ElectraNet

Typical Primary Plant

Document Number: 1-11-FR-33

VERSION 1.0 June 2018

This functional requirements document is in line with the organisation's Primary Plant Asset Class Strategies

Contents

1. Purpose and Scope

This document describes the requirements for equipment connected directly to the South Australian electrical transmission system operating at voltages of 275 kV, 132 kV, 66 kV, and 33 kV. The principles of this document apply to equipment connected at other voltages.

The requirements contained within this document may be modified on a site specific basis. However, unless such modifications are explicitly detailed and accepted by ElectraNet the requirements of this document apply.

Ratings are specified for equipment with nominal operating voltages of 33 kV and above. Deviations of the requirements for equipment operating at these voltages will be permitted only when it can be demonstrated that the proposed derogation will not be detrimental to the safety, operability, maintainability, constructability and reliability of the South Australian electricity transmission system.

2. Legal and Regulatory Requirements

Equipment that is to be installed on the South Australian electrical transmission system must be installed in accordance with all requirements of:

- The latest version of the National Electricity Rules;
- The South Australia Electricity Act 1996;
- The latest version of the Electricity Transmission Code.

3. Application

Equipment that is to be installed on the South Australian electrical transmission system must be suitable for operation as required by the ElectraNet Switching Manual.

Equipment is to be installed in such a way that allows for operation and maintenance personnel to work with and around the equipment in accordance with the ElectraNet Asset Access Manual.

Equipment is to be procured and installed in accordance with ElectraNet Asset Design Manuals.

4. Referenced Documents

The table below lists applicable legislations, standards, referenced documents:

Legislation	
NER	National Electricity Rules
SAEA	South Australia Electricity Act 1996
TC/08	Electricity Transmission Code
Standards	
AS/NZS 3000	Australian and New Zealand wiring rules
AS 1170.2	Structural design actions - Wind actions
AS 1170.4	Structural design actions - Earthquake actions in Australia
AS 1349	Bourdon tube pressure and vacuum gauges
AS 2067	Substations and high voltage installations exceeding 1 kV a.c.
AS 4436	Guide for the selection of insulators in respect of polluted conditions
AS 62271.301	AS 62271.301-2005 (R2016) : High voltage switchgear and controlgear - Dimensional standardization of terminals
IEC 60099-4	Surge arresters - Part 4: Metal-oxide surge arresters without gaps for a.c. systems
IEC 60099-5	Surge arresters - Part 5: Selection and application recommendations
IEC 60099-6	Surge arresters - Part 6: Surge arresters containing both series and parallel gapped structures - Rated 52 kV and less
IEC 60099-7	Surge arresters - Part 7: Glossary of terms and definitions from IEC publications 60099-1, 60099-4, 60099-6, 61643-1, 61643-12, 61643-21, 61643-311, 61643-321, 61643-331 and 61643-341
IEC 60099-8	Surge arresters - Part 8: Metal-oxide surge arresters with external series gap (EGLA) for overhead transmission and distribution lines of a.c. systems above 1 kV
IEC 60296	Fluids for Electrotechnical applications - Unused mineral insulating oils for transformers and switchgear
IEC 60376	Specification of technical grade sulphur hexafluoride (SF6) for use in electrical equipment.
IEC 60529	Degrees of protection provided by enclosures (IP Code)
IEC/TS 60815-1	Selection and dimensioning of high-voltage insulators intended for use in polluted conditions - Part 1: Definitions, information and general principles

IEC 61462	Composite hollow insulators - Pressurized and unpressurized insulators for use in electrical equipment with rated voltage greater than 1 000 V - Definitions, test methods, acceptance criteria and design recommendations
IEC 61869-1	Instrument Transformers - Part1: General Requirements
IEC 61869-2	Instrument transformers - Part 2: Additional requirements for current transformers
IEC 61869-3	Instrument transformers - Part 3: Additional requirements for inductive voltage transformers
IEC 61869-5	Instrument transformers - Part 5: Additional requirements for capacitor voltage transformers
IEC 61869-103	Instrument transformers - The use of instrument transformers for power quality measurement
IEC 62271-1	High Voltage AC Switchgear and Control Gear – Common specifications
IEC 62271-100	High Voltage AC Switchgear and Controlgear – Part 100: High-voltage Alternating Current Circuit Breakers
IEC 62271-102	High voltage switchgear and controlgear - Alternating current disconnectors and earthing switches
ISO 9223	Corrosion of metals and alloys - Corrosivity of atmospheres - Classification, determination and estimation

5. Environmental and Seismic Service Conditions

Equipment must be suitable for operation under the normal service conditions defined in Table 5-1 Outdoor Environmental and Seismic Service Conditions.

Equipment installed outdoors must have a degree of protection of at least IP54 as defined in IEC 60529.

The pollution level must be III – Heavy as defined in AS 4436. For particular locations which may be subject to severe coastal or industrial pollution the pollution level must be IV – Very heavy as defined in AS 4436.

The corrosivity of the atmosphere must be category C3 (medium) as defined in ISO 9223. For particular locations which may be subject to severe corrosion, the category must be C5 (very high).

The structural design of equipment for wind loading must be in accordance with AS 1170.2.

The structural design of equipment for seismic activity must be in accordance with AS 1170.4.

Table 5-1 Outdoor Environmental and Seismic Service Conditions

Description	Unit	Value
Maximum ambient temperature	°C	55
Maximum one hour average temperature	°C	48
Maximum twenty four hour average temperature	°C	37
Minimum ambient temperature	°C	-5
Maximum humidity	%	100
Maximum average summer humidity	%	55
Maximum average winter humidity	%	90
Minimum humidity	%	15
Maximum solar radiation	kW/m2	1.1
Maximum installed altitude	m	1000
Maximum wind speed	m/s	46
Seismic load hazard factor	No.	0.14
Seismic annual probability of exceedance	Years	1 in 1000

6. All Equipment Electrical Requirements

6.1 System Voltage

Equipment must satisfy its function and performance requirements over the range of primary voltages given in Table 6-1 System Voltage.

Table 6-1 System Voltage

Nominal system voltage (kV)	Rated voltage of equipment (kV)
33	36
66	72.5
132	145
275	300

6.2 System Frequency

Equipment must satisfy its function and performance requirements over the range of frequencies given in Table 6-2 System Frequency.

Table 6-2 System Frequency

	Unit	Value
Nominal frequency	Hz	50
Maximum continuous frequency	Hz	50.5
Minimum continuous frequency	Hz	47.5

6.3 Rated Insulation Level

The rated insulation values must be in accordance with table 3.1 of AS 2067. The values selected from table 3.1 of AS 2067 must be in accordance with Table 6-3 Rated Insulation Level.

Table 6-3 Rated Insulation Level

Rated voltage (kV)	Rated short duration power frequency withstand voltage (kV)	Rated lightening impulse withstand voltage (kV peak)	Rated switching impulse voltage, phase to earth (kV peak)
36	70	200	No Rating
72.5	140	325	No Rating
145	275	650	No Rating
300	460	1050	850

6.4 Design and Safety Clearances

The design and safety clearances must be in accordance with table 3.1 of AS 2067. The relevant values are included in Table 6-4 Safety Clearances.

Table 6-4 Safety Clearances

Rated voltage (kV)	Phase-to-phase clearance (mm)	Non-flashover distance (mm)	Ground clearance (mm)	Section clearance (mm)
36	440	420	2440	3135*
72.5	725	695	2440	3135
145	1495	1430	2440	3870
300	3100	2545	2440	4985

*At 36 kV the section clearance is higher than the value specified in table 3.1 of AS 2067.

6.5 Current Ratings

Equipment must be suitable for operation under the conditions detailed in Table 6-5 Current Ratings. The determination as to whether a substation is high capacity or low capacity is made after the completion of power flow studies.

Table 6-5 Current Ratings

Rated voltage (kV)	Substation type	Rated normal current (A)	Busbar rated normal current (A)	Fault level (kA)	Fault duration (s)	X/R Ratio
36	All types	2500	4000	31.5	1	20
72.5	All types	2500	4000	31.5	1	20
145	High capacity(1)	1600	3150	25	1	20
	Low capacity(2)	1200	2500	15	1	20
300	High capacity(3)	2500	4000	40	1	14
	Low capacity(4)	1200	2500	15	1	14

(1) The maximum current rating has been determined on the same assumptions as for the 275 kV sites with the ratings adjusted to match the current ratings of the 132 kV feeders.

(2) The same principles as per the 275 kV low capacity apply.

(3) The maximum current rating is based on a 1 ½ circuit breaker arrangement and three 275 kV feeders of 1200 A rating and assuming that under a fault condition one diameter must be rated to withstand the power flow of 2 x 1200 A rounded up to 2500 A. The main bus rating is obtained by using a 1.6 multiplier which is based on power flow studies.

(4) The maximum current rating has been determined based on a 1 ½circuit breaker arrangement and a total of two diameters with two feeders rated 1200 A each. The main bus was rated to match a standard tubular bus of smaller size than the one used for high capacity substations.

7. All Equipment Design Requirements

7.1 General

All mandatory requirements of IEC 62271-1 must be met.

7.2 Documentation

Adequate documentation for installation, commissioning and lifetime management of the equipment must be supplied with the equipment.

The documentation may include manuals, test recommendations, drawings and other supporting documentation.

Documentation must be provided in a suitable electronic format.

7.3 Operating Mechanisms

7.3.1 Local Operating Point

Equipment with power operated devices must be provided with a single local operating point that is connected to the equipment. If the device is three phase with single phase operation, the individual phases must be operable from the single operating point.

The local control point must provide the means of operation to closing and opening the device.

The local control point must provide the means of selecting remote, manual or local control of the device.

7.3.2 Remote / Manual / Local

Equipment with power operated devices must be provided with a three position Remote / Manual / Local switch.

When the Remote / Manual / Local switch is in the remote position, local control must be prevented and remote control must be enabled.

When the Remote / Manual / Local switch is in the manual position, both local and remote control must be prevented.

When the Remote / Manual / Local switch is in the local position, local control must be enabled and remote control must be prevented.

7.4 Auxiliary Switches

Auxiliary switches must be provided where the equipment has switching capabilities.

Equipment must have sufficient spare auxiliary switches to provide the status of the equipment main contact to other devices.

Auxiliary relays must not be used to provide the status of the main contacts.

Auxiliary Switches must be rated to class 1 as per IEC 62271-1.

7.5 Terminal Palms

Terminal palms for high voltage connections must be selected from AS 62271.301, Figure 2 Australian preferred palm terminal —numbers 10 to 14. The preferred terminal palms are No 12, No 13 and No 14.

The selected terminal palm current rating must be greater than the rating of the equipment that it is connected to.

7.6 Design Life

The equipment design life must be a minimum of 45 years.

7.7 Enclosures and Terminals

Enclosures for auxiliary equipment must be mounted on the structure of its associated equipment.

Enclosures must offer a degree of protection of IP55 in accordance with IEC 60529.

Terminals must offer a degree of protection in IP2X in accordance with IEC 60529.

7.8 Auxiliary Supplies

Equipment that requires an external power supply for its operation must operate over the voltage ranges given in Table 7-1 Rated Supply and Operating Voltage Ranges.

Table 7-1 Rated Supply and Operating Voltage Ranges

	Units	Minimum Operating Voltage	Nominal Operating Voltage	Maximum Operating Voltage
AC supply nominal voltage	V_{AC}	195 / 340	230 / 400	253 / 440
DC supply nominal voltage	V_{DC}	93	110	123

The AC supply frequency is nominally 50 Hz.

Direct current control systems must be used for the control of circuit breakers, disconnectors or earthing switches.

7.9 Bushings

All hollow bushings must be of the composite type and must meet all of the requirements of IEC 61462.

Where the selected pollution level is III – Heavy the minimum creepage distance must be 25 mm / kV as defined in Table II or AS 4436.

Where the selected pollution level is IV – Very heavy the minimum creepage distance must be 31 mm / kV as defined in Table II or AS 4436.

7.10 Access to Hazardous Parts.

The requirements of IEC 62271-1 regarding the protection of persons against access to hazardous parts and protection of the equipment against ingress of solid foreign objects (IP coding) must be met with an additional requirement for the IP1XB rating to be achieved with all doors open.

7.11 Plant Hazard and Identification.

Each and every item of equipment must be provided with a plant hazard and identification form. This form must detail all plant safety hazards and the mitigation strategies that have been implemented to allow for the safe operation of the plant.

7.12 SF6 as an Insulation Medium

Where gas is used as an insulation medium a pressure gauge must be provided for each gas zone. The pressure gauge must meet the requirements of AS 1349. Gauges must be arranged so that they can be read by a person standing at ground level.

If SF_6 is used as a high voltage insulation medium then the SF_6 must meet the requirements of IEC 60376.

7.13 Oil as an Insulation Medium

If oil is used for insulation an oil sight glass must be provided with markings to indicate normal and low oil levels and these must be clearly visible from ground level.

If oil is used as a high voltage insulation medium then the oil must meet the requirements of IEC 60296.

8. High Voltage Air Insulated Circuit Breakers

High voltage circuit breakers are mechanical switching devices capable of carrying and breaking currents under normal conditions.

Circuit breakers are also capable of making, carrying and breaking currents short time abnormal current such as those of short-circuit.

8.1 General Requirements

All requirements of IEC 62271-100 must be met.

8.2 Gas alarms

Where gas is used for arc extension or operation, low gas alarms must be provided.

An alarm to indicate falling gas pressure must be provided.

An alarm to indicate that the device has locked out due to low gas pressure must be provided. The low gas lockout alarm must operate at a lower pressure than the falling gas pressure alarm.

8.3 Mechanism

The rated operating sequence must be 0 – 0.3 s – CO – 3 min – CO, in accordance with IEC 62271-100.

8.4 Shunt Releases

All circuit breakers must be provided with two shunt opening releases per operating mechanism. The opening releases must be arranged for supply from separate battery systems and must have segregated circuits. The circuits must be arranged so that the failure of a device in one circuit must not prevent the operation of the circuit breaker.

The shunt opening releases must be suitable for trip-circuit-monitoring without the inadvertent operation of the circuit breaker.

All circuit breakers must be provided with a single shunt closing release per operating mechanism.

8.5 Break Time

For circuit breakers with an operating voltage of 300 or 145 kV the total break time must be less than 55 ms.

For circuit breakers with an operating voltage of 72.5 or 36 kV the total break time must be less than 60 ms.

8.6 Electrical Endurance

For all circuit breakers the electrical endurance class must be E2 as per IEC 62271-100.

8.7 Mechanical Endurance

For circuit breakers with an operating voltage of 300 or 145 kV the mechanical endurance must be M2 as per IEC 62271-100.

For circuit breakers with an operating voltage of 72.5 or 36 kV the mechanical endurance must be M1 as per IEC 62271-100.

8.8 Re-strike Performance

When switching capacitive currents within the rating of the circuit breaker, the circuit breaker probability of re-strike must be very low as defined by class C2 of IEC 62271-100.

8.9 Auto Reclose

For circuit breakers with an operating voltage of 300 kV the circuit breaker must be capable of single pole auto reclose. Some site specific requirements will require 145 kV disconnectors to be capable of performing single pole auto reclose.

For circuit breakers with an operating voltage of 145, 72.5 or 36 kV the circuit breaker must be capable of performing a three pole auto reclose.

8.10 TRV Requirements

For circuit breakers rated between 15kV and 100kV the Supplier must use the values detailed in IEC62271-100, Table 2 – Standard values of transient recovery voltage for class S2 circuit-breakers – Rated voltage equal to or higher than 15kV and less than 100kV – Representation by two parameters.

For circuit breakers rated between 100kV and 170kV the Supplier must use the values detailed in IEC62271-100, Table 3 – Standard values of transient recovery voltage – Rated voltages of 100kV to 170kV for effectively earthed systems – Representation by four parameters.

For circuit breakers rated 300kV the Supplier must use the values detailed in IEC62271-100, Table 5 – Standard values of transient recovery voltage – Rated voltages 245kV and above for effectively earthed systems.

9. High Voltage Air Insulated Disconnectors and Earthing Switches

High voltage disconnectors and earthing switches are used to ensure that an electrical circuit is completely de-energised to allow isolation of apparatus such as circuit breakers, transformers, and transmission lines, for maintenance. The disconnector is usually not intended for normal control of the circuit, but only for safety isolation, they are off-load devices, intended to be opened only after current has been interrupted by a circuit breaker. Disconnectors can be operated either manually or remotely (motorised disconnector).

9.1 General Requirements

All requirements of IEC 62271-102 must be met.

9.2 Mechanical Endurance of Disconnectors

Disconnectors must be rated to class M1 as per IEC 62271-102.

9.3 Electrical Endurance of Earthing Switches

Earthing Switches must be rated to class E0 as per IEC 62271-102.

9.4 Manual and Motor Operation

Disconnectors must be motor operated with the capability to be manually operated.

Earthing Switches must be motor operated with the capability to be manually operated.

9.5 Motor Supply Isolation

A lockable motor supply isolation switch must be installed to isolate the electrical supply to the disconnector and earthing switch motors.

The motor supply isolator switch is to be mounted on the outside of the disconnector and earthing switch control boxes.

9.6 Interlocking

Where a disconnector is to be supplied with integral earthing switches, mechanical interlocks must be provided between the disconnector and the earthing switches.

Disconnectors must be fitted with a solenoid interlock that must only allow operation of the disconnector when all interlocking requirements are met.

There is no requirement for transmission line disconnectors to have solenoid interlocking.

9.7 Mechanical Locking

Disconnector and earthing switches operating mechanisms must be lockable in either the closed or the open positions.

The mechanical locking point must be clearly visible and accessible from ground level without the need to open any doors or remove any covers.

10. High Voltage Air Insulated Current Transformers

A current transformer provides a proportional secondary current to the current flowing in the primary circuit. The current transformer is required to meet accuracy requirements for both current magnitude and phase angle. Accuracy requirements apply to the current transformer for both normal operating currents and transient currents such as those that may occur under power system fault conditions.

The output of the current transformer must be sufficiently accurate to allow for the correct functions of the devices that it is connected to. Typically a current transformer will provide inputs to:

- Protective relays;
- National grid metering;
- SCADA metering;
- Power quality monitoring devices; and
- Fault location devices.

10.1 General Requirements

All requirements of IEC 61869-1 and 61869-2 must be met.

10.2 Metering

Current transformers performing metering functions must comply with chapter 7 of the National Electricity Rules.

10.3 Dielectric Loss Angle Measurements Test Point

An insulated test terminal must be provided for instrument transformers for the purpose of performing capacitance and dielectric loss angle measurements.

The purpose of this terminal must be identified in the terminal box where the terminal is installed.

This terminal must be insulated to a minimum of 2.5 kV.

A shorting link must be provided to earth this terminal.

10.4 Overvoltage Protection

Overvoltage protection must be provided between the secondary terminals on all secondary cores.

10.5 Testing

For instrument transformers having a rated voltage 123kV or above the Supplier must perform tests specified in IEC62271-1, Clause 6.9, Electromagnetic compatibility tests.

If the instrument transformer is to be used for power quality data collection then the supplier must perform frequency response testing in accordance with Clause 7.3 and 7.4 of IEC/TR 61869-103.

11. High Voltage Air Insulated Voltage Transformers

A voltage transformer provides a proportional secondary voltage to the voltage in the primary circuit. The voltage transformer is required to meet accuracy requirements for both voltage magnitude and phase angle. Accuracy requirements apply to the voltage transformer for both normal operating voltages and transient voltages such as those that may occur under power system fault conditions.

The output of the voltage transformer must be sufficiently accurate to allow for the correct functions of the devices that it is connected to. Typically a voltage transformer will provide inputs to:

- Protective relays;
- National grid metering;
- SCADA metering;
- Power quality monitoring devices;
- Fault location devices; and
- Transformer on-line-tap-changer relay.

11.1 General Requirements

All requirements of IEC 61869-1 and IEC 61869-103 must be met.

11.2 Additional Requirements for Inductive Voltage Transformers

Inductive voltage transformers must comply with IEC 61869-3.

11.3 Additional Requirements for Capacitor Voltage Transformers

Capacitive voltage transformers must comply with IEC 61869-5.

11.4 Metering

Voltage transformers performing metering functions must comply with chapter 7 of the National Electricity Rules.

11.5 Dielectric Loss Angle Measurements Test Point

An insulated test terminal must be provided for instrument transformers for the purpose of performing capacitance and dielectric loss angle measurements.

The purpose of this terminal must be identified in the terminal box where the terminal is installed.

This terminal must be insulated to a minimum of 2.5 kV.

A shorting link must be provided to earth this terminal.

11.6 Testing

For instrument transformers having a rated voltage 123kV or above the Supplier must perform tests specified in IEC62271-1, Clause 6.9, Electromagnetic compatibility tests.

If the instrument transformer is to be used for power quality data collection then the supplier must perform frequency response testing in accordance with Clause 7.3 and 7.4 of IEC/TR 61869-103.

12. High Voltage Air Insulated Surge Arresters

Surge arresters are installed to limit the voltage across the terminals of equipment within a substation to its insulation withstand voltage.

12.1 General Requirements

The type of and rating of surge arresters must be determined for each installation in accordance with IEC 60099-6. All requirements of the appropriate standards from the IEC 60099 range must be met.

13. High Voltage Air Insulated Post Insulators

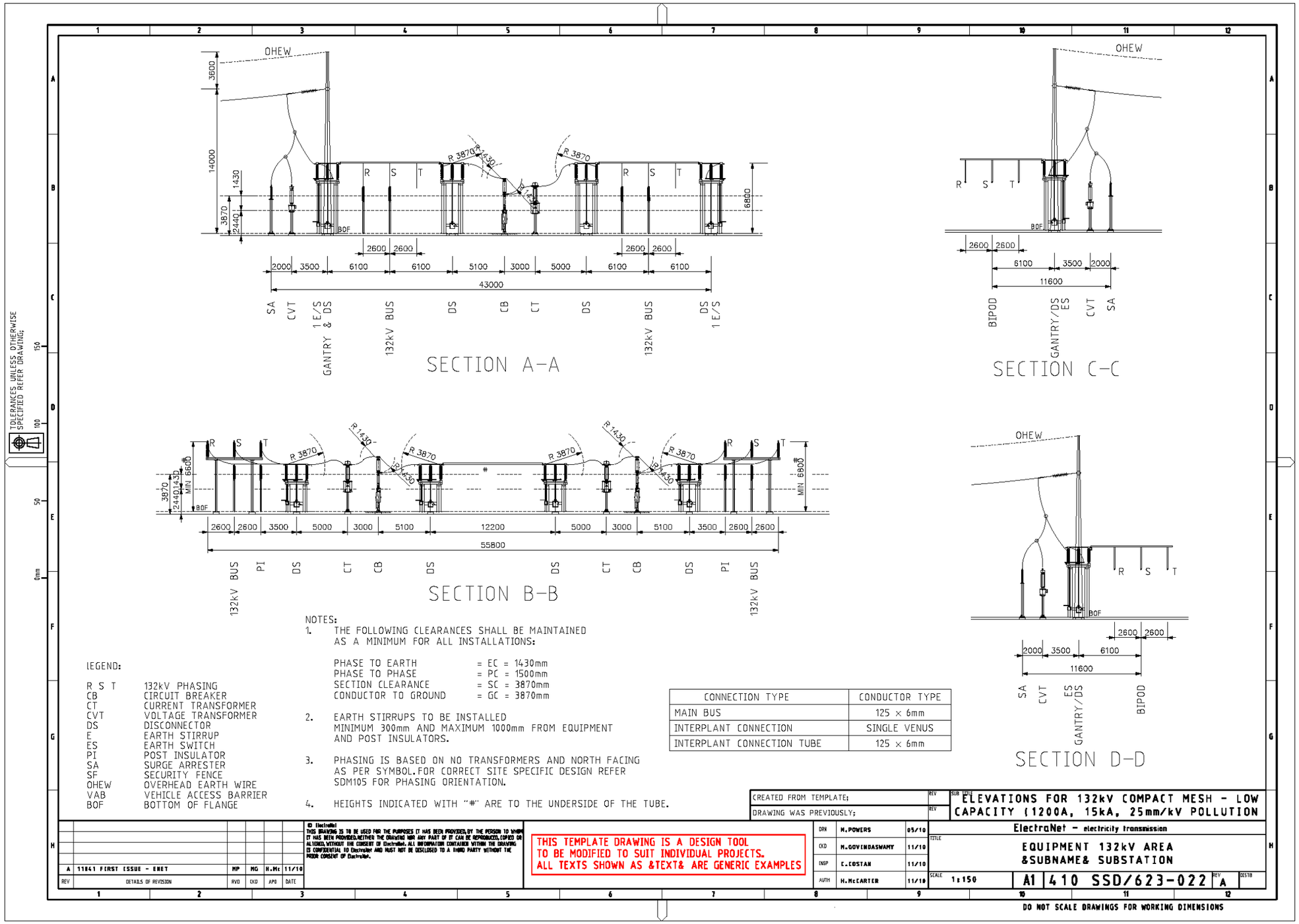
Post Insulators provide insulation of the live conductors from each other and from the structure upon which they are mounted.

13.1 General Requirements

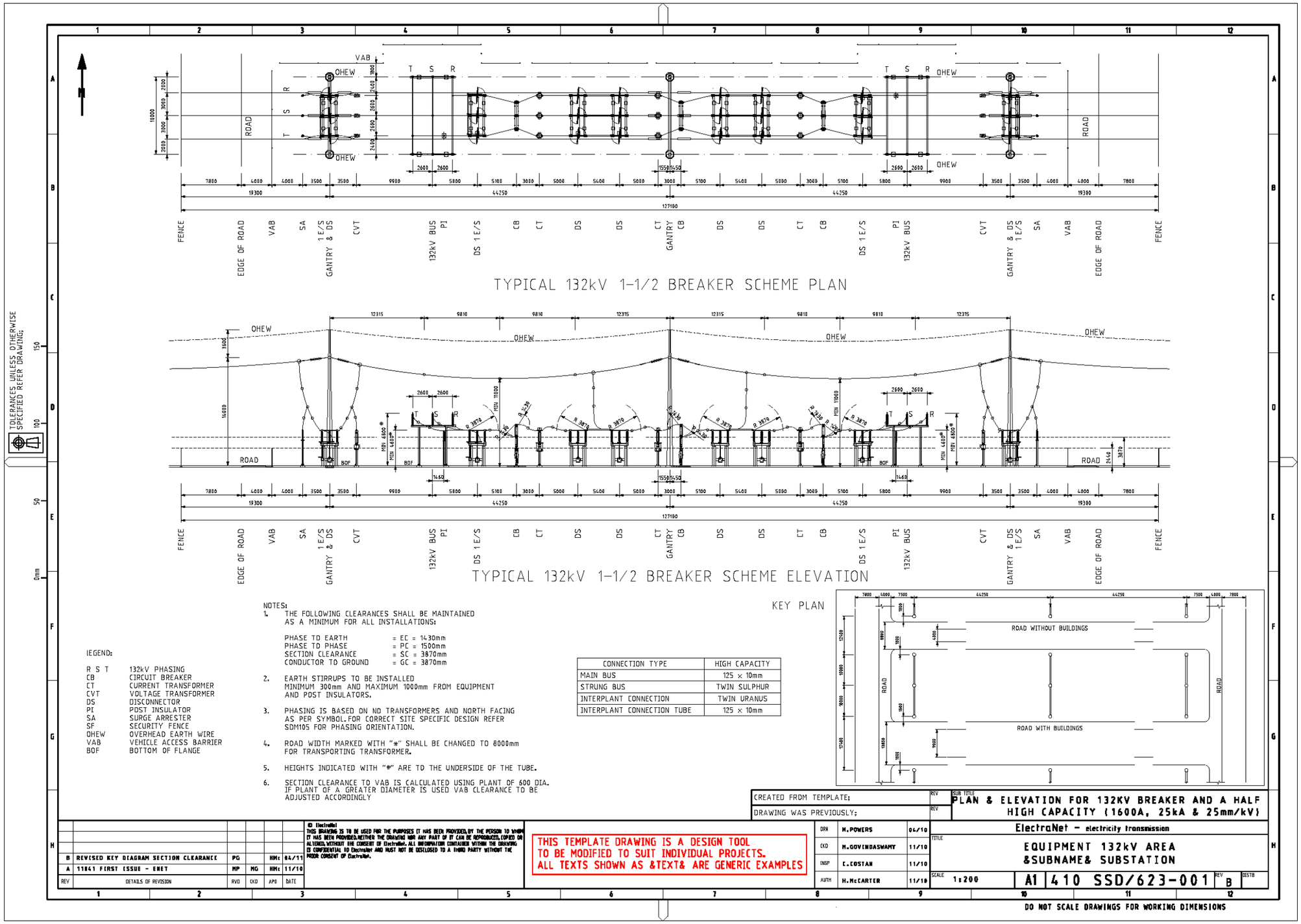
All requirements of IEC 60273 must be met.

Appendices

Appendix A 132 kV Compact Mesh Configuration



Appendix B 132 kV Circuit Breaker and Half Configuration



NOTES:

1. THE FOLLOWING CLEARANCES SHALL BE MAINTAINED AS A MINIMUM FOR ALL INSTALLATIONS:

   PHASE TO EARTH = EC = 1430mm
   PHASE TO PHASE = PC = 1500mm
   SECTION CLEARANCE = SC = 3870mm
   CONDUCTOR TO GROUND = GC = 3870mm

2. EARTH STIRRUPS TO BE INSTALLED MINIMUM 300mm AND MAXIMUM 1000mm FROM EQUIPMENT AND POST INSULATORS.
3. PHASING IS BASED ON NO TRANSFORMERS AND NORTH FACING AS PER SYMBOL.FOR CORRECT SITE SPECIFIC DESIGN REFER SDM105 FOR PHASING ORIENTATION.
4. ROAD WIDTH MARKED WITH "*" SHALL BE CHANGED TO 8000mm FOR TRANSPORTING TRANSFORMER.
5. HEIGHTS INDICATED WITH "#" ARE TO THE UNDERSIDE OF THE TUBE.
6. SECTION CLEARANCE TO VAB IS CALCULATED USING PLANT OF 600 DIA. IF PLANT OF A GREATER DIAMETER IS USED VAB CLEARANCE TO BE ADJUSTED ACCORDINGLY

LEGEND:

R S T	132kV PHASING
CB	CIRCUIT BREAKER
CT	CURRENT TRANSFORMER
CVT	VOLTAGE TRANSFORMER
DS	DISCONNECTOR
PI	POST INSULATOR
SA	SURGE ARRESTER
SF	SECURITY FENCE
OHEW	OVERHEAD EARTH WIRE
VAB	VEHICLE ACCESS BARRIER
BOF	BOTTOM OF FLANGE

CONNECTION TYPE	HIGH CAPACITY
MAIN BUS	125 × 10mm
STRUNG BUS	TWIN SULPHUR
INTERPLANT CONNECTION	TWIN URANUS
INTERPLANT CONNECTION TUBE	125 × 10mm

REV	DETAILS OF REVISION	RVD	CKD	APD	DATE
B	REVISED KEY DIAGRAM SECTION CLEARANCE	PG		HM:	04/11
A	11841 FIRST ISSUE - ENET	MP	MG	HM:	11/10

THIS TEMPLATE DRAWING IS A DESIGN TOOL
TO BE MODIFIED TO SUIT INDIVIDUAL PROJECTS.
ALL TEXTS SHOWN AS &TEXT& ARE GENERIC EXAMPLES

DRN	M.POWERS	04/10
CKD	M.GOVINDASWAMY	11/10
INSP	C.COSTAN	11/10
AUTH	H.McCARTER	11/10

CREATED FROM TEMPLATE: REV
DRAWING WAS PREVIOUSLY: REV

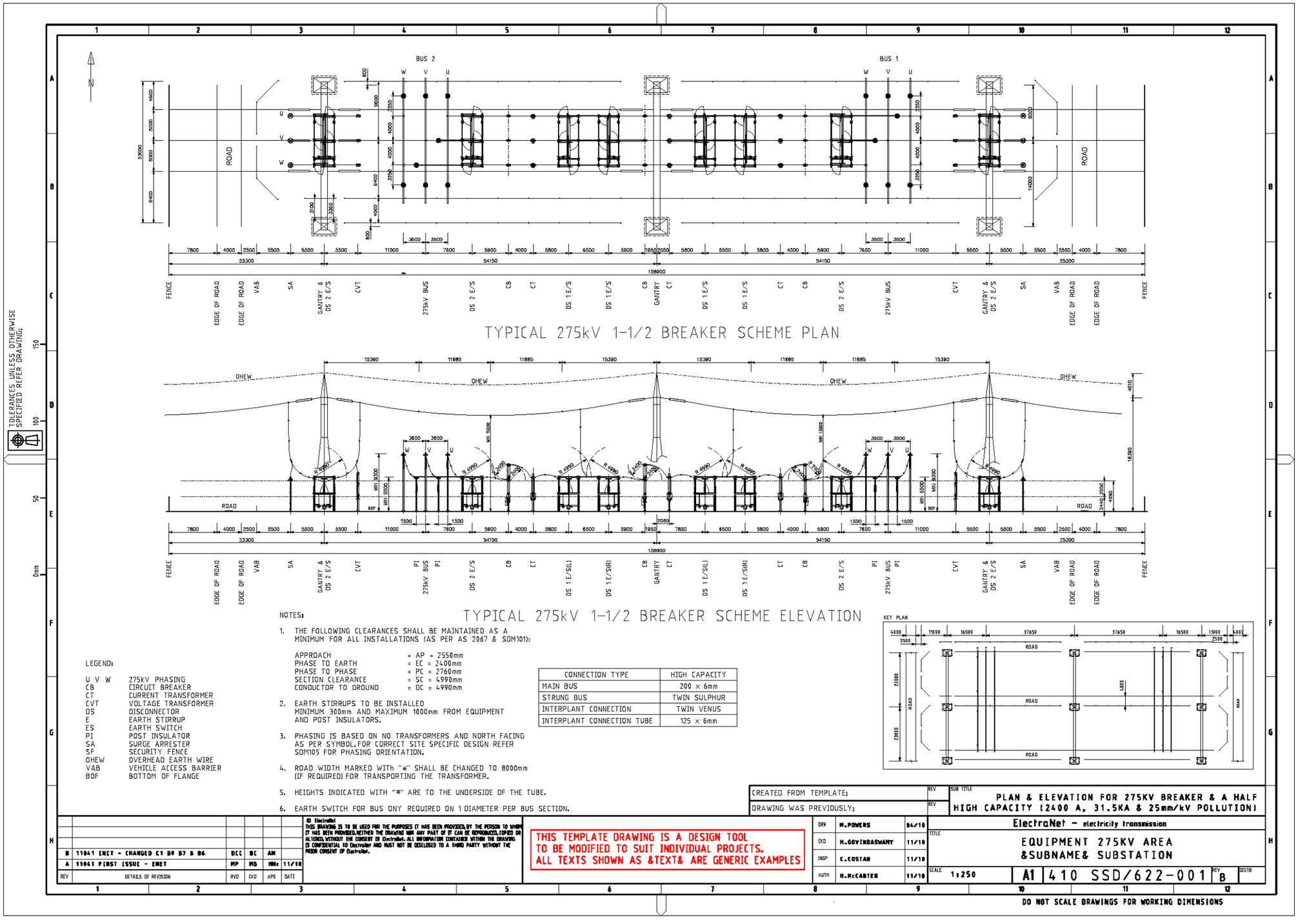
SUB TITLE: PLAN & ELEVATION FOR 132KV BREAKER AND A HALF HIGH CAPACITY (1600A, 25kA & 25mm/kV)

ElectraNet – electricity transmission

TITLE: EQUIPMENT 132kV AREA &SUBNAME& SUBSTATION

SCALE 1:200 | A1 | 410 SSD/623-001 | REV B | QSTB

Appendix C 275 kV Circuit Breaker and Half Configuration



ElectraNet

Contact Us

52–55 East Terrace, Adelaide,
South Australia 5000
PO Box, 7096, Hutt Street Post Office,
Adelaide, South Australia 5000

Phone **+61 8 8404 7966** or toll-free **1800 243 853**

Fax **+61 8 8404 7956**

Visit us online **electranet.com.au**