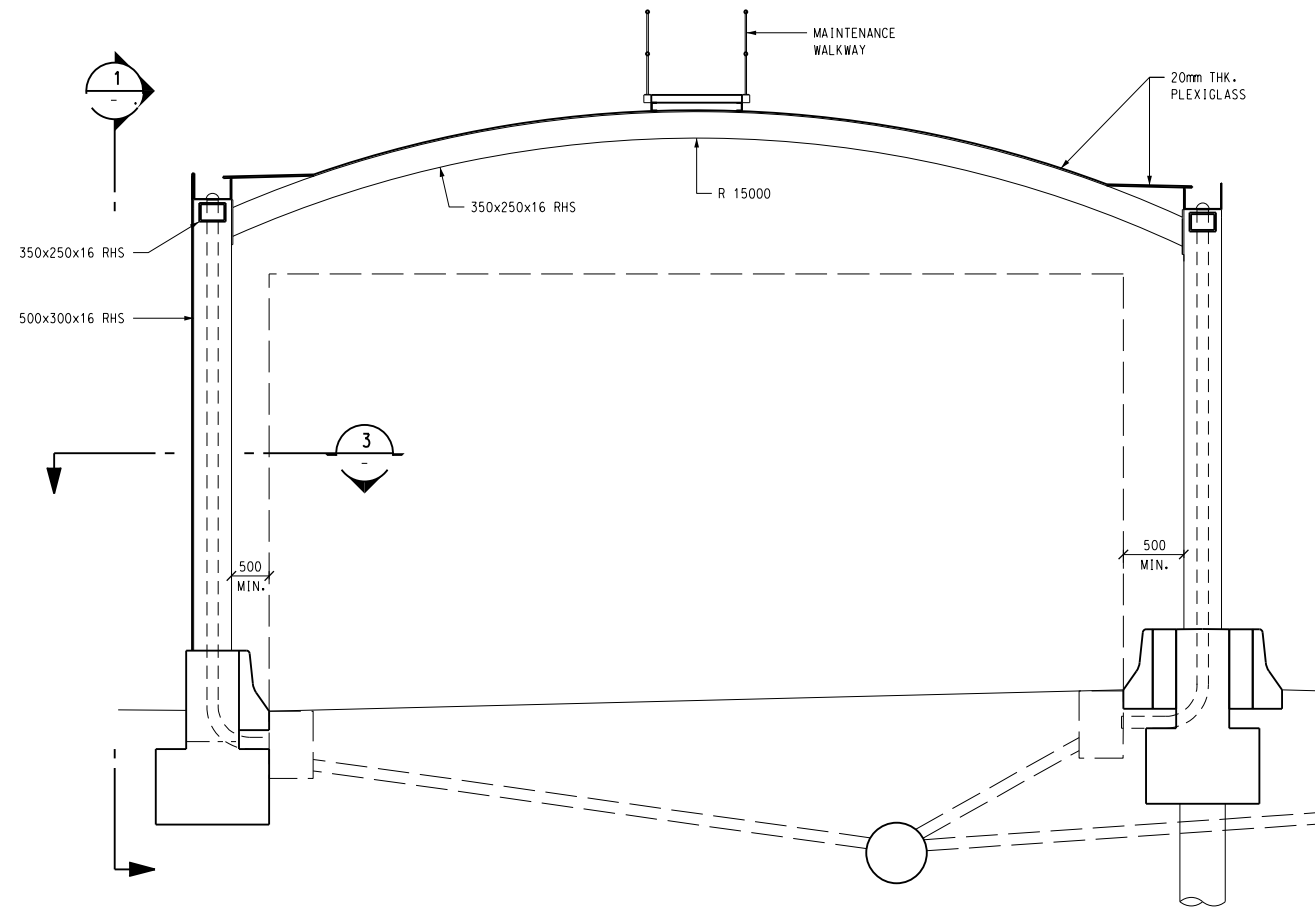
Job Title

Agreement No. CE 43/2008(HY)
Cross Bay Link, Tseung Kwan O – Investigation

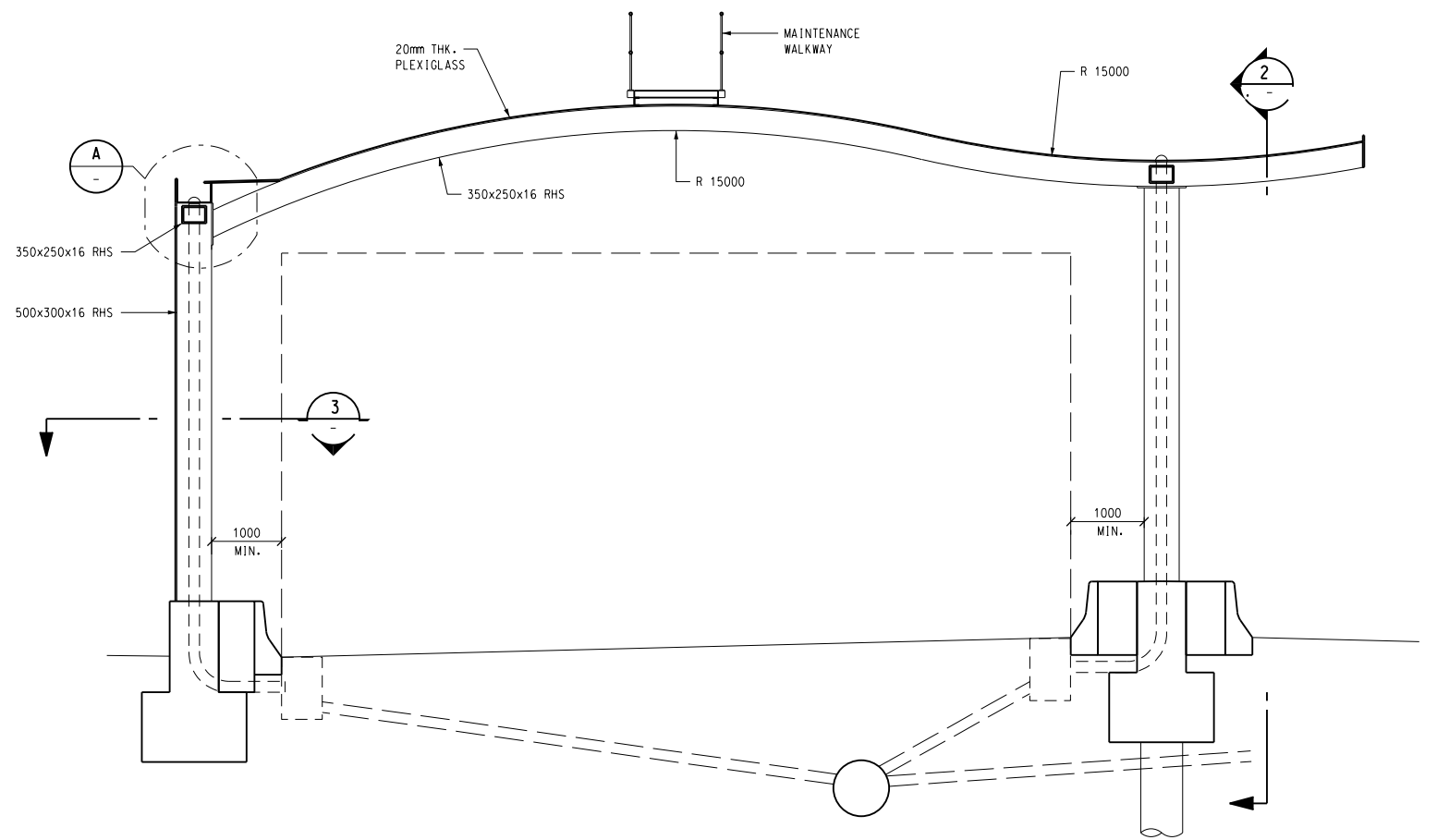
Drawing Title

NOISE BARRIERS
SECTIONS
SHEET 2

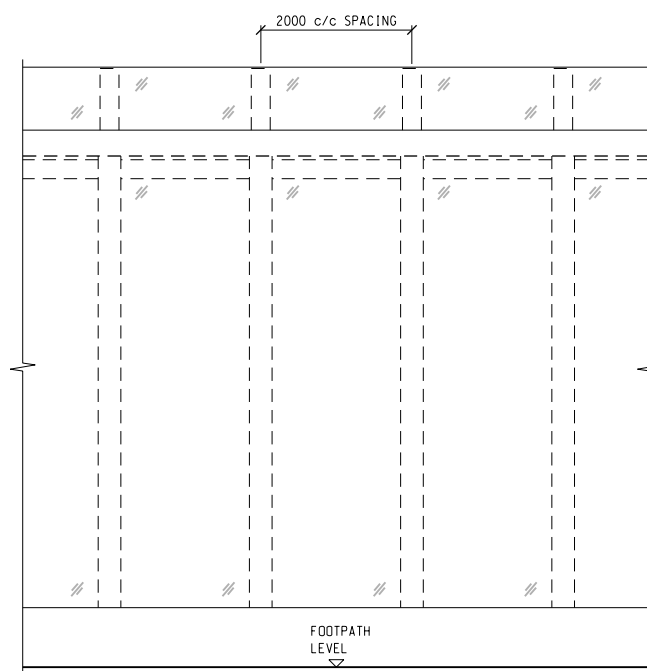
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Checked MH		Approved SYC		
A	DRAFT	03/11	Scale 1:400 on A3	Status DRAFT
Rev.	Description	Date		Rev. B



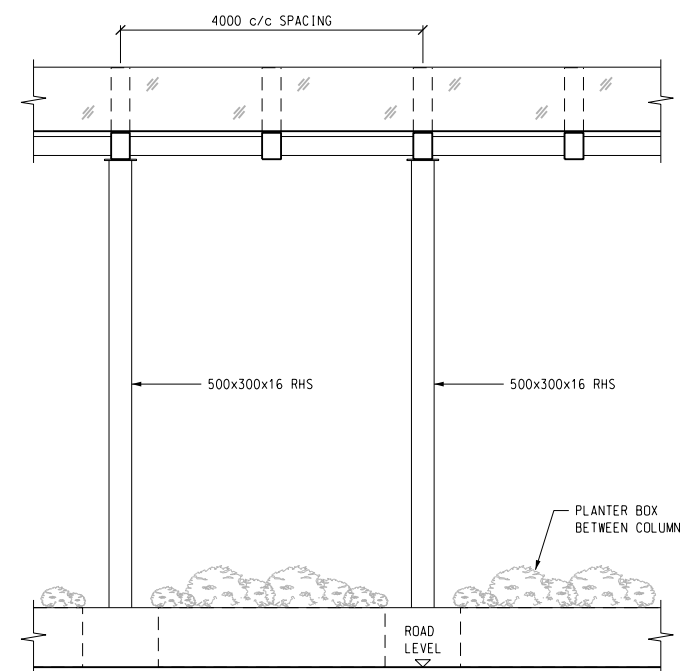
TYPICAL SECTION FROM R5 JUNCTION TO WAN PO ROAD
1:50



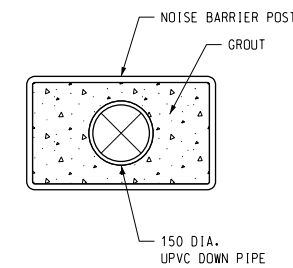
TYPICAL SECTION FROM MAIN BRIDGE TO R5 JUNCTION
1:50



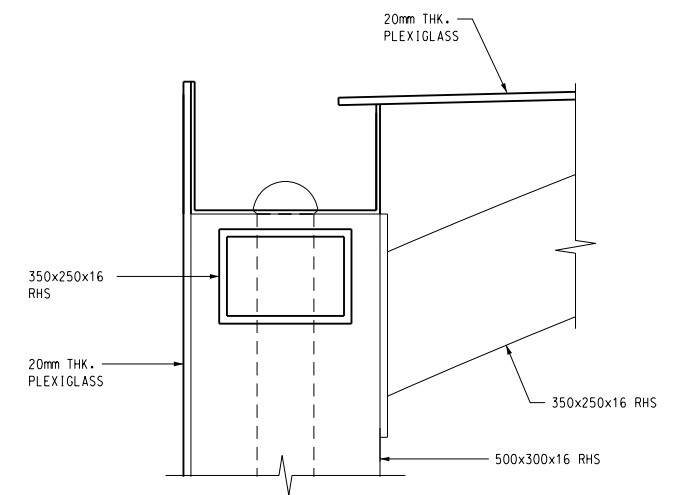
SECTION 1
SCALE 1:50



SECTION 2
SCALE 1:50



SECTION 3
SCALE 1:10



DETAIL A
SCALE 1:10

Printed by : kam-lung lie 4/8/2011
Filename : J:\209506\Civil\209506-CBL-3205.dgn



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Agreement No. CE 43/2008(HY)
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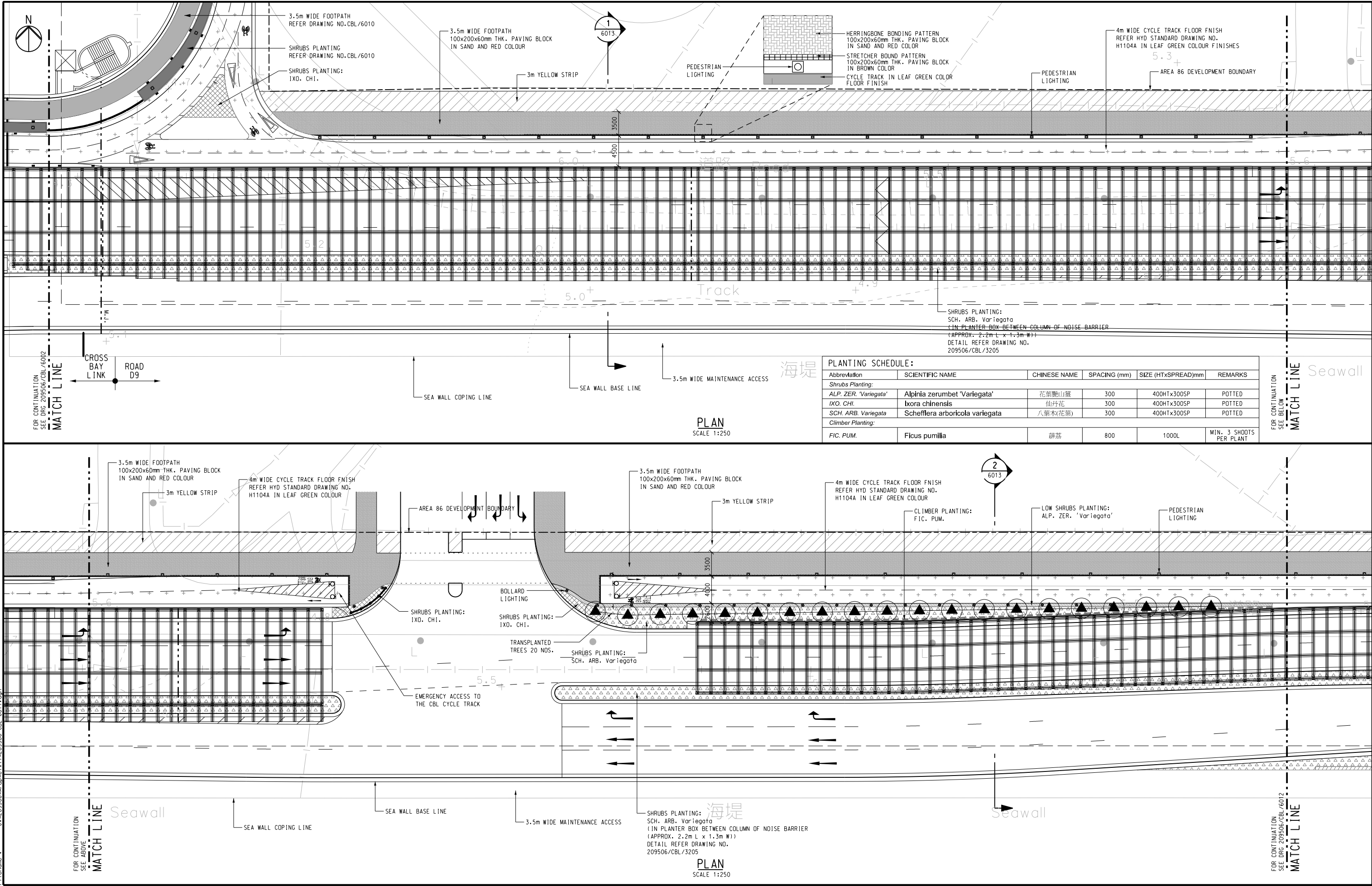
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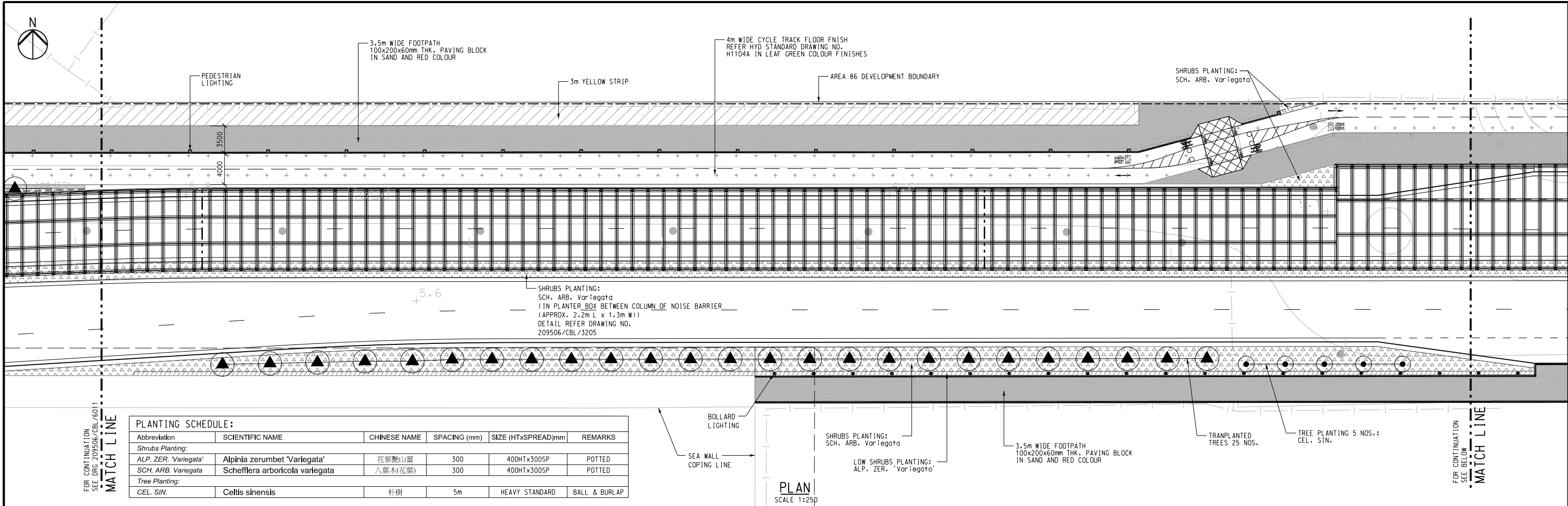
NOISE BARRIERS
DETAILS
SHEET 1

Rev.	Description	Date
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A	FIRST ISSUE	03/11

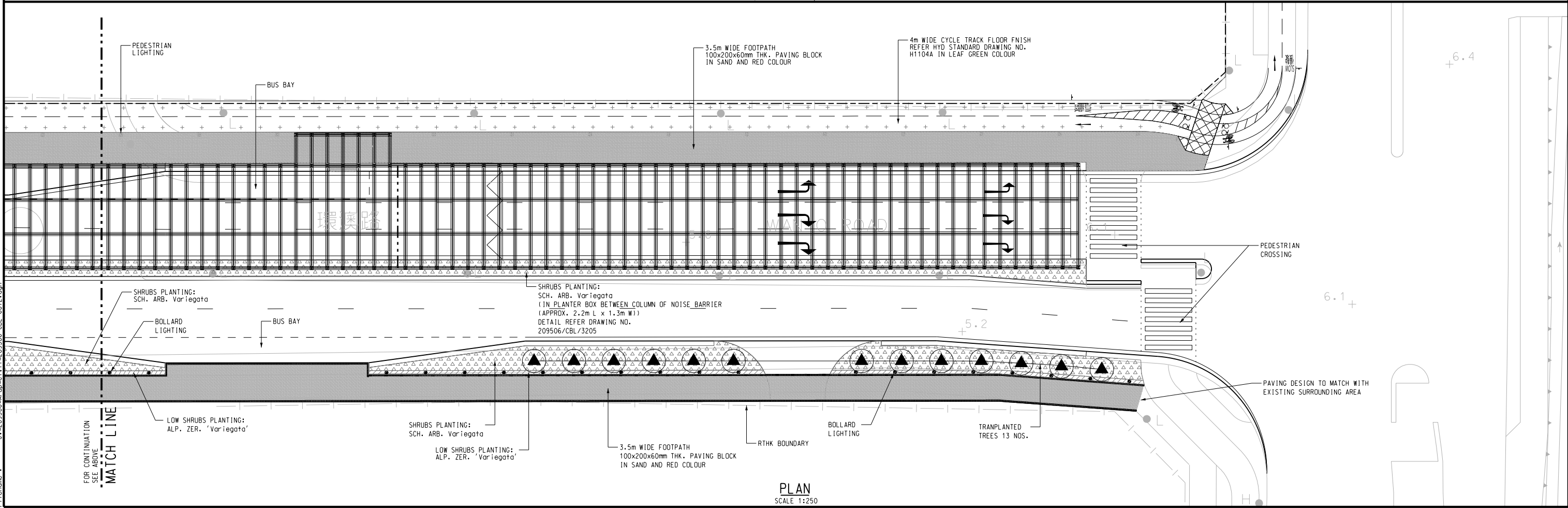
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Checked	MH	Approved	SYC
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Drawing No.	209506/CBL/3205	
Status	DRAFT	Rev.
		B



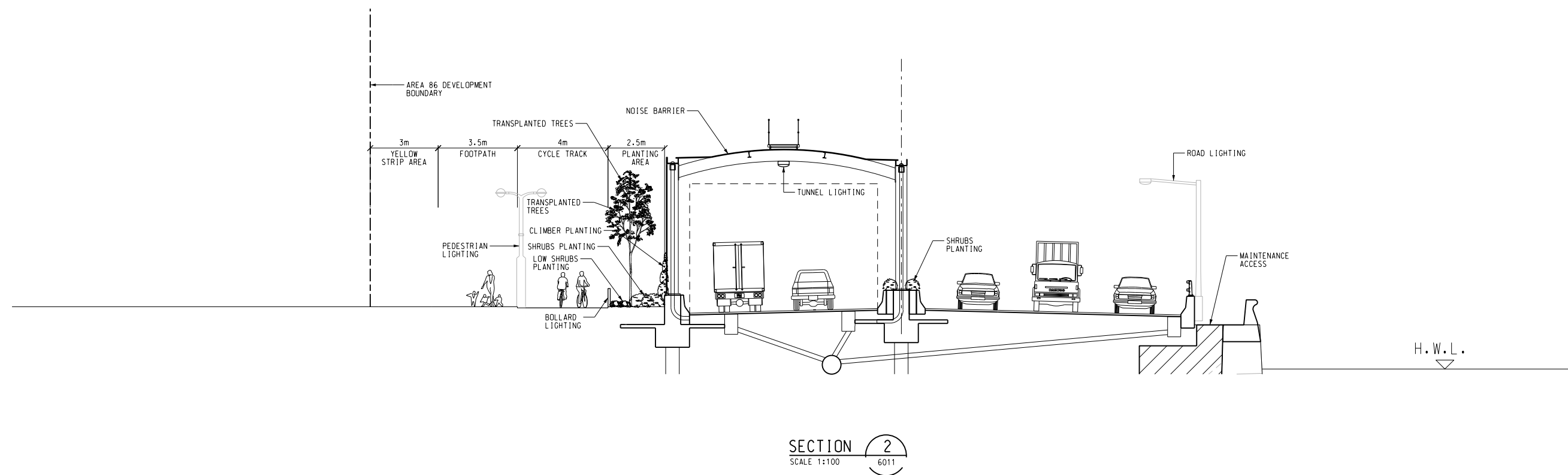
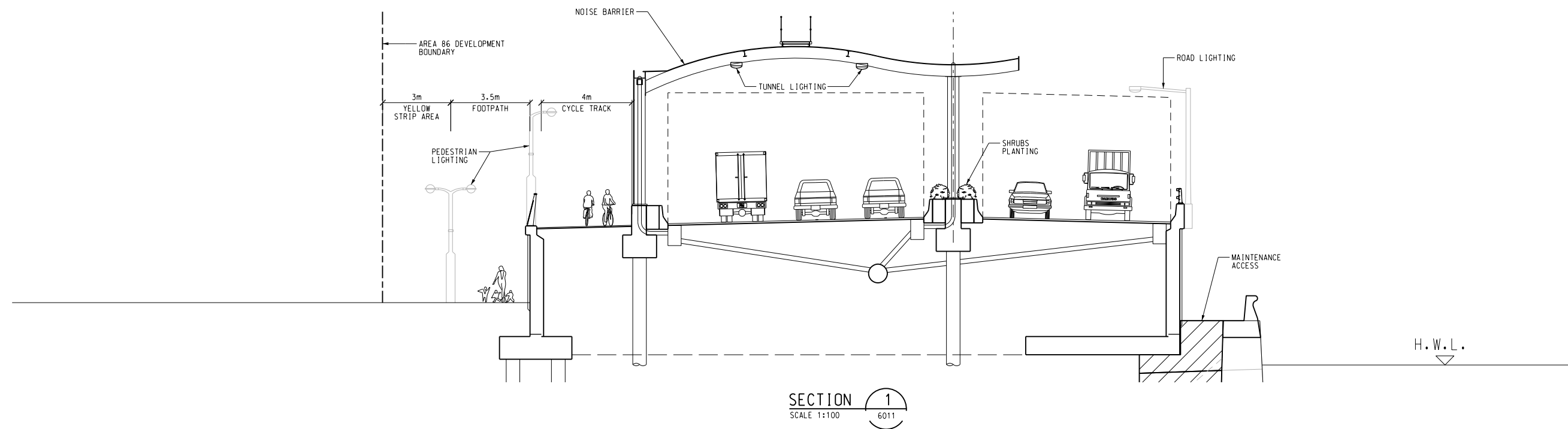


PLANTING SCHEDULE:					
Abbreviation	SCIENTIFIC NAME	CHINESE NAME	SPACING (mm)	SIZE (HTxSPREAD)mm	REMARKS
Shrubs Planting:					
ALP. ZER. 'Variegata'	Alpinia zerumbet 'Variegata'	花葉山薑	300	400HTx300SP	POTTED
SCH. ARB. Variegata	Schefflera arboricola variegata	八葉木(花葉)	300	400HTx300SP	POTTED
Tree Planting:					
CEL. SIN.	Celtis sinensis	朴樹	5m	HEAVY STANDARD	BALL & BURLAP



NOTE

1. PLANTING DESIGN REFER DRAWING NO. 209506/CBL/6011 & 6012
AND PLANTING SCHEDULE ON 209506/CBL/6011.



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Filename : J:\209506\CBL\up\Civil\209506-CBL-6013.dgn



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Job Title

**Agreement No. CE 43/2008(HY)
Cross Bay Link, Tseung Kwan O – Investigation**

Drawing Title

**ROAD D9 LANDSCAPE
SECTION**

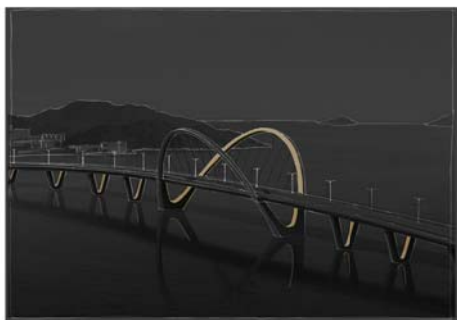
Rev.	Description	Date
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A	DRAFT	04/11

Drawn	MAN	Date	04/11
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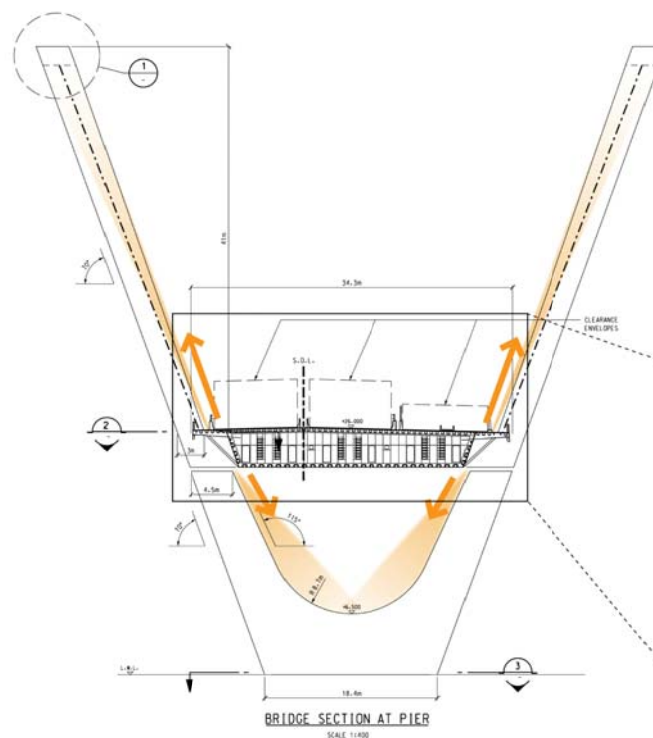
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Status	DRAFT		
Rev.	B		



Reference images of projected light onto arches



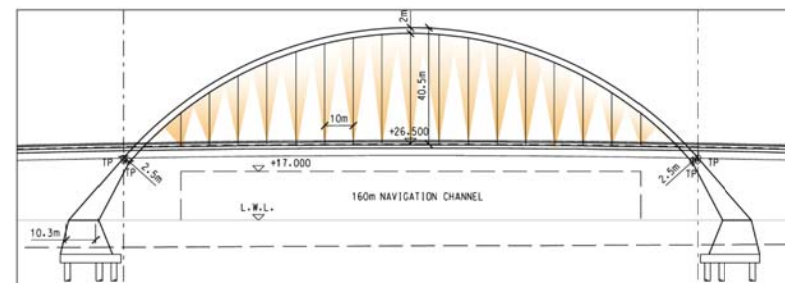
Artist impression of projected light effect: distant view



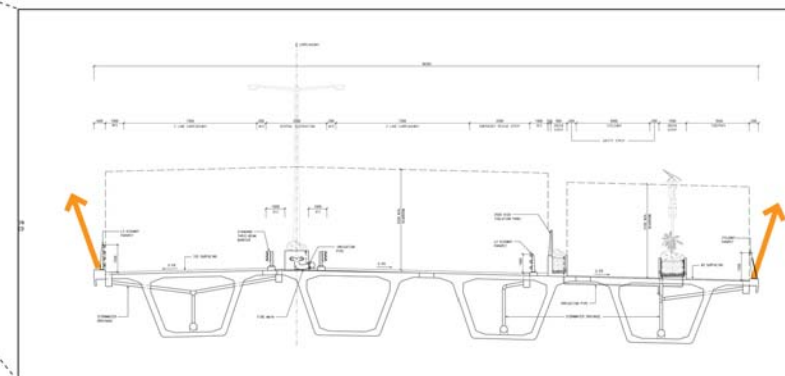
Section at Eternity Arch Pier; projectors to illuminate inside faces need to be positioned above and below deck level to create a visual continuous loop



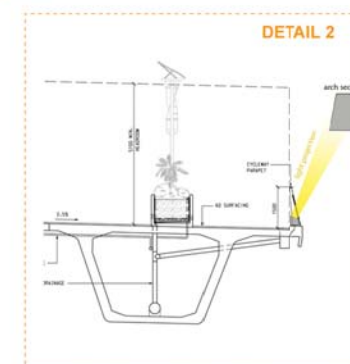
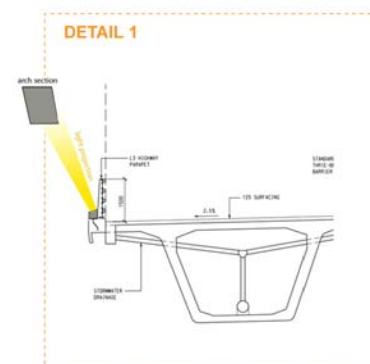
Possible LED projectors (> IP65)



Projectors recessed and regularly spaced to create a "fanned" lighting distribution

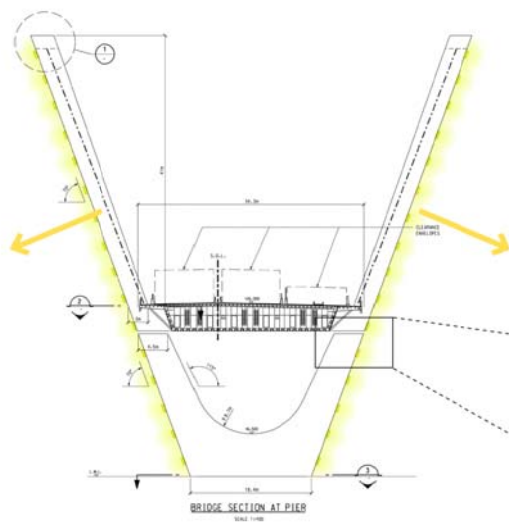


Projectors recessed and regularly spaced within planter boxes

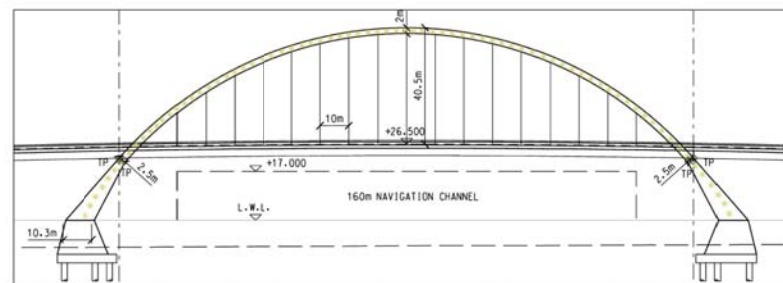


Note:

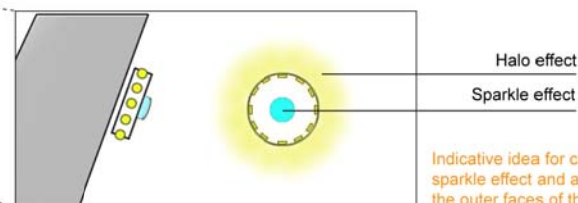
1/ The Lighting Design shown here is for illustrative purpose only



Section at Eternity Arch Pier; LED modules create a sparkling effect with diffuse glow of light onto the outer surfaces.



LED modules at regular intervals, integrated into the Eternity Arches (indicative number only)



Indicative idea for custom LED module to create sparkle effect and a glowing halo to emphasize the outer faces of the Eternity Arches



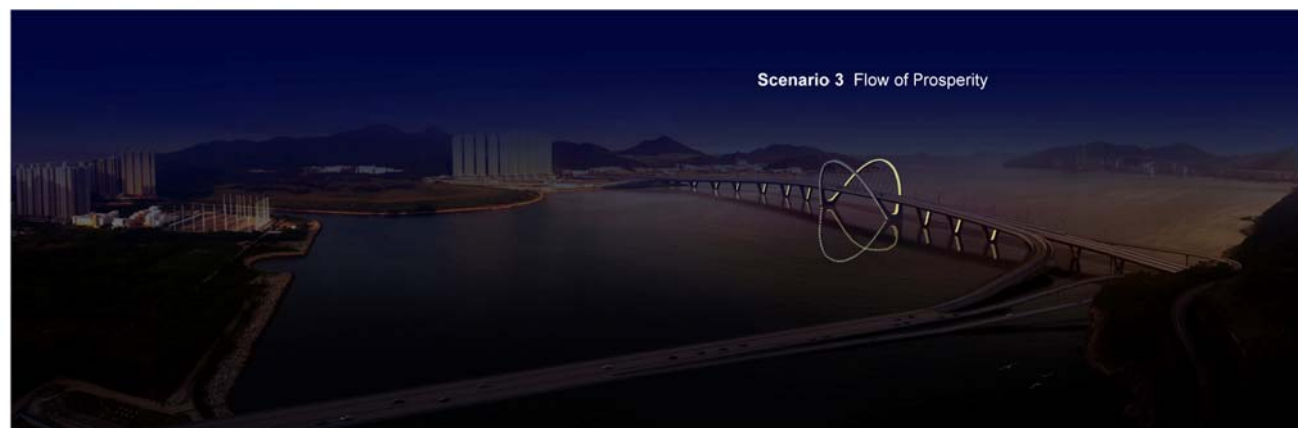
Reference images of sparkling LED modules onto bridge structures



Artist impression of sparkling light effect



Note:
1/ The Lighting Design shown here is for illustrative purpose only.



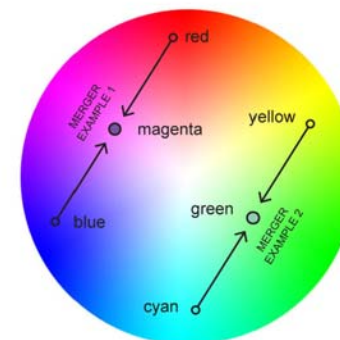
Note:
1/ The Lighting Design shown here is for illustrative purpose only.

SCENARIO 1

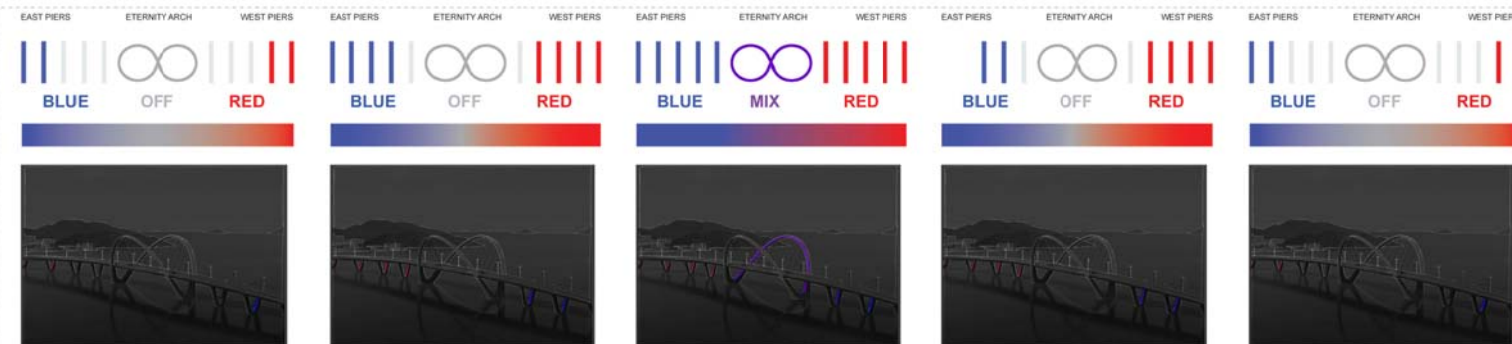
Flow of Cultures

In Hong Kong people of many origins, both from the East and the West come together. There is a flow of cultures that meet and interact constantly. Scenario 1 represents the continuous exchange between these cultures, and social, economical and spiritual growth that emerges from it.

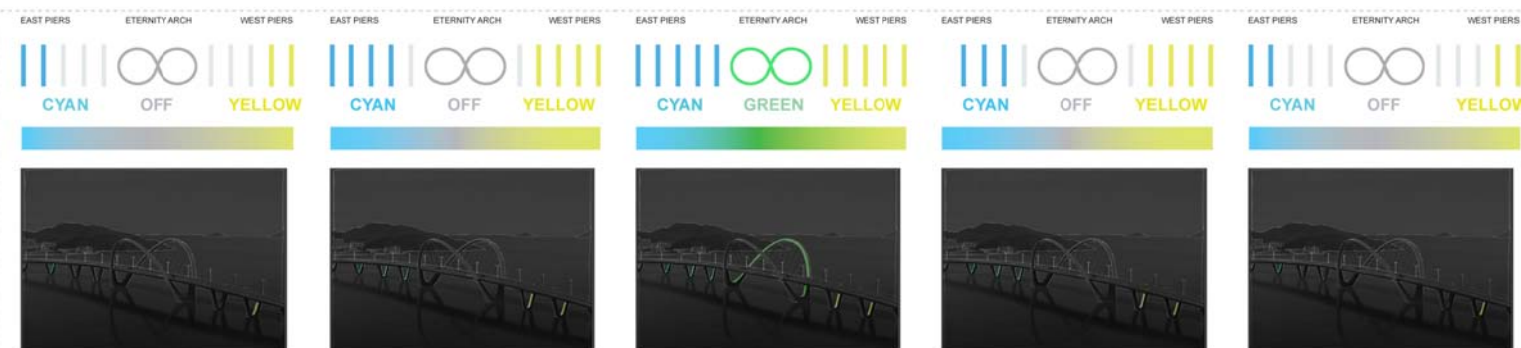
It is proposed to introduce two contrasting colours, i.e. red and blue, that represent a culture. Each colour will "flow" from one approach towards the core, the Eternity Arches, where they merge to form their combined, or blend colour, i.e. magenta. This merger symbolises that different cultures learn and benefit from each other, when they work together and combine their strengths.



The merger of cultures stretches out over time. The V-shaped pier inner faces will gradually appear in one of the two colours. Both colours will flow towards the Eternity arches, where they will merge. A typical night could look like (examples only):



MERGER EXAMPLE 1



MERGER EXAMPLE 2

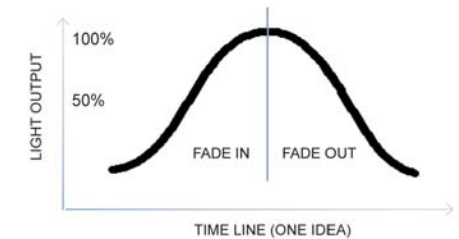
Note:
1/ The Lighting Design shown here is for illustrative purpose only.

SCENARIO 2

Flow of Ideas

Hong Kong is a global hub for innovation, development, and great initiatives... It is a hub for new ideas, by leaders, by individuals, by artists, by business men. This scenario will emphasize the continuous flow of ideas, and the gradual process of their growth into success for the city of Hong Kong.

One colour will gently appear (50% output) on the piers at either end of the CBL approaches. It will represent the initial stage - the emergence - of an idea. Gradually this colour will wash across the other piers with growing intensity towards the centre piece; representing that the idea is developing its potential. Finally, the colour will flow onto the Eternity Arches and remain in 100% output for a while representing a successful idea. Then the colour will fade and move gradually away, to allow for a new colour (or idea) to come to life.



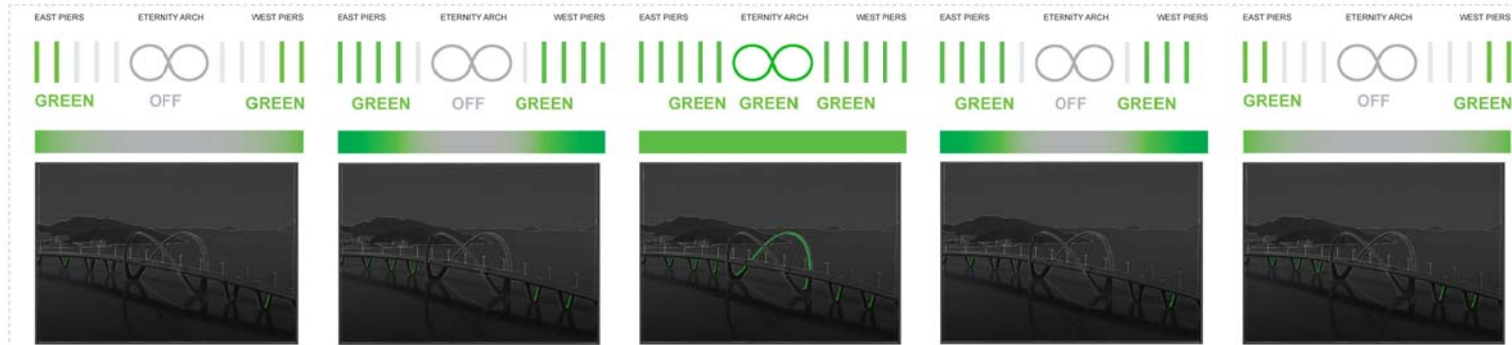
Colours may represent typical levels where ideas arise; at individual level (green), at groups level (blue) and at national level (red). The speed of a colour flow may vary as well; some ideas take longer to ripe than others. The development of ideas is a dynamic process.

The 3 typical ideas will randomly alternate throughout the evening, with various speeds. Each night will generate a new palette of 'ideas'. A typical night could look like:

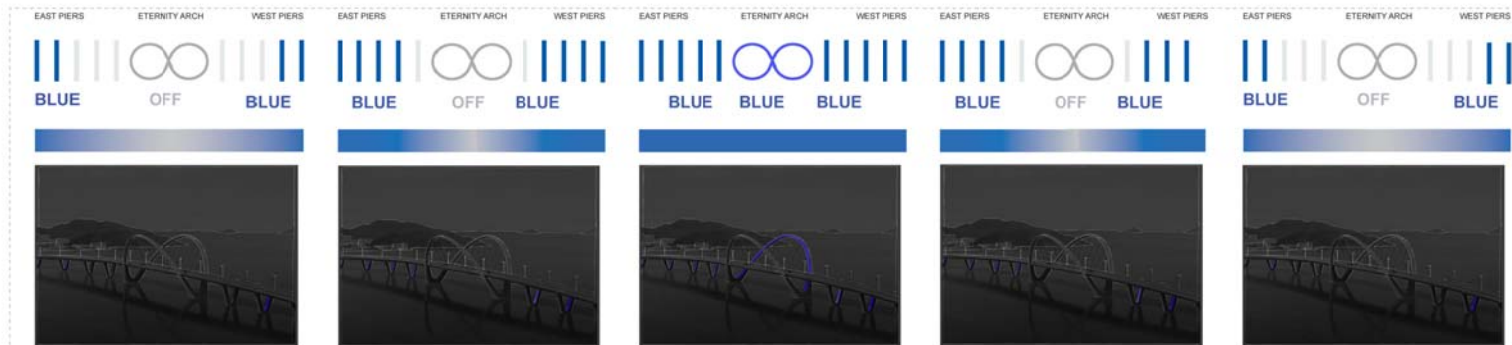


(Note that typical colours green, blue and red are for indicative use only; preferred colours should be agreed on with the client)

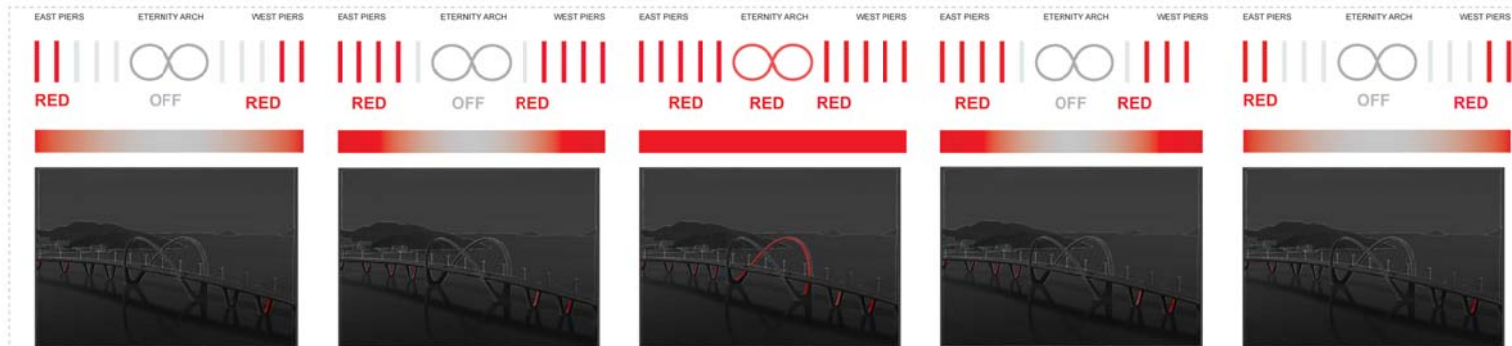
Note:
1/ The Lighting Design shown here is for illustrative purpose only.



IDEA LEVEL: 1



IDEA LEVEL: 2



IDEA LEVEL: 3

SCENARIO 3

Flow of Prosperity

This third scenario celebrates the prosperity of Hong Kong; its business, its culture, its people, its knowledge, its spirit. At special events or celebrations, this scenario of golden glowing piers and brightly sparkling arches, is activated to celebrate prosperity.

The V-shaped piers will be lit in a golden or warm white tint, activated one per one towards the centre of the CBL. This act is completed when the inside faces of the eternity arches are glowing in gold as well.

Then the embedded LED luminaires of the external Eternity arches will be activated, generating a cool white sparkling effect that will allow for dramatic visual scene.

Both principles remain active throughout the event or night. Towards the end, the sequence will be reversed by de-activating the sparkles and ascend of the golden tint.

Note:
1/ The Lighting Design shown here is for illustrative purpose only.

EAST PIERS ETERNITY ARCH WEST PIERS

GOLD OFF GOLD



EAST PIERS ETERNITY ARCH WEST PIERS

GOLD OFF GOLD

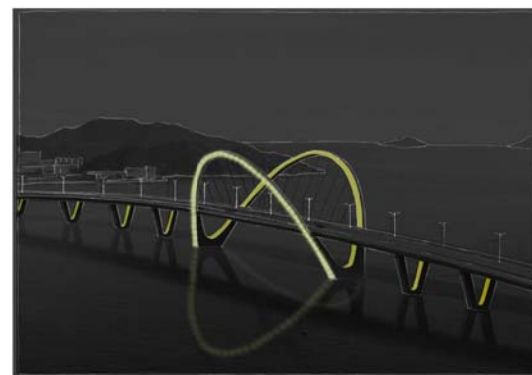


EAST PIERS ETERNITY ARCH WEST PIERS

GOLD SPARKLE GOLD



TIME LINE



Appendix C

Response to Comments

Comments received:	Responses:
<p>(1) From Chairman, ACABAS, Highways Department</p> <p>Date: 14 June 2011 Ref: (2P2K) in HyD T 4/1/287(M)</p> <p><u>Advisory Committee on the Appearance of Bridges and Associated Structures Minutes of the 328th Meeting</u></p> <p>The project team presented the project as the following:</p> <p>(i) This submission was to present the preliminary design of the proposed Cross Bay Link and the Road D9 noise enclosure.</p> <p>(ii) Detail description of the project and the project team's responses to comments of 315th meeting were included in the report.</p> <p>The Committee had the following comments:</p> <p><u>Primary comments</u></p> <p>1. The committee had reservation on the structural form of the Road D9 noise enclosure. The portal was not aesthetically pleasing to the road users. The Committee suggested project team to revisit the technical requirement of the noise enclosure to avoid a full enclosure design. In view of the iconic bridge at the middle, more graceful design of the noise enclosure should be considered. Project team was required to review the design accordingly.</p> <p>2. Project team was required to consider appropriate vertical greening e.g. climbers for the noise enclosure, and provide tree planting, e.g. for the footpath and at the two ends before the arch bridge.</p> <p>3. The main deck was considered long, and the Committee commented that a more compatible street furniture design (e.g. street light between cycle path and footway etc.) to echo with the design of the arc bridge would be necessary. Project team should review the design accordingly.</p> <p>4. The Committee considered that the scale of viewing platform appeared small for the intended function. Project team should review for a suitable scale of the area.</p>	<p>The extent of the noise barriers is based on a noise impact analysis, which considers noise levels from the road on sensitive receivers within the LOHAS Park development. From this analysis the location and extent of noise barrier is calculated. The findings from the analysis are that the eastbound carriageway requires a full enclosure form. Slightly more coverage is required on the approach to the main bridge due to the rising road level.</p> <p>The shape of the noise barrier has been revised to be more in keeping with the flowing curves of the main bridge. An arched roof has been added to the noise barrier to be more sympathetic with the arch forms of the main bridge.</p> <p>Vertical greening of the noise barrier, in the form of creepers, has been adopted where space permits for the at grade planter.</p> <p>The nature of this bridge is that it is a long linear object and the planting zones are positioned for enjoyment by bridge users, but also for separating cyclists from pedestrians.</p> <p>We have adopted a number of tactics to avoid a continuous feature. These include:</p> <ul style="list-style-type: none">• Viewing platforms to create nodes of interest.• Seating areas at regular intervals.• Varied plant selection. <p>In terms of the street furniture we have amended the lighting columns, pedestrian parapets and isolation panel posts to be more compatible.</p> <p>Noted. The size of the viewing platform has been revised to be larger and better integrated into the landscaped feature at this location.</p>

Comments received:	Responses:
<p>5. Project team was advised to review the proposed paving design to better relate to the site context and to visually tie-in the structure with the streetscape. Project team was required to review the design accordingly.</p> <p>6. The Committee commented that there was wide opening from cycle park to the adjoining footway. Cyclists may take advantage of this exit onto footway. Project team should review the interface between cycle track / park and footway, so that the footway would be cycle-free.</p> <p>7. Project team should carry out discussion with the maintenance office for the proposed elements.</p> <p>8. Previous comment “to reduce bulkiness of the proposed arch” would still be valid. Project team was required to address the comment accordingly.</p> <p>9. Previous comment was not addressed. Project team was reminded to take into consideration structural efficiency and maintenance aspect in the detail development.</p> <p>CONCLUSION: Based on the information submitted, the Committee considered that submission of the Cross Bay Link Bridge was <u>acceptable in principle</u>, and the submission of the noise enclosure was <u>unacceptable</u>. Resubmission and presentation to address all comments by the project team would be required.</p>	<p>At this preliminary design stage we only show indicative tiling patterns. Tiling patterns that fit in with the site context, but also ties in with the surrounding promenade works will be developed during preliminary design and subsequently presented to ACABAS.</p> <p>The gaps in the central planter are essential for allowing emergency services and maintenance staff to access the footpath from the highway via the doors in the isolation panel. They also create space for cycle racks - CBL is a long gradient and some cyclists may need to stop and rest. Clearly, this creates a path for cyclists and pedestrians interchange between corridors.</p> <p>The strategy is to make the cycle track more desirable to cyclists than using the footpath and to provide deterrents such as bollards, railings and signage. Please refer to the revised report for further discussion and details.</p> <p>Noted. The operational and maintenance aspects of the bridge are discussed in the Operation and Maintenance Report, which was circulated to all the relevant departments on the 28th June.</p> <p>In terms of the impact of maintenance facilities on the overall aesthetics we have added to the visualisation the items we expect to see in the views, such as under bridge maintenance gantry, arch inspection gantry rails. Please refer to the revised visualizations.</p> <p>We investigated various options including modifying the shape of the arch to reduce the visual bulk. In the end we found that by adding the arch inspection gantry rails to the visualisation, this had the effect of breaking up the large open surface of the arch face. We have added further comparative visualizations to the report to demonstrate this effect along with further discussion of the issue.</p> <p>We have added permanent maintenance equipment to the visualizations to show their effect on aesthetics. In terms of structural efficiency, the major elements are sized based on the minimum utilization ratio specified by the Highways Department.</p> <p>Noted.</p>