



Regional Planning Commission of Greater Birmingham
On Behalf of the City of Birmingham

VULCAN GREENWAY STUDY

Advanced Planning,
Programming, and Logical
Engineering (APPLE) Program



March 21, 2018



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Advanced Planning, Programming, and Logical Engineering (APPLE) Program

[Signature 1 Name]
[Title]

Prepared for: Regional Planning Commission
of Greater Birmingham on Behalf of The City
of Birmingham

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SARCOR Project No. 17-E-01-040000
RPC Project No. 1289.17

March 21, 2018

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ACRONYMS AND ABBREVIATIONS

AADT	Annual Average Daily Traffic
ALDOT	Alabama Department of Transportation
APPLE	Advanced Planning, Programming, and Logical Engineering
BJCTA	Birmingham Jefferson County Transit Authority
RPCGB	Regional Planning Commission of Greater Birmingham
RRRVTS	Red Rock Ridge and Valley Trail System's

EXECUTIVE SUMMARY

The City of Birmingham requested the Regional Planning Commission of Greater Birmingham (RPCGB) to provide planning assistance in evaluating the feasibility of creating a multi-use bicycle/pedestrian greenway. The Vulcan Greenway Feasibility Study, as this will be known, will evaluate the functionality of developing a greenway from the 15th Avenue South area up to Vulcan Park in the City of Birmingham.

The three alternatives and the no-build alternative presented will support the proposed development of the Red Rock Ridge and Valley Trail System's (RRRVTS) plan for the Jones Valley Corridor to provide a street-based path with shared-use side path along 20th Street from Five Points South past Vulcan Park to Valley Avenue. Evaluation consists of assessing potential right of way, environmental, and ADA issues for each alternative. The three alternatives evaluated are:

Alternative #1:

Alternative 1 implements striping, designated left turn lanes, medians, a multi-use concrete trail on the right-hand side of Richard Arrington Boulevard South, replacing the existing guardrail and installing ADA ramps at crossings.

Alternative #2:

Alternative 2 includes striping, designated turn lanes and medians, a sidewalk for pedestrian foot traffic along the West side of the corridor, designated bike lanes, replacing the existing guardrail and installing ADA ramps at crossings.

Alternative #3:

Alternative 3 includes striping, designated turn lanes, medians, a sidewalk for pedestrian foot traffic along each side of the corridor, installing ADA ramps at crossings, a trail running along Warwick Drive, designated bike lanes and installing ADA driveway crossings.

1 STUDY AREA PRESENTATION

1.1 *Background*

The Jones Valley Corridor of the RRRVTS is slated to provide multi-modal commuting and recreational connectivity opportunities for the urban and residential areas between Jones Valley east – west footprint from Bessemer to East Lake Park and Ruffner Mountain and Sand Ridge to Red Mountain from the north and south. Implementation of the RRRVTS requires safe, pedestrian / bike friendly connectivity is desired from Five Points South to Valley Avenue. This Advanced Planning Report (APR) area of study includes Richard Arrington Jr. Boulevard / 20th Street South from 15th Avenue South to Valley Avenue.

1.2 *Purpose and Need*

The purpose of study is to evaluate the feasibility of proposed a multi-use bicycle/pedestrian greenway's functionality along Richard Arrington Jr. Boulevard / 20th Street South from the 15th Avenue South area up to Vulcan Park in the City of Birmingham.

1.2.1 Goal

The project's goal is to provide design and estimate alternatives for connectivity as designated in the RRRVTS' Richard Arrington Jr. Boulevard / 20th Street South Vulcan Greenway Plan.

1.2.2 Objectives

The project's objective is to present the RPCGB and the City of Birmingham with the best alternatives for providing multi-modal commuting / access along the Richard Arrington Jr. Boulevard / 20th Street South corridor from 15th Avenue South to Vulcan Park.

1.3 *Project Area*

The study area consists of the Richard Arrington Jr. Boulevard / 20th Street South corridor from 15th Avenue South to Valley Avenue.



2 DEMOGRAPHICS – HISTORICAL & PROJECTED FORECAST

2.1 *Population*

As of July 1, 2016, the population of the City of Birmingham was 212,157.

2.2 *Demographics*

Per the United States Census Bureau, of Birmingham's 212,157 citizens, (United States Census Bureau, 2018)

- 29.4% live in poverty
- 73% Black or African-American
- 24% White
- 3% Other
- 13.5% under age 65 live with a disability
- \$32,404 is the median household income from 2002 - 2016

2.3 *Employment*

The unemployment rate in the Birmingham Area as November 2017 is 3.4%. This is a 2.2% improvement from November 2016. This data is inclusive of the Birmingham-Hoover area. (Bureau of Labor Statistics, 2018) (See Appendix)

2.4 *Residential and Commercial Use*

The study area is mixed with both residential and commercial use.

3 EXISTING CONDITIONS

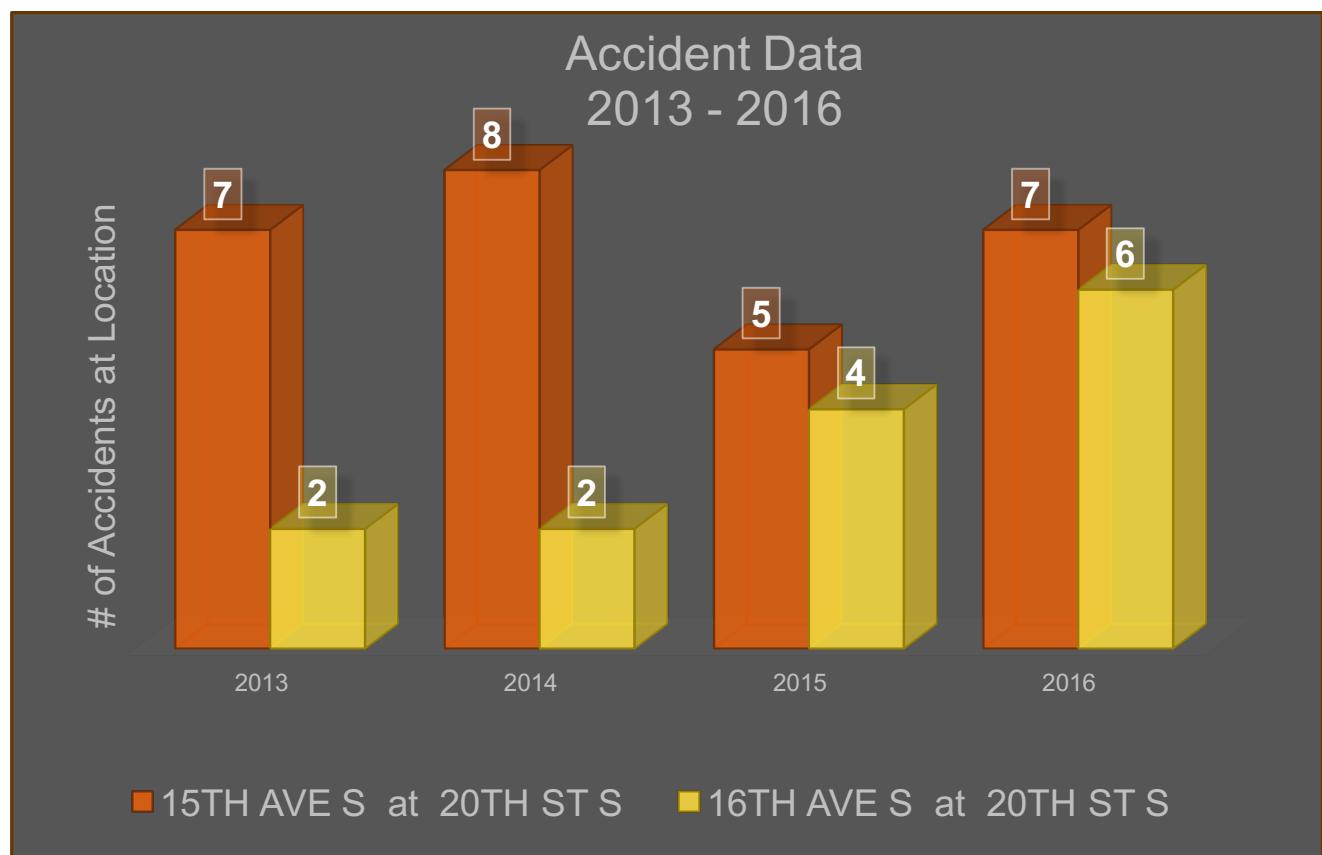
3.1 *Land Use*

Currently, the land use surrounding the proposed project site consists of both residential and commercial development. Residential land use consists of pockets of and relatively new self-contained townhouse developments built as suburban-style as well as older developments.

3.2 Roadways / Traffic

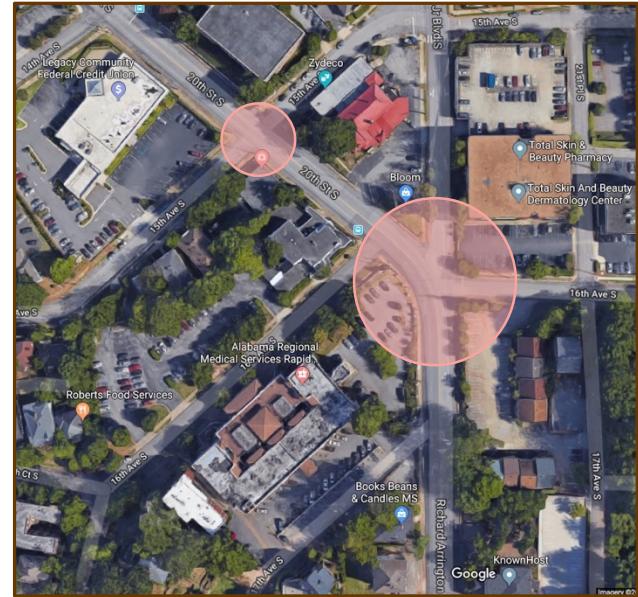
The mean travel time to work from, 2012 – 2016, in the City of Birmingham for workers age 16 and up is 21.4 minutes. The study area's corridor consists of two lanes in travelling north and south. Per the ALDOT Traffic Counters, the 2015 AADT was 16,730. (See Appendix)

Accidents occurred with the most frequency between 2013 – 2016 at the intersections of 15th Avenue South at 20th Street South and the intersection of 16th Avenue South at 20th Street South. A total of 27 accidents occurred at the 15th Street intersection whereas a total of 14 accidents occurred at the 16th Street intersection. Property damage was reported for nearly each occurrence. Four (4) injuries were reported; two (2) of which were considered incapacitating.



Primary causes for the accidents include:

- Unseen Object/Person/Vehicle
- Failed to Yield the Right-of-Way
- Failed to Yield Right-of-Way from Stop Sign
- Improper Lane Change/Use
- Driving too Fast for Conditions
- Failed to Yield the Right-of-Way
- Followed too Close
- Misjudge Stopping Distance
- Distracted by Use of Electronic Communication Device



3.3 *Pedestrian, Bicycle, and Trails*

The study area corridor has some areas with sidewalks; however, sidewalk conditions are relatively poor. There are no bicycle lanes or sharrows. The purpose of the study is to create connectivity to the trail at Vulcan Park and support the development of the RRRVTS.

3.4 Transit

BJCTA currently uses the project corridor to commute between its two stops. Both stops are approximately one mile from Vulcan Park. Route 39 Homewood Wildwood runs along study area; however, currently there are no stops in the study area. BJCTA serves Vulcan Park with two stops, B and C, as shown in Appendix A and Appendix B. Both stops are approximately one-mile from Vulcan Park. With no Major Stop at Vulcan Park, visitors and employees of Vulcan Park that do not have vehicle access will have to walk or ride their bicycles to the park.

Table 1. BJCTA Route #39 Homewood Wildwood Stop Data for Study Area

Stop Name	Stop Location	City	Start Time	End Time
B	20th St & 11th Ave S	Birmingham	5:13 AM	6:43 PM
C	28th Avenue & 18th St	Homewood	5:19 AM	6:49 PM

Table 2. Commute Times From Stops to Vulcan Park (Shortest Route)

Stop Name	Stop Location	City	Bicycle	Pedestrian
B	20th St & 11th Ave S	Birmingham	15 minutes	29 minutes
C	28th Avenue & 18th St	Homewood	10 minutes	19 minutes

Figure 1. 20th St & 11th Ave S (Five Points South) (Bicycle)

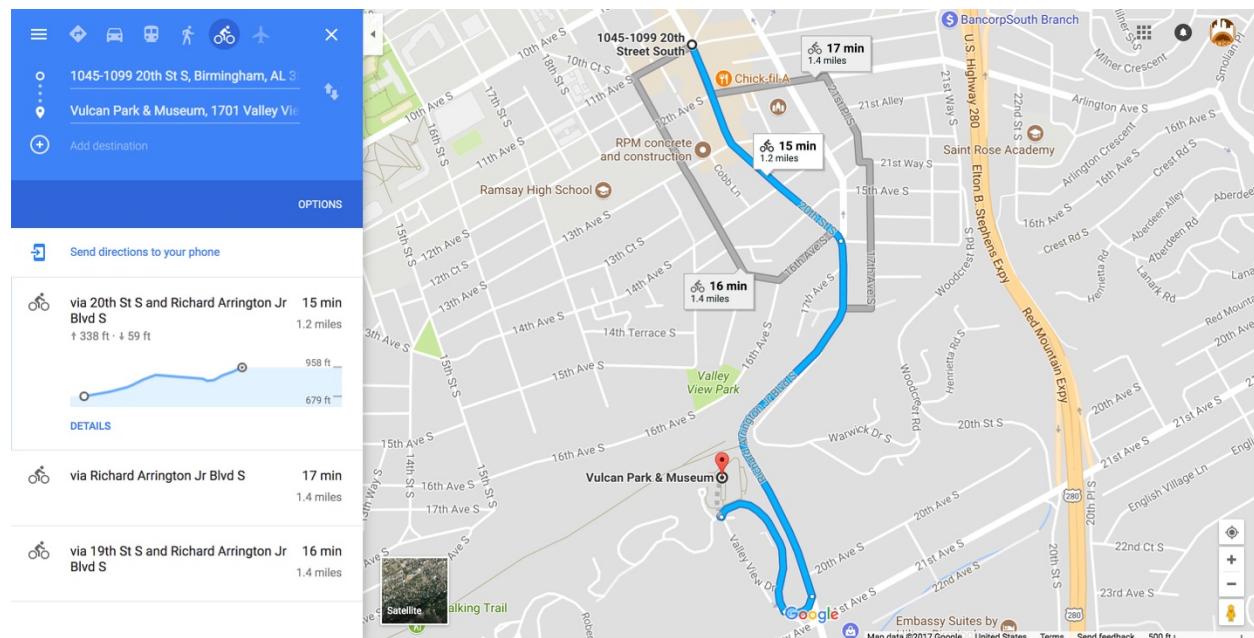


Figure 2. 20th St & 11th Ave S (Five Points South) (Pedestrian)

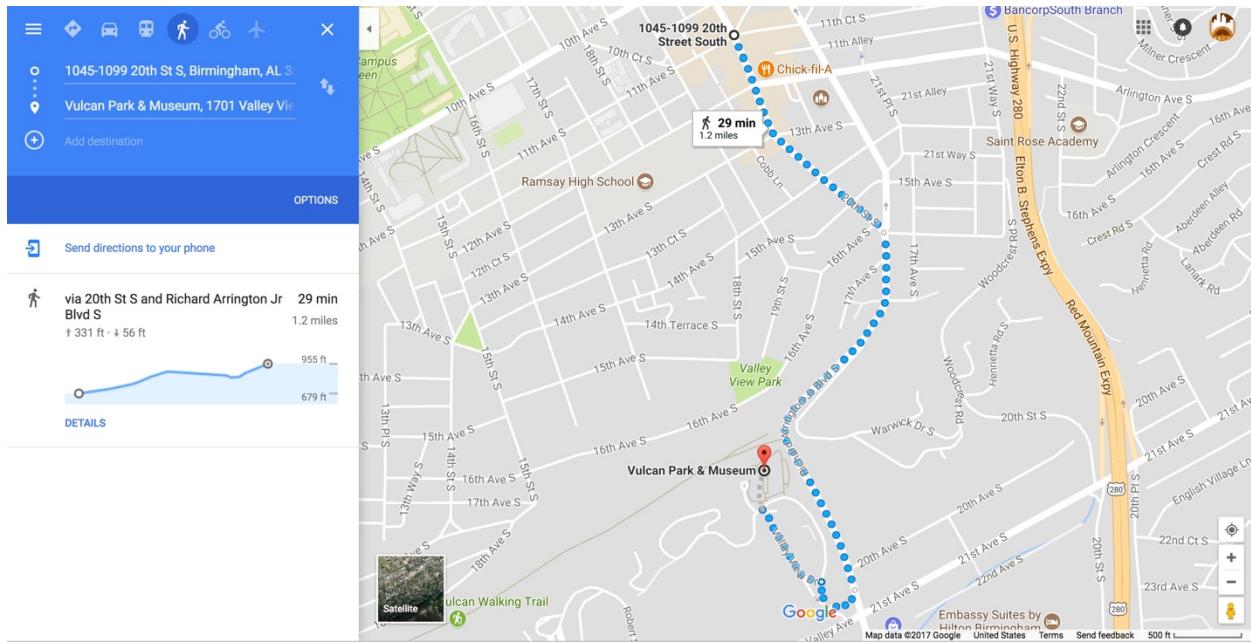


Figure 3. 28th Avenue & 18th St (Homewood) (Bicycle)

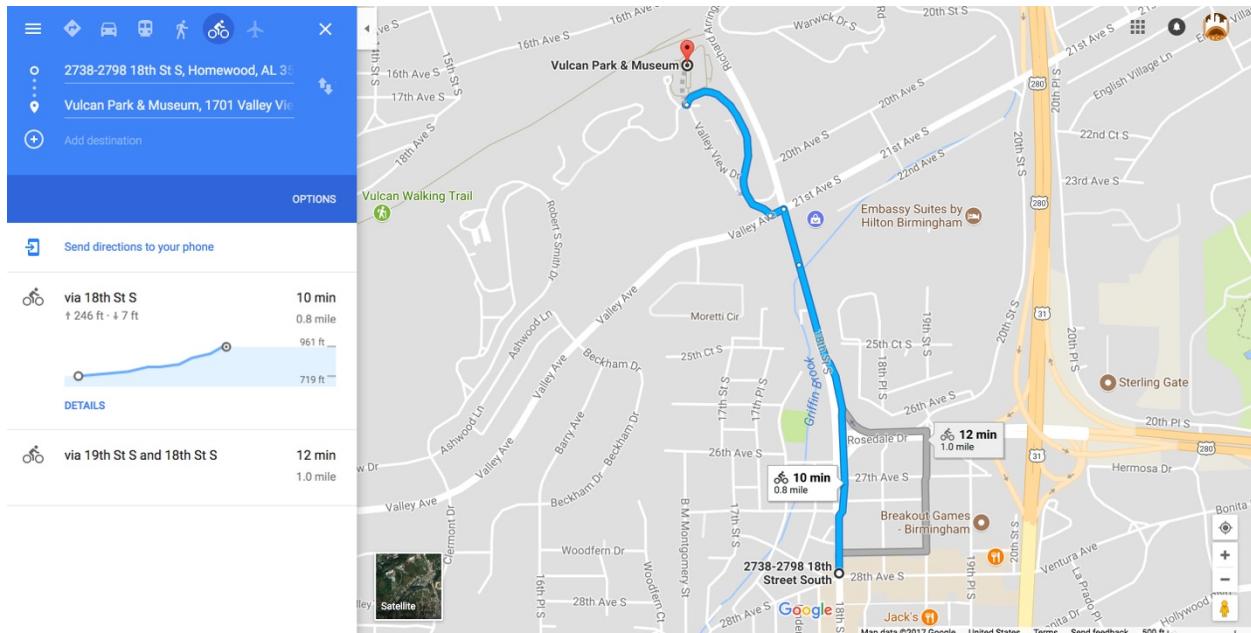
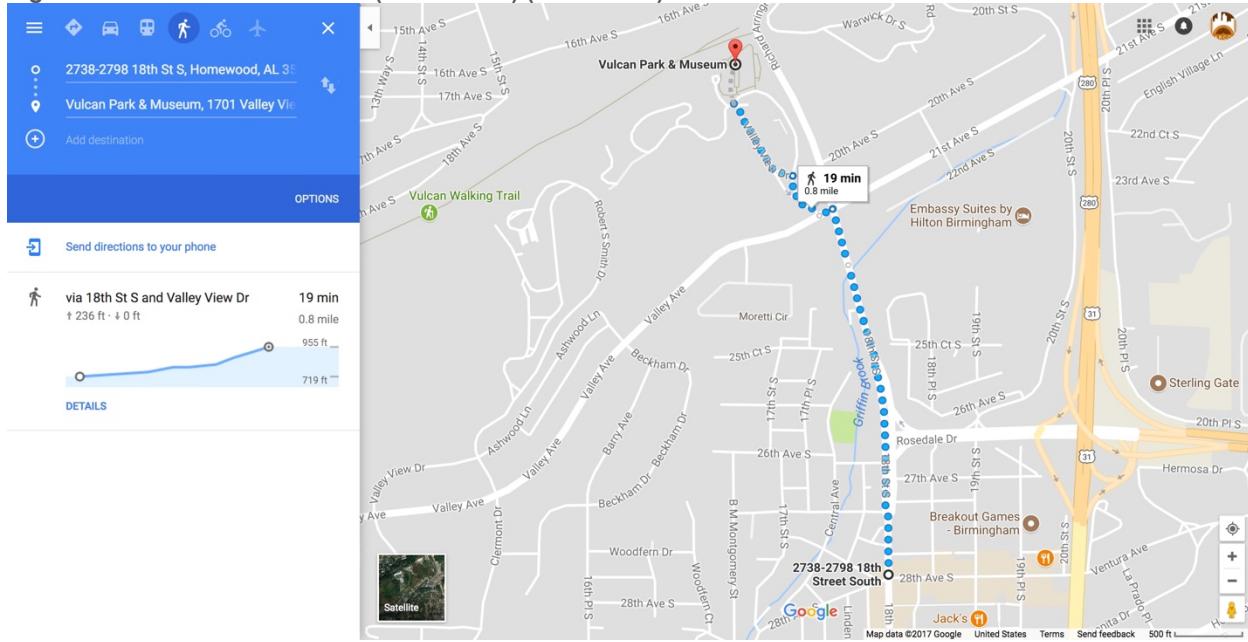


Figure 4. 28th Avenue & 18th St (Homewood) (Pedestrian)



3.5 Freight

Minimal freight is in the area. On observation days selected randomly, there was no presence of multi-axle trucks. The proposed road diet in each alternative is designed to discourage freight through the corridor. Minimal freight, if any, is in the project area. It is not anticipated for freight to cause any environmental impact.

3.6 Rail

There is no rail along the corridor. Rail is not currently in the project area and it is not proposed; therefore, rail will not cause any environmental impact.

3.7 Airport

The Birmingham-Shuttlesworth International Airport is approximately 6.6 miles away from the study corridor. The trail system does not take into account connectivity to the airport. Proximity to the Birmingham-Shuttlesworth International Airport will not result in any environmental impact.

4 POTENTIAL TRANSPORTATION SYSTEM IMPROVEMENT ALTERNATIVES

Three reasonable alternatives were developed in addition to the No-Build Alternative. Benchmarks were established to evaluate each alternative. These benchmarks are:

- Existing Conditions
- Design Criteria
- Community Needs

4.1 *Alternative 1*

Alternative 1 implements striping, designated left turn lanes, medians, a multi-use concrete trail on the right-hand side of Richard Arrington Boulevard South, replacing the existing guardrail and installing ADA ramps at crossings. The corridor consists of one-lane of traffic travelling in each direction with medians or middle turn lanes dividing them. The medians will start just before the entrance to the Vulcan Trail and stop just before 20th Avenue South. Designated left turn lanes will be present at the entrance of every road intersecting Richard Arrington Boulevard South. The left turn lanes leading to 17th Avenue South and Abbey Road will not have medians due to the road widening back to 3 lanes, 2 North bound and 1 South bound toward the Vulcan Trail. The multi-use concrete trail proposed in this alternate would run on the West side of the corridor with a continuous grass strip abutting the back of curb. The proposed multi-use trail will be 14 ft. in width to accompany pedestrian cyclists and foot traffic.

4.2 *Alternative 2*

Alternative 2 includes striping, designated turn lanes and medians, a sidewalk for pedestrian foot traffic along the West side of the corridor, designated bike lanes, replacing the existing guardrail and installing ADA ramps at crossings. The proposed corridor would consist of one lane of traffic travelling in each direction with medians or middle turn lanes dividing them. These turn lanes are designed to allow traffic to turn either direction with a designated left turn only section at the end of each lane. Two turn lanes will be designated for left turns only and will be located in-between the entrance of Abbey Road and Warwick Drive. The medians are present in areas where no turn lanes are present and will have openings allowing vehicles to U-Turn. Designated bike lanes are

in each direction measuring 5 ft. in width. The sidewalk is designated to be 5 ft. to accompany pedestrian foot traffic with a grass strip abutting the back of the curb.

4.3 Alternative 3

Alternative 3 includes striping, designated turn lanes, medians, a sidewalk for pedestrian foot traffic along each side of the corridor, installing ADA ramps at crossings, a trail running along Warwick Drive, designated bike lanes and installing ADA driveway crossings. The corridor consists of one lane of traffic travelling in each direction with medians or middle turn lanes dividing them. Two of the turn lanes will be multi-directional and will be located at the intersections of 17th Avenue South and 20th Avenue South. The other turn lanes will be designated left turn only lanes. The medians are present in areas where no turn lanes are present and will have openings allowing vehicles to U-Turn. The sidewalk located East of the corridor will be 5 ft. in width. It will become a scenic trail starting at the entrance to Warwick Drive and reconnect to the corridor just before the first commercial property on the east side of the corridor. The sidewalk on the West side will also be 5 ft. in width and will not include a scenic route due to the existing Vulcan Trail on that side.

4.4 No-Build Alternative

The “No Build” Alternative is included as a baseline or benchmark against where “Build” alternatives and their respective impacts are evaluated. A No-Build Alternative takes into consideration an area’s long-range transportation plan and incorporates the planned improvements. The No-Build Alternative is demarcated as the existing alignment, traffic and signalization of the project’s intersection and corridor.

5 SUMMARY OF RESULTS AND COSTS

5.1 Right of Way

Alternate 3 would require the purchase of two structures that would be impacted. The estimated cost of the required right-of-way and structure acquisition is \$1,500,000.00.

5.2 Railroad

There is no railroad involvement on this project and therefore no financial impact on the estimated total construction costs.

5.3 Utility

Utilities exist above ground and below ground. Significant utility coordination would be required.

5.4 Other Considerations

The number of residences and business affected with access to their driveways, lane closures, coordination with the City of Homewood all require significant consideration.

5.5 Preferred Alternative Cost Matrix

Alternative 1A incorporates an additional lane on Richard Arlington to accept a double left from Valley Avenue. For design, a traffic study is necessary to determine how to address the intersection at Valley Avenue. If Alternative 1A is not feasible, based on the results of the traffic study, Alternate 1 would default to the preferred alternative.

Table 3. Preferred Alternative Cost Matrix

Alternate	Estimated Right of Way Costs (\$)	Estimated Construction Costs (\$)
1A	TBD	\$2,366,010.00

6 SUMMARY, CONCLUSION, NEXT STEPS

Table 4. Alternative Comparison

Alternate	Estimated Right of Way Costs (\$)	Estimated Construction Costs (\$)
1	\$2,154,223,70	\$2,154,223,70
1A	N/A	\$2,366,010.00
2	N/A	\$1,941,999.25
3	\$1,500,000.00	5,537,358.10
Summary	Total	Total

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7 WORKS CITED

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https://www.bls.gov/regions/southeast/summary/blssummary_birmingham.pdf
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<https://www.census.gov/quickfacts/fact/table/birminghamcityalabama/HEA775216#viewtop>

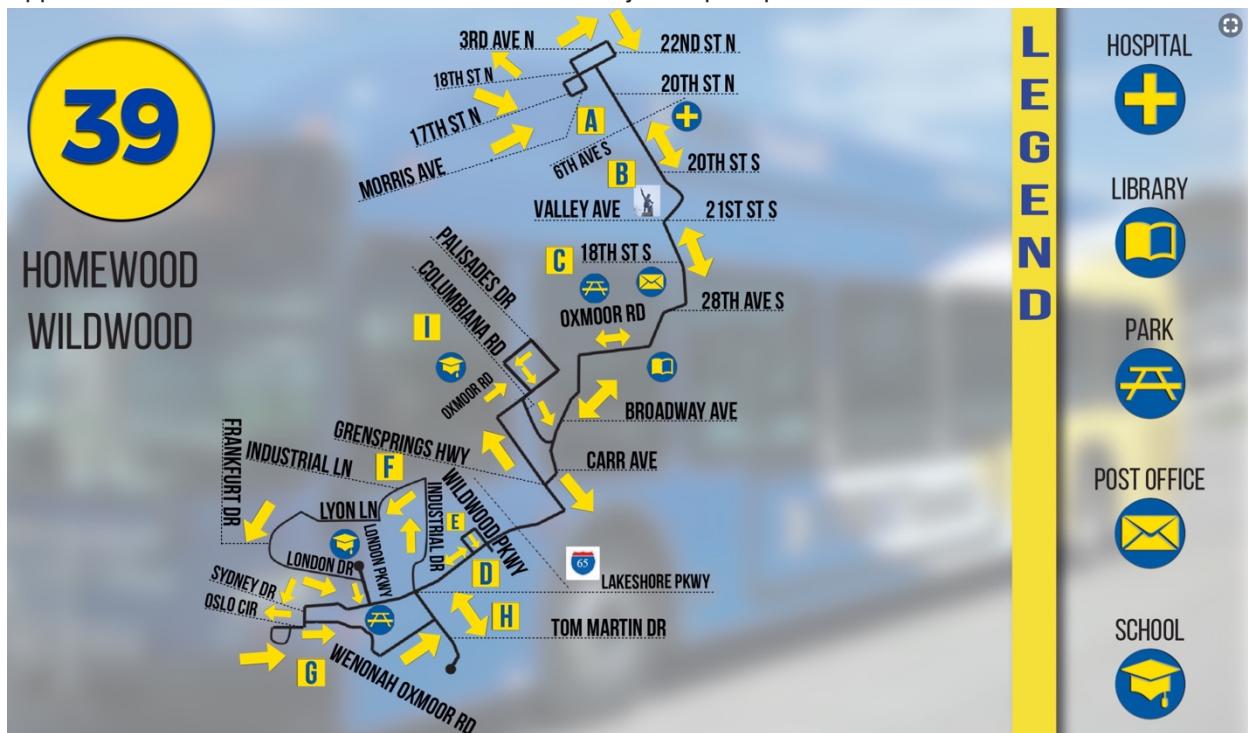
APPENDIX



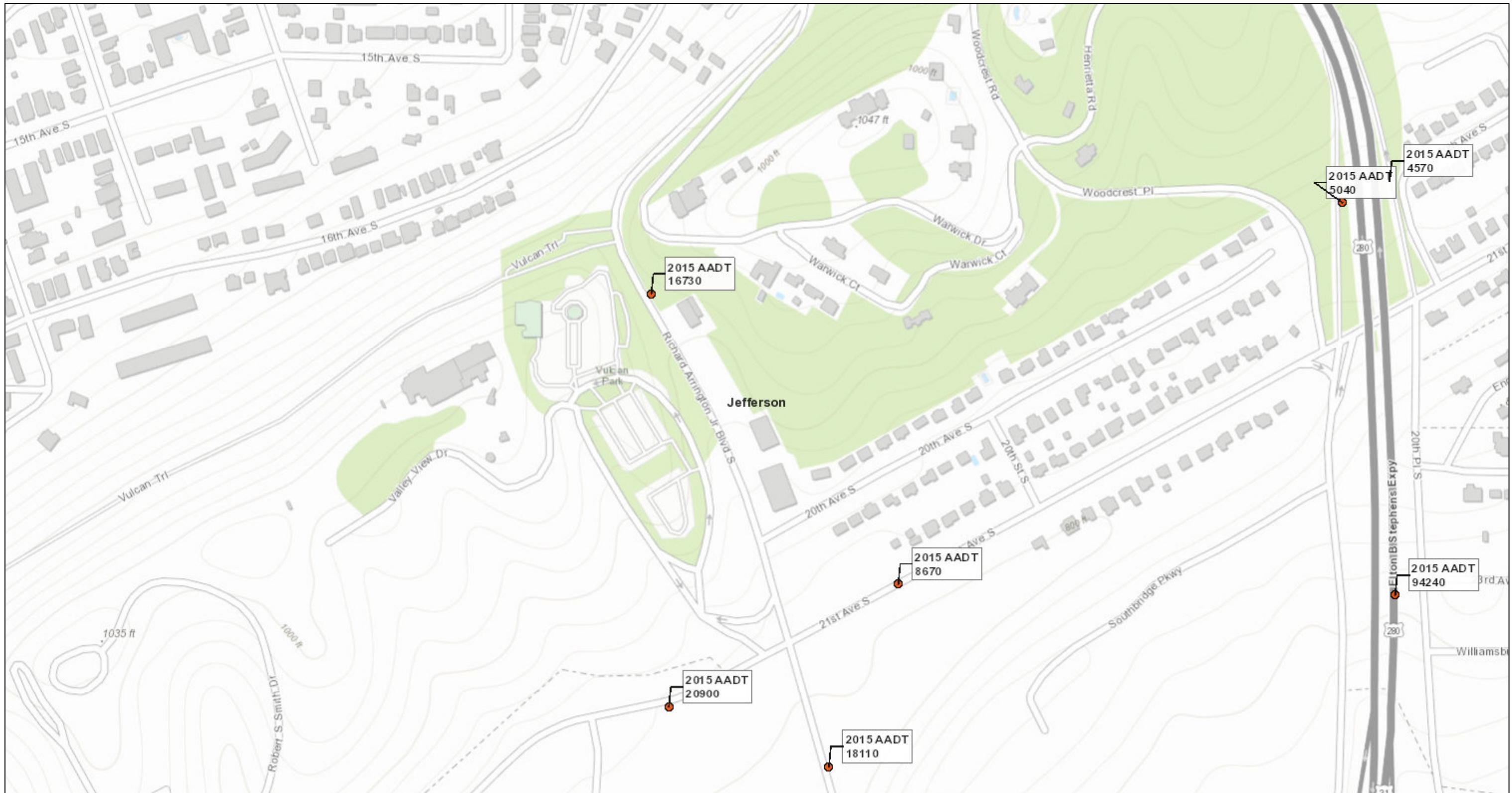
Appendix A BJCTA #39 Homewood Wildwood Major Stop and Departures

Major Stop		Departure Times																		
A	Central Station	Not Served	4:55 AM	5:45 AM	6:55 AM	7:45 AM	8:55 AM	9:35 AM	10:45 AM	11:35 AM	12:35 PM	1:25 PM	2:35 PM	3:25 PM	4:35 PM	5:25 PM	6:25 PM			
B	20th St & 11th Ave S	Not Served	5:13 AM	6:03 AM	7:13 AM	8:03 AM	9:13 AM	9:53 AM	11:03 AM	11:53 AM	12:53 PM	1:43 PM	2:53 PM	3:43 PM	4:43 PM	5:43 PM	6:43 PM			
C	28th Ave & 16th St Homewood	Not Served	5:19 AM	6:09 AM	7:19 AM	8:09 AM	9:19 AM	9:59 AM	11:09 AM	11:59 AM	12:59 PM	1:49 PM	2:59 PM	3:49 PM	4:59 PM	5:49 PM	6:49 PM			
D	Wildwood South Walmart	Not Served	5:31 AM	6:21 AM	7:31 AM	8:21 AM	9:31 AM	10:11 AM	11:21 AM	12:11 PM	1:11 PM	2:01 PM	3:11 PM	4:01 PM	5:11 PM	6:01 PM	7:01 PM			
E	Wildwood North Bruno's	Not Served	Not Served	Not Served	Not Served	8:27 AM	9:37 AM	Not Served	11:27 AM	12:17 PM	Not Served	Not Served	Not Served	Not Served	5:17 PM	6:07 PM	Not Served			
F	Industrial Lane Books A Million	Not Served	5:46 AM	6:36 AM	7:46 AM	Not Served	1:26 PM	2:16 PM	3:26 PM	4:16 PM	Not Served	Not Served	Not Served							
G	UCP Center (101 Oslo Circle)	Not Served	5:56 AM	6:46 AM	7:56 AM	8:37 AM	9:47 AM	10:36 AM	11:37 AM	12:27 PM	1:36 PM	2:26 PM	3:36 PM	4:26 PM	5:27 PM	6:17 PM	7:16 PM			
H	Internal Revenue Service	Not Served	6:02 AM	6:52 AM	8:02 AM	8:43 AM	9:53 AM	10:42 AM	11:43 AM	12:33 PM	1:42 PM	2:32 PM	3:42 PM	4:32 PM	5:33 PM	6:23 PM	7:22 PM			
I	Arrive Wildwood South Wildwood	Not Served	6:10 AM	7:00 AM	8:10 AM	8:50 AM	10:00 AM	10:50 AM	11:50 AM	12:40 PM	1:50 PM	2:40 PM	3:50 PM	4:40 PM	5:40 PM	6:30 PM	7:30 PM			

Appendix B BJCT #39 Homewood Wildwood Major Stop Map



ALDOT Traffic Counters



May 30, 2017

1:4,514

0 0.05 0.1 0.15 0.2 mi
0 0.075 0.15 0.3 km

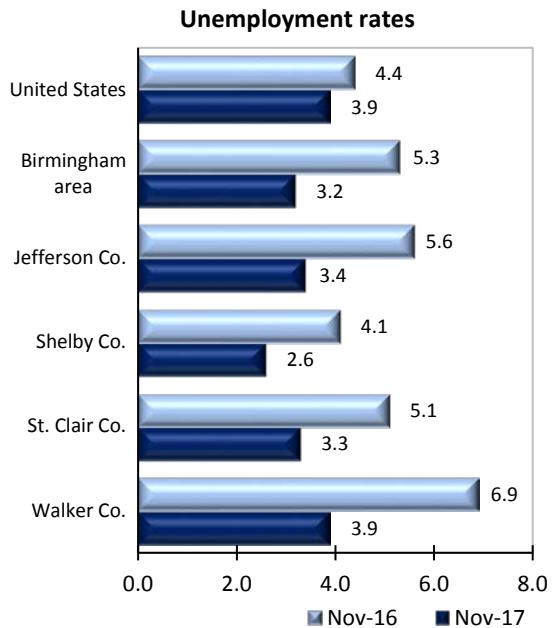
Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCan, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Birmingham Area Economic Summary

Updated January 04, 2018

This summary presents a sampling of economic information for the area; supplemental data are provided for regions and the nation. Subjects include **unemployment**, **employment**, **wages**, **prices**, **spending**, and **benefits**. All data are not seasonally adjusted and some may be subject to revision. Area definitions may differ by subject. For more area summaries and geographic definitions, see www.bls.gov/regions/economic-summaries.htm.

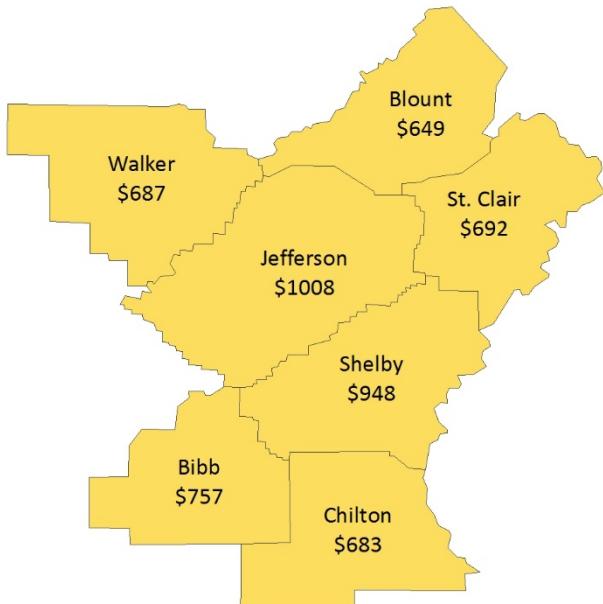
Unemployment rates for the Birmingham area, selected area counties, and the nation



Source: U.S. BLS, Local Area Unemployment Statistics.

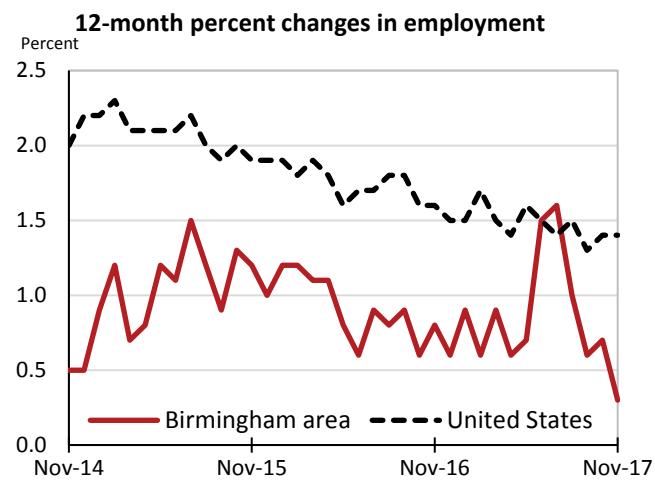
Average weekly wages for all industries by county

Birmingham area, 2nd quarter 2017
(U.S. = \$1,020; Area = \$959)



Source: U.S. BLS, Quarterly Census of Employment and Wages.

Over-the-year changes in employment on nonfarm payrolls and employment by major industry sector



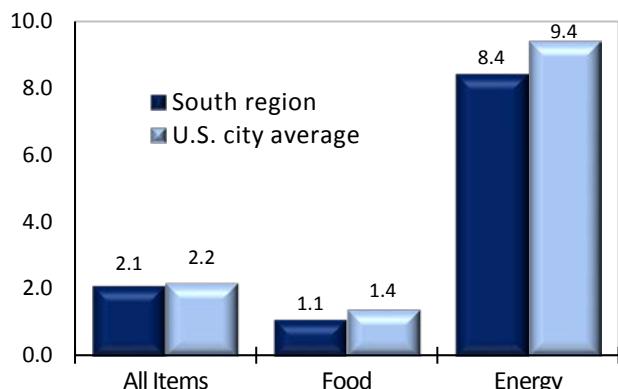
Source: U.S. BLS, Current Employment Statistics.

Birmingham area employment (numbers in thousands)	Nov. 2017	Change from Nov. 2016 to Nov. 2017	
		Number	Percent
Total nonfarm	527.3	1.4	0.3
Mining and logging	2.2	-0.2	-8.3
Construction	26.6	1.2	4.7
Manufacturing	37.7	0.1	0.3
Trade, transportation, and utilities	112.5	0.5	0.4
Information	7.4	-0.5	-6.3
Financial activities	41.7	-0.6	-1.4
Professional and business services	66.8	0.2	0.3
Education and health services	73.6	0.3	0.4
Leisure and hospitality	50.5	-0.3	-0.6
Other services	23.9	0.1	0.4
Government	84.4	0.6	0.7

Source: U.S. BLS, Current Employment Statistics.

Over-the-year change in the prices paid by urban consumers for selected categories

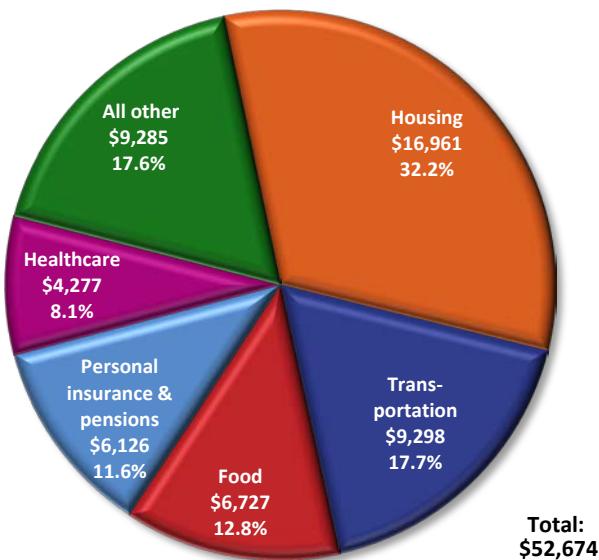
12-month percent change in CPI-U, November 2017



Source: U.S. BLS, Consumer Price Index.

Average annual spending and percent distribution for selected categories

South Region average annual expenditures 2016



Source: U.S. BLS, Consumer Expenditure Survey.

Employer costs per hour worked for wages and selected employee benefits by geographic division

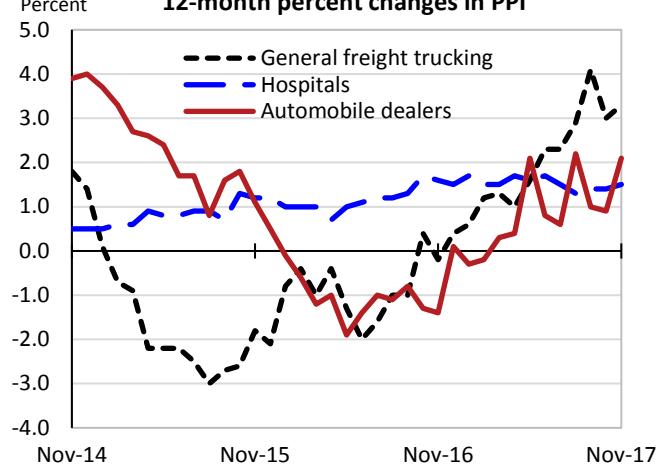
Private industry, September 2017	East South Central (1)	United States
Total compensation	\$25.99	\$33.55
Wages and salaries	18.43	23.35
Total benefits	7.56	10.20
Paid leave	1.67	2.32
Vacation	0.86	1.20
Supplemental pay	0.68	1.19
Insurance	2.31	2.68
Retirement and savings	0.89	1.39
Legally required benefits	2.02	2.62

(1) East South Central includes AL, KY, MS, and TN.

Source: U.S. BLS, Employer Costs for Employee Compensation.

Over-the-year changes in the selling prices received by producers for selected industries nationwide

12-month percent changes in PPI



Source: U.S. BLS, Producer Price Index.

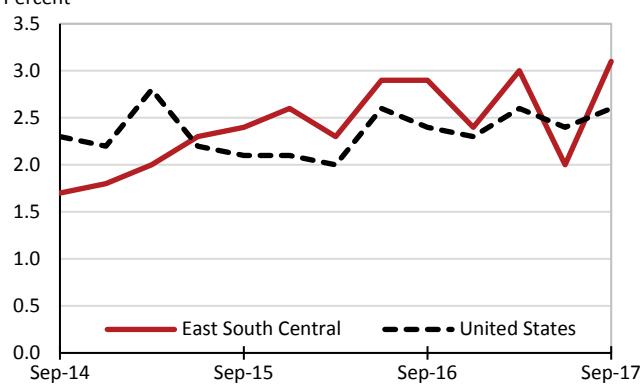
Average hourly wages for selected occupations

Occupation	Birmingham area	United States
Total, all occupations	\$22.33	\$23.86
General and operations managers	62.10	58.70
Accountants and auditors	33.82	36.89
Registered nurses	28.76	34.70
Heavy and tractor-trailer truck drivers	19.51	20.96
Customer service representatives	16.64	16.91
Construction laborers	15.01	18.22
Retail salespersons	14.02	13.07
Nursing assistants	11.29	13.29
Security guards	10.48	14.29
Waiters and waitresses	9.88	11.73
Cashiers	9.18	10.43
Cooks, fast food	9.03	9.89

Source: U.S. BLS, Occupational Employment Statistics, May 2016.

Over-the-year changes in wages and salaries

12-month percent changes in ECI



Source: U.S. BLS, Employment Cost Index.

Project: Vulcan Greenway**Estimate Prepared By: Engineering Design Technologies, Inc.****Date: 01/10/2018****Alternate 1 Total Construction Estimate:****\$ 2,154,223.70****Base Bid**

Item No.	Item Description	Quantity	Unit	Unit Price	Item Total
1	Clearing and Grubbing	1	ACRE	\$ 8,000.00	\$ 8,000.00
2	Curb and Gutter Removal	3190	LIN FT	\$ 5.00	\$ 15,950.00
3	Concrete Sidewalk Removal	565	SQ YD	\$ 7.00	\$ 3,955.00
4	Guardrail Removal	313	LIN FT	\$ 10.00	\$ 3,130.00
5	Street Light Pole Replace	10	EACH	\$ 12,000.00	\$ 120,000.00
6	Sign Replace	8	EACH	\$ 300.00	\$ 2,400.00
7	24" Roadway Pipe (Class 3 RC)	2000	LIN FT	\$ 42.00	\$ 84,000.00
8	Inlet (Type S)	24	EACH	\$ 3,000.00	\$ 72,000.00
9	Milling, 1"	16785	SQ YD	\$ 2.00	\$ 33,570.00
10	Asphalt Seal, Type "N.S.", 1"	925	TON	\$ 115.00	\$ 106,375.00
11	Tack Coat	1680	GAL	\$ 6.00	\$ 10,080.00
12	Temporary Striping	4	MILE	\$ 1,000.00	\$ 4,000.00
13	Traffic Control	1	LUMP SUM	\$ 30,000.00	\$ 30,000.00
14	Signal Modification	1	LUMP SUM	\$ 13,500.00	\$ 13,500.00
15	Pavement Striping	4	MILE	\$ 3,500.00	\$ 14,000.00
16	Pavement Markings	2130	SQ FT	\$ 15.00	\$ 31,950.00
17	Unclassified Excavation	1850	CU YD	\$ 20.00	\$ 37,000.00
18	Guardrail	520	LIN FT	\$ 81.00	\$ 42,120.00
19	Concrete Curb and Gutter	3010	LIN FT	\$ 26.00	\$ 78,260.00
20	Concrete Curb	1800	LIN FT	\$ 22.50	\$ 40,500.00
21	Concrete Sidewalk, 4" Thick	4485	SQ YD	\$ 50.00	\$ 224,250.00
22	Concrete Driveway, 6" Thick	350	SQ YD	\$ 75.00	\$ 26,250.00
23	Silt Fence (includes removal)	3000	LIN FT	\$ 5.00	\$ 15,000.00
24	Solid Sodding	2950	SQ YD	\$ 10.00	\$ 29,500.00
25	Inlet Protection	28	EACH	\$ 266.00	\$ 7,448.00
26	Utility Relocation	1	LUMP SUM	\$ 100,000.00	\$ 100,000.00
27	Pedestrian Lighting	32	EACH	\$ 10,000.00	\$ 320,000.00
28	Mobilization	1	LUMP SUM	\$ 92,500.00	\$ 92,500.00
29	Roadway Signing	1	LUMP SUM	\$ 25,000.00	\$ 25,000.00
30	Construction Fuel	1	LUMP SUM	\$ 55,000.00	\$ 55,000.00
31	Geometric Control	1	LUMP SUM	\$ 27,500.00	\$ 27,500.00
32	Landscaping - Hardscaping	1	LUMP SUM	\$ 200,000.00	\$ 200,000.00

Base Bid Total \$ 1,873,238.00**15% Contingency \$ 280,985.70****Total (Base Bid + 15%) \$ 2,154,223.70**

Project: Vulcan Greenway**Estimate Prepared By: Engineering Design Technologies, Inc.****Date: 01/10/2018****Alternate 1A Total Construction Estimate:****\$ 2,366,010.00****Base Bid**

Item No.	Item Description	Quantity	Unit	Unit Price	Item Total
1	Clearing and Grubbing	1	ACRE	\$ 8,000.00	\$ 8,000.00
2	Curb and Gutter Removal	4225	LIN FT	\$ 5.00	\$ 21,125.00
3	Concrete Sidewalk Removal	565	SQ YD	\$ 7.00	\$ 3,955.00
4	Guardrail Removal	313	LIN FT	\$ 10.00	\$ 3,130.00
5	Street Light Pole Replace	16	EACH	\$ 12,000.00	\$ 192,000.00
6	Sign Replace	16	EACH	\$ 275.00	\$ 4,400.00
7	24" Roadway Pipe (Class 3 RC)	3500	LIN FT	\$ 35.00	\$ 122,500.00
8	Inlet (Type S)	28	EACH	\$ 2,770.00	\$ 77,560.00
9	Milling, 1"	14895	SQ YD	\$ 2.00	\$ 29,790.00
10	Asphalt Seal, Type "N.S.", 1"	820	TON	\$ 115.00	\$ 94,300.00
11	Asphalt Binder, 2"	105	TON	\$ 85.00	\$ 8,925.00
12	Tack Coat	2380	GAL	\$ 6.00	\$ 14,280.00
13	Aggregate Base, 6" Thick	160	SQ YD	\$ 120.00	\$ 19,200.00
14	Temporary Striping	4	MIILE	\$ 1,000.00	\$ 4,000.00
15	Traffic Control	1	LUMP SUM	\$ 12,000.00	\$ 12,000.00
16	Pavement Striping	4	MIILE	\$ 3,500.00	\$ 14,000.00
17	Pavement Markings	1230	SQ FT	\$ 15.00	\$ 18,450.00
18	Unclassified Excavation	2100	CU YD	\$ 20.00	\$ 42,000.00
19	Guardrail	520	LIN FT	\$ 81.00	\$ 42,120.00
20	Concrete Curb and Gutter	3845	LIN FT	\$ 26.00	\$ 99,970.00
21	Concrete Curb	1800	LIN FT	\$ 22.50	\$ 40,500.00
22	Concrete Sidewalk, 4" Thick	4485	SQ YD	\$ 50.00	\$ 224,250.00
23	Concrete Driveway, 6" Thick	700	SQ YD	\$ 75.00	\$ 52,500.00
24	Silt Fence (includes removal)	3400	LIN FT	\$ 5.00	\$ 17,000.00
25	Solid Sodding	2520	SQ YD	\$ 10.00	\$ 25,200.00
26	Inlet Protection	33	EACH	\$ 265.00	\$ 8,745.00
27	Pedestrian Lighting	32	EACH	\$ 10,000.00	\$ 320,000.00
28	Landscaping - Hardscaping	1	LUMP SUM	\$ 200,000.00	\$ 200,000.00
29	Utility Relocation	1	LUMP SUM	\$ 120,000.00	\$ 120,000.00
30	Construction Fuel	1	LUMP SUM	\$ 60,000.00	\$ 60,000.00
31	Geometric Control	1	LUMP SUM	\$ 30,000.00	\$ 30,000.00
32	Roadway Signing	1	LUMP SUM	\$ 30,000.00	\$ 30,000.00
33	Mobilization	1	LUMP SUM	\$ 97,500.00	\$ 97,500.00

Base Bid Total \$ 2,057,400.00**15% Contingency \$ 308,610.00****Total (Base Bid + 15%) \$ 2,366,010.00**

Project: Vulcan Greenway**Estimate Prepared By: Engineering Design Technologies, Inc.****Date: 01/10/2018****Alternate 2 Total Construction Estimate:****\$ 1,941,999.25**

Base Bid					
Item No.	Item Description	Quantity	Unit	Unit Price	Item Total
1	Clearing and Grubbing	1	ACRE	\$ 8,000.00	\$ 8,000.00
2	Curb and Gutter Removal	3300	LIN FT	\$ 5.00	\$ 16,500.00
3	Concrete Sidewalk Removal	565	SQ YD	\$ 7.00	\$ 3,955.00
4	Guardrail Removal	313	LIN FT	\$ 10.00	\$ 3,130.00
5	Street Light Pole Replace	11	EACH	\$ 12,000.00	\$ 132,000.00
6	Sign Replace	10	EACH	\$ 300.00	\$ 3,000.00
7	24" Roadway Pipe (Class 3 RC)	2000	LIN FT	\$ 42.00	\$ 84,000.00
8	Inlet (Type S)	26	EACH	\$ 3,000.00	\$ 78,000.00
9	Milling, 1"	17750	SQ YD	\$ 2.00	\$ 35,500.00
10	Asphalt Seal, Type "N.S.", 1"	975	TON	\$ 115.00	\$ 112,125.00
11	Asphalt Binder, 2"	17	TON	\$ 100.00	\$ 1,700.00
12	Tack Coat	1820	GAL	\$ 6.00	\$ 10,920.00
13	Aggregate Base, 6" Thick	25	SQ YD	\$ 195.00	\$ 4,875.00
14	Temporary Striping	5	MILE	\$ 1,000.00	\$ 5,000.00
15	Traffic Control	1	LUMP SUM	\$ 11,000.00	\$ 11,000.00
16	Signal Modification	1	LUMP SUM	\$ 7,000.00	\$ 7,000.00
17	Pavement Striping	5	MILE	\$ 3,250.00	\$ 16,250.00
18	Pavement Markings	1970	SQ FT	\$ 15.00	\$ 29,550.00
19	Unclassified Excavation	560	CU YD	\$ 25.00	\$ 14,000.00
20	Guardrail	520	LIN FT	\$ 81.00	\$ 42,120.00
21	Concrete Curb and Gutter	2730	LIN FT	\$ 26.00	\$ 70,980.00
22	Concrete Curb	2510	LIN FT	\$ 22.50	\$ 56,475.00
23	Concrete Sidewalk, 4" Thick	1630	SQ YD	\$ 50.00	\$ 81,500.00
24	Concrete Driveway, 6" Thick	250	SQ YD	\$ 80.00	\$ 20,000.00
25	Silt Fence (includes removal)	3100	LIN FT	\$ 5.00	\$ 15,500.00
26	Concrete Median	460	SQ YD	\$ 65.00	\$ 29,900.00
27	Solid Sodding	2050	SQ YD	\$ 10.00	\$ 20,500.00
28	Inlet Protection	31	EACH	\$ 265.00	\$ 8,215.00
29	Pedestrian Lighting	32	EACH	\$ 10,000.00	\$ 320,000.00
30	Landscaping - Hardscaping	1	LUMP SUM	\$ 200,000.00	\$ 200,000.00
31	Utility Relocation	1	LUMP SUM	\$ 100,000.00	\$ 100,000.00
32	Roadway Signing	1	LUMP SUM	\$ 25,000.00	\$ 25,000.00
33	Construction Fuel	1	LUMP SUM	\$ 48,000.00	\$ 48,000.00
34	Geometric Control	1	LUMP SUM	\$ 24,000.00	\$ 24,000.00
35	Mobilization	1	LUMP SUM	\$ 50,000.00	\$ 50,000.00

Base Bid Total	\$ 1,688,695.00
15% Contingency	\$ 253,304.25
Total (Base Bid + 15%)	\$ 1,941,999.25

Project: Vulcan Greenway
Estimate Prepared By: Engineering Design Technologies, Inc.
Date: 01/10/2018

Alternate 3 Total Construction Estimate: \$ 5,537,358.10

Base Bid					
Item No.	Item Description	Quantity	Unit	Unit Price	Item Total
1	Clearing and Grubbing	2	ACRE	\$ 6,000.00	\$ 12,000.00
2	Curb and Gutter Removal	6030	LIN FT	\$ 4.50	\$ 27,135.00
3	Concrete Sidewalk Removal	760	SQ YD	\$ 6.50	\$ 4,940.00
4	Guardrail Removal	1213	LIN FT	\$ 8.00	\$ 9,704.00
5	Street Light Pole Replace	17	EACH	\$ 12,000.00	\$ 204,000.00
6	Sign Replace	16	EACH	\$ 275.00	\$ 4,400.00
7	Structure Remove	2	EACH	\$ 15,000.00	\$ 30,000.00
8	24" Roadway Pipe (Class 3 PC)	3500	LIN FT	\$ 40.00	\$ 140,000.00
9	Inlet (Type S)	47	EACH	\$ 2,750.00	\$ 129,250.00
10	Milling, 1"	18680	SQ YD	\$ 2.00	\$ 37,360.00
11	Asphalt Seal, Type "N.S.", 1"	1085	TON	\$ 115.00	\$ 124,775.00
12	Asphalt Binder, 2"	120	TON	\$ 85.00	\$ 10,200.00
13	Tack Coat	2190	GAL	\$ 6.00	\$ 13,140.00
14	Aggregate Base, 6" Thick	105	SQ YD	\$ 145.00	\$ 15,225.00
15	Temporary Striping	6	MILE	\$ 1,000.00	\$ 6,000.00
16	Traffic Control	1	LUMP SUM	\$ 17,000.00	\$ 17,000.00
17	Signal Modification	1	LUMP SUM	\$ 7,000.00	\$ 7,000.00
18	Pavement Striping	6	MILE	\$ 3,000.00	\$ 18,000.00
19	Pavement Markings	1900	SQ FT	\$ 15.00	\$ 28,500.00
20	Unclassified Excavation	3500	CU YD	\$ 20.00	\$ 70,000.00
21	Guardrail	520	LIN FT	\$ 81.00	\$ 42,120.00
22	Retaining Wall Demolition	1	LUMP SUM	\$ 100,000.00	\$ 100,000.00
23	Retaining Wall	10160	SQ FT	\$ 40.00	\$ 406,400.00
24	Concrete Curb and Gutter	5650	LIN FT	\$ 24.00	\$ 135,600.00
25	Concrete Curb	3845	LIN FT	\$ 21.00	\$ 80,745.00
26	Concrete Sidewalk, 4" Thick	3500	SQ YD	\$ 45.00	\$ 157,500.00
27	Concrete Driveway, 6" Thick	450	SQ YD	\$ 70.00	\$ 31,500.00
28	Silt Fence (includes removal)	6000	LIN FT	\$ 4.50	\$ 27,000.00
29	Solid Sodding	3380	SQ YD	\$ 10.00	\$ 33,800.00
30	Inlet Protection	55	EACH	\$ 260.00	\$ 14,300.00
31	Pedestrian Lighting	64	EACH	\$ 10,000.00	\$ 640,000.00
32	Landscaping - Hardscaping	1	LUMP SUM	\$ 250,000.00	\$ 250,000.00
33	Utility Relocation	1	LUMP SUM	\$ 150,000.00	\$ 150,000.00
34	Roadway Signing	1	LUMP SUM	\$ 35,000.00	\$ 35,000.00
35	Construction Fuel	1	LUMP SUM	\$ 95,000.00	\$ 95,000.00
36	Gemetric Control	1	LUMP SUM	\$ 47,500.00	\$ 47,500.00
37	Mobilization	1	LUMP SUM	\$ 160,000.00	\$ 160,000.00

Right-of-Way and Structure Acquisition					
N/A	Purchace of 2 Impacted Structures	1	LUMP SUM	\$ 1,500,000.00	\$ 1,500,000.00
				Base Bid Total	\$ 4,815,094.00
				15% Contingency	\$ 722,264.10
				Total (Base Bid + 15%)	\$ 5,537,358.10

Dynamic Civil Solutions **Volume-Class**

CustomList-1 -- English (ENU)

Datasets:

Site: [V1] Richard Arrington Jr Blvd S @ 21 Ave S SB
Attribute:
Direction: 3 - South bound, A trigger first. **Lane:** 0
Survey Duration: 0:00 Tuesday, October 03, 2017 => 15:40 Friday, October 06, 2017,
Zone:
File: V106Oct2017_Southbound.EC0 (Plus)
Identifier: BM00R598 MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm: Factory default axle (v5.02)
Data type: Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time: 0:00 Tuesday, October 03, 2017 => 0:00 Thursday, October 05, 2017 (2)
Included classes: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range: 6 - 99 mph.
Direction: North, East, South, West (bound), P = South, Lane = 0-16
Separation: Headway > 0 sec, Span 0 - 328.084 ft
Name: Factory Default Profile
Scheme: Vehicle classification (Scheme F3)
Units: Non metric (ft, mi, ft/s, mph, lb, ton)

Column Legend:

0 [Time]	24-hour time (0000 - 2359)
1 [Total]	Number in time step
2 [Cls]	Class totals

Dynamic Civil Solutions **Volume-Gap**

CustomList-1 -- English (ENU)

Datasets:

Site: [V1] Richard Arrington Jr Blvd S @ 21 Ave S SB
Attribute:
Direction: 3 - South bound, A trigger first. **Lane:** 0
Survey Duration: 0:00 Tuesday, October 03, 2017 => 15:40 Friday, October 06, 2017,
Zone:
File: V106Oct2017_Southbound.EC0 (Plus)
Identifier: BM00R598 MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm: Factory default axle (v5.02)
Data type: Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time: 0:00 Tuesday, October 03, 2017 => 0:00 Thursday, October 05, 2017 (2)
Included classes: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range: 6 - 99 mph.
Direction: North, East, South, West (bound), P = South, Lane = 0-16
Separation: Headway > 0 sec, Span 0 - 328.084 ft
Name: Factory Default Profile
Scheme: Vehicle classification (Scheme F3)
Units: Non metric (ft, mi, ft/s, mph, lb, ton)

Column Legend:

0 [Time]	24-hour time (0000 - 2359)
1 [Total]	Number in time step
2 [Sep]	Separation bin totals

Dynamic Civil Solutions **Volume-Speed**

CustomList-1 -- English (ENU)

Datasets:

Site: [V1] Richard Arrington Jr Blvd S @ 21 Ave S SB
Attribute:
Direction: 3 - South bound, A trigger first. **Lane:** 0
Survey Duration: 0:00 Tuesday, October 03, 2017 => 15:40 Friday, October 06, 2017,
Zone:
File: V106Oct2017_Southbound.EC0 (Plus)
Identifier: BM00R598 MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm: Factory default axle (v5.02)
Data type: Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time: 0:00 Tuesday, October 03, 2017 => 0:00 Thursday, October 05, 2017 (2)
Included classes: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range: 6 - 99 mph.
Direction: North, East, South, West (bound), P = South, Lane = 0-16
Separation: Headway > 0 sec, Span 0 - 328.084 ft
Name: Factory Default Profile
Scheme: Vehicle classification (Scheme F3)
Units: Non metric (ft, mi, ft/s, mph, lb, ton)

Column Legend:

0 [Time]	24-hour time (0000 - 2359)
1 [Total]	Number in time step
2 [Vbin]	Speed bin totals

MetroCount Traffic Executive Volume-Class

CustomList-2 -- English (ENU)

Datasets:

Site: [V1] Richard Arrington Jr Blvd S @ 21st Ave NB
Attribute:
Direction: 1 - North bound, A trigger first. **Lane:** 0
Survey Duration: 0:00 Tuesday, October 03, 2017 => 15:45 Friday, October 06, 2017,
Zone:
File: V106Oct2017Northbound.EC0 (Plus)
Identifier: BK96F1P6 MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm: Factory default axle (v5.02)
Data type: Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time: 0:00 Tuesday, October 03, 2017 => 0:00 Thursday, October 05, 2017 (2)
Included classes: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range: 6 - 99 mph.
Direction: North, East, South, West (bound), P = North, Lane = 0-16
Separation: Headway > 0 sec, Span 0 - 328.084 ft
Name: Factory Default Profile
Scheme: Vehicle classification (Scheme F3)
Units: Non metric (ft, mi, ft/s, mph, lb, ton)

Column Legend:

0 [Time]	24-hour time (0000 - 2359)
1 [Total]	Number in time step
2 [Cls]	Class totals

MetroCount Traffic Executive Volume-Gap

CustomList-2 -- English (ENU)

Datasets:

Site: [V1] Richard Arrington Jr Blvd S @ 21st Ave NB
Attribute:
Direction: 1 - North bound, A trigger first. **Lane:** 0
Survey Duration: 0:00 Tuesday, October 03, 2017 => 15:45 Friday, October 06, 2017,
Zone:
File: V106Oct2017Northbound.EC0 (Plus)
Identifier: BK96F1P6 MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm: Factory default axle (v5.02)
Data type: Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time: 0:00 Tuesday, October 03, 2017 => 0:00 Thursday, October 05, 2017 (2)
Included classes: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range: 6 - 99 mph.
Direction: North, East, South, West (bound), P = North, Lane = 0-16
Separation: Headway > 0 sec, Span 0 - 328.084 ft
Name: Factory Default Profile
Scheme: Vehicle classification (Scheme F3)
Units: Non metric (ft, mi, ft/s, mph, lb, ton)

Column Legend:

0 [Time]	24-hour time (0000 - 2359)
1 [Total]	Number in time step
2 [Sep]	Separation bin totals

MetroCount Traffic Executive Volume-Speed

CustomList-2 -- English (ENU)

Datasets:

Site: [V1] Richard Arrington Jr Blvd S @ 21st Ave NB
Attribute:
Direction: 1 - North bound, A trigger first. **Lane:** 0
Survey Duration: 0:00 Tuesday, October 03, 2017 => 15:45 Friday, October 06, 2017,
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Included classes: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range: 6 - 99 mph.
Direction: North, East, South, West (bound), P = North, Lane = 0-16
Separation: Headway > 0 sec, Span 0 - 328.084 ft
Name: Factory Default Profile
Scheme: Vehicle classification (Scheme F3)
Units: Non metric (ft, mi, ft/s, mph, lb, ton)

Column Legend:

0 [Time]	24-hour time (0000 - 2359)
1 [Total]	Number in time step
2 [Vbin]	Speed bin totals

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