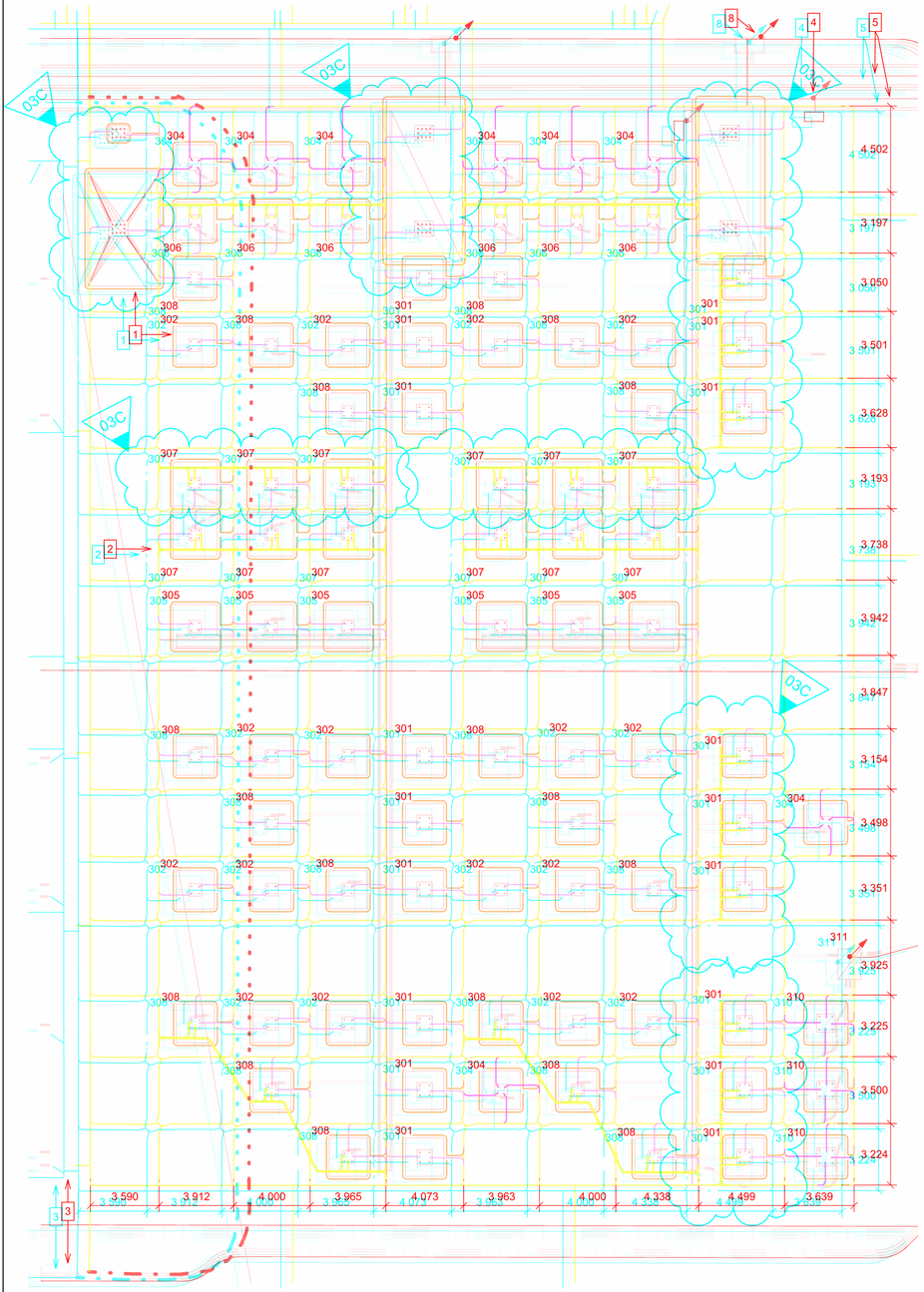
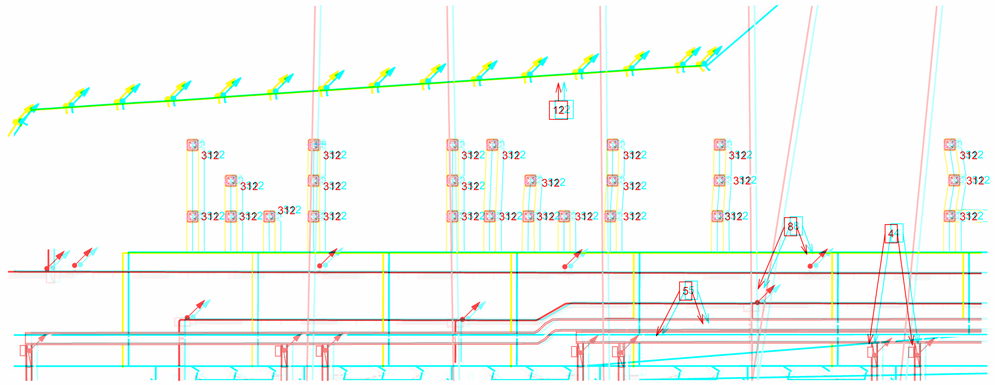
Main Switchyard



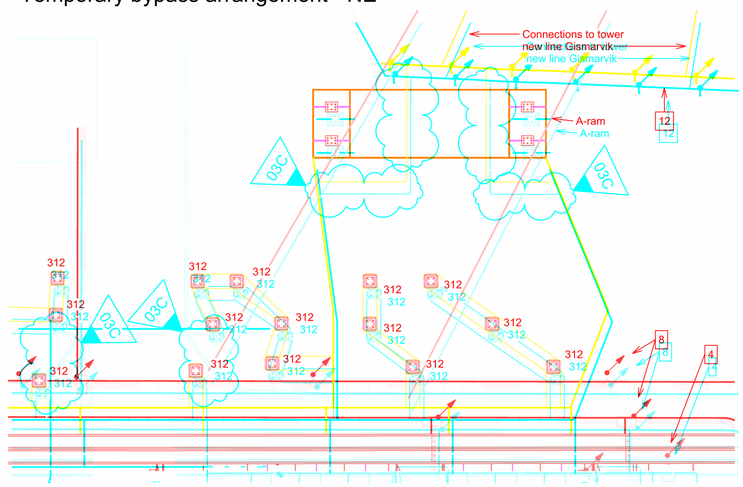
Scale 1 : 160

Temporary bypass arrangement - NW



Scale 1 : 200

Temporary bypass arrangement - NE



Scale 1 : 250

Schedule of foundations

Item	Description
301	300 kV Main Busbar Support Insulator / 300 kV Main Busbar Support Insulator & Earth Switch
302*	300 kV Post Insulator
304*	300 kV Capacitive Voltage Transformer
305	300 kV Circuit Breaker
306*	300 kV Current Transformer
307	300 kV Disconnector with Earth Switch
308	300 kV Disconnector without Earth Switch (Pantograph)
309*	300 kV Resistive Capacitive Voltage Transformer
310	300 kV Stations Service Voltage Transformer
311	Breaker Cabinet for SSVT
312*	300 kV Post Insulator (temporary connection)

* Foundationtypes marked with * has diagonal brace connection points on their metal base, others have centered brace connection points.

NOTES

All larger metal parts with length > 2 m or area > 1 m^2, shall have potential equalization to nearby earthing wire, with at least 1x25 mm^2 insulated Y/G CU, even if not specified in this drawing.

All buried earth conductors shall be laid in 0 – 16 mm crushed aggregate, with a minimum of 50 mm below and above. The aggregate must be protected against washout.

Earthing conductors should not be laid with sharp bends. Minimum 200 mm bending radius.

All mesh grid and other interconnections, are to be connected using C-type connectors or appropriate cable lugs. C-type connectors shall be crimped at least twice using supplier-approved tools, or else in accordance with the tool manufacturers instructions. Cable lugs shall match conductor type and size, and be crimped per supplier's recommendations.

1. Switchyard foundation earth is placed surrounding foundations foot or close below foot, with risers to above mesh grid. Mesh grid earth shall be installed at depth 0.3 - 0.7 m. All lead risers from mesh grid to the above foundation top steel support are fastened with minimum two acid-resistant saddles, with length of riser at least 0.4 m above foundation top.
2. The short circuit interconnections is to be installed at same level as/and connected to the Earth Grid, with risers connected to designated earth points on foundation top steel support, before new connections are extended to the top equipment earthing switch/lance.
3. The existing earthing system shall remain unchanged, except for new connections to the switchyard earthing grid and interconnections at the new fences. Any existing earth conductors encountered during excavation shall be repaired.
4. All Field cabinet shall be earthed with at least 1x70 mm^2 insulated Y&G CU riser from the below cable duct earthing conductor.
5. Cable ducts shall have a centered 1x120 mm ^{2} uninsulated CU wire. All earthing conductors ends terminations shall be terminated connected to the nearby ring or mesh grid. Cable trenches shall have 1x120 mm ^{2} uninsulated CU.
8. Within the electrical system, all junction boxes metal lids and metal bases of lighting poles shall be connected to the nearby cable trench wire or other earth electrode wire, using minimum 1x25 mm^2 insulated Y/G CU.
12. A 1x120 mm² uninsulated CU ring earth conductor shall be laid 0.5– 1 m from the new fence and buried at 0.3 m depth. Where burial is not possible, it shall be clamped to the mountain on the fence inner side. Every end pole and every second pole shall be connected to the ring with 1x120 mm² CU risers, fixed as low as possible on the poles inner side. The new conductor must connect to the existing fence earth at fence terminations.

Tegningsnummer: A1137-HMV-XX-BLÅ-DR-E-0006-04C
Revisjon: 04C

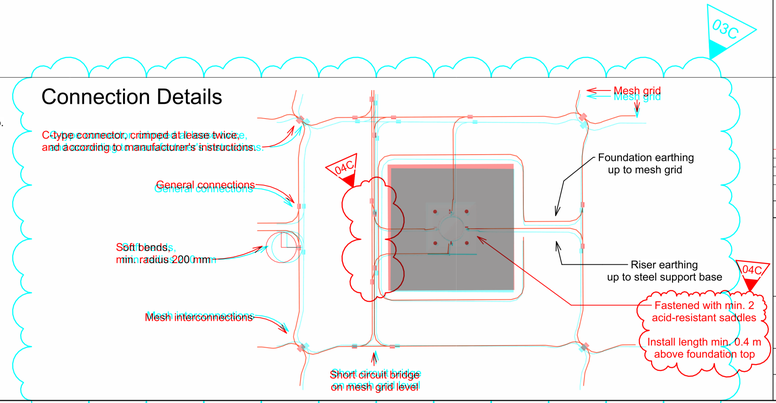
References

1. SDOK-47-51 - General Technical Spesifications for Earthing in Substations
2. SDOK-47-52 - Special Technical Spesifications for Earthing in Substations
   10323-SWE-BLÅ-E-SP-0005_BLÅ - Blåfalli koblingsstasjon
   Technical specification Earthing in substation
3. SDOK-83-20 - Principle Drawing Cable Routing and Grounding in ControlSystems
4. SDOK-119-14 - Principle for substation site construction
5. 10323-SWE-BLÅ-E-XX-0001 03B 300 kV switchgear Plan view
6. A1137-HMV-XX-BLÅ-RP-E-001 BLÅ 300 kV - Substation Earthing Report

Legend

- Riser, described by riser symbol or colored line given in legend
- Switchyard deep foundation earthing conductor, 1x120 mm^2 uninsulated CU - With one risers to above mesh/ring.
- Switchyard level foundation earthing conductor, 1x120 mm^2 uninsulated CU - With one riser to the above mesh/ring.
- Earthing conductor 1x120 mm^2 uninsulated CU - Ring-, mesh-, fence-, gate- and interconnecting earthing conducters.
- Short circuit bridge earthing conductor with two 1x120 mm^2 unisulated CU below ground, two risers of 1x120 mm ^{2} uninsulated CU from below ground to steel support base, 3x120 mm ^{2} insulated Y/G CU risers from support base to earth lance / earth switch.
- Switchyard riser earthing conductor, 1x120 mm^2 uninsulated CU - Two risers connecting mesh grid and steel support base.
- Switchyard riser earthing conductor, 1x120 mm^2 uninsulated CU - Four risers connecting mesh grid and steel support base.
- Earthing conductor 1x120 mm^2 uninsulated CU - At center of concrete cable trench, with end connections to mesh grid, with minimum 1x70 mm^2 insulated Y/G CU riser to each field cabinet.
- Earthing conductor 1x120 mm^2 uninsulated CU - Following all cable trenches, with minimum 1x25 mm ^{2} insulated Y/G CU risers for potential equalization of larger metallic objects > 2 m or > 1 m ^{2}.
- Existing 70 mm ^{2} earthing system to be kept and connected to.
- Existing 70 mm ^{2} earthing wire to be removed.

Connection Details



04C	Updated after SN comments	OscJac	PSS	OscJac	2025-07-02
03C	Updated after SN comments and current project situation	OscJac	PSS	OscJac	2025-06-12
02C	New configuration switchyard	OscJac	TAR	OscJac	2025-05-09
01C	Issued for review	OscJac	PSS	OscJac	2025-03-11
Rev.	Reason for issue/Description	Prepeared	Checked (STN)	Approved	Date dd.mm.yyy

Project / Contract no.: 10323/CTR007037

Title: BLÅ 300 kV
Substation Earthing Plan for Switchyard installations

Scale: As Indicated
Coordinate system: EUREF89 NTM6
System of heights: NN2000

Client: Statnett
ELE Contractor: H&MV ENGINEERING
ELE Consultant: Norconsult
Project no. supplier
Project no. supplier

Discipline responsible: Checker
Executioner
Author

Classification: Statnett Sensitive (K3)
Contractor's document no.: A1137-HMV-XX-BLÅ-DR-E-0006-04C
Format: A1

Replaces document
Document no.
Sheet