



DEPARTMENT OF TRANSPORTATION  
STATE OF GEORGIA  
TIA PROJECT CONCEPT REPORT

Project Type: Roadway Improvements P.I. Number: 0011420  
GDOT District: 2 County: Richmond  
Federal Route Number: N/A MPO ID Number: N/A  
State Route Number: N/A

*Project Description: Roadway improvements along Druid Park Avenue from Walton Way to Wrightsboro Road for approximately 0.7 miles. Improvements include new pedestrian plaza, sidewalks, lighting, drainage, and a roundabout at the intersection of Druid Park Avenue and Laney Walker Boulevard.*

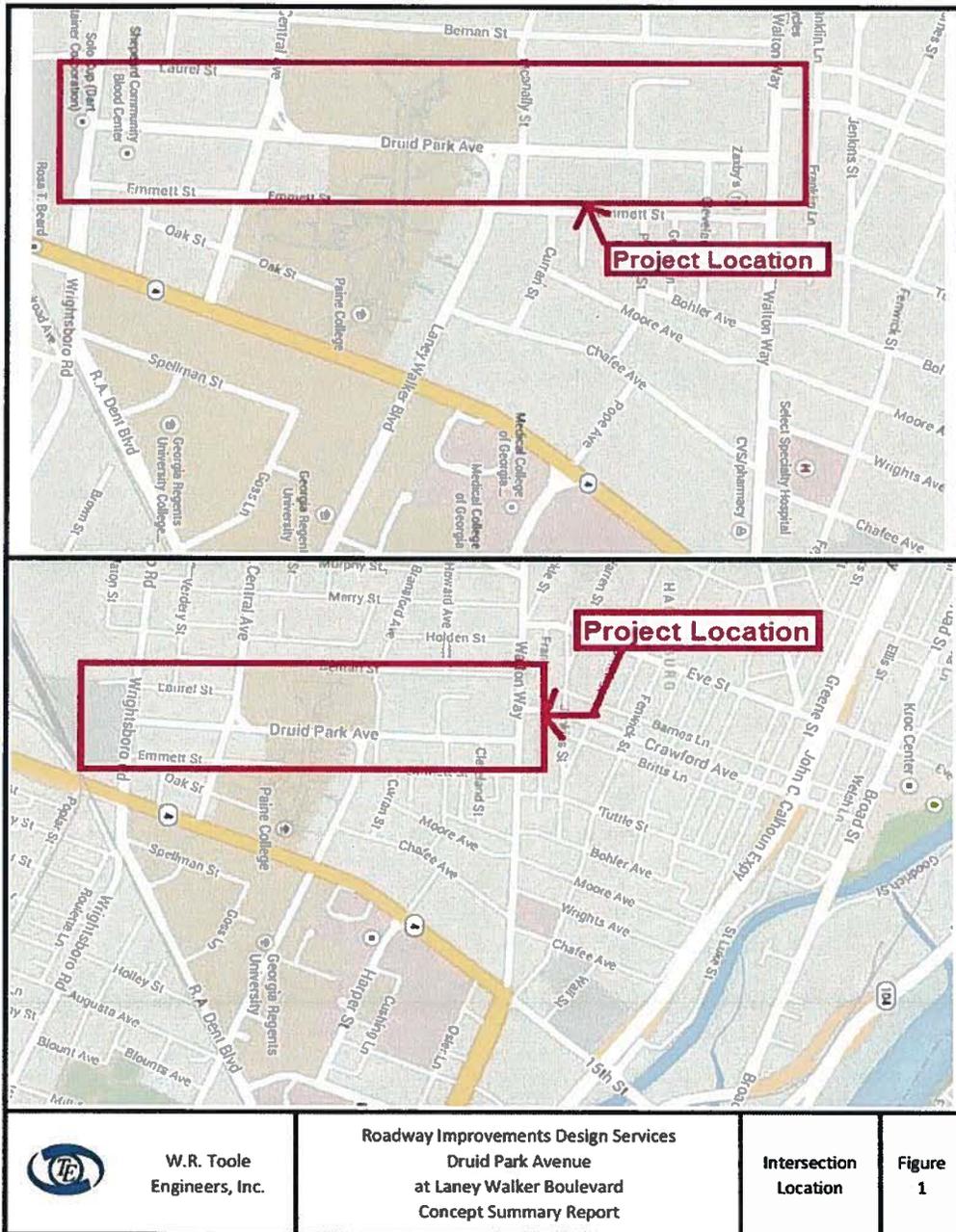
Submitted for approval:

[Signature] 8-20-14  
Local Government Representative DATE  
[Signature] Aug. 20, 2014  
District Engineer/Consultant & Firm Kimley-Horn and Associates, Inc. DATE  
[Signature] 9-2-14  
TIA Project Manager DATE  
[Signature] 9/5/14  
GDOT TIA Regional Coordinator DATE  
P.P. [Signature] 9/5/14  
TIA Program Manager Tony Sanger DATE  
[Signature] 9/5/2014  
GDOT State TIA Administrator DATE

Approval:

Concur: [Signature] 9/10/14  
GDOT Director of Engineering DATE  
Approve: [Signature] 9/12/14  
GDOT Chief Engineer DATE

### PROJECT LOCATION





County: Richmond

## PLANNING & BACKGROUND DATA

**Project Intended Benefit:** To improve roadway operation, safety, surface drainage, and produce enhanced multi-modal facilities through the use of context sensitive design including a new roundabout, landscaped medians, bicycle lanes and shared-use signage, lighting, and a raised pedestrian crossing plaza.

### Description of the proposed project:

- **Problem Definition**

- The following issues have been identified for the existing corridor:
  1. The Druid Park Ave/Laney Walker Blvd intersection is projected to operate at or over a Level of Service (LOS) C in the PM and LOS B in the AM by the 2037 Design Year under current, signal-controlled conditions.
  2. Pedestrian facilities at the intersection of Druid Park and Laney Walker Blvd need to be upgraded to meet current standards. This intersection provides critical pedestrian access for Paine College, Georgia Regents University, and the Medical District of Augusta.
  3. The surface drainage conveyance system throughout the corridor requires improvements to reduce gutter spread and improve roadway safety.

- **Existing Conditions**

- The existing three-way, signal-controlled intersection of Druid Park Avenue and Laney Walker Boulevard in Augusta, Richmond County, Georgia is located to the southwest of the John C. Calhoun Expressway (SR28) and 15<sup>th</sup> Street (SR4) Interchange. The northbound approach of Druid Park Avenue consists of a through lane and a second through lane that converts to a dedicated right turn lane. The southbound approach of Druid Park Avenue consists of two through lanes. The westbound approach of Laney Walker Boulevard consists of two dedicated left turn lanes and a dedicated right turn lane. All approaches have curb and gutter shoulders with sidewalk existing along both sides of the north and southbound approaches on Druid Park Avenue. The Druid Park Avenue corridor is characterized by residential and commercial properties to the south of Central Avenue and to the north of Laney Walker Boulevard with on-street parking allowed. Paine College is the primary stakeholder between Central Avenue and Laney Walker Boulevard with property along both sides of Druid Park Avenue. The posted speed for both roads is 35 MPH. There have not been any potential buffered state waters or wetlands identified within the proposed project area.

- **Need and Purpose**

- The purposes of the proposed project are to:
  1. Improve traffic operations at the intersection of Druid Park Avenue and Laney Walker Boulevard by installing a single-lane roundabout.
  2. Improve pedestrian operations by adding ADA-compliant ramps and crosswalks on all three legs of the intersection as well as tying to existing sidewalks along both roads.
  3. Improve pedestrian and bicycle safety along the Druid Park corridor by adding lighting, bicycle lanes, replacing sidewalk, and modifying a pedestrian mid-block crossing. A proposed raise median will provide a measure of traffic calming.
  4. Improve Druid Park Avenue corridor surface drainage through resurfacing and reconstruction of the existing curb and gutter and drainage structures.

- **Supporting Studies**

1. Aside from the traffic engineering study completed in June 2013, there is no evidence of any additional formal engineering study of this intersection.
2. Pedestrian issues are identified in Paine College Master Plan.

**Federal Oversight:**  Exempt  State Funded  TIA  Other

**MPO:** Augusta-Richmond County

**MPO Project ID:** N/A

**Regional Commission:** Central Savannah River RC

**RC Project ID:** N/A

**Congressional District(s):** 12



County: Richmond

**DESIGN AND STRUCTURAL DATA**

**Mainline Design Features:**

Feature	Existing ✓	Standard*	Proposed ✓
<b>Typical Section</b>			
- Number of Lanes	2	N/A	1
- Lane Width(s)	12' (+/-)	11' (min)	11'-15'
- Median Width & Type	N/A	20' Raised	10' Raised
- Outside Shoulder Width	8'-10'	12'	12'
- Sidewalks	5' (where present)	5' (min)	6'
- Auxiliary Lanes	12' (various locations)	11' (min)	Remove Existing
- Bike Lanes	N/A	4'	4'-5'
Posted Speed	Druid Park: 35 mph Laney Walker: 35 mph		Druid Park: 35 mph Laney Walker: 35 mph
Design Speed	Druid Park: 35 mph Laney Walker: 35 mph	N/A	Druid Park: 35 mph Laney Walker: 35 mph
Min Horizontal Curve Radius	N/A	N/A	Druid Park: 371' Laney Walker: 371'
Superelevation Rate	N/A	4%	4%
Grade	Unknown	10%	10%
Access Control	By Permit	By Permit	By Permit
Right-of-Way Width	Druid Park (North): 80' Druid Park (South): 70' Laney Walker: 70'	N/A	Druid Park (North): 80' Druid Park (South): 70' Laney Walker: 70'
Design Vehicle	Unknown	BUS-40 (No Tracking) WB-40	BUS-40 (No Tracking) WB-40
Pavement Type	Asphalt	Asphalt	Asphalt
Maximum Driveway Grade	Unknown	11% Commercial 20% Residential	11% Commercial 20% Residential
Gutter Spread	Unknown	½ Lane + Gutter (8' max)	½ Lane + Gutter (8' max)
Clear Zone (Min.)	Unknown	Druid Park: 12'-14' Laney Walker: 12'-14'	Druid Park: 12'-14' Laney Walker: 12'-14'
Additional Items as needed			

\*According to current GDOT design policy if applicable

County: Richmond

**ROUNABOUT FEATURES**

Approach Lane Widths: 12'-16'  
 Approach Design Speed: 25 MPH  
 Number of Entry Lanes per approach: 1  
 Inscribed Circle Diameter: 116'  
 Circulatory Roadway Width: 18'

Major Structures: N/A

Major Interchanges/Intersections: None

Utility Involvements:

Utility Type	Owner
Electrical	Georgia Power – Distribution
Electrical	Georgia Power - Transmission
Telephone/Telecom	Level 3
Telephone/Telecom	AT&T
Water & Sewer	City of Augusta – Augusta Utilities Department
Gas	Atlanta Gas Light Company
Cable TV	Comcast

Public Interest Determination Policy and Procedure recommended (Utilities)?  No  Yes

SUE Required:  No  Yes

Railroad Involvement: None

Complete Streets - Bicycle, Pedestrian, and/or Transit Warrants:

Warrants met:  None  Bicycle  Pedestrian  Transit

Right-of-Way:

Required Right-of-Way anticipated:  No  Yes  Undetermined  
 Easements anticipated:  None  Temporary  Permanent  Utility  Other

Anticipated number of impacted parcels: 5  
 Displacements Anticipated: 0  
 Businesses: 2  
 Residences: 1  
 Institutions: 2

County: Richmond

Transportation Management Plan [TMP] Required:  No  Yes  
 If Yes: Project classified as:  Non-Significant  Significant  
 TMP Components Anticipated:  TTC  TO  PI

Design Exceptions to FHWA/AASHTO controlling criteria anticipated: None Anticipated

Design Variances to GDOT Standard Criteria anticipated: None Anticipated

### ENVIRONMENTAL DATA

#### Anticipated Environmental Document:

GEPA:  Type A Letter  Type B Letter  
 NEPA:  CE  EA/FONSI

#### Project Air Quality: N/A

Is the project located in a PM 2.5 Non-attainment area?  No  Yes  
 Is the project located in an Ozone Non-attainment area?  No  Yes  
 Is a Carbon Monoxide hotspot analysis required?  No  Yes

MS4 Compliance – Is the project located in an MS4 area?  No  Yes

#### Environmental Permits/Variations/Commitments/Coordination anticipated (Include description of potential for 404 Permit, Stream Buffer Variance, and Section 4(f):

- NPDES (Project will disturb more than 1 acre)

### PROJECT RESPONSIBILITIES

**Project Activities:**

<b>Project Activity</b>	<b>Party Responsible for Performing Task(s)</b>
Concept Development	<i>Kimley-Horn &amp; Associates, Inc.</i> <i>W.R. Toole Engineers, Inc.</i>
Design	Kimley-Horn & Associates, Inc.
Right-of-Way Acquisition	Augusta-Richmond County
Utility Relocation	Augusta-Richmond County
Letting to Contract	Augusta-Richmond County
Construction Supervision	Augusta-Richmond County
Providing Material Pits	Augusta-Richmond County
Providing Detours	Augusta-Richmond County
Environmental Studies, Documents, and Permits	Kimley-Horn & Associates, Inc.
Environmental Mitigation	Augusta-Richmond County
Construction Inspection & Materials Testing	Augusta-Richmond County

**Lighting required:**       No       Yes

**Other projects in the area:** 15<sup>th</sup> Street Bicycle and Pedestrian Improvements (PI: 0011408), Walton Way Signal Modernization Project (PI: 0011407), and Laney Walker Boulevard Bicycle and Pedestrian Improvements (East of 15<sup>th</sup> Street) (PI: 0010230)

**Other coordination to date:**

- **Initial Concept Meeting:**                      N/A
- **Concept Meeting:**                              N/A
- **Public Involvement:**
  - Public Information Open House held on October 24, 2013 with approximately 60 attendees.
  - Stakeholder meeting with Paine College anticipated for June 2014.
  - Public Information session to be held prior to construction.

County: Richmond

**Project Cost Estimate and Funding Responsibilities:**

	Breakdown of PE	Breakdown of ROW	Breakdown of Reimbursable Utilities <sup>2</sup>	Breakdown of CST <sup>1</sup>	Environmental Mitigation	Total Cost
By Whom	TIA	TIA	TIA	TIA	TIA	
Date of Estimate	6/2014	6/2014	6/2014	6/2014	6/2014	
TIA Current Programmed Budget \$	\$26,849	\$1,400,000	\$1,750,000	\$335,607	\$0	\$3,512,456
Estimated \$ Amount	\$299,000	\$74,685	\$1,025,794	\$2,068,179	\$0	
Budget Contingency \$	\$0	\$0	\$0	\$301,191	\$0	
Total Estimated Cost	\$299,000	\$74,685	\$1,025,794	\$2,369,370	\$0	\$3,768,849

- Note: 1. Construction phase contains 3% CE&I in addition to other contingencies.  
 2. Includes 3 Transmission Pole Relocations at \$275,000 per pole

**ALTERNATIVES**

<b>Preferred Alternative:</b>			
<b>Estimated Property Impacts:</b>	<b>5</b>	<b>Estimated Total Cost:</b>	<b>\$3,768,849</b>
<b>Estimated ROW Cost:</b>	<b>\$74,685</b>	<b>Estimated CST Time:</b>	
<b>Rationale:</b>			

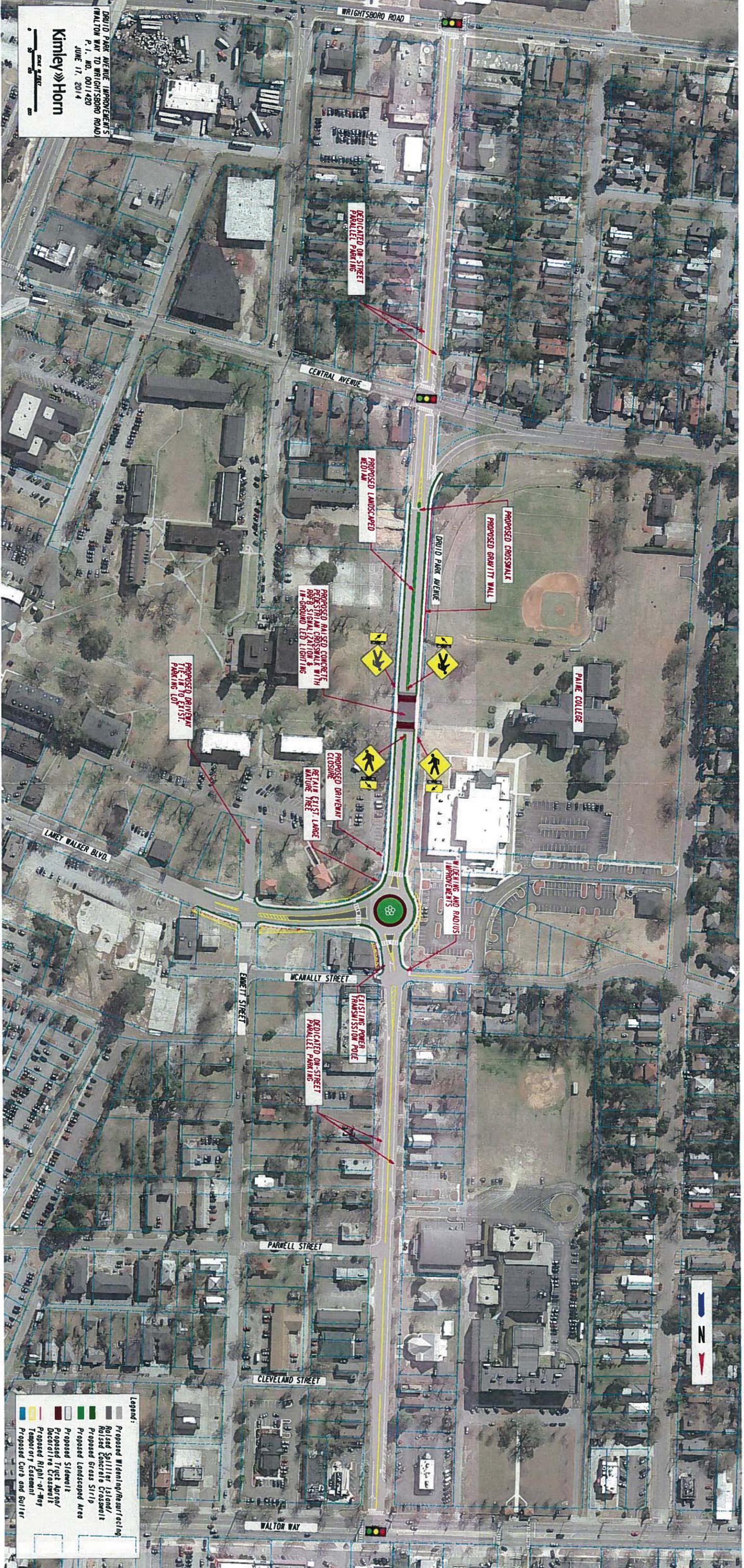
<b>Alternative 1: No-Build Alternative</b>			
<b>Estimated Property Impacts:</b>	<b>0</b>	<b>Estimated Total Cost:</b>	<b>\$0</b>
<b>Estimated ROW Cost:</b>	<b>\$0</b>	<b>Estimated CST Time:</b>	<b>0</b>
<b>Rationale</b>			

**Comments/additional information:**

**Attachments:**

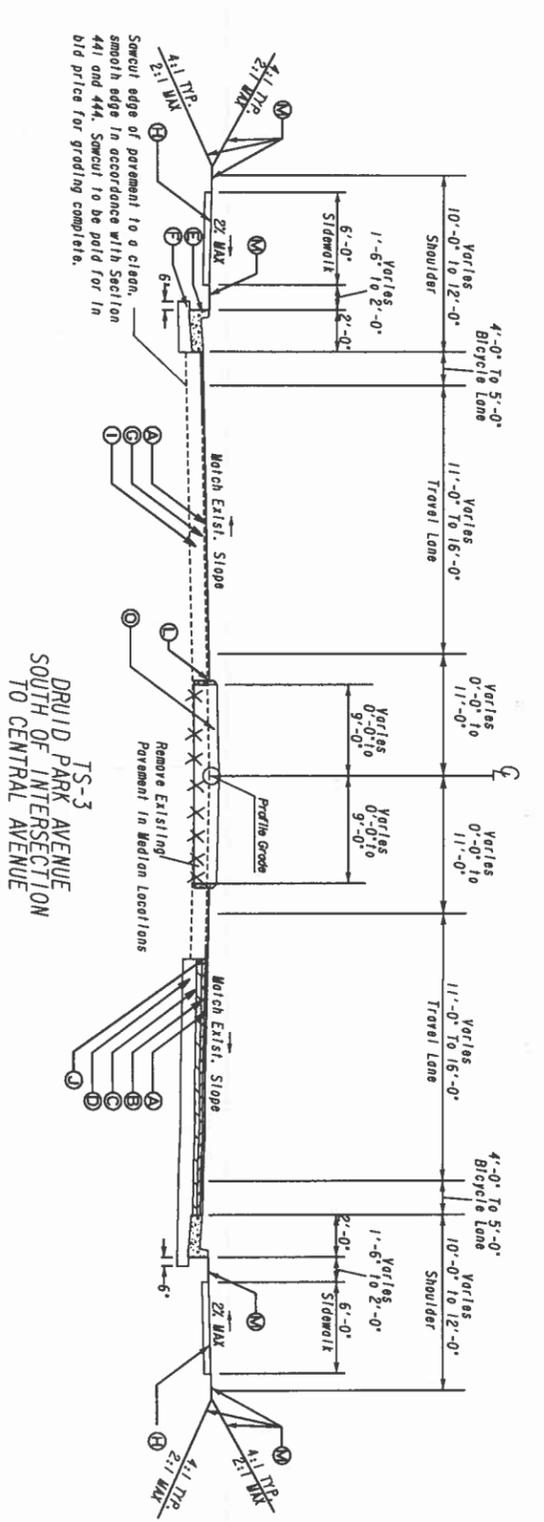
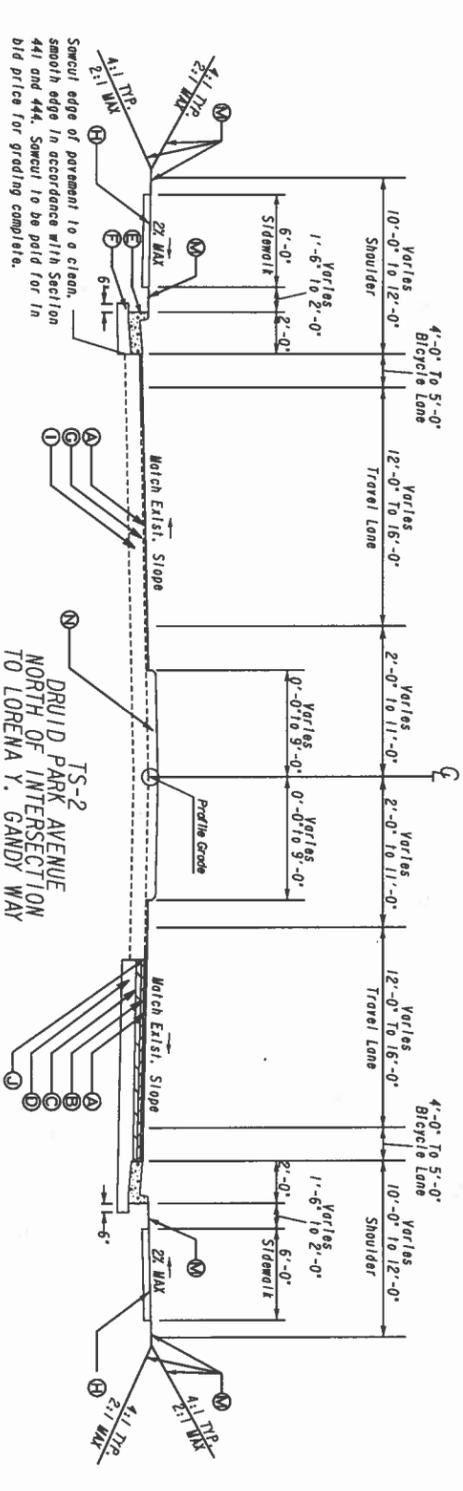
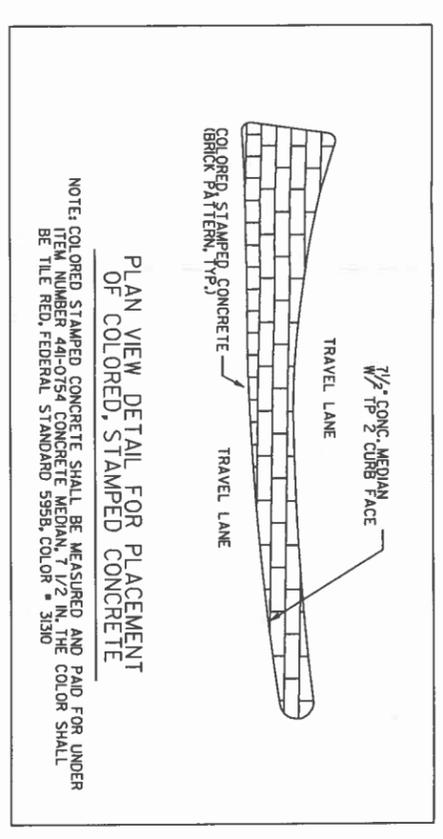
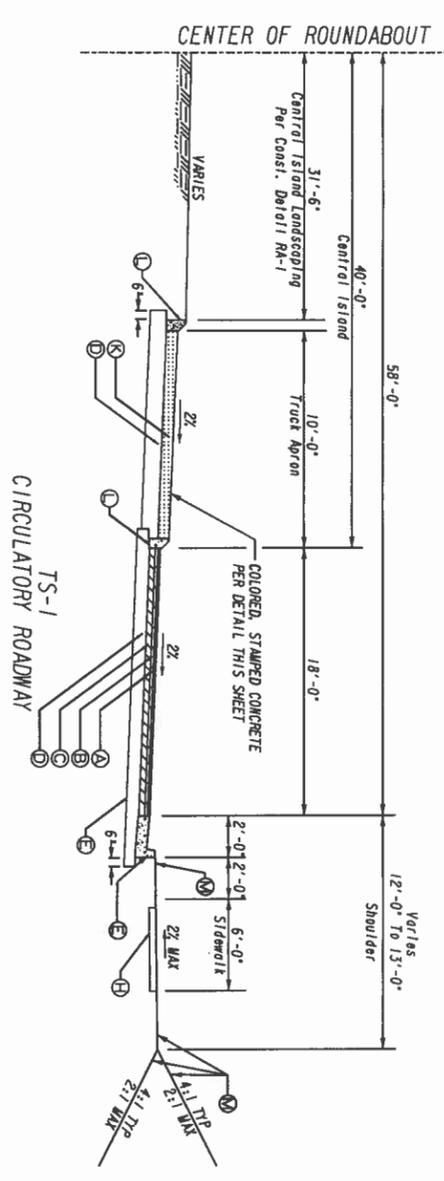
1. Original Concept Layout
2. Roundabout Typical Section
  - a. 05-001
  - b. 05-002
3. GDOT Construction Details
  - a. RA-1
  - b. RA-2
4. Construction Cost Estimate
5. Traffic Report with Crash Summaries (provided by Augusta)
6. Proposed Pavement Design

DRUID PARK AVENUE IMPROVEMENTS  
 (WALTON WAY TO WRIGHTSBORO ROAD)  
 P.L. NO. 0011430  
 JUNE 17, 2014  
**Kimley»Horn**  
 SCALE 1" = 20'  
 0 20 40



- Legend:**
- Proposed Widening/Resurfacing
  - Proposed Spillway Island/Decorative Crosswalk
  - Proposed Concrete Crosswalk
  - Proposed Grass Strip
  - Proposed Landscaped Area
  - Proposed Sidewalk
  - Proposed Street Apron/Decorative Crosswalk
  - Proposed Right-of-Way
  - Proposed Easement
  - Proposed Curb and Gutter





SLOPE CONTROLS		
SLOPE	CUT	FILL
4:1	---	0-10'
2:1	ALL	OVER 10'

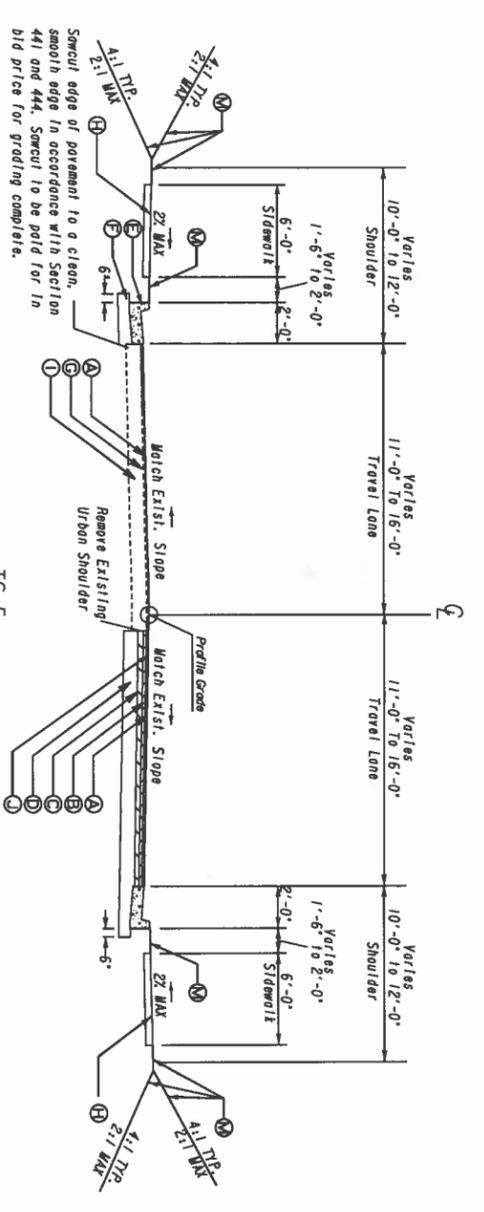
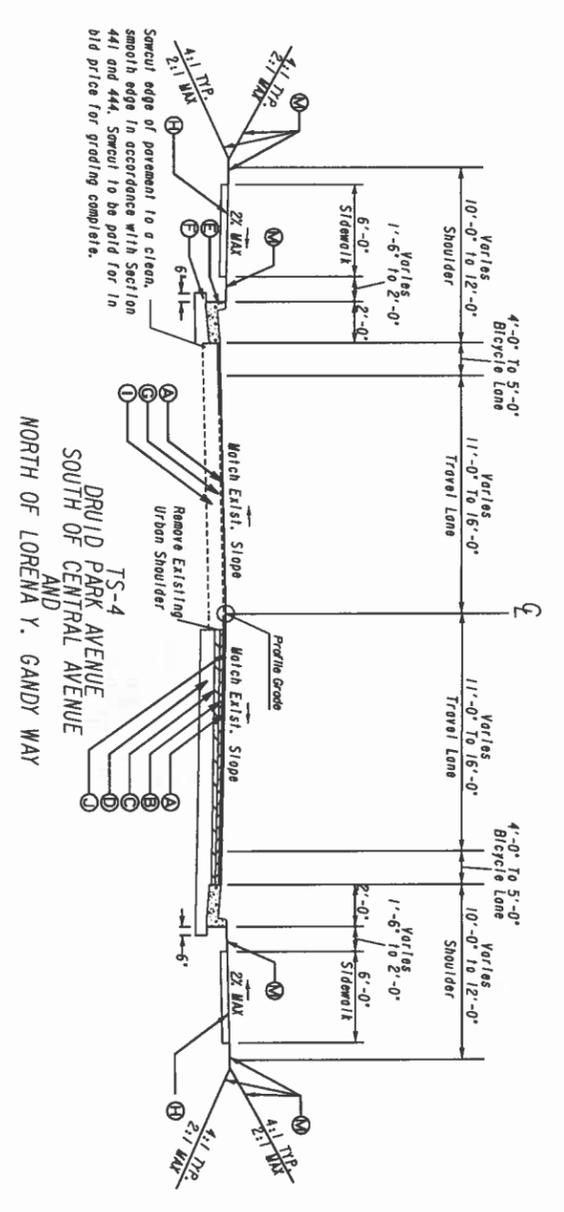
- REQUIRED PAVEMENT**
- 1 RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP 2 ONLY, INCL BITUM WATL & H LINE (165 LB/ST)
  - 2 RECYCLED ASPH CONC 19 MM SUPERPAVE, GP 1 OR 2, INCL BITUM WATL & H LINE (220 LB/ST)
  - 3 RECYCLED ASPH CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM WATL & H LINE (440 LB/ST)
  - 4 GR AGGR BASE CRS, INCL WATL (8")
  - 5 CONC CURB & GUTTER, 6 IN X 24 IN, TP 2
  - 6 GR AGGR BASE CRS, INCL WATL (8")
  - 7 RECYCLED ASPH CONC LEVELING, INCL BITUM WATL & H LINE
  - 8 CONC SIDEWALK (4" THICKNESS TYP.; 8" THICKNESS IN CURB RETURN RADII & RAMPS)
  - 9 EXISTING PAVEMENT-RETAIN
  - 10 PAINT REIN FABRIC STRIPS, TP 2, 18 INCH WIDTH
  - 11 PLAIN PC CONC PWT, CL 1 CONC, 10 INCH TX (W/ RED STAMPING)
  - 12 CONCRETE HEADER CURB, 6 IN, TP 7
  - 13 SOD
  - 14 CONCRETE MEDIAN, 7 1/2 IN
  - 15 GRASSED MEDIAN, 7 1/2 IN
  - 16 CONCRETE HEADER CURB, 6 IN, WITH 1' OFFSET

REVISION DATES	

**Kimley»Horn**

NOT TO SCALE

CITY OF AUGUSTA  
 ENGINEERING DEPARTMENT  
 DRUID PARK AVENUE-  
 LANEY WALKER BOULEVARD  
 DRAWING NO. 05-001



SLOPE CONTROLS		
SLOPE	CUT	FILL
4:1	—	0-10'
2:1	ALL	OVER 10'

- REQUIRED PAVEMENT**
- 1 RECYCLED ASPH CONC (2.5 MM SUPERPAVE, GP 2 ONLY, INCL BITUM MANTL & H LINE (165 LB/ST))
  - 2 RECYCLED ASPH CONC (19 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MANTL & H LINE (220 LB/ST))
  - 3 RECYCLED ASPH CONC (25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MANTL & H LINE (440 LB/ST))
  - 4 GR AGGR BASE CRS, INCL MANTL (8")
  - 5 GR AGGR BASE CRS, INCL MANTL (8")
  - 6 CONC CURB & GUTTER, 6 IN X 24 IN, TP 2
  - 7 GR AGGR BASE CRS, INCL MANTL (8")
  - 8 RECYCLED ASPH CONC LEVELLING, INCL BITUM MANTL & H LINE
  - 9 CONC SIDEWALK (4" THICKNESS, TP 1, 8" THICKNESS IN CURB RETURN RADIUS & RAMP(S))
  - 10 EXISTING PAVEMENT-RETAIN
  - 11 PAVT REINF FABRIC STRIPS, TP 2, 18 INCH WIDTH
  - 12 PLAIN PC CONC PAVT, CL 1 CONC, 10 INCH TK (NW/RED STAMPING)
  - 13 CONCRETE HEADER CURB, 6 IN, TP 7
  - 14 SOD
  - 15 GRASSSED MEDIUM, 1/2 IN

**REVISION DATES**

NO.	DATE	DESCRIPTION

CITY OF AUGUSTA  
ENGINEERING DEPARTMENT

**TYPICAL SECTIONS**

DRUID PARK AVENUE-  
LANEY WALKER BOULEVARD

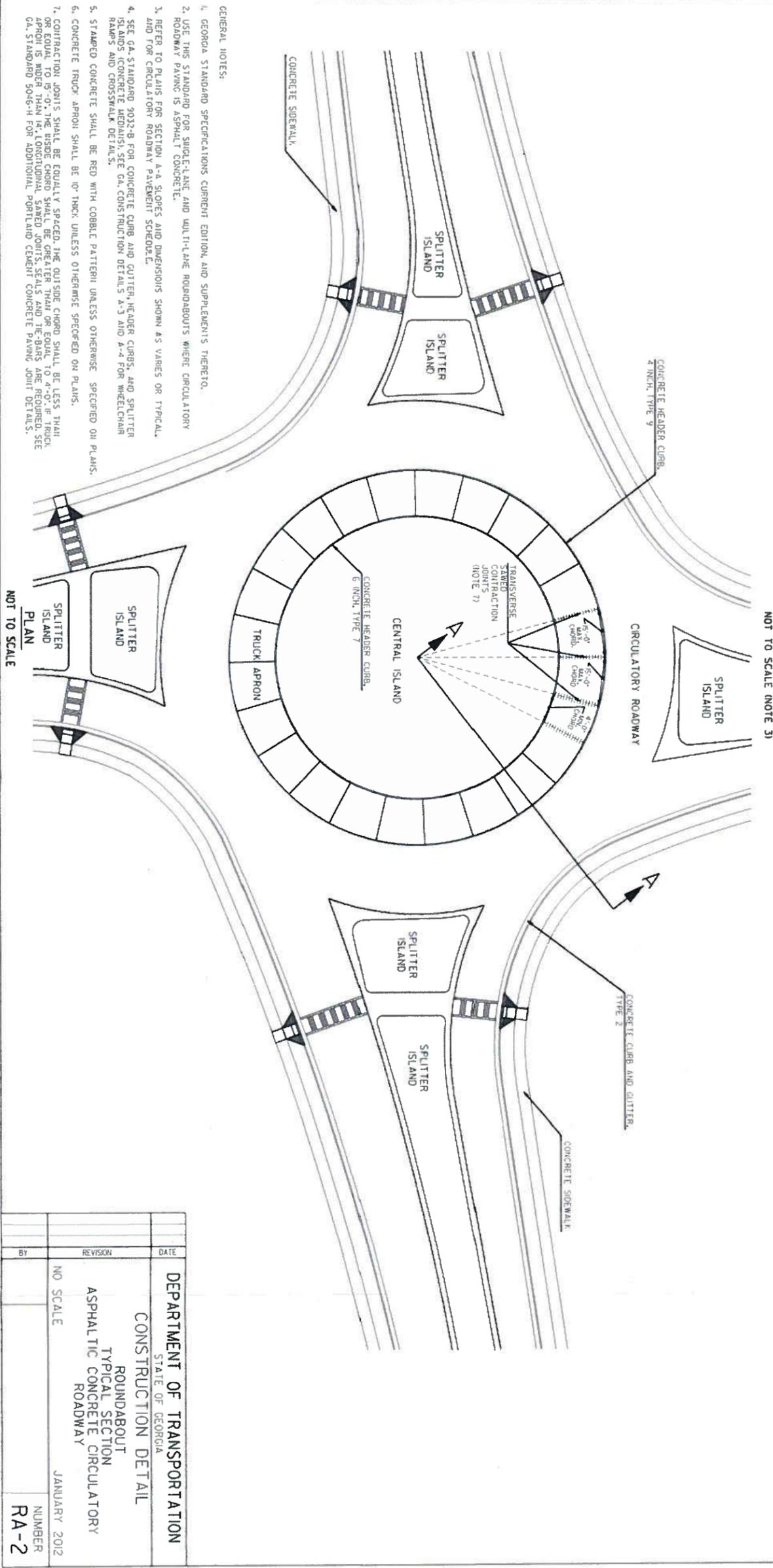
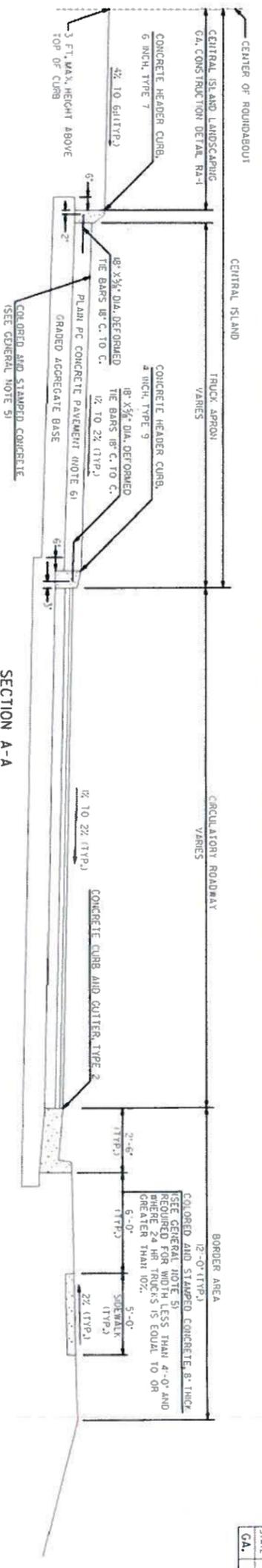
DRAWING NO.  
**05-002**

**Kimley»Horn**

NOT TO SCALE

DATE: 11/23/2011 8:28:28 AM PROJECT NUMBER: 40596 STATE: GA SHEET NO.: TOTAL SHEETS: 10

STATE	PROJECT NUMBER	SHEET TOTAL
GA.		NO. SHEETS



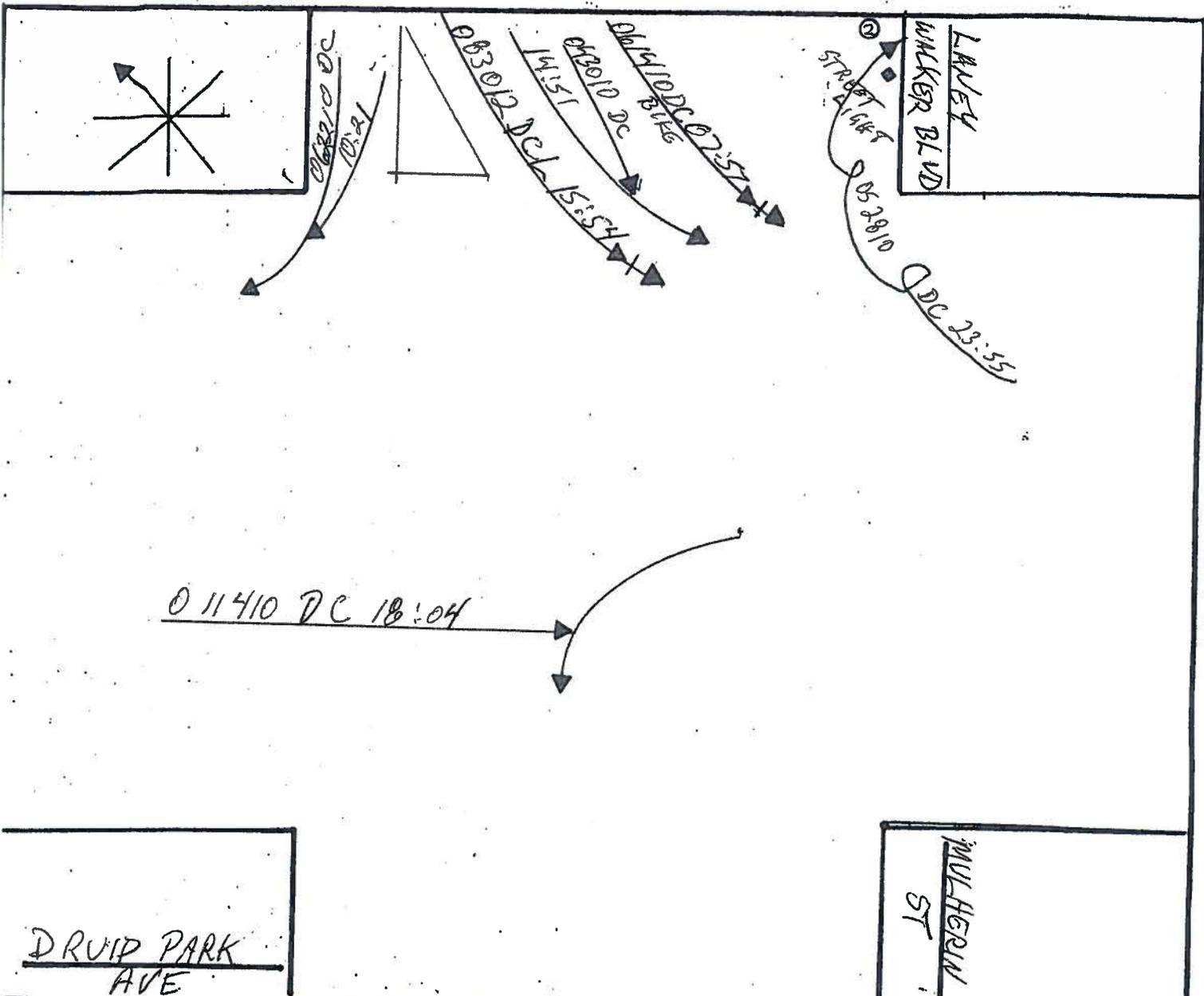
DATE	REVISION	BY
<b>DEPARTMENT OF TRANSPORTATION</b> STATE OF GEORGIA <b>CONSTRUCTION DETAIL</b> ROUNDABOUT TYPICAL SECTION ASPHALTIC CONCRETE CIRCULATORY ROADWAY JANUARY 2012 NUMBER <b>RA-2</b>		
NO SCALE		

**DRUID PARK AVENUE AND LANEY WALKER BOULEVARD**

Date of Estimate: June 18, 2014

<u>ITEM NO.</u>	<u>UNIT</u>	<u>DESCRIPTION</u>	<u>QUANTITY</u>	<u>UNIT PRICE</u>	<u>EXTENDED AMOUNT</u>
009-3500	LS	MISCELLANEOUS LANDSCAPE ITEMS (SOD, LANDSCAPING, IRRIGATION)	1	\$35,000.00	\$35,000
150-1000	LS	TRAFFIC CONTROL	1	\$75,000.00	\$75,000
210-0100	LS	GRADING COMPLETE	1	\$300,000.00	\$300,000
310-5080	SY	GR AGGR BASE CRS, 8 INCH, INCL MATL	8211	\$20.00	\$164,220
310-5100	SY	GR AGGR BS CRS 10 IN INCL MATL	201	\$20.00	\$4,020
402-3113	TN	RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME (OVERLAY)	852	\$85.00	\$72,420
402-3113	TN	RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	277	\$85.00	\$23,545
402-3121	TN	RECYCLED ASPH CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	369	\$85.00	\$31,365
402-3190	TN	RECYCLED ASPH CONC 19 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	738	\$85.00	\$62,730
413-1000	GL	BITUM TACK COAT	754	\$3.00	\$2,262
430-0200	SY	PLAIN PC CONC PVMT, CL 1 CONC, 10 INCH THK	201	\$60.00	\$12,060
432-5010	SY	MILL ASPHALT PAVEMENT VARIABLE DEPTH	10446	\$5.00	\$52,230
441-0104	SY	CONC SIDEWALK, 4 IN	2073	\$25.00	\$51,825
441-0754	SY	CONCRETE MEDIAN, 7 1/2 IN	369	\$60.00	\$22,140
441-5008	LF	CONCRETE HEADER CURB, 6 IN, TP 7	201	\$16.00	\$3,216
441-5025	LF	CONCRETE HEADER CURB, 4 IN, TP 9	251	\$11.00	\$2,761
441-6012	LF	CONC CURB & GUTTER/ 6"X24"TP2	3170	\$15.00	\$47,550
441-6720	LF	CONC CURB & GUTTER/ 6"X30"TP7	1330	\$15.00	\$19,950
500-3107	CY	CLASS A CONCRETE, RETAINING WALL	156	\$475.00	\$74,100
500-9999	CY	CLASS B CONCRETE, BASE OR PVMT WIDENING	250	\$200.00	\$50,000
550-1180	LF	STM DR PIPE 18",H 1-10	943	\$40.00	\$37,720
550-1240	LF	STM DR PIPE 24",H 1-10	572	\$45.00	\$25,740
550-1300	LF	STM DR PIPE 30",H 1-10	172	\$56.00	\$9,632
550-1360	LF	STM DR PIPE 36",H 1-10	343	\$85.00	\$29,155
632-003	EA	CHANGEABLE MESSAGE SIGN, PORT, TP 3	4	\$6,000.00	\$24,000
634-1200	EA	RIGHT OF WAY MARKERS	20	\$105.00	\$2,100
668-1100	EA	CATCH BASIN, GP 1	21	\$2,200.00	\$46,200
682-9031	EA	LIGHTING SYSTEM	30	\$10,000.00	\$300,000
700-0200	LS	GRASSING COMPLETE	1	\$10,000.00	\$10,000
XXX-XXXX	LS	EROSION CONTROL	1	\$30,000.00	\$30,000
653	LS	STRIPING, PAVEMENT MARKING	1	\$20,000.00	\$20,000
636	LS	SIGNS	1	\$15,000.00	\$15,000
999-9999	LS	ROUNDOABOUT FOUNTAIN	1	\$150,000.00	\$150,000
	EA	TRAFFIC SIGNAL MODIFICATIONS (CENTRAL AVE. AND WRIGHTSBORO RD.)	2	\$50,000.00	\$100,000
	LS	PEDESTRIAN PLAZA COMPLETE (INCLUDING BOLLARDS)	1	\$42,000.00	\$42,000
	EA	RECTANGULAR RAPID FLASH BEACON PEDESTRIAN SIGNAL	1	\$60,000.00	\$60,000
		<b>SUBTOTAL</b>			<b>\$2,007,941</b>
		CONTINGENCY		15%	\$301,191
		REIMBURSIBLE UTILITIES		10%	\$200,794
		CONSTRUCTION, ENGINEERING, & INSPECTION		3%	\$60,238
		TRANSMISSION POLE RELOCATION (3 LOCATIONS)			\$825,000
		RIGHT OF WAY ACQUISITION			\$74,685
		PROFESSIONAL SERVICES			\$299,000
		<b>TOTAL</b>			<b>\$3,768,849</b>

# COLLISION DIAGRAM



SYMBOLS		TYPES OF COLLISIONS	
<ul style="list-style-type: none"> <li>— MOVING VEHICLE</li> <li>→→→ BACKING VEHICLE</li> <li>- - - PEDESTRIAN</li> <li>▭ PARKED VEHICLE</li> <li>□ FIXED OBJECT</li> <li>● FATAL ACCIDENT</li> <li>○ INJURY ACCIDENT</li> </ul>	<ul style="list-style-type: none"> <li>←+→ REAR END</li> <li>→+← HEAD ON</li> <li>←→ SIDE SWIPE</li> <li>→∞← OUT OF CONTROL</li> <li>→↘ LEFT TURN</li> </ul>	<ul style="list-style-type: none"> <li>└─┘ RIGHT ANGLE</li> </ul>	
		<p>SHOW FOR EACH ACCIDENT</p> <ol style="list-style-type: none"> <li>1. Date And Time</li> <li>2. Weather And Road Surface.</li> </ol>	

INTERSECTION LANEY WALKER BLVD and DRUID PARK AVE / MULHERIN ST  
 PERIOD 36 MONTHS FROM 01-01-2010 to 12-31-2012  
 BY D-ELLIS date: 1-29-2013

## ACCIDENT SUMMARY

MONTH	NO.ACCS.	WEATHER	NO.ACCS.
DEC-FEB	1	CLEAR	5
MAR-MAY	2	RAIN	0
JUNE-AUG	3	CLOUDY	1
SEPT-NOV	0	FOG	0
		SNOW	0
<b>TOTAL =</b>	<b>6</b>	<b>TOTAL =</b>	<b>6</b>
TIME	NO ACCS.	ACCIDENT SEVERITY	NO ACCS.
6 A.M.-10 A.M.	1	PROP-DAMAGE ONLY	5
10 A.M.- 4 P.M.	3	NON-FATAL INJURIES	1
4 P.M. - 7 P.M.	1	FATALITY	0
7 P.M. - 12 MID	1		
12 MID - 6 A.M.	0		
<b>TOTAL =</b>	<b>6</b>	<b>TOTAL =</b>	<b>6</b>
DIRECTION OF APPROACH	NO.VECHS	TYPE ACC.	NO.ACCS.
NORTHBOUND	0	SIDESWIPE	2
SOUTHBOUND	6	REAR END	2
EASTBOUND	2	RIGHT ANGLE	0
WESTBOUND	3	LEFT TURN	1
		OTHER	1
<b>TOTAL =</b>	<b>11</b>	<b>TOTAL =</b>	<b>6</b>
INTERSECTION <i>LANEY WALKER BLVD</i>		AND <i>DRUID PARK AVE / MULHOLLER ST</i>	
PERIOD <i>36 MONTHS</i>			
FROM <i>01-01-2010</i>		TO <i>12-31-2012</i>	
DATE <i>1-29-2013</i>		SIGNAL <i>YES</i>	
BY <i>D. Ellis</i>			

## Flexible Pavement Design Analysis

<b>PI Number</b>	0011420	<b>County(s)</b>	Richmond
<b>Project Number</b>		<b>Design Name</b>	W.R. Toole Engineers, Inc.
<b>Project Description</b>	Druid Park Avenue and Laney Walker Boulevard		

Traffic Data (AADTs are one-way)					Miscellaneous Data		
<b>Initial Design Year</b>	2017	<b>Initial AADT, VPD</b>	9,700	<b>24 Hour Truck %</b>	3.00	<b>Lanes in one direction</b>	1
<b>Final Design Year</b>	2037	<b>Final AADT, VPD</b>	10,700	<b>SU Truck %</b>	3.00	<b>Curb &amp; Gutter/Barrier</b>	Yes
		<b>Mean AADT, VPD</b>	10,200	<b>MU Truck %</b>	0.00		

Design Data					
<b>Lane Distribution Factor (%)</b>	100.00	<b>Soil Support Value</b>	3.50	<b>Single Unit ESAL</b>	0.40
<b>Terminal Serviceability Index</b>	2.50	<b>Regional Factor</b>	1.50	<b>Multiple Unit ESAL</b>	1.50
		<b>User Defined 18-KIP ESAL</b>	0.00	<b>Calculated 18-KIP ESAL</b>	0.40
<b>Non-Standard Value Comment</b>					

Design Loading (Calculated 18-KIP ESAL)					
Mean AADT, VPD	LDF (%)	Vehicle Type	Volume (%)	ESAL Factor	Daily ESAL
10,200	100.00	Single Unit Truck	3.00	0.40	123
		Multi Unit Truck	0.00	1.50	0
<b>Total Daily ESALs</b>					123
<b>Total Design Period ESALs</b>					897,900

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
		3.00	0.3000	0.90
Course 4	Graded Aggregate Base	8.00	0.1600	1.28
<b>Required SN</b>	3.87	<b>Proposed pavement is 7.41% Overdesigned</b>		<b>Proposed SN</b>
				4.16

<b>Design Remarks</b>	
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Prepared By \_\_\_\_\_ Date 6/30/2014 3:39 PM

W.R. Toole Engineers, Inc. Date

Recommended By \_\_\_\_\_ Date

Consultant Design Phase Leader Date

Approved By \_\_\_\_\_ Date

State Pavement Engineer Date