

**DEPARTMENT OF TRANSPORTATION  
STATE OF GEORGIA**

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**INTERDEPARTMENTAL CORRESPONDENCE**

**FILE** 0010925 - Fulton County  
PI No. 0010925  
I-285 @ Riverside Drive  
*A. S. F. Ab*  
**OFFICE** Materials & Testing  
Forest Park, Georgia  
**DATE** May 15, 2014

**FROM** Charles A. Hasty, P.E., State Materials Engineer

**TO** Darryl VanMeter, Office of Innovative Program Delivery  
Attention: Marlo Clowers, Project Manager

**SUBJECT** **Pavement Evaluation Summary**  
I-285 at CR 209/Riverside Drive – Interchange Improvements

As requested, a Pavement Evaluation Summary has been performed on the aforementioned project. The results of this work are attached.

If additional information is needed, please contact Eugene Utsalo of the Geotechnical Environmental Pavement Bureau at 404-608-4775.

CAH: EUU

Attachments

- Pavement Evaluation Summary
- Full-Depth Flexible Designs (2)
- Full-Depth Rigid Design
- Project Location Map

cc: Rachel Brown, District Engineer, Chamblee  
Sebastian Nesbitt, Area Engineer, Marietta

File

## **PAVEMENT EVALUATION SUMMARY**

**For**  
**0010925 Fulton County**  
**PI No. 0010925**

### **1. LOCATION / DESCRIPTION**

This project is for the intersection improvements to the existing interchange on I-285 at Riverside Drive. The current roadway configuration of Riverside Drive consists of one, twelve foot lane in both directions and traffic signals at the ramp termini. The eastbound and westbound I-285 off ramps each consists of a single, sixteen foot lane. The project consists of safety improvements to the existing interchange which will convert the two existing signalized intersections at each ramp terminal 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 project limits. The project length is approximately 0.5 mile and located west of the city limits of Sandy Springs in Fulton County within the following station limits:

**Station to Station**  
104+46± to 117+00±

**Location**  
CR 209/Riverside Drive

### **2. PAVEMENT CONDITION SUMMARY**

#### **Riverside Drive**

The existing pavement on Riverside Drive is in fair visual condition. During the field investigation of this project on May 7, 2014, block distresses were observed (See Section 6: *Pavement Distresses* for more details). The pavement rehabilitation recommendation for this roadway is presented in Sections 5: *Overlay Sections*.

#### **I-285 Eastbound Off & On Ramps**

The existing pavements on the I-285 eastbound on and off ramps are in good condition. No visual distresses were observed during the field investigation. These ramps have concrete surface.

#### **I-285 Westbound Off & On Ramps**

The existing pavements on the I-285 westbound on and off ramps are in good condition. No visual distresses were observed during the field investigation. These ramps have asphaltic concrete surface.

### 3. PAVEMENT RECOMMENDATION SUMMARY

The pavement recommendation summary within the project limits is as follows.

Location	Construction Limits	Construction Recommendation	Description
CR 209/Riverside Drive	STA 104+46± to STA 117+00±	Full-depth Construction & Overlay	Full-depth construction for widening and roundabout.  Overlay at bridge approaches for tie-ins and to keep the same maintenance cycle
I-285 Ramps	Project Limits	Full-depth Construction	Full-depth construction for proposed widening areas

### 4. FULL-DEPTH SECTIONS

The following full-depth flexible pavement section is recommended for use on the proposed areas to be widened on CR 209/Riverside Drive. This section is also recommended for the roundabout construction.

CR 209/Riverside Drive – Widening and Roundabout (STA 104+46± to STA 117+00±)				
Pay Item Number	Material	Course	Thickness	Spread Rate
402-3130	12.5 mm Superpave	Surface	1.5 inches	165 lbs/yd <sup>2</sup>
402-3190	19 mm Superpave	Binder	2 inches	220 lbs/yd <sup>2</sup>
402-3121	25 mm Superpave	Asphalt Base	7 inches	770 lbs/yd <sup>2</sup>
310-1101	Graded Aggregate Base	Base	12 inches	N/A

The following full-depth flexible alternate pavement section is recommended for the proposed areas to be widened on the I-285 On and Off ramps at Riverside Drive. A PCC alternate section is also provided as an option.

<b>I-285 Ramps – Widening with AC Alternative</b>				
<b>Pay Item Number</b>	<b>Material</b>	<b>Course</b>	<b>Thickness</b>	<b>Spread Rate</b>
402-3130	12.5 mm Superpave	Surface	1.5 inches	165 lbs/yd <sup>2</sup>
402-3190	19 mm Superpave	Binder	2 inches	220 lbs/yd <sup>2</sup>
402-3121	25 mm Superpave	Asphalt Base	6 inches	660 lbs/yd <sup>2</sup>
310-1101	Graded Aggregate Base	Base	12 inches	N/A

The following full-depth rigid alternative pavement section is recommended for the proposed areas to be widened on the I-285 On and Off ramps at Riverside Drive.

<b>I-285 Ramps – Widening with PCC Alternative</b>				
<b>Pay Item Number</b>	<b>Material</b>	<b>Course</b>	<b>Thickness</b>	<b>Spread Rate</b>
439-0018	Plain PC Concrete	Surface	8 inches	N/A
402-3190	19 mm Superpave	Binder	3 inches	330 lbs/yd <sup>2</sup>
310-1101	Graded Aggregate Base	Base	12 inches	N/A

## **5. OVERLAY SECTIONS**

The following overlay section is recommended for Riverside Drive. All surface cracks should be sealed with Type M crack sealant prior to overlaying, as per Section 407 of the Standard Specifications. No overlay design analyses are provided as the existing pavement thicknesses are unknown.

<b>Riverside Drive – Overlay Existing</b>				
<b>Pay Item Number</b>	<b>Material</b>	<b>Course</b>	<b>Thickness</b>	<b>Spread Rate</b>
402-3130	12.5 mm Superpave	Surface	1.5 inches	165 lbs/yd <sup>2</sup>

## **6. PAVEMENT DISTRESSES**

Except for the following, no other distresses were encountered during the field investigation of this project:

**Block/ Transverse Cracking** Levels 1 and 2 block/transverse cracks were observed on Riverside Drive at the beginning and end of the project limits.

## **7. CORES**

No core samples were gathered for this project.

## **8. COPACES**

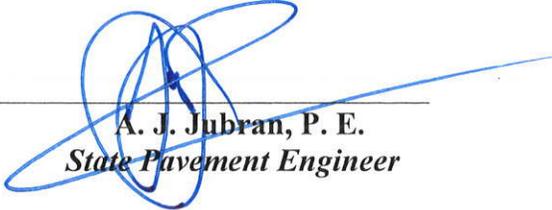
COPACES data are not available for county roads.

## **9. OTHER INFORMATION**

- The use of asphalt mixes recommended in this report meet the “Guidelines for Superpave and Other Mix Type Selection” established on March 18, 2011.
- A Soil Survey Summary has not been completed for this project. The attached designs use the typical values for Fulton County.
- The roundabout truck apron should be design according to GDOT guidelines.
- The pavement designs are based on approved traffic volumes that were provided by Arcadis and approved by the Office of Planning.
- Design Considerations for CR 209/Riverside Drive
  - Number of travel lanes (in one-direction): 1
  - Overlay with 1.5 inches of 12.5 mm Superpave

**Reported By:** Eugene Utsalo, P.E.

**Reviewed By:** \_\_\_\_\_

  
A. J. Jubran, P. E.  
*State Pavement Engineer*

## Flexible Pavement Design Analysis

PI Number	0010925	County(s)	Fulton (north)
Project Number	0010925	Design Name	Riverside Drive
Project Description	I-285 at Riverside Drive		

Traffic Data (AADTs are one-way)						Miscellaneous Data	
Initial Design Year	2015	Initial AADT, VPD	9,765	24 Hour Truck %	8.00	Lanes in one direction	2
Final Design Year	2035	Final AADT, VPD	10,790	SU Truck %	7.00	Curb & Gutter/Barrier	Yes
		Mean AADT, VPD	10,278	MU Truck %	1.00		

Design Data					
Lane Distribution Factor (%)	100.00	Soil Support Value	2.00	Single Unit ESAL	0.40
Terminal Serviceability Index	2.50	Regional Factor	1.80	Multiple Unit ESAL	1.50
		User Defined 18-KIP ESAL	0.00	Calculated 18-KIP ESAL	0.54
Non-Standard Value Comment					

Design Loading (Calculated 18-KIP ESAL)					
Mean AADT, VPD	LDF (%)	Vehicle Type	Volume (%)	ESAL Factor	Daily ESAL
10,278	100.00	Single Unit Truck	7.00	0.40	288
		Multi Unit Truck	1.00	1.50	155
<b>Total Daily ESALs</b>					443
<b>Total Design Period ESALs</b>					3,233,900

Proposed Flexible Full Depth Pavement Structure				
Course	Material	Thickness (inches)	Structural Coefficient	Structural Value
Course 1	12.5 mm Superpave	1.50	0.4400	0.66
Course 2	19 mm Superpave	2.00	0.4400	0.88
Course 3	25 mm Superpave	1.00	0.4400	0.44
		6.00	0.3000	1.80
Course 4	Graded Aggregate Base	12.00	0.1600	1.92
Required SN	5.79	Proposed pavement is 1.55% Underdesigned		Proposed SN
				5.70

Design Remarks	Full-depth for proposed widening; Including Roundabout construction
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Prepared By  5/12/2014 5:08 PM  
Pavement Test Engineer Date

Recommended By \_\_\_\_\_  
State Roadway Design Engineer Date

Approved By \_\_\_\_\_  
State Pavement Engineer Date



## Rigid Pavement Design Analysis

PI Number	0010925	County(s)	Fulton (north)			
Project Number	0010925	Design Name	I-285 Ramps - PCC Alternate			
Project Description	I-285 at Riverside Drive					
Section Location	All Ramps - Proposed Construction				Type Section	JPCP
Begin Section Station	104+46	End Section Station	117+00	Section Length	0.5 mile	

Traffic Data (AADTs are one-way)						Miscellaneous Data	
Initial Design Year	2015	Initial AADT, VPD	5,015	24 Hour Truck %	10.50	Lanes in one direction	2
Final Design Year	2035	Final AADT, VPD	5,540	SU Truck %	9.50	Curb & Gutter/Barrier	Yes
		Mean AADT, VPD	5,278	MU Truck %	1.00	Interstate	Yes

Design Loading (Calculated 18-KIP ESAL)					
Mean AADT, VPD	LDF (%)	Vehicle Type	Volume (%)	ESAL Factor	Daily ESAL
5,278	100	Other Vehicles	89.50	0.004	19
		Single Unit Truck	9.50	0.500	251
		Multi Unit Truck	1.00	2.680	142
<b>Total Daily ESALs</b>					412
<b>Total Design Period ESALs</b>					3,007,600

Design Data							
Terminal Serviceability Index (P <sub>t</sub> )	2.50	Working Stress (psi)	450	Modulus of Elasticity (psi)	3,200,000		
Soil Support Value	2.00	Subgrade Modulus (k)	110	Subbase Modulus (k <sub>1</sub> )	210	Subbase Modulus (k <sub>eff</sub> )	260
Trial Depth of PCC Pavement (inches)		8.00	Calculated Stress from Equation (psi)			461.43	
% Overstressed	2.54	% Underdesigned	2.48	Balanced Thickness (inches)		8.12	
Non-Standard Value Comment							

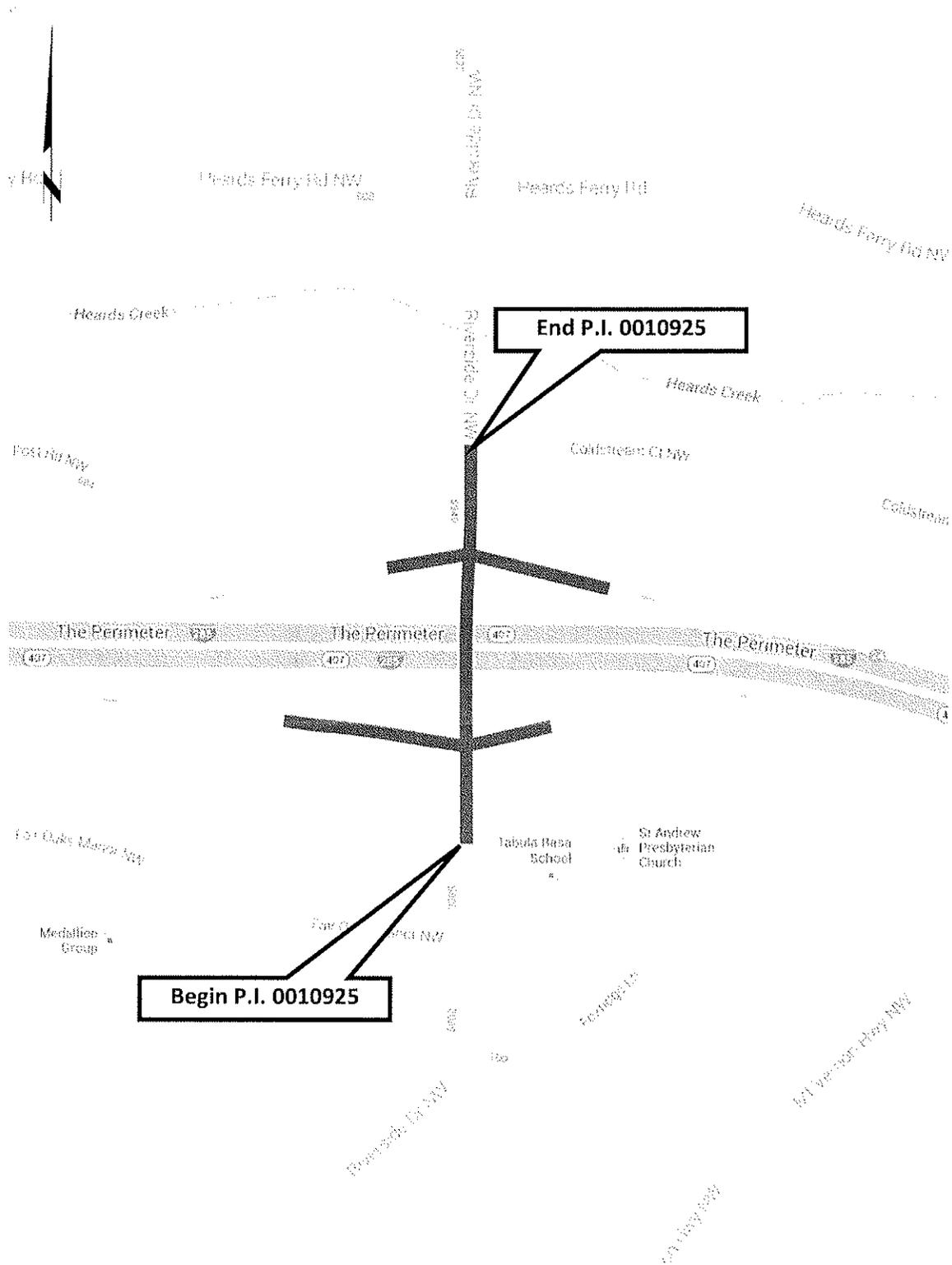
Proposed Rigid Pavement Structure	
Material	Thickness (inches)
JPCP - Jointed Portland Cement Concrete Pavement	8.00
19 mm Superpave Asphaltic Concrete Interlayer	3.00
Graded Aggregate Base	12.00

JPCP - Dowel Bar Size and Spacing
Refer to GDOT Standard 5046H: Joint Details for Portland Cement Concrete Paving

Design Remarks	I-285 Ramps widening
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Prepared By		5/12/2014 5:38 PM
	Pavement Test Engineer	Date
Recommended By	State Roadway Design Engineer	Date
Approved By	State Pavement Engineer	Date

### PROJECT LOCATION



Not to Scale