Roundabout Study and Design EDSM Revisions
Roundabout Study and Approval
EDSM VI.1.1.5

- This EDSM sets DOTD policy for the justification and approval of roundabouts on Louisiana State Highways.
- Policy is designed to evaluate potential roundabout projects in the early stages to ensure that it is the best intersection control.
- Requires that the intersection be evaluated for operation/capacity, safety, potential design constraints, and cost.
- Provides guidance on when a roundabout is or isn’t an appropriate intersection control alternative.
Traffic Volumes

NEW REQUIREMENTS OR ITEMS

- Addresses data collection requirements for the minor roadway – 48 hour counts acceptable
- Growth rate, build year, and any waivers to the design year requirement must be approved by the Traffic Engineering Division Administrator
- Peak hour counts to be projected for a 15 year design life measured from the anticipated build year, can be approximated to be 3 years from approved roundabout study report.
- Roundabouts should not be designed to include metering or signalization when first opens
MODIFICATIONS AND/OR CLARIFICATIONS

- 7 day – 24 Hr. Counts to be done during a non-holiday or special event week

- Manual TMC Counts to be completed during expected peak conditions and during a non-holiday or special event week.

- Projected volumes and 15 year design life requirement to be measured from the anticipated build year or 3 years from date of approved roundabout report.
SPEED STUDY REQUIREMENTS

MODIFICATIONS AND/OR CLARIFICATIONS

- Speed study is required on each mainline approach.
- Speed study must be conducted per DOTD policy (radar) - Tube counts are not acceptable for speed studies.
- The posted speed cannot be substituted for the speed study.
MODIFICATIONS AND/OR CLARIFICATIONS

- Approved roundabout analysis software is *Sidra Standard Intersection*
- Program settings must be set per DOTD requirements as indicated in the *DOTD Roundabout Analysis Brochure* currently under development
- In cases where *VisSim* traffic models are required, DOTD may require a calibrated model that DOTD calibrated traffic modeling policy
- Report must include Autoturn analysis showing that at minimum, the roundabout can accommodate the WB-67 design vehicle. If proposed roundabout is on a designated OSOW truck route, larger design vehicle autoturn analysis may be required.
The roundabout report must provide a sound engineering reason to justify the installation of a roundabout.

The report must include documentation and conceptual layout that shows a thorough investigation of the proposed site for use during the plan development process:

- Existing Residential and Commercial Access
- Right of Way
- Drainage
- Operational Issues
- Utilities
- Nearby driveways Intersections and traffic control types within the 95% queue
- Sidewalks
Louisiana has 18 roundabouts in operation and 53 proposed.
This EDSM sets DOTD policy for the design of roundabouts on Louisiana State Highways.

Policy is designed to ensure consistency of design practices as it relates roundabouts.
GENERAL

MODIFICATIONS AND/OR CLARIFICATIONS

- Roundabouts to be designed for a 15 year design life measured from the build year or 3 years from date of roundabout study.

- Roundabout should be constructed for the build year condition but design should plan for future expansion to full build condition
  - ✔ Full Build ROW requirements
  - ✔ Full Build Drainage plan
  - ✔ Location of sidewalks
  - ✔ Curbing

- Full Build expansion should avoid complete rebuild of the roundabout
MODIFICATIONS AND/OR CLARIFICATIONS

- Previous requirement of a city/state agreement applicable to Roundabout projects installed under permit has been removed.

- The city/state agreement was required to ensure that DOTD did not incur cost of reengineering or reconstruction for roundabouts that failed within first 3 years.

  - Difficult to monitor roundabout
  - Study and Design review process has improved
  - Requirement no longer necessary
The design of roundabout is independent of the design criteria for the corresponding roadway classification of the approaching roadways.

Design criteria for roundabouts begins 200 ft. prior to the intersection for approaching roadways posted 45 mph or below

400 ft. for approaching roadways posted greater than 45 mph

Criteria based on 2-3 mph/sec deceleration rate (light to very light breaking) and the NCHRP recommendation that approach speeds immediately prior to the entry curve of a roundabout be limited to approximately 35 mph.
Geometry

MODIFICATIONS AND/OR CLARIFICATIONS

- Speed control shall take place prior to the yield point on entry should be accomplished geometrically with the use of a reverse curve on the approaches.

- Recommended design speed for vehicles entering the roundabout is 15 mph.
MODIFICATIONS AND/OR CLARIFICATIONS

Offset Left Alignment  Radial Alignment  Offset Right Alignment

Preferred  Requires waiver by Traffic Engineering Division Administrator
Geometry

MODIFICATIONS AND/OR CLARIFICATIONS

- The circulatory width should accommodate busses and fire trucks so that they **do not** use the truck apron.
- The entry radius should be between 90’ and 130’.
- The exit radius should be between 400’ and 800’.
- The cross slope for the circulating lane should not exceed 1.5%.
- Truck aprons widths typically range from 5’ – 20’ but the width should be determined by the truck wheel path.
- The truck apron cross slope should be 0.5% -1.5% away from the center island.
Geometry

MODIFICATIONS AND/OR CLARIFICATIONS

- Minimum length of splitter islands has been reduced

<table>
<thead>
<tr>
<th>Posted Speed</th>
<th>Minimum Length of Curbed Splitter Island</th>
</tr>
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<tbody>
<tr>
<td>35 ≥</td>
<td>50</td>
</tr>
<tr>
<td>40 ≥</td>
<td>75</td>
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<tr>
<td>45 ≥</td>
<td>125</td>
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- 3” sloping (mountable) curb is preferred for splitter islands and outside curbing
- 3” sloping (mountable) curbing is required for the outside edge of the truck apron
- 6” barrier curb is required on the inside edge of the truck apron where it meets the center island
Geometry

NEW REQUIREMENTS OR ITEMS

- Roundabouts should be installed on level terrain and with a maximum of a 3% grade.

- Additional earthwork may be required to achieve this criteria.
Single Lane Roundabout

Geometry

MODIFICATIONS AND/OR CLARIFICATIONS

- Minimum inscribed diameter = 110’
- 20’ circulatory width
Multi-Lane Roundabout Geometry

MODIFICATIONS AND/OR CLARIFICATIONS

- The minimum diameter for a multi-lane roundabout = 175’
- The multi-lane roundabout should be designed such that a truck and passenger vehicle can circulate the roundabout simultaneously
- The design vehicle may encroach on the outer lane, but a “safe” width of 12’ must be maintained
- A 30’-32’ circulatory width is recommended. 30’ circulatory widths may be appropriate for roundabouts with inscribed circles that have larger than the minimum diameter
MODIFICATIONS AND/OR CLARIFICATIONS

- If landscaping beyond a grass center island is desired, the local government must agree to maintain it.

- Sponsorship for landscaping is permitted but any sign must be placed so that it is visible to each approach.

- Any sign shall have 2” lettering, be retro-reflective, and placed so that the bottom of the sign has a maximum 2’ ground clearance.

- Up-lighting may be installed to illuminate the roundabout but is not considered or intended roadway illumination.

- Hard wall, benches, large spraying fountains or any object that would encourage pedestrians are not allowed in the center island.
Questions???

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USA!  USA!  USA!