PRACTICAL SOLUTIONS FOR PLANNING AND DESIGNING ROADS

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Realities

- Limited state funds
  - 2008 road fund down $80+ million
- Need for roadway improvements
  - Safety
  - Mobility
- Unfunded short term needs
- More projects than funds

Objective and Goal

- Use available funds more efficiently
  - Address more needs faster
  - Complete more projects
  - Opportunities for balancing priorities system-wide
- Deliver an improved system with limited resources

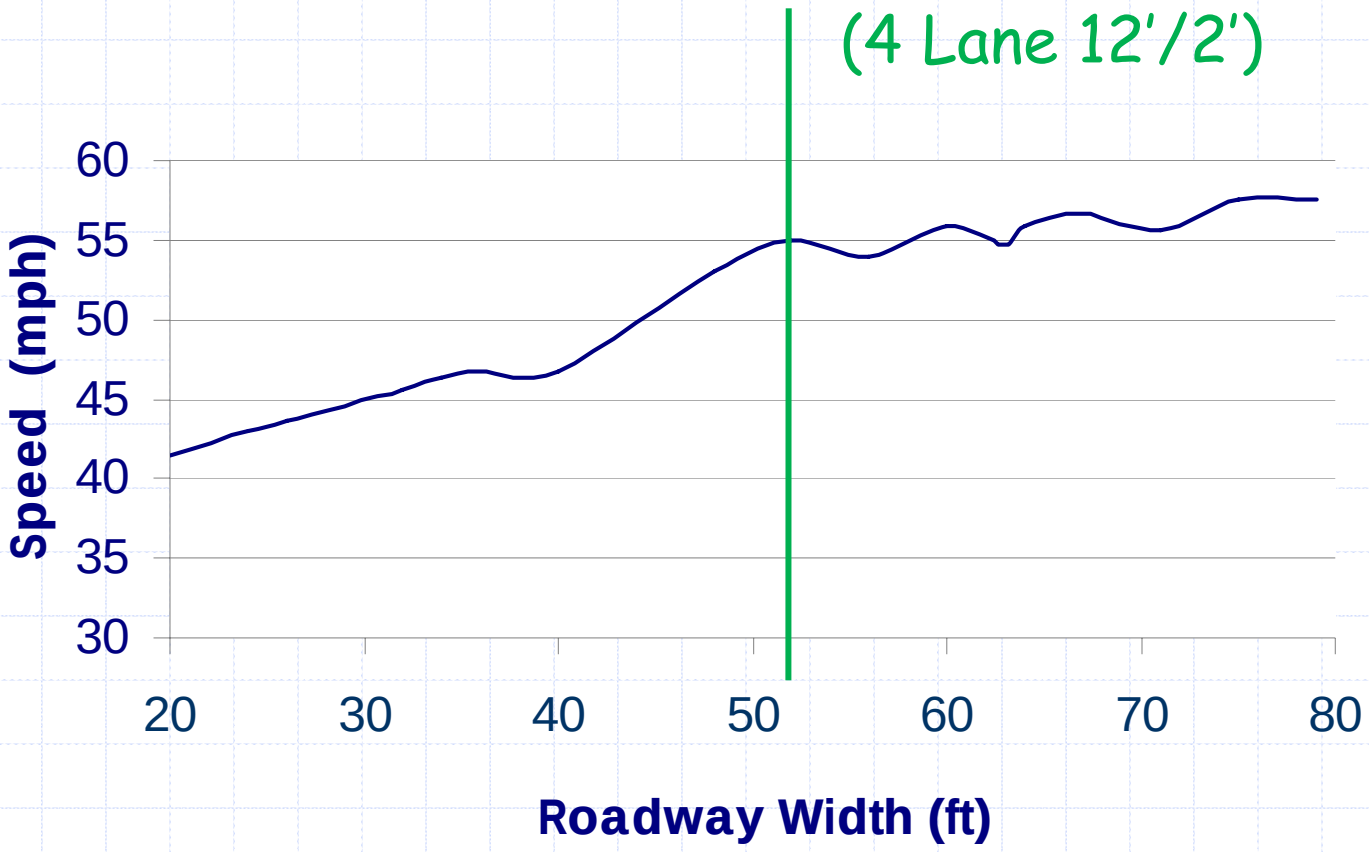
Basic Needs-Road Costs

- 2 lane
  - $5.7-8.7 million/mile
- 4 lane
  - $18.9-23.9 million/mile

Basic Needs-Mobility

- Estimates of mobility
  - Delay
  - Speed
  - Time
  - Level of Service (rating of congestion)

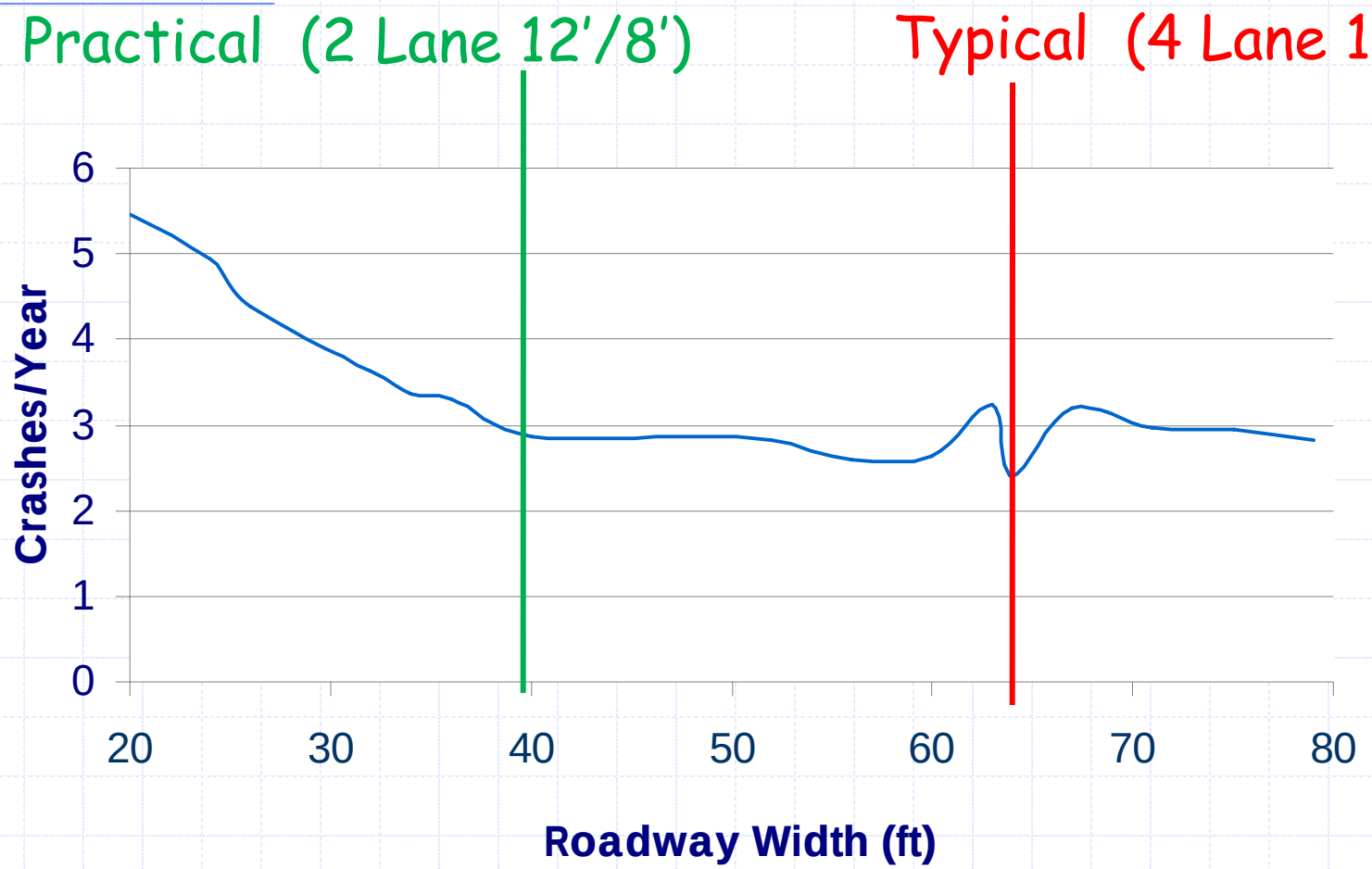
Speed and Road Width



Basic Needs-Safety

- Crashes happen with every roadway design
- Goal: Safety improvement

Safety Tradeoffs



Existing Cross Section

2 Lane, 10 ft L, 2 ft S

Crashes per Year

5.4

Travel Speed (mph)

41.4


Cross Section
2 Lane 12 ft L, 8 ft S
Crashes per Year
2.9
Cost/Mile (millions)
$7.2
Travel Speed (mph)
46.7
Miles
69.4
Miles improved w/$500 m
4/2/2008

Cross Section	Crashes Per Year	Cost/Mile (millions)	Travel Speed (mph)	Miles
4 Lane 12 ft L, 8 ft S	2.4	$21.5	55.9	23.3

Miles improved w/$500 m

Road Improvement Example

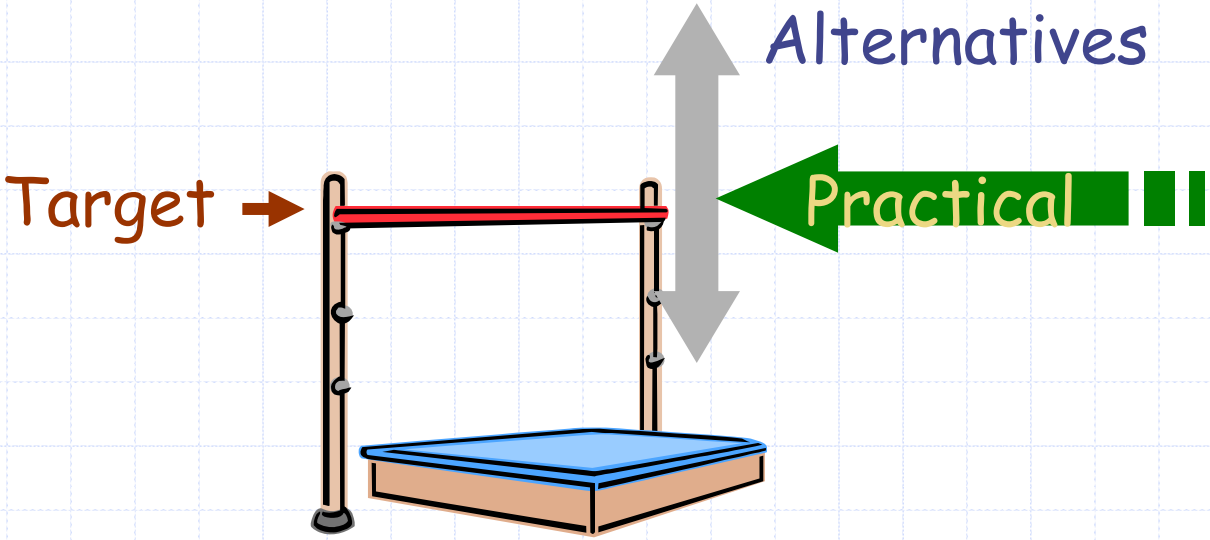
Available budget $500 m to improve 2 lane roads

Cross Section	Crashes per Year	Cost (millions)	Speed (mph)	Miles	Total Reductions	
					Crashes	Travel
2 Lane, 10 ft/2 ft	5.4	--	41.4	--	--	--
2 Lane, 12 ft/8 ft	2.9	$7.2	46.7	69.4	173.5	367.8
4 Lane, 12 ft/8 ft	2.4	$21.5	55.9	23.3	69.9	337.9

More miles, fewer crashes and fewer delays for same budget!

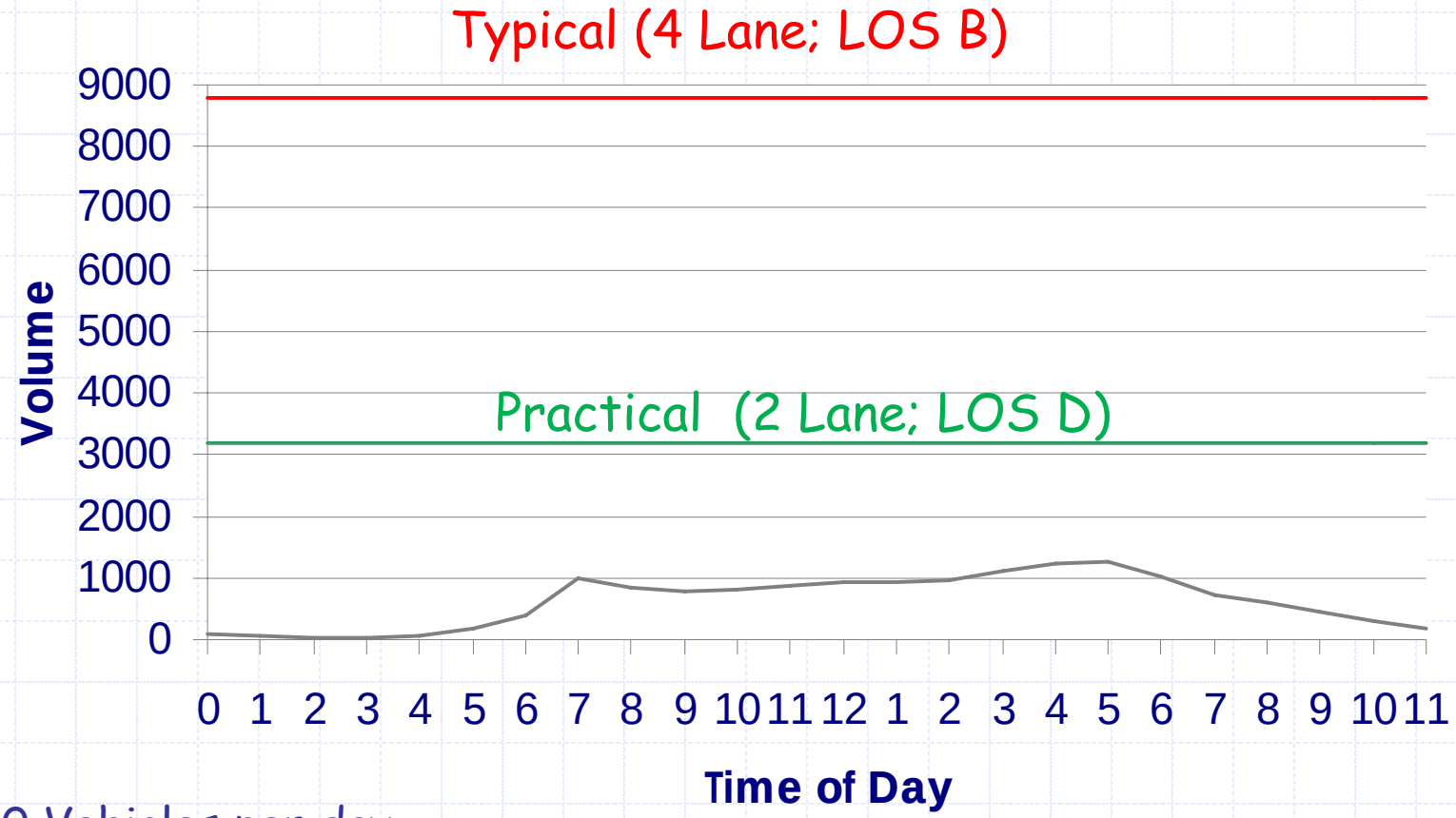
KY Practical Solutions Principles-1

- Target the goals/objectives of the Purpose and Need Statement



KY Practical Solutions Principles-2

- Meet anticipated capacity needs



15,000 Vehicles per day

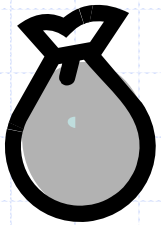
KY Practical Solutions Principles-3

- Evaluate safety compared to the existing conditions

Alternative A

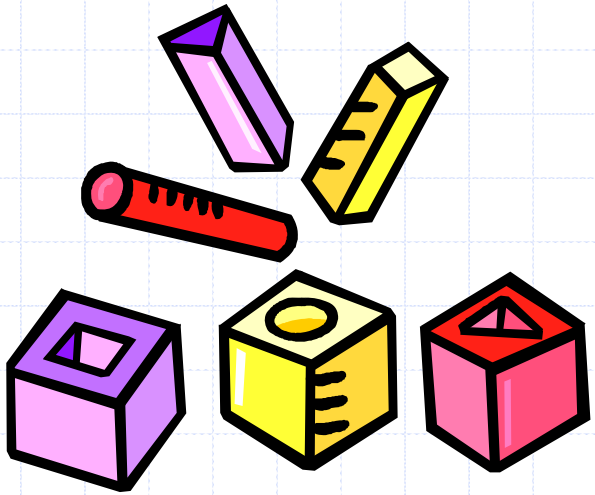
Alternative B

Existing



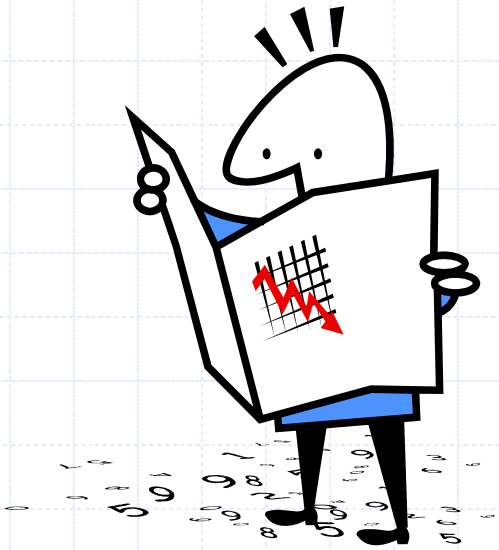
KY Practical Solutions Principles-4

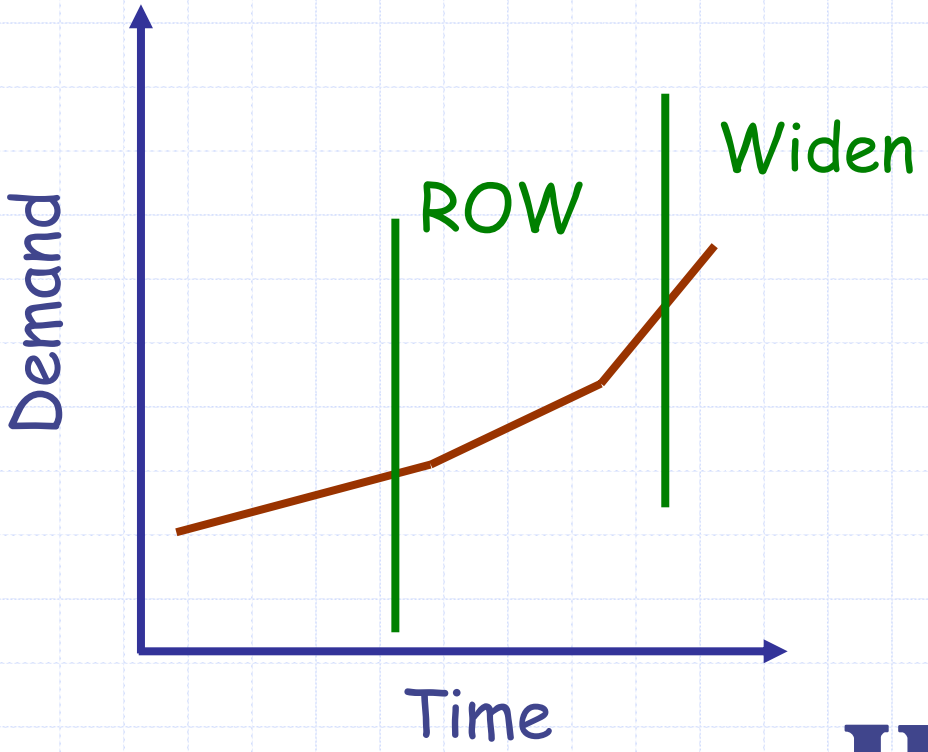
- Develop and evaluate design options and alternatives



KY Practical Solutions Principles-5

- Maximize design to the point of diminishing return





KY Approach

- Re-evaluate all projects
- Consider size/budget

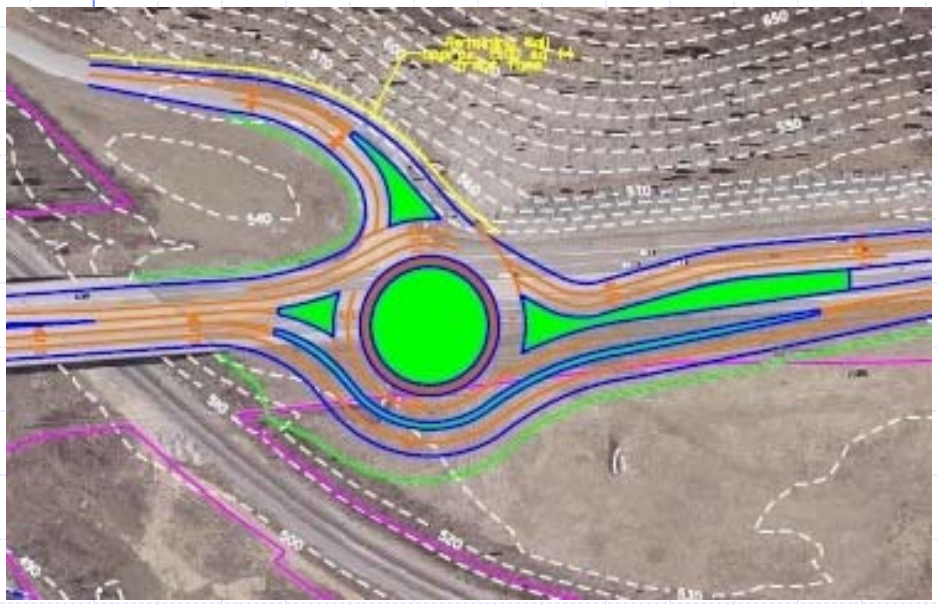
- Cost savings
- Backlog shortened
- Safety/mobility improvements

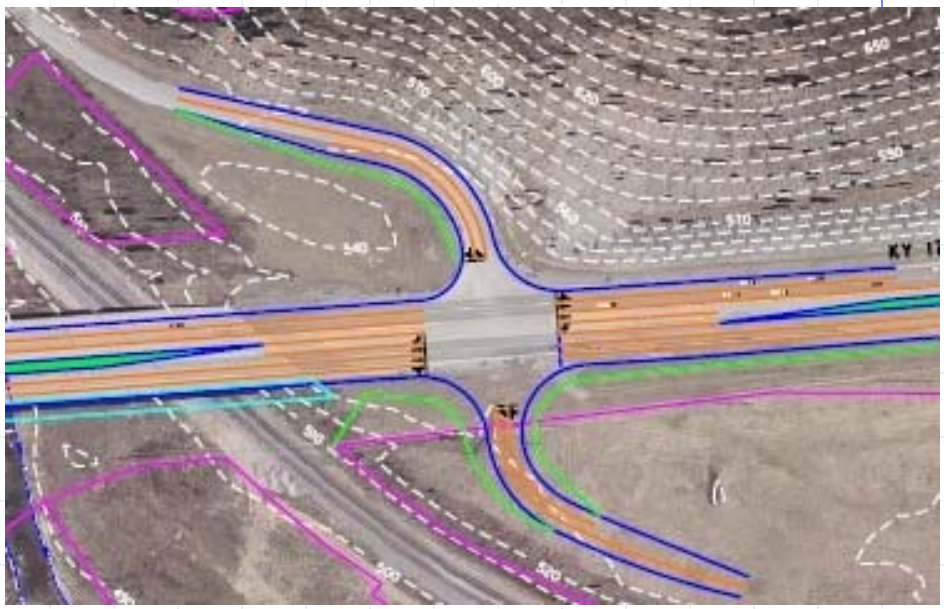
Example 1

- Madison Pike (KY 17) Intersection Improvement Study
- Comprehensive plan for intersection improvements
- Current LOS F

Example 1

(2/3)





Traditional designs $5-$5.8 m

Example 1

Practical Design

Real issues:
Delay from side street;
no need for widening

Cost: $275,000

Budget gains $5 million

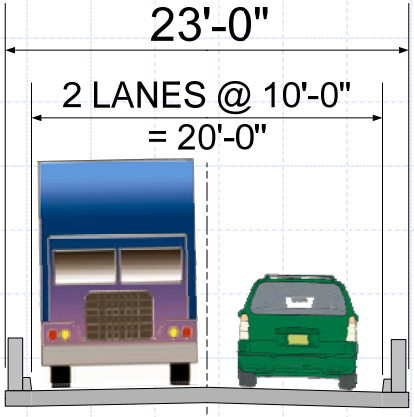
Example 2

- Bridge replacement over Lake Barkley and Kentucky Lake
- 1.8 miles
- High truck traffic

Example 2

Kentucky Lake
(Looking East)

Lake Barkley
(Looking East)



EXISTING TYPICAL SECTION
(Looking East)

Example 2

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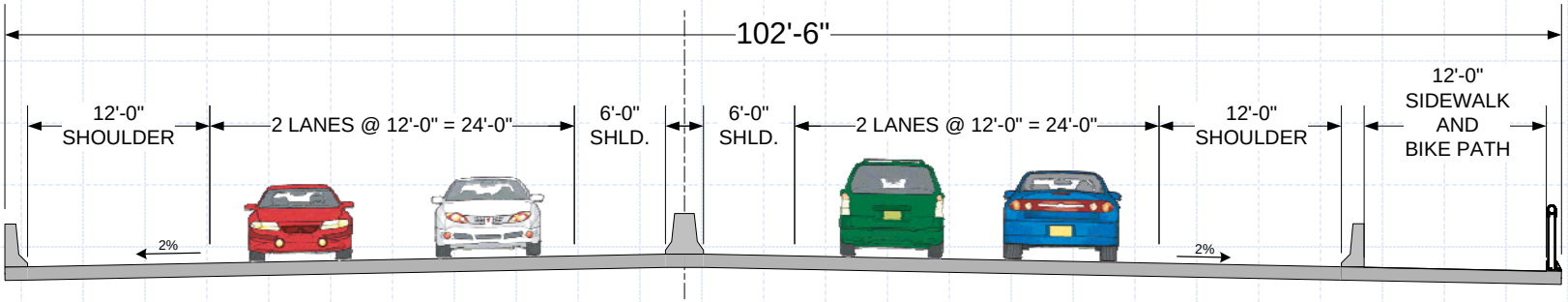
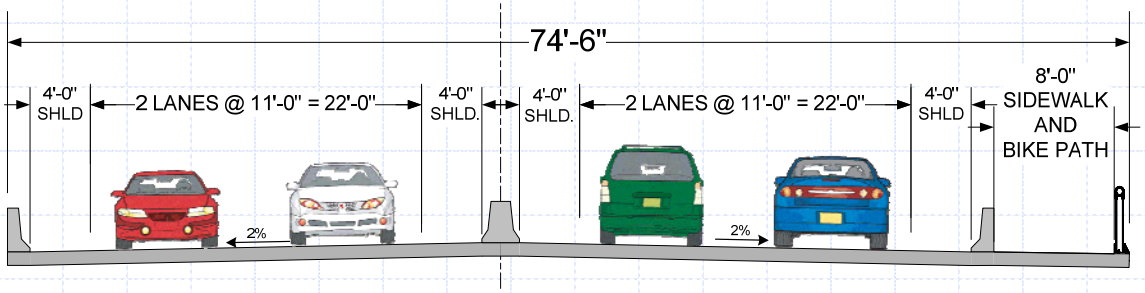


ORIGINAL TYPICAL SECTION



REDUCED SECTION

Budget gains $80 million

KY Next Steps

- Apply process
  - New projects
  - Planning
- Refine principles
- Develop tools

Summary

- More projects with same funds
  - Decreased traffic delays
  - Improved safety
- Potential for setting system-wide approach and priorities
- Appropriate and contextual design

Final Thoughts

- Purpose and need
  - Establish targets
  - Do not exceed them
- Identify true problems
- Think beyond the standards
- Documentation