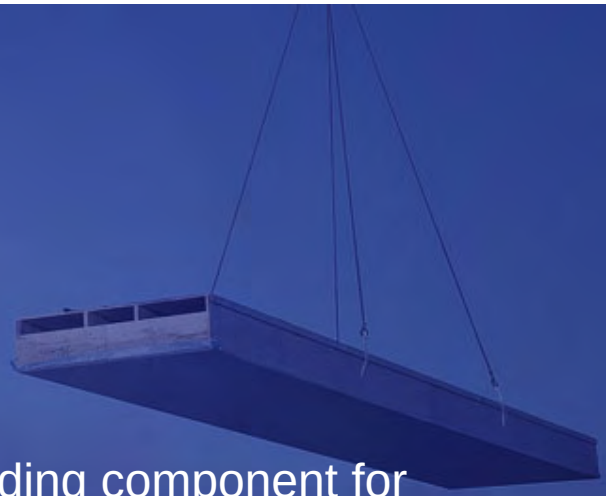
Industrially produced roofing system Kerto-Ripa™ for non-residential buildings

Case: Department store in Raisio, Finland

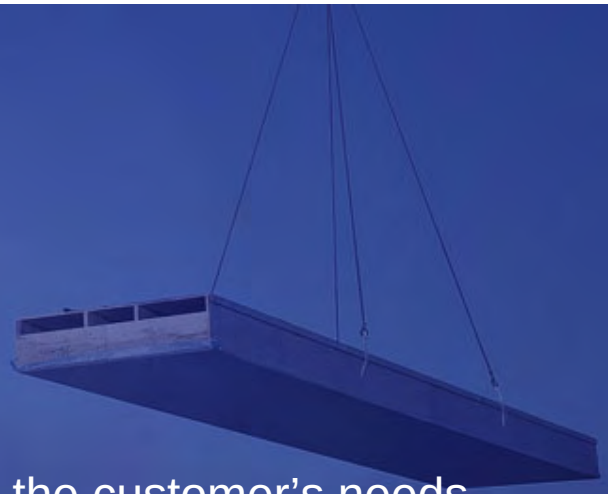
30 000 m² of commercial space weather-protected in 9 weeks

Kerto-Ripa roof element



- Kerto-Ripa roof element is a ready-to-install building component for large roofs.
- Kerto-Ripa roof element is ideal for long spans (12 to 18 meters). The maximum cost-efficiency with ordinary frame solutions is reached, when every second main beam with columns and foundations can be deleted.
- The element is very light in weight. Therefore, heavy concrete beams can easily be replaced with glulam beams (max. length 34 meters).

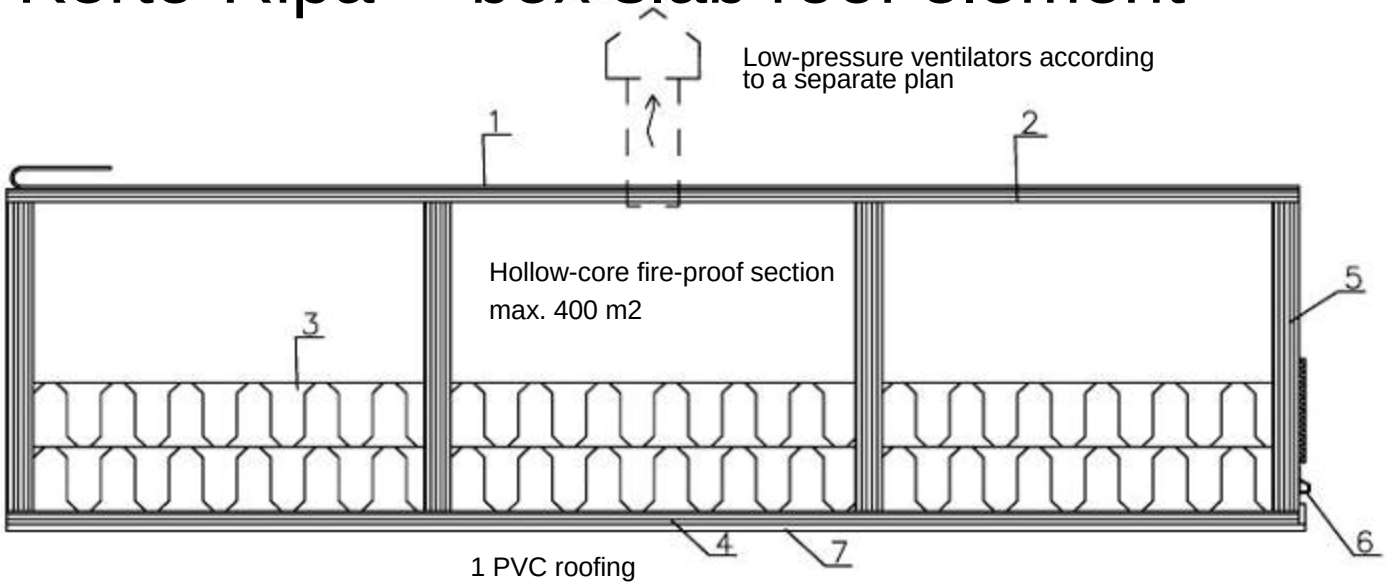
Kerto-Ripa roof element



- Kerto-Ripa roof element is planned according to the customer's needs. The frame of the element is made of Kerto® LVL. The element is delivered with a bitumen roofing felt or a PVC cover. It is equipped with a thermal insulation most suitable for the project.
- Kerto-Ripa element is produced at the mill, and delivered just in time. On site, the element is fixed into the frame, as well as the joints between the elements.
- Installation is very effective: In one day, we can install up to 1.000m² of ready, water-tight and warm-insulated roof.

Roof ready in one delivery: Weather-proof roofing – thermal insulation – ceiling panel on the underside

Kerto-Ripa™ box slab roof element



1 PVC roofing
2 Kerto-Q panel
3 Thermal insulation 250 mm
4 Kerto-Q panel
5 Kerto-S (h~600 mm)
6 Sealant (type Finnforest) + insulation
7 Gypsum board 13 mm
U 0,16

Structure of Kerto-Ripa™ box slab roof element

Production of Kerto-Ripa™ element in conditioned mill environment, Oct. to Dec. 2007

Production of Kerto-Ripa™ element in conditioned mill environment, Oct. to Dec. 2007

Production of Kerto-Ripa™ element in conditioned mill environment, Oct. to Dec. 2007

Production of Kerto-Ripa™ element in conditioned mill environment, Oct. to Dec. 2007

Installation starts on 15th October, 2007

Installation starts on 15th October, 2007

Installation starts on 15th October, 2007

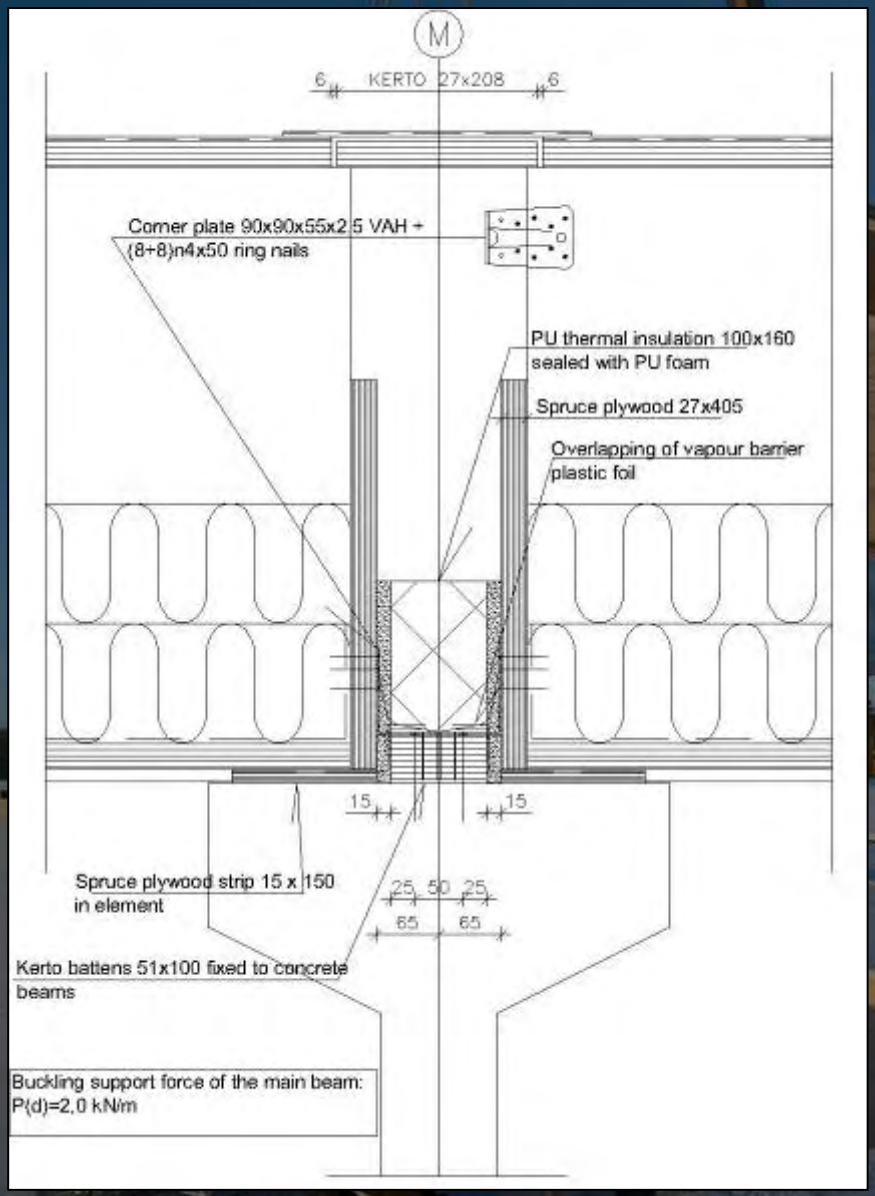
The inside work continues immediately

Construction site remains clean

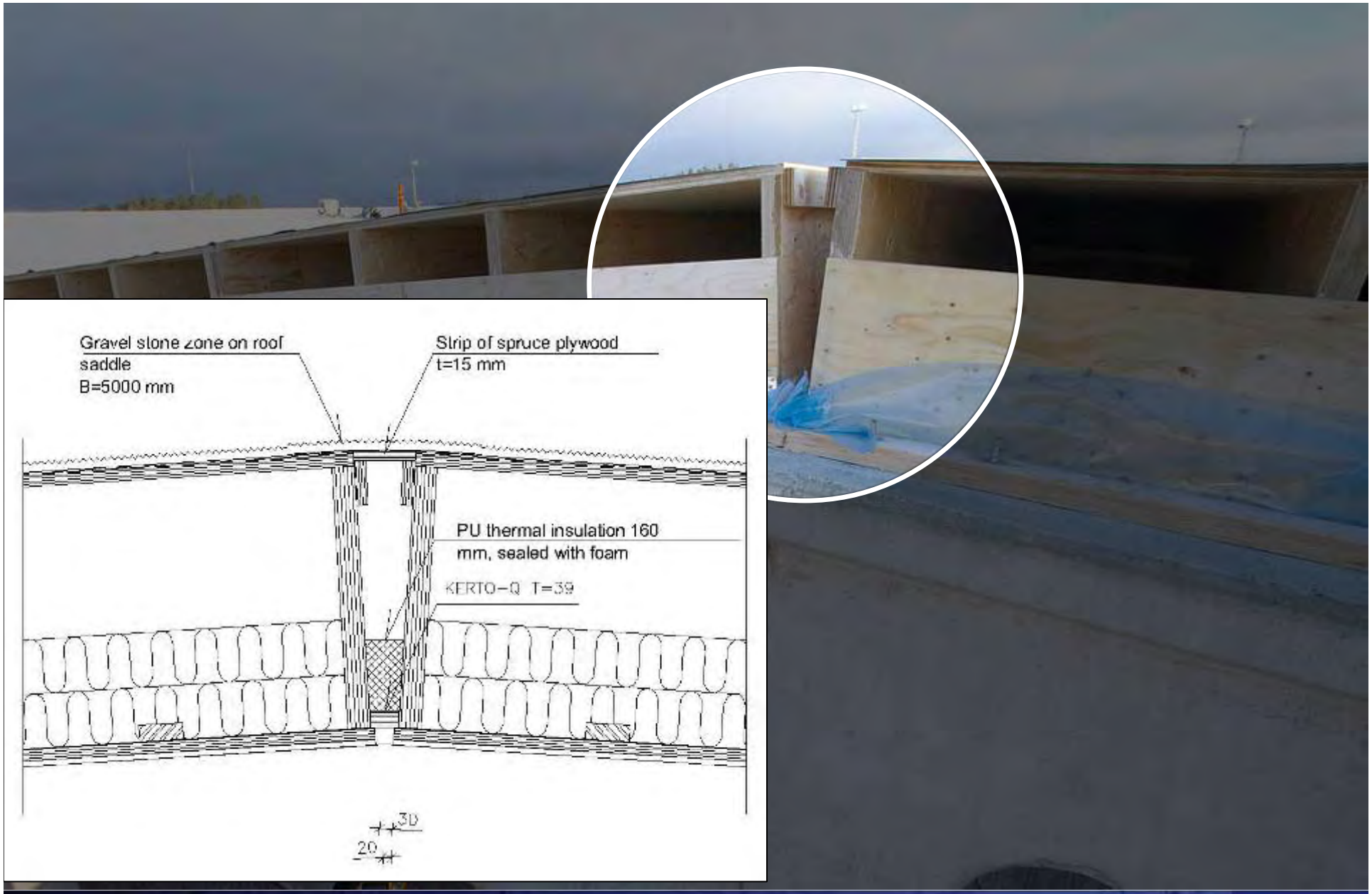
16 000 m^2 of roof is installed in 9 weeks

Fixing the element in load-bearing beams

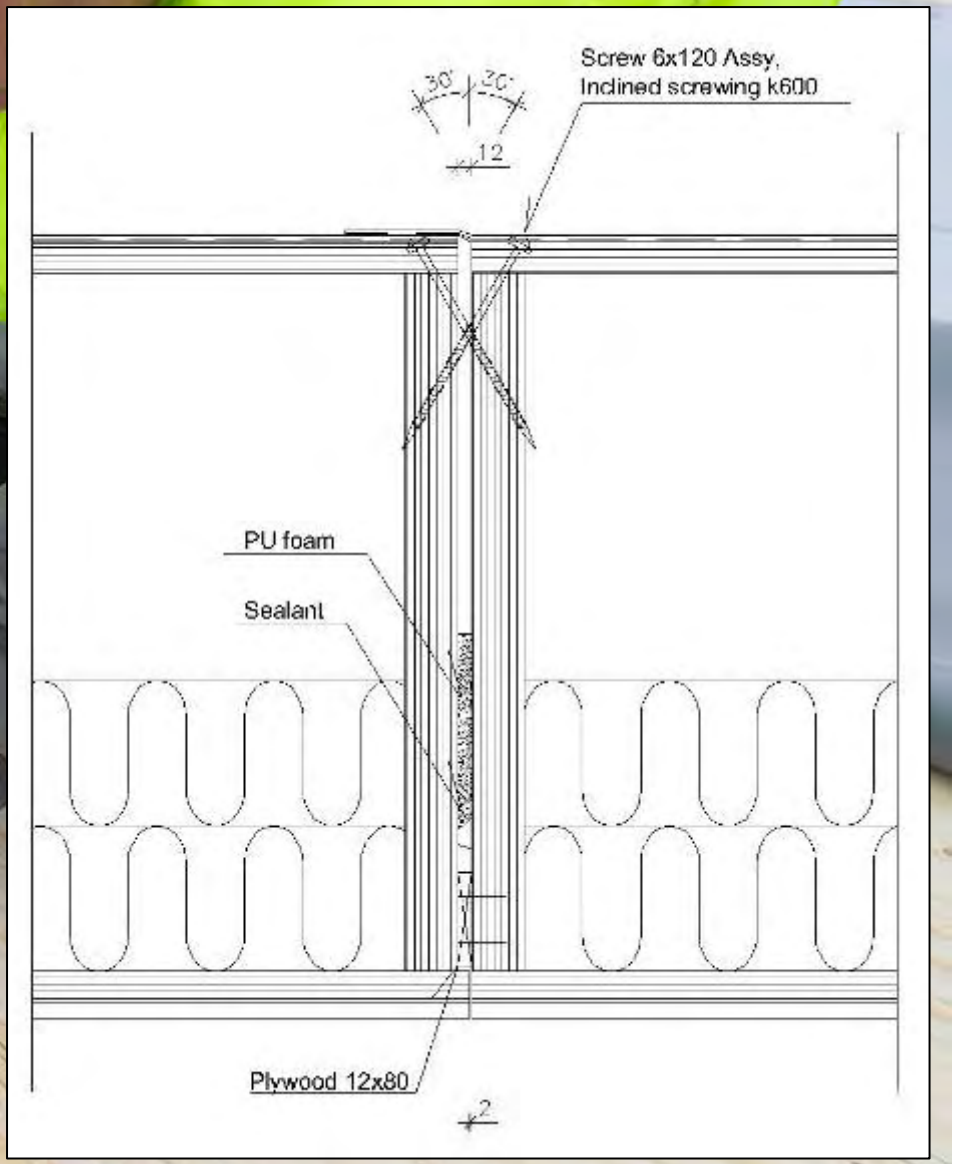
Installation is finished on 14th December, 2007 – waterproof and sealed including gutters



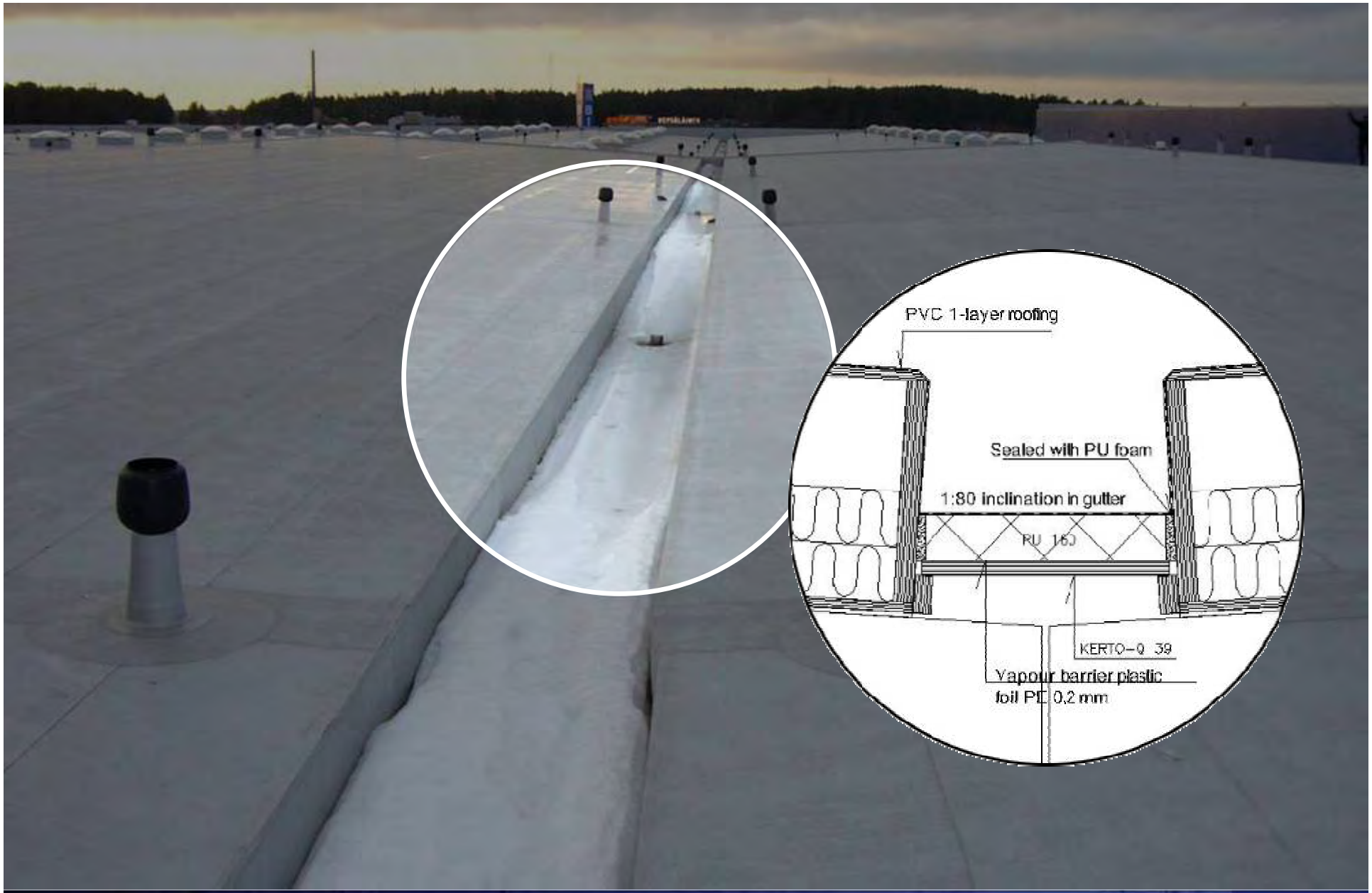
Buckling of primary beams is prevented with roof elements



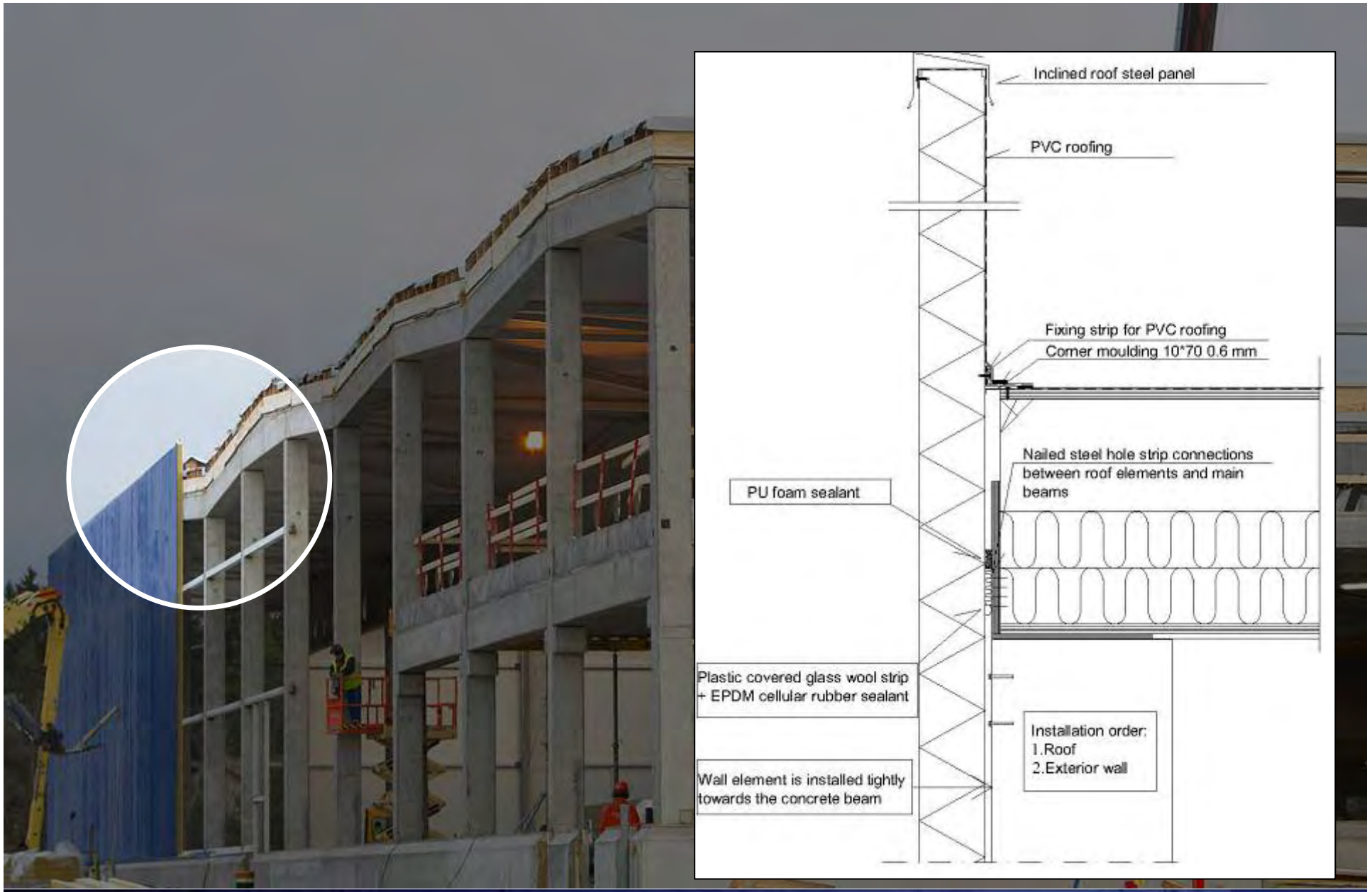
Roof saddle connection



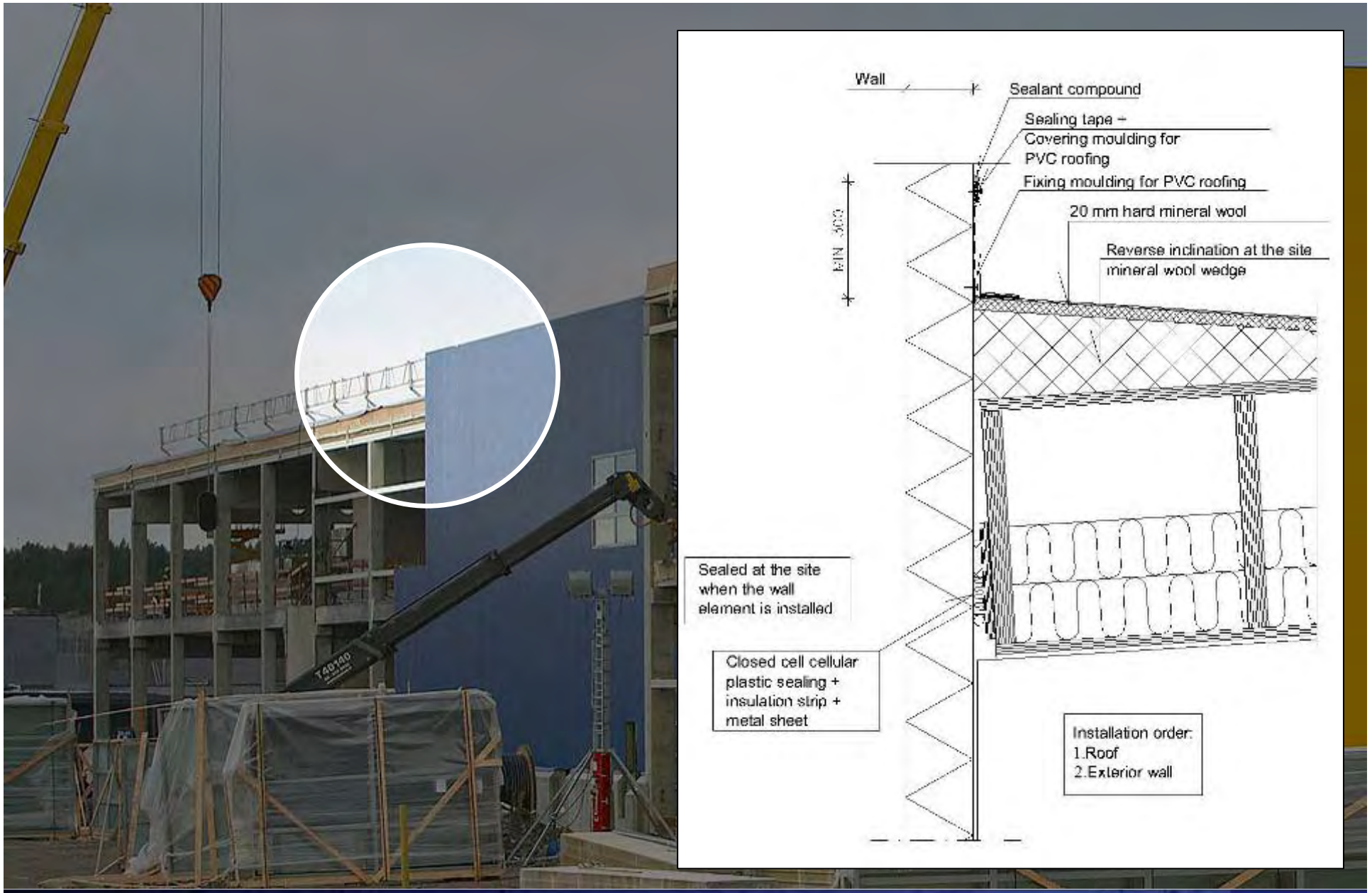
Finishing the joint between two elements



Finishing the PVC roofing and the structure of the gutter

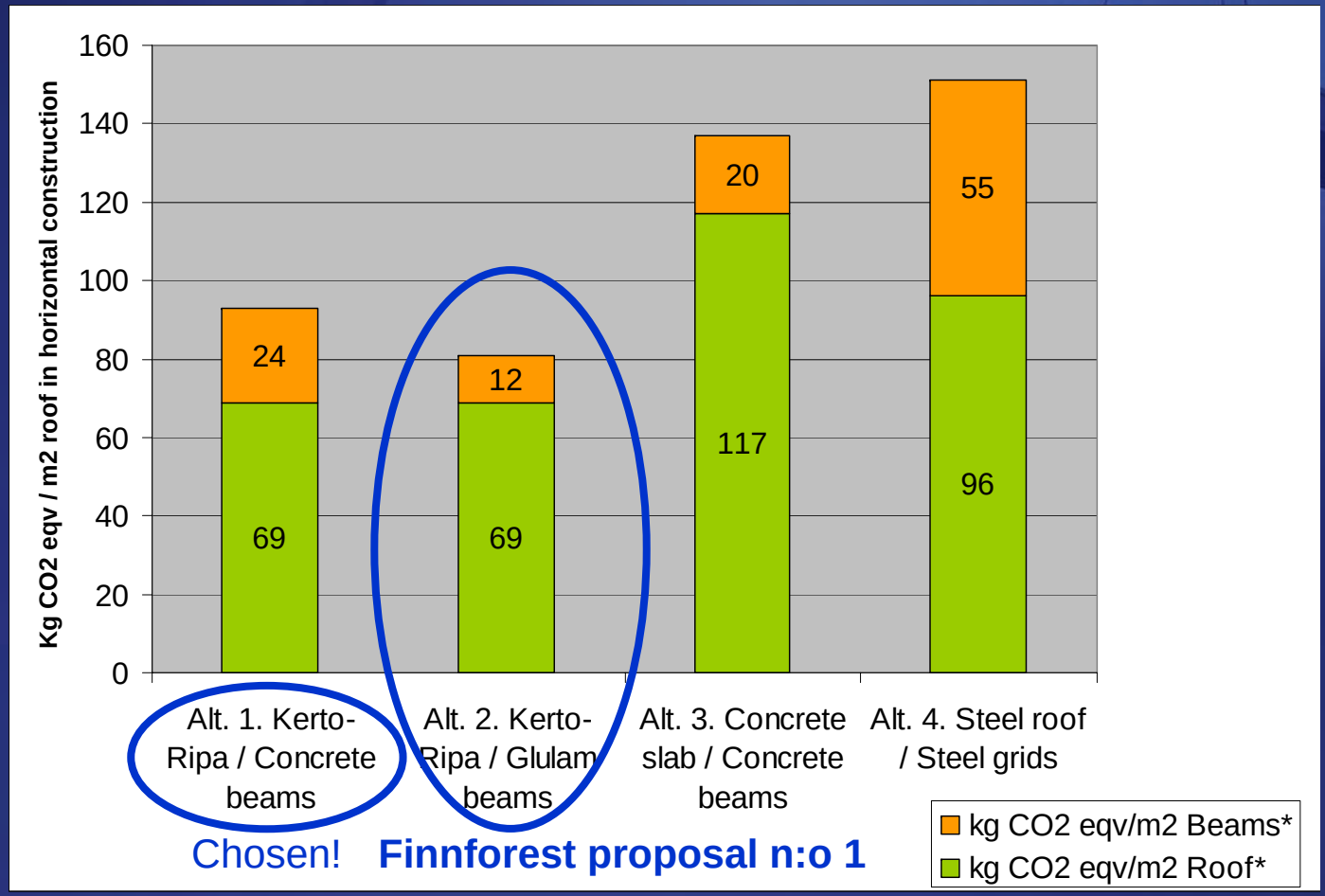


Connection between roof and end wall



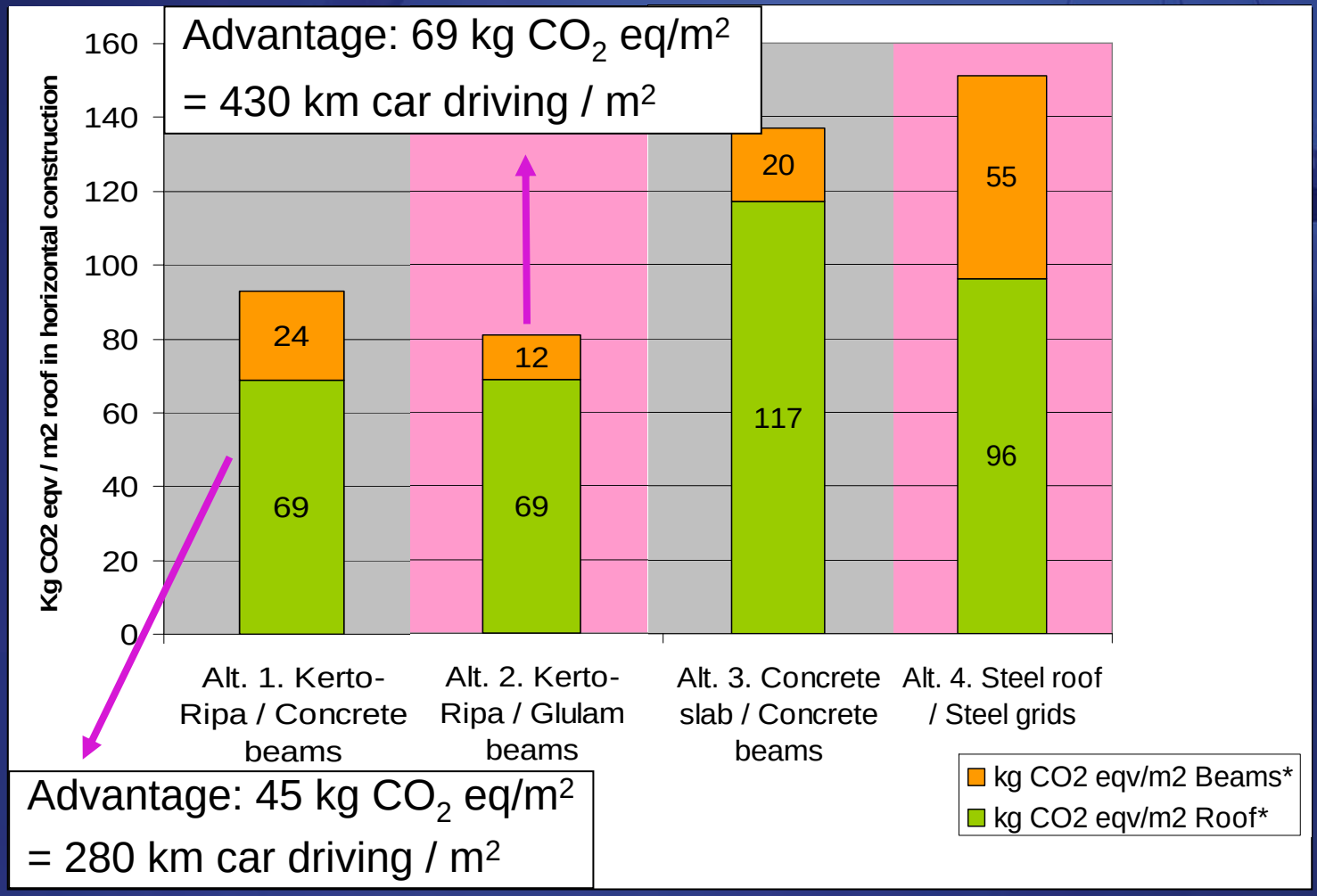
Connection between roof and side wall

Carbon footprint, kg CO_2/ m2 of roof of alternative materials



Comparison in terms of CO_2

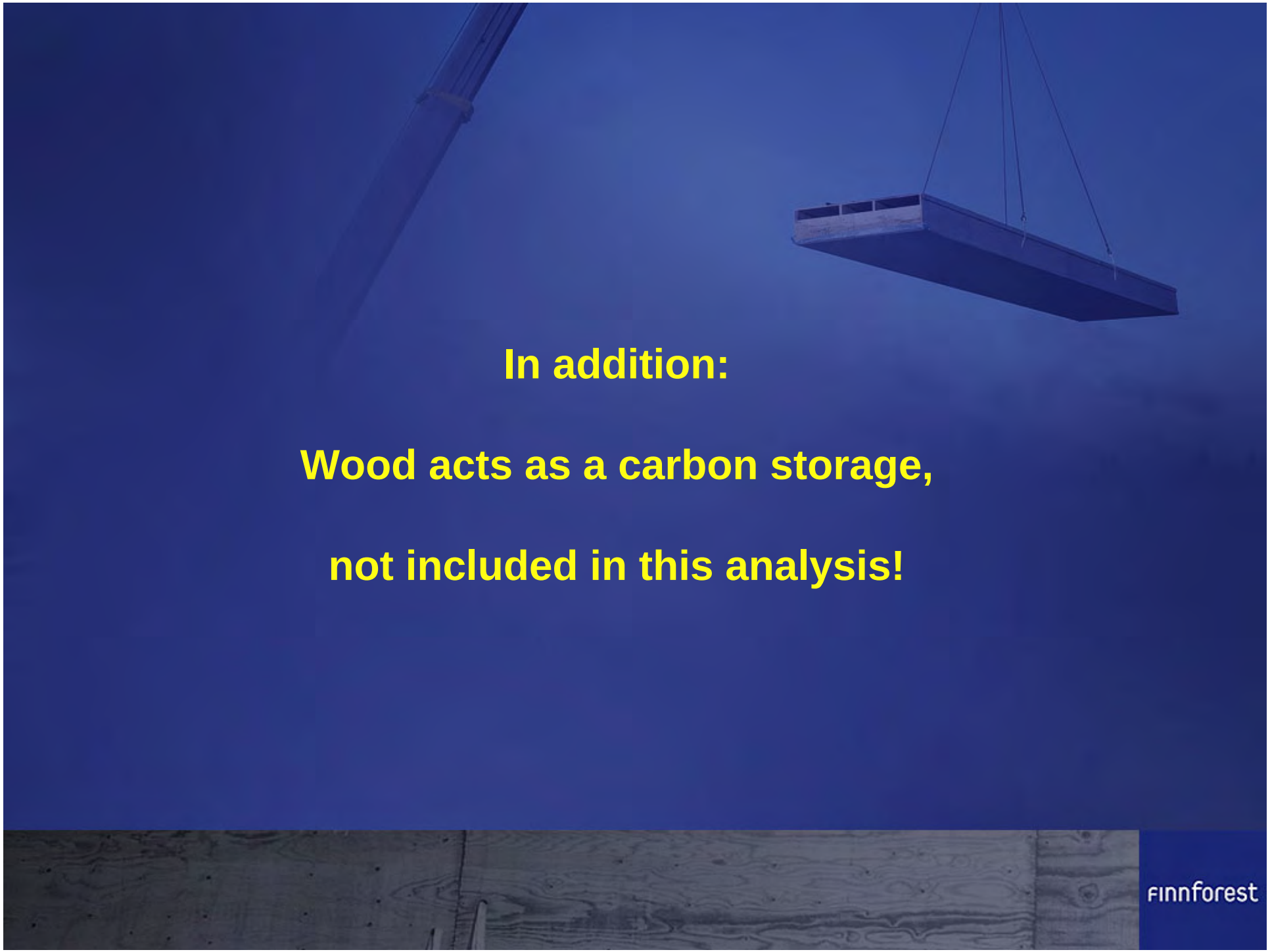
The CO_2 emissions of different structure alternatives, compared with emissions of a car (160 g CO_2 / km)



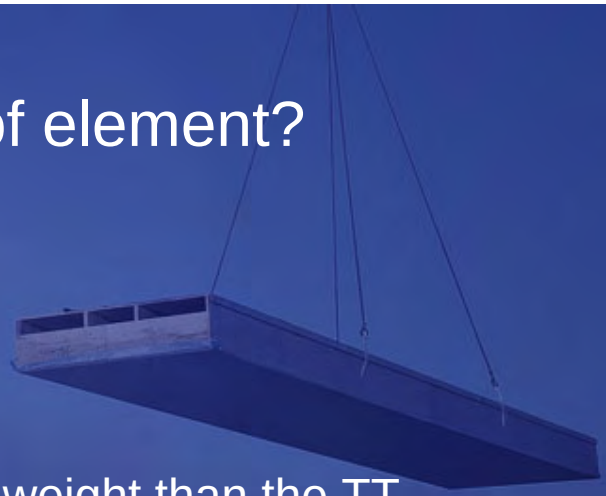
The saved emissions of the 16.000 m**2** roof equals to

4.500.000 to 6.900.000 kilometres of car-driving

finnforest


In addition:
Wood acts as a carbon storage,
not included in this analysis!
Finnforest

Why to choose the Kerto-Ripa™ roof element?

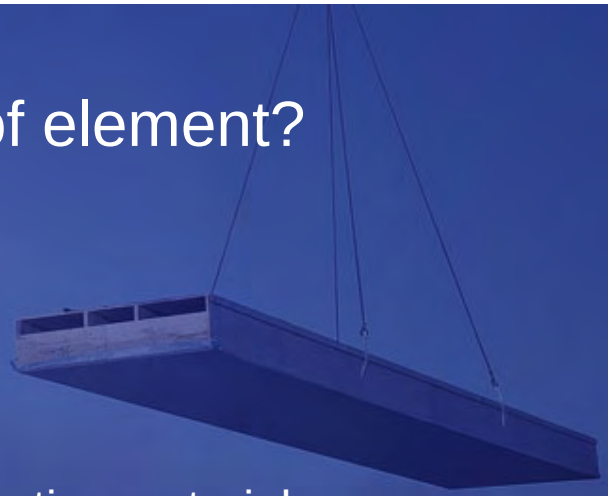


1. Cost-efficient

- Kerto-Ripa™ box slab is **five times lighter** in weight than the TT concrete slab with a span of 16 meters
  - Smaller size concrete main beams could be used and less piles were needed for the foundation
  - Long spans: even 18 meters
- Quicker construction: cladding on underside of element, thermal insulations and roof covering are installed already on mill.
  - Short installation time
  - Next phases of construction can continue immediately, in dry conditions
- The total construction time is shorter

=> **Saving in time and money**

Why to choose the Kerto-Ripa™ roof element?



2. Environmental friendly

- Carbon footprint ~40 % less than with alternative materials
- Wood acts as a carbon storage and is a completely renewable building material.

=> Saving in CO_2 emissions

- Thermal insulation of the roof can be easily increased with a very moderate cost.

  E.g. an increase of 5 cm costs ~2 eur/m^2. Advantage of 20% better thermal insulation

=> **Saving in energy**

Why to choose the Kerto-Ripa™ roof element?

3. Fire safe

- Fire resistance R60 minutes and A1-s1,d0 reaction to fire classification

4. Verified building physics

- Thermal and moisture behaviour of the structures were carefully tested by the Technical University of Tampere, Finland (Report 1562/T)

5. Certified

- Kerto-Ripa™ roof element has the European technical approval ETA-07/0029 and CE marking.

For more information, please contact

Jouni Hakkarainen

Finnforest, Building Solutions

Phone +358 50 598 9611

Jouni.hakkarainen@finnforest.com

www.finnforest.com

Contact