GDOT ROUNDABOUT DESIGN CHECKLIST - CONCEPT DEVELOPMENT

Notes:

1) This checklist is specifically written for a standalone intersection project. Some minor adjustments may be needed for a consultant designed roundabout with respect to roles. For linear or interchange reconstruction projects much of the concept development effort can be accomplished during the preliminary design. Additional items should be added as necessary to define/document the design. The preparation of a roundabout design may be terminated at any time during the process, if a decision is made to eliminate a roundabout from further consideration. In this case, documentation should be organized and retained to support this decision.

2) This checklist includes work items which are specific to the roundabout project and does not include many items which would be common to all conventional intersection projects. The level of detail and timing of some tasks will vary with the complexities of the roundabout and site constraints.

3) The checklist is meant to combine certain categories of information and is not meant to reflect a precise sequence of performance. Any items which do not apply to a specific project can be marked as "N/A" (i.e. not applicable).

PI Number: _____ County: _____

Design Phase Leader: _____ Design Office: _____

Description: _____

No.	Completed	Action By	Item	Commentary (Can modify text to replace with project specific info, will show in **bold** letters)
1. Operations - Planning Level Assessment - *See DPM section 8.2.1*				
1			Vicinity Map	*Map showing roadways within approximately 1 mile +/- of each direction from the roundabout.*
2			Intersection Layout	*Show layout of existing intersection including site constraints such as property, access buildings. A recent aerial photo from any source is sufficient.*
3			Letter of support from local government	*Letter of support is required from local government for project to proceed as a roundabout - See DPM figure 8.1.*
4			Crash history	*Send request to Norm Cressman of GDOT Crash Reporting Unit.*
5			Pedestrian and bike activity	*Estimate level of activity. Sources may include site inspection, local GDOT and government offices.*
6			Estimate current traffic volumes	*May obtain from GDOT transportation Data Viewer or TPAS.*
7			Estimate design year traffic volumes	*Important if significant growth is anticipated.*
8			Percent traffic on major roads	*Traffic volume entering roundabout from the major road should be no more than 90% of total volume entering the roundabout.*
9			Number of circulatory lanes	*Single lane - ADT < 25,000, Two-lane - ADT < 45,000. See exhibit 3-12 of NCHRP.*
10			Favorable conditions	*See section 8.2.1 Planning Level Assessments for list of conditions where roundabouts tend to be advantageous.*
11			Unfavorable conditions	*See section 8.2.1 Planning Level Assessments for list of conditions which may be unfavorable for roundabouts.*
12			Purpose of roundabout	*Clearly define what "need" the roundabout addresses.*
13			Roundabout sketch	*Hand drawn sketch showing location and configuration envisioned.*

PI Number: _____ County: _____

Design Phase Leader: _____ Design Office: _____

Description: _____

No.	Completed	Action By	Item	Commentary (Can modify text to replace with project specific info, will show in **bold** letters)
2. Design - Gather information for Concept - *for existing intersection and for base & design years*				
1			Vicinity Map	*Map showing roadways within approximately 1 mile +/- of each direction from the roundabout.*
2			Approach Speeds	*Identify posted speeds for approach roadways - Obtain from existing speed limit signs or GDOT Transportation Data Viewer. For county and local roads it is recommended to contact the local district traffic operations office to request from local enforcement agency.*
3			Grades	*Generally not desirable to locate roundabouts with grades through the roundabout greater than 4%. Can continue with a roundabout but should consider truck volumes and potential for truck overturning.*
4			Functional Classification	*Identify for each approach roadway using GDOT Transportation Data Viewer. As a secondary source may use Office of Transportation Data functional classification maps.*
5			Current year traffic volumes	*Send email request to Office of Planning (ADT and am/pm DHV), attn Abby Ebodaghe.*
6			Base year traffic projections	*Be sure to obtain growth rates for traffic projections where evaluating capacity during interim years may be required.*
7			Design year traffic projections	*Be sure to obtain growth rates for traffic projections where evaluating capacity during interim years may be required.*
8			Future projects	*Identify any planned roadway project in vicinity.*
9			Desirable LOS	*Refer to DPM Section 6.14, Summary of Design Criteria for Cross Section Elements.*
3. Design - Roundabout Feasibility Study, Part 1 - *Alternate comparison and selection*				
1			Intersection base map	*Show layout of existing intersection including site constraints such as right-of-way, access, buildings, and environmental resources. A recent aerial photo from any source is sufficient.*
2			Signal Warrant Study	*This will define whether or not a signal is a possible alternate and will be prepared by the local District Traffic Operations Office.*
3			Identify/sketch alternative intersection forms	*See DPM Section 8.2.2 - bullet for Section 3. Sketch to the level at which alternates can be adequately compared. May include single and multilane roundabout layouts.*
4			Safety assessment	*See DPM Section 8.2.2 - bullet for Section 2.*
5			Number of entry lanes for each approach leg	*May use turning movements to estimate of lane requirements at each entry. See exhibits 3-14 and 4-3 of NCHRP 672.*
6			Operational analyses	*See DPM Section 8.2.2 - bullet for Section 4.*
7			Cost comparison	*See DPM Section 8.2.2 - bullet for Section 5. Not required if roundabout is to address severe crash history.*
8			Select most favorable alternative	*See DPM Section 8.2.2 - bullet for Section 6. A tabulated comparison of alternates recommended.*

PI Number: _____ County: _____

Design Phase Leader: _____ Design Office: _____

Description: _____

No.	Completed	Action By	Item	Commentary (Can modify text to replace with project specific info, will show in **bold** letters)
4. Design - Roundabout Feasibility Study, Part 2 - *Roundabout layout (as required to define footprint)*				
1			Design alternate roundabout layouts	*The identification of the most favorable layout may require the development and consideration of multiple roundabout layouts/locations.*
2			Identify likely impacts	*Identify potential conflicts with underground utilities and likely property and environmental resource impacts, etc.*
3			Fastest paths	*Document fastest paths on concept layouts, indicate speeds and speed differentials. (May require update during preliminary design for requirements to layout.)*
4			Design vehicle	*See DPM Section 8.3.2, Design Vehicle and Section 3.2. Greater consideration should be given to selecting a larger design vehicle - even if roundabout may be infrequently used by that size vehicle.*
5			Design vehicle swept path	*Document all movements. (May require update during preliminary design for requirements to layout.)*
6			Stopping sight distance	*Evaluate stopping sight distance to roundabout yield line, for each approach.*
7			Staging improvements	*If multilane is required in the design year evaluate whether or not a single-lane will be adequate through the base plan 10 years. If so, construct as a single lane which allows for future expansion to a multilane footprint without reconstruction.*
8			Finalize concept layout	*Prepare a concept layout of the proposed roundabout. May be CAD or hand drawn, but should be to scale. Should show central island, splitter islands, sidewalks, crosswalks and truck apron. Note or list dimensions for ICD, circulatory roadway width, truck apron widths, angles between approach centerlines. Will be helpful to include preliminary striping for multilane roundabouts. Show scale and North arrow.*
5. Design - Other information - *required for Concept Report*				
1			Typical section	*Required for concept reports.*
2			Construction sequencing	*Briefly describe expected staging for construction, e.g. built under traffic, off-site detour, new location…*
3			Lighting	*Include in cost estimate. Define if need is to address high speeds on approaches, pedestrian activity and if approaches are lighted.*
4			Landscaping requirements	*Include in cost estimate. Will normally be required. This is particularly the case for high speed approaches to enhance visibility of the roundabout from a distance.*
5			Pavement Type	*Will normally match major road pavement. Asphalt commonly provides for easier staging for construction at existing intersections.*
6. Design - Implement program of local government coordination and public involvement				
1			Presentation layouts	*Prepare exhibits for meetings.*
2			Meeting with local officials	*An initial meeting with local government officials (and their support of the roundabout) will be helpful in gaining support at a PIOH.*
3			Public outreach	*Required in most cases, often in the form of a PIOH. See DPM Section 8.2.5 Public Involvement for helpful advice regarding visual aids. This should occur after the feasibility study is complete.*

PI Number: _____ County: _____

Design Phase Leader: _____ Design Office: _____

Description: _____

No.	Completed	Action By	Item	Commentary (Can modify text to replace with project specific info, will show in **bold** letters)
7. Complete quality assurance reviews - *occurs at previous points in the process*				
1			QA review by design process	*Feasibility studies should be reviewed within the originating design office, in accordance with the Department's QC/QA manual (located on ROADS).*
2			Informal review by GDOT roundabout SME	*Upon request, a GDOT SME will, (prior to peer review), perform an informal review of a feasibility study or any in-progress work products. Contact either Scott Zehngraff (szehngraff@dot.ga.gov) of the Office of Traffic Operations or Daniel Pass (dpass@dot.ga.gov) of the Office of Design Policy and Support.*
3			Peer review by Consultant peer reviewer	*See Daniel Pass for a list of approved roundabout peer reviewers and a scope of work for a peer review task order. Peer review can be accomplished either in discrete events or incrementally from start of concept to letting. Should be completed prior to the concept team meeting where a complex roundabout is proposed. See DPM Section 8.2.3. Review of Feasibility Studies.*

Notes:

1) *Key objectives during concept development includes identifying the best solution that addresses the project need and defining a layout which best considers geometric, operational and other project-specific constraints. Defining an "accurate" footprint is particularly important for projects with significant site constraints and for roundabouts of greater complexity (complex roundabouts). Complex roundabouts include multilane roundabouts and single land roundabouts which addresses difficult conditions such as bad skews or significant geometric or operational constraints.*

2) *It should be recognized that unlike conventional intersection forms (e.g., signalization, stop control, etc.) the configuration and layout of a roundabout can be dramatically affected by the results of capacity, fastest path, and truck turning template studies and thus often requires higher level of engineering during the concept phase.*

3) *Include a completed checklist with the submittal package to the peer reviewer and with submission of the concept report for review and approval. Any peer review recommended changes not implemented must be coordinated with the peer reviewer and/or the Office of Design Policy and Support. The peer review report should also be included in the concept report if any recommended changes are to be made after concept development. At minimum, make all changes which affect impacts, cost, required R/W, basic operation of the roundabout leg, elimination of a bypass lane, etc. prior to submitting the concept report for review and approval.*

List of Acronyms

SME - Subject Matter Expert
DPM - Design Policy Manual
ICD - Inscribed Diameter
TPAS - Traffic polling and Analysis System