DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE P.I. # 0010925, Fulton County
I-285 Ramps at CR 209/Riverside Drive

OFFICE Innovative Delivery

DATE April 1, 2014

FROM Darryl D. VanMeter, P.E., State Innovative Delivery Engineer

TO Brent Story, P.E., State Design Policy Engineer

SUBJECT **Request for Design Variance – Existing Limit of Access Length**

The Office of Innovative Delivery recommends approval of the attached Request for Design Variance on the above listed project. The scope of this project is to replace the existing I-285/Riverside Drive signalized ramp intersections with roundabouts.

The request letter from the Engineer/Designer of Record is attached. This Request for Design Variance is also saved in the following location *PCCommon:\0010925\Design Exceptions and Variance*. If you have any questions or require additional information, please contact Marlo Clowers by email or at (404) 631-1713.

DVM:MLC

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TRANSPORTATION

Marlo Clowers, PE
Project Manager
Office of Program Delivery
Georgia Department of Transportation
600 West Peachtree Street, 25th Floor
Atlanta, GA 30308

Subject:
Request for Design Variance – Limited Access
P.I. No. 0010925, Fulton County
Riverside Drive/County Road 209 at I-285 Interchange Improvements

Date:
April 1, 2014

Contact:
Shamir Poudel, PE

Phone:
770.384.6553

Email:
shamir.poudel@
arcadis-us.com

Our ref:
GADT0201

Dear Ms. Clowers:

Approval of the following Design Variance is requested for the above-referenced project.

The proposed Design-Build project is located on Riverside Drive at the interchange with I-285 in Fulton County Georgia and is within the city limits of Sandy Springs. The project consists of safety improvements (see ***Attachment 1***) to the existing interchange which will convert the two existing signalized intersections at each ramp terminal with roundabouts.

The current roadway configuration of Riverside Drive consists of one, twelve foot lane in both directions and traffic signals at the ramp termini. There are no left turn lanes at the intersections with the I-285 entrance ramps, resulting in left turning vehicles blocking the through movements to enter I-285. The existing bridge only provides for two lanes of traffic, one northbound and one southbound. The eastbound and westbound I-285 off ramps each consists of a single, sixteen foot lane. There are no existing sidewalks approaching the bridge, however there are existing sidewalks on the bridge itself. The existing right-of-way along Riverside Drive varies from 50 to 100 feet.

The proposed Design-Build project will convert the signalized intersections at the ramp termini to single lane roundabouts, one at each intersection. Each approach to the roundabout will be widened to two lanes with one lane entering the roundabout and the other serving as a right turn lane. Sidewalks will be added to both sides of the roadway along Riverside Driveway within the limits of the project.

The project will also include routine rehabilitation of the existing bridge. This rehabilitation work includes replacement of joints; reseal construction joints; seal the bridge deck with a two-part polymer overlay and repair concrete spalling as required.

Riverside Drive is classified as an Urban Minor Arterial Street. The length of the project along Riverside Drive is approximately 0.5 miles. The design speed for Riverside Drive is 35 miles per hour (mph). The design speed for the ramps is 60 mph where entering and exiting I-285 and a minimum of 35 mph where entering and exiting Riverside Drive.

Design Variance Request: for the LOA lengths along Riverside Drive

A Design Variance is requested to retain the existing non-standard Limit of Access (LOA) control distances along Riverside Drive. As stated in the *Design Policy Manual (DPM); Chapter-3; Section 3.5.2 Access Management* (***Attachment 2***), Georgia Department of Transportation has adopted as a standard that access control along the cross-road at an Interstate Interchange project should be 600 ft where practical and 300 feet at a minimum in urban areas. It is important to note that the *AASHTO Publication, A Policy on Design Standards Interstate System, January 2005, Section: Right-of-Way – Control of Access* (***Attachment 3***), states that "access control … should extend beyond the ramp terminal at least 100 feet in urban areas.

The proposed design will move the existing residential driveways in the interchange's northwest and southwest quadrants away from the ramp terminals. The existing LOA ends before the existing R/W miters at each ramp terminal (***see Attachment 4***); therefore moving the driveways actually increases the distance between the existing LOA point and the new driveway. The new distances will be approximately 100 ft.

In the Interchange's northeast and southeast quadrants the first existing roads are Coldstream Court and a driveway to a church respectively. Coldstream Court is 230 feet and the church driveway is 280 feet from the outer radius of the ramp terminal roundabouts and both roads have low traffic volumes since the church traffic is primary on Sunday and Coldstream Court is a dead street which provides access to only a small number of large residencies (20+/-).

Traffic diagrams are provided in ***Attachment 5*** showing the open year (2015) and design year (2035) average daily traffic volumes (ADT) and peak hour traffic volumes (DHV) for build and no-build alternatives. The results of the Safety and Crash Analysis conducted for this project are summarized in ***Attachment 6***. Table 1 presents a comparison between the number of study intersection crashes and the historic statewide average number of intersection crashes that occurred at comparable intersections. The crashes at the westbound ramps intersection

exceeded statewide average total crashes in 1 out of the 5 years, and exceeded statewide average Property Damage Only (PDO) crashes in 2 out of the 5 years. The crashes at the eastbound ramps intersection exceeded statewide average total crashes in 2 out of the 5 years, exceeded statewide average injury crashes in 3 out of the 5 years, and exceeded statewide average PDO crashes in 2 out of the 5 years. Additionally, the tables show that fatal crashes are less frequent at the Riverside Drive intersections compared to the statewide intersection averages as there were zero fatal crashes at the study intersections during the five years analyzed.

Figures 1 – 2 of ***Attachment 6*** show that rear-end crashes and angle crashes occurred the most frequently at the two interchange intersections. These two types of crashes represent 86 percent of the total crashes that occurred at the I-285 westbound ramps intersection and 94 percent of the total crashes that occurred at the I-285 eastbound ramps intersection. In general, these two crash types are the most prevalent at signalized intersections. The severity of the crashes was also analyzed, the findings show that 14 percent of the crashes at the I-285 westbound ramps intersection involved injuries and 32 percent of the crashes at the I-285 eastbound ramps intersection involved injuries. During the five years of study, no crashes involving fatalities occurred at the interchange intersections. It is important to mention that the Chapter 12 of the Highway Safety Manual (HSM) provides crash modification factors to be used to predict the reduction in crashes expected to accompany the conversion of the intersections to roundabouts. The HSM provides a crash modification factor of 0.52 (equal to a reduction of 48%) for conversion from a signalized intersection to a roundabout. Refer to Attachment 2 for the complete Safety and Crash Analysis Discussion.

The current GDOT DPM standard requiring a 300 foot minimum length of LOA control in an area urban is not practical in this situation due to the severe right-of-way impacts to adjacent residential properties, resulting in a significant increase in project right-of-way cost. If the LOA control was increased to the minimum 300-ft in all four quadrants for the ramp terminals two residencies would be landlocked with no access (one each in the northwest and southwest quadrants). It would be impractical to provide access to these above mentioned residencies across adjacent properties because the southwest driveway would have to be move to the far end of the property and the next drive to a large home adjacent to the northwest resident is too far away to use for common access. Therefore all the access rights to these two properties in the northwest and southwest quadrants would have to be acquired to provide for 300 feet.

In north east quadrant the intersection of Coldstream Court would have to be relocated approximately 70 feet to the north along riverside Drive to accommodate

300 feet of access rights from the ramp terminal. It is impractical from a R/W cost perspective to relocate this intersection because it would displace one residential home and severely damage another residential property.

The additional right-of-way cost to increase the existing LOA control to a minimum standard of 300 feet along Riverside Drive on both the north and south sides of the interchange would be approximately $1,540,000 (***Attachment 7***). It is important to note that there would be two large landlocked properties and an additional displaced home on Coldstream Court. The R/W cost of the two landlocked properties is almost as much as total displacements since the land itself would be of limited property value unless proper access could be provided.

One mitigation technique incorporated in the proposed design that would lessen the impact of not having at least 300 feet of access control are the proposed roundabouts since they will serve as traffic calming devices to slow traffic both approaching and leaving the roundabouts. Another mitigation technique to improve on the existing access control conditions is moving the two close driveways away from the ramp terminal. An inherit characteristic of the surrounding area which acts as a mitigation tool to the type of traffic is that all the properties are zoned residential and most of these homes are the type that owners would not want to turn into commercial properties.

We recommend approval of this Design Variance to retain the existing LOA at this interchange. Approximately 100 feet minimum of no-access area will be available at all ramp termini which is the minimum recommended by AASHTO *Policy on Design Standards Interstate System*. Providing 300-feet LOA from a ramp terminal to the first driveway or access break will result in substantial impacts to adjacent residential lots and an increase of right-of-way cost. If you have any questions or further clarification is needed, please contact Shamir Poudel at 770.431.8666.

Recommend: Shamir Poudel — 4/1/14
Engineer of Record — Date

Concur: Glenn Bowman — 4/18/14
GDOT Director of Engineering — Date

Approve: _____ 5/7/14
GDOT Chief Engineer Date

Attachments:

1. Proposed Design Concept Layout of Riverside Dr/I-285 Interchange Improvements
2. DPM Chapter 3, pages 3-8 & 3-9
3. AASHTO Design Standards Interstate System, January 2005, Cover page and page 2
4. Old plan sheet showing the existing LOA Control
5. Traffic Diagrams
6. Crash History Data and Analysis
7. Additional Right of Way Cost Estimate

Attachment 1

Attachment 2

On loop ramps, adequate deceleration length should be provided prior to the loop part of the ramp. All areas of deceleration should be separated from the mainline lanes. System to system loop ramps will be evaluated on a case-by-case basis.

3.3.4. Urban Subdivision Streets

In most cases, the design speed for urban subdivision streets should be a minimum of 25 mph.

3.4. Highway Capacity

All portions of roadways that are part of major construction or reconstruction should be designed to accommodate, at a minimum, 20-year forecasted traffic volumes. The design year for the 20-year traffic volumes should be forecasted from the estimated base (or opening) year, which is the year the project is anticipated to be open for traffic use. Refer to **Chapter 13, Traffic Forecasting and Analysis Concepts,** of this Manual for further discussion on the traffic engineering and analysis.

If a project is not new roadway construction or reconstruction, refer to **Chapter 11, Other Project Types** for guidance relating to other project types.

3.5. Establishment of Access Control

3.5.1. Definitions

GDOT has adopted the following "Access Control" criteria as standard, having substantial importance to the operational and safety performance of a roadway such that special attention should be given to design decisions. The designer is encouraged to select design elements and features that are consistent with the access control plan established for a roadway. A decision to use a design element or feature that does not meet the standard access control criteria defined by GDOT shall require a comprehensive study by an engineer and the prior approval of a Design Variance from the Department's Chief Engineer.

Roadways serving higher volumes of regional through traffic require greater access control to preserve their traffic function. Frequent and direct property access is more compatible with the function of local and collector roadways. The regulation of access to a roadway is referred to as "access control". It is achieved through the regulation of public access rights to and from properties abutting the roadway facilities. The Official Code of Georgia Annotated (OCGA)[5] § 32-6-111 to -114 give GDOT this authority.

The regulation of public access rights is generally categorized as either full control of access, partial control of access, or control of access by permit (or permitted access).

Full control of access means that preference is given to through traffic by providing access connections by means of ramps with only selected public roads and by prohibiting crossings at grade and direct driveway connections.

Partial control of access means that some preference should be given to through traffic. Access connections, which may be at-grade or grade-separated, are provided with selected public roads

[5] Online public access to the Official Code of Georgia Annotated (OCGA) is provided at: http://w3.lexis-nexis.com/hottopics/gacode/Default.asp?loggedIn=done

and private driveways. In areas with partial control of access, the decision to grant access to private driveways is made at the time of project development, and thereafter, private driveway access should not be added.

Permitted access means that a permit is needed for access. A permit is required prior to performing any construction work or non-routine maintenance within the State highway right-of-way. This includes but is not limited to the following activities: grading, landscaping, drainage work, temporary access to undeveloped land for logging operations, or construction of a development. Any new driveway or revisions to any portion of existing driveways, i.e. widening and/or relocation that are within the State roadway right-of-way shall also require a permit.

3.5.2. Access Management

The following standards shall be used to establish access control:

Full control of access

- Full control of access shall be established on all Interstates.
- Full control of access shall be established on principal arterials constructed on new location with grade separated interchanges.
- For projects that involve an Interstate interchange, (new construction or reconstruction), access control should be established along the intersecting route for a distance of 600-ft. in urban areas and 1,000-ft. in rural areas, where practical. At a minimum, access control shall not be less than 300-ft. This distance is measured from the radius return of the ramp termini with the intersecting route. (See Figure 3.1, Limit of Access Control Interstate/Freeway Interchange).
- Where improved traffic operations and safety warrant, existing driveways may be closed and no access allowed to developed or undeveloped property. Decisions on elimination of access points should be based in part on an economic study of alternate courses of action.

Partial control of access

- Partial control of access shall be established on principal and minor arterials that are constructed on a new location with intersections at-grade. Access control should not be established on portions of projects on new location which are less than one mile in length, unless the project connects to a section of roadway were access control has been or will be established or where required to preserve the functional area of an intersection as described below.
- Partial control of access should be established on existing principal arterials that are being widened, when it is determined that partial access control is advisable. On this type of project, every attempt shall be made to consolidate existing access to the roadway by developing a supporting roadway network. All undeveloped property frontage should be treated in the same manner as new location construction.

Breaks in access will only be granted for the following conditions:

- State or local government public road intersections

Attachment 3

A POLICY ON
DESIGN STANDARDS INTERSTATE SYSTEM

January 2005

Prepared by the
Standing Committee on Highways
AASHTO Highway Subcommittee on Design
Technical Committee on Geometric Design

American Association of State
Highway and Transportation Officials

RIGHT-OF-WAY

Right-of-Way

The width of right-of-way shall be sufficient to accommodate the roadway cross section elements and requisite appurtenances necessary for an adequate facility in the design year and for known future improvements.

Control of Access

Access to the interstate system shall be fully controlled. The interstate highway shall be grade separated at all railroad crossings and selected public crossroads. At-grade intersections shall not be allowed. To accomplish this, the intersecting roads are to be grade separated, terminated, rerouted, and/or intercepted by frontage roads. Access is to be achieved by interchanges at selected public roads.

Access control shall extend the full length of ramps and terminals on the crossroad. Such control

shall either be acquired outright prior to construction or by the construction of frontage roads or by a combination of both.

Access control beyond the ramp terminals should be affected by purchasing access rights, providing frontage roads, controlling added corner right-of-way areas, or prohibiting driveways. Such control should extend beyond the ramp terminal at least 30 m (100 ft) in urban areas and 90 m (300 ft) in rural areas. However, in areas of high traffic volume, where exists the potential for development which would create operational or safety problems, longer lengths of access control should be provided.

GEOMETRIC CONTROLS AND CRITERIA

Design Speed

A minimum design speed of 110 km/h (70 mph) should be used for rural areas. Where terrain is mountainous, a design speed from 80 to 100 km/h (50 to 60 mph) may be used. In urban areas, the design speed shall be at least 80 km/h (50 mph).

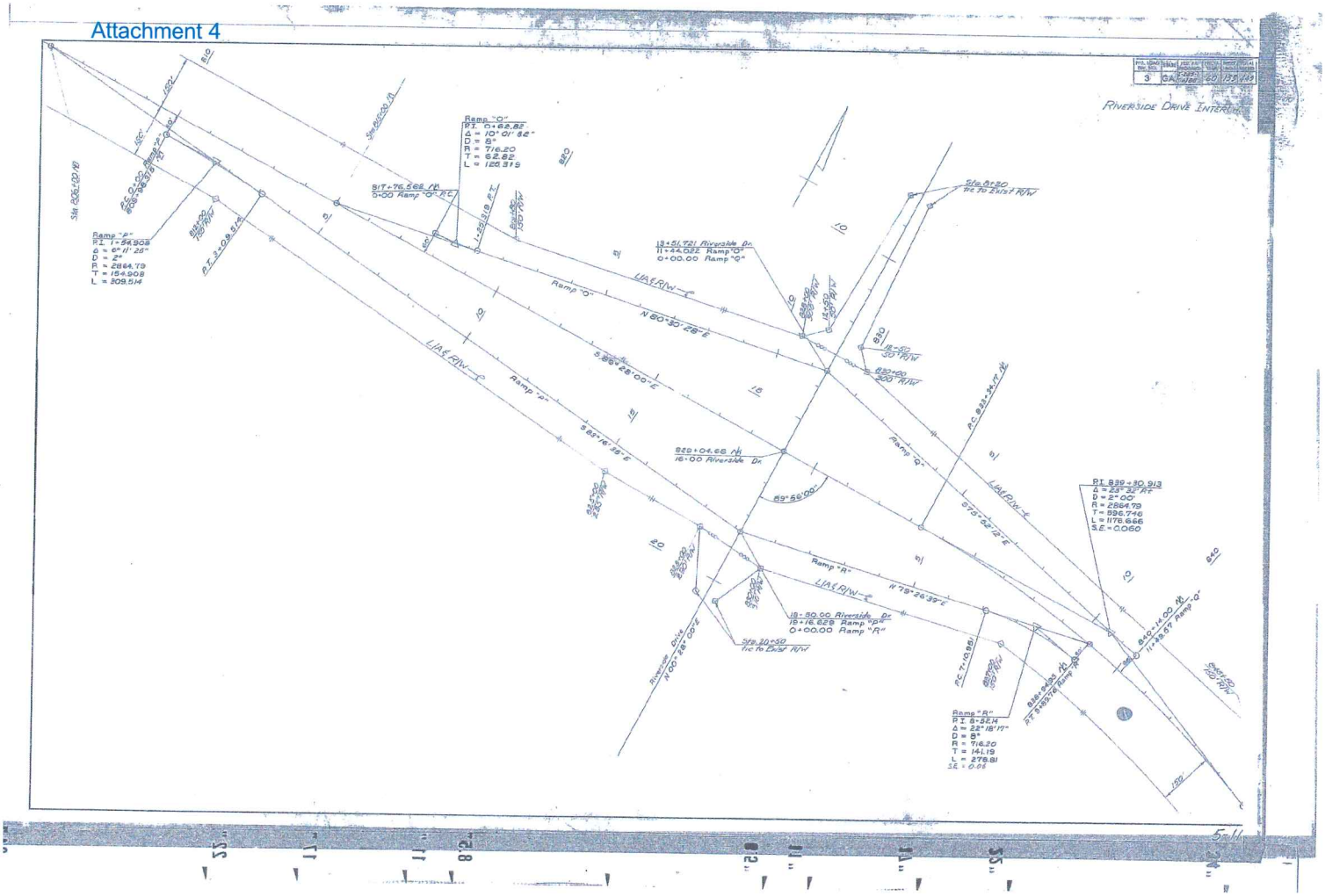
Sight Distance

The minimum stopping sight distance shall be the values established in the current edition of AASHTO's *A Policy on Geometric Design of Highways and Streets* for the appropriate design speed.

Curvature and Superelevation

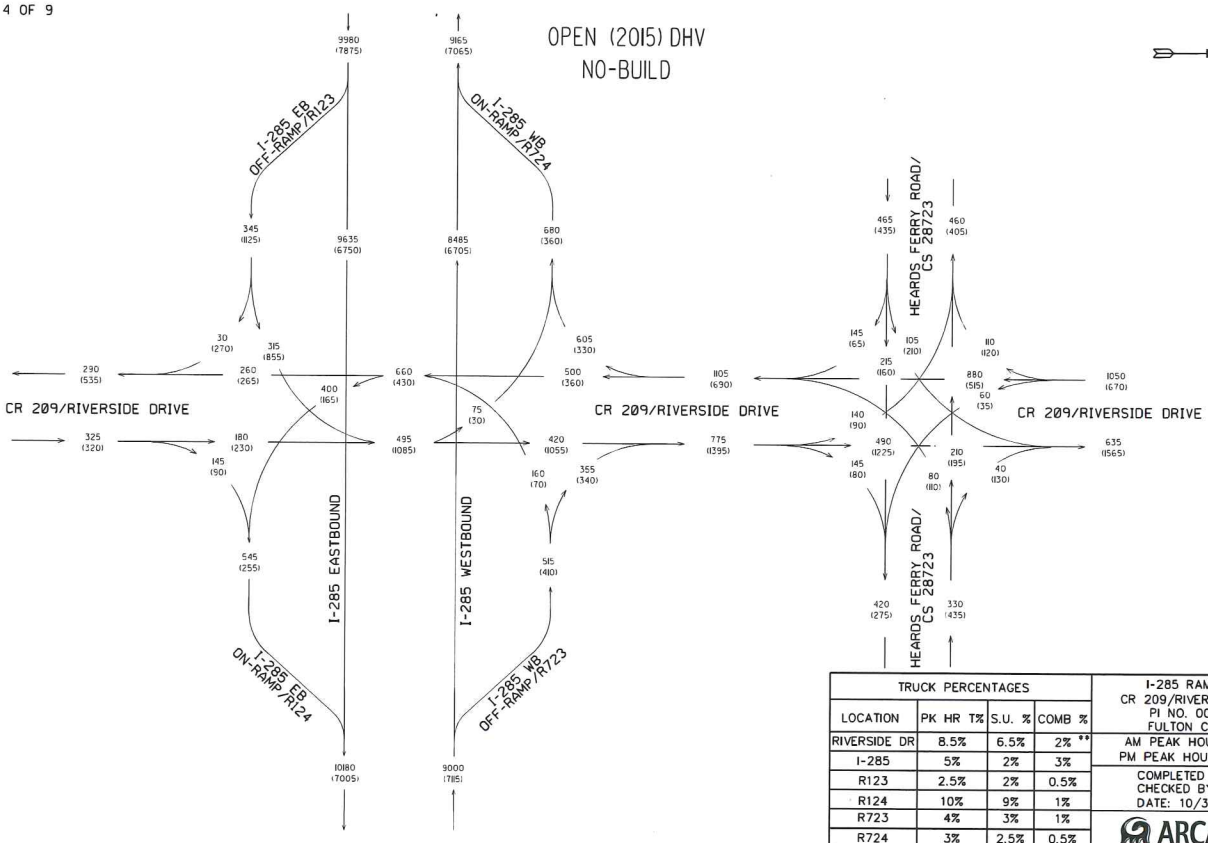
Curvature, superelevation, and allied features, such as transition curves, shall be correlated with the design speed in accordance with the current edition of AASHTO's *A Policy on Geometric Design of Highways and Streets*.

Attachment 4



Attachment 5

SHEET 4 OF 9



TRUCK PERCENTAGES			
LOCATION	PK HR T%	S.U. %	COMB %
RIVERSIDE DR	8.5%	6.5%	2% **
I-285	5%	2%	3%
R123	2.5%	2%	0.5%
R124	10%	9%	1%
R723	4%	3%	1%
R724	3%	2.5%	0.5%
** LARGE TRUCKS PROHIBITED			

I-285 RAMPS AT
CR 209/RIVERSIDE DRIVE
PI NO. 0010925
FULTON COUNTY

AM PEAK HOUR = 000
PM PEAK HOUR = (000)

COMPLETED BY: KC
CHECKED BY: SR
DATE: 10/31/2013

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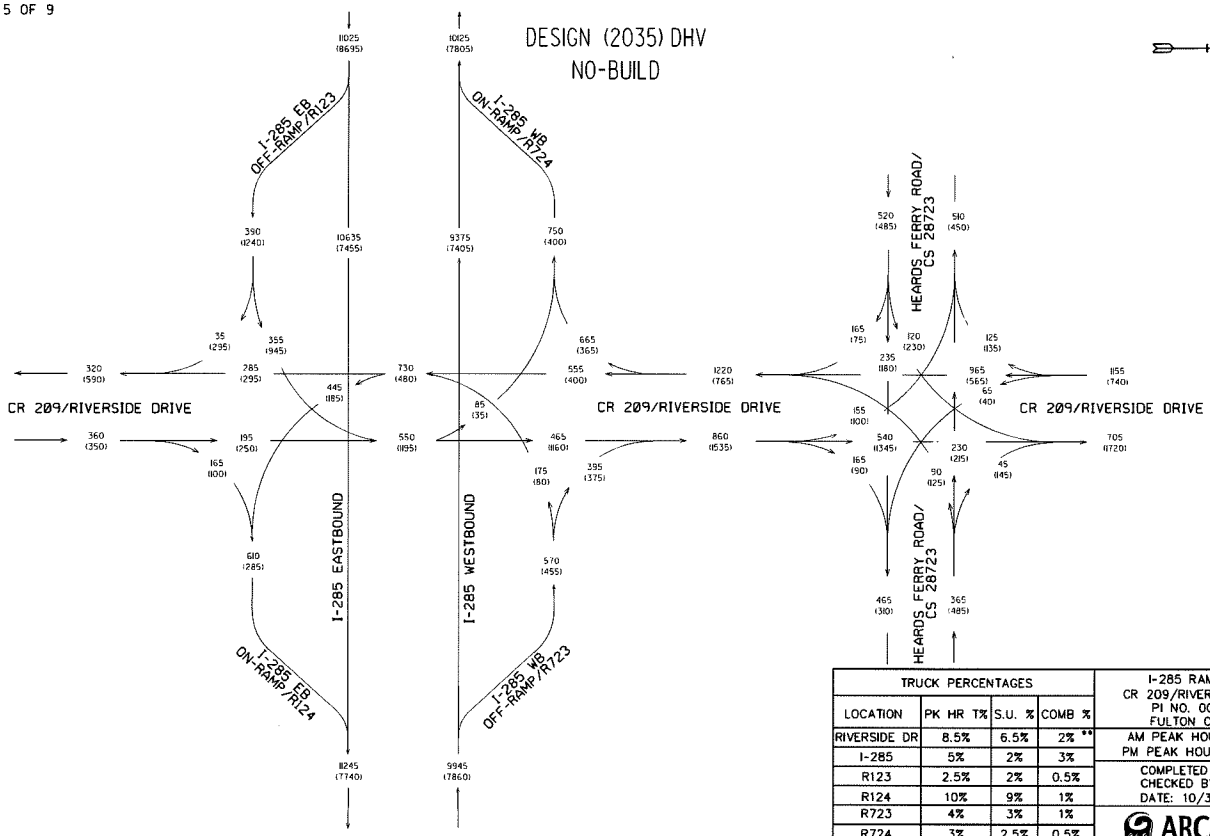
SHEET 5 OF 9

DESIGN (2035) DHV
NO-BUILD



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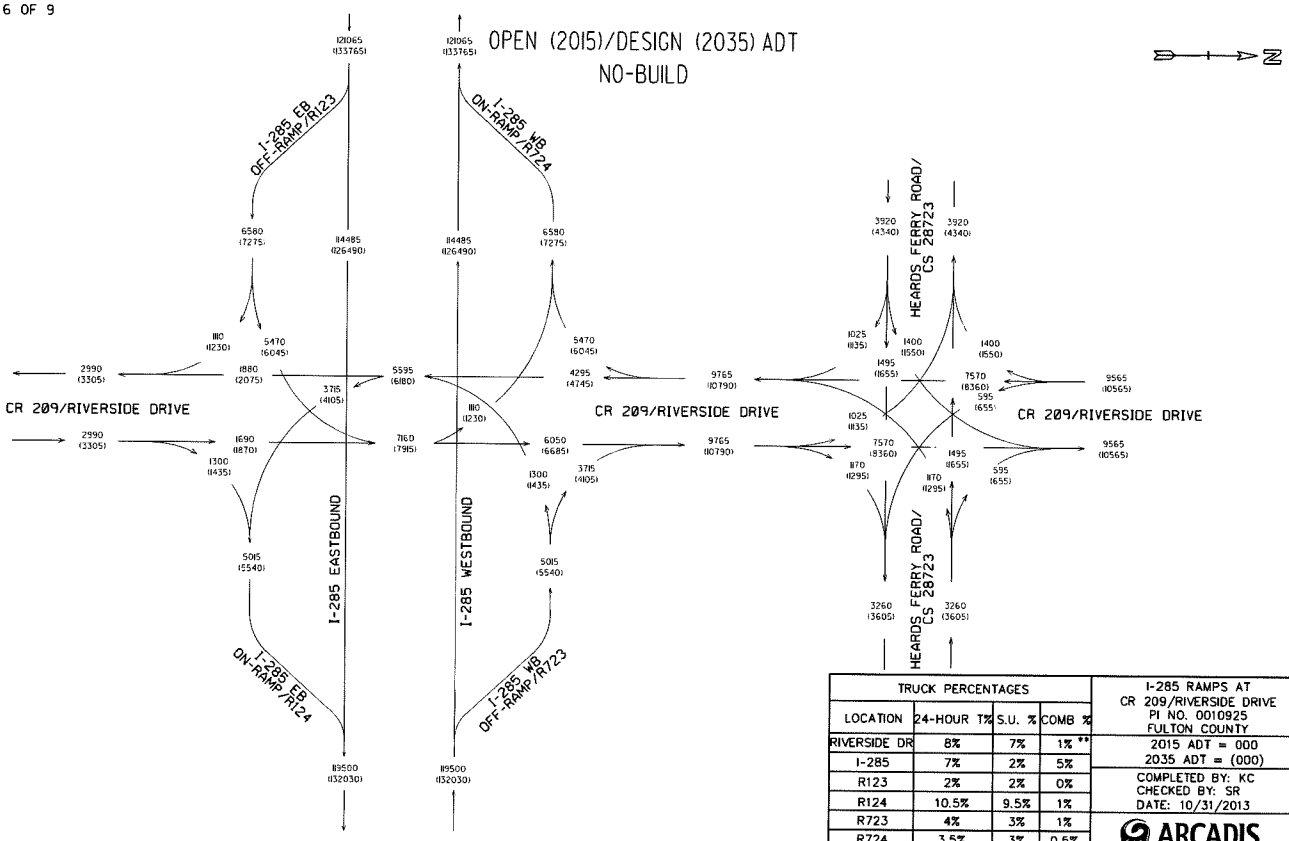
SHEET 6 OF 9

OPEN (2015)/DESIGN (2035) ADT
NO-BUILD



TRUCK PERCENTAGES			
LOCATION	24-HOUR T%	S.U. %	COMB %
RIVERSIDE DR	8%	7%	1% **
I-285	7%	2%	5%
R123	2%	2%	0%
R124	10.5%	9.5%	1%
R723	4%	3%	1%
R724	3.5%	3%	0.5%
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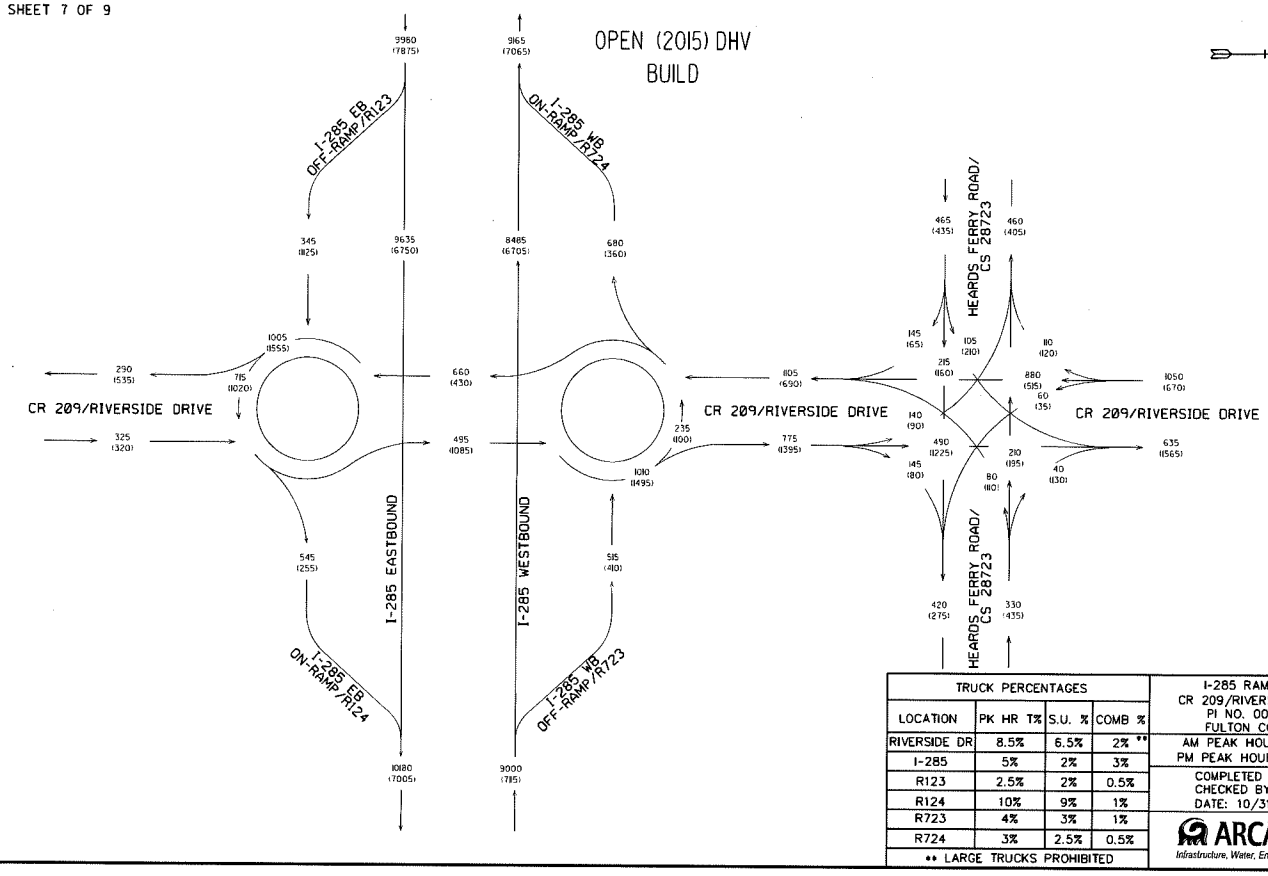
SHEET 7 OF 9



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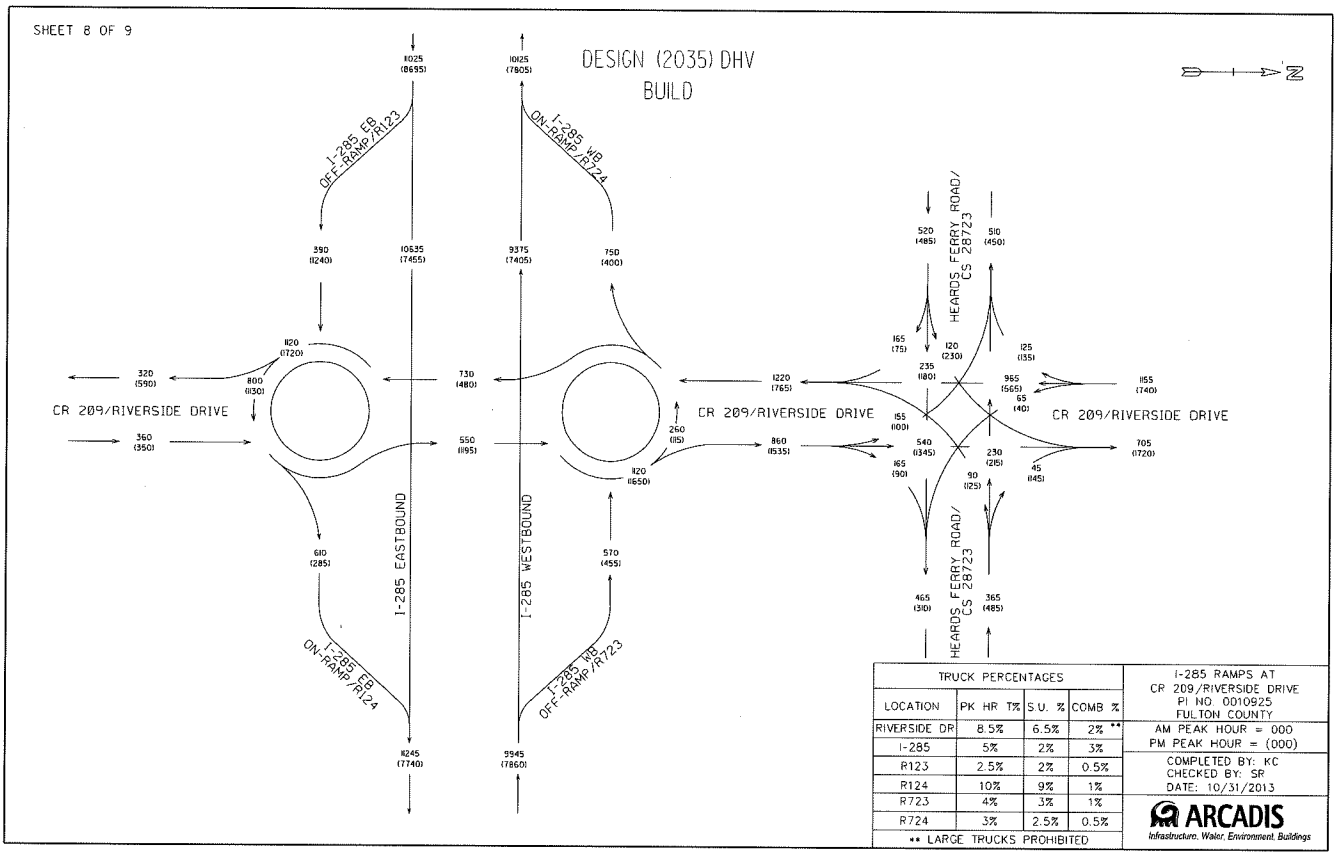

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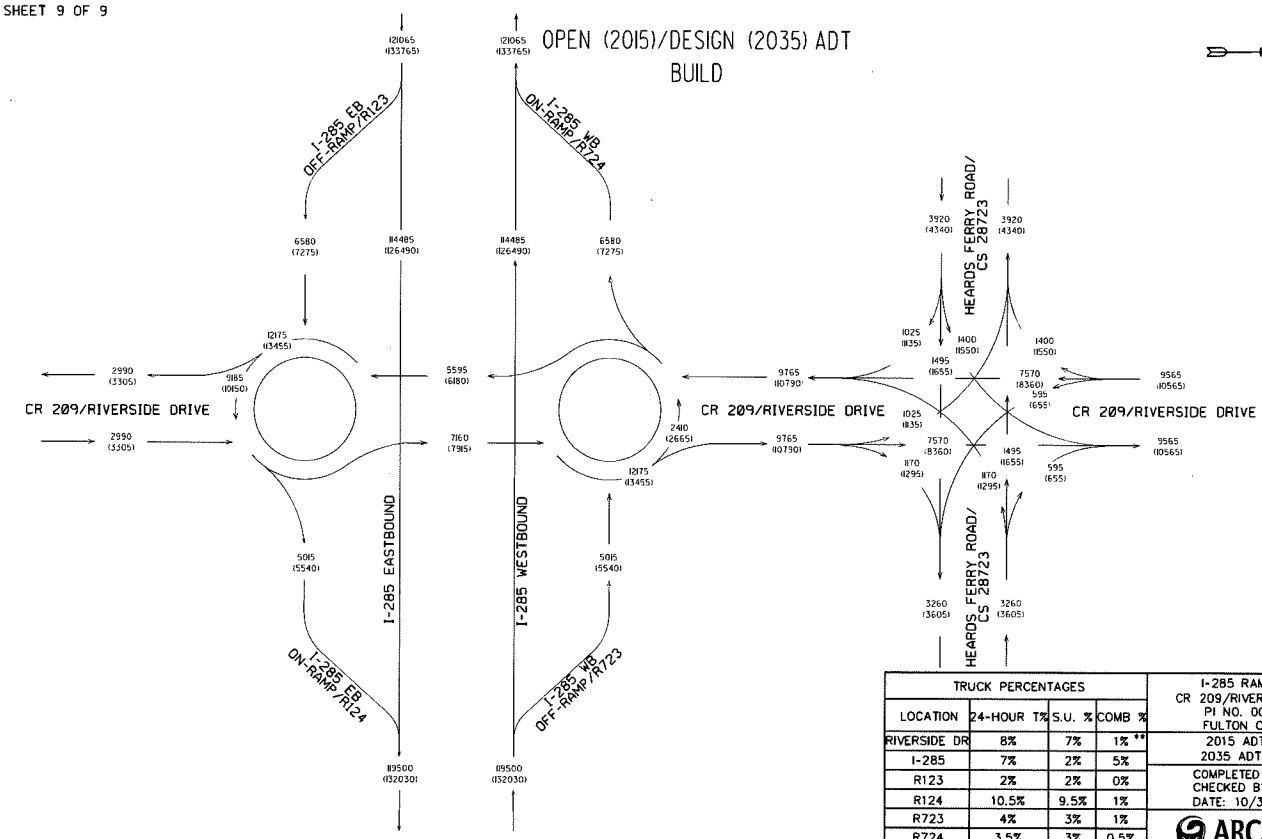
SHEET 9 OF 9

OPEN (2015)/DESIGN (2035) ADT
BUILD



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Attachment 6

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PI 0010925 Riverside Drive Roundabouts Crash Summaries

1. Safety Analysis

In addition to vehicular mobility, safety is an important aspect related to development of the Riverside Drive and I-285 interchange. Traffic incidents (crashes) cause congestion, economic loss, and the potential for injuries or loss of life.

When analyzing crash data, it is important to note that there are usually multiple underlying reasons for each crash. These include roadway geometry, weather conditions, driver behavior, traffic operations, on-road or roadside hazards, and construction activity. In most cases, no single factor causes a crash to occur. This report focuses on identifying the underlying causes of crashes to determine where motorist safety may be improved by means of upgrading roadway geometry, installing safety-related features, and/or improving traffic conditions.

The latest five years of crash data available were collected from GDOT and analyzed to quantify the frequency, severity, and type of the crashes occurring at the intersections of Riverside Drive at the I-285 westbound ramps and Riverside Drive at the I-285 eastbound ramps. The latest crash data available for the two intersections were for the years 2008 to 2012.

1.1 Crash Rate Analysis

The GDOT crash data was analyzed to determine the raw number of crashes that occurred at each study intersection each year. Table 1 below presents a comparison between the raw number of study intersection crashes and the historic statewide average number of intersection crashes that occurred at comparable intersections. Statewide average intersection crashes were calculated using the Predictive Crash Table Tool Analysis Report spreadsheet obtained from GDOT.

The results presented in the tables show that:

- The crashes at the westbound ramps intersection exceeded statewide average total crashes in 1 out of the 5 years, and exceeded statewide average PDO crashes in 2 out of the 5 years.
- The crashes at the eastbound ramps intersection exceeded statewide average total crashes in 2 out of the 5 years, exceeded statewide average injury crashes in 3 out of the 5 years, and exceeded statewide average PDO crashes in 2 out of the 5 years.

Additionally, the tables show that fatal crashes are less frequent at the Riverside Drive intersections compared to the statewide intersection averages as there were zero fatal crashes at the study intersections during the five years analyzed.

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Table 1: I-285 Ramp Intersections Crash Rates vs. Statewide Average Intersection Crash Rates

Riverside Drive		2008			2009*			2010*			2011*			2012*		
		AADT	Intersection Raw #	Statewide Avg.	AADT	Intersection Raw #	Statewide Avg.	AADT	Intersection Raw #	Statewide Avg.	AADT	Intersection Raw #	Statewide Avg.	AADT	Intersection Raw #	Statewide Avg.
WB Ramps Intersection	Total Crashes	17,760	12	10.029	17,850	10	10.029	17,940	6	10.029	18,030	9	10.029	18,120	5	10.029
	Fatality Crashes		0	0.014		0	0.014		0	0.014		0	0.014		0	0.014
	Injury Crashes		1	2.145		0	2.145		1	2.145		2	2.145		2	2.145
	PDO Crashes		11	7.870		10	7.870		5	7.870		7	7.870		3	7.870
EB Ramps Intersection	Total Crashes	9,740	6	6.119	9,790	5	6.119	9,840	7	6.119	9,890	4	6.119	9,940	9	6.119
	Fatality Crashes		0	0.010		0	0.010		0	0.010		0	0.010		0	0.010
	Injury Crashes		1	1.413		8	1.413		3	1.413		1	1.413		2	1.413
	PDO Crashes		5	4.696		2	4.696		4	4.696		3	4.696		7	4.696

Source: GDOT Crash Database (2008 – 2012)
*2008 statewide averages were used for years 2009 – 2012

1.2 Crash Type Analysis

The GDOT crash data were also analyzed to determine the frequency of each crash type that occurred at each of the interchange intersections. In Georgia, crash data are categorized by type. With the exception of one type, "not a collision with a motor vehicle", the crash types focus on the manner in which the vehicles collided. A crash categorized as "not a collision with a motor vehicle" occurs when a vehicle strikes a fixed object (utility pole, guardrail, curb, structure, etc.), a bicyclist, or a pedestrian, or when the vehicle leaves the roadway. Figures 1 – 2 below illustrate the total number and percentage of each type of crash that occurred at the Riverside Drive at I-285 westbound ramps and the Riverside Drive at I-285 eastbound ramps intersections respectively.

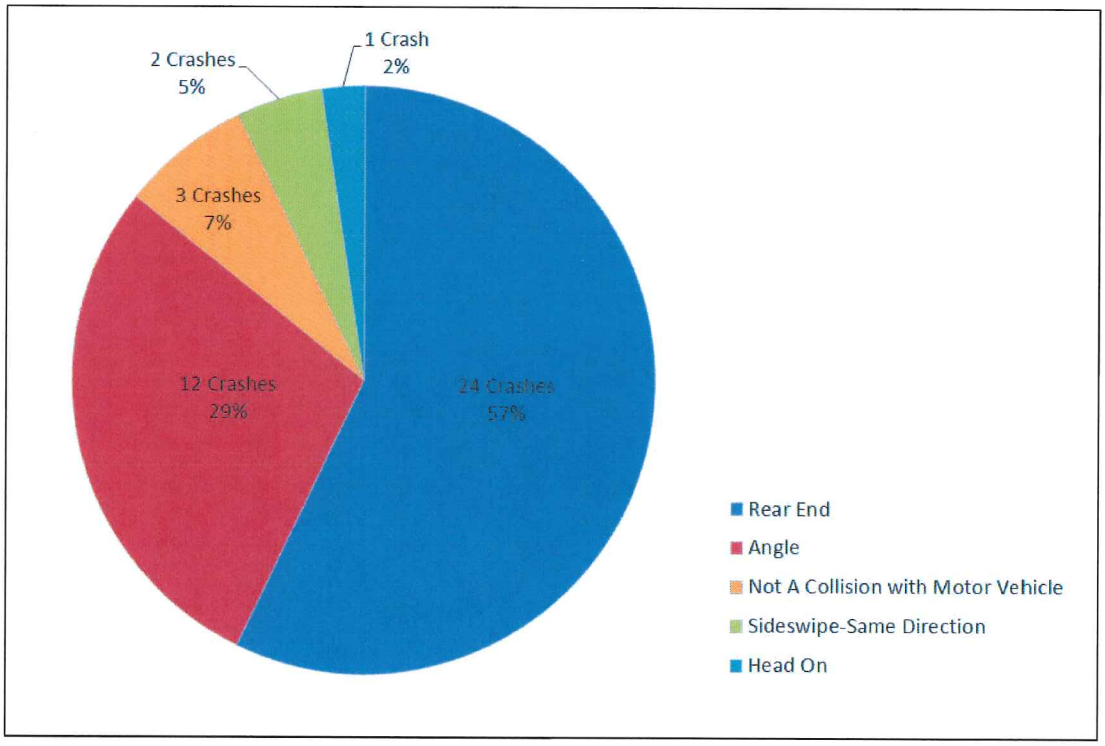

Figure 1: I-285 Westbound Ramps Intersection Crash Frequency by Crash Type (2008-2012)

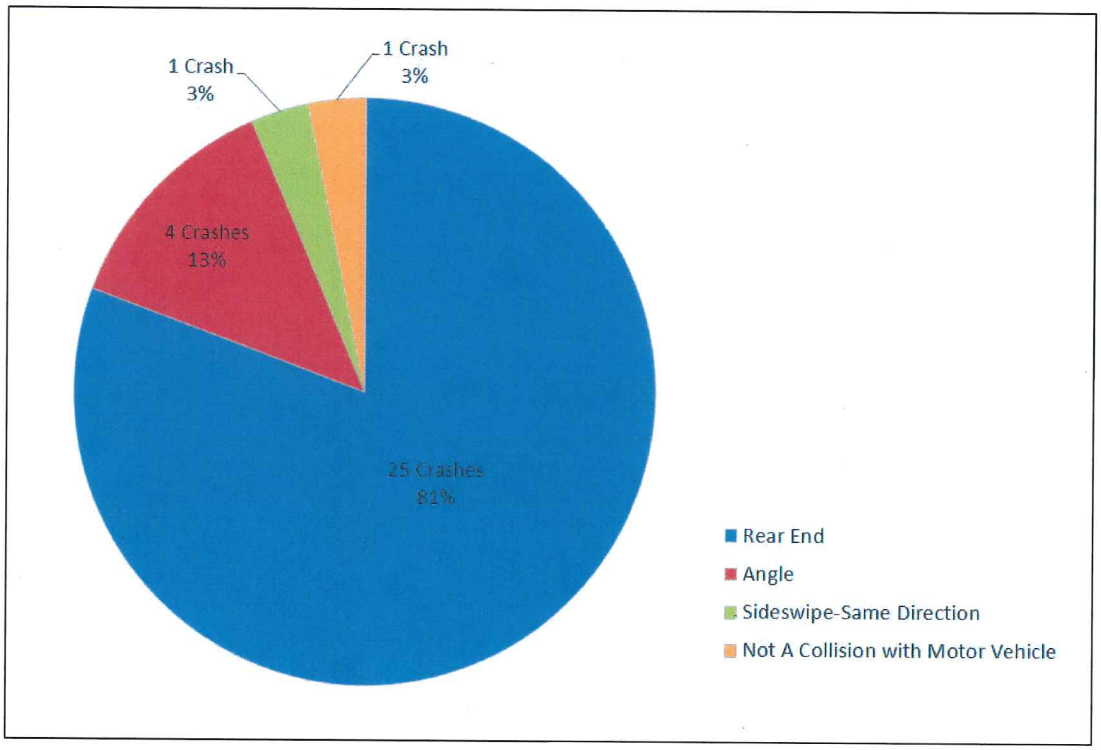

Figure 2 : I-285 Eastbound Ramps Intersection Crash Frequency by Crash Type (2008-2012)

Figures 1 – 2 show that rear-end crashes and angle crashes occurred the most frequently at the two interchange intersections. These two types of crashes represent approximately 86 percent of the total crashes that occurred at the I-285 westbound ramps intersection and approximately 94 percent of the total crashes that occurred at the I-285 eastbound ramps intersection. In general, these two crash types are the most prevalent at signalized intersections.

Additionally, the figures show that sideswipe crashes only accounted for 5 percent of the total crashes that occurred at the I-285 westbound ramps intersection and 3 percent of the total crashes that occurred at the I-285 eastbound ramps intersection. This crash type is common at locations where traffic must weave across lanes to access adjacent land uses.

1.3 Crash Severity Analysis

The severity of the crashes was analyzed by calculating the percentage of each type of crash that involved injuries or fatalities. At the study intersections, injuries are common for angle crashes and rear end crashes. Tables 2 – 3 below show the injury rates for each crash type for the two interchange intersections. Overall, 14 percent of the crashes at the I-285 westbound ramps intersection involved injuries and 32 percent of the crashes at the I-285 eastbound ramps intersection involved injuries. During the five years of study, no crashes involving fatalities occurred at the interchange intersections.

Table 2: I-285 Westbound Ramps Intersection Crash Severity 2008 – 2012

Collision Type	Number of Crashes	Number of Injury Crashes	Percentage of Injury Crashes
Rear End	24	3	13%
Angle	12	2	17%
Not A Collision With A Motor Vehicle	3	0	0%
Sideswipe - Same Direction	2	1	50%
Head On	1	0	0%
Total	**42**	**6**	**14%**

Table 3: I-285 Eastbound Ramps Intersection Crash Severity 2008-2012

Collision Type	Number of Crashes	Number of Injury Crashes	Percentage of Injury Crashes
Angle	4	2	50%
Not A Collision With A Motor Vehicle	1	0	0%
Rear End	25	8	32%
Sideswipe - Same Direction	1	0	0%
Total	**31**	**10**	**32%**

1.4 Crash Reduction

In order to predict the reduction in crashes that may occur at the Riverside Drive intersections with the I-285 westbound ramps and the I-285 eastbound ramps after their conversion to roundabouts, the Predictive Method for Urban and Suburban Arterials outlined in Chapter 12 of the Highway Safety Manual (HSM) was followed:

- The inputs to this method included signalization as the base condition for the Riverside Drive and I-285 eastbound ramps intersection as well as the Riverside Drive and I-285 westbound ramps intersection as these are the existing conditions as well as the no-build conditions.

- The HSM methodology and formulas were followed to predict the number of multi-vehicle and single-vehicle crashes (separated further into injury/fatality crashes and PDO crashes) that are expected occur at the two intersections in the 2015 open year and the 2035 design year under no-build conditions.

- The HSM methodology predicts the number of fatality and injury crashes that will occur as a combined number. However, because no fatalities occurred at the ramp termini intersections during the five years of available crash data, the fatality/injury crash prediction for these intersections is shown as a prediction for injury crashes only.

- Chapter 12 of the HSM provided crash modification factors to be used to predict the reduction in crashes expected to accompany the conversion of the intersections to roundabouts. The HSM provides a crash modification factor of 0.52 (equal to a reduction of 48%) for conversion from a signalized intersection to a roundabout.

- To calculate the expected number of crashes for the build conditions, the no-build expected crashes from the HSM methodology were multiplied by the roundabout crash modification factor from the HSM. The results of the HSM predictive method are shown in Table 4 and Table 5 below.

Table 4: Riverside Drive & I-285 Westbound Ramps Intersection Predicted Crashes & Crash Reduction

Crash Type	Open Year (2015)			Design Year (2035)		
	No-Build	Build	Percent Reduction	No-Build	Build	Percent Reduction
Total Predicted Crashes	9.59	4.99	48%	10.90	5.67	48%
Predicted Injury Crashes	3.08	1.60	48%	3.53	1.84	48%
Predicted Property Damage Only Crashes	6.51	3.39	48%	7.37	3.83	48%

Table 5: Riverside Drive & I-285 Eastbound Ramps Intersection Predicted Crashes & Crash Reduction

Crash Type	Open Year (2015)			Design Year (2035)		
	No-Build	Build	Percent Reduction	No-Build	Build	Percent Reduction
Total Predicted Crashes	6.40	3.33	48%	7.27	3.78	48%
Predicted Injury Crashes	1.94	1.01	48%	2.21	1.15	48%
Predicted Property Damage Only Crashes	4.47	2.32	48%	5.06	2.63	48%

1.5 Crash Reduction Cost Savings

According to the Federal Highway Administration, injury crashes can be associated with an average cost value of $955,500 and property damage only crashes can be associated with an average cost value of $27,300. Using these average cost values and the predicted crashes and crash reduction information presented in Tables 4 and 5 above, the cost savings in crash reductions in open year 2015 and in design year 2035 from no-build to build conditions can be calculated. Using this information, the total expected crash reduction cost savings for the two ramp termini intersections is approximately $2.4 million in the open year 2015 and is approximately $2.8 million in the design year 2035. Assuming a linear increase in crash reduction cost savings over the life of the project, the conversion of the ramp termini intersections from signalized intersections to roundabouts is expected to save approximately $52.4 million over the 20 year life of the project.

Attachment 7

GEORGIA DEPARTMENT OF TRANSPORTATION
DETAILED ROW COST ESTIMATE SUMMARY

Date (MM/YYYY): March-14
Revised:
Project: Riverside Drive Roundabouts
County: Fulton
PI: 10925
Description:
Parcels: 4
R/W Plan Date: 9/1/2014

CONTRACT

Land and Improvements	$1,376,881.97
Valuation Services	$8,900.00
Legal Services	$40,200.00
Relocation	$14,000.00
Demolition	$52,500.00
TOTAL CONTRACT	**$1,492,481.97**

INHOUSE

TOTAL INHOUSE	**$43,750.00**
TOTAL ESTIMATED COSTS	$1,536,231.97
TOTAL ESTIMATED COSTS (ROUNDED)	***$1,540,000.00***

Preparation Credits	Hours	Signature

CG#:

CG#:

Attachment(s): **Project Location Map; Subject/Comp Location Map; Comparable Sales Data**