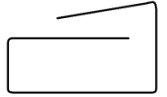


# Dansk Ståldag

## Amager Bakke – Fra Forbrændingsanlæg til Skibakke!

Peter Madsen Nordestgaard



**MBG**  
Joint Venture

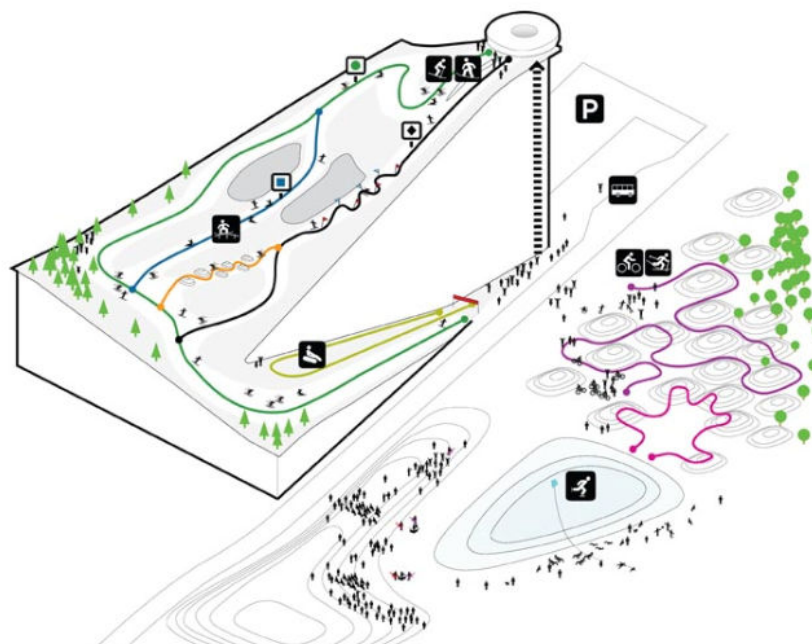
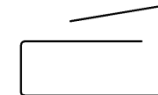
**BIG**

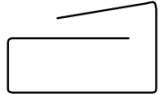
 **Amagerforbrænding**  
Nyt affaldsbehandlingscenter



**Særlige udfordringer ved projektering af "Nyt Affaldsbehandlingscenter".**

# Affaldsarkitektur – Fra Forbrændingsanlæg til Skibakke

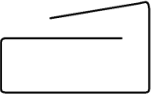




1. Affaldssilo og kranloft
2. Ovnanlæg
3. Kedler og overophedere
4. Turbiner og varmevekslere
5. Røggasrensningsanlæg
6. Andre restprodukter (slagge og spildevand)

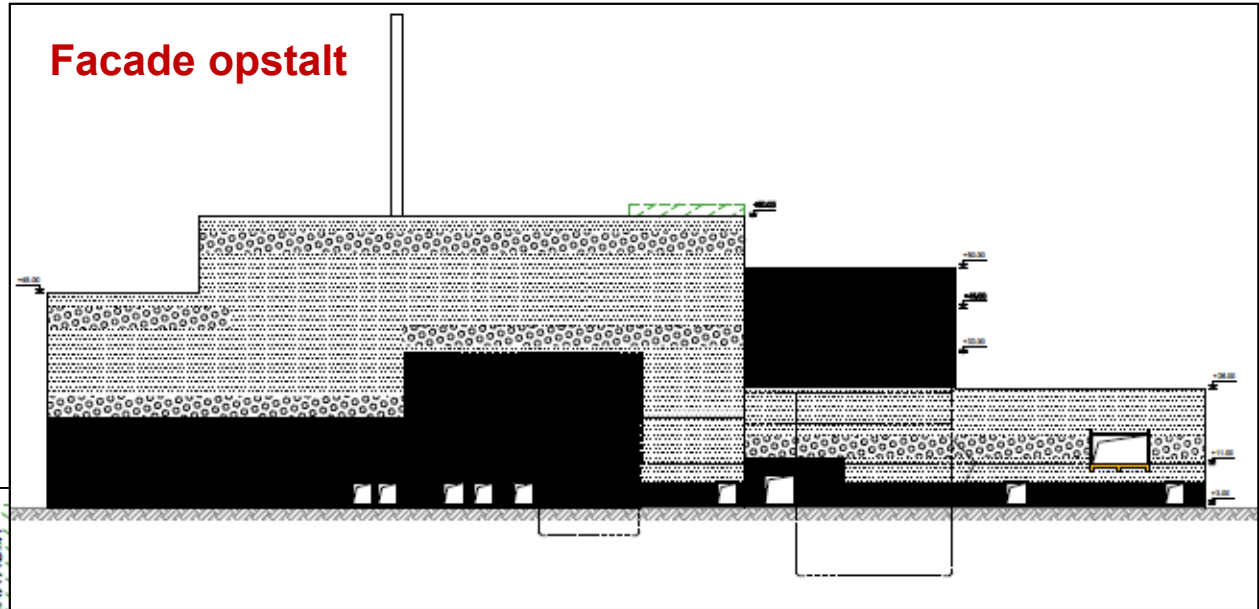


# Layout til Arkitektkonkurrence – Maskin-/El-rådgiver

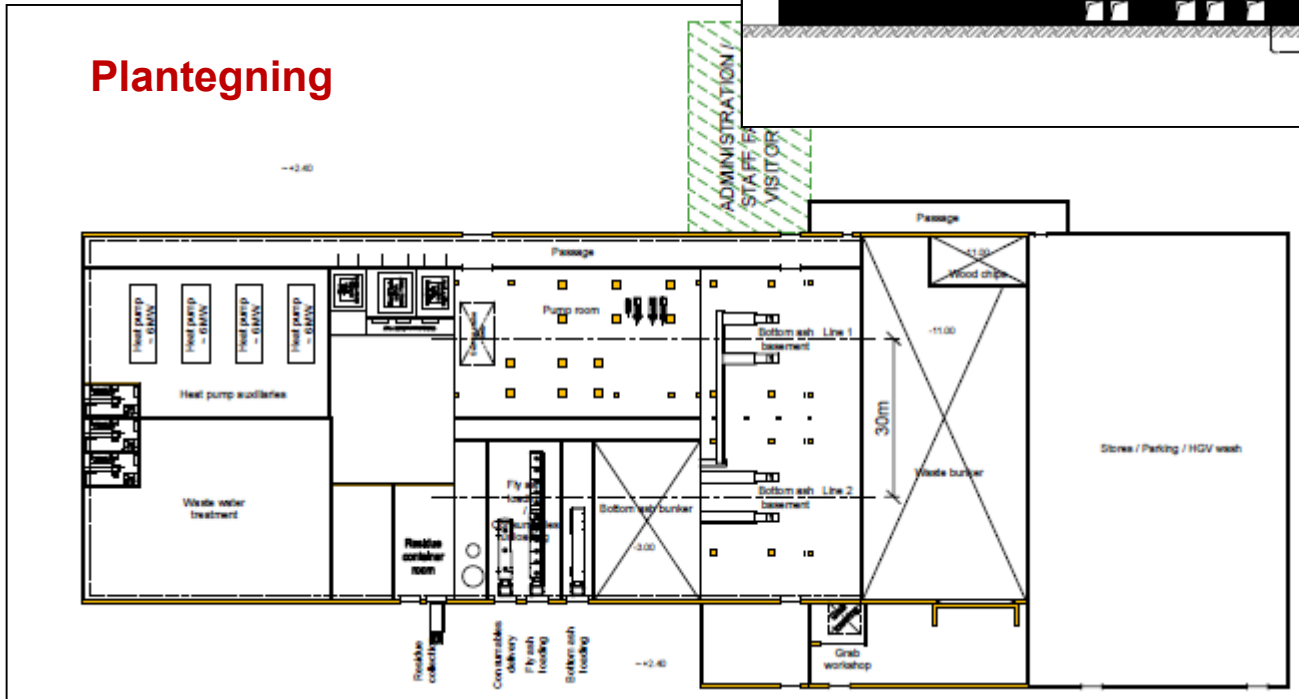


August 2010

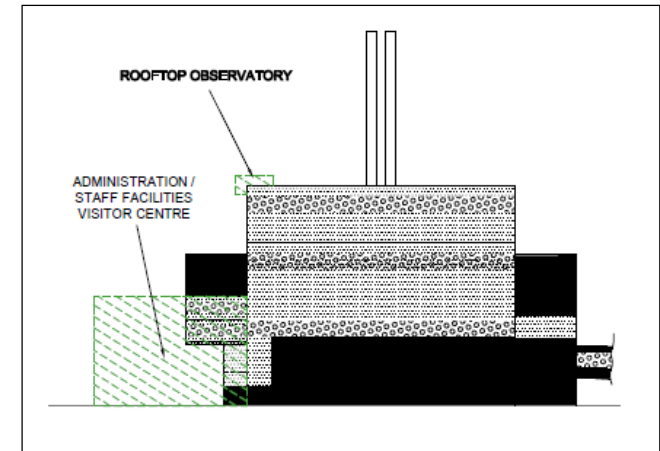
Facade opstalt



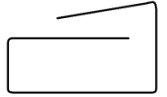
Plantegning



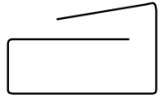
Gavl opstalt



# BIG's Vinderprojekt



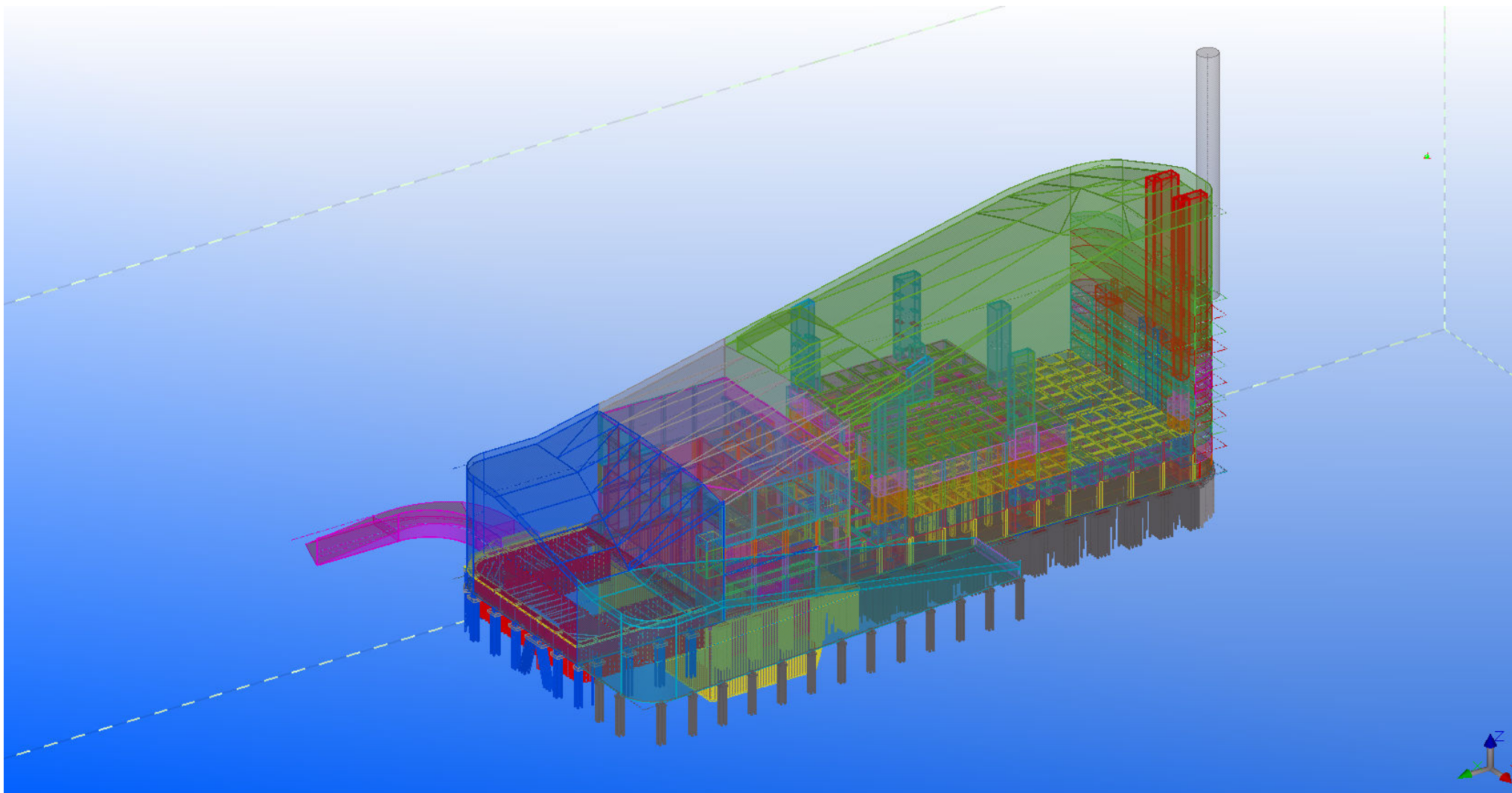
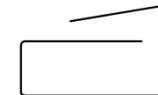




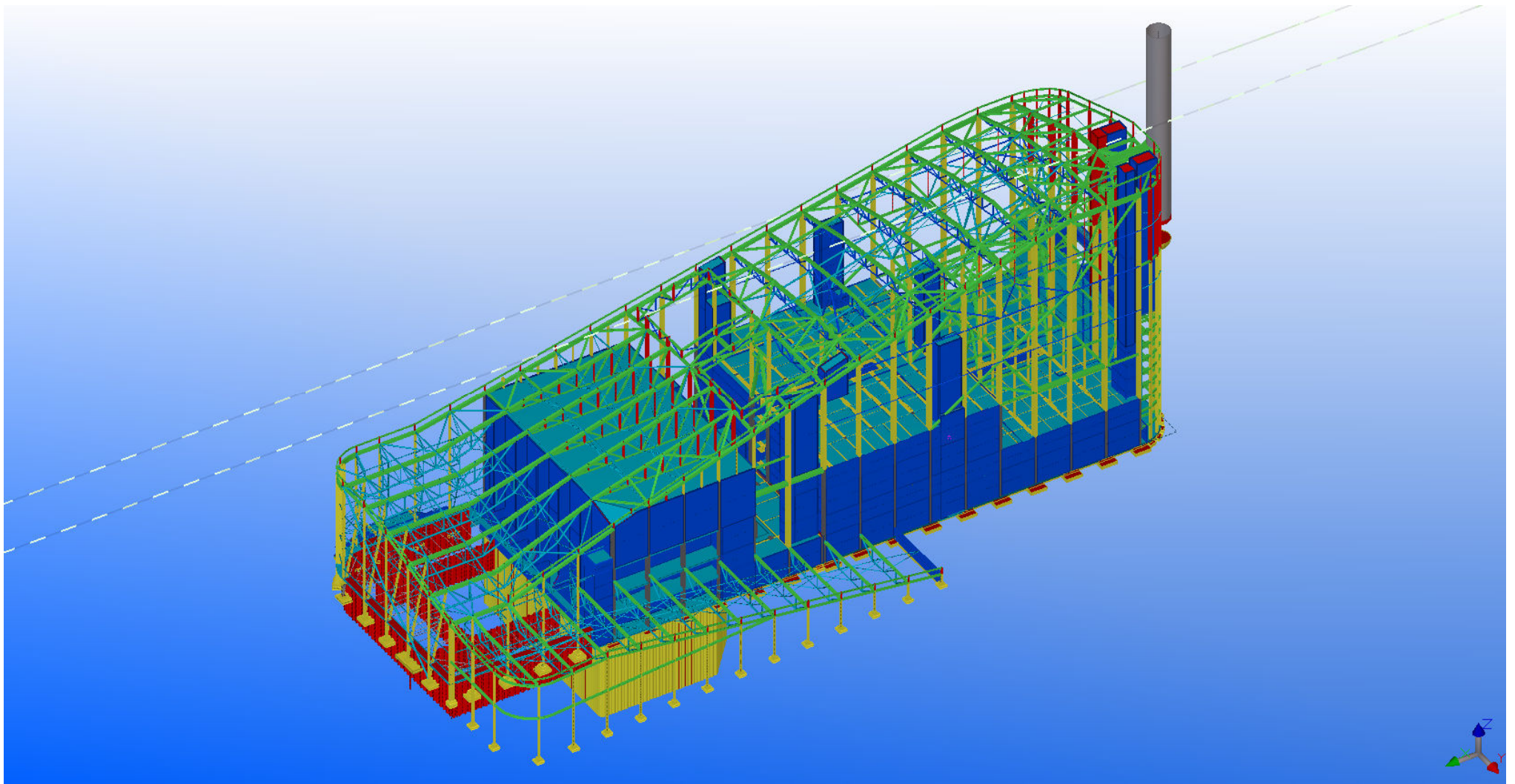
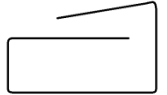
November 2011



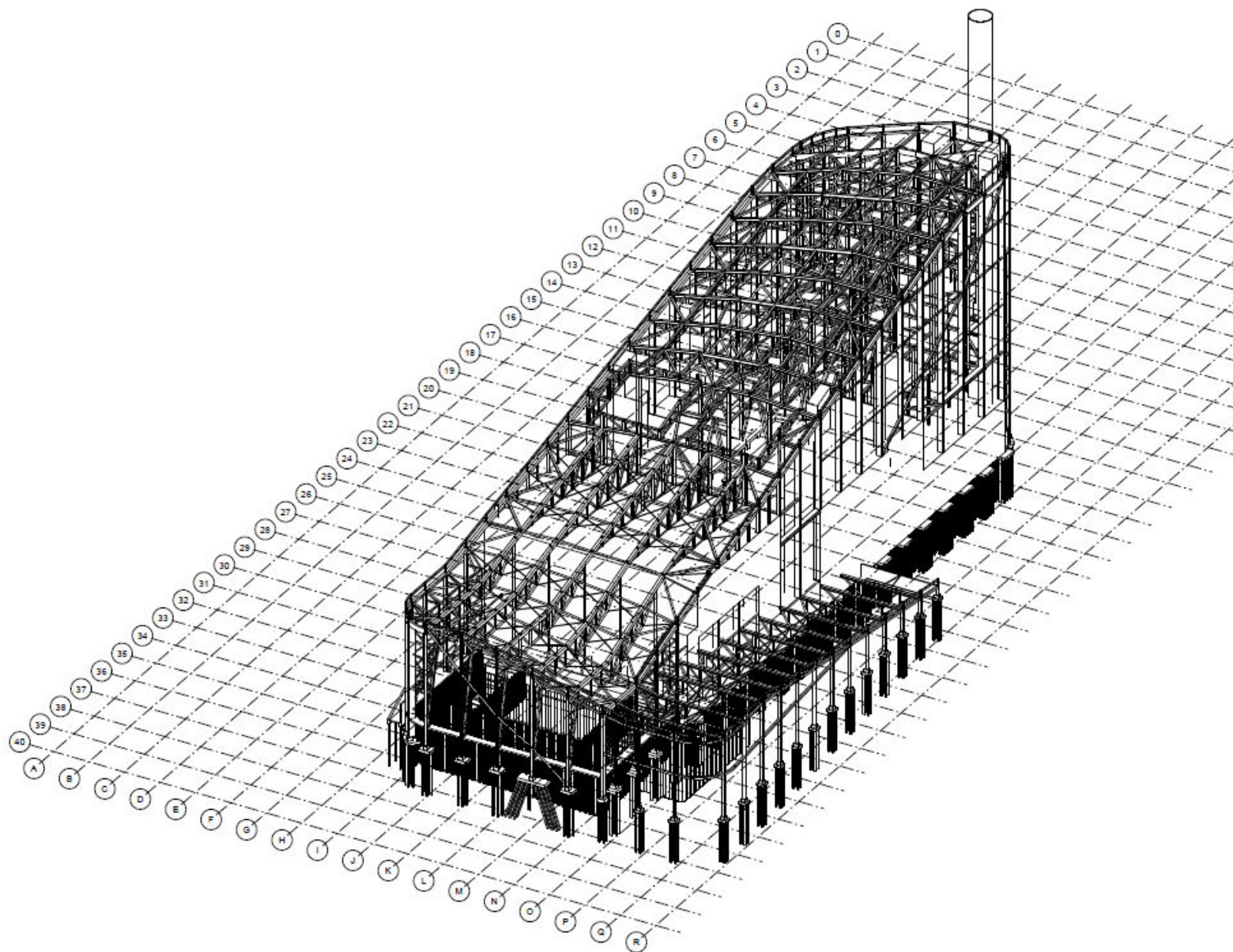
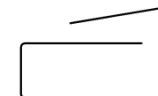
# Ydre Bakkegeometri – Klimaskærm





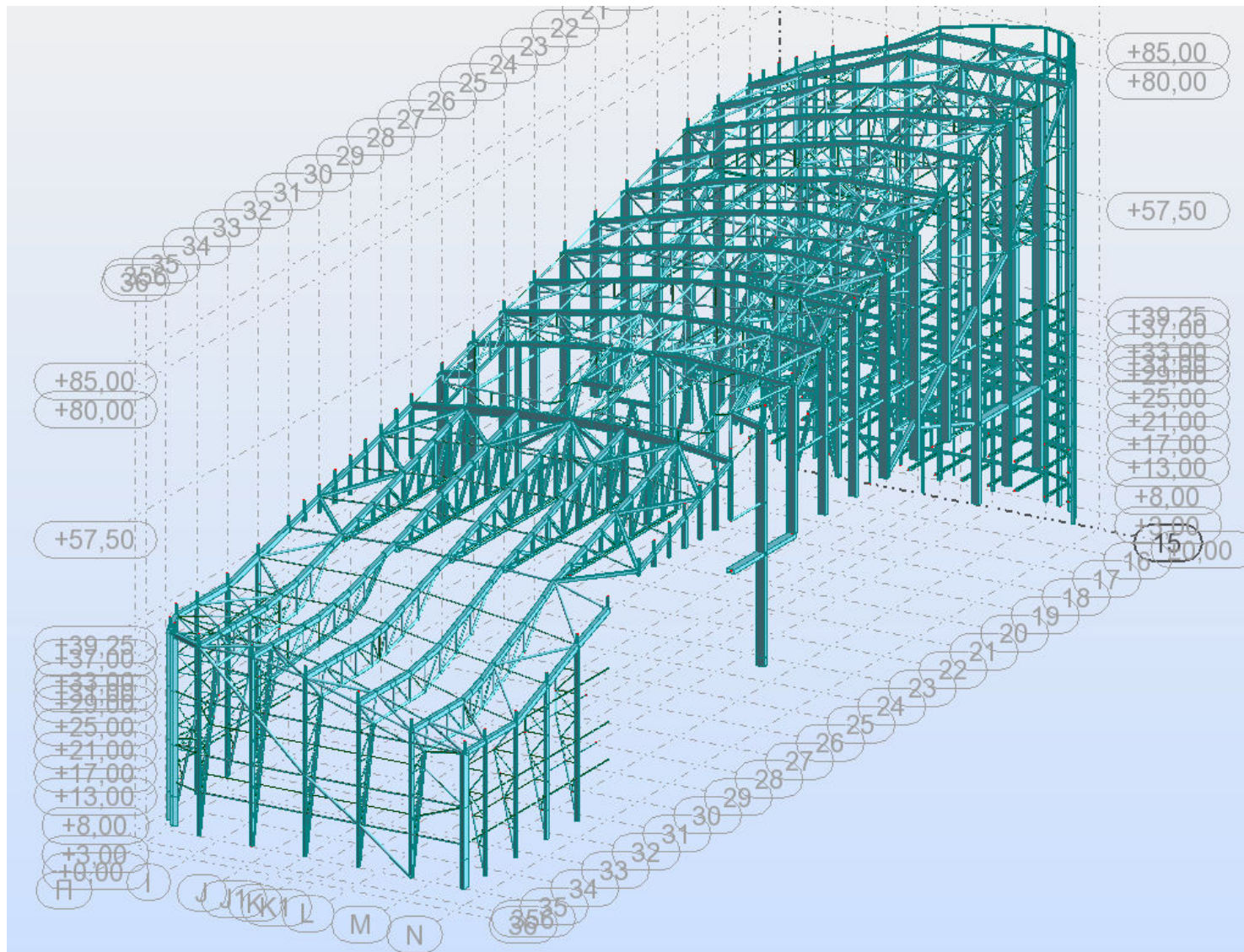
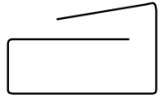


# 3D-Konstruktioner – Stål og Beton i samme model



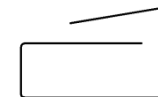


# 3D-Beregningsmodeller – FEM





# Nøgletal – Stort Projekt



## Forbrændingsanlæg:

- 2 Ovnlinjer ca. 35 tons affald i timen hver.

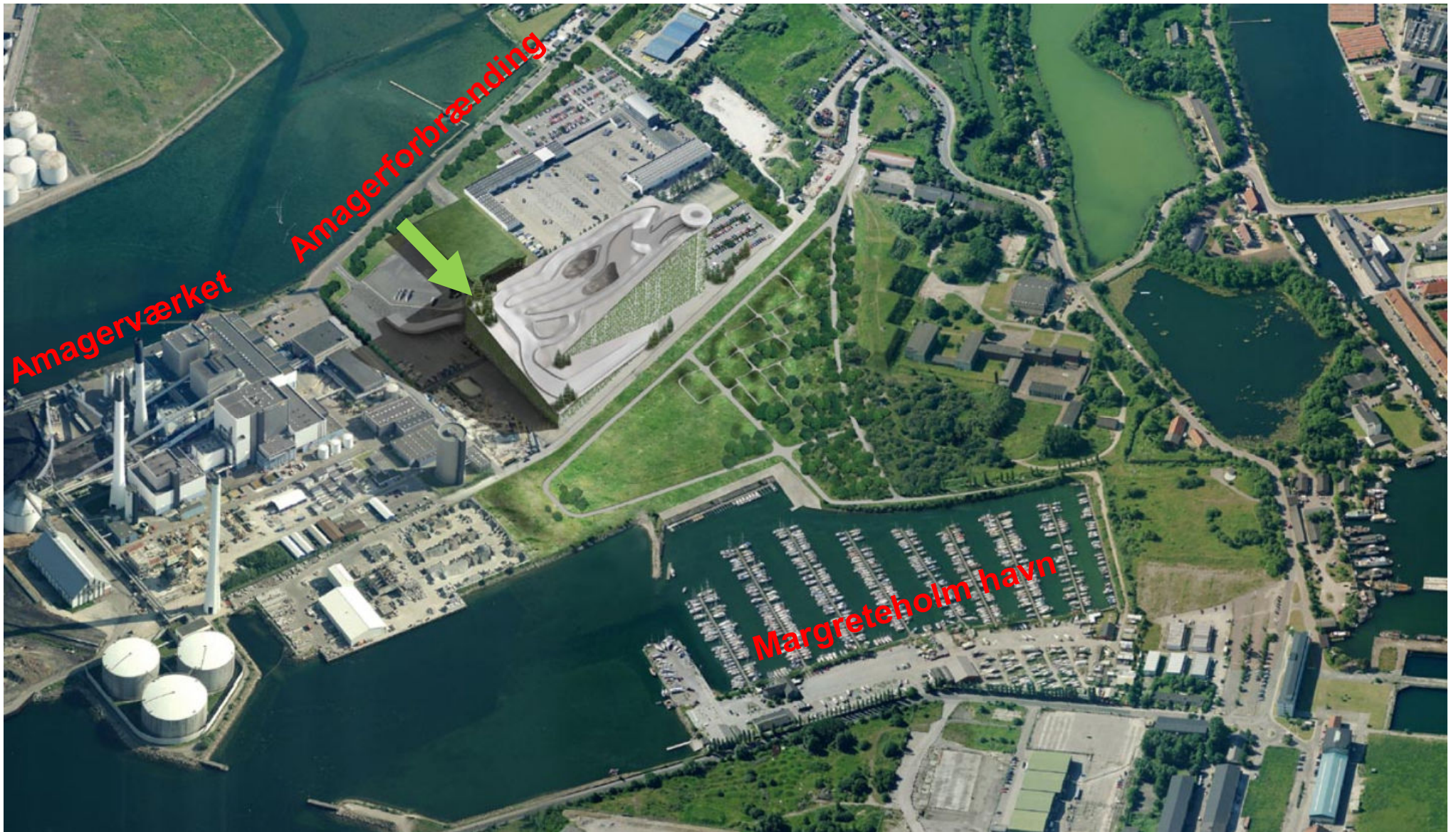
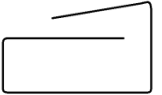
## Bygninger:

- Tagareal ca. 16.500 m<sup>2</sup>
- Administration ca. 4.500 m<sup>2</sup>
- Facadeareal ca. 20.000 m<sup>2</sup>

## Primære konstruktioner:

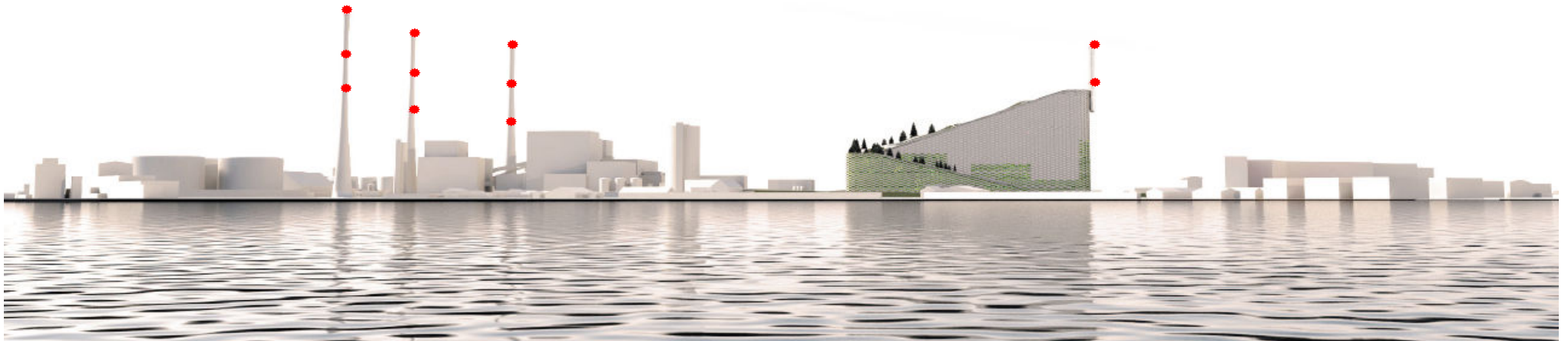
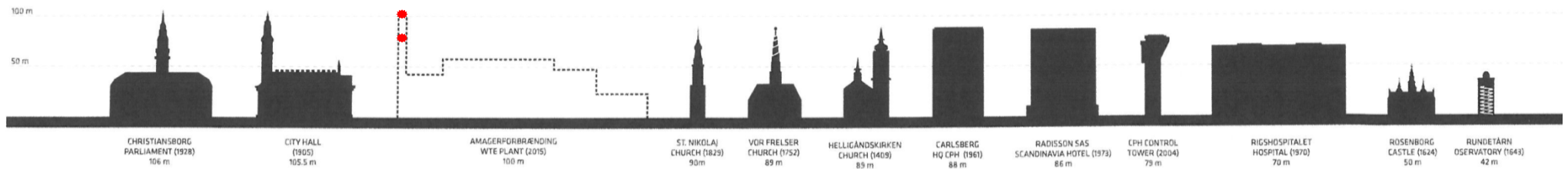
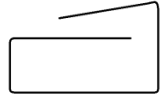
- Budget for samlede anlæg ca. 3.500.000.000 kr.
- **Stålkonstruktioner** **ca. 4.000.000 kg**
- Jernbeton ca. 40.000 m<sup>3</sup>
- Jernbeton pæle ca. 2400 stk.
- Sekantpælevægge ca. 4400 m<sup>2</sup>
- Spuns ca. 5000 m<sup>2</sup>
- Udgravning af jord ca. 50.000 m<sup>3</sup>

# Placering – Amager Bakke



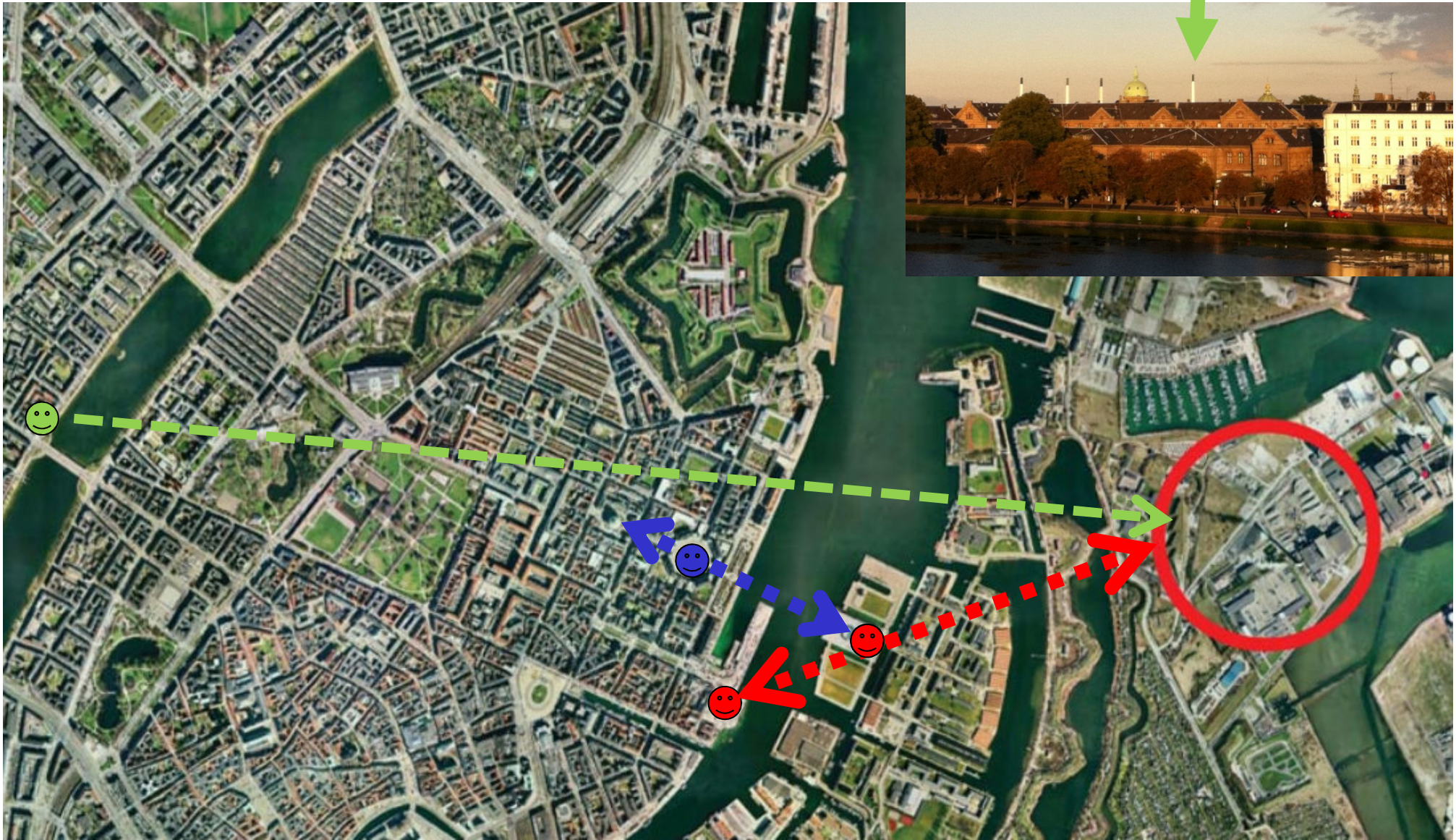
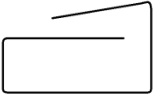


# Skyline – Blinkende røde lys – Synlig i Bybilledet



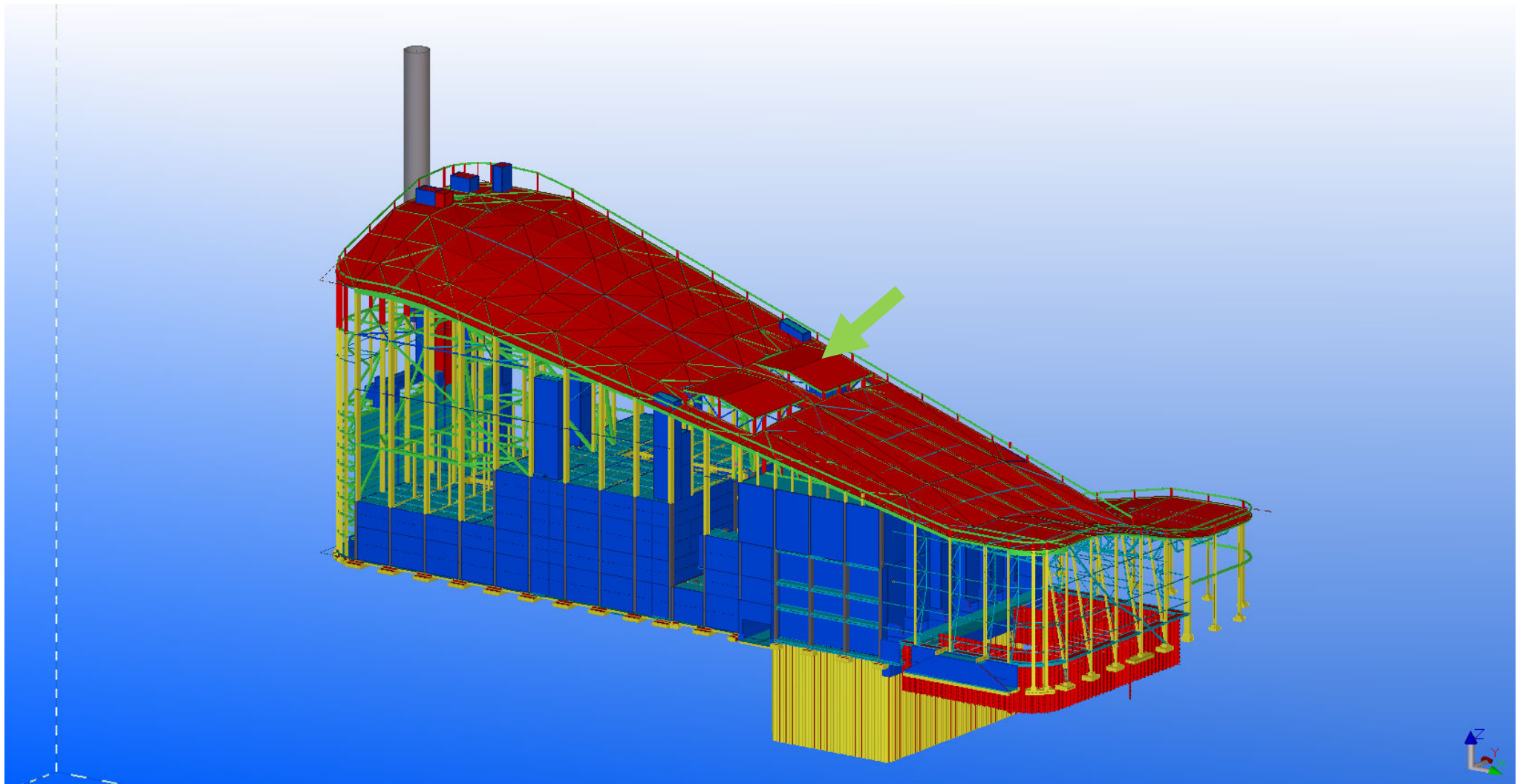
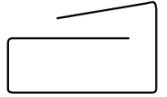


# Placering – Nye Akser

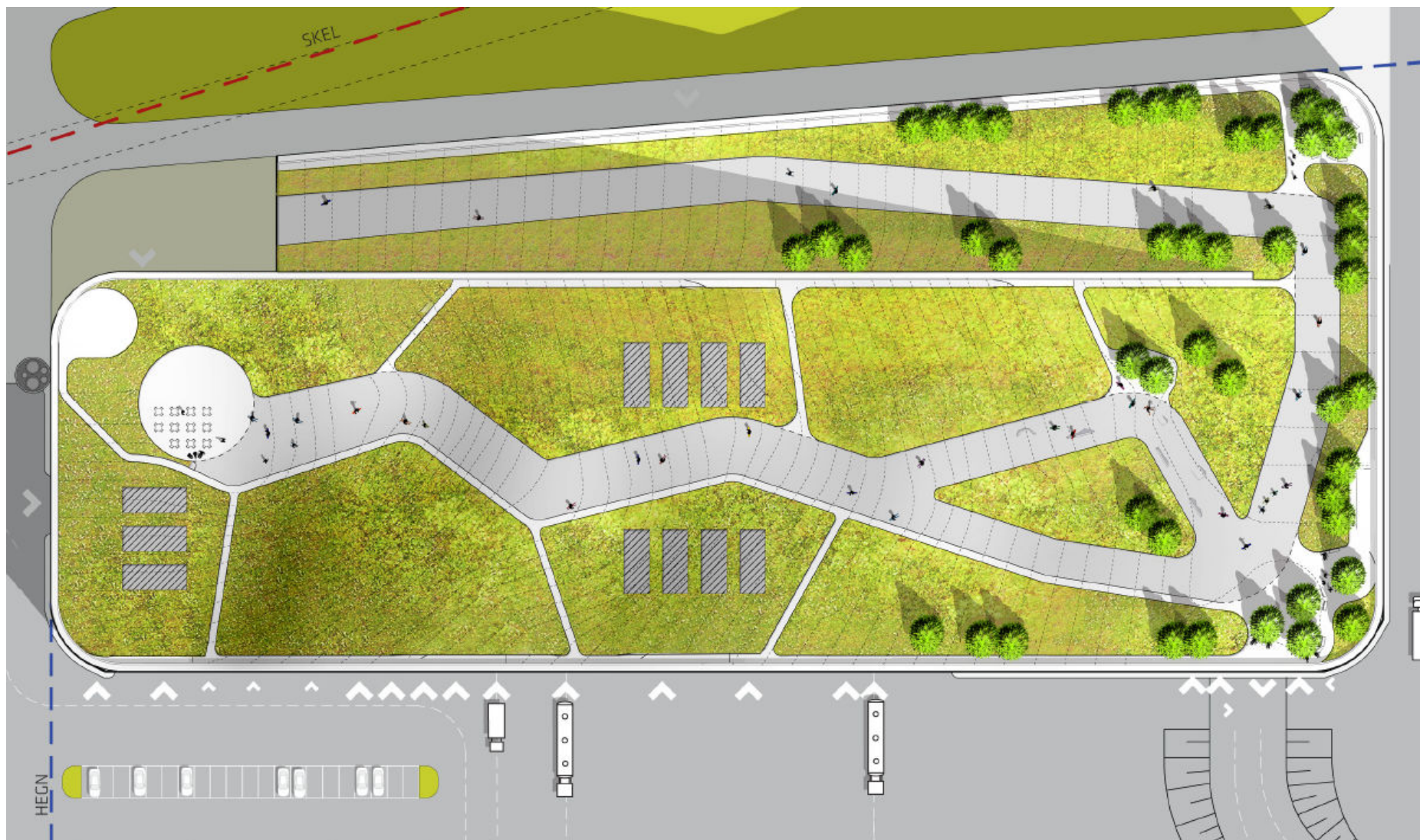
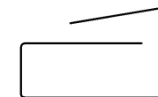




# Kasser på tag – ”Scenetårn” = Plads til Ovn/Kedel

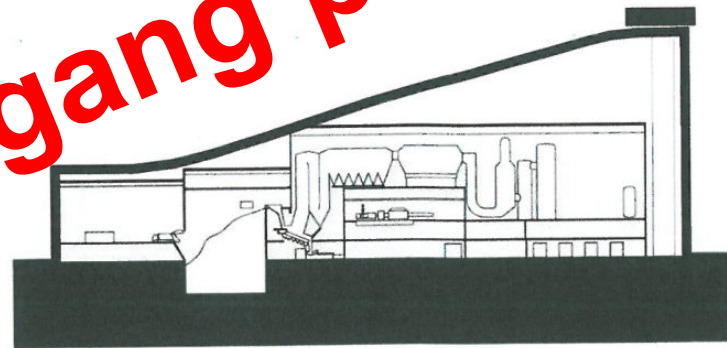
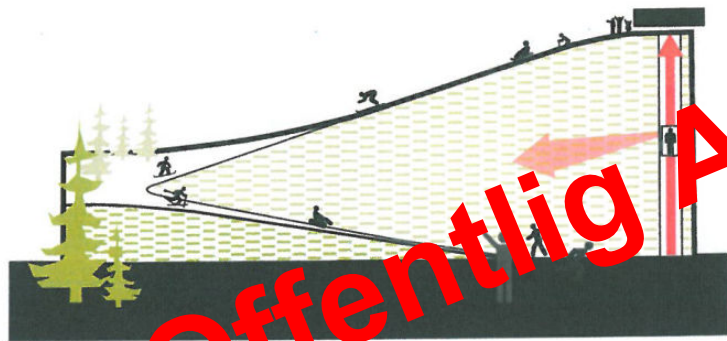
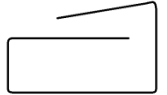


# Tag til Rekreative Formål





# "Forbrændingsanlæg" med "Personer på Tag"



**Offentlig Adgang på Tag**

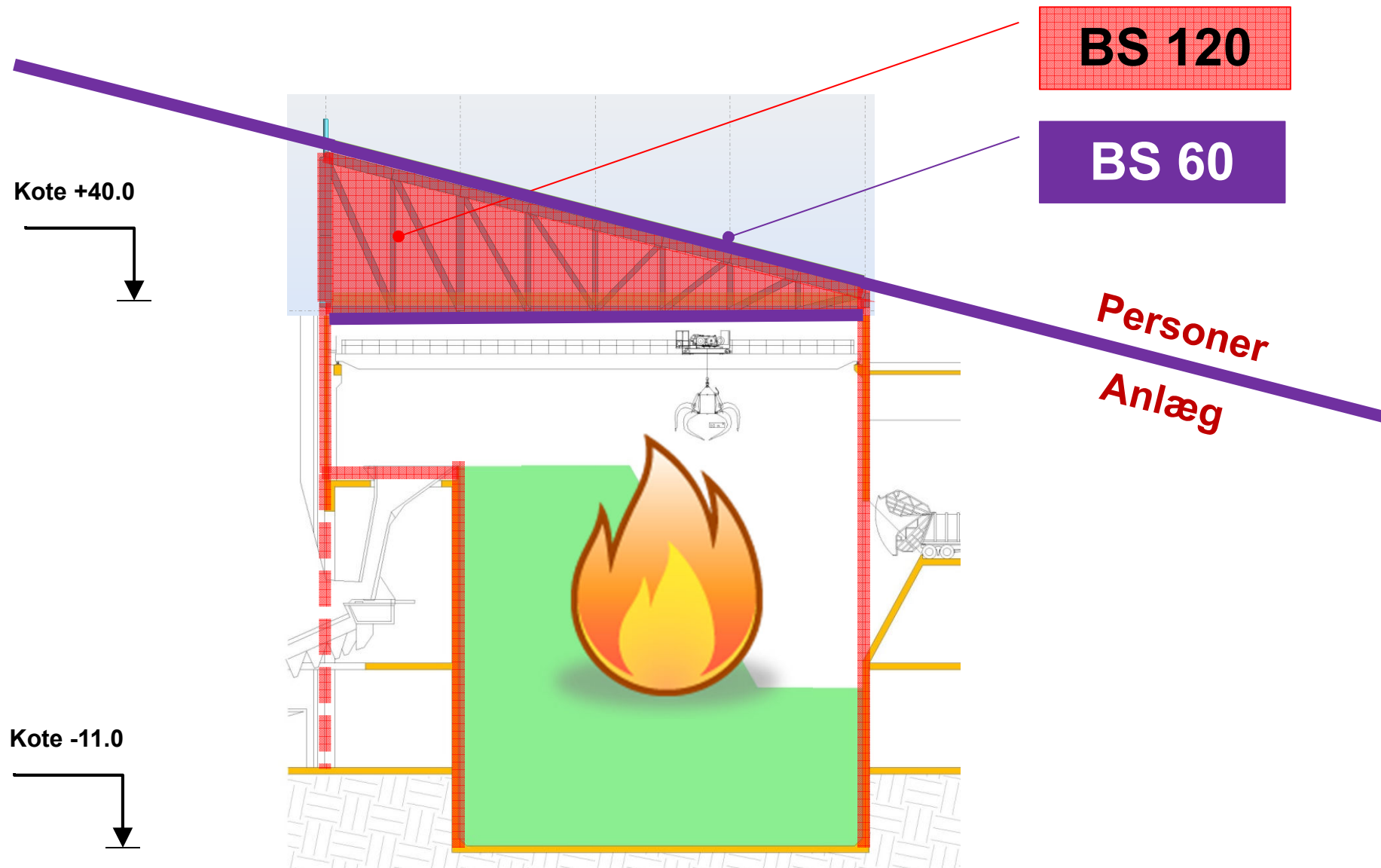
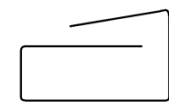
## Ekstra krav til Dimensionering:

- CC3-krav: Robusthed
- Brand adskillelse
- Stor nyttelast på tag

## Overbygning:

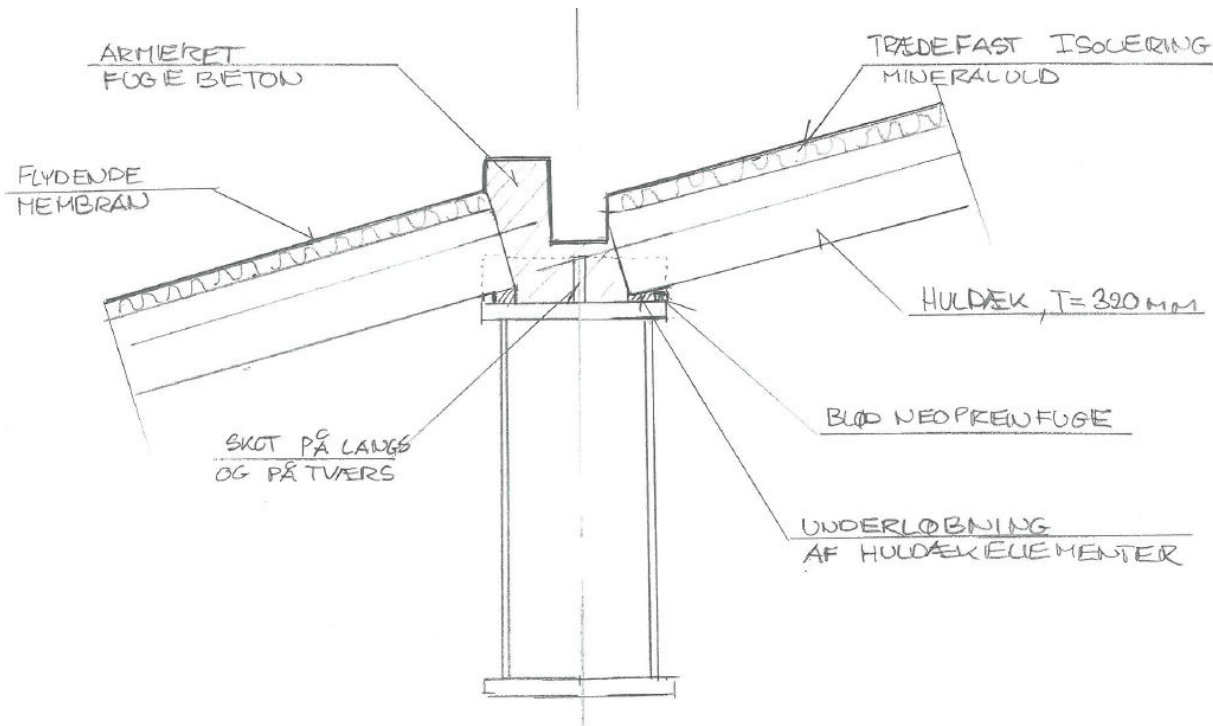
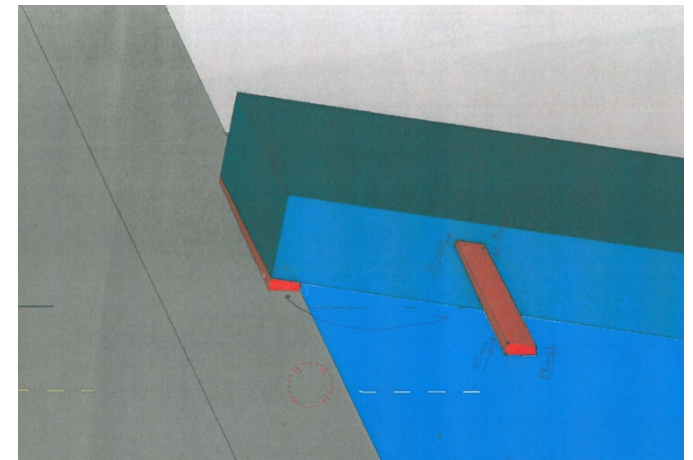
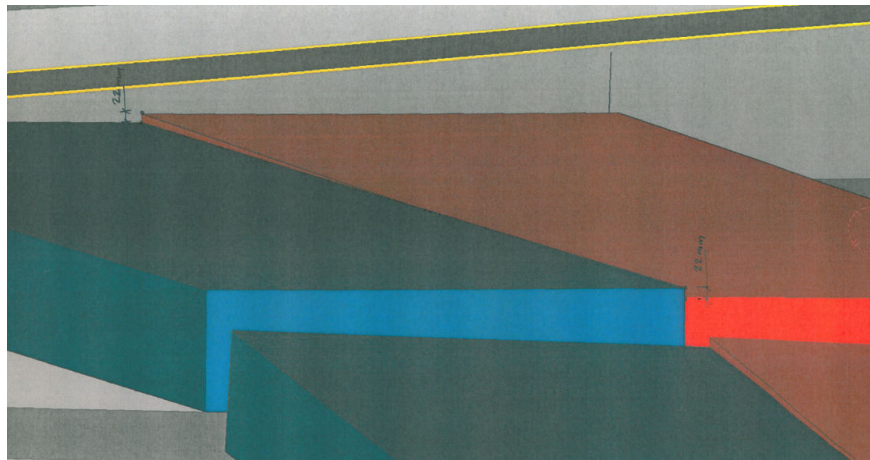
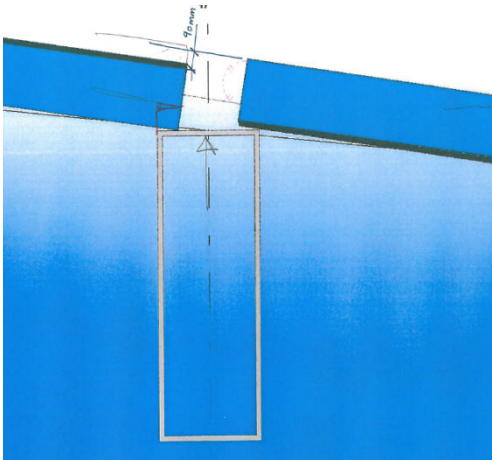
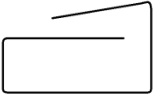
- Tag: **Huldækelementer**
- Hovedkonstruktion: Stål
- Underbygning: In situ beton

# Affaldssilo – Brandadskillelse

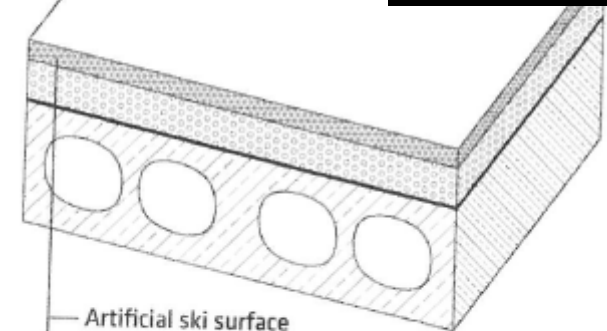
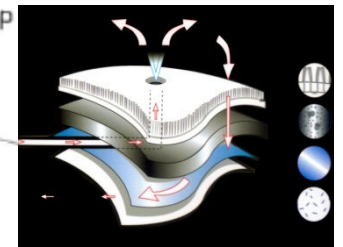




# Tag: Elementer – Kompleks Geometri – Hurtig Montage

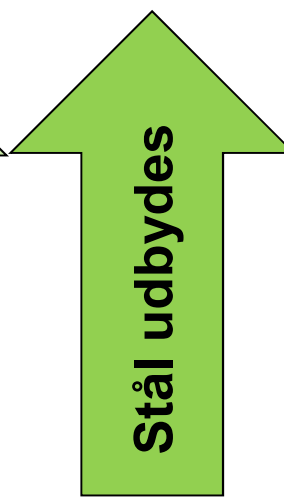
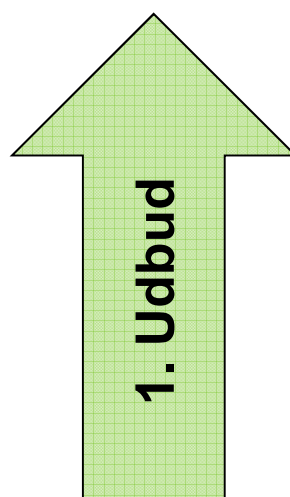
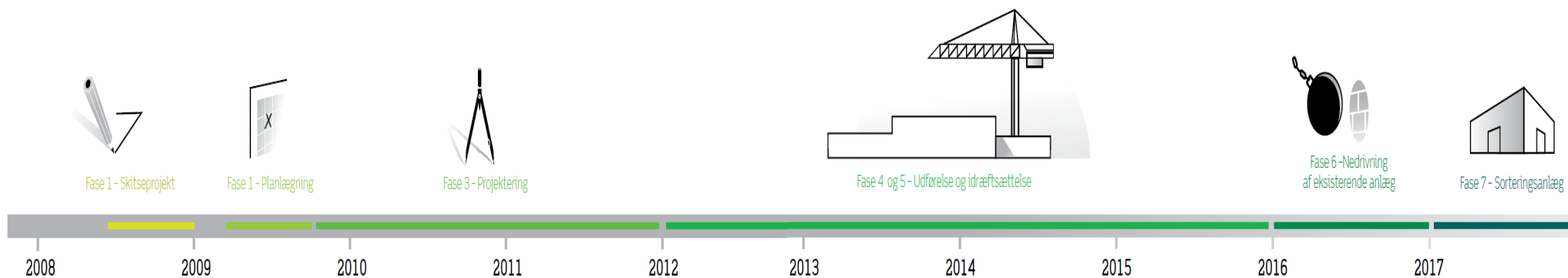
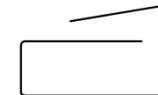


SKI SURFACE ROOF BUILD-UP



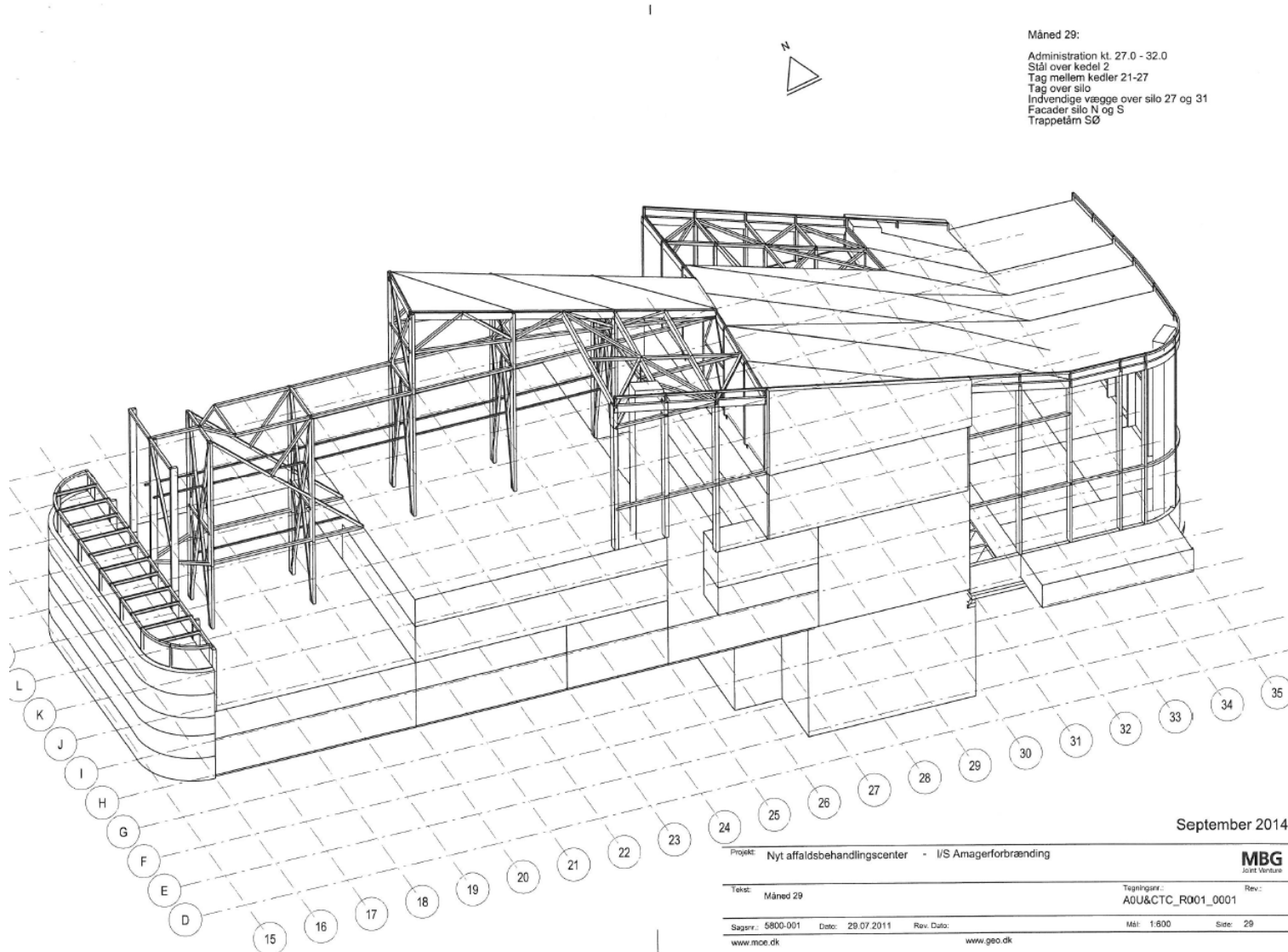
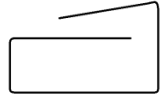
- Artificial ski surface
- Shock absorbent layer
- Waterproof membrane
- Prefabricated prestressed Concrete slah

# Tidslinje

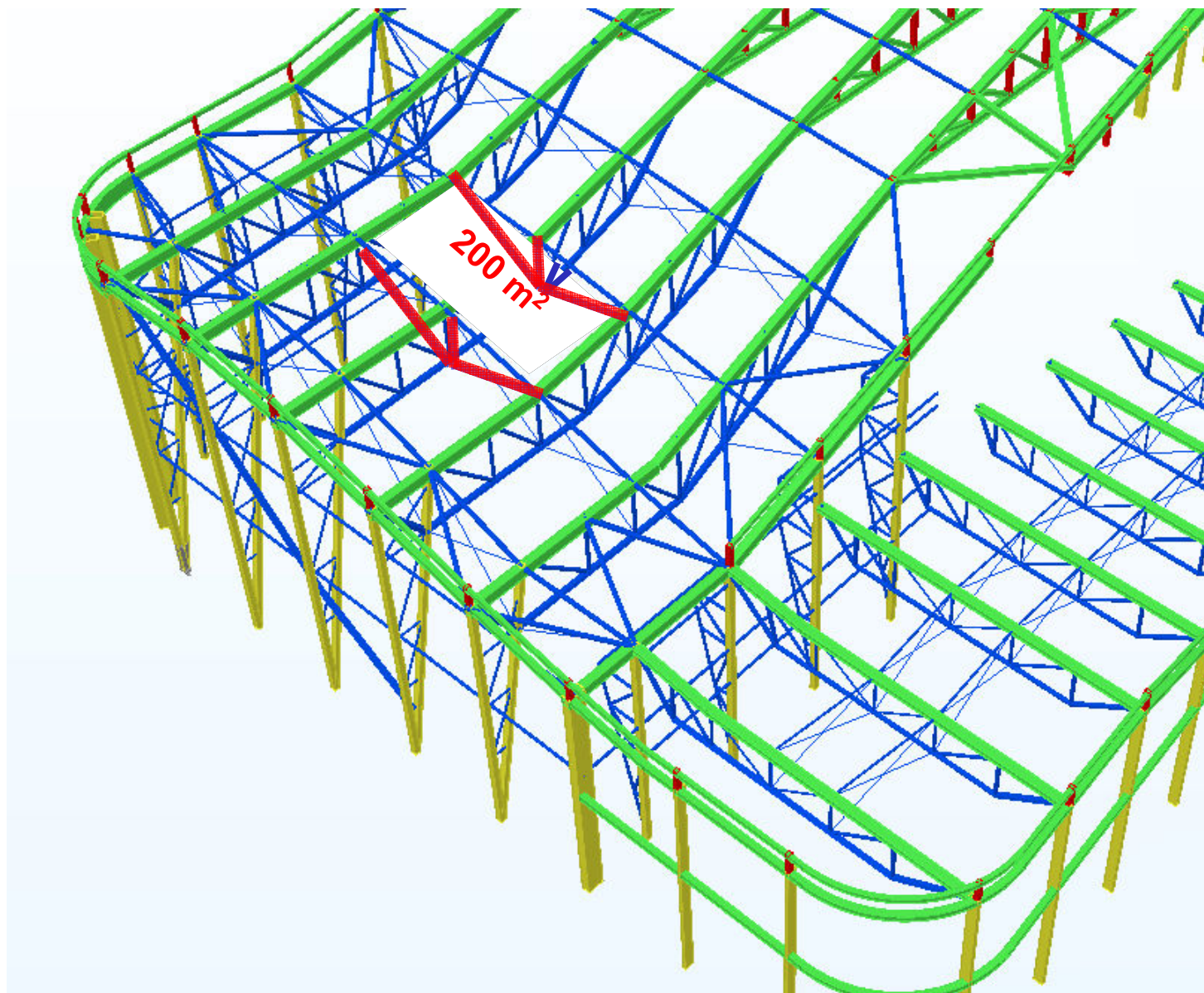
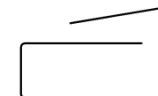




# Byggetakt B&A samtidig med Maskin-leverancer

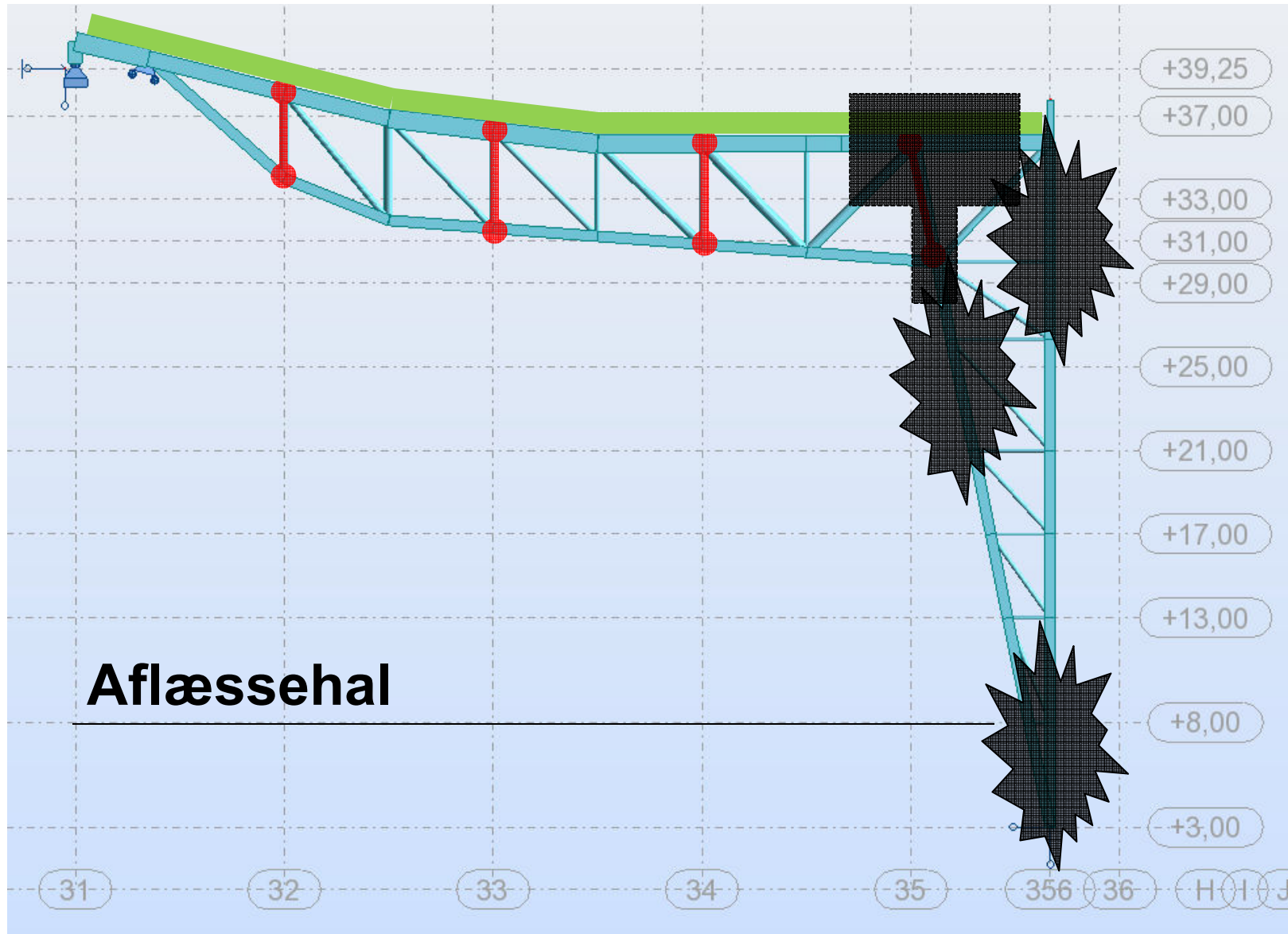
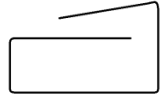


# Robusthed – Kollaps af Tag

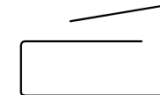




# Robusthed – Gitterdraggersystem

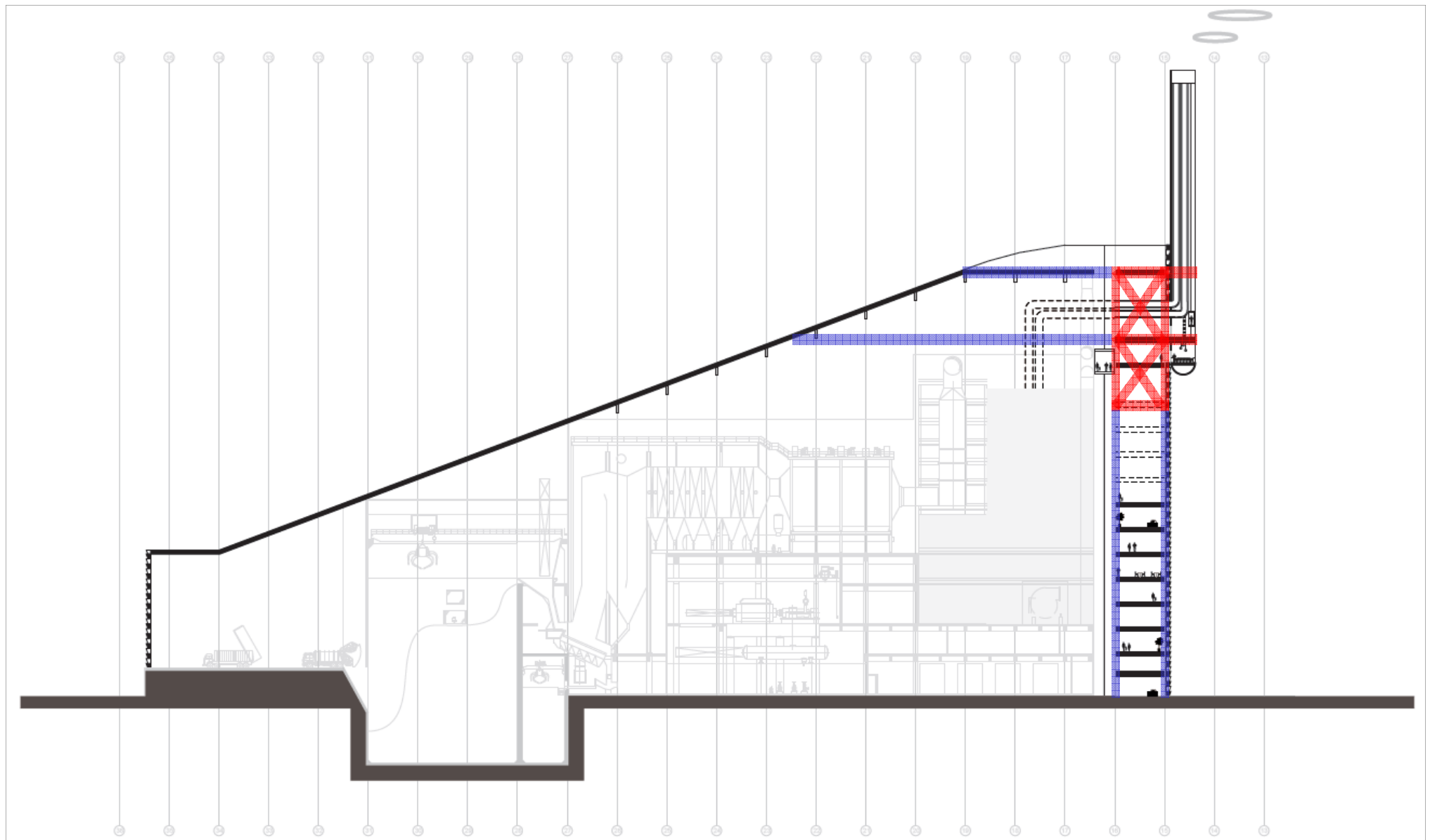
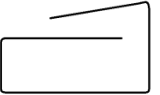


# Skorsten – Kunst

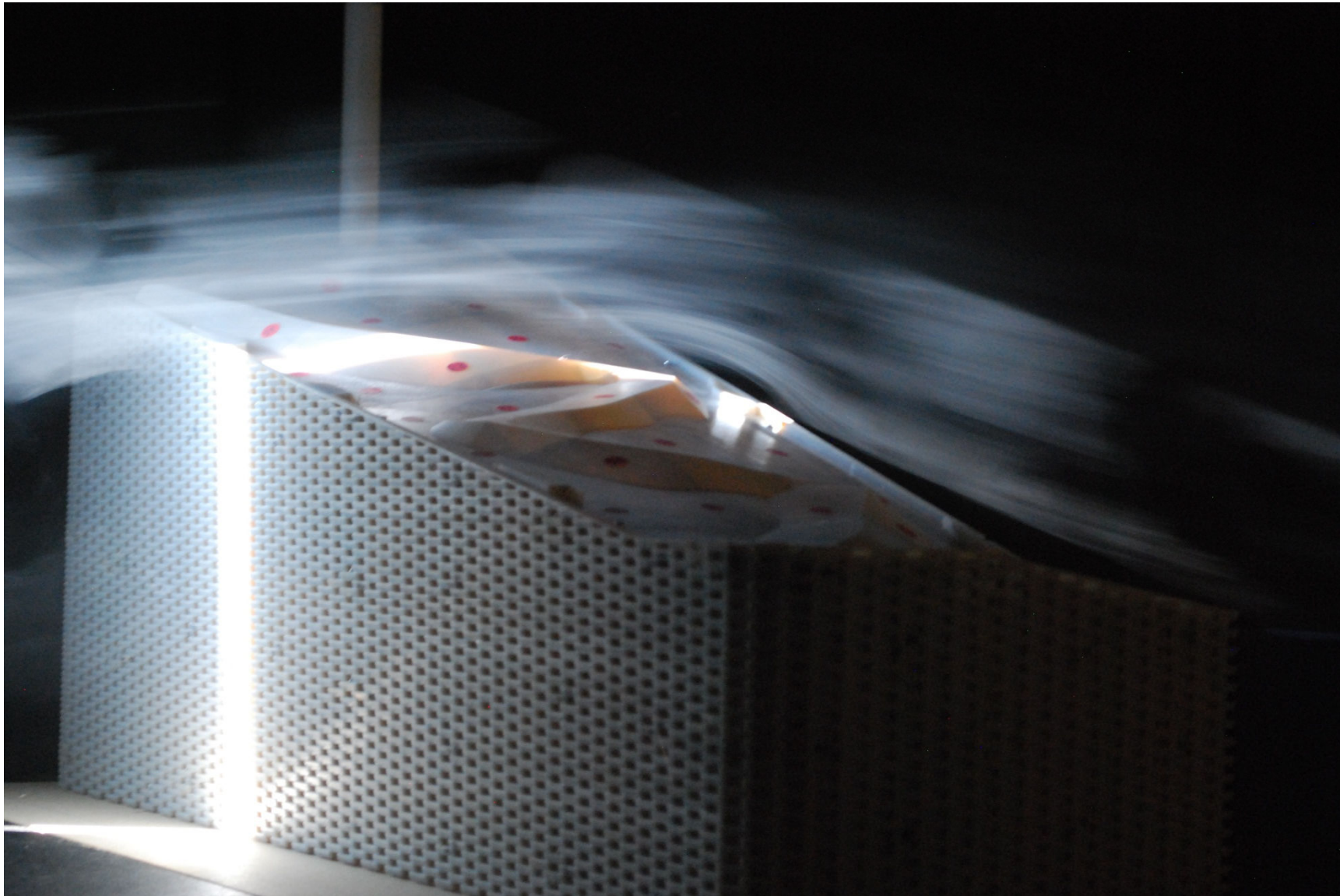
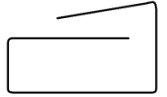




# Skorsten – Udfordring

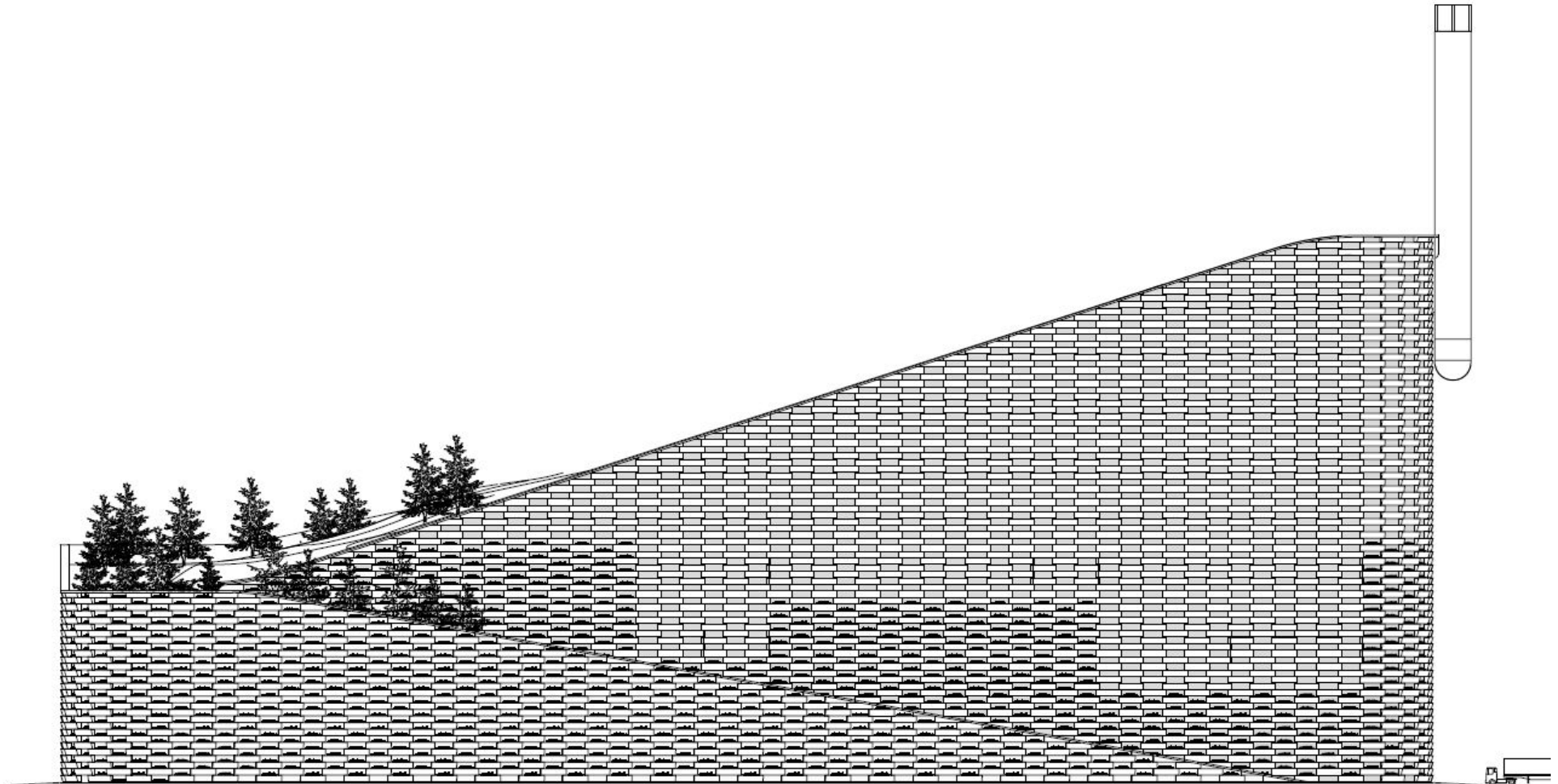
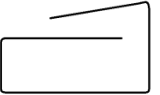


# Vindtunnelforsøg - Video

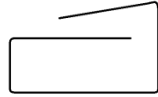




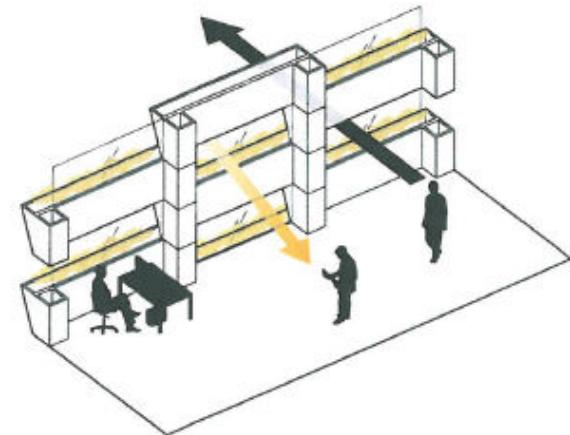
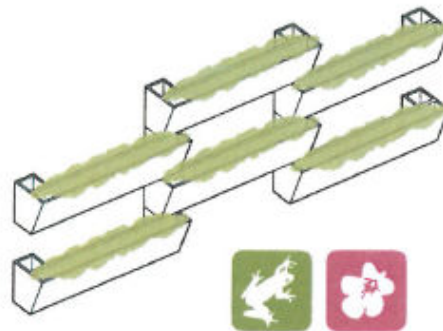
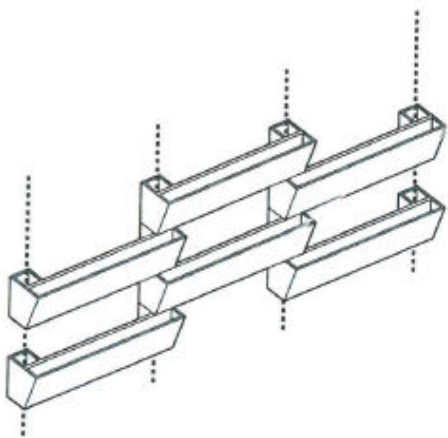
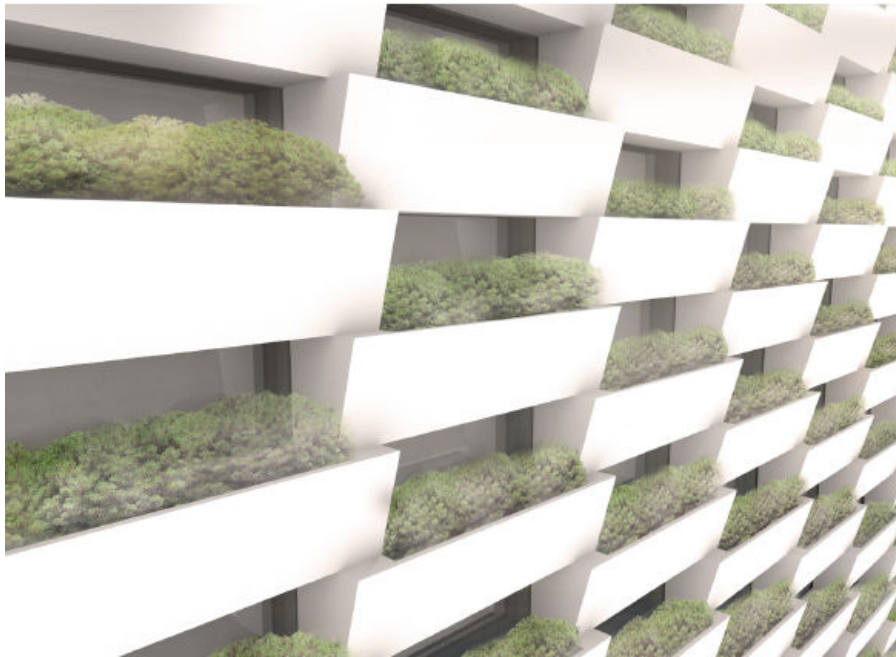
# Facade – Brick's



Facade Nord

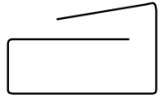


# Bricks - Facadeelementer





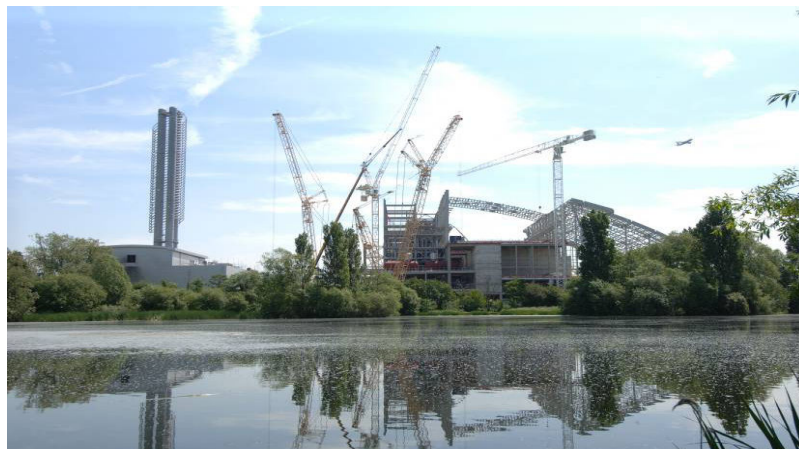
# M&B-E&I-Referencer – Affaldsforbrændingsanlæg



Esbjerg L90



Reno Nord

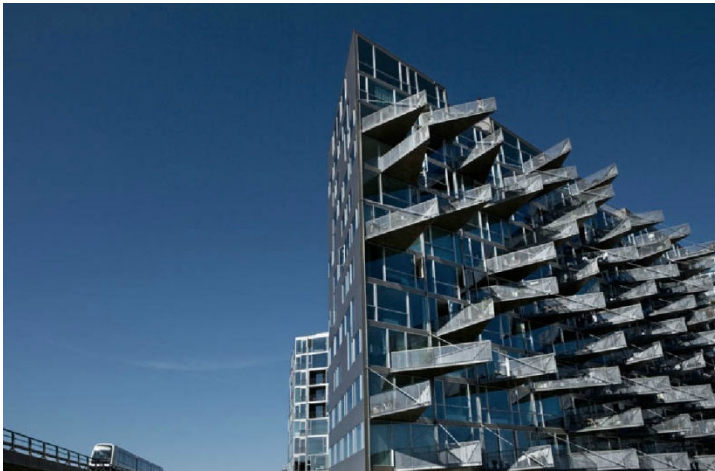
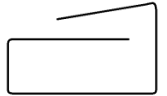


Lakeside, *London.*



Agder Energicentral, *Norge.*

# M&B/BIG-Referencer – Amagers højdepunkter



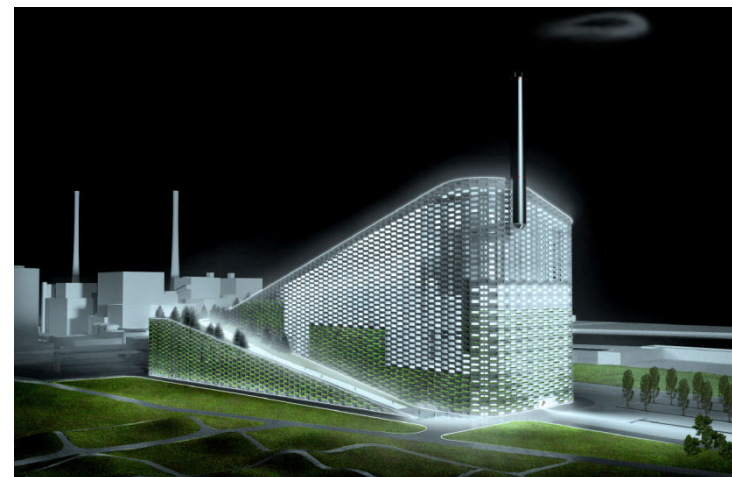
WM-husene,  $h = 36\text{ m}$ .



Bjerget,  $h = 36\text{ m}$ .



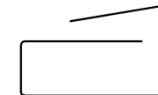
8-Tallet,  $h = 36\text{ m}$ .



Amager Bakke,  $h = 82\text{ m}$  (118 m).



# Slut – Nyd Udsigten om 5 år...



 **MAGER BAKKE**