



Concrete Pavement Spectrum

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Spectrum of Pavement Designs

- Cities in Iowa typically design concrete pavements for 30 years or more
- Can we design concrete pavements for more years?
- How about fewer years?
- What about concrete overlays?
- What design life is the most cost effective?

Spectrum of Pavement Designs

- Mission: Lay out a spectrum of designs that run from 10 years through 50 years. Conduct an economic comparison of the options via LCCA.

Concrete Design Spectrum



Pavement Design Parameters

- New concrete pavement
- Two-lane residential street
- With or without curb
- Varying concrete strengths
- With or without load transfer
- Varying joint spacings

10 Year Pavement Design



20 Year Pavement Design



30 Year Pavement Design



40 Year Pavement Design



50 Year Pavement Design



Overlay Design Parameters

- Unbonded concrete overlay of concrete
- Two-lane residential street
- With or without curb
- Varying concrete strengths
- With or without load transfer
- Varying joint spacings
- With or without fiber reinforcement

10 Year Overlay Design



20 Year Overlay Design

30 Year Overlay Design

40 Year Overlay Design

50 Year Overlay Design

Pavement Design Spectrum

	Subbase Thickness	Pavement Thickness
10 Year		
20 Year		
30 Year		
40 Year		
50 Year		

Overlay Design Spectrum

	Joint Spacing	Overlay Thickness
10 Year		
20 Year		
30 Year		
40 Year		
50 Year		

Life Cycle Cost Analysis

- To compare options of different design lives, one must convert to annual costs
 - Equivalent Uniform Annual Cost (EUAC)
- StreetPave's LCCA component
 - Demonstration

Concepts

- Designs in this presentation are shown as examples of potential concepts
- ICPA can work with your engineer to develop designs for your city's needs

Questions

