State Transportation Plan Implementation

Mobility and safety improvements – “Super-2”

Iowa Transportation Commission

January 14, 2020

IOWA DOT

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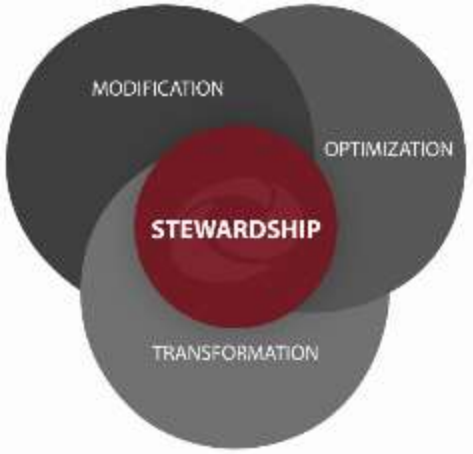
Background

- State Transportation Plan adopted by Iowa Transportation Commission May 2017
- Identified four investment areas, including **modification**, or right-sizing the system
  - "This will require significant investment in stewardship, some focused capacity expansion as resources allow, and perhaps even some contraction of the system. **Future capacity expansion should be limited, strategic, and prioritized**."



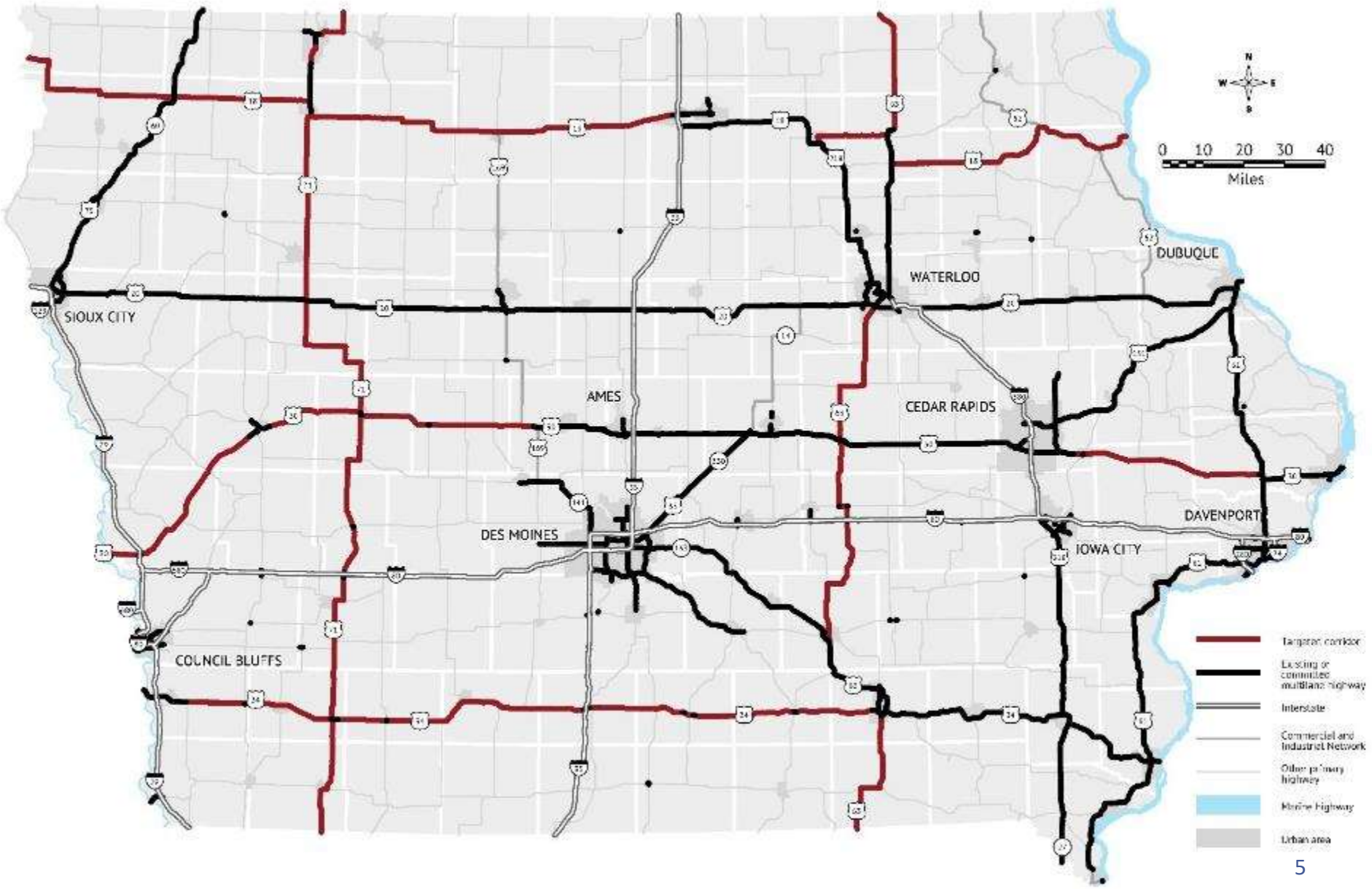
Background

- Highway analysis reviewed seven layers of improvement needs.
- Analysis helps provide a corridor-level perspective that should be considered as individual projects are developed.
- Mobility and safety improvements were targeted towards **specific corridors that lack capacity needs**. Improvements are anticipated to be addressed with Super-2 style design elements.

Background

- Capacity analysis showed a lack of future capacity needs on the majority of the non-interstate Primary Highway System
- Five corridors targeted for mobility and safety improvements based on **statewide connectivity**, **geographic access**, **existing network designations**, and **priority corridors**
- Improvements could include elements such as **wider paved shoulders and rumbles**, **turn lanes**, **passing/climbing lanes**, possibly limited access and geometric improvements
- Benefits:
  - Improve system operation
  - Enhance safety
  - Complementary network to the multilane highway network
  - Cost-effective alternative to 4-laning

Corridors targeted for improvements



Background

- In the past, Super-2 design generally included aggressive geometric improvements that would enable higher design speeds, which proved costly
- Mobility and safety improvements being discussed are a more relaxed version of the Super-2 concept, focused on implementing the **appropriate mix of elements** based on a corridor's characteristics
- Would include **limited geometric improvements**, and **implementation would be more opportunistic** as part of future maintenance and rehabilitation projects

Support

- Public input takeaways during Plan development included:
  - It was preferred that the Iowa DOT **focus on maintaining the current system** and ensure expansion is only done when there is significant need.
  - A survey asked how we should approach roads where we do not expect significant congestion. Majority of respondents favored adding enhancements such as **Super-2 elements on targeted corridors** (as opposed to doing nothing or adding these elements throughout the system).
- Local support for Super-2 improvements on specific targeted corridors (e.g., US 18 and US 34)

Considerations

	Super-2	4-lane
Impact to ROW/utilities	Minimal	Significant
Up-front construction cost *	$	$$$$$
Life-cycle maintenance costs	$	$$$
Safety and mobility benefits?	Yes	Yes (if full access control)
Implement w/ small projects?	Yes	No
Construction impacts to environment and users	Minimal	Significant

*When compared to a baseline cost to reconstruct an existing two-lane highway, the **additional cost to upgrade** to a Super-2 is 15% to 20% of the cost to upgrade to a four-lane

Super-2 in other states

- Several other states were examined during development of Iowa DOT design guidance: Illinois, Kansas, Michigan, Missouri, Minnesota, Nebraska, Texas, Wisconsin
- Varying specifications
  - Passing lane lengths of <0.25-2 miles
  - Passing lane spacing of 3-15 miles
- Specific examples of what some states consider “Super-2” that are not good comparables:
  - Continuous 3-lane section with alternating passing
  - Fully-access-controlled 2-lane facility

US 63 Turtle Lake – Barronnett, WI

- 20 mile corridor, NW Wisconsin
- Overall, similar treatments
- Alternating passing lanes of 1-1.5 miles in length


US Hwy 61
Google


US Hwy 61
Google


Elm St
Google

Super-2 in Iowa

- Historically, there has not been intentional system or corridor-level application
- **US 169 Fort Dodge-Humboldt** provides a good case study
- Analysis of two corridors with Super-2 style improvements constructed between 2008-2011 showed significant safety benefits
- Reviewed crashes four years prior to and four years after construction (excluded animal crashes)
  - US 169 Fort Dodge-Humboldt: **67% reduction**
  - US 63 Oskaloosa-New Sharon: **49% reduction**


US 169 example segment
• Passing lane
• Paved shoulder & rumbles


US 169 example intersection
• Left and right turn lanes

Implementation

IOWA DOT
Office of Design

6C-2

Super Two Highways

Design Manual
Chapter 6
Geometric Design
Originally Issued 4-29-19

- New Super-2 design guidance issued April 2019
  - Targeted corridors as identified in Iowa In Motion 2045
  - Passing lane location, spacing, and length
    - Areas to avoid (e.g., bridges, RR crossings, horizontal curves with reduced speed)
    - Offset locations for opposing traffic lanes is preferred

    - Uniform spacing of 4-5 miles is preferred (driver expectancy benefits due to uniform application, rather than spot application)
    - Length of 0.5-1.75 miles is preferred, depending on traffic volumes
  - Signage and pavement markings

Implementation

- Super-2 elements being incorporated into project design or as an alternative in Planning and Environmental Linkage (PEL) studies on targeted corridors
  - US 18
    - PEL study underway from Spencer to Garner
    - Significant interest on US 18 from local jurisdictions and Highway 18 Super-2 Coalition; $700,000 committed by RPA 2
  - US 30
    - PEL study in Cedar and Clinton Counties – recommendations are to incorporate Super-2 elements
  - US 63
    - PEL study underway from US 6 to Hudson

Going forward

- Continued study of targeted corridors to evaluate alternatives, including Super-2 improvements
- Opportunistic completion of Super-2 improvements as part of future maintenance and rehabilitation projects
- Ongoing analysis of benefits of Super-2 improvements

Questions?

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