“IF IT AIN’T BROKE...”
AND OTHER SAFETY LESSONS

Kendra Schenk, PE, PTOE, RSP
Safety Lessons

• If it ain’t broke, don’t fix it
• Rules are made to be broken
• Make good choices
• Get your priorities straight
Lesson 1

If it ain’t broke, don’t fix it
Laybourne Road
Laybourne Road
Laybourne Road
Laybourne Road

ALTERNATIVE 2 – TIGHT DIAMOND

BURGESS & NIPLE
Laybourne Road

ALTERNATIVE 3 - ROUNDABOUT

BURGESS & NIPLE
Laybourne Road

ALTERNATIVE 4 – PARCLO

BURGESS & NIPLE
# Laybourne Road

## Alternatives Evaluation - Laybourne Road Relocation

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
<th>Alternative 1 No-Build</th>
<th>Alternative 2 Tight Diamond</th>
<th>Alternative 3 Roundabout</th>
<th>Alternative 4 Partial Cloverleaf</th>
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<tbody>
<tr>
<td>Safety</td>
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<td>Maintenance of Traffic /Constructability</td>
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<tr>
<td>Design Geometrics</td>
<td></td>
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<tr>
<td>Construction Cost (2019 $$)</td>
<td></td>
<td></td>
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</tbody>
</table>

*1. Good*

*2. Fair*

*3. Satisfactory*

*4. Unsatisfactory*

*5. Poor*
Laybourne Road

2015 – 2017
2 Fixed Object Crashes
1 Backing Crash
0 Injuries
### Laybourne Road

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<td>Design Geometrics</td>
<td>N/A</td>
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<tr>
<td>Construction Cost (2019 S$)</td>
<td>N/A</td>
<td>$2.89M</td>
<td>$3.10M</td>
<td>$3.00M</td>
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</table>

*BURGESS & NIPLE*
Features of the existing design that are performing well may remain unchanged, while features that are performing poorly should be improved, where practical.
Laybourne Road

ALTERNATIVE 1 - NO-BUILD

ALTERNATIVE 1 - NO-BUILD
Lesson Summary

- Perception is not always reality
- Decisions (especially expensive ones) should be based on data
Rules are made to be broken
Gemini Parkway

EXISTING
74'

ALTERNATIVE 1
80'

ALTERNATIVE 2
74'

ALTERNATIVE 3
74'

BURGESS & NIPLE
Gemini Parkway

Class Average

Grade of Individual Student

BURGESS & NIPLE
## Gemini Parkway

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<th></th>
<th>Alternative 1</th>
<th>Alternative 2</th>
<th>Alternative 3</th>
</tr>
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<tr>
<td>Fatal and Serious Injury</td>
<td>-1.00</td>
<td>-0.89</td>
<td>-0.85</td>
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<tr>
<td>Injury</td>
<td>-8.48</td>
<td>-7.67</td>
<td>-7.31</td>
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<tr>
<td>Total Crashes</td>
<td>-46.35</td>
<td>-44.98</td>
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<tr>
<td>Construction Costs</td>
<td>$7.44 M</td>
<td>$5.48 M</td>
<td>$5.48 M</td>
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<tr>
<td>Safety B/C</td>
<td>2.07</td>
<td>2.61</td>
<td>2.49</td>
</tr>
</tbody>
</table>

### ALTERNATIVE 1

![Alternative 1 Diagram]

### ALTERNATIVE 2

![Alternative 2 Diagram]

### ALTERNATIVE 3

![Alternative 3 Diagram]
Gemini Parkway

- Nearly $2M in cost savings
- Design Exceptions for lane and inside shoulder widths
In the past, designers sought to assure good traffic operational and safety performance for the design of specific projects primarily by meeting the dimensional design criteria in this policy. This approach was appropriate in the past because the relationship between the design dimensions and future performance was poorly understood. Traditional applications of this policy took the approach that, if the geometric design of a project met or exceeded specific design dimensional design criteria, it would likely to perform well. In some cases, this may have led to overdesign, constructing projects that were more costly than they needed to be, or were inappropriate for the roadway context.
Lesson Summary

- “Safest” option doesn’t always “win”
- 12-foot lane widths aren’t required
- Just because it’s “in the manual” doesn’t mean it’s “safe”
Lesson 3

Make good choices
Carters Corner Road
Carters Corner Road

6 Rear End Crashes
3 Injury Crashes

SPEED LIMIT 55

US 36 / SR 37
Carters Corner Road

Unsignalized Intersection
Carters Corner Road

Signalized Intersection
Carters Corner Road

Roundabout
## Carters Corner Road

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<tr>
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<td>2018 Project Costs</td>
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<td>Safety B/C</td>
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- **2018 Project Costs**:
  - Unsignalized: $466,000
  - Signalized: $767,000
  - Roundabout: $1,591,000

- **Safety B/C**:
  - Unsignalized: 2.66 crash reduction/year
  - Signalized: 3.39 crash INCREASE/year
  - Roundabout: 4.25 crash reduction/year

- **LOS**:
  - F: Similar delays for unsignalized movements
  - B: Improvement over No Build
  - C: Improvement over No Build

**Safety**

- 2.66 crash reduction/year
- 3.39 crash INCREASE/year
- 4.25 crash reduction/year
Lesson Summary

- Use safety as a metric when evaluating alternatives
- What works for operations may not work for safety
Lesson 4

Get your priorities straight
Morse Road and Westerville Road

Lane Drop 250’ Past Intersection

Lane Drop 250’ Past Intersection

Lane Drop
Morse Road and Westerville Road

90+ Feet

Morse Road Looking East
Morse Road and Westerville Road
Morse Road and Westerville Road

**Immediate Improvements**

- Modify yellow + all red times
  - Reduce crashes by 8-14%
- Optimize signal timings
  - Reduce crashes by 32%
Morse Road and Westerville Road

Short-Term Improvements

Restripe to provide dual left-turn lanes

Lane Drop 250’ Past Intersection

Reduces 3.5 crashes per year

$340,000
Morse Road and Westerville Road

Widen approach to provide dual left-turn lanes

Widen approach to provide right-turn lane

Medium/Long-Term Improvements

Reduces an additional 1.5 crashes per year
Plus operational improvements

$1,700,000
Lesson Summary

- Don’t wait!
- Use safety to help prioritize phased improvements or overall projects
Safety Lessons

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Questions?
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317-237-2760
Kendra.Schenk@BurgessNiple.com