400 kV GIS MINIMUM ALL YEAR ROUND RATINGS		
COUPLER BAY	3150A	50kA
BUSBAR	3150A	50kA
FEEDER BAY	2500A	50kA
TRAFO BAY	2500A	50kA
SECTIONALISER BAY	3150A	50kA

HV BAY CONDUCTOR RATINGS SHALL OUTLINE RATINGS FOR SUMMER WINTER & AUTUMN.

220 kV GIS MINIMUM ALL YEAR ROUND RATINGS		
COUPLER BAY	3150A	40kA
BUSBAR	3150A	40kA
FEEDER BAY	2500A	40kA
TRAFO BAY	2500A	40kA
SECTIONALISER BAY	3150A	40kA

HV BAY CONDUCTOR RATINGS SHALL OUTLINE RATINGS FOR SUMMER WINTER & AUTUMN.

110 kV GIS MINIMUM ALL YEAR ROUND RATINGS		
COUPLER BAY	2500A	31.5kA
BUSBAR	2500A	31.5kA
FEEDER BAY	1250A	31.5kA
TRAFO BAY	1250A	31.5kA
SECTIONALISER BAY	2500A	31.5kA

HV BAY CONDUCTOR RATINGS SHALL OUTLINE RATINGS FOR SUMMER WINTER & AUTUMN.

IEC DESIGNATOR (ESB DESIGNATOR)	DESCRIPTION
QA1(CB)	CIRCUIT BREAKER
QB1(DA) QB2(DB)	BUSBAR DISCONNECT
QB9(DL)	LINE DISCONNECT
QB9(DT)	TRAFO DISCONNECT
QC9(DE/DEM4)	ISOLATABLE HIGH SPEED EARTH SWITCH
QC1/QC2/QC3/(DEM1/DEM2 /DEM3)	ISOLATABLE MAINTENANCE EARTH SWITCH *
QC11/QC21(DEA1/DEB1) QC12/QC22(DEA2/DEB2) QC14/QC24(DEA4/DEB4)	ISOLATABLE HIGH SPEED EARTH SWITCH
QB11/QB12/QB21/QB22 (SA1-2 SA1/SA1-2 SA2/ SB1-2 SB1/SB1-2 SB2) (SA2-4 SA2/SA2-4 SA4) (SB2-4 SB2/SB2-4 SB4)	SECTIONALISER DISCONNECT
QA1(SA1-2 CB, SB1-2 CB) QA1(SA1-3 CB, SB1-3 CB)	SECTIONALISER CIRCUIT BREAKER
QB1(K1 DA, K2 DA, K3 DA) QB2(K1 DB, K2 DB, K3 DB)	WING COUPLER BUSBAR DISCONNECT
QA1(K1 CB, K2 CB, K3 CB)	WING COUPLER CIRCUIT BREAKERS

* THE REQUIREMENT FOR MAINTENANCE EARTH SWITCHES TO BE ISOLATABLE IS TO BE CONFIRMED PER PROJECT AND OEM.

LEGEND	
SA	SURGE ARRESTER
VT	VOLTAGE TRANSFORMER
CT	CURRENT TRANSFORMER
NES	NEUTRAL EARTH SWITCH

NOTE 1:
THIS SLD IS AN ELECTRICAL REPRESENTATION OF THE GIS STATION. FOR PHYSICAL LAYOUT REQUIREMENTS REFER TO EIRGRID GENERAL FUNCTIONAL SPECIFICATION XDS-GFS-00-001.

NOTE 2:
THE SPECIFIC MINIMUM 3 PHASE SHORT CIRCUIT BAY RATING 50kA (1s) AT 400 kV, 40kA (1s) AT 220kV, AND 31.5kA (1s) AT 110kV APPLIES TO BOTH ELECTRICAL AND MECHANICAL FORCES.

NOTE 3:
HIGHER SHORT CIRCUIT RATING MAY BE REQUIRED DEPENDING ON LOCATION OF THE SUBSTATION.

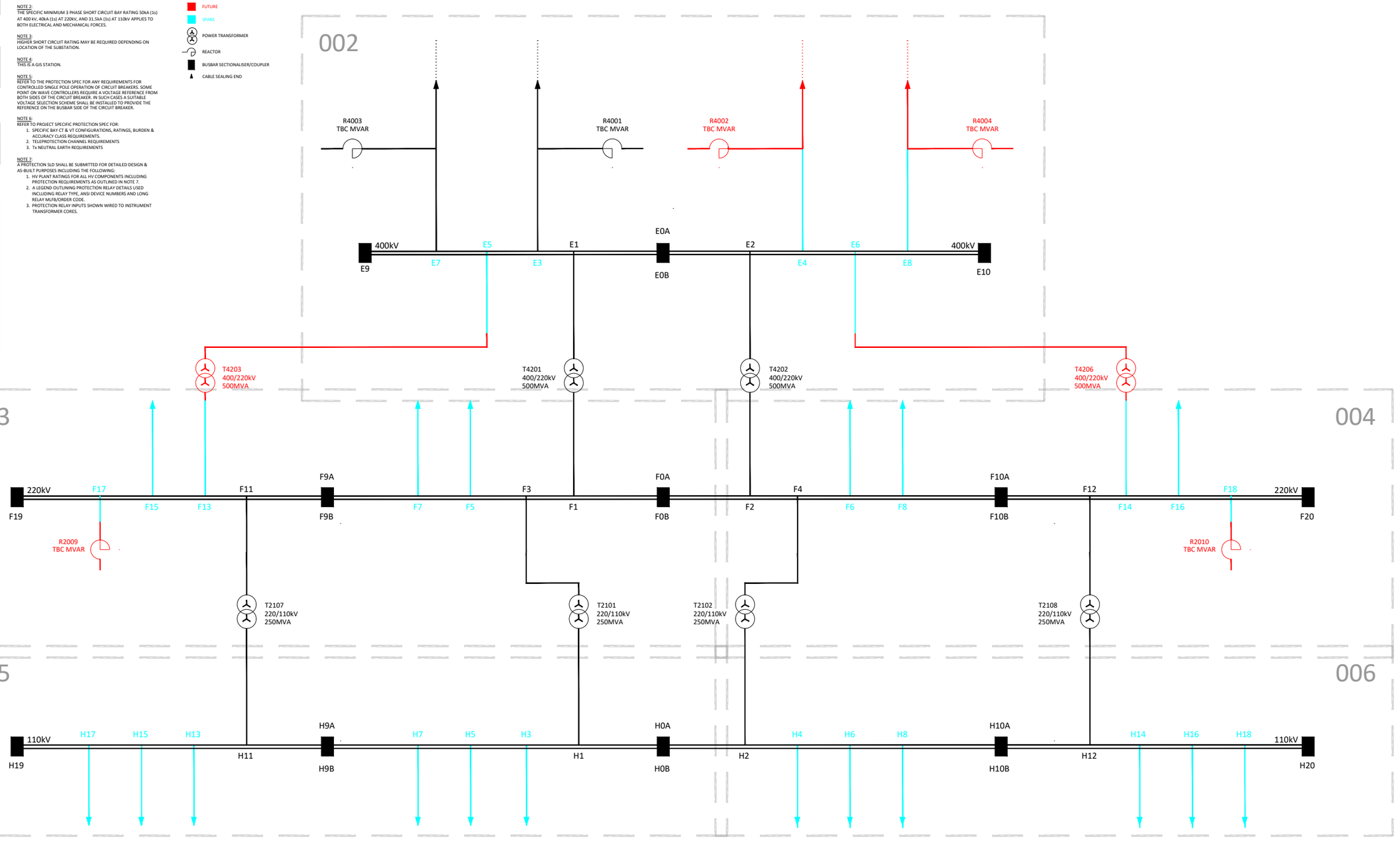
NOTE 4:
THIS IS A GIS STATION.

NOTE 5:
REFER TO THE PROTECTION SPEC FOR ANY REQUIREMENTS FOR CONTROLLED SINGLE POLE OPERATION OF CIRCUIT BREAKERS. SOME POINT ON WAVE CONTROLLERS REQUIRE A VOLTAGE REFERENCE FROM BOTH SIDES OF THE CIRCUIT BREAKER. IN SUCH CASES A SUITABLE VOLTAGE SELECTION SCHEME SHALL BE INSTALLED TO PROVIDE THE REFERENCE ON THE BUSBAR SIDE OF THE CIRCUIT BREAKER.

NOTE 6:
REFER TO PROJECT SPECIFIC PROTECTION SPEC FOR:
1. SPECIFIC BAY CT & VT CONFIGURATIONS, RATINGS, BURDEN & ACCURACY CLASS REQUIREMENTS.
2. TELEPROTECTION CHANNEL REQUIREMENTS
3. Tx NEUTRAL EARTH REQUIREMENTS

NOTE 7:
A PROTECTION SLD SHALL BE SUBMITTED FOR DETAILED DESIGN & AS-BUILT PURPOSES INCLUDING THE FOLLOWING:
1. HV PLANT RATINGS FOR ALL HV COMPONENTS INCLUDING PROTECTION REQUIREMENTS AS OUTLINED IN NOTE 7.
2. A LEGEND OUTLINING PROTECTION RELAY DETAILS USED INCLUDING RELAY TYPE, ANSI DEVICE NUMBERS AND LONG RELAY MLFB/ORDER CODE.
3. PROTECTION RELAY INPUTS SHOWN WIRED TO INSTRUMENT TRANSFORMER CORES.

KEY
- NEW
- FUTURE
- SPARE
- POWER TRANSFORMER
- REACTOR
- BUSBAR SECTIONALISER/COUPLER
- CABLE SEALING END



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REV	DESC	DRAWN	ORIGINATED	REVIEWED	CHECKED	APPROVED	DATE
00	First issue	TLI	N. Cowap	ESB DD D. Guistini N. McMahon	R. Barandika	N. Cowap	21/04/2026

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PROJECT
400-8/220-16/110-16 Standard Substation

DRAWING TITLE
400-8/220-16/110-16 Standard Single Line Diagram - Sheet 1 of 6 Substation Overview

No of Shts	SIZE	SCALE
6	A3	N/A

DRAWING NUMBER: XDN-SLD-STND-L-101

SHEET	REV
001	00

400 kV GIS MINIMUM ALL YEAR ROUND RATINGS		
COUPLER BAY	3150A	50kA
BUSBAR	3150A	50kA
FEEDER BAY	2500A	50kA
TRAFO BAY	2500A	50kA
SECTIONALISER BAY	3150A	50kA

HV BAY CONDUCTOR RATINGS SHALL OUTLINE RATINGS FOR SUMMER WINTER & AUTUMN.

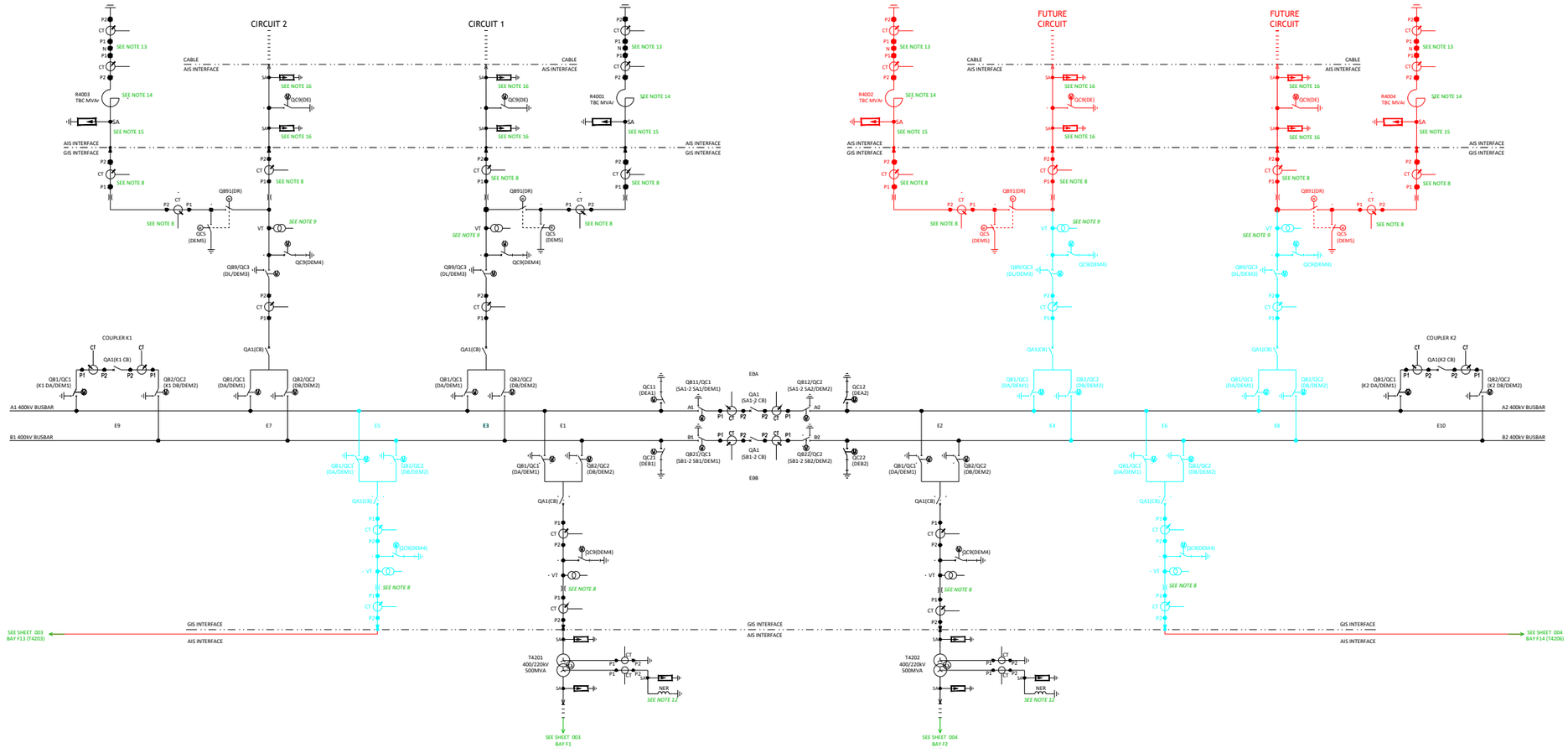
IEC DESIGNATOR (ESB DESIGNATOR)	DESCRIPTION
QA1(CB)	CIRCUIT BREAKER
QB1(DA) QB2(DB)	BUSBAR DISCONNECT
QB9(DL)	LINE DISCONNECT
QB9(DT)	TRAFO DISCONNECT
QC9(DE/DEM4)	ISOLATABLE HIGH SPEED EARTH SWITCH
QC1/QC2/QC3/(DEM1/DEM2 /DEM3)	ISOLATABLE MAINTENANCE EARTH SWITCH *
QC11/QC21(DEA1/DEB1) QC12/QC22(DEA2/DEB2) QC14/QC24(DEA4/DEB4)	ISOLATABLE HIGH SPEED EARTH SWITCH
QB11/QB12/QB21/QB22 (SA1-2 SA1/SA1-2 SA2/ SB1-2 SB1/SB1-2 SB2) (SA2-4 SA2/SA2-4 SA4) (SB2-4 SB2/SB2-4 SB4)	SECTIONALISER DISCONNECT
QA1(SA1-2 CB, SB1-2 CB) QA1(SA1-3 CB, SB1-3 CB)	SECTIONALISER CIRCUIT BREAKER
QB1(K1 DA, K2 DA, K3 DA) QB2(K1 DB, K2 DB, K3 DB)	WING COUPLER BUSBAR DISCONNECT
QA1(K1 CB, K2 CB, K3 CB)	WING COUPLER CIRCUIT BREAKERS

* THE REQUIREMENT FOR MAINTENANCE EARTH SWITCHES TO BE ISOLATABLE IS TO BE CONFIRMED PER PROJECT AND OEM.

LEGEND	
SA	SURGE ARRESTER
VT	VOLTAGE TRANSFORMER
CT	CURRENT TRANSFORMER
NES	NEUTRAL EARTH SWITCH

KEY

- NEW
- FUTURE
- SPARE
- REACTOR
- NEUTRAL EARTH REACTOR
- MULTIWINDING VT
- MULTICORE CT
- SINGLE CORE CT
- RING CT (ONE OR MORE SETS)
- CABLE SEALING END
- CABLE
- THROUGH WALL OF BUILDING
- GIS - AIR BUSHING



NOTE 1:
THIS SLD IS AN ELECTRICAL REPRESENTATION OF THE GIS STATION.
FOR PHYSICAL LAYOUT REQUIREMENTS REFER TO EIRGRID GENERAL FUNCTIONAL SPECIFICATION XDS-GFS-00-001.

NOTE 2:
THE SPECIFIC MINIMUM 3 PHASE SHORT CIRCUIT BAY RATING 40kA (1s) APPLIES TO BOTH ELECTRICAL AND MECHANICAL FORCES.

NOTE 3:
HIGHER SHORT CIRCUIT RATING MAY BE REQUIRED DEPENDING ON LOCATION OF THE SUBSTATION.

NOTE 4:
THIS IS A GIS STATION.

NOTE 5:
REFER TO THE PROTECTION SPEC FOR ANY REQUIREMENTS FOR CONTROLLED SINGLE POLE OPERATION OF CIRCUIT BREAKERS. SOME POINT ON WAVE CONTROLLERS REQUIRE A VOLTAGE REFERENCE FROM BOTH SIDES OF THE CIRCUIT BREAKER. IN SUCH CASES A SUITABLE VOLTAGE SELECTION SCHEME SHALL BE INSTALLED TO PROVIDE THE REFERENCE ON THE BUSBAR SIDE OF THE CIRCUIT BREAKER.

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2. TELEPROTECTION CHANNEL REQUIREMENTS
3. Tx NEUTRAL EARTH REQUIREMENTS

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3. PROTECTION RELAY INPUTS SHOWN WIRED TO INSTRUMENT TRANSFORMER CORES.

NOTE 8:
A GIB TYPE CONNECTION IS DEPICTED, INCLUDING ADDITIONAL GIS CT FOR BUSBAR PROTECTION.

NOTE 9:
AS PER SECTION 7.10.5 OF XDS-GFS-25-001-R5, IT SHALL BE POSSIBLE TO DISCONNECT THE INDUCTIVE VOLTAGE TRANSFORMERS FROM THE HV BAY BY REMOVAL OR DISCONNECTION OF AN INTERNAL LINK WITHIN THE GAS COMPARTMENT.

NOTE 10:
GIS SURGE ARRESTORS ARE SHOWN AS A WORST CASE SCENARIO. AN INSULATION COORDINATION STUDY SHOULD BE PERFORMED TO ASSESS ITS REQUIREMENTS AT DETAILED DESIGN STAGE. THE SURGE ARRESTER, IF REQUIRED, COULD BE INSTALLED AIS I.E OUTSIDE THE BUILDING OR GIS WITHIN THE BAY.

NOTE 11:
TEMPORARY SECTION OF BUS-DUCT LINKING A & B BUSBARS TO BE REMOVED WHEN INSTALLING THE A4 & B4 SECTION OF BUSBAR.

NOTE 12:
THE REQUIREMENT FOR NEUTRAL EARTH REACTORS, NEUTRAL EARTH RESISTORS OR NEUTRAL EARTH SWITCHES ON THE LOW VOLTAGE NEUTRALS OF POWER TRANSFORMERS IS TO BE DETERMINED ON A PROJECT-BY-PROJECT BASIS. THIS STANDARD SLD SHOWS OPTIONS TO ENSURE THE STANDARD LAYOUT IS SUFFICIENT FOR ANY EVENTUALITY.

NOTE 13:
SINGLE RING CT CONNECTED BETWEEN STAR POINT AND EARTH FOR REF PROTECTION. A SEPARATE SET OF CT WILL BE INSTALLED IN EACH PHASE FOR THE REACTOR DIFFERENTIAL PROTECTION.

NOTE 14:
SHUNT AND SYSTEM REACTOR SIZES AND RATINGS ARE TO BE CONFIRMED ON A PROJECT-BY-PROJECT BASIS.

NOTE 15:
ANOTHER SURGE ARRESTOR MAY BE REQUIRED BEFORE THE AIS-GIS BUSHINGS DEPENDING ON THE OUTCOME OF THE PROTECTION COORDINATION STUDY.

NOTE 16:
SURGE ARRESTER QUANTITY AND LOCATION TO BE CONFIRMED BY INSULATION COORDINATION STUDY AT DETAILED DESIGN.

DRAWING IS NOT TO SCALE - IF IN DOUBT, ASK

REV	DESC	DRAWN	ORIGINATED	REVIEWED	CHECKED	APPROVED	DATE
00	First issue	TLI	N. Cowap	ESB DD D. Guistini N. McMahon	R. Barandika	N. Cowap	21/04/2026

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PROJECT
400-8/220-16/110-16 Standard Substation

DRAWING TITLE
400-8/220-16/110-16 Standard Single Line Diagram - Sheet 2 of 6
400 kV Busbars: Bays E0 to E10

No of Shts	SIZE	SCALE
6	A3	N/A

DRAWING NUMBER	SHEET	REV
XDN-SLD-STND-L-101	002	00

220 kV GIS MINIMUM ALL YEAR ROUND RATINGS		
COUPLER BAY	3150A	40kA
BUSBAR	3150A	40kA
FEEDER BAY	2500A	40kA
TRAFO BAY	2500A	40kA
SECTIONALISER BAY	3150A	40kA

HV BAY CONDUCTOR RATINGS SHALL OUTLINE RATINGS FOR SUMMER WINTER & AUTUMN.

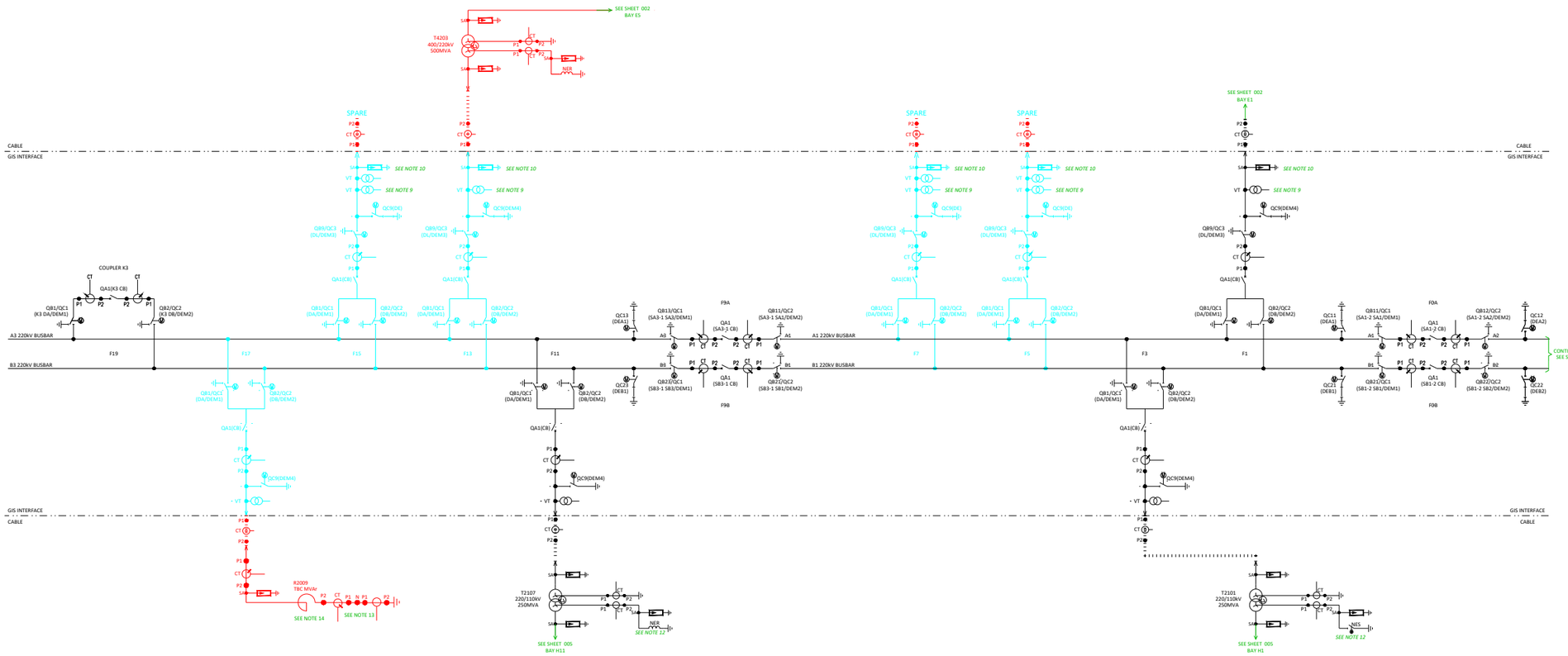
IEC DESIGNATOR (ESB DESIGNATOR)	DESCRIPTION
QA1(CB)	CIRCUIT BREAKER
QB1(DA) QB2(DB)	BUSBAR DISCONNECT
QB9(DL)	LINE DISCONNECT
QB9(DT)	TRAFO DISCONNECT
QC9(DE/DEM4)	ISOLATABLE HIGH SPEED EARTH SWITCH
QC1/QC2/QC3/(DEM1/DEM2 /DEM3)	ISOLATABLE MAINTENANCE EARTH SWITCH *
QC11/QC21(DEA1/DEB1) QC12/QC22(DEA2/DEB2) QC14/QC24(DEA4/DEB4)	ISOLATABLE HIGH SPEED EARTH SWITCH
QB11/QB12/QB21/QB22 (SA1-2 SA1/SA1-2 SA2/ SB1-2 SB1/SB1-2 SB2) (SA2-4 SA2/SA2-4 SA4) (SB2-4 SB2/SB2-4 SB4)	SECTIONALISER DISCONNECT
QA1(SA1-2 CB, SB1-2 CB) QA1(SA1-3 CB, SB1-3 CB)	SECTIONALISER CIRCUIT BREAKER
QB1(K1 DA, K2 DA, K3 DA) QB2(K1 DB, K2 DB, K3 DB)	WING COUPLER BUSBAR DISCONNECT
QA1(K1 CB, K2 CB, K3 CB)	WING COUPLER CIRCUIT BREAKERS

* THE REQUIREMENT FOR MAINTENANCE EARTH SWITCHES TO BE ISOLATABLE IS TO BE CONFIRMED PER PROJECT AND OEM.

LEGEND	
SA	SURGE ARRESTER
VT	VOLTAGE TRANSFORMER
CT	CURRENT TRANSFORMER
NES	NEUTRAL EARTH SWITCH

KEY

- NEW
- FUTURE
- SPARE
- REACTOR
- NEUTRAL EARTH REACTOR
- MULTIWINDING VT
- MULTICORE CT
- SINGLE CORE CT
- RING CT (ONE OR MORE SETS)
- CABLE SEALING END
- CABLE
- THROUGH WALL OF BUILDING
- GIS - AIR BUSHING



NOTE 1:
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FOR PHYSICAL LAYOUT REQUIREMENTS REFER TO EIRGRID GENERAL FUNCTIONAL SPECIFICATION XDS-GFS-00-001.

NOTE 2:
THE SPECIFIC MINIMUM 3 PHASE SHORT CIRCUIT BAY RATING 40kA (1s) APPLIES TO BOTH ELECTRICAL AND MECHANICAL FORCES.

NOTE 3:
HIGHER SHORT CIRCUIT RATING MAY BE REQUIRED DEPENDING ON LOCATION OF THE SUBSTATION.

NOTE 4:
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NOTE 5:
REFER TO THE PROTECTION SPEC FOR ANY REQUIREMENTS FOR CONTROLLED SINGLE POLE OPERATION OF CIRCUIT BREAKERS. SOME POINT ON WAVE CONTROLLERS REQUIRE A VOLTAGE REFERENCE FROM BOTH SIDES OF THE CIRCUIT BREAKER. IN SUCH CASES A SUITABLE VOLTAGE SELECTION SCHEME SHALL BE INSTALLED TO PROVIDE THE REFERENCE ON THE BUSBAR SIDE OF THE CIRCUIT BREAKER.

NOTE 6:
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2. TELEPROTECTION CHANNEL REQUIREMENTS
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3. PROTECTION RELAY INPUTS SHOWN WIRED TO INSTRUMENT TRANSFORMER CORES.

NOTE 8:
A GIB TYPE CONNECTION IS DEPICTED, INCLUDING ADDITIONAL GIS CT FOR BUSBAR PROTECTION.

NOTE 9:
AS PER SECTION 7.10.5 OF XDS-GFS-25-001-RS, IT SHALL BE POSSIBLE TO DISCONNECT THE INDUCTIVE VOLTAGE TRANSFORMERS FROM THE HV BAY BY REMOVAL OR DISCONNECTION OF AN INTERNAL LINK WITHIN THE GAS COMPARTMENT.

NOTE 10:
GIS SURGE ARRESTORS ARE SHOWN AS A WORST CASE SCENARIO. AN INSULATION COORDINATION STUDY SHOULD BE PERFORMED TO ASSESS ITS REQUIREMENTS AT DETAILED DESIGN STAGE. THE SURGE ARRESTER, IF REQUIRED, COULD BE INSTALLED AIS I.E OUTSIDE THE BUILDING OR GIS WITHIN THE BAY.

NOTE 11:
TEMPORARY SECTION OF BUS-DUCT LINKING A & B BUSBARS TO BE REMOVED WHEN INSTALLING THE A4 & B4 SECTION OF BUSBAR.

NOTE 12:
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NOTE 13:
SINGLE RING CT CONNECTED BETWEEN STAR POINT AND EARTH FOR REF PROTECTION. A SEPARATE SET OF CT WILL BE INSTALLED IN EACH PHASE FOR THE REACTOR DIFFERENTIAL PROTECTION.

NOTE 14:
SHUNT AND SYSTEM REACTOR SIZES AND RATINGS ARE TO BE CONFIRMED ON A PROJECT-BY-PROJECT BASIS.

NOTE 15:
ANOTHER SURGE ARRESTOR MAY BE REQUIRED BEFORE THE AIS-GIS BUSHINGS DEPENDING ON THE OUTCOME OF THE PROTECTION COORDINATION STUDY.

NOTE 16:
SURGE ARRESTER QUANTITY AND LOCATION TO BE CONFIRMED BY INSULATION COORDINATION STUDY AT DETAILED DESIGN.

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REV	DESC	DRAWN	ORIGINATED	REVIEWED	CHECKED	APPROVED	DATE
00	First issue	TLI	N. Cowap	ESB DD D. Guistini N. McMahon	R. Barandika	N. Cowap	21/04/2026

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PROJECT
400-8/220-16/110-16 Standard Substation

DRAWING TITLE
400-8/220-16/110-16 Standard Single Line Diagram - Sheet 3 of 6
220 kV Busbars: Bays F0 to F19

No of Shts	SIZE	SCALE
6	A3	N/A

DRAWING NUMBER
XDN-SLD-STND-L-101

SHEET	REV
003	00

220 kV GIS MINIMUM ALL YEAR ROUND RATINGS		
COUPLER BAY	3150A	40kA
BUSBAR	3150A	40kA
FEEDER BAY	2500A	40kA
TRAFO BAY	2500A	40kA
SECTIONALISER BAY	3150A	40kA

HV BAY CONDUCTOR RATINGS SHALL OUTLINE RATINGS FOR SUMMER WINTER & AUTUMN.

IEC DESIGNATOR (ESB DESIGNATOR)	DESCRIPTION
QA1(CB)	CIRCUIT BREAKER
QB1(DA) QB2(DB)	BUSBAR DISCONNECT
QB9(DL)	LINE DISCONNECT
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QC9(DE/DEM4)	ISOLATABLE HIGH SPEED EARTH SWITCH
QC1/QC2/QC3/(DEM1/DEM2 /DEM3)	ISOLATABLE MAINTENANCE EARTH SWITCH *
QC11/QC21(DEA1/DEB1) QC12/QC22(DEA2/DEB2) QC14/QC24(DEA4/DEB4)	ISOLATABLE HIGH SPEED EARTH SWITCH
QB11/QB12/QB21/QB22 (SA1-2 SA1/SA1-2 SA2/ SB1-2 SB1/SB1-2 SB2) (SA2-4 SA2/SA2-4 SA4) (SB2-4 SB2/SB2-4 SB4)	SECTIONALISER DISCONNECT
QA1(SA1-2 CB, SB1-2 CB) QA1(SA1-3 CB, SB1-3 CB)	SECTIONALISER CIRCUIT BREAKER
QB1(K1 DA, K2 DA, K3 DA) QB2(K1 DB, K2 DB, K3 DB)	WING COUPLER BUSBAR DISCONNECT
QA1(K1 CB, K2 CB, K3 CB)	WING COUPLER CIRCUIT BREAKERS

* THE REQUIREMENT FOR MAINTENANCE EARTH SWITCHES TO BE ISOLATABLE IS TO BE CONFIRMED PER PROJECT AND OEM.

LEGEND	
SA	SURGE ARRESTER
VT	VOLTAGE TRANSFORMER
CT	CURRENT TRANSFORMER
NES	NEUTRAL EARTH SWITCH

KEY

- NEW
- FUTURE
- SPARE
- REACTOR
- NEUTRAL EARTH REACTOR
- MULTIWINDING VT
- MULTICORE CT
- SINGLE CORE CT
- RING CT (ONE OR MORE SETS)
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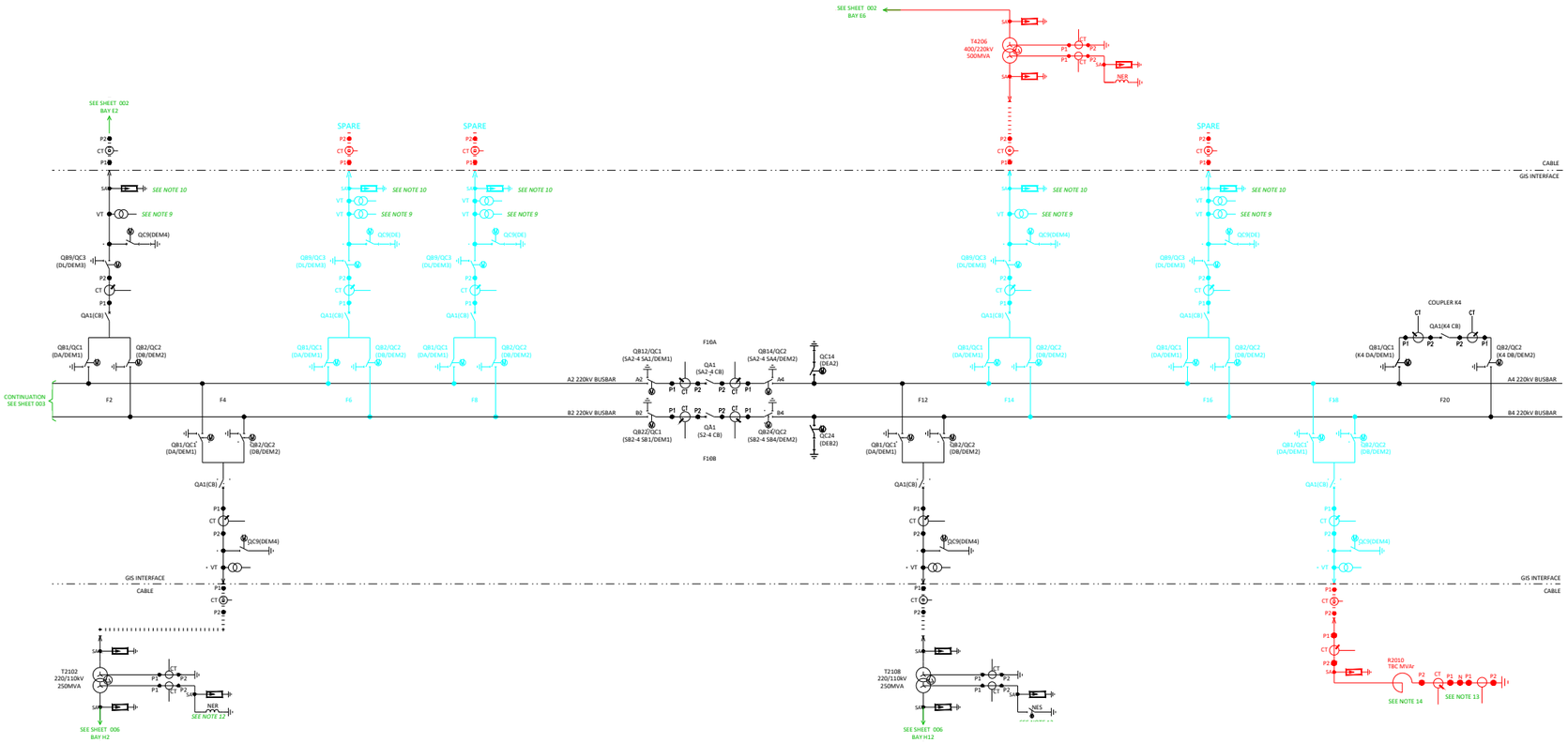

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NOTE 2:
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NOTE 8:
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NOTE 9:
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NOTE 10:
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NOTE 11:
TEMPORARY SECTION OF BUS-DUCT LINKING A & B BUSBARS TO BE REMOVED WHEN INSTALLING THE A4 & B4 SECTION OF BUSBAR.

NOTE 12:
THE REQUIREMENT FOR NEUTRAL EARTH REACTORS, NEUTRAL EARTH RESISTORS OR NEUTRAL EARTH SWITCHES ON THE LOW VOLTAGE NEUTRALS OF POWER TRANSFORMERS IS TO BE DETERMINED ON A PROJECT-BY-PROJECT BASIS. THIS STANDARD SLD SHOWS OPTIONS TO ENSURE THE STANDARD LAYOUT IS SUFFICIENT FOR ANY EVENTUALITY.

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SINGLE RING CT CONNECTED BETWEEN STAR POINT AND EARTH FOR REF PROTECTION. A SEPARATE SET OF CT WILL BE INSTALLED IN EACH PHASE FOR THE REACTOR DIFFERENTIAL PROTECTION.

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SHUNT AND SYSTEM REACTOR SIZES AND RATINGS ARE TO BE CONFIRMED ON A PROJECT-BY-PROJECT BASIS.

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ANOTHER SURGE ARRESTOR MAY BE REQUIRED BEFORE THE AIS-GIS BUSHINGS DEPENDING ON THE OUTCOME OF THE PROTECTION COORDINATION STUDY.

NOTE 16:
SURGE ARRESTER QUANTITY AND LOCATION TO BE CONFIRMED BY INSULATION COORDINATION STUDY AT DETAILED DESIGN.

DRAWING IS NOT TO SCALE - IF IN DOUBT, ASK

REV	DESC	DRAWN	ORIGINATED	REVIEWED	CHECKED	APPROVED	DATE
00	First issue	TLI	N. Cowap	ESB DD D. Guistini N. McMahon	R. Barandika	N. Cowap	21/04/2026

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PROJECT
400-8/220-16/110-16 Standard Substation

DRAWING TITLE
400-8/220-16/110-16 Standard Single Line Diagram - Sheet 4 of 6
220 kV Busbars: Bays F2 to F20

No of Shts	SIZE	SCALE
6	A3	N/A

DRAWING NUMBER	SHEET	REV
XDN-SLD-STND-L-101	004	00

110 kV GIS MINIMUM ALL YEAR ROUND RATINGS		
COUPLER BAY	2500A	31.5kA
BUSBAR	2500A	31.5kA
FEEDER BAY	1250A	31.5kA
TRAFO BAY	1250A	31.5kA
SECTIONALISER BAY	2500A	31.5kA

HV BAY CONDUCTOR RATINGS SHALL OUTLINE RATINGS FOR SUMMER WINTER & AUTUMN.

IEC DESIGNATOR (ESB DESIGNATOR)	DESCRIPTION
QA1(CB)	CIRCUIT BREAKER
QB1(DA) QB2(DB)	BUSBAR DISCONNECT
QB9(DL)	LINE DISCONNECT
QB9(DT)	TRAFO DISCONNECT
QC9(DE/DEM4)	ISOLATABLE HIGH SPEED EARTH SWITCH
QC1/QC2/QC3/(DEM1/DEM2 /DEM3)	ISOLATABLE MAINTENANCE EARTH SWITCH *
QC11/QC21(DEA1/DEB1) QC12/QC22(DEA2/DEB2) QC14/QC24(DEA4/DEB4)	ISOLATABLE HIGH SPEED EARTH SWITCH
QB11/QB12/QB21/QB22 (SA1-2 SA1/SA1-2 SA2/ SB1-2 SB1/SB1-2 SB2) (SA2-4 SA2/SA2-4 SA4) (SB2-4 SB2/SB2-4 SB4)	SECTIONALISER DISCONNECT
QA1(SA1-2 CB, SB1-2 CB) QA1(SA1-3 CB, SB1-3 CB)	SECTIONALISER CIRCUIT BREAKER
QB1(K1 DA, K2 DA, K3 DA) QB2(K1 DB, K2 DB, K3 DB)	WING COUPLER BUSBAR DISCONNECT
QA1(K1 CB, K2 CB, K3 CB)	WING COUPLER CIRCUIT BREAKERS

* THE REQUIREMENT FOR MAINTENANCE EARTH SWITCHES TO BE ISOLATABLE IS TO BE CONFIRMED PER PROJECT AND OEM.

LEGEND	
SA	SURGE ARRESTER
VT	VOLTAGE TRANSFORMER
CT	CURRENT TRANSFORMER
NES	NEUTRAL EARTH SWITCH

NOTE 1:
THIS SLD IS AN ELECTRICAL REPRESENTATION OF THE GIS STATION.
FOR PHYSICAL LAYOUT REQUIREMENTS REFER TO EIRGRID GENERAL FUNCTIONAL SPECIFICATION XDS-GFS-00-001.

NOTE 2:
THE SPECIFIC MINIMUM 3 PHASE SHORT CIRCUIT BAY RATING 40kA (1s) APPLIES TO BOTH ELECTRICAL AND MECHANICAL FORCES.

NOTE 3:
HIGHER SHORT CIRCUIT RATING MAY BE REQUIRED DEPENDING ON LOCATION OF THE SUBSTATION.

NOTE 4:
THIS IS A GIS STATION.

NOTE 5:
REFER TO THE PROTECTION SPEC FOR ANY REQUIREMENTS FOR CONTROLLED SINGLE POLE OPERATION OF CIRCUIT BREAKERS. SOME POINT ON WAVE CONTROLLERS REQUIRE A VOLTAGE REFERENCE FROM BOTH SIDES OF THE CIRCUIT BREAKER. IN SUCH CASES A SUITABLE VOLTAGE SELECTION SCHEME SHALL BE INSTALLED TO PROVIDE THE REFERENCE ON THE BUSBAR SIDE OF THE CIRCUIT BREAKER.

NOTE 6:
REFER TO PROJECT SPECIFIC PROTECTION SPEC FOR:
1. SPECIFIC BAY CT & VT CONFIGURATIONS, RATINGS, BURDEN & ACCURACY CLASS REQUIREMENTS.
2. TELEPROTECTION CHANNEL REQUIREMENTS
3. Tx NEUTRAL EARTH REQUIREMENTS

NOTE 7:
A PROTECTION SLD SHALL BE SUBMITTED FOR DETAILED DESIGN & AS-BUILT PURPOSES INCLUDING THE FOLLOWING:
1. HV PLANT RATINGS FOR ALL HV COMPONENTS INCLUDING PROTECTION REQUIREMENTS AS OUTLINED IN NOTE 7.
2. A LEGEND OUTLINING PROTECTION RELAY DETAILS USED INCLUDING RELAY TYPE, ANSI DEVICE NUMBERS AND LONG RELAY MLFB/ORDER CODE.
3. PROTECTION RELAY INPUTS SHOWN WIRED TO INSTRUMENT TRANSFORMER CORES.

NOTE 8:
A GIB TYPE CONNECTION IS DEPICTED, INCLUDING ADDITIONAL GIS CT FOR BUSBAR PROTECTION.

NOTE 9:
AS PER SECTION 7.10.5 OF XDS-GFS-25-001-R5, IT SHALL BE POSSIBLE TO DISCONNECT THE INDUCTIVE VOLTAGE TRANSFORMERS FROM THE HV BAY BY REMOVAL OR DISCONNECTION OF AN INTERNAL LINK WITHIN THE GAS COMPARTMENT.

NOTE 10:
GIS SURGE ARRESTORS ARE SHOWN AS A WORST CASE SCENARIO. AN INSULATION COORDINATION STUDY SHOULD BE PERFORMED TO ASSESS ITS REQUIREMENTS AT DETAILED DESIGN STAGE. THE SURGE ARRESTER, IF REQUIRED, COULD BE INSTALLED AIS I.E OUTSIDE THE BUILDING OR GIS WITHIN THE BAY.

NOTE 11:
TEMPORARY SECTION OF BUS-DUCT LINKING A & B BUSBARS TO BE REMOVED WHEN INSTALLING THE A4 & B4 SECTION OF BUSBAR.

NOTE 12:
THE REQUIREMENT FOR NEUTRAL EARTH REACTORS, NEUTRAL EARTH RESISTORS OR NEUTRAL EARTH SWITCHES ON THE LOW VOLTAGE NEUTRALS OF POWER TRANSFORMERS IS TO BE DETERMINED ON A PROJECT-BY-PROJECT BASIS. THIS STANDARD SLD SHOWS OPTIONS TO ENSURE THE STANDARD LAYOUT IS SUFFICIENT FOR ANY EVENTUALITY.

NOTE 13:
SINGLE RING CT CONNECTED BETWEEN STAR POINT AND EARTH FOR REF PROTECTION. A SEPARATE SET OF CT WILL BE INSTALLED IN EACH PHASE FOR THE REACTOR DIFFERENTIAL PROTECTION.

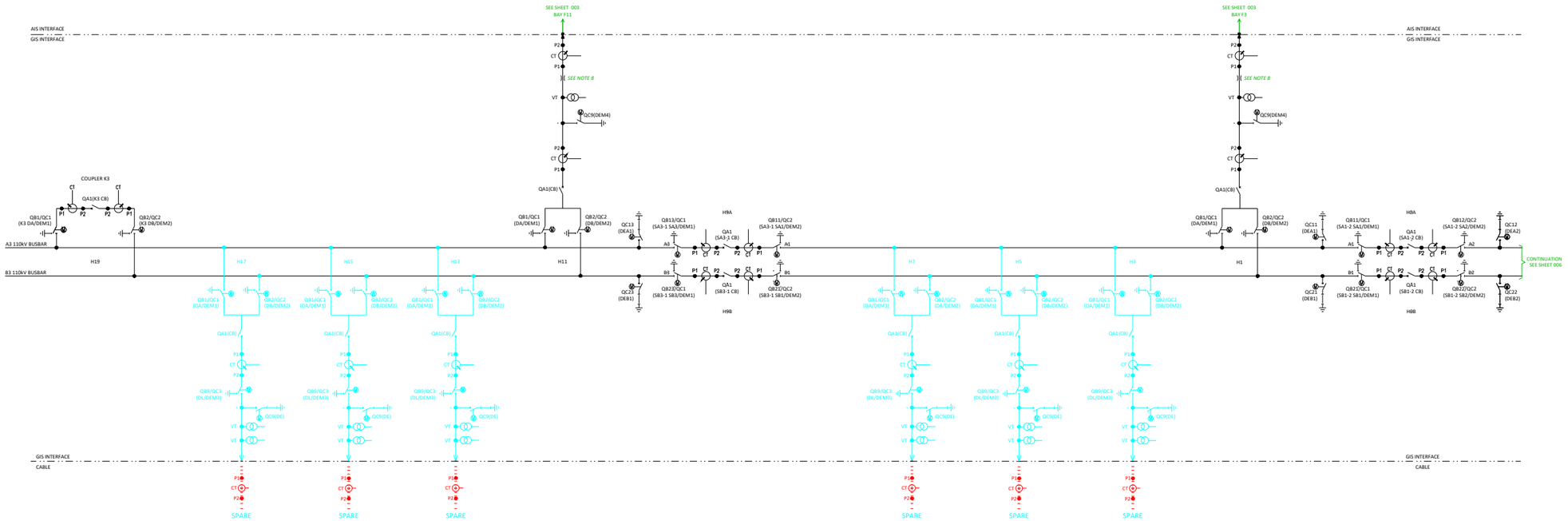
NOTE 14:
SHUNT AND SYSTEM REACTOR SIZES AND RATINGS ARE TO BE CONFIRMED ON A PROJECT-BY-PROJECT BASIS.

NOTE 15:
ANOTHER SURGE ARRESTOR MAY BE REQUIRED BEFORE THE AIS-GIS BUSHINGS DEPENDING ON THE OUTCOME OF THE PROTECTION COORDINATION STUDY.

NOTE 16:
SURGE ARRESTER QUANTITY AND LOCATION TO BE CONFIRMED BY INSULATION COORDINATION STUDY AT DETAILED DESIGN.

KEY

- NEW
- FUTURE
- SPARE
- REACTOR
- NEUTRAL EARTH REACTOR
- MULTIWINDING VT
- MULTICORE CT
- SINGLE CORE CT
- RING CT (ONE OR MORE SETS)
- CABLE SEALING END
- CABLE
- THROUGH WALL OF BUILDING
- GIS - AIR BUSHING



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PROJECT
400-8/220-16/110-16 Standard Substation

DRAWING TITLE
400-8/220-16/110-16 Standard Single Line Diagram - Sheet 5 of 6
110 kV Busbars: Bays H0 to H19

No of Shts 6 | SIZE A3 | SCALE N/A

DRAWING NUMBER XDN-SLD-STND-L-101 | SHEET 005 | REV 00

110 kV GIS MINIMUM ALL YEAR ROUND RATINGS		
COUPLER BAY	2500A	31.5kA
BUSBAR	2500A	31.5kA
FEEDER BAY	1250A	31.5kA
TRAFO BAY	1250A	31.5kA
SECTIONALISER BAY	2500A	31.5kA

HV BAY CONDUCTOR RATINGS SHALL OUTLINE RATINGS FOR SUMMER WINTER & AUTUMN.

IEC DESIGNATOR (ESB DESIGNATOR)	DESCRIPTION
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QB1(DA) QB2(DB)	BUSBAR DISCONNECT
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QC9(DE/DEM4)	ISOLATABLE HIGH SPEED EARTH SWITCH
QC1/QC2/QC3/(DEM1/DEM2 /DEM3)	ISOLATABLE MAINTENANCE EARTH SWITCH *
QC11/QC21(DEA1/DEB1) QC12/QC22(DEA2/DEB2) QC14/QC24(DEA4/DEB4)	ISOLATABLE HIGH SPEED EARTH SWITCH
QB11/QB12/QB21/QB22 (SA1-2 SA1/SA1-2 SA2/ SB1-2 SB1/SB1-2 SB2) (SA2-4 SA2/SA2-4 SA4) (SB2-4 SB2/SB2-4 SB4)	SECTIONALISER DISCONNECT
QA1(SA1-2 CB, SB1-2 CB) QA1(SA1-3 CB, SB1-3 CB)	SECTIONALISER CIRCUIT BREAKER
QB1(K1 DA, K2 DA, K3 DA) QB2(K1 DB, K2 DB, K3 DB)	WING COUPLER BUSBAR DISCONNECT
QA1(K1 CB, K2 CB, K3 CB)	WING COUPLER CIRCUIT BREAKERS

* THE REQUIREMENT FOR MAINTENANCE EARTH SWITCHES TO BE ISOLATABLE IS TO BE CONFIRMED PER PROJECT AND OEM.

LEGEND	
SA	SURGE ARRESTER
VT	VOLTAGE TRANSFORMER
CT	CURRENT TRANSFORMER
NES	NEUTRAL EARTH SWITCH

KEY

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- FUTURE
- SPARE
- REACTOR
- NEUTRAL EARTH REACTOR
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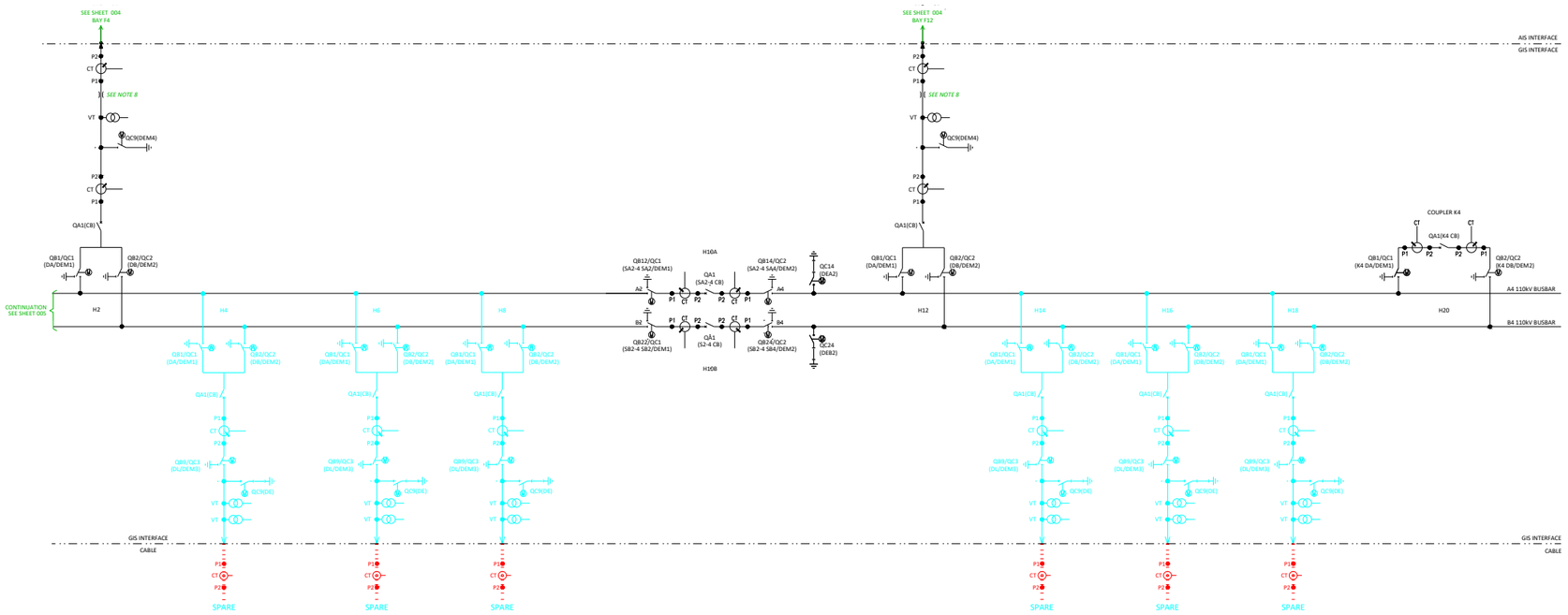

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PROJECT
400-8/220-16/110-16 Standard Substation

DRAWING TITLE
400-8/220-16/110-16 Standard Single Line Diagram - Sheet 6 of 6
110 kV Busbars: Bays H2 to H20

No of Shts	SIZE	SCALE
6	A3	N/A

DRAWING NUMBER	SHEET	REV
XDN-SLD-STND-L-101	006	00