

*East Hall under construction - 1962*

# Shielding status

Erwan Harrouch



ENGINEERING  
DEPARTMENT



**EAST AREA RENOVATION**

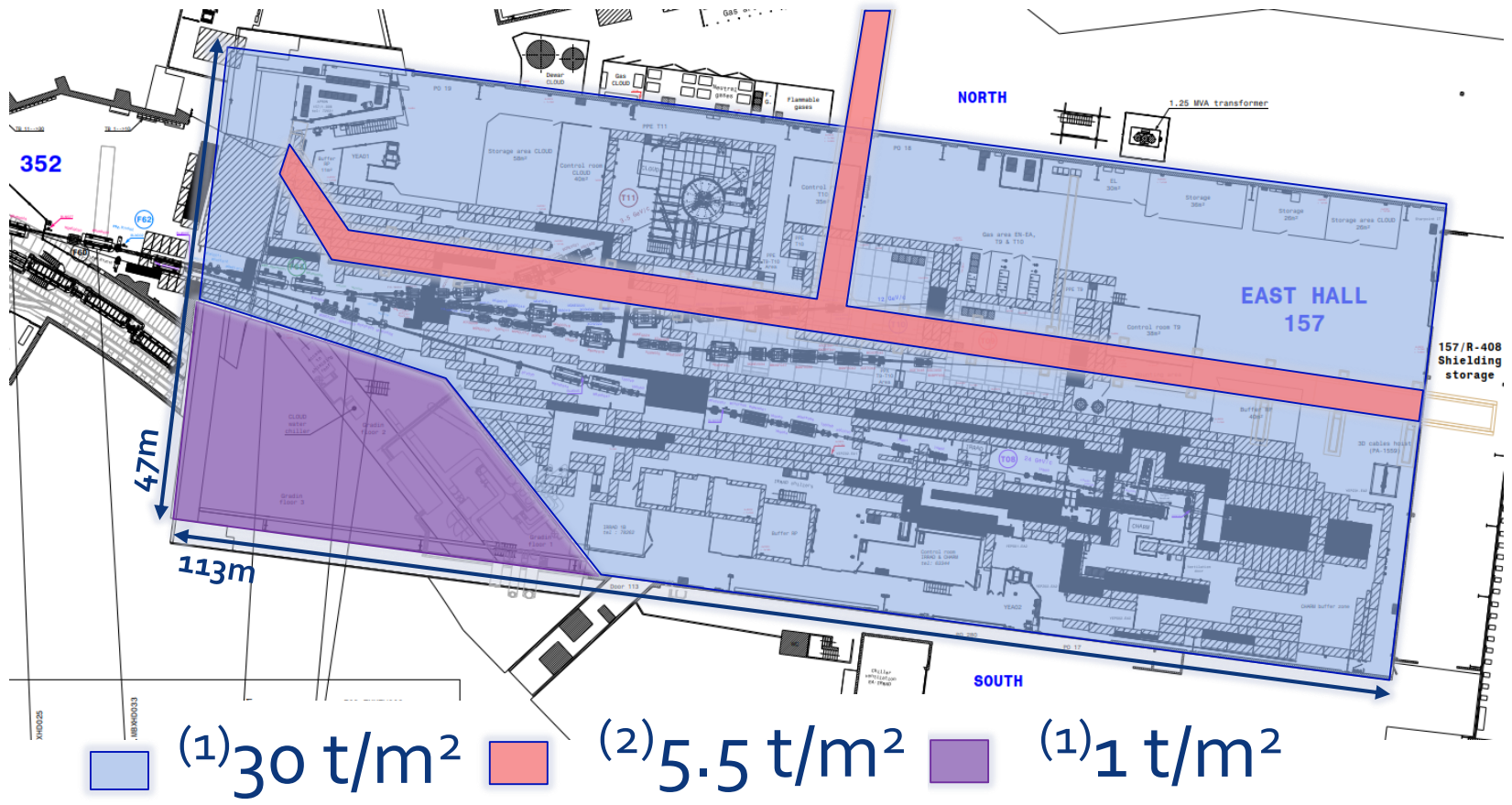


# Index

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- Walls(Ground loading situation)
- Roofs
- Sealing
- Dumps

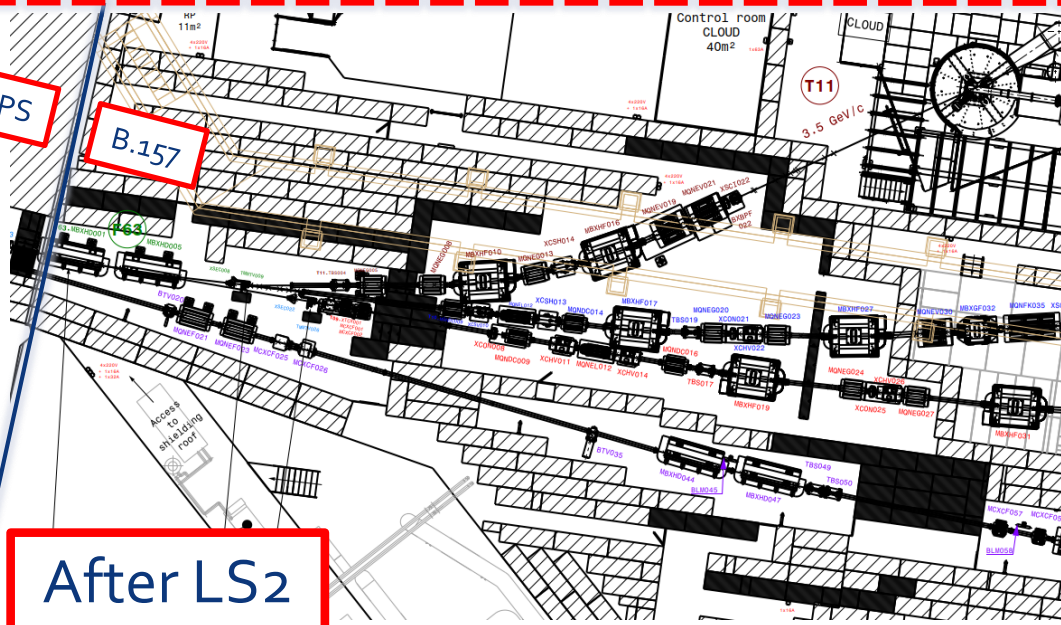
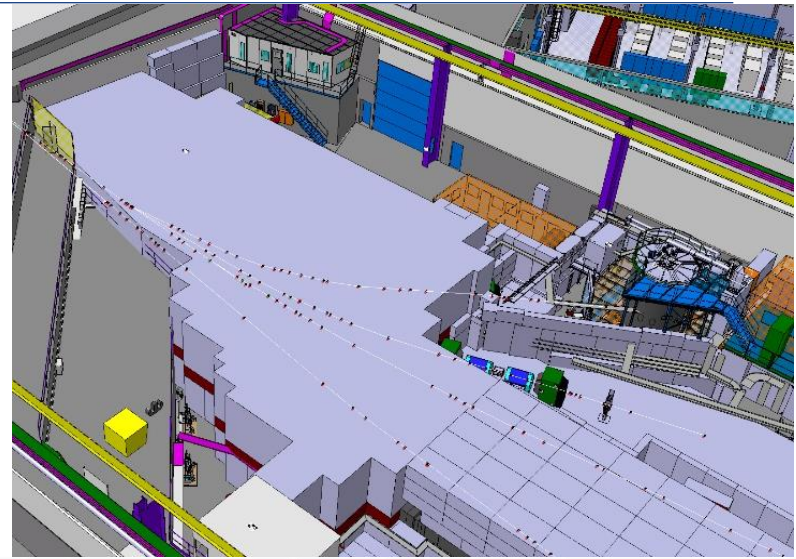
# Maximum permissible load in b.157



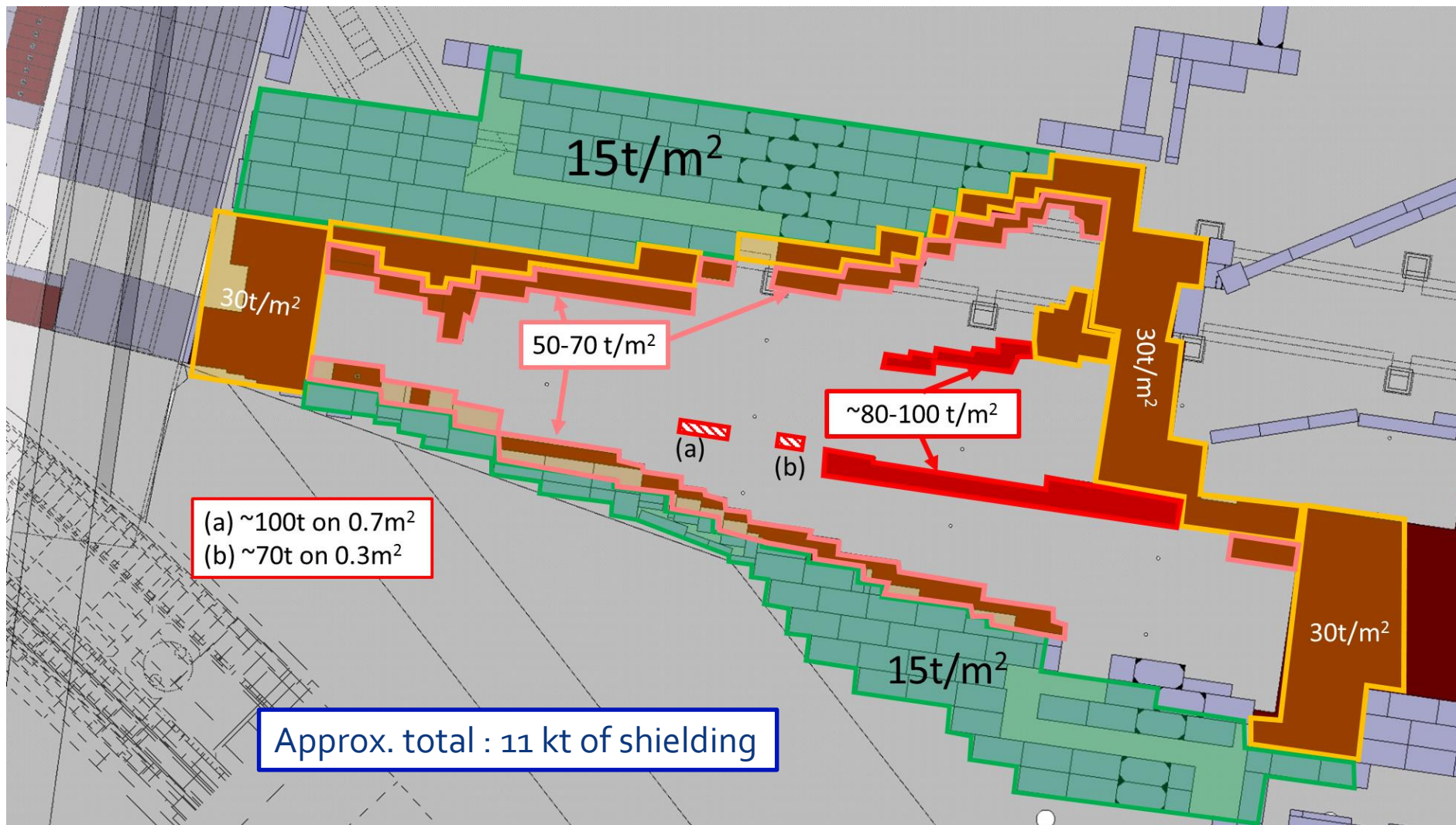
(1) From the construction drawings

(2) From Raul Fernandez (SMB-SE) calculations

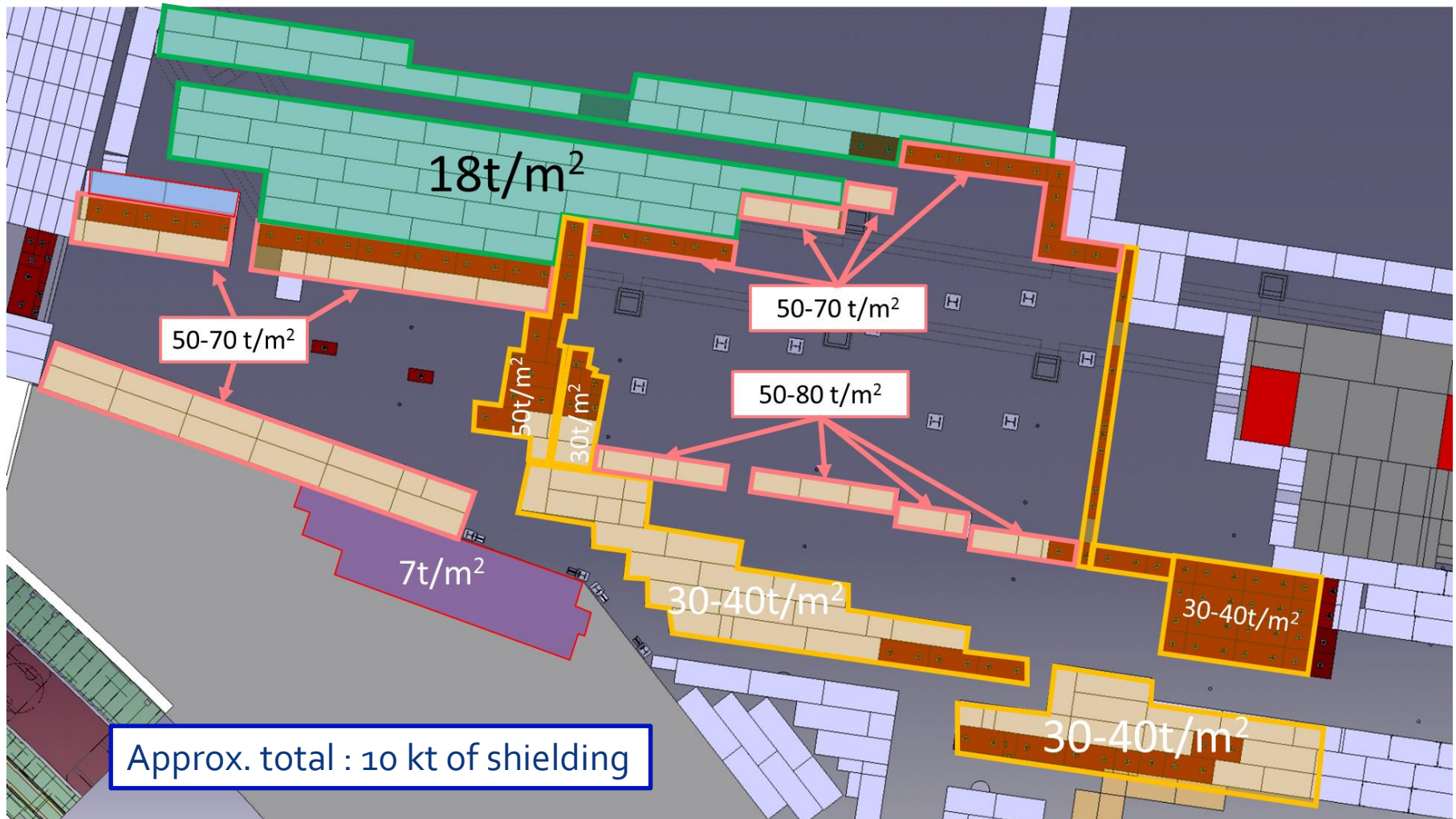
# Shielding before and after LS2



# Situation before LS2 : Ground loading



# Situation after LS2 : Ground loading



# Summary + Next steps

	Max load above the gallery	Max load above b.157's slab	Max load above the gradins
Max load permissible	5.5 t/m <sup>2</sup>	30 t/m <sup>2</sup>	1 t/m <sup>2</sup>
Max load before LS <sub>2</sub>	70 t/m <sup>2</sup>	100 t/m <sup>2</sup>	0 t/m <sup>2</sup>
Max load after LS <sub>2</sub>	60 t/m <sup>2</sup>	70 t/m <sup>2</sup>	7 t/m <sup>2</sup>

## Next steps :

- SMB – Raul Fernandez Ortega :

Identify critical areas, Consider local reinforcement (technical gallery), Consider load & destructive tests (assess concrete composition), Appeal to Geotechnics company

- EA – Erwan Harrouch/Damien Brethoux :

Relocate loading areas (avoid the technical gallery), Optimize load distribution

- RP – Robert Froeschl/Elpida Iliopoulou :

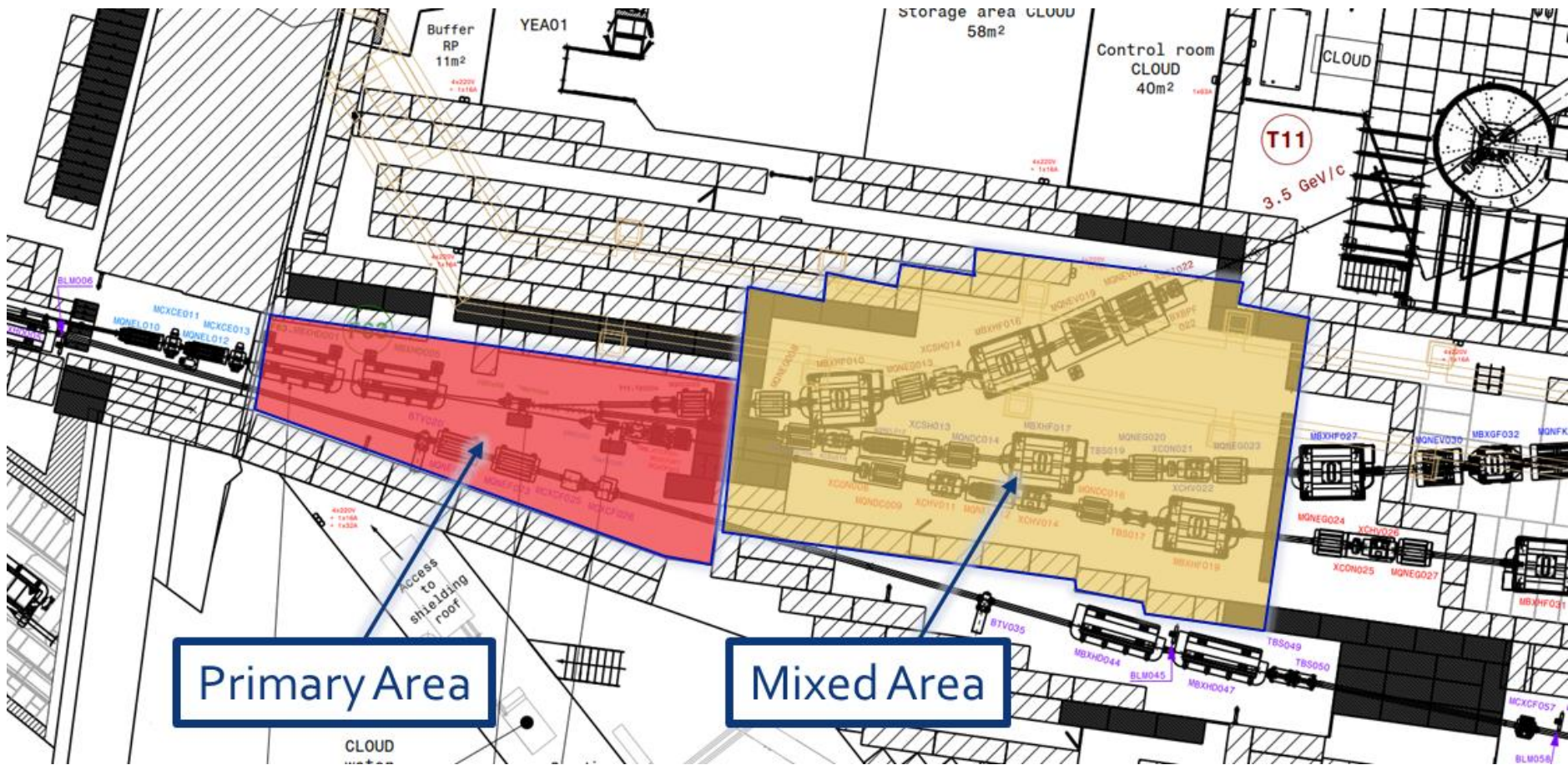
Optimize mixed area shielding (include magnets in simulations)

- HSE – R. Morton/M. Andreini :

Define acceptance procedure, Assess seismic response, Propose CERN-wide guidelines (create database)

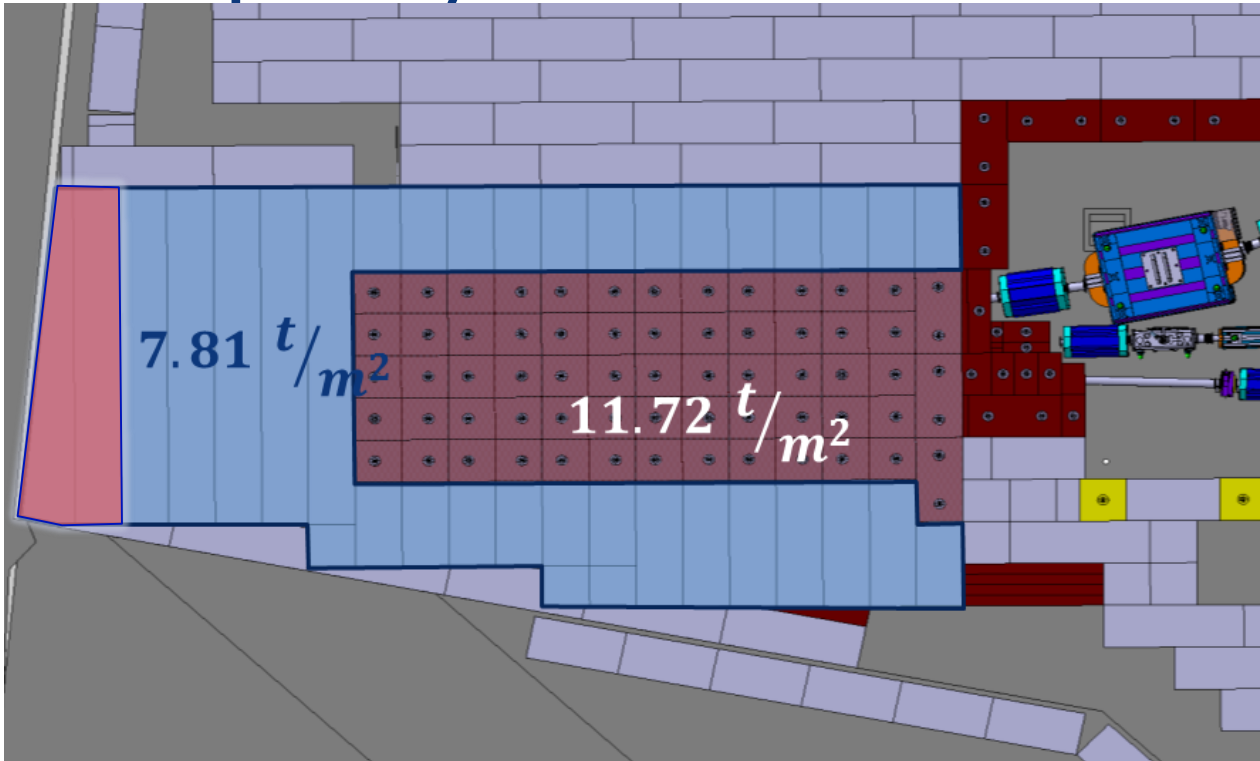
- **This freeze the design of the supporting structure for the mixed area's roof at the moment**
- Supporting beams for the primary area's roof should not be affected

# Roofs





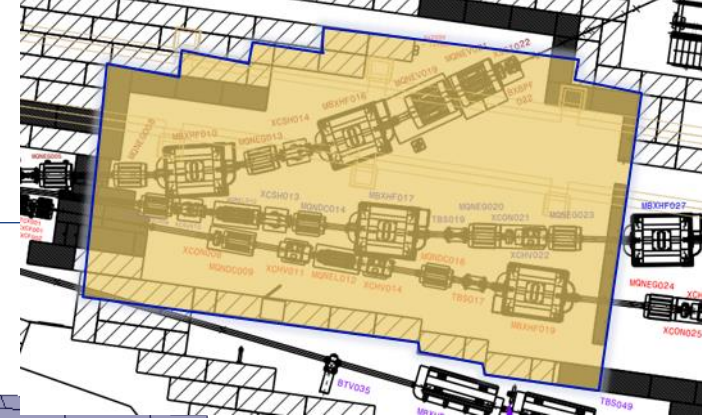
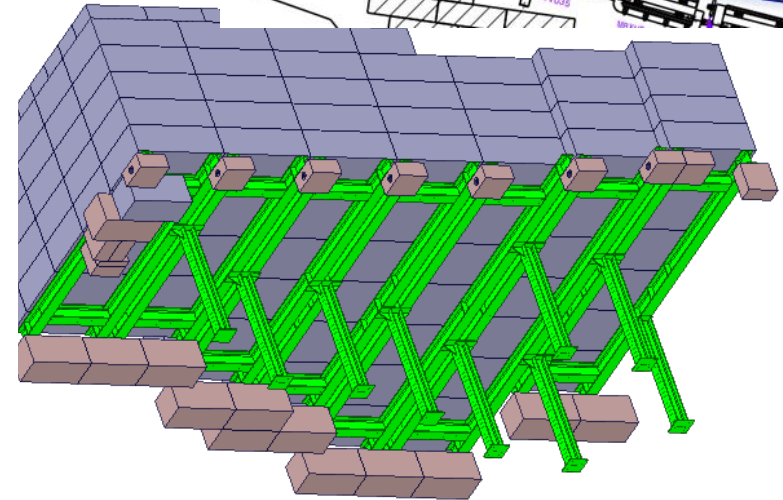
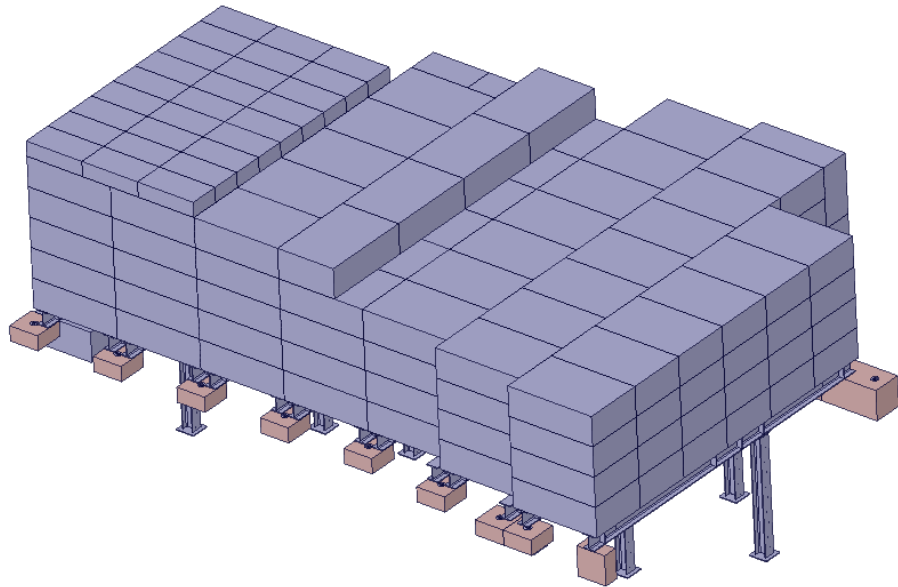
# Roof primary area



- Roof made of 4.8m of shielding with a localized layer of 0.8m of iron
- Design status of the reinforced concrete beam to support the roof (L. Dougherty) :
  - 400\*400 reinforced concrete beam :
    - Designed (Positive feedback from HSE)
    - (Iteration on-going with M. Lazzaroni to fit the design with the framework contract)
  - **Tailor made block** being designed

# Roof Mixed area

- Metallic structure to support the roof
- 4.4m to 3.2m of concrete



Design status (E. Harrouch) :

- First iteration started with HSE to validate the design with the Eurocode
- Ground loading situation need to be addressed to pursue calculation (Re-design of the support needed in collaboration with SMB)

# Sealing primary area

- NUVIA and ONET contacted to get a proposition (No answer yet),
- Design to seal the roof ready. Prototype could be manufactured and tested (Need of standard blocks, space, renting of ventilation unit),
- Solution for the "drains" to be found/designed.



# Dumps (Michael Lazzaroni)

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- Assembly of standard block except blocks for tungsten insert
- Tungsten insert
- Status unknown (Sorry)

# Thanks for your attention !

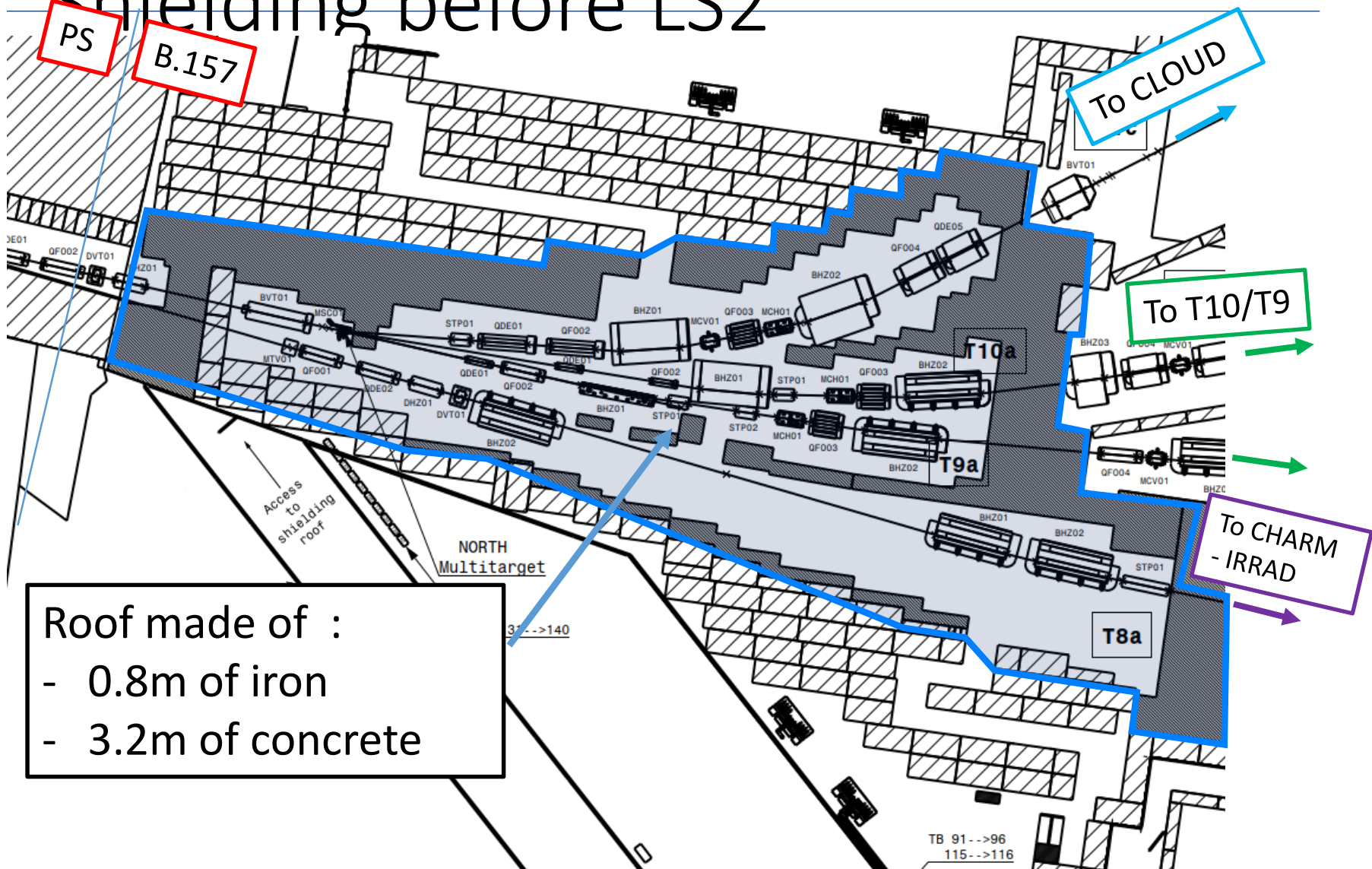


## **EAST AREA RENOVATION**

# Loading of the “Gradins” (1 t/m<sup>2</sup> allowed)

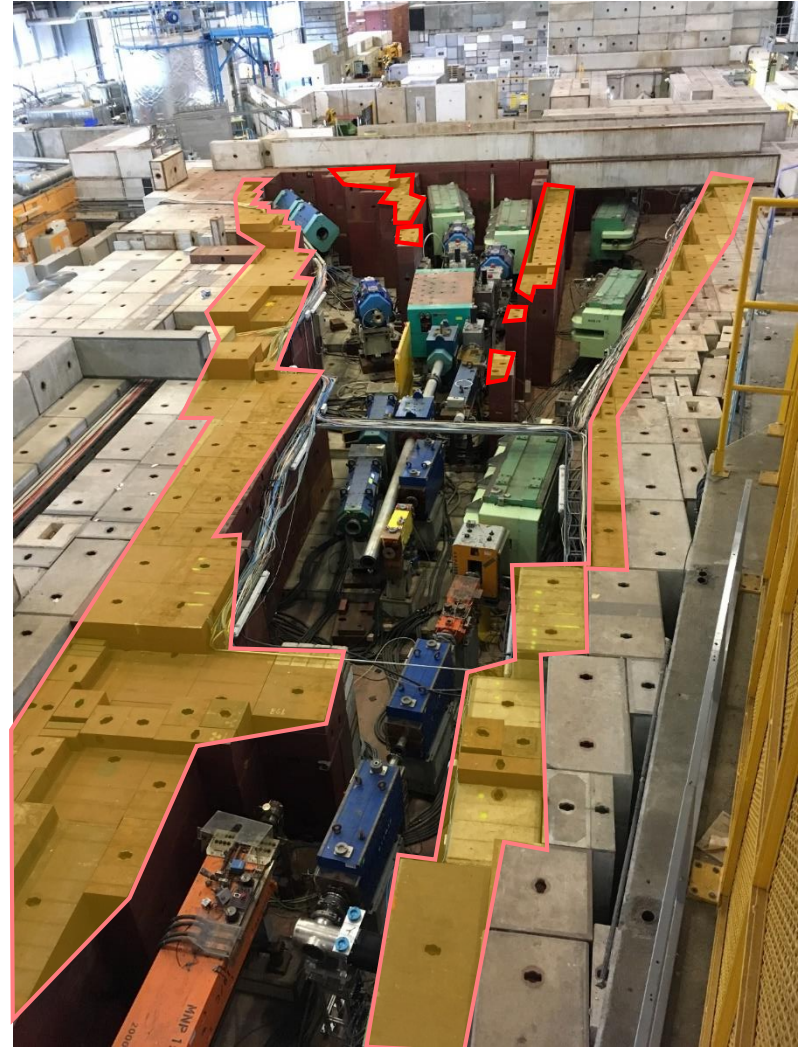


# Shielding before LS2



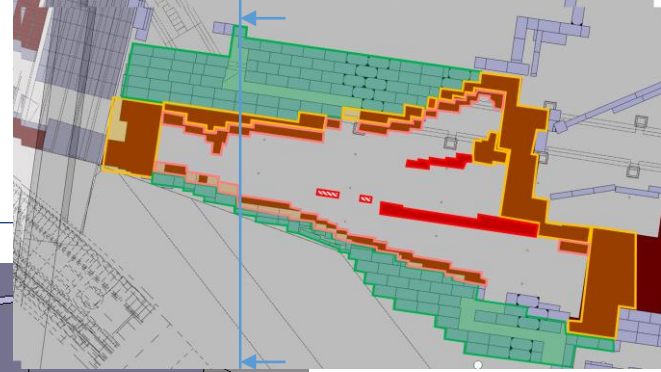
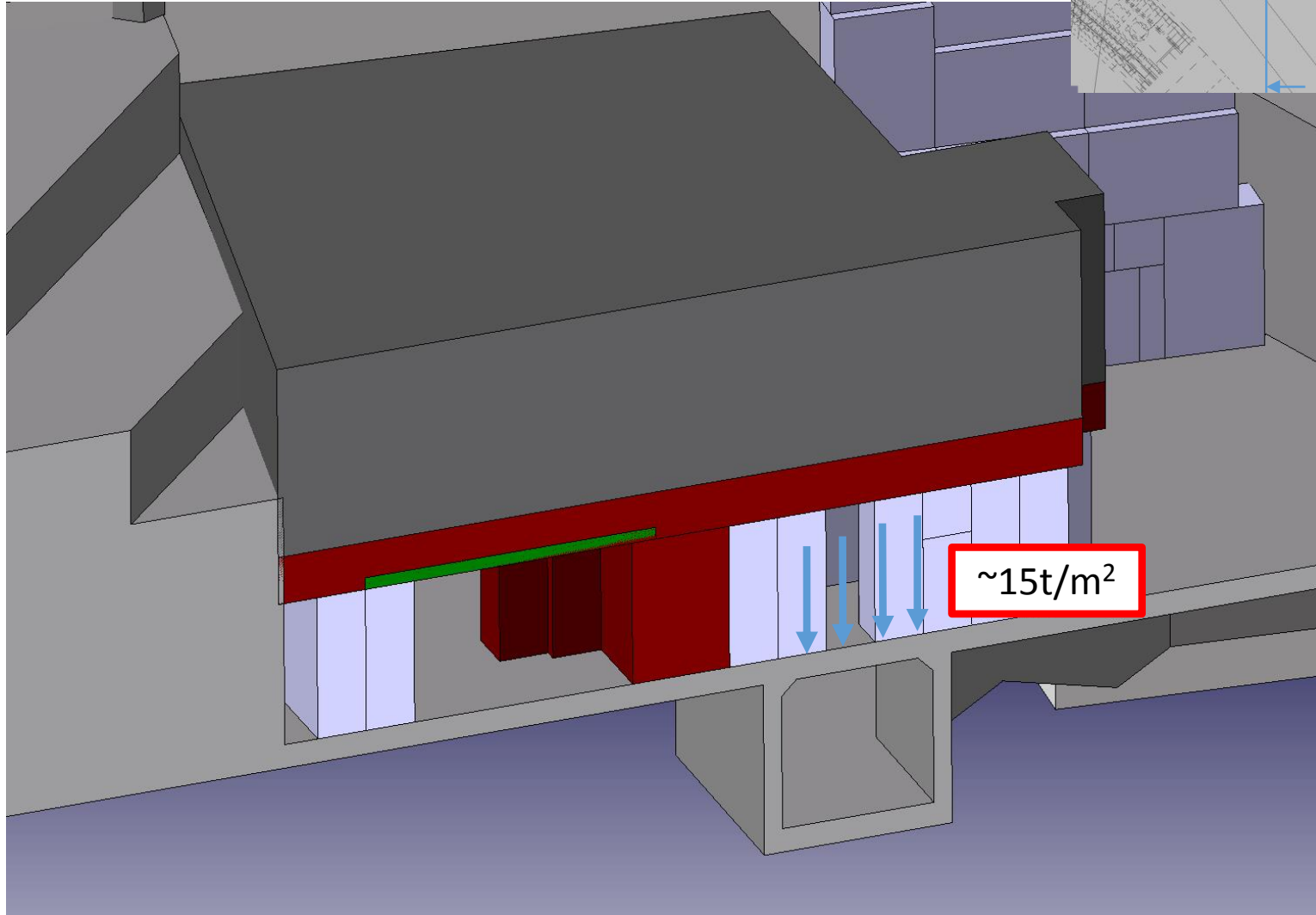
Roof made of :  
- 0.8m of iron  
- 3.2m of concrete

# Shielding before LS2

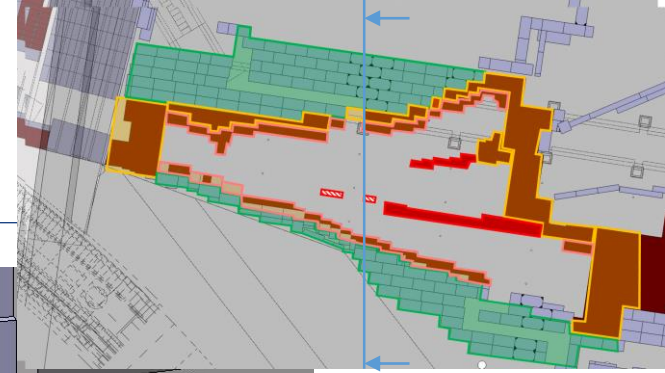
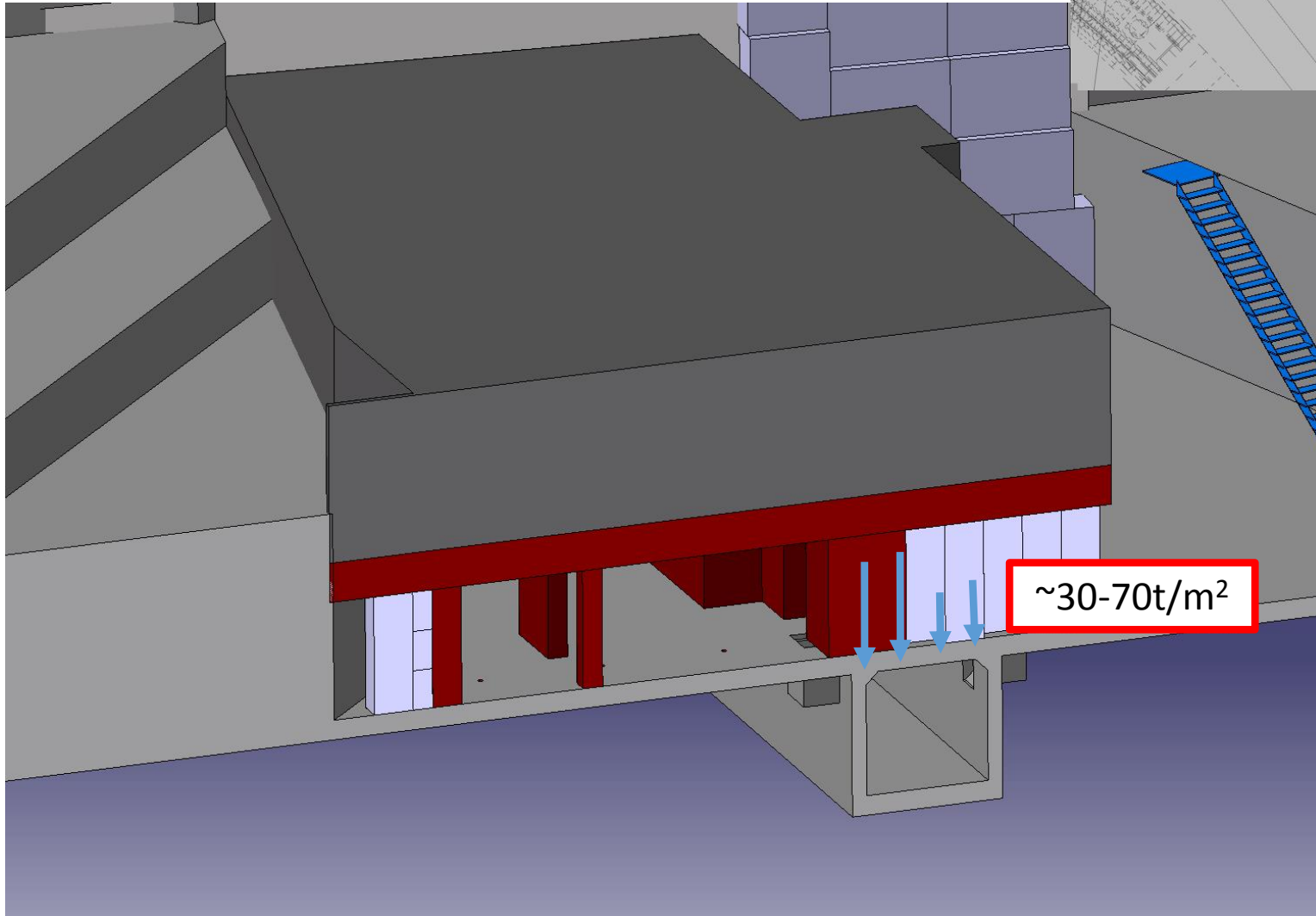




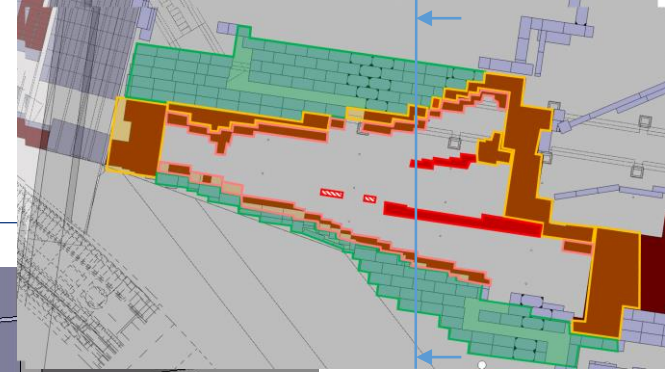
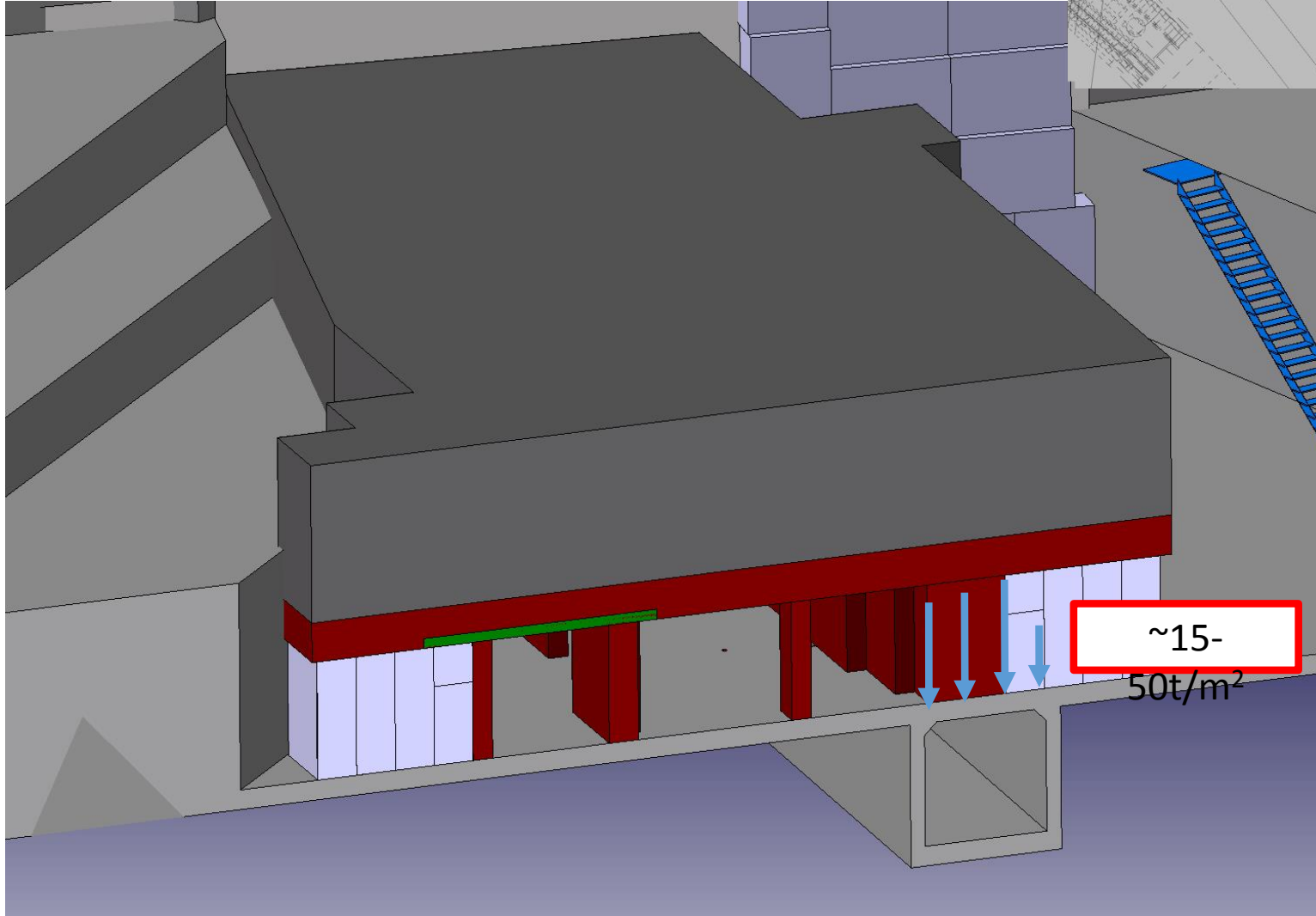
# Situation before LS2 : Ground loading



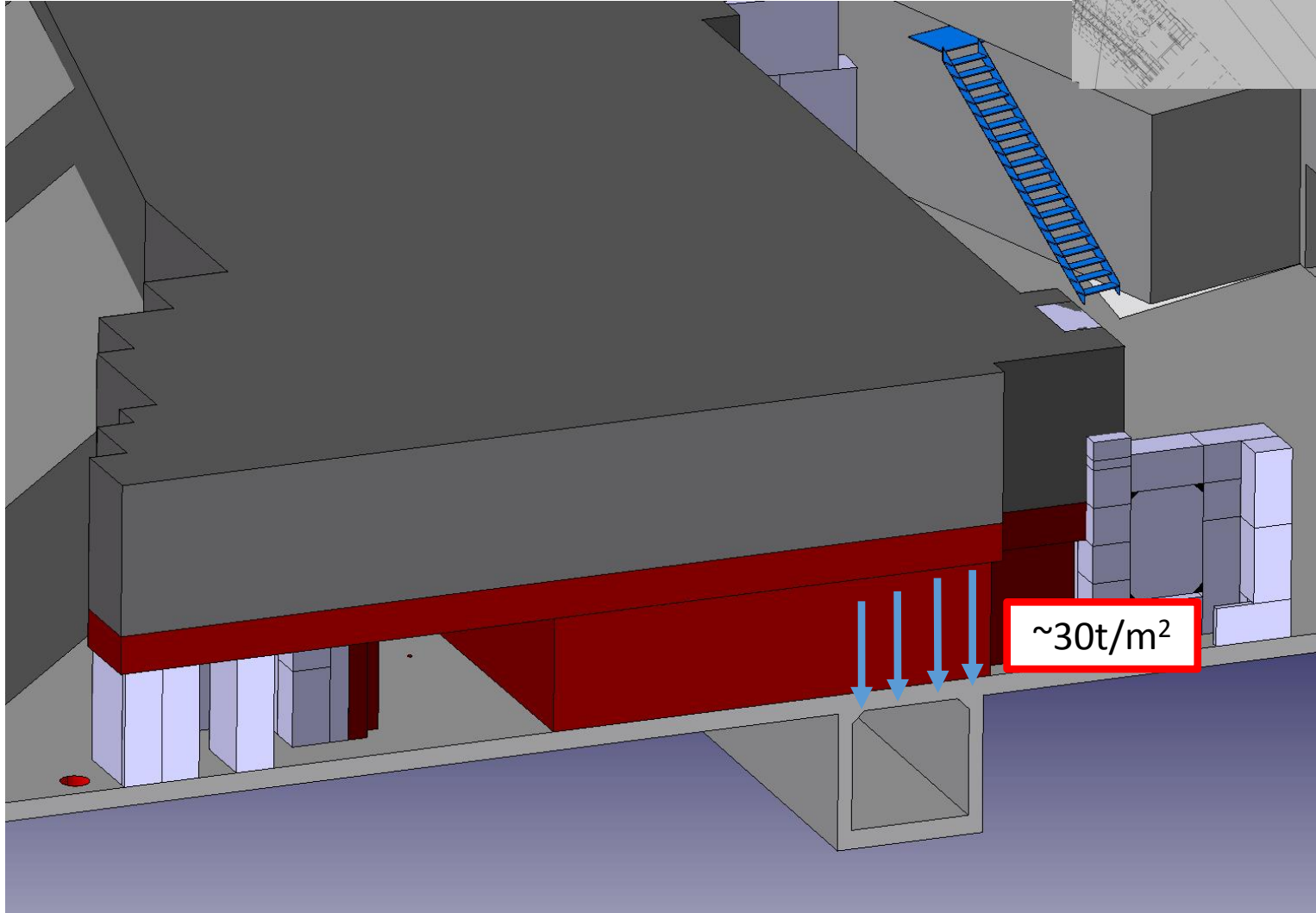
# Situation before LS2 : Ground loading



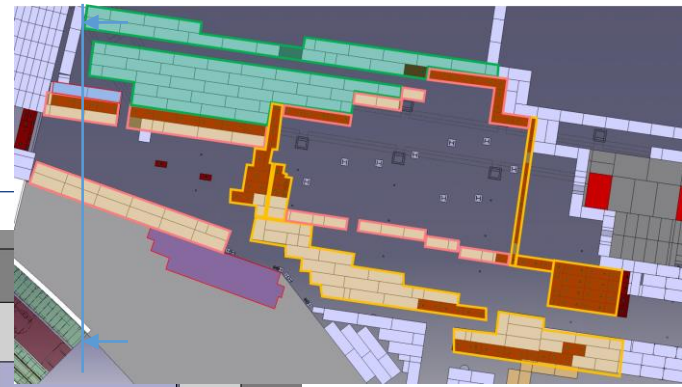
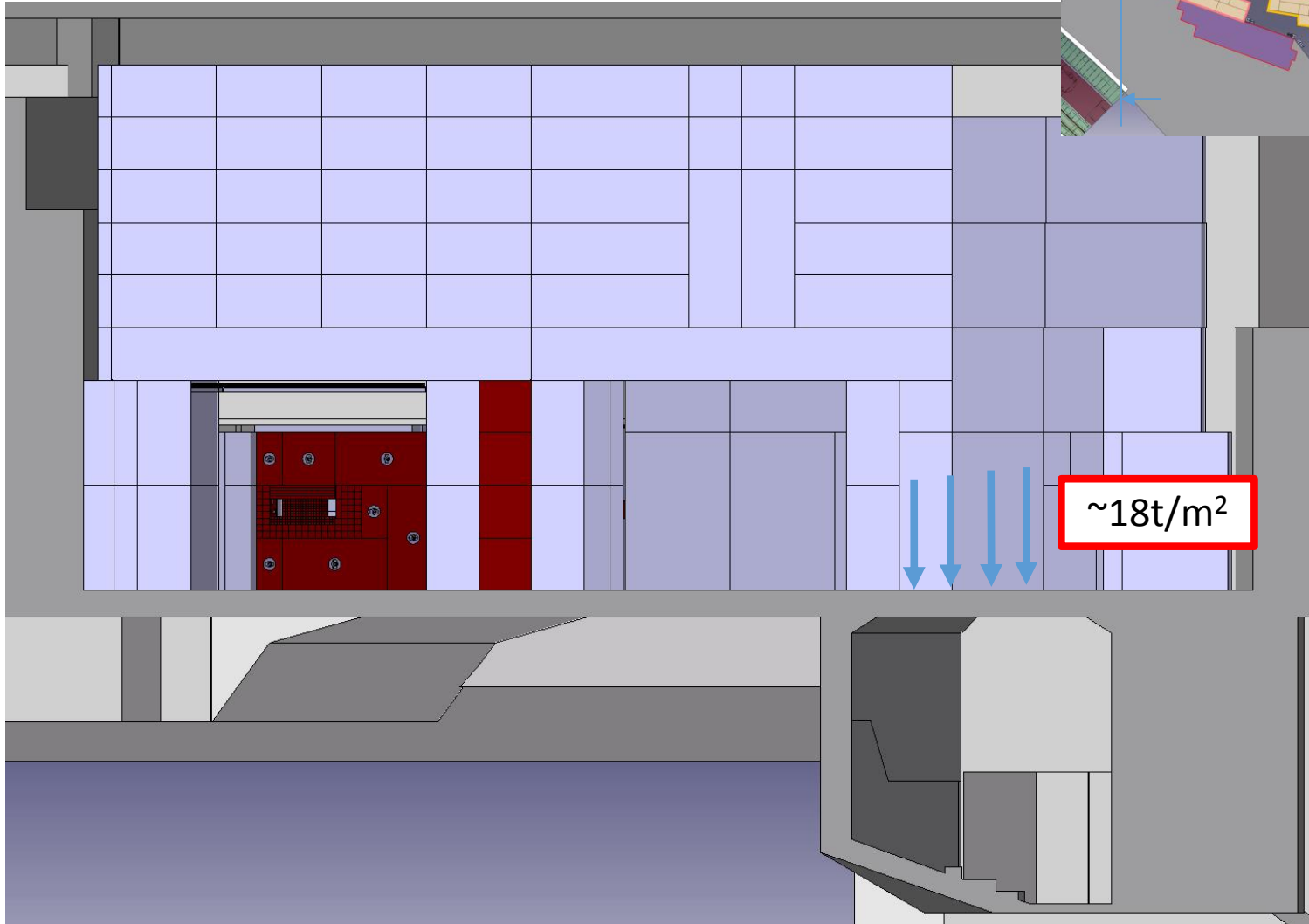
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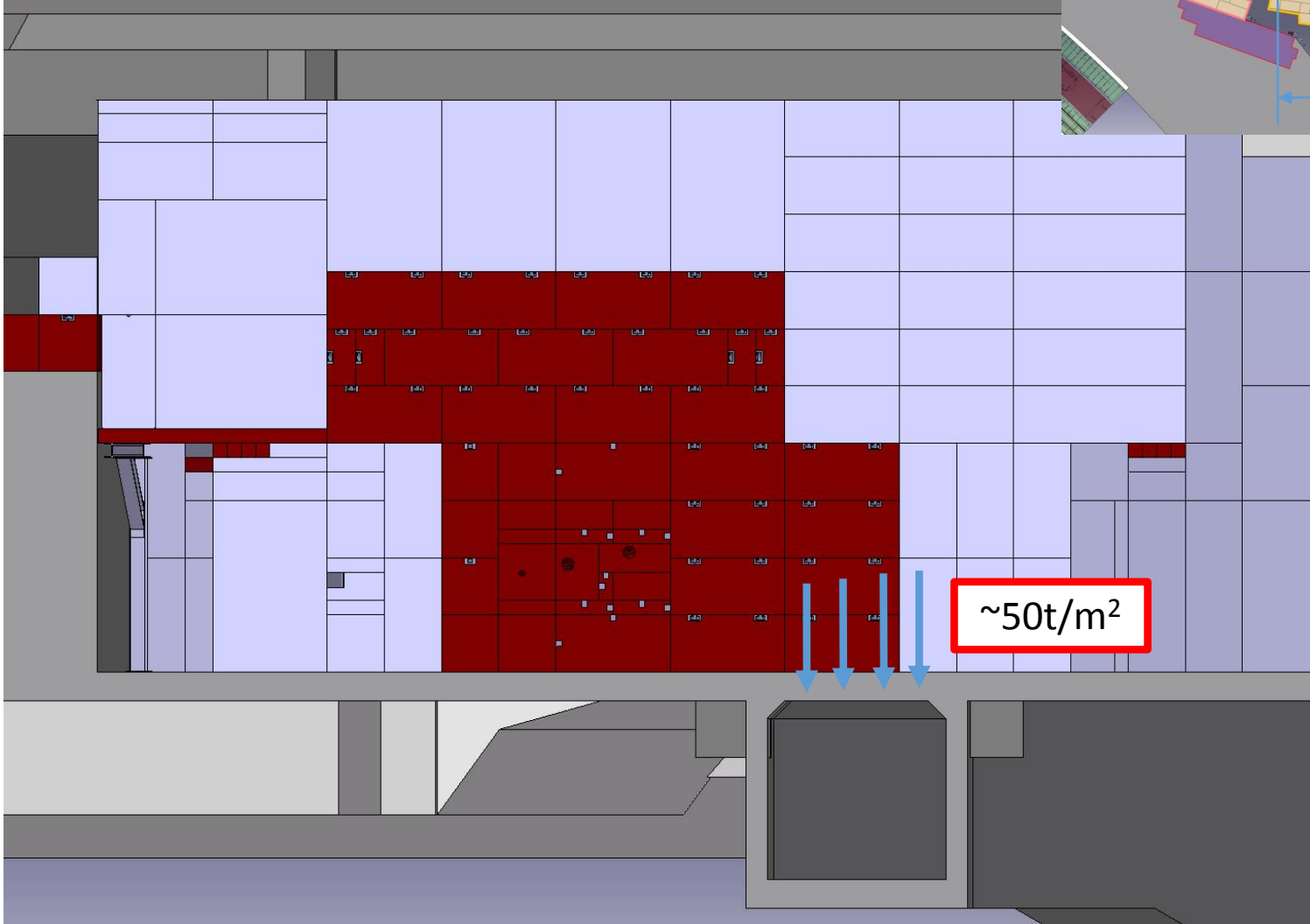
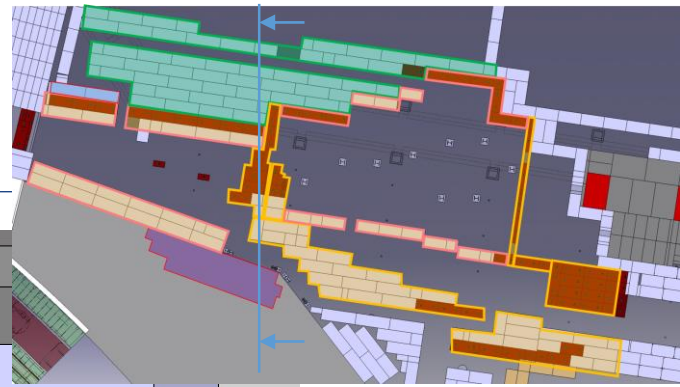
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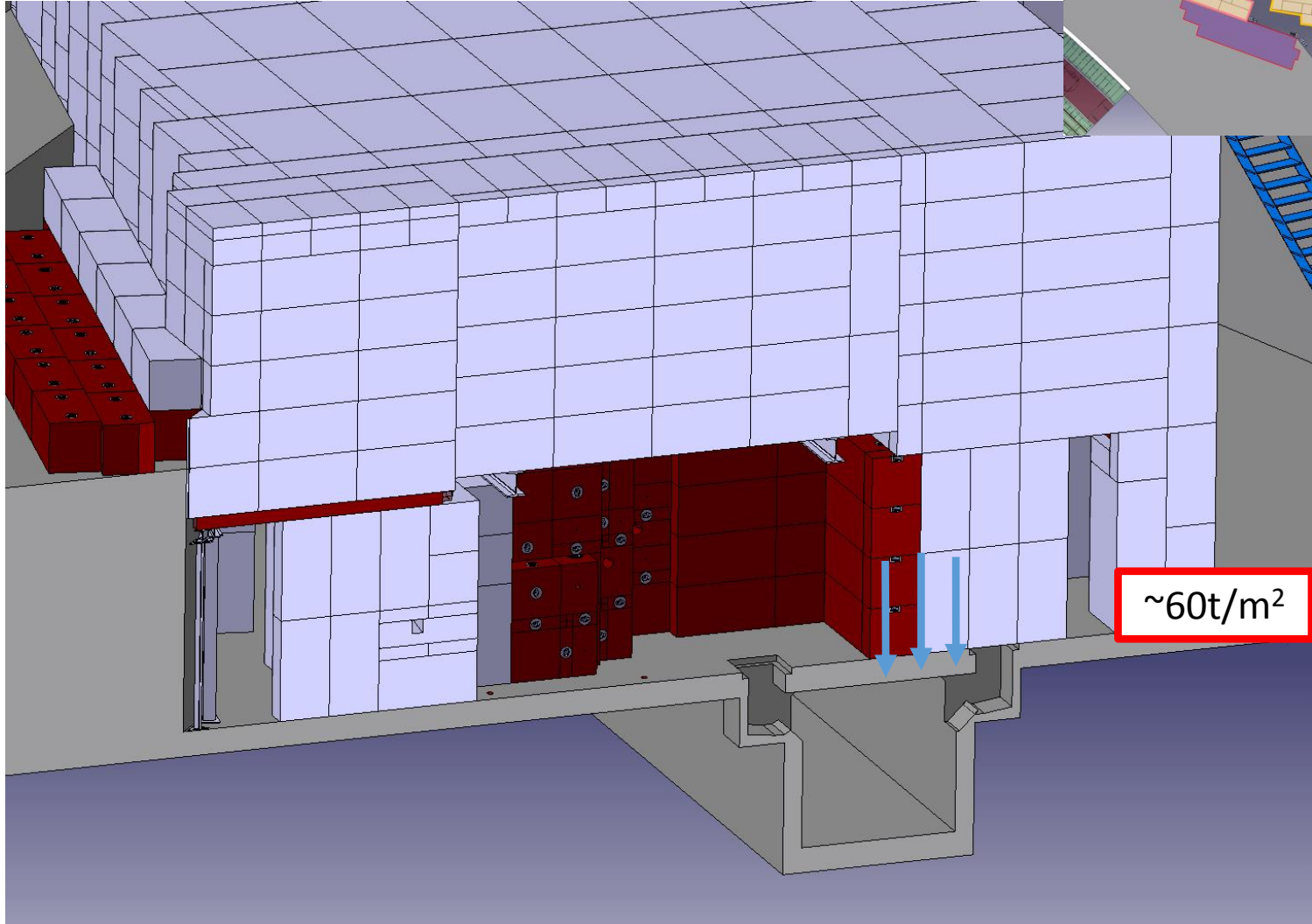
# Situation after LS2 : Ground loading



# Situation after LS2 : Ground loading



# Situation after LS2 : Ground loading



# Situation after LS2 : Ground loading

