MAX IV – Lund

CEO Fastighets AB ML4 Rickard Berlin

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Background to the project

- Lunds universitet – Landlord contract 2010
- 25-year rent lease
- Max IV-laboratory is the user and requirement maker
- Peab – Wihlborgs => Fastighets AB ML 4

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Agreement Structure

- Implementation agreement, valid for completion in 2015 and for new projects
- Lease agreement, ML4 – LU, secures the rental flow
- Management agreement, Peab/Wihlborgs – LU, Property management responsibility, containing funds för damage etc.
- Option agreement, Peab/Wihlborgs – LU
- Remaining agreement, Peab/Wihlborgs - LU

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Investment MAX IV

- Total investment: 4 030 Mkr
  of which base investment 1 180 Mkr
  14 decided beamline 960 Mkr
  via rent lease 1 890 Mkr

- Project budget rent component: 2 200 Mkr
  Total project cost when finished: 1 890 Mkr

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Construction contract

- Contractor Peab
- Collaborative agreement
- Contract is based with a economic incentive method
- Project ended under budget and delivered the MAX IV 3 months before the hand over in the timeplan.

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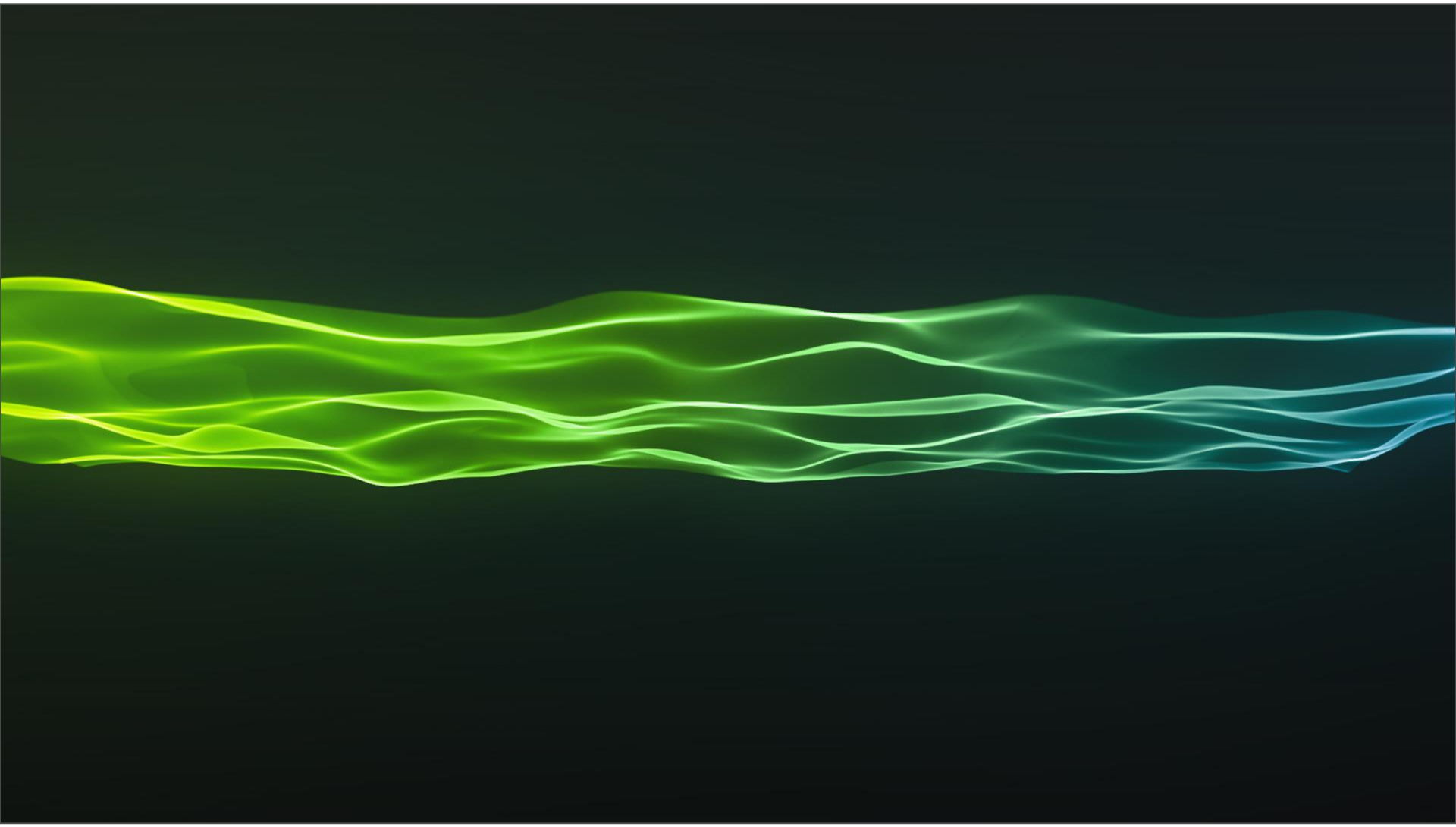
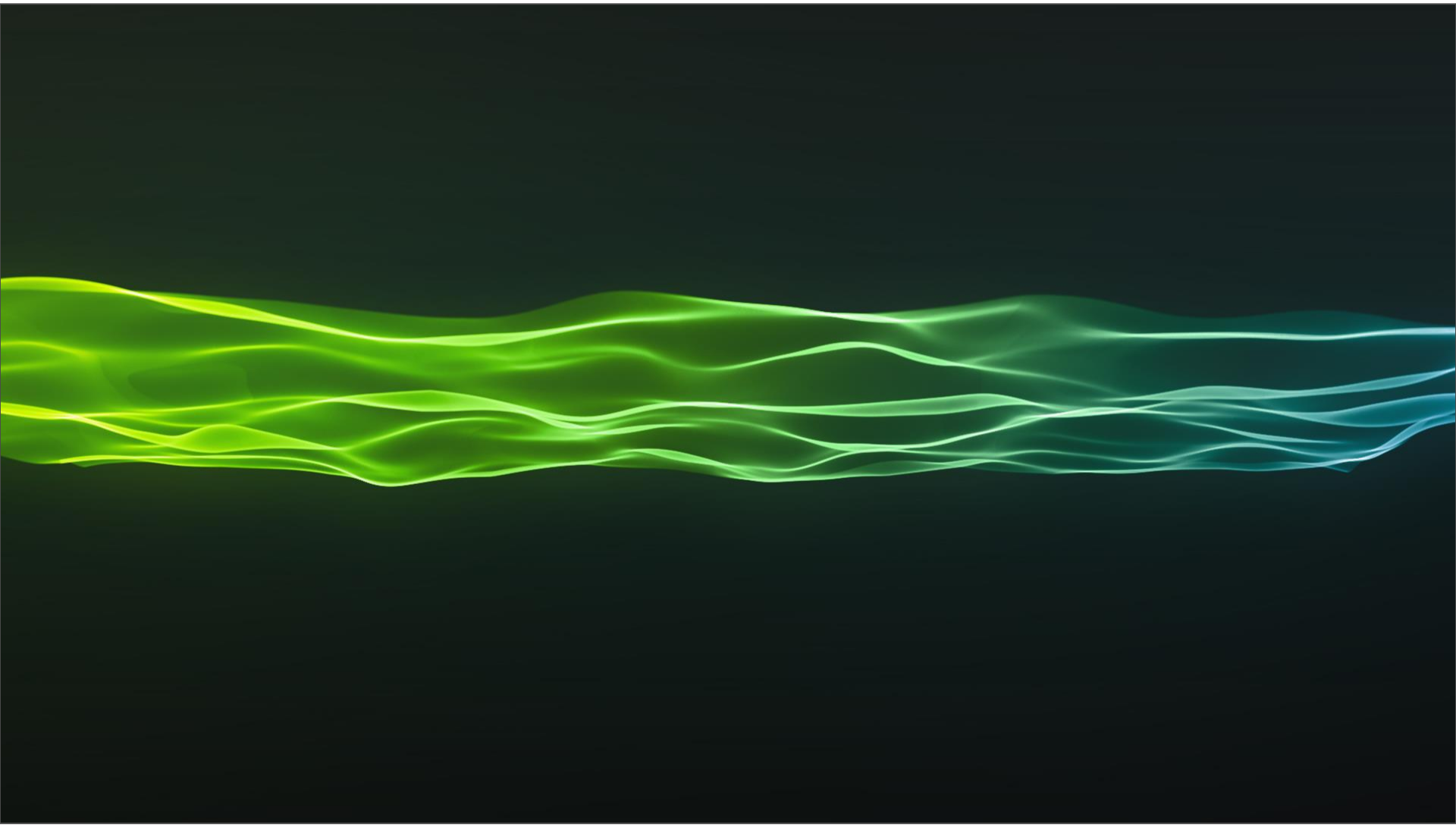
Environment



Design

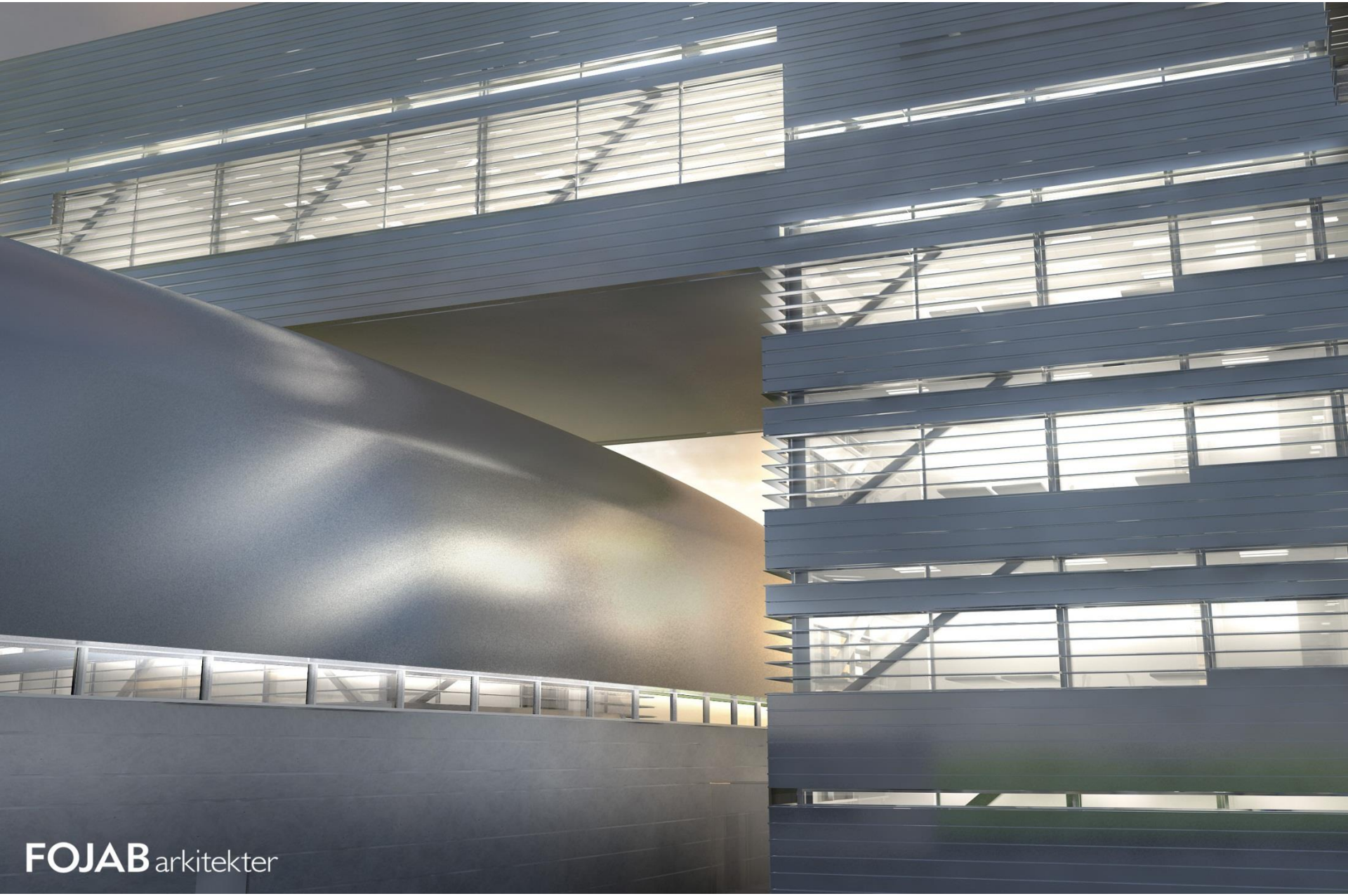



FOJAB arkitekter
SNØHETTA


FOJAB arkitekter


FOJAB arkitekter


FOJAB arkitekter


FOJAB arkitekter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FOJAB arkitekter


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2013-09-17
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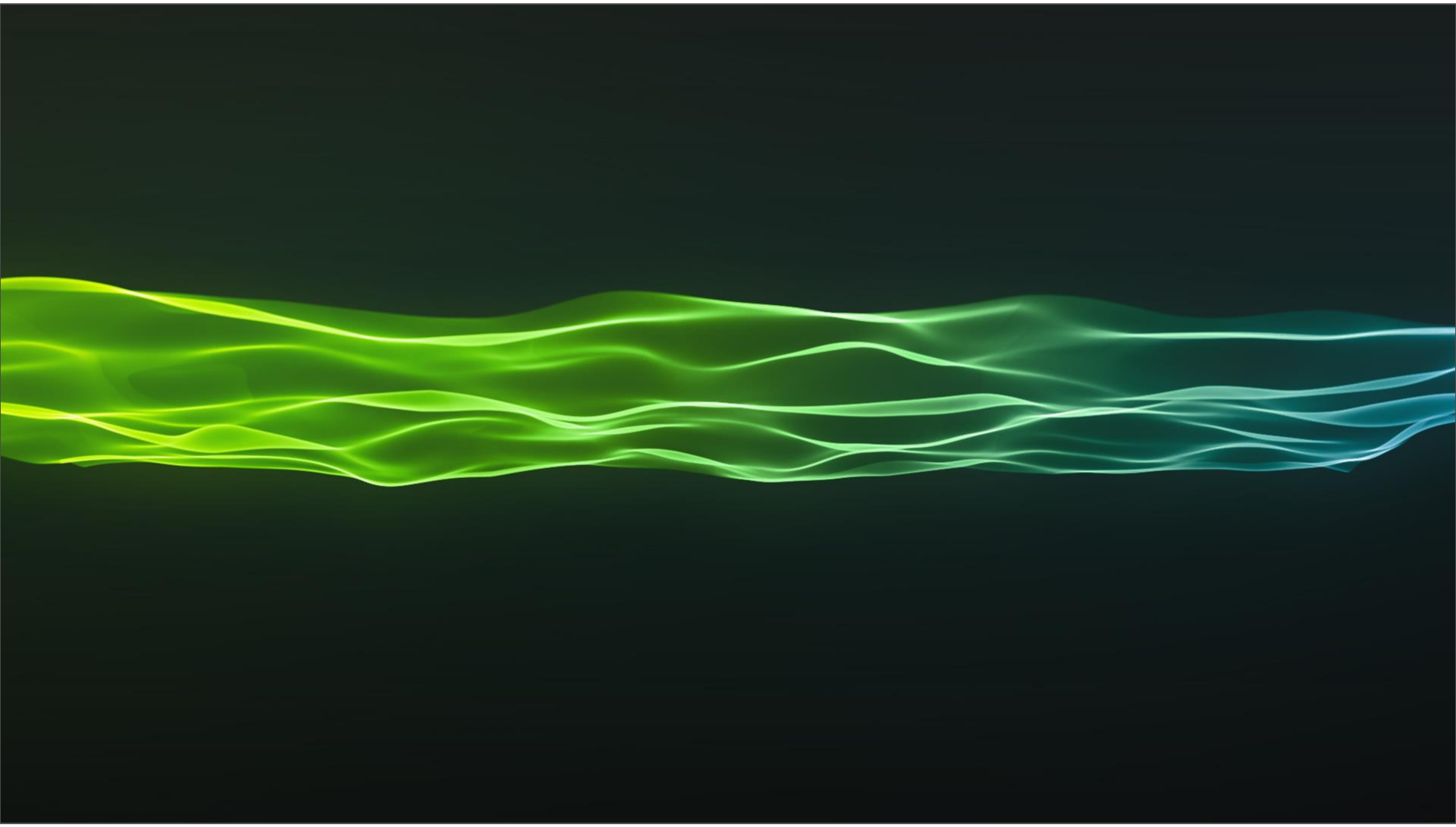
Enviroment Program



ML4 Environment Program

Developed in 2010-2011

Started from Wihlborgs Environment program

- incl Green Building
- incl Miljöbyggnad class Gold

+ BREEAM
+ Sunda hus as a method

Applies for the WHOLE site

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All installations included

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BREEAM® SE

BRE Environmental & Sustainability Standard

BES 5066: ISSUE 1.1

BREEAM-SE Ver. 1.0
Interim Assessment Report

Office building (Building E) at MAX IV

Prepared for:
Fastighets AB ML4
29 April 2013

BREEAM-SE 2013-001

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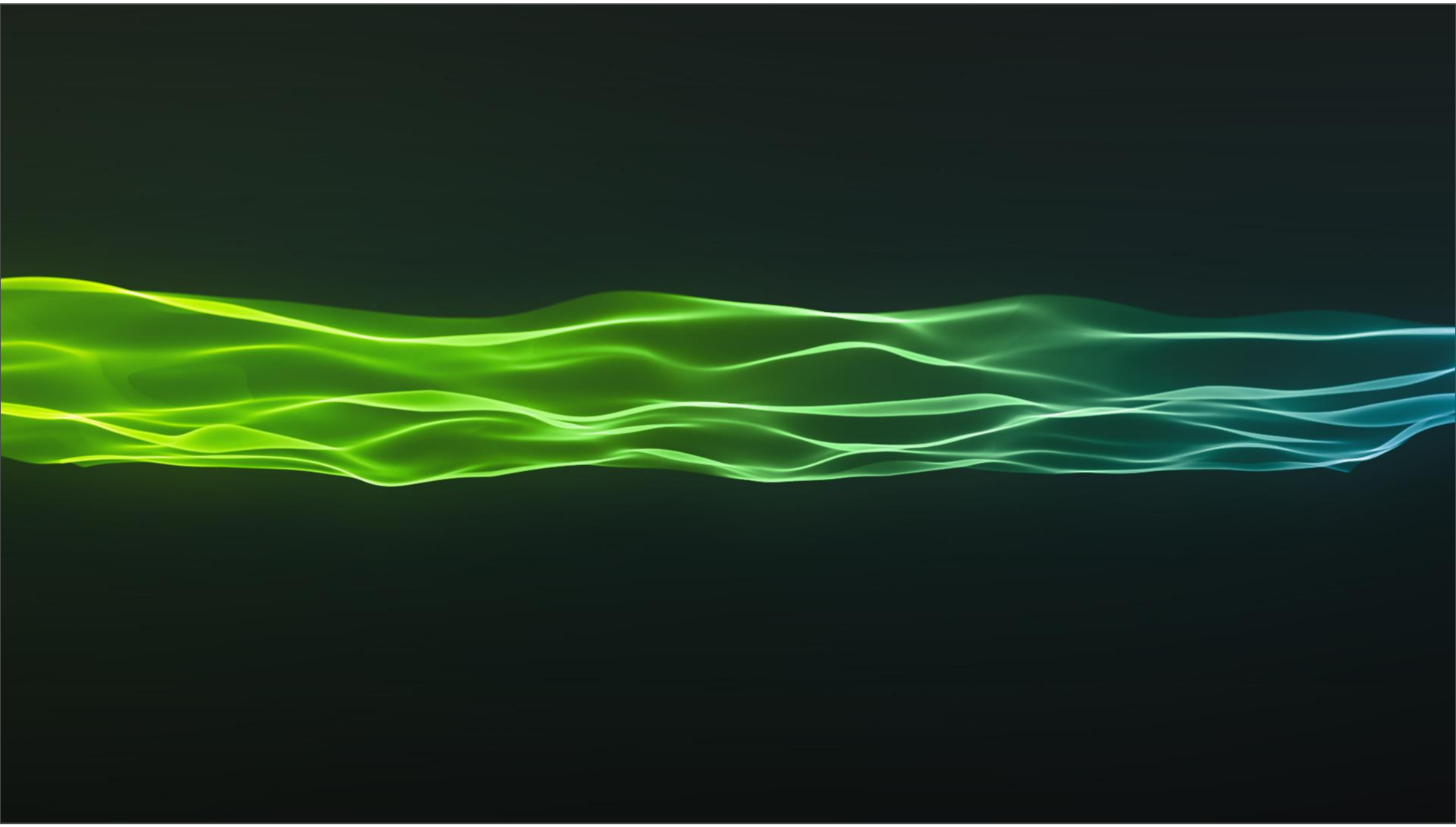
Construction site from above june 2011 -



2010-10-26

2011-06-11

2011-08-03

2011-11-14

2012-06-10

2012-11-12

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2013-04-17

2013-07-15

2013-08-02

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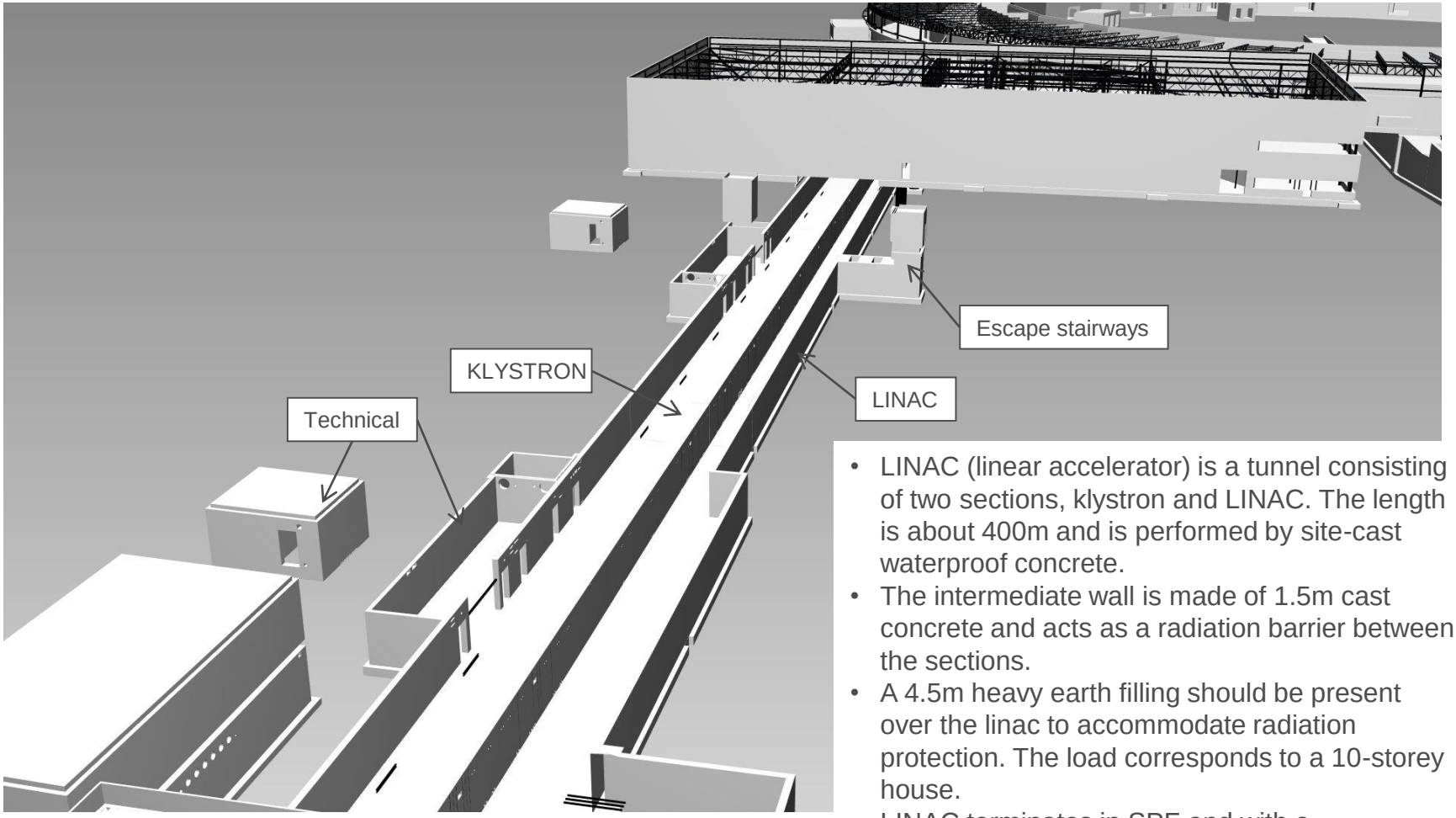
LINAC



- LINAC (linear accelerator) is a tunnel consisting of two sections, klystron and LINAC. The length is about 400m and is performed by site-cast waterproof concrete.
- The intermediate wall is made of 1.5m cast concrete and acts as a radiation barrier between the sections.
- A 4.5m heavy earth filling should be present over the linac to accommodate radiation protection. The load corresponds to a 10-storey house.
- LINAC terminates in SPF and with a “beamdump”.

Klystron

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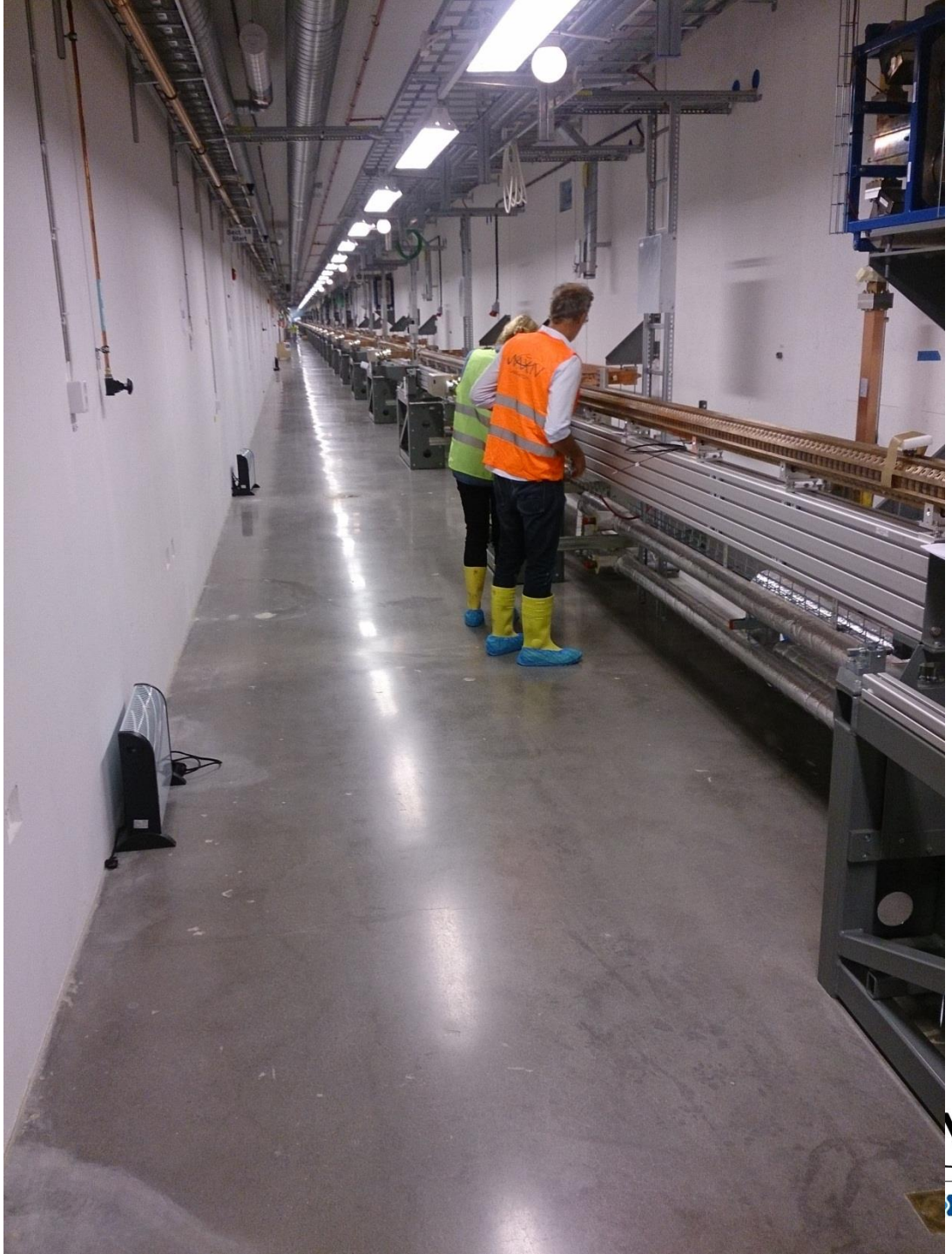
LINAC



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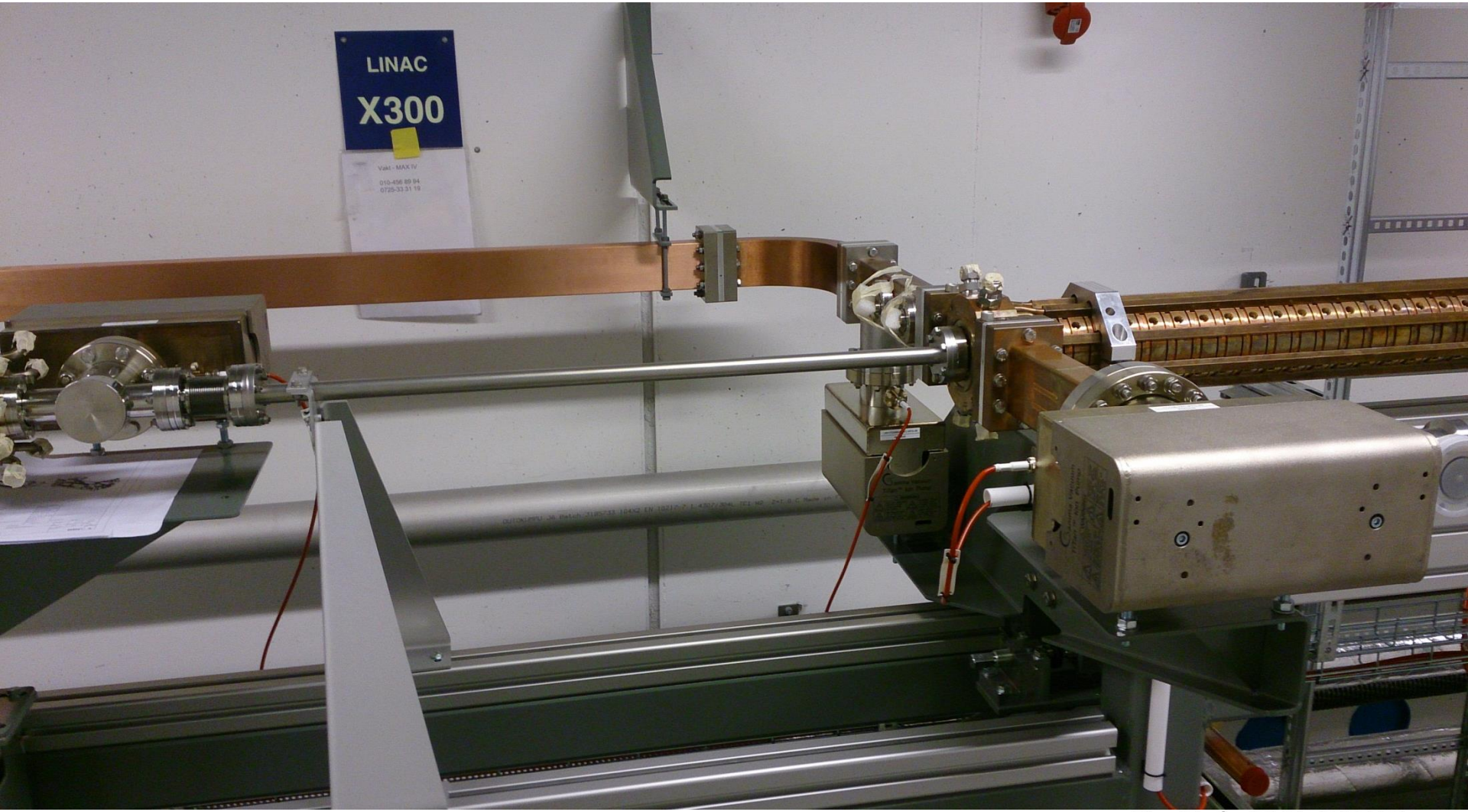
LINAC



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LINAC - Radiation protection doors

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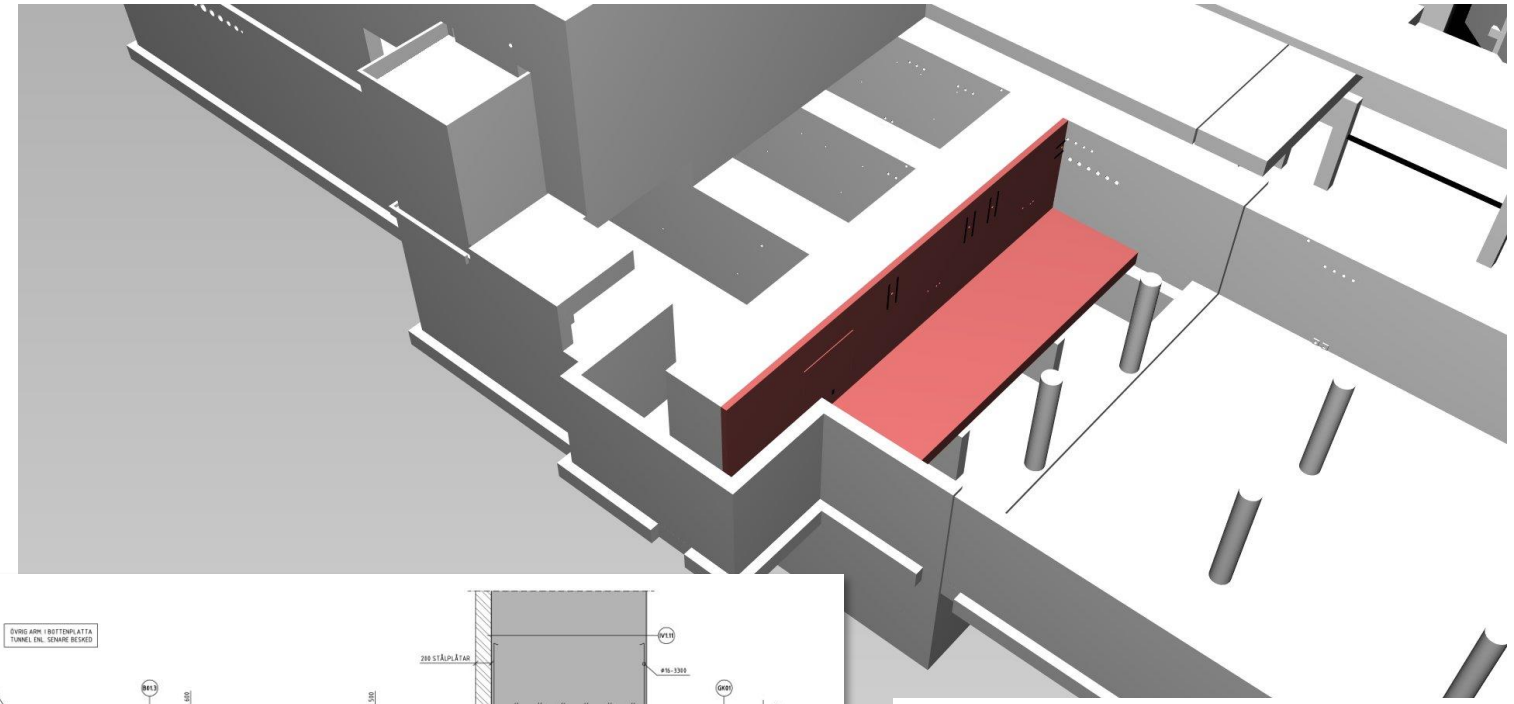
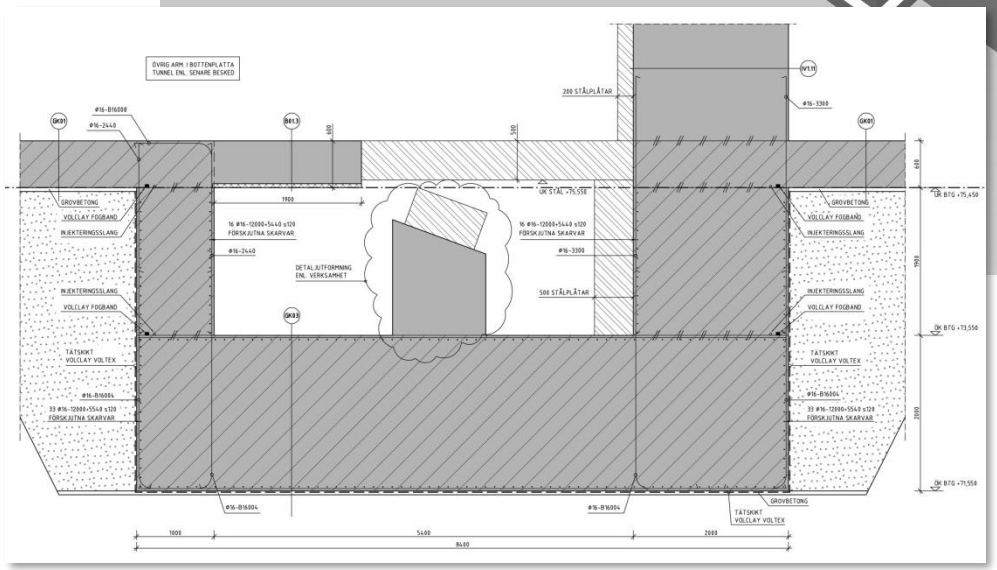
LINAC - BEAMDUMP





- "Leftover" electrons are captured in a so-called beam dump. Here, 2000mm concrete alone cannot handle the requirement. Solid steel plates with a total thickness of 500mm complement the radiation protection. In total, approximately 300 tons of complementary steel was required locally at a beam dump.

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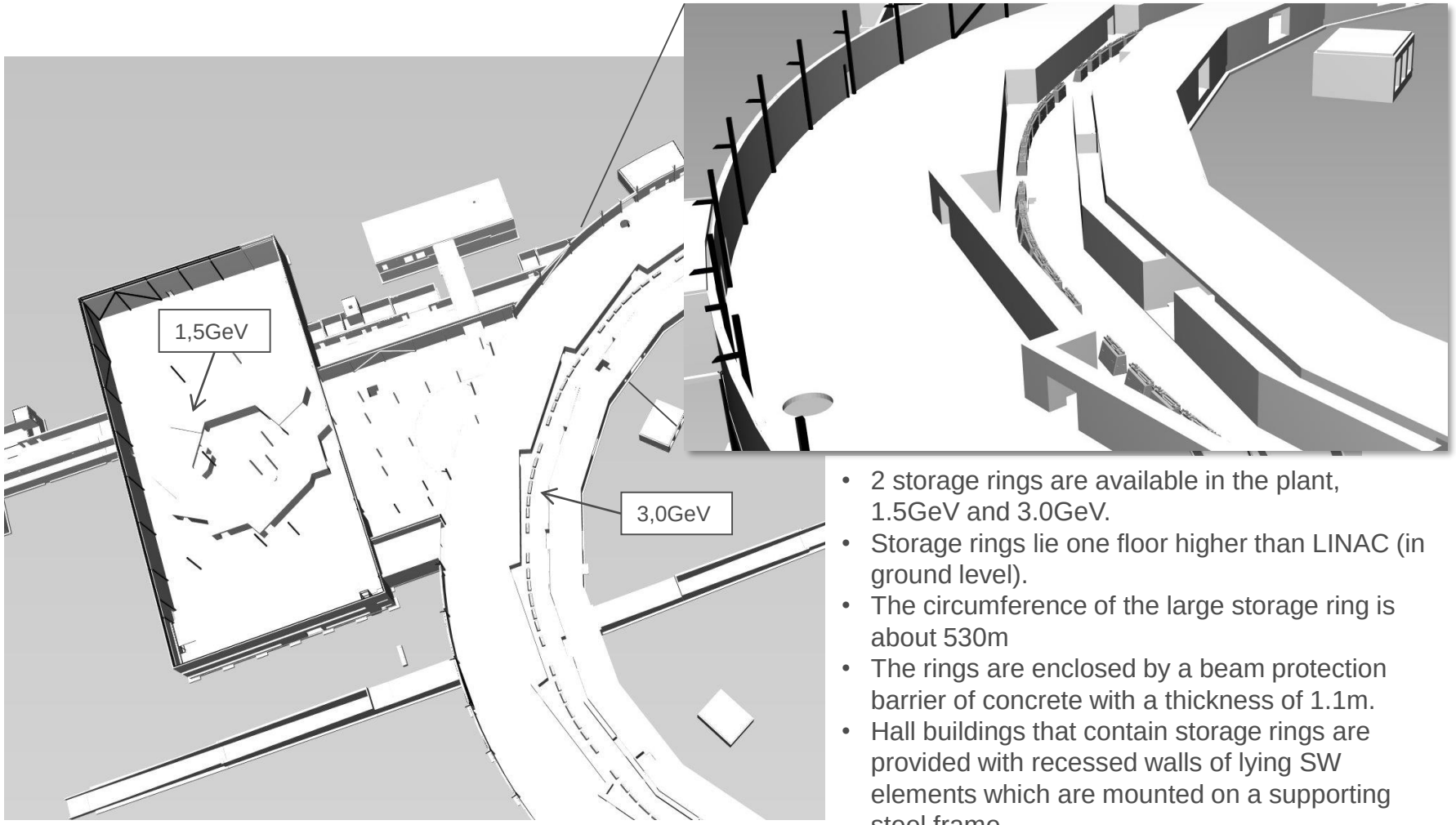
Storage Rings



- 2 storage rings are available in the plant, 1.5GeV and 3.0GeV.
- Storage rings lie one floor higher than LINAC (in ground level).
- The circumference of the large storage ring is about 530m
- The rings are enclosed by a beam protection barrier of concrete with a thickness of 1.1m.
- Hall buildings that contain storage rings are provided with recessed walls of lying SW elements which are mounted on a supporting steel frame.
- The heaviest wall element weighs about 17ton.

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Storage rings - Bottom plate

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Storage rings - SW

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Storage rings - Steel frame

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Storage Rings

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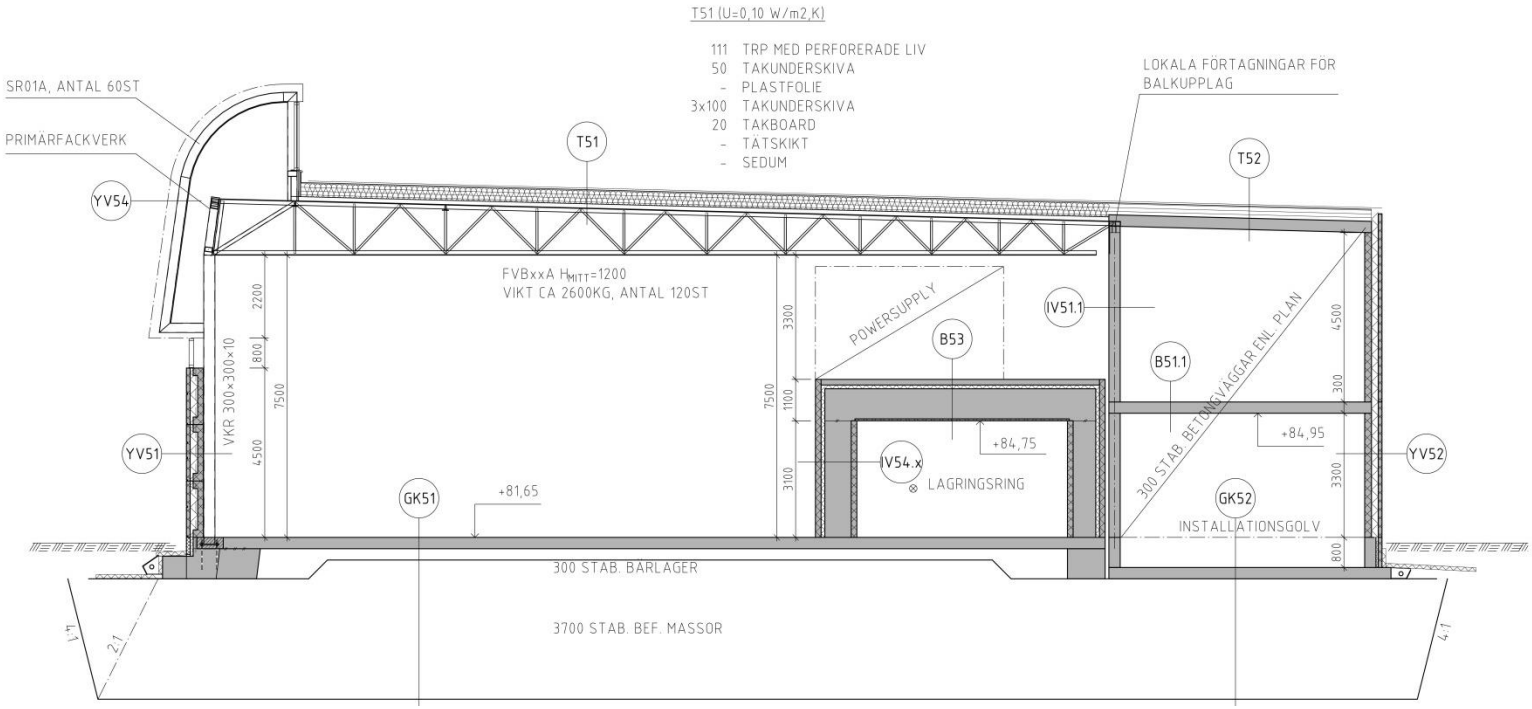
FOUNDATION



- 4m of existing moraine clay is excavated.
- 3.7m of these masses are backfilled and packed in layers of 300mm after mixing in lime use where the finished stabilization gets an E-module of about 4000MPa
- The top 0.3m is mixed with cement mortar, where the finished stabilization gets an E-module of about 8000MPa.
- A 300mm thick concrete floor is cast on top of a layer of protective concrete. The entire construction interacts and becomes very rigid, which is favorable with respect to vibrations.

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FOUNDATION - Stabilization

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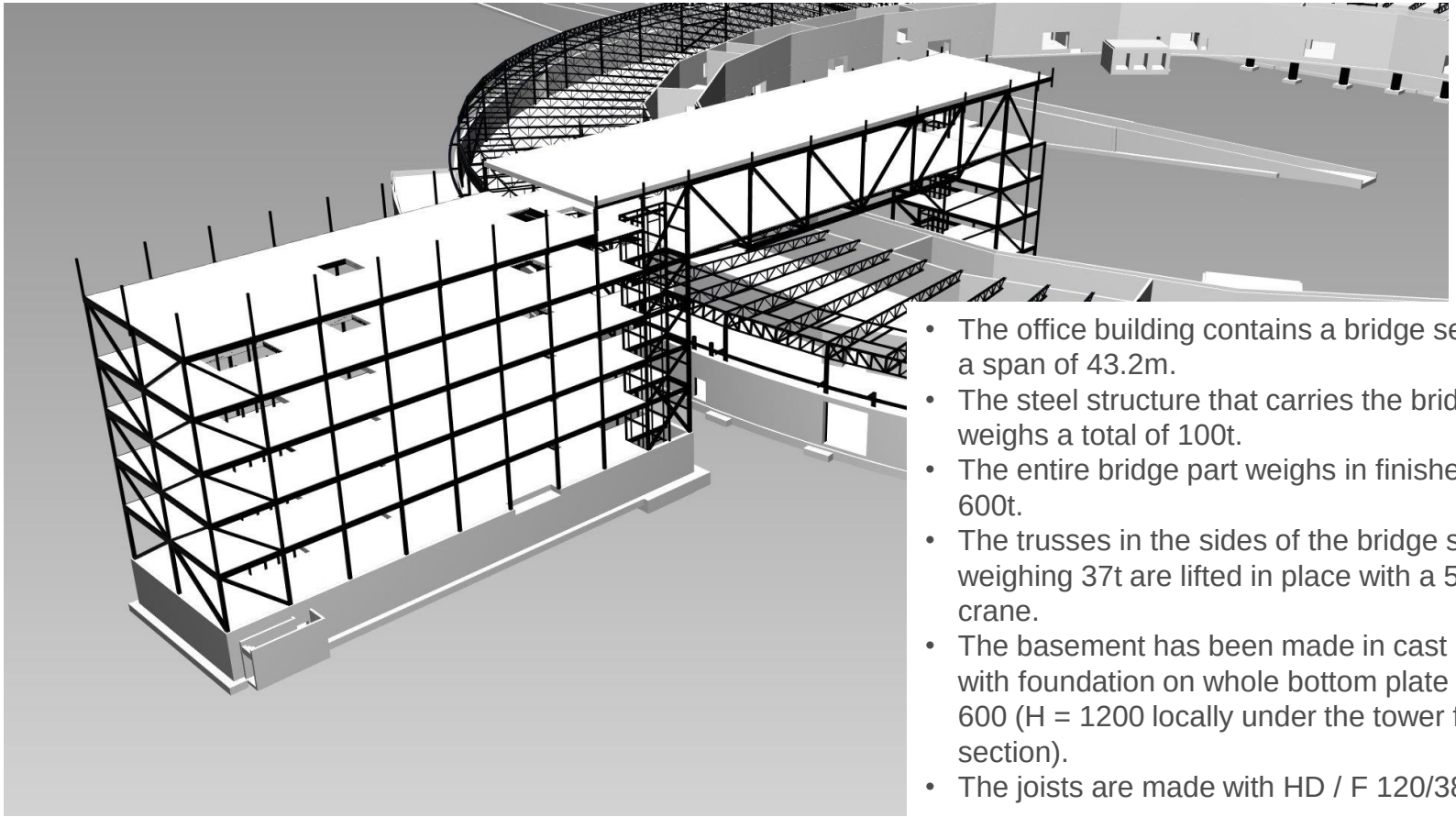
OFFICEBUILDING



- The office building contains a bridge section with a span of 43.2m.
- The steel structure that carries the bridge part weighs a total of 100t.
- The entire bridge part weighs in finished version 600t.
- The trusses in the sides of the bridge section weighing 37t are lifted in place with a 500-ton crane.
- The basement has been made in cast concrete with foundation on whole bottom plate with H = 600 (H = 1200 locally under the tower for bridge section).
- The joists are made with HD / F 120/38

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OFFICEBUILDING

It took 2 cranes to lift the 37ton heavy truss in place. The nearest closest crane weighs 500 tonnes.

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Technical information

- Info about amount of Steel.
- Info about where the Steel are made
- How much is galvanised
- Hoe much is painted on site

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www.maxlabiv.se

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