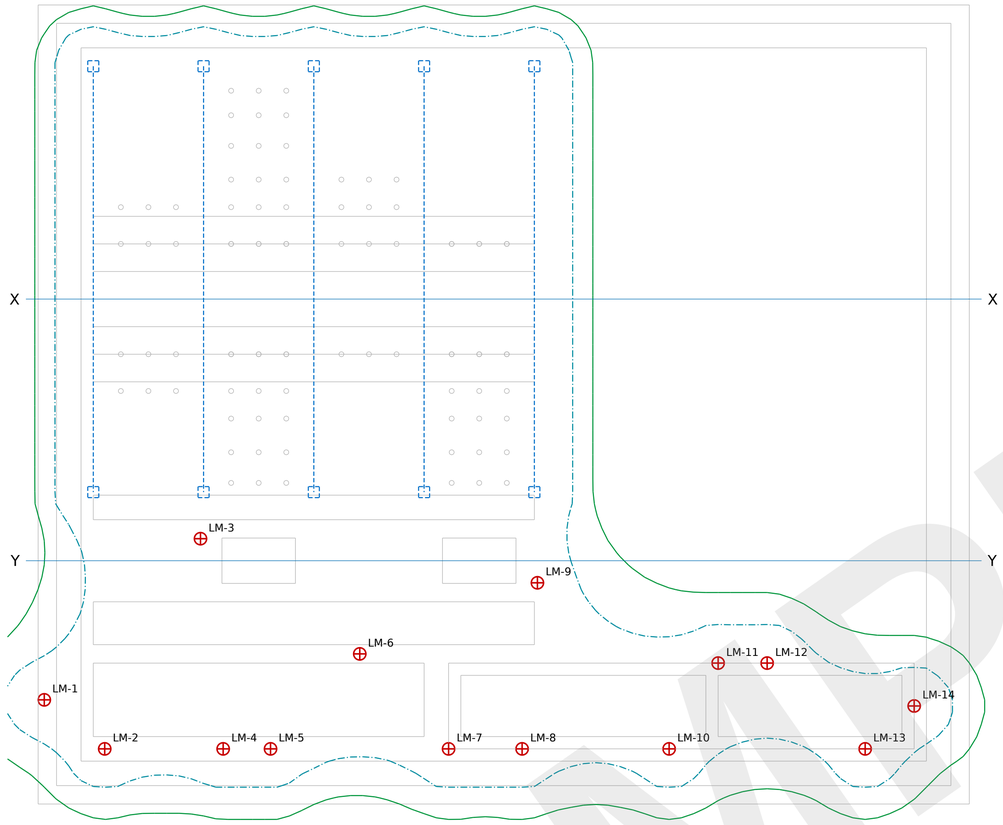
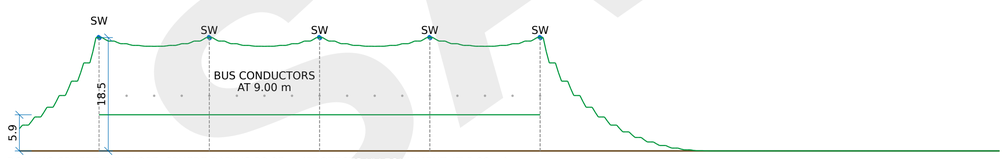
DSLP PLAN (SCALE 1:500)

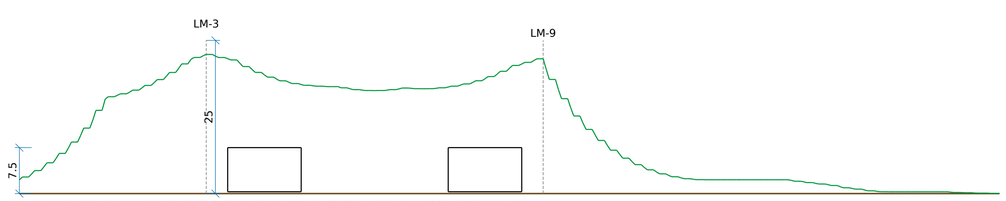


SECTION X-X (220 kV YARD) (SCALE 1:500)



ROLLING SPHERE ENVELOPE, SPHERE RADIUS 28.97 m (PROTECTS HV EQUIPMENT AT 5.90 m)

SECTION Y-Y (ICT ROW) (SCALE 1:500)



ROLLING SPHERE ENVELOPE, SPHERE RADIUS 27.99 m (PROTECTS ICT BUSHING TOPS AT 7.50 m)

LIGHTNING PROTECTION (IEEE 998-2012, IEC 62305-3)

HV tubular bus: IEEE 998 (Mousa), protected height A 9.00 m, sphere radius S 29.15 m (BIL 1050 kVp, surge impedance Zs 316 Ω, stroke current Is 7.31 kA).

HV equipment: IEEE 998 (Mousa), protected height A 5.90 m, sphere radius S 28.97 m (BIL 1050 kVp, surge impedance Zs 319 Ω, stroke current Is 7.24 kA).

ICT bushing tops: IEEE 998 (Mousa), protected height A 7.50 m, sphere radius S 27.99 m (BIL 1050 kVp, surge impedance Zs 336 Ω, stroke current Is 6.87 kA).

33 kV outdoor areas: IEC 62305 LPL I, protected height A 5.50 m, sphere radius S 20.00 m.

Control building roof: IEC 62305 LPL I, protected height A 6.00 m, sphere radius S 20.00 m.

COVERAGE (MARGIN OF THE SPHERE ABOVE THE PROTECTED HEIGHT)

HV tubular bus: least margin 8.09 m · limit 0.00 m · Pass

HV equipment: least margin 11.17 m · limit 0.00 m · Pass

ICT bushing tops: least margin 9.82 m · limit 0.00 m · Pass

33 kV outdoor areas: least margin 0.22 m · limit 0.00 m · Pass

Control building roof: least margin 3.46 m · limit 0.00 m · Pass

SHIELDING

5 shield wires at 18.50 m along the HV column boundaries, 10 gantry peaks and shield towers.

14 lightning masts of 25.00 m.

Each mast and tower has 2 earth electrodes bonded to the earth mat (48 in total).

LIGHTNING MASTS

Positions (x, y) in metres, x east and y north from the fence's south-west corner. Masts stand clear of the roads and the building.

LM-1 (1.0, 17.0) · LM-2 (10.9, 9.0) · LM-3 (26.5, 43.3) · LM-4 (30.2, 9.0) · LM-5 (37.9, 9.0) · LM-6 (52.5, 24.5) · LM-7 (67.0, 9.0) · LM-8 (79.0, 9.0) · LM-9 (81.5, 36.1) · LM-10 (103.0, 9.0) · LM-11 (111.0, 23.0) · LM-12 (119.0, 23.0) · LM-13 (135.0, 9.0) · LM-14 (143.0, 16.0).

NOTES

1. Green: protected zone at 220 kV equipment height. Teal dash-dot: protected zone at 33 kV equipment height. Red circle with a cross: a lightning mast. In the sections, dashed grey: a support beyond the section plane.

2. Striking-distance factor k = 1 for masts and shield wires (IEEE 998 allows 1.2 for a mast, so a mast's zone is drawn smaller than it may be). Shield-wire sag is not deducted, so the zone under a span is smaller than drawn at mid-span. Check it at detail design with the stringing sag.

3. The control building's roof air terminals and down conductors are the building's own design to IEC 62305-3.

SubstationLayout

REV	DATE	DESCRIPTION	BY
0	2 Nov 2026	Issued	Sample engineer

PROJECT	Sample 220/33 kV pooling substation
CLIENT	Sample client
LOCATION	Sample site
TITLE	DIRECT STROKE LIGHTNING PROTECTION 220/33 kV POOLING SUBSTATION, 250 MW

	NAME	DATE
DRAWN	Sample engineer	2 Nov 2026
CHECKED	Sample engineer	2 Nov 2026
APPROVED	Sample engineer	2 Nov 2026

DRG. NO.	SSL-E-DSL-001	REV.	0
SCALE	1:500 / 1:500	SIZE A1	Sheet 1 of 1

SAMPLE

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