



S.No.	Symbol	Description	QTY.
1	●	Earth Pit For Equipments	29 Nos.
2	●	Ø25mm Copper bonded steel Conductor, Vertical rod	59 Nos.
3	—	50x6mm Copper coated steel strip	150 Mtr.
4	—	Ø25mm Copper Bonded steel Conductor	2617 Mtr.
5	+	Cross Exothermic Joint	223 Nos.
6	T	Tee Exothermic Joint	59 Nos.
7	—	Straight Joint	523 Nos.
8	L	L Joint	7 Nos.
9	⊕	750x75x6mm Main Earth Terminal(MET)	28 Nos.
10	⊕	Tee/Earthing Risers Joint with Ø25mm earth conductor with (50x6) copper bonded steel strip	310 Nos.
11	—	50x6mm Copper coated steel strip	1144 Mtr.

- NOTE:-
- ALL DIMENSIONS ARE IN MM.
 - THIS DRAWING IS INDICATIVE AND FOR TENDER PURPOSE ONLY AND CONTRACTOR SHALL DEVELOP THE DRAWING FOR CLIENT APPROVAL.
 - EARTHING SYSTEMS WILL GENERALLY BE CONSTRUCTED IN ACCORDANCE WITH IS: 3043 - CODE OF PRACTICE FOR EARTHING INSTALLATION AND IEEE80.
 - THE LAYOUT OF EARTH GRID CONDUCTOR MAY BE SUITABLY CHANGED TO AVOID FOULING WITH COLUMNS/ FOUNDATION DURING ACTUAL CONSTRUCTION.
 - PRESENT EARTH MAT DESIGN IS BASED ON TYPICAL SOIL RESISTIVITY OF 50 OHM-METER. HOWEVER, THE DESIGN WILL BE REVISED ON THE BASIS OF ACTUAL SOIL RESISTIVITY OF RSS SITE LATER ON
 - THE FAULT CURRENT HAS BEEN SELECTED FOR 40 KA FOR 1 SECONDS.

6.0 Earth Mat Conductor size calculation Copper Bonded Steel				
SN	Description	Symbol	Unit	Value
1	Short circuit current	I	kA	40.0
2	Fault duration	t _c	sec	1
3	Thermal capacity factor (Table-1/IEEE 80, Page-42)	T _{cap}	J/cm ² °C	3.8
4	Thermal coefficient for resistivity at ref. Temp. (Table-1/IEEE 80)	α _r	/°C	0.00378
5	Maximum allowable temp. (Table-1/IEEE 80)	T _m	°C	1084
6	Ambient temperature	T _a	°C	40
7	Reference Temperature for material constant	T _r	°C	20
8	Resistivity at ref. Temp. Tr (Table-1/IEEE 80)	ρ _r	μΩ-cm	10.1
9	K ₀ = ((1/α _r) - Tr) (Eq. 37/IEEE 80)	K ₀		245.00
Earth Conductor size in sq mm (Eq. 45/IEEE 80-2013)				
$A = \frac{I \sqrt{t_c}}{\sqrt{T_{cap} \times 10^{-4} \times \ln \left(\frac{T_m}{T_a + K_0 + T_r} \right)}}$				
Substituting the values in above equation, we get:-				
10	Calculated area of Earth Conductor	A	mm ²	323.12
	Calculated Earth Conductor diameter	d	mm	20.28
11	Selected Earth Conductor Dia.	D _{sel}	mm	25.00

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 - INTERFACE WITH OTHER DESIGN DISCIPLINE WILL BE DONE AS PER AVAILABILITY OF DETAILS.

REV	DATE	DESCRIPTION	Originator	Checked	Approved
R0	08-01-2025	FIRST SUBMISSION	KD	V.S/R.K	SK

K RIDE

DM / ELE / KRIDE Sr. DGM / ELE / KRIDE AGM / ELE / KRIDE

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egis **AECOM** wsp
EGIS-AECOM-WSP

Senior Discipline Expert Chief Discipline Expert Project Director

Certified that this document has been designed and checked in accordance with DDC Quality Assurance Plan.
Detailed Design Consultant for design of Traction & Auxiliary Power Supply and Distribution for BSRP

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Approved: S. Kumar

Client:



**RAIL INFRASTRUCTURE
DEVELOPMENT COMPANY
(KARNATAKA) LIMITED**

Project Title: Bengaluru Suburban Rail Project (BSRP)
(Detailed Design Consultant for design of Traction & Auxiliary Power Supply and Distribution for BSRP)

Corridor-2 (Benniganahalli - Chikkabanavara)

Drawing Title: Equipment Earthing Layout (Plan View)
Soladevanahalli Depot 220/33/27.5 kV GIS Substation
(Sh. 1 of 3)

Project Stage:

Paper Size: A1

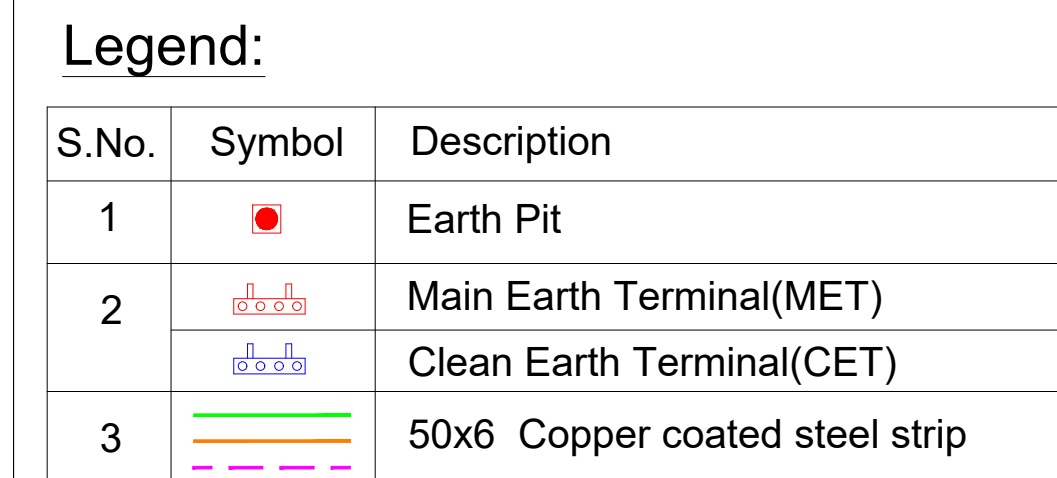
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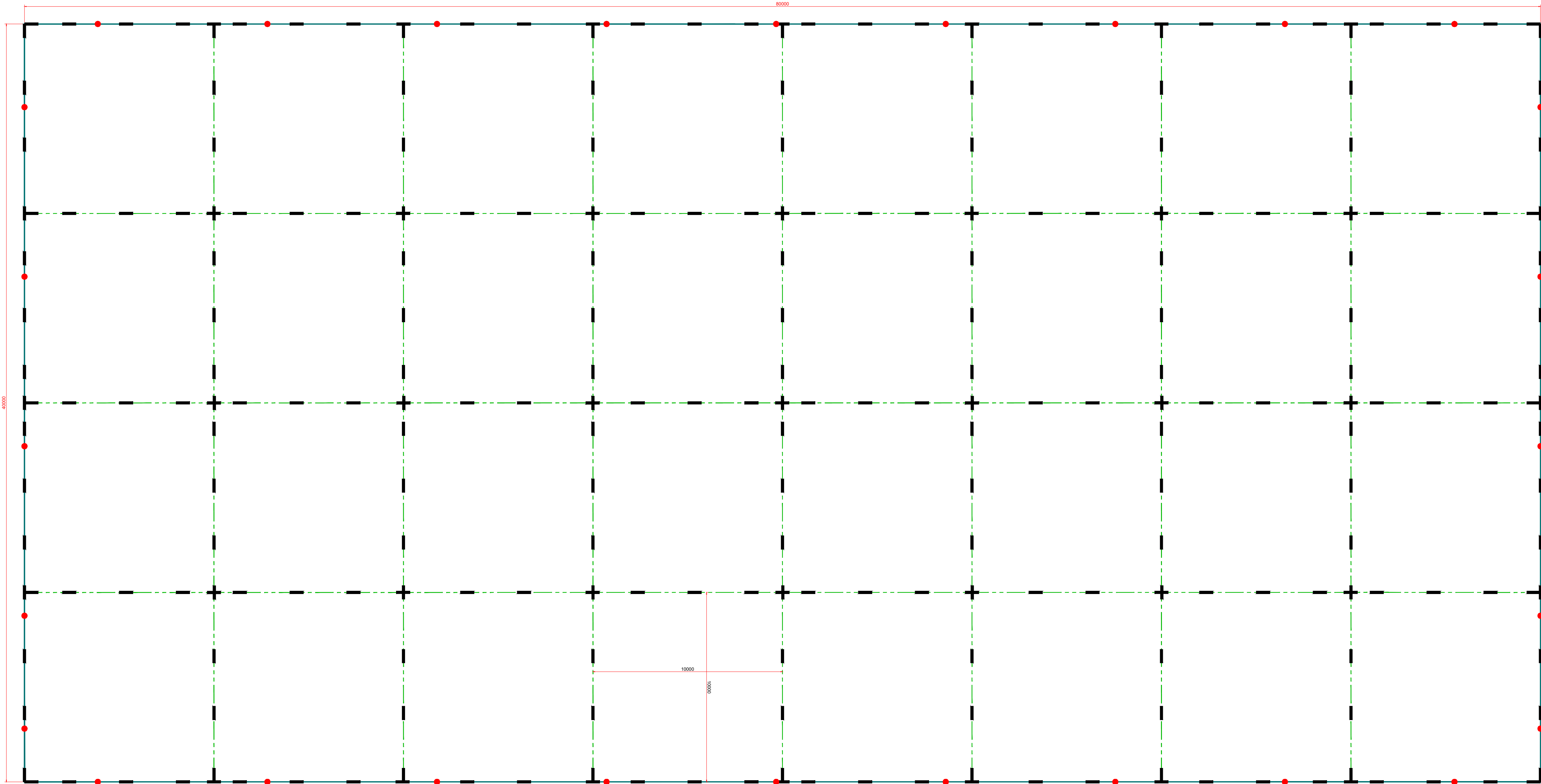
Date: 08/01/2025

Scale: TS/NTS

Drawing no.: KRDD01-TDR-GEN-GEN-TPS-DWG-00033

Revision: R0





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REV	DATE	DESCRIPTION	Originator	Checked	Approved

K RIDE		
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Corridor-2 (Benniganahalli - Chikkabanavara)

Drawing Title: Earth Mat Layout (View Plan)
Soladevanahalli Depot 220/33/27.5 kV GIS Substation
(Sh. 3 of 3)

Drawing no.: KRDD01-TDR-GEN-GEN-TPS-DWG-00033

Project Stage:

Date: 08/01/2025

Scale: TS/NTS

Revision: R0