

A

B

C

D

E

F

G

H

A

B

C

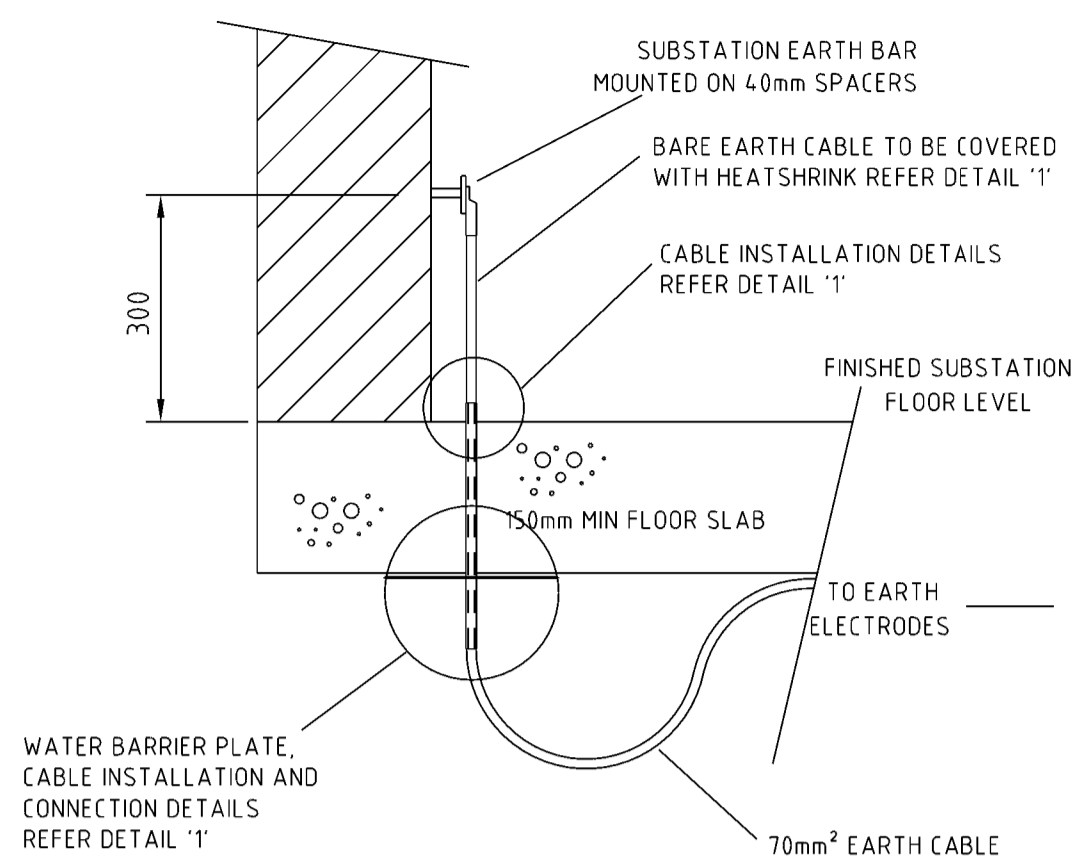
D

E

F

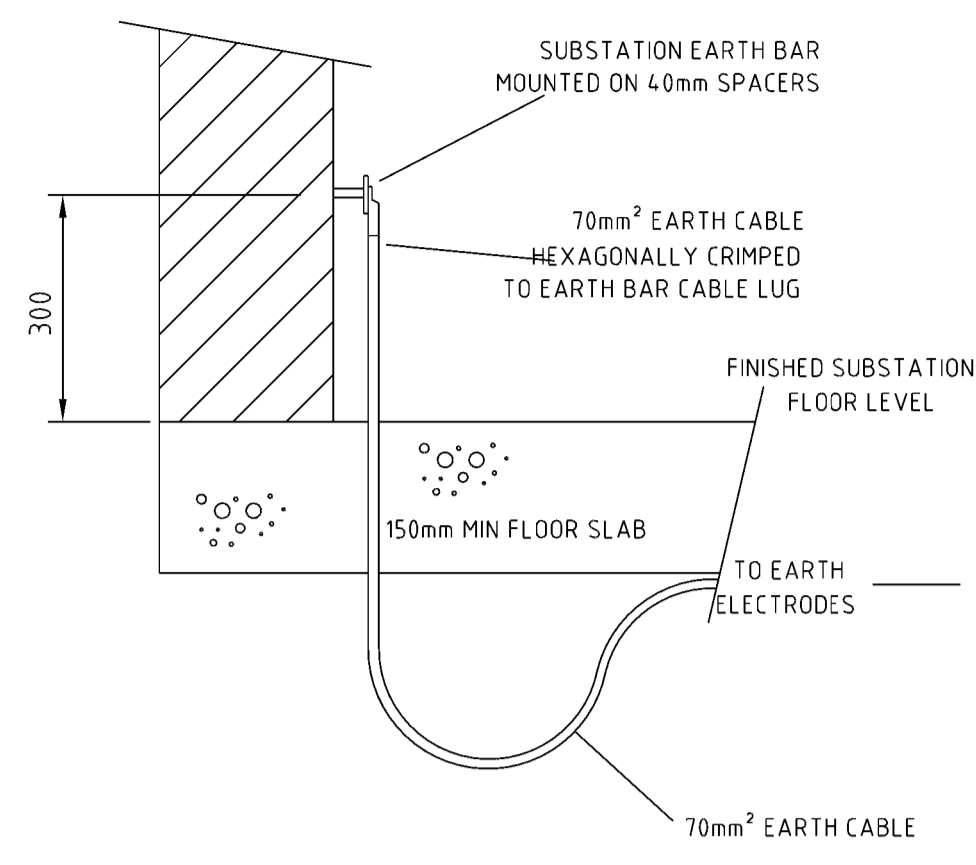
G

H



TYPE A INSTALLATION

SCALE 1:10



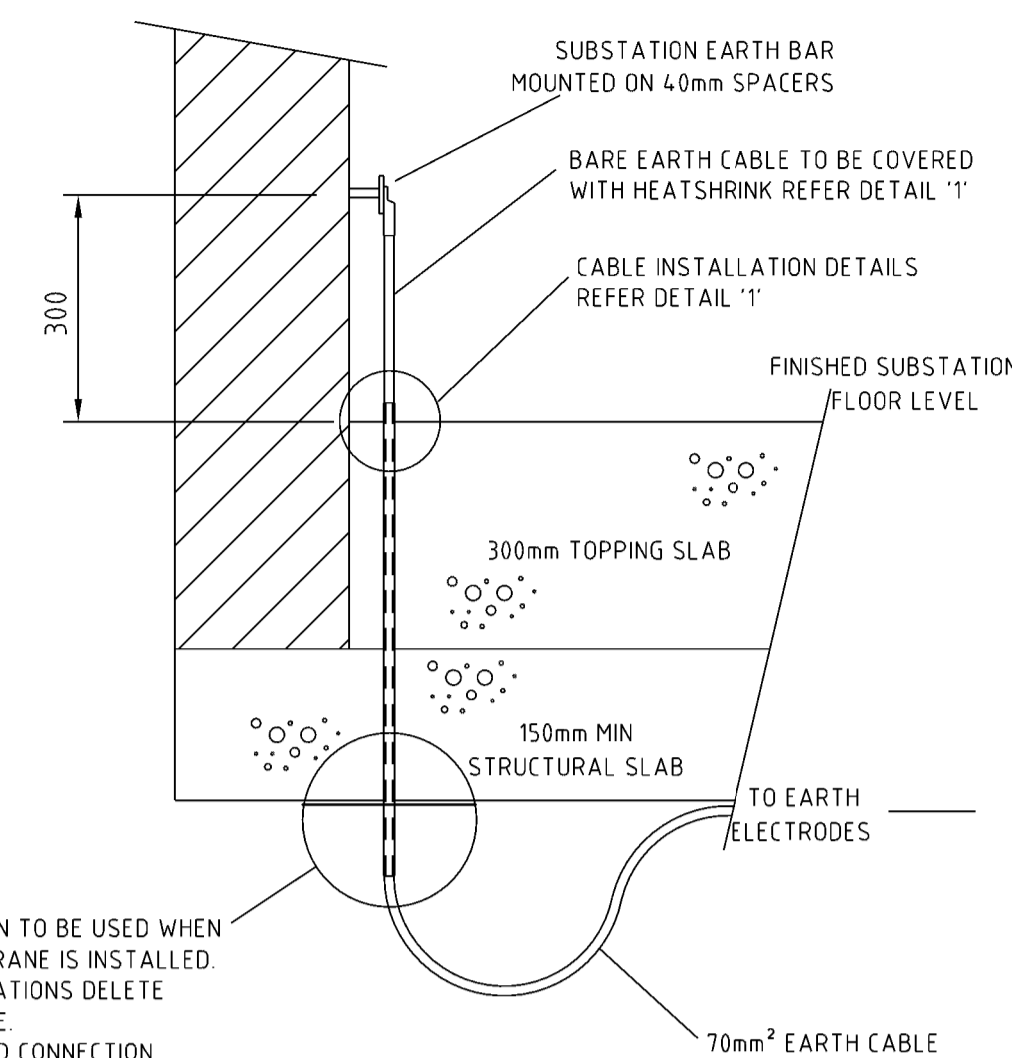
TYPE B INSTALLATION

SCALE 1:10

TYPE 'A' INSTALLATION TO BE USED WHEN A WATERPROOF MEMBRANE IS INSTALLED. FOR TYPE 'B' INSTALLATIONS DELETE WATER BARRIER PLATE. FOR INSTALLATION AND CONNECTION DETAILS REFER DETAIL '1'

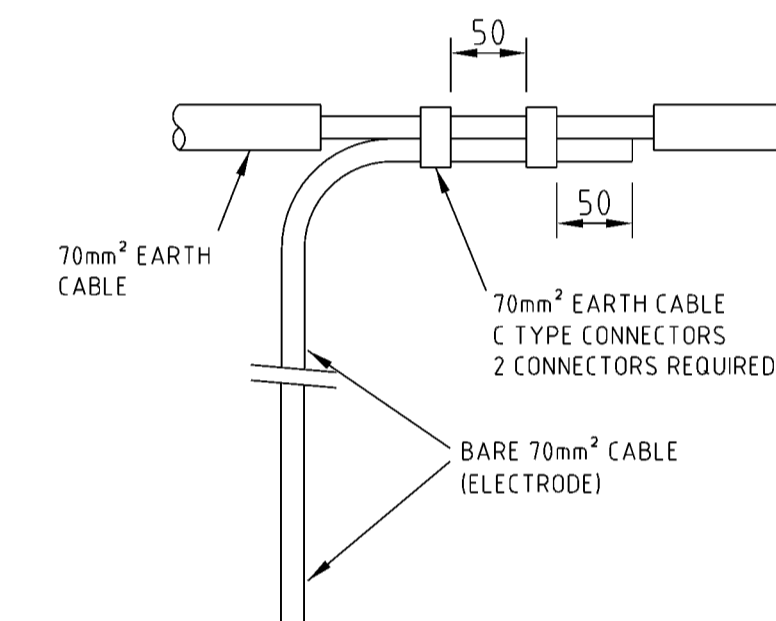
TYPES A & B INSTALLATIONS CONSTRUCTED WITH TOPPING SLAB

SCALE 1:10



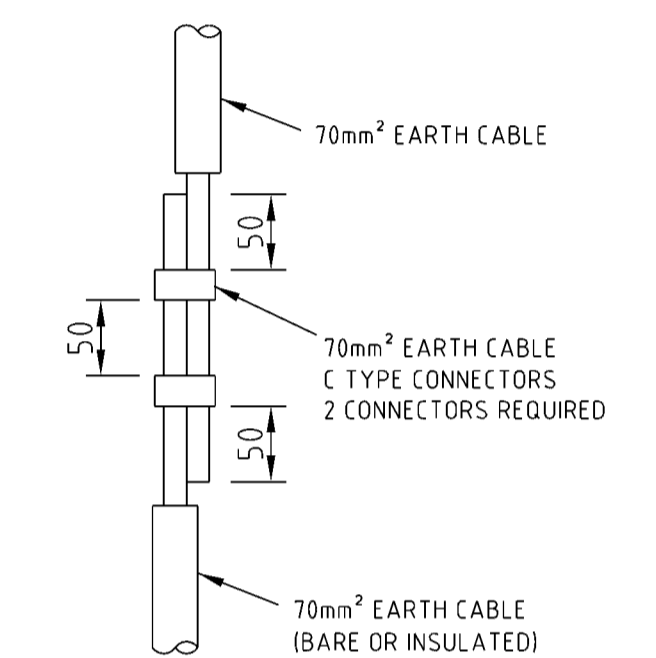
NOTES

- THIS DRAWING SHOWS TYPICAL INSTALLATION OF EARTH ELECTRODES IN CHAMBER SUBSTATIONS AND INDICATES
 - TYPE 'A' INSTALLATION (USED ONLY WHEN A WATERPROOF MEMBRANE IS INSTALLED)
 - TYPE 'B' INSTALLATION (USED ONLY WHEN A WATERPROOF MEMBRANE IS NOT REQUIRED)
 AND SHOULD BE READ IN CONJUNCTION WITH THE SUBSTATION DRAWINGS, AND NETWORK STANDARDS NS113, NS114 AND NS116. THE TYPICAL INSTALLATION DETAILS SHOWN CAN BE USED IN EITHER A STANDARD MINIMUM EARTHING DESIGN OR A SITE SPECIFIC DESIGN.
- SUPPLY AND INSTALLATION OF EARTH ELECTRODES, FITTINGS AND CABLES IS TO BE CARRIED OUT BY THE SUBSTATION EQUIPPING CONTRACTOR BEFORE THE INSTALLATION OF ANY WATERPROOF MEMBRANE AND POURING OF THE BASEMENT OR SUBSTATION FLOOR SLAB. ALL TERMINATIONS AND JOINTS IN STRANDED EARTH CONDUCTORS ARE TO BE MADE BY APPROVED COMPRESSION TECHNIQUES.
- WHERE GROUND CONDITIONS PERMIT, ELECTRODES ARE TO BE DRIVEN USING APPROPRIATE ROD DRIVERS AND DRIVING HEADS. WHERE GROUND CONDITIONS REQUIRE BORE HOLES, A 35mm DIAMETER HOLE FOR ROCK OR A 50mm DIAMETER HOLE FOR CLAY IS TO BE BORED FOR EACH EARTH CABLE. AN APPROVED EARTHING COMPOUND IS TO BE PUMPED INTO THE BORE HOLE AFTER BARE EARTH CABLE HAS BEEN INSTALLED. ALL ELECTRODE AND EARTH CABLE INSTALLATIONS ARE TO BE AT THE DEPTH SPECIFIED IN THE EARTHING DESIGN.
- COPPER EARTHING CONNECTIONS ARE TO BE KEPT CLEAR OF STEEL REINFORCING OF FLOOR SLAB WHERE POSSIBLE. OTHERWISE INSULATED CABLES ARE TO BE USED AND COMPRESSION FITTINGS ARE TO BE TAPED OVER.
- A SUITABLE GALVANISED STEEL DRAW-IN BOX IS TO BE INSTALLED AT EACH CHANGE OF DIRECTION. THE BOX IS TO BE MOUNTED SUCH THAT IT IS ACCESSIBLE TO AUSGRID STAFF AT ALL TIMES. IF A CABLE JOIN IS REQUIRED INSIDE THE BOX, ENSURE THE BOX IS LARGE ENOUGH TO HOUSE CRIMPING JOINTS SHOWN IN DETAIL '2'. WHERE A VERTICAL CABLE JOIN IS REQUIRED WITHIN A DRAW-IN BOX THE BOTTOM CABLE IS TO BE PROPERLY SUPPORTED WITH SADDLE OR CABLE TIE SO THAT NO STRESS IS PLACED ON THE CONNECTING CRIMPS.
- THE MECHANICAL PROTECTION TO CABLES AND CRIMPED JOINTS SHOWN IN LOW BASEMENT INSTALLATIONS IS TO BE PERFORMED BY A REMOVABLE GALVANISED STEEL COVER. THIS COVER IS TO BE ACCESSIBLE TO AUSGRID STAFF AT ALL TIMES.
- THE INSTALLATION AND CONNECTION OF THE EARTH RODS AND CONNECTING CABLES ARE TO BE INSPECTED AND APPROVED BY AUSGRID'S NOMINATED OFFICER BEFORE THE INSTALLATION OF ANY WATERPROOF MEMBRANE AND POURING OF THE BASEMENT OR SUBSTATION FLOOR SLAB. CONNECTING CABLES FOR EACH EARTHING GROUP UNDER THE SLAB MUST BE CONTINUOUS AND CONNECTIONS TO ELECTRODES OR BARE WIRE FOR BORE HOLES AS DETAILED.
- ALL 70mm² EARTH CABLES TO BE BLACK INSULATED STRANDED COPPER CONDUCTOR.
- CABLES ARE TO BE PROPERLY SUPPORTED WITH SADDLES TO THE WALL OR CABLE TIES SO THAT NO STRESS IS PLACED ON THE LUG CONNECTION TO EARTH BAR.



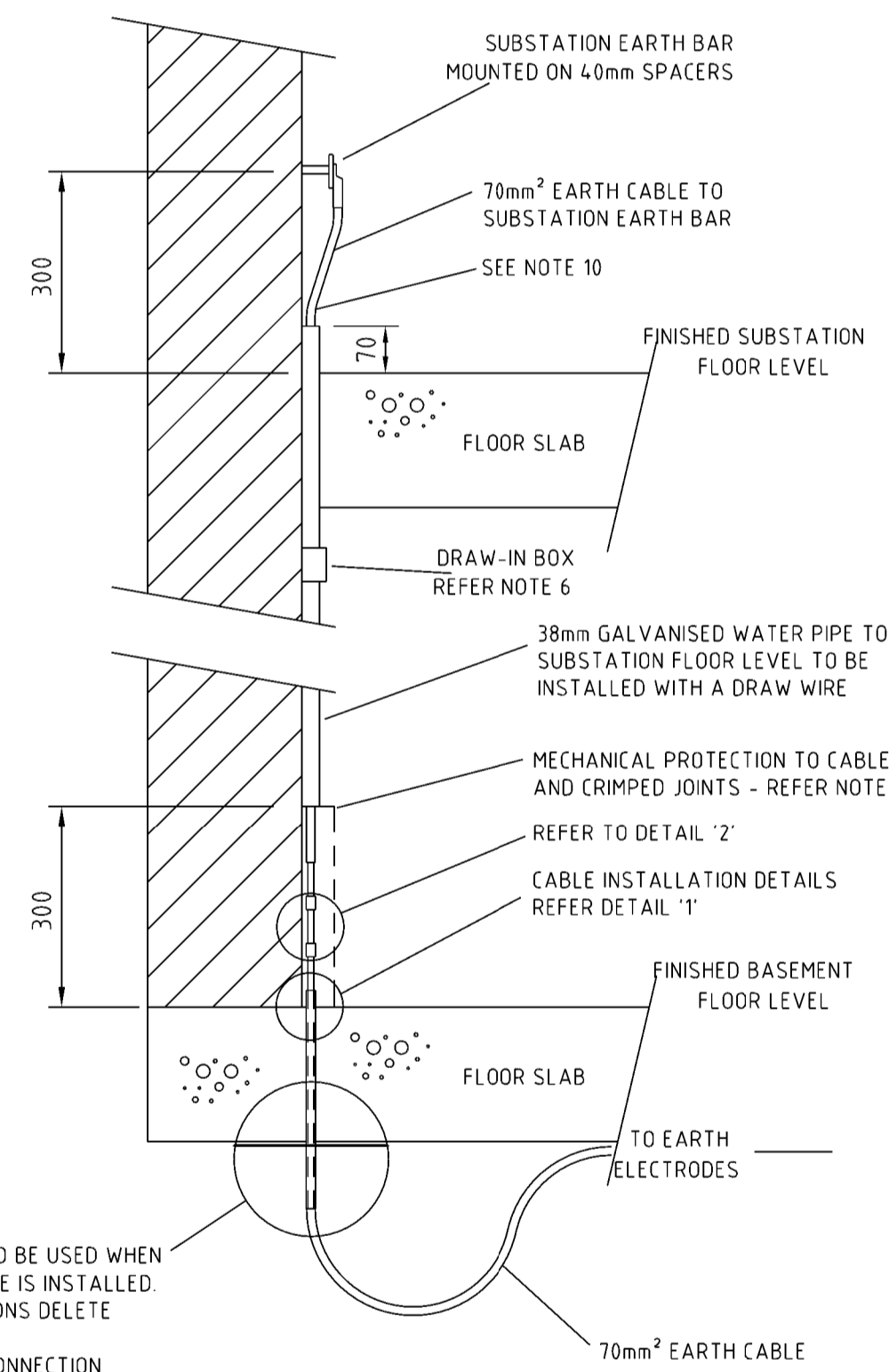
CONNECTIONS FOR BORE HOLE CABLE TYPE ELECTRODE

SCALE 1:5



DETAIL 2 CONNECTING EARTH CABLES

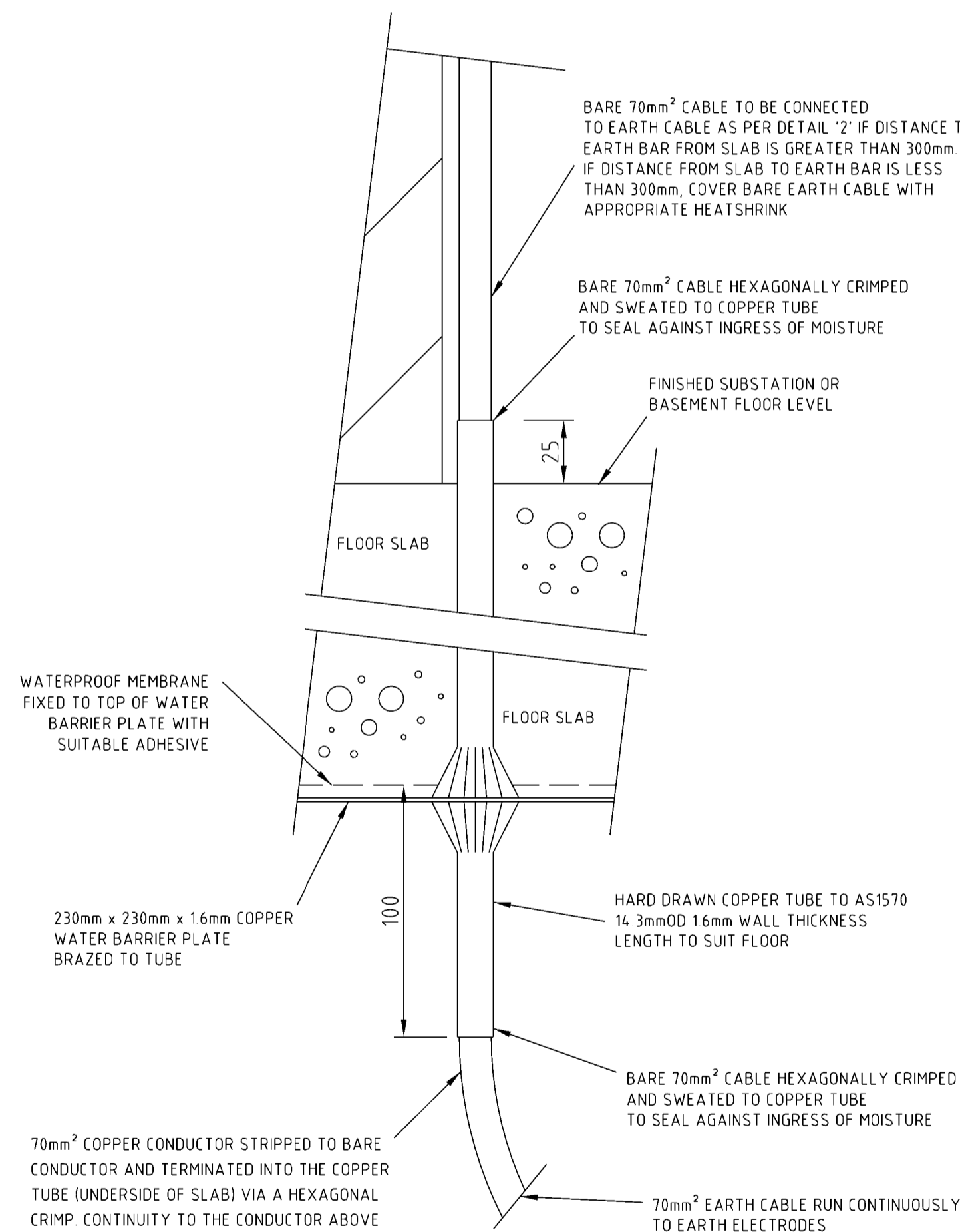
SCALE 1:5



TYPES A & B INSTALLATIONS WITH EARTH RODS IN THE LOWEST BASEMENT LEVEL

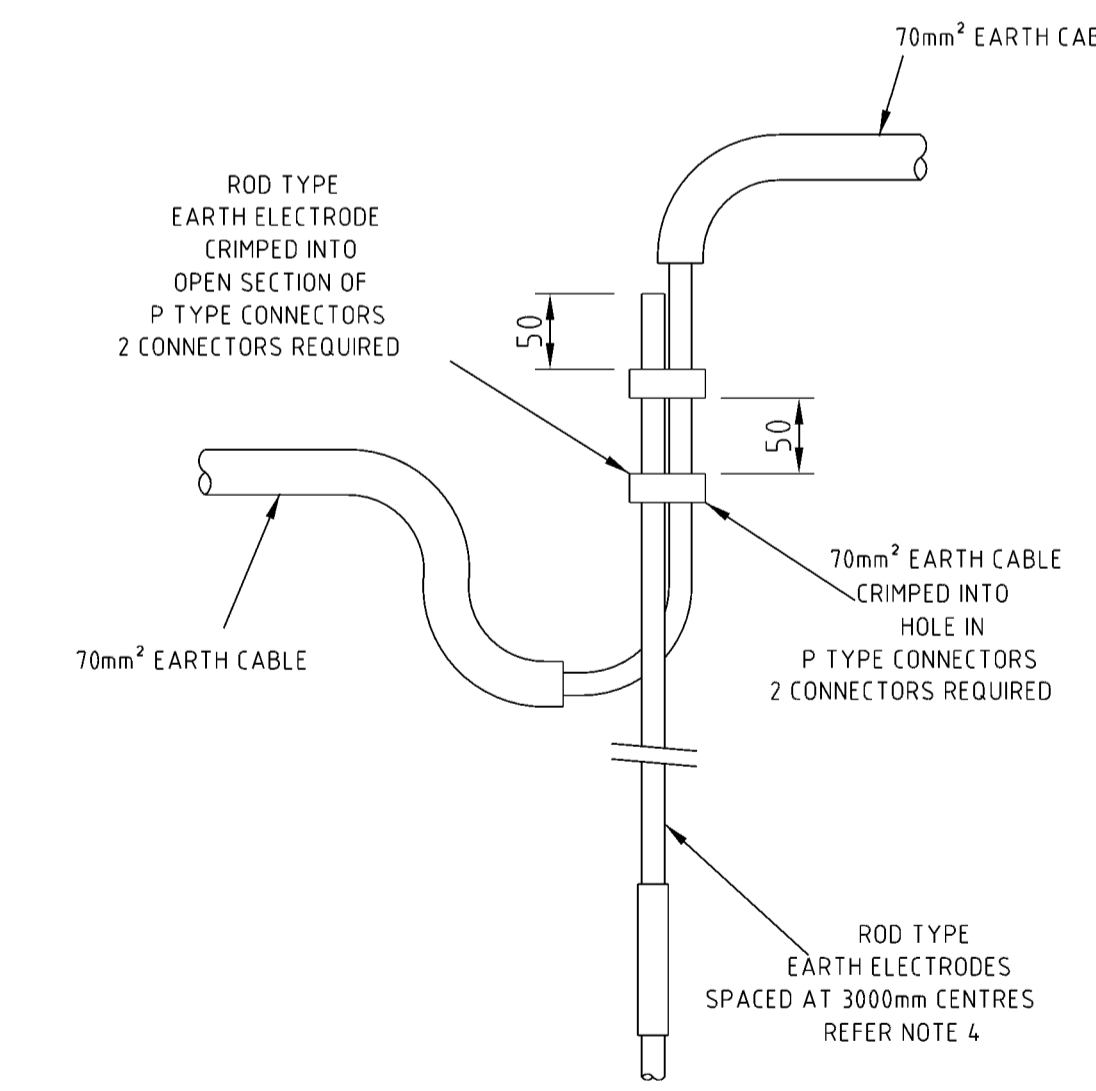
SCALE 1:10

TYPE 'A' INSTALLATION TO BE USED WHEN A WATERPROOF MEMBRANE IS INSTALLED. FOR TYPE 'B' INSTALLATIONS DELETE WATER BARRIER PLATE. FOR INSTALLATION AND CONNECTION DETAILS REFER DETAIL '1'



DETAIL 1 WATER BARRIER PLATE INSTALLATION

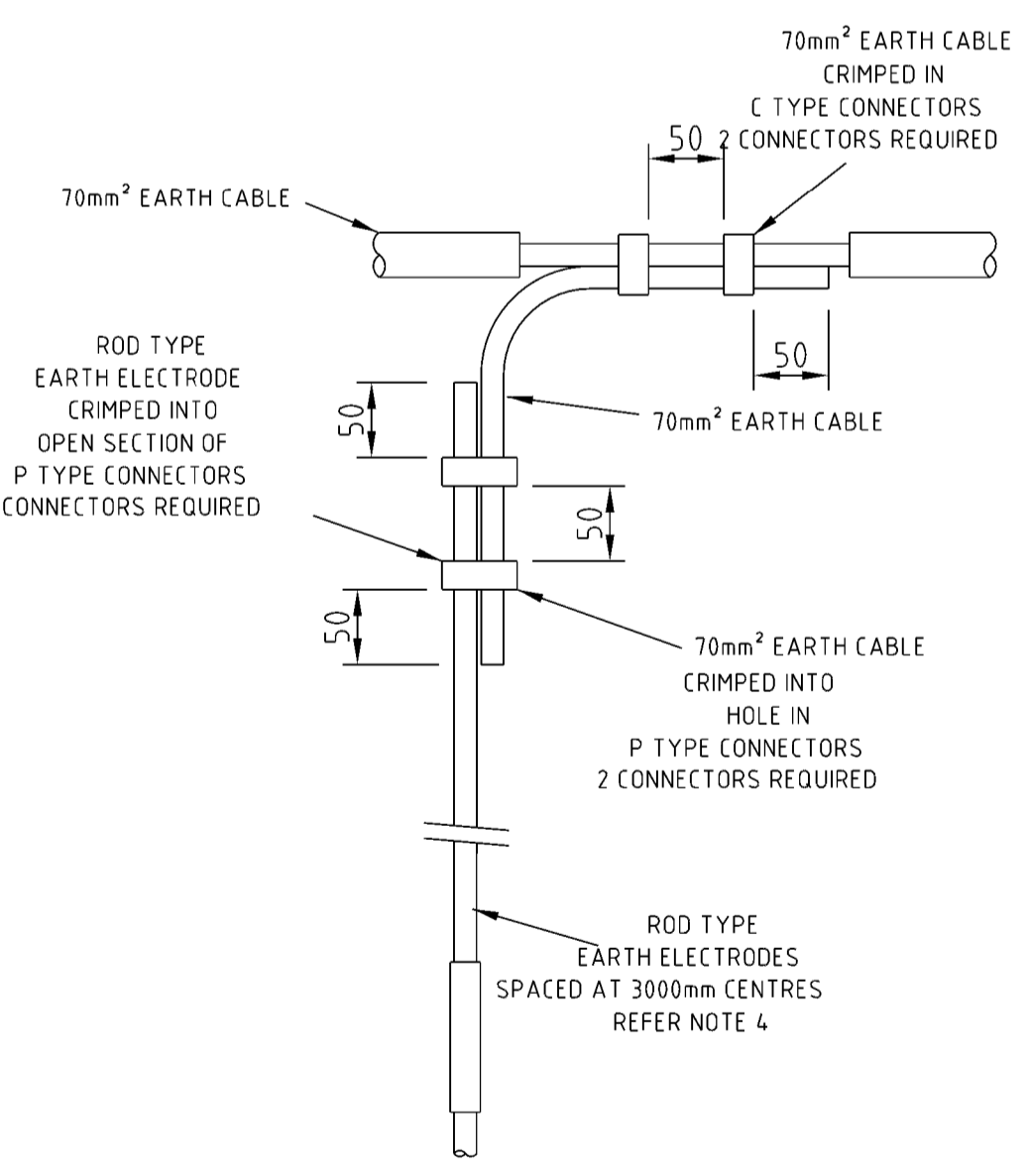
SCALE 1:2



PREFERRED

CONNECTIONS FOR DRIVEN ROD TYPE EARTH ELECTRODES

SCALE 1:5

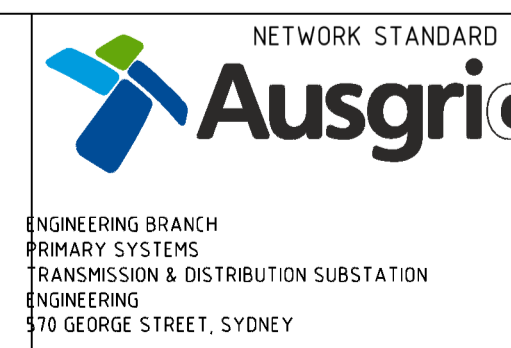


ALTERNATIVE

IF THE CHAMBER SUBSTATION SITE DOES NOT MEET THE CRITERIA FOR STANDARD MINIMUM EARTHING, A SITE SPECIFIC EARTHING DESIGN MUST BE UNDERTAKEN

13	REF E2, C10	14	EARTH ROD SPACING AND NOTES
14	DRAW-IN BOX AND NOTES	15	NOTES 1 AND 4 ALTERED
15	6 AND 7 ADDED	16	TITLE CHANGED FROM SUBSTATION
16	PWJ 11191	17	EARTHING TYPICAL INSTALLATION
17	CHECKED BJT	18	OF EARTH ELECTRODES
18	APPROVED: DGH	19	PN ES03/59/1/2
19	11	20	PN ES03/59/1/2
20	25	21	DRAWN: MP 18 105
21	25	22	CHECKED: IWR
22	25	23	APPROVED: PWJ
23	25	24	16 DETAILS & REFERENCES TO TUBE
24	25	25	TYPE COMPRESSION FITTINGS
25	25	26	REPLACED BY C AND P TYPE
26	25	27	COMPRESSION FITTINGS
27	25	28	NOTE 4 UPDATED
28	25	29	PN ES03/59/1/2
29	25	30	DRAWN: PWJ 4, 9, 06
30	25	31	CHECKED: IWR
31	25	32	APPROVED: IWR
32	25	33	17. NEW DRAWING BORDER
33	25	34	TUBE TYPE EARTH
34	25	35	ELECTRODES REMOVED
35	25	36	ROD TYPE ELECTRODES
36	25	37	DETAIL AMENDED
37	25	38	P/N PM02-02010-1-4-1
38	25	39	C MABBUTT 10 0112
39	25	40	CHECKED: P JARVIS
40	25	41	APPROVED: P JARVIS
41	25	42	18. DETAIL FOR BORE HOLE
42	25	43	EARTHING ADDED
43	25	44	DETAIL '2' ADDED
44	25	45	DETAIL '1', TYPE 'A' & TYPE 'B'
45	25	46	AMENDED TO SHOW NEW
46	25	47	CABLE CONNECTION METHOD
47	25	48	TO COPPER TUBING
48	25	49	NOTES 1, 4, 6 & 8 AMENDED
49	25	50	NOTE 9 & 10 ADDED
50	25	51	P/N PM02-02010-1-4-1
51	25	52	C MABBUTT 16 0312
52	25	53	CHECKED: P JARVIS
53	25	54	APPROVED: MCKELLY
54	25	55	19. NOTE 1 AND EARTHING
55	25	56	DESIGN NOTE ALTERED TO
56	25	57	REFLECT CRITERIA FOR
57	25	58	STANDARD MINIMUM EARTHING
58	25	59	DESIGN: 4568-1.1-6
59	25	60	P JARVIS 24 6 16
60	25	61	CHECKED: P JARVIS
61	25	62	APPROVED: D GRICE
62	25	63	BSTADDON/M CHARAN
63	25	64	APPROVED: D GRICE
64	25	65	DRAWN: P. RIOS
65	25	66	CHECKED: C MABBUTT
66	25	67	20. DATE: 04/11/2021
67	25	68	NOTE AMENDED ON
68	25	69	DETAIL 1
69	25	70	APPD by: P. TURRIN

CONSTRUCTION



SCALE	AS SHOWN
DESIGNED	SIGNED ON ORIGINAL
DRAWN	J BROOKER
CHECKED	SIGNED ON ORIGINAL
APPROVED	SIGNED ON ORIGINAL
DATE	30/06/2021
PROJECT NUMBER	
PROJTRAK NUMBER	

CHAMBER SUBSTATION EARTHING TYPICAL INSTALLATION OF EARTH ELECTRODES	
SIZE	DRAWING No
A1	25121
SHEET	AMD
1	20