

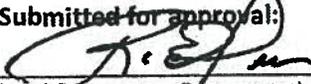
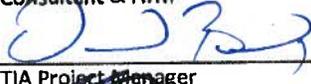
**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
TIA PROJECT CONCEPT REPORT
Minor Project (Local Roads Only)**



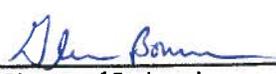
Project Type:	<u>Realignment</u>	P.I. Number:	<u>0011436</u>
GDOT District:	<u>3</u>	County:	<u>Muscogee</u>
Federal Route Number:	<u>N/A</u>	MPO ID Number:	<u>RC08-000057</u>
State Route Number:	<u>N/A</u>		

Buena Vista Corridor is to be modified to improve operations and safety from SR 22 Spur/Wynnton Road to the intersections of Martin Luther King Jr. Blvd and the existing at grade railroad crossing

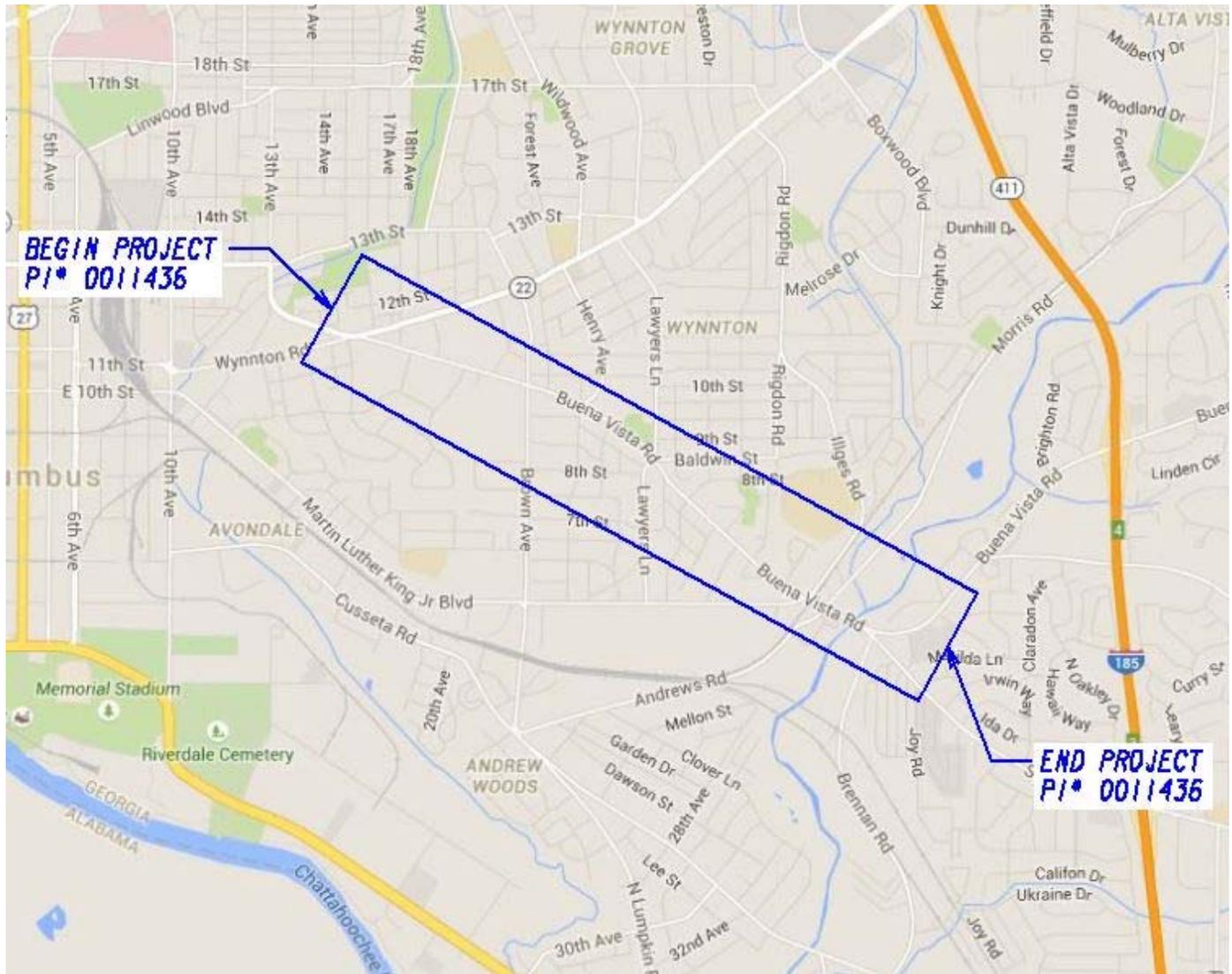
Submitted for approval:

 Local Government Representative	<u>9/28/15</u> DATE
 <u>Wolverton & Associates, Inc</u> Consultant & Firm	<u>9/28/15</u> DATE
 TIA Project Manager	<u>9/28/15</u> DATE
 GDOT TIA Regional Coordinator	<u>10/1/15</u> DATE
 TIA Program Manager	<u>9/29/15</u> DATE
 GDOT State TIA Administrator	<u>10/01/2015</u> DATE

Approval:

Concur:  GDOT Director of Engineering	<u>11/4/2015</u> DATE
Approve:  GDOT Chief Engineer	<u>11.4.15</u> DATE

PROJECT LOCATION



PLANNING & BACKGROUND DATA

Project Intended Benefit:

This project could potentially maximize the full utility of an existing transportation facility. In some cases, bypasses will be necessary. Example benefits could be: mitigating congestion (e.g. operational improvements) and optimizing capital asset management (e.g. resurfacing, rehabilitation). The impacts would apply to this roadway segment, corridor and/or intersection

This project would benefit the traveling public by alleviating the congestion at the critical convergence of several arterial roadways in Southeast Columbus by removing the existing at-grade railroad crossing. Currently the Buena Vista Road corridor has approximately 27,130 cars per day that are regularly delayed

County: Muscogee County

by slow moving trains blocking the roadway for extended periods. The benefit of a new flyover bridge would decrease average travel times and improve emergency services response time by eliminating the delays created by the regular train blockages. Operational improvements along Buena Vista Road will further alleviate congestion for the corridor as a whole and bicycle/pedestrian facilities throughout increase safety for those modes of transportation. The bicycle/pedestrian facilities will also connect to the City's future trail plan.

Description of the proposed project:

The project proposes to improve the Buena Vista Road corridor. The proposed project would begin at the intersection of SR 22 Spur/Wynnton Road and Buena Vista Road and ends at the Bridge over Bull Creek. The total project length is approximately 1.67 miles. The geographic midpoint of the project is located at 32°27' 44.1" N and 84°57' 15.73" W.

From the intersection of SR 22 Spur/Wynnton Road and Buena Vista Road to the intersection of Annette Avenue and Buena Vista Road, Buena Vista Road will be widened to accommodate a two-way left turn lane as well as a multi-use path on the north side.

A bridge will be constructed along Buena Vista Road over Martin Luther King Jr. Blvd./Illges Road and the existing Norfolk Southern railroad track and will tie back in before the bridge over Bull Creek. Morris Road will be raised to meet the new profile of Buena Vista Road.

A new connection will be made from Martin Luther King Jr. Blvd. to Buena Vista Road including left and right turn lanes as well as sidewalks. Roundabouts are proposed at Martin Luther King JR Blvd/Illges Road, Illges Road/Ace Way Drive, Ace Way Drive/Morris Road and Buena Vista Road/Lawyers Lane.

Federal Oversight: Exempt State Funded TIA Other

Regional Commission: River Valley RC RC Project ID RC08-000057

Congressional District(s): 2

Projected Traffic: ADT

Current Year (2015): 30,600 Open Year (2021): 32,450 Design Year (2041): 39,600

Traffic Projections Performed by: Wolverton & Associates, Inc.

Functional Classification (Mainline): Urban Principal Arterial

Is this a 3R (Resurfacing, Restoration, & Rehabilitation) Project? No Yes

County: Muscogee County

DESIGN AND STRUCTURAL DATA**Mainline Design Features:** *Buena Vista Road*

Feature	Existing	Proposed
Typical Section		
- Number of Lanes	Varies 2-8	Varies 3-7
- Lane Width(s)	12'	12'
- Median Width & Type	N/A	N/A
- Outside Shoulder or Border Area Width	Varies	16'
- Outside Shoulder Slope	2%	2%
- Inside Shoulder Width	N/A	N/A
- Sidewalks	5'	10'
- Bike Lanes	None	None
Posted Speed	30 mph	30 mph
Design Speed	30 mph	30 mph
Min Horizontal Curve Radius	250'	250'
Superelevation Rate	4%	4%
Grade	4%	8%
Right-of-Way Width	100'	100'
<i>Additional Items as needed</i>		

Major Structures:

Structure ID	Existing	Proposed
<i>215-0035-0</i>	<i>Buena Vista Road over Bull Creek – 102' Wide x 294' Long</i>	<i>To Remain</i>
<i>TBD</i>	<i>At-grade rail crossing and intersection.</i>	<i>Buena Vista Road over MLK Blvd./Brookhaven Rd. & Norfolk Southern Railway – 81'5" Wide x 224' Long</i>

Utility Involvements:

AT&T – Telephone

Columbus Water Works – Sanitary Sewer

Columbus Water Works – Water

Georgia Power Distribution – Electric

Georgia Power Transmission – Electric

Liberty Utilities – Gas

Mediacom – Cable

Wide Open West – Cable

County: Muscogee County

SUE Required: No Yes

Railroad Involvement:

Norfolk Southern Railroad will be involved in this project. A grade separation will be constructed over the railroad.

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:	61
Displacements Anticipated:	11
Businesses:	11
Residences:	0
Other:	0

Design Exceptions to FHWA/AASHTO controlling criteria anticipated: No Yes

If yes describe the exception needed:

Design Variances to GDOT Standard Criteria anticipated: No Yes

If yes describe the variance needed:

ENVIRONMENTAL DATA

Anticipated Environmental Document: The Project will utilize local funds and be local let. Therefore GEPA/NEPA is not applicable.

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

Project Air Quality: *(On-system projects only)*

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):*

County: Muscogee County

NEPA/GEPA Comments & Information: The Project will utilize local funds and be local let. Therefore GEPA/NEPA is not applicable.

Other projects in the area:

PI 0012577 Buena Vista Interchange – located at I-185

Other coordination to date:

- 10 alternatives were prepared and presented to the City of Columbus in 2012
- A public meeting was held on May 12, 2014 to present 3 alternatives: an underpass following the existing alignment and two overpasses further north of the existing alignment with revised roadway networks. The public discussions indicated that they were favorable of the underpass since it minimized right-of-way requirements and relocations.
- A second public meeting was presented to the public was held on September 14, 2015. It was explained to the public that the underpass was found infeasible due to high groundwater, and an overpass was now being presented. The project has also included a 3-lane widening and bike/ped improvements along Buena Vista Road. Discussions from the public meeting indicated a high level of approval of these modifications. All negative comments were related to impacts to businesses. All right-of-way impacts will be thoroughly reviewed and minimized during design.

Project Cost Estimate and Funding Responsibilities:

	Breakdown of PE	Breakdown of ROW	Breakdown of Reimbursable Utilities	Breakdown of CST	Breakdown of Environmental Mitigation	Total Cost
By Whom	TIA	TIA	TIA	TIA	TIA	
Date of Estimate	8/31/15	8/31/15	8/31/15	8/31/15	8/31/15	
TIA Current Programmed Budget \$	\$2,634,684	\$8,668,918	\$3,699,551	\$24,996,847	\$0	\$40,000,000
Estimated \$ Amount	\$3,000,000	\$7,272,240	\$2,813,000	\$15,508,329	\$0	
Budget Contingency \$	\$600,000	\$1,454,448	\$562,600	\$3,101,666	\$0	
Total Estimated Cost	\$3,600,000	\$8,726,688	\$3,375,600	\$18,609,995	\$0	\$34,312,283

Note: 1. All phases contain 1% Department Management costs and calculated project risk contingency in the Budget Contingency \$ line item.

2. Construction phase contains 3% CEI in addition to other contingencies

Comments/additional information: N/A

Attachments:

1. TIA Project Sheet
2. Concept Layout
3. Typical sections
4. Cost Estimates
5. Spiderweb Traffic Study
6. Buena Vista Corridor and Spider Web Traffic Memo
7. Buena Vista Road Traffic Study
8. Meeting Minutes
9. Signed Agreements
10. Concept Report Review and Responses

Project Sheet

Project Number: RC08-000057 **Project Name:** Intersection Improvements along Buena Vista Road (Columbus Spider Web Network)

GDOT ID: 0011436

Project Description: The project will include road realignments and/or a possible overpass on Buena Vista Road due to a Norfolk Southern Railroad Crossing. The project limits on Buena Vista Road are between Martin Luther King Jr Blvd and St. Marys Rd.

Regional Commission: River Valley

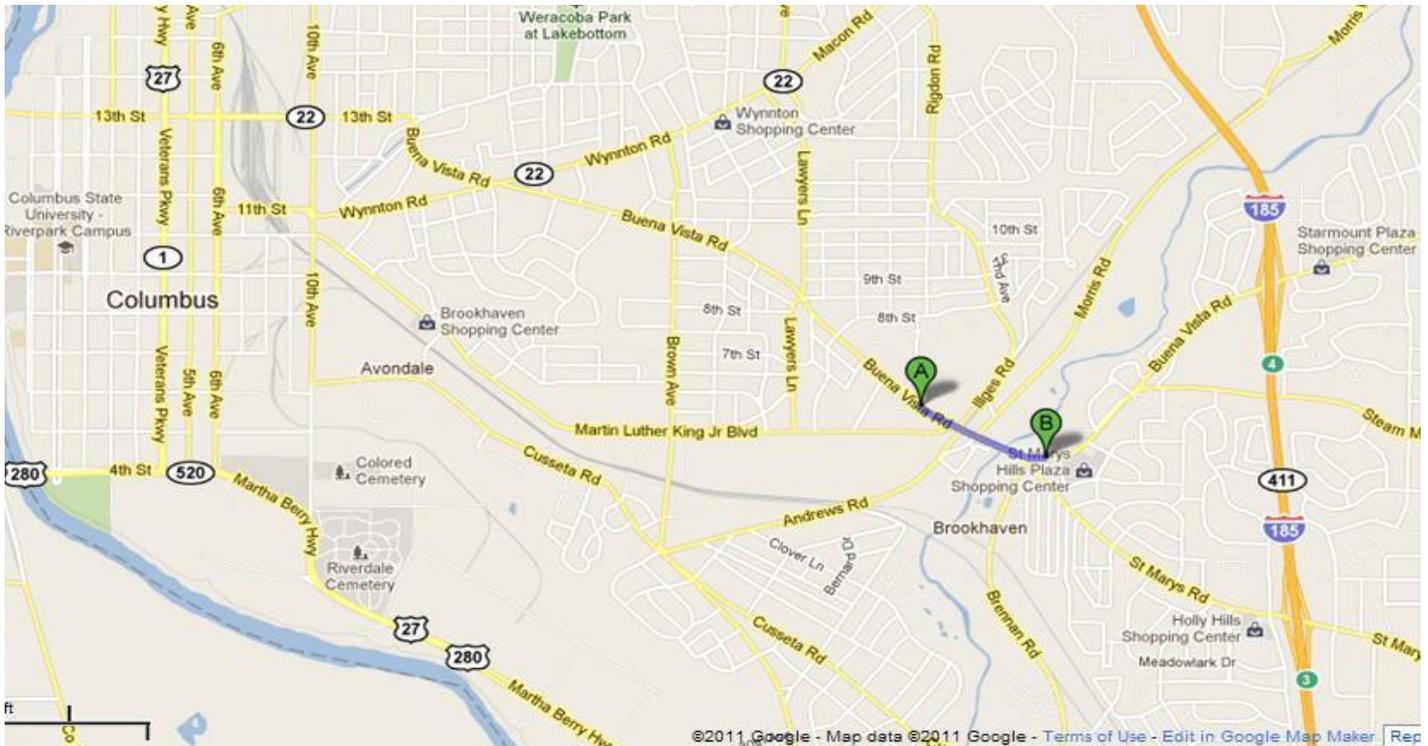
County: Muscogee County

Phase	Total Project Cost	Total TIA Amount	Comments (Please note all cost estimates are in 2011 dollars and actual costs for all phases at year of expenditure will be higher):
PE	\$2,522,522	\$2,522,522	Construction of project will include road realignments and a possible overpass. Approximately seven (7) trains a day cross Buena Vista Road daily. Of the seven, six are through trains that travel through Columbus during the daytime (3) and evening (3). There are seven (7) roads that are impacted and are heavily congested when the trains are traveling through this area.
ROW	\$8,648,648	\$8,648,648	
CST	\$25,225,225	\$25,225,225	
UTL	\$3,603,605	\$3,603,605	
Total	\$40,000,000	\$40,000,000	

Public Benefit	Notes
Maximizing the value of Georgia's Assets	This project could potentially maximize the full utility of an existing transportation facility(s). In some cases, bypasses will be necessary. Example benefits could be: mitigating congestion (e.g. operational improvements) and optimizing capital asset management (e.g. resurfacing, rehabilitation). The impacts would apply to this roadway segment, corridor, and/or intersection.

Additional Benefits	This project would benefit the traveling public by alleviating the congestion at the critical convergence of several arterial roadways in Southeast Columbus by removing the existing at-grade railroad crossing. Currently, the Buena Vista Road corridor has approximately 27,130 cars per day that are regularly delayed by slow moving trains blocking the roadway for extended periods. The benefit of a new flyover bridge would decrease average travel times and improve emergency services response time by eliminating the delays created by the regular train blockages.
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Project Location



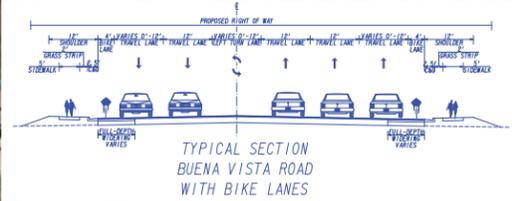
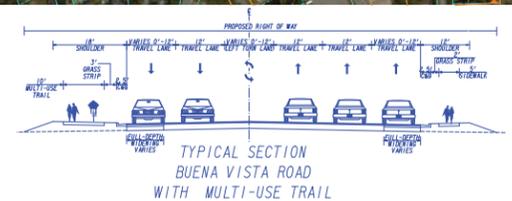
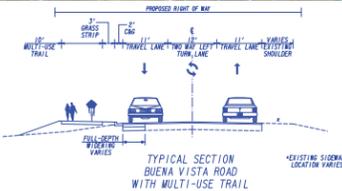
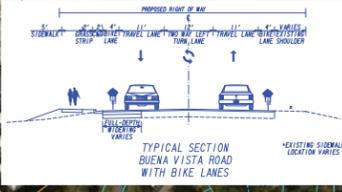
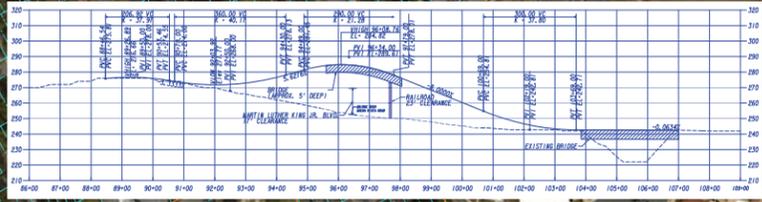
**COLUMBUS CONSOLIDATED GOVERNMENT
IMPROVEMENTS ALONG BUENA VISTA ROAD
CORRIDOR INCLUDING COLUMBUS SPIDER
WEB NETWORK**

LEGEND

PROPOSED FULL DEPTH PAVEMENT	EXISTING RIGHT OF WAY OR PROPERTY LINE
PROPOSED OVERLAY	REQUIRED RIGHT OF WAY
PROPOSED BRIDGE	PERMANENT EASEMENT
PROPOSED SIDEWALK	STREAM
EXISTING SIGNAL	STREAM BUFFER
PROPOSED WALL	POTENTIALLY ELIGIBLE HISTORIC RESIDENCE
	DISPLACED BUILDING
	AT GRADE RAILROAD CROSSING



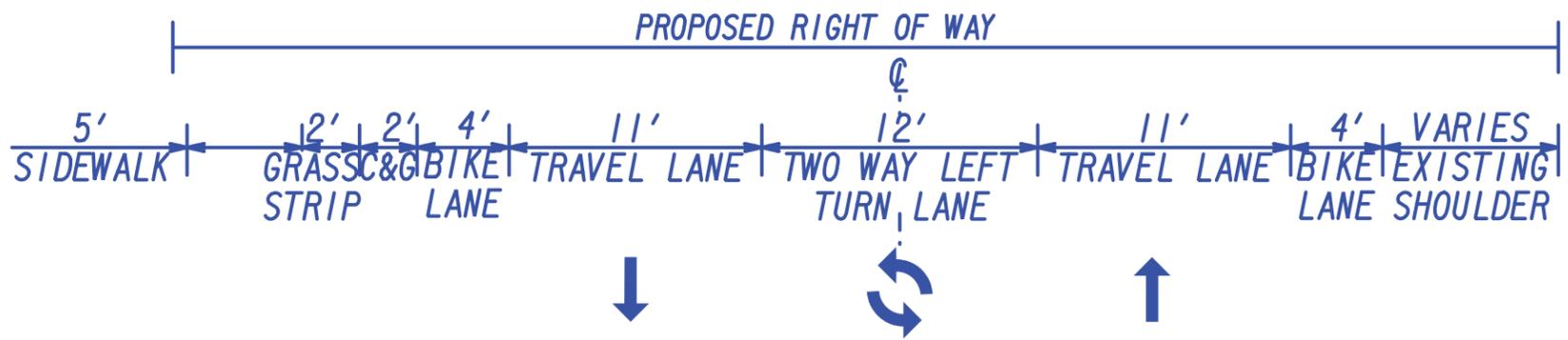
Wolverine Associates



SHEET 1



BEGIN BUENA VISTA ROAD CORRIDOR PROJECT



SHEET 2

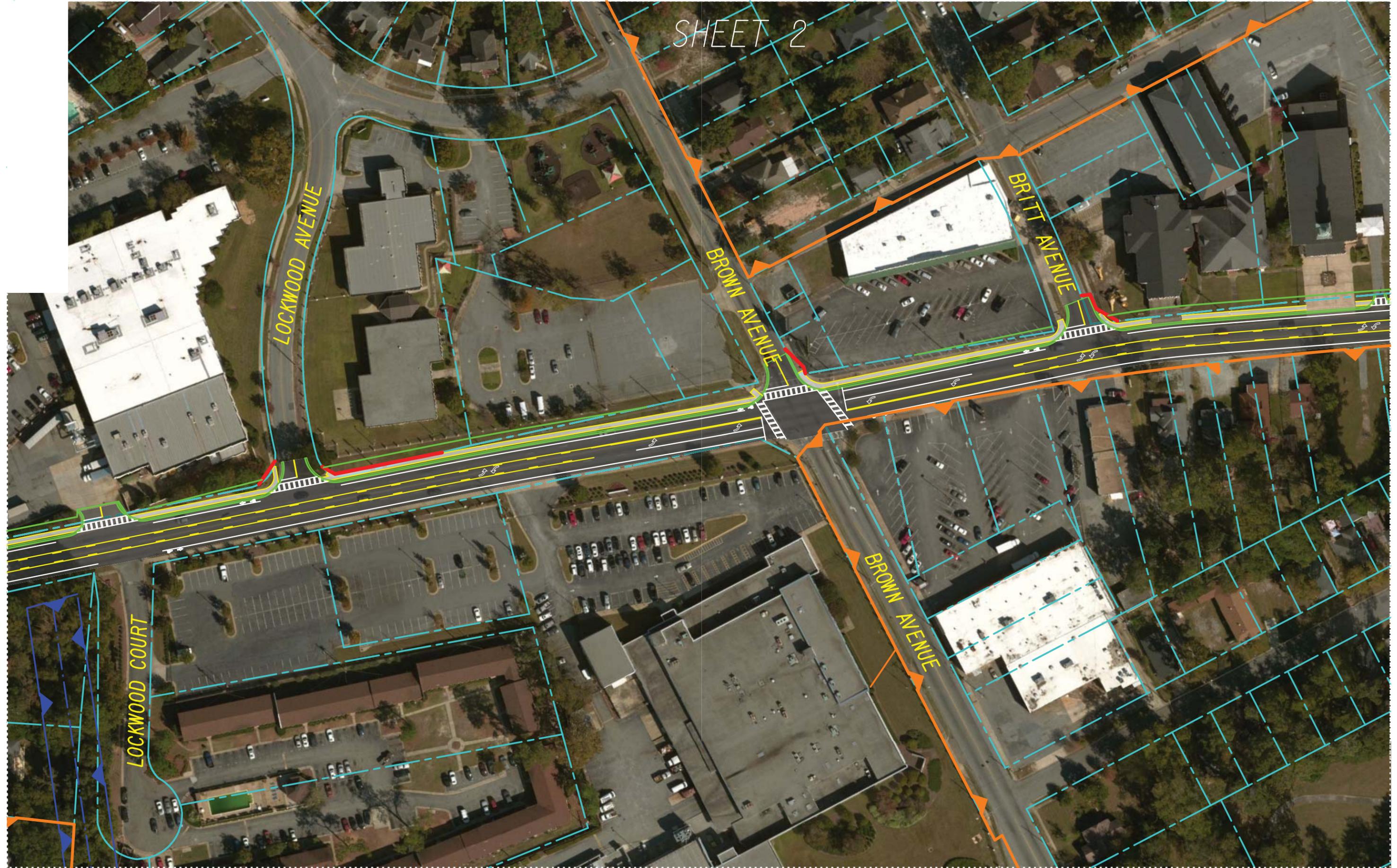
LOCKWOOD AVENUE

BROWN AVENUE

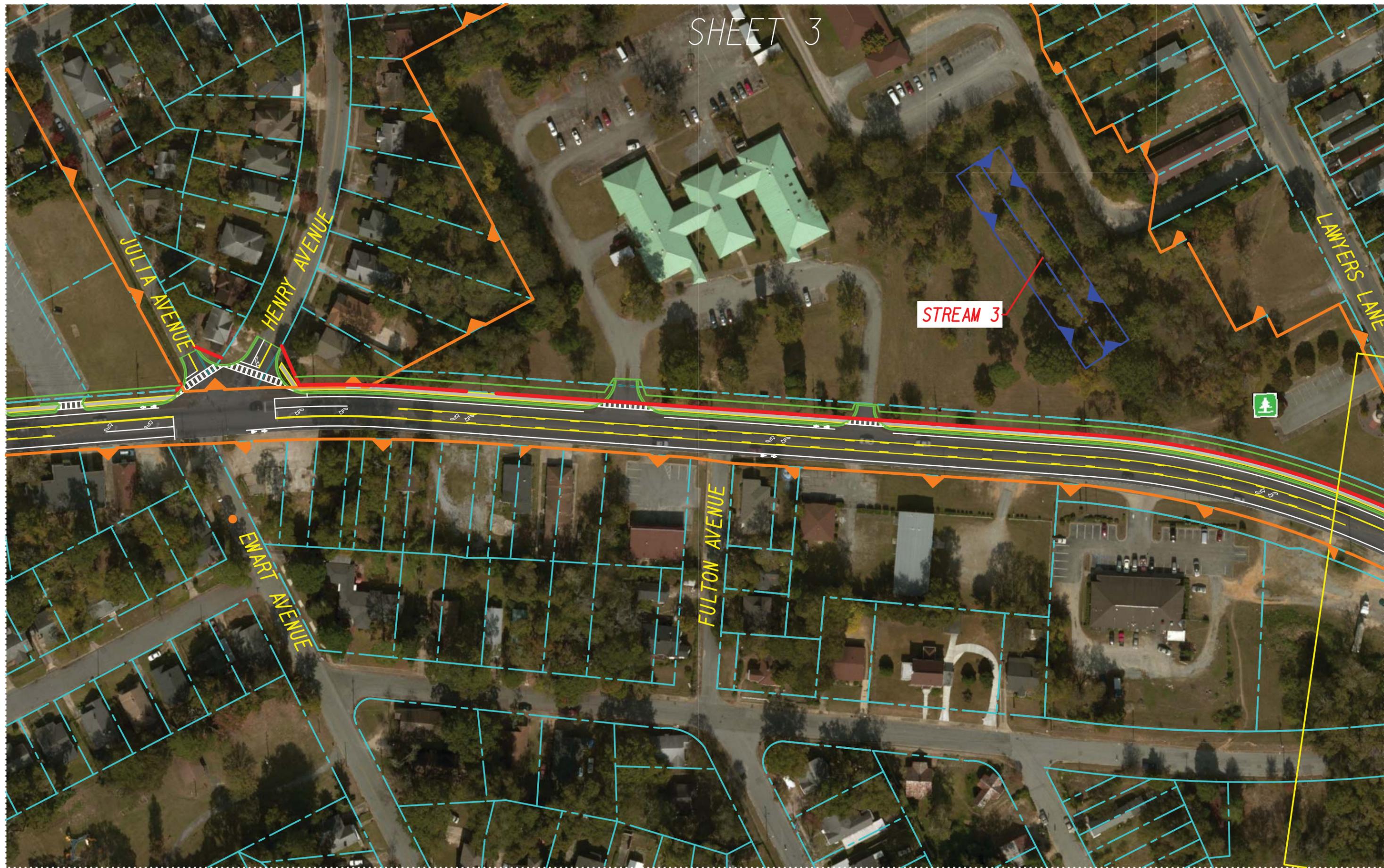
BRITT AVENUE

BROWN AVENUE

LOCKWOOD COURT



SHEET 3



SHEET 4

BALDWIN STREET

8TH STREET

LAWYERS LANE

CHURCH AVENUE



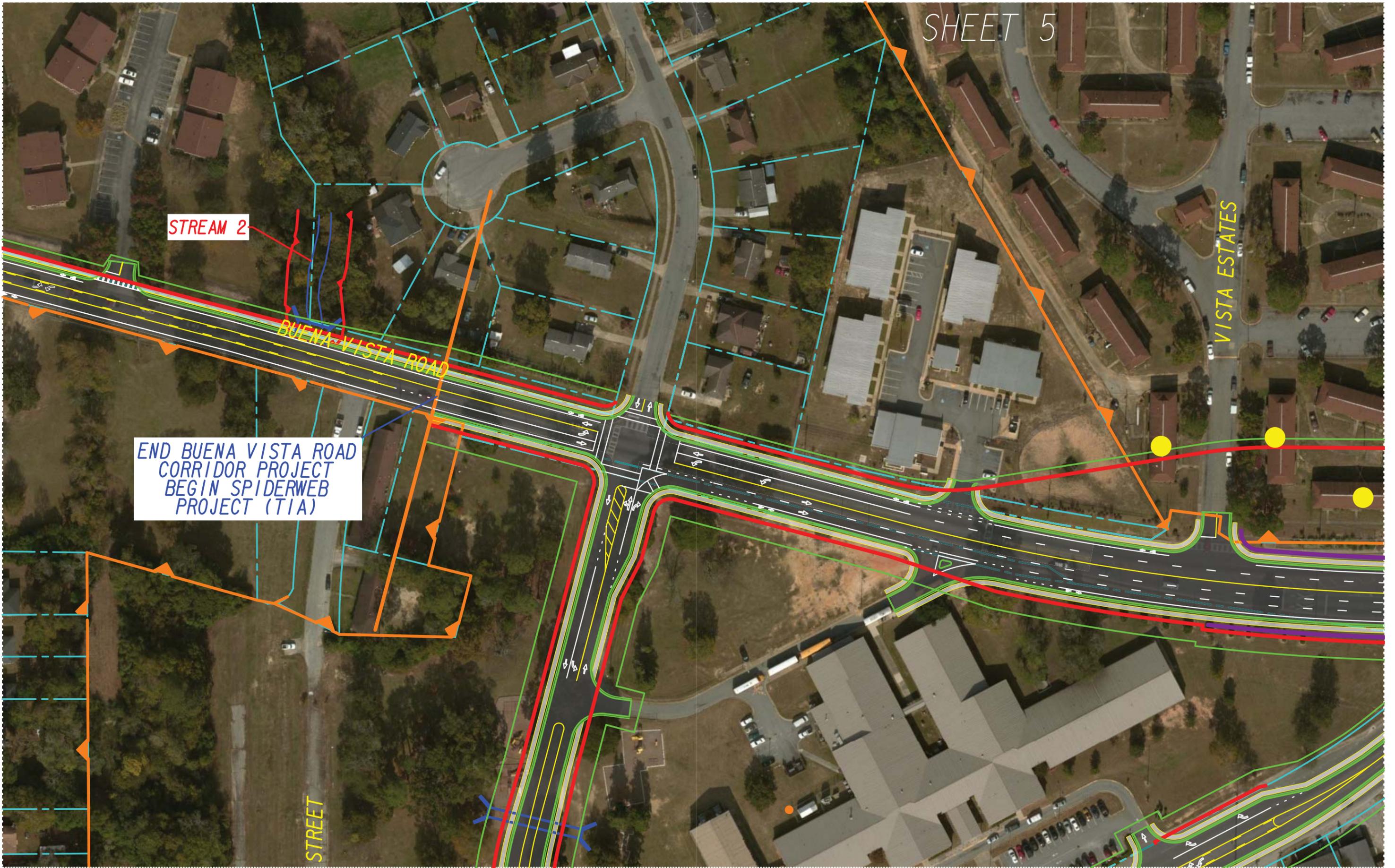
STREAM 2

BUENA VISTA ROAD

VISTA ESTATES

STREET

END BUENA VISTA ROAD
CORRIDOR PROJECT
BEGIN SPIDERWEB
PROJECT (TIA)



SHEET 6

STREAM 3

BULL CREEK

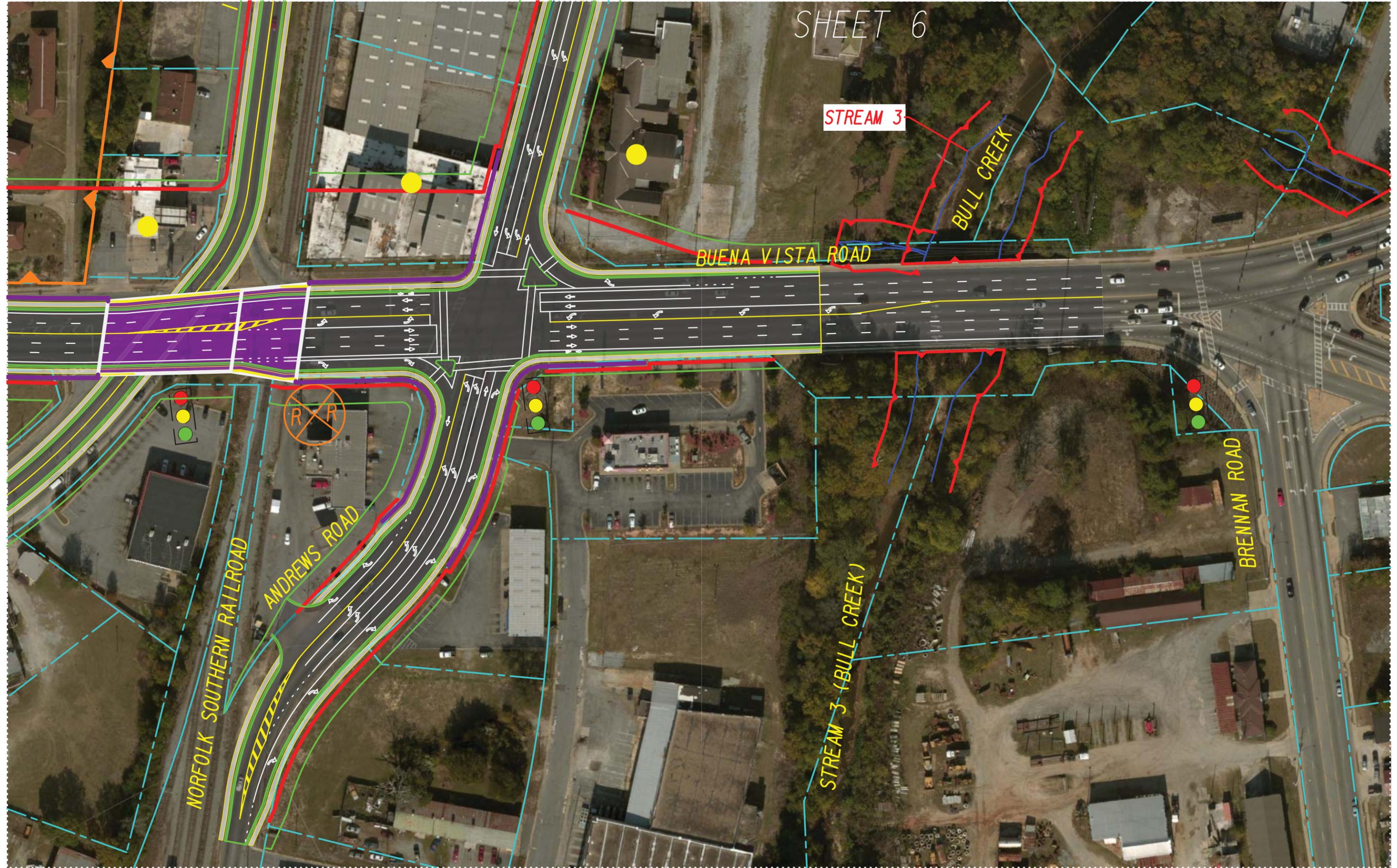
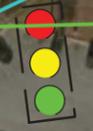
BUENA VISTA ROAD

BRENNAN ROAD

STREAM 3 (BULL CREEK)

NORFOLK SOUTHERN RAILROAD

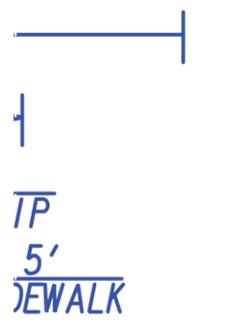
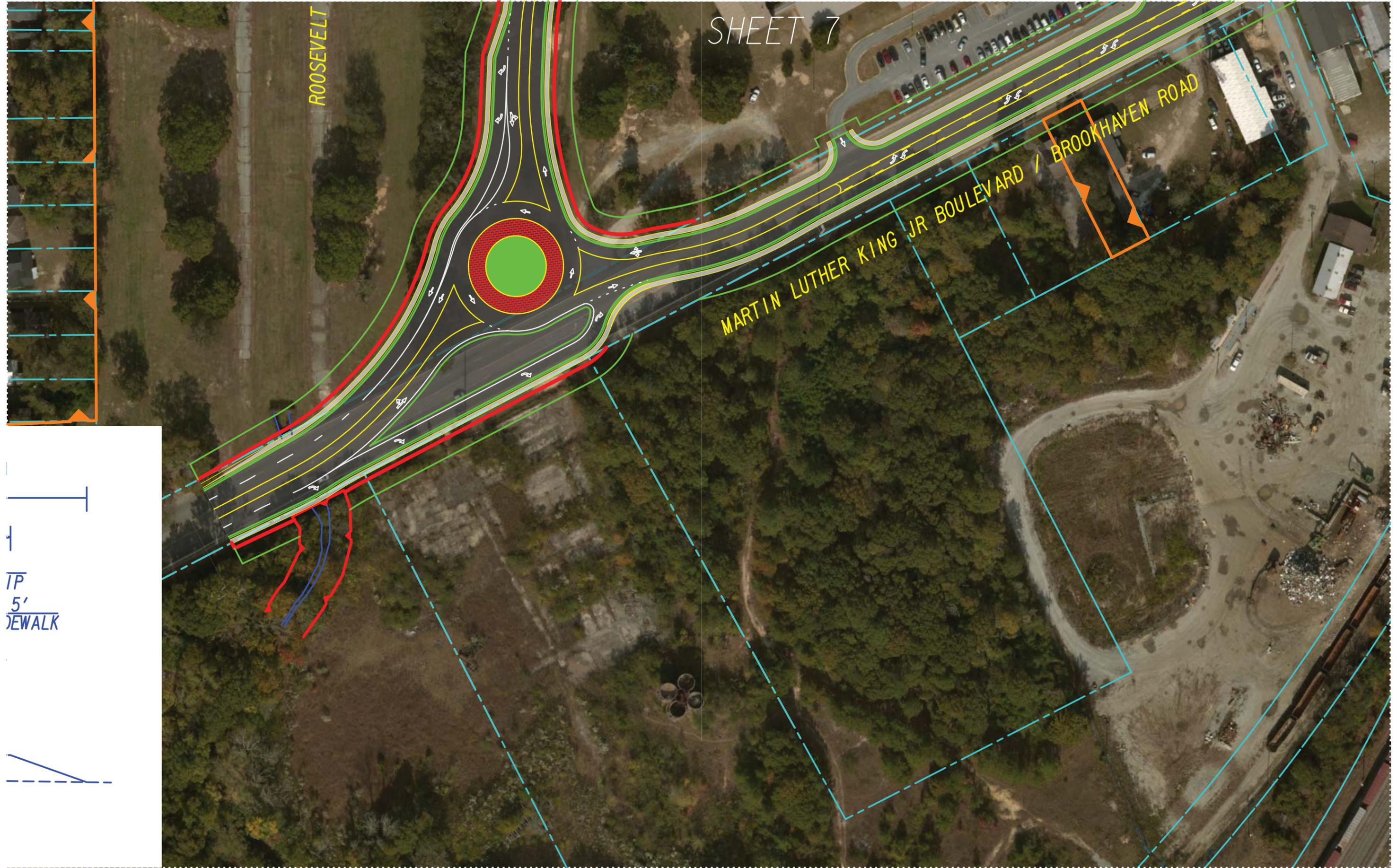
ANDREWS ROAD

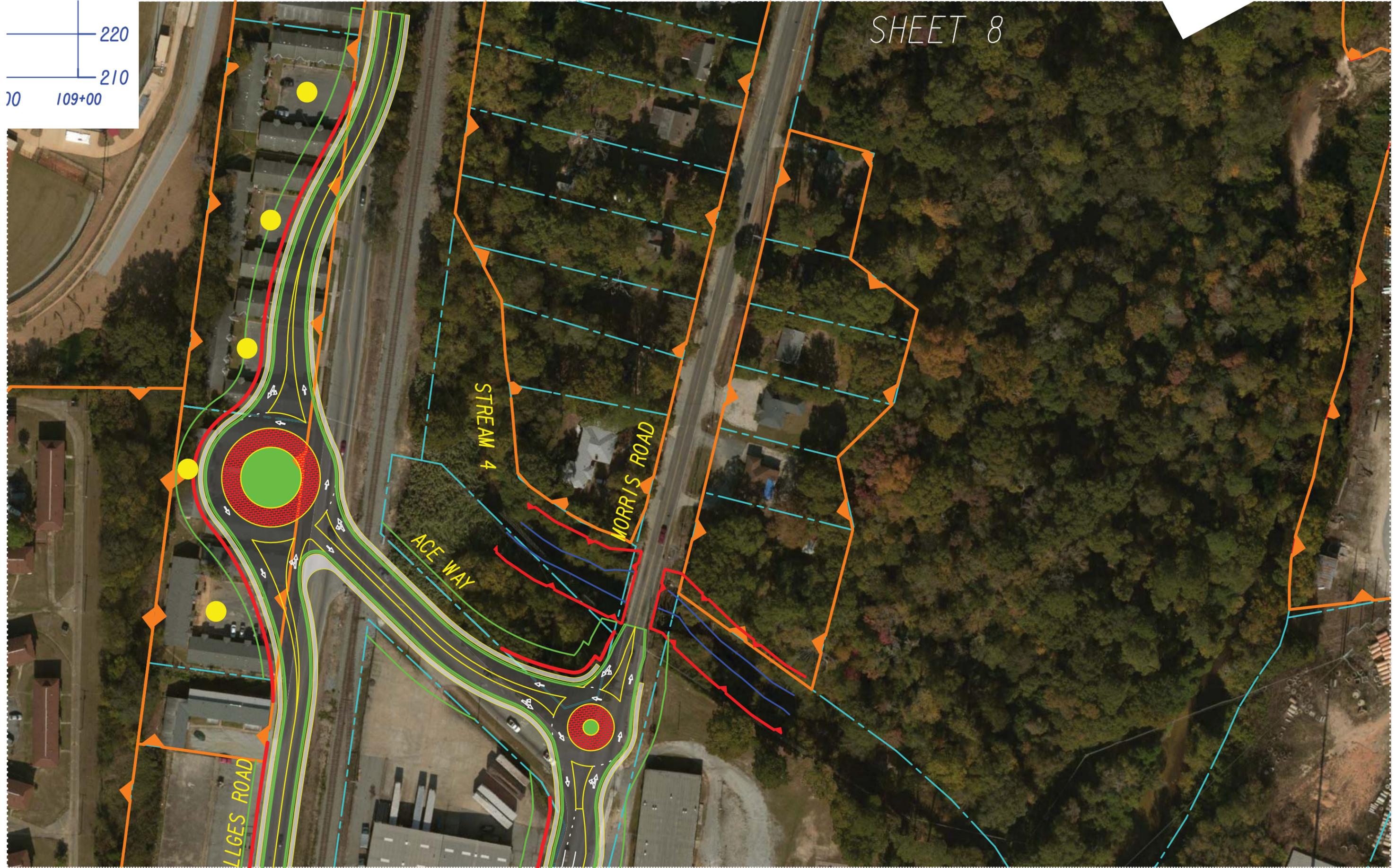
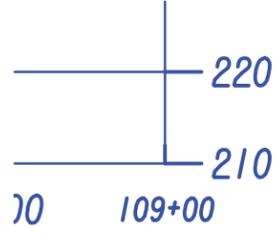


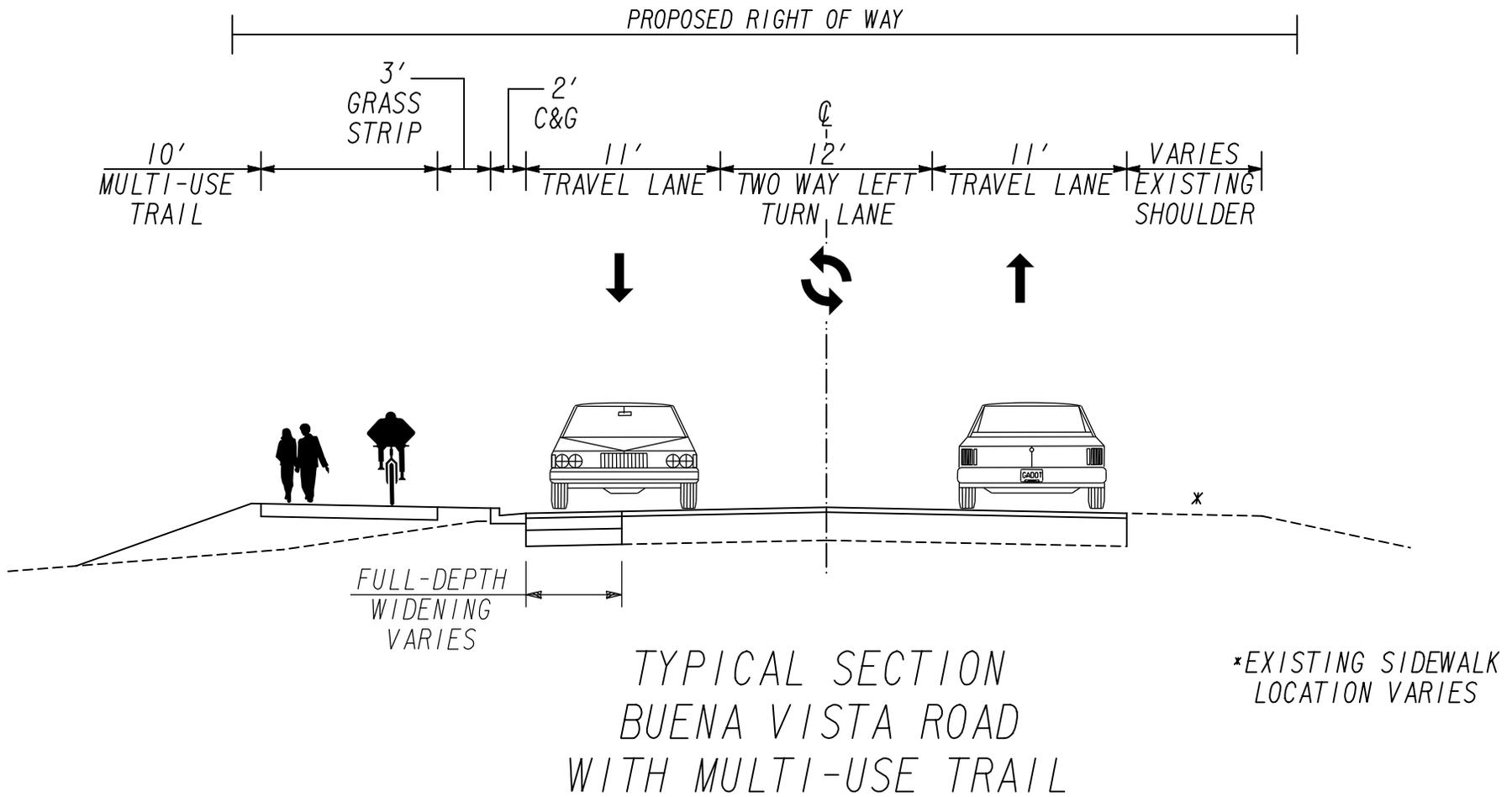
SHEET 7

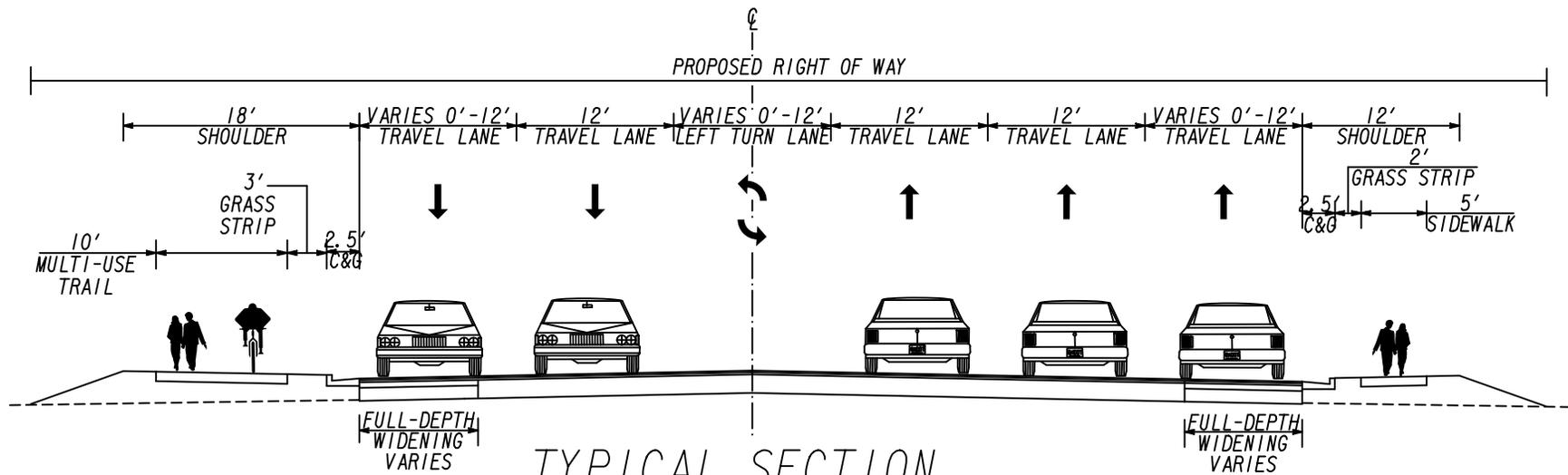
ROOSEVELT

MARTIN LUTHER KING JR BOULEVARD / BROOKHAVEN ROAD









TYPICAL SECTION
 BUENA VISTA ROAD
 WITH MULTI-USE TRAIL

Columbus Spider Web					
Concept Cost Estimate					
9/2/2015					
ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	EXTENSION
ROADWAY					
150-1000	TRAFFIC CONTROL	LS	LUMP	\$ 1,500,000.00	\$ 1,500,000.00
153-1300	FIELD ENGINEERS OFFICE TP 3	EA	1	\$ 88,824.40	\$ 88,824.40
210-0100	GRADING COMPLETE -	LS	LUMP	\$ 2,000,000.00	\$ 2,000,000.00
310-1101	GR AGGR BASE CRS, INCL MATL	TN	30700	\$ 19.02	\$ 583,975.79
318-3000	AGGR SURF CRS	TN	900	\$ 21.94	\$ 19,745.29
402-1812	RECYCLED ASPH CONC LEVELING, INCL BITUM MATL & H LIME	TN	900	\$ 73.03	\$ 65,723.08
402-3121	RECYCLED ASPH CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	TN	10900	\$ 64.80	\$ 706,341.00
402-3130	RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP 2 ONLY, INCL BITUM MATL & H LIME	TN	7600	\$ 72.68	\$ 552,355.96
402-3190	RECYCLED ASPH CONC 19 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	TN	10100	\$ 70.95	\$ 716,625.36
413-1000	BITUM TACK COAT	GL	13400	\$ 2.56	\$ 34,369.37
432-0206	MILL ASPH CONC PVMT, 1 1/2 IN DEPTH	SY	467	\$ 1.29	\$ 604.45
433-1000	REINF CONC APPROACH SLAB	SY	580	\$ 151.46	\$ 87,849.54
441-0018	DRIVEWAY CONCRETE, 8 IN TK	SY	210	\$ 48.30	\$ 10,142.41
441-0104	CONC SIDEWALK, 4 IN	SY	12800	\$ 26.43	\$ 338,361.00
441-0740	CONCRETE MEDIAN, 4 IN	SY	4100	\$ 25.85	\$ 105,966.59
441-0748	CONCRETE MEDIAN, 6 IN	SY	1300	\$ 47.28	\$ 61,458.89
441-4030	CONC VALLEY GUTTER, 8 IN	SY	290	\$ 43.43	\$ 12,595.54
441-5002	CONCRETE HEADER CURB, 6 IN, TP 2	LF	300	\$ 13.40	\$ 4,021.16
441-6216	CONC CURB & GUTTER, 8 IN X 24 IN, TP 2	LF	2965	\$ 13.59	\$ 40,307.91
441-6222	CONC CURB & GUTTER, 8 IN X 30 IN, TP 2	LF	23700	\$ 13.46	\$ 318,942.43
500-3101	CLASS A CONCRETE	CY	320	\$ 443.57	\$ 141,941.42
500-9999	CLASS B CONC, BASE OR PVMT WIDENING	CY	49	\$ 185.13	\$ 9,071.14
511-1000	BAR REINF STEEL	LB	43100	\$ 0.84	\$ 36,258.90
550-1180	STORM DRAIN PIPE, 18 IN, H 1-10	LF	10500	\$ 35.79	\$ 375,810.81
550-1240	STORM DRAIN PIPE, 24 IN, H 1-10	LF	6530	\$ 44.87	\$ 292,973.92
550-1300	STORM DRAIN PIPE, 30 IN, H 1-10	LF	6500	\$ 54.80	\$ 356,198.92
550-1360	STORM DRAIN PIPE, 36 IN, H 1-10	LF	1000	\$ 69.43	\$ 69,430.20
550-4218	FLARED END SECTION 18 IN, STORM DRAIN	EA	17	\$ 589.73	\$ 10,025.48
550-4224	FLARED END SECTION 24 IN, STORM DRAIN	EA	3	\$ 698.00	\$ 2,094.00
550-4230	FLARED END SECTION 30 IN, STORM DRAIN	EA	3	\$ 809.33	\$ 2,427.98
603-2181	STN DUMPED RIP RAP, TP 3, 18 IN	SY	207	\$ 42.95	\$ 8,891.09
603-7000	PLASTIC FILTER FABRIC	SY	207	\$ 3.98	\$ 824.34
610-9099	REM WINGWALLS & PARAPETS, STA -	LS	LUMP	\$ 6,064.62	\$ 6,064.62
620-0100	TEMPORARY BARRIER, METHOD NO. 1	LF	0	\$ 25.02	\$ -
632-0003	CHANGEABLE MESSAGE SIGN, PORTABLE, TYPE 3	EA	1	\$ 8,560.77	\$ 8,560.77
634-1200	RIGHT OF WAY MARKERS	EA	115	\$ 109.50	\$ 12,592.05
668-1100	CATCH BASIN, GP 1	EA	117	\$ 2,221.89	\$ 259,961.36
668-2100	DROP INLET, GP 1	EA	40	\$ 1,944.39	\$ 77,775.77
668-4300	STORM SEWER MANHOLE, TP 1	EA	24	\$ 1,867.37	\$ 44,816.99
	EROSION AND SEDIMENT	LS	LUMP	\$ 593,000.00	\$ 593,000.00
	SIGNING AND MARKING	LS	LUMP	\$ 460,000.00	\$ 460,000.00
647-1000	TRAFFIC SIGNAL INSTALLATION NO -	LS	6	\$ 150,000.00	\$ 900,000.00
				SUB-TOTAL CONSTRUCTION:	\$ 10,916,929.93
BRIDGE 1					
	BRIDGE OVER MLK	SF	19356	\$ 100.00	\$ 1,935,600.00
	MSE WALLS	SF	48980	\$ 45.00	\$ 2,204,100.00
				SUB-TOTAL BRIDGE	\$ 4,139,700.00
				3% CEI	\$ 451,698.90
				TOTAL: \$	15,508,328.83

Preliminary ROW Cost Estimate

Project No. RC08-000057
 PI No. 0011436
 Project Name: Buena Vista Corridor/Spiderweb Network
 Date: Enter Date of Estimate (L 4-Sep-15

Land and Improvements	Agriculture	Residential	Commercial	Industrial	Notes
Estimate (\$/ac)	\$0	\$45,000	\$200,000	\$150,000	Enter Cost / Acre
Fee Simple Area (ac)	0.00	0.66	5.00	1.00	Enter Acreage
Fee Simple Estimate	\$0	\$29,700	\$1,000,000	\$150,000	CALCULATED FIELD
Perm Easement Area (ac)	0.00	0.53	4.00	0.80	Enter Acreage
Perm Easement Factor	0%	50%	50%	50%	Adjust Percentage as Appropriate
Perm Easement Estimate	\$0	\$11,925	\$400,000	\$60,000	CALCULATED FIELD
Temp Easement Area (ac)	0.00	0.00	0.00	0.00	Enter Acreage
Temp Easement Factor	0%	25%	25%	0%	Adjust Percentage as Appropriate
Temp Easement Estimate	\$0	\$0	\$0	\$0	CALCULATED FIELD
City Land Available for Swap (ac)	0.00	0.00	0.00	0.00	Enter Acreage (If required)
City Land Available for Swap Estimate	\$0	\$0	\$0	\$0	Enter Estimated Value (If required)
Proximity Damages	\$0	\$25,000	\$0	\$0	Enter Fees and Provide Notes as Appropriate
Consequential Damages	\$0	\$0	\$400,000	\$0	Access, Parking,
Cost to Cures	\$0	\$0	\$400,000	\$0	Parking, Playground, Circulation
Improvements	\$0	\$0	\$2,000,000	\$0	Apartments, Buildings, Fences,
Trade Fixtures	\$0	\$0	\$500,000	\$0	Signs, Trade Fixtures, Asphalt,
Relocations - 40		\$100,000	\$200,000		
PROPERTY TYPE TOTALS	\$0	\$166,625	\$4,900,000	\$210,000	CALCULATED FIELD
Land and Improvements Sub Total				\$5,276,625	CALCULATED FIELD
Valuation Services	Agriculture	Residential	Commercial	Industrial	
Appraisals (# of Parcels)	0	12	40	10	Adjust Parcels as required
Estimated Fee (per Parcel)	\$0	\$1,750	\$2,500	\$2,500	Enter Estimated Fee per Parcel
Total Appraisals	\$0	\$21,000	\$100,000	\$25,000	CALCULATED FIELD
Specialty Reports	\$0	\$0	\$60,000	\$10,000	Circulation, UST Removal, Trade Fixtures, Signs, Parking
Estimated Fees	\$0	\$40,000	\$10,000	\$0	Relocation Offer Packages
PROPERTY TYPE TOTALS	\$0	\$61,000	\$170,000	\$35,000	CALCULATED FIELD
Valuation Services Sub Total				\$266,000	CALCULATED FIELD
Legal Services	Parcels	Estimated Fees	Totals		
Meeting with Attorney	61	\$125		\$7,625	Adjust Parcels / Fees as required (using best judgement)
Preliminary Titles & Updates	61	\$400		\$24,400	Adjust Parcels / Fees as required
Closing and Final Title	61	\$500		\$30,500	Adjust Parcels / Fees as required
Recording Fees	61	\$50		\$3,050	Adjust Parcels / Fees as required
Condemnations	12	7500		90000	
Legal Services Sub Total				\$155,575	CALCULATED FIELD
Administrative	Parcels	Man Hours/Parcel	Totals		
Pre-Acquisition	61	40		\$122,000	Adjust Parcels / Fees as required
Acquisition	61	40		\$122,000	Adjust Parcels / Fees as required
Administrative Appeals	12	30		\$18,000	Calculates as 15% of Acq Parcel Count (Adjust if Necessary)
Relocations	40	50		\$100,000	
Administrative Sub Total				\$362,000	CALCULATED FIELD
Contingency					
Overall Contingency	20%	\$1,212,040			Enter Percentage for Contingency (Default = 20%)
Total Estimated Costs				\$7,272,240	CALCULATED FIELD

SPIDERWEB UTILITIES COST ESTIMATE

	ITEM	UNIT	QUANTITY	UNIT PRICE	COST	TOTAL COST
POWER/PHONE/CABLE						
ALTERNATIVE 4	REGULAR POLE	EA	82	\$10,000.00	\$820,000.00	\$1,300,000.00
	HIGH VOLTAGE POLE	EA	2	\$200,000.00	\$400,000.00	
	ADJUST ATT MH'S	EA	16	\$5,000.00	\$80,000.00	
ALTERNATIVE 2	REGULAR POLE	EA	64	\$10,000.00	\$640,000.00	\$1,440,000.00
	HIGH VOLTAGE POLE	EA	4	\$200,000.00	\$800,000.00	
ALTERNATIVE 3	REGULAR POLE	EA	26	\$10,000.00	\$260,000.00	\$260,000.00
	HIGH VOLTAGE POLE	EA	0	\$200,000.00	\$0.00	
WATER						
ALTERNATIVE 4	8" DUCTILE IRON	LF	3050	\$63.80	\$194,590.00	\$372,306.00
	12" DUCTILE IRON	LF	1420	\$74.80	\$106,216.00	
	RELOCATE HYDRANTS	EA	11	\$6,500.00	\$71,500.00	
ALTERNATIVE 2	6" DUCTILE IRON	LF	700	\$60.50	\$42,350.00	\$241,912.00
	8" DUCTILE IRON	LF	660	\$63.80	\$42,108.00	
	16" DUCTILE IRON	LF	1070	\$103.40	\$110,638.00	
	20" DUCTILE IRON	LF	380	\$123.20	\$46,816.00	
ALTERNATIVE 3	6" DUCTILE IRON	LF	400	\$60.50	\$24,200.00	\$174,812.00
	8" DUCTILE IRON	LF	1680	\$63.80	\$107,184.00	
	16" DUCTILE IRON	LF	420	\$103.40	\$43,428.00	
GAS						
ALTERNATIVE 4	GAS LINE	LF	4470	\$15.00	\$67,050.00	\$67,050.00
ALTERNATIVE 2	GAS LINE	LF	2810	\$15.00	\$42,150.00	\$42,150.00
ALTERNATIVE 3	GAS LINE	LF	2500	\$15.00	\$37,500.00	\$37,500.00
SEWER						
ALTERNATIVE 4	8" GRAVITY SEWER	LF	1350	\$24.20	\$32,670.00	\$73,030.00
	30" GRAVITY SEWER	LF	320	\$60.50	\$19,360.00	
	ADJUST SSMH'S	EA	6	\$3,500.00	\$21,000.00	
ALTERNATIVE 2						
ALTERNATIVE 3						

UTILITIES AT LERNATIVE 4: **\$1,813,000.00**

UTILITIES AT LERNATIVE 2: **\$1,725,000.00**

UTILITIES AT LERNATIVE 3: **\$473,000.00**



TRAFFIC ENGINEERING REPORT
FOR
PROPOSED ROADWAY IMPROVEMENTS

BUENA VISTA ROAD SPIDER WEB NETWORK
GRADE SEPARATION
AT BROOKHAVEN ROAD/MARTIN LUTHER
KING JR BOULEVARD/ILLGES ROAD

CITY OF COLUMBUS,
MUSCOGEE COUNTY, GEORGIA

W & A Project No. 15-TP-001

June 19, 2015

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1. INTRODUCTION

BUENA VISTA ROAD “SPIDER WEB” NETWORK TRAFFIC ENGINEERING REPORT

The purpose of this report is to analyze concept improvements for the Buena Vista Road “Spider Web” network grade separation in Columbus, Muscogee County, Georgia. The project will provide for a grade separation of Buena Vista Road at Martin Luther King Jr Boulevard (MLK Jr Boulevard)/Illges Road in the form of a bridge on Buena Vista Road over MLK Jr Boulevard/Illges Road and the railroad tracks that run parallel to MLK Jr Boulevard/Illges Road. Currently, the railroad tracks that run parallel to MLK Jr Boulevard/Illges Road are at grade, as is the Buena Vista Road intersection with MLK Jr Boulevard/Illges Road. The project is identified as follows:

- Grade separation of the existing seven-lane section on Buena Vista Road to a five-lane elevated section (three eastbound, two westbound) from Vista Estates driveway to Morris Road/Andrews Road over MLK Jr Boulevard/Illges Road and the railroad tracks that run parallel to MLK Jr Boulevard/Illges Road.

Figure 1 schematically illustrates the existing roadway facility as well as the location of the study intersections on the Buena Vista Road “Spider Web” network.

Methodology

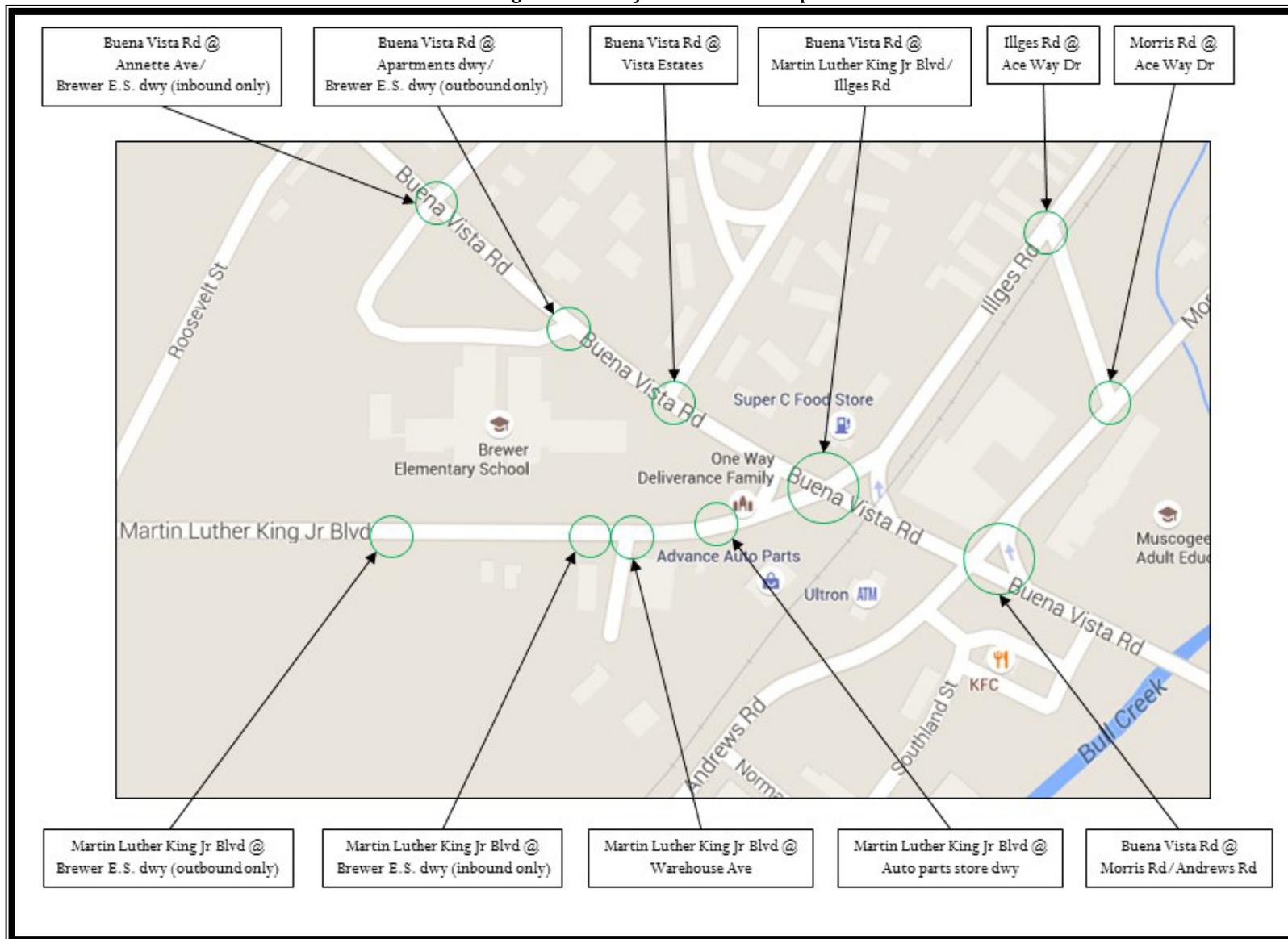
Initial evaluations were made to assess the current conditions along the corridor. Peak hour turning movement counts (TMCs) were conducted at the study intersections along the corridor. In addition to the TMCs, 24-hour directional counts were taken at select locations along the corridor. Traffic projections for the corridor were developed for the Opening Year 2021 and the Design Year 2041. No-Build and Build models were developed and analyzed for the study intersections along the corridor for the Opening Year 2021 and the Design Year 2041. Improvements were identified for intersections that operated at inadequate levels of service (LOS) with the improvements expected as part of the proposed grade separation.

Planned Improvements

In addition to the proposed project, there is one other known project that will affect the Buena Vista Road “Spider Web” network.

The first project is STP-8042(5), PI No. 350796, the widening and reconstruction of 1.3 miles of Buena Vista Road from Brown Avenue to Illges Road in the City of Columbus, Muscogee County. This project is included in GDOT’s STP. This project is not expected to have significant traffic impacts on the Buena Vista Road “Spider Web” network.

Figure 1 – Project Location Map



2. EXISTING CONDITIONS

BUENA VISTA ROAD “SPIDER WEB” NETWORK TRAFFIC ENGINEERING REPORT

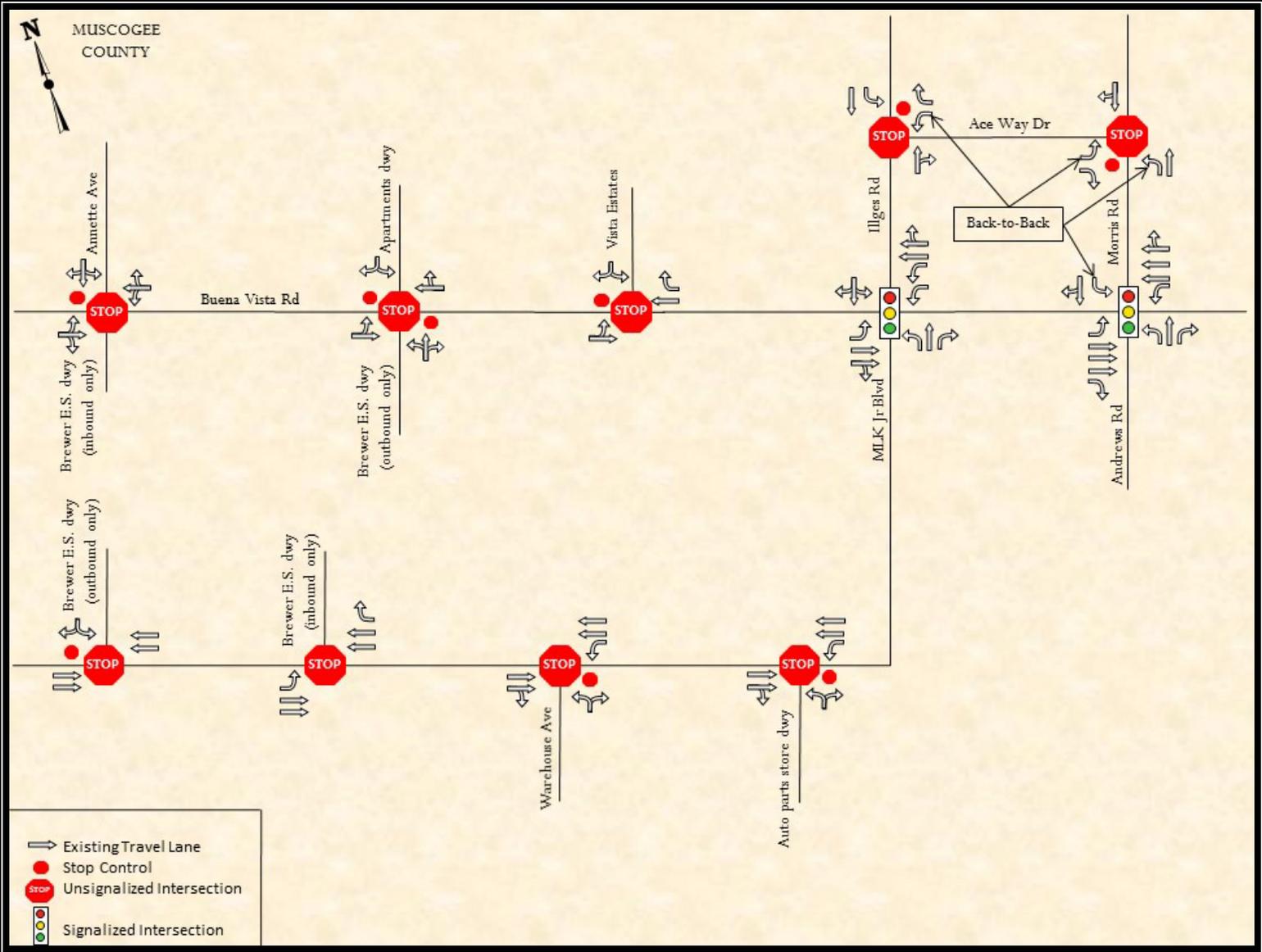
The project will provide for a grade separation of Buena Vista Road at MLK Jr Boulevard/Illges Road in the form of a bridge on Buena Vista Road over MLK Jr Boulevard/Illges Road and the railroad tracks that run parallel to MLK Jr Boulevard/Illges Road. Currently, the railroad tracks that run parallel to MLK Jr Boulevard/Illges Road are at grade, as is the Buena Vista Road intersection with MLK Jr Boulevard/Illges Road. The project spans 0.35 miles on Buena Vista Road, starting at Annette Avenue/Brewer Elementary School (Brewer E.S.) inbound driveway and ending just east of Andrews Road/Morris Road prior to the bridge over Bull Creek.

The following are the study intersections along the corridor:

1. Buena Vista Road and Annette Avenue/Brewer E.S. inbound driveway (unsignalized)
2. Buena Vista Road and apartments driveway/Brewer E.S. outbound driveway (unsignalized)
3. Buena Vista Road and Vista Estates driveway (unsignalized)
4. Illges Road and Ace Way Drive (unsignalized)
5. Buena Vista Road and MLK Jr Boulevard/Illges Road (signalized)
6. MLK Jr Boulevard and auto parts store driveway (unsignalized)
7. MLK Jr Boulevard and Warehouse Avenue (unsignalized)
8. MLK Jr Boulevard and Brewer E.S. inbound driveway (unsignalized)
9. MLK Jr Boulevard and Brewer E.S. outbound driveway (unsignalized)
10. Morris Road and Ace Way Drive (unsignalized)
11. Buena Vista Road and Morris Road/Andrews Road (signalized)

Figure 2 illustrates the associated geometry and operation control of the study intersections. As general assumptions for all figures in this report, Buena Vista Road is considered to be east/west at all intersections, and MLK Jr Boulevard is considered to be north/south at all intersections, with the exception of the proposed roundabout intersection with the extended Annette Avenue. At this intersection, MLK Jr Boulevard is considered to be east/west, and Annette Avenue is considered to be north/south.

Figure 2 – Existing Travel Lanes and Traffic Control



3. TRAFFIC DATA

BUENA VISTA ROAD “SPIDER WEB” NETWORK TRAFFIC ENGINEERING REPORT

Turning movement counts (TMCs) were collected at the study intersections, and 24-hour directional volume counts were collected at select locations in the study area in February 2015. Printouts for TMCs and 24-hour counts are provided in Appendix A. The existing peak volumes are illustrated in Appendix B.

The Opening Year 2021 and Design Year 2041 traffic projections were formulated for locations in the project area corresponding to the TMC locations. The future year projections based on annual growth rates were determined for the corridor.

Projected Average Daily Traffic Volumes (ADT) Volumes

Traffic on the Buena Vista Road “Spider Web” network is expected to increase as a result of continuing development in the region. The local GDOT count stations were used to develop an annual growth rate that was applied to the existing traffic. The GDOT count stations that were utilized were Stations 0116, 0774, 0392, and 0389 in Muscogee County. All of these count stations are along the Buena Vista Road “Spider Web” network in the vicinity of the study corridor. Using the historical traffic count data from these four counters, linear regression analysis was performed to help predict future traffic growth in the area. The average growth rate per year for these four count locations is 0.6% per year from 2015 to 2021, and 0.5% per year from 2021 to 2041. Additional information on the historical traffic count data can be found in Appendix A.

Additional sources of growth rates were utilized to assist in developing the traffic growth rates. Regional population model forecast data from the year 2000 for Muscogee County for the years 2010, 2015, 2020, and 2025 was reviewed. The model incorporates socio-economic factors and other pertinent contributing factors to determine future population figures. The table below shows predicted Muscogee County populations for the years 2010, 2015, 2020, and 2025.

Travel Demand Model Growth	
Years	Muscogee County Population
2010	191,259
2015	204,495
2020	218,254
2025	232,645
% Growth 2010-15	1.3%
% Growth 2010-20	1.3%
% Growth 2010-25	1.3%
% Growth 2015-20	1.3%
% Growth 2015-25	1.3%
% Growth 2020-25	1.3%

The table above shows that, per the population growth model, the growth rate from 2010 to 2025 is 1.3%. However, this data simply represents an estimate of future growth before the 2010 census was conducted. According to the U.S. Census Bureau, in 2010 the actual population of Muscogee County was 189,885, which is slightly lower than the model's estimated 2010 figure of 191,259. The U.S. Census Bureau's 2014 estimate of the population of Muscogee County was 200,887.

Updated regional population model forecast data for Muscogee County for every year from 2011 to 2060 was available. However, only data through 2040 was reviewed. This model also incorporates socio-economic factors and other pertinent contributing factors to determine future population figures. The table below shows predicted Muscogee County populations for the years 2011, 2015, 2020, 2025, 2030, 2035, and 2040.

Travel Demand Model Growth	
Years	Columbus-Muscogee County Population
2011	418,851
2015	427,835
2020	441,793
2025	456,180
2030	469,325
2035	481,015
2040	492,404
% Growth 2011-15	0.5%
% Growth 2015-20	0.6%
% Growth 2020-25	0.6%
% Growth 2025-30	0.6%
% Growth 2030-35	0.5%
% Growth 2035-40	0.5%
% Growth 2011-20	0.6%
% Growth 2020-30	0.6%
% Growth 2030-40	0.5%

The table above shows that, per the population growth model, the growth rate from 2011 to 2040 is between 0.5% and 0.6%.

Census data for Muscogee County and the City of Columbus was obtained for the years 2000 and 2010. The table below shows the census data for Muscogee County and the City of Columbus for the years 2000 and 2010.

Census Data – Muscogee County & City of Columbus

Population Growth	
Years	Muscogee County Population
2000	186,291
2010	189,885
% Growth 2000-2010	0.2%

The table above shows that, per the census data for the years 2000 and 2010, the growth rate is approximately 0.2% for Muscogee County and the City of Columbus.

Further information on population data can be found in Appendix A.

There are no known developments in the immediate vicinity of the project area, Developments of Regional Impact (DRIs) or otherwise, that would contribute additional traffic to the project area.

The proposed improvements are not expected to attract additional traffic to the study intersections when compared to the No-Build condition. Therefore, based upon the historical analysis and the regional population forecast data available, **a 1.0% growth rate will be used for the No-Build and Build scenarios from both 2015 to 2021 and 2021 to 2041.**

The growth rates were applied to the average daily traffic (ADT) numbers to project 24-hour traffic for the Opening Year 2021 and Design Year 2041. Projections were developed for the Build Scenario as well as the No-Build Scenario.

Projected Design Hour Volumes (DHV)

Design hour volumes (DHV) are obtained by applying the growth rate to the existing traffic volumes found in Appendix B. Those projected hourly volumes are checked against the ADT projections.

The projected DHV and ADT for the Existing Year 2015, the Opening Year 2021, and the Design Year 2041 are illustrated in Appendix B for the No-Build Scenario. The projected DHV and ADT for the Opening Year 2021 and the Design Year 2041 are illustrated in Appendix C for the Build Scenario.

4. DATA ANALYSIS

BUENA VISTA ROAD “SPIDER WEB” NETWORK TRAFFIC ENGINEERING REPORT

Capacity analysis was used to evaluate the projected volumes at the study intersections along the corridor. This process was used to determine the geometry and traffic control needed at each intersection to result in adequate Levels of Service (LOS) for the Opening Year 2021 and Design Year 2041 conditions.

Synchro (1) was used to conduct capacity analysis. *Synchro* implements the capacity methods of the *Highway Capacity Manual* (HCM) (2) for performing the industry standard evaluation of intersection performance.

The HCM defines LOS in terms of the amount of control delay, including initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay.

The LOS thresholds for stop controlled and signal controlled intersections are provided in Table 1.

Table 1 – Level of Service Criteria

LEVEL OF SERVICE	CONTROL DELAY PER VEHICLE (SEC)	
	WITH STOP-SIGN CONTROL	WITH SIGNAL CONTROL
A	≤ 10	≤ 10
B	> 10 and ≤ 15	> 10 and ≤ 20
C	> 15 and ≤ 25	> 20 and ≤ 35
D	> 25 and ≤ 35	> 35 and ≤ 55
E	> 35 and ≤ 50	> 55 and ≤ 80
F	> 50	> 80

Source: *Highway Capacity Manual*

GDOT has ranges of adequate LOS based on the area classification. Rural, sparsely developed areas have a minimum LOS requirement of C. This is due to the expectancy of rural residents for relatively uncongested conditions and to design flexibility related to lower right of way costs. The minimum LOS for urban areas is D. This reflects the greater acceptance of delay and congestion by urban residents. Additionally, the increased density of developments makes right of way costs much higher in urban areas. The Buena Vista Road “Spider Web” network project corridor is in the Columbus metro area and, therefore, has a minimum LOS requirement of D.

Intersection Capacity Analysis Results

Existing and No-Build

The study intersections were initially evaluated with the existing geometry, using the Existing Year 2015, Opening Year 2021, and Design Year 2041 volumes. This establishes a baseline for comparing improvements.

Table 2 contains the results of the capacity analysis with the existing roadway geometry and operational conditions for the Existing Year 2015, Opening Year 2021, and Design Year 2041. The values shown in

parentheses indicate the estimated delay in seconds per vehicle. Asterisks indicate a very high delay that is beyond the limits that can be estimated using the *Synchro* software.

As shown in Table 2, all of the study intersections are currently operating adequately, except for the following.

At the intersection of Buena Vista Road and Annette Avenue/Brewer Elementary School inbound driveway, the southbound approach of Annette Avenue is currently operating at LOS E during the PM peak hour.

At the intersection of Buena Vista Road and Vista Estates driveway, the southbound approach of Vista Estates driveway is currently operating at LOS E during the PM peak hour.

At the intersection of Buena Vista Road and Morris Road/Andrews Road, the overall intersection is currently operating at LOS E during the PM peak hour.

By the Year 2021, in addition to the study intersections that are already operating inadequately for existing conditions, the following study intersections are expected to experience inadequate LOS during one or both peak hours if no improvements are made.

At the intersection of Buena Vista Road and apartments driveway/Brewer Elementary School outbound driveway, the southbound approach of apartments driveway is expected to operate at LOS E during the PM peak hour in the Year 2021 if no improvements are made.

By the Year 2041, in addition to the study intersections that expected to operate inadequately for Year 2021 conditions, the following study intersections are expected to experience inadequate LOS during one or both peak hours if no improvements are made.

At the intersection of Buena Vista Road and Annette Avenue/Brewer Elementary School inbound driveway, the southbound approach of Annette Avenue is expected to operate at LOS E during the AM peak hour and LOS F during the PM peak hour in the Year 2041 if no improvements are made.

At the intersection of Buena Vista Road and apartments driveway/Brewer Elementary School outbound driveway, the southbound approach of apartments driveway is expected to operate at LOS E during the AM peak hour and LOS F during the PM peak hour in the Year 2041 if no improvements are made.

At the intersection of Illges Road and Ace Way Drive, the westbound approach of Ace Way Drive is expected to operate at LOS F during the PM peak hour in the Year 2041 if no improvements are made.

At the intersection of Morris Road and Ace Way Drive, the eastbound approach of Ace Way Drive is expected to operate at LOS E during the PM peak hour in the Year 2041 if no improvements are made.

Synchro printouts for the Existing Year 2015 and No-Build Scenarios for 2021 and 2041 are provided in Appendix D.

Table 2 – Results of Capacity Analysis: No-Build

Int #	Intersection	Control	Existing 2015								2021								2041											
			AM Peak				PM Peak				AM Peak				PM Peak				AM Peak				PM Peak							
			NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB				
1	Buena Vista Rd & Annette Ave/Brewer E.S. inbound dwy	TWSC		C (21.3)	A (9.0)	A (9.3)		E (40.9)	A (9.1)	-				C (23.4)	A (9.2)	A (9.4)		E (49.6)	A (9.3)	-				E (36.8)	A (9.8)	A (9.7)		F (146.4)	A (10.0)	-
2	Buena Vista Rd & apartments dwy/Brewer E.S. outbound dwy	TWSC	B (12.5)	C (24.8)	A (9.1)	-	C (20.7)	D (32.5)	-	-	B (12.7)	D (26.9)	A (9.2)	-	C (22.1)	E (37.4)	-	-	B (13.8)	E (37.9)	A (9.9)	-	D (28.6)	F (65.9)	-	-				
3	Buena Vista Rd & Vista Estates dwy	TWSC		C (18.0)	A (9.1)	-		E (49.7)	A (9.3)	-				C (19.2)	A (9.3)	-		F (60.4)	A (9.5)	-				D (26.5)	A (9.9)	-		F (180.3)	B (10.3)	-
4	Illges Rd & Ace Way Dr	TWSC	-	A (8.6)		C (21.5)	-	A (8.7)		D (25.6)	-	A (8.7)		C (23.5)	-	A (8.8)		D (28.5)	-	A (9.3)		D (34.8)	-	A (9.5)		F (51.3)				
5	Buena Vista Rd & MLK Jr Blvd/Illges Rd	Signal	C (26.3)				D (36.0)				C (27.0)				D (38.3)				C (34.2)				D (52.4)							
6	MLK Jr Blvd & auto parts store dwy	TWSC	-	A (7.9)		B (10.3)	-	A (8.6)		B (10.7)	-	A (7.9)		B (10.4)	-	A (8.7)		B (10.9)	-	A (8.1)		B (10.8)	-	A (9.1)		B (11.5)				
7	MLK Jr Blvd & Warehouse Ave	TWSC	-	-		-	-	A (8.5)		A (9.9)	-	-	-	-	-	A (8.6)		B (10.0)	-	-		-	-	-	-	A (8.9)		B (10.4)		
8	MLK Jr Blvd & Brewer E.S. inbound dwy	--	A (7.8)	-		-	-				A (7.8)	-			-	-			A (8.0)	-			-	-		-				
9	MLK Jr Blvd & Brewer E.S. outbound dwy	TWSC	-	-	B (11.3)		-	-	B (10.9)		-	-	B (11.5)		-	-	B (11.1)		-	-	B (12.5)		-	-	B (11.8)					
10	Morris Rd & Ace Way Drive	TWSC	A (8.6)	-	C (21.2)		A (8.6)	-	D (25.8)		A (8.7)	-	C (23.0)		A (8.8)	-	D (28.5)		A (9.2)	-	D (33.7)		A (9.3)	-	E (45.4)					
11	Buena Vista Rd & Morris Rd/Andrews Rd	Signal	D (39.1)				E (57.0)				D (41.2)				E (62.2)				D (53.2)				F (110.4)							

Build

The Build Scenario will consist of grade separation of the existing seven-lane section on Buena Vista Road to a five-lane elevated section (three eastbound, two westbound) from Vista Estates driveway to Morris Road/Andrews Road over MLK Jr Boulevard/Illges Road and the railroad tracks that run parallel to MLK Jr Boulevard/Illges Road.

As part of the project, Annette Avenue will be extended south to connect with MLK Jr Boulevard via a proposed roundabout. The west leg of the roundabout on MLK Jr Boulevard is proposed as two approach lanes and two receiving lanes. The east leg of the roundabout on MLK Jr Boulevard is proposed as one approach lane and one receiving lane. The north leg of the roundabout on Annette Avenue is proposed as one approach lane and one receiving lane. This proposed roundabout was analyzed as part of the Build Scenario.

All of the side streets and driveways on Buena Vista Road and MLK Jr Boulevard/Illges Road will maintain full access to the main street.

In order to reach three eastbound lanes before the intersection subject to grade separation, Buena Vista Road and MLK Jr Boulevard/Illges Road, it was assumed that there would be free flow right turn lanes added on Buena Vista Road at Annette Avenue from the northbound channelized right turn and at Brewer Elementary School outbound driveway channelized right turn.

In order to reach two westbound lanes before the intersection subject to grade separation, Buena Vista Road and MLK Jr Boulevard/Illges Road, it was assumed that there would be a westbound right turn only lane drop on Buena Vista Road at the intersection with Morris Road/Andrews Road.

The lane configurations on the side streets and driveways on Buena Vista Road and MLK Jr Boulevard/Illges Road were assumed to be the same as the existing lane configurations.

The intersection controls were assumed to be the same as the existing intersection controls, with the exception of the intersection of Buena Vista Road and MLK Jr Boulevard/Illges Road.

Table 3 shows the LOS of the study intersections for the Opening Year 2021 and Design Year 2041 in the Build Scenario. The *Synchro* printouts for the Build Scenario are located in Appendix E of this report.

As can be seen in Table 3, all of the study intersections are expected to operate adequately for Opening Year 2021 conditions, except for the following.

At the intersection of Buena Vista Road and Annette Avenue, the southbound approach on Annette Avenue is expected to operate at LOS F during both peak hours for Opening Year 2021 conditions if no additional improvements are made. The northbound approach on Annette Avenue is also expected to operate at LOS F during the PM peak hour for Opening Year 2021 conditions if no additional improvements are made.

At the intersection of Buena Vista Road and apartments driveway/Brewer Elementary School outbound driveway, the southbound approach of apartments driveway is expected to operate at LOS E during the PM peak hour for Opening Year 2021 conditions if no additional improvements are made.

At the intersection of Buena Vista Road and Vista Estates driveway, the southbound approach of Vista Estates driveway is expected to operate at LOS E during the PM peak hour for Opening Year 2021 conditions if no additional improvements are made.

At the intersection of Illges Road and Ace Way Drive, the westbound left turn approach on Ace Way Drive is expected to operate at LOS E during the AM peak hour for Opening Year 2021 conditions if no additional improvements are made.

At the intersection of Morris Road and Ace Way Drive, the eastbound left turn approach on Ace Way Drive is expected to operate at LOS F during the both peak hours for Opening Year 2021 conditions if no additional improvements are made.

At the intersection of Buena Vista Road and Morris Road/Andrews Road, the overall intersection is expected to operate at LOS E during both peak hours for Opening Year 2021 conditions if no additional improvements are made.

As can be seen from Table 3, in addition to the study intersections that are expected to operate inadequately for Opening Year 2021 conditions, the following study intersections are expected to experience inadequate LOS during one or both peak hours for Design Year 2041 conditions if no additional improvements are made.

At the intersection of Buena Vista Road and Annette Avenue, the northbound approach on Annette Avenue is expected to operate at LOS E during the AM peak hour for Opening Year 2041 conditions if no additional improvements are made.

At the intersection of Buena Vista Road and apartments driveway/Brewer Elementary School outbound driveway, the southbound approach of apartments driveway is expected to operate at LOS E during the AM peak hour for Opening Year 2041 conditions if no additional improvements are made.

At the intersection of Illges Road and Ace Way Drive, the westbound left turn approach on Ace Way Drive is expected to operate at LOS F during the PM peak hour for Opening Year 2041 conditions if no additional improvements are made.

Table 3 – Results of Capacity Analysis: Build

Int #	Intersection	Control	2021								2041										
			AM Peak				PM Peak				AM Peak				PM Peak						
			NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB			
1	Buena Vista Rd & Annette Ave	TWSC	C (19.7)	F (89.0)	A (9.1)	A (8.5)	F (297.7)	F**	A (9.2)	B (11.4)	E (38.4)	F (352.0)	A (9.6)	A (8.8)	F (899.4)	F**	A (9.9)	B (14.0)			
2	Buena Vista Rd & apartments dwy/ Brewer E.S. outbound dwy	TWSC	B (11.7)	D (28.0)	A (9.7)	-	C (20.5)	E (37.7)	-	-	B (12.5)	E (40.5)	B (10.6)	-	D (25.9)	F (69.1)	-	-			
3	Buena Vista Rd & Vista Estates dwy	TWSC	-	C (17.4)	A (9.7)	-	-	E (39.5)	B (10.3)	-	-	C (22.7)	B (10.6)	-	-	F (163.2)	B (11.5)	-			
4	Ilges Rd & Ace Way Dr	TWSC	-	A (8.3)	-	WBL E (35.0)	WBR B (12.1)	-	A (8.3)	-	WBL D (27.2)	WBR B (12.0)	-	A (8.7)	-	WBL F (101.5)	WBR B (14.3)	-	A (8.7)	WBL F (51.0)	WBR B (14.0)
5	Buena Vista Rd & MLK Jr Blvd/Ilges Rd																				
6	MLK Jr Blvd & auto parts store dwy	TWSC	-	A (7.6)	-	B (10.1)	-	A (7.5)	-	A (9.3)	-	A (7.7)	-	B (10.6)	-	A (7.6)	-	A (9.5)			
7	MLK Jr Blvd & Warehouse Ave	TWSC	-	-	-	-	-	A (7.5)	-	A (8.9)	-	-	-	-	-	A (7.5)	-	A (9.0)			
8	MLK Jr Blvd & Brewer E.S. inbound dwy	--	A (7.7)	-	-	-	-	-	-	A (7.8)	-	-	-	-	-	-	-	-			
9	MLK Jr Blvd & Brewer E.S. outbound dwy	TWSC	-	-	B (10.0)	-	-	-	A (9.6)	-	-	B (10.5)	-	-	-	A (9.9)	-	-			
10	Morris Rd & Ace Way Dr	TWSC	B (10.9)	-	EBL F (133.0)	EBR C (18.2)	-	B (10.0)	-	EBL F (81.6)	EBR C (16.7)	-	B (13.7)	-	EBL F (619.1)	EBR D (32.6)	-	B (11.6)	-	EBL F (261.2)	EBR D (25.8)
11	Buena Vista Rd & Morris Rd/ Andrews Rd	Signal	E (56.8)				E (66.6)				F (81.6)				F (113.8)						
12	MLK Jr Blvd & Annette Ave	Roundabout	A (2.8)	-	A (3.7)	A (5.0)	-	A (3.0)	A (7.4)	A (8.0)	-	A (3.1)	A (4.1)	A (5.0)	-	A (3.5)	-	A (9.2)	A (9.0)		

**Delay is too high to calculate.

Mitigated

Additional improvements were identified for the study intersections where inadequate operating conditions are expected. The results are shown in Table 4. The *Synchro* printouts for the mitigated condition are contained in Appendix F.

As can be seen from Table 4, at the intersection of Buena Vista Road and Annette Avenue, a left turn lane is expected to be needed on the eastbound approach and a left turn only lane is expected to be needed on the westbound approach. Traffic signal warrant analysis was also performed at the intersection. The traffic signal warrant analysis is discussed in Section 5. As will be seen in Section 5, a traffic signal is expected to be warranted for the Opening Year 2021 and the Design Year 2041. With the free-flowing northbound right turn lane, there will be two receiving lanes on the east leg of the intersection. These improvements are expected to provide adequate operating conditions in the Opening Year 2021. These improvements are expected to provide LOS C and D, respectively, during both peak hours in the Design Year 2041.

At the intersections of Buena Vista Road at apartments driveway/Brewer Elementary School outbound driveway and Buena Vista Road at Vista Estates driveway, the volumes on each of the side street approaches are expected to be too low to require any improvements.

At the intersection of Illges Road and Ace Way Drive, traffic signal warrant analysis and single-lane roundabout analysis were performed for the intersection. The traffic signal warrant analysis is discussed in Section 5. As will be seen in Section 5, a traffic signal is expected to be warranted for the Opening Year 2021. As an alternative to a traffic signal, a single-lane roundabout analysis was also performed for the intersection, using GDOT's *Roundabout Analysis Tool* (4). The results are also shown in Table 4. As can be seen from Table 4, the intersection is expected to experience lower delays during both peak hours with a single-lane roundabout than it would with a traffic signal. The roundabout analysis is included in Appendix G. However, this intersection is approximately 50 feet from the railroad tracks, which cross Ace Way Drive at grade. Roundabout installation would require significant acquisition of right-of-way a sufficient distance away from the railroad tracks so as not to interfere with the traffic flow near or even within the roundabout.

It should be noted that GDOT's *Roundabout Analysis Tool* provides two LOS, one for the Opening Year when drivers are unfamiliar with the roundabout, and one for the Design Year, when drivers are familiar with the roundabout. Therefore, it is not uncommon for the LOS to improve between the Opening Year and the Design Year because drivers have become accustomed to the roundabout.

At the intersection of Morris Road and Ace Way Drive, traffic signal warrant analysis and single-lane roundabout analysis were performed for the intersection. The traffic signal warrant analysis is discussed in Section 5. As will be seen in Section 5, a traffic signal is not expected to be warranted for the Opening Year 2021. As an alternative to a traffic signal, a single-lane roundabout analysis was also performed for the intersection, using GDOT's *Roundabout Analysis Tool* (4). The results are also shown in Table 4. As can be seen from Table 4, the intersection is expected to experience sufficient LOS during both peak hours with a single-lane roundabout. The roundabout analysis is included in Appendix G. However, roundabout installation would require significant acquisition of right-of-way in the area. This intersection is approximately 350 feet away from the railroad tracks, which cross Ace Way Drive at grade. A roundabout

would provide a U-turn option and should keep traffic flowing reasonably in the area while a train is occupying the tracks, and also allows for timely clearance of the tracks during normal operations.

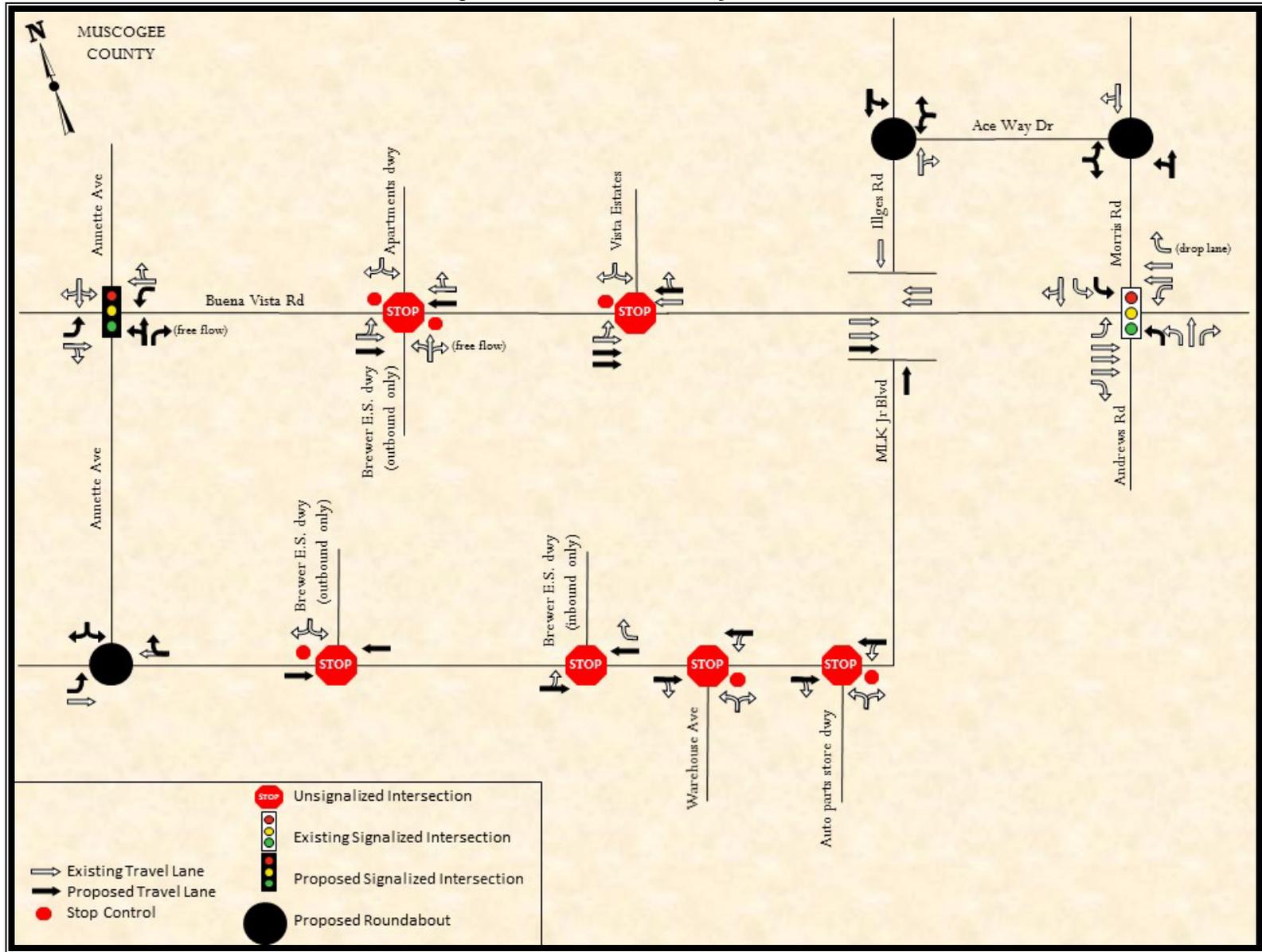
At the intersection of Buena Vista Road and Morris Road/Andrews Road, in addition to the improvements expected as part of the proposed grade separation at Buena Vista Road and MLK Jr Boulevard/Illges Road, dual left turn lanes on both Morris Road and Andrews Road approaches and a westbound right turn only lane on Buena Vista Road are expected to provide adequate operating conditions for the Opening Year 2021. These improvements are expected to provide LOS D and E, respectively, during both peak hours in the Design Year 2041; additional improvements would be cost prohibitive.

The improvements are shown in Figure 3 with a traffic signal at the intersection of Buena Vista Road and Annette Avenue and with roundabouts at the intersections of MLK Jr Boulevard and Annette Avenue, Illges Road and Ace Way Drive, and Morris Road and Ace Way Drive. As can be seen from a comparison of Figures 2 and 3, the number of lanes expected to be needed at the proposed roundabout intersections is fewer than with proposed traffic signals with the existing intersection geometry.

Table 4 – Results of Capacity Analysis: Mitigated

Int #	Intersection	Lane Configurations and Intersection Control	2021		2041	
			AM Peak	PM Peak	AM Peak	PM Peak
1	Buena Vista Rd & Annette Ave	Traffic Signal EB: 1 left, 1 thru+right WB: 1 left, 1 thru+right NB: 1 left+thru, 1 right (free-flow add lane) SB: 1 left+thru+right	B (18.5)	D (35.1)	C (23.9)	D (41.4)
4	Illges Rd & Ace Way Dr	Single-lane roundabout WB: 1 left+right NB: 1 thru+right SB: 1 left+thru	WB: B (11.0) NB: A (7.0) SB: A (9.0)	WB: A (10.0) NB: A (7.0) SB: A (9.0)	WB: B (11.0) NB: A (6.0) SB: A (8.0)	WB: A (9.0) NB: A (6.0) SB: A (8.0)
		Traffic signal	B (12.1)	B (11.1)	B (14.3)	A (9.9)
10	Morris Rd & Ace Way Dr	Single-lane roundabout EB: 1 left+right NB: 1 left+thru SB: 1 thru+right	EB: B (14.0) NB: C (20.0) SB: C (19.0)	EB: B (12.0) NB: C (21.0) SB: B (15.0)	EB: B (13.0) NB: C (22.0) SB: C (18.0)	EB: B (12.0) NB: D (25.0) SB: B (14.0)
11	Buena Vista Rd & Morris Rd/Andrews Rd	Traffic signal EB: 1 left, 3 thru, 1 right WB: 1 left, 2 thru, 1 right (drop lane) NB: 2 left, 1 thru, 1 right SB: 2 left, 1 thru+right	C (30.6)	D (44.7)	D (39.4)	E (66.0)

Figure 3 – Recommended Improvements



Storage Summary

Table 5 shows the worst case scenario queue lengths over both peak hours and accompanying storage lengths only for the Build Scenario with the improvements included in Table 4 for the Design Year 2041. For the signalized intersections, the 95th percentile queue length from *Synchro* is shown. In cases where the 95th percentile queue length or the calculated queue length is lower than the minimum storage length from GDOT's *Regulations for Driveway and Encroachment Control*, GDOT's minimum storage length for the design speed is shown. In cases where high volumes of turning vehicles are expected, and the length needed to accommodate the turning traffic is shorter than the length needed to prevent queued through vehicles from blocking the entrance to the turn bay, the length needed to prevent queued through vehicles from blocking the entrance to the turn bay is shown. For the roundabouts, the 95th percentile queue length from GDOT's *Roundabout Analysis Tool* is shown for the critical lane on the approach. See GDOT standards and details for bay taper and deceleration lengths.

As can be seen from Tables 5A and 5B, at the intersections of Illges Road and Ace Way Drive and Morris Road and Ace Way Drive, where either traffic signals or roundabouts are being considered, the queue lengths are expected to be shorter with the roundabouts than with the traffic signals.

Table 5A – Queue Lengths

Int #	Intersection	Control	EBL/ EBU	EBT	EBR	WBL/ WBU	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
1	Buena Vista Rd & Annette Ave	Signal	9 ft	1120 ft	325 ft	686 ft	26 ft	23 ft	85 ft					
2	Buena Vista Rd & apartments dwy/Brewer E.S. outbound dwy	Side Street Stop	0 ft	-	-	-	0 ft	13 ft						
3	Buena Vista Rd & Vista Estates dwy	Side Street Stop	5 ft	-	-	-	-	73 ft						
4	Illges Rd & Ace Way Dr	Signal	122 ft	43 ft	58 ft	136 ft	33 ft							
		Roundabout	128 ft	23 ft	68 ft									
5	Buena Vista Rd & MLK Jr Blvd/Illges Rd													
6	MLK Jr Blvd & auto parts store dwy	Side Street Stop	3 ft											
7	MLK Jr Blvd & Warehouse Ave	Side Street Stop	0 ft											
8	MLK Jr Blvd & Brewer E.S. inbound dwy	Side Street Stop	3 ft											
9	MLK Jr Blvd & Brewer E.S. outbound dwy	Side Street Stop	18 ft											
10	Morris Rd & Ace Way Dr	Roundabout	118 ft	362 ft	138 ft									
11	Buena Vista Rd & Morris Rd/Andrews Rd	Signal	99 ft	539 ft	92 ft	628 ft	405 ft	389 ft	235 ft	446 ft	405 ft	282 ft	461 ft	
12	MLK Jr Blvd/Annette Ave	Roundabout	84 ft	23 ft	24 ft									

Table 5B – Storage Summary

Int #	Intersection	Control	EBL/ EBU	EBR	WBL/ WBU	WBR	NBL	NBR	SBL	SBR	
1	Buena Vista Rd & Annette Ave	Signal	50 ft	-	-	-	-	100 ft	-		
2	Buena Vista Rd & apartments dwy/Brewer E.S. outbound dwy	Side Street Stop	-	-	-	-	-	-	-	-	
3	Buena Vista Rd & Vista Estates dwy	Side Street Stop	-	-	-	-	-	-	-	-	
4	Illges Rd & Ace Way Dr	Signal	75	-	-	-	-	165	-		
		Roundabout	-	-	-	-	-	-	-		
5	Buena Vista Rd & MLK Jr Blvd/Illges Rd										
6	MLK Jr Blvd & auto parts store dwy	Side Street Stop	-	-	-	-	-	-	-		
7	MLK Jr Blvd & Warehouse Ave	Side Street Stop	-	-	-	-	-	-	-		
8	MLK Jr Blvd & Brewer E.S. inbound dwy	Side Street Stop	-	-	-	-	-	-	-	150 ft	
9	MLK Jr Blvd & Brewer E.S. outbound dwy	Side Street Stop	-	-	-	-	-	-	-		
10	Morris Rd & Ace Way Dr	Roundabout	-	-	-	-	-	-	-		
11	Buena Vista Rd & Morris Rd/Andrews Rd	Signal	100 ft	100 ft	210 ft	-	250 ft (dual)	400 ft	285 ft (dual)	-	
12	MLK Jr Blvd/Annette Ave	Roundabout	-	-	-	-	-	-	-		

5. SIGNAL WARRANT ANALYSIS

BUENA VISTA ROAD “SPIDER WEB” NETWORK TRAFFIC ENGINEERING REPORT

The following three unsignalized intersections, also identified in Section 4 of this report, were evaluated for the installation of traffic signals:

- Buena Vista Road and Annette Avenue
- Illges Road and Ace Way Drive
- Morris Road and Ace Way Drive

The projected volumes of the intersections were evaluated using the guidelines given in the *Manual on Uniform Traffic Control Devices* (MUTCD) (6). The MUTCD establishes the following Warrants:

- Warrant 1, Eight-Hour Vehicular Volume,
- Warrant 2, Four-Hour Vehicular Volume,
- Warrant 3, Peak Hour,
- Warrant 4, Pedestrian Volume,
- Warrant 5, School Crossing,
- Warrant 6, Coordinated Signal System,
- Warrant 7, Crash Experience,
- Warrant 8, Roadway Network,
- Warrant 9, Intersection near a Grade Crossing.

The applicable warrants will be addressed for each intersection being analyzed. The MUTCD guidelines for warrant studies suggest that a traffic signal should not be installed unless one or more of the warrants are satisfied.

Hourly Volumes

Signal warrant studies typically study existing intersections and intersection configurations and involve the collection of hourly traffic data. However, this study is concerned with the analysis of the projected conditions that will occur in the Opening Year 2021 and the Design Year 2041. Therefore, projections of the ADT volumes were used. The ADT volumes are contained in Appendix C. The ADT volumes were distributed hourly using the 24-hour directional counts that were taken at select locations along the corridor for this project. Right turn volumes were not included on any of the side street approaches, with the exception of the southbound approach on Annette Avenue, which is a single lane approach. Warrants 1 and 2 were evaluated using the Eighth Highest Hour and the Fourth Highest Hour, respectively.

Warrant 1 – Eight-Hour Vehicular Volume

The MUTCD gives minimum volumes required to meet the warrant based on the number of lanes on the major street, the number of lanes on the minor street, and the speed limit on the major street. The traffic volume requirements of Warrant 1, Conditions A and B are hourly volumes that must be met for eight hours of an average day. The required volume for the major street is the total approach volume (both

directions). The required minor street volume is the heavier approach volume (one direction). If either Condition A or Condition B is met, then Warrant 1 is satisfied. If neither Condition A nor Condition B is met, but 80% of the volume requirements for Condition A are met for eight hours and 80% of the volume requirements for Condition B are met for eight hours, then Warrant 1 is satisfied; the eight hours satisfied for 80% of Condition A do not have to be the same eight hours satisfied for 80% of Condition B. Warrant 1 is intended to be applied as a single warrant; therefore, if Condition A is satisfied, Condition B is not evaluated, and if Condition A or Condition B is satisfied, the combination of Conditions A and B is not evaluated.

The MUTCD states that the threshold volumes may be reduced by 30% if the speed limit on the major roadway exceeds 40 mph. The speed limits on Buena Vista Road and all side streets do not exceed the 40 mph threshold at any point within the study area. Therefore, the projected traffic volumes were compared to the requirements of Warrant 1, when using the 100% threshold volumes for the Opening Year 2021 and the Design Year 2041. The tables below show the results of the evaluation of Warrant 1 for the three intersections being considered for traffic signals.

2021 Weekday - Buena Vista Road and Annette Avenue					
8th Highest Hour Volume		100 % Threshold			
		Condition A		Condition B	
Major Street	*Side Street	Major	Side	Major	Side
		> 600	> 150	>900	>75
973	29	YES	NO	YES	NO

* - Does NOT Include any Right Turn Reduction (RTR)

2041 Weekday - Buena Vista Road and Annette Avenue					
8th Highest Hour Volume		100 % Threshold			
		Condition A		Condition B	
Major Street	*Side Street	Major	Side	Major	Side
		> 600	> 150	>900	>75
1187	36	YES	NO	YES	NO

* - Does NOT Include any Right Turn Reduction (RTR)

2021 Weekday - Buena Vista Road and Annette Avenue					
8th Highest Hour Volume		100 % Threshold			
		Condition A		Condition B	
Major Street	**Side Street	Major	Side	Major	Side
		> 600	> 150	>900	>75
421	118	NO	NO	NO	YES

** - Main street left turning volume was used as side street volume

2041 Weekday - Buena Vista Road and Annette Avenue					
8th Highest Hour Volume		100 % Threshold			
		Condition A		Condition B	
Major Street	**Side Street	Major	Side	Major	Side
		> 600	> 150	>900	>75
514	144	NO	NO	NO	YES

** - Main street left turning volume was used as side street volume

2021 Weekday - Illges Road and Ace Way Drive					
8th Highest Hour Volume		100 % Threshold			
		Condition A		Condition B	
Major Street	Side Street	Major	Side	Major	Side
		> 600	> 150	>900	>75
321	52	NO	NO	NO	NO

2041 Weekday - Illges Road and Ace Way Drive					
8th Highest Hour Volume		100 % Threshold			
		Condition A		Condition B	
Major Street	Side Street	Major	Side	Major	Side
		> 600	> 150	>900	>75
389	63	NO	NO	NO	NO

2021 Weekday - Morris Road and Ace Way Drive					
8th Highest Hour Volume		100 % Threshold			
		Condition A		Condition B	
Major Street	Side Street	Major	Side	Major	Side
		> 600	> 150	>900	>75
690	27	YES	NO	NO	NO

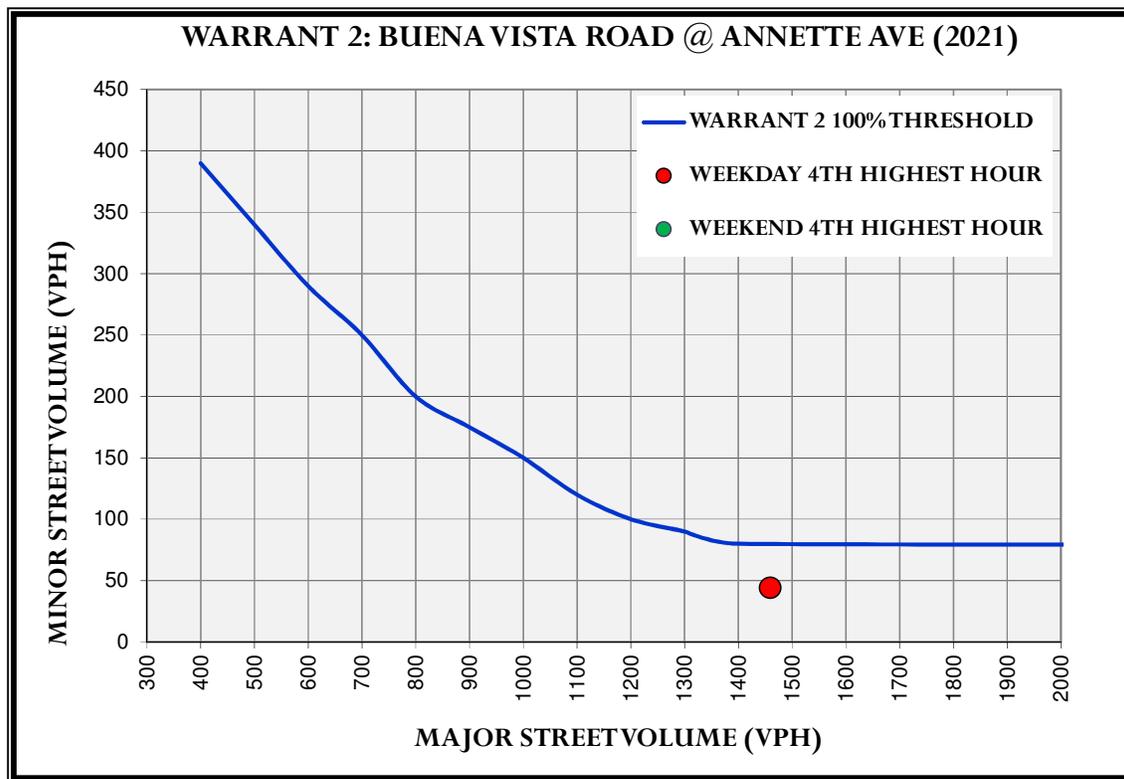
2041 Weekday - Morris Road and Ace Way Drive					
8th Highest Hour Volume		100 % Threshold			
		Condition A		Condition B	
Major Street	Side Street	Major	Side	Major	Side
		> 600	> 150	>900	>75
843	32	YES	NO	NO	NO

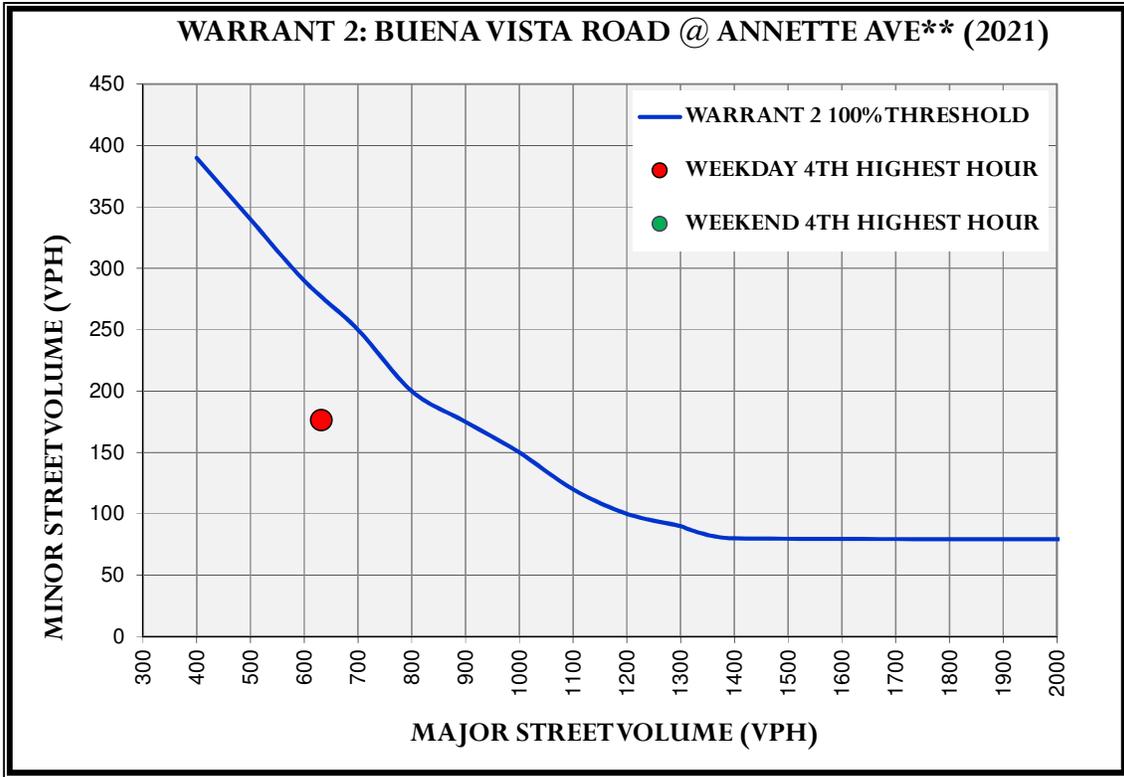
Of the three intersections evaluated for the installation of traffic signals, none of the intersections meet Warrant 1. The side street volume on Annette Avenue is too low to meet the threshold required from the side street for both Conditions A and B.

Warrant 2 – Four-Hour Vehicular Volume

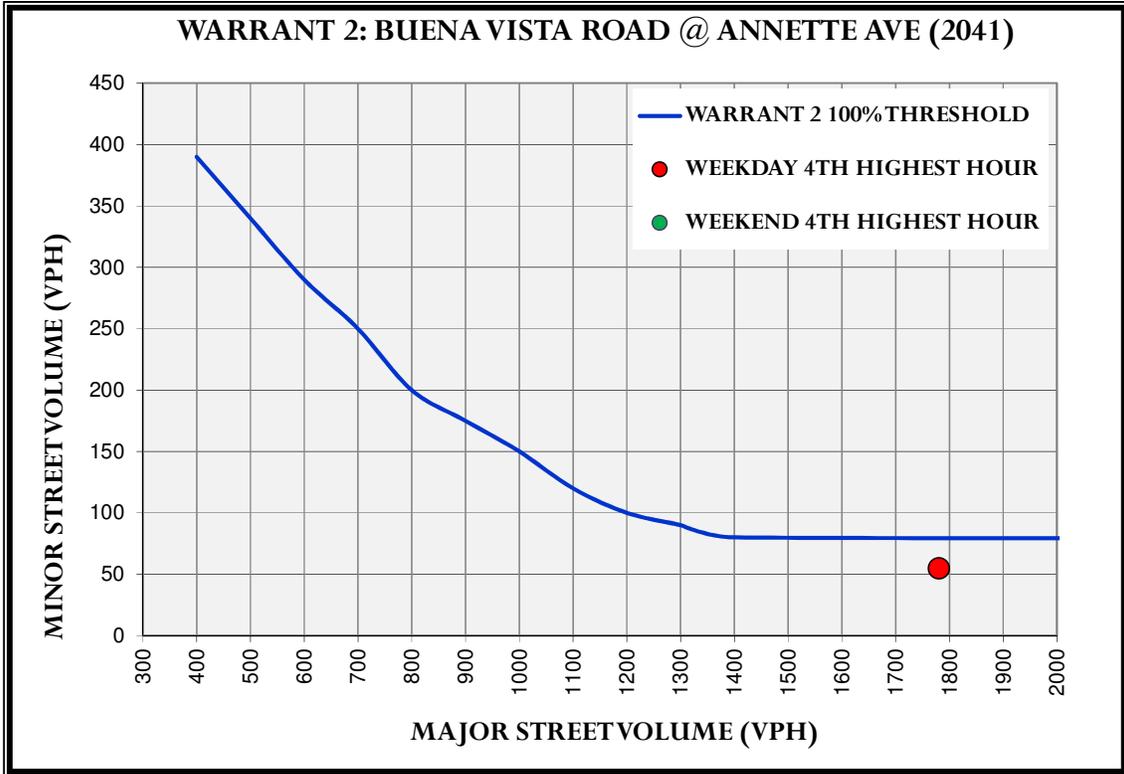
The Four-Hour Vehicular Volume Warrant is presented in the MUTCD using a graph of required side street volumes versus main street volumes. The projected traffic volumes were compared to the requirements of Warrant 2, when using the 100% threshold volumes for the Opening Year 2021 and the Design Year 2041.

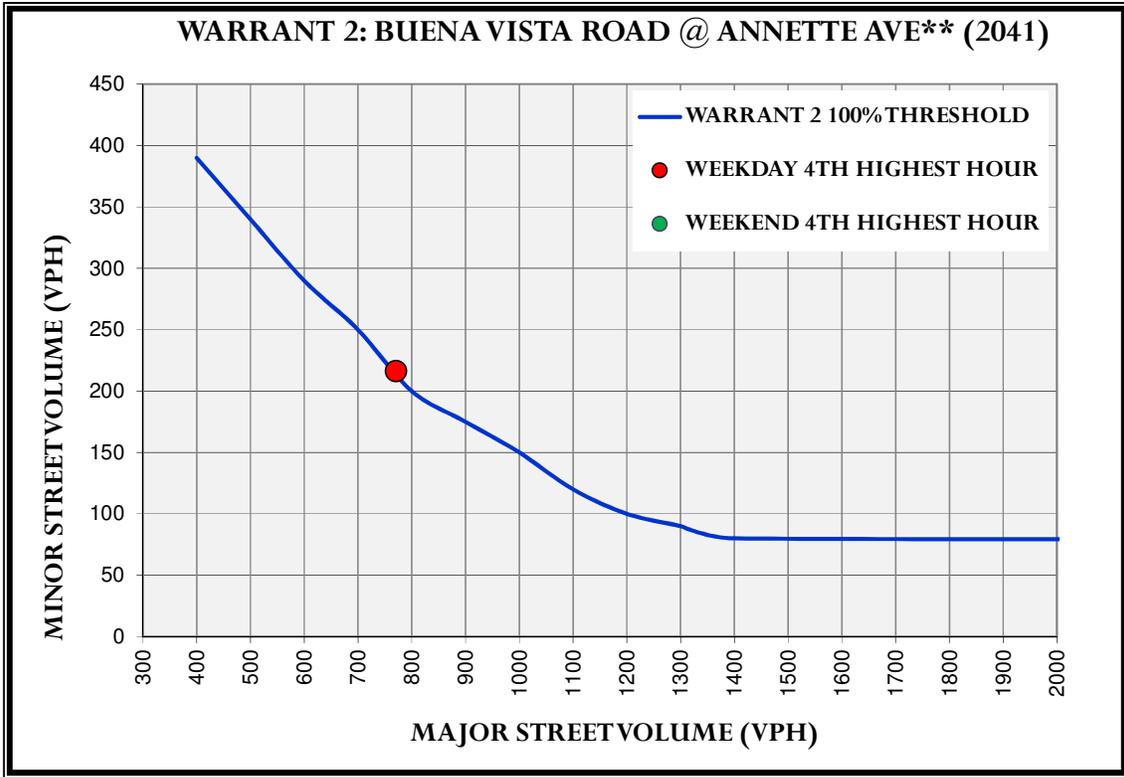
The MUTCD states that the threshold volumes may be reduced by 30% if the speed limit on the major roadway exceeds 40 mph. The speed limits on Buena Vista Road and all side streets do not exceed the 40 mph threshold at any point within the study area. Therefore, the projected traffic volumes were compared to the requirements of Warrant 2, when using the 100% threshold volumes for the Opening Year 2021 and the Design Year 2041. The tables below show the results of the evaluation of Warrant 1 for the three intersections being considered for traffic signals.



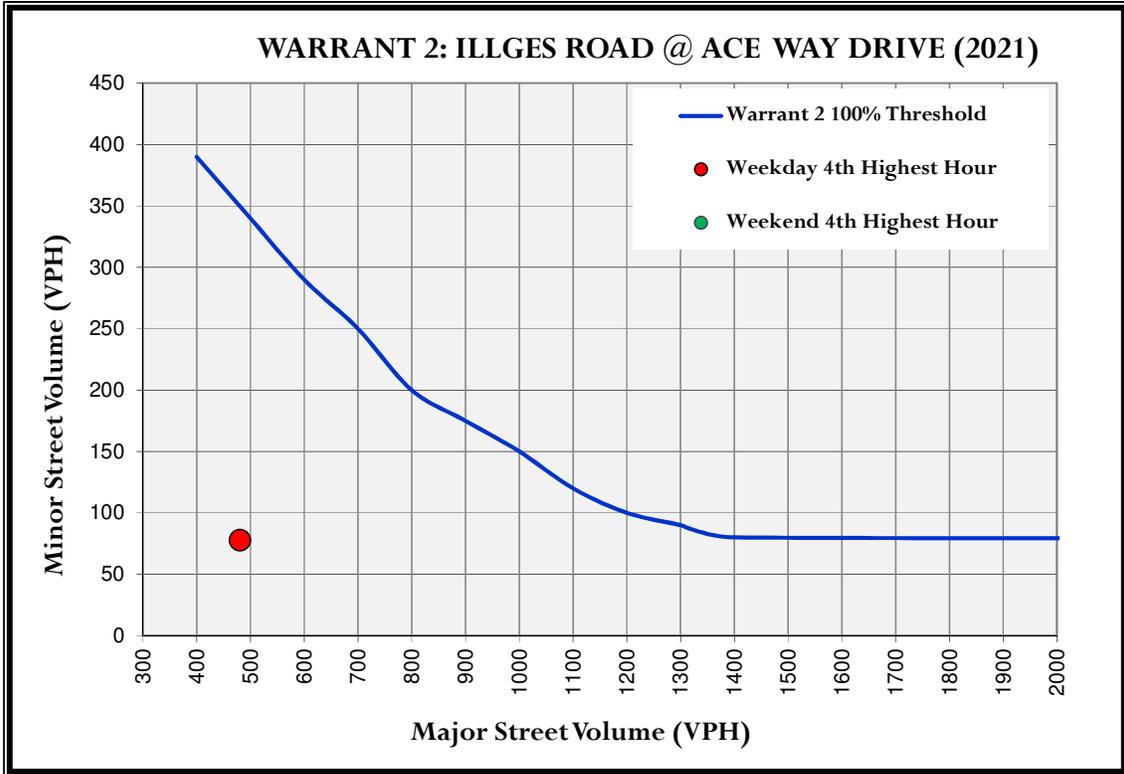


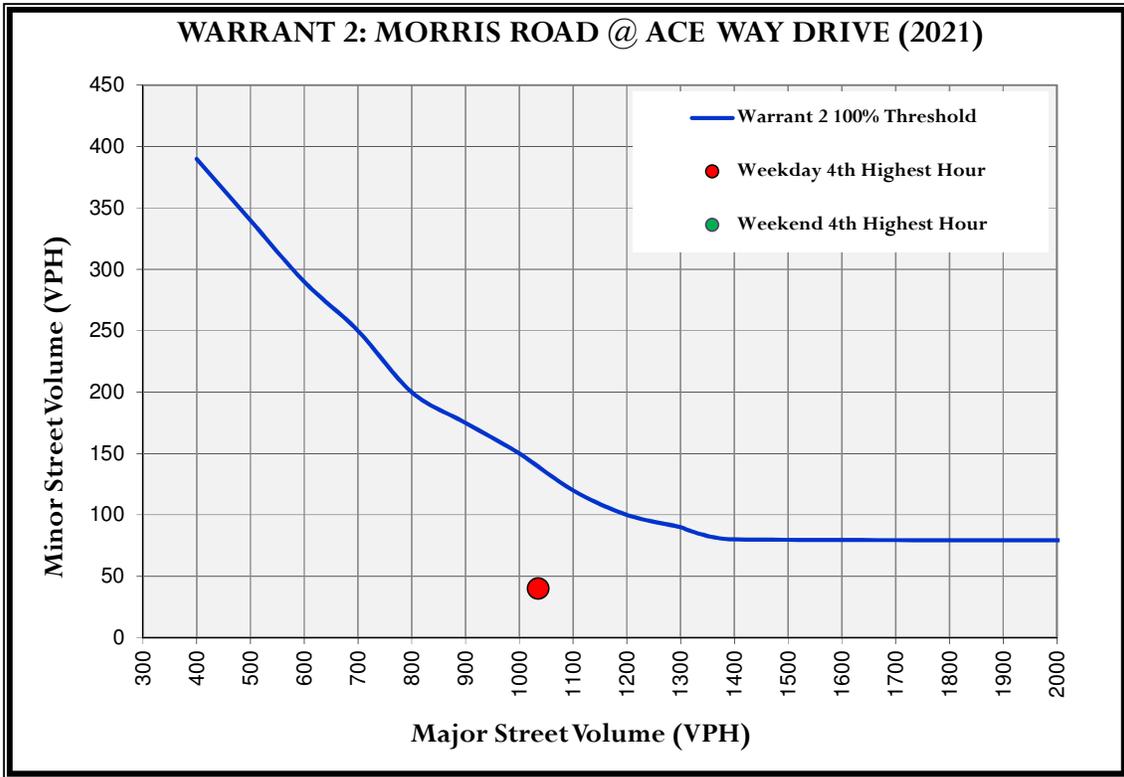
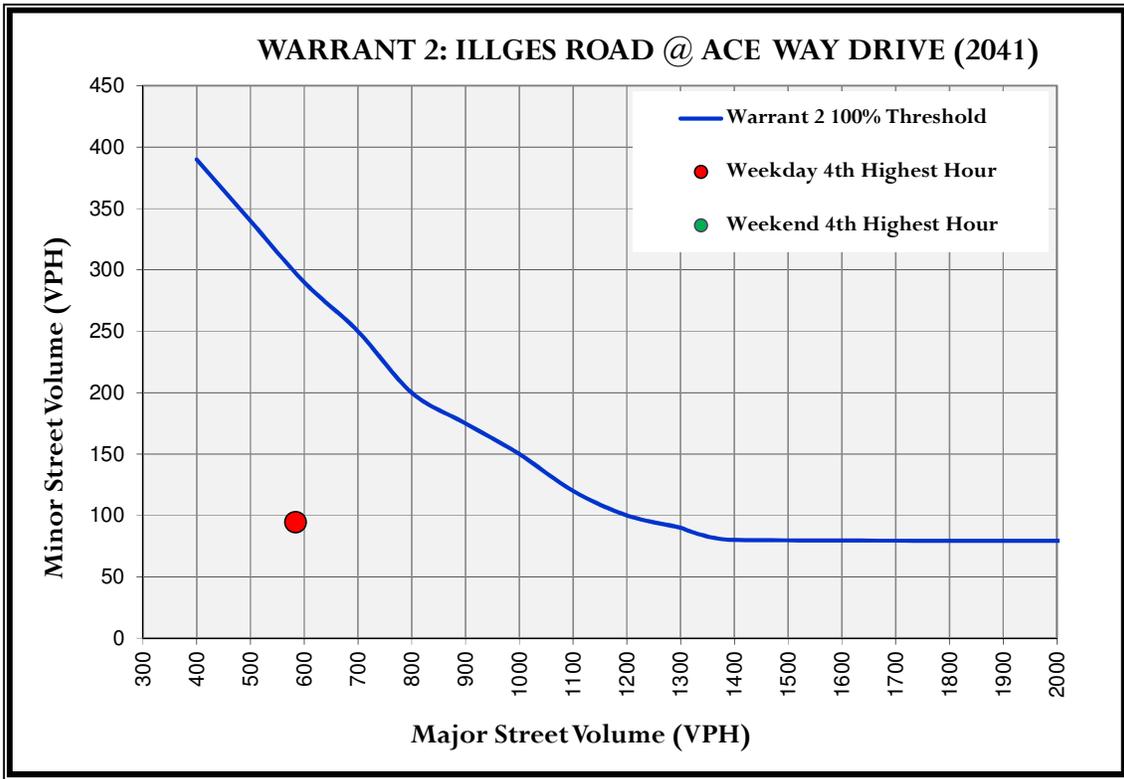
** - Main street left turning volume was used as side street volume

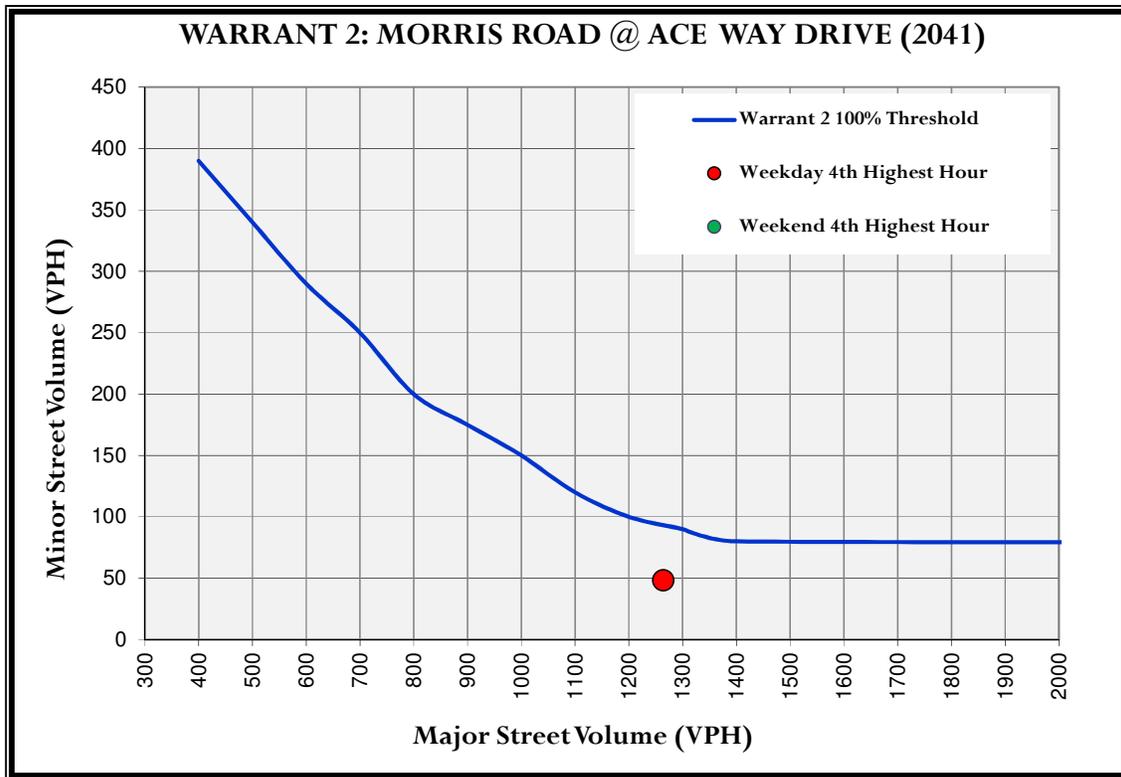




** - Main street left turning volume was used as side street volume







Of the three intersections evaluated for the installation of traffic signals, only the intersection of Buena Vista Road and Annette Avenue meets Warrant 2. However, this warrant is met by applying the main street left turning volume as the side street volume. The side street volume on Annette Avenue is too low to meet the threshold required from the side street for Warrant 2.

Warrant 3 – Peak Hour

The MUTCD states: “Support: The Peak Hour signal warrant is intended for use at a location where traffic conditions are such that for a minimum of 1 hour of an average day, the minor-street traffic suffers undue delay when entering or crossing the major street.”

Standard: This signal warrant shall be applied only in unusual cases, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time.”

Therefore, Warrant 3 is not applicable for any of the intersections evaluated.

Warrant 4 – Pedestrian Volume

There is not excessive pedestrian volume in the area of the study. Therefore, Warrant 4 is not applicable for any of the intersections evaluated.

Warrant 5 – School Crossing

The fact that schoolchildren are crossing the major street is a reason to consider installing a traffic signal at the intersection of Buena Vista Road and Annette Avenue, but not at the intersections of Illges Road and Ace Way Drive and Morris Road and Ace Way Drive. There is currently a crossing guard near the intersection of Buena Vista Road and apartments driveway/Brewer Elementary School outbound driveway. A traffic signal at the intersection of Buena Vista Road and Annette Avenue, combined with further pedestrian-friendly accommodations either at the intersection or in the vicinity such as sufficient sidewalks and crosswalks, may encourage schoolchildren to cross at the potentially signalized intersection in the future. The potential traffic signal also may encourage consolidation of pedestrians crossing Buena Vista Road into one location, rather than at scattered locations between the intersections of Buena Vista Road and Annette Avenue and Buena Vista Road and apartments driveway/Brewer Elementary School outbound driveway.

Warrant 6 – Coordinated Signal System

Signalization is not expected to be needed in order to maintain proper platooning of vehicles. Therefore, Warrant 6 is not applicable for any of the intersections evaluated.

Warrant 7 – Crash Experience

Warrant 7 was evaluated for the three intersections under consideration for a traffic signal. The tables below show the crash history for each intersection under consideration for a traffic signal.

<u>BUENA VISTA ROAD @ ANNETTE AVE</u>									
Year	Rear End	Side Swipe Same Direction	Side Swipe Opposite Direction	Angle	Head On	Not a Collison with a Motor Vehicle	Total	Injury Crashes/ Number of Injuries	Fatal Crashes/ Number of Fatalities
2012	1	0	0	1	0	0	2	0/0	0/0
2013	0	0	0	0	0	0	0	0/0	0/0
2014	2	1	0	1	0	0	4	0/0	0/0

ILLGES ROAD @ ACE WAY DRIVE									
Year	Rear End	Side Swipe Same Direction	Side Swipe Opposite Direction	Angle	Head On	Not a Collision with a Motor Vehicle	Total	Injury Crashes/ Number of Injuries	Fatal Crashes/ Number of Fatalities
2012	2	0	0	1	0	0	3	0/0	0/0
2013	3	0	0	4	0	0	7	1/3	0/0
2014	1	0	0	1	0	0	2	0/0	0/0

MORRIS ROAD @ ACE WAY DRIVE									
Year	Rear End	Side Swipe Same Direction	Side Swipe Opposite Direction	Angle	Head On	Not a Collision with a Motor Vehicle	Total	Injury Crashes/ Number of Injuries	Fatal Crashes/ Number of Fatalities
2012	4	0	0	2	0	0	6	1/1	0/0
2013	3	0	0	0	0	0	3	1/1	0/0
2014	3	2	0	1	0	0	6	1/3	0/0

As can be seen from the tables, there were six crashes, twelve crashes, and fifteen crashes, respectively, at the intersections of Buena Vista Road and Annette Avenue, Illges Road and Ace Way Drive, and Morris Road and Ace Way Drive within any three year period. However, there are not enough crash types in this same period that would be expected to be mitigated by a traffic signal, such as angle and head on collisions. Therefore, Warrant 7 is not met for any of the three intersections evaluated.

Warrant 8 – Roadway Network

Signalization is not expected to be needed in order to encourage concentration and organization of traffic flow on the roadway network. Therefore, Warrant 8 is not applicable for any of the intersections evaluated.

Warrant 9 – Intersection near a Grade Crossing

Proximity of the intersection to a grade crossing is a reason to consider installing a traffic signal at the intersection of Illges Road and Ace Way Drive, but not at the intersections of Buena Vista Road and Annette Avenue and Morris Road and Ace Way Drive.

Summary of Traffic Signal Warrant Analysis

Table 6 summarizes the traffic signal warrant analysis for the three aforementioned intersections along the Buena Vista Road “Spider Web” network, using the Opening Year 2021 volumes and the Design Year 2041 volumes. The traffic signal warrant analyses are detailed in Appendix H. Based on the traffic signal warrant analysis using 100% threshold volumes, signalization is expected to be warranted at the intersection of Buena Vista Road and Annette Avenue in the Opening Year 2021 and the Design Year 2041; however, the signal is warranted by using the main street left turning vehicles as the side street approach.

In addition to the intersection where signalization is expected to be warranted based on 100% threshold volumes, signalization is warranted at the intersection of Illges Road and Ace Way Drive in the Opening Year 2021 based on Warrant 9, Intersection Near a Grade Crossing.

Signalization is not expected to be warranted at the intersection of Morris Road and Ace Way Drive in the Opening Year 2021 or the Design Year 2041.

Table 6 – Summary of Traffic Signal Warrant Analysis

Int #	Intersection	Existing Control	Warrants Met	Warrants Met
			Opening Year 2021	Opening Year 2041
			100% Threshold Volumes	100% Threshold Volumes
1	Buena Vista Road & Annette Avenue	Side Street Stop	2*, 5	2*, 5
4	Illges Road & Ace Way Drive	Side Street Stop	9	9
10	Morris Road & Ace Way Drive	Side Street Stop	none	none

*using main street left turn volumes

6. CONCLUSIONS

BUENA VISTA ROAD “SPIDER WEB” NETWORK TRAFFIC ENGINEERING REPORT

Based on the analysis documented in this report, Wolverton and Associates, Inc. make the following conclusions.

No-Build Scenario, Opening Year 2021:

- The following four intersections are expected to experience inadequate levels of service during one or both peak hours in the Opening Year 2021 if no improvements are made: Buena Vista Road and Annette Avenue/Brewer Elementary School inbound driveway, Buena Vista Road and apartments driveway/Brewer Elementary School outbound driveway, Buena Vista Road and Vista Estates driveway, and Buena Vista Road and Morris Road/Andrews Road.

No-Build Scenario, Design Year 2041:

- The following six intersections are expected to experience inadequate levels of service during one or both peak hours in the Design Year 2041 if no improvements are made: Buena Vista Road and Annette Avenue/Brewer Elementary School inbound driveway, Buena Vista Road and apartments driveway/Brewer Elementary School outbound driveway, Buena Vista Road and Vista Estates driveway, Illges Road and Ace Way Drive, Morris Road and Ace Way Drive, and Buena Vista Road and Morris Road/Andrews Road.

Build Scenario, Opening Year 2021:

- Grade separation of the existing seven-lane section on Buena Vista Road to a five-lane elevated section (three eastbound, two westbound) from Vista Estates driveway to Morris Road/Andrews Road over MLK Jr Boulevard/Illges Road and the railroad tracks that run parallel to MLK Jr Boulevard/Illges Road.
- Annette Avenue will be extended south to connect with MLK Jr Boulevard via a proposed roundabout. The west leg of the roundabout on MLK Jr Boulevard is proposed as two approach lanes and two receiving lanes. The east leg of the roundabout on MLK Jr Boulevard is proposed as one approach lane and one receiving lane. The north leg of the roundabout on Annette Avenue is proposed as one approach lane and one receiving lane.
- The roadway segment on MLK Jr Boulevard between the proposed roundabout at the extended Annette Avenue and the grade separated intersection of Buena Vista Road and MLK Jr Boulevard/Illges Road is proposed as a two-lane undivided segment in the Build scenario to better align with the existing two-lane undivided section on Illges Road north of Buena Vista Road.
- In order for Buena Vista Road to arrive at the proposed grade separated section over MLK Jr Boulevard/Illges Road with three eastbound lanes and two westbound lanes, free-flow channelized right turns are proposed at the intersections of Buena Vista Road and Annette Avenue and Buena Vista Road and apartments driveway/Brewer Elementary School outbound driveway. A westbound right turn only lane is proposed at the intersection of Buena Vista Road and Morris Road/Andrews Road.

Mitigated Build Scenario, Design Year 2041:

The following intersection improvements are also expected to be needed by the Design Year 2041 as part of the original Build Scenario improvements:

- Buena Vista Road and Annette Avenue:
 - Signalize the intersection.
 - Construct an eastbound left turn bay of 50 feet.
 - Construct a westbound left turn only lane.
 - Construct a northbound right turn bay of 100 feet.

- Illges Road and Ace Way Drive:
 - Signalize the intersection and keep the existing geometry.
 - Or:
 - Install a single-lane roundabout.
 - A roundabout would be expected to provide lower delays and shorter queue lengths with less necessary capacity than a traffic signal.

- Morris Road and Ace Way Drive:
 - Install a single-lane roundabout.
 - A roundabout would be expected to provide lower delays and shorter queue lengths with less necessary capacity than a traffic signal. In addition, a traffic signal is not warranted at this intersection.

- Buena Vista Road and Morris Road/Andrews Road:
 - Construct dual northbound left turn lanes of 250 feet each.
 - Construct dual southbound left turn lanes of 285 feet each.
 - Extend northbound right turn bay to 405 feet.
 - Reconstruct eastbound left turn bay to 100 feet.
 - Reconstruct eastbound right turn bay to 100 feet.
 - These improvements are expected to provide LOS D and E, respectively, during both peak hours in the Design Year 2041; additional improvements would be cost prohibitive.

The improvements are shown in Figure 3 with a traffic signal at the intersection of Buena Vista Road and Annette Avenue and with roundabouts at the intersections of MLK Jr Boulevard and Annette Avenue, Illges Road and Ace Way Drive, and Morris Road and Ace Way Drive. As can be seen from a comparison of Figures 2 and 3, the number of lanes expected to be needed at the proposed roundabout intersections is fewer than with proposed traffic signals with the existing intersection geometry.

REFERENCES

BUENA VISTA ROAD “SPIDER WEB” NETWORK TRAFFIC ENGINEERING REPORT

1. Synchro, Version 8, Trafficware Ltd., Sugar Land, TX, 2015.
2. Highway Capacity Manual, HCM 2000, Transportation Research Board, Washington, DC, 2000.
3. Regulations for Driveway and Encroachment Control, Georgia Department of Transportation, Atlanta, GA, 2009.
4. Roundabout Analysis Tool, v 1.3, Georgia Department of Transportation, Atlanta, GA, 2010.
5. GRTA DRI Review Package Technical Guidelines, Georgia Regional Transportation Authority, Atlanta, GA, 2008.
6. Manual on Uniform Traffic Control Devices, 2009 Edition, Federal Highway Administration, Washington, DC, 2009.



September 11, 2015

Mr. Rick Jones
City of Columbus
Sent via Email: rjones@columbusga.org

RE: GDOT Project No. 0011436
Buena Vista Corridor and Spider Web

Dear Mr. Jones,

This memo provides the results of the analysis performed along Buena Vista Road to determine if the proposed three-lane section for the Buena Vista Corridor project is expected to operate adequately with the expected traffic from the Spider Web project.

The traffic study which was performed by Wolverton & Associates (W&A) for the Buena Vista Corridor in late 2012/early 2013 analyzed various alternatives to improve Buena Vista Road from SR 22 Spur/Wynnton Road to east of Lawyers Lane/Baldwin Street. At the time of the 2013 study, the project had a design year of 2032. The 2013 study included analyses for Existing Year 2012, Interim Year 2022, and Design Year 2032. The outcome of the 2013 study was to provide a consistent cross-section on Buena Vista Road from 18th Avenue to Annette Avenue by converting both the existing four-lane undivided section from 18th Avenue to Britt Avenue and the existing two-lane undivided section from Britt Avenue to Annette Avenue to two lanes with a center two-way left-turn lane (TWLTL).

At the time of the Buena Vista Corridor's 2013 study, the Spider Web project was a separate project which was adjacent to the eastern end of the Buena Vista Corridor project. The Spider Web project will provide a grade separation of the existing seven-lane section on Buena Vista Road to a five-lane elevated section (three eastbound, two westbound) from Vista Estates driveway to Morris Road/Andrews Road over Martin Luther King Jr. Boulevard/Illges Road and the railroad tracks that run parallel to Martin Luther King Jr. Boulevard /Illges Road. It will improve the existing two-lane section of Buena Vista Road from Annette Avenue to Vista Estates driveway to tie into the proposed three-lane section of Buena Vista Road west of Annette Avenue. W&A performed a traffic study for the Spider Web project in late 2012/early 2013 and updated the study in 2015. The 2015 study included analyses for Existing Year 2015, Opening Year 2021, and Design Year 2041.

The Buena Vista Corridor project has now been added to the Spider Web project, and the improvements to the Buena Vista Corridor will be made under the Spider Web's GDOT Project No. 0011436. The analysis presented in this letter was performed to address concerns arising from the difference between the Design Year 2032 for the Buena Vista Corridor project in the 2013 study and the Design Year 2041 for the Spider Web project in the 2015 study. The concern was that the proposed three-lane section for the Buena Vista Corridor project, which would be adequate for the Buena Vista Corridor project's Design Year 2032, might not be adequate in the Spider Web project's Design Year 2041.

Two intersections along the Buena Vista Corridor were selected for reanalysis: Brown Avenue and Buena Vista Road, and 18th Avenue and Buena Vista Road. The intersection of Brown Avenue and Buena Vista Road was selected because it had the highest expected delay among the intersections included in the Buena Vista Corridor's 2013 study; it should be noted that while it had the highest delay among the study intersections, the delay and Level of Service (LOS) were expected to be acceptable. The intersection of 18th Avenue and Buena Vista Road was selected because it is currently the proposed western terminus of the conversion of Buena Vista Road from a four-lane undivided section to three-lane section.

A 0.5% per year growth rate was developed by comparing the counts collected in 2012 and 2015 for the Spider Web's traffic studies. The 0.5% per year growth rate was applied for three years to the counts collected for the Buena Vista Corridor project in 2012 to grow them to the Spider Web's Existing Year 2015 levels. The 1.0% per year growth rate from the Spider Web's 2015 study was then applied for 26 years to grow the Existing Year 2015 volumes to the Design Year 2041.

GDOT has ranges of adequate LOS based on the area classification. The Buena Vista Corridor is in the Columbus metro area and, therefore, has a minimum LOS requirement of D.

The table below shows the LOS for the two intersections for the AM and PM peak hours in the Design Year 2041 with the proposed three-lane section. The values shown in parenthesis indicate the estimated delay in seconds per vehicle.

INTERSECTION	IMPROVEMENT	MOVEMENT	2041 AM PEAK HOUR	2041 PM PEAK HOUR
18 th Avenue & Buena Vista Rd	Restripe Buena Vista Rd as a 3-lane section east of 18 th Ave	EBL	A (9.0)	A (9.0)
		SB	C (17.4)	C (21.4)
Brown Ave & Buena Vista Rd	Restripe Buena Vista Rd as a 3-lane section	Overall	B (16.1)	B (19.1)

As can be seen from the table, the LOS at each of the intersections are expected to be adequate for the AM and PM peak hours in the Design Year 2041. Therefore, the proposed three-lane section on Buena Vista Road from 18th Avenue to Annette Avenue is expected to operate adequately in the Design Year 2041.

Should you have any questions or comments, please do not hesitate to call me at (770) 447-8999.

Sincerely,

Wolverton & Associates, Inc.

Julie M. Doyle, P.E., PTOE



TRAFFIC ENGINEERING REPORT
FOR
PROPOSED ROADWAY IMPROVEMENTS

BUENA VISTA ROAD CORRIDOR
FROM SR 22 SPUR/WYNNTON ROAD
TO ILLGES ROAD/MARTIN LUTHER KING JR. BOULEVARD

COLUMBUS, MUSCOGEE COUNTY, GEORGIA

W & A Project No. 12-910

February 6, 2013

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1. INTRODUCTION

BUENA VISTA ROAD TRAFFIC ENGINEERING REPORT

The purpose of this report is to analyze concept improvements for the 1.66 mile Buena Vista Road corridor from SR 22 Spur/Wynnton Road to Illges Road/Martin Luther King Jr. (MLK) Boulevard in Columbus, Muscogee County, Georgia. Three improvement alternatives were initially considered, in addition to the No-Build alternative: 1) widen the existing two-lane section from Britt Avenue to Vista Estates to a three-lane section with one lane in each direction and a center two-way left-turn lane; 2) widen the existing two-lane section from Britt Avenue to Vista Estates to a four-lane section with two lanes in each direction; 3) restripe the existing four-lane section from SR 22 Spur/Wynnton Road to Britt Avenue to a three-lane section with one lane in each direction and a center two-way left-turn lane, widen the existing two-lane section from Britt Avenue to Vista Estates to a three-lane section, and restripe the existing four-lane section from Vista Estates to Illges Road/MLK Boulevard to a three-lane section.

Figure 1 schematically illustrates the existing roadway facility as well as the location of the study intersections on Buena Vista Road.

Methodology

Initial evaluations were made to assess the current conditions along the corridor. Peak hour turning movement counts were conducted at the study intersections along the corridor. In addition to the TMCs, 24-hour directional counts were taken at select locations along the corridor. Traffic projections for the corridor were developed for the Interim Year 2022 and the Design Year 2032. No-Build and Build models were developed and analyzed for the study intersections along the corridor for the Interim Year 2022 and the Design Year 2032. Improvements were identified for intersections that operated at inadequate levels of service (LOS) with the improvements expected.

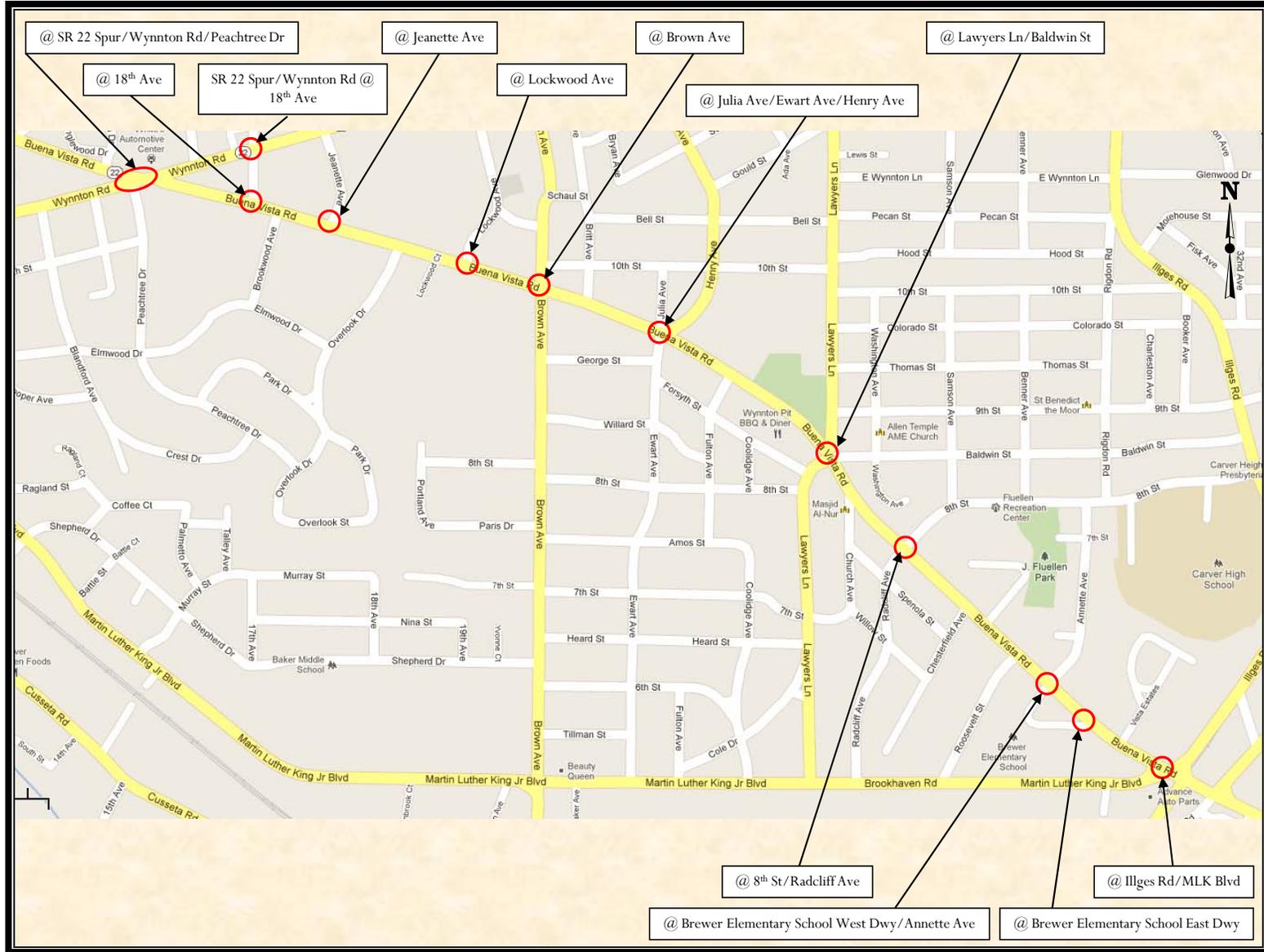
Planned Improvements

In addition to the proposed project, there are two other known projects that will affect the Buena Vista Road corridor.

The first project is a recently completed traffic signal timing optimization project to improve traffic flow along the Buena Vista corridor by improving the signal timing from Brown Avenue to Floyd Road/McBride Road. This project was completed in November 2012.

The second project is a recently completed pre-concept development project on Buena Vista Road from Illges Road/MLK Boulevard to Brennan Road/St. Mary's Road. This area is commonly referred to as the Spiderweb. This project developed three alternatives to improve the crossing of Buena Vista Road over the Norfolk Southern railroad tracks. This project was completed in December 2012. Note that the pre-concept layouts for the three alternatives were completed in December 2012, not the construction of the improvements. The anticipated opening year for the Spiderweb improvements is 2022.

Figure 1 – Project Location Map



2. EXISTING CONDITIONS

BUENA VISTA ROAD TRAFFIC ENGINEERING REPORT

Three alternatives to improve 1.66 miles of Buena Vista Road from SR 22 Spur/Wynnnton Road to Illges Road/MLK Boulevard were considered.

The following are the study intersections along the corridor:

1. Buena Vista Road and SR 22 Spur/Wynnnton Road/Peachtree Drive (signalized)
2. Buena Vista Road and 18th Avenue (unsignalized)
3. Buena Vista Road and Jeanette Avenue (unsignalized)
4. Buena Vista Road and Lockwood Avenue (unsignalized)
5. Buena Vista Road and Brown Avenue (signalized)
6. Buena Vista Road and Julia Avenue/Ewart Avenue/Henry Avenue (signalized)
7. Buena Vista Road and Lawyers Lane/Baldwin Street (signalized)
8. Buena Vista Road and 8th Street/Radcliff Avenue (unsignalized)
9. Buena Vista Road and Annette Avenue/Brewer Elementary School West Driveway (unsignalized)
10. Buena Vista Road and Brewer Elementary School East Driveway (unsignalized)
11. Buena Vista Road and Illges Road/MLK Boulevard (signalized)
12. SR 22 Spur/Wynnnton Road and 18th Avenue (signalized)

Buena Vista Road is a four-lane undivided roadway from SR 22 Spur/Wynnnton Road to Britt Avenue, and a two-lane undivided roadway from Britt Avenue to Vista Estates. It widens back to four lanes between Vista Estates and Illges Road/MLK Boulevard. Buena Vista Road is classified as an Urban Principal Arterial. The speed limit on Buena Vista Road is 30 mph. The adjacent development is a mixture of commercial and institutional. It runs roughly east-west from 13th Street, where it aligns with 13th Avenue, crossing over I-185, with which it has an interchange, to SR 103, where it aligns with Schatulga Road. Between 13th Street and Wynnnton Road, Buena Vista Road is also designated as SR 22 Spur and is part of the National Highway System. For the purposes of this study, Buena Vista Road is assumed to run east-west.

Wynnnton Road is a four-lane undivided Urban Principal Arterial with a 30 mph speed limit in the vicinity of Buena Vista Road. The adjacent development is commercial. It runs roughly east-west from 10th Avenue, where it aligns with 11th Street and continues into downtown Columbus, to 13th Street, where it aligns with Macon Road. Macon Road continues east, crossing under I-185, with which it has an interchange, to northeast Columbus and points beyond. East of Buena Vista Road, it is also designated as SR 22 Spur and is part of the National Highway System. For the purposes of this study, Wynnnton Road is assumed to run north-south at its intersection with Buena Vista Road and east-west at its intersection with 18th Avenue. Left turns from Wynnnton Road northbound to Buena Vista Road westbound and right turns from Buena Vista Road eastbound to Wynnnton Road southbound use a short connector roadway in the southwest quadrant of the intersection. Northbound lefts on Wynnnton Road turn just before the intersection onto the connector roadway and then must stop at a stop sign before turning left onto Buena Vista Road westbound. Eastbound rights on Buena Vista Road turn just before the intersection onto the connector roadway and then must yield before turning right onto Wynnnton Road southbound. Left turns are not allowed from SR 22 Spur/Wynnnton Road southbound onto Buena Vista Road eastbound or onto Peachtree Drive southeastbound; instead, southbound vehicles on SR 22 Spur/Wynnnton Road that are bound for Buena

Vista Road eastbound must turn left onto 18th Avenue and then stop at a stop sign before turning left onto Buena Vista Road.

Peachtree Drive is a two-lane undivided residential roadway that runs south from Wynnton Road. It forms the fifth leg of the intersection of Buena Vista Road and SR 22 Spur/Wynnton Road. For the purposes of this study, Peachtree Drive is assumed to form the southeast leg of the intersection of Buena Vista Road and SR 22 Spur/Wynnton Road.

18th Avenue is a two-lane undivided Urban Collector that serves commercial development in the vicinity of Buena Vista Road and SR 22 Spur/Wynnton Road and residential development further north. It runs north-south from Buena Vista Road to Slade Drive. Left turns are not allowed from SR 22 Spur/Wynnton Road southbound onto Buena Vista Road eastbound; instead, vehicles must turn left onto 18th Avenue and then stop at a stop sign before turning left onto Buena Vista Road.

Jeanette Avenue is a two-lane undivided Urban Local Road that runs north-south from Buena Vista Road to SR 22 Spur/Wynnton Road and serves the AFLAC campus.

Lockwood Avenue is a two-lane undivided Urban Local Road that serves commercial development in the vicinity of Buena Vista Road. It runs north-south from Buena Vista Road to SR 22 Spur/Wynnton Road. There is a short section north of SR 22 Spur/Wynnton Road that turns west and runs to Eberhart Avenue.

Brown Avenue is a two-lane undivided Urban Minor Arterial with a 30 mph speed limit that serves commercial development in the vicinity of Buena Vista Road. It runs north-south from SR 22 Spur/Wynnton Road, where it aligns with Peacock Avenue, to Cusseta Road.

Julia Avenue is a short, two-lane undivided residential roadway with a 30 mph speed limit that runs one-way northbound from Buena Vista Road, where it aligns with Ewart Avenue, to 10th Street.

Ewart Avenue is a two-lane undivided residential roadway with a 30 mph speed limit that runs north-south from Buena Vista Road, where it aligns with Julia Avenue, to MLK Boulevard.

Henry Avenue is a two-lane undivided residential roadway with a 30 mph speed limit that runs roughly north-south from Buena Vista Road, where it forms the northeast leg of the intersection of Buena Vista Road and Julia Avenue/Ewart Avenue/Henry Avenue, to SR 22 Spur/Wynnton Road, where it aligns with Forest Avenue.

Lawyers Lane is a two-lane undivided Urban Collector with a 30 mph speed limit that mainly serves residential development. It runs north-south from SR 22 Spur/Wynnton Road to MLK Boulevard.

Baldwin Street is a two-lane undivided Urban Collector with a 30 mph speed limit that serves residential development. It runs east-west from Buena Vista Road, where it forms the fifth leg of the intersection of Buena Vista Road and Lawyers Lane, to Illges Road. For the purposes of this study, it is assumed to form the northeast leg of the intersection of Buena Vista Road and Lawyers Lane.

8th Street is a two-lane undivided roadway that runs east-west from Buena Vista Road, where it aligns with Radcliff Avenue, to 34th Avenue. The adjacent development is a mixture of residential and institutional.

For the purposes of this study, 8th Street is assumed to run north-south at its intersection with Buena Vista Road.

Radcliff Avenue is a two-lane undivided roadway that runs north-south from Buena Vista Road, where it aligns with 8th Street, to MLK Boulevard. The adjacent development is a mixture of commercial, institutional, and residential.

Annette Avenue is a two-lane residential roadway that runs north-south from Buena Vista Road, where it aligns with the western driveway for Brewer Elementary School, to 8th Street.

Brewer Elementary School has two driveways on Buena Vista Road and two driveways on MLK Boulevard. There is no internal roadway connection between the driveways on Buena Vista Road and the driveways on MLK Boulevard. The Buena Vista Road access points are used for school bus drop-off and pick-up operations, and the MLK Boulevard driveways are used for staff, visitors, and parent drop-off and pick-up operations. The western driveway on Buena Vista Road is inbound only, and the eastern driveway is outbound only. The western driveway aligns with Annette Avenue, and the eastern driveway aligns with the access point for the Willow Glen Apartments.

Illges Road is a two-lane Urban Minor Arterial with a 30 mph speed limit that serves commercial development in the vicinity of Buena Vista Road and residential development further north. It runs north-south from Buena Vista Road, where it aligns with MLK Boulevard, changes names to Rigdon Road, and continues north to SR 22 Spur/Macon Road. Left turns are not allowed from Illges Road southbound onto Buena Vista Road eastbound.

Martin Luther King Jr. (MLK) Boulevard is a four-lane Urban Minor Arterial with a center two-way left-turn lane and a 30 mph speed limit. It runs east-west from Buena Vista Road, where it aligns with Illges Road, to 10th Avenue, where it aligns with 10th Street and continues into downtown Columbus. In the vicinity of Buena Vista Road, the adjacent development is commercial and institutional. For the purposes of this study, MLK Boulevard is assumed to run north-south at its intersection with Buena Vista Road.

Figures 2A and 2B illustrate the associated geometry and operation control of the study intersections. As a general assumption for all figures in this report, Buena Vista Road is considered to be east-west at all intersections.

METRA Bus Route #1 East Wynnton crosses Buena Vista Road on Lawyers Lane. METRA Bus Route #3 St. Mary's Road/Buena Vista Road/Schatulga Road runs along Buena Vista Road from Brown Avenue to east of Illges Road/MLK Boulevard. METRA Bus Route #7 Columbus South crosses Buena Vista Road on Wynnton Road and runs east along Buena Vista Road from Illges Road.

Figure 2A – Existing Travel Lanes and Traffic Control

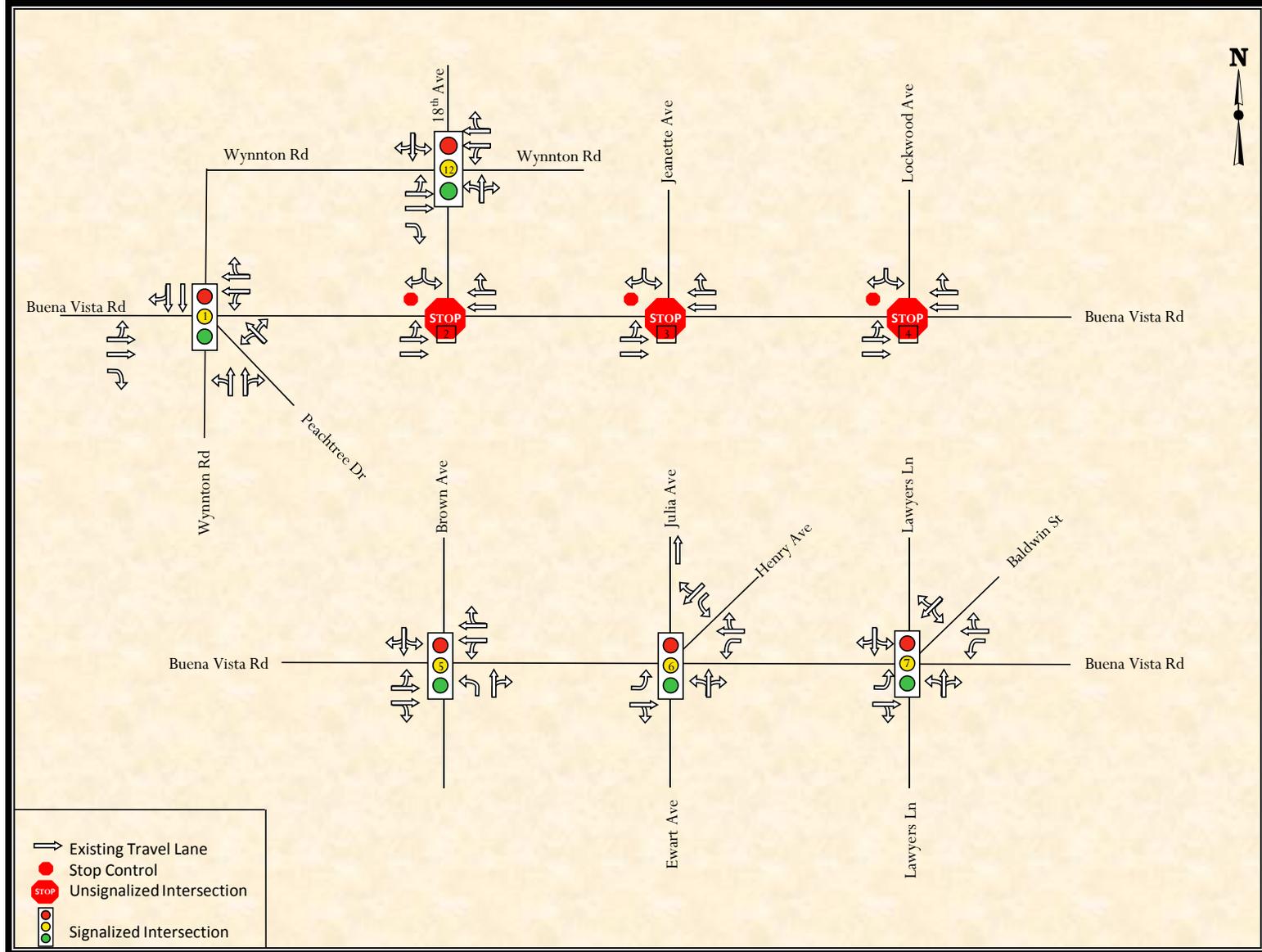
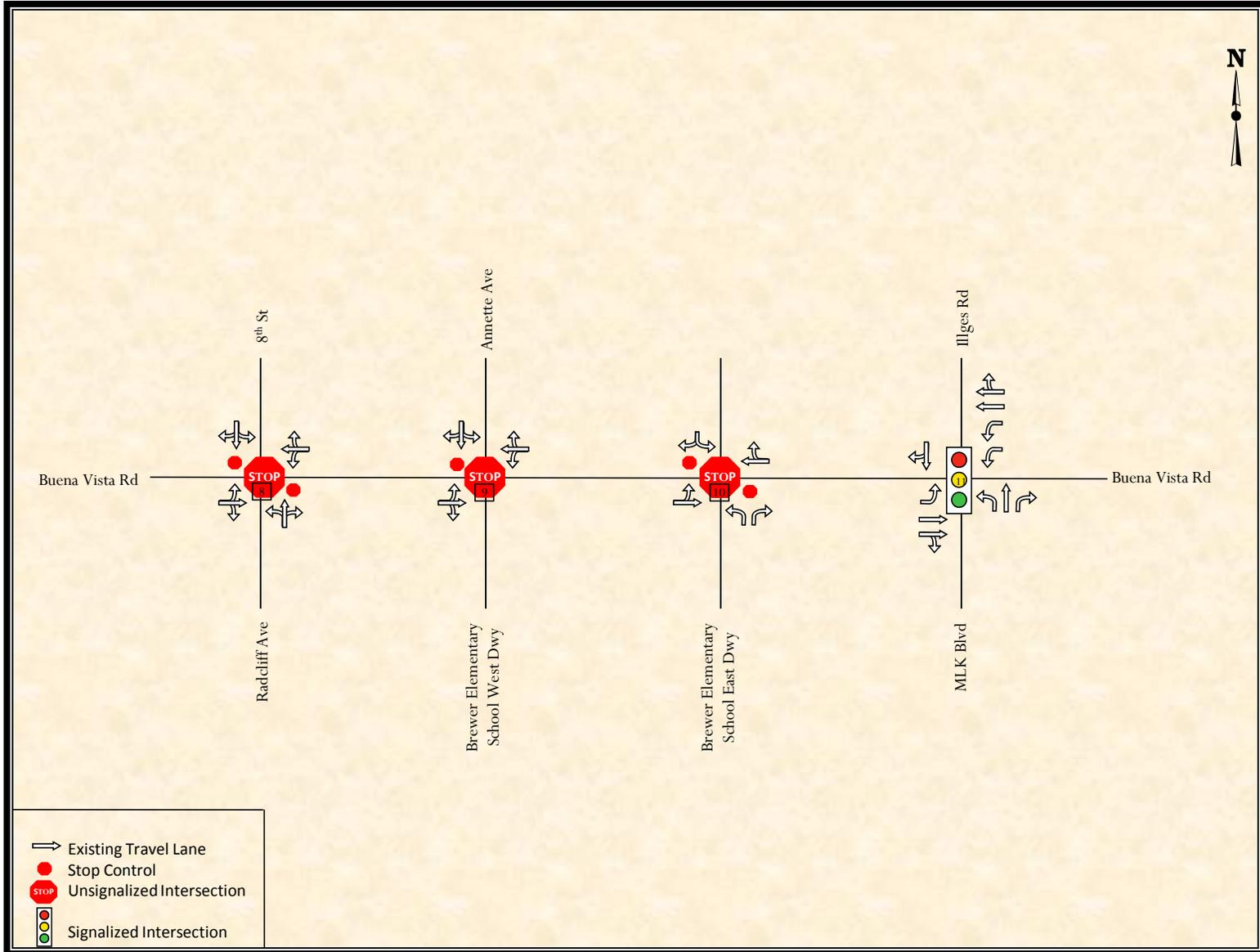


Figure 2B – Existing Travel Lanes and Traffic Control



3. TRAFFIC DATA

BUENA VISTA ROAD TRAFFIC ENGINEERING REPORT

Turning movement counts (TMCs) at the study intersections and 24-hour directional volume counts at select locations in the study area were collected in May 2012 and November 2012. TMCs were also collected in September 2012 at the signalized study intersections that were included in the recently completed traffic signal timing optimization project on Buena Vista Road from Brown Avenue to Floyd Road/McBride Road. Printouts for TMCs and 24-hour counts are provided in Appendix A. The existing peak hour volumes are illustrated in Figures 3A, 3B and 3C.

The Interim Year 2022 and Design Year 2032 traffic projections were formulated for locations in the project area corresponding to the TMC locations. The future year projections based on annual growth rates were determined for the corridor.

Traffic on Buena Vista Road is expected to increase as a result of continuing development in the region. The local GDOT count stations were used to develop an annual growth rate that was applied to the existing traffic. The GDOT count stations in the vicinity of the study corridor that were utilized were Stations 0112, 0114, 0247, 0249, 0291, 0293, 0297, 0299, 0301, 0303, 0392, 0396, 0523, 0525, 0547, 0769, 0772, 0794, and 0796 in Muscogee County. Historic counts from 2002 through 2011 were included. Microsoft Excel's FORECAST function was used to estimate the Existing Year 2012, Interim Year 2022, and Design Year 2032 volumes at the count stations, and the growth rates per year were calculated. The average growth rate per year for these count locations is -1.6% per year from 2012 to 2022, and -2.0% per year from 2022 to 2032. Only three out of the nineteen count station in the vicinity of the study corridor showed positive growth from 2002 to 2011. For those three count stations, the average growth rate per year is 0.38% per year from 2012 to 2022, and 0.37% per year from 2022 to 2032.

A 0.5% per year growth rate was applied to the existing traffic volumes found in Appendix A to project hourly volumes for the Interim Year 2022. A 2.0% per year growth rate was applied to the Interim Year 2022 volumes to project hourly volumes for the Design Year 2032. The higher growth rate from the Interim Year 2022 to the Design Year 2032 reflects the additional traffic expected as a result of the Spiderweb improvements which are anticipated to open in 2022.

The projected hourly volumes for the Interim Year 2022 and the Design Year 2032 are illustrated in Figures 4A, 4B and 4C and Figures 5A, 5B and 5C, respectively.

Figure 3A – Existing Peak Hour Volumes

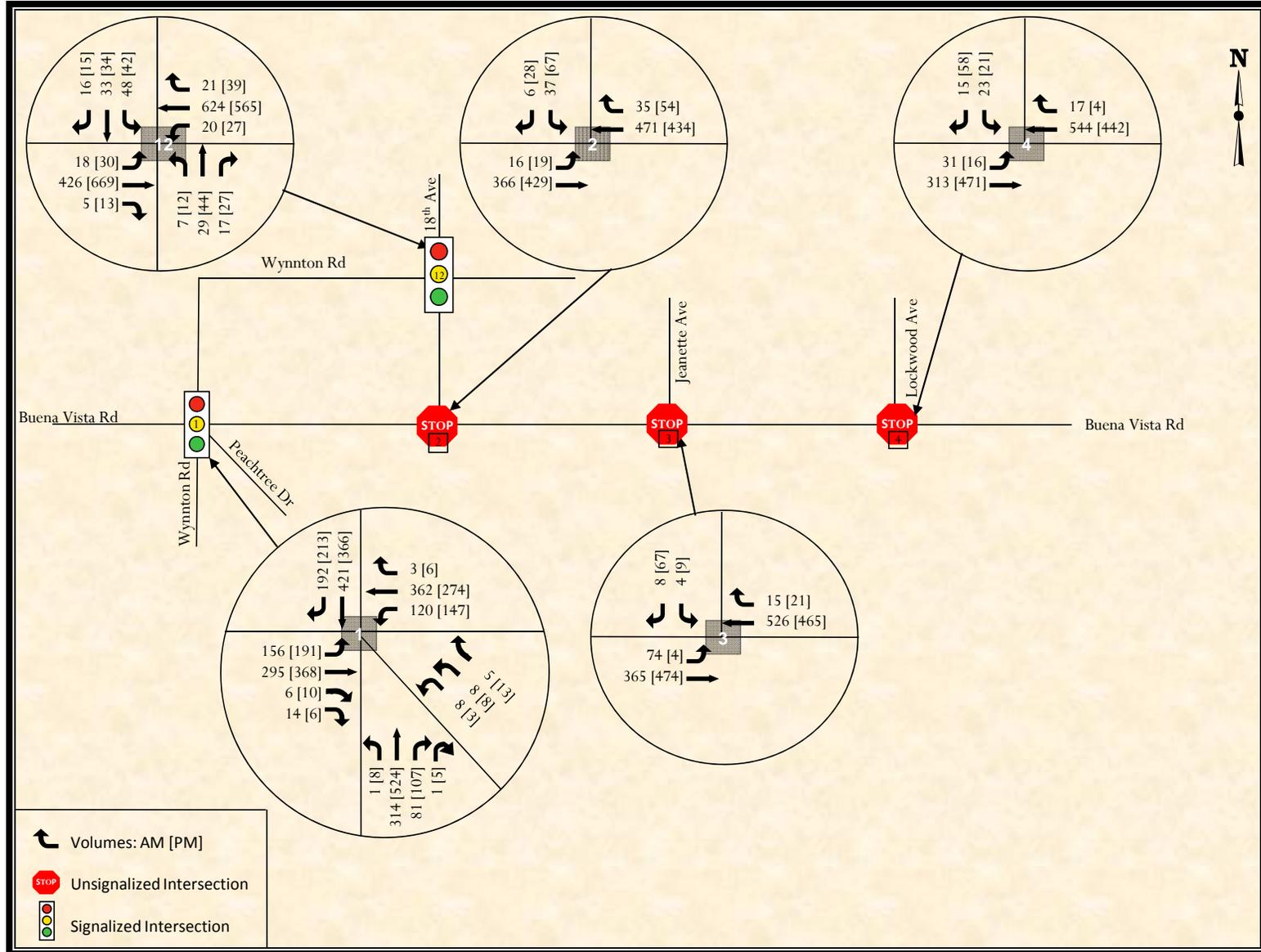


Figure 3B – Existing Peak Hour Volumes

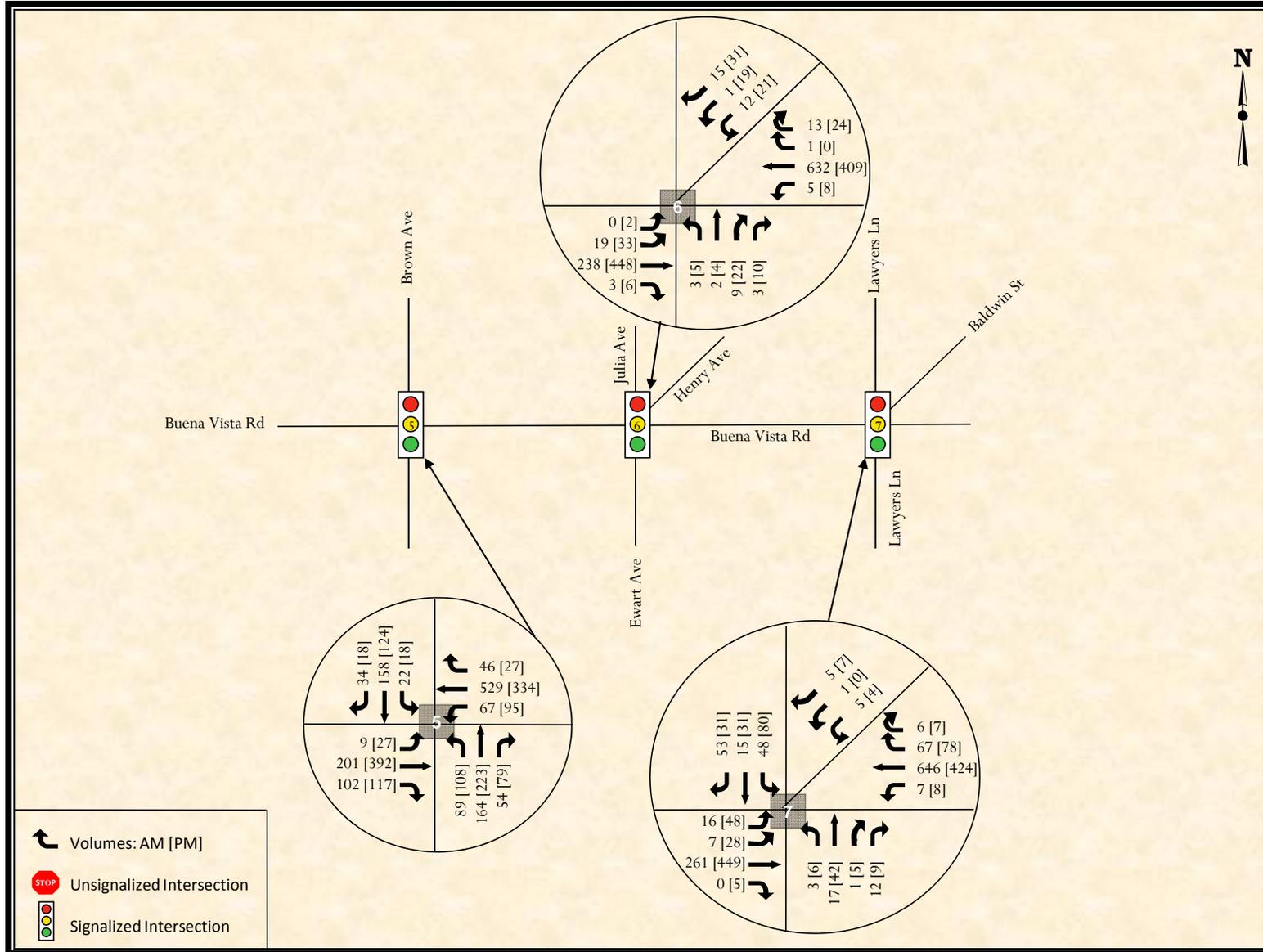


Figure 3C – Existing Peak Hour Volumes

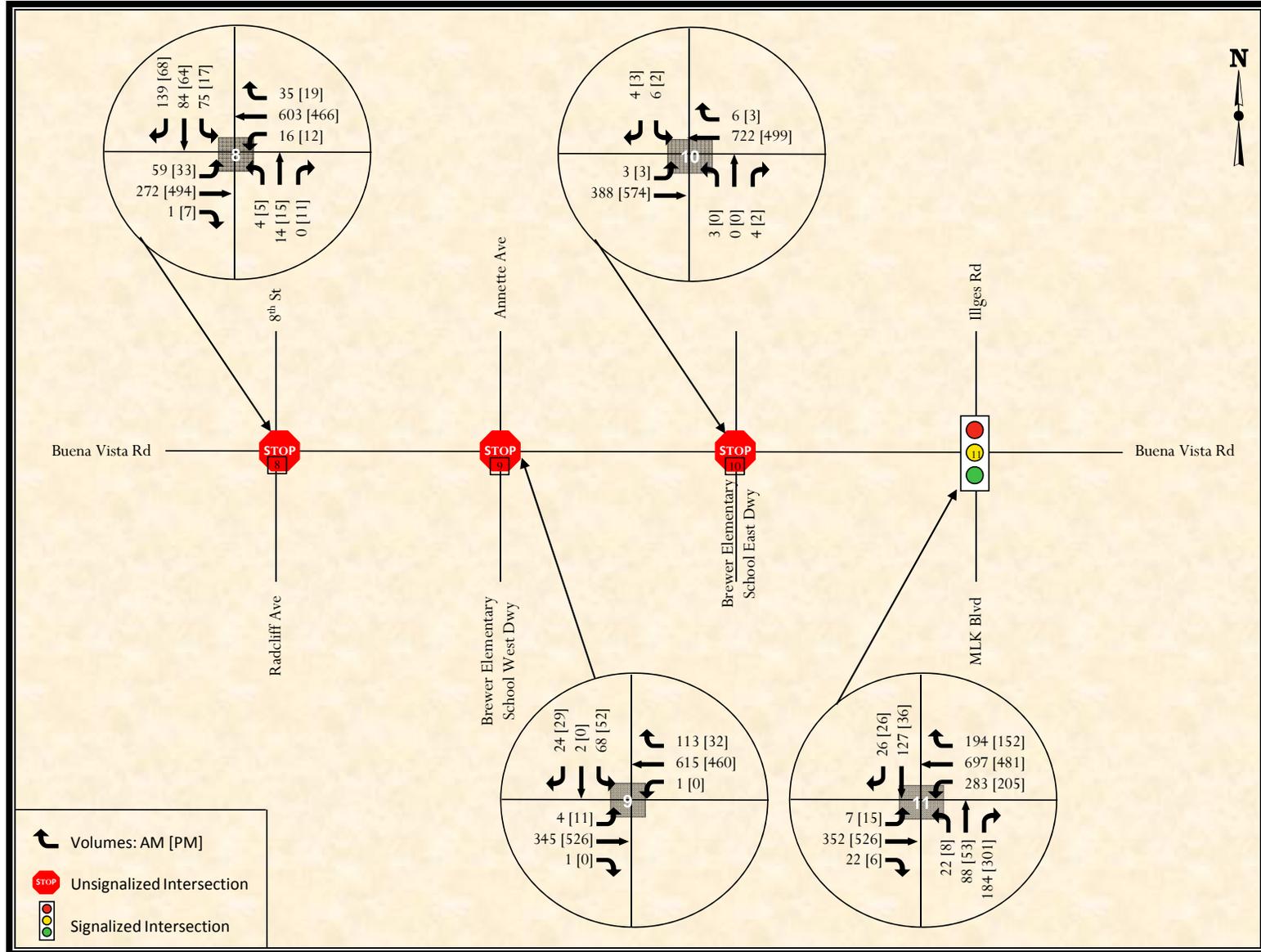


Figure 4A – Interim Year Peak Hour Volumes

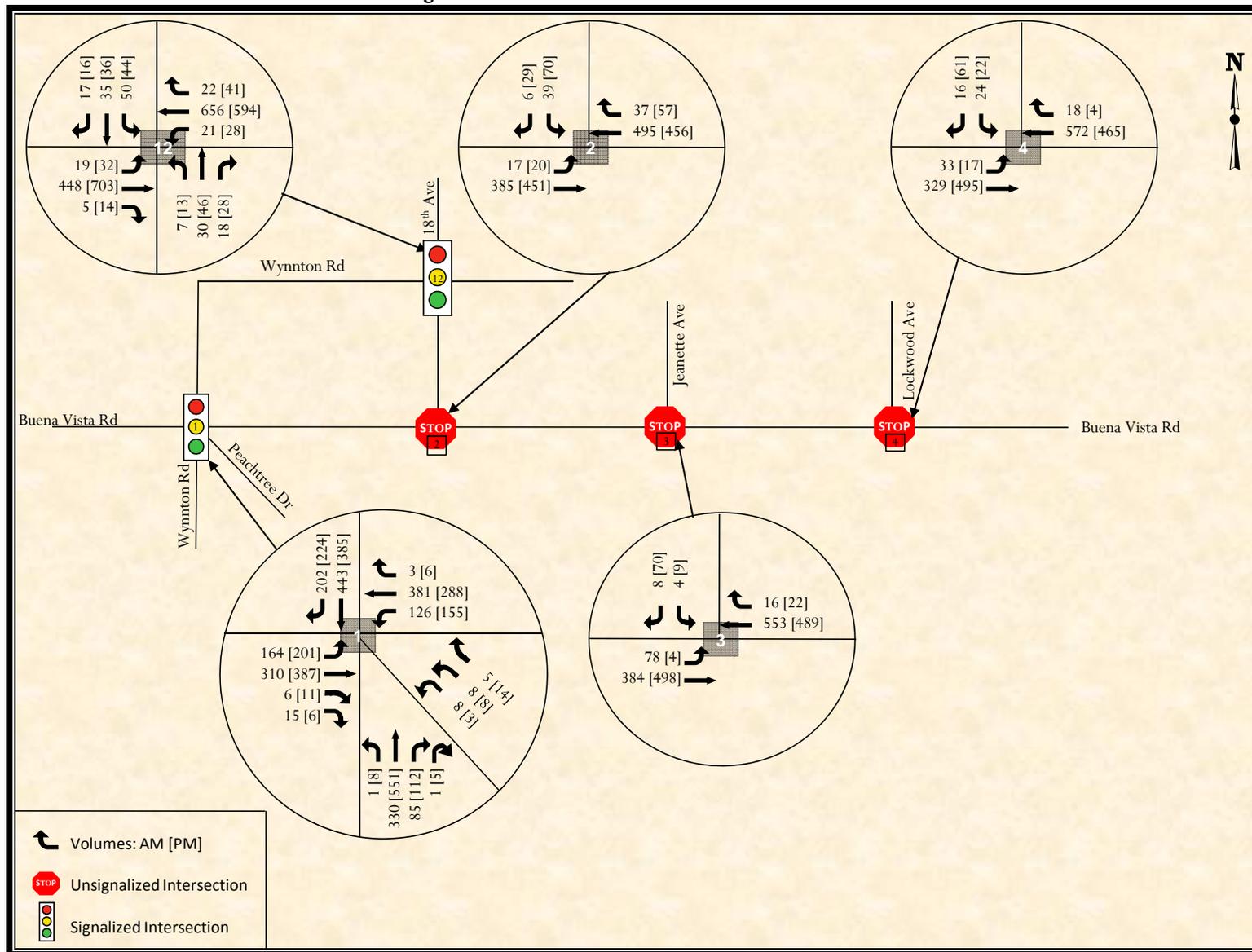


Figure 4C – Interim Year Peak Hour Volumes

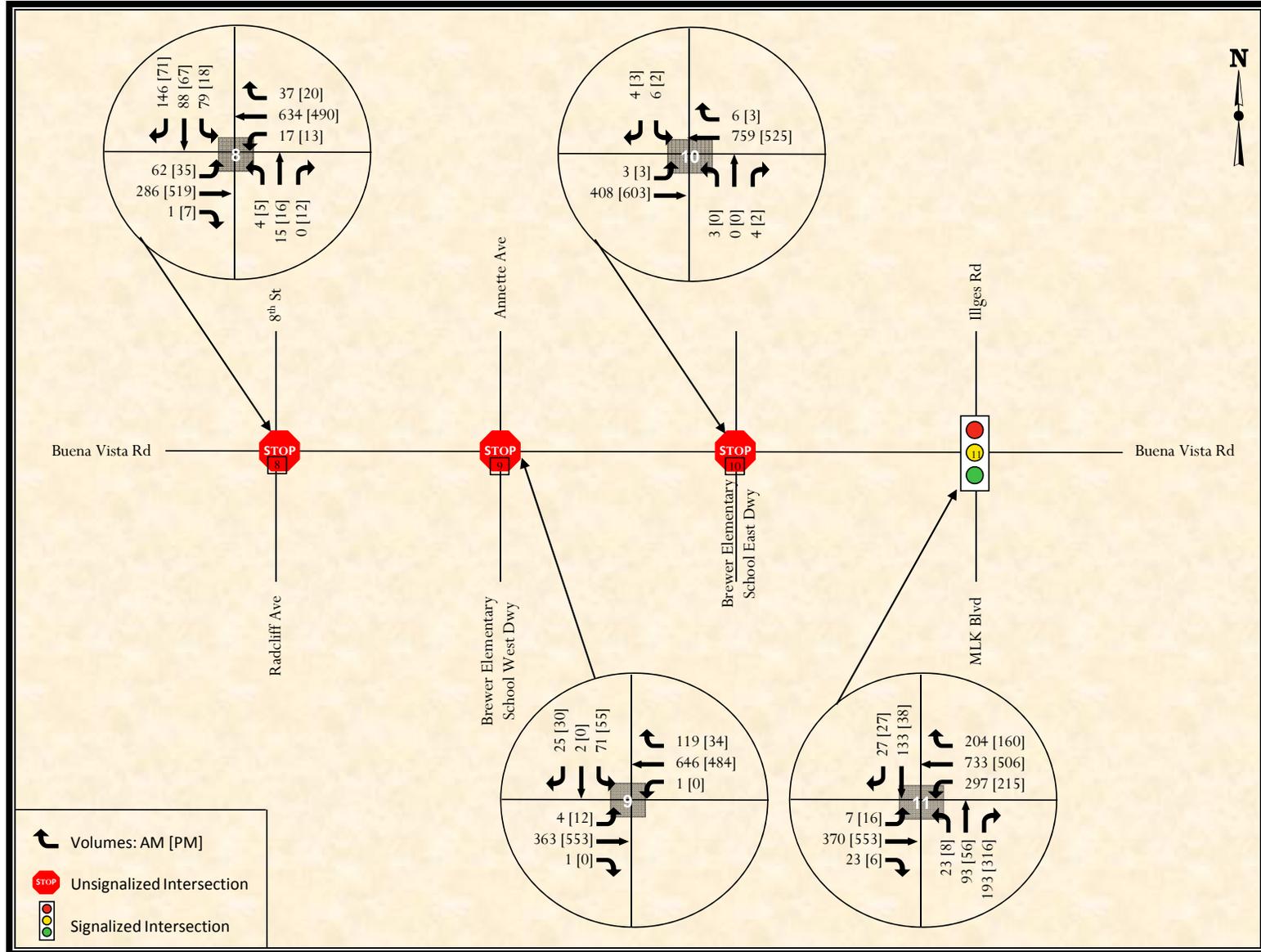


Figure 5A – Design Year Peak Hour Volumes

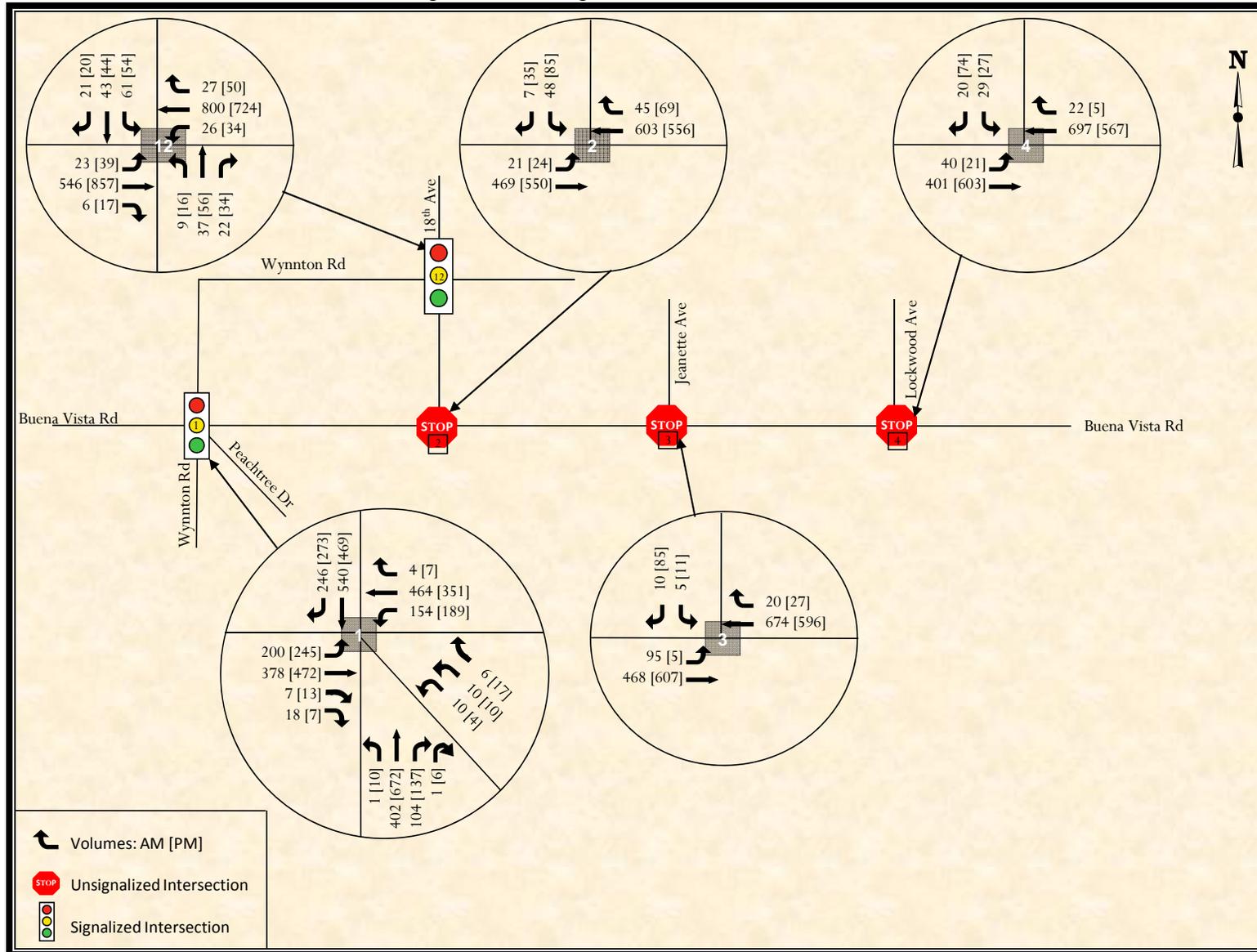


Figure 5B – Design Year Peak Hour Volumes

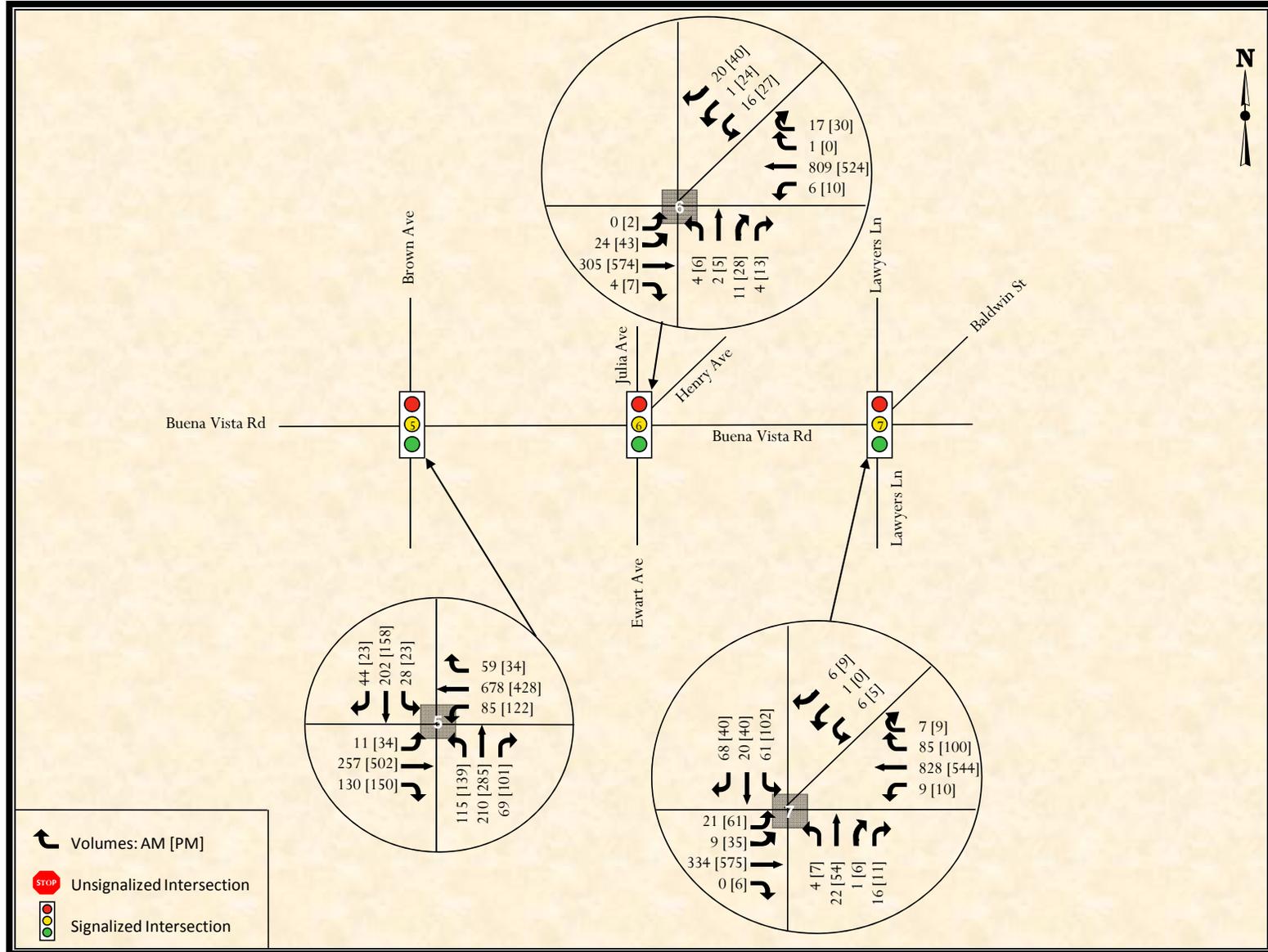
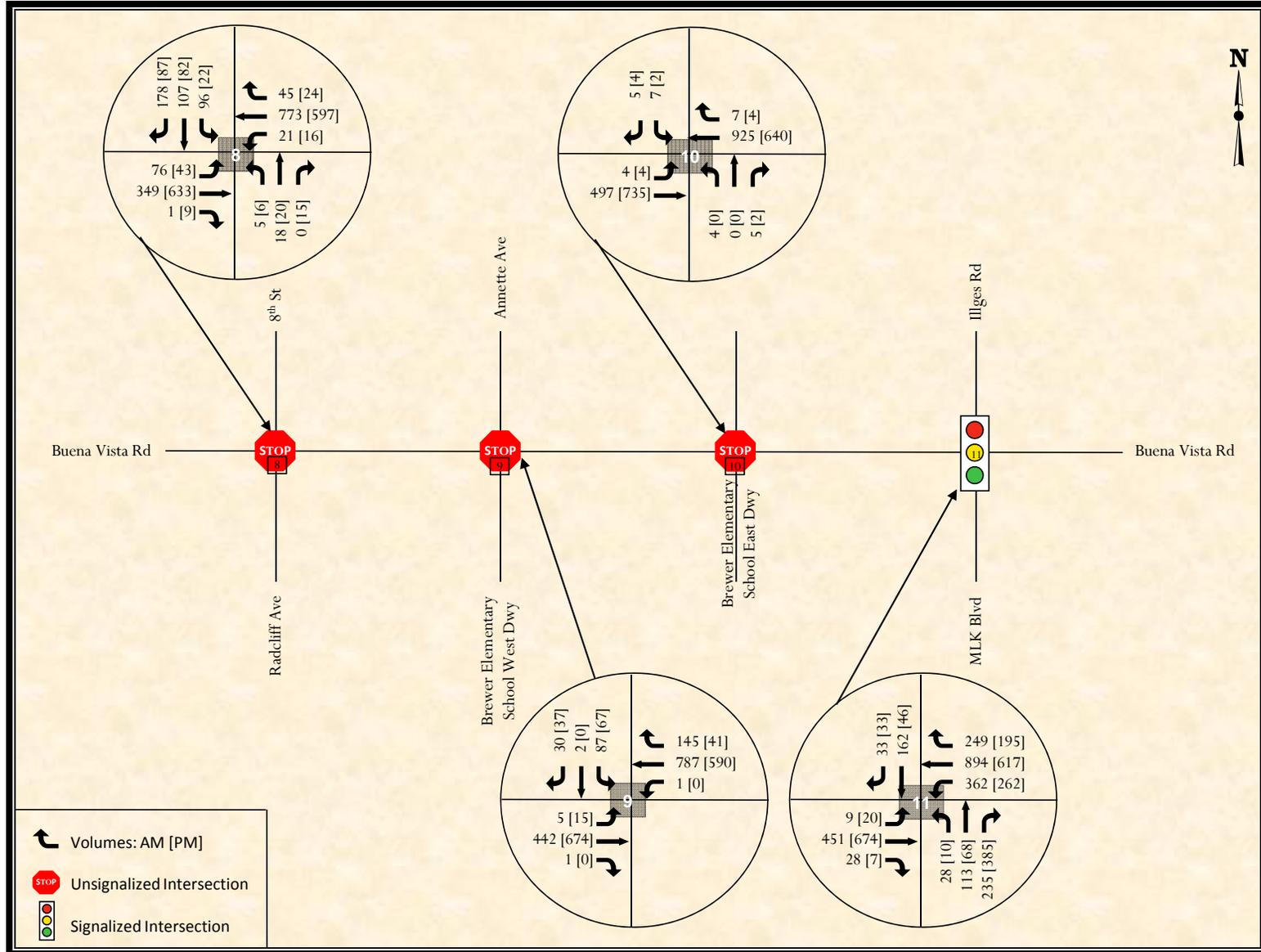


Figure 5C – Design Year Peak Hour Volumes



4. CAPACITY ANALYSIS

BUENA VISTA ROAD TRAFFIC ENGINEERING REPORT

Intersection Capacity Analysis Methodology

Intersection capacity analysis was used to evaluate the projected volumes at the study intersections along the corridor. This process was used to determine the geometry and traffic control needed at each intersection to result in adequate levels of service (LOS) for the Interim Year 2022 and Design Year 2032 conditions.

The recently completed pre-concept development project for the Spiderweb developed three alternatives to improve the crossing of Buena Vista Road over the Norfolk Southern railroad tracks between Illges Road/MLK Boulevard and Morris Road/Andrews Road. One of the outcomes of the Spiderweb project was that the intersections on Buena Vista Road from 8th Avenue/Radcliff Avenue east to Illges Road/MLK Boulevard are expected to be considerably impacted by the improvements to the Spiderweb. Therefore, the intersections on Buena Vista Road from 8th Avenue/Radcliff Avenue east to Illges Road/MLK Boulevard were not included as part of the analysis for this Buena Vista Road corridor study because it was assumed that those intersections would be improved as part of the Spiderweb project.

Synchro (1) was used to conduct capacity analysis. *Synchro* implements the capacity methods of the *Highway Capacity Manual* (HCM) (2) for performing the industry standard evaluation of intersection performance.

The HCM defines LOS in terms of the amount of control delay, including initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay.

The LOS definitions for both stop controlled and signal controlled intersections are provided in Table 1.

Table 1 – Level of Service Criteria

LEVEL OF SERVICE	CONTROL DELAY PER VEHICLE (SEC)	
	WITH STOP-SIGN CONTROL	WITH SIGNAL CONTROL
A	≤ 10	≤ 10
B	> 10 and ≤ 15	> 10 and ≤ 20
C	> 15 and ≤ 25	> 20 and ≤ 35
D	> 25 and ≤ 35	> 35 and ≤ 55
E	> 35 and ≤ 50	> 55 and ≤ 80
F	> 50	> 80

Source: *Highway Capacity Manual*

GDOT has ranges of adequate LOS based on the area classification. Rural, sparsely developed areas have a minimum LOS requirement of C. This is due to the expectancy of rural residents for relatively uncongested conditions and to design flexibility related to lower right of way costs. The minimum LOS for urban areas is D. This reflects the greater acceptance of delay and congestion by urban residents. Additionally, the increased density of developments makes right of way costs much higher in urban areas. The Buena Vista Road project corridor is in the Columbus metro area and, therefore, has a minimum LOS requirement of D.

Intersection Capacity Analysis Results

Existing and No-Build

The study intersections were initially evaluated with the existing geometry, using the Existing Year 2012, Interim Year 2022, and Design Year 2032 volumes. This establishes a baseline for comparing improvements.

Table 2 contains the results of the capacity analysis with the existing roadway geometry and operational conditions for the Existing Year 2012, Interim Year 2022, and Design Year 2032. The values shown in parenthesis indicate the estimated delay in seconds per vehicle. Asterisks indicate a very high delay that is beyond the limits that can be estimated using the *Synchro* software. Intersection capacity analysis printouts for the Existing Year 2012 and No-Build Scenario are provided in Appendix B.

Table 2 – Existing and No-Build Intersection Capacity Analysis

INT #	INTERSECTION	MOVEMENT	EXISTING YEAR 2012		INTERIM YEAR 2022		DESIGN YEAR 2032	
			AM PEAK HOUR	PM PEAK HOUR	AM PEAK HOUR	PM PEAK HOUR	AM PEAK HOUR	PM PEAK HOUR
1	SR 22 Spur/Wynnnton Rd/ Peachtree Dr & Buena Vista Rd	Overall	D (35.3)	D (38.9)	D (36.9)	D (43.4)	D (43.6)	E (59.1)
2	18th Ave & Buena Vista Rd	EB	A (0.4)	A (0.4)	A (0.4)	A (0.4)	A (0.5)	A (0.5)
		SB	C (15.7)	C (16.6)	C (16.1)	C (16.6)	C (19.2)	C (22.6)
3	Jeanette Ave & Buena Vista Rd	EB	A (1.7)	A (0.1)	A (1.8)	A (0.1)	A (2.0)	A (0.1)
		SB	B (13.7)	B (12.0)	B (14.2)	B (12.3)	C (17.2)	B (14.3)
4	Lockwood Ave & Buena Vista Rd	EB	A (0.9)	A (0.3)	A (0.9)	A (0.3)	A (1.0)	A (0.4)
		SB	B (14.7)	B (12.8)	C (15.3)	B (13.4)	C (17.7)	C (15.1)
5	Brown Ave & Buena Vista Rd	Overall	C (21.4)	C (22.2)	B (15.5)	B (16.9)	B (17.4)	B (18.4)
6	Julia Ave/ Ewart Ave/ Henry Ave & Buena Vista Rd	Overall	A (6.5)	B (10.1)	A (3.9)	A (8.4)	A (5.4)	A (9.4)
7	Lawyers Ln/ Baldwin S & Buena Vista Rd	Overall	B (18.7)	C (22.2)	B (15.0)	B (16.2)	C (21.7)	C (22.0)
12	SR 22 Spur/Wynnnton Rd & 18th Ave	Overall	A (9.1)	B (11.3)	A (7.5)	A (9.5)	A (9.5)	B (10.5)

As shown in the Table 2, all of the study intersections are currently operating adequately.

In the Year 2022, all of the study intersections are expected to operate adequately.

By the Year 2032, all of the study intersections are expected to operate adequately, except for the following.

The intersection of SR 22 Spur/Wynnnton Road/Peachtree Drive and Buena Vista Road is expected to operate at LOS E during the PM peak hour for Design Year 2032 conditions if no improvements are made. This is principally due to the high through volumes expected on Wynnnton Road, and improvements to Wynnnton Road to address this issue are beyond the scope of this study.

Since the No-Build Scenario is expected to provide mostly adequate LOS for Design Year 2032 conditions, the improvement alternatives to be analyzed were changed from the three which were initially under consideration to the following: 1) construct minimal improvements on the study side streets to provide adequate LOS for the overall intersection and the side street approaches; 2) restripe the existing four-lane section from east of SR 22 Spur/Wynnton Road to Britt Avenue to a three-lane section with one lane in each direction and a center two-way left-turn lane and widen the existing two-lane section from Britt Avenue to east of Lawyers Lane/Baldwin Street to a three-lane section.

Improvement Alternatives 1 and 1A

Improvement Alternative 1 consists of constructing minimal improvements on the study side streets to provide adequate LOS for the overall intersection and the side street approaches.

The overall intersection of SR 22 Spur/Wynnton Road and 18th Avenue is currently operating adequately and is expected to continue to operate adequately in the Interim Year 2022 and the Design Year 2032. However, the southbound side street approach of 18th Avenue is currently operating at LOS E during the PM peak hour and is expected to operate at LOS F during the PM peak hour in the Interim Year 2022 and LOS E during both peak hours in the Design Year 2032 if no improvements are made. The northbound side street approach is also expected to operate at LOS E during the PM peak hour in the Design Year 2032 if no improvements are made.

The City requested that converting Baldwin Street to one-way northeastbound heading away from Buena Vista Road be included as part of Improvement Alternative 1. Replacing the existing traffic signal at the intersection of Lawyers Lane/Baldwin Street and Buena Vista Road with a single-lane roundabout was included as Improvement Alternative 1A.

Table 3 shows the LOS of the improved study intersections for the Interim Year 2022 and Design Year 2032 in Improvement Alternatives 1 and 1A. Intersection capacity analysis printouts for Improvement Alternative 1 are located in Appendix C of this report. Roundabout analysis printouts for Improvement Alternative 1A are located in Appendix E of this report. The roundabout analysis will be discussed further in the roundabout analysis section of this report.

Table 3 – Improvement Alternatives 1 and 1A Intersection Capacity Analysis

INT #	INTERSECTION	IMPROVEMENT	MOVEMENT	INTERIM YEAR 2022		DESIGN YEAR 2032	
				AM PEAK HOUR	PM PEAK HOUR	AM PEAK HOUR	PM PEAK HOUR
7	Lawyers Ln/ Baldwin S & Buena Vista Rd	Alternative 1 - convert Baldwin St to one-way northeastbound	Overall	B (14.6)	B (14.9)	B (19.5)	B (17.6)
			EB	A (7.0)	B (13.0)	A (6.0)	B (12.0)
		Alternative 1A - single-lane roundabout	WB	C (16.0)	B (13.0)	C (16.0)	B (12.0)
			NB	A (5.0)	A (8.0)	A (4.0)	A (7.0)
			SB	B (10.0)	A (8.0)	A (9.0)	A (7.0)
		SWB	A (8.0)	A (7.0)	A (6.0)	A (6.0)	
12	SR 22 Spur/Wynnton Rd & 18th Ave	Add a separate southbound left turn lane on 18th Ave	Overall	A (7.1)	A (8.7)	A (7.9)	A (9.4)

As can be seen in Table 3, the overall intersection of SR 22 Spur/Wynnton Road and 18th Avenue and the side street approaches of 18th Avenue are expected to operate with mostly lower delays and shorter queues for Interim Year 2022 conditions and Design Year 2032 conditions with a separate southbound left turn lane on 18th Avenue.

The intersection of Lawyers Lane/Baldwin Street and Buena Vista Road is expected to operate adequately for Interim Year 2022 conditions and Design Year 2032 conditions with Baldwin Street converted to one-way northeastbound or with a single-lane roundabout.

The concept layouts for Improvement Alternatives 1 and 1A are included in Appendix C.

Improvement Alternatives 2 and 3

Improvement Alternatives 2 and 3 consist of restriping the existing four-lane section from east of SR 22 Spur/Wynnton Road to Britt Avenue to a three-lane section with one lane in each direction and a center two-way left-turn lane and widening the existing two-lane section from Britt Avenue to east of Lawyers Lane/Baldwin Street to a three-lane section. One of the tasks of the analysis was to identify at what location east of SR 22 Spur/Wynnton Road the transition from four lanes to three lanes should occur. It was determined that Buena Vista Road needs to remain as a four-lane section from SR 22 Spur/Wynnton Road to 18th Avenue, and that it can be restriped to a three-lane section to the east of 18th Avenue. The location of the transition point east of Lawyers Lane/Baldwin Street is expected to be determined as part of the Spiderweb project.

The City requested that converting Baldwin Street to one-way northeastbound heading away from Buena Vista Road be included as part of these alternatives.

Two options were considered to accommodate pedestrians and bicyclists. Improvement Alternative 2 would include four-foot bike lanes adjacent to the travel lanes and five-foot sidewalks on ten-foot shoulders. Improvement Alternative 3 would place a multi-use trail on the roadway shoulder which would carry the bicycles and pedestrians and would require less right of way for construction.

Table 4 shows the LOS of the improved study intersections for the Interim Year 2022 and Design Year 2032 in Improvement Alternatives 2 and 3. Intersection capacity analysis printouts for Improvement Alternatives 2 and 3 are located in Appendix D of this report. For the purposes of the intersection capacity analysis, Improvement Alternatives 2 and 3 are the same because the location of the bicycle and pedestrian accommodations does not affect the intersection capacity analysis.

Table 4 – Improvement Alternatives 2 and 3 Intersection Capacity Analysis

INT #	INTERSECTION	IMPROVEMENT	MOVEMENT	INTERIM YEAR 2022		DESIGN YEAR 2032	
				AM PEAK HOUR	PM PEAK HOUR	AM PEAK HOUR	PM PEAK HOUR
2	18th Ave & Buena Vista Rd	Restripe Buena Vista Rd as a three-lane section east of 18th Ave	EB	A (0.4)	A (0.4)	A (0.4)	A (0.4)
			SB	B (13.0)	B (14.3)	B (14.8)	C (17.4)
3	Jeanette Ave & Buena Vista Rd	Restripe Buena Vista Rd as a three-lane section	EB	A (1.5)	A (0.1)	A (1.7)	A (0.1)
			SB	B (13.1)	B (14.1)	B (14.8)	C (17.2)
4	Lockwood Ave & Buena Vista Rd	Restripe Buena Vista Rd as a three-lane section	EB	A (0.8)	A (0.3)	A (0.9)	A (0.3)
			SB	B (13.6)	B (13.2)	C (16.2)	C (15.7)
5	Brown Ave & Buena Vista Rd	Restripe Buena Vista Rd as a three-lane section	Overall	B (14.3)	B (17.1)	B (19.4)	C (20.6)
6	Julia Ave/ Ewart Ave/ Henry Ave & Buena Vista Rd	Widen Buena Vista Rd to a three-lane section	Overall	A (4.5)	A (7.6)	A (4.5)	A (8.7)
7	Lawyers Ln/ Baldwin S & Buena Vista Rd	Widen Buena Vista Rd to a three-lane section; convert Baldwin St to one-way northeastbound	Overall	B (14.8)	B (14.8)	B (19.4)	B (17.6)

As can be seen in Table 4, the intersections of Buena Vista Road with 18th Avenue, Jeanette Avenue, Lockwood Avenue, Brown Avenue, Julia Avenue/Ewart Avenue/Henry Avenue, and Lawyers Lane/Baldwin Street are expected to operate adequately for Interim Year 2022 conditions and Design Year 2032 conditions if Buena Vista Road is restriped as a three-lane section from 18th Avenue to Britt Avenue and widened to a three-lane section from Britt Avenue to east of Lawyers Lane/Baldwin Street and Baldwin Street is converted to one-way northeastbound.

It should be noted that Improvement Alternatives 2 and 3 do not address the inadequate LOS on the side street approaches of 18th Avenue at SR 22 Spur/Wynnnton Road. The separate southbound left turn lane on 18th Avenue at SR 22 Spur/Wynnnton Road that was included as part of Improvement Alternative 1 is expected to be needed as part of Improvement Alternatives 2 and 3 as well.

The concept layouts for Improvement Alternatives 2 and 3 are included in Appendix D.

Roundabout Analysis

The existing signalized intersections of Buena Vista Road at Brown Avenue, Julia Avenue/Ewart Avenue/Henry Avenue, and Lawyers Lane/Baldwin Street were also evaluated for single-lane roundabouts using GDOT’s *Roundabout Analysis Tool* (3). The roundabout analysis is included in Appendix E.

According to GDOT’s *Roundabout Analysis Tool*, “Roundabouts may not operate well if there is too much traffic entering the intersection or if the percentage of traffic on the major road is too high.” The thresholds are less than 25,000 vehicles per day for a single-lane roundabout, with less than 90% of the traffic on the main road.

At the intersection of Buena Vista Road and Brown Avenue in the Design Year 2032, the volume entering the intersection on Buena Vista Road is expected to be 16,410 vehicles per day, and the volume entering the intersection on Brown Avenue is expected to be 11,182 vehicles per day. 27,592 vehicles per day are expected to enter the intersection of Buena Vista Road and Brown Avenue in the Design Year 2032, which

is greater than the 25,000 vehicles per day threshold. Therefore, a single-lane roundabout is not expected to operate well at the intersection of Buena Vista Road and Brown Avenue in the Design Year 2032.

At the intersection of Buena Vista Road and Julia Avenue/Ewart Avenue/Henry Avenue in the Design Year 2032, the volume entering the intersection on Buena Vista Road is expected to be 15,423 vehicles per day, and the volume entering the intersection on Julia Avenue/Ewart Avenue/Henry Avenue is expected to be 1,387 vehicles per day. 92% of the traffic is expected to be on the main street, which is greater than the 90% threshold. Therefore, a single-lane roundabout is not expected to operate well at the intersection of Buena Vista Road and Julia Avenue/Ewart Avenue/Henry Avenue in the Design Year 2032.

At the intersection of Buena Vista Road and Lawyers Lane/Baldwin Street in the Design Year 2032, the volume entering the intersection on Buena Vista Road is expected to be 16,412 vehicles per day, and the volume entering the intersection on Lawyers Lane/Baldwin Street is expected to be 3,763 vehicles per day. 20,175 vehicles per day are expected to enter the intersection of Buena Vista Road and Lawyers Lane/Baldwin Street in the Design Year 2032, which is less than the 25,000 vehicles per day threshold. 81% of the traffic is expected to be on the main street, which is less than the 90% threshold. All approaches to the intersection are expected to operate at adequate LOS during both peak hours for Design Year 2032 conditions. Therefore, a single-lane roundabout would be expected to operate well at the intersection of Buena Vista Road and Lawyers Lane/Baldwin Street in the Design Year 2032 and has been included as Improvement Alternative 1A.

It should be noted that GDOT's *Roundabout Analysis Tool* provides two LOS, one for the Build (Interim) Year when drivers are unfamiliar with the roundabout, and one for the Future (Design) Year, when drivers are familiar with the roundabout. Therefore, it is not uncommon for the LOS to improve between the Build Year and the Future Year because drivers have become accustomed to the roundabout.

Storage Summary

Table 5 shows the 95th percentile queue lengths from *Synchro* and GDOT's *Roundabout Analysis Tool* for the No-Build alternative and Improvement Alternatives 1, 1A, 2, and 3 for the Design Year 2032. For the purposes of the storage summary, Improvement Alternatives 2 and 3 are the same because the location of the bicycle and pedestrian accommodations does not affect the queue lengths.

Table 5 – Storage Summary

INT #	INTERSECTION	MOVEMENT	EXISTING QUEUE STORAGE LENGTH	NO-BUILD		ALTERNATIVE 1		ALTERNATIVE 1A		ALTERNATIVES 2 AND 3	
				AM PEAK HOUR	PM PEAK HOUR	AM PEAK HOUR	PM PEAK HOUR	AM PEAK HOUR	PM PEAK HOUR	AM PEAK HOUR	PM PEAK HOUR
1	SR 22 Spur/Wynnton Rd/ Peachtree Dr & Buena Vista Rd	EB	--	274 ft	357 ft	--	--	--	--	--	--
		WB	654 ft	379 ft	355 ft	--	--	--	--	--	--
		NB	--	247 ft	523 ft	--	--	--	--	--	--
		SB	658 ft	433 ft	467 ft	--	--	--	--	--	--
		NWB	--	49 ft	58 ft	--	--	--	--	--	--
2	18th Ave & Buena Vista Rd	EB L	--	--	--	--	--	--	--	25 ft	25 ft
		EB	654 ft	25 ft	25 ft	--	--	--	--	0 ft	0 ft
		WB	--	0 ft	0 ft	--	--	--	--	0 ft	0 ft
		SB	319 ft	25 ft	44 ft	--	--	--	--	25 ft	32 ft
3	Jeanette Ave & Buena Vista Rd	EB L	--	--	--	--	--	--	--	25 ft	25 ft
		EB	--	25 ft	25 ft	--	--	--	--	0 ft	0 ft
		WB	--	0 ft	0 ft	--	--	--	--	0 ft	0 ft
		SB	--	25 ft	25 ft	--	--	--	--	25 ft	29 ft
4	Lockwood Ave & Buena Vista Rd	EB L	--	--	--	--	--	--	--	25 ft	25 ft
		EB	--	25 ft	25 ft	--	--	--	--	0 ft	0 ft
		WB	517 ft	0 ft	0 ft	--	--	--	--	0 ft	0 ft
		SB	--	25 ft	25 ft	--	--	--	--	25 ft	25 ft
5	Brown Ave & Buena Vista Rd	EB L	--	--	--	--	--	--	--	25 ft	25 ft
		EB	517 ft	86 ft	196 ft	--	--	--	--	181 ft	384 ft
		WB L	--	--	--	--	--	--	--	25 ft	70 ft
		WB	294 ft	144 ft	48 ft	--	--	--	--	73 ft	173 ft
		NB L	57 ft	89 ft	98 ft	--	--	--	--	91 ft	104 ft
		NB T+R	--	199 ft	273 ft	--	--	--	--	203 ft	287 ft
6	Julia Ave/ Ewart Ave/ Henry Ave & Buena Vista Rd	SB	--	241 ft	187 ft	--	--	--	--	262 ft	177 ft
		EB L	74 ft	25 ft	25 ft	--	--	--	--	25 ft	25 ft
		EB T+R	--	80 ft	163 ft	--	--	--	--	103 ft	208 ft
		WB L	82 ft	0 ft	25 ft	--	--	--	--	0 ft	25 ft
		WB T+R	--	25 ft	457 ft	--	--	--	--	49 ft	273 ft
		NB	--	34 ft	59 ft	--	--	--	--	31 ft	54 ft
		SWB L	45 ft	33 ft	67 ft	--	--	--	--	30 ft	61 ft
7	Lawyers Ln/ Baldwin S & Buena Vista Rd	SWB R	--	36 ft	56 ft	--	--	--	--	34 ft	51 ft
		EB L	110 ft	31 ft	120 ft	31 ft	61 ft	35 ft	130 ft	31 ft	59 ft
		EB T+R	--	181 ft	276 ft	179 ft	252 ft			180 ft	243 ft
		WB L	108 ft	25 ft	25 ft	25 ft	25 ft	221 ft	125 ft	25 ft	25 ft
		WB T+R	--	966 ft	643 ft	777 ft	461 ft			777 ft	461 ft
		NB	--	50 ft	86 ft	46 ft	78 ft	4 ft	11 ft	46 ft	78 ft
12	SR 22 Spur/Wynnton Rd & 18th Ave	SB	--	136 ft	195 ft	130 ft	175 ft	25 ft	26 ft	130 ft	175 ft
		SWB	--	27 ft	28 ft	--	--	2 ft	2 ft	--	--
		EB L+T	658 ft	43 ft	108 ft	25 ft	25 ft	25 ft	25 ft	--	--
		EB R	150 ft	25 ft	0 ft	0 ft	0 ft	0 ft	0 ft	--	--
		WB	--	151 ft	150 ft	116 ft	133 ft	116 ft	133 ft	--	--
		NB	319 ft	68 ft	116 ft	75 ft	143 ft	75 ft	143 ft	--	--
12	SR 22 Spur/Wynnton Rd & 18th Ave	SB L	--	--	--	92 ft	100 ft	92 ft	100 ft	--	--
		SB	--	156 ft	156 ft	77 ft	91 ft	77 ft	91 ft	--	--

Crash Analysis

The crash analysis examines the crash statistics along Buena Vista Road and compares them to the statewide averages of similar facilities. The statewide averages are calculated using crash data that is collected annually by GDOT. Crash rates are based on the number of crashes, injuries, and fatalities per million vehicle miles traveled. Crash data on the Buena Vista Road corridor was collected for the years of 2007, 2008, and 2009. Table 6 illustrates the differences between the crash rates on Buena Vista Road and the statewide averages. As can be seen in the table, the crash rates on Buena Vista Road exceeded the statewide averages for number of crashes and number of injuries for each of the three years analyzed. There was one fatality on the corridor in 2009; therefore, the statewide average for number of fatalities was also exceeded in 2009.

Table 6 – Crash Rates

Section	Location	Type	2007		2008		2009	
			Statewide	Study Roadway	Statewide	Study Roadway	Statewide	Study Roadway
MP 0.22 - 1.88 Muscogee County	Buena Vista Rd from SR 22 Spur/Wynnton Rd to Illges Rd/Martin Luther King Jr. Blvd	Collisions	649	1424	612	1330	603	1144
		Injuries	227	441	213	297	214	336
		Fatalities	1.53	0	1.33	0	1.32	15.26

5. CONCLUSIONS

BUENA VISTA ROAD TRAFFIC ENGINEERING REPORT

Based on the analysis documented in this report, Wolverton and Associates, Inc. make the following conclusions.

Existing Year 2012:

- All of the study intersections are currently operating adequately.

No-Build Alternative, Interim Year 2022:

- All of the study intersections are expected to operate adequately.

No-Build Alternative, Design Year 2032:

- All of the study intersections are expected to operate adequately, except for the following. The intersection of SR 22 Spur/Wynnton Road/Peachtree Drive and Buena Vista Road is expected to operate at LOS E during the PM peak hour for Design Year 2032 conditions if no improvements are made. This is principally due to the high through volumes expected on Wynnton Road, and improvements to Wynnton Road to address this issue are beyond the scope of this study.

Improvement Alternatives 1 and 1A:

- Minimal improvements will be constructed on the study side streets to provide adequate LOS for the overall intersection and the side street approaches. These improvements are:
 - Construct a separate southbound left turn lane on 18th Avenue at SR 22 Spur/Wynnton Road
- At the intersection of Lawyers Lane/Baldwin Street and Buena Vista Road:
 - Improvement Alternative 1 – Baldwin Street will be converted to one-way northeastbound; OR
 - Improvement Alternative 1A – The existing traffic signal will be replaced with a single-lane roundabout.
- The traffic signals from Brown Avenue to Lawyers Lane/Baldwin Street will be coordinated.
- All turn bays must exceed the queue lengths (as shown in Table 5, Section 4 of this report) or meet minimum deceleration criteria, whichever is longer, unless geometrically infeasible.

Improvement Alternatives 2 and 3:

- Buena Vista Road will be restriped from the existing four-lane section to a three-lane section with one lane in each direction and a center two-way left-turn lane from 18th Avenue to Britt Avenue and the existing two-lane section from Britt Avenue to east of Lawyers Lane/Baldwin Street will be widened to a three-lane section.

- Two options were considered to accommodate pedestrians and bicyclists:
 - Improvement Alternative 2 would include four-foot bike lanes adjacent to the travel lanes and five-foot sidewalks on ten-foot shoulders.
 - Improvement Alternative 3 would place a multi-use trail on the roadway shoulder which would carry the bicycles and pedestrians and would require less right of way for construction.
- The separate southbound left turn lane on 18th Avenue at SR 22 Spur/Wynnton Road that was included as part of Improvement Alternative 1 is expected to be needed as part of Improvement Alternatives 2 and 3 as well.
- Baldwin Street will be converted to one-way northeastbound.
- The traffic signals from Brown Avenue to Lawyers Lane/Baldwin Street will be coordinated.
- All turn bays must exceed the queue lengths (as shown in Table 5, Section 4 of this report) or meet minimum deceleration criteria, whichever is longer, unless geometrically infeasible.

The existing signalized intersections of Buena Vista Road at Brown Avenue and Julia Avenue/Ewart Avenue/Henry Avenue were also evaluated for single-lane roundabouts. Single-lane roundabouts are not expected to operate well at the intersections of Buena Vista Road at Brown Avenue and at Julia Avenue/Ewart Avenue/Henry Avenue in the Design Year 2032. As has already been discussed, a single-lane roundabout would be expected to operate well at the intersection of Buena Vista Road and Lawyers Lane/Baldwin Street in the Design Year 2032; however, it should be considered if it is desirable to have one roundabout along a corridor that otherwise has signalized and side street stop-controlled intersections.

REFERENCES

BUENA VISTA ROAD TRAFFIC ENGINEERING REPORT

1. Synchro, Version 7, Trafficware Ltd., Sugar Land, TX, 2007.
2. Highway Capacity Manual, HCM 2010, Transportation Research Board, Washington, DC, 2010.
3. Roundabout Analysis Tool, v 2.1, Georgia Department of Transportation, Atlanta, GA, 2012.



MEETING MINUTES

LOCATION: Wolverton & Associates, Inc.
MEETING DATE: March 6, 2015, 10:00 AM
RE: Spiderweb Network, City of Columbus, PI 0011436

ATTENDEES:

Brad Robinson	W&A
Mario Macrina	W&A
Joe Macrina	W&A
Rob Jacquette	W&A
Josh Pruitt	W&A
Michael High	W&A
Brandon Miller	W&A
Carl Sellars	W&A
Lee Williams (phone)	Edwards-Pitman Environmental
James McNabb (phone)	ARCADIS
Kristen Kasmire (phone)	ARCADIS
Allen Krivsky (phone)	Heath & Lineback
Sam Moussly (phone)	MC Squared
Kelvin Mullins (phone)	GDOT
Shrujal Amin (phone)	TIA

- Brad Robinson opened the meeting and requested introductions.
- Brad then provided an overview of the technical meeting held on 2-20-15 between W&A, ARCADIS, Heath and Lineback and MC Squared.
 - The project is planned to be staged via an on-site detour north of existing Buena Vista Road and an off-site detour for Andrews Road.
 - The vertical profile and horizontal tie-ins will be controlled by the required clearance, maximum grades and structure depth. W&A is to coordinate with the City of Columbus to get acceptance on a 16' clearance and 8% max grade.
 - The bridge is anticipated to be single span, built on site parallel to the bridge and rolled into place during a temporary railroad closure.
 - The Circle K gas station is significantly impacted by the project and could provide benefits to the project as a pump station location.
 - The presence of rock under the railroad could be a critical flaw. United Consulting is to complete borings at select locations on 3/10/15 to ensure there is no rock present.
- Sam Moussly provided an overview of the current UST Phase 1 screening. There are multiple locations of USTs in the vicinity of the project. If right-of-way is proposed for these parcels, a Phase II investigation will be recommended to ensure there is no contamination present.
- Lee Williams reviewed the findings of the waters delineation that had been completed. There are several streams outside of the project, but currently only one where MLK ties back into the existing alignment. Impacts to any waters would require 404 permitting and special studies. Brad stated that the layout will be revised to avoid the stream if possible.
- Rob Jacquette discussed the status of the traffic analysis. Traffic counts have been obtained and the analysis is underway. Rob anticipated having preliminary results within two weeks to provide recommendations regarding the number of lanes on Buena Vista Road and the on-site detour.
- Carl Sellars stated that utility coordination had begun. The project layout has been sent to all known contacts along the project. The SUE QL-D is scheduled for completion on 3/20.

- Brad stated that the City of Columbus would be required to obtain a PE Agreement with Norfolk Southern Railroad in order for the railroad to review plans.
- Shrujal Amin noted that a Concept Report could be submitted in draft form to facilitate an early review. Brad stated that W&A would submit after the lane configurations are known and layout can be updated.

- Previous Action Items:
 - W&A to coordinate with the City of Columbus regarding their land acquisition procedures and a contact person for lane closures during field investigations.
 - Felton Grant will be the City's point of contact regarding acquisition
 - W&A to provide a survey letter covering all disciplines that are required to complete field investigations.
 - Completed
 - W&A to schedule technical review meeting and monthly project meetings.
 - Completed
 - All parties to review the proposed schedule and provide comments by 1/30/15. W&A will then provide the schedule to the City and TIA.
 - Completed
 - All subconsultants to execute the agreements as required.
 - Completed

- New Action Items:
 - W&A to coordinate design criteria acceptance with the City regarding required clearances and maximum grades. Also will notify the City of the PE Agreement requirements between the railroad and City.
 - United Consulting to complete borings on 3/10/15 to determine the presence of rock.
 - MC Squared to finalize UST Phase 1 the week of 3/13/15.
 - W&A to determine lane recommendations the week of 3/20/15.
 - W&A to complete SUE QL-D by 3/20/15.
 - W&A to complete DRAFT Concept Report after lane configurations are known and concept layout is updated.

MEETING MINUTES

LOCATION: Wolverton & Associates, Inc.
MEETING DATE: April 3, 2015, 10:00 AM
RE: Spiderweb Network, City of Columbus, PI 0011436

ATTENDEES:	Brad Robinson	W&A
	Mario Macrina	W&A
	Joe Macrina	W&A
	Rob Jacquette	W&A
	Brandon Miller	W&A
	Carl Sellars	W&A
	Buck Wright	W&A
	Sam Moussly	MC Squared
	Rick Jones (phone)	City of Columbus
	Kristen Kasmire (phone)	ARCADIS
	Allen Krivsky (phone)	Heath & Lineback
	Santanu Sinharoy (phone)	United Consulting
	Kelvin Mullins (phone)	GDOT
	Shrujal Amin (phone)	TIA

- Brad Robinson opened the meeting and provided an overview of the geotechnical investigation. United Consulting has completed three borings along the project to determine the presence of rock or groundwater. No rock was encountered, but groundwater was found to be only 7-10' below the surface in the vicinity of the railroad. Groundwater at this depth would require extensive pumping, waterproofing and designing the underpass for buoyancy. The design team has updated the conceptual project cost from \$47M to \$51M. The TIA budget is \$40M. It was also noted that the concept cost may not include additional impacts for discharging flood water or additional railroad and property impacts due to settling.
- After group discussion, it was agreed that other concept alternatives should be investigated due to the increased risk presented by the high groundwater (including costs, public impacts and liability). Rick Jones stated that another public meeting would be required for the concept to change and he was unsure how the change would be received. The City and the public had previously approved of the preferred alternative.
- Brad stated that the design team would revisit the other alternatives presented to the public as well as a new alternative to mimic the underpass layout, but with a bridge over the railroad instead of going under.
- Kelvin Mullins stated that the \$40M project budget was all inclusive of design, right-of-way, utilities and construction. Shrujal Amin noted that the TIA Team wants to ensure the project budget and schedule is met.
- Mario Macrina stated that most of the work completed by the design team up to this point will still be used going forward.
- Brad gave an update of the other work completed by the team, including:
 - UST Investigations – there are six sites within the project limits. Once right-of-way impacts are known, Phase 2 UST Investigations requirements will be determined.
 - Traffic Counts and Analysis has started. It is expected that Buena Vista Road can be reduced to four lanes through the project corridor.
 - The SUE QL-D investigation has been completed, noting the overhead and underground utilities within the corridor.
- Previous Action Items:
 - W&A to coordinate design criteria acceptance with the City regarding required clearances and maximum grades. Also will notify the City of the PE Agreement requirements between the railroad and City.

- Not completed. Will continue railroad coordination when the concept alternative is determined.
- United Consulting to complete borings on 3/10/15 to determine the presence of rock.
 - Completed.
- MC Squared to finalize UST Phase 1 the week of 3/13/15.
 - Completed.
- W&A to determine lane recommendations the week of 3/20/15.
 - Completed.
- W&A to complete SUE QL-D by 3/20/15.
 - Completed.
- W&A to complete DRAFT Concept Report after lane configurations are known and concept layout is updated.
 - Not completed. The Concept Report will be developed once the concept alternative is determined.

➤ New Action Items:

- W&A to coordinate the investigation of additional concept alternatives, to be presented to the City of Columbus.
- W&A to coordinate design criteria acceptance with the City regarding required clearances and maximum grades. Also will notify the City of the PE Agreement requirements between the railroad and City.
- W&A to complete DRAFT Concept Report after lane configurations are known and concept layout is updated.

MEETING MINUTES

LOCATION: Wolverton & Associates, Inc.
MEETING DATE: MAY 1, 2015, 10:00 AM
RE: Spiderweb Network, City of Columbus, PI 0011436
ATTENDEES:

Brad Robinson	W&A
Mario Macrina	W&A
Russell Smith	W&A
Rob Jacquette	W&A
Todd DeVos	W&A
Buck Wright	W&A
Rick Jones (phone)	City of Columbus
Kristen Kasmire (phone)	ARCADIS
Masood Shabazaz (phone)	Heath & Lineback
Santanu Sinharoy (phone)	United Consulting
Dan Bodycomb (phone)	TIA

- Brad Robinson opened the meeting and provided an overview of the new Alternative 4 to Bridge over the Railroad & MLK and ties back into Buena Vista before the Bridge over Bull Creek.
 - Critical vertical clearance will be at the existing Railroad track – 23' Vertical, 5'-6" from CL of Track.
 - Assumes 5' structure depth – Type III AASHTO PSC Beam
 - 8% max Grades
 - Approximate project costs \$21M.
- Brad reviewed a possible staging layout with an onsite detour to the north of Buena Vista Road. This detour could be designed to tie back in before the existing bridge over Bull Creek.
- Kristen Kasmire stated the current rating for the bridge of Bull creek is 58.6 and normally a rating below 50 would require replacement if it were being effected by the project. If staging requires widening of the bridge, rehab of bridge or replacement may still be required. Kristen stated that bridge rehab work could be possibly be completed to increase the bridge rating without replacing the bridge.
- Santanu Sinharoy stated that there are soft soils in the area and this would require additional installation time for MSE walls around the bridge.
- Rick Jones stated that another public meeting would be required for the new alternate.
- Rick also mentioned that the City would be interested in a pedestrian crossing under/over the relocated MLK.
- Dan Bodycomb stated that the TIA budget was \$40M, and if the project costs are estimated at \$21M, additional improvements could be added to the project.

Previous Action Items:

- W&A to complete the DRAFT Concept Report after lane configurations are known and concept layout is updated. *In Progress*
- W&A to coordinate the investigation of additional concept alternatives, to be presented to the City of Columbus. *In Progress*

New Action Items:

- W&A to continue the conceptual staging design and coordination of Alternative 4.
- W&A will double check detour traffic to ensure 4 lanes are required for the temporary condition.

- W&A to submit the concept alternative to Rick Jones for presentation to City Council and scheduling of a public meeting.



MEETING MINUTES

LOCATION: Wolverton & Associates, Inc.
MEETING DATE: AUGUST 7, 2015, 10:00 AM
RE: Spiderweb Network, City of Columbus, PI 0011436

ATTENDEES:

Brad Robinson	W&A
Joe Macrina	W&A
Mario Macrina	W&A
Russell Smith	W&A
Todd DeVos	W&A
Josh Pruitt	W&A
Buck Wright	W&A
Brandon Miller	W&A
Jim Godfrey	W&A
Rick Jones (WebEx)	City of Columbus
Kristen Kasmire (WebEx)	ARCADIS
Santanu Sinharoy (WebEx)	United Consulting
Allen Krivsky (WebEx)	Heath & Linebeck
Dan Bodycomb (WebEx)	TIA
Kelvin Mullins (WebEx)	GDOT

- Brad Robinson opened the meeting and provided an overview of the new layout, including the addition of improvements to the Buena Vista Corridor and roundabouts on Illges Road and Morris Road. Construction cost of the Spiderweb Project allowed for these additional improvements to be made. Brad stated that the current Cost Estimate is now \$31.4 million.
 - Rick Jones stated that the City was leaning towards replacing the bike lanes with a multi-use trail on the north side of the road. Mario Macrina asked which option (Bike Lanes or Multi-Use Trail) should be shown on the display for the upcoming Public meeting. Rick stated that a typical should be added for the multi-use trail so that both options are presented.
- Kelvin Mullins asked if the Buena Vista Corridor project was originally a GDOT Project. He also stated that if this was the case, it would need to be removed from GDOT's program since it will be added to the Spiderweb project.
- Brad asked W&A Traffic to give an overview of the recommendations made on the project.
 - Josh Pruitt explained the traffic volumes at Buena Vista Road and Morris Road/Andrews Road dictated the need for 3 lanes in the east bound direction.
 - Josh stated that at the intersection of Morris Road and Ace Way a traffic signal was not warranted but a roundabout would function better than the stop-controlled configuration due to the high left turn volume.
 - Josh stated that at the intersection of Illges Road and Ace Way a traffic signal was warranted solely by the presence of the Railroad. He said that a roundabout would function better than a signal in this location as well.
- Brad asked ARCADIS to give an overview of their Bridge Inspection of the existing bridge over Bull Creek.
 - Kristen Kasmire stated that they found no significant issues when they performed their inspection.

- She stated that it was an old bridge and that there was some spalling and areas with exposed rebar.
- She also stated that one of the Bents had settled.
- Brad mentioned that the GDOT Sufficiency Rating was a 58.
 - Kristen stated that GDOT had rated the superstructure as satisfactory and the substructure as poor. ARCADIS was not sure what factors caused GDOT to rate the substructure as poor at this time.
- Brad asked if there was a way we could increase the sufficiency rating.
 - Kristen state that there was not because there was not a way to increase the structural capacity of the existing bridge.
- Mario suggested coordinating with whoever performed the original sufficiency inspection at GDOT to determine what caused their substructure rating of poor. Kristen agreed.
- Kristen stated that it might be worthwhile to remove and replace the asphalt on the existing bridge but that this is not a critical item.
- Brad stated that the Draft Concept Report is in progress and close to completion. Remaining items include combining the traffic reports of the Spiderweb and the Buena Vista Corridor projects by letter.
- Rick stated that currently the plan is to have a Public Meeting on 9/14/15 at Brewer Elementary School.
 - Brad asked if Rick thought the results of the Public Meeting would cause any changes to the Preferred Alternative and if W&A could begin survey on the project.
 - Rick stated that he did not believe any changes would result from the Public Meeting and that W&A could begin survey.
- Brad reviewed the schedule for the upcoming month.
 - For August:
 - Schedule Public Meeting (9/14/15)
 - Submit DRAFT Concept Report
 - Begin Survey (End of August or First of September)
- Joe Macrina asked if the addition of the corridor improvements would change the level of utility coordination
 - Brad stated that SUE Quality B will be performed but no major impacts are expected for the corridor additions.

Previous Action Items:

- W&A to complete DRAFT Concept Report after lane configurations are known and concept layout is updated. *In Progress.*

Next Action Items:

- W&A to add a multi-use trail typical section to the concept layout.
- ARCADIS to coordinate with GDOT Bridge Inspector to determine reasoning for low sub-structure rating.
- W&A to review rendering and send to the City
- W&A to complete DRAFT Concept Report and submit to the City



MEETING MINUTES

LOCATION: Wolverton & Associates, Inc.
MEETING DATE: SEPTEMBER 8, 2015, 10:00 AM
RE: Spiderweb Network, City of Columbus, PI 0011436

ATTENDEES:

Brad Robinson	W&A
Joe Macrina	W&A
Mario Macrina	W&A
Russell Smith	W&A
Rob Jacquette	W&A
Buck Wright	W&A
Brandon Miller	W&A
James McNabb	ARCADIS
Kristen Kasmire (WebEx)	ARCADIS
Santanu Sinharoy (WebEx)	United Consulting
Allen Krivsky (WebEx)	Heath & Linebeck
Sam Moussly (WebEx)	MCSquared
Gary Webb (WebEx)	THC
Dan Bodycomb (WebEx)	TIA
Kelvin Mullins (WebEx)	GDOT

- Brad Robinson opened the meeting and stated that W&A submitted the Draft Concept report last week. In this draft W&A matched the costs estimates and the table in the Concept Report.
 - The updated costs included ROW and Utility costs for all pieces of the current project: Spiderweb, Buena Vista Corridor and the Lawyer's Lane Roundabout.
 - Includes estimated Railroad engineering of \$1 million. Could possibly go down due to the current option going over the rail road as opposed to under it.
 - Also includes a conservative 20% contingency.
- Brad stated that the Public Meeting is scheduled for 9/14/15.
 - W&A currently finalizing the Traffic Letter and Concept Report.
- Joe Macrina asked what the procedure for the Public Meeting was the previous time it was held?
 - Brad stated that it was an informal setting with people allowed to attend during a preset range of times. Approximately 40-50 people attended with a generally positive outlook toward the project.
 - Joe reiterated that the reason for the change of Preferred Alternative from the previous Public Meeting was High Water Table and Cost of Construction.
- Brandon Miller stated that W&A began survey the week of 8/31/15
- Brad stated that W&A has requested a Supplemental Agreement for the change in Scope. Rick Jones of the City of Columbus has approved this SA and is presenting it to the City Council 9/8/15
- Brad asked ARCADIS to address any findings in their investigation of the Low Bridge rating for the bridge over Bull Creek.
 - James McNabb said they have not followed up with GDOT Bridge Maintenance as of yet but ARCADIS's finding did not reveal any structural deficiencies in the bridge. ARCADIS will follow up with GDOT Bridge Maintenance.
- Sam Moussly asked if a Pile Integrity Test had been run.
 - James McNabb stated that there had been no such test

- Brad stated that ARCADIS performed their own investigation involving the low bridge rating and no further testing would be required at this time.
- Gary Webb stated that with regards to the ROW estimate, the relocation number that was provided was considering a Non-FHWA, Non-GDOT procedure. If the City decides to follow these procedures the ROW Relocation estimates could go up significantly.
- Gary also raised concerns with regard to the Elementary schools parking and playground being shown as affected by the project on the layout.
 - Brad stated that the issues will be addressed in design and will be mitigated where possible.
- James expressed concerns about the Roundabout at the Railroad crossing of Illges Road.
 - Brad stated that these issues would be the same if the intersection was a signal or a Roundabout.
 - James suggested the possibility of a bypass lane for Southbound Illges Road.
 - Brad stated that these issues would be addressed during the design phase.

Previous Action Items:

- W&A to add a multi-use trail typical section to the concept layout. *Completed.*
- ARCADIS to coordinate with GDOT Bridge Inspector to determine reasoning for low sub-structure rating. *In Progress.*
- W&A to review rendering and send to the City. *Completed.*
- W&A to complete DRAFT Concept Report and submit to the City. *Completed.*

Next Action Items:

- W&A to Finalize Traffic Letter
- W&A to Finalize Concept Report
- ARCADIS to coordinate with GDOT Bridge Inspector to determine reasoning for low sub-structure rating.
- Attend Public Meeting

PI# 0011436
CONTRACT ID# AETIADES150153



TRANSPORTATION INVESTMENT ACT OF 2010 PROJECT AGREEMENT

By and Between

THE GEORGIA DEPARTMENT OF TRANSPORTATION

and

COLUMBUS CONSOLIDATED GOVERNMENT

This Agreement, made and entered into this 23rd day of September 2014 ("Effective Date"), by and between the DEPARTMENT OF TRANSPORTATION, an agency of the State of Georgia, hereinafter referred to as the "DEPARTMENT", and **COLUMBUS CONSOLIDATED GOVERNMENT GEORGIA**, acting by and through its Mayor and City Council or Board of Commissioners, as the case may be, hereinafter referred to as the "LOCAL GOVERNMENT".

WHEREAS, pursuant to O.C.G.A. § 48-8-240 *et. seq.*, the General Assembly adopted the Transportation Investment Act of 2010 (hereinafter referred to as the "ACT");

WHEREAS, the LOCAL GOVERNMENT has been approved by the DEPARTMENT to carry out a Project on the Approved Investment List(s) of special district River Valley as approved by the final regional transportation roundtable for the special district and provided to the Director of Planning in accordance with O.C.G.A. § 48-8-243(b), which consists of all or part of the design, acquisition of right of way, construction, operation and maintenance of Columbus Spider Web Network, RC08-000057, P.L. 0011436, hereinafter referred to as the "PROJECT"; and

WHEREAS, in accordance with O.C.G.A. § 48-8-249(b)(1) and an Intergovernmental Agreement between the DEPARTMENT and the GEORGIA STATE FINANCING AND INVESTMENT COMMISSION (hereinafter referred to as "GSFIC") dated January 1, 2013 the DEPARTMENT is authorized to manage the execution, schedule, budget and delivery of the Projects on the Approved Investment List(s) for the special district; and

WHEREAS, in accordance with O.C.G.A. § 48-8-249(c)(4), the DEPARTMENT has made the determination that the LOCAL GOVERNMENT has the requisite experience to undertake the PROJECT as set forth in the Local Project Delivery Application form, Appendix A, attached hereto and incorporated herein by reference; and

WHEREAS, the LOCAL GOVERNMENT has indicated that it is qualified and experienced to provide such services necessary for all or part of the design, acquisition of right of way, construction, operation and maintenance of the PROJECT and the DEPARTMENT has relied upon such representations; and

WHEREAS, pursuant to provisions of O.C.G.A. § 48-8-249(b), GSFIC is authorized to dispense special district transportation sales and use tax proceeds upon the receipt of certified invoices from the DEPARTMENT of the completion of an Eligible PROJECT Cost, as herein defined, as reimbursement to the DEPARTMENT; and

WHEREAS, the Georgia Constitution authorizes intergovernmental agreements whereby state and local entities may contract with one another "for joint services, for the provision of services, or for the joint or separate use of facilities or equipment; but such contracts must deal with activities, services or facilities which the parties are authorized by law to undertake or provide." Ga. Constitution Article IX, §III, ¶I(a).

NOW, THEREFORE, in consideration of the mutual promises and the benefits to flow from one to the other, the DEPARTMENT and the LOCAL GOVERNMENT do hereby agree as follows:

**ARTICLE I
SCOPE AND PROCEDURE**

A. **General Scope and Procedures.** The SCOPE AND PROCEDURE for this PROJECT shall be Columbus Spider Web Network, RC08-000057, P.I. 0011436.

The LOCAL GOVERNMENT shall be responsible for assuring that the PROJECT will be economically feasible and that the design and construction will be based upon sound engineering principles, meet American Association of State Highway and Transportation Officials ("AASHTO") Guidelines and will be sensitive to ecological, environmental and archaeological issues. The LOCAL GOVERNMENT shall also be responsible for assuring that the PROJECT meets and complies with the scope as defined in the Approved Investment List.

It is understood and agreed that the reimbursement for the PROJECT shall be dependent on the DEPARTMENT'S review and approval of the certified vouchers and contingent upon the availability of special district transportation sales and use tax proceeds, as more specifically set forth in Article VI, COMPENSATION AND PAYMENT.

The LOCAL GOVERNMENT shall work with the DEPARTMENT or its designees as may be designated by the DEPARTMENT at a later date, who will advise the LOCAL GOVERNMENT on the work scope and provide guidance and required approvals during implementation of the PROJECT.

B. **Local Project Delivery Application.** The LOCAL GOVERNMENT has submitted its Local Project Delivery Application to administer the PROJECT, attached hereto as Appendix A. The DEPARTMENT'S State TIA Administrator has reviewed, confirmed and approved the Local Project Delivery Application for the LOCAL GOVERNMENT to develop the PROJECT within the scope of its certification. Expenditures incurred by the LOCAL GOVERNMENT prior to the execution of this AGREEMENT or expenditures made pursuant to other funding agreements shall not be reimbursed by the DEPARTMENT.

C. **Applicable Laws, Regulations and Standards.** During the duration of the PROJECT and this Agreement, the LOCAL GOVERNMENT has and will taken into consideration, and has and will comply with, as applicable, the DEPARTMENT'S Transportation Investment Act of 2010 Manual – Processes and Procedures, available on the DEPARTMENT'S website, and as may be amended or supplemented from time to time and including addenda (hereinafter referred to as "TIA Manual"), and other standards and guidelines as may be applicable to the PROJECT. The DEPARTMENT may in its sole discretion waive certain requirements set forth in the TIA Manual unilaterally or upon receipt of a written request from the LOCAL GOVERNMENT.

D. **Notices to Proceed.** The work shall be carried on in accordance with the schedule attached to this Agreement as "Exhibit A" WORK SCHEDULE with the understanding that unforeseen events may make necessary some minor variations in that schedule. The DEPARTMENT may request additional or updated information and documentation regarding the WORK SCHEDULE from the LOCAL GOVERNMENT at any time.

No work on any phase of the PROJECT shall begin without a written notice to proceed from the DEPARTMENT to the LOCAL GOVERNMENT for each of the following separate phases:

- (1) Preliminary Engineering Activities – Concept Report Approval
- (2) Preliminary Engineering Activities – Field Plan Review Approval
- (3) Right of Way

- (4) Construction – Notice to Advertise
- (5) Construction – Notice to Proceed
- (6) Transit – Operations Per Year (if applicable)

Each Notice to Proceed will contain a Completion Date for that phase, which shall be binding. If unforeseen conditions are encountered and an extension of the completion date is warranted, the LOCAL GOVERNMENT may request in writing an extension of the completion date for written approval by the DEPARTMENT.

E. **Preliminary Engineering Activities.** The LOCAL GOVERNMENT shall be solely responsible for the Preliminary Engineering (“PE”) activities for the PROJECT. The PE activities shall be accomplished in accordance with the ACT, the DEPARTMENT’s TIA Manual, and all applicable design guidelines and policies of the DEPARTMENT in order to produce a cost effective PROJECT. Failure to follow the TIA Manual and all applicable guidelines and policies will jeopardize the reimbursement of special district transportation sales and use tax proceeds in some or all categories outlined in this Agreement, and it shall be the responsibility of the LOCAL GOVERNMENT for any loss of funding. The DEPARTMENT agrees to reimburse the LOCAL GOVERNMENT **Not to Exceed Two Million, Four Hundred Eighty Four Thousand, Six Hundred Eighty Four Dollars and Zero Cents (\$2,484,684.00)** for eligible PE costs, contingent upon the availability of special district transportation sales and use tax proceeds as more specifically set forth in Article VI, COMPENSATION AND PAYMENT. PE costs eligible for reimbursement are those Eligible Project costs as defined in Article VI, COMPENSATION AND PAYMENT. The LOCAL GOVERNMENT may request that the reimbursement cap for eligible PE costs be increased or decreased by written request sent to the DEPARTMENT. If the DEPARTMENT agrees, a supplemental agreement with the new reimbursement cap for eligible PE costs shall be issued and signed by the Parties.

F. **Right of Way Activities.** The LOCAL GOVERNMENT shall be solely responsible for Right of Way Acquisition. The Right of Way (hereinafter referred to as “ROW”) activities shall be accomplished in accordance with the ACT, the DEPARTMENT’s TIA Manual, and all applicable design guidelines and policies of the DEPARTMENT in order to produce a cost effective PROJECT. Failure to follow the TIA Manual and all applicable guidelines and policies will jeopardize the reimbursement of special district transportation sales and use tax proceeds in some or all categories outlined in this Agreement, and it shall be the responsibility of the LOCAL GOVERNMENT for any loss funding. The DEPARTMENT agrees to reimburse the LOCAL GOVERNMENT **Not to Exceed Eight Million, Five Hundred Eighteen Thousand, Nine Hundred Eighteen Dollars and Zero Cents (\$8,518,918.00)** for eligible ROW costs, contingent upon the availability of special district transportation sales and use tax proceeds as more specifically set forth in Article VI, COMPENSATION AND PAYMENT. ROW costs eligible for reimbursement are those Eligible Project costs as defined in Article VI, COMPENSATION AND PAYMENT. The LOCAL GOVERNMENT may request that the reimbursement cap for eligible Right of Way costs be increased or decreased by written request sent to the DEPARTMENT. If the DEPARTMENT agrees, a supplemental agreement with the new reimbursement cap for eligible Right of Way costs shall be issued and signed by the Parties.

Upon approval of the ROW plans by the DEPARTMENT, the LOCAL GOVERNMENT may begin the acquisition of the necessary ROW for the PROJECT. ROW acquisition can occur concurrently with the environmental process once final impacts are known, provided that the DEPARTMENT has provided a written notice to proceed to the LOCAL GOVERNMENT to stake the ROW and proceed with all pre-acquisition ROW activities. LOCAL GOVERNMENT shall acquire ROW, if required, and related ROW services for the PROJECT. Further, the LOCAL GOVERNMENT shall be responsible for making all changes to the approved ROW plans, as deemed necessary by the DEPARTMENT, for whatever reason, as needed to purchase the ROW or to match actual conditions encountered.

Reimbursement of acquisition expenses will be eligible on a monthly basis. After completion of all land and improvement acquisition; completion of all property management; completion of all demolition; and, after all occupants have relocated off the PROJECT, the LOCAL GOVERNMENT shall certify in writing to the DEPARTMENT that title to all parcels, whether acquired by deed or condemnation, has been quitclaimed from the LOCAL GOVERNMENT to the DEPARTMENT where PROJECT is located on a federal or state route, and that all property management, all demolition and all relocation has been completed. Said certification will include a statement that "All parcels are vacant and immediately available for construction purposes".

The LOCAL GOVERNMENT agrees to pay for the defense of any and all suits, if any should arise, involving property titles and/or contaminated properties associated with the acquisition of ROW by deed or condemnation. The LOCAL GOVERNMENT hereby agrees to indemnify and hold harmless the DEPARTMENT, the State of Georgia and its departments, agencies and instrumentalities and all of their respective officers, members, employees and directors from and against any and all claims, demands, liabilities, losses, costs or expenses, including attorneys' fees, due to due to liability to a third party or Parties, arising from, related to, or caused by property titles and/or contaminated properties associated with the acquisition of ROW by deed or condemnation.

G. **Construction.** The LOCAL GOVERNMENT shall be solely responsible for Construction. Construction shall be accomplished in accordance with the ACT, the DEPARTMENT's TIA Manual, and all applicable design guidelines and policies of the DEPARTMENT in order to produce a cost effective PROJECT. Failure to follow the TIA Manual and all applicable guidelines and policies will jeopardize the reimbursement of special district transportation sales and use tax proceeds in some or all categories outlined in this Agreement, and it shall be the responsibility of the LOCAL GOVERNMENT for any loss of funding. The DEPARTMENT agrees to reimburse the LOCAL GOVERNMENT **Not to Exceed Twenty Eight Million, Three Hundred Ninety Six Thousand, Three Hundred Ninety Eight Dollars and Zero Cents (\$28,396,398.00)** for eligible Construction costs, contingent upon the availability of special district transportation sales and use tax proceeds as more specifically set forth in Article VI, COMPENSATION AND PAYMENT. Construction costs eligible for reimbursement are those Eligible Project costs as defined in Article VI, COMPENSATION AND PAYMENT. The LOCAL GOVERNMENT may request that the reimbursement cap for eligible Construction costs be increased or decreased by written request sent to the DEPARTMENT. If the DEPARTMENT agrees, a supplemental agreement with the new reimbursement cap for eligible Construction costs shall be issued and signed by the Parties.

The LOCAL GOVERNMENT shall ensure that all contracts as well as any subcontracts for the construction and implementation of the PROJECT shall comply with the applicable State legal requirements imposed on the DEPARTMENT and any amendments thereto. The LOCAL GOVERNMENT is required and does agree to abide by those provisions governing the DEPARTMENT's authority to contract Sections 32-2-60 through 32-2-77 of the Official Code of Georgia Annotated; the DEPARTMENT's Rules and Regulations governing the Prequalification of Prospective Bidders, Chapter 672-5; the DEPARTMENT's *Standard Specifications and Special Provisions*, Current Edition, as amended in the DEPARTMENT's *Supplemental Specifications Book*, current edition; and any Supplemental Specifications and Special Provisions as applicable for the PROJECT.

The LOCAL GOVERNMENT shall be solely responsible for Letting the PROJECT to construction, for the execution of all applicable agreements, and for securing and awarding the construction contract for the PROJECT after the following items have been completed and submitted by the LOCAL GOVERNMENT to the DEPARTMENT:

1. Submittal of acceptable PE activity deliverables for the PROJECT as noted in the TIA Manual; and
2. Providing the necessary certifications as set forth in the TIA Manual.

The work can be performed by the LOCAL GOVERNMENT or can be subcontracted through the appropriate procurement process to a private contractor or government entity as may be appropriate. If the work is performed by a private contractor, the LOCAL GOVERNMENT is responsible for preparing the bid contract documents and letting the work out for bid in accordance with the express limitations as provided in Part 2 of Chapter 4 of Article 3 of Title 32 or any other applicable provisions of State law. Upon opening bids, the LOCAL GOVERNMENT shall award the PROJECT to the lowest reliable bidder. The LOCAL GOVERNMENT shall provide the above deliverables and certifications and shall follow the requirements of the DEPARTMENT's TIA Manual.

Prior to award of the PROJECT, the LOCAL GOVERNMENT shall submit to the DEPARTMENT a bid tabulation and the LOCAL GOVERNMENT's recommendation for awarding the PROJECT. The DEPARTMENT will review the information focusing on budget proposals and issue a written recommendation to award or reject the bids. If a recommendation to award is given by the DEPARTMENT a written Notice to Proceed with Construction will be issued. No work shall begin until this Notice to Proceed has been issued to the LOCAL GOVERNMENT.

The LOCAL GOVERNMENT will be responsible for performing the construction, inspection, supervision and documentation. At the discretion of the DEPARTMENT, spot inspection and material testing will be performed by the DEPARTMENT when deemed necessary by the DEPARTMENT and pursuant to the TIA Manual.

H. **Reporting.** During each phase of the PROJECT, the LOCAL GOVERNMENT must submit the following to the DEPARTMENT on a monthly basis: Estimated Costs to Complete and the Estimate Costs at Completion on a monthly basis.

ARTICLE II REVIEW OF WORK

Authorized representatives of the DEPARTMENT, GSFIC and the Citizens Review Panel as defined in O.C.G.A. § 48-8-251 may at all reasonable times review and inspect the activities and data collected under the terms of this Agreement and amendments thereto, including but not limited to, all reports, drawings, studies, specifications, estimates, maps, and computations, prepared by or for the LOCAL GOVERNMENT. The DEPARTMENT reserves the right for reviews and acceptance on the part of affected public agencies, railroads and utilities insofar as the interest of each is concerned.

Acceptance shall not relieve the LOCAL GOVERNMENT of its obligation to correct, at its expense, any of its errors in the work. The DEPARTMENT's review recommendations shall be incorporated into the work activities of the LOCAL GOVERNMENT.

The LOCAL GOVERNMENT shall keep accurate records in a manner approved by the DEPARTMENT with regard to the PROJECT and submit to the DEPARTMENT, upon request, such information and documentation as is required in order to ensure compliance with this Article and the ACT.

**ARTICLE III
TERM OF AGREEMENT AND TIME OF PERFORMANCE**

A. **Term of Agreement.** This Agreement will commence on the Effective Date as defined above and continue for a period of ten (10) years, unless terminated earlier by either Party in accordance with the termination provisions set forth in Article XI below.

B. **Time of Performance.** TIME IS OF THE ESSENCE IN THIS AGREEMENT. The LOCAL GOVERNMENT shall perform its responsibilities for the PROJECT, commencing upon receipt from the DEPARTMENT of written Notice to Proceed for each Phase as outline in Article I.D above.

C. The work shall be carried on expeditiously, it being understood, however, that this Agreement may be extended or continued in force by mutual consent of the parties and evidenced by a written amendment thereto. If, for any reason, the LOCAL GOVERNMENT does not produce acceptable deliverables in accordance with the approved schedule, the DEPARTMENT reserves the right to take control of the PROJECT and to complete the PROJECT through its own procurement process.

**ARTICLE IV
RESPONSIBILITY FOR CLAIMS AND LIABILITY**

The LOCAL GOVERNMENT shall, to the extent permitted by law, be responsible for any and all damages to property or persons and shall indemnify and save harmless the DEPARTMENT, its officers, agents and employees from all suits, claims, actions or damages of any nature whatsoever resulting from the negligence of the LOCAL GOVERNMENT in the performance of the work under this Agreement.

It is understood by the LOCAL GOVERNMENT that claims, damages, losses, and expenses may include monetary claims made by the construction contractor for the PROJECT, and its related facilities, that are a result of the LOCAL GOVERNMENT's negligence or improper representation in the plans.

The LOCAL GOVERNMENT shall ensure that all provisions of this Article are included in all contracts and subcontracts.

These indemnities shall not be limited by reason of any insurance coverage held by the LOCAL GOVERNMENT or the LOCAL GOVERNMENT's contractors or subcontractors.

**ARTICLE V
INSURANCE**

It is understood that the LOCAL GOVERNMENT is self insured and all claims against LOCAL GOVERNMENT will be handled through the Risk Management Division.

Prior to beginning work, the LOCAL GOVERNMENT shall where applicable cause its engineering firms, contractors and subcontractors to obtain and furnish certificates and the endorsement page to the DEPARTMENT for the following minimum amounts of insurance:

A. Workers' Compensation Insurance in accordance with the laws of the State of Georgia.

- B. Public Liability Insurance in an amount of not less than one hundred thousand dollars (\$100,000) for injuries, including those resulting in death to any one person, and in an amount of not less than three hundred thousand dollars (\$300,000) on an account of any one occurrence.
- C. Commercial General Liability Insurance of at least \$1,000,000 per occurrence \$3,000,000 aggregate, including Automobile Comprehensive Liability Coverage with bodily injury in the minimum amount of \$1,000,000 combined single limits each occurrence. GDOT shall be named as an additional insured and a copy of the policy endorsement shall be provided with the insurance certificate. Valuable Papers Insurance in an amount sufficient to assure the restoration of any plans, drawings, field notes, or other similar data relating to the work covered by the PROJECT.
- D. Where applicable, professional Liability (Errors and Omissions) Insurance with limits not less than the following:
 - i. For Professionals – \$1,000,000 per claim and \$1,000,000 in aggregate coverage;
 - ii. For Sub-consultant Engineers and Architects – \$1,000,000 per claim and \$1,000,000 in aggregate coverage;
 - iii. For Other Consultants – \$1,000,000 per claim and \$1,000,000 in aggregate coverage.
 - iv. Professional liability insurance that shall be either a practice policy or project-specific coverage. Professional liability insurance shall contain prior acts coverage for services performed for this PROJECT. If project-specific coverage is used, these requirements shall be continued in effect for two years following final completion for the PROJECT.

The above listed instrument(s) of insurance shall be maintained in full force and effect during the life of the Agreement and until final completion of the PROJECT.

ARTICLE VI COMPENSATION AND PAYMENT

A. 100% TIA Funded Project.

THE LOCAL GOVERNMENT ACKNOWLEDGES THAT THE PROJECT IS 100% FUNDED WITH SPECIAL DISTRICT TRANSPORTATION SALES AND USE TAX PROCEEDS COLLECTED PURSUANT TO THE ACT AND THAT THE DEPARTMENT'S PAYMENT OBLIGATIONS RELATED TO THE PROJECT ARE STRICTLY LIMITED AS SET FORTH HEREIN. THE LOCAL GOVERNMENT FURTHER ACKNOWLEDGES THAT NO ENTITY OF THE STATE OF GEORGIA OTHER THAN THE DEPARTMENT HAS ANY OBLIGATIONS TO THE LOCAL GOVERNMENT RELATED TO THIS PROJECT.

THE OBLIGATION OF THE DEPARTMENT TO PAY OR REIMBURSE ANY INCURRED COST IS EXPRESSLY LIMITED TO THE AMOUNT OF SPECIAL DISTRICT TRANSPORTATION SALES AND USE TAX PROCEEDS REMITTED TO THE DEPARTMENT BY GSFIC AND DESIGNATED BY THE DEPARTMENT FOR THE PROJECT. THIS AGREEMENT DOES NOT OBLIGATE THE DEPARTMENT TO MAKE ANY PAYMENT TO THE LOCAL GOVERNMENT FROM ANY FUNDS OTHER THAN THOSE MADE AVAILABLE TO THE DEPARTMENT FROM THE SPECIAL DISTRICT TRANSPORTATION SALES AND USE TAX PROCEEDS BY GSFIC AND DESIGNATED BY THE DEPARTMENT FOR THE PROJECT. IN THE EVENT THE FUNDS MADE AVAILABLE TO THE DEPARTMENT FROM THE SPECIAL DISTRICT TRANSPORTATION SALES AND USE TAX PROCEEDS ARE INSUFFICIENT FOR THE PROJECT AS DESIGNATED BY THE DEPARTMENT, THE DEPARTMENT'S PAYMENT OBLIGATIONS SHALL NOT EXCEED THE AVAILABILITY OF SUCH SPECIAL DISTRICT TRANSPORTATION SALES AND USE TAX PROCEEDS AND THE DEPARTMENT

SHALL HAVE THE RIGHT AT ITS SOLE DISCRETION TO TERMINATE THIS AGREEMENT IMMEDIATELY UPON NOTICE TO THE LOCAL GOVERNMENT WITHOUT FURTHER OBLIGATION OF THE DEPARTMENT TO THE EXTENT THAT THE OBLIGATIONS EXCEED THE AVAILABILITY OF SUCH THE SPECIAL DISTRICT TRANSPORTATION SALES AND USE TAX PROCEEDS FOR THE PROJECT AS DESIGNATED BY THE DEPARTMENT. THE DEPARTMENT'S CERTIFICATION AS TO THE AVAILABILITY OF THE SPECIAL DISTRICT TRANSPORTATION SALES AND USE TAX PROCEEDS AS DESIGNATED BY THE DEPARTMENT FOR THE PROJECT SHALL BE CONCLUSIVE.

Any payments shall be made to the LOCAL GOVERNMENT after receipt of such transportation sales and use tax proceeds from GSFIC. The parties agree that the provisions of the Georgia Prompt Pay Act, O.C.G.A. § 13-11-1 *et seq.*, do not control and that the LOCAL GOVERNMENT waives any and all rights it may have under said Act.

The LOCAL GOVERNMENT shall ensure that the provisions of this Article are included in all contracts and subcontracts.

To the extent practically possible, the DEPARTMENT will provide notification to the LOCAL GOVERNMENT that this Agreement will be terminated or that the work will be suspended as set forth in Subsection VLE below, three (3) months prior to the date of the termination or suspension.

B. **Eligible Project Costs.** Any LOCAL GOVERNMENT cost must meet the definition of ELIGIBLE PROJECT COST as set forth in O.C.G.A. § 48-8-249(d) and the Intergovernmental Agreement between GDOT and GSFIC in order to be compensated.

C. **Budget Estimate.**

It is understood and agreed that the total costs of the PROJECT as shown in Exhibit "B", BUDGET ESTIMATE, attached hereto and incorporated as if fully set forth herein is the amount established in the Approved Investment List, or **Forty Million Dollars and Zero Cents, (\$40,000,000.00)** This BUDGET ESTIMATE is the maximum amount of special district transportation sales and use tax proceeds that can be made available for the PROJECT, contingent upon the provisions set forth herein. The PROJECT BUDGET ESTIMATE shall include any claims by the LOCAL GOVERNMENT for all costs incurred by the LOCAL GOVERNMENT in the conduct of the entire scope of work for the PROJECT. The LOCAL GOVERNMENT shall be solely responsible for any and all amounts in excess of the BUDGET ESTIMATE or for amounts not available from special district transportation sales and use tax proceeds.

It is understood and agreed that nothing in the foregoing shall prevent an adjustment of the BUDGET ESTIMATE at the discretion of the DEPARTMENT, provided that the maximum obligation under this Agreement is not exceeded and that the original intent of the PROJECT is not substantially altered from the approved PROJECT. The LOCAL GOVERNMENT shall submit to the DEPARTMENT a revised BUDGET ESTIMATE whenever the PROJECT estimates for the design, right of way or construction have changed. In order to adjust said BUDGET ESTIMATE, it is also understood that the LOCAL GOVERNMENT shall make such request for any and all budget changes within the confines of the maximum amount established herein, such budget change request shall be in writing and any adjustment of the budget shall be subject to written approval by the DEPARTMENT.

If the PROJECT costs are less than the BUDGET ESTIMATE, the LOCAL GOVERNMENT will only be compensated for those incurred ELIGIBLE PROJECT COSTS.

The DEPARTMENT reserves the right in its sole discretion to add up to a maximum of two (2%) percent to the overall budget estimate to account for inflation.

D. Process For Payment.

The LOCAL GOVERNMENT shall submit to the DEPARTMENT monthly reports of the PROJECT's progress to include a report on what was accomplished during the month, anticipated work to be done during the next month and any problems encountered or anticipated. Payment vouchers for ELIGIBLE PROJECT COSTS will be made monthly on the basis of calendar months and submitted to the DEPARTMENT. The DEPARTMENT shall, at the request of the LOCAL GOVERNMENT, review such payment vouchers. If approved, the vouchers shall be certified by the Commissioner of Transportation or the Commissioner's designee and submitted to GSFIC along with the DEPARTMENT'S certification. After reimbursement from GSFIC, payment shall be made to the LOCAL GOVERNMENT, subject to the provisions set forth herein.

The final invoice submitted for each phase of the PROJECT must contain a certification from the LOCAL GOVERNMENT that all work for that phase has been completed in accordance with this Agreement and in accordance with the scope as defined in the Approved Investment List, using the form contained in Appendix E, attached hereto and incorporated by reference.

Should the work for the PROJECT begin within any one month, the first voucher shall cover the partial period from the beginning date of the work through the last date of the month in which it began. The vouchers shall be numbered consecutively and subsequent vouchers submitted each month until the work is completed.

Payment will be made in the amount of sums earned less previous partial payments, contingent entirely upon the availability of special district transportation sales and use tax proceeds as set forth herein. If an error is found in a previously paid invoice which resulted in overbilling by the LOCAL GOVERNMENT and/or an overpayment to the LOCAL GOVERNMENT, future payments will be made in the amount of sums earned less this error, contingent entirely upon the availability of special district transportation sales and use tax proceeds as set forth herein.

The final invoice shall reflect the actual cost of work accomplished by the LOCAL GOVERNMENT under the terms of this Agreement, and shall be the basis for final payment. The final invoice shall include all ELIGIBLE PROJECT COSTS incurred by the LOCAL GOVERNMENT in all phases. See ARTICLE VII, FINAL PAYMENT for further detail. The final invoice for the PROJECT must contain a certification from the LOCAL GOVERNMENT that all work has been completed in accordance with this Agreement in accordance with the scope as defined in the Approved Investment List, using the form contained in Appendix E, attached hereto and incorporated by reference.

Should the work under this Agreement be terminated by the DEPARTMENT, pursuant to the provisions of ARTICLE XI, TERMINATION, or subsection E. herein, the LOCAL GOVERNMENT shall be paid based upon the percentage of work completed at the point of termination, notwithstanding any just claims by the LOCAL GOVERNMENT, and contingent entirely upon the availability of special district transportation sales and use tax proceeds as set forth herein.

E. Insufficient Special District Transportation Sales and Use Tax Proceeds.

If the DEPARTMENT determines that there are insufficient special district transportation sales and use tax proceeds remitted to the Department by GSFIC and designated by the Department for the PROJECT, the DEPARTMENT may at in its sole discretion:

- (1) Terminated this Agreement immediately (and not pursuant to the provisions of Article XI) upon notice to the LOCAL GOVERNMENT and without further obligation on the part of the DEPARTMENT; or

- (2) Direct the Local Government to stop work under this Agreement. Such stop work suspension shall last for a maximum of ninety (90) days. After this ninety (90) day period, if special district transportation sales and use tax proceeds as designated by the DEPARTMENT for the PROJECT are available or are anticipated to be available, the LOCAL GOVERNMENT will have the option to: (1) continue the work under the Agreement; (2) elect to terminate the Agreement pursuant to the termination provisions set forth in Article XI; or (3) agree to a new stop work suspension period as determined by the Department. No delay damages or consequential damages will be recoverable as a result of any stop work suspension period.

ARTICLE VII FINAL PAYMENT

Upon completion of the work by the LOCAL GOVERNMENT and acceptance by the DEPARTMENT of the work, including the receipt of any final written submission by the LOCAL GOVERNMENT and a final statement of costs, the DEPARTMENT shall submit the certified final payment voucher to GSFIC and, after receipt of reimbursement from GSFIC, shall pay to the LOCAL GOVERNMENT a sum equal to one hundred percent (100%) of the total compensation as set forth in all approved invoices, less the total of all previous partial payments, paid or in the process of payment, contingent upon the availability of special district transportation sales and use tax proceeds as set forth in ARTICLE VI, COMPENSATION AND PAYMENT.

The LOCAL GOVERNMENT agrees that acceptance of this final payment shall be in full and final settlement of all claims arising against the DEPARTMENT or the State for work done, materials furnished, costs incurred, or otherwise arising out of this Agreement and shall release the DEPARTMENT and the State from any and all further claims of whatever nature, whether known or unknown, for and on account of said Agreement, and for any and all work done, and labor and materials furnished, in connection with the same.

The LOCAL GOVERNMENT will allow examination and verification of costs by the DEPARTMENT and GSFIC's representative(s) before final payment is made, in accordance with the provisions of Article IX, MAINTENANCE OF CONTRACT COST RECORDS, herein. If the DEPARTMENT or any authorized entity's examination of the contract cost records, as provided for in Article IX, results in unallowable expenses, the LOCAL GOVERNMENT shall immediately be responsible for reimbursing the DEPARTMENT the full amount of such disallowed expenses.

ARTICLE VIII SUBSTANTIAL CHANGES

No material changes in the scope, character, complexity, or duration of the PROJECT from those required under the Agreement or from the general description of the PROJECT as approved by the DEPARTMENT shall be allowed without the execution of a written Supplemental Agreement between the DEPARTMENT and LOCAL GOVERNMENT.

Minor changes in the work which do not involve increased compensation, extensions of time, or changes in the goals and objectives of the PROJECT, may be made by written notification of such change by either party with written approval by the other party.

**ARTICLE IX
MAINTENANCE OF CONTRACT COST RECORDS**

The LOCAL GOVERNMENT shall maintain all books, documents, papers, accounting records, and other evidence pertaining to costs incurred on the PROJECT and used in support of its proposal and shall make such material available at all reasonable times during the period of the Agreement, and for seven years from the date of final payment under the Agreement, for inspection by the DEPARTMENT, any authorized entity and any reviewing agencies, and the Citizen Review Panel as referenced in the ACT and copies thereof shall be furnished upon request. The LOCAL GOVERNMENT agrees that the provisions of this Article shall be included in any Agreement it may make with any engineering firm, contractor, subcontractor, assignee, or transferee. The LOCAL GOVERNMENT shall provide any and all information and/or documentation requested by GDOT or GSFIC, when either state agency is complying with the requirements of O.C.G.A. § 48-8-249(d).

**ARTICLE X
SUBLETTING, ASSIGNMENT, OR TRANSFER**

The work of the LOCAL GOVERNMENT is considered personal by the DEPARTMENT. The LOCAL GOVERNMENT agrees not to assign, sublet, or transfer any or all of its interest in this Agreement without prior written approval of the DEPARTMENT.

The DEPARTMENT reserves the right to review all contracts and subcontracts prepared in connection with the Agreement and maintained by the LOCAL GOVERNMENT, and the LOCAL GOVERNMENT agrees that upon request it shall submit to the DEPARTMENT proposed contract and subcontract documents together with contractor and subcontractor cost estimates in its possession for the DEPARTMENT's review and written concurrence in advance of their execution.

**ARTICLE XI
TERMINATION**

The DEPARTMENT reserves the right to terminate this Agreement at any time for just cause, or for any cause or for no cause upon sixty (60) days written notice to the LOCAL GOVERNMENT, notwithstanding any just claims by the LOCAL GOVERNMENT for payment of services rendered prior to the date of termination subject to the provisions of ARTICLE VI COMPENSATION AND PAYMENT

Subject to the provisions of ARTICLE VI, COMPENSATION AND PAYMENTS, it is understood by the parties hereto that should the DEPARTMENT terminate this Agreement prior to the completion of a PROJECT or PROJECT Element the LOCAL GOVERNMENT shall be reimbursed for such PROJECT or PROJECT Element contingent upon the availability of special district transportation sales and use tax proceeds as set forth in ARTICLE VI, COMPENSATION AND PAYMENT.

Failure to meet the time set for completion of an approved work authorization may be considered just cause for termination of the Agreement.

**ARTICLE XII
MAINTENANCE AND OPERATIONS OF PROJECT**

In accordance with the provisions of O.C.G.A. § 32-2-2(a)(1), the DEPARTMENT shall plan, designate, improve, manage, control, construct, and maintain a state highway system and shall have control of and responsibility for all construction, maintenance, or any other work upon the state highway system and all other work which may be designated to be done by the DEPARTMENT by this title or any other law. However,

on those portions of the state highway system lying within the corporate limits of any municipality, the DEPARTMENT shall be required to provide only substantial maintenance activities and operations, including but not limited to reconstruction and major resurfacing, reconstruction of bridges, erection and maintenance of official department signs, painting of striping and pavement delineators, furnishing of guardrails and bridge rails, and other major maintenance activities.

It shall be the duty of the DEPARTMENT to maintain, or cause to be maintained, any project constructed as part of a Federal-aid system. For those projects that are not part of the Federal-aid system, the maintenance responsibility will reside with the LOCAL GOVERNMENT, the county or municipality in which the project is located.

Notwithstanding the foregoing, the DEPARTMENT is responsible for inspection of bridges in Georgia, both on and off the State Highway System. The LOCAL GOVERNMENT will be notified by the DEPARTMENT of all deficient bridges under their jurisdiction. It is the responsibility of the LOCAL GOVERNMENT to post load limits signs or close bridges based on the DEPARTMENT bridge inspection reports and the deficient bridge list.

Any maintenance activities that are the responsibility of the LOCAL GOVERNMENT pursuant to O.C.G.A. § 32-2-2(a)(1), as set forth herein, or made the subject of other agreements with the DEPARTMENT shall not be reimbursed from special district transportation sales and use tax proceeds except as stated herein for Transit projects.

The DEPARTMENT reserves the right to conduct periodic site inspections for the purpose of confirming proper operation and maintenance of the PROJECT. The LOCAL GOVERNMENT shall be responsible for the continual maintenance, operation and replacement of all lighting systems installed for the PROJECT.

Furthermore, if the PROJECT pertains to or includes a roundabout, the LOCAL GOVERNMENT shall also be responsible for the maintenance and operation of all lighting and the maintenance of all landscaping installed as part of any roundabout construction and shall not be reimbursed from special district transportation sales and use tax proceeds.

ARTICLE XIII OWNERSHIP OF DOCUMENTS

The LOCAL GOVERNMENT agrees that all reports, drawings, studies, specifications, survey notes, estimates, maps, computations, computer discs and printouts and other data prepared by, of, or for it under the terms of this Agreement shall remain the property of the LOCAL GOVERNMENT upon termination or completion of the work if the work is on a local roadway. The DEPARTMENT shall have the right to use the same without restriction or limitation and without additional compensation to the LOCAL GOVERNMENT other than that provided for in this Agreement.

If the PROJECT is on the state route system, the LOCAL GOVERNMENT agrees that all of the foregoing information shall be provided to the DEPARTMENT and is the sole property of the DEPARTMENT.

**ARTICLE XIV
PUBLICATION AND PUBLICITY**

Articles, papers, bulletins, data, studies, statistics, interim or final reports, oral transmittals or any other materials reporting the plans, progress, analyses, results, or findings of work conducted under this Agreement regarding the TIA Program shall not be presented publicly or published without prior written approval by the DEPARTMENT.

All releases of information, findings, and recommendations regarding the TIA Program shall include a disclaimer provision and that all published reports shall include that disclaimer on the cover and title page in the following form:

"The contents in this publication reflect the views of the author(s), who is (are) responsible for the facts and accuracy of the data presented herein. The opinions, findings, and conclusions in this publication are those of the author(s) and do not necessarily reflect the official views or policies of those of the Department of Transportation, State of Georgia. This publication does not constitute a standard, specification or regulation."

If any information concerning the TIA Program, its conduct, results or data gathered or processed should be released by the LOCAL GOVERNMENT without prior approval from the DEPARTMENT, the release of same may constitute grounds for termination of this Agreement without indemnity to the LOCAL GOVERNMENT; but should any such information be released by the DEPARTMENT, or by the LOCAL GOVERNMENT with such prior written approval, the same shall be regarded as public information and no longer subject to the restrictions of this Agreement.

Provided, however, that should the release of such information be required under the Georgia Open Records Act, O.C.G.A. Section 50-18-70, *et.seq.*, the restrictions and penalties set forth herein shall not apply. Any request for information directed to the LOCAL GOVERNMENT, pursuant to the Georgia Open Records Act, for documents that are either received or maintained by the LOCAL GOVERNMENT in the performance of a service or function for or on behalf of the DEPARTMENT shall be released pursuant to provisions of the Open Records Act. Further, the LOCAL GOVERNMENT agrees to consult with the DEPARTMENT prior to releasing the requested documents.

**ARTICLE XV
DBE, SMALL BUSINESS AND VETERAN OWNED BUSINESS**

A. On May 17, 2012, the DEPARTMENT, acting by and through its Board, passed a resolution in which it:

- 1) reaffirmed its commitment to Title VI of the 1964 Civil Rights Act of nondiscrimination in the delivery and management of TIA funded projects; and
- 2) encouraged the use of Disadvantaged Business Enterprises (including minority and woman owned businesses), small businesses, and veteran owned businesses in any project that is funded in whole or in part by TIA funds, and encouraged wherever practical and feasible, the local government or governments that manage TIA funded projects to include the same in its delivery and management of a project.

B. Reference to this resolution shall be included in all contracts entered in by the LOCAL GOVERNMENT related to this PROJECT.

C. While there is no DBE, small businesses or veteran owned businesses Goal required, the LOCAL GOVERNMENT is required to provide the following information monthly to the DEPARTMENT regarding whether it utilized any DBE (as defined in forth in 49 CFR Part 26), small business (as defined in 13, CRR Part 121) or veteran owned, along with the following information:

- 1) The names and addresses of DBE firms, small businesses or veteran owned businesses committed to participate in the Contract;
- 2) A description of the work each DBE firm, small business or veteran owned business will perform; and
- 3) The dollar amount of the participation of each DBE firm, small business or veteran owned business participating.

ARTICLE XVI

The Parties acknowledge that the documents listed below are hereby incorporated into and made a part of this Agreement as though expressly written herein:

- (1) TIA Manual; and
- (2) Department's "TIA Invoice Process", as may be amended from time to time; and
- (3) Intergovernmental Agreement between the Georgia Department of Transportation and the and Georgia State Financing and Investment Commission with an Effective Date of January 1, 2013.

ARTICLE XVII

A. ASSIGNMENT. Except as herein provided, the Parties hereto will not transfer or assign all or any of their rights, titles or interests hereunder or delegate any of their duties or obligations hereunder without the prior written consent of the other Party, which consent will not be unreasonably withheld.

B. NON WAIVER. No failure of either Party to exercise any right or power given to such Party under this Agreement, or to insist upon strict compliance by the other Party with the provisions of this Agreement, and no custom or practice of either Party at variance with the terms and conditions of this Agreement, will constitute a waiver of either Party's right to demand exact and strict compliance by the other Party with the terms and conditions of this Agreement.

C. CONTINUITY. Each of the provisions of this Agreement will be binding upon and inure to the benefit and detriment of GDOT and the LOCAL GOVERNMENT and the successors and assigns of GDOT and the LOCAL GOVERNMENT.

D. TIME OF THE ESSENCE. All time limits stated herein are of the essence of this Agreement.

E. PREAMBLE, RECITALS AND EXHIBITS. The Preamble, Recitals and Exhibits hereto are a part of this Agreement and are incorporated herein by reference.

F. SEVERABILITY. If any one or more of the provisions contained herein are for any reason held by any court of competent jurisdiction to be invalid, illegal or unenforceable in any respect, such invalidity, illegality or unenforceability will not affect any other provision hereof, and this Agreement will be construed as if such invalid, illegal or unenforceable provision had never been contained herein.

G. CAPTIONS. The brief headings or titles preceding each provision hereof are for purposes of identification and convenience only and should be completely disregarded in construing this Agreement.

H. GEORGIA AGREEMENT. This Agreement will be governed, construed under, performed and enforced in accordance with the laws of the State of Georgia. Any dispute arising from this contractual relationship shall be governed by the laws of the State of Georgia, and shall be decided solely and exclusively by the Superior Court of Fulton County, Georgia. LOCAL GOVERNMENT hereby consents to personal jurisdiction and venue in said court and waives any claim of inconvenient forum.

I. COUNTERPARTS. This Agreement is executed in two (2) counterparts which are separately numbered but each of which is deemed an original of equal dignity with the other and which is deemed one and the same instrument as the other.

J. INTERPRETATION. Should any provision of this Agreement require judicial interpretation, it is agreed that the court interpreting or construing the same shall not apply a presumption that the terms hereof shall be more strictly construed against one Party by reason of the rule of construction that a document is to be construed more strictly against the Party who itself or through its agent prepared the same, it being agreed that the agents of all Parties have participated in the preparation hereof.

K. EXECUTION. Each of the individuals executing this Agreement represents that they are authorized to execute this Agreement on behalf of their respective entities.

L. NO THIRD PARTY BENEFICIARIES. Nothing contained herein shall be construed as conferring upon or giving to any person, other than the Parties hereto, any rights or benefits under or by reason of this Agreement.

M. ENTIRE AGREEMENT. This Agreement supersedes all prior negotiations, discussion, statements and agreements between the Parties and constitutes the full, complete and entire agreement between the Parties with respect hereto; no member, officer, employee or agent of either Party has authority to make, or has made, any statement, agreement, representation or contemporaneous agreement, oral or written, in connection herewith, amending, supplementing, modifying, adding to, deleting from, or changing the terms and conditions of this Agreement. No modification of or amendment to this Agreement will be binding on either Party hereto unless such modification or amendment will be properly authorized, in writing, properly signed by both Parties and incorporated in and by reference made a part hereof.

**ARTICLE XVIII
COMPLIANCE WITH APPLICABLE LAWS**

A. The undersigned, on behalf of the LOCAL GOVERNMENT, certify that the provisions of Section 45-10-20 through 45-10-28 of the Official Code of Georgia Annotated relating to Conflict of Interest and State employees and officials trading with the State have been complied with in full.

B. The provisions of Section 50-24-1 through 50-24-6 of the Official Code of Georgia Annotated relating to the "Drug-Free Workplace Act" have been complied with in full, as stated in Appendix C of this Agreement.

C. The LOCAL GOVERNMENT has read and understands the regulations for STATE AUDIT REQUIREMENT as stated in Appendix D of this Agreement and will comply in full with said provisions of O.C.G.A. § 36-81-7.

D. By execution of this Agreement, I, on behalf of the LOCAL GOVERNMENT, certify under penalty of law that the LOCAL GOVERNMENT is in compliance with the service delivery strategy law (O.C.G.A. Sec. 36-701 et seq.) and is not debarred from receiving financial assistance from the State of Georgia.

E. The LOCAL GOVERNMENT hereby agrees that it shall comply, and shall require its subcontractors to, comply with all applicable requirements of the American with Disabilities Act of 1990 (ADA), 42 U.S.C. 12101, et seq. and 49 U.S.C. 322; Section 504 of the Rehabilitation Act of 1973, as amended, 29 U.S.C. 791; and regulations and amendments thereto.

F. The LOCAL GOVERNMENT hereby agrees that it shall, and shall require its contractors and subcontractors to, comply with GA Code Title 25, Section 9, Georgia Utility Facility Protection Act, CALL BEFORE YOU DIG 1-800-282-7411.

G. Pursuant to O.C.G.A. § 13-10-91, the LOCAL GOVERNMENT and all contractors and subcontractors performing work under this Agreement are, and shall be at all times, in compliance with the Federal Work Authorization Program. Prime contractors and subcontractors may participate in any of the electronic verification work authorization programs operated by the United States Department of Homeland Security or any equivalent federal work authorization program operated by the United State Homeland Security to verify information of newly hired employees, pursuant to the Immigration Reform and Control Act of 1986 ("IRCA"), Appendix E.

H. LOCAL GOVERNMENT acknowledges and agrees that failure to complete appropriate certifications or the submission of a false certification shall result in the termination of this Agreement pursuant to the provisions of Article XI.

The covenants herein contained shall, except as otherwise provided, accrue to the benefit of and be binding upon the successors and assigns of the parties hereto.

IN WITNESS WHEREOF, said parties have hereunto set their hands and affixed their seals the day and year above first written.

(SIGNATURES ON NEXT PAGE)

Columbus Consolidated Government, Georgia

Georgia Department of Transportation

By: [Signature]
Commissioner



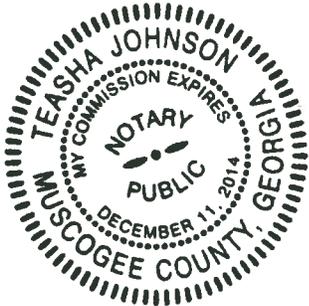
Attest:
[Signature]
Treasurer

By: [Signature]
Name:
Title:

Signed, sealed and delivered
This 29 day of AUGUST
2014, in the presence of:

[Signature]
Witness

[Signature]
Notary Public



This Agreement, approved by
Columbus Consolidated Government,
the 29th
day of August, 2014.

Attest:
[Signature]
Name and Title Deputy Clerk

58-1097948
Federal Employer Identification
Number:

EXECUTION AUTHORIZED
By Resolution No. 271-14
[Signature]
Deputy Clerk of Council

EXHIBITS

Exhibit A

Work Schedule

Exhibit B

Budget Estimate

EXHIBIT A

WORK SCHEDULE

P.L. 0011436

The LOCAL GOVERNMENT shall provide the DEPARTMENT with a detailed PROJECT schedule that reflects milestones, deliverables with durations for all pertinent activities to develop critical path elements. An electronic project schedule shall be submitted to the DEPARTMENT after execution of this Agreement

The DEPARTMENT may request additional or updated information and documentation regarding the WORK SCHEDULE from the LOCAL GOVERNMENT at any time.

If applicable, this must include the yearly operations plan for a transit project, to be updated annually by the LOCAL GOVERNMENT.

EXHIBIT B

BUDGET ESTIMATE

P.I. 0011436

PHASE	TIA FUNDS	RESPONSIBLE PARTY
PRELIMINARY ENGINEERING (PE)	\$2,484,684.00	Local Government
RIGHT OF WAY (ROW)	\$8,518,918.00	Local Government
CONSTRUCTION (CST)	28,396,398.00	Local Government
TIA PROJECT MANAGEMENT	\$600,000.00	TIA Office
TOTAL TIA FUNDS	\$40,000,000.00	

APPENDICES

Appendix A	Local Project Delivery Application
Appendix B	Certification of Drug-Free Workplace
Appendix C	Certificate of Audit Compliance
Appendix D	Georgia Security and Immigration Compliance Act Affidavit

APPENDIX A

LOCAL PROJECT DELIVERY APPLICATION

RECEIVED JAN 0 2 2013



Transportation Investment Act (TIA) Local Project Delivery Application

Section I - Local Government Applicant Information		
Applicant City of Columbus		Main Contact Rick Jones
Contact Title Planning Director		Phone Number 708-225-3636
Contact Address P.O. Box 1340 Planning Department		
Address Line 2 420 10th Street, 2nd Floor Planning Department		
City Columbus	State Georgia	Zip Code 31902

Section II - Project Information			
County Muscogee	City Columbus	Congressional District 2, 3	GDOT District 2
Regional Commission River Valley Regional Commission		MPO Region (if applicable) Columbus-Phenix City MPO	
Regional Commission ID Number/ PI Number/ and Project Name RC08-000057 - Intersection Improvements along Buena Vista Road (Columbus Spider Web Network) PI 0011436			
<p>*All Local Governments must be CA-Certification Acceptance LAP certified in Local Delivery by Georgia Department of Transportation</p> <p><input checked="" type="checkbox"/> Local Government is LAP Certified</p>			

Please check all phases of delivery in which the Local Government desires to have responsibility (PE, ROW, UTL, CST)

- Preliminary Engineering (PE)
- Right of Way (ROW)
- Utilities (UTL)
- Construction (CST)

Section III-Attachments

Provide as attachments, the following information:

1. The Local Government's plan for delivering the selected phase(s) of the Project. Include in this plan the following information:
 - a. Type of resources necessary (internal/external, breakdown by each phase, types, and anticipated costs)
 - b. Type of contracting mechanism
 - c. Local Government's plan to contract and fund selected phase(s) until TIA revenues are available for reimbursement; and
 - d. If Project is on the State Route system.
2. Previous experience with Project or Program Delivery. List no more than 4 and no less than 2 projects of similar scope and cost. Provide dates of initializing PE, right of way acquisition, letting and completing construction for each. Provide the percentage breakdown of Local Government's project management and program management costs for each project. Provide original estimated cost and final completed cost by phase.
3. Procedures currently in place or that will be in place for managing Project quality, scope, schedule, and budget.
4. Procedures in place or that will be in place for regular reporting to GDOT of Project scope, schedule, and budgets.
5. The Local Government's expense eligibility guidelines for delivering local transportation projects; or procedures in place for contract payment validation.
6. The MPO recommendation (if within MPO).
7. The Local Government's conflict of interest policy.

22(b)

Complete the information below, add the appropriate attachments and submit to:

Mike Dover, State TIA Administrator
Georgia Department of Transportation
600 West Peachtree Street, NW
Atlanta, Georgia 30308

I, Teresa Pike Tomlinson (Name), the Mayor of Columbus

(Title), on behalf of Columbus Consolidated Government, who being duly sworn do swear that the

information given herein is true to the best of his/her knowledge and belief.

LOCAL GOVERNMENT:

[Signature] (Signature)

Sworn to and subscribed before me,

Mayor of Columbus (Title)

This 20th day of Dec, 2012
In the presence of:

12/20/12 (Date)

NOTARY PUBLIC

SEAL:



Diane Edwards
My Commission Expires:

INTERSECTION IMPROVEMENTS ALONG BUENA VISTA ROAD
(COLUMBUS SPIDER WEB NETWORK)

ATTACHMENTS

1. The Local Government's plan for delivering the selected phase(s) of the Project.
 - a. Type of resources necessary (internal/external, breakdown by each phase, types, and anticipated costs). The City of Columbus an approved consulting list that will handle the PE, ROW, and Construction Phase of each project. The City's Engineering Department has two (2) Internal Project Managers who will oversee the projects. The anticipated cost for reimbursement for the project managers will be 1% or less of the total project cost.
 - b. Type of contracting mechanism. City has an approved consulting list.
 - c. Local Government's plan to contract and fund selected phase(s) until TIA revenues are available for reimbursement; and The City of Columbus will utilize its General Fund-Fund Balance for the cash flow for of TSPLOST reimbursements. This is depending upon the 30 day response time as stated by GDOT and GSPIC for reimbursements. Should that not occur, the City and GDOT will need to look for additional funding sources.
 - d. If Project is on the State Route system. Buena Vista Road is on the State Route System.

2. Previous experience with Project and Program Delivery. List no more than 4 and no less than 2 projects of similar scope and cost. Provide dates of initializing PE, right of way acquisition, letting and completing construction for each. Provide the percentage breakdown of Local Government's project management and program management costs for each project. Provide original estimated cost and final completed cost by phase.
 - Fall Line Trace (Warm Springs Rail Line Bike/Ped Trail) – Constructed a 11 mile trail on rail line purchased by the City – Approximate cost - \$13,500,000.00. (\$11,000,000.00 – SPLOST Money) – (\$2,500,000.00 TE & Stimulus) PE (City) – 2007, CST (City) – 2009. Completed in the fall of 2011. All phases of the project were managed by City Staff.
 - St. Mary's Road – Widening Project. City was responsible for all ROW Acquisition. PE (State – 1991), ROW (Local – 2004-2006) Original cost \$1,500,000.00 – Final cost - \$1,543,721.00, CST (State – 2006 – 2008) – Original Cost – \$4,812,000.00 - Final Cost - \$5,853,883.00
 - 14th Street Pedestrian Bridge – Approximate Cost - \$3,351,386.00 (Stimulus Funds). PE – 2009, CST – 2010 to Present. All phases of this project are being managed by the City Staff.

3. Procedures currently in place or that will be in place for managing Project quality, scope, schedule, and budget. The City of Columbus and the MPO has been the recipient of Federal and State funds for over 40 years. Management of project quality, scope, and schedule, and budget is in keeping with all Federal and State program guidelines, regulations, and legislation prescribed by the Georgia Department of Transportation and

Federal Highway Administration. The City's Engineering Department has a Certified Project Manager on staff that will oversee all phases of each project.

4. Procedures in place or that will be in place for regular reporting to GDOT of Project scope, schedule, and budgets. The City will continue to report to GDOT detailed project information that will include: project scope, implementation schedule, and budget/expenditures on a monthly basis. If GDOT has additional requirements, these will be incorporated into the reporting format.
5. The Local Government's expense eligibility guidelines for delivering local transportation projects; or procedures in place for contract payment validation. The City of Columbus follows the guidelines and procedures put forth by GDOT. Internal Project Inspectors verify work completed by contractors prior to payments or reimbursement request.
6. The MPO recommendation (if within MPO). The Columbus-Phenix City MPO recently amended the 2012-2015 TIP to utilize L230 funds to conduct this study. The consulting firm of Wolverton Associates was been awarded the project.
7. The Local Government's conflict of interest policy. NON-COLLUSION. By signing and submitting this bid, bidder declares that its agents, officers, or employees have not directly or indirectly entered into any agreements, participated in any collusion or otherwise taken any action in restraint of free competitive bidding in connection with this bid. In the event, said bidder is found guilty of collusion, the company and agents will be removed from the City's bid list for one full year and any current orders will be canceled.

Columbus Council, by Ordinance 92-60 has prohibited any business that is owned by any member of Columbus Council or the Mayor, or any business in which any member of Columbus Council or the Mayor has a substantial pecuniary interest from submitting a bid for goods or services to the Consolidated Government of Columbus, Georgia.

By Ordinance 92-61, no business which is owned by any member of any board, authority or commission, subordinate or independent entity, or any business in which any member of any board, authority or commission, subordinate or independent entity has substantial pecuniary interest may submit a bid to the Consolidated Government if such bid pertains to the board, authority or commission.

APPENDIX B

CERTIFICATION OF LOCAL GOVERNMENT

DRUG-FREE WORKPLACE

I hereby certify that I am a principle and duly authorized representative of Columbus Consolidated Government whose address is P.O. Box 1340, Columbus, GA 31902 and it is also that:

1. The provisions of Section 50-24-1 through 50-24-6 of the Official Code of Georgia Annotated, relating to the "Drug-Free Workplace Act" have been complied with in full; and
2. A drug-free workplace will be provided for the LOCAL GOVERNMENT's employees during the performance of the contract; and
3. Each subcontractor hired by the LOCAL GOVERNMENT shall be required to ensure that the subcontractor's employees are provided a drug-free workplace. The LOCAL GOVERNMENT shall secure from that subcontractor the following written certification: "As part of the subcontracting agreement with _____, _____ certifies to the LOCAL GOVERNMENT that a drug-free workplace will be provided for the subcontractor's employees during the performance of this contract pursuant to paragraph (7) of subsection (b) of the Official Code of Georgia Annotated Section 50-24-3"; and
4. It is certified that the undersigned will not engage in unlawful manufacture, sale, distribution, dispensation, possession, or use of a controlled substance or marijuana during the performance of the contract.

9/5/14
Date


Signature

APPENDIX C

CERTIFICATION OF COMPLIANCES

I hereby certify that I am a principal and duly authorized representative of Columbus Consolidated Government, whose address is P.O. Box 1340, Columbus, GA 31902 and it is also certified that:

I. PROCUREMENT REQUIREMENTS

The below listed provisions of State Procurement requirements shall be complied with throughout the contract period:

- (a) Provisions of Section Chapters 2 and Chapters 4 of the Title 32 of the Official Code of Georgia Annotated. Specifically as to the County the provisions of O.C.G.A. § 32-4-40 *et seq.* and as to the Municipality the provisions of O.C.G.A. § 32-4-92 *et seq.*

II. STATE AUDIT REQUIREMENT

The provisions of Section 36-81-7 of the Official Code of Georgia Annotated, relating to the "Requirement of Audits" shall be complied with throughout the contract period in full, including but not limited to the following provisions:

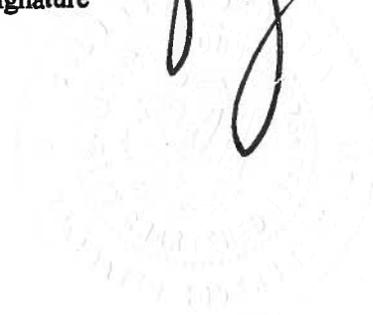
- (a) Each unit of local government having a population in excess of 1,500 persons or expenditures of \$ 300,000.00 or more shall provide for and cause to be made an annual audit of the financial affairs and transactions of all funds and activities of the local government for each fiscal year of the local government.
- (b) The governing authority of each local unit of government not included above shall provide for and cause to be made the audit required not less often than once every two fiscal years.
- (c) The governing authority of each local unit of government having expenditures of less than \$ 300,000.00 in that government's most recently ended fiscal year may elect to provide for and cause to be made, in lieu of the biennial audit, an annual report of agreed upon procedures for that fiscal year.
- (d) A copy of the report and any comments made by the state auditor shall be maintained as a public record for public inspection during the regular working hours at the principal office of the local government. Those units of local government not having a principal office shall provide a notification to the public as to the location of and times during which the public may inspect the report.
- (e) The audits of each local government shall be conducted in accordance with generally accepted government auditing standards.

III. SERVICE DELIVERY STRATEGY REQUIREMENT

The provisions of Section 36-70-20 et seq. of the Official Code of Georgia, relating to the "Coordinated And Comprehensive Planning And Service Delivery By Counties And Municipalities", as amended, has been complied with throughout the contract period.

8/29/14
Date

[Handwritten Signature]
Signature



APPENDIX D

GEORGIA SECURITY AND IMMIGRATION COMPLIANCE ACT AFFIDAVIT

Name of Contracting Entity: Columbus Consolidated Government

Contract No. and Name: P.I. 0011436, Columbus Spider Web Network

By executing this affidavit, the undersigned person or entity verifies its compliance with O.C.G.A. § 13-10-91, stating affirmatively that the individual, firm, or entity which is contracting with the Georgia Department of Transportation has registered with, is authorized to participate in, and is participating in the federal work authorization program commonly known as E-Verify, or any subsequent replacement program, in accordance with the applicable provisions and deadlines established in O.C.G.A. § 13-10-91.

The undersigned person or entity further agrees that it will continue to use the federal work authorization program throughout the contract period, and it will contract for the physical performance of services in satisfaction of such contract only with subcontractors who present an affidavit to the undersigned with the information required by O.C.G.A. § 13-10-91(b).

The undersigned person or entity further agrees to maintain records of such compliance and provide a copy of each such verification to the Georgia Department of Transportation within five (5) business days after any subcontractor is retained to perform such service.

46433
E-Verify / Company Identification Number

7/19/2007
Date of Authorization

[Signature]
Signature of Authorized Officer or Agent

Isaiah Husley
Printed Name of Authorized Officer or Agent

City Manager
Title of Authorized Officer or Agent

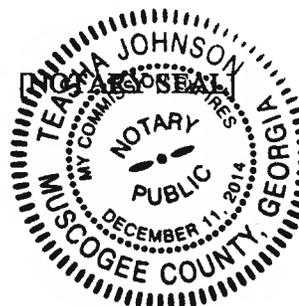
August 29, 2014
Date

SUBSCRIBED AND SWORN
BEFORE ME ON THIS THE

29 DAY OF August, 2014

Teasha Johnson
Notary Public

My Commission Expires: 12/11/2014



Concept Report Review

Designer / Consultant:
Brad Robinson, PE
Wolverton &
Associates
6745 Sugarloaf Pkwy
Duluth, GA 30097

Date:
10/26/15

PI Number:
0011436

City/County:
City of Columbus
Muscogee County

Project Name: Buena Vista Road Corridor & Columbus Spiderweb Network

CONCEPT REPORT

1. In **“Environmental Data: Anticipated Environmental Document:”** Revise statement to read: *“The project will utilize local funds and be local let. Therefore GEPA/NEPA is not applicable.”*
Statement will be revised.
2. In **“Environmental Data: NEPA/GEPA Comments and Information:”** Revise statement to read: *“The project will utilize local funds and be local let. Therefore GEPA/NEPA is not applicable.”*
Statement will be revised.

CONCEPT LAYOUT

1. Layout is too small for adequate review.
The layout has been broken into several smaller sheets to cover the corridor at 100 scale.
2. Should the roundabout be this close to an active Rail Line? Won't through lanes get stopped too?
A dedicated bypass through lane in the south bound direction is being considered to help reduce the number of vehicles being stopped by the rail line. Both a stop condition and signal would also be delayed during a train crossing. Also, local traffic will be aware that continuing south onto MLK and Annette Ave is an alternate when a train is crossing.
3. Is Ace Way connection needed?
The Ace Way connection is needed because the traffic study indicated that there is a high volume of cars coming from Buena Vista Road onto Morris Road, making the left onto Ace and continuing North on Illges road. This movement will only increase in volume due to the proposed grade separation at Illges Road/MLK Jr. Blvd.

4. Recommend separate right turn lanes at all public streets on 3-lane section of Buena Vista Road especially.
A right turn lane at all public streets on the north side of Buena Vista Road would cost approximately \$40,000 per intersection, with 7 intersection, for a total of \$280,000. Also, Level of Service along the corridor does not warrant right turn lanes. Right turn lanes would also introduce additional impacts to Historical resources.
5. Why does a 3rd Eastbound lane start at a driveway?
Currently one lane is being added at Annette Road/MLK Jr Blvd Ext. The Traffic Study indicated that a 3rd lane was needed along this link to add capacity prior to the intersection with Morris Road/Andrews Road. Adding a 3rd lane at this driveway allows for this to be developed while at the same time providing a dedicated right out for school buses leaving Brewer Elementary School.
6. Recommend longer left turn lane on Eastbound Buena Vista Road to Northbound Morris Road. Left turn bay and Right turn bay on Buena Vista Road is just past sharp crest vertical curve.
Currently, the crest of the vertical curve is approximately at the beginning of the bridge. If both left and right turn lanes were extended past the crest of the vertical curve it would require the bridge to be 7 lanes wide for the full length of the bridge. This additional width would increase the cost of the bridge, MSE Walls and pavement by approximately \$1,000,000. The vertical curve is designed for a posted speed of 30 mph.
7. Intersection sight distance at Morris Road/Andrews Road looking west appears poor?
The intersection of Morris Road/Andrews Road and Buena Vista Road is a Signalized Intersection with protective movements. However, sight distance is met for any time that the signal is in a flashing mode.
8. Morris Road/Andrews Road Intersection is currently being shown on an 8% grade? Poor Operations on multi-lane sections.
The design is constrained by right of way concerns and the proximity of buildings along the corridor as well as the intention of not disturbing the existing bridge over Bull Creek. GDOT Design Policy and AASHTO Standards are met with the current design.

TYPICAL SECTIONS

1. Median/Left turn should not be 0' anywhere. Should be 4' Minimum/8' Desired.
AASHTO prefers the presence of a median in an undivided multi-lane arterial where practical. There's currently an 800 foot section of the Spiderweb that does not show a divided median. The additional cost for widening the corridor in this area to 4' would be \$86,200 for the additional pavement, right of way on the south side of Buena Vista Road and widening of the bridge over MLK. The impacts of the additional pavement width will be reviewed after survey is obtained and the flush median incorporated if feasible.

TRAFFIC STUDY

1. Why is Andrews/Morris Road at Buena Vista Road not included in the traffic study?
The project was studied under two separate traffic studies. The first in the Concept Report is for the Spiderweb (Annette Ave to Andrews/Morris Road) and the second is for Buena Vista Corridor improvements from Wynnton Road to Illges Road/MLK Blvd. The Andrews/Morris Road intersection is covered by the first traffic study.