DISTRIBUTION CONSTRUCTION STANDARDS

Date Published: 14 May 2020

PART 10 - SUBSTATIONS

G9 - ENVIRONMENTAL PROTECTION

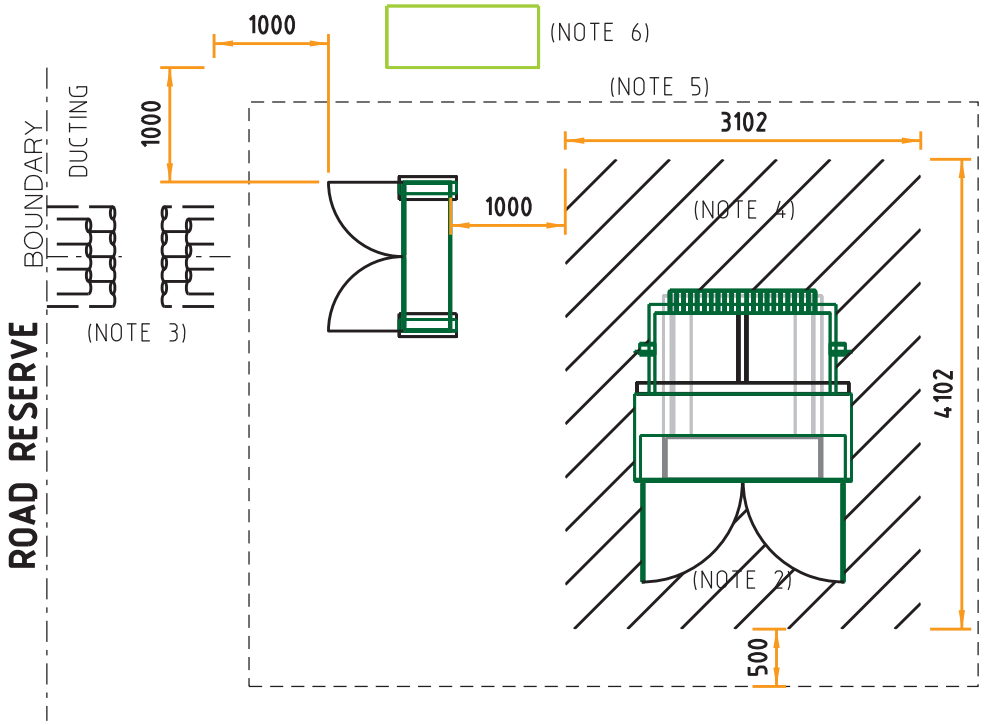
For application to
Horizon Power
Electricity Distribution Networks

Uncontrolled document when printed. Refer Online for latest version.

G9 – ENVIRONMENTAL PROTECTION – Drawing Register

Number	Description
G9-1/1	Environmental Protection Oil Containment For MPS Substation (Up to 630kVA) – Equipment & Installation Details
G9-2/1	Environmental Protection Oil Containment For Non MPS Substation (Up to 2000kVA) – Equipment & Installation Details
G9-3/1	District Substation Flood Prevention Limestone Retaining Wall – Civil & Land Requirements
G9-3/2	District Substation Flood Prevention Cross Section Through Stairs – Limestone Retaining Wall
G9-3/3	District Substation Flood Prevention Section Through Wall – Limestone Retaining Wall
G9-4/1	District Substation Flood Prevention Retaining Panel and Post – Civil & Land Requirements
G9-4/2	District Substation Flood Prevention Retaining Detail – Panel and Post
G9-4/3	District Substation Flood Prevention Step Section – Panel and Post

MINIMUM BUND SIZES (NOTE 2)	
TX CAPACITY	L x W (m)
UP TO 630kVA (22kV AND BELOW)	3 x 2.8
UPTO 630kVA (33kV)	3.4 x 3.05



NOTES:

1. THIS LAYOUT DRAWING SHOWS RELATIVE POSITION OF THE EQUIPMENT ONLY. FOR INDIVIDUAL SUBSTATION CONFIGURATIONS, REFER TO G3 DRAWINGS.
2. AREA SHOWN HATCHED REPRESENTS OIL BUND. FOR OIL VOLUMES, BUND SIZE CALCULATIONS AND REQUIREMENTS, REFER TO STANDARD "OIL CONTAINMENT FOR DISTRIBUTION TRANSFORMERS"(HPC-9DJ-0001-2013)
3. DUCTING REQUIRED IF LAND REQUIREMENT IS SET BACK FROM ROAD RESERVE BOUNDARY. G6-01 SPACING REQUIREMENTS MAY NEED TO BE INCREASED TO SUIT BUND INSTALLATION.
4. DUCTING REQUIRED FOR ALL CABLES PASSING UNDERNEATH OIL BUND (EARTHING CABLES EXEMPTED).
5. REFER TO G6-11 FOR DETAILED INFORMATION ON EARTHING. INCREASE DEPTH OF EARTHING TO 700mm.
6. CUSTOMER MAIN SWITCHBOARD (IF REQUIRED).

THIS DRAWING TO BE READ IN CONJUNCTION WITH THE DISTRIBUTION DESIGN RULES - HPC-9DJ-01-0002-2015.

HORIZON POWER

DISTRIBUTION CONSTRUCTION STANDARDS

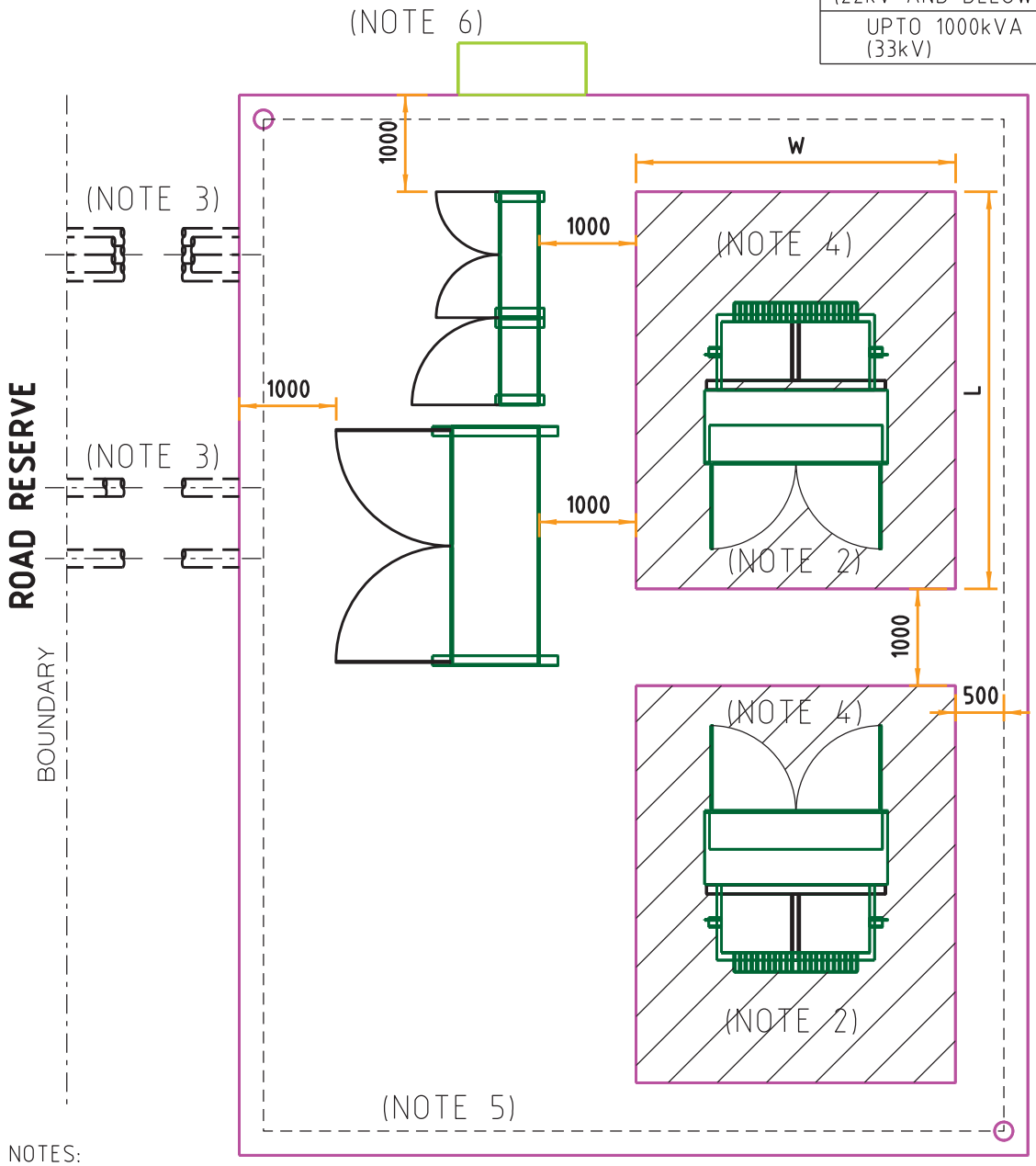
ENVIRONMENTAL PROTECTION OIL CONTAINMENT FOR MPS SUBSTATION (UPTO 630kVA) EQUIPMENT & INSTALLATION DETAILS

REVISION	DATE
B	MARCH 18

DRAWING No.

G9-01/1

MINIMUM BUND SIZES (NOTE 2)	
TX CAPACITY	L x W (m)
UP TO 1000kVA (22kV AND BELOW)	3.25 x 3
UPTO 1000kVA (33kV)	3.4 x 3.35



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4. DUCTING REQUIRED FOR ALL CABLES PASSING UNDERNEATH OIL BUND (EARTHING CABLES EXEMPTED).
5. REFER TO G6-11 FOR DETAILED INFORMATION ON EARTHING. INCREASE DEPTH OF EARTHING TO 700mm.
6. CUSTOMER MAIN SWITCHBOARD (IF REQUIRED).

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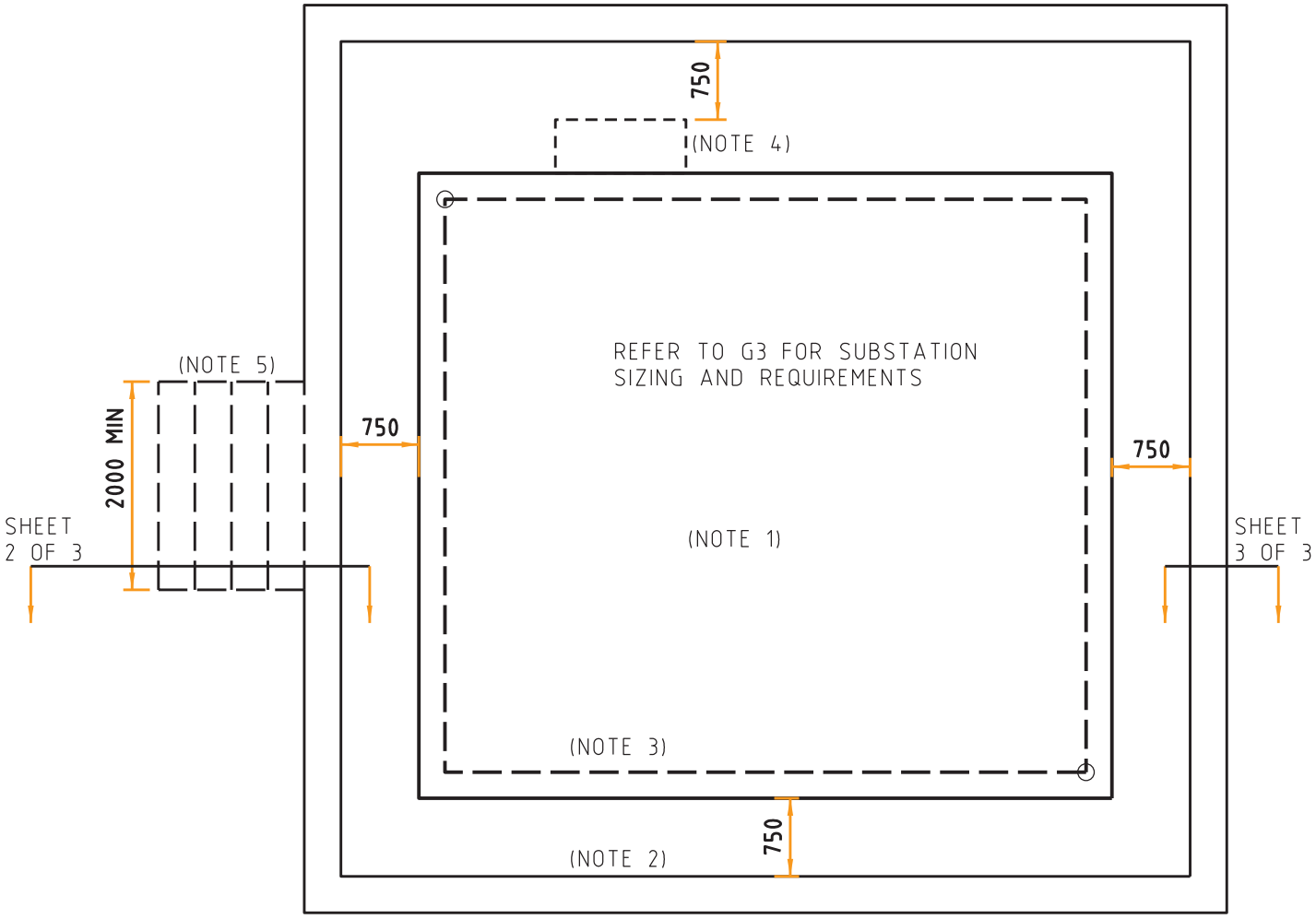
DISTRIBUTION CONSTRUCTION STANDARDS

ENVIRONMENTAL PROTECTION OIL CONTAINMENT FOR NON MPS SUBSTATION (UPTO 2000kVA) EQUIPMENT & INSTALLATION DETAILS

REVISION	DATE
B	MARCH 18

DRAWING No.

G9-02/1



NOTES:

1. THIS LAYOUT DRAWING SHOWS RELATIVE DIMENSIONS OF FLOOD RETAINING WALLS ONLY. FOR INDIVIDUAL SUBSTATION CONFIGURATION REFER TO G3 DRAWINGS.
2. FLOOD WALL TO BE CONSTRUCTED UPTO A MAXIMUM HEIGHT OF 1m ONLY IRRESPECTIVE OF A HIGHER 100 YEAR FLOOD LEVEL.
3. REFER TO G-6-11 FOR DETAILED INFORMATION ON EARTHING.
4. CUSTOMER MAIN SWITCHBOARD (IF REQUIRED) MAINTAIN 750mm CLEARANCE TO EDGE.
5. STEPS SHALL BE FITTED WITH APPROPRIATE HAND RAILS IN ACCORDANCE WITH AS1657 AND BUILDING CODE OF AUSTRALIA (BCA) USE OF GUARD RAILS AROUND SUBSTATION PERIMETER NEED TO BE CONSIDERED BY THE DESIGNER AS WELL. METALLIC HAND RAILS AND GUARD RAILS IF USED SHALL BE BONDED TO THE EARTH GRID.

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DISTRIBUTION CONSTRUCTION STANDARDS

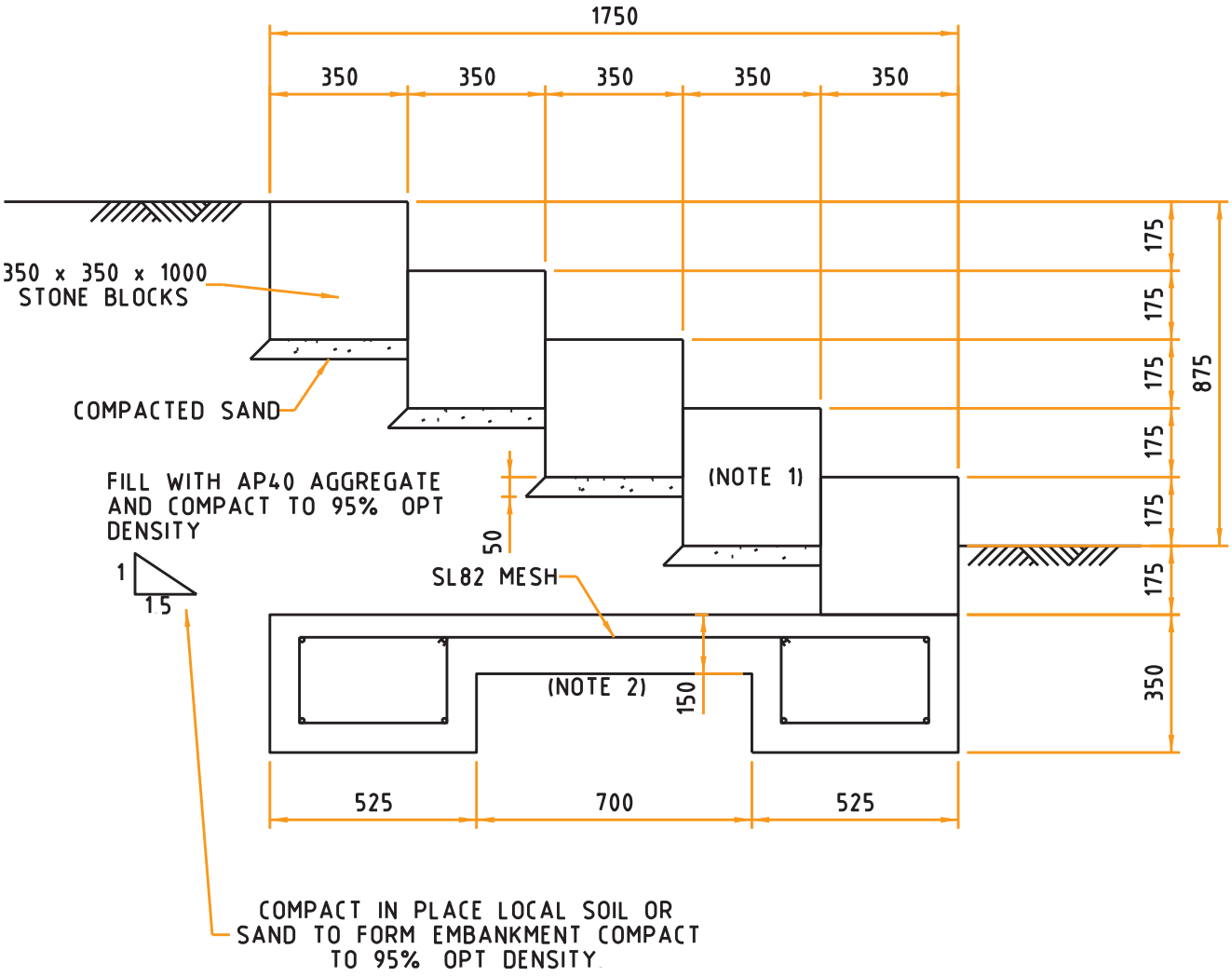
DISTRICT SUBSTATION FLOOD PREVENTION LIMESTONE RETAINING WALL

CIVIL & LAND REQUIREMENTS

REVISION	DATE
B	MARCH 18

DRAWING No.

G9-03/1



NOTES:
1 STEPS TO BE CONSTRUCTED FROM BGC NATURAL EARTH BLOCKS (OR EQUIVALENT) 350 x 350 x 1000
2 700mm FOR 5 STEPS REDUCES TO 0mm FOR 3 STEPS

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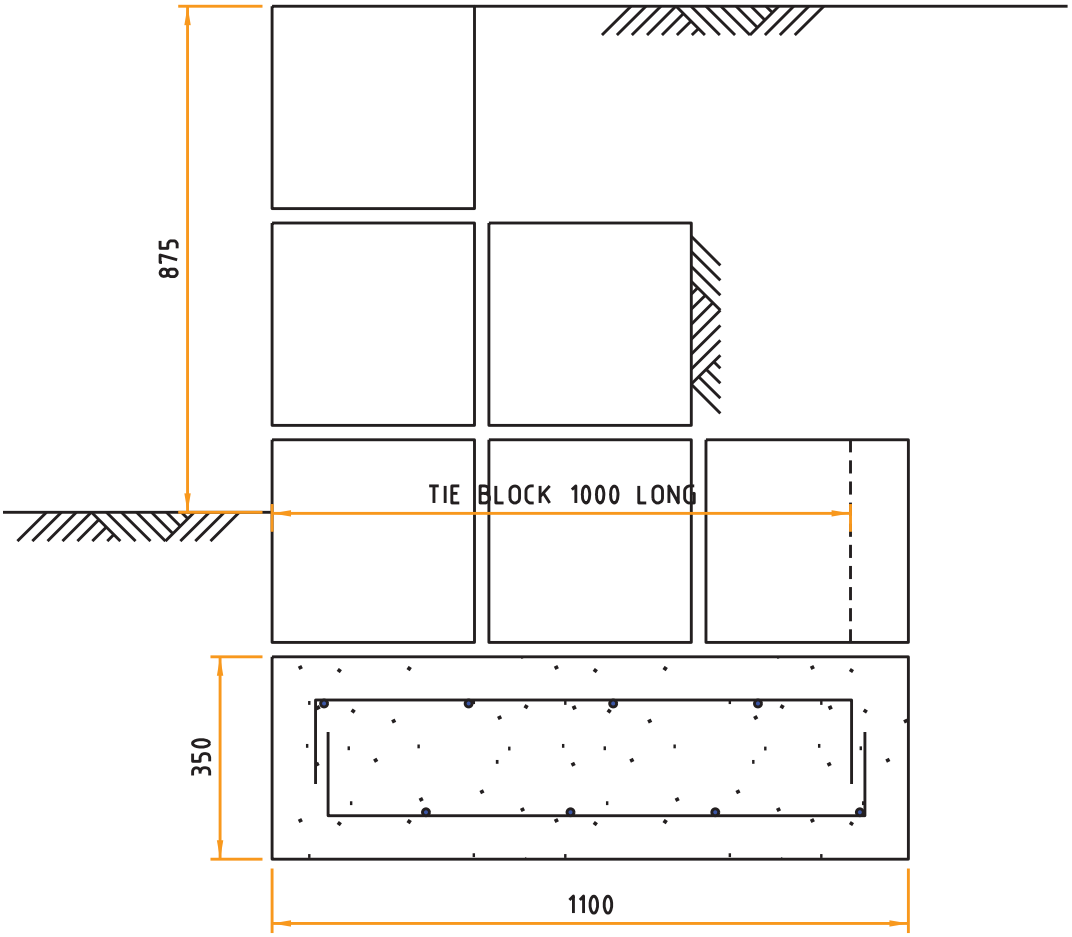
HORIZON POWER DISTRIBUTION CONSTRUCTION STANDARDS	DISTRICT SUBSTATION FLOOD PREVENTION CROSS SECTION THROUGH STAIRS LIMESTONE RETAINING WALL	REVISION B	DATE MARCH 18
		DRAWING No G9-03/2	



NOTES:

1. WALLS TO BE CONSTRUCTED FROM BGC NATURAL EARTH BLOCKS 350 x 350 x 1000 OR EQUAVLIENT FOR FACE BLOCKS, TIE BLOCKS BGC PLAIN FACE 350 x 125 x 1000 OR EQUAVILENT.
2. TIE BLOCKS INSTALLED IN LOWER COURSE SPACED AT NOT MORE THAN 4m APART.
3. ONLY TRADE QUALIFIED BRICKLAYERS TO BE EMPLOYED IN STONE BLOCK LAYING WORK.
4. MIN CRUSHING STRENGTH FOR CONCRETE 20MPa.
5. LONGITUDINAL STEEL IN FOUNDATION ×12mm WITH 145mm COG TO PROVIDE LAP WHERE DIRECTION OF FOUNDATION CHANGES 90×.
6. LATERAL REINFORCEMENT ×12mm SPACE @ 250c/c.
7. MINIMUM COVER TO ALL STEEL 75mm.

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HORIZON POWER

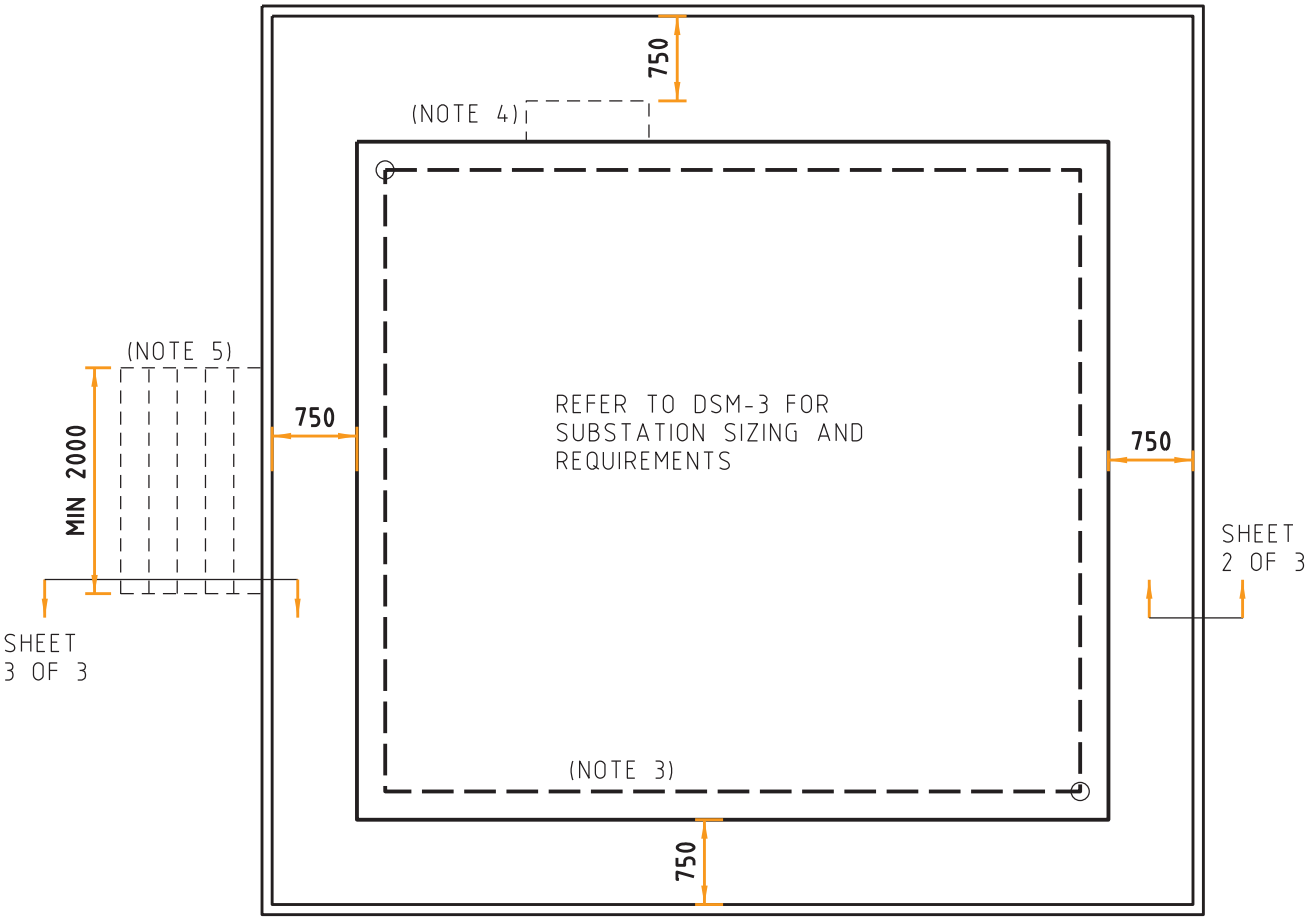
DISTRIBUTION CONSTRUCTION STANDARDS

DISTRICT SUBSTATION FLOOD PREVENTION SECTION THROUGH WALL LIMESTONE RETAINING WALL

REVISION	DATE
B	MARCH 18

DRAWING No.

G9-03/3



NOTES:

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2. FLOOD WALL TO BE CONSTRUCTED UPTO A MAXIMUM HEIGHT OF 1m ONLY IRRESPECTIVE OF A HIGHER 50 YEAR FLOOD LEVEL
3. REFER TO G6-11 FOR DETAILED INFORMATION ON EARTHING.
4. CUSTOMER MAIN SWITCHBOARD (IF REQUIRED) MAINTAIN 750mm CLEARANCE TO RETAINING WALL.
5. STEPS SHALL BE FITTED WITH APPROPRIATE HAND RAILS IN ACCORDANCE WITH AS1657 AND BUILDING CODE OF AUSTRALIA (BCA) USE OF GUARD RAILS AROUND SUBSTATION PERIMETER NEED TO BE CONSIDERED BY THE DESIGNER AS WELL. METALLIC HAND RAILS AND GUARD RAILS IF USED SHALL BE BONDED TO THE EARTH GRID.

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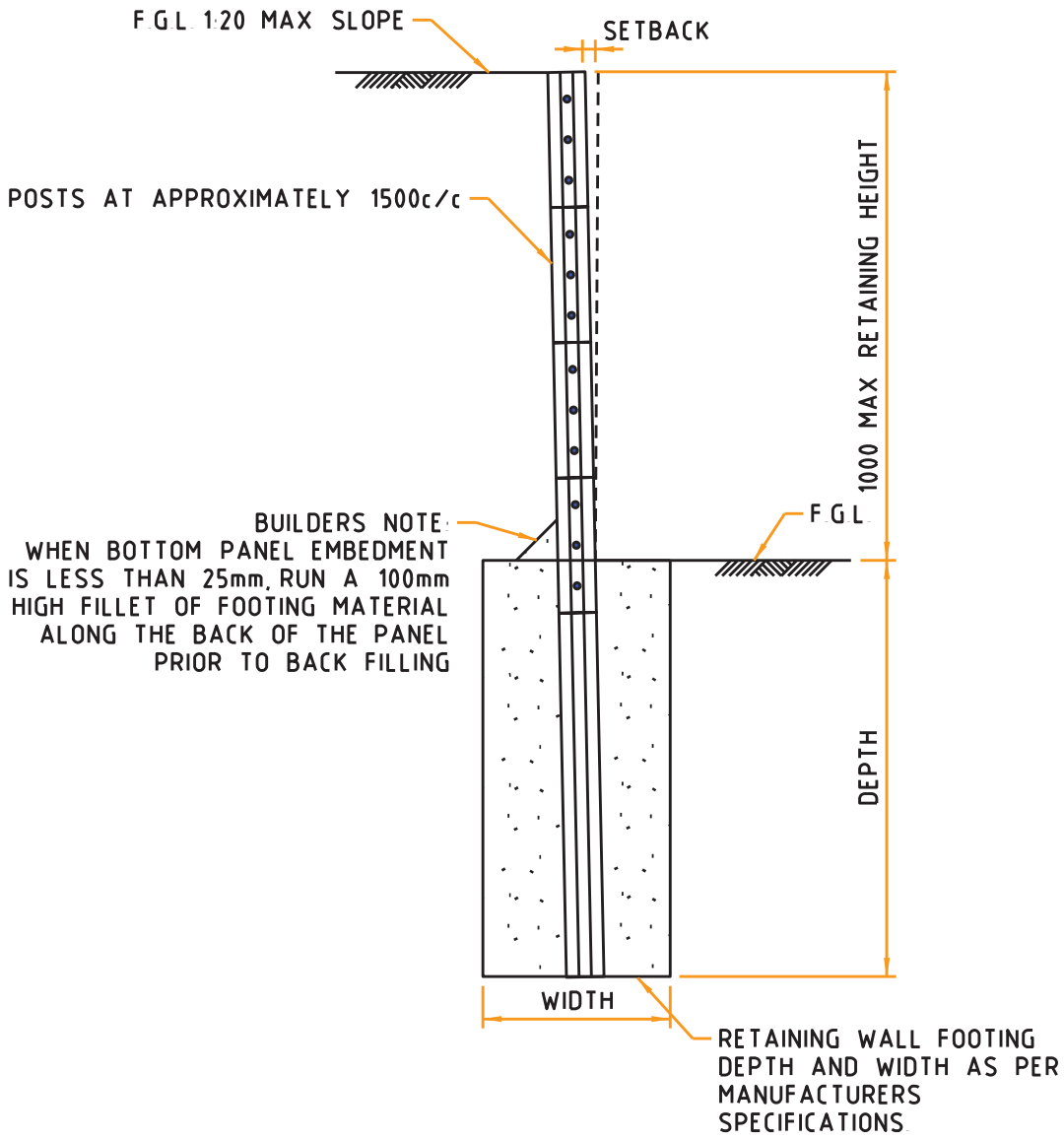
DISTRIBUTION CONSTRUCTION STANDARDS

DISTRICT SUBSTATION FLOOD PREVENTION RETAINING PANEL AND POST CIVIL & LAND REQUIREMENTS

REVISION	DATE
B	MARCH 18

DRAWING No.

G9-04/1



NOTES
SEE STRUCTURAL REPORT ON DM NUMBER 375635 FOR RECOMMENDATIONS ON PANEL AND POST WALL SIMILAR PANEL AND POST CONSTRUCTION CAN BE USED ON APPROVAL FROM THE STRUCTURAL ENGINEER.

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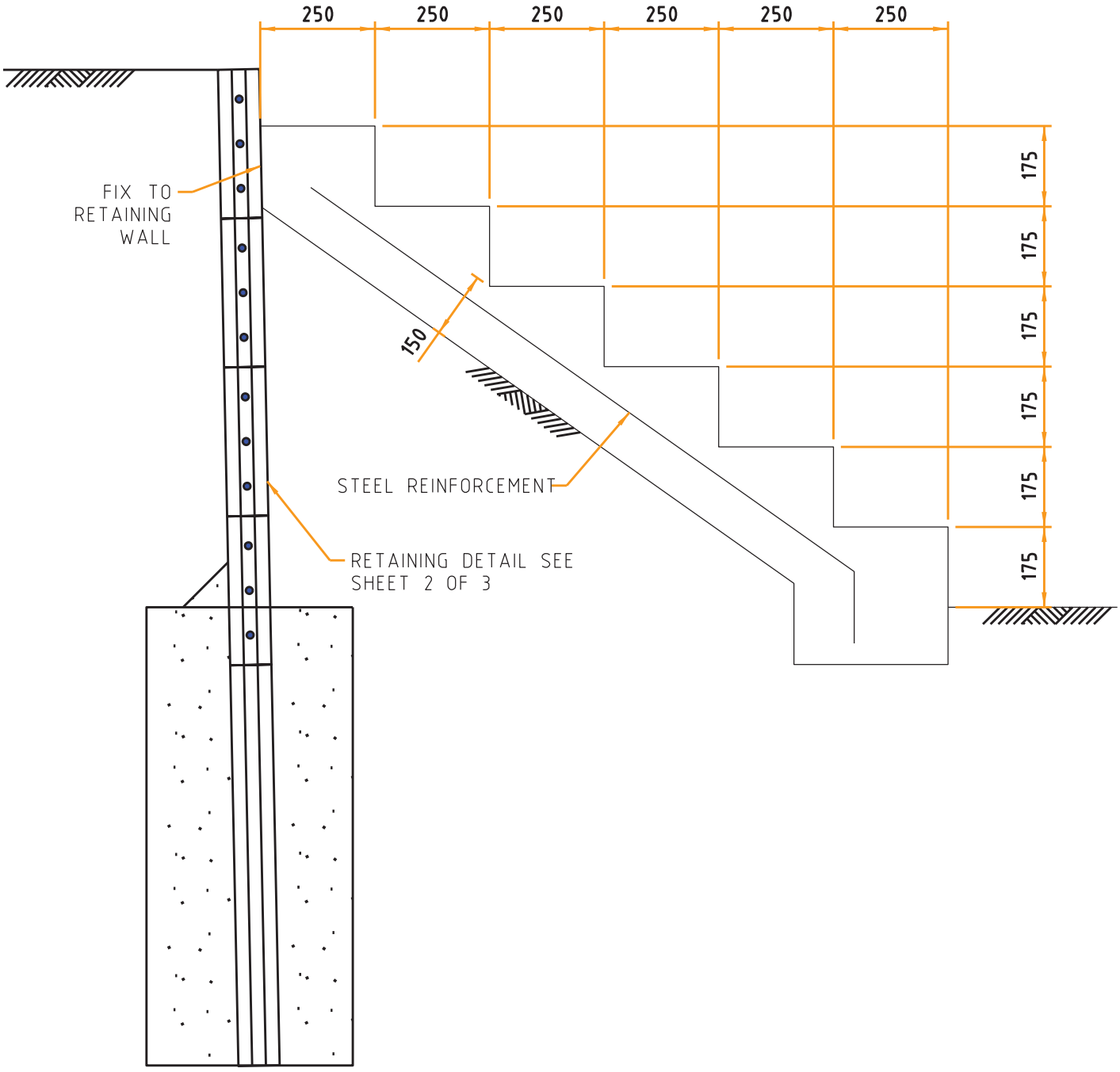
HORIZON POWER DISTRIBUTION CONSTRUCTION STANDARDS	DISTRICT SUBSTATION FLOOD PREVENTION RETAINING DETAIL PANEL AND POST	REVISION B	DATE MARCH 18
		DRAWING No G9-04/2	



NOTES:

1. MINIMUM REQUIREMENTS FOR CAST IN SITU STEPS

   a) STEPS TO BE MINIMUM 2000mm WIDE AND POSITIONED CENTRALLY TO FRONT WALL
   b) CONCRETE TO BE MINIMUM N25 GRADE
   c) ALL CONCRETE TO BE REINFORCED WITH MIN SL62 MESH ENSURE MINIMUM COVER AS PER AS3600

2. CONTRACTOR MAY OFFER PRECAST SET OF STEPS HOWEVER THEY MUST BE BENCHMARKED AGINST ABOVE DESIGN

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HORIZON POWER DISTRIBUTION CONSTRUCTION STANDARDS	DISTRICT SUBSTATION FLOOD PREVENTION STEP SECTION PANEL AND POST	REVISION B	DATE MARCH 18
		DRAWING No G9-04/3	