



Long life pavements



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Loss of integrity - structural failure



Long life pavements

- when designing pavements, you have to decide upon
 - design strategy
 - design method



Long life pavements

design strategies

- long life design strategy
- long life design & maintenance strategy
- limited life design strategy



Long life pavements

Long life design strategy

- pavement is designed to be free from structural deterioration
- stresses & strains are kept below fatigue limits (which we do not know too well)
- materials must be insensitive for deterioration from climate, environment, endogenous processes etc.
- this approach is called the 'long life pavement' or the 'perpetual pavement' approach



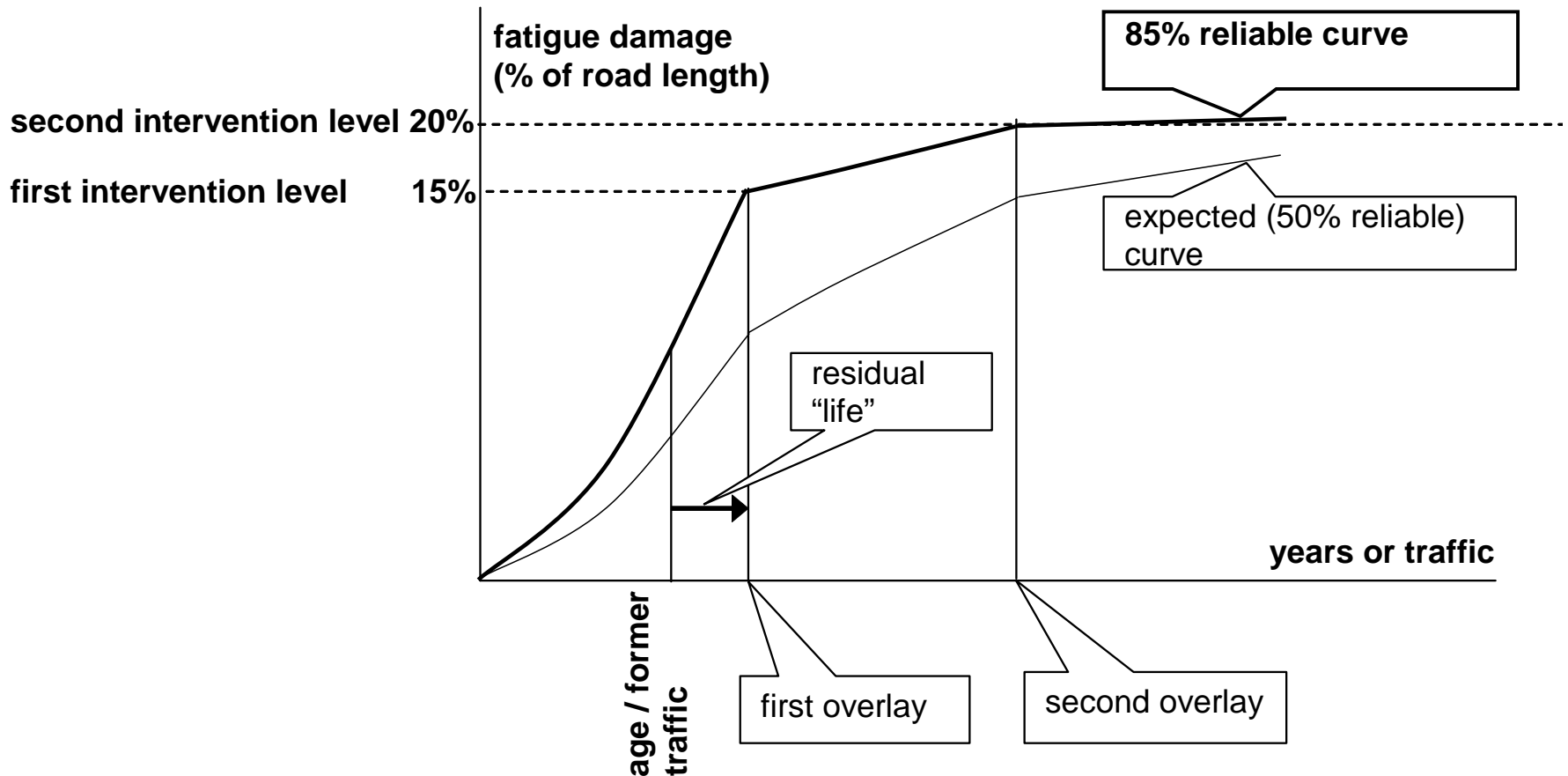
Long life pavements

Long life design & maintenance strategy

- pavement is designed such that structural deterioration will end after one or more overlays
- initial stresses & strains are kept low so that distress is limited at overlaying
- overlaying will further reduce stresses and strains
- advantages is that overlay can be combined with profiling and can be optimised depending on the actual behaviour of the pavement
- disadvantage is that possibly no one ever puts on the overlay.....



long life design & maintenance strategy





long life design & maintenance strategy

- the choice of design period (period between overlays) is crucial
- this has to be harmonised with intervals for major maintenance of wearing courses
- in the Netherlands, prevailingly porous asphalt is used on the primary network
- this on average has a durability of 11 years for the right hand lane and 15 years for the total carriageway width
- so design period should at least be 15 years, but should incorporate some margin for longer wearing course life (NL uses 20 years)



long life design & maintenance strategy

- there is more to long life than design:
- build quality
- adequate maintenance
- avoiding design solutions that cause a lot of maintenance



limited life design strategy

Limited life design strategy

- pavement is designed for limited life (which also needs to be tuned to wearing course maintenance)
- it will need full replacement once or more times
- this is initially cheaper but more expensive on the long term (strengthening is much cheaper than replacement)
- also traffic hindrance is of an other order
- sustainability issues can be more serious (use of raw materials and energy, emissions, ...)



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