



Stålkonstruktioner på Industriens Hus

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Troels Hoff, Rambøll
Brynjolf H. Jørgensen, Pihl

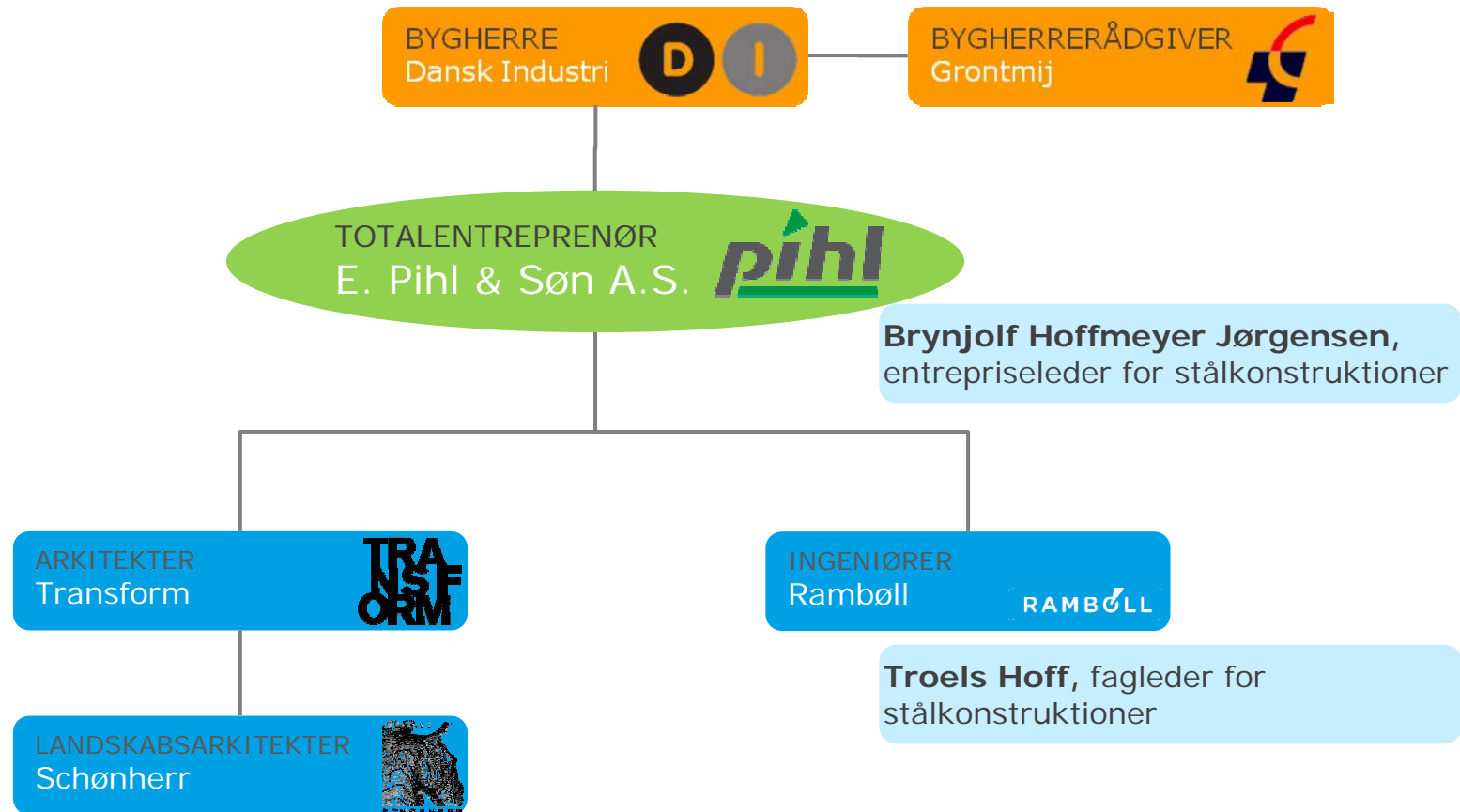
Stålkonstruktioner på Industriens Hus

Agenda

- Introduktion til projektet
- Foyergitter - projektering
- Foyergitter - udførelse
- Atriumtag – projektering
- Atriumtag – udførelse



Industriens Hus - organisation



Faktaboks

Areal: Fra 24.000 m² til i alt 40.000 m²

Byggetid: sept 2010 – maj 2013: 34 mdr.

Samlet budget: kr. 850 mio.

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Industriens Hus siden 1978



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Industriens Hus 2013 -



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Industriens Hus før ombygning



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Industriens Hus efter ombygning



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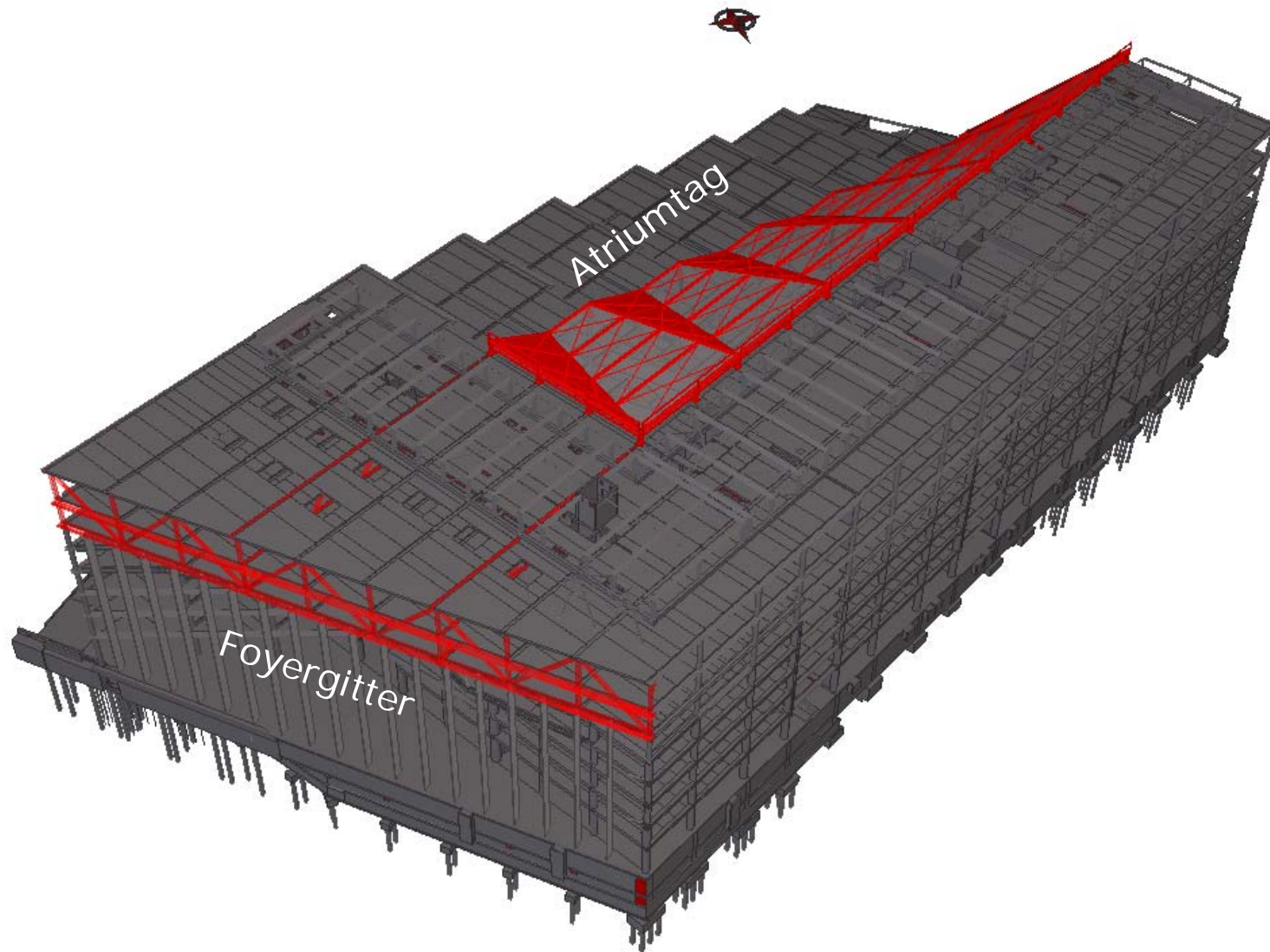
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Industriens Hus – stål - fakta

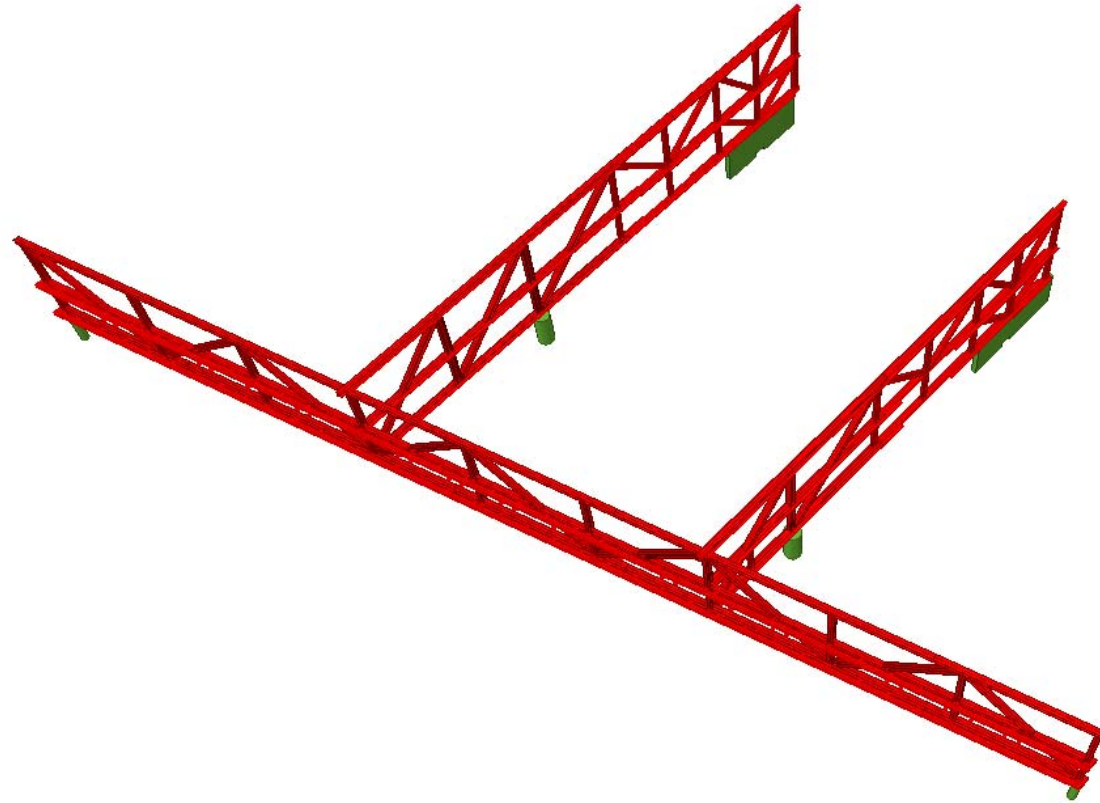
- Hovedprojekt stål: juli 2010 – december 2010
- Udførelse: oktober 2010 – november 2011
- Ståltonnage: ≈ 600 tons
- Stålentreprenør: Kecon, Skælskør



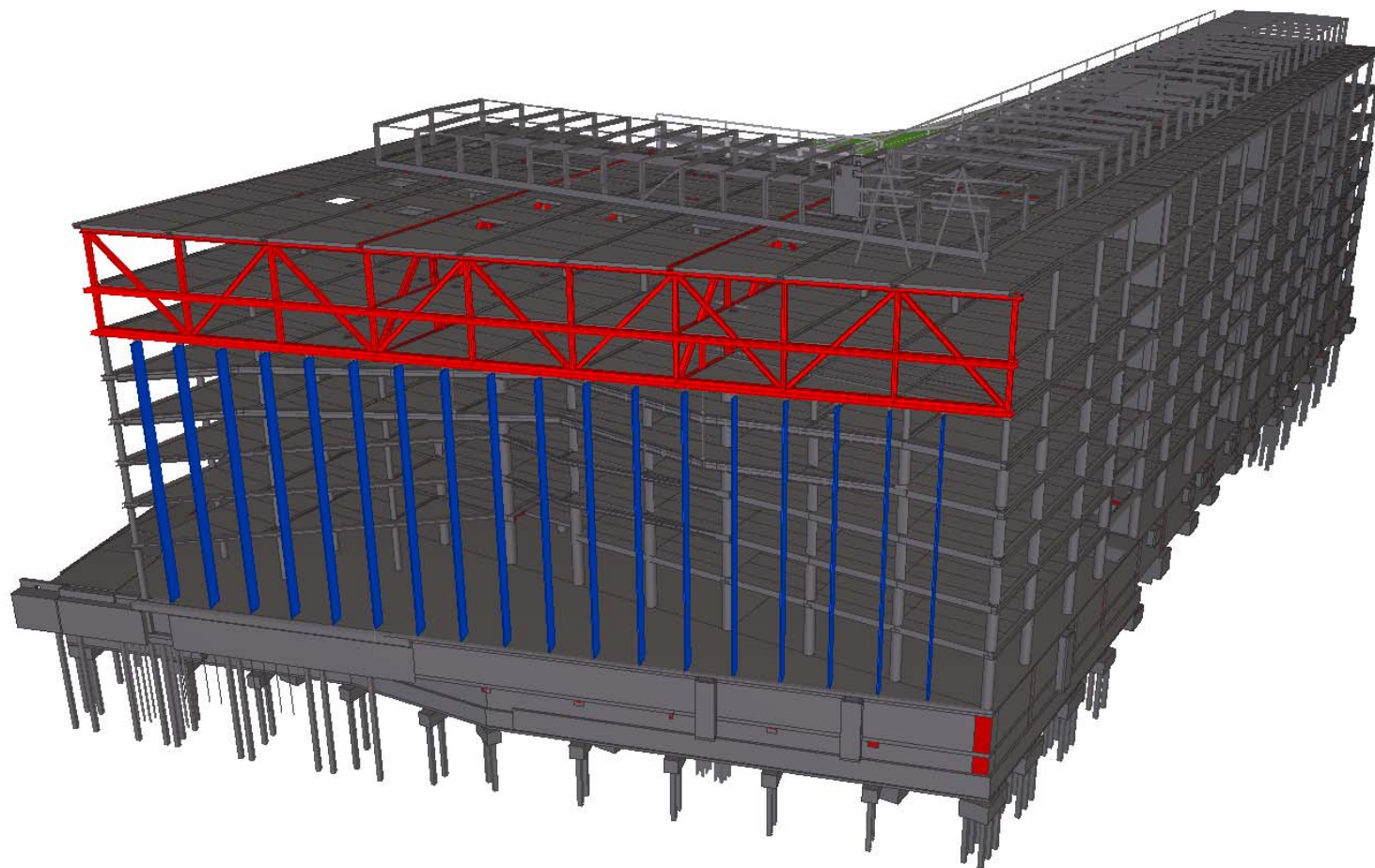
Industriens Hus – foyergitter og atriumtag



Foyergitter

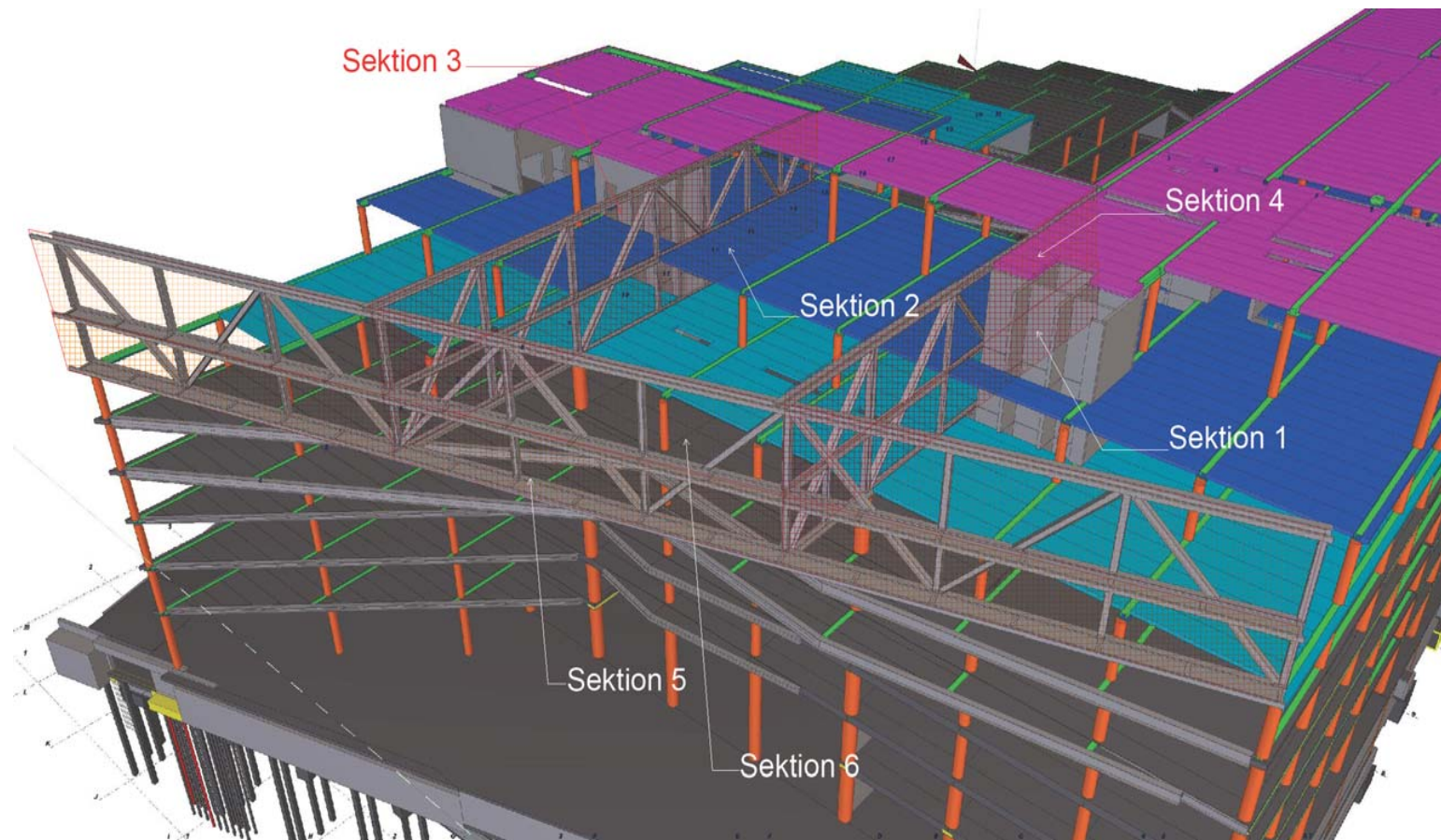


Foyergitter



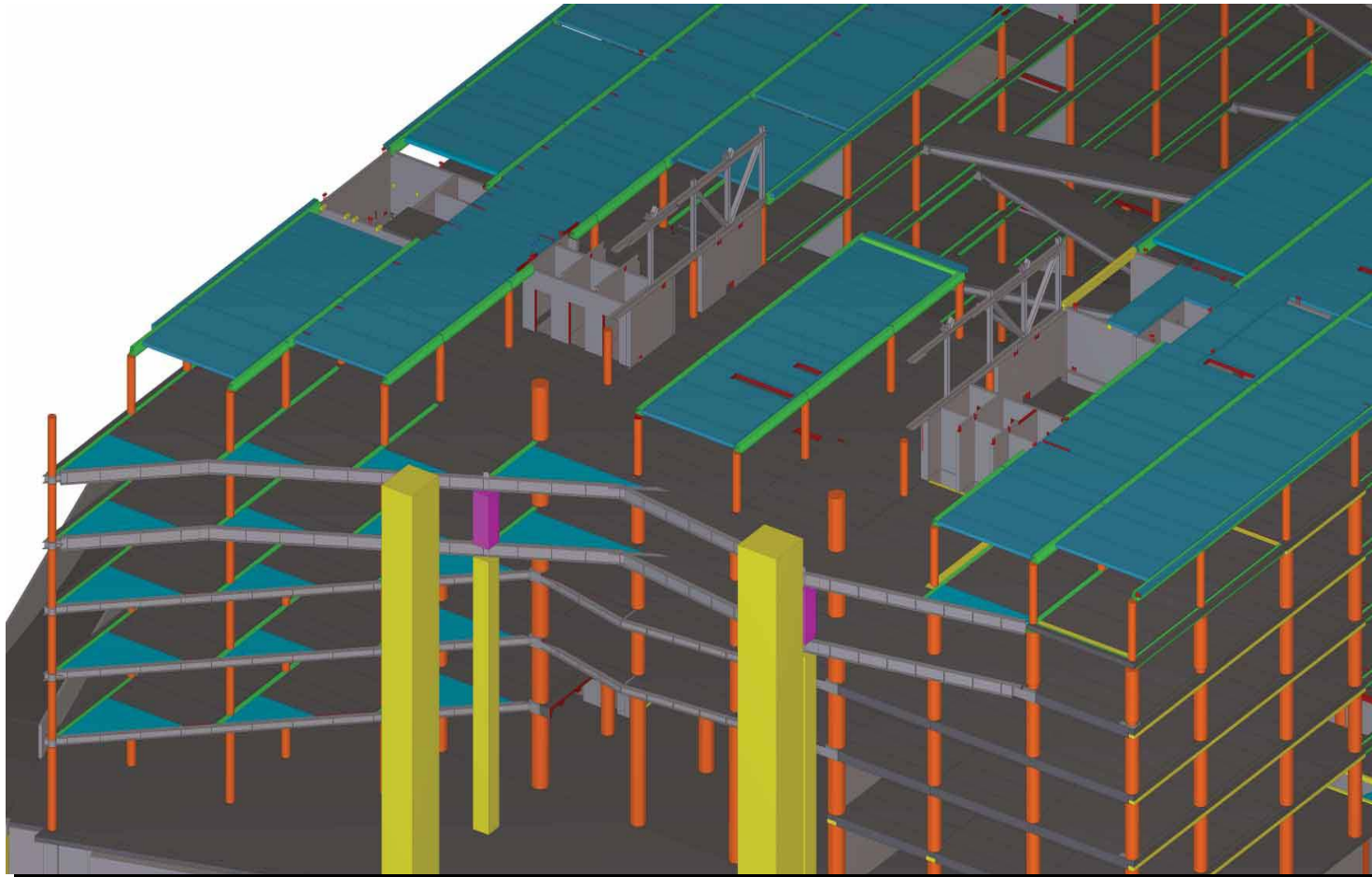
Foyergitter

6 sektioner.



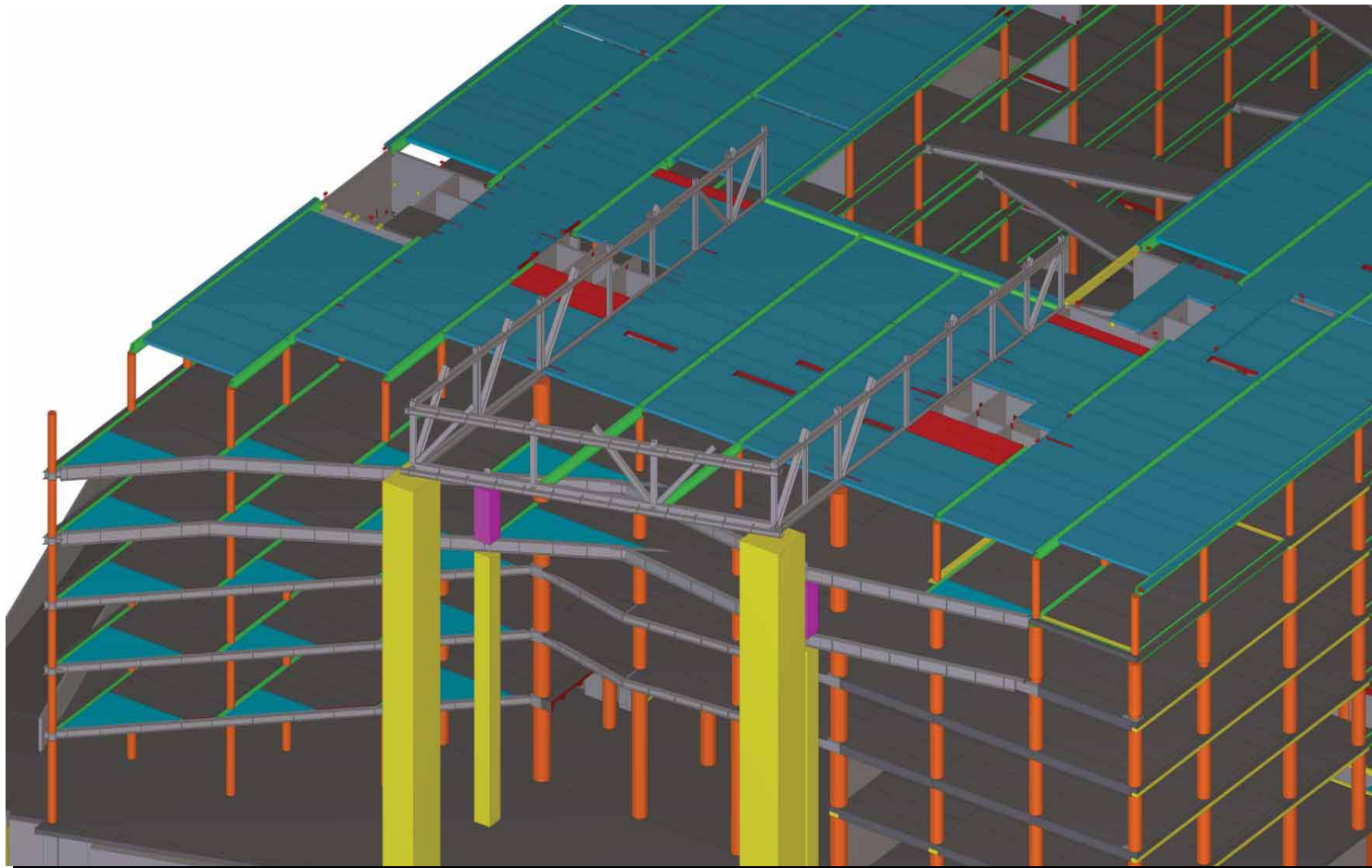
Foyergitter

14 sektioner As built sektion 1 & 3.

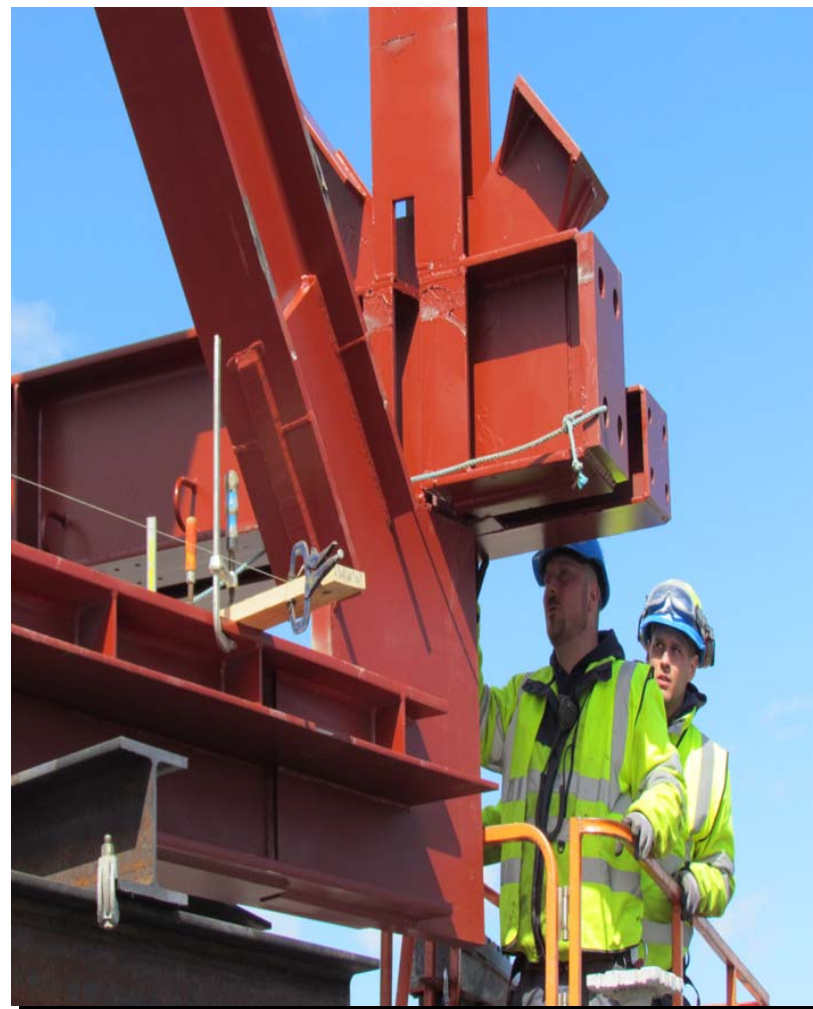
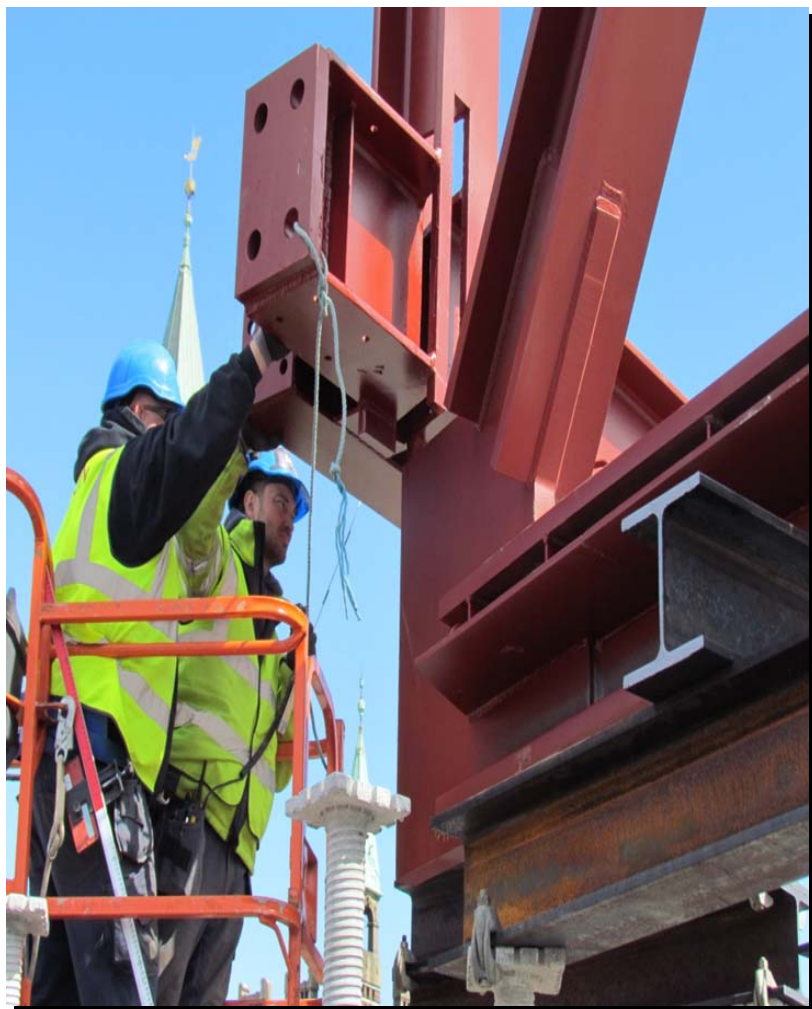


Foyergitter

Sektion 2, 4 & 5.

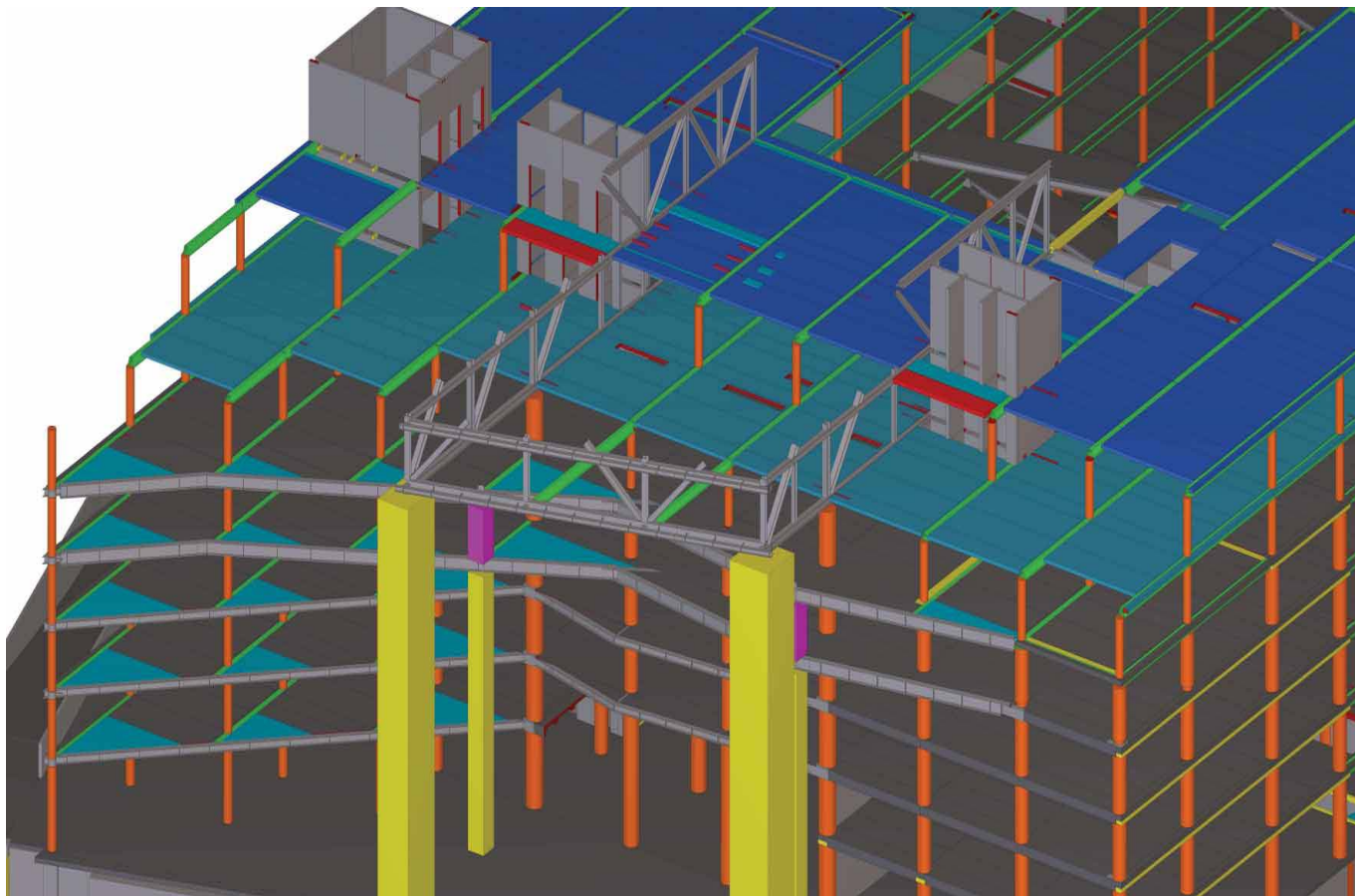


Foyergitter



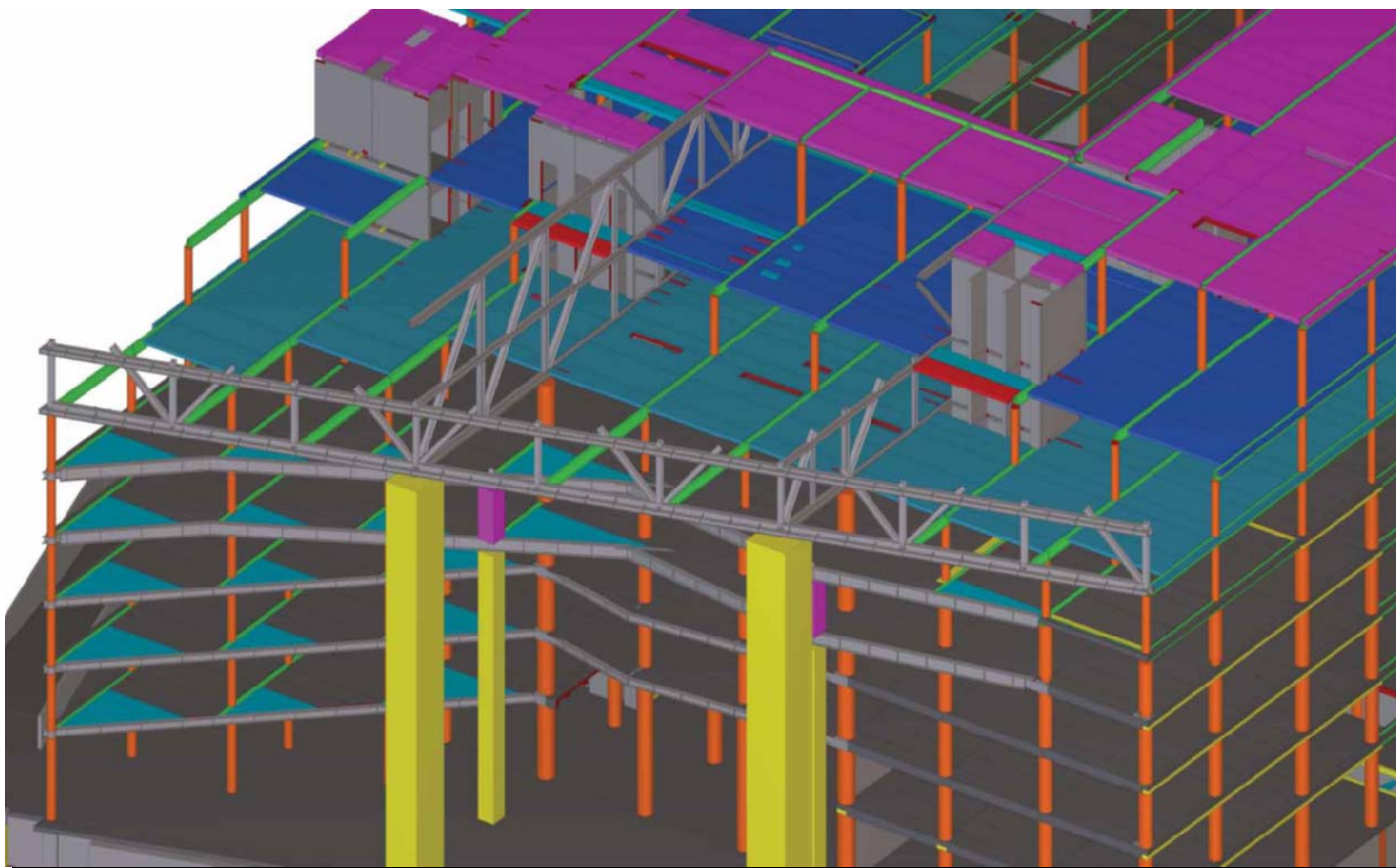
Foyergitter

Sektion 8 & 10.



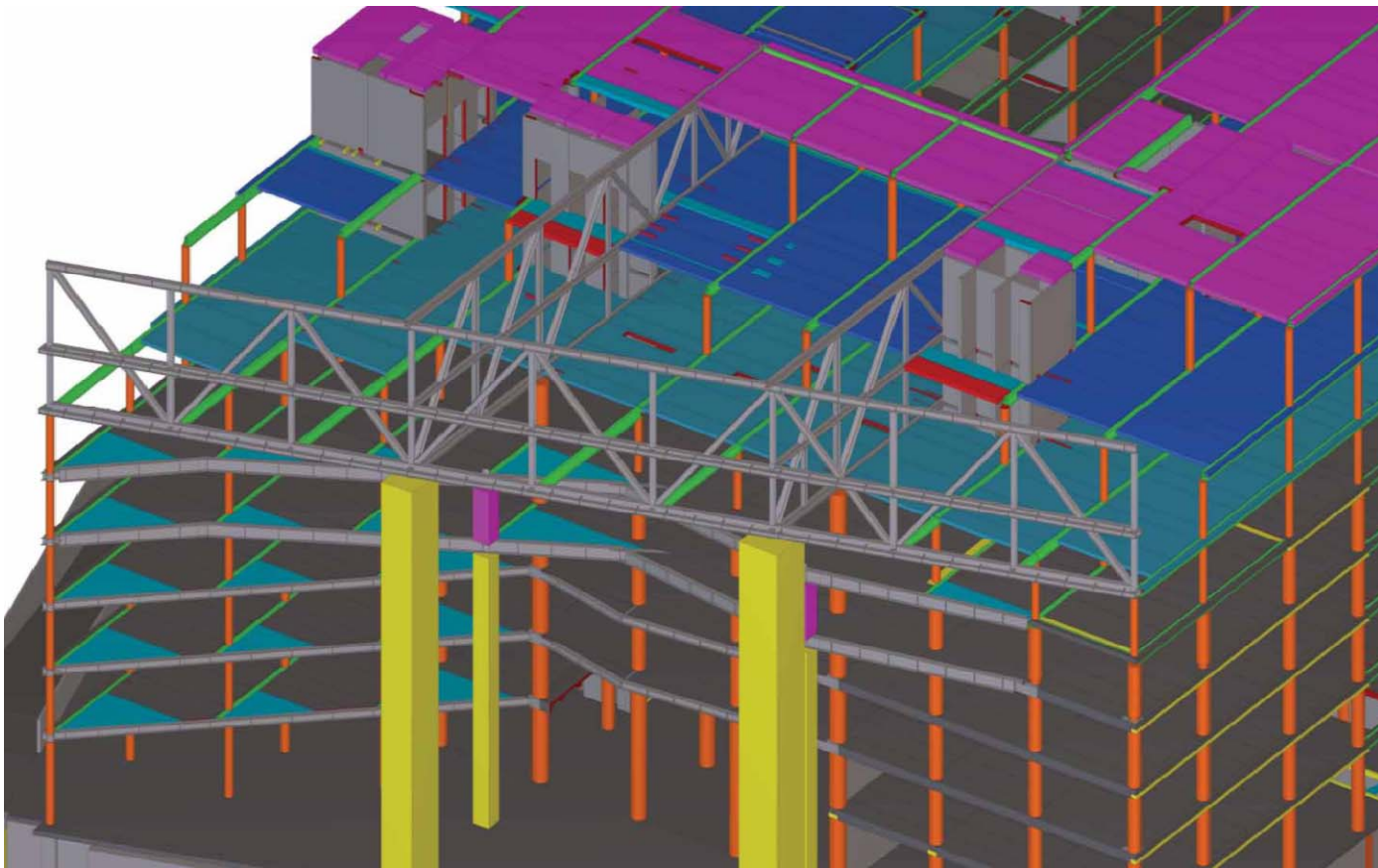
Foyergitter

Sektion 6, 7 & 11.



Foyergitter

Sektion 9, 12, 13 & 14.

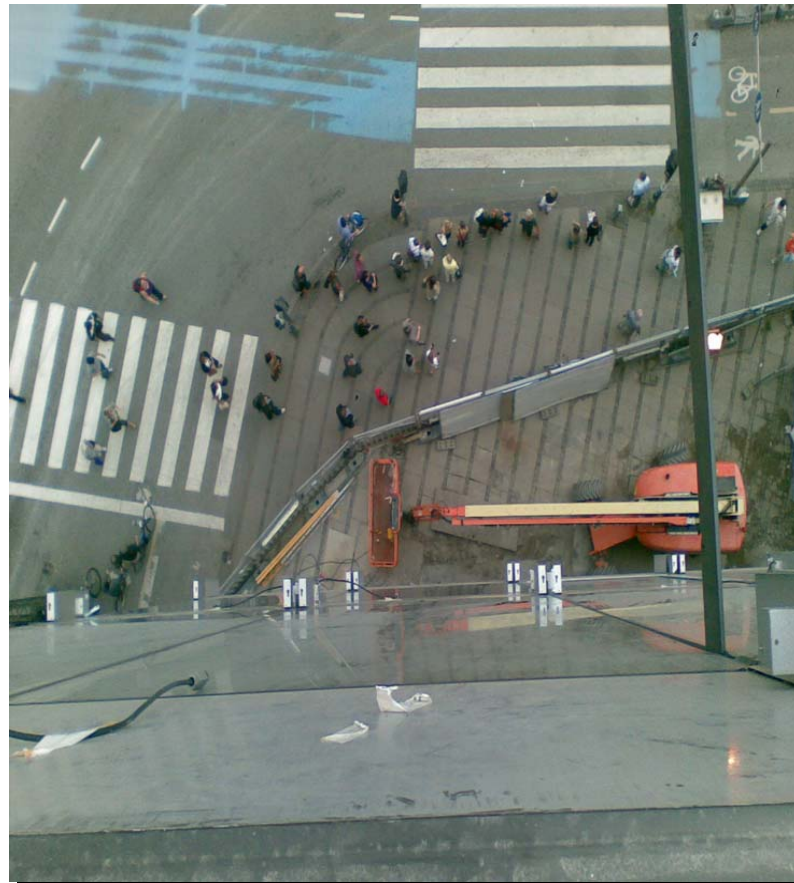
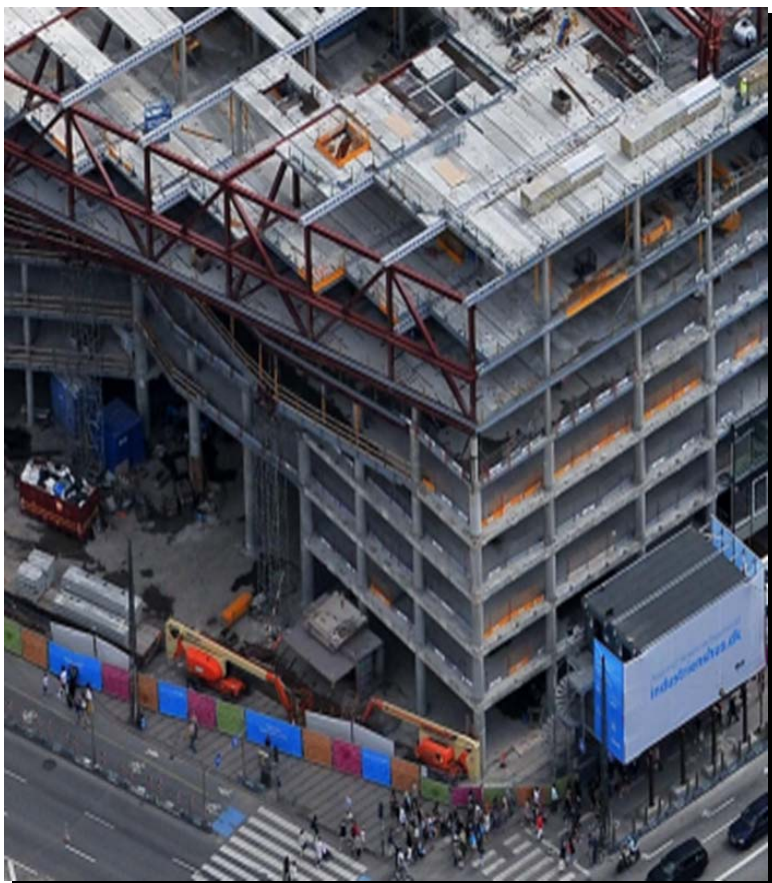


Foyergitter

Synlig arbejdsplads.



Foyergitter



Foyer.

Indv. Façade.

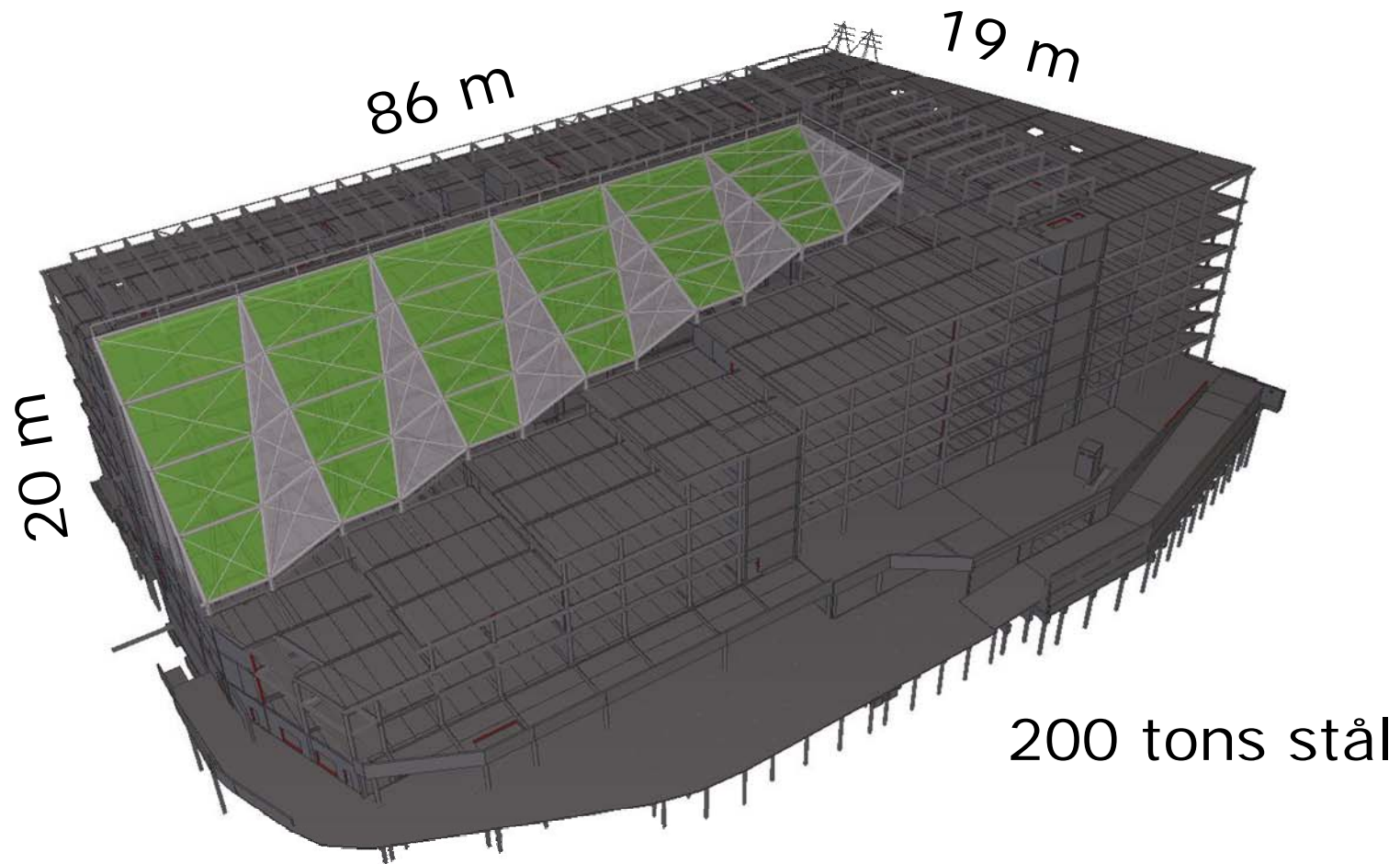


Foyer.

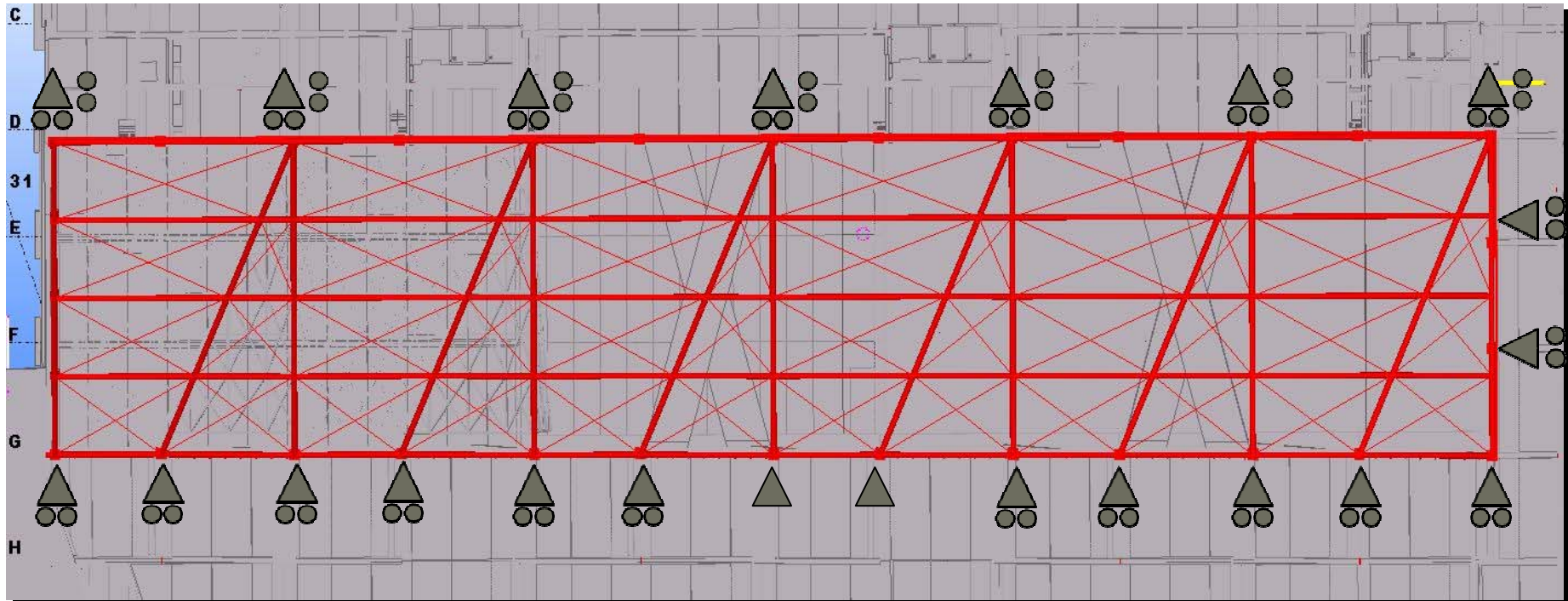
Udv. Facade.



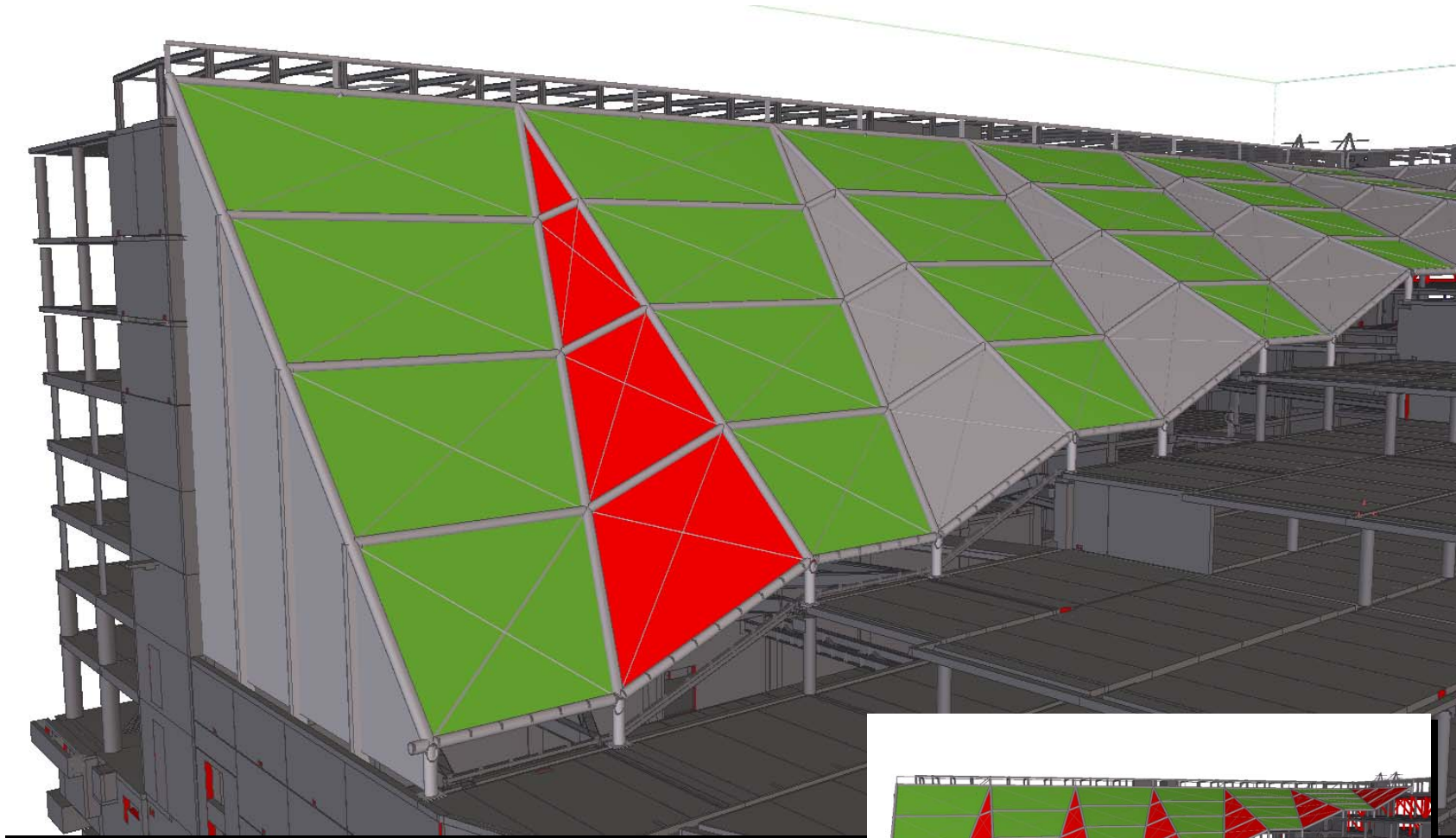
Atriumtag



Atriumtag - understøtningsbetingelser



Atriumtag – statisk virkemåde

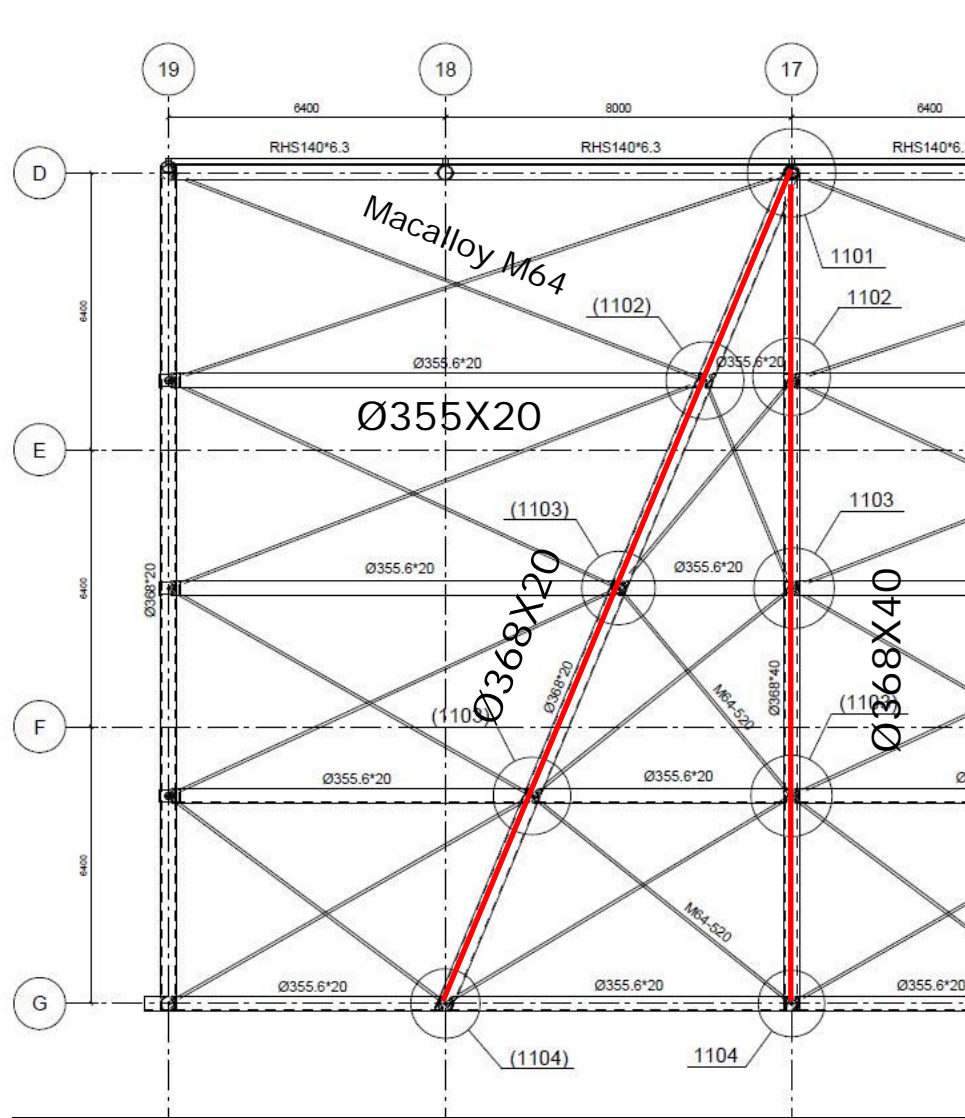
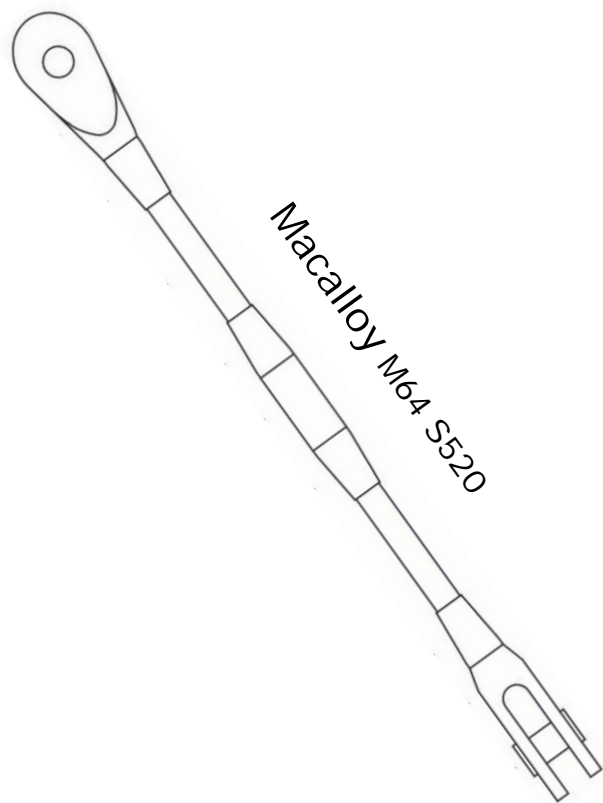


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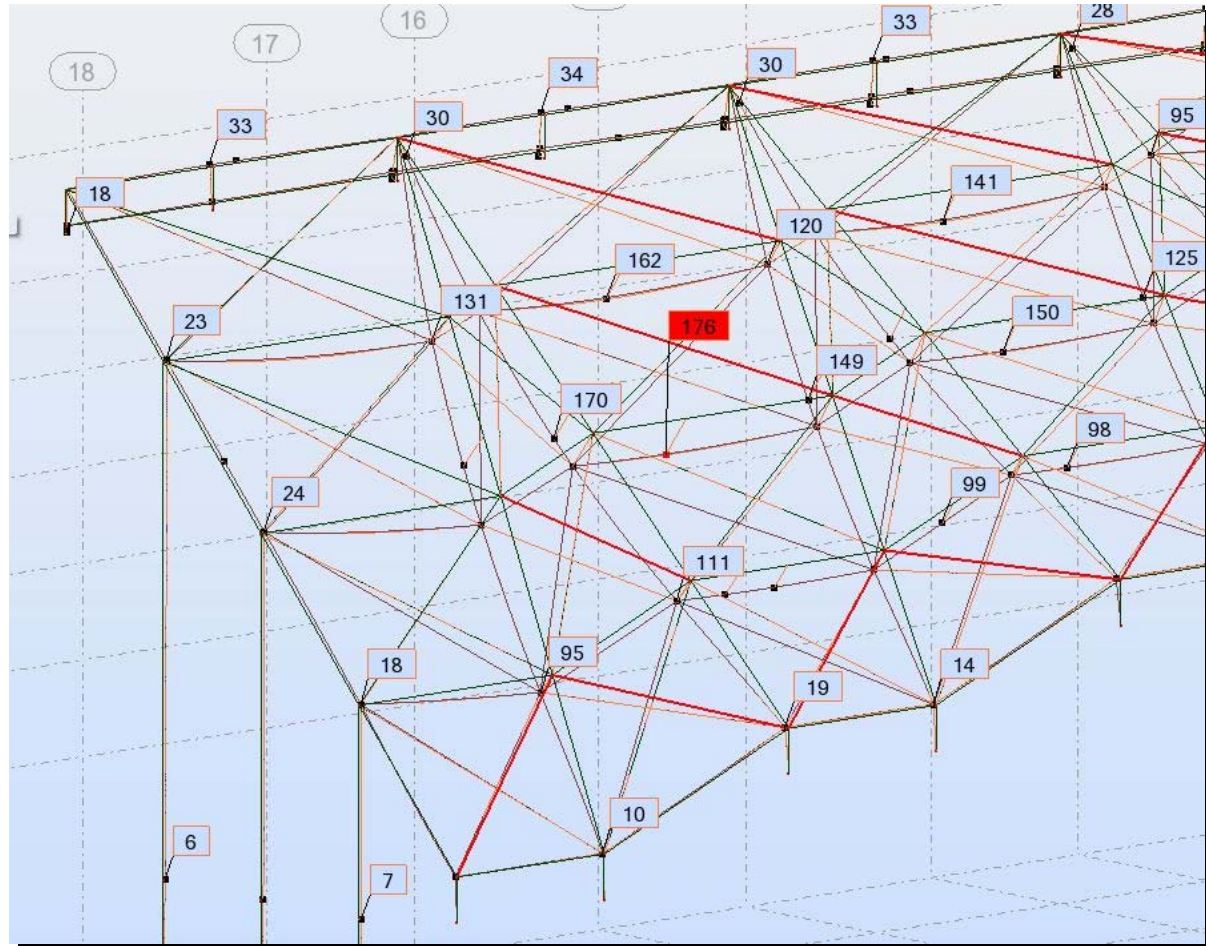
Atriumtag

Profildimensioner



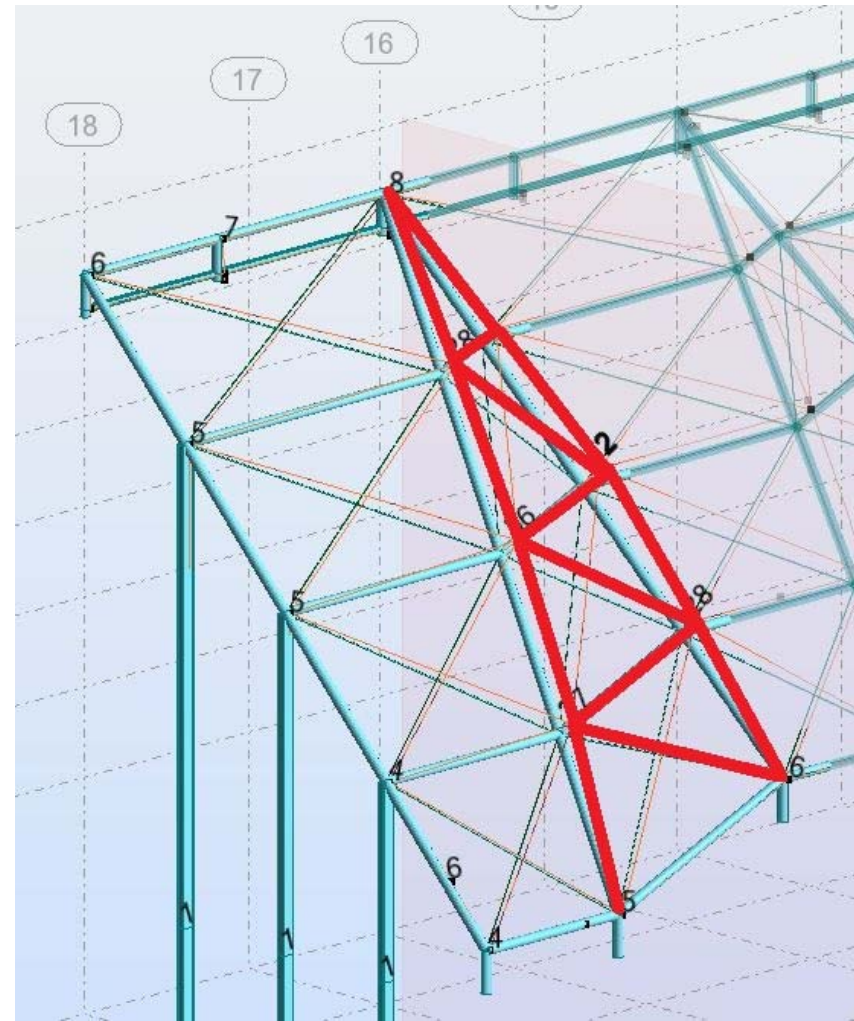
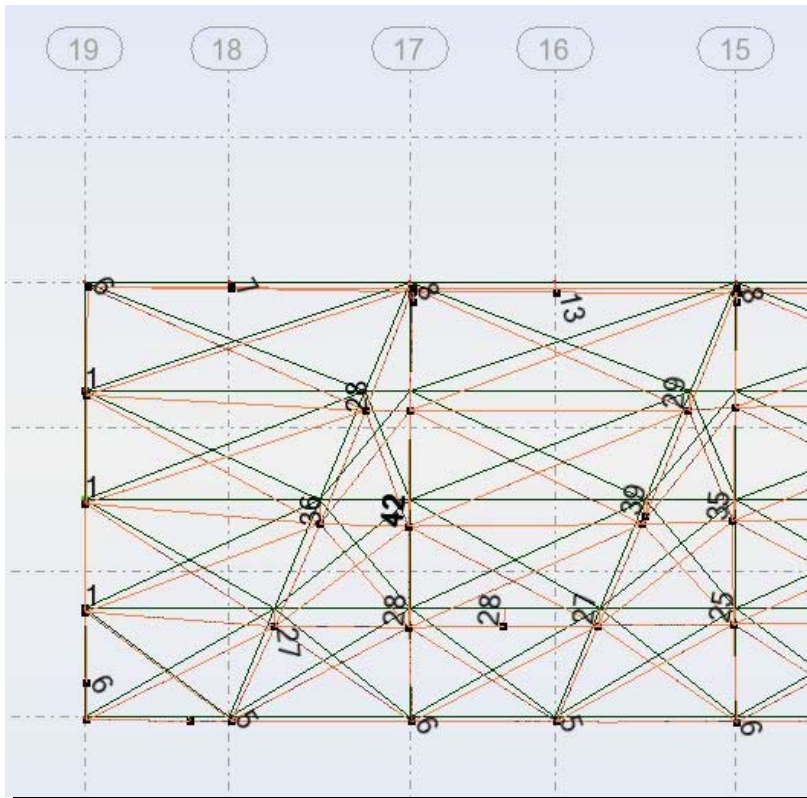
Atriumtag

Før opspænding



Deformationer uden opspænding for total egenlast

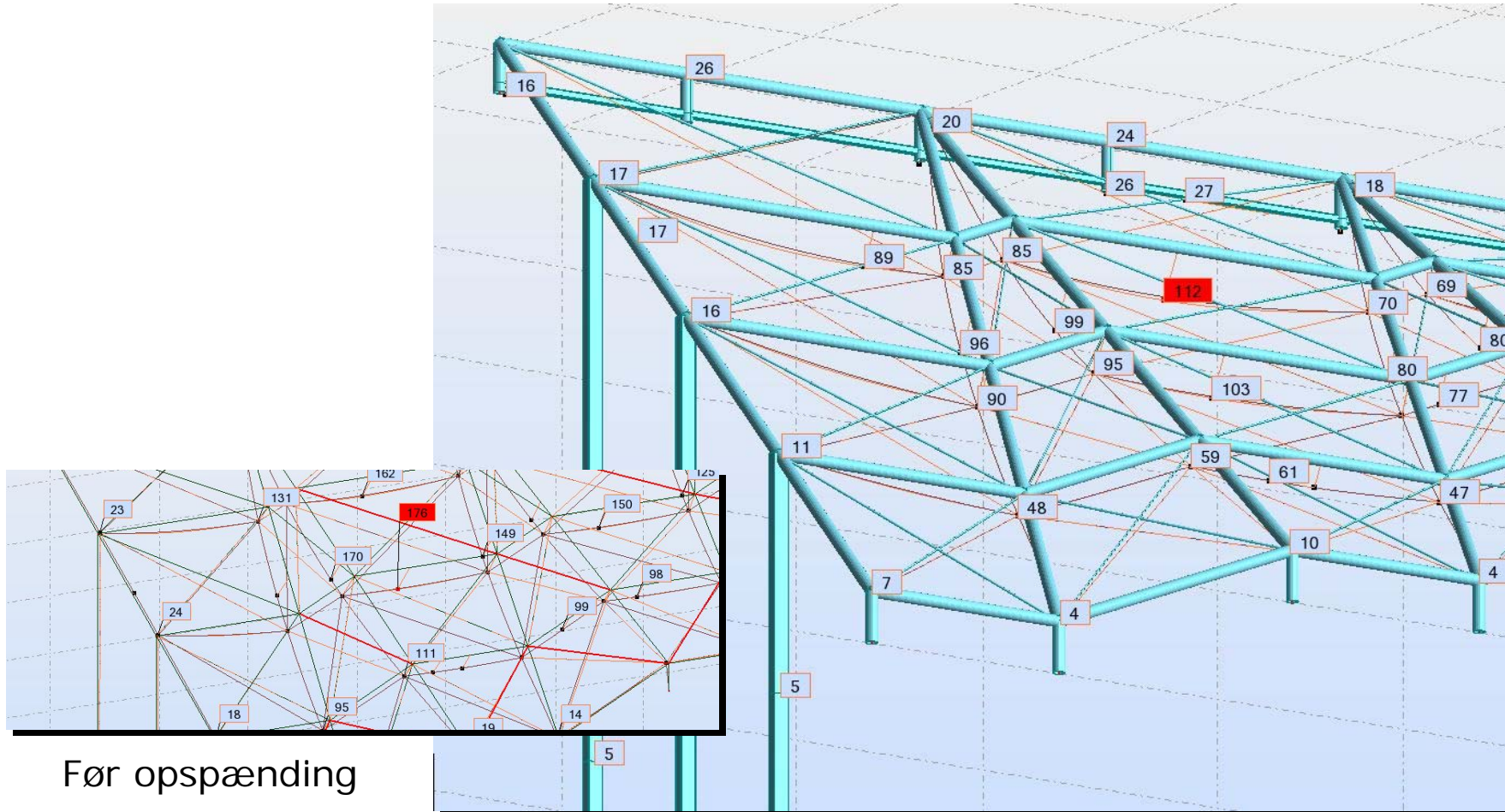
Atriumtag Opspænding



Opspænding giver opbøjning

Industriens Hus

Efter opspænding



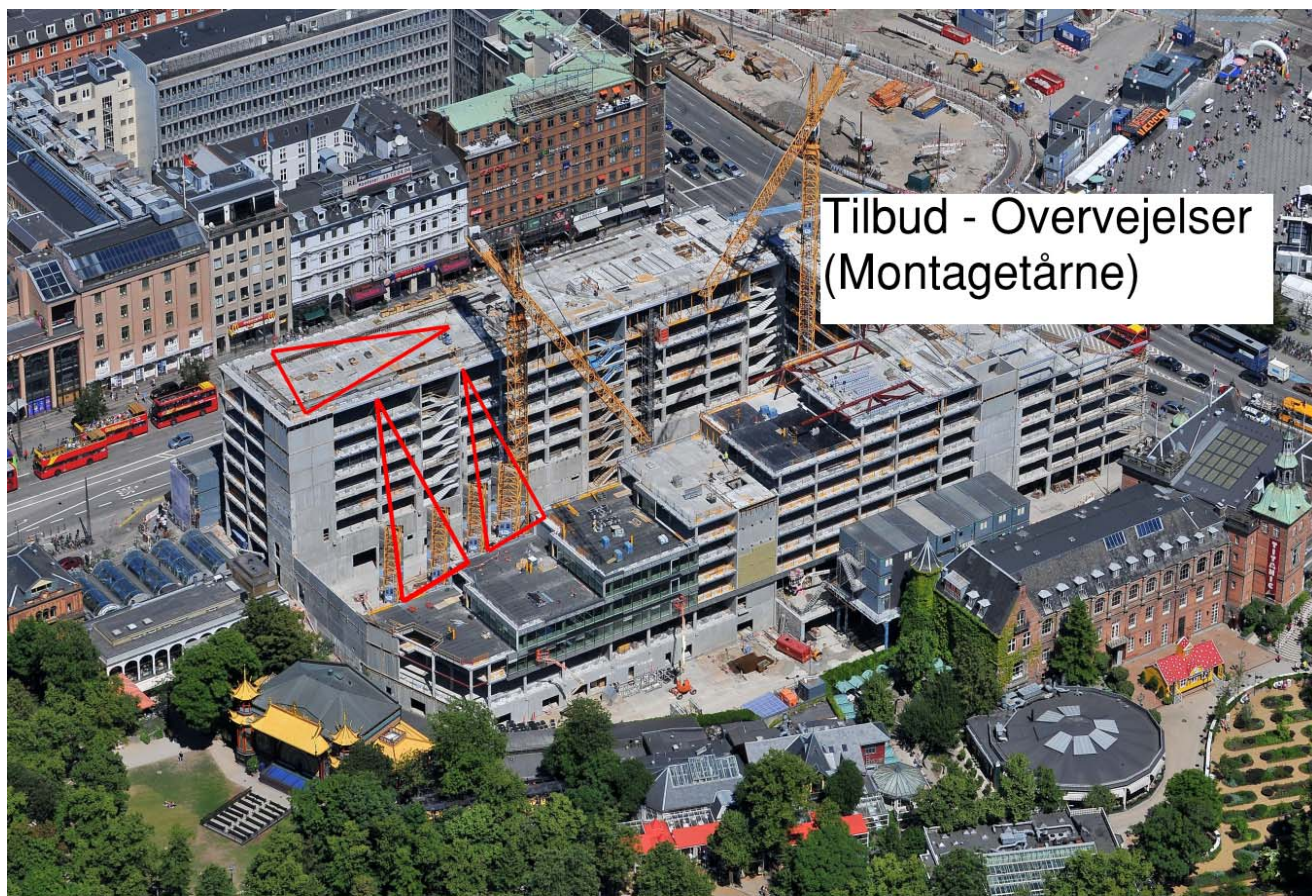
Før opspænding

Deformationer efter opspænding



Atriumtag

6 Sektioner, 12 tårne for hver ca. 10 Tons.



Atriumtag

As built "løse enheder", ingen tårne.



Atriumtag

Kecon A/S



Atriumtag

Kecon A/S

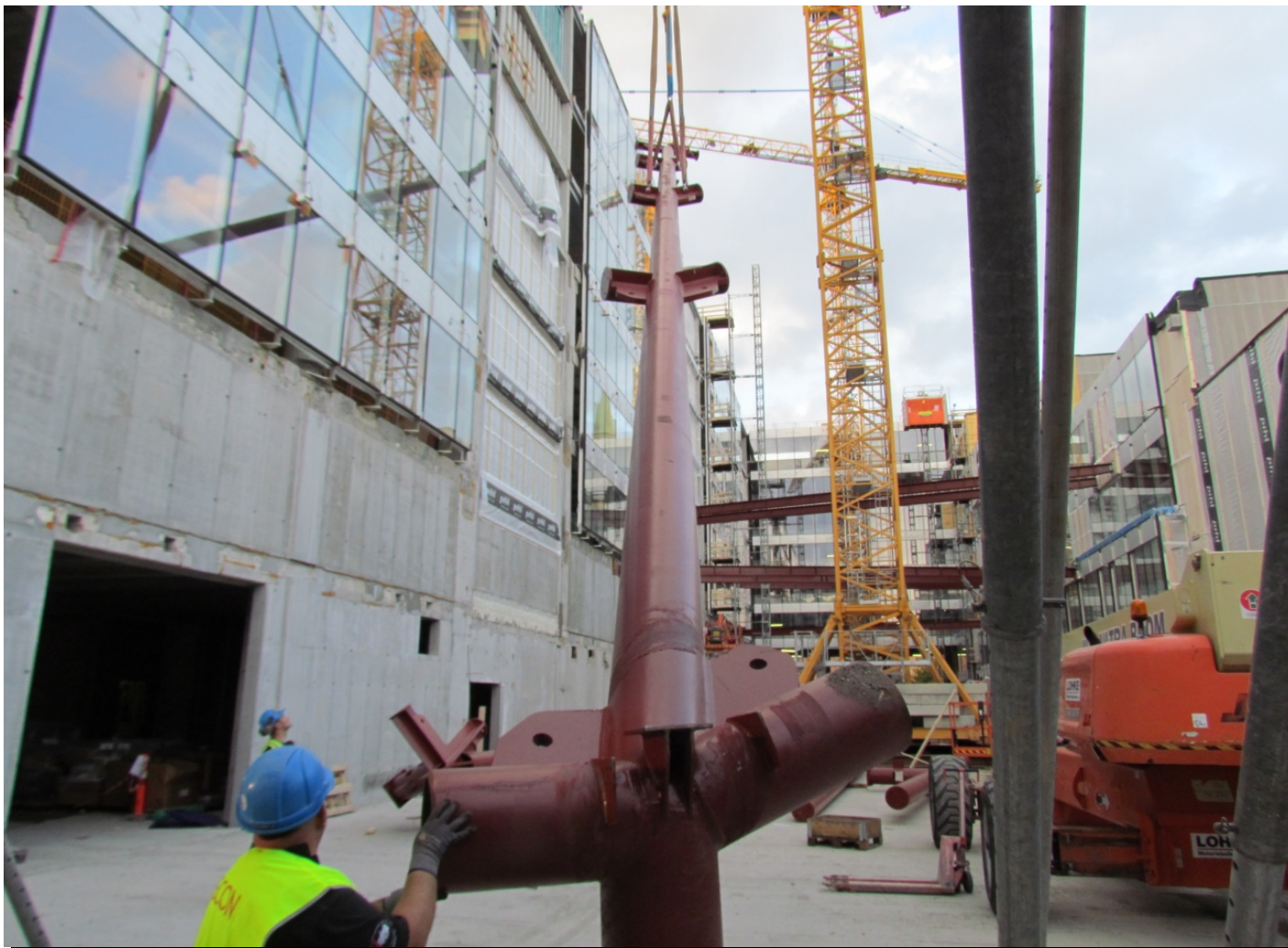


Atriumtag

Kecon A/S



Atriumtag



Atriumtag



Atriumtag



Atriumtag



Atriumtag



Atriumtag



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Atriumtag

Teoretisk nulpunkt, klar for opspænding.



Atriumtag

Opspænding, værktøj Macalloy katalog.



Atriumtag

Opspænding, værktøj as built.



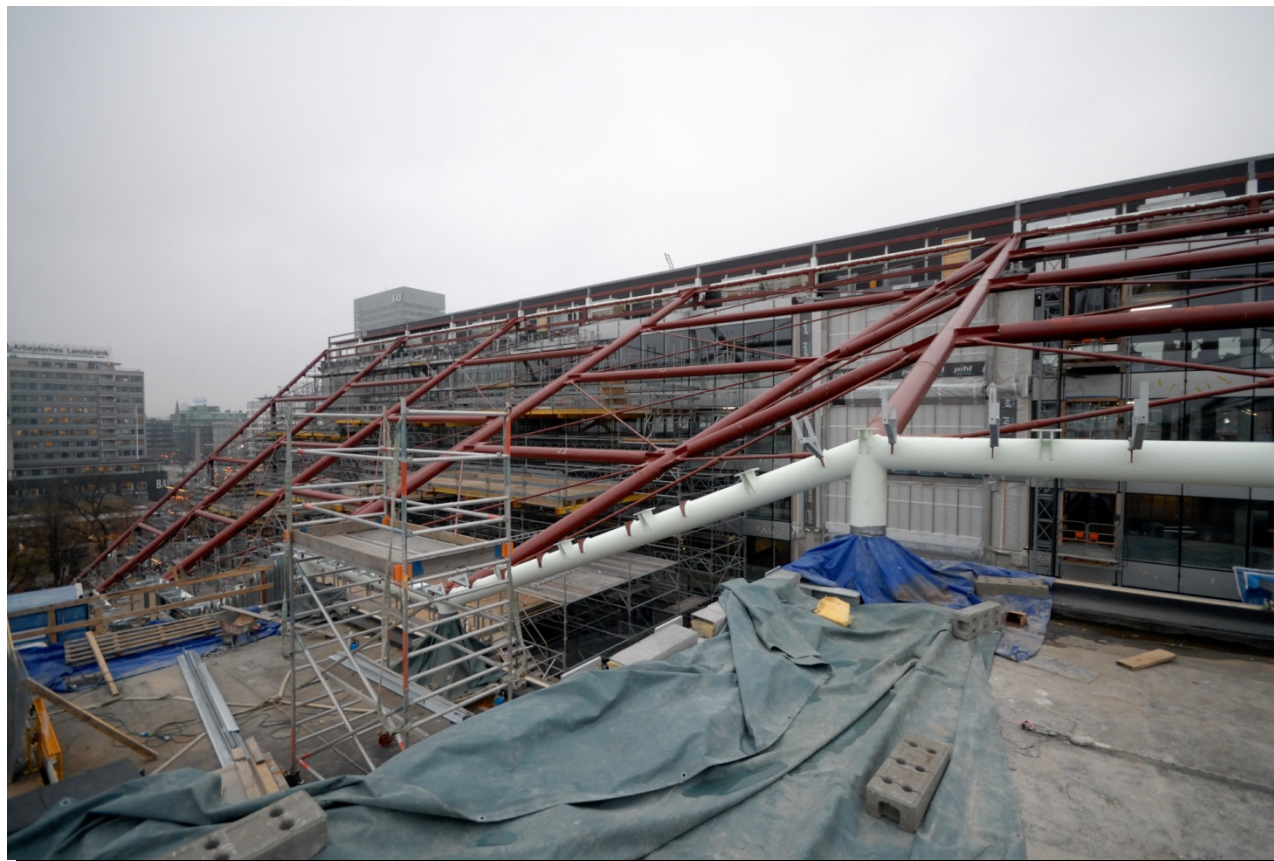
Atriumtag

Kontrol



Atriumtag

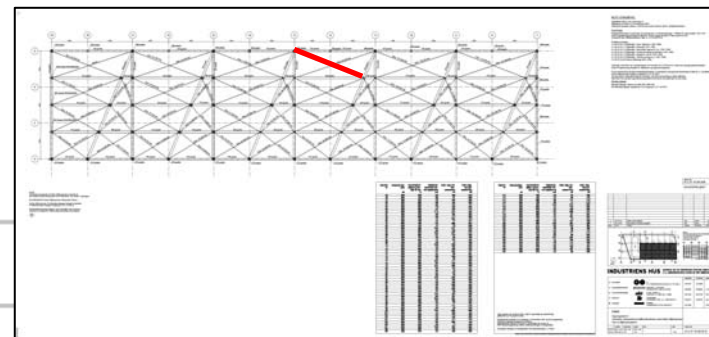
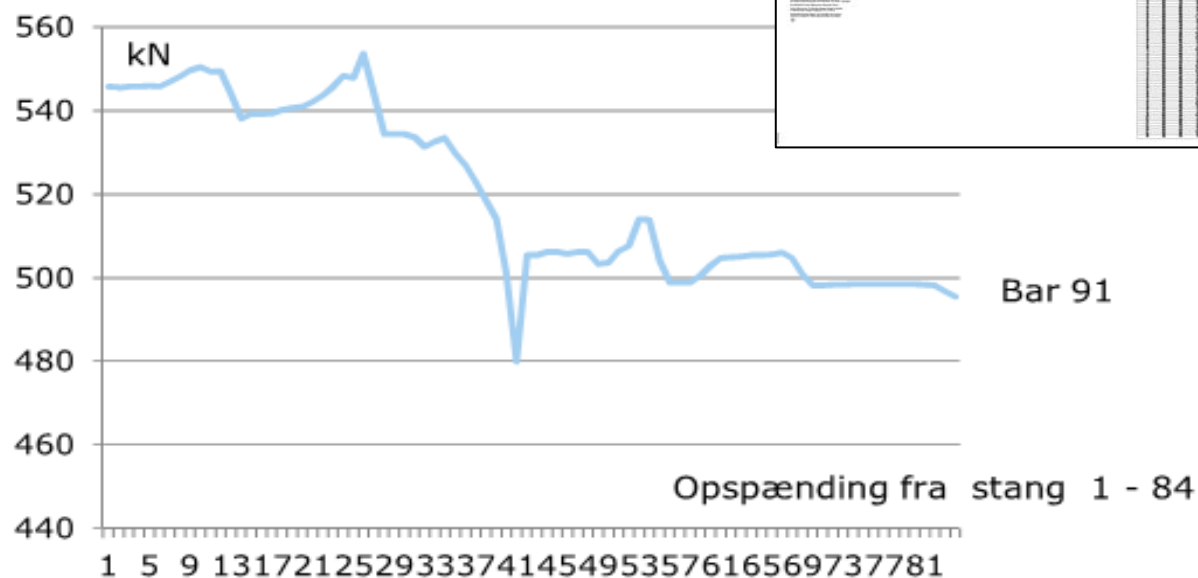
Planlagt opspænding – start 0%, 50% & 100%.



Atriumtag

As built opspænding – 0%, 50%, 75% & 100%.

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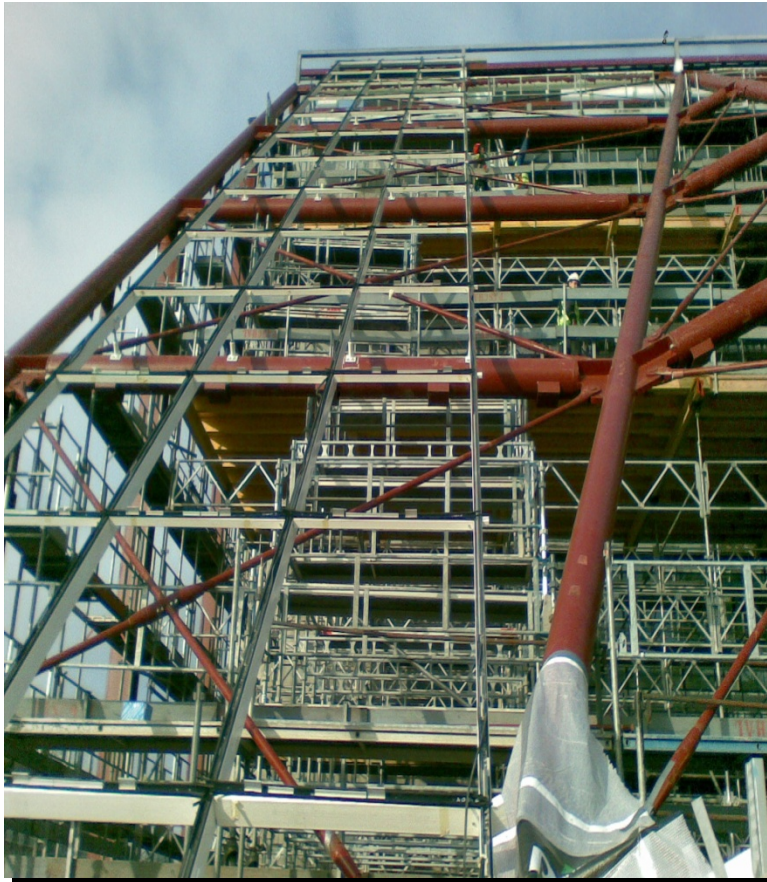
Grafen viser som eksempel, hvordan kraften varierer i bar 91 efterhånden som stængerne i taget spændes fra 1 - 84. Springet i kurven ved opspænding 41 svarer til, at opspændingen er nået til bar 91, der spændes yderligere, så kraften stiger.

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Atriumtag

Overdragelse til facadeentreprenør.



Industriens Hus 2013



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September 2010



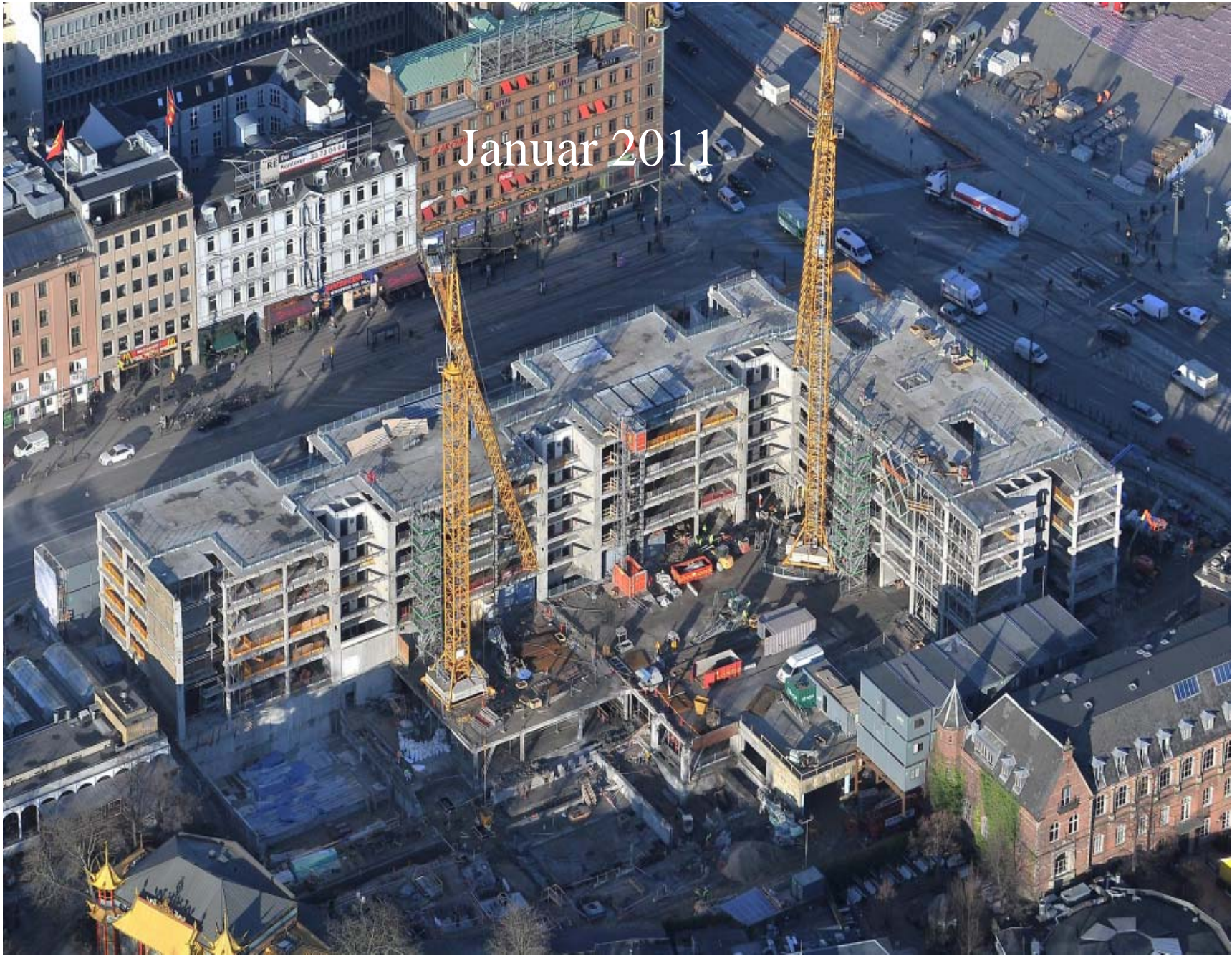


November 2010



December 2010

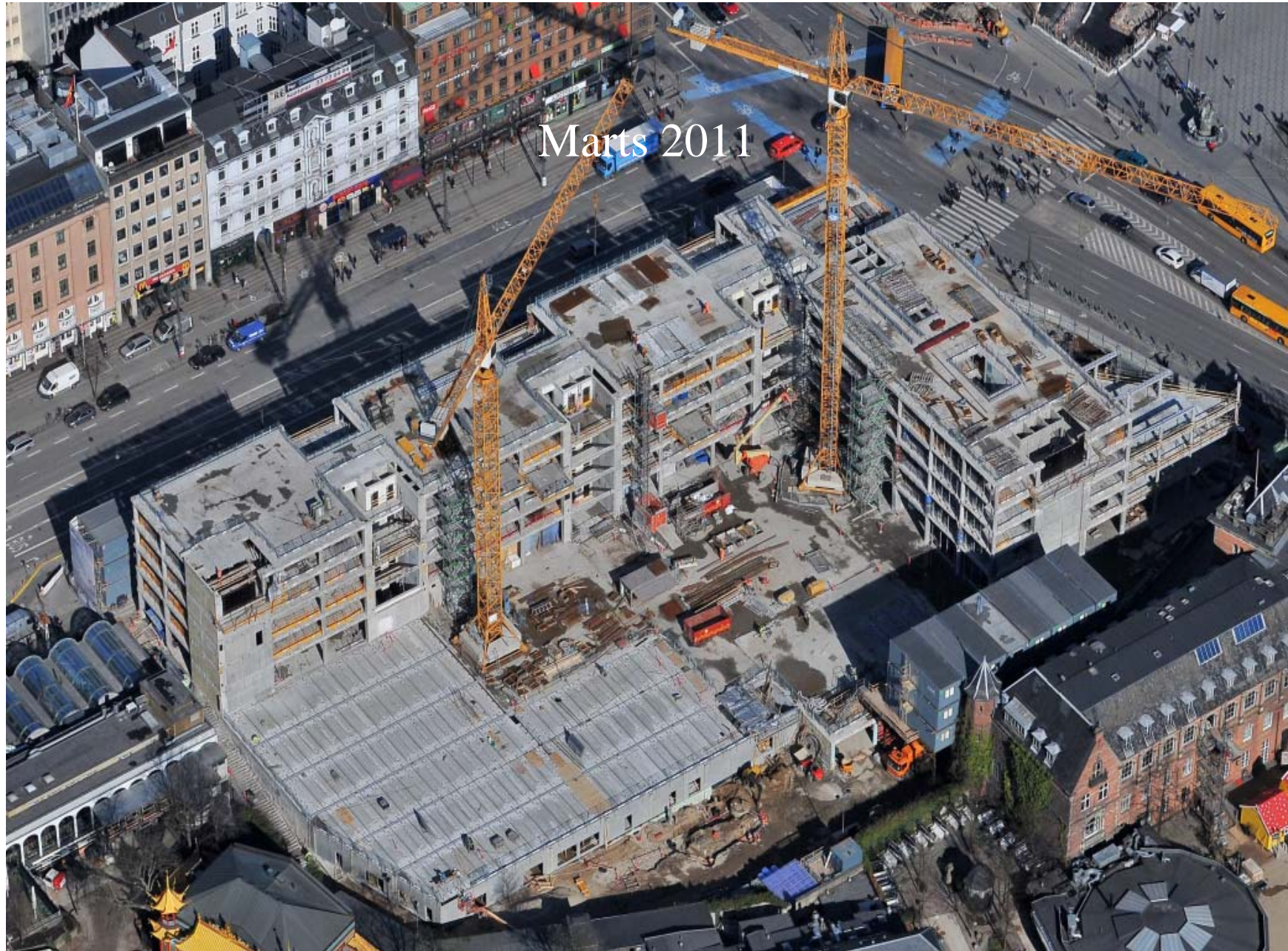




Januar 2011



Februar 2011



Marts 2011



April 2011



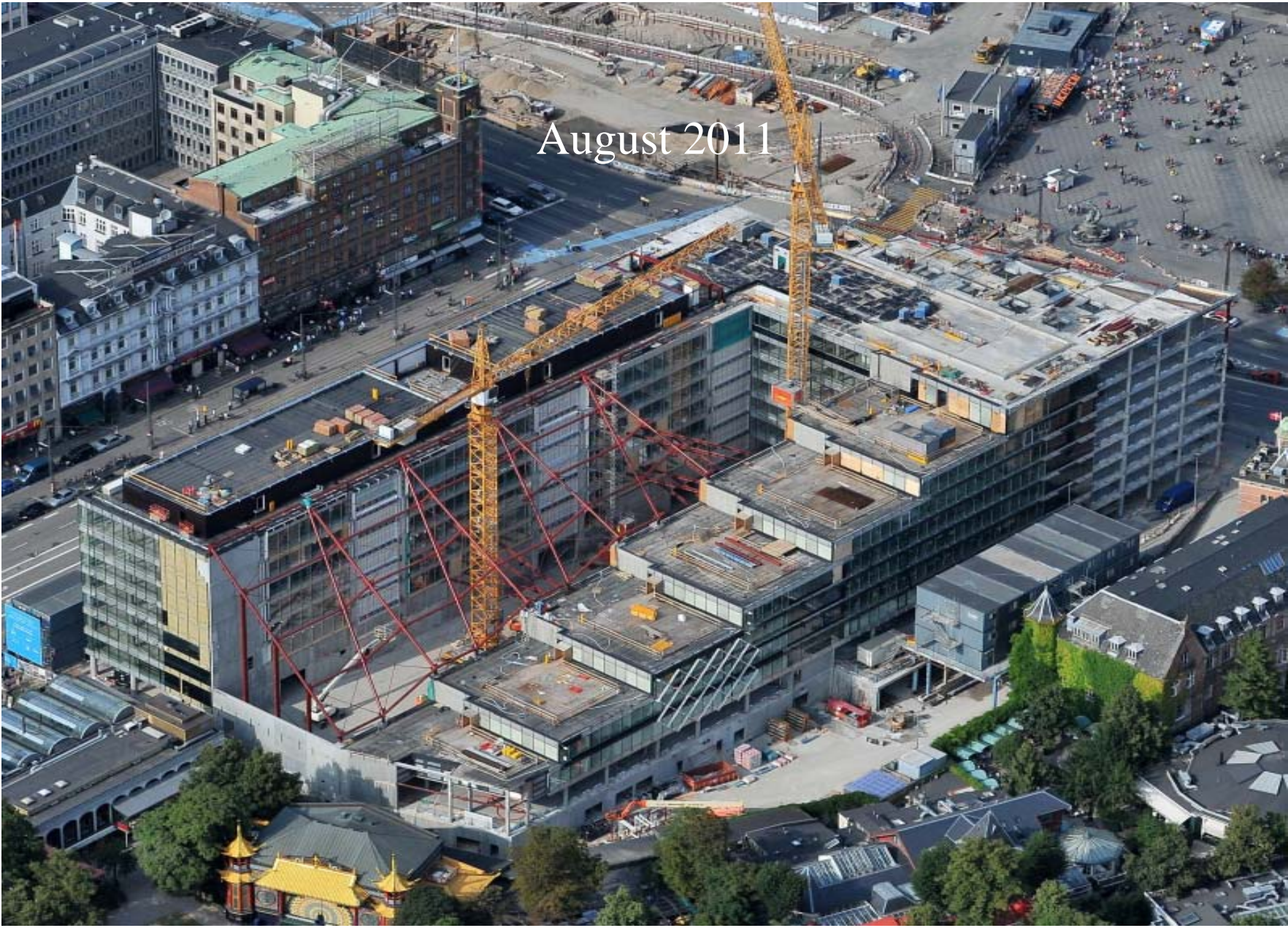
Maj 2011



Juni 2011

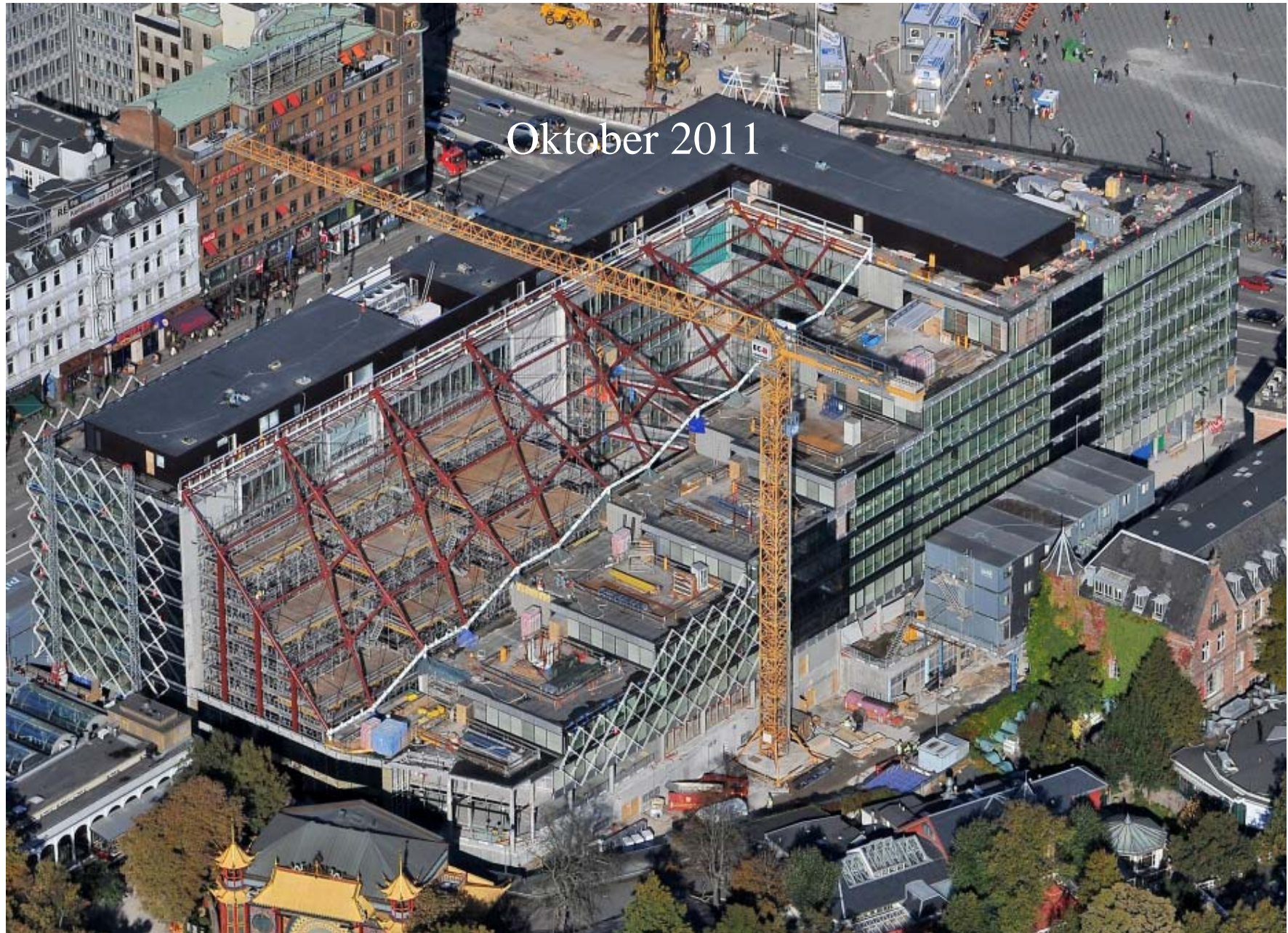


August 2011





September 2011



Oktober 2011