

Capacity of Rural Two-Lane Highways



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Relevant, - Why ?

- Many two-lane roads
- When do they need to be up-graded or replaced ?
- How does the traffic operate at two-lane roads, - and at what level of service ?
- Not recently investigated in DK

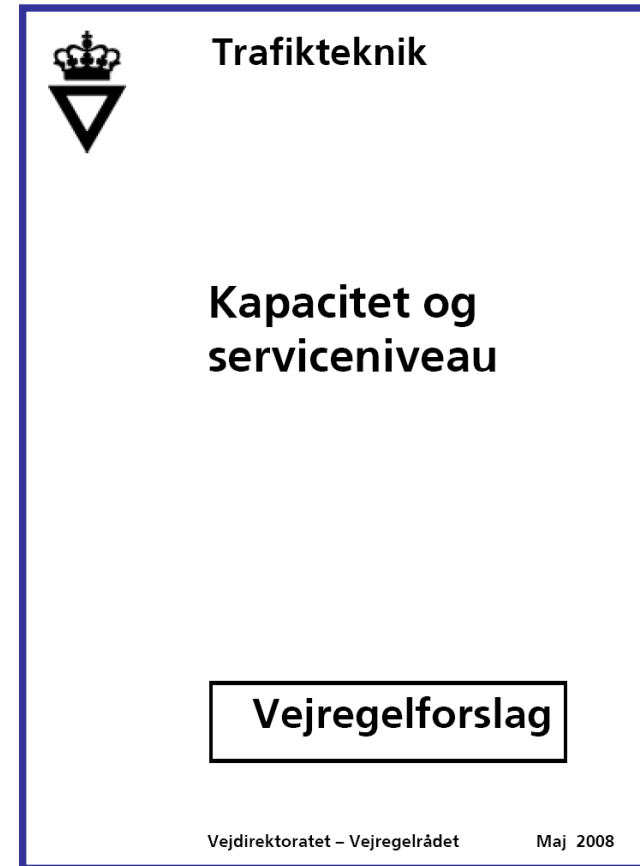


Calcalaton of Capacity

- The current calculation procedure in Danish capacity manual originates from HCM 1994, but the driving directions are considered separately. HCM 1994 focused on determining service flow rates and capacity.
- The calculation procedure of 2-lane highway capacity and level of service has been thoroughly revised in HCM 2000 and focuses now on determining average speed and amount of time drivers follow closely behind other vehicles. Driving directions can be considered together or separately.

Therefore, the Road Directorate Realized a Need to

- enhance our knowledge about two lane highway traffic operations
- validate and update the capacity manual calculation procedures for rural two lane highways



2-Lane Highway Study - a Challenge

- Traffic in both directions share the roadway
- A great variety in level and vertical profile on 2-lane roads which impacts the traffic operations



.... Two Lane Highway Study Problems

- Lack of bottlenecks unaffected of intersections
- Lack of long uniform road sections
- Lack of 2 lane highways with a high degree of traffic saturation

A Study was Initiated in 2007 and Finished 2009

1. Selection of highway sections to be analyzed
2. Planning and completion of data recording
3. Analyses of data determining:
 - speed/flow relations
 - highway capacity
 - the extent of vehicle platooning

... and the impact on speed, capacity and platooning of

- trucks (including estimating truck passenger car equivalents)
- very slow vehicles, eg. agricultural vehicles
- passing restrictions
- directional split of traffic

Test Sites

- Five test sites selected
- Speed limit 80 km/h at four sites, 90 km/h at one site (2+1-lane road)
- Almost level terrain at all sites
- Lane width 3.5-3.7 m

Then the study does not cover the effects on capacity and LOS of lane width, grade and speed limit