中華電力有限公司
CLP Power Hong Kong Limited

資產管理部
Asset Management Department

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29 January 2019

To: To Whom It May Concern

Our Ref L/0006/2019-01/AMD-AD

Dear Sirs/Madams,

Code of Practice 101 for Distribution Substation Design (COP101)
Update No. 3/2019 – Fall Restraint System and Anti-Flooding Requirement

This letter serves to announce the revision of COP101 clauses and drawings as below:

<table>
<tr><td>Document:</td><td>COP101 Version 14</td></tr>
<tr><td>Effective Date:</td><td>31 January 2019</td></tr>
<tr><td>Summary of Change:</td><td>Following clauses are added and revised which wordings are bold.

5.1.3 ……

…….

• Install flood prevention facilities such as sump pump and flood gate. Flood gate should be installed in substation to prevent water ingress from door or low level louvre.

<table>
<tr><th>Description</th><th>Anti-Flooding Measures</th></tr>
<tr><td>New substation floor level reach 4.4mPD at Victoria Harbour or 5.5mPD at Tolo Harbour</td><td>600mm flood gate / sump pump facilities may be required subject to the location of substation</td></tr>
<tr><td>New substation floor level reach between 3.8 ~ 4.4mPD at Victoria Harbour or 4.9 ~ 5.5mPD at Tolo Harbour</td><td>600mm flood gate / sump pump facilities</td></tr>
<tr><td>New substation floor level below 3.8mPD at Victoria Harbour or 4.9mPD at Tolo Harbour</td><td>Developer should raise the substation floor level / change the location of substation from ground floor to upper floor</td></tr>
</table>

5.2 Additional Requirements for Basement Substations

Basement substations will only be considered under the condition that there is no ground or above ground building structure for erection of substation within the site boundary.

5.2.1…….</td></tr>
</table>

.....

5.2.4 Basement substations should **be located at maximum one level below ground floor, and at the same level or above the customer main switchroom to reduce the risk of flooding.** Under the substation, there should be at least one accessible basement floor where **adequate** drainage system is installed to prevent flooding.

.....

5.2.12 Alternative access by a lift in the public area inside the building shall be provided for operational and maintenance purpose.

.....

5.3.8 In the case of equipment access through a floor opening, the opening shall be provided with removable R.C. covers of 2-hour FRR construction. **Fixed and** removable stainless steel railing shall be provided to securely fenced the floor opening to a height of 900-1150mm with mid-rail between 450-600mm. An I-beam together with an electrical hoist for lifting minimum 9000kg load (actual required loading is subjected to the equipment used) in the substation shall be provided and maintained by the building owner. An emergency lowering device with handwheel shall also be provided. The clear height of the hoisting equipment to the substation floor shall be minimum 3700mm under the hook. **Fall restraint system shall be provided.**

.....

5.3.10 In case of equipment access via external wall opening through retractable hoist beam within the building area, the vertical distance between floor level of substation and the floor level of lifting plant shall not be greater than 4.5m. The wall opening shall be fitted with steel folding door of appropriated fire resistance rating in accordance with the relevant statutory requirements. Other facilities including folding gate, I-beam, electrical hoist and change-over switch shall be provided. **Fall restraint system shall be provided.**

.....

5.3.17 Alternative access by a lift in the public area inside the building shall be provided for operational and maintenance purpose.

New and revised COP101 drawings are listed as below and attached.

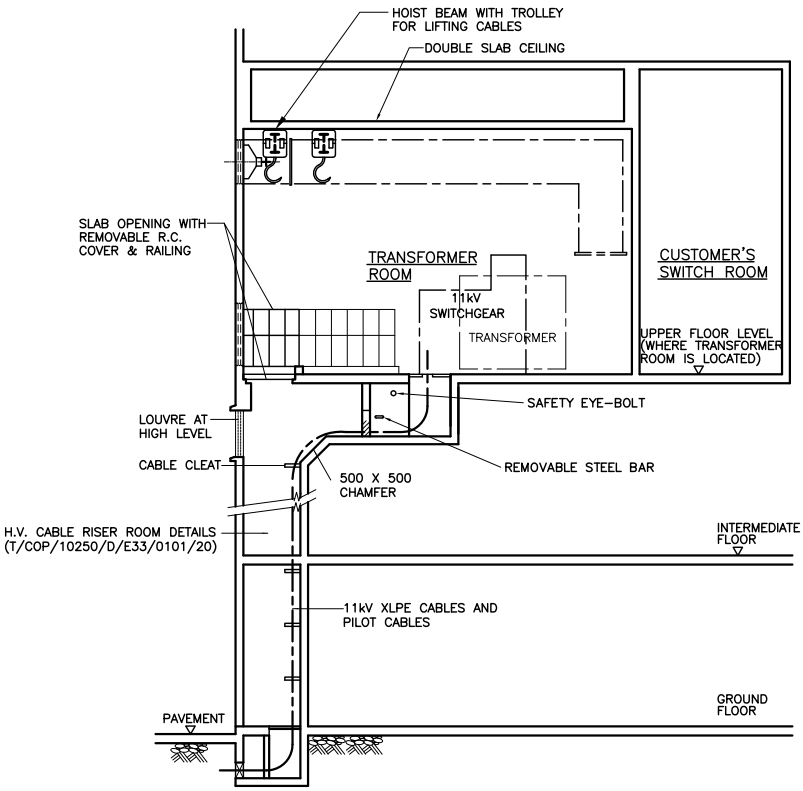
1. Revision of drawing - T-COP-10250-D-E33-0101-09-E-A
   (Note updated.)

2. Revision of drawing - T-COP-10250-D-E33-0101-13-K-A
   (Anchor points and fixed railing added. Note added.)

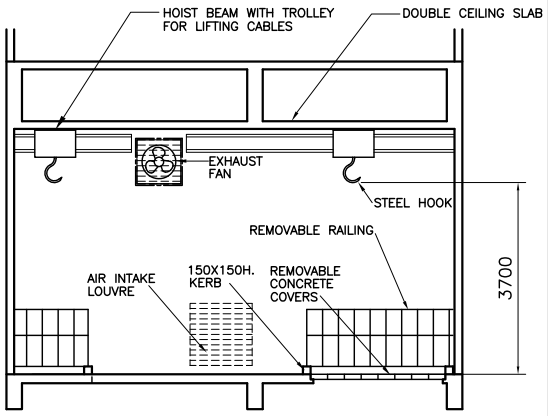
	3. Revision of drawing – T-COP-10250-D-E33-0103-32-A-A (Anchor points deleted. Note added.) 4. New drawing – T-COP-10250-D-E33-0103-38-A (Typical Design of Fall Restraint System) 5. New drawing – T-COP-10250-D-E33-0103-39-A (Typical Design of Ground Floor Entrance for Basement Substation)

Yours sincerely,

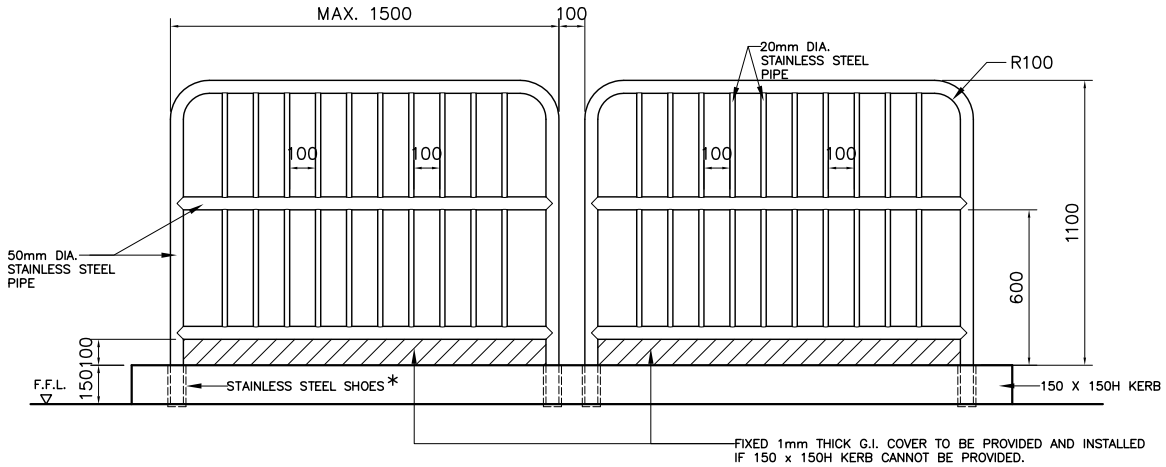
Ho Wai Ching
Asset Development Engineer



TYPICAL SECTION OF H.V. CABLE RISER



TYPICAL SECTIONAL VIEW OF UPPER FLOOR SUBSTATION WITH LIFTING SHAFT



TYPICAL ELEVATION OF REMOVABLE STAINLESS STEEL RAILING

NOTES:

1. ALL METAL WORKS MUST BE BONDED TO THE EARTHING TERMINAL AT THE DISTRIBUTION BOARD WITH COPPER CONNECTOR NOT LESS THAN 6mm².
2. *STAINLESS STEEL SHOES WILL NOT BE REQUIRED IF IT IS A FIXED RAILING.
3. ALL DIMENSIONS ARE IN mm

E	NOTE UPDATED
D	DETAILS OF HOIST BEAM & AIR TRUNK UPDATED
C	TYPICAL DETAIL OF REMOVABLE RAILING AND NOTE ADDED.
B	SAFETY EYE-BOLT, REMOVABLE STEEL BAR AND HOISTING HOOK ADDED

REVS.	08.01.10	26.03.12	18.03.14	17.03.17	22.01.19						
	A	B	C	D	E	F	G	H	J	K	L
INITIAL	KCC	KCC	H.T.YU	H.T.YU	ED.YU						

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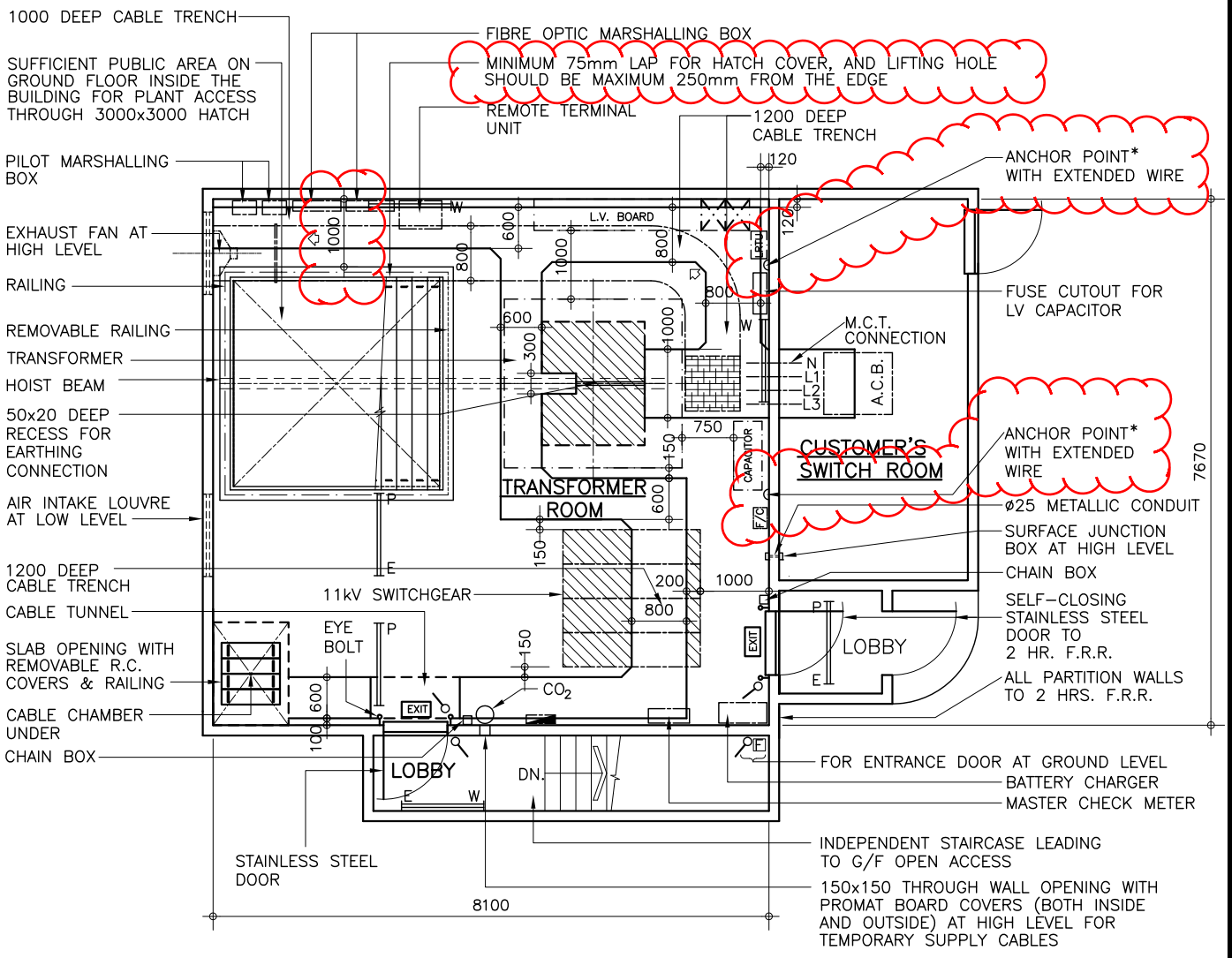
TITLE :

TYPICAL UPPER FLOOR SUBSTATION SECTIONS

DRAWN:	S. C. TO	DATE:	22-07-2002
CHECKED:	K. C. CHENG	APPROVED:	K. W. WONG
SCALE:	N. T. S.	SHEET(S) IN SET:	

ASSET MANAGEMENT

DRG. NO. TCOP/10250/D/E33/0101/09/E/A



LEGEND:

- W — WALL MOUNTED LAMPS
- P — LAMPS SUSPENDED FROM CEILING
- E — LAMPS WITH EMERGENCY LIGHTING UNIT
- LIGHTING SWITCH (2-WAY/INTERMEDIATE SWITCHING CONTROL FOR MULTIPLE ENTRANCE DOORS)
- F/C — FAN CONTROL PANEL
- LRTU — LV MONITORING PANEL
- MCB BOARD
- F — FAN AUTO/MANUAL OPERATION SWITCH
- FIXED RAILING
- REMOVABLLE RAILING

NOTES:

*1. DESIGN OF FALL RESTRAINT SYSTEM SHALL FOLLOW THE TYPICAL DRAWING T-COP-10250-D-E33-0103-38.

2. IF THE PROVISION OF FALL RESTRAINT SYSTEM IS NOT REASONABLY PRACTICABLE, FALL ARREST SYSTEM SHALL BE PROVIDED AS THE LAST RESORT.

K	ANCHOR POINT AND FIXED RAILING, NOTE ADDED.
J	GENERAL LAYOUT REVISION
H	SYMBOLS, DEPTH OF CABLE TRENCH CONDUIT, FIRE EXTINGUISHER, MASTER CHECK METER ADDED.
G	FUSE CUTOUT ADDED, DOOR, TRANSFORMER, HV SWITCHGEAR AND G.I. SLEEVE SIZE UPD.
F	CHAIN BOX ADDED AND CABLE TRENCH LADDER DELETED
E	PHASE IDENTIFICATION UPDATED AND CABLE TRENCH LADDER ADDED
D	AIR INTAKELOUVRE AND FAN CONTROL PANEL RELOCATED
C	LRTU ADDED
B	GENERAL LAYOUT REVISION

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REVS.	7.9.04	7.12.04	21.12.05	5.1.06	16.08.07	16.12.09	26.03.12	18.03.14	23.02.17	17.12.18	
	A	B	C	D	E	F	G	H	J	K	L
INITIAL	K.C.C	K.C.C	K.C.C	K.C.C	K.C.C	K.C.C	K.C.C	H.T.YU	H.T.YU	H.T.YU	

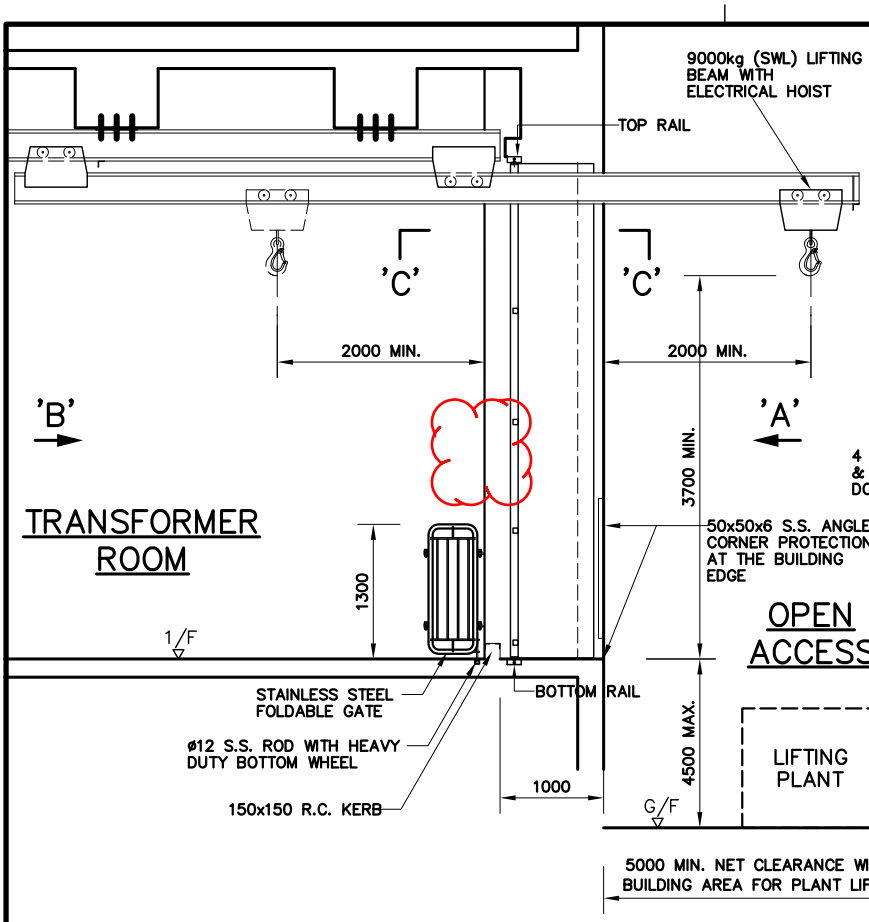
DRAWN:	S. C. TO	DATE:	22-07-2002
CHECKED:	K. C. CHENG	APPROVED:	W.C.HO
SCALE:	1 :100 (mm)	SHEET(S) IN SET:	

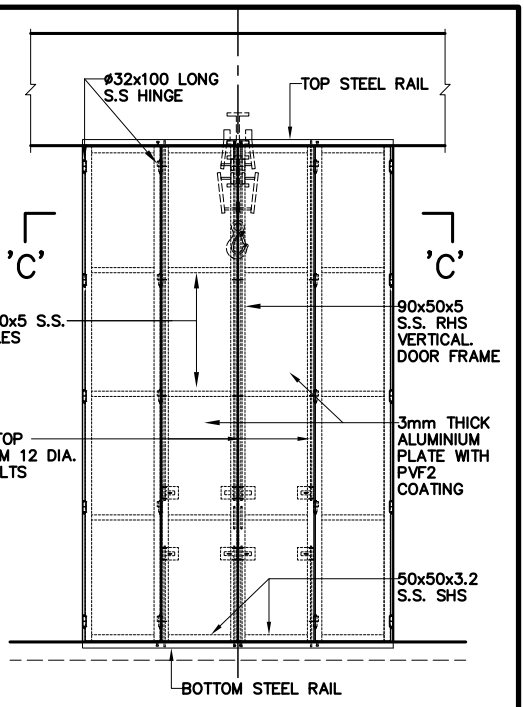
TITLE :

TYPICAL UPPER FLOOR SUBSTATION LAYOUT FOR HOUSING ONE TRANSFORMER WITHOUT VEHICULAR ACCESS (INDEPENDENT STAIRCASE)

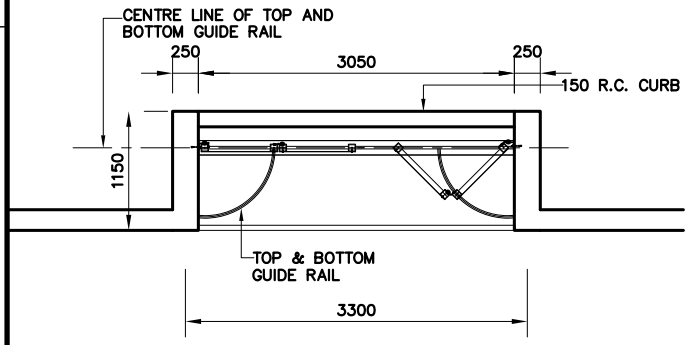
ASSET MANAGEMENT

DRG. NO. T C O P 1 0 2 5 0 D E 3 3 0 1 0 1 1 3 K A





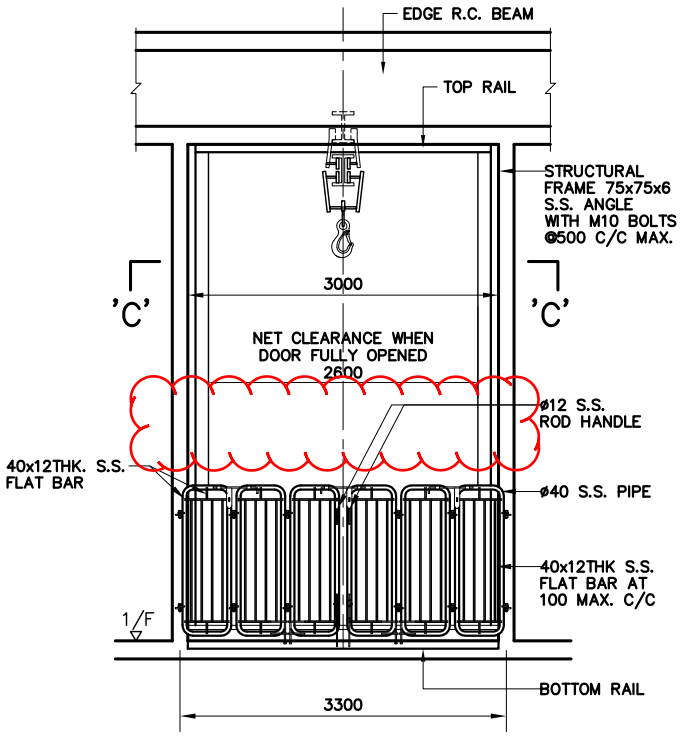
VIEW 'A' FROM THE OUTSIDE
(S.S. FOLDABLE DOOR IN CLOSED POSITION)



SECTION 'C – C'

Notes:

1. STEEL FOLDABLE GATE IS NOT SHOWN FOR CLARITY.
2. STEEL FOLDABLE DOOR IN CLOSED AND SEMI–OPEN POSITION.



VIEW 'B' FROM THE INSIDE
(S.S. FOLDABLE DOOR IN FULLY OPEN POSITION)

NOTES:

1. ALL CONNECTIONS FOR STAINLESS AND G.M.S. STEEL WORKS SHALL BE 3mm S.S. FILLET WELD, OR 3mm FILLET WELDED FOR G.M.S., ALL ROUND.
2. ALL STEEL WORKS TO BE GRADE 316L STAINLESS STEEL OR EQUIVALENT.
3. ALL STEEL WORKS MUST BE BONDED TO THE EARTHING TERMINAL AT THE DISTRIBUTION BOARD WITH COPPER CONDUCTOR NOT LESS THAN 6mm².
4. ALL DIMENSIONS AND MEMBER SIZES SHOWN ARE INDICATIVE ONLY, THE CONTRACTOR IS RESPONSIBLE TO CHECK AND AND SUBMIT THE DESIGN ACCORDING TO MATCH THEIR GENERAL BUILDING PLAN AND THEIR PROPOSED FIRE RATED DOOR.
5. RUBBER WEATHER PROOF STRIPES SHALL BE PROVIDED TO PREVENT INGRESS OF RAIN WATER DURING THE SEVERE RAINING CONDITION.
6. DESIGN OF FALL RESTRAINT SYSTEM SHALL FOLLOW THE TYPICAL DRAWING T–COP–10250–D–E33–0103–38.
7. IF THE PROVISION OF FALL RESTRAINT SYSTEM IS NOT REASONABLY PRACTICABLE, FALL ARREST SYSTEM SHALL BE PROVIDED AS THE LAST RESORT.
8. ALL DIMENSIONS ARE IN mm.

A	ANCHOR POINTS DELETED, NOTE ADDED.

REVS.	17.12.18										
	A	B	C	D	E	F	G	H	J	K	L
INITIAL	H.T.YU										

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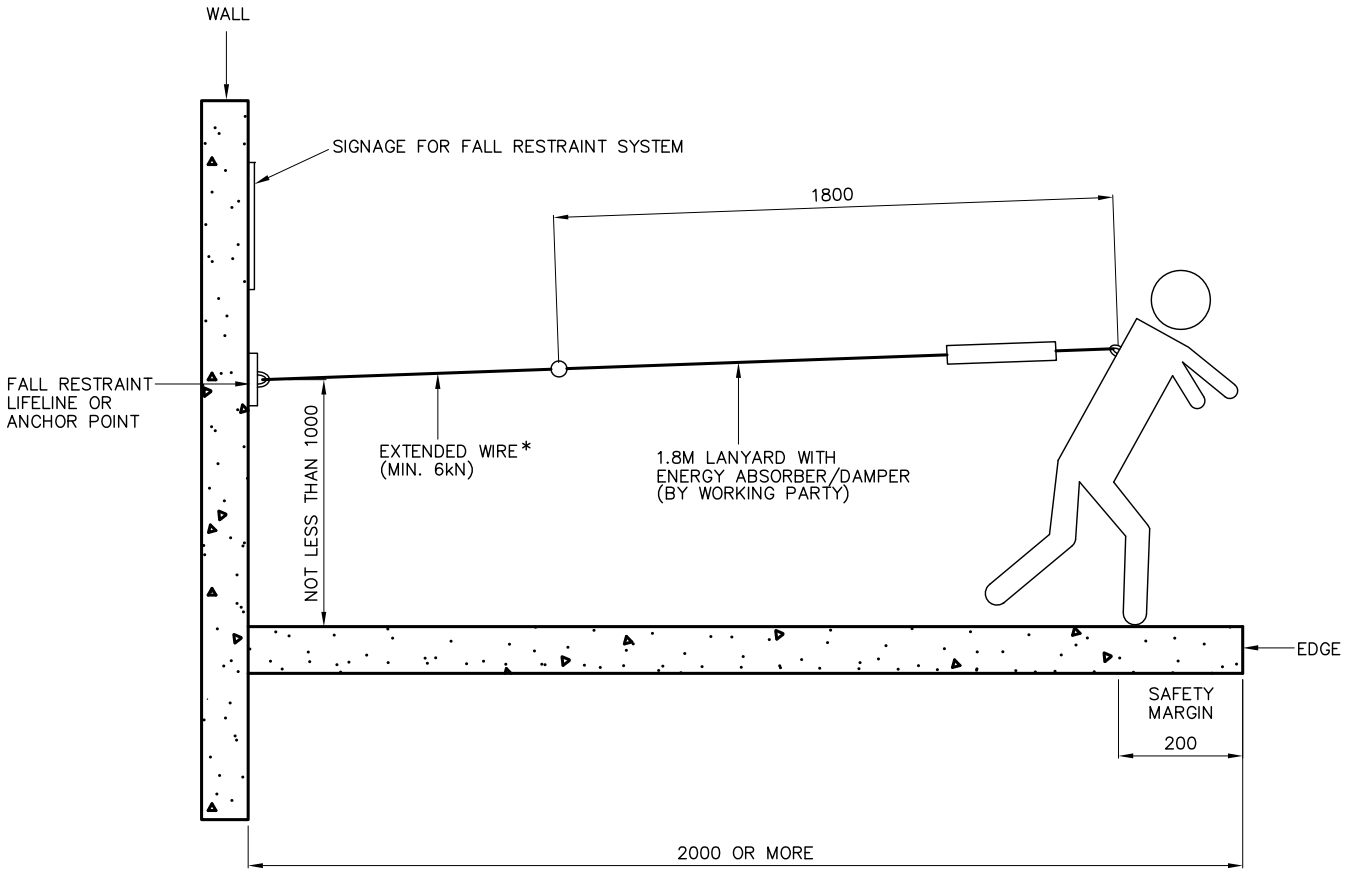
DRAWN: M. S. FONG	DATE: 27 APR., 2017
CHECKED: M. S. FONG	APPROVED: GARY KWOK
SCALE: 1 :75	SHEET(S) IN SET: 1

TITLE :

TYPICAL DETAILS FOR UPPER FLOOR SUBSTATION WITH RETRACTABLE HOIST BEAM AND TROLLEY

ASSET MANAGEMENT

DRG. NO. T/COP/10250/D/E33/0103/32/A/A



NOTES:

1. FOR FALL RESTRAINT LIFELINE, WALL MOUNTED TYPE DESIGN SHOULD BE ADOPTED WITH MAXIMUM SPAN LENGTH OF 10M. 3 NUMBER OF EXTENDED WIRE SHOULD BE PROVIDED.
2. THE FALL RESTRAINT LIFELINE SHALL BE CAPABLE OF SUPPORTING A MINIMUM SAFETY LOAD OF 18kN.
3. LENGTH OF EXTENDED WIRE IS SUBJECTED TO THE ACTUAL SITE CONDITION AND LAYOUT ORIENTATION.
4. IF ANCHOR POINT IS PROVIDED, IT SHALL BE CAPABLE OF SUPPORTING A MINIMUM SAFETY LOAD OF 6kN.
5. FALL PROTECTION SYSTEM SHALL COMPLY WITH EN795 STANDARD.

* 6. IF THE DISTANCE BETWEEN FALL RESTRAINT LIFELINE OR ANCHOR POINT AND THE EDGE IS MORE THAN 2M, EXTENED WIRE WILL BE REQUIRED.

7. ALL DIMENSIONS ARE IN mm.

CLP 中電

REVS.	A	B	C	D	E	F	G	H	J	K	L
INITIAL											

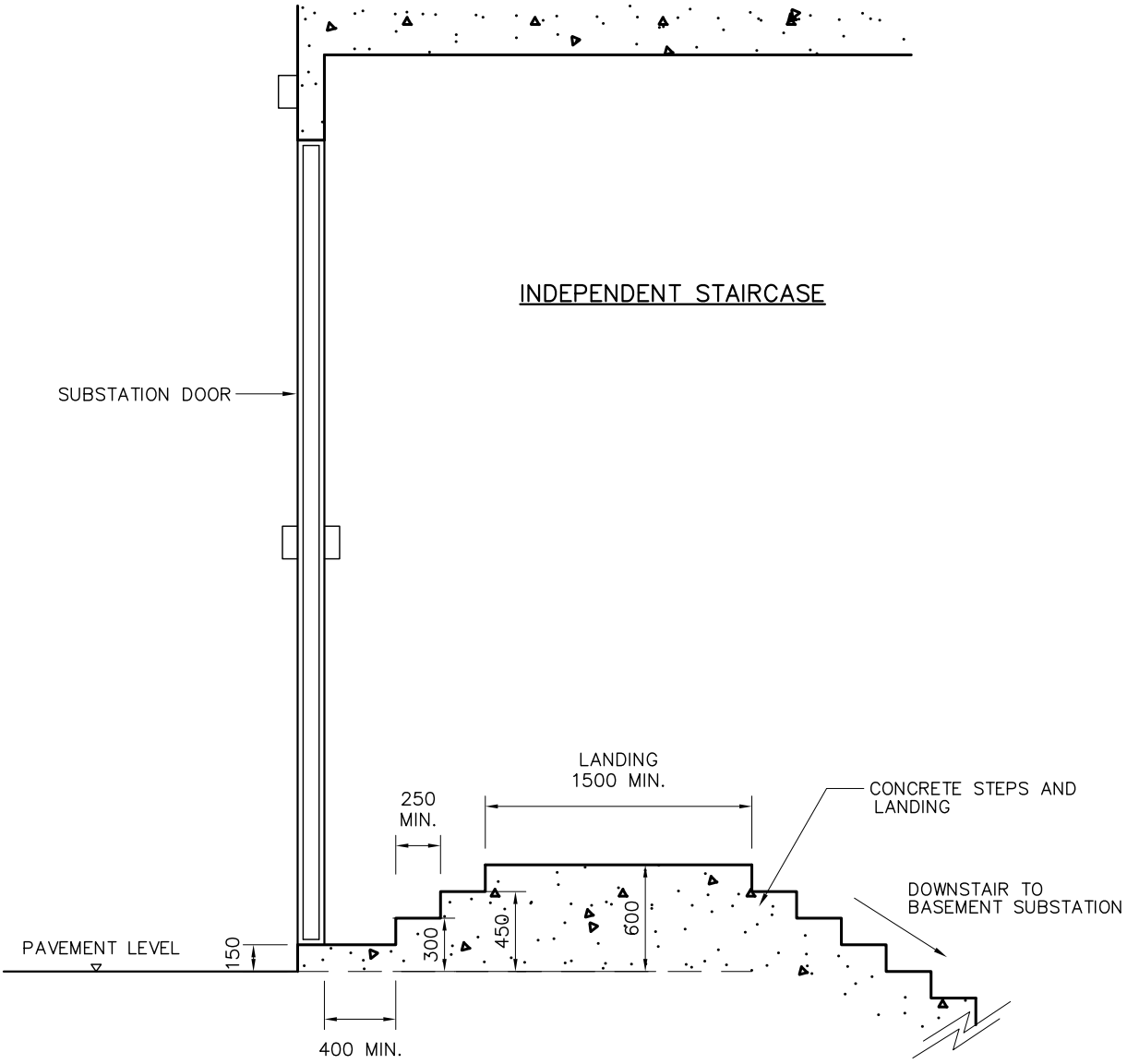
DRAWN: T. W. LAU	DATE: 17 –12–2018
CHECKED: H. T. YU	APPROVED: W. C. HO
SCALE: 1 :5 (mm)	SHEET(S) IN SET:

TITLE :

TYPICAL DESIGN OF FALL RESTRAINT SYSTEM

ASSET MANAGEMENT

DRG. NO. TCOP10250DE3301033 8 – A



NOTES:

1. THE MINIMUM VERTICAL HEADROOM ABOVE ANY STEP SHOULD BE 2M.
2. IF AIR INTKE LOUVRE FOR NATURAL VENTILATION IS REQUIRED, THE LOWEST SIDE OF LOUVRE SHOULD BE INSTALLED AT MINIMUM 600mm ABOVE THE PAVEMENT LEVEL.
3. INSTALLATION OF FLOOD GATE AT LANDING AREA MAY BE REQUIRED SUBJECT TO THE DATUM LEVEL AT PAVEMENT
4. ALL DIMENSIONS ARE IN mm.

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REVS.	A	B	C	D	E	F	G	H	J	K	L
INITIAL											

TITLE :

TYPICAL DESIGN OF GROUND FLOOR ENTRANCE FOR BASEMENT SUBSTATION

DRAWN:	T.W.LAU	DATE:	24-1-2019
CHECKED:	EDMOND YU	APPROVED:	W.C. HO
SCALE:	N.T.S.	SHEET(S) IN SET:	

ASSET MANAGEMENT

DRG. NO. TCOP1025ODE330103 39 - A