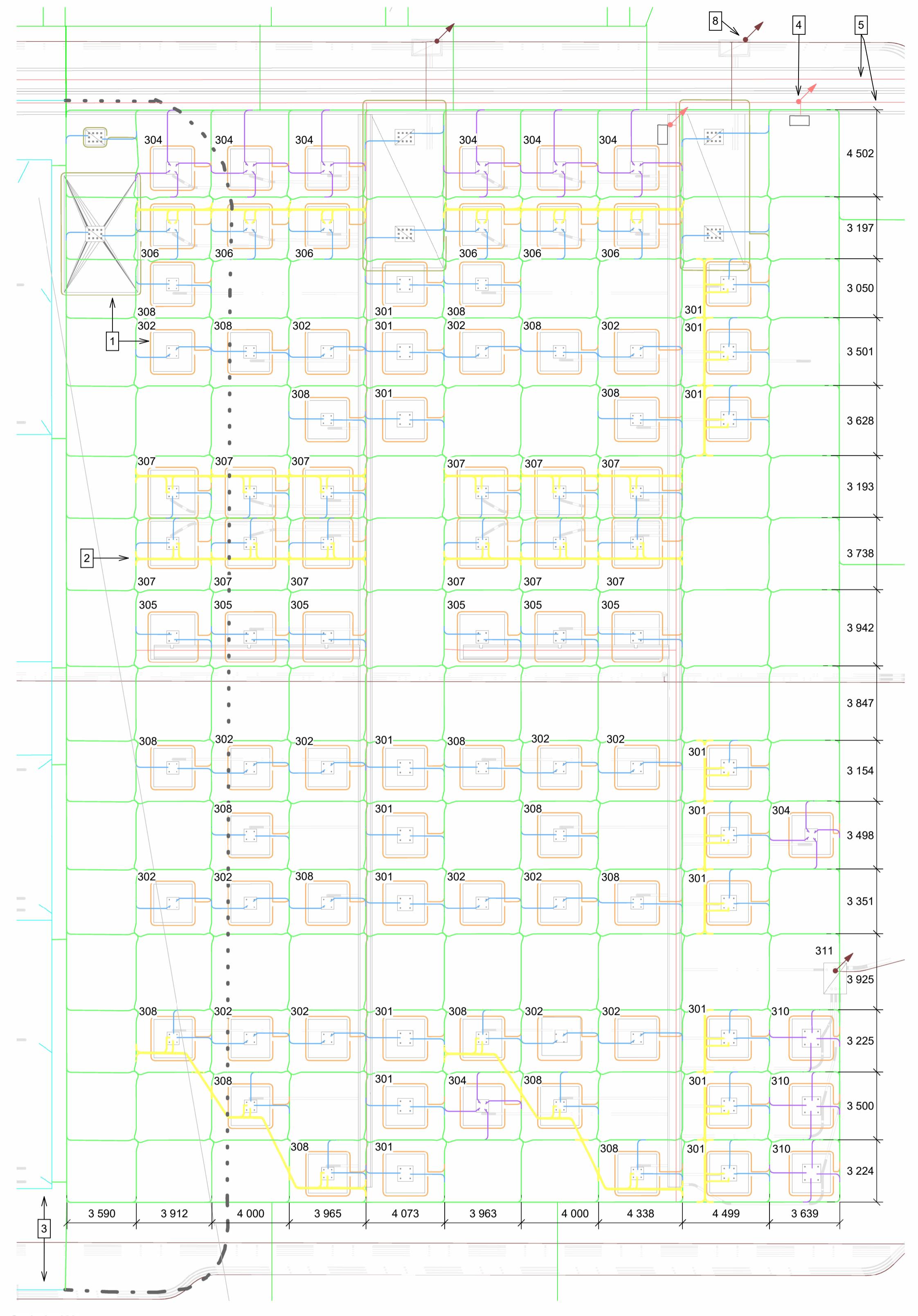
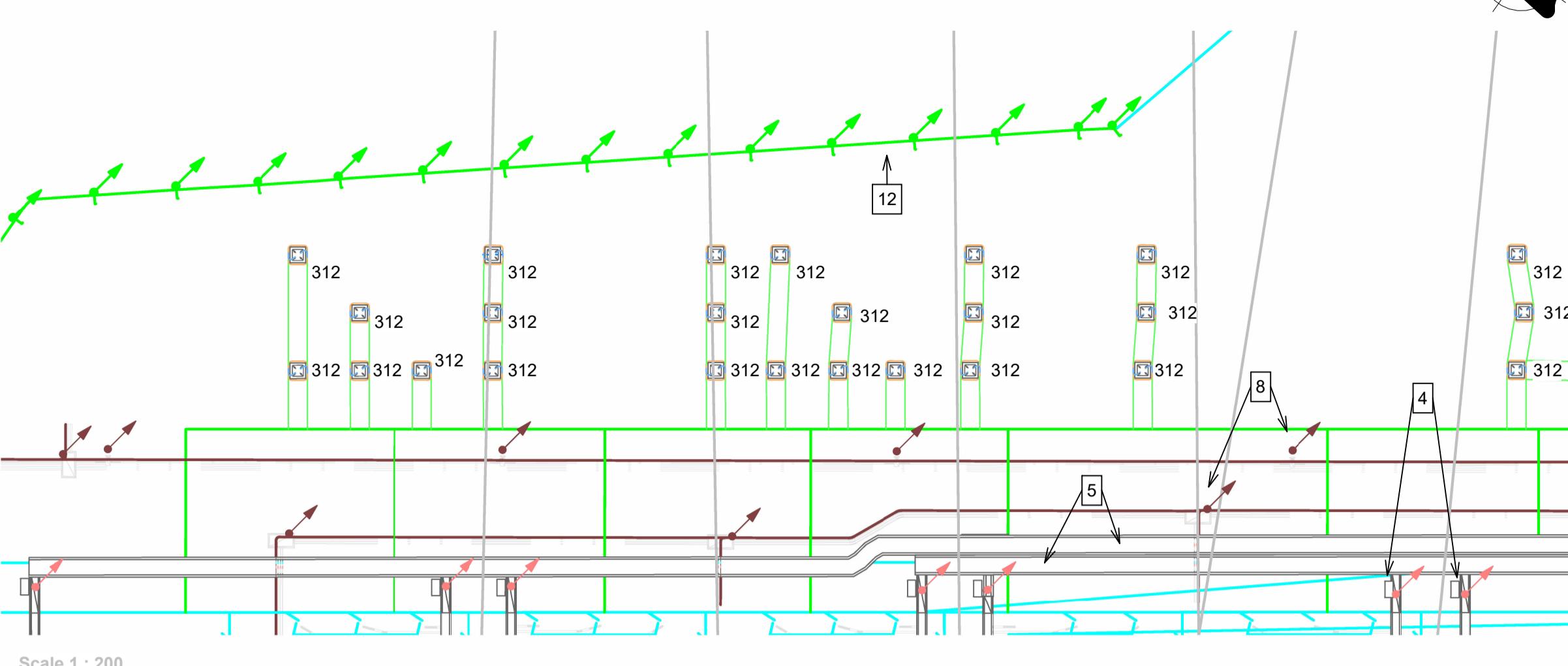


Main Switchyard

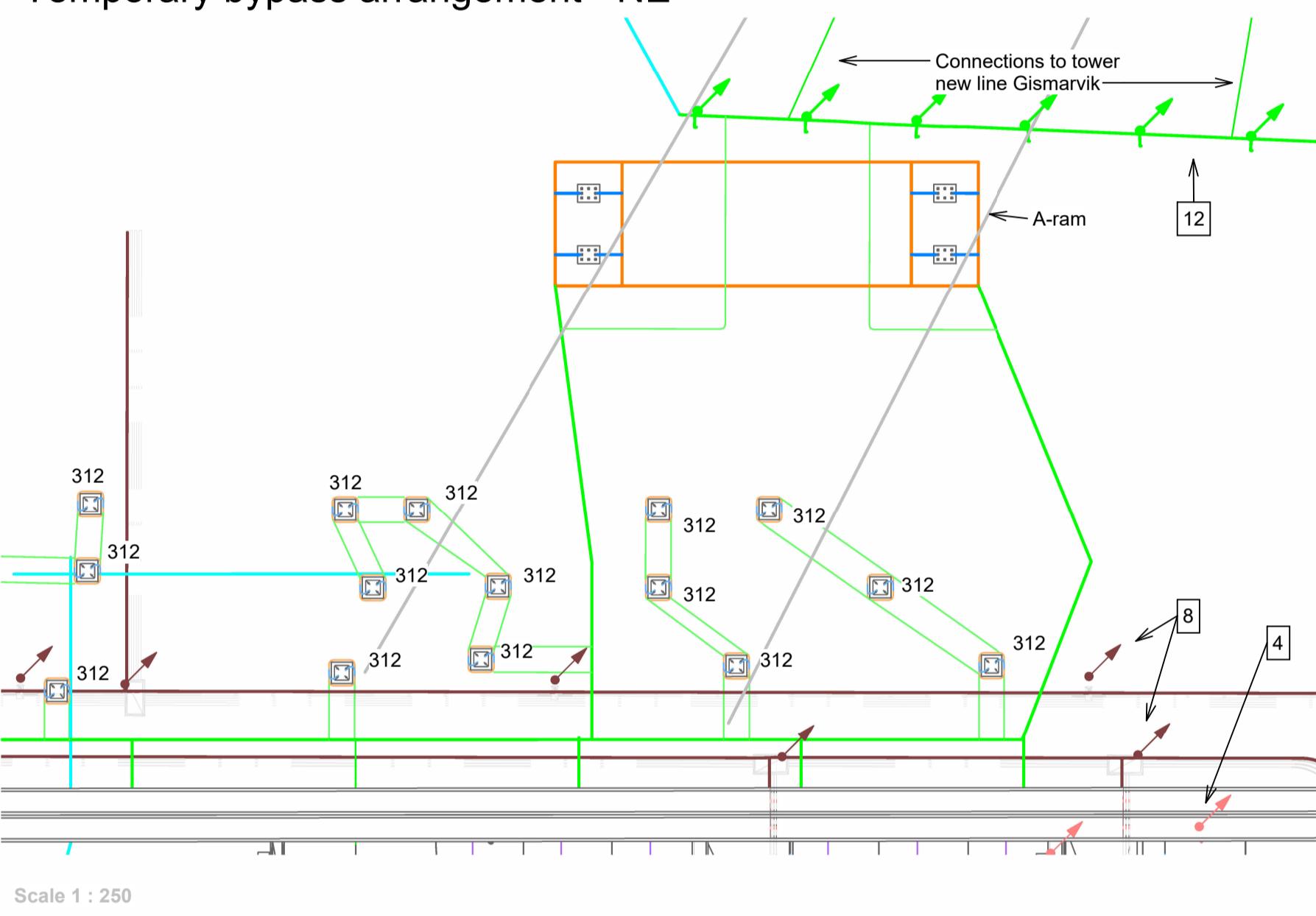


Scale 1 : 160

Temporary bypass arrangement - NW



Temporary bypass arrangement - NE



Schedule of foundations

Description

- 300 kV Main Busbar Support Insulator / 300 kV Main Busbar Support Insulator & Earth Switch
- 300 kV Post Insulator
- 300 kV Capacitive Voltage Transformer
- 300 kV Circuit Breaker
- 300 kV Current Transformer
- 300 kV Disconnector with Earth Switch
- 300 kV Disconnector without Earth Switch
(Pantograph)
- 300 kV Resistive Capacitive Voltage Transformer
- 300 kV Stations Service Voltage Transformer
- Breaker Cabinet for SSVT
- 300 kV Post Insulator (temporary connection)

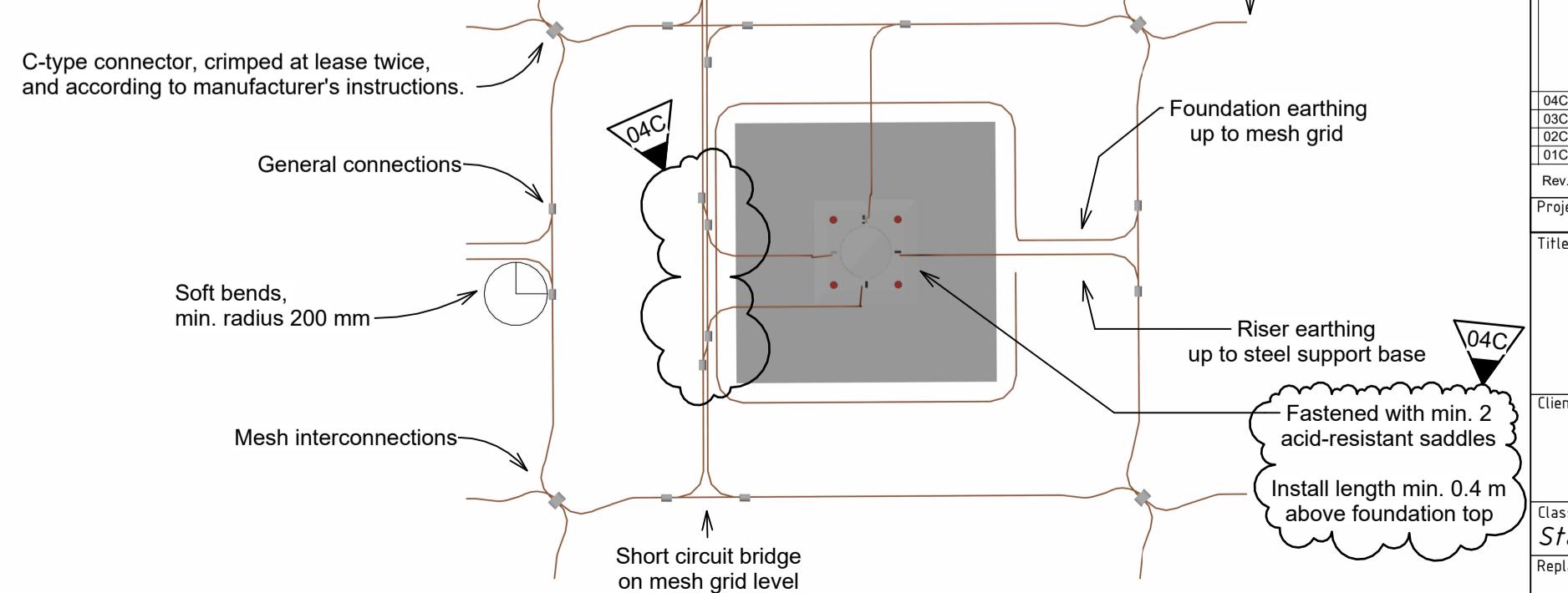
* Foundation types marked with * has diagonal brace connection points on their metal base, others have centered brace connection points.

Legend

-  or — Riser, described by riser symbol or colored line given in legend
 - Switchyard deep foundation earthing conductor, 1x120 mm² uninsulated CU - With one risers to above mesh/ring.
 - Switchyard level foundation earthing conductor, 1x120 mm² uninsulated CU - With one riser to the above mesh/ring.
 - Earthing conductor 1x120 mm² uninsulated CU - Ring-, mesh-, fence-, gate- and interconnecting earthing conductors.
 - Short circuit bridge earthing conductor with two 1x120 mm² uninsulated CU below ground, two risers of 1x120 mm² uninsulated CU from below ground to steel support base, 3x120 mm² insulated Y/G CU risers from support base to earth lance / earth switch.
 - Switchyard riser earthing conductor, 1x120 mm² uninsulated CU - Two risers connecting mesh grid and steel support base.
 - Switchyard riser earthing conductor, 1x120 mm² uninsulated CU - Four risers connecting mesh grid and steel support base.
 - Earthing conductor 1x120 mm² uninsulated CU - At center of concrete cable trench, with end connections to mesh grid, with minimum 1x70 mm² insulated Y/G CU riser to each field cabinet.
 - Earthing conductor 1x120 mm² uninsulated CU - Following all cable trenches, with minimum 1x25 mm² insulated Y/G CU risers for potential equalization of larger metallic objects > 2 m or > 1 m².

- Existing 70 mm² earthing system to be kept and connected to.
- Existing 70 mm² earthing wire to be removed.

Connection Details



NOTES

All larger metal parts with length > 2 m or area > 1 m², shall have potential equalization to nearby earthing wire, with at least 1x25 mm² 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 manufacturer's instructions. Cable lugs shall match conductor type and size, and be crimped per supplier's recommendations.

- 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.

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.

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.

All Field cabinet shall be earthed with at least 1x70 mm² insulated Y&G CU riser from the below cable duct earthing conductor.

Cable ducts shall have a centered 1x120 mm² uninsulated CU wire. All earthing conductors ends terminations shall be terminated connected to the nearby ring or mesh grid. Cable trenches shall have 1x120 mm² uninsulated CU.

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 mm² insulated Y/G CU.

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
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References

1. SDOK-47-51 - General Technical Specifications for Earthing in Substations
 2. SDOK-47-52 - Special Technical Specifications 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

Classified as restricted information under the Norwegian Energy Act § 9-3 and the Emergency Preparedness Regulation (bef) § 6-2. Exempted from public disclosure according to the Freedom of Information Act. (Offentleglova)

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	Discipline responsible Checker Executioner Author	
Classification	<i>Statnett Sensitive (K3)</i>	Contractor's document no. A1137-HMV-XX-BLÅ-DR-E-0006-04C			Format A1
Replaces document		Document no.			Sheet