



中國建築 - 利達聯營
CHINA STATE - LEADER JOINT VENTURE

**Wan Chai Development Phase II –
Central – Wan Chai Bypass at Wan Chai West
Contract No. HK/2012/08**

**Noise Management Plan
for FEP-09/364/2009/B**

Revision: 2

Revision	Date of Issue	Remarks	Prepared by	Checked by
1	10 Apr 2013	First Issue	James MA	George CHEUNG
2	28 Jun 2013	Revised as per EPD's comments	James MA	George CHEUNG

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1 Introduction

Wan Chai Development Phase II – Central – Wan Chai Bypass at Wan Chai West (Contract No. HK/2012/08) is part of the Central - Wan Chai Bypass (CWB) including its road tunnel and slip roads covered under the Environmental Permit No. EP-364/2009/B.

China State – Leader Joint Venture was granted on 5 March 2013 a Further Environmental Permit (No. FEP-09/364/2009/B) for the Contract No. HK/2012/08 under the master Environmental Permit.

Under Condition 2.9 of Part C of the FEP-09/364/2009/B, a noise management plan has to be prepared and deposited by the permit holder to the EPD at least two weeks prior to the commencement of construction of the corresponding component(s) of the project.

The purpose of this Noise Management Plan is to provide an evaluation of the potential noise impact during construction phase of the project (Contract No. HK/2012/08) which is undertaken by China State – Leader Joint Venture (CSLJV).

2 Environmental Legislation, Policies, Plans, Standards and Criteria

Noise impacts have been assessed in accordance with the criteria and methodology given in the Technical Memoranda made under the Noise Control Ordinance (NCO) and the Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM).

The NCO provides the statutory framework for noise control. Assessment procedures and standards are set out in the following Technical Memoranda:

- Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM);
- Technical Memorandum on Noise from Construction Work other than Percussive Piling (GW-TM);
- Technical Memorandum on Noise from Construction Work in Designated Areas (DA-TM); and
- Technical Memorandum on Noise from Places other than Domestic Premises, Public Places or Construction Sites (IND-TM).

3 Noise Limit

The NCO provides the statutory framework for noise control of construction work other than percussive piling using powered mechanical equipment (PME) between the hours of 1900 and 0700 or at any time on Sundays and public holidays (i.e. restricted hours). Noise control on construction activities taking place at other times is subject to the Criteria for Evaluating Noise Impact stated in Table 1B of Annex 5 in the EIAO-TM. The noise limit is 75dB(A) Leq(30min) at the facades of dwellings and 70dB(A) Leq(30min) at the facades of schools (65dB(A) during examinations). The construction noise criteria are summarized in Table 1

Table 1 Daytime Construction Noise Criteria

Uses	Noise Level in Leq(30min), dB(A)
Domestic Premises	75
Educational Institution	70
Educational Institution (during examination)	65

Between 1900 and 0700 hours and all days on Sundays and public holidays, activities involving the use of powered mechanical equipment (PME) for the purpose of carrying out construction work is prohibited unless a Construction Noise Permit (CNP) has been obtained. A CNP may be granted on condition that the Acceptable Noise Level (ANL) for the noise sensitive receivers (NSRs) can be complied with. ANLs are assigned depending upon the Area Sensitivity Ratings (ASRs). The corresponding Basic Noise Levels (BNLs) for evening and night time periods are given in Table 2.

Table 2 Construction Noise Criteria for Activity other than Percussive Piling (for Evening and Night Time)

Time Period	Basic Noise Levels (BNLs)		
	ASR A	ASR B	ASR C
Evening (1900 to 2300 hours)	60	65	70
Night (2300 to 0700 hours)	45	50	55

4 Identified Noise Sensitive Receivers (NSRs)

In order to evaluate the construction noise impact from the project (Contract No. HK/2012/08), representative noise sensitive receivers (NSRs) for this project are

selected for assessment and summarized in Table 3. The site layout plan (scale 1:1000) of the project showing the relevant NSRs is shown in Appendix I.

Table 3 List of Relevant NSRs Selected for Noise Assessment

Relevant NSRs	Use	Nearest Distance from Works Based on EIA Report
*The Hong Kong Academy for Performing Arts (HKAPA)	Performing Arts Centre	208m
*Hong Kong Arts Centre	Performing Arts Centre	180m

*: NSRs as identified in the EIA Report (Register No.: AEIAR-041/2001)

It is expected that the construction noise impact on the selected NSRs is deemed to be insignificant as the NSRs have facades / fixed windows and they are provided with central air conditioning. Hence, the NSRs do not rely on openable windows for ventilation.

5 Construction Noise

The construction tasks which are deemed to have emission of construction noise are shown as below:

- Tunnel construction;
- Diaphragm wall construction;
- Middle ventilation building sub-structure construction;
- Road formation and earthworks.

Types and number of powered mechanical equipment (PME) which would be used on site are documented in Appendix 4.1 of AEIAR-041/2001. They are grouped according to different stages of works. The actual list of PME to be implemented on site and specific noise impact of individual construction task will be reviewed in relevant method statements via submission to the Engineer's Representative (ER).

6 Mitigation of Environmental Impacts

To further reduce the noise impact to the NSRs during normal daytime working hours, it is recommended that the following noise reduction measures should be considered as far as practicable during construction:

6.1 Quiet Powered Mechanical Equipment (QPME)

Use of the following QPME will be considered during construction phase of this Project to reduce noise impact:

- Bulldozer, wheeled/tracked
- Excavator, wheeled/tracked
- Loader, wheeled/tracked
- Asphalt paver
- Road roller
- Roller, vibratory
- Power rammer (petro)
- Compactor, vibratory
- Crane, mobile
- Generator

6.2 Multiple-phase Construction Schedule

The multiple-phase construction schedule will be adopted as far as practicable during the planning of the construction programme.

6.3 Noise Reduction at Source

In order to reduce the noise impact generated by the stationary PME, movable acoustic shelter, flexible noise barriers and acoustic blanket will be considered.

The barrier and shelter could be made of a sheeting not less than 5kg/m² or baffles which comprise of sound absorbing lining and 1mm thick steel (or 10mm thick plywood) backing.

Typical details of the noise barrier are shown in Appendix II.

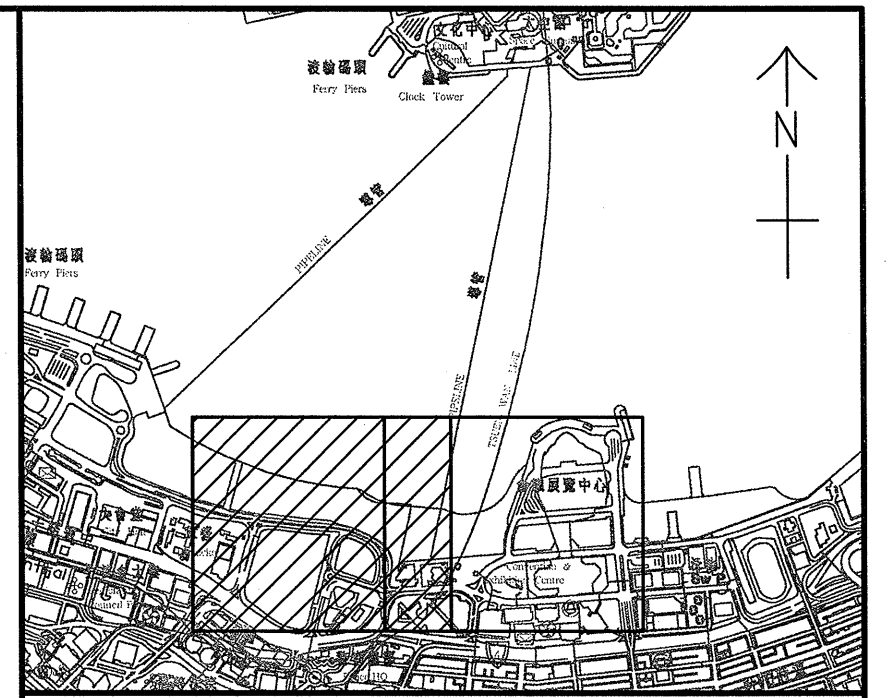
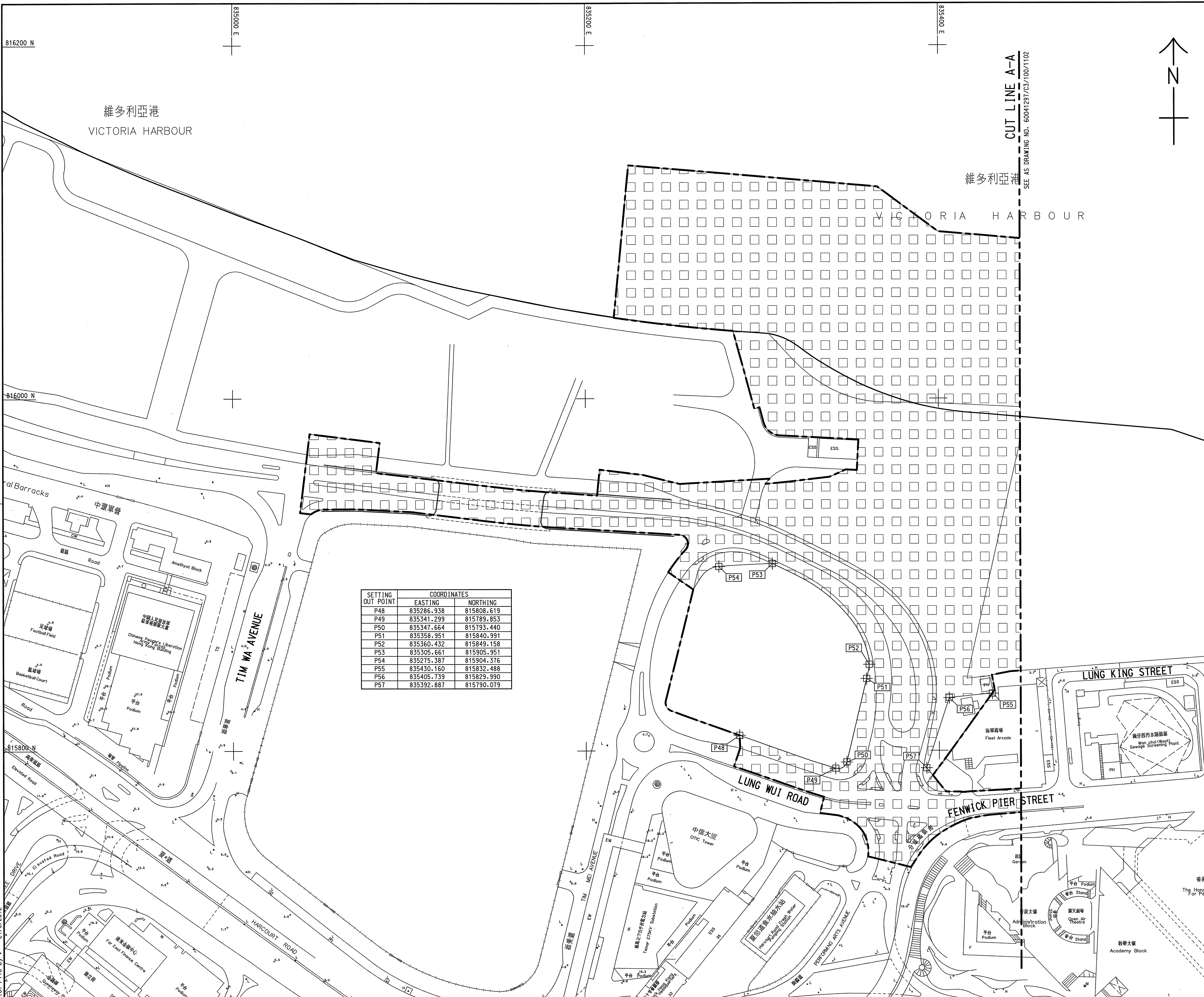
6.4 Other Mitigation Measures

The following good practices will be adopted when practical to alleviate noise impact:

- All PME to be used on site should be properly maintained;
- Mobile plant should be sited as far as away from NSRs as possible;
- Starting up the engines of all plant simultaneously should be avoided;
- PME known to emit noise strongly in one direction should, where possible, be orientated so that the noise is directed away from the nearby NSRs;
- Close liaison and communication with the neighbourhood including HKAPA and Hong Kong Arts Centre should be maintained.

Appendix I

Site Layout Plan Showing the Relevant Noise Sensitive Receivers



KEY PLAN
SCALE 1 : 20000

- NOTES:**
1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NO. 60041297/C3/100/1102.
 2. COORDINATES ARE BASED ON HONG KONG METRIC GRID (1980) UNLESS OTHERWISE NOTED.
 3. LEVELS ARE IN METRES RELATIVE TO HONG KONG PRINCIPAL DATUM (HPD) UNLESS OTHERWISE NOTED.
 4. DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
 5. SETTING OUT DIMENSIONS, LEVELS, COORDINATES ARE TO BE CALCULATED BY THE CONTRACTOR. NO INFORMATION SHOULD BE SCALED PHYSICALLY OR ELECTRONICALLY FROM THE DRAWINGS OR FILES.
 6. SITE BOUNDARY SETTING OUT POINTS SHALL REFER TO DRAWING NOS. 60041297/C3/100/1011 & 1012.

- LEGEND:**
- SITE BOUNDARY
 - [Grid Pattern] PORTION 1
 - [Cross-hatch Pattern] PORTION 1A
 - [Diagonal Hatch Pattern] PORTION 1C
 - [Downward Arrow Pattern] PORTION 1D
 - [Star Pattern] PORTION 2
 - [Dotted Pattern] PORTION 2A
 - [Staircase Pattern] PORTION 3
 - [Wavy Hatch Pattern] PORTION 4
 - [Vertical Line Pattern] PORTION 7A
 - [Hexagonal Pattern] PORTION 7B
 - [Diagonal Hatch Pattern] PORTION 7C
 - [Crosshair Symbol] PORTION OF SITE SETTING OUT POINT

SETTING OUT POINT	COORDINATES	
	EASTING	NORTHING
P48	835286.938	815808.619
P49	835341.299	815789.853
P50	835347.664	815793.440
P51	835358.951	815840.991
P52	835360.432	815849.158
P53	835305.661	815905.951
P54	835275.387	815904.376
P55	835430.160	815832.488
P56	835405.739	815829.990
P57	835392.887	815790.079

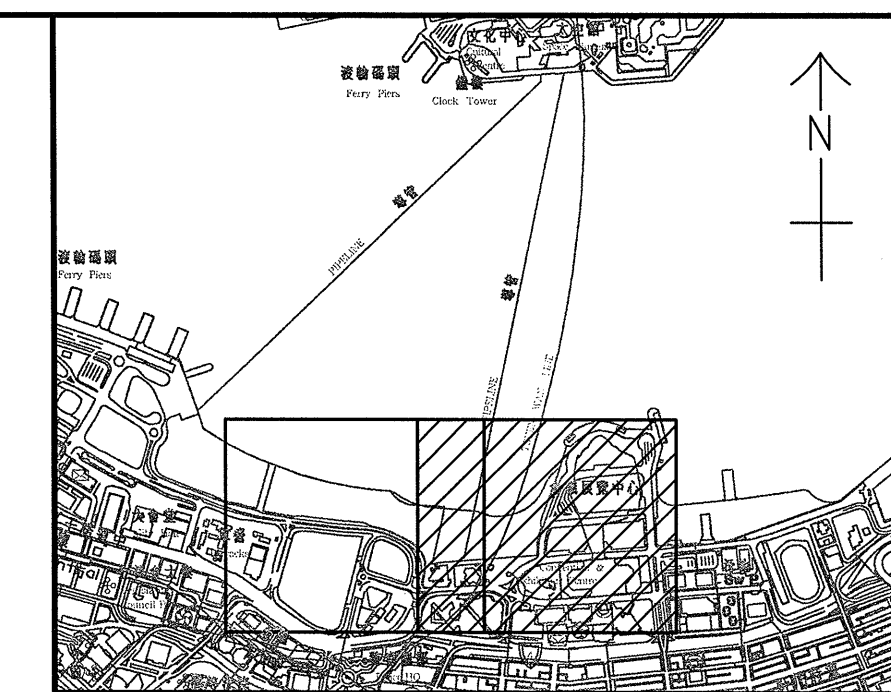
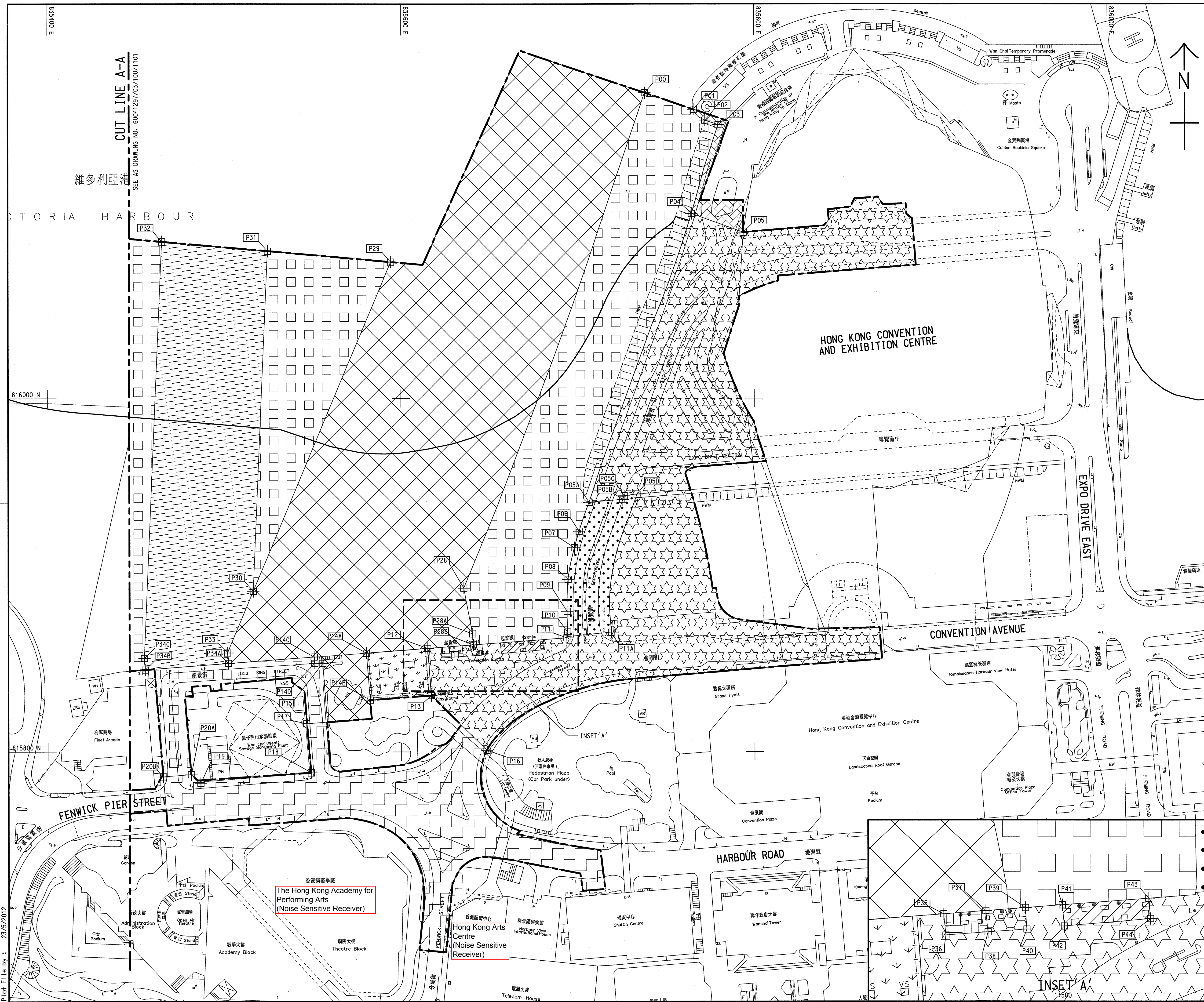
WAN CHAI DEVELOPMENT PHASE II
WAN CHAI DEVELOPMENT PHASE II - CENTRAL - WAN CHAI BYPASS AT WAN CHAI WEST
PORTIONS OF THE SITE
SHEET 1 OF 2

DRG. NO. 圖紙編號 60041297/C3/100/1101

DESIGNED BY 設計 ST	CONTRACT NO. 合約編號 HK/2012/08	P. Dir. APPROVED 批准人 TKH
DRAWN BY 繪圖 TS	STATUS 階段	
SCALE 比例 A1 1:1000		
DIMENSIONS ARE IN 尺寸單位 METRES		

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Plot File by : 21/5/2012



KEY PLAN
SCALE 1 : 2000

NOTES:

1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NO. 60041297/C3/100/1101.
2. FOR NOTES AND LEGEND, REFER TO DRAWING NO. 60041297/C3/100/1101.

SETTING OUT POINT	COORDINATES	
	EASTING	NORTHING
P00	835738.175	816173.081
P01	835765.748	816163.776
P02	835772.245	816157.539
P03	835779.732	816155.047
P04	835764.593	816104.538
P05	835793.834	816093.810
P05A	835706.435	815941.214
P05B	835725.524	815942.734
P05C	835726.280	815944.846
P05D	835733.564	815945.770
P06	835700.770	815924.945
P07	835698.098	815915.569
P08	835694.510	815897.644
P09	835693.898	815879.513
P10	835694.205	815867.667
P11	835693.740	815864.370
P11A	835719.007	815867.538
P12	835614.956	815858.431
P13	835617.952	815831.809
P14A	835580.205	815855.706
P14B	835582.361	815849.928
P14C	835550.675	815853.528
P14D	835551.006	815849.966
P15	835555.535	815818.612
P16	835648.359	815800.938
P17	835546.365	815815.792
P18	835548.892	815788.138
P19	835486.433	815782.243
P20A	835481.092	815787.056
P20B	835465.309	815785.873
P28	835635.452	815892.598
P28A	835640.377	815866.613
P28B	835640.823	815860.384
P29	835594.299	816077.375
P30	835516.317	815890.820
P31	835524.611	816083.485
P32	835594.299	816077.375
P33	835501.694	815855.838
P34A	835502.178	815849.829
P34B	835455.087	815846.162
P34C	835454.624	815852.778
P35	835622.572	815859.001
P36	835623.144	815853.003
P37	835634.478	815859.905
P38	835635.075	815853.869
P39	835645.670	815860.745
P40	835646.068	815854.666
P41	835656.183	815861.541
P42	835656.708	815855.546
P43	835680.564	815863.378
P44	835681.064	815857.655

WAN CHAI DEVELOPMENT PHASE II

WAN CHAI DEVELOPMENT PHASE II - CENTRAL - WAN CHAI BYPASS AT WAN CHAI WEST

PORTIONS OF THE SITE

SHEET 2 OF 2

DRG.NO. 60041297/C3/100/1102
圖紙編號

DESIGNED BY ST
DRAWN BY TS
SCALE 1:1000
DIMENSIONS ARE IN METRES

CONTRACT NO. HK/2012/08
STATUS 階段

APPROVED BY TKH
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Plot File by : 23/5/2012

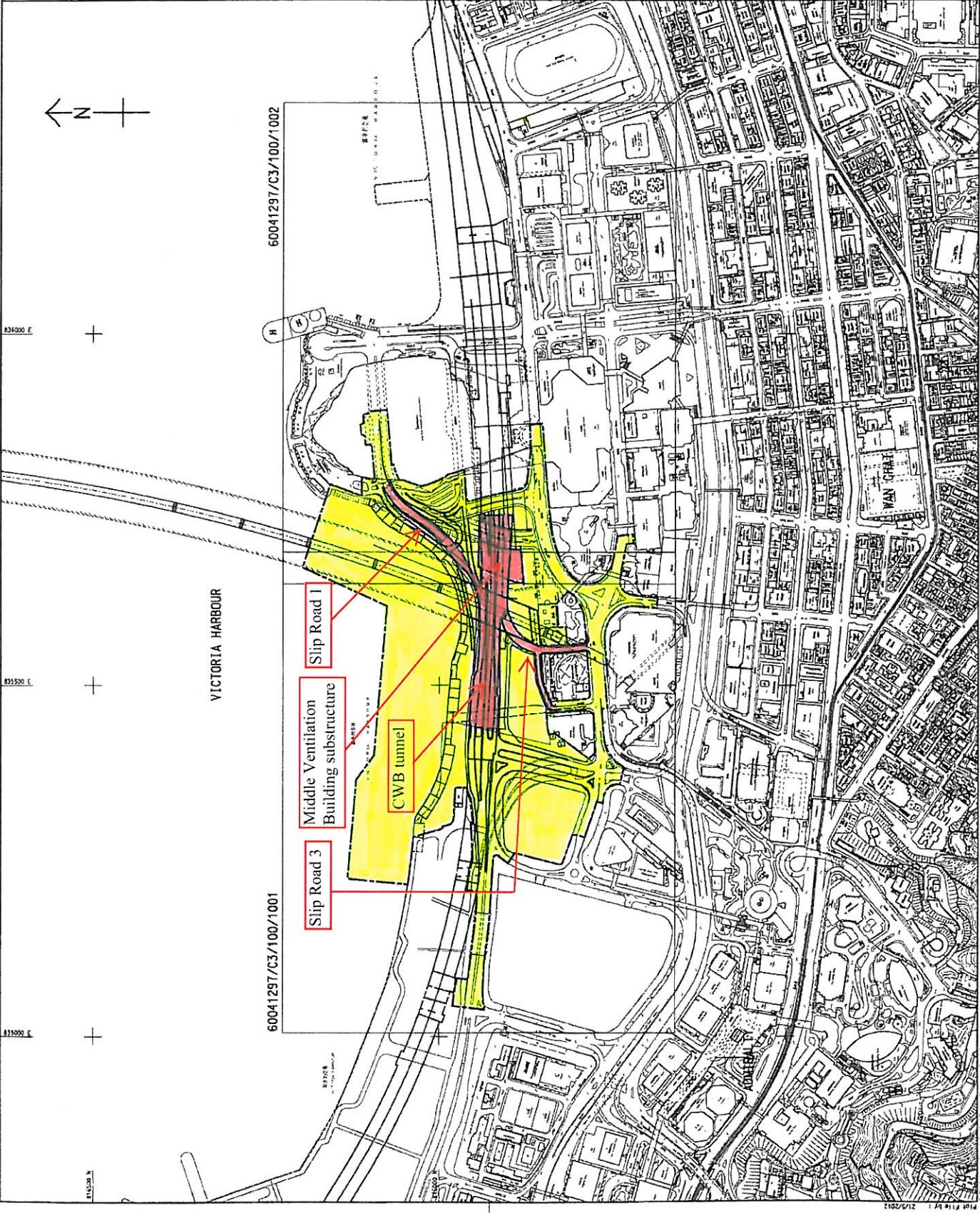


LEGEND:
SITE BOUNDARY

- Site Area within site boundary
- Site Area under FEP-09/364/2009/B

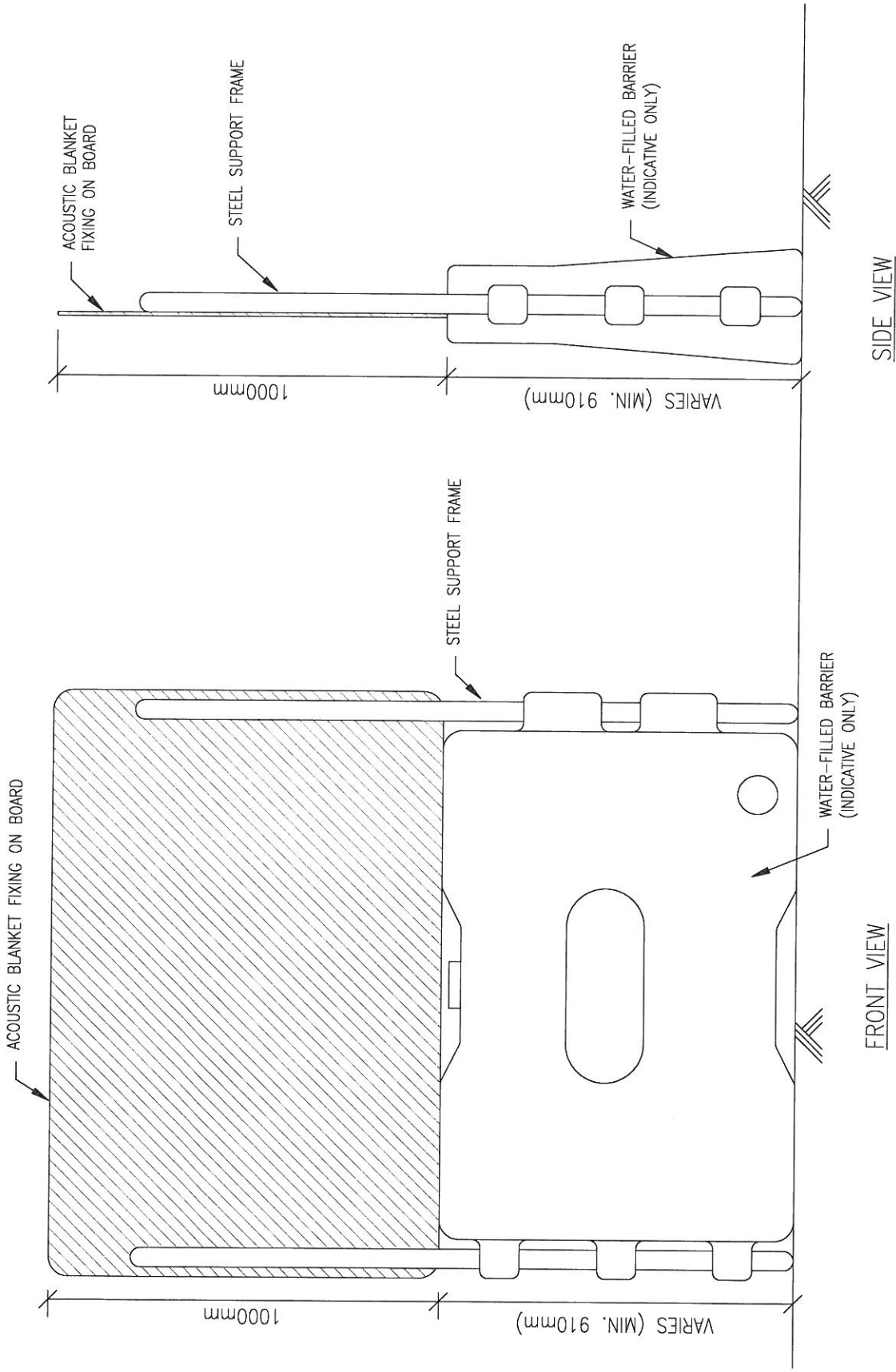
WAN CHAI DEVELOPMENT PHASE II
WAN CHAI DEVELOPMENT PHASE II
CENTRAL WAI CHAI BYPASS AT WAN CHAI MK33
General Layout of the Project

DRIVING	DATE	BY	SCALE	NO.
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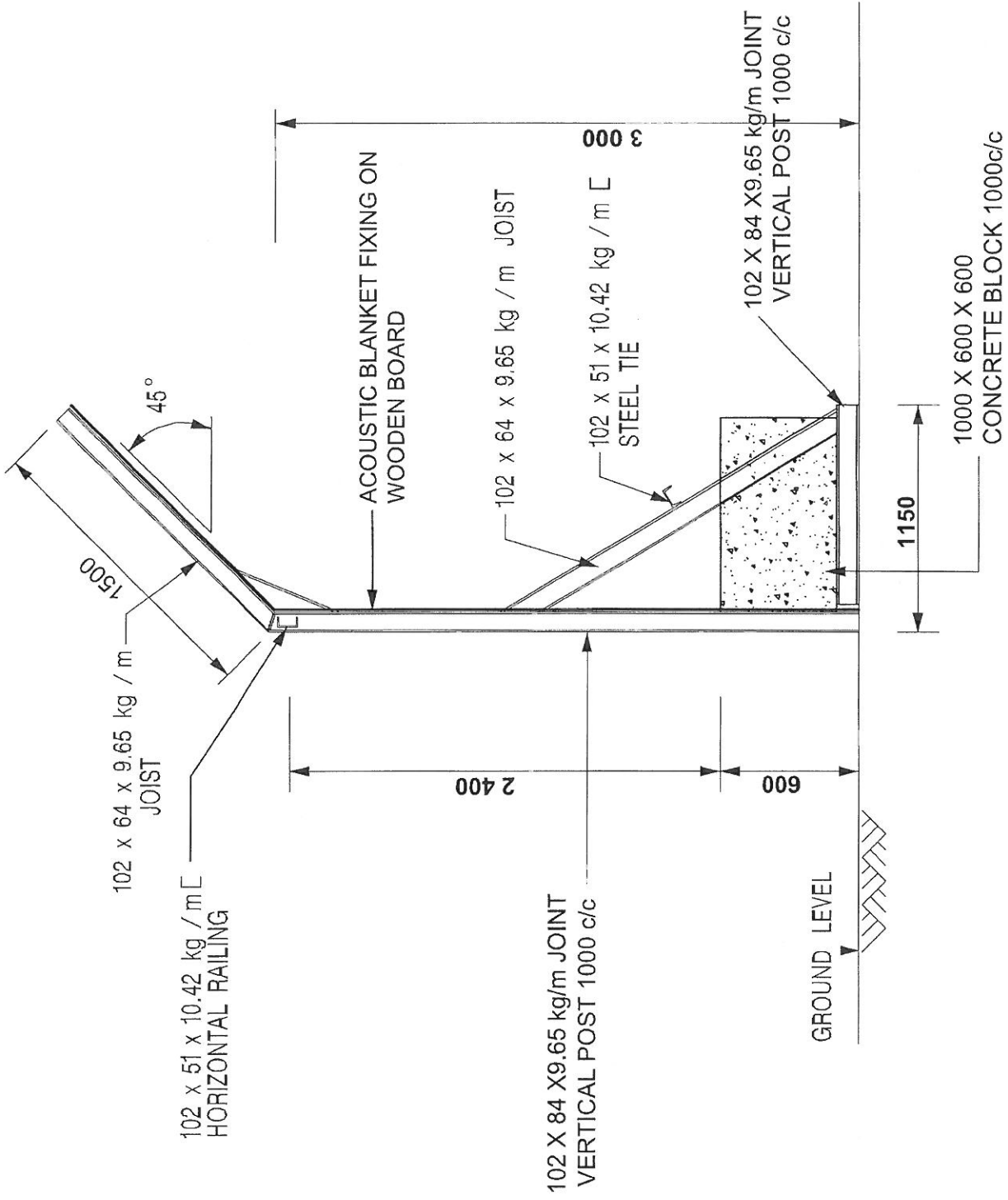


Appendix II

Details of a Typical Noise Barrier



MOVEABLE NOISE BARRIER



DETAIL FOR NOISE BARRIER