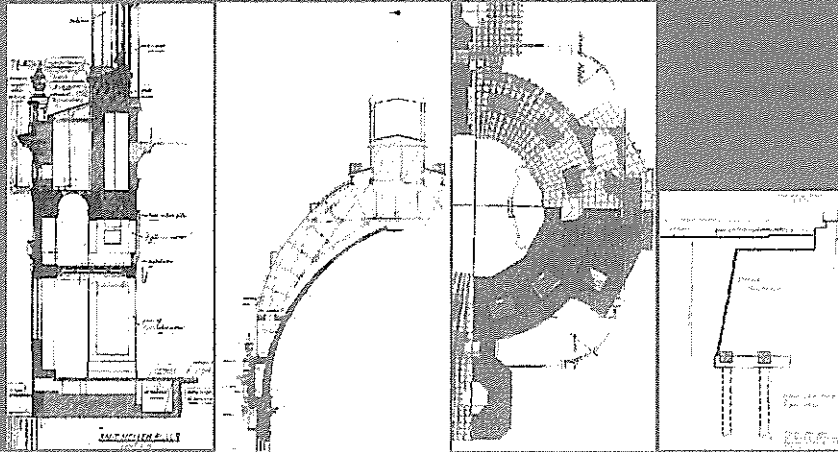
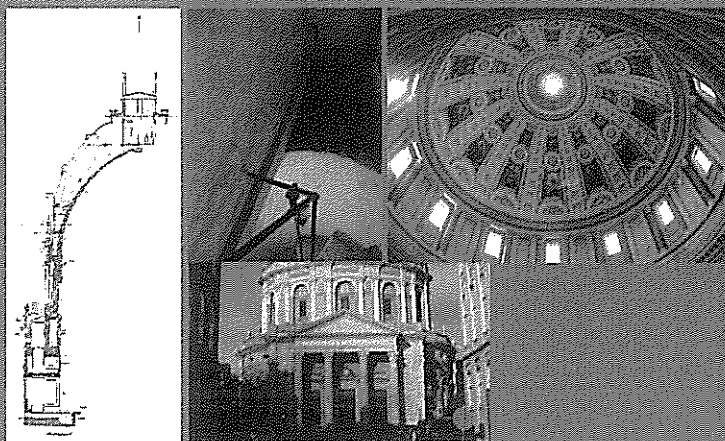


### Indsamling af kildemateriale



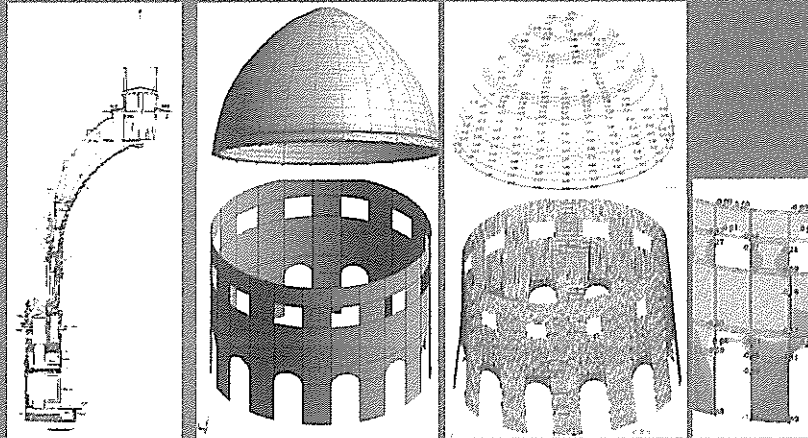
**Metro**

### Kirkens bestanddele



**Metro**

### Modellering af kirken



**Metro**

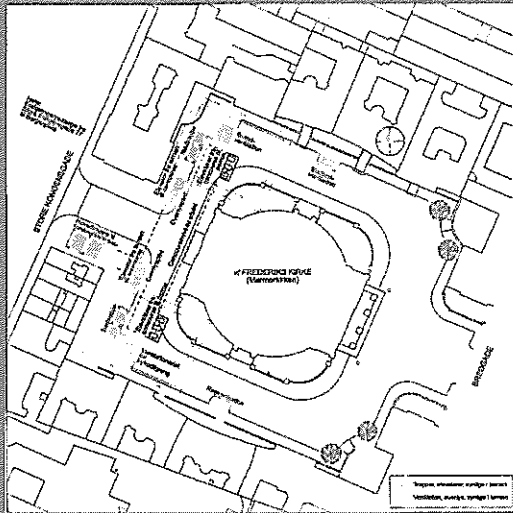
### Vurderede Stationsforslag

- Udredningens løsning
- Projekt-løsning
- Alternativ 1 - Dybere projekt-løsning
- Alternativ 2 - Hindegade-løsning
- Alternativ 3 - Store Kongensgade-løsning

**Metro**

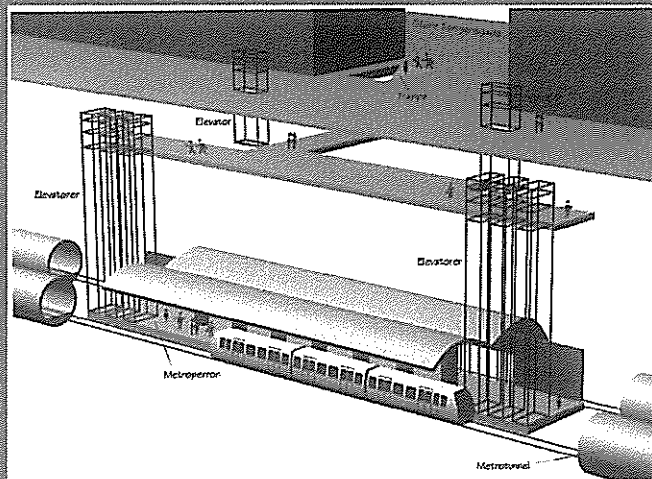
### Udredningens løsning

- Hovedadgang med elevatorer



**Metro**

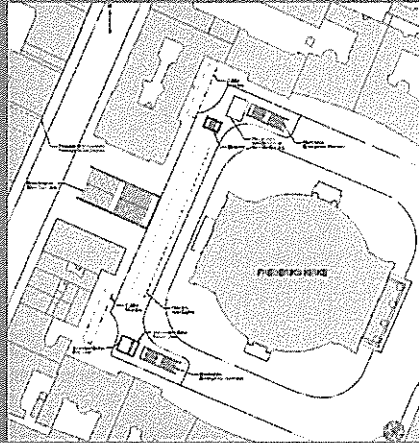
### Udredningens løsning



**Metro**

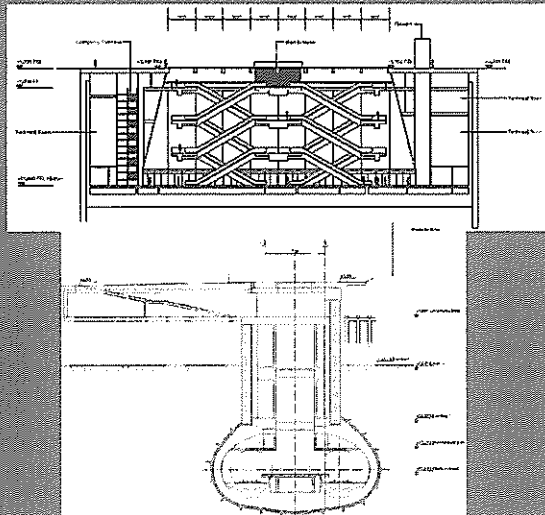
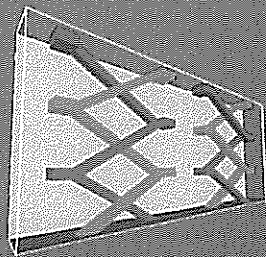
### Projekt-løsning

- Hovedadgang med rulletrapper
- Øget sikkerhed for kirken alt andet lige
- Sammenlignelig arbejdsplads med udredningens løsning



**Metro**

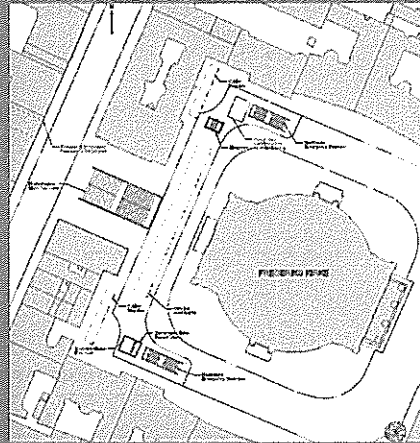
### Projekt-løsning



**Metro**

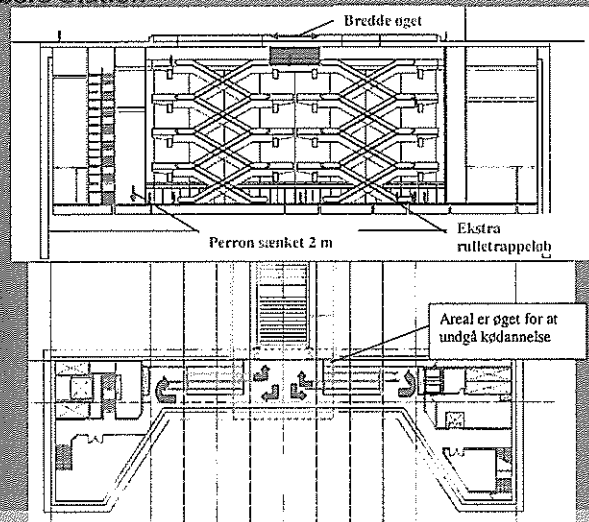
### Alternativ 1 - Dybere Station – kavernen 1,2 m længere fra kirken

- Hovedadgang med rulletrapper
- Marginalt øget sikkerhed for kirken
- Sammenlignelig arbejdsplads som udredningens løsning
- Fordyrelse ca. + 20 mio. kr.
- Ekstra men kortere rulletrappeløb



**Metro**

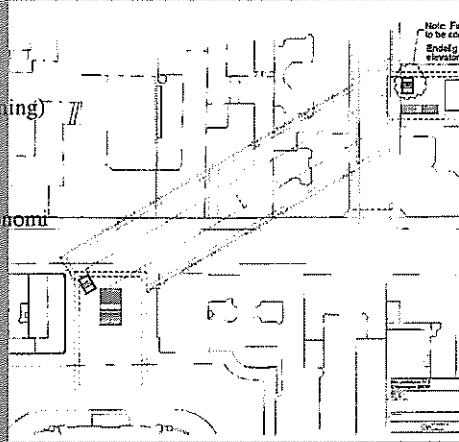
### Alternativ 1 - Dybere Station



**Metro**

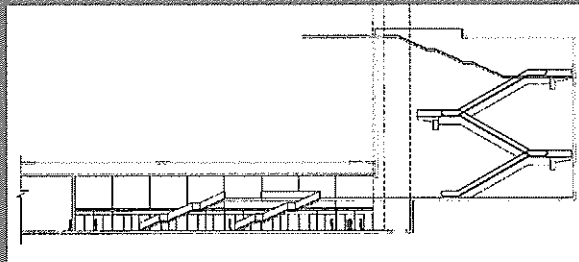
## Alternativ 2 - Hindegade-løsning

- Hovedadgang med rullemøbler
- En smule øget sikkerhed for kirken
- Kompliceret grundvandshåndtering (frysning)
- Arbejdsplads ved kirken og i Hindegade
- Fordyrelse ca. + 175 mio. kr.
- 1/2-1 år længere udførelsesfase
- Behov for supplerende VMM (tid og økonomi ikke afklaret)



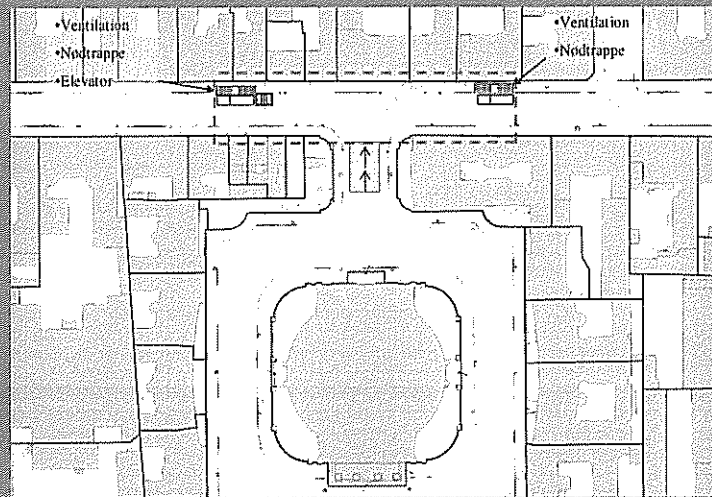
**Metro**

## Alternativ 2 - Hindegade-løsning



**Metro**

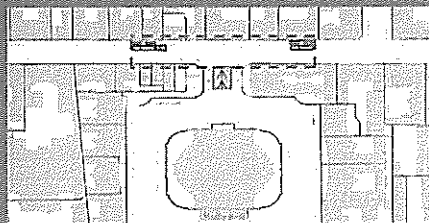
### Alternativ 3 - Store Kongensgade-løsning



**Metro**

### Alternativ 3 - Store Kongensgade-løsning

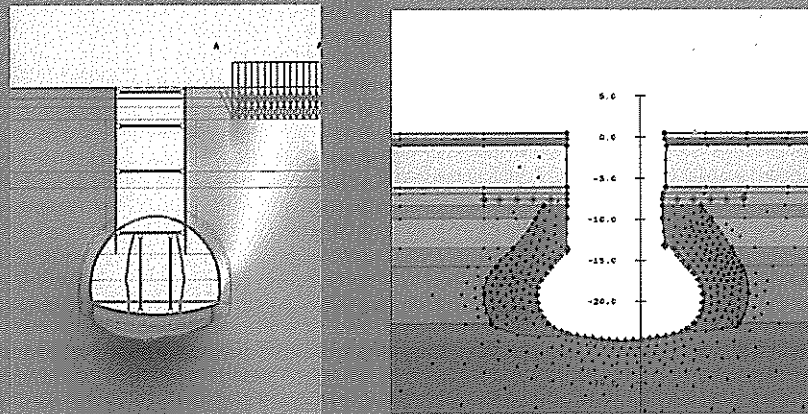
- Spejlet projekt-løsning
- En smule øget sikkerhed for kirken – kompliceret grundvandshåndtering
- Fordyrelse ikke beregnet
- Betydelige ledningsomlægninger (tid)
- Lukning af ca. 100m af St. Kongensgade
- Supplerende VVM (tid og økonomi ikke afklaret)



**Metro**

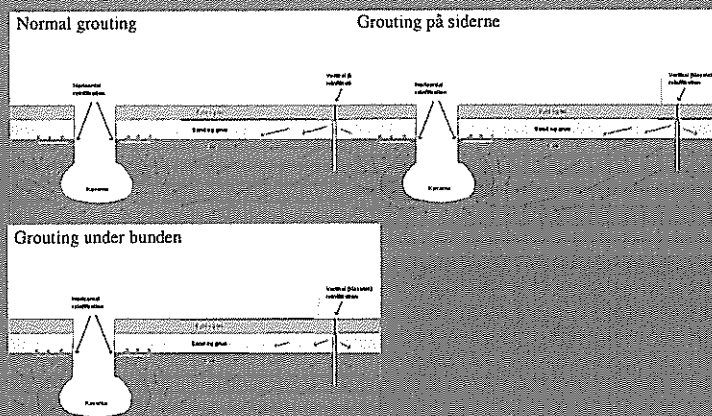


## Modellering af jord og grundvand



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## Håndtering af grundvand ved Frederiks Kirke



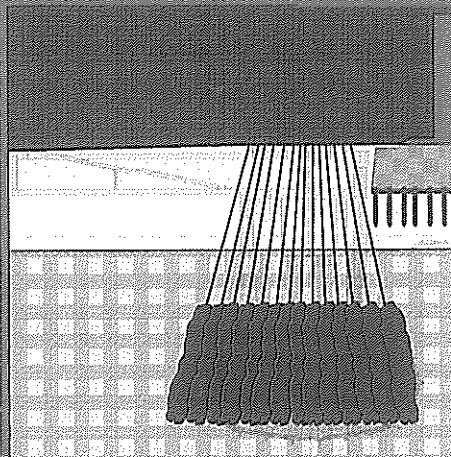
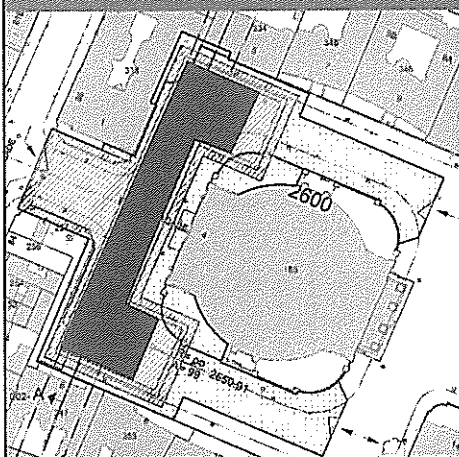
**Metro**

### Projektløsningen - Arbejdets udførelse

- Geotekniske undersøgelser
- Overvågning af sætninger
- **Mindske kalkens vandføringsevne**
- **Etablere indfatningsvægge**
- **Udgravning til reinfiltrering af vand**
- **Udgravning og afstivning af byggegrube i etaper**
- Modtagelse og videreførelse af TBM
- Færdig betonarbejder
- **Færdiggørelse af pladsen**

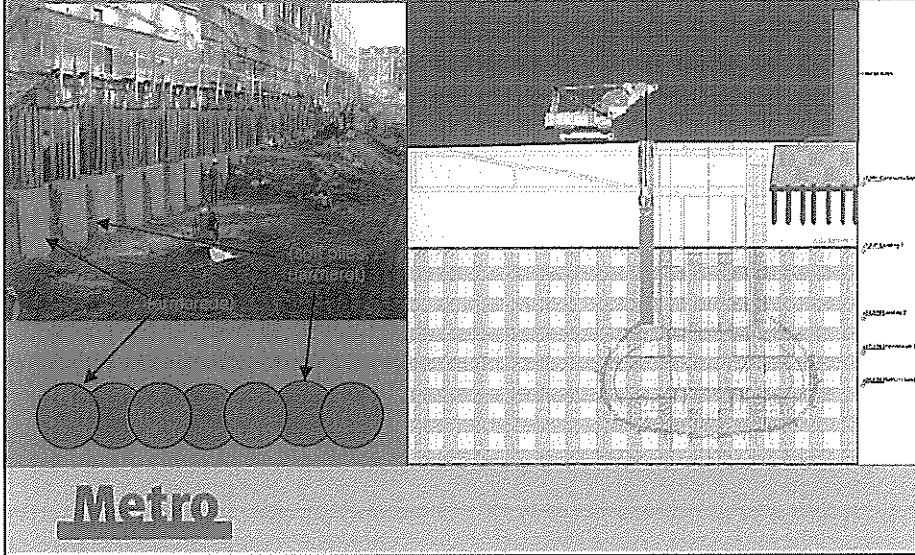
**Metro**

### Mindskning af kalkens vandføringsevne – grouting

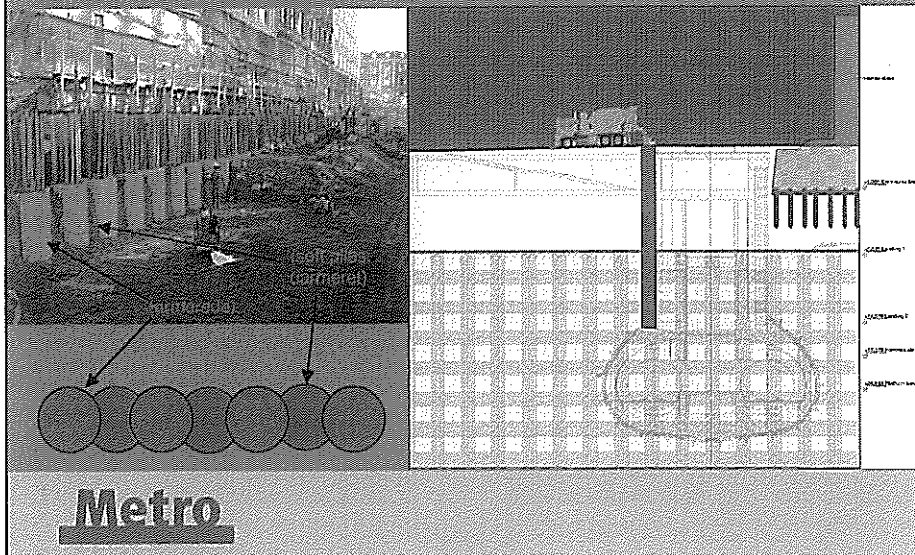


**Metro**

### Etablering af indfatningsvægge



### Etablering af indfatningsvægge



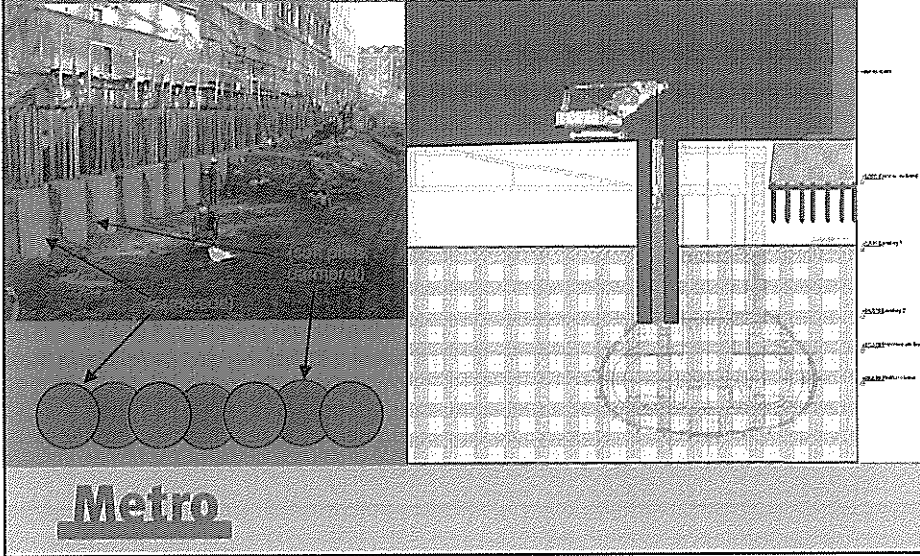
### Etablering af indfatningsvægge

The image is a composite graphic. On the left, a black and white photograph shows a construction site with a retaining wall under construction. A crane is visible in the background. Below the photo, five circles are arranged horizontally, with arrows pointing from the photo to them. On the right, a technical drawing shows a cross-section of a retaining wall with various layers and reinforcement. The drawing includes labels for different materials and components. At the bottom left, the word "Metro" is written in a bold, sans-serif font.

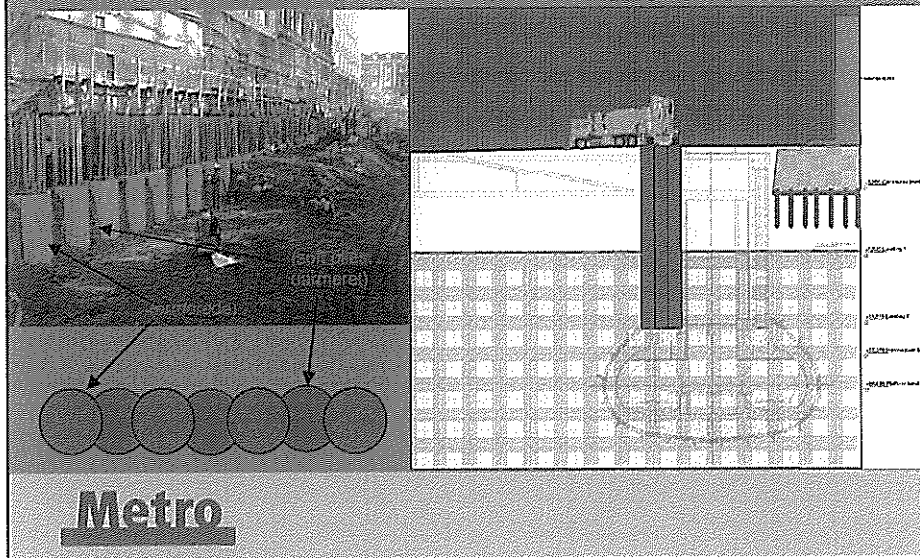
### Etablering af indfatningsvægge

This image is identical to the one above. It features a composite graphic with a construction site photograph on the left, a technical drawing of a retaining wall on the right, and five circles at the bottom. The text "Etablering af indfatningsvægge" is at the top, and the "Metro" logo is at the bottom left.

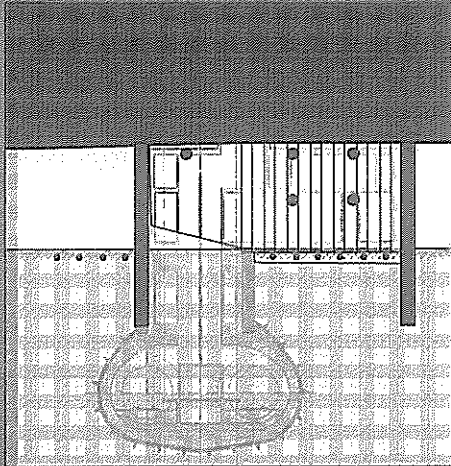
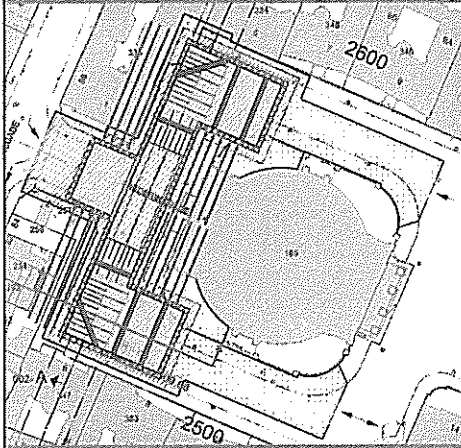
### Etablering af indfatningsvægge



### Etablering af indfatningsvægge

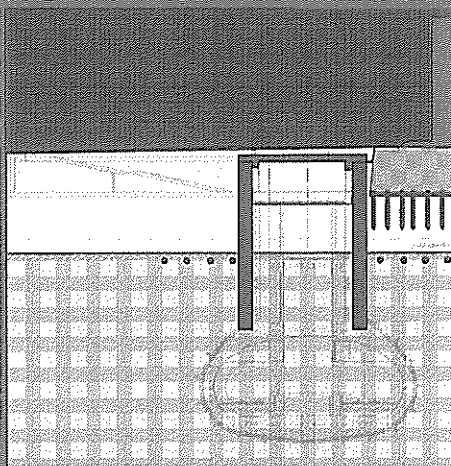
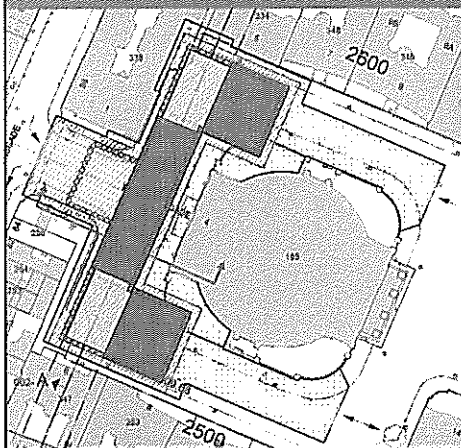


### Etablering af re-infiltrationssystem



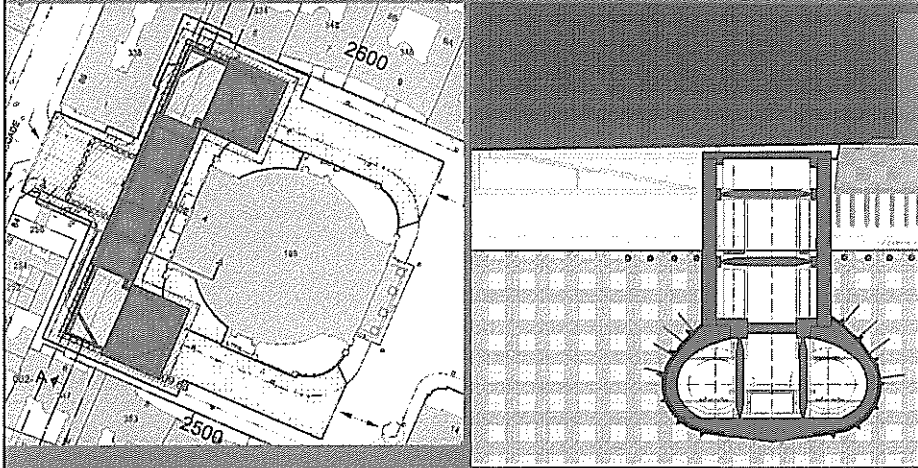
**Metro**

### Udgravning og afstivning af byggegruber i etaper



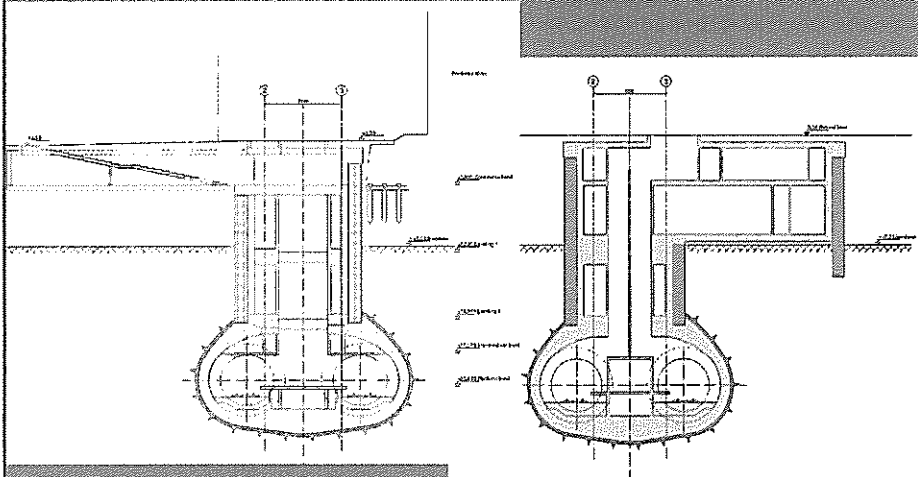
**Metro**

### Udgravning og afstivning af byggegruber i etaper



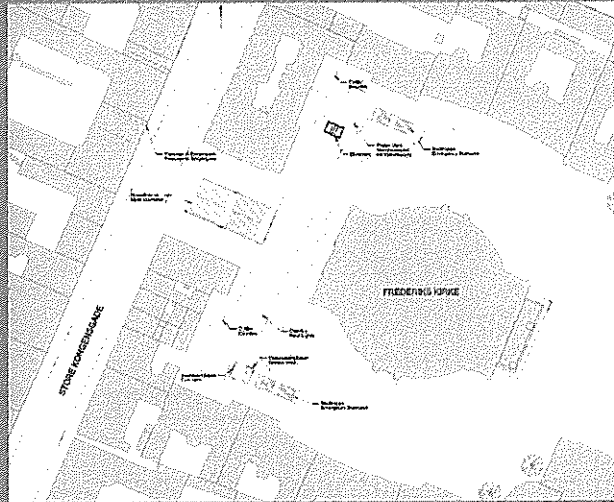
**Metro**

### Færdig station



**Metro**

Færdig station



**Metro**

Færdig station



**Metro**