

Traffic Engineering 101 - The Basics

Understanding the basic principles and how these drive the decisions regarding traffic management in Louisiana





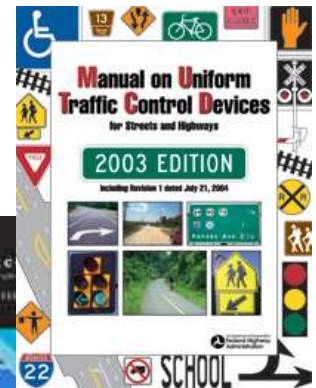
Traffic Engineering 101

- Purpose:
 - To provide an overview of engineering principles; guidelines & laws which govern traffic management in Louisiana
 - Discuss how DOTD's decisions impact local communities
 - Facilitate feedback & questions from local agencies on state and local traffic engineering issues



Manual on Uniform Traffic Control Devices

- Federal policy
- All states must adopt
- Set minimums for traffic control devices such as
 - Signs
 - Pavement marking
 - And signals





Engineering Design Standard Manual

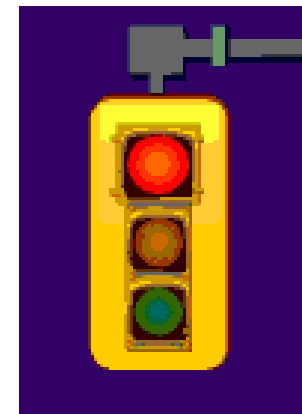
- DOTD policy
- Signed by Chief Engineer
- Provides additional requirements





Basic Principle of Traffic Engineering

“Everything is designed to meet Driver Expectancy”



Even Roundabouts!





TR Engineering 101

- Module:

1. Introduction & Overview (3/22/10)
2. Speed Management Overview (4/26/10)
3. School Zones (4/26/10)
4. Intersection Traffic Control (5/24/10)
5. Traffic Signal (5/24/10)
6. Roundabouts (5/24/10)
7. Sign Selection & Installation (6/28/10)
8. Work Zones (6/28/10)
9. Access Management (7/26/10)
- 10. Roundabouts (8/23/2010)**



TODAY

- Central, LA
- Roundabouts
 - Design Features
 - Safety Aspects
 - Operations and Capacity
 - Lafayette Roundabouts



Roundabout Myths

- “Louisiana drivers can’t handle it”
- “Not for high volume intersections”
- “Not for high speed suburban/rural intersections”
- “Trucks can’t maneuver through them”
- “The public won’t accept them”



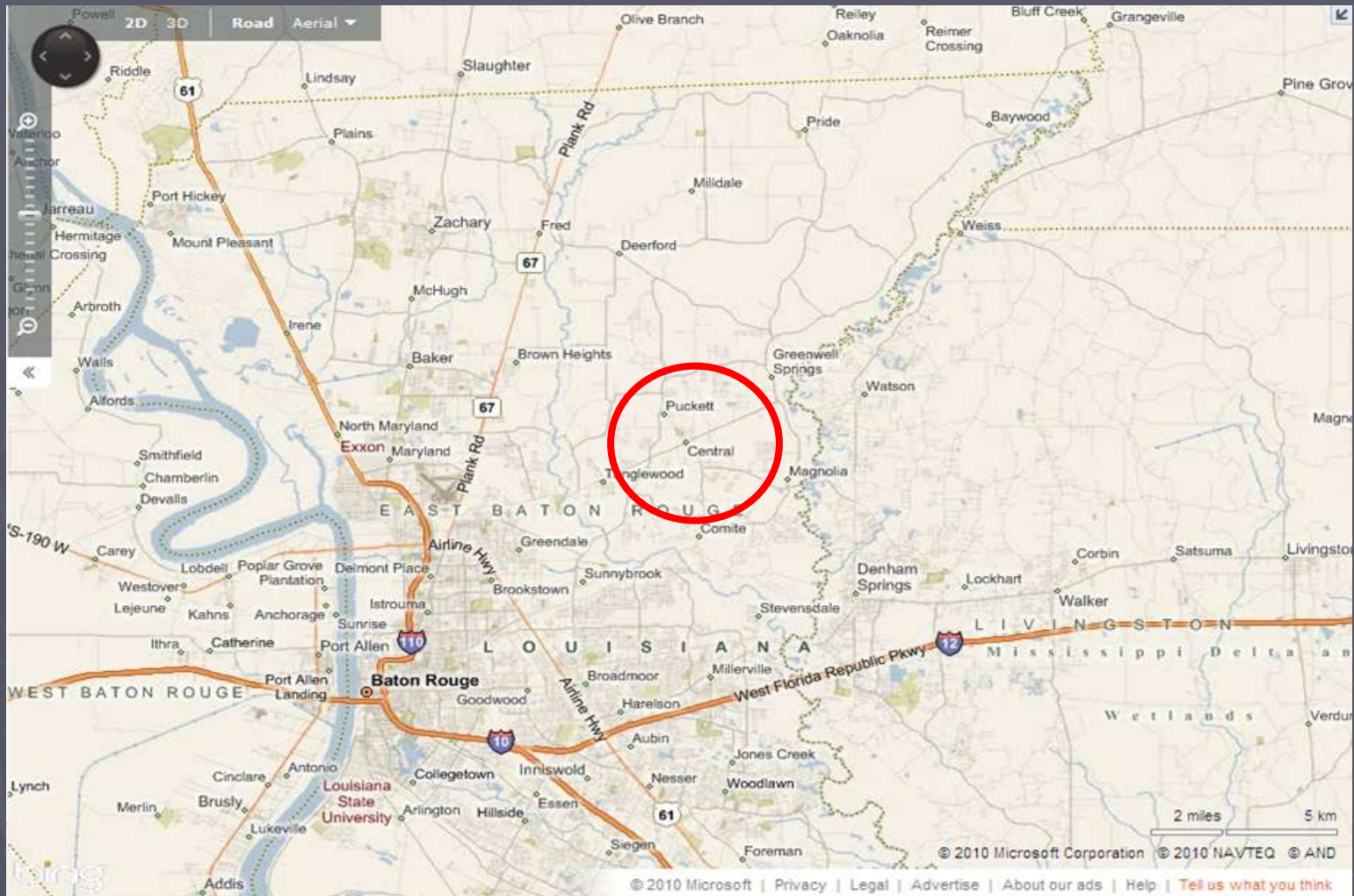
More Suggestions?

- Other traffic issues or questions?
- Contact Jody Colvin at Jody.Colvin@la.gov
- or Marie B. Walsh at mbwalsh@ltrc.lsu.edu

City of Central East Baton Rouge Parish

Access Management
August 23, 2010

City of Central, Louisiana



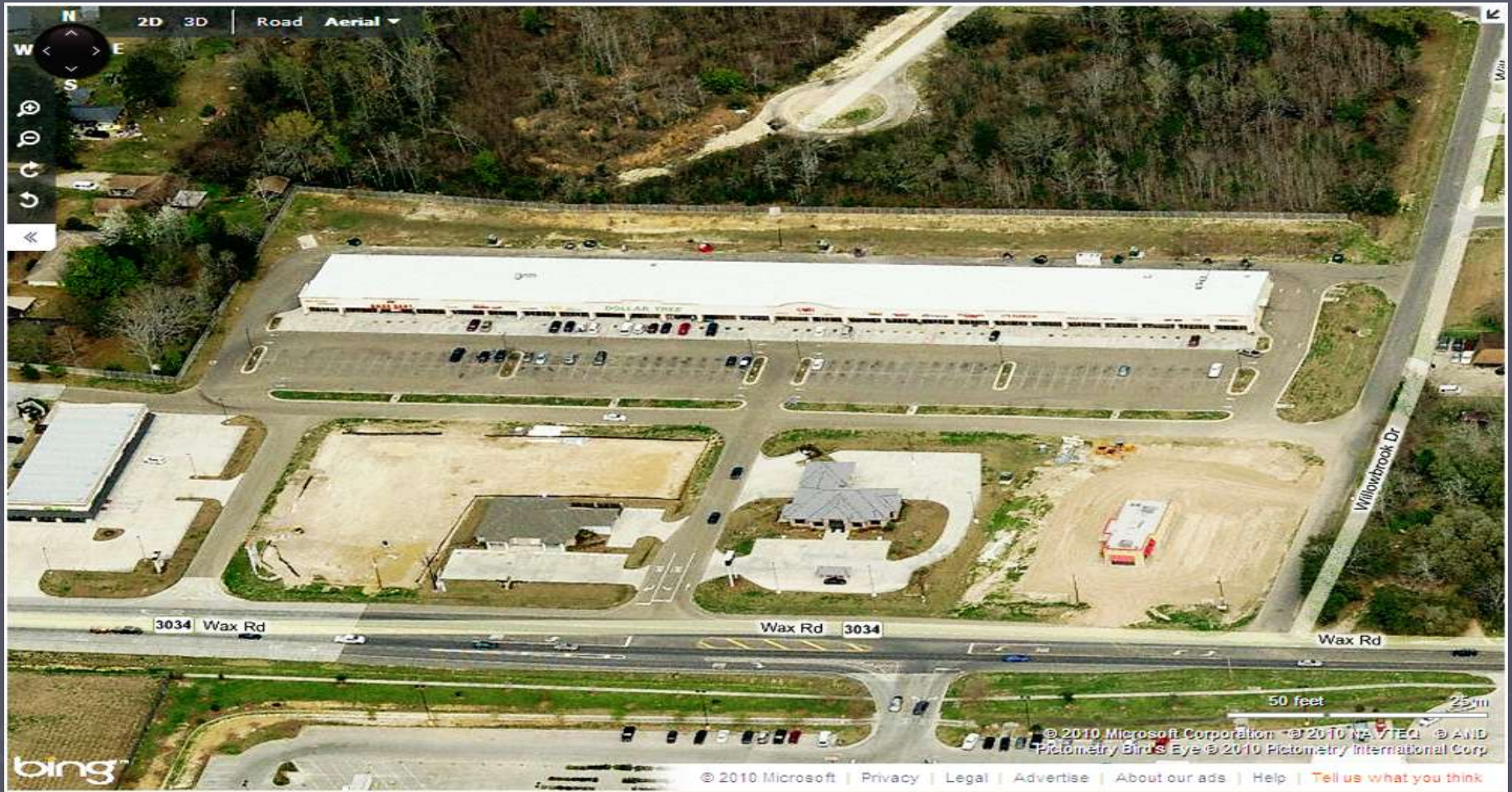


- ▶ 28,000 people
- ▶ 66 sq. miles
- ▶ 12th largest city in the state
- ▶ 2005 incorporated
- ▶ 2008 took over services from East Baton Rouge Parish
- ▶ **#5 School District** in the entire state of Louisiana*



*http://www.centraleconomicdevelopment.org/louisiana_schools.php

Central Crossing on Wax Rd





Central Crossing

- East West Driveway connecting Sullivan Rd to Willowbrook Drive through middle of shopping center.



Central Crossing

- ▶ Entrance from Sullivan Rd.



Central Crossing

- ▶ Driveway entrance #1 with bank access to entranceway.



Central Crossing

- ▶ Driveway #1 to Wax Rd. Right-in/Right-out only onto Wax Rd.
- ▶ Bank to left.
- ▶ Retail Center on right.



Central Crossing

- ▶ Main access driveway looking towards Wax Rd
- ▶ Bank on left.
- ▶ Retail business on right.
- ▶ Left and right turn lanes to Wax Rd.



Central Crossing

- ▶ Main Access Photo 2 at center intersection within shopping complex looking towards Wax Rd.
- ▶ Bank on left
- ▶ Retail office on right.



Central Crossing

- ▶ Main Entrance
Photo 3
looking from
Wax Rd.



Central Crossing

- ▶ View from Wax Rd headed west.
- ▶ No direct driveway access to Wax Rd.
- ▶ Driveway to the right is Main Entrance.



Cleaners / O'Reilly's



- ▶ Shared driveway to O'Reilly's Auto Parts and Central Cleaners on Wax Rd.

Cleaner's/O'Reilly's



- ▶ Another view of shared access between Central Cleaner's and O'Reilly's on Wax Rd.
- ▶ Cleaners not shown on right.

Cleaner's / O'Reilly's



- View looking toward the east of O'Reilly's and Central Cleaners on Wax Rd (LA3034)

Walgreens / Car Wash



- ▶ Shared access between Walgreen's and Car Wash at the intersection of Greenwell Springs Rd (LA37) and Sullivan Rd.

Walgreen's / Car Wash



- ▶ Shared driveway for Walgreens and Car Wash onto Sullivan Rd near Greenwell Springs Rd
- ▶ Car Wash on left. Walgreens on right.

Walgreen's / Car Wash



- ▶ View from Walgreens looking towards carwash (north)
- ▶ Shared driveway is at the stop sign.

Walgreens / Carwash



- ▶ Rear of Car Wash and Walgreens.
- ▶ This photo shows shared access along the rear of the property as well.
- ▶ Drive-thru shown at Walgreens

Central Square – Sullivan at Wax



Wax Rd extension 1

- ▶ Wax Rd extension at Central Square
- ▶ Car Wash on right
- ▶ Roundabout in background



Wax Rd extension 2

- ▶ Close up view of Roundabout.
- ▶ Roadway will be extended in the future to serve more retail and residential development.



Wax Rd extension 3

- ▶ Another view of roundabout looking west.
- ▶ Future street expansion to the west and south will connect to roundabout.



Wax Rd at Sullivan Rd EB

Developer had to add new lanes



[illegible]

Lovett Rd Roundabout



- Eastbound Approach to Roundabout on Lovett Rd at Magnolia Square in Central, LA

Lovett Rd Roundabout



- Roundabout on Lovett Rd at Magnolia Square

Lovett Rd Roundabout



- Roundabout on Lovett Rd installed March 2010.

Lovett Rd Roundabout



- Lovett Rd Roundabout

Lovett Rd roundabout WB



- Lovett Rd roundabout approach westbound

Lovett Rd roundabout WB



- Westbound approach to Lovett Rd roundabout

Lovett Rd roundabout WB

- Advance Warning sign on Lovett Rd WB.



Contact Info

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- ▶ Central, LA (EBR Parish)
- ▶ 225-261-5255
- ▶ david.barrow@centralgov.com
- ▶ www.centralgov.com

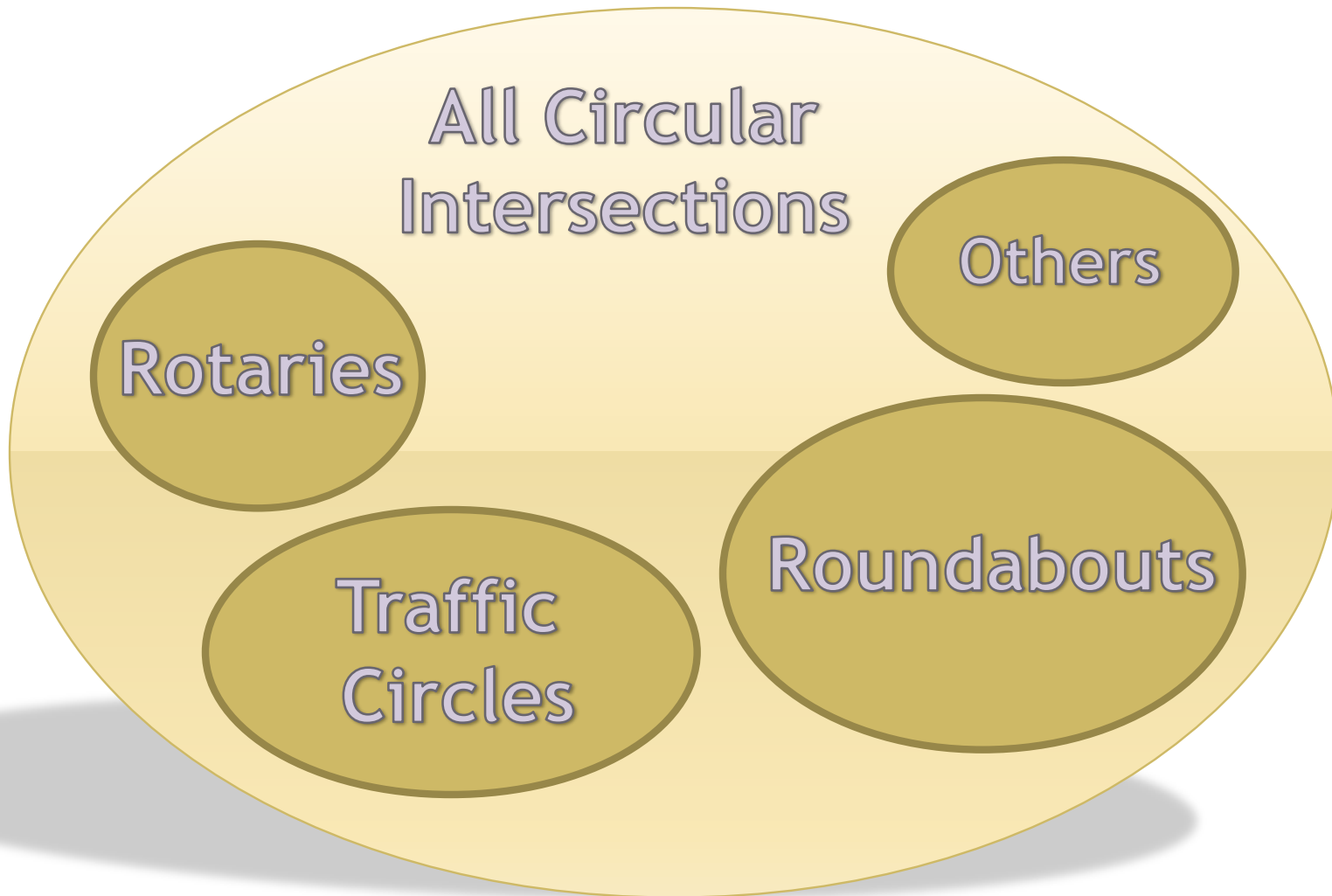


SAFETY BENEFITS OF ROUNDBABOUTS

AUGUST 23, 2010



TERMINOLOGY



WHAT ISN'T A ROUNDABOUT?



Rotary

Traffic Circle



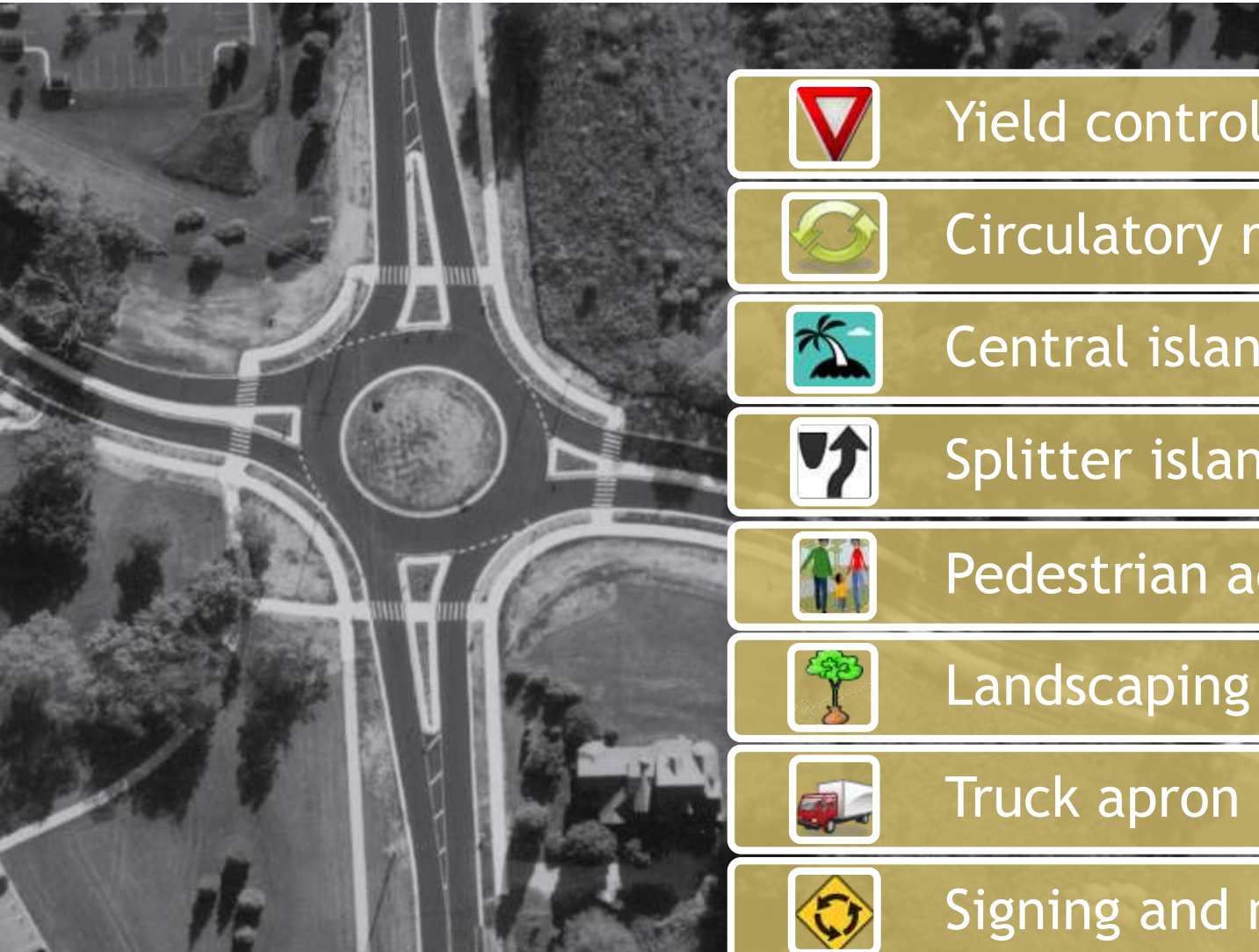
Neighborhood Circle

WHAT IS A ROUNDABOUT?

- A compact circular intersection in which traffic flows counter-clockwise around a center island
- Entering traffic yields
- Designed to slow the speed of vehicles
- Approaches are channelized to deflect traffic into a proper entry path



KEY FEATURES



Yield control



Circulatory roadway



Central island



Splitter island



Pedestrian access



Landscaping



Truck apron



Signing and marking

KEY FEATURES



Vehicles yield upon entry
in a modern roundabout.

No traffic control in the
circulatory roadway.
Movement is counter-
clockwise.



KEY FEATURES



Central island
deflects vehicles
from a straight-line
path.

Landscaping is
needed as a visual
element to drivers



KEY FEATURES



**Splitter islands
separate, deflect,
and slow traffic.**

**Truck aprons should
be designed to
accommodate largest
vehicle expected.**



ROUNDAABOUT SIMULATIONS

Louisiana Department of Transportation and Development - Windows Internet Explorer

http://www.dotd.louisiana.gov

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Louisiana Department of Transportation and Development

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WELCOME TO DOTD.LOUISIANA.GOV

Philosophy: LA DOTD exists to serve the transportation and water resources needs of the public. We are committed to teamwork, quality, integrity, professionalism, innovation and excellence in serving our

Current Construction

Ferry Status

Highway Safety

Intermodal Transportation

Leban Ave. Trade & Travel Study (LATS)

Louisiana Transportation Authority

Louisiana Transportation Research Center

Marine & Rail

Portable Bridge Sales

New Orleans: EGCO Bridge/Parries

Public Transportation

Public Works and Water Resources

Trucks, Customs

Traffic Engineering

Weights & Standards (Permits)

Oil Spill Information

Emergency.louisiana.gov

Gulf of Mexico - Transocean Drilling Incident

U.S. Coast Guard

Gulf of Mexico Coastal Ocean Observing System (GCOOS)

For BP Oil Spill truck permits requests, please call 877-452-3683.

American Recovery and Reinvestment Act

The American Recovery and Reinvestment Act of 2009 (i.e., the Federal Economic Stimulus Bill), provides \$430 million in highway funding and \$66 million in transit funding for Louisiana. The projects approved for funding have been included in the State Transportation Improvement Program in accordance with state and federal regulations. To facilitate public access to this information, a separate listing of these projects, with pertinent information for each, is provided. > More

What's New on the Site

Contractors Informational Meeting - I-10 Twin Span Bridge Demolition

Prospect Bridge Project (LA 3027)

Judge Seebler Bridge (Cibola Ave.) Maintenance Project

Grand Ecore Bridge LA 6 / US 84 Project

Louisiana Transportation Authority

Water Assets - USGS Hydrographic Stations, Public Harbors, State Maintained Movable Bridges

News in DOTD

BRD Louisiana Department of Transportation and Development reminds Grand Isle residents to sign up for Exemot Tail Tag

Louisiana Department of Transportation and Development announces I-10 Mississippi River Bridge closure, new lane configuration

DOTD celebrates opening of U.S. 171 corridor in western Louisiana

LaGov: DOTD implements new service for business vendors

DOTD works to minimize distracted driving through pilot Cell Control program

Huey P. Long Bridge span lift significant technical achievement

Louisiana DOTD and the FHWA's Title VI Seminar

Traffic cameras now available in Hammond and Northshore areas

DOTD begins field-testing of solar-powered highway lights

DOTD celebrates completion of Ambassador Caffery Extension

DOTD Announces \$81.4 Million for Roads Damaged by Hurricanes

Click Here: To view all DOTD Press Releases

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CONTACTS

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The LA DOTD Headquarters Building is located at 1201 Capitol Access Road, Baton Rouge, LA, 70802 Telephone: (225) 279-1232.
Please send us your Comments or Suggestions.

Internet

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LOUISIANA'S SECRETARY SHERI LEAS

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Truck Permits

Traffic Information

Ferry Status

Movable Bridge Status

Traveler Information and Road Closures

Louisiana Travel Times

Traffic Cameras

Baton Rouge

Lafayette

Hammond/Northshore

Houma

Lake Charles

New Orleans

Shreveport / Bossier

511

DEAUXPASS

GOVERNMENT

GOVERNMENT

LA Swift

Louisiana on the Move

ROUNDAABOUT SIMULATIONS

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U.S. Coast Guard

Gulf of Mexico Coastal Ocean Observing System (GCOOS)

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Internet

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ROUNDBABOUT SIMULATIONS

Internet Explorer window showing the Louisiana Department of Transportation and Development (DOTD) website, specifically the Highway Safety section.

The page title is "Highway Safety". The main content area features a "Highway Safety Section" with a video player showing orange traffic cones. Below this, there are four "Single Line Roundabout Videos" links, each with a thumbnail image and a "Download Video" button. These links are circled in red:

- Roundabout Overview (Download Video)
- Roundabout Left Turn (Download Video)
- Roundabout Right Turn (Download Video)
- Roundabout Through Movement (Download Video)

Below the videos, there are "Dual Transportation Safety Presentations (March 2010)" links:

- 2010 Transportation Safety Summit - Highway
- 2010 Transportation Safety Summit - Rail

A section titled "To analyze your roads, do the following:" lists three steps:

- Download the Analyzing Your Roads Checklist
- Go to Traffic Records Data Report link to answer your checklist data questions
- Visit the Planning page to find solutions to your data issues for the checklist

Quick Links:

- Traffic Records Data Report
- Analyzing Your Roads Checklist

Location Information:

Mail Address: Highway Safety Section, P.O. Box 94245, Baton Rouge, LA 70804-9425

Physical Address: 1201 Capitol Access Road, Baton Rouge, LA 70802

Phone Number: (225) 379-1960

Fax Number: (225) 242-4552

Group Email: DOTD-HighwaySafety@la.gov

Contacts:

Name	Phone	Title
Angela Barker	(225) 379-1842	ENGINEERING TECHNICIAN 4
James H. Chapman	(225) 242-4574	Highway Safety SE
Michael F. Connors	(225) 379-1431	PARS Analyst / Highway Safety
Daniel Magel	(225) 379-1871	HIGHWAY SAFETY ADMINISTRATOR

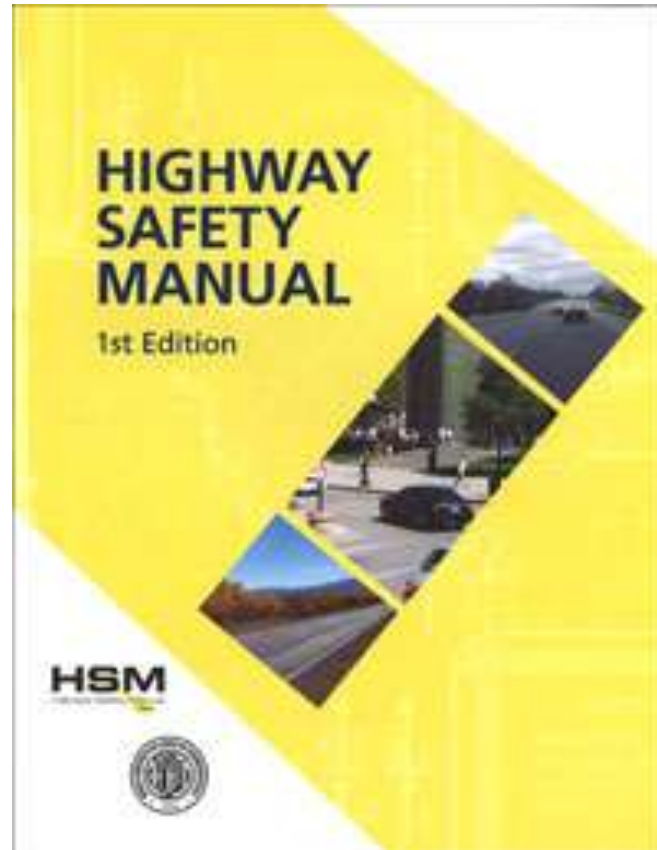
Right sidebar includes a "SECRETARY SHEERI LEBAS" photo and a "Quick Links" section with links to Contacts by Dept., Email Comments, Performance Indicators, Press Releases, Public Meetings, and Truck Permits. Below this is a "Traffic Information" section with links to Ferry Status, Movable Bridge Status, Traveler Information and Road Closures, and Louisiana Travel Times. Further down is a "Traffic Cameras" section with links to Baton Rouge, Lafayette, Hammond/Northshore, Houma, Lake Charles, New Orleans, and Shreveport / Bossier. At the bottom of the sidebar are logos for 511, EAUXPASS, GRADYPLAN, GRACE WIDER, and LA Swift.

WHY ROUNDABOUTS?

- ⦿ Improve safety - reduction in fatalities and serious injuries
- ⦿ Save money
- ⦿ Reduce congestion and pollution - less stopped delay and idling
- ⦿ Complement other community values - promotes walkable communities and improved aesthetics

SAFETY BENEFITS

- ◉ Highway Safety Manual recently published by AASHTO
- ◉ Crash Modification Factor (CMF)
- ◉ Science-based approach to safety analysis



CMF FOR ROUNDABOUTS

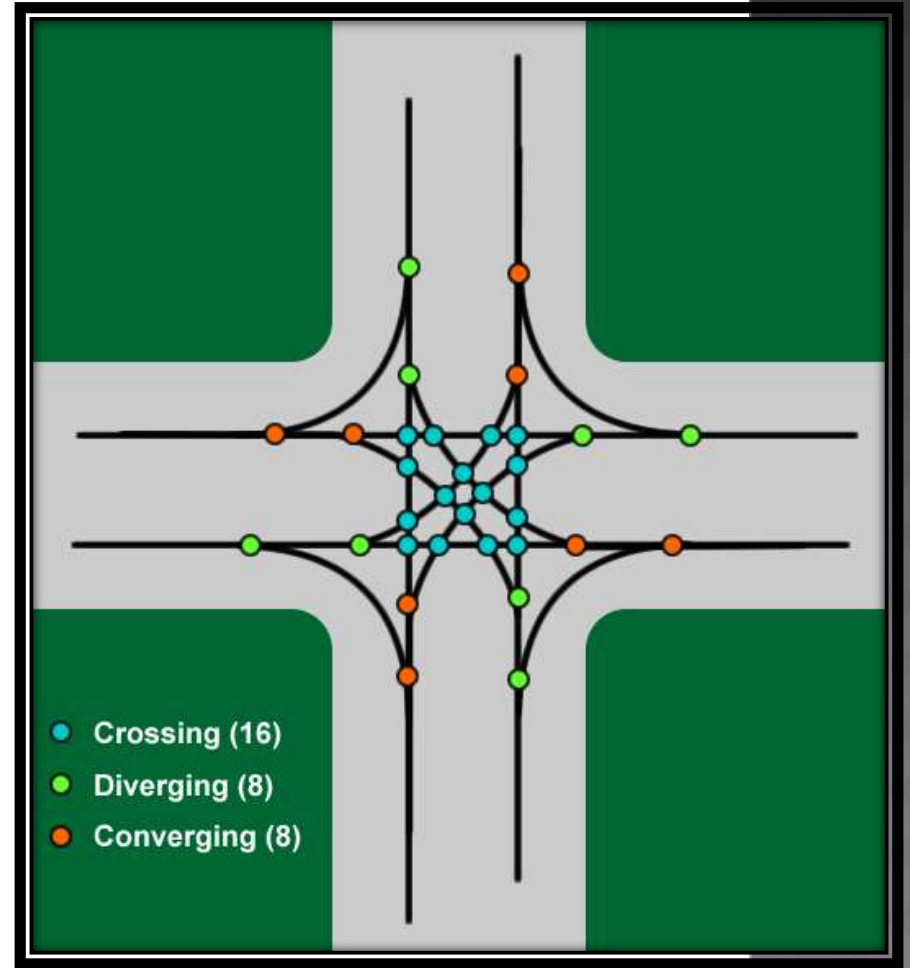
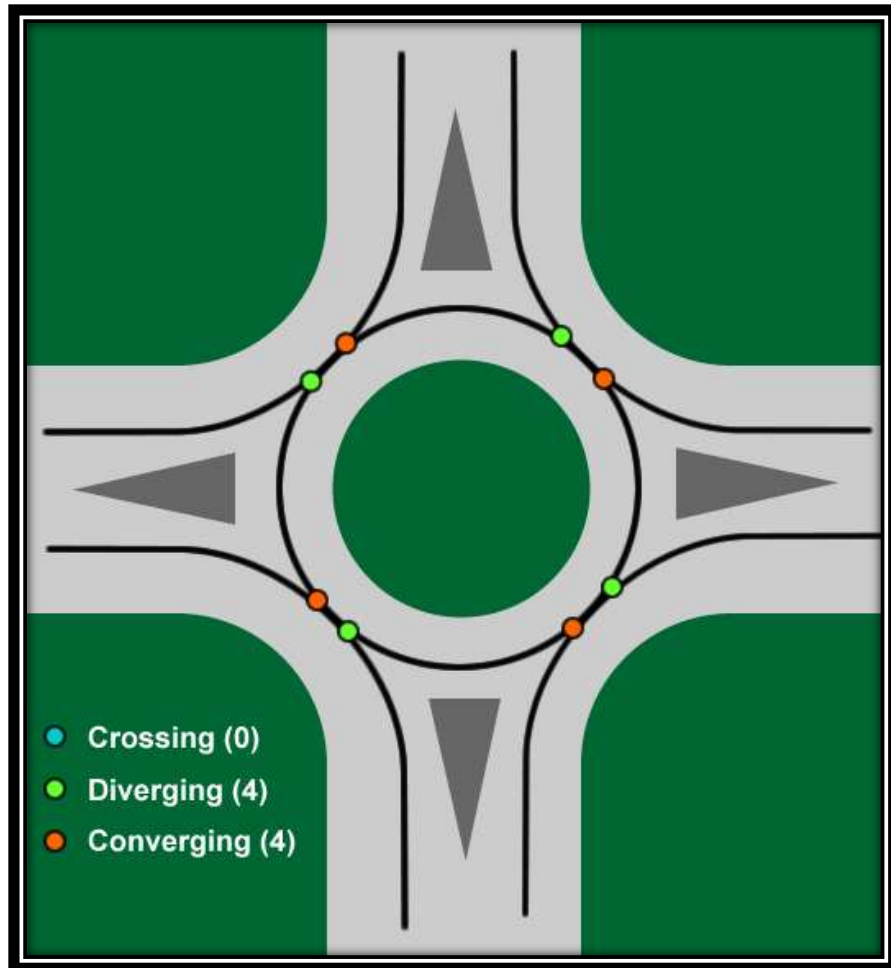
◎ Convert Signal to Roundabout

- For Urban Areas (Single or Multilane)
 - CMF = 0.40 for Injury Crashes
 - 60% Reduction in Injury Crashes
- For Suburban Areas (Multilane)
 - CMF = 0.33 for All Crash Severities
 - 67% Reduction in All Crashes

CMF FOR ROUNDABOUTS

- ◎ Convert 2-Way STOP to Single Lane Roundabout
 - For Rural Areas
 - CMF = 0.13 for Injury Crashes
 - 87% Reduction in Injury Crashes
 - For Urban and Suburban Areas
 - CMF = 0.22 for Injury Crashes
 - 78% Reduction in Injury Crashes

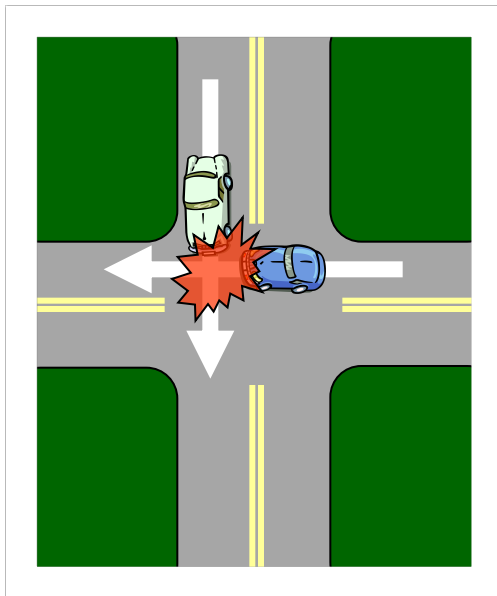
CONFLICT POINTS



TYPE OF CRASHES

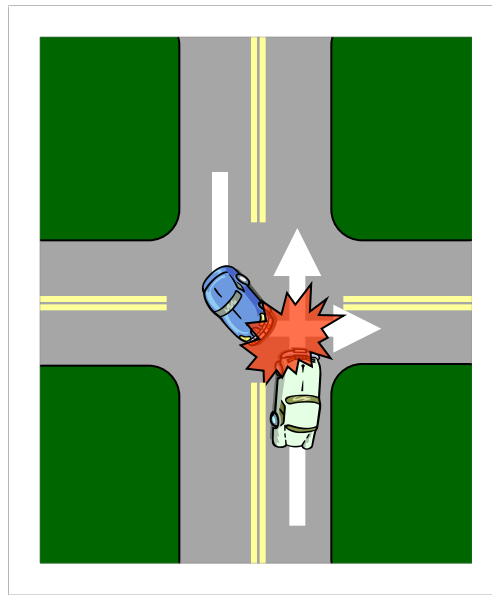
Typical 4-leg intersection

Angle



High Severity

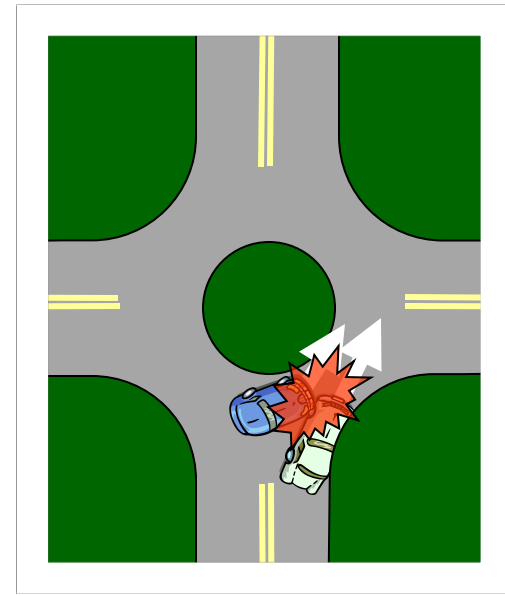
Left turn



High Severity

Roundabout

Sideswipe



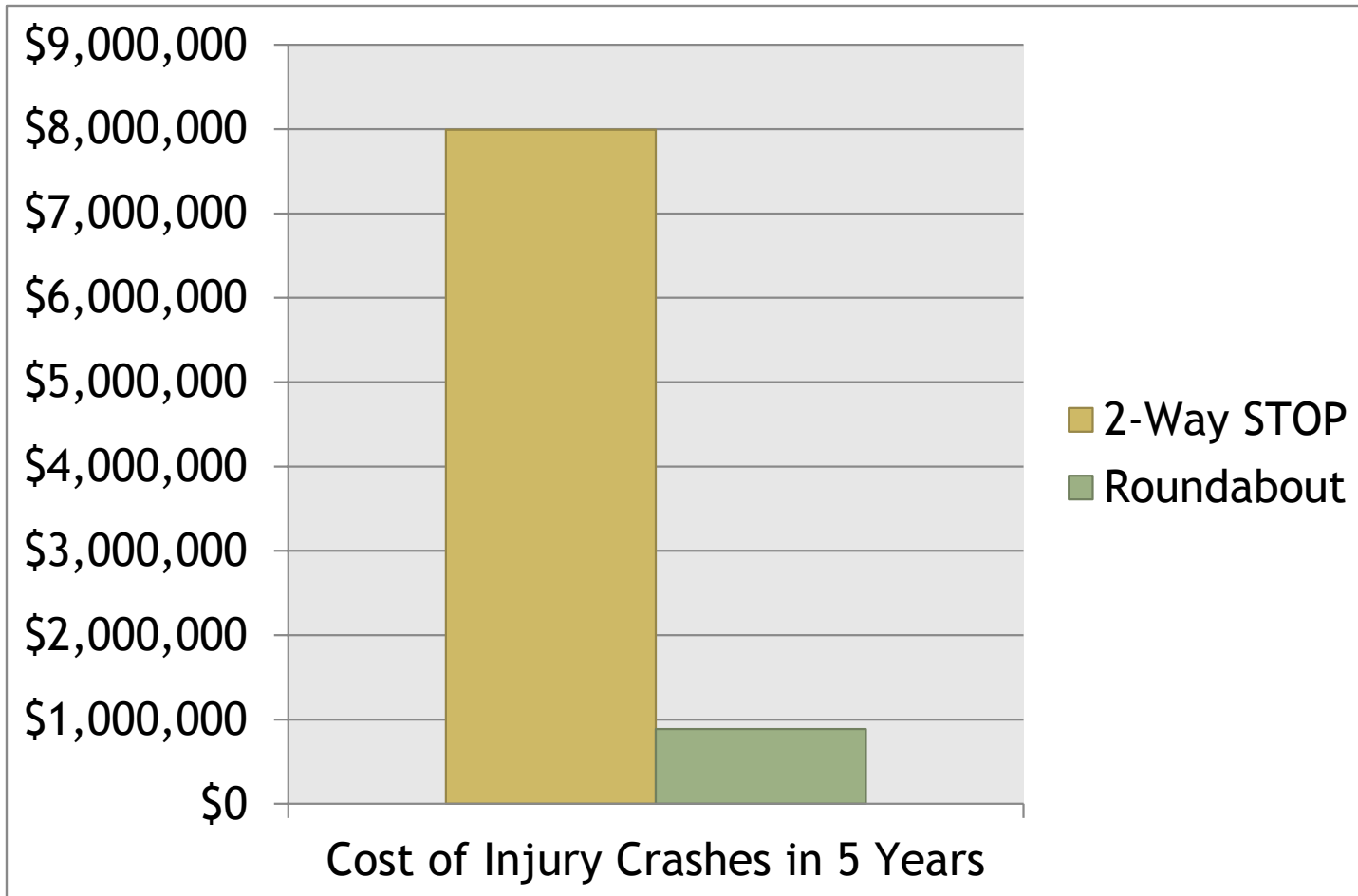
Low Severity

COST OF CRASHES IN LOUISIANA

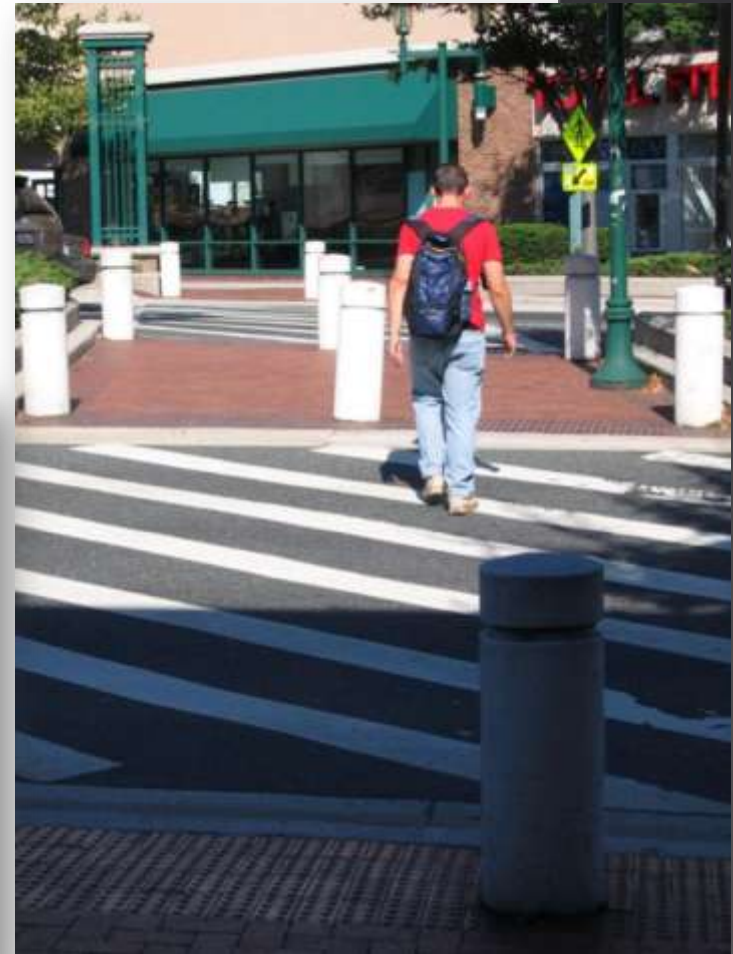
- ◎ Fatal Crash = \$1,201,965.84*
- ◎ Serious Injury Crash = \$888,240.81*
- ◎ PDO Crash = \$3,114.36*

*Includes loss of productivity, medical costs, legal and court costs, emergency services costs, insurance administration costs, travel delay, property damage, and workplace losses.

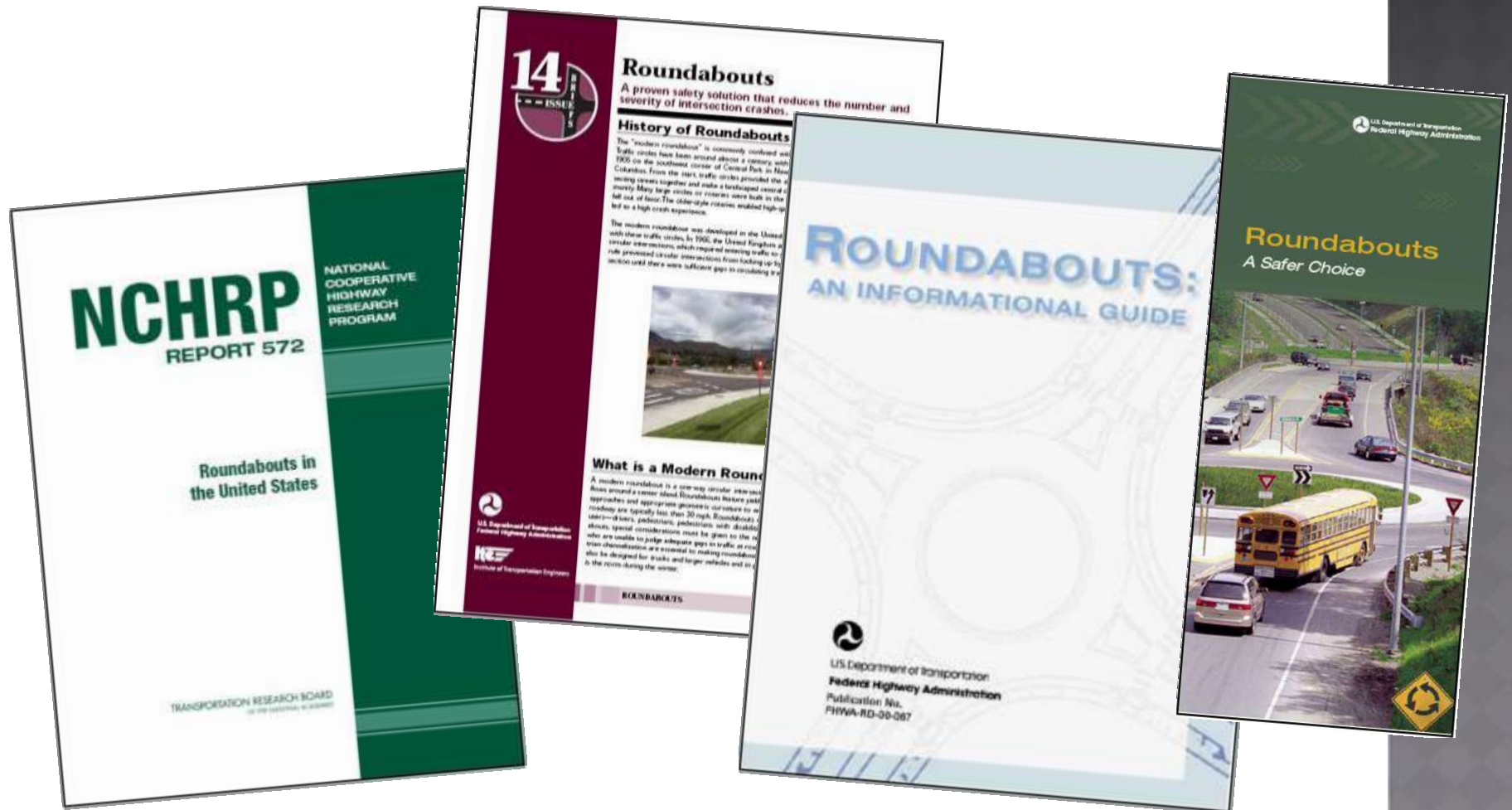
LESS CRASHES = MORE MONEY



SPECIAL CONSIDERATIONS



ROUNDAABOUT RESOURCES



CONTACT INFORMATION

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Highway Safety Engineer

Louisiana Department of Transportation and
Development

1201 Capitol Access Road

Baton Rouge, LA 70802

(225)379-1919

april.renard@la.gov

Roundabouts – Operation & Design



Presentation Overview

- Characteristics of modern roundabouts with emphasis on principles-based approach to design
- Key considerations for analysis and design of roundabouts



Photo: Kittelson & Associates, Inc.

Presentation Outline

- **Louisiana Roundabouts**
- Benefits of Roundabouts
- Location Considerations
- DOTD Policy
- Conclusions



Roundabouts in Louisiana



Louisiana Roundabouts Installed

- LA 59 @ LA 36 - Abita Springs
 - LA 1067 @ Airport Road - Hammond
 - LA 93 @ Ridge Road - Lafayette
 - LA 92 @ Chemin Metairie Parkway - Lafayette metro (Youngsville)
 - LA 89 @ Chemin Metairie Parkway – Lafayette metro (Youngsville)
-and other local installations.



Louisiana Roundabouts Under Construction

- LA 1091 @ Brownswitch Road - Slidell
- US 11 @ Cleo - Slidell
- LA 1067 @ Airport Road - Hammond

Note: These locations are on State highways near Interstate access in a high speed, high traffic volume environment.

Roundabouts in Louisiana



Louisiana Roundabouts Under Consideration

- Lafayette urban area –
 - LA 342 @ LA 724
 - LA 93 @ LA 3168
 - Regional consideration
- Baton Rouge urban area –
 - US 190 @ Juban
 - US 190 @ Eden Church Rd
 - LA 16 @ LA 22
 - LA 431 @ LA 42

Roundabouts in Louisiana



Louisiana Roundabouts Under Consideration

- North Shore
 - US 51 Bus @ I-12
 - LA 1077 @ LA 1085
 - US 190 @ La 434
 - LA 40 @ Barkers Corner
- Alexandria urban area
 - LA 8 @ LA 3144/Susek Drive
- Monroe urban area
 - I-20 @ Garrett Rd Interchange
- Jefferson Parish
 - LA 3154 @ Hickory



Roundabouts in Louisiana

LA 93 (Rue De Belier) @ LA 342 (Ridge Rd)



Roundabouts in Louisiana

LA 92 @ Chemin Metairie Parkway



Roundabouts in Louisiana

LA 59 @ LA 36



Presentation Outline

- Louisiana Roundabouts
- **Benefits of Roundabouts**
- Location Considerations
- DOTD Policy
- Conclusions



Benefits of Roundabouts



- Operational Performance
 - Lower overall delay than other controlled intersections
 - Specific users do not receive priority
- Ongoing Operations and Maintenance
 - Lower operating and maintenance costs than a traffic signal
 - Lower life cycle cost
- Approach Roadway Width
 - May not require lengthy turn lanes
 - May have greater right-of-way needs at the intersection quadrants

Benefits of Roundabouts (Continued)



- Access Management
 - Facilitate U-turns, enabling left-turn restrictions at driveways
- Environmental Factors
 - Less noise, fuel consumption and fewer air quality impacts
- Aesthetics
 - Islands offer opportunity for landscaping and art displays
- Land Use
 - Provide transition areas between different environments

Presentation Outline

- Louisiana Roundabouts
- Benefits of Roundabouts
- **Location Considerations**
- DOTD Policy
- Conclusions



Location Considerations



- A modern roundabout should be considered anywhere a traffic signal or stop control is under consideration
- Roundabouts can be advantageous in a number of locations
- However, certain constraints may adversely affect their feasibility at a specific site

Common Site Applications – Schools / High Pedestrian Volumes

- Schools / High Ped Locations: Reduce vehicle speeds



Common Site Applications - Interchanges

- Interchanges: More efficient use of bridge / underpass between ramp terminals



Common Site Applications – Commercial Developments

- Commercial Developments: Safe, slower speeds, meets capacity needs and aesthetically pleasing.



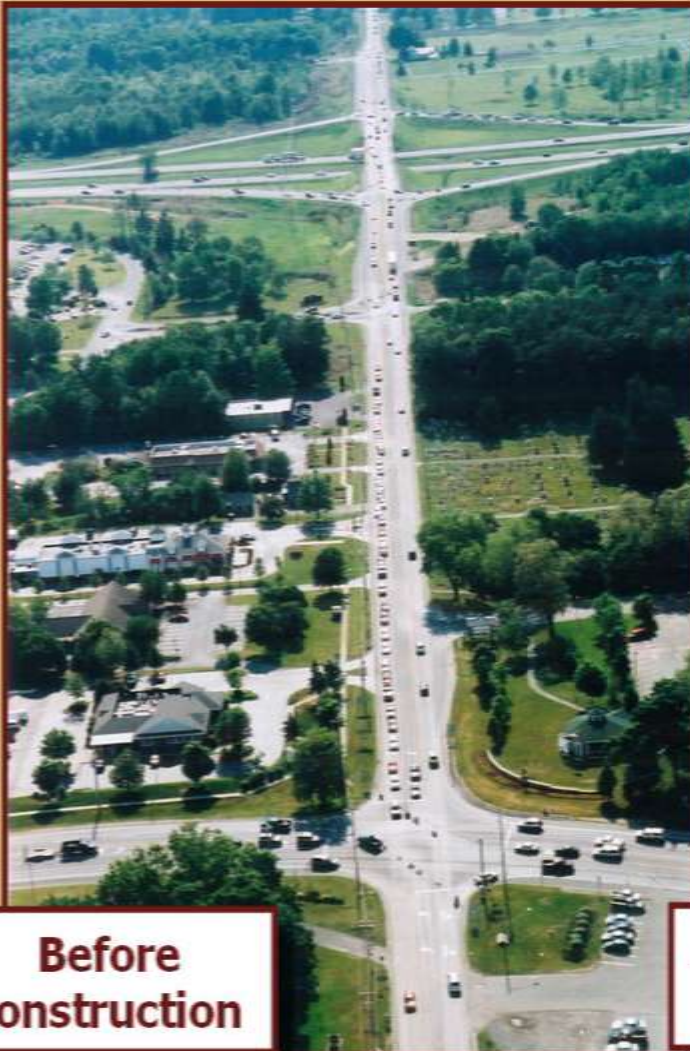
Common Site Applications – Residential Subdivisions

- Residential Subdivisions



Common Site Applications - Corridors

Saratoga County: NYS Route 67 corridor, Town of Malta



**Before
construction**



**After completion
in 2007**

Common Site Applications – Gateway Treatments

- Gateway Treatments: Create community focal point



Common Site Applications – Intersections with High Delay

- Intersections with high delay



Common Site Applications – Rural Intersections

- Rural Intersections: significantly reduce fatal and serious injuries compared to signals and 4-way stops



Potential Site Constraints – Arterial Signal Systems



Potential Site Constraints – Right of Way Constraints



Presentation Outline

- Louisiana Roundabouts
- Benefits of Roundabouts
- Location Considerations
- **DOTD Policy**
- Conclusions



- Planning level
 - EDSM VI.1.1.5
 - “Roundabout Study and Approval”
- Design level
 - EDSM VI.1.1.6
 - “Roundabout Design”

DOTD Policy – Roundabout Study and Approval



- Comprehensive investigation and report of traffic conditions and physical site
- Installation recommended by District and approved by the Chief Engineer
- Report includes:
 - Crash history
 - Capacity Analysis
 - Traffic volumes
 - Identify safety concerns
 - Speed study
 - Nearby land use / ROW
 - Modeling
 - Conceptual drawing

DOTD Policy – Roundabout Study and Approval



- DOTD has identified conditions that may justify a roundabout in policy
 - Intersection with 5 or more reported crashes
 - Intersections with poor visibility
 - Need to increase capacity of intersection
 - Intersections with limited space for queuing
 - Intersections with difficult skew angles, significant offsets, odd number of approaches or close spacing to other intersections
 - Intersections where U-turns need to be accommodated.

DOTD Policy – Roundabout Design EDSM VI.1.1.6

- Operational
- Geometry
- Pedestrians
- Bicycles
- Transit vehicles
- Signing
- Pavement Markings
- Landscaping
- Lighting



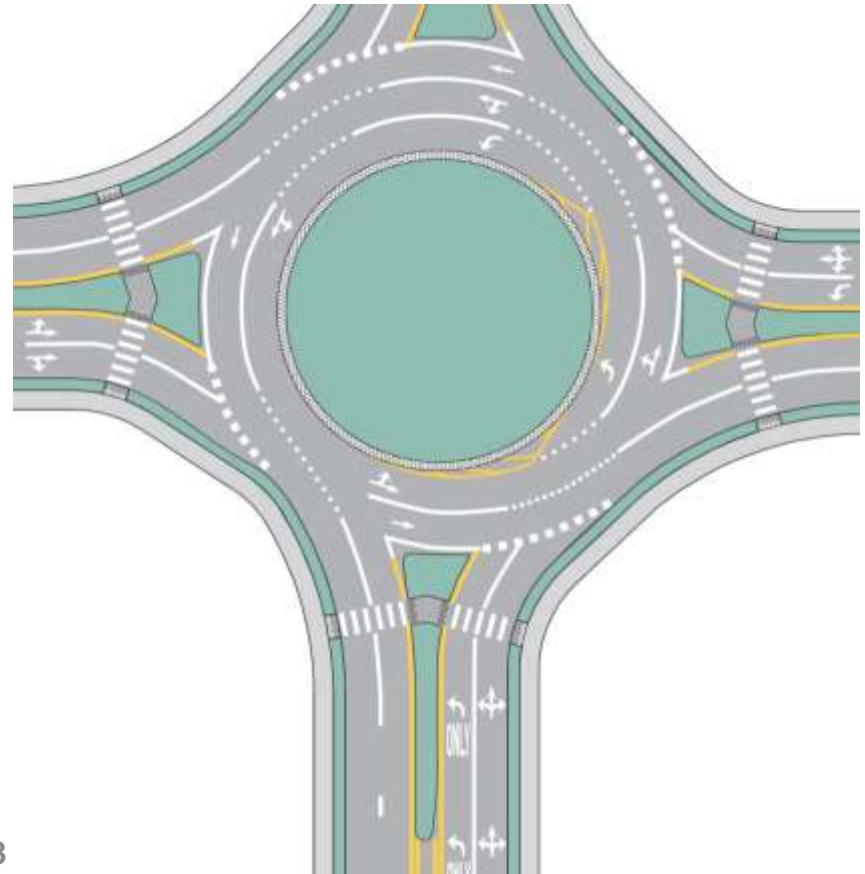
Key Objectives of Roundabout Design



- Slow entry speeds
- Appropriate number of lanes
- Smooth channelization
- Adequate accommodation for design vehicles
- Meeting needs of pedestrians and bicyclists
- Appropriate sight distance and visibility

Pavement Markings and Signs

- Markings and signs are integral to roundabout design and should facilitate through and turning movements
- Typical pavement markings delineate the entries, exits, and circulatory roadway
- Overall signing concept similar to intersection signing



Presentation Outline

- Louisiana Roundabouts
- Benefits of Roundabouts
- Location Considerations
- DOTD Policy
- **Conclusions**



Conclusion



- In general, roundabouts are much safer and perform better than traffic signals or 4-way stops.
 - Installation of a traffic signal should be a “last resort”.
- Roundabouts can be installed in most locations.
- Roundabout design features work together to effectively control an intersection.
- In Louisiana, roundabouts are here to stay!

References

- Federal Highway Administration. *Technical Summary on Roundabouts*. 2010.
- Federal Highway Administration. *Roundabouts: An Informational Guide*. June 2000.
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For More Information

- Visit FHWA's intersection safety web site to access more materials highlighting roundabouts:

<http://safety.fhwa.dot.gov/intersection>

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Background



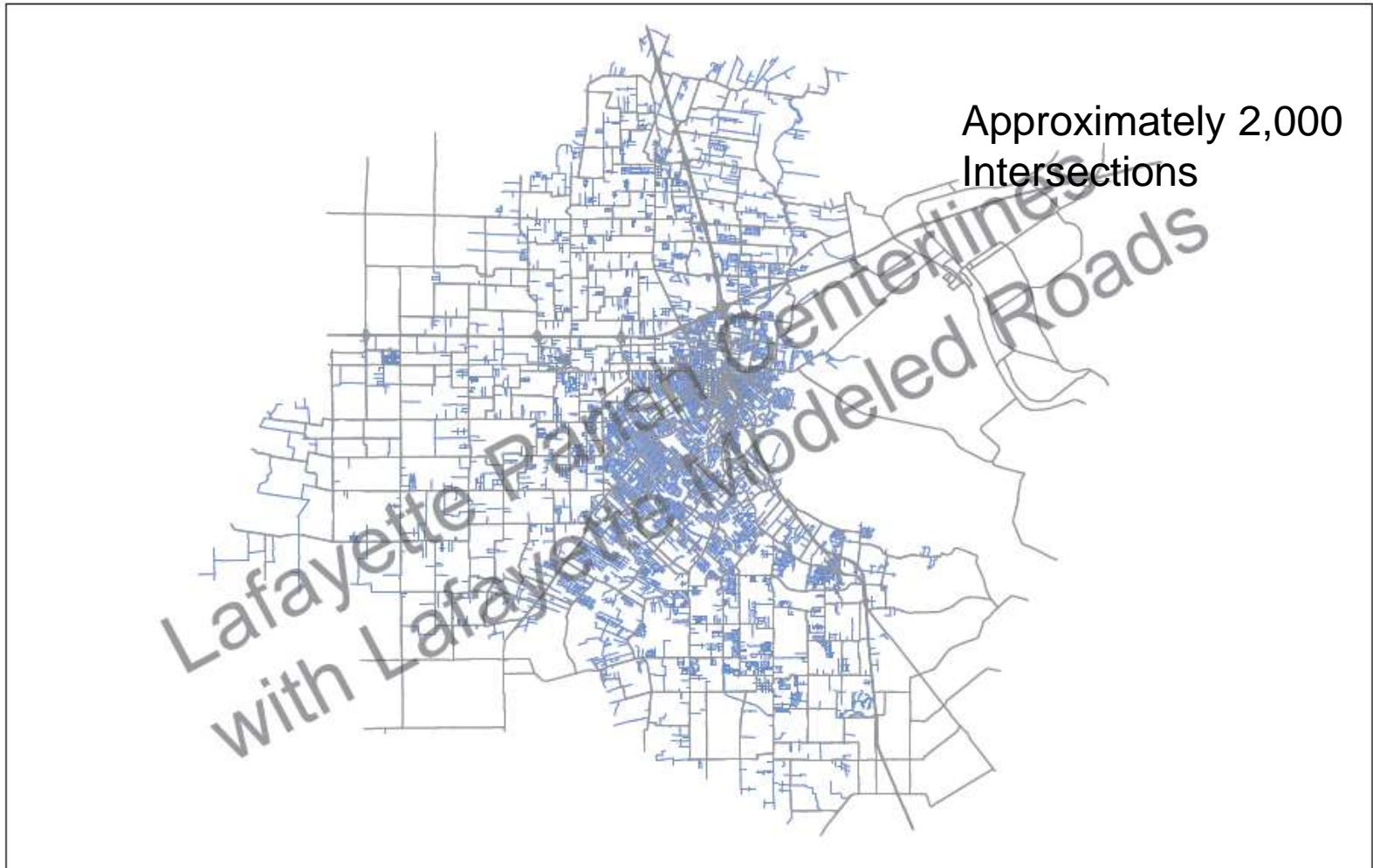
Background

- MPO Committees (community) bought into roundabout plan and roundabouts as Traffic control.
- Learned about TIGER Grant in May, applications were due by September 15th (4 months).
- Prompted the MPO to come up with a quick method to select potential locations for Roundabouts.

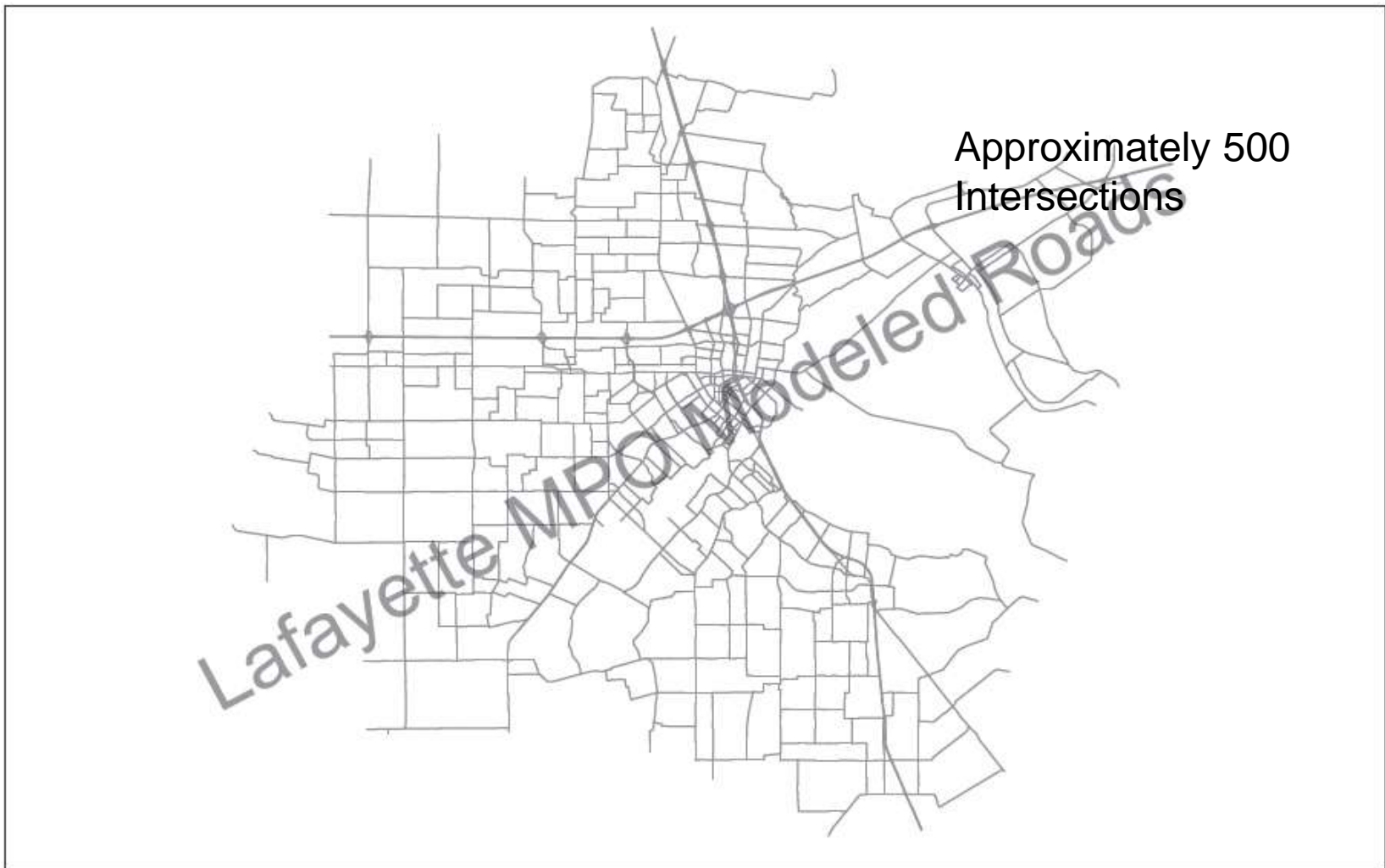
Methodology

- Selection of Variables
 - Intersection Volume
 - Volume split ratio
 - Safety
 - 3 year summary of crashes
 - Right of way assignment
 - Current traffic control
 - Existing Geometrics
 - Intersection Geometrics

Intersection Volume (1)

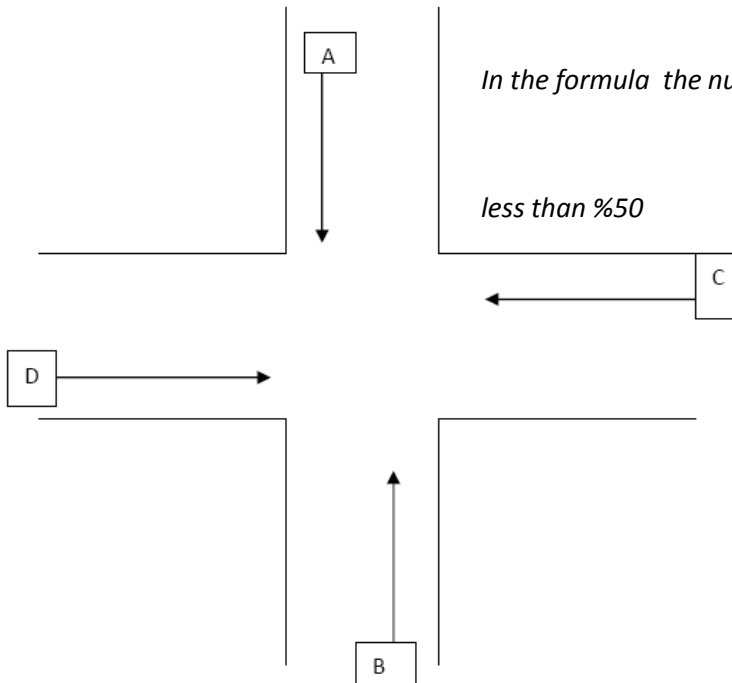


Intersection Volume (2)



Intersection Volume (3)

- 1. Volume Split Ratio- The ratio of volumes of the two entering directions



$$\frac{A \text{ or } C+D}{(A+B)+(C+D)} * 100$$

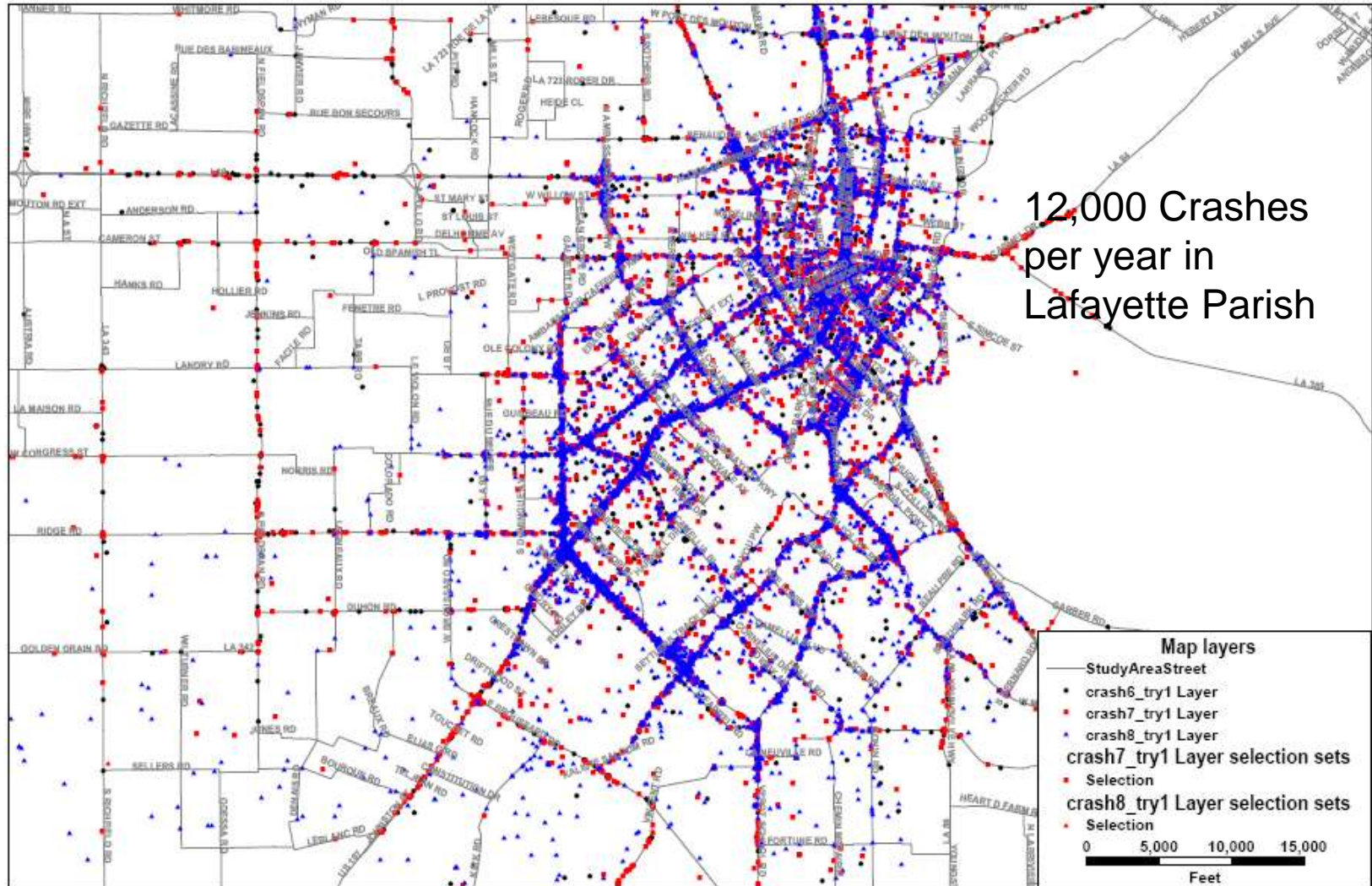
In the formula the numerator will always be the smaller

or C+D, this will make the percentage

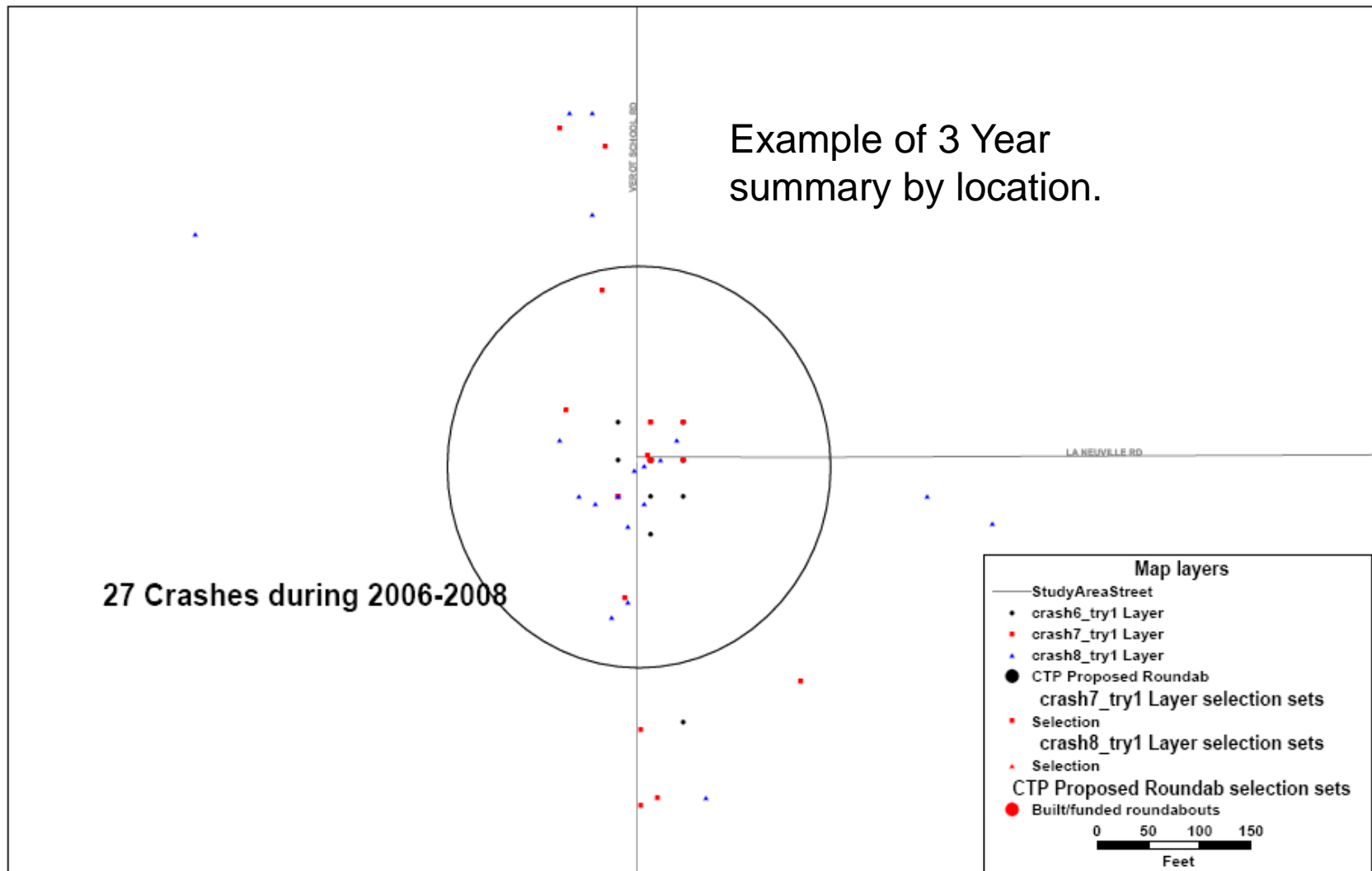
less than %50

Traffic Control	Ratio
Good for Stop control	10%
	20%
	30%
	40%
Worse for Stop Control	50%

Safety (1)



Safety (2)

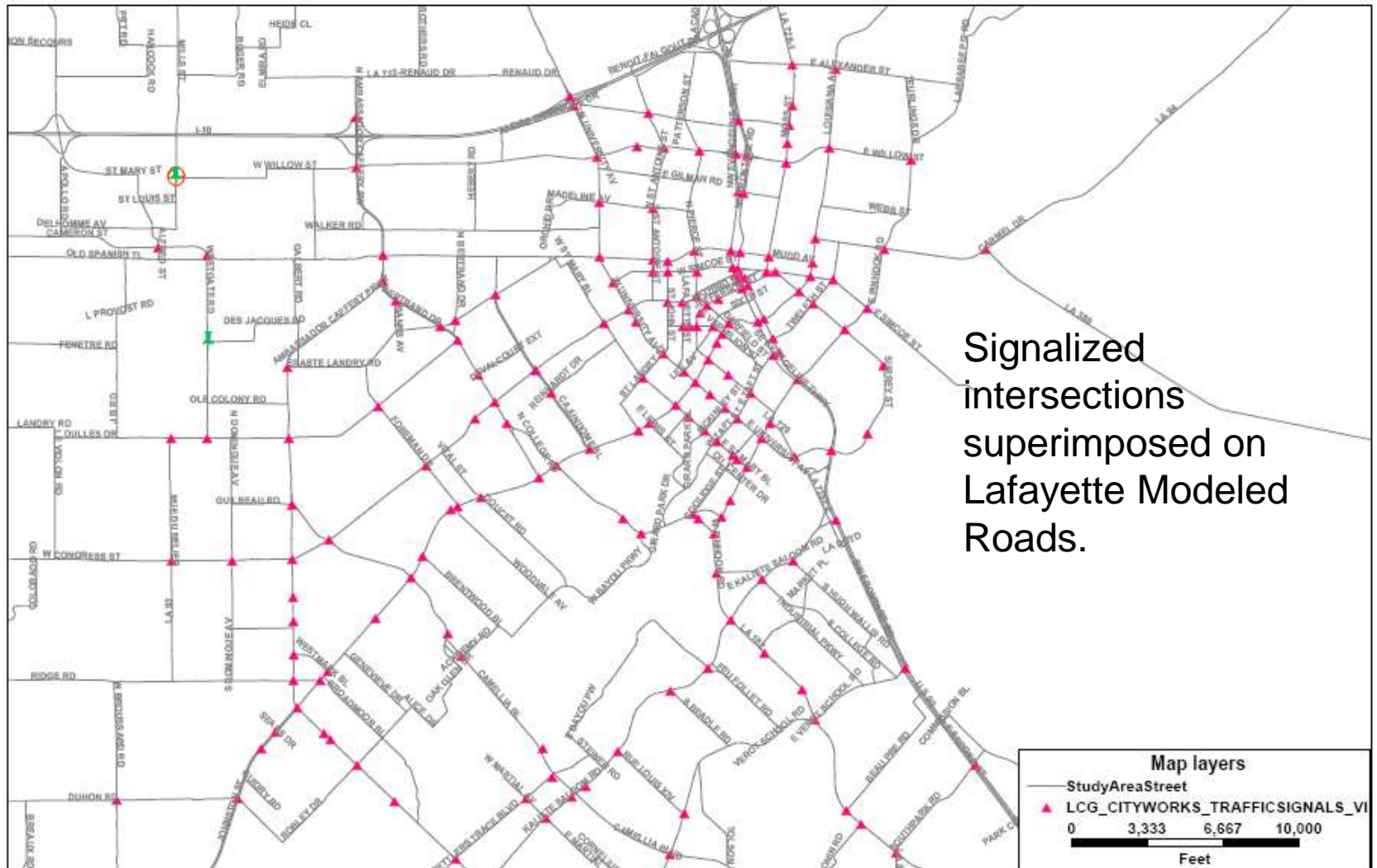


Right of way assignment (1)



Example of Google Earth Streets view

Right of way assignment (2)



Existing Geometrics (1)

- Intersection Geometry viewed to look for offset intersections.
- Roundabout Islands are normally in between 130-180' for a single lane roundabout that accommodates a WB-67 type design vehicle. See table below.
<http://safety.fhwa.dot.gov/intersection/roundabouts/fhwasai0006/>

Table 2: Common Inscribed Circle Diameter Ranges		
Roundabout Configuration	Typical Design Vehicle	Inscribed Circle Diameter Range*
Mini-Roundabout	SU-30 (SU-9)	45 to 90 ft (14 to 27 m)
Single-Lane Roundabout	B-40 (B-12)	90 to 150 ft (27 to 46 m)
Single-Lane Roundabout	WB-50 (WB-15)	105 to 150 ft (32 to 46 m)
Single-Lane Roundabout	WB-67 (WB-20)	130 to 180 ft (40 to 55 m)
Multilane Roundabout (2 lanes)	WB-50 (WB-15)	150 to 220 ft (46 to 67 m)
Multilane Roundabout (2 lanes)	WB-67 (WB-20)	165 to 220 ft (50 to 67 m)
Multilane Roundabout (3 lanes)	WB-50 (WB-15)	200 to 250 ft (61 to 76 m)
Multilane Roundabout (3 lanes)	WB-67 (WB-20)	220 to 300 ft (67 to 91 m)
* Assumes 90-degree angles between entries and no more than four legs.		

Existing Geometrics (2)



Calculations (1)

- Variable A

Variable a = safety

The range will be inbetween 0.0 and 4.0, 4 being the highest.

# Crashes	Variable A Value
1	0.2
5	1
10	2
11	2.1
20	3
21	4

* Notes:

From 1 to 10 the incremental increase in Variable A value will be .2/crash

From 10-20 the incremental increase in Variable A value will be .1/crash

Anything above 20 will be a 4.

Calculations (2)

- Variable B

Variable b = Intersection type

Variable b will carry a 3 max, 3 will be a Multi-way stop intersection, 2 will be a yield stop type intersection, and 1 will be an offset type intersection

Intersection Type	Variable B Value
Multiway Stop Intersection	3
Yield-Stop Intersection	2
Offset Intersection (150' or less)	1

*Note:

Any other kind of intersection will carry a 0 value.

Calculations (3)

- Variable C

Variable c = Volumes

Variable c = Volumes will carry a max of 3.

$$\text{Split Ratio} = (A+B) / (A+B) + (C+D) * 100$$

In the formula the numerator will always be the smaller combination of numbers A+B or C+D, this will make the percentage less than %50

Ratio	Variable C Value
1%	0.06
10%	0.6
20%	1.2
30%	1.8
40%	2.4
50%	3

*Note:

All numbers less than 1% are =0

Conclusion

- The Grant was completed and submitted on Sept 15th.
- The final list of roundabouts for the Tiger Grant was 121. They were divided into 3 sets; A, B, and C.
- Link to the TIGER Grant on Lafayette MPO's website:
http://mpo.lafayettela.gov/tigergrant/Tiger_Rndabout/Tiger_Rndabout.asp

Post Grant application work and effort

- The Grant was not awarded to the MPO.
- MPO took steps to refine the work and continue it.
 - roundabout subcommittee started. Subcommittee comprised of Various MPO committee members. The initiative was too analyze and examine each location for reasonableness, as well as to refine the list to a set of absolute good locations.
 - The subcommittee looked at different criteria to help them streamline the 121 roundabouts.
 - Roundabout rating system devised.

Post Grant application work and effort

Roundabout Rating System

Rate each roundabout 1 – 3 in each category with 1 being best and 3 being worst

Traffic volumes – intersection total:

1. 18,000 – 27,000 vehicles per day
2. 9,000 – 18,000 vehicles per day
3. 0 – 9,000 vehicle per day

Geometry/Design:

1. No roadway/intersection re-alignment/no driveway or streets in roundabout area
2. Some roadway or intersection constraints/ one driveway or street in roundabout area
3. Offset intersection/ geometry change/multiple drives or streets in roundabout area

Utilities:

1. No/minimal known utility adjustments
2. Some utility adjustments
3. Major utility impacts (coulees or other structures)

Matching Funds:

1. 50% matching funds
2. 10 - 20% matching funds
3. No matching funds

Post Grant application work and effort



Post Grant application work and effort

- Roundabout Subcommittee streamlined the list of 121 roundabouts to approximately 70, eliminating roundabouts based off of the “roundabout rating system”
- The MPO is in the process of adding the list of 70 roundabouts to its roundabout plan.
http://mpo.lafayetteela.gov/plans/RoundaboutPlan/Roundabout_Plan.asp
- The MPO is also in the process of hiring a consultant to perform in depth analysis for 60-70 of these intersections.

Contact me or us

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Questions?



Traffic Engineering 101

**Thank You for joining us
every month!**

&

**Thanks to LMA and LTAP for
all of their assistance!**