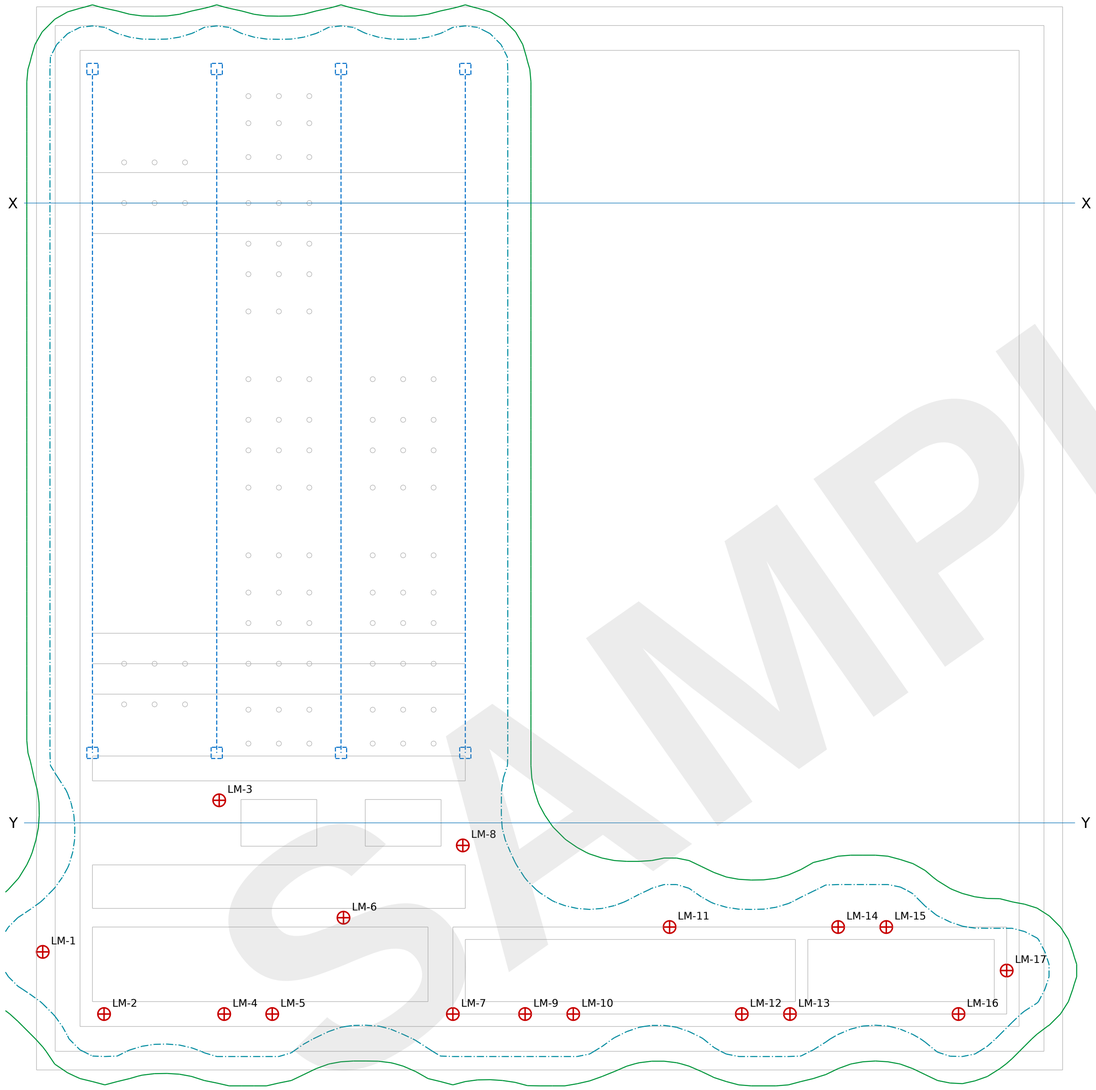
DSLP PLAN (SCALE 1″ = 40′-0″)

N

0 25 50 ft



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

HV tubular bus: IEEE 998 (Mousa), protected height A 27′-11″, sphere radius S 86′-1″ (BIL 900 kVp, surge impedance Zs 318 Ω, stroke current Is 6.22 kA).

HV equipment: IEEE 998 (Mousa), protected height A 16′-5″, sphere radius S 86′-9″ (BIL 900 kVp, surge impedance Zs 314 Ω, stroke current Is 6.30 kA).

Transformer bushing tops: IEEE 998 (Mousa), protected height A 24′-7″, sphere radius S 81′-11″ (BIL 900 kVp, surge impedance Zs 343 Ω, stroke current Is 5.76 kA).

34.5 kV outdoor areas: IEC 62305 LPL I, protected height A 16′-5″, sphere radius S 65′-7″.

Control building roof: IEC 62305 LPL I, protected height A 19′-8″, sphere radius S 65′-7″.

COVERAGE (MARGIN OF THE SPHERE ABOVE THE PROTECTED HEIGHT)

HV tubular bus: least margin 27′-11″ · limit 0′-0″ · Pass

HV equipment: least margin 39′-6″ · limit 0′-0″ · Pass

Transformer bushing tops: least margin 32′-11″ · limit 0′-0″ · Pass

34.5 kV outdoor areas: least margin 5′-10″ · limit 0′-0″ · Pass

Control building roof: least margin 11′-4″ · limit 0′-0″ · Pass

SHIELDING

4 shield wires at 62′-4″ along the HV column boundaries, 8 gantry peaks and shield towers.

17 lightning masts of 82′-0″.

Each mast and tower has 2 ground electrodes bonded to the ground grid (50 in total).

LIGHTNING MASTS

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

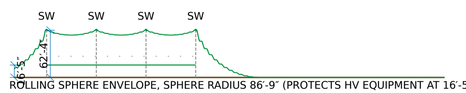
LM-1 (3.3, 62.3) · LM-2 (35.7, 29.5) · LM-3 (96.5, 142.4) · LM-4 (99.1, 29.5) · LM-5 (124.5, 29.5) · LM-6 (162.1, 80.4) · LM-7 (219.8, 29.5) · LM-8 (225.1, 118.5) · LM-9 (258.0, 29.5) · LM-10 (283.4, 29.5) · LM-11 (334.2, 75.5) · LM-12 (372.4, 29.5) · LM-13 (397.8, 29.5) · LM-14 (423.2, 75.5) · LM-15 (448.6, 75.5) · LM-16 (486.8, 29.5) · LM-17 (512.2, 52.5).

NOTES

1. Green: protected zone at 230 kV equipment height. Teal dash-dot: protected zone at 34.5 kV equipment height. Red circle with a cross: a lightning mast. In the sections, dashed gray: 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.

SECTION X-X (230 kV YARD) (SCALE 1″ = 100′-0″)

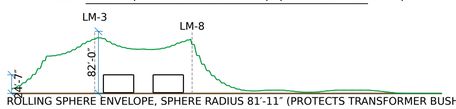
0 50 100 ft



ROLLING SPHERE ENVELOPE, SPHERE RADIUS 86′-9″ (PROTECTS HV EQUIPMENT AT 16′-5″)

SECTION Y-Y (TRANSFORMER ROW) (SCALE 1″ = 100′-0″)

0 50 100 ft



ROLLING SPHERE ENVELOPE, SPHERE RADIUS 81′-11″ (PROTECTS TRANSFORMER BUSHING TOPS AT 24′-7″)

SubstationLayout

REV	DATE	DESCRIPTION	BY
0	4 Nov 2026	Issued	Sample engineer

PROJECT	Sample 230/34.5 kV pooling substation
CLIENT	Sample client
LOCATION	Sample site
TITLE	DIRECT STROKE LIGHTNING PROTECTION 230/34.5 kV POOLING SUBSTATION, 250 MW

	NAME	DATE
DRAWN	Sample engineer	4 Nov 2026
CHECKED	Sample engineer	4 Nov 2026
APPROVED	Sample engineer	4 Nov 2026

DRG. NO.	SSL-E-DSL-001	REV.	0
SCALE	1″ = 40′-0″ / 1″ = 100′-0″	SIZE ANSI D	Sheet 1 of 1

SAMPLE

Sample document for a sample project, generated by SubstationLayout. Not for construction. © SolarLayout.