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Swedish experience from **Concrete roads**

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Dep. of Investment/Technology and Environment

Swedish Transport Administration

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Swedish history of concrete roads

- **1950**
  - 350 km concrete roads
  - mostly PJCP
- **1970**
  - Plate length of 10-17 meter
  - asphalt overlay in the beginning of year 2000
- **1990- today**
  - 5 routes, 68 km
  - plate length of 5 meter

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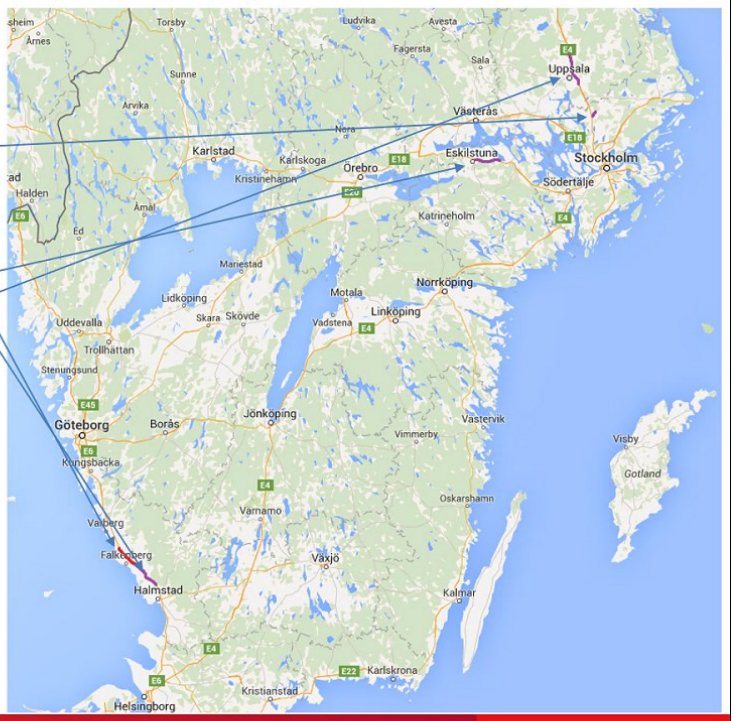
Swedish concrete roads of today

- Arlanda 1991
- Falkenberg N 1993
- Falkenberg S 1996
- Eskilstuna 1999
- Uppsala 2006



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Swedish concrete roads

Why concrete?

- Resistans against deformation
- Less sensitive to temperature
- Low cost of maintenance

Why not allways concrete?

- High initially cost
- Demand a good/ stable foundation
- Difficult to repair damages

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Swedish concrete roads

Why concrete?

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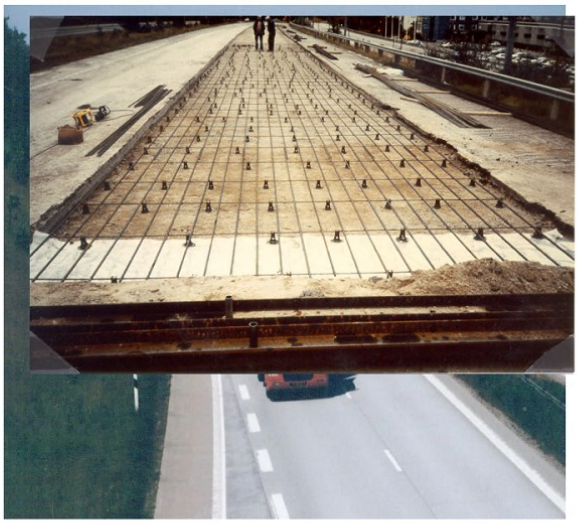

- CRCP or **PJCP**?

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Swedish concrete roads

Why concrete?

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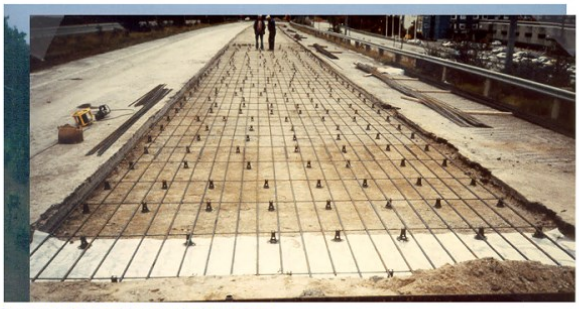


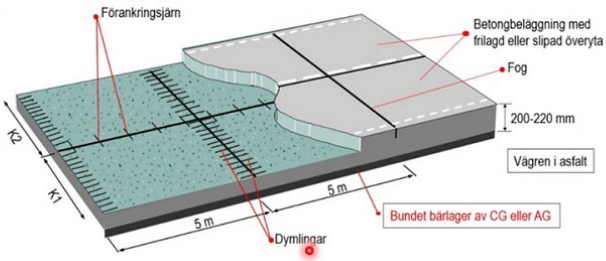
Oarmerad fogad betongbeläggning

Why not allways concrete?

High initially cost

Demand a good/ stable foundat

Difficult to repair damages



- CRCP or **PJCP**?

5

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Uppsala 2006

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Different types of damages on the concrete road

- Cracks

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Different types of damages on the concrete road

- Cracks
- Plate displacement

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Different types of damages on the concrete road

- Cracks
- Plate displacement
- Rutting

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Different types of damages on the concrete road

- Cracks
- Plate displacement
- Rutting
- Loss of partical

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Damages on the swedish network of concrete roads

- Cracks
  - On Falkenberg S you find longitudial cracks on approx. 35% of the length. Hardly 1% of the platten has been changed.
  - Uppsala have some transverse cracks.
  - Just a few cracks on the other routs.
- Flat displacement
  - Just a few
- Rutting
  - Big ruttingproblem on Eskilstuna there some of the most badly was fixed during 2015 -2016.
  - Some rutting on Arlanda and Uppsala.
- Loss of partical
  - In connection with some cracks on Falkenberg S.
  - In connection with some joints on Uppsala.

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Cause of cracks

Falkenberg S

Erosion in the layer beneeth, Cement stabilized layer with ”traped” water.

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Cause of cracks

Falkenberg S

Erosion in the layer beneeth, Cement stabilized layer with ”traped” water.

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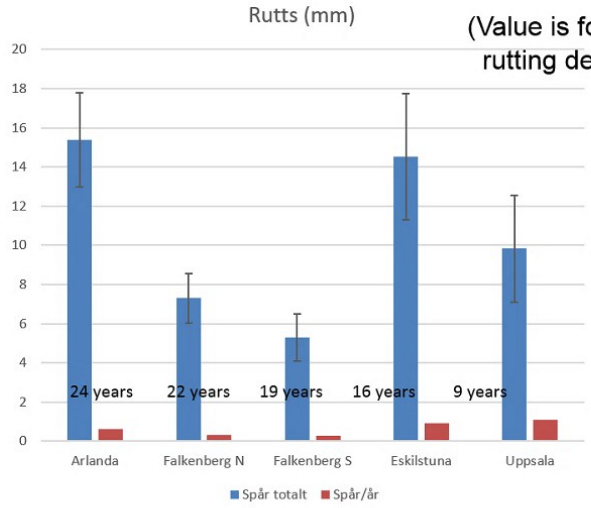
Rutting depth on the concrete roads today

- 

(Value is for the right lane, K1. In K2 is rutting depth 2-5 mm on all roads)

- (Error showing standardeviation).

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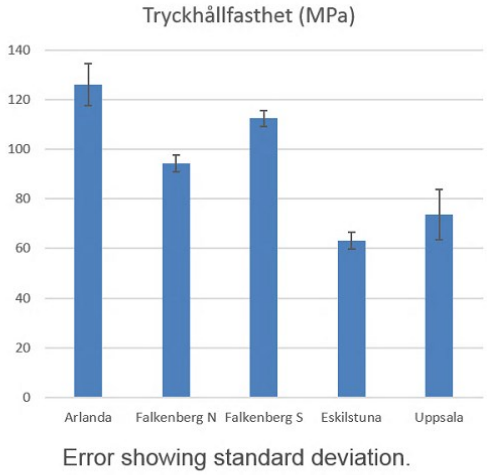
Main subjects in discussions about rutting from studdy tyres.

- Aggregate
- Dens of aggregate
- Quality of the concrete



Error showing standard deviation.

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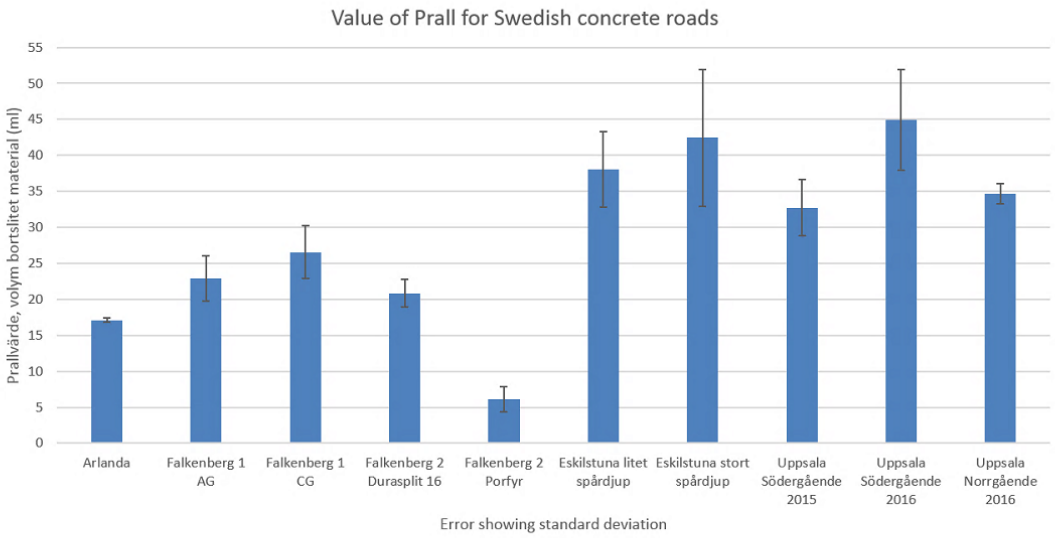
Wearing test – Prall method



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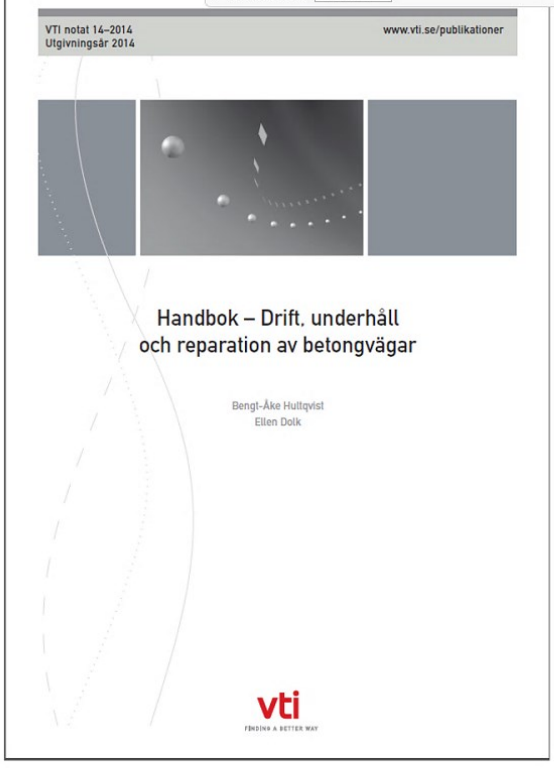

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Stockholm Bypass, E4

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Förbifart Stockholm

Förbifart Stockholms tunnelprofil med ramper upp till trafikplatserna på Lovö och i Vinsta. Observera att profilen inte är proportionerlig.

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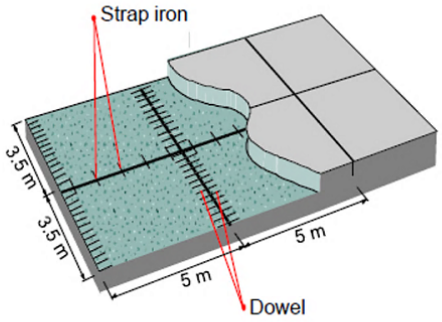
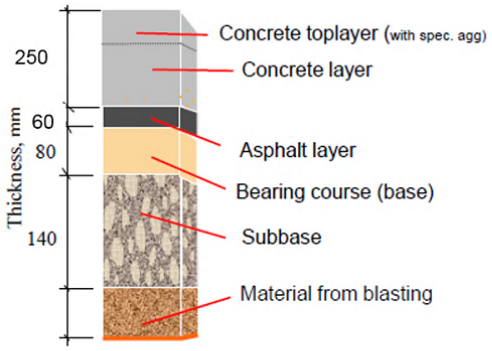
Roadconstruction - concrete pavement, FSK02

-Example for the tunnel-

Joints in concrete paving, PJCP



"Basedesign"



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Thank's for your attention ☺

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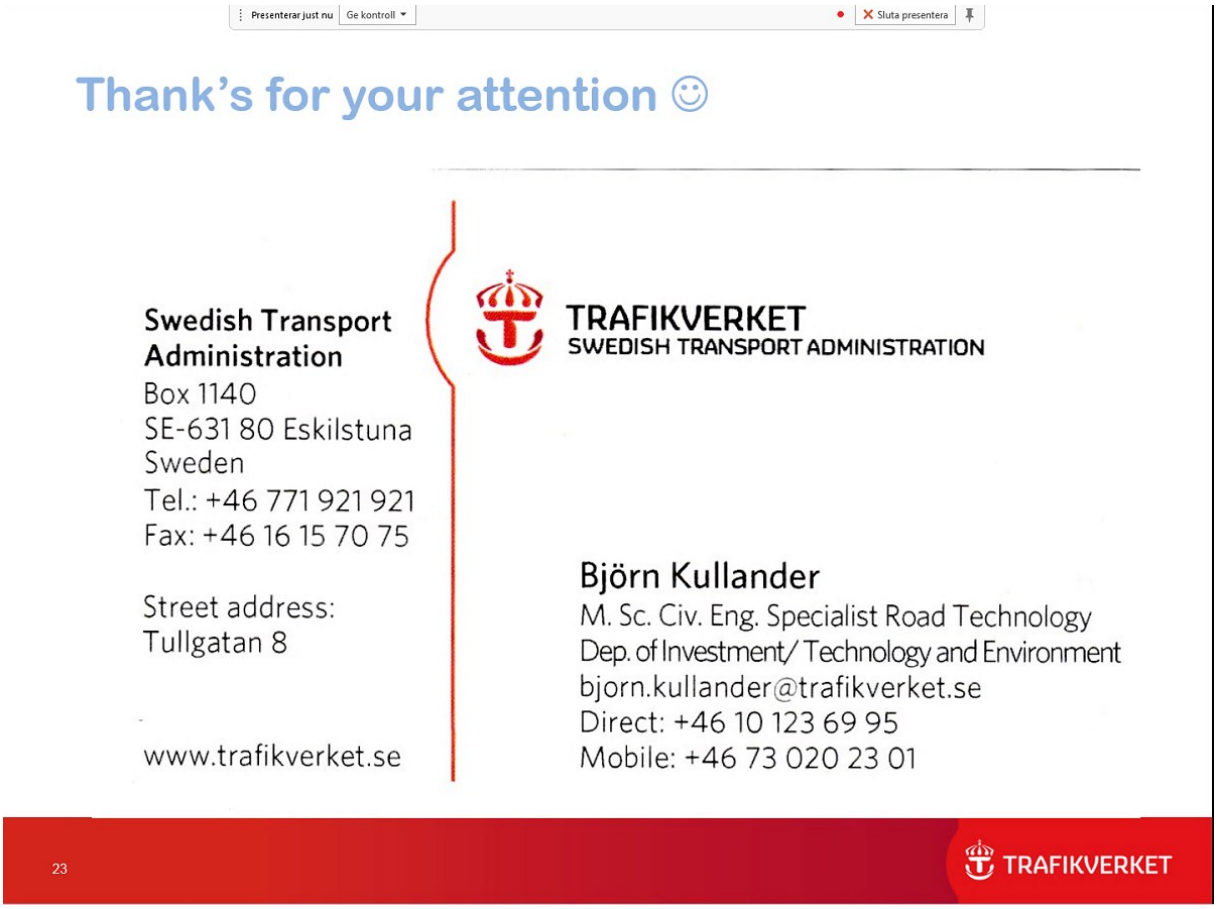

CONVERSATION

[10.02.2017 11:35]

Finn Thøgersen:
Rapport om betonvejssituationen i Danmark:
http://www.vejdirektoratet.dk/DA/viden_og_data/publikationer/Lists/Publikationer/Attachments/736/Endelig%20rapport_Moderne%20betonveje.pdf

[10.02.2017 11:36] Aksnes Jostein:
Er friksjon et mulig problem?

[10.02.2017 11:38] Aksnes Jostein:
Men er ikke piggdekkandelen i Stockholm ganske lav?

[10.02.2017 11:38] Finn Thøgersen:
Har I lavet sammenligning på totaløkonomi i forhold til tilstødende asfaltstrækninger?

[10.02.2017 11:41] Jette Bork:
Tak for i dag.

[10.02.2017 11:41] Martin Wiström:
Tack!