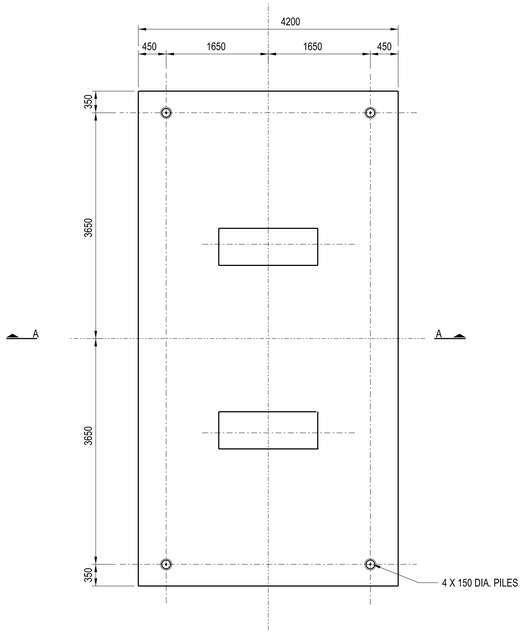
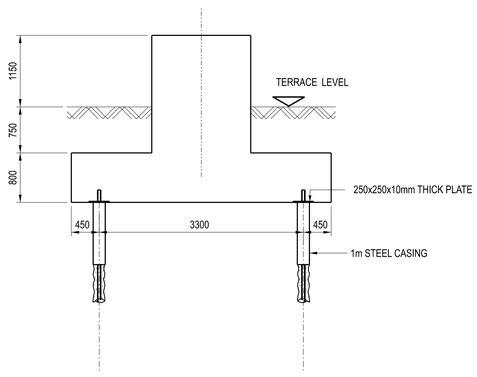
400kV FOUNDATION NC1

(FOR COLUMN TYPES NC1, NC2, NC12 & NC14)

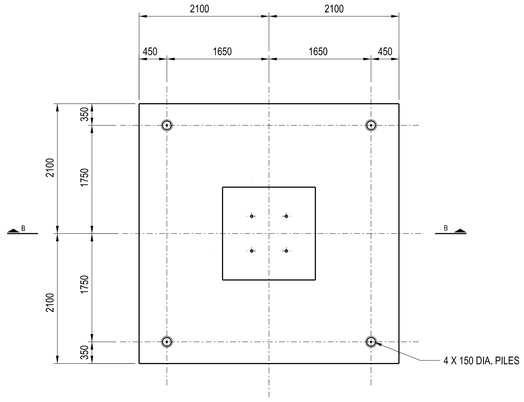


PLAN

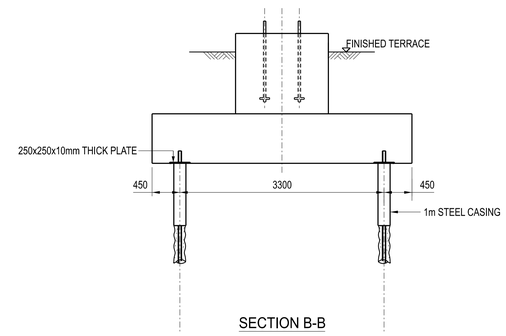


SECTION A-A

TUBULAR BUSBAR SUPPORT

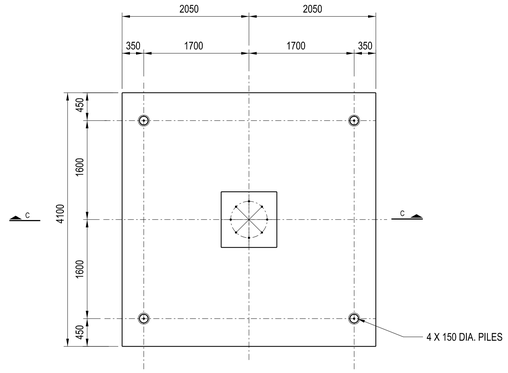


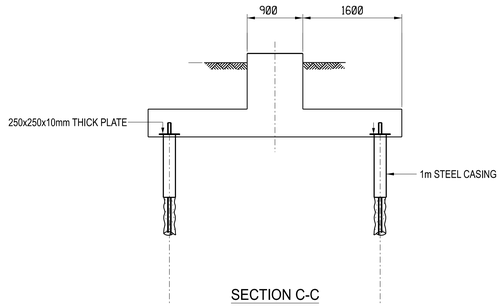
PLAN



SECTION B-B

24m LIGHTING MAST SUPPORT FOUNDATION





SECTION C-C

NOTES

1. SECURE AREA FOR WORK AND SURVEY LOCATIONS FOR PILE INSTALLATION
2. ADVANCE 182mm OUTSIDE DIAMETER CASING TO FULL PILE DEPTH REQUIRED (10m MINIMUM INTO DANCE DENSE GRAVEL SOILS) UTILIZING ROTARY DRILLING TECHNIQUES.
3. TREMIE CASING FULL WITH NEAT CEMENT GROUT
4. PLACE 40 MILLIMETERS REINFORCING THREADBAR WITH CENTRALIZERS.
5. REATTACH DRILL HEAD TO THE TOP OF THE CASING AND PRESSURE GROUT THE 10 METER-LONG PILE BOND LENGTH BY PUMPING NEAT CEMENT GROUT AND PRESSURE LINE EXTRACTING CASING MINIMUM GROUT PRESSURE SHOULD BE 0.35 MPA.
6. UPON COMPLETION OF PRESSURE GROUTING, REINSERT CASING 1M INTO THE TOP OF THE BOND LENGTH.
7. TRIM TOP OF CASING TO PROPER ELEVATION AND WELD THE TOP BEARING PLATES WITH STIFFNESS STIFFENER PLATES.
8. THE QUALITY OF THE GROUND SHALL BE MONITORED BY COLLECTING GROUT CUBES FOR LATER COMPRESSION TESTING AND BY MEASURING THE GROUT SPECIFIC GRAVITY FROM 1 BATCH PER DAY.
9. CONSISTENCY OF PILE INSTALLATION SHALL BE MONITORED AND RECORDED AS DESCRIBED IN THE PILE INSTALLATION CONTROL DOCUMENT. MONITOR AND RECORD THE DATA SHALL INCLUDE THE TOTAL PILE DEPTH, GROUT PRESSURES, AND QUALITIES, SOILS/ROCK ENCOUNTERED DURING INSTALLATION OR ANY OBSTRUCTION OR IRREGULARITIES.

PILE LOAD TEST

THE PILE ROAD TEST PROGRAM SHALL BE CONDUCTED AS DESCRIBED IN THE SPECIFICATION TESTING PROCEDURES AND RESULTS WILL BE INSPECTED AND REVIEWED BY NTCSA REPRESENTATIVES AND ARE SUBJECT TO NTCSA APPROVAL.

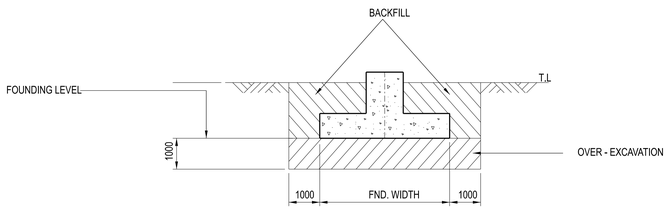
MATERIAL SPECIFICATION

GROUT - A NEAT MIX OF PORTLAND CEMENT CONFORMING TO ASTM C150 WITH A WATER CEMENT RATIO OF APPROXIMATELY 0.45. THE MINIMUM 28 DAY COMPRESSIVE STRENGTH OF THE GROUT SHALL BE 25 MPA.

REINFORCING BAR - THE REINFORCING BAR SHALL BE 40MM GRADE 450 MPA THREADBAR (OR EQUIVALENT). LENGTH OF COUPLE BAR SECTIONS SHALL BE DETERMINED BASED ON OVERHEAD CLEARANCE AVAILABLE FOR EACH PILE.

BEARING PLATE - STEEL FOR THE TOP BEARING WITH SIDE STIFFENERS SHALL CONFORM TO AASHTO M270 GRADE 350.

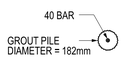
CASING - THE STEEL CASING SHALL BE 182MM OUTSIDE DIAMETER, 16MM WALL THICKNESS CONFORMING TO ASTM DESIGNATION: A106 GRADE B, A252 GRADE 2, A519 WITH A MINIMUM YIELD STRENGTH OF 241 MPA.



TYPICAL - EQUIPMENT FOUNDATIONS

MICROPILE DETAILS

MICROPILE DETAILS	NUMBER	4
	WORKING LOAD (COMPRESSION) kN	170kN
	TENSION LOAD (kN)	310KN
	HORIZONTAL LOAD (kN)	NIL
	APPLIED MOMENT (kNm)	97KN.m
MICROPILE SPECIFICATIONS	MIN. ULTIMATE CAPACITY BAR (kN)	585
	DIAMETER OF BAR (mm)	40
	DRILL BIT DIAMETER (mm)	150
	PILE DIAMETER (mm) - 1.5xDRILL BIT	150
REINFORCEMENT DETAILS	BAR SIZE	40
	WORKING LENGTH (m)	10
	BAR LENGTH (m)	18
INSTALLATION TOLLERANCES	VERTICALLY	1:75
	PLAN POSITION	75mm
	CAST LEVEL	300
PERMISSIBLE SETTLEMENT UNDER COMPRESSION LOAD (mm)	4mm	
EXPECTED OBSTRUCTIONS	YES/NO/MAYBE	NO
UNDERWATER CONCRETING	YES/NO/MAYBE	N/A
HOLES WITH COLLAPSE	YES/NO/MAYBE	YES
CHECK FOR GROUND HEAVE	YES/NO/MAYBE	NO
GROUT	STRENGTH	25MPa
	CEMENT TYPE	OPC
FOUNDING LEVEL (m)	10m	
CAST LEVEL	ALL PILES TO BE OVERCAST BY 125mm	
TRIM LEVEL	50mm	



PLAN - MICROPILE
SCALE 1:25

TYPICAL SECTION
SCALE 1:25

DETAILED DESIGN
NOT FOR CONSTRUCTION

4859	LIGHTING MAST FND.
4319	BUSBAR SUPP. FND.
3531	132kV MAIN COLUMN FND.
3990	400kV MAIN COLUMN FND.

REV	REVISION DESCRIPTION	DRAWN	CHKD	AUTH	DATE	ESKOM REFERENCE DRAWINGS
0	FIRST ISSUE					

APPROVED BY
DATE
CHECKED BY
DATE
DRAWN BY: S DUMA
DATE: 20/03/2025
SCALE: AS SHOWN

Eskom
Eskom Holdings SOC Ltd
Reg No 2002/015527/30

LESEDING

MICROPILE
LAYOUT & DETAILS
FOUNDATION

©

SHEET NUMBER	REVISION
0	0

LES23P04-SE-D105

SIZE: A0L
GROUT.TPL