US 167 (Johnston Street) Corridor Study

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Project Background

- US 167 (Johnston Street) is one of Lafayette’s Major Arterials
- Five-lane Major Arterial through Lafayette
- Traverses through Downtown, ULL, Commercial Areas and the Mall of Acadiana
- Multiple Planning Efforts Over the Last 10 – 15 Years
Initial Planning Efforts
Community Design Workshop

- ULL Architecture Students
- Community Design Charettes
- Development of Design Alternatives
  - Separate Bus Lanes
  - Typical Sections Requiring 126’ – 144’ ROW
Conceptual Design
Community Design Workshop
Community Concerns

- Right of Way Requirements
- Impacts on Adjacent Businesses
Current Design Effort

- Evaluate Design Alternatives
  - Little or No New Right of Way Required
  - Complete Streets Approach
  - Context Sensitive Design

- MPO Developed Design Alternative

- Discussions with Local, State and Federal Stakeholders

- Interest in Safety and Access Management Implications of Project
EXISTING ROADWAY
PROPOSED CONCEPT
Study Area Limits

- US 167 (Johnston Street) 0.8 mi between
  - Coulee Mine bridge, approximately 200 ft west of Holden Avenue
  - Coulee Mine Branch bridge, approximately 100 ft west of Cajundome Boulevard

- Three Major Property Owners Supportive of the Project
  - Lafayette Central Park
  - Bertrand Streetscape Project
  - LCG Comprehensive Plan Small Area Plan
  - Lafayette Utility System Study to Bury Utilities
Study Area Limits
Project Purpose and Need

- US 167 (Johnston Street) on LCG’s list of corridor transportation improvement projects
- Incorporate Complete Street and Access Management approach in proposed alternatives
- Enhance Safety along the corridor
- Improve efficiency/mobility of traffic flow
EXISTING CONDITIONS
Existing Conditions

Existing Geometry

- Urban five (5) lane arterial with a center two-way left turn (TWLT) lane with bike lanes adjacent to roadway in both directions
- Speed limit 40 MPH
- Ten (10) foot wide travel lanes
- Three (3) signalized
- Six (6) unsignalized intersections
- Mixture of commercial, residential, parks and school properties with numerous driveway connections.
Existing Conditions

Crash Analysis

- Crash Analysis: years 2009 to 2011
- 8.30 crashes per mvm compared to Statewide Avg. of 1.74 crashes per mvm.

Overrepresented Crashes

» Rear End Crashes (56% compared to 37.71%)
## Existing Conditions

### Crash Analysis

#### Crash Severity

<table>
<thead>
<tr>
<th>Crash Severity</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatality Crashes</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Injury Crashes</td>
<td>29</td>
<td>42</td>
<td>29</td>
<td>100 (23%)</td>
</tr>
<tr>
<td>Property Damage</td>
<td>117</td>
<td>119</td>
<td>102</td>
<td>338 (77%)</td>
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<tr>
<td>Total</td>
<td>146</td>
<td>161</td>
<td>131</td>
<td>438</td>
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</tbody>
</table>
Existing Conditions

Crash Analysis

- Crash Type

- Rear End: 56%
- Right Angle: 13%
- Left Turn: 8%
- Right Turn: 2%
- Side Swipe: 15%
- Head on: 5%
- Other: 1%
Existing Conditions

Crash Analysis

- Sample Collision Diagram
PROPOSED ALTERNATIVES
Alternative 1

*Description*

- Converts five (5) lane section to a four (4) lane boulevard with a raised median
- Lane widths increase from 10’ to 11’
- 6’ sidewalk adjacent to curb of roadway
- 5’ dedicated bike lane in both directions
- Turn lane modifications at two (2) signalized intersections
Alternative 1
Concept Layout
Alternative 2

Description

- Converts five (5) lane section to a four (4) lane boulevard with a raised median
- Lane widths increase from 10’ to 11’
- 6’ sidewalk adjacent to curb of roadway
- 5’ dedicated bike lane in both directions
- Turn lane modifications to two (2) signalized intersections
- Partial Reduced Phased Intersection (RPI) at the intersection of US 167 at S College Rd
Alternative 2
Concept Layout
Alternative 3

Description

- Converts five (5) lane section to a four (4) lane boulevard with a raised median
- Lane widths increase from 10’ to 12’
- 8’ multiuse path
- 5’ dedicated bike lane in both directions
- Turn lane modifications at two (2) signalized intersections
Alternative 3
Concept Layout
ALTERNATIVES ANALYSIS
Alternatives Crash Analysis

Estimated reduction in crashes using Crash Modification Factors (CMF) from “Highway Safety Manual” (HSM)

» CMFs considered included
  - Raised Median (injury / non injury)
  - Lane Width Modification (injury / non injury)
  - Modify Access Points (injury)
  - Providing a Right Turn Lane on Approach to Intersection (all severities / injury) (intersections only)
  - Prohibiting Left Turns (Alt. 3 only / intersection)

Estimated crash benefits for each alternative
Crash Modification Factor (CMF)

CMF used in segment analysis

» For adding raised median: HSM Table 13-11
  - CMF for Injury: 0.78
  - CMF for Non-Injury: 1.09

» For lane widths modification: HSM Table 13-4 / Eq. 13-3
  - CMF for Injury: 0.9598 (10’ to 11’); 0.9569 (10’ to 12’)
  - CMF for Non-Injury: 0.9598 (10’ to 11’); 0.9569 (10’ to 12’)

» For Reduced Access Point Density: HSM Table 13-58
  - CMF for Injury: 0.71
  - CMF for Non-Injury: N/A
# Crash Benefit

## Alternative 1

<table>
<thead>
<tr>
<th>Segment / Intersection Crash Benefit</th>
<th>Existing Crashes Per year</th>
<th>CMF #1</th>
<th>CMF #2</th>
<th>CMF #3</th>
<th>Est Crash Reduction (Crashes/yr)</th>
<th>Avg Cost/ Crash Moderate</th>
<th>Avg Cost/ Crash PDO</th>
<th>Est Crash cost Savings per Year</th>
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</thead>
<tbody>
<tr>
<td>Injury</td>
<td>9.3</td>
<td>0.78</td>
<td>0.9598</td>
<td>0.71</td>
<td>5</td>
<td>$164,396</td>
<td>N/A</td>
<td>$841,191</td>
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<tr>
<td>Non-Injury</td>
<td>102</td>
<td>1.09</td>
<td>0.9598</td>
<td>N/A</td>
<td>-5</td>
<td>NA</td>
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<td>SEGMENT SUBTOTAL $824,469</td>
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<td>Injury (Int.)</td>
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<td>0.91</td>
<td>N/A</td>
<td>N/A</td>
<td>1</td>
<td>$164,396</td>
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<td>INT. SUBTOTAL $103,569</td>
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<td></td>
<td>TOTAL CRASH BENEFIT $928,038</td>
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</tbody>
</table>

- **CMF #1** - Add Raised Median
- **CMF #2** - Lane Width Modifications
- **CMF #3** - Reduced Access Point Density
- **CMF #4** - Add Right Turn Lane at Intersection
## Crash Benefit

### Alternative 2

<table>
<thead>
<tr>
<th>Segment / Intersection Crash Benefit</th>
<th>Existing Crashes Per year</th>
<th>CMF#1</th>
<th>CMF#2</th>
<th>CMF#3</th>
<th>Est Crash Reduction (Crashes/yr)</th>
<th>Avg Cost/ Crash</th>
<th>Avg Cost/ Crash</th>
<th>Est Crash cost Savings per Year</th>
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</thead>
<tbody>
<tr>
<td><strong>Injury</strong></td>
<td>9.3</td>
<td>0.78</td>
<td>0.9598</td>
<td>0.71</td>
<td>5</td>
<td>$164,396</td>
<td>N/A</td>
<td>$841,191</td>
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<tr>
<td><strong>Non-Injury</strong></td>
<td>102</td>
<td>1.09</td>
<td>0.9598</td>
<td>N/A</td>
<td>-5</td>
<td>NA</td>
<td>$3,292</td>
<td>-$16,722</td>
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<tr>
<td><strong>SEGMENT SUBTOTAL</strong></td>
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<td>$824,469</td>
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<tr>
<td><strong>CMF#4</strong></td>
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<td><strong>CMF#5</strong></td>
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<tr>
<td><strong>Injury (Int.)</strong></td>
<td>7</td>
<td>0.91</td>
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<td>1</td>
<td>$164,396</td>
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<td><strong>All Types Int.</strong></td>
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- **CMF #1** - Add Raised Median
- **CMF #2** - Lane Width Modifications
- **CMF #3** - Reduced Access Point Density
- **CMF #4** - Add Right Turn Lane at Intersection
- **CMF #5** - Prohibit Left Turn at Intersection
## Crash Benefit
### Alternative 3

<table>
<thead>
<tr>
<th>CMF#1</th>
<th>CMF#2</th>
<th>CMF#3</th>
<th>Est Crash Reduction (Crashes/yr)</th>
<th>Avg Cost/ Crash Moderate</th>
<th>Avg Cost/ Crash PDO</th>
<th>Est Crash cost Savings per Year</th>
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</thead>
<tbody>
<tr>
<td>Existing Crashes Per year</td>
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<td></td>
</tr>
<tr>
<td>Injury</td>
<td>9.3</td>
<td>0.78</td>
<td>0.9569</td>
<td>0.71</td>
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<td>$164,396</td>
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| CMF#4                  |          |          |                                  |                           |                     |                                 |
| Injury                 | 7        | 0.91     | N/A                              | N/A                       | 1                   | $164,396                        |
|                        |          |          |                                  |                           |                     | $103,569                        |

| SEGMENT SUBTOTAL       | $829,877 |          |                                  |                           |                     |                                 |
| INT. SUBTOTAL          |          |          |                                  |                           |                     | $103,569                        |
| TOTAL CRASH BENEFIT    |          |          |                                  |                           |                     | $933,446                        |

- **CMF #1** - Add Raised Median
- **CMF #2** - Lane Width Modifications
- **CMF #3** - Reduced Access Point Density
- **CMF #4** - Add Right Turn Lane at Intersection
# Summary of Alternatives Analysis

<table>
<thead>
<tr>
<th>US 167/Johnston St feasibility study</th>
<th>Alt. 1</th>
<th>Alt. 2</th>
<th>Alt. 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crash Benefit ($/year)</td>
<td>$928,000</td>
<td>$1,591,000</td>
<td>$933,450</td>
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<tr>
<td>Level of Service</td>
<td>D</td>
<td>D</td>
<td>D</td>
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<tr>
<td>Impacts to Adjacent Businesses</td>
<td>Low</td>
<td>High</td>
<td>Moderate</td>
</tr>
<tr>
<td>ROW Cost</td>
<td>Low</td>
<td>High</td>
<td>Moderate</td>
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<tr>
<td>Utility Relocate Cost</td>
<td>Low</td>
<td>Moderate</td>
<td>High</td>
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<tr>
<td>Project Cost (Environmental/Design/ROW/Construction Costs)</td>
<td>$12,810,000</td>
<td>$26,275,000</td>
<td>$32,084,000</td>
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Moving Forward

- DOTD, LCG, LUS and MPO Review of Stage 0 Study

- Agreement to Move Forward with a Modified Alternative 3
  - Bury Distribution Lines
  - Keep Transmission Lines Overhead

- Project Funding with Safety, Access Management and MPO (STP>200K)

- Major Property Owners Supportive of Project

- Finalizing State Entity Agreement