



## CERN - Hilumi LHC Point 1 (CH) Sheet Waterproofing

<b>Country</b>	Switzerland
<b>Type</b>	Nuclear Building
<b>Client</b>	CERN European Organization for Nuclear Research
<b>Main Contractor</b>	Marti Tunnelbau AG
<b>Execution of the work</b>	Renesco AG
<b>Designer</b>	JV Origin (Setec als, CSD Ingénieurs SA, Rocksoil Spa)
<b>Construction Period</b>	2019 – 2021

## Project Description

CERN - Hilumi LHC Point 1, Extension of particle Accelerator – Geneva, Switzerland. The research at Cern is looking for unknown elementary particles to explain previously unsolved secrets of the universe. In essence, the number of proton collisions is to increase from one billion collisions per second to five billion, which requires a large amount of new infrastructure and underground space.

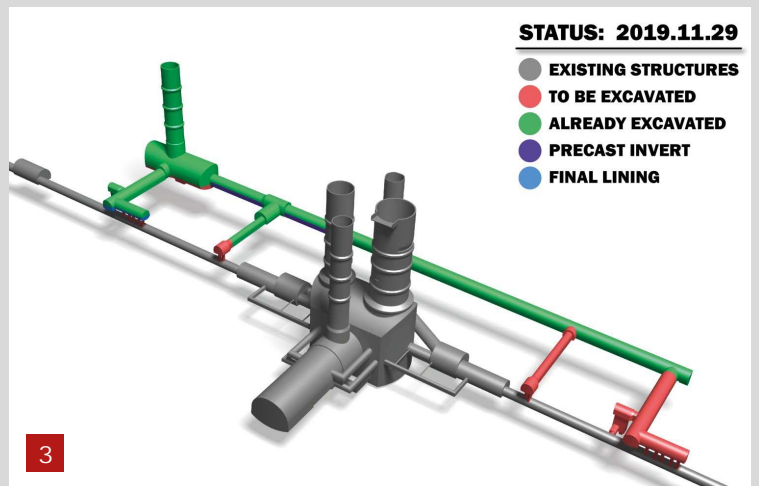
The Large Hadron Collider (LHC) project consists of a 27km circular tunnel, located in France and Switzerland, with eight sites positioned around the tunnel's circumference. New tunnels, shafts and a large cavern are being built, as well as above-ground auxiliary buildings. Point 1, located in Switzerland, is one of the largest sites. Excavation principally in weak sedimentary rock, fresh water molasse, 50% sandstones and 50% marl. A part of the new structure is the waterproofing system.

- Access Shaft Ø 12m, depth 60m
- Cryogenic Cavern L = 51m / B = 18m / H= 20m
- Long Power Converter Tunnel L = 300m
- Service Tunnels 4 pces / Ø 3m / L = 200m
- 5 complex industrial buildings

## Scope of Service

Installation of waterproofing membrane system in tunnels, caverns, shafts and cross-passages, sheet waterproofing 2.5mm, PVC-P based according to SIA272 (Swiss standard), designed as a drained system.

- Regularization fine graded gunite shotcrete for surface preparation
- Sheet waterproofing, 2.5mm PVC-P
- Polypropylene protection geotextile
- Protection sheet membrane, 2mm
- Compartmentalization with PVC-P water barriers
- Drainage layer, PEHD
- Plastic drainage profiles



1. Shaft
2. Sheet waterproofing
3. Construction overview