James White Parkway Urban Wilderness Corridor Study

City of Knoxville, TN

For
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EXECUTIVE SUMMARY

PURPOSE OF REPORT

The purpose of the James White Parkway Urban Wilderness Corridor Study is to investigate alternatives that meet the traffic demand, satisfy the Tennessee Department of Transportation's (TDOT) request to maintain the corridor's viability as an alternate route for Chapman Highway, and fit the context of the surrounding community. James White Parkway is currently designed as a high-speed controlled access facility. It was originally designed to extend south of Sevierville Pike and connect to Chapman Highway. The City of Knoxville has decided that the future extension of James White Parkway to Chapman Highway does not fit their vision for South Knoxville. As a result, James White Parkway now ends abruptly at Sevierville Pike. The City has recently acquired James White Parkway's existing right-of-way (ROW) from Sevierville Pike north to north of Anita Drive at the bridge approach to the James White Parkway bridge over the Tennessee River from TDOT and plans to modify this 1.1-mile long corridor and surrounding street network into a more multimodal facility. TDOT would continue to maintain the existing bridge over the river and the city would take over responsibility at the end of the bridge as identified in the deed conveying ownership. The goal of this document is to provide functional layouts for the corridor that are agreed upon by both TDOT and the City of Knoxville to move into the next stages of design and implementation.

The proposed changes to James White Parkway are integral to the City's vision for the Urban Wilderness park system in South Knoxville. Knoxville's Urban Wilderness is an outdoor adventure area where visitors can hike, bike, climb, or paddle – all within the heart of the city. Over 50 miles of trails and greenways connect visitors to a nature center, pristine lakes, historic sites, dramatic quarries, adventure playgrounds, five city parks, and a 500-acre wildlife area. James White Parkway is currently an underutilized four-lane urban freeway that serves only motorists. The vision is for James White Parkway to serve as the multi-modal gateway linking neighborhoods throughout South Knoxville and Downtown to the regional outdoor recreation venue. Excess motorist capacity along James White Parkway will be transitioned to serve bicyclists and pedestrians along an urban parkway corridor. Additional information concerning Knoxville's Urban Wilderness can be found on their website at https://www.visitknoxville.com/urban-wilderness/ .

DESCRIPTION OF THE STUDY AREA

The project Study Area is located in the City of Knoxville. The limits of the study area along James White Parkway will extend from the bridge over the Tennessee River to the north, to Sevierville Pike to the south. In addition, the study area includes Cottrell Street to the east, Sevier Avenue / East Moody Avenue to the west, and the interchange at Sevier Avenue / Anita Drive. James White Parkway is currently designed as a high-speed controlled access facility with a posted speed limit of 55 mph. The roadway is a major connector between downtown Knoxville and South Knoxville with a bridge across the Tennessee River. The adjacent land use primarily consists of suburban single family residential on the east and west sides of the roadway. Baker Creek Preserve, which is a part of the City's Urban Wilderness, is located at the end of the roadway at Sevierville Pike.

EXISTING TRAFFIC AND SAFETY CONDITIONS

Existing AM and PM peak-hour turning movements were obtained from previous studies and grown to the 2020 and 2040 analysis years using an annual rate of 1.5%. Traffic analyses were developed for the No Build and Build conditions. The studied intersections as well as the James

White Parkway roadway analysis were analyzed with the methodology found in the 6th Edition of the Highway Capacity Manual (HCM). For all study intersections, the overall LOS is B or better. Therefore, under existing conditions, all intersections operate satisfactorily.

Safety analyses were performed for all study corridors using non-intersection crashes.

James White Parkway had a crash rate of 0.410 crashes per million vehicle miles travelled. The statewide rate for similar roadways (Urban Functional Route, Freeway) is 1.681. Therefore, the ratio of the actual crash rate to the statewide crash rate (A/SW) at non-intersection locations is 0.24. This segment had an actual-to-critical crash ratio of 0.17.

Anita Drive from Sevier Avenue/Ford Place to James White Parkway had a crash rate of 1.634 crashes per million vehicle miles travelled. The statewide rate for similar roadways (Urban Functional Route, 4-Lane Divided) is 3.00. Therefore, the ratio of the actual crash rate to the statewide crash rate (A/SW) at non-intersection locations is 0.54. This segment had an actual-to-critical crash ratio of 0.23.

Anita Drive from Hillwood Drive to James White Parkway did not have any non-intersection crashes.

Sevierville Pike from Woodlawn Pike to James White Parkway had a crash rate of 4.04 crashes per million vehicle miles travelled. The statewide rate for similar roadways (Urban Functional Route, 2 Lane W/TL) is 3.461. Therefore, the ratio of the actual crash rate to the statewide crash rate (A/SW) at non-intersection locations is 1.17. This segment had an actual-to-critical crash ratio of 0.61.

Sevierville Pike from James White Parkway to Compton Street had a crash rate of 2.529 crashes per million vehicle miles travelled. The statewide rate for similar roadways (Urban Functional Route, 2 Lane W/TL) is 3.461. Therefore, the ratio of the actual crash rate to the statewide crash rate (A/SW) at non-intersection locations is 0.73. This segment had an actual-to-critical crash ratio of 0.22.

Therefore, the actual corridor crash rate at non-intersection locations along all corridors is less than the statewide average crash rates for similar corridors except Sevierville Pike from Woodlawn Pike to James White Parkway. All segments had an actual-to-critical crash ratio less than 1.0.

The crash rates of intersections that had five (5) or more crashes between June 1, 2017 and May 31, 2020 within the analysis area are outlined below. Of the four (4) intersections with five (5) or more crashes, three (3) had crash rates higher than the statewide average for similar intersections.

The intersection of Anita Drive at Cottrell Street is stop controlled on all approaches. This intersection has a median along Anita Drive that allows travel across Anita Drive. This intersection had a crash rate of 0.85 crashes per millions of entering vehicles. The statewide rate for similar intersections (Urban, Full Stop Intersections on Multilane Divided Facilities) is 0.688. Therefore, the ratio of the actual crash rate to the statewide crash rate (A/SW) is 1.23. This intersection had an actual-to-critical crash ratio of 0.57.

The intersection of Sevierville Pike at Woodlawn Pike is a signalized intersection. This intersection allows full movements and has left-turn lanes on both Sevierville Pike and Woodlawn Pike approaches. This intersection had a crash rate of 1.37 crashes per millions of entering vehicles. The statewide rate for similar intersections (Urban, Signalized Intersections on Multilane Divided Facilities) is 0.609. Therefore, the ratio of the actual crash rate to the statewide crash rate (A/SW) is 2.25. This intersection had an actual-to-critical crash ratio of 1.19.

The intersection of Sevierville Pike at James White Parkway (SB Ramp) is a signalized intersection. This three-legged intersection allows thru movements on Sevierville Pike and has turn lanes on both the southbound James White Parkway approach. This intersection had a crash rate of 0.49 crashes per millions of entering vehicles. The statewide rate for similar intersections (Urban, Signalized Intersections on Multilane Divided Facilities) is 0.609. Therefore, the ratio of the actual crash rate to the statewide crash rate (A/SW) is 0.80. This intersection had an actual-to-critical crash ratio of 0.46.

The intersection of Sevierville Pike at James White Parkway (NB Ramp) is a signalized intersection. This three-legged intersection allows turning movements from Sevierville Pike to northbound James White Parkway approach. This intersection had a crash rate of 0.54 crashes per millions of entering vehicles. The statewide rate for similar intersections (Urban, Signalized Intersections on Multilane Divided Facilities) is 0.609. Therefore, the ratio of the actual crash rate to the statewide crash rate (A/SW) is 0.89. This intersection had an actual-to-critical crash ratio of 0.48.

CONCEPTUAL ALTERNATIVE

The proposed project plans to consolidate the motor vehicle traffic to the southbound side of the road to provide pedestrian and bicycle connections on the northbound side and open up the accessibility of the Urban Wilderness Park to the community by creating this linear park along the neighborhood. The Proposed Alternative accommodates two-way travel on the western portion of James White Parkway and the new access to Urban Wilderness Gateway Park. James White Parkway will be realigned at the southern terminus to provide a direct connection with Sevierville Pike, which will connect to Chapman Highway. This substitutes for the original intent of James White Parkway to connect to Chapman Highway. A clear separation is intended between motor vehicle and pedestrian traffic with the consolidation of the motor vehicle traffic on the existing James White Parkway southbound lanes and a linear park on the existing northbound lanes.

The proposed typical section on James White Parkway would consist of two 11 foot lanes in both northbound and southbound directions, 2 foot inside shoulders, a 4 foot raised median, and 6 foot paved outside shoulders with 2 foot reinforced grass shoulder. The posted speed limit proposed for the corridor is 35 mph.

PROPOSED ALTERNATIVE TRAFFIC ANALYSIS

Intersection and roadway analyses were performed for the proposed alternative using Synchro software and Highway Capacity Software (HCS), respectively. The proposed alternative provides

adequate traffic operations through the design year of 2040 and adequately service the projected traffic demand.

PROPOSED ALTERNATIVE COST

The estimated planning level cost for construction is $11,200,000, right-of-way (ROW) is $595,000, Utilities is $356,00, and preliminary engineering is $1,030,000 for the Proposed Alternative for a total cost estimate of $13,200,00. See **Appendix A** for detailed itemization of cost estimates and inflated cost estimate summary.

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1.0 INTRODUCTION

1.1 PURPOSE OF REPORT

The purpose of the James White Parkway Urban Wilderness Corridor Study is to investigate alternatives that meet the traffic demand, satisfy the Tennessee Department of Transportation's (TDOT) request to maintain the corridor's viability as an alternate route for Chapman Highway, and fit the context of the surrounding community. James White Parkway is currently designed as a high-speed controlled access facility. It was originally designed to extend south of Sevierville Pike and connect to Chapman Highway. The City of Knoxville has decided that the future extension of James White Parkway to Chapman Highway does not fit their vision for South Knoxville. As a result, James White Parkway now ends abruptly at Sevierville Pike. The City has recently acquired James White Parkway's existing right-of-way (ROW) from Sevierville Pike north to north of Anita Drive at the bridge approach to the James White Parkway bridge over Tennessee River from TDOT and plans to modify this 1.1-mile long corridor and surrounding street network into a more multimodal facility. TDOT would continue to maintain the existing bridge over the river and the city would take over responsibility at the end of the bridge as identified in the deed conveying ownership. The goal of this document is to provide functional layouts for the corridor that are agreed upon by both TDOT and the City of Knoxville to move into the next stages of design and implementation.

The proposed changes to James White Parkway are integral to the City's vision for the Urban Wilderness park system in South Knoxville. Knoxville's Urban Wilderness is an outdoor adventure area where visitors can hike, bike, climb, or paddle – all within the heart of the city. Over 50 miles of trails and greenways connect visitors to a nature center, pristine lakes, historic sites, dramatic quarries, adventure playgrounds, five city parks, and a 500-acre wildlife area. James White Parkway is currently an underutilized four-lane urban freeway that serves only motorists. The vision is for James White Parkway to serve as the multi-modal gateway linking neighborhoods throughout South Knoxville and Downtown to the regional outdoor recreation venue. Excess motorist capacity along James White Parkway will be transitioned to serve bicyclists and pedestrians along an urban parkway corridor. Additional information concerning Knoxville's Urban Wilderness can be found on their website at https://www.visitknoxville.com/urban-wilderness/ .

1.2 DEMOGRAPHICS

The 2019 population of Knox County was estimated by the US Census Bureau as 461,104 while the population in 2014 was estimated as 440,732. This results in a growth rate of 0.91%. Select demographics are provided in Table 1, which compares Knox County to equivalent demographics for Tennessee and the United States.

TABLE 1: STUDY AREA LOG MILES

Characteristic	Knox County	Tennessee	United States
Growth Rate (2014-2019)	0.91%	0.79%	0.67%
Unemployment (2019)	4.30%	5.30%	5.30%
Minority Population (2019)	14.50%	22.80%	28.00%
Median Household Income (2019)	$57,470	$56,071	$65,712
Persons Below Poverty Level (2019)	14.50%	13.90%	12.30%
Median Age (2019)	37.4	39	38.5

As shown in Table 1, Knox County has a higher population growth rate than both Tennessee and the United States as a whole. Unemployment rates are lower in Knox County compared to Tennessee and the United States, and there is a slightly higher median household income when compared to the state of Tennessee.

1.3 EXISTING LAND USE AND ZONING

James White Parkway is currently designed as a high-speed controlled access facility with a posted speed limit of 55 mph. The roadway is a major connector between downtown Knoxville and South Knoxville with a bridge across the Tennessee River. The adjacent land use primarily consists of suburban single family residential on the east and west sides of the roadway. Baker Creek Preserve is located at the end of the roadway at Sevierville Pike.

1.4 ADJACENT PROJECTS

1.4.1 TIP (2020)

The Knoxville Area Transportation Planning Organization's (TPO's) *Transportation Improvement Program* (TIP) is a four-year schedule of projects that provides a description of the cost that will occur within the timeframe for the TIP. Projects in the TIP must first have been included in the LRTP. To receive federal funds, a project must be listed in the TIP. The 2020 – 2023 TIP does not list any along James White Parkway. The goal of this Study is to identify the project to be incorporated into the TIP. The 2020 – 2023 TIP lists the following projects near the study area.

Sevier Avenue – South Knoxville Waterfront Roadway Improvements (TIP No. 20-2014-032, TDOT PIN 109677.00)
The project consists of roadway streetscape improvements and utility relocations along Sevier Avenue and will include a new roundabout constructed at the intersection of Foggy Bottom/Sevier Avenue/Island Home Avenue. No additional lanes will be constructed.

South Waterfront Greenway – East of Suttree (TIP No. 20-2017-049, TDOT PIN 127815.00)
The project consists of constructing a Riverwalk trail connecting the 0.10 mile section of cantilevered Riverwalk along Island Home Avenue to Suttree Landing Park Riverwalk that is just east of Foggy Bottom Street along the Tennessee River.

1.4.2 LRTP (2017)

The TPO's *Mobility Plan 2040 Connecting People and Places* is the Long Range Transportation Plan (LRTP) for the Knoxville region. Based on input from regional residents, stakeholders, and elected officials, it guides transportation decision-making in the region over the next two decades. The LRTP is updated every four years. The plan identifies and prioritizes investments of all types of transportation. The current LRTP was adopted in April 2017. As seen in Figure 1, there are no individual construction projections planned within the Study Area. However, the following project has been identified near the study area.

Baker Creek Greenway – Maynard Glenn Park to Island Home Avenue (Mobility Plan No. 13-854)

The project consists of constructing a new shared use path along Baker Creek, connecting Maynard Glenn Park, Mary James Park, to the proposed South Waterfront Greenway.

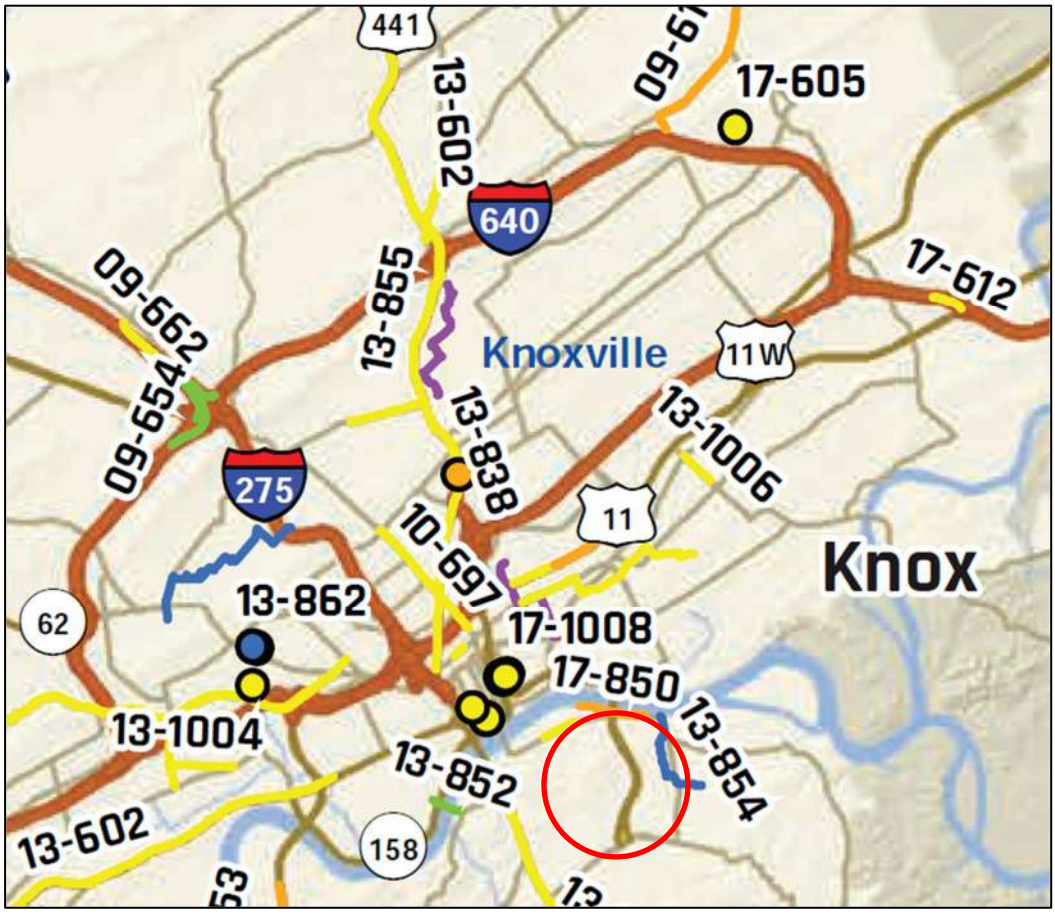

FIGURE 1: MOBILITY PLAN 2040 (LRTP) PLANNED PROJECTS
Source: Knoxville Regional TPO

2.0 HISTORY AND BACKGROUND

The project Study Area is located in the City of Knoxville. The limits of the study area along James White Parkway will extend from the bridge over the Tennessee River to the north, to Sevierville Pike to the south. In addition, the study area includes Cottrell Street to the east, Sevier Avenue / East Moody Avenue to the west, and the interchange at Sevier Avenue / Anita Drive. **Figure 2** through **Figure 5** provide maps of the Study Area. **Table 2** summarizes the Study Area termini.

TABLE 2: STUDY AREA LOG MILES

Route Name	Begin		End		Distance (miles)
	LM	Description	LM	Description	
James White Parkway	0.0	Begin	1.1	Island Home Overpass	1.1
Anita Drive	0.815	Sevier Ave/Ford Place	0.0215	James White Parkway	0.0215
Anita Drive	0.22	Hillwood Drive	0.230	James White Parkway	0.230
Sevierville Pike	1.002	Woodlawn Pike	0.208	James White Parkway	0.208
Sevierville Pike	0.0	James White Parkway	0.115	Compton Street	0.115

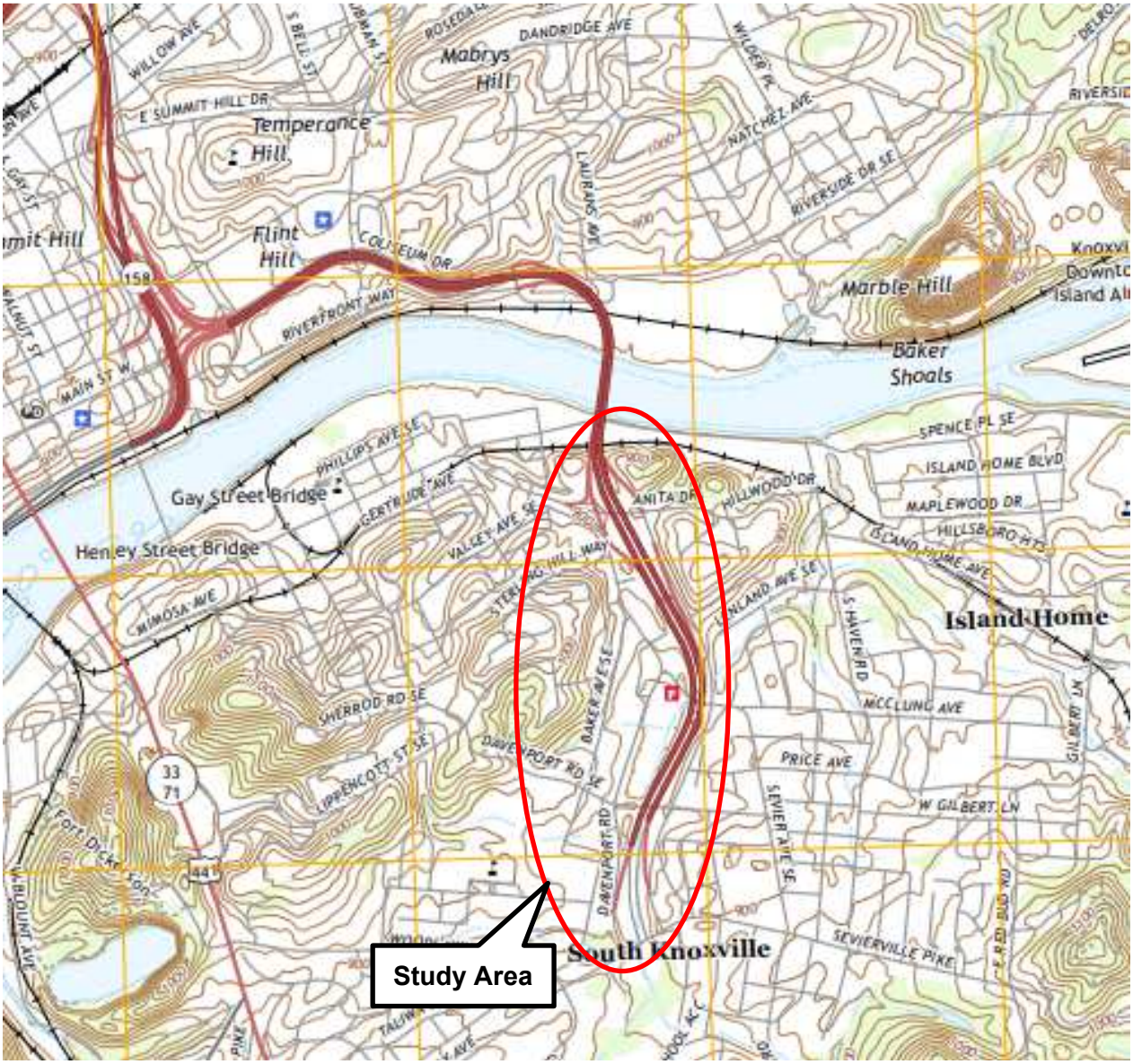

FIGURE 2: VICINITY MAP
Source: USGS Quad Maps – 2019 Knoxville, TN

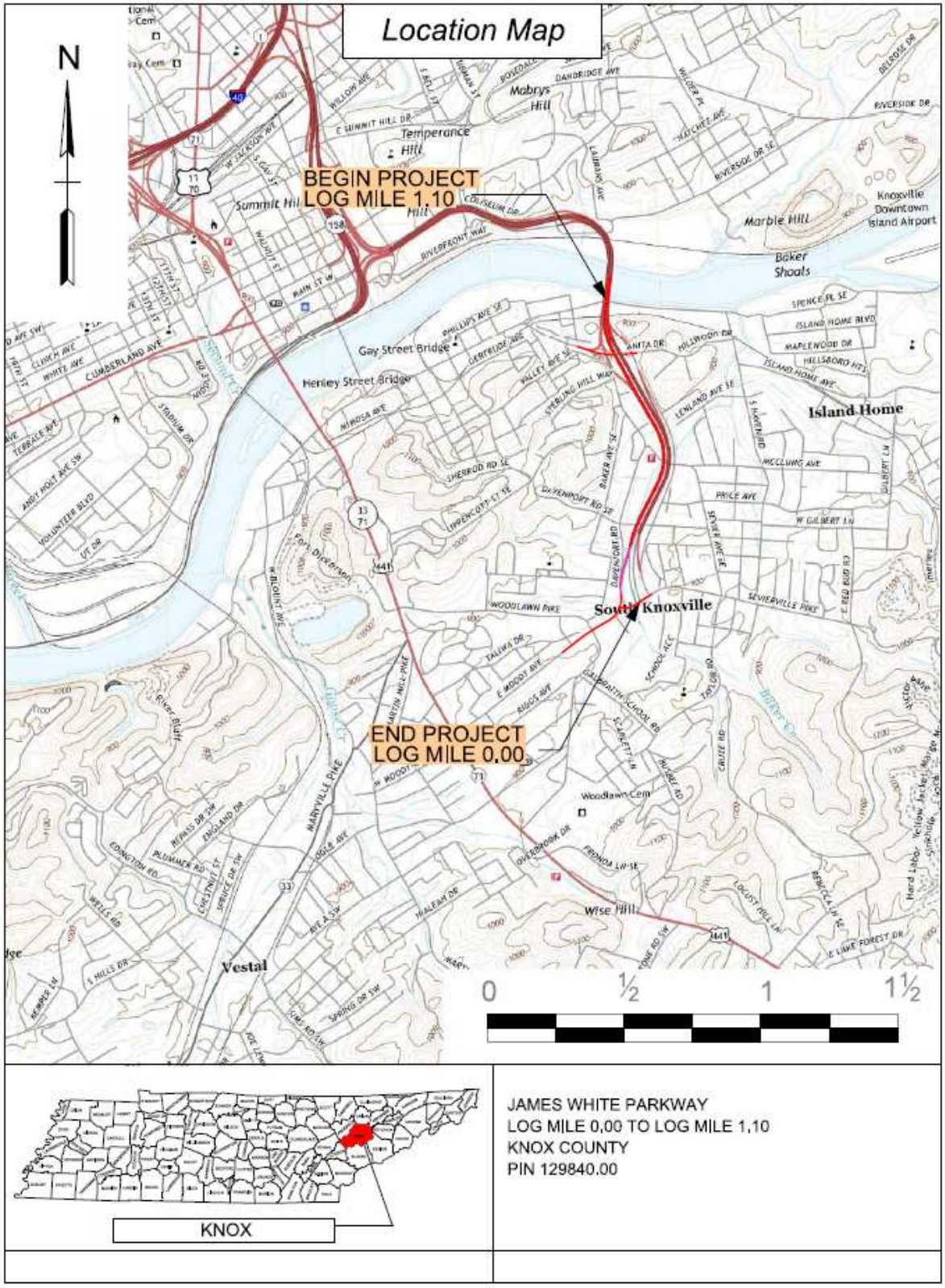

FIGURE 3: LOCATION MAP

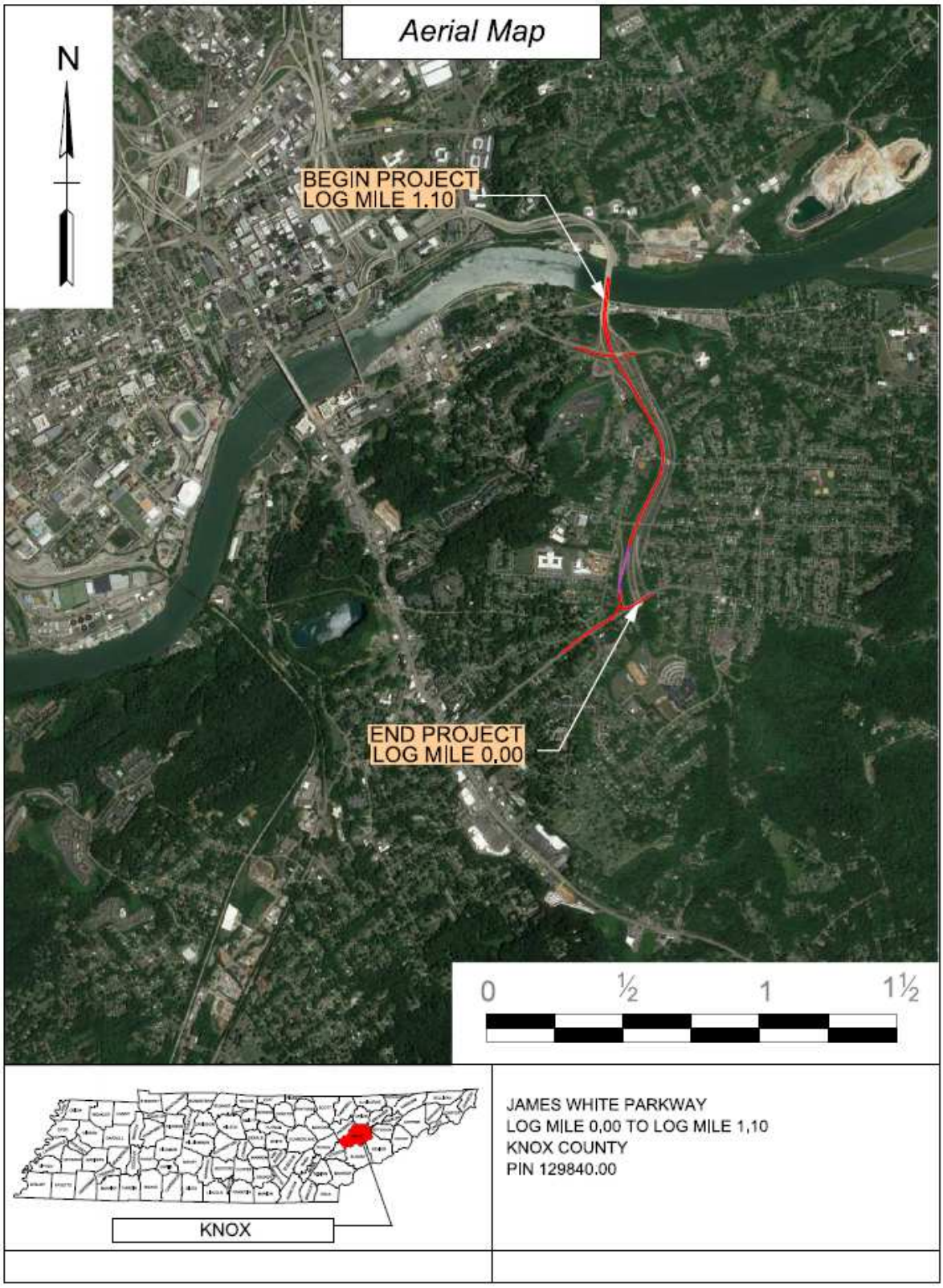

FIGURE 4: AERIAL MAP

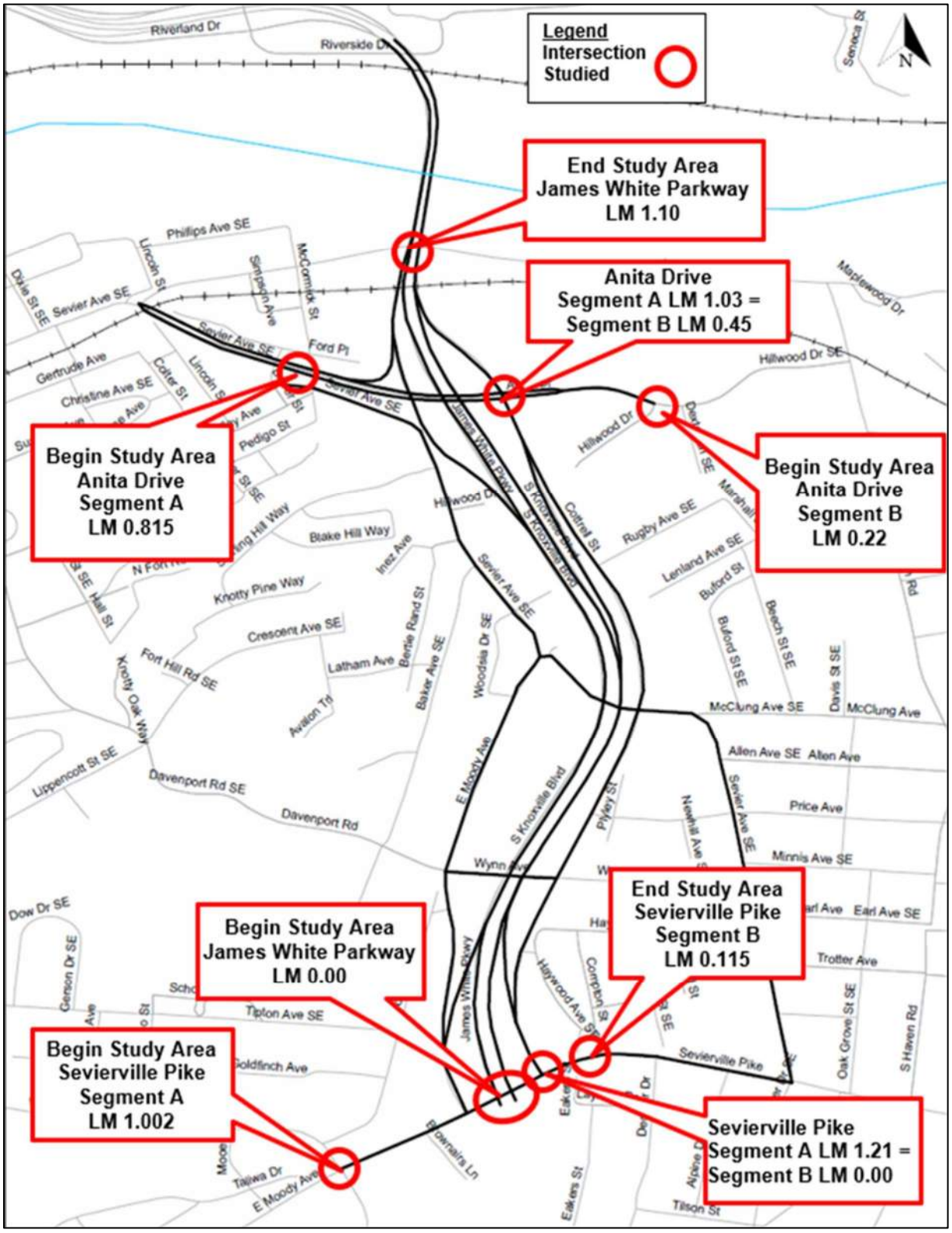

FIGURE 5: DETAILED LOCATION MAP

2.1 PREVIOUS STUDIES

2.1.1 City of Knoxville

Urban Wilderness Gateway Park Project, Framework, Vision + Concept Design Report

Knoxville's Urban Wilderness is an outdoor adventure area where visitors can hike, bike, climb, or paddle – all within the heart of the city. Over 50 miles of trails and greenways connect visitors to a nature center, pristine lakes, historic sites, dramatic quarries, adventure playgrounds, five city parks, and a 500-acre wildlife area (see Figure 6). James White Parkway is currently an underutilized four-lane urban freeway that serves only motorists. The vision is for James White Parkway to serve as the multi-modal gateway linking neighborhoods throughout South Knoxville and Downtown to the regional outdoor recreation venue. Excess motorist capacity along James White Parkway will be transitioned to serve bicyclists and pedestrians along an urban parkway corridor. Additional information concerning Knoxville's Urban Wilderness can be found on their website at https://www.visitknoxville.com/urban-wilderness/ .

The City has previously utilized a consultant team to develop the 'Framework, Vision + Concept Design Report for the Urban Wilderness Gateway Park', final report dated August 31, 2018. The report outlines the City of Knoxville's plan to convert James White Parkway from an urban freeway to a multi-modal corridor. The Urban Wilderness Gateway Park site was acquired by the City of Knoxville via an excess land transfer from TDOT. It is located between the terminus of the James White Parkway at Anita Drive and The Baker Creek Preserve south of Sevierville Pike. As part of the Urban Wilderness project, the existing northbound lanes of James White Parkway will be converted into a continuous bike and pedestrian greenway and motor vehicle traffic will be shifted to the west where the existing southbound lanes are located. Therefore, James White Parkway will be two-way traffic on the current southbound lanes.

FIGURE 6: URBAN WILDERNESS VISION

3.0 EXISTING CONDITIONS

3.1 DESCRIPTION OF THE STUDY AREA

James White Parkway is a north-south roadway with a posted speed limit of fifty-five (55) miles per hour on the mainline. It is functionally classified as a Freeway.

Anita Drive is an east-west roadway with a posted speed limit of thirty-five (35) miles per hour. It is functionally classified as an Urban Minor Arterial.

Cottrell Street is a north-south roadway with a posted speed limit of thirty-five (35) miles per hour. It is functionally classified as an Urban Local Route.

Sevierville Pike is an east-west roadway with a posted speed limit of thirty (30) miles per hour. It is functionally classified as a Major Collector.

Sevier Avenue is an undivided two-lane roadway with a posted speed limit of thirty (30) miles per hour. It is functionally classified as an Urban Local Road.

3.2 TRAFFIC VOLUMES

Traffic data from three primary sources were utilized in the James White Parkway Urban Wilderness Corridor Study traffic projections:

- Tennessee Department of Transportation (TDOT) Annual Average Daily Traffic (AADT) Data
- Field Collected Data
- Knoxville Area Transportation Planning Organization (TPO) Travel Demand Model (TDM) Data

Based on the data sources listed above, this study assumed an annual traffic growth rate of 1.5%. Existing AM and PM peak-hour turning movements were obtained from previous studies and grown to the 2020 and 2040 analysis years. The detailed traffic volumes are provided in the Existing Traffic Counts Technical Memorandum in **Appendix B** and the Traffic Data and Projection Technical Memorandum in **Appendix C**.

3.3 CRASH HISTORY

Crash data along James White Parkway, Anita Drive, and Sevierville Pike within the Study Area were obtained from the Tennessee Integrated Traffic Analysis Network (TITAN) database. Crash data from the most recent three years of data were utilized in the analysis (June 1, 2017 through May 31, 2020).

In these years there were:

1. James White Parkway
    a. Seven (7) reported crashes along the 1.1 miles between the beginning of James White Parkway and the Island Home overpass.
    b. There were no (0) fatal crashes, two (2) serious injury crashes, no (0) other injury crashes, and five (5) property damage only crashes.

2. Anita Drive - Segment A
    a. Eight (8) reported crashes along the 0.215 miles between Sevier Avenue/Ford Place and James White Parkway.
    b. There were no (0) fatal crashes, no (0) serious injury crashes, no (0) other injury crashes and eight (8) property damage only crashes.
3. Anita Drive – Segment B
    a. Six (6) reported crashes along the 0.23 miles between Hillwood Drive and James White Parkway.
    b. There were no (0) fatal crashes, no (0) serious injury crashes, three (3) other injury crashes and three (3) property damage only crashes.
4. Sevierville Pike – Segment A
    a. Forty-one (41) reported crashes along the 0.208 miles between Woodlawn Pike and James White Parkway.
    b. There were no (0) fatal crashes, one (1) serious injury crash, nine (9) other injury crashes and thirty-one (31) property damage only crashes.
5. Sevierville Pike – Segment B
    a. Ten (10) reported crashes along the 0.115 miles between James White Parkway and Compton Street.
    b. There were no (0) fatal crashes, no (0) serious injury crashes, no (0) other injury crashes and ten (10) property damage only crashes.

Figure 7 plots the crash locations within the Study Area. **Figure 8** charts the crashes by time of day along James White Parkway, Anita Drive and Sevierville Pike. The majority of crashes occurred between 1:00 PM and 7:00 PM. **Table 3** through **Table 6** summarizes the crash statistics along James White Parkway, Anita Drive and Sevierville Pike.

Table 3 lists information concerning the types of crashes observed. The majority of the crashes were rear-end (thirty-nine [39] percent) followed closely by angle (thirty-five [35] percent). These types of crashes are typically intersection-related, and the data demonstrate that seventy-four (74) percent of the crashes were at intersections. Seventy-six (76) percent of the crashes occurred in dry road conditions and seventy-four (74) percent during daylight hours.

Table 4 lists overall crash data. Seven (7) of the seventy-two (72) crashes occurred along James White Parkway. Two (2) were serious injury crashes, none (0) were minor injury crashes and five (5) were property damage only crashes. Fourteen (14) of the seventy-two (72) crashes occurred along Anita Drive. Three (3) were minor injury cashes and eleven (11) were property damage only crashes. Fifty-one (51) of the seventy-two (72) crashes occurred along Sevierville Pike. One (1) was a serious injury crash, nine (9) were minor injury crashes, and forty-one (41) were property damage only crashes.

Corridor crash rates are calculated with non-intersection crashes. The calculated, actual, crash rates were compared to statewide crash rates of similar locations. The actual crash rates were also compared to the critical crash rates. The critical crash rate is a statistical control used to be reasonably certain that an observed crash rate differs significantly from the statewide average rate. The statistical control indicates that any actual to critical ratio greater than one (1.0) is most likely not due to chance but to some unfavorable characteristic of the local conditions. TDOT utilizes a ninety-nine percent confidence level in their critical crash rate calculations. **Table 5** lists all non-intersection crashes and shows:

James White Parkway had a crash rate of 0.410 crashes per million vehicle miles travelled. The statewide rate for similar roadways (Urban Functional Route, Freeway) is 1.681. Therefore, the ratio of the actual crash rate to the statewide crash rate (A/SW) at non-intersection locations is 0.24. This segment had an actual-to-critical crash ratio of 0.17.

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Therefore, the actual corridor crash rate at non-intersection locations along all corridors is less than the statewide average crash rates for similar corridors except Sevierville Pike from Woodlawn Pike to James White Parkway. All segments had an actual-to-critical crash ratio less than 1.0.

Table 6 lists the crash rates of intersections that had five (5) or more crashes between June 1, 2017 and May 31, 2020 within the analysis area. Of the four (4) intersections with five (5) or more crashes, three (3) had crash rates higher than the statewide average for similar intersections.

The intersection of Anita Drive at Cottrell Street is stop controlled on all approaches. This intersection has a median along Anita Drive that allows travel across Anita Drive. This intersection had a crash rate of 0.85 crashes per millions of entering vehicles. The statewide rate for similar intersections (Urban, Full Stop Intersections on Multilane Divided Facilities) is 0.688. Therefore, the ratio of the actual crash rate to the statewide crash rate (A/SW) is 1.23. This intersection had an actual-to-critical crash ratio of 0.57.

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Detailed crash analyses are provided in the Traffic Analysis Technical Memorandum in **Appendix D**.

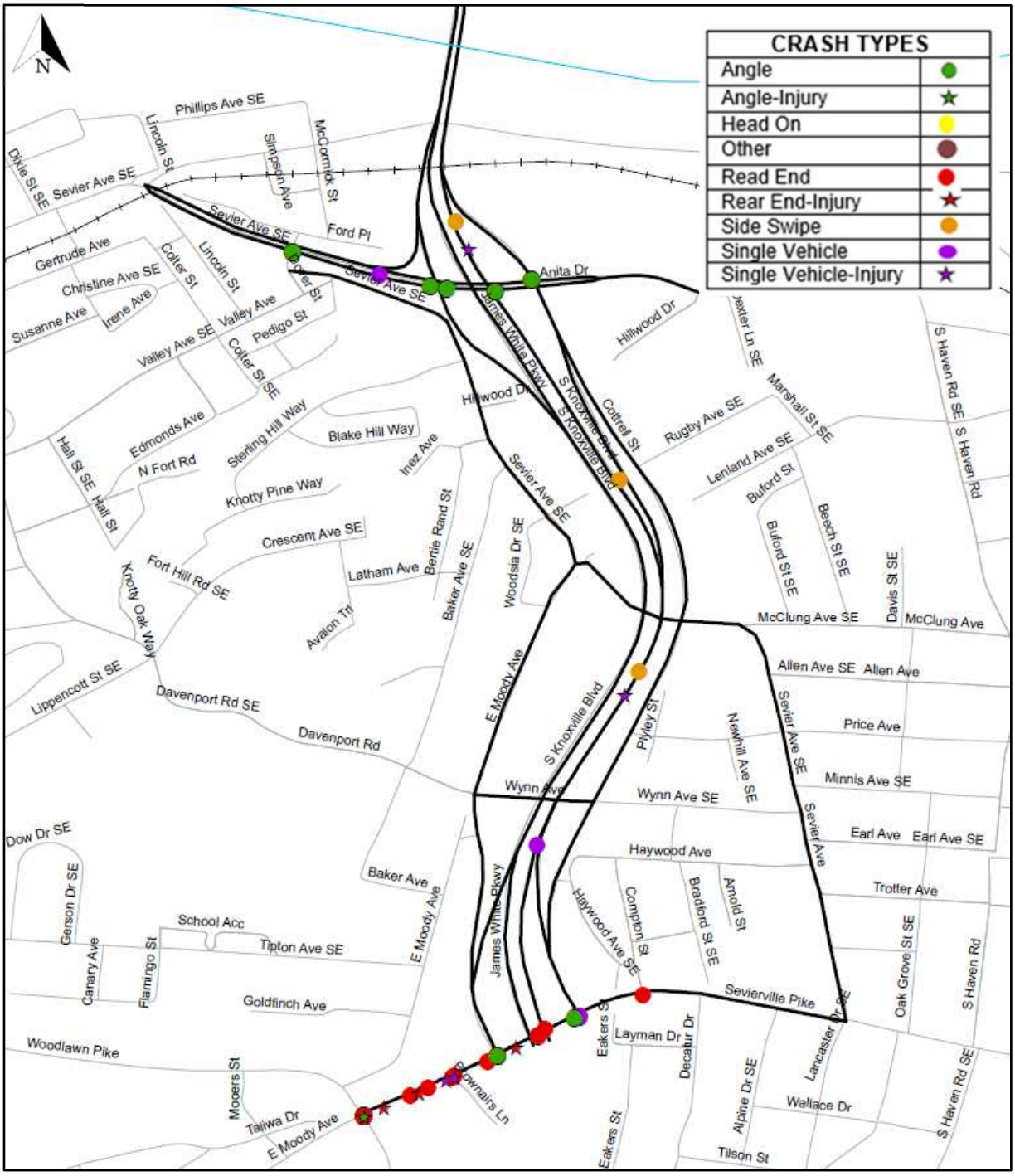

FIGURE 7: JAMES WHITE PARKWAY STUDY AREA, CRASH HISTORY (6/1/17 – 5/31/20)
Source: TITAN Database

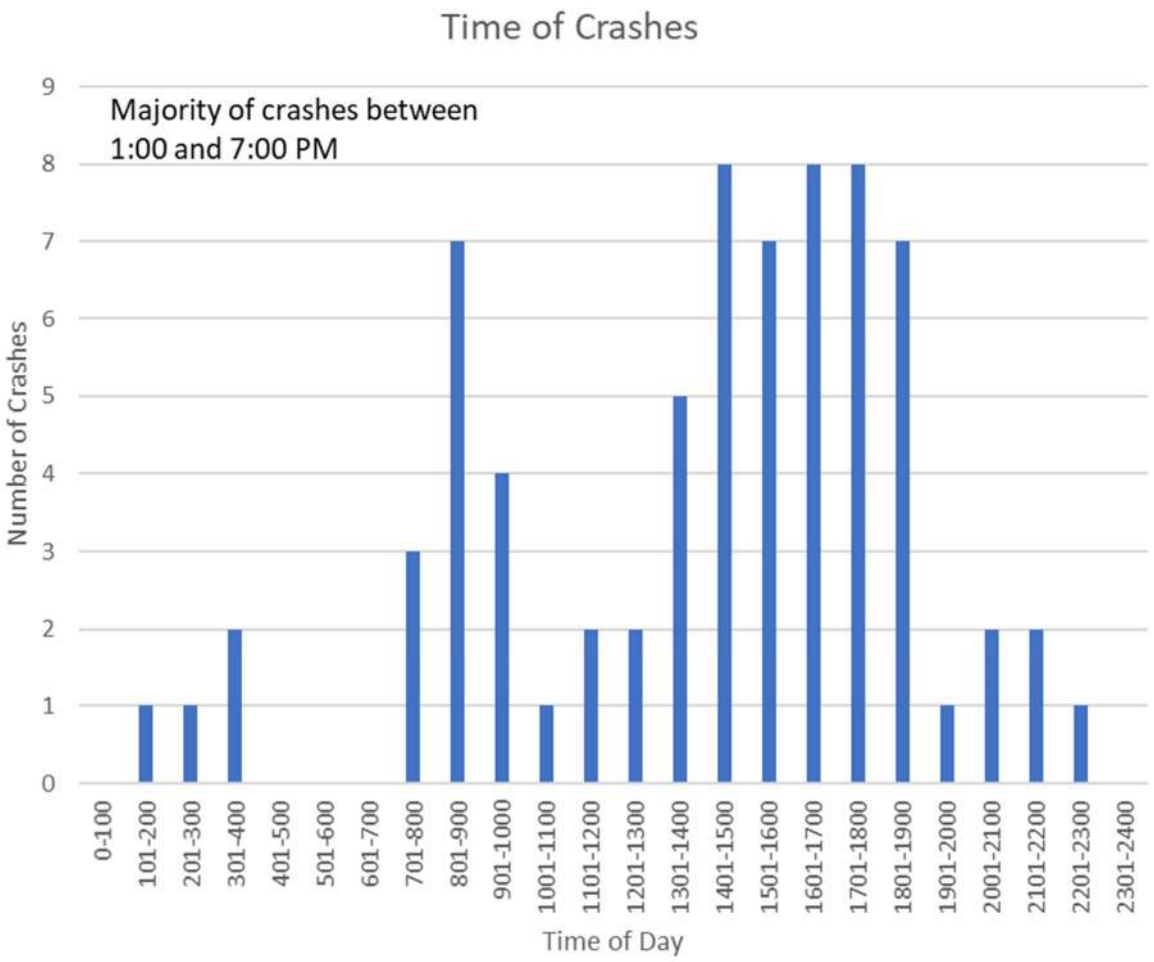

FIGURE 8: JAMES WHITE PARKWAY STUDY AREA, CRASHES BY TIME OF DAY (6/1/17 – 5/31/20)

TABLE 3: JAMES WHITE PARKWAY STUDY AREA, CRASH STATISTICS, TYPE OF CRASHES (6/1/17 – 5/31/20)

Condition	Study Area	
	Number of Crashes	Percentage of Total
	Severity	
Fatal	0	0%
Serious Injury	3	4%
Other Injury	12	17%
PDO	57	79%
	Manner of Collision	
Angle	25	35%
Rear-End	28	39%
Single Car	8	11%
Sideswipe Same Dir.	3	4%
Head-On	1	1%
Rear-to-Rear	6	8%
Unknown	1	1%
	Road Conditions	
Ice	0	0%
Snow	0	0%
Sand/Mud/Dirt	0	0%
Wet	17	24%
Dry	55	76%
	Light Condition	
Daylight	53	74%
Dusk	3	4%
Dark/Lighted	13	18%
Dark/Not Lighted	3	4%
Not Indicated	0	0%
	Crash Location	
Along Roadway	19	26%
At Intersection	53	74%
Total	**72**	

TABLE 4: CRASH STATISTICS (6/1/17 – 5/31/20)- JAMES WHITE PARKWAY STUDY AREA SUMMARY

Route	Begin LM	Description	End LM	Description	Dist.	AADT 2019	Crashes					Actual Rate	Severity Index
							Total	Fatal	Serious Inj.	Other Inj.	PDO		
James White Pkwy	0	Begin	1.1	Island Home Overpass	1.100	14,160	7		2		5	0.410	0.57
Anita Dr	0.815	Sevier Ave/Ford Pl	1.03	James White Pkwy	0.215	5,200	8				8	6.535	0.00
Anita Dr	0.22	Hillwood Drive	0.45	James White Pkwy	0.230	4,000	6			3	3	5.956	0.50
Sevierville Pike	1.002	Woodlawn Pike	1.21	James White Pkwy	0.208	9,780	41		1	9	31	18.406	0.27
Sevierville Pike	0.000	James White Pkwy	0.115	Compton Street	0.115	3,140	10				10	25.291	0.00
	Total:				1.9		72	0	3	12	57		

TABLE 5: CRASH STATISTICS (6/1/17 – 5/31/20)- JAMES WHITE PARKWAY STUDY AREA, NON-INTERSECTIONS

Route	Begin LM	Description	End LM	Description	Dist.	AADT 2019	Crashes					Actual Rate	Severity Index	Statewide Rate	Actual / Statewide	Critical Rate	Actual / Critical
							Total	Fatal	Serious Inj.	Other Inj.	PDO						
James White Pkwy	0	Begin	1.1	Island Home Overpass	1.100	14,160	7		2		5	0.410	0.57	1.681	0.24	2.44	0.17
Anita Dr	0.815	Sevier Ave/Ford Pl	1.03	James White Pkwy	0.215	5,200	2				2	1.634	0.00	3.000	0.54	7.05	0.23
Anita Dr	0.22	Hillwood Drive	0.45	James White Pkwy	0.230	4,000	0				5	0.000	0.00	3.000	0.00	7.51	0.00
Sevierville Pike	1.002	Woodlawn Pike	1.21	James White Pkwy	0.208	9,780	99		1	3	31	4.040	0.56	3.461	1.17	6.59	0.61
Sevierville Pike	0.000	James White Pkwy	0.115	Compton Street	0.115	3,140	1				1	2.529	0.00	3.461	0.73	11.61	0.22

Notes: Statewide average crash rate for similar facilities (Urban Functional Route, Freeway; 2017-2019) is 1.681 crashes per million vehicle miles
Statewide average crash rate for similar facilities (Urban Functional Route, 4-Lane Divided; 2017-2019) is 3.00 crashes per million vehicle miles
Statewide average crash rate for similar facilities (Urban Functional Route, 2-Lane W/TL; 2017-2019) is 3.461 crashes per million vehicle miles

TABLE 6: CRASH STATISTICS (6/1/17 – 5/31/20), JAMES WHITE PARKWAY STUDY AREA, INTERSECTIONS WITH 5 OR MORE CRASHES

ID	LM	Route	Side Road	ADT Mainline		ADT Side Road		Three Year Total		Statewide Rate	Actual/ Statewide	Critical Rate	Actual/ Critical
				West	East	North	South	# Crashes	Rate				
1	0.39	Anita Drive	Cottrell Street	4,000	4,000	2,460	2,460	6	0.85	0.688	1.23	1.48	0.57
2	1.002	Sevierville Pike	Woodlawn Pike	9,780	9,780	2,220	2,220	18	1.37	0.609	2.25	1.15	1.19
3	1.153	Sevierville Pike	James White Parkway SB Ramp	9,780	9,780	14,160		9	0.49	0.609	0.80	1.06	0.46
4	0.048	Sevierville Pike	James White Parkway NB Ramp	9,780	3,140	14,160		8	0.54	0.609	0.89	1.11	0.48

Notes: SW Rate for urban full stop intersections on multi-lane divided facilities (2017-2019): 0.688
SW Rate for urban signalized intersections on two lane facilities with turn lanes (2017-2019): 0.609

3.4 LEVEL OF SERVICE ANALYSIS (NO BUILD ALTERNATIVE)

Figure 9 provides a map of the Study Area. The limits of the study area along James White Parkway will extend from the bridge over the Tennessee River to the north and to Sevierville Pike to the south. In addition, the study area includes Cottrell Street to the east, Sevier Avenue/E. Moody Avenue to the west, and the interchange of James White Parkway at Sevier Avenue / Anita Drive.

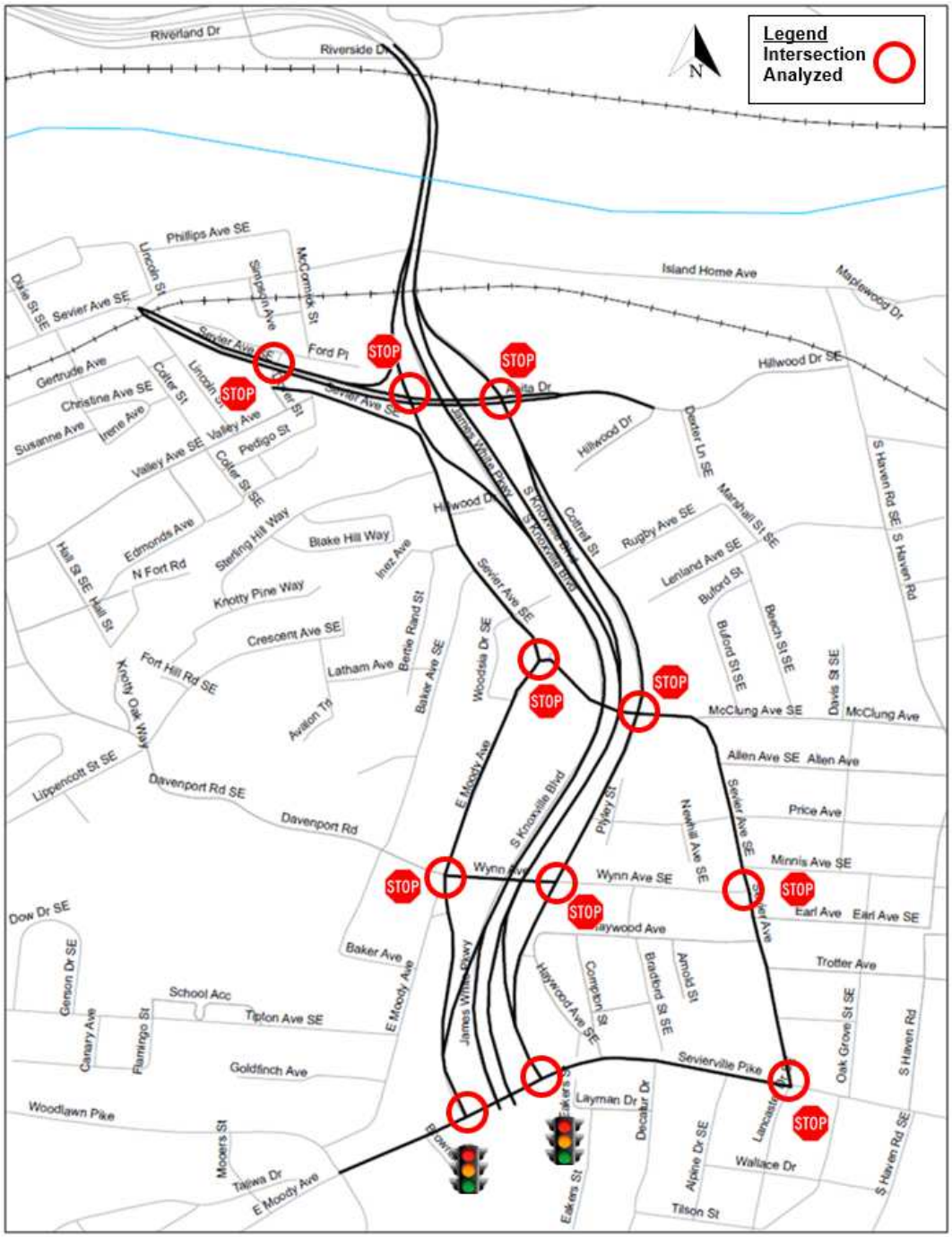

FIGURE 9: JAMES WHITE PARKWAY STUDY INTERSECTIONS

Table 7 through **Table 8** summarizes the traffic analysis. The LOS are reported for the entire intersection and for each approach with the maximum volume to capacity ratio. The years 2020 and 2040 AM and PM Peak Hours were analyzed.

Table 7 summarizes the 2020 No Build Alternative. For all study intersections, the overall LOS is B or better. A few approaches operate at a LOS C, but the delay is less than 22 seconds and is considered to have minimal delay overall. Therefore, under existing conditions, all intersections operate satisfactorily.

Table 8 summarizes the 2040 No Build Alternative. For all study intersections, the overall LOS is C or better with the exception of two study intersections. In the PM peak hour, the Sevierville Pike at James White Parkway Off Ramp intersection operates at a LOS E with the eastbound approach failing at a LOS F. This approach is a single lane with over 900 vehicles in the peak hour. In addition, the Sevierville Pike at Sevier Avenue/Lancaster Drive intersection is an all-way stop intersection that operates at a LOS C in the AM peak hour and a LOS D in the PM peak hour. The higher delay can be associated with the heavy AM westbound movement and heavy PM eastbound movement.

The Traffic Analysis Technical Memorandum is provided in **Appendix D**.

TABLE 7: TRAFFIC ANALYSIS – 2020 NO BUILD ALTERNATIVE

Study Area Intersection	Intersection Control Type	AM						PM					
		Overall Intersection		EB	WB	NB	SB	Overall Intersection		EB	WB	NB	SB
		LOS	Max v/c	LOS				LOS	Max v/c	LOS			
		Delay (s)		*Delay (s)*				*Delay (s)*		*Delay (s)*			
101: Sevier Avenue & Anita Drive	TWSC	A	0.343	A	A	B	C	A	0.285	A	A	B	C
		5.3		*0.4*	*1.9*	*13.5*	*15.9*	*5.4*		*0.1*	*4.2*	*13.9*	*17.4*
102: Anita Drive & James White Parkway SB Ramp	TWSC	A	0.255	A	A	-	B	A	0.306	A	A	-	B
		4.9		*0.0*	*1.3*	*-*	*10.2*	*6.5*		*0.0*	*2.1*	*-*	*10.5*
103: Cottrell Street & Anita Drive	AWSC	B	0.354	B	B	B	-	A	0.273	A	A	A	-
		10.8		*10.6*	*11.0*	*11.0*	*-*	*9.5*		*9.4*	*9.6*	*9.7*	*-*
104: E. Moody Avenue & Sevier Avenue	TWSC	A	0.058	-	A	A	A	A	0.047	-	A	A	A
		4.7		*-*	*9.2*	*0.0*	*3.4*	*5.1*		*-*	*9.3*	*0.0*	*5.0*
105: Cottrell Street & Sevier Avenue	AWSC	A	0.226	A	A	A	-	A	0.122	A	A	A	-
		7.9		*7.9*	*7.8*	*8.0*	*-*	*7.5*		*7.7*	*7.3*	*7.8*	*-*
106: E. Moody Avenue & Davenport Road/Wynn Avenue	AWSC	A	0.143	A	A	A	A	A	0.196	A	A	A	A
		8.0		*7.5*	*8.4*	*7.8*	*8.0*	*7.8*		*7.8*	*7.6*	*7.8*	*7.7*
107: Cottrell Street & Wynn Avenue	TWSC	A	0.107	A	A	A	-	A	0.101	A	A	A	-
		8.0		*9.9*	*9.6*	*0.0*	*-*	*6.8*		*9.6*	*9.2*	*0.0*	*-*
108: Sevier Avenue & Wynn Avenue	TWSC	A	0.059	A	-	A	A	A	0.05	A	-	A	A
		2.3		*9.4*	*-*	*2.0*	*0.0*	*2.4*		*9.2*	*-*	*1.3*	*0.0*
109: Sevierville Pike & James White Pkwy Off-Ramp	Signal	B	0.600	B	A	-	B	B	0.750	C	A	-	B
		13.5		*16.5*	*8.4*	*-*	*11.7*	*17.0*		*21.6*	*9.7*	*-*	*15.0*
110: Sevierville Pike & James White Pkwy Ramps	Signal	A	0.480	A	A	-	-	A	0.390	A	A	-	-
		2.6		*2.1*	*3.3*	*-*	*-*	*1.0*		*0.8*	*1.8*	*-*	*-*
111: Lancaster Drive/Sevier Avenue & Sevierville Pike	AWSC	B	0.502	A	B	A	A	B	0.613	C	B	A	A
		10.9		*9.2*	*12.4*	*9.8*	*8.9*	*12.8*		*15.2*	*10.6*	*9.8*	*9.7*

TABLE 8: TRAFFIC ANALYSIS – 2040 NO BUILD ALTERNATIVE

		AM						PM					
Study Area Intersection	Intersection Control Type	Overall Intersection		EB	WB	NB	SB	Overall Intersection		EB	WB	NB	SB
		LOS	Max v/c	LOS				LOS	Max v/c	LOS			
		Delay (s)		*Delay (s)*				*Delay (s)*		*Delay (s)*			
101: Sevier Avenue & Anita Drive	TWSC	A	0.572	A	A	C	C	A	0.522	A	A	C	D
		7.7		*0.4*	*2.0*	*20.8*	*22.4*	*7.5*		*0.1*	*4.4*	*22.7*	*26.6*
102: Anita Drive & James White Parkway SB Ramp	TWSC	A	0.378	A	A	-	B	A	0.434	A	A	-	B
		5.9		*0.0*	*1.3*	*-*	*12.5*	*8.0*		*0.0*	*2.1*	*-*	*13.1*
103: Cottrell Street & Anita Drive	AWSC	C	0.602	B	C	C	-	B	0.515	B	B	B	-
		15.3		*13.6*	*15.1*	*17.6*	*-*	*12.3*		*13.3*	*10.8*	*11.8*	*-*
104: E. Moody Avenue & Sevier Avenue	TWSC	A	0.082	-	A	A	A	A	0.069	-	A	A	A
		4.8		*-*	*9.6*	*0.0*	*3.4*	*5.2*		*-*	*9.8*	*0.0*	*5.0*
105: Cottrell Street & Sevier Avenue	AWSC	A	0.312	A	A	A	-	A	0.169	A	A	A	-
		8.5		*8.2*	*8.6*	*8.4*	*-*	*7.9*		*8.0*	*7.7*	*8.0*	*-*
106: E. Moody Avenue & Davenport Road/Wynn Avenue	AWSC	A	0.202	A	A	A	A	A	0.273	A	A	A	A
		8.5		*8.0*	*9.0*	*8.4*	*8.5*	*8.3*		*8.5*	*7.9*	*8.2*	*8.1*
107: Cottrell Street & Wynn Avenue	TWSC	A	0.147	B	A	A	-	A	0.141	B	A	A	-
		8.3		*10.4*	*9.9*	*0.0*	*-*	*7.0*		*10.0*	*9.4*	*0.0*	*-*
108: Sevier Avenue & Wynn Avenue	TWSC	A	0.087	A	-	A	A	A	0.072	A	-	A	A
		2.4		*9.9*	*-*	*2.1*	*0.0*	*2.4*		*9.6*	*-*	*1.3*	*0.0*
109: Sevierville Pike & James White Pkwy Off-Ramp	Signal	B	0.81	C	B	-	B	E	1.14	F	B	-	C
		18.9		*24.1*	*15.3*	*-*	*14.1*	*57.3*		*104.1*	*12.0*	*-*	*32.1*
110: Sevierville Pike & James White Pkwy Ramps	Signal	A	0.63	A	B	-	-	A	0.52	A	A	-	-
		9.3		*4.1*	*15.9*	*-*	*-*	*1.8*		*0.9*	*4.8*	*-*	*-*
111: Lancaster Drive/Sevier Avenue & Sevierville Pike	AWSC	C	0.741	B	C	B	B	D	0.918	E	B	B	B
		16.5		*11.0*	*21.5*	*11.9*	*10.4*	*27.3*		*40.2*	*14.6*	*12.0*	*11.9*

3.5 EXISTING MAJOR STRUCTURES AND BRIDGES

Seven (7) structures are located within the project limits. **Table 9** below shows the structural details. All structures were evaluated to be in good condition.

TABLE 9: EXISTING STRUCTURES AND BRIDGES

Route	Crossing	Log Mile	Structure #	Type*	Length (ft) (Max Span (ft))	Sufficiency Rating	Verticle Clearance	Condition
Moody Avenue	James White Parkway	1.20	47000710009	CC	220 (118)	96.80	16' - 00"	Good
Wynn Avenue	James White Parkway	1.01	47000710011	CC	242 (121)	78.40	18' - 02"	Good
James White Parkway	Sevier Avenue	0.53	47000710013	PC	110 (105)	96.00	16' - 09"	Good
James White Parkway	Sevier Avenue	0.53	47000710014	PC	110 (105)	97.00	17' - 03"	Good
Sevier Avenue	James White Parkway	0.43	47000710015	CC	255 (130)	99.00	16' - 08"	Good
Baker Creek	-	-	47000710019	Box Culvert	1 @ 18'	-	-	Good
Baker Creek	-	-	47000710021	Box Culvert	2 @ 8'	-	-	Good
*Note: PC = Prestressed Concrete, CC = Continuous Concrete								

3.6 FIELD REVIEW

A field review was held for the project on December 4, 2020. Representatives from the City of Knoxville, Knoxville-Knox County Planning, TDOT Strategic Transportation Investments Division (STID), and TDOT Region 1 were in attendance. The draft conceptual plans were discussed and reviewed. Documentation of the field review is provided in **Appendix E**.

4.0 PURPOSE AND NEED FOR IMPROVEMENTS

James White Parkway is currently an underutilized four-lane urban freeway that serves only motorists. The purpose of the proposed James White Parkway Corridor Project is to convert the existing facility into a multi-modal gateway linking neighborhoods throughout South Knoxville and Downtown to the Urban Wilderness park system. Excess motorist capacity along James White Parkway will be transitioned to serve bicyclists and pedestrians along an urban parkway corridor. Additional information concerning Knoxville's Urban Wilderness can be found in Section 2.1.1 of this report and on the City's website at https://www.visitknoxville.com/urban-wilderness/ .

The proposed project is needed to fit the City's vision for the Urban Wilderness while maintaining the corridor's viability as an alternate route for Chapman Highway. The proposed project will provide similar capacity as the existing facility while modifying it to a parkway corridor, fitting its urban and residential context. The proposed project will create a destination area for people to travel, enjoy, and spend more time and invest in area businesses. With no future plans to extend the current James White Parkway freeway facility, its current condition would remain as a dead end at Sevierville Avenue.

The proposed project will consolidate the motor vehicle traffic along the southbound side of the corridor and provide pedestrian and bicycle connections on the northbound side. The proposed

project will serve as a multi-modal gateway linking neighborhoods throughout South Knoxville and Downtown to the Urban Wilderness Park.

5.0 PROPOSED ALTERNATIVE

The Proposed Alternative shown on the following pages addresses the purpose and need of the project. The Proposed Alternative accommodates two-way travel on the western portion of James White Parkway and the new access to Urban Wilderness Gateway Park. James White Parkway will be realigned at the southern terminus to provide a direct connection with Sevierville Pike, which will connect to Chapman Highway. This substitutes for the original intent of James White Parkway to connect to Chapman Highway. A clear separation is intended between motor vehicle and pedestrian traffic with the consolidation of the motor vehicle traffic on the existing James White Parkway southbound lanes and a linear park on the existing northbound lanes. Four (4) access points are being removed which include the southbound On-ramp at Anita Drive, the northbound Off-ramp at Anita Drive, the southbound On-Ramp from Moody Avenue and the northbound On-ramp at Sevierville Pike. A new access break location is proposed for the entrance to the park. The net change in access points has been reduced by three (3) but the City will need to work through Excess Land to shift the access break to the new location shown in the functional layouts. In order to reduce potential conflicts with pedestrians and bicyclists, the right turn slip lane on the southbound Off-Ramp at Anita Drive is to be removed and will be realigned with the existing intersection location. Also, motor vehicle traffic entering and exiting the Urban Wilderness Gateway Park parking area will have access to James White Parkway just south of the Wynn Avenue overpass bridge. This proposed intersection will include an acceleration lane to create a two-stage movement for left turning traffic exiting the Urban Wilderness Gateway Park parking area. This intersection may require additional analysis in the future to determine if traffic volumes and/or safety concerns warrant a traffic signal.

The proposed typical section on James White Parkway would consist of two-eleven (11) foot lanes in both northbound and southbound directions, two (2) foot inside shoulders, a four (4) foot raised median, and six (6) foot paved outside shoulders with two (2) foot grass shoulder. The consolidation of both directions of James White Parkway required a reduction in shoulder width to maintain the existing right-of-way through the corridor. The outside shoulder will provide eight (8) foot stabilized shoulder for emergency pull off. The proposed typical has been accepted by the City and TDOT and will require a Design Exception form to be executed during the design phase. The posted speed limit proposed for the corridor is 35 mph.

TYPE	YEAR	COUNTY	FIGURE NO.
TR	2022	KNOX	01

LEGEND:

SCARIFICATION

PROPOSED ACCESS CONTROL FENCE

EXISTING R.O.W.

6' PAVED SHOULDERS

2 11' NORTH BOUND LANES JAMES WHITE PARKWAY

4' RAISED MEDIAN WITH CURB

ANITA DRIVE

MATCH LINE LOG MILE 0.65 SEE FIGURE NO. 2

FUTURE LINEAR PARK

PROVIDE BRIDGE PROTECTION

JAMES WHITE PARKWAY

EXISTING R.O.W.

10' GREENWAY PROPOSED IN CONCURRENT PROJECT

BEGIN PROJECT LOG MILE 1.10

R=1250'

R=1250'

R=900'

R=1250'

R=1250'

R=1250'

SEVIER AVENUE

2' STABILIZED GRASS SHOULDER

6' PAVED SHOULDERS

2 11' SOUTHBOUND LANES JAMES WHITE PARKWAY

ISLAND HOME DRIVE

REMOVE SWEEPING RIGHT TURN AND ADD LANE TO BRING RIGHT TURN TO STOP CONDITION

ANITA DRIVE

0 200' 400' 600'

N

TECHNICAL REPORT

JAMES WHITE PARKWAY
FROM SEVIERVILLE PIKE (L.M. 0.00) TO ISLAND HOME DRIVE (L.M. 1.10)
CITY OF KNOXVILLE

CITY OF KNOXVILLE
DEPARTMENT OF
ENGINEERING

FIGURE 01
JAMES WHITE
PARKWAY
L.M. 1.10 TO L.M. 0.65

5/3/2022 9:58:01 AM
\\global.gsp\data\nf\kn_nf02144860\01Work\01CADUrbanWIld_1.sht

TYPE	YEAR	COUNTY	FIGURE NO.
TR	2022	KNOX	02

LEGEND:

SCARIFICATION

PROPOSED ACCESS CONTROL FENCE

GREENWAY (BY OTHER)

COTTRELL STREET ONE-LANE NORTHBOUND (BY OTHER)

FUTURE LINEAR PARK

2 11' NORTH BOUND LANES JAMES WHITE PARKWAY

4' RAISED MEDIAN WITH CURB

EXISTING R.O.W.

6' PAVED SHOULDERS

2' STABILIZED GRASS SHOULDER

GREENWAY (BY OTHER)

COTTRELL STREET ONE-LANE NORTHBOUND (BY OTHER)

COTTRELL ST.

RELOCATE ACCESS CONTROL FENCE

RELOCATE ACCESS CONTROL FENCE

2' STABILIZED GRASS SHOULDER

JAMES WHITE PARKWAY

SEVIER AVE.

EXISTING R.O.W.

MATCH LINE LOG MILE 0.65 SEE SHEET 1

2 11' SOUTH BOUND LANES JAMES WHITE PARKWAY

WYNN AVE.

MATCH LINE LOG MILE 0.12 SEE FIGURE NO. 3

SEVIER AVENUE

EAST MOODY AVE.

PROVIDE BRIDGE PROTECTION

2' STABILIZED GRASS SHOULDER

6' PAVED SHOULDERS

PROPOSED SLOPE EASEMENT

0 200' 400' 600'

N

TECHNICAL REPORT

JAMES WHITE PARKWAY
FROM SEVIERVILLE PIKE (L.M. 0.00) TO ISLAND HOME DRIVE (L.M. 1.10)
CITY OF KNOXVILLE

CITY OF KNOXVILLE
DEPARTMENT OF ENGINEERING

FIGURE 02
JAMES WHITE PARKWAY
L.M. 0.65 TO L.M. 0.12

2/14/2022 2:32:52 PM
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TYPE	YEAR	COUNTY	FIGURE NO.
TR	2022	KNOX	03

MATCH LINE LOG MILE .12 SEE SHEET 2

PROPOSED ACCEL LANE

STOP

EXISTING R.O.W.

6-30 CURB AND GUTTER

SOUTH BOUND JAMES WHITE PARKWAY

4' RAISED MEDIAN WITH CURB

PROPOSED R.O.W.

PEDESTRIAN BRIDGE

ONLY ONLY

ACCESS CONTROL FENCE

EXISTING BOX CULVERT TO BE REMOVED AND REPLACED WITH STREAM RELOCATION

PROPOSED TUNNEL

PROPOSED R.O.W.

PROPOSED SLOPE EASEMENT

WOODLAWN PIKE

E. MOODY AVE.

6' BIKE LANE

5' SIDEWALK MM-SW-1

2' GRASS STRIP

URBAN WILDERNESS

DOWNTOWN

SEVIERVILLE PIKE

FUTURE LINEAR PARK

COTTRELL ST.

HAYWOOD AVE.

EXISTING R.O.W.

GREENWAY (BY OTHER)

PROPOSED PARKING LOT (BY OTHER)

PROPOSED OVERHEAD YELLOW FLASHING BEACONS

SEVIERVILLE PIKE

END PROJECT LOG MILE 0.00

E. MOODY AVE

PROPOSED GREENWAY (BY OTHER)

LEGEND:

SCARIFICATION

PROPOSED ACCESS CONTROL FENCE

PROPOSED SIGNALIZED INTERSECTION

0 200' 400' 600'

N

TECHNICAL REPORT

JAMES WHITE PARKWAY
FROM SEVIERVILLE PIKE (L.M. 0.00) TO ISLAND HOME DRIVE (L.M. 1.10)
CITY OF KNOXVILLE

CITY OF KNOXVILLE
DEPARTMENT OF ENGINEERING

FIGURE 03
JAMES WHITE PARKWAY
L.M. 0.12 TO L.M. 0.00

2/14/2022 2:37:09 PM
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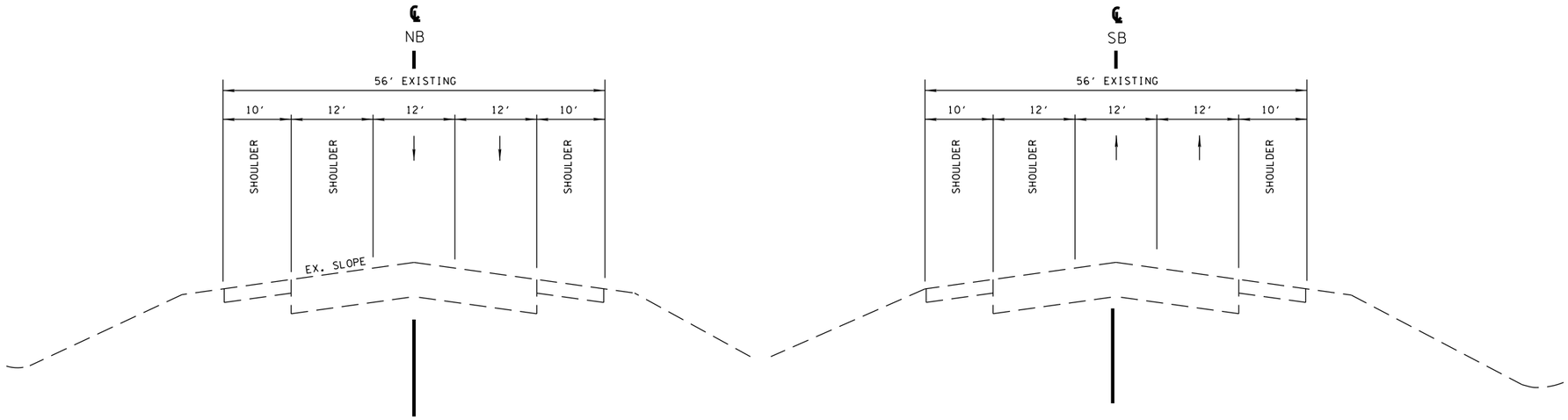
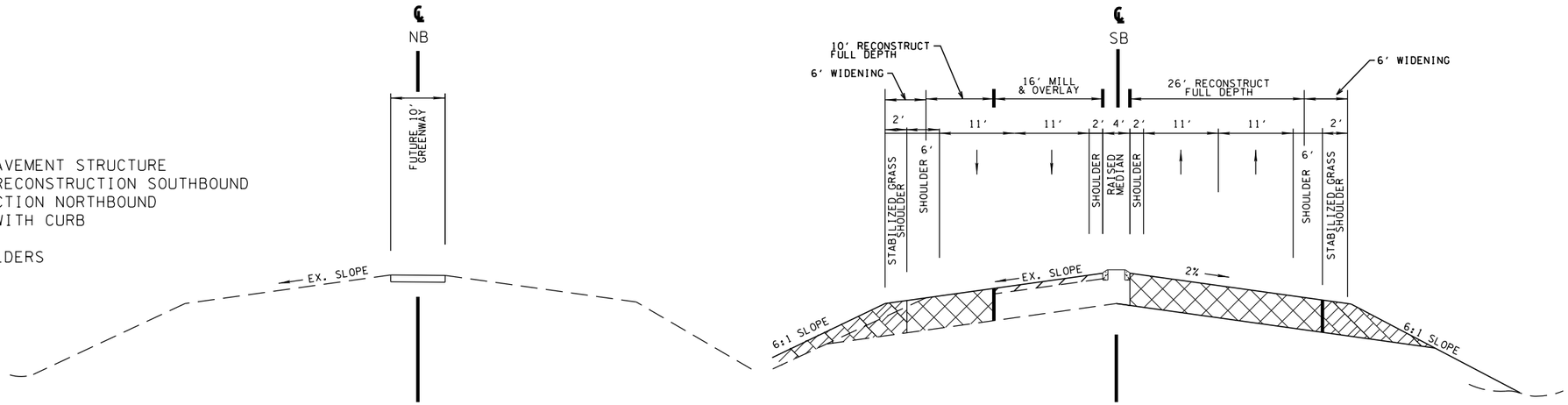
TYPE	YEAR	COUNTY	FIGURE NO.
TR	2020	KNOX	TYP1



EXISTING TANGENT SECTION

- MAINTAINS ORIGINAL 56' PAVEMENT STRUCTURE
- 10' FULL DEPTH SHOULDER RECONSTRUCTION SOUTHBOUND
- 26' FULL DEPTH RECONSTRUCTION NORTHBOUND
- 4' RAISED CENTER MEDIAN WITH CURB
- 6' PAVED SHOULDERS
- 2' STABILIZED GRASS SHOULDERS
- 16' MILL AND OVERLAY



PROPOSED TANGENT SECTION

CONCEPTUAL TYPICAL SECTIONS

CITY OF KNOXVILLE
HOUSING AND NEIGHBORHOOD DEVELOPMENT DEPARTMENT

JAMES WHITE PARKWAY CONCEPTUAL PLANS

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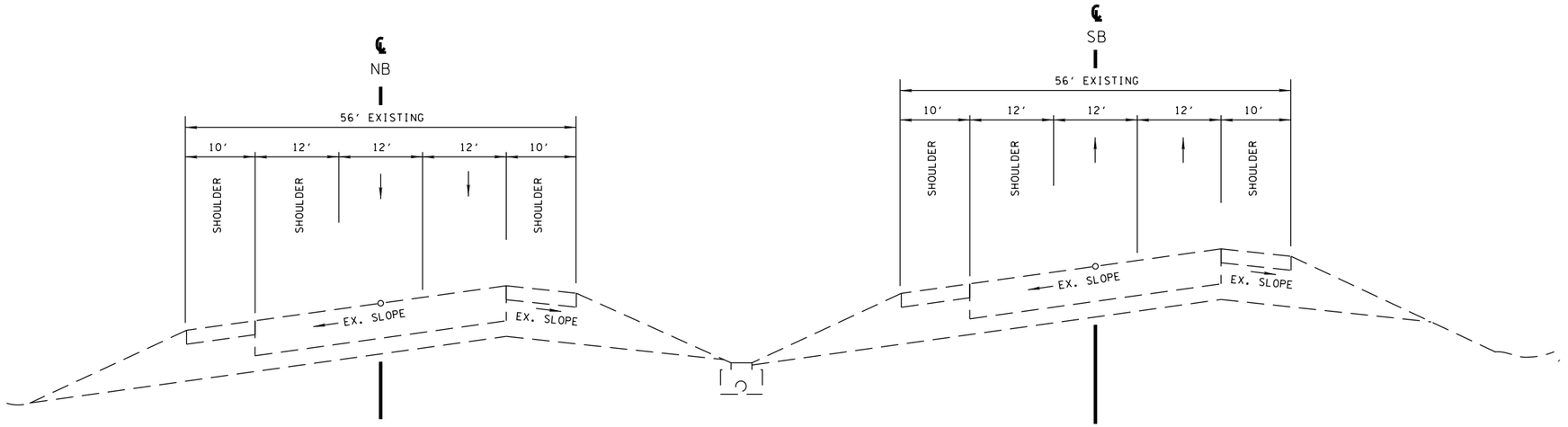
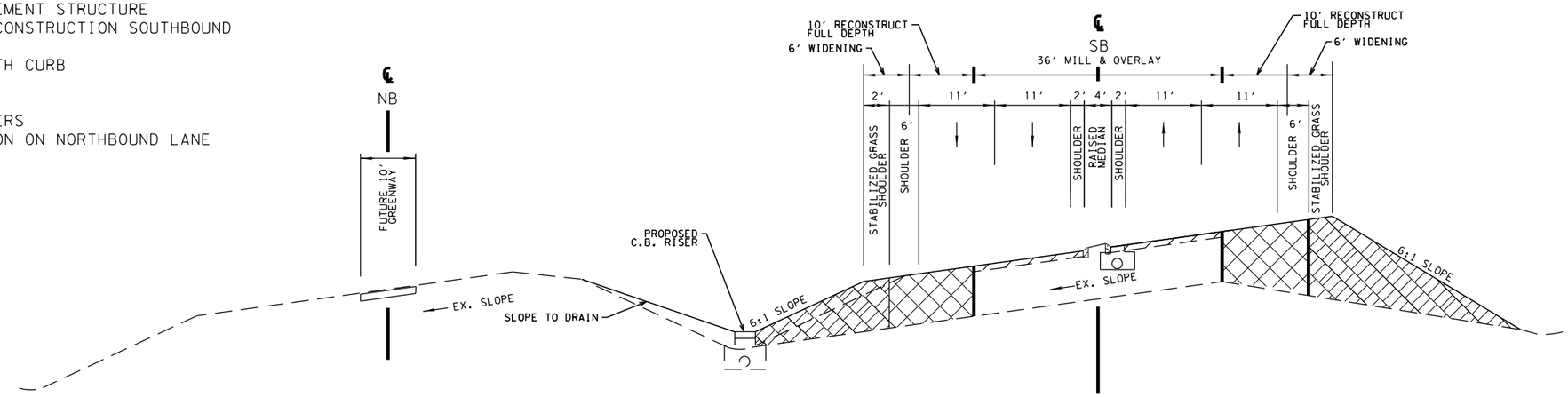
TYPE	YEAR	COUNTY	FIGURE NO.
TR	2020	KNOX	TYP2



EXISTING SUPER ELEVATION SECTION

- MAINTAINS ORIGINAL 56' PAVEMENT STRUCTURE
- 10' FULL DEPTH SHOULDER RECONSTRUCTION SOUTHBOUND AND NORTHBOUND
- 4' RAISED CENTER MEDIAN WITH CURB
- 36' MILL AND OVERLAY
- 6' PAVED SHOULDERS
- 2' STABILIZED GRASS SHOULDERS
- REVERSE CROWN SUPERELEVATION ON NORTHBOUND LANE



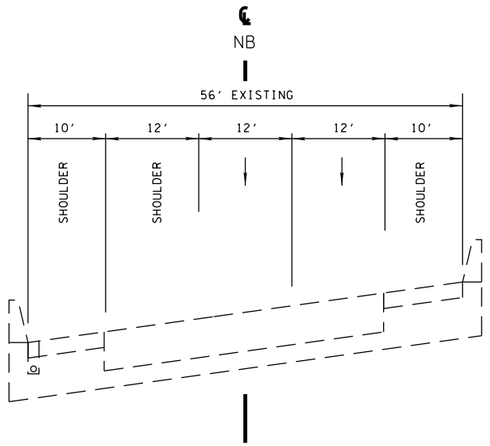
PROPOSED SUPER ELEVATION SECTION

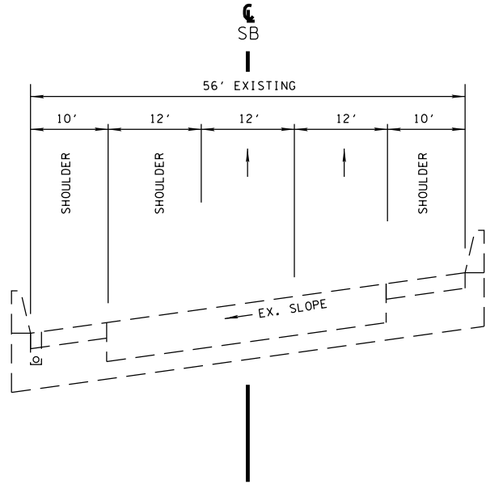
CONCEPTUAL TYPICAL SECTIONS

CITY OF KNOXVILLE
HOUSING AND NEIGHBORHOOD DEVELOPMENT DEPARTMENT

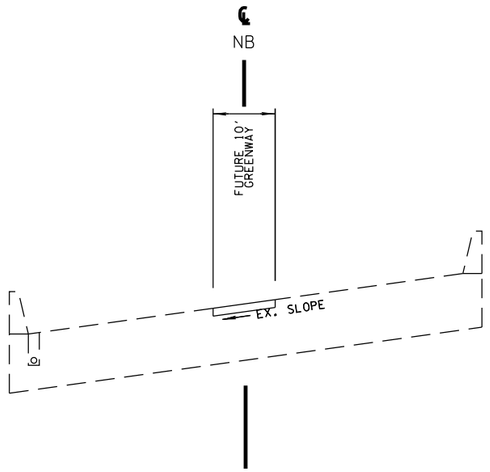
JAMES WHITE PARKWAY CONCEPTUAL PLANS

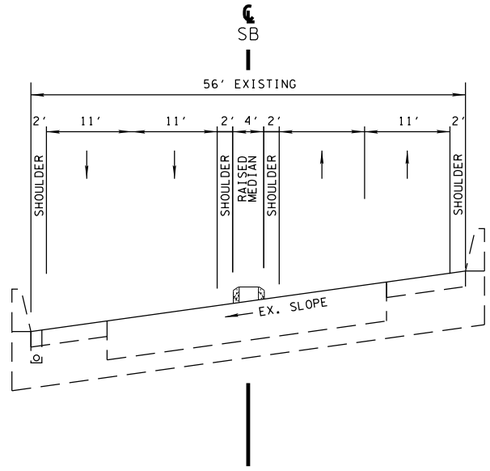
TYPE	YEAR	COUNTY	FIGURE NO.
TR	2020	KNOX	TYP3





EXISTING BRIDGE OVER SEVIER AVENUE TYPICAL SECTION





PROPOSED BRIDGE OVER SEVIER AVENUE TYPICAL SECTION

CONCEPTUAL TYPICAL SECTIONS

CITY OF KNOXVILLE
HOUSING AND NEIGHBORHOOD DEVELOPMENT DEPARTMENT

JAMES WHITE PARKWAY CONCEPTUAL PLANS

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5.1 PROPOSED ALTERNATIVE COST

The estimated planning level cost for construction is $11,200,000, right-of-way (ROW) is $595,000, Utilities is $356,00, and preliminary engineering is $1,030,000 for the Proposed Alternative for a total cost estimate of $13,200,00. See **Appendix A** for detailed itemization of cost estimates and inflated cost estimate summary.

5.2 PROPOSED ALTERNATIVE TRAFFIC ANALYSIS

5.2.1 Projected Traffic Volumes

Section 3.2 details the primary sources utilized in the James White Parkway Urban Wilderness Corridor Study traffic projections. The traffic projections assumed a 1.5 percent annual growth in traffic, consistent with the Knoxville Transportation Planning Organization's Travel Demand Model. The traffic projection calculations for the proposed alternative utilized the balanced No Build volumes to account for two-way travel on the western portion of James White Parkway and the new access to Urban Wilderness Gateway Park at the south end of the corridor and are shown in **Appendix C**.

5.2.2 Level of Service Analysis (Proposed Alternative)

The Proposed Alternative is shown in the conceptual plans in Section 5.0. Traffic analysis was performed in Synchro and HCS. The results are shown in **Table 10** and **Table 11**. The Traffic Analysis Technical Memorandum is provided in **Appendix D**.

TABLE 10: MULTILANE ROADWAY ANALYSIS

	AM		PM	
Travel Direction	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
Northbound	14.5	B	8.9	A
Southbound	7.6	A	15	B

TABLE 11: TRAFFIC ANALYSIS – 2040 PROPOSED ALTERNATIVE

Study Area Intersection	Intersection Control Type	AM						PM					
		Overall Intersection		EB	WB	NB	SB	Overall Intersection		EB	WB	NB	SB
		LOS	Max v/c	LOS				LOS	Max v/c	LOS			
		Delay (s)		*Delay (s)*				*Delay (s)*		*Delay (s)*			
101: Sevier Avenue & Anita Drive	TWSC	A	0.595	A	A	C	C	A	0.544	A	A	C	D
		8.2		*0.4*	*2.3*	*22.3*	*23.7*	*7.9*		*0.1*	*4.7*	*24.3*	*28.4*
102: Anita Drive & James White Parkway SB Ramp	TWSC	A	0.394	A	A	-	B	A	0.401	A	A	-	B
		5.9		*0.0*	*0.0*	*-*	*12.5*	*8.0*		*0.0*	*0.0*	*-*	*12.9*
103: Cottrell Street & Anita Drive	AWSC	C	0.602	B	C	C	-	B	0.515	B	B	B	-
		15.3		*13.6*	*15.1*	*17.6*	*-*	*12.3*		*13.3*	*10.8*	*11.8*	*-*
104: E. Moody Avenue & Sevier Avenue	TWSC	A	0.087	-	A	A	A	A	0.073	-	B	A	A
		4.0		*-*	*9.8*	*0.0*	*2.2*	*4.1*		*-*	*10.1*	*0.0*	*3.4*
105: Cottrell Street & Sevier Avenue	AWSC	A	0.333	A	A	A	-	A	0.172	A	A	A	-
		9.0		*8.6*	*9.2*	*9.0*	*-*	*8.0*		*8.1*	*7.7*	*8.2*	*-*
106: E. Moody Avenue & Davenport Road/Wynn Avenue	AWSC	A	0.253	A	A	A	A	A	0.285	A	A	A	A
		8.9		*8.2*	*9.3*	*8.6*	*9.2*	*8.7*		*8.9*	*8.1*	*8.3*	*8.7*
107: Cottrell Street & Wynn Avenue	TWSC	A	0.037	A	A	A	-	A	0.034	A	A	A	-
		1.0		*3.4*	*0.0*	*0.0*	*-*	*1.5*		*3.2*	*0.0*	*0.0*	*-*
108: Sevier Avenue & Wynn Avenue	TWSC	A	0.134	B	-	A	A	A	0.076	B	-	A	A
		4.4		*11.8*	*-*	*5.7*	*0.0*	*3.5*		*10.2*	*-*	*3.7*	*0.0*
109: Sevierville Pike & James White Pkwy	Signal	C	0.81	-	C	C	B	C	0.83	-	C	C	C
		23.1		*-*	*20.4*	*27.7*	*19.5*	*23.7*		*-*	*30.1*	*21.5*	*23.7*
111: Lancaster Drive/Sevier Avenue & Sevierville Pike	AWSC	C	0.715	B	C	B	B	D	0.918	E	B	B	B
		15.6		*11.0*	*19.7*	*11.8*	*10.4*	*26.8*		*39.6*	*13.9*	*11.9*	*11.8*
112: James White Pkwy/James White Pkwy & Proposed Park Connection	TWSC	A	0.002	-	B	A	A	A	0.007	-	B	A	A
		0.0		*-*	*12.7*	*0.0*	*0.0*	*0.1*		*-*	*10.7*	*0.0*	*0.1*

6.0 ENVIRONMENTAL IMPACTS

The project proposes to utilize the existing roadway network for the improvements along the corridor. The Flood Map shown in **Figure 10** below identifies that the corridor is outside the 100-year flood elevation. A stream runs along the west side of the study corridor on the southern half of the project named Bakers Creek. Any encroachment or disturbance on the stream will require permitting.

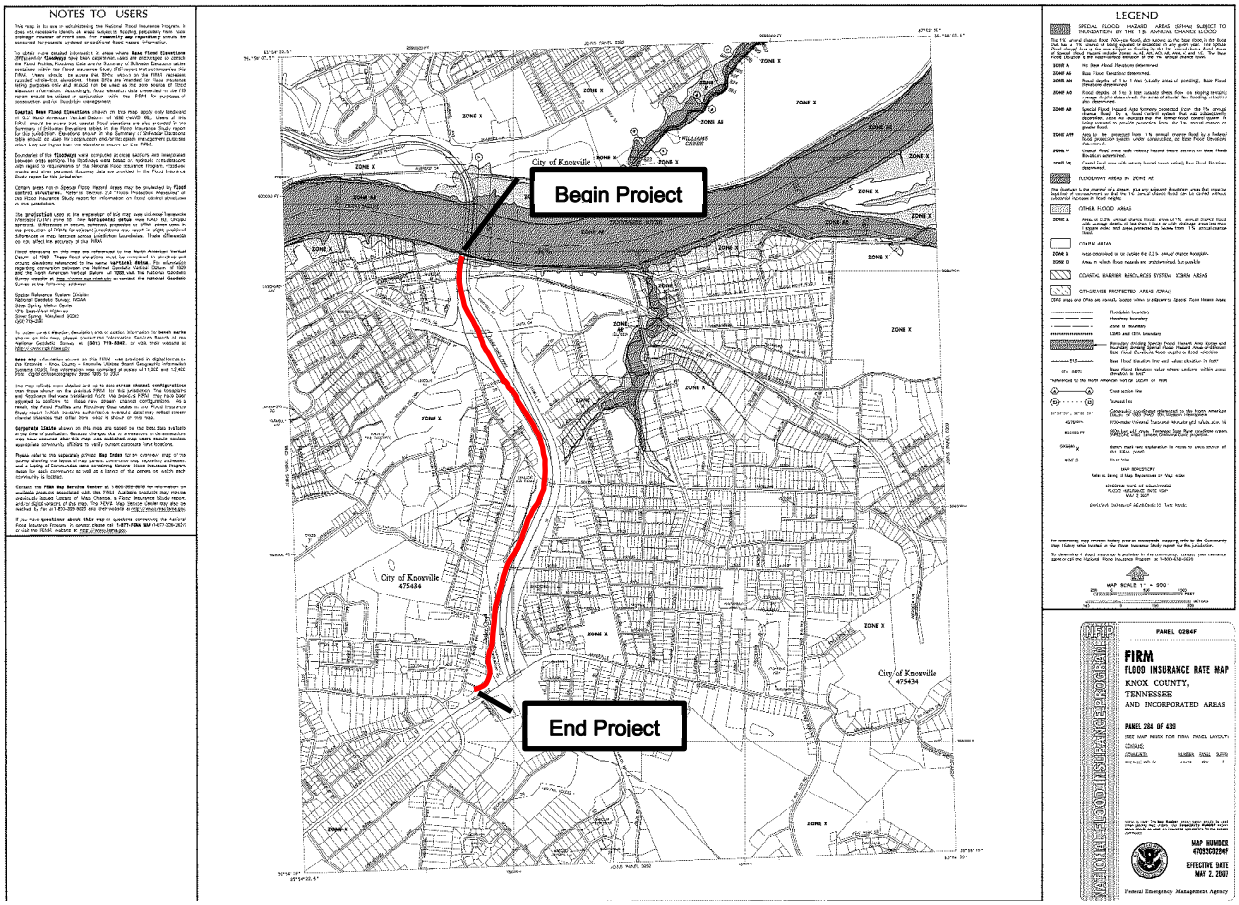


FIGURE 10: FLOOD MAP

7.0 ASSESSMENT OF PROPOSED ALTERNATIVE

7.1 TDOT SEVEN GUIDING PRINCIPLES

1. Preserve and Manage the Existing Transportation System – The proposed project is converting the urban freeway into a local, multimodal corridor that is in context with its surroundings. With the conversion, the roadway will maintain the access control and lane capacity of the existing corridor. James White Parkway will be realigned at the southern terminus to provide a direct connection with Sevierville Pike, which will

connect to Chapman Highway. This substitutes for the original intent of James White Parkway to connect to Chapman Highway.

2. Move a Growing, Diverse, and Active Population – The goal of this project is to reduce the footprint of the motor vehicle traffic to develop a linear park system to promote active transportation within the area.
3. Support the State's Economy – The proposed project goal is to provide similar capacity at the same time modifying the facility to fit its urban, residential, context. The proposed project is creating a destination area for people to travel, enjoy, and spend more time and invest in area businesses.
4. Maximize Safety and Security – Access control will be maintained along the corridor and four (4) access points are being removed. A clear separation is intended between motor vehicle and pedestrian traffic with the consolidation of the motor vehicle traffic on the existing James White Parkway southbound lanes and a linear park on the existing northbound lanes.
5. Build Partnerships for Livable Communities – The proposed project creates an active transportation facility that the existing freeway does not provide.
6. Promote Stewardship for the Environment – The goal of the project is to create a route that travels through a scenic park area. The proposal of grass shoulders on the project was done to limit the amount of asphalt while still providing the safety of shoulders along the corridor.
7. Emphasize Financial Responsibility – The project will reduce the footprint of the corridor and the alternatives proposed are taking measure to utilize the existing infrastructure to maintain a fiscally responsible project.

8.0 SUMMARY

This Technical Report along with its Appendices demonstrate that the proposed project provides an acceptable Level of Service through the design year of 2040 and provides a means for multimodal accommodations for the community. The proposed design alternative appropriately addresses the purpose and need of converting the one-mile segment of James White Parkway between Anita Drive and Sevierville Pike from its existing condition of an urban freeway to a multimodal city street corridor while maintaining safe and efficient travel for all users.

Appendix

Appendix A: Cost Estimate
Appendix B: Technical Memorandum – Exising Traffic Counts
Appendix C: Technical Memorandum – Traffic Data and Projection Summary
Appendix D: Technical Memorandum – Traffic Analysis
Appendix E: Field Review Documentation

APPPENDIX A

Cost Estimate

COST ESTIMATE SUMMARY

Route:	SR 71 - James White Parkway
Termini:	From TN River Bridge to the termini at Sevierville Pike
Scope of Work:	
Project Type of Work:	Widen
County:	Knox
Length:	1.49 Miles
Date:	February 22, 2022
Estimate Type:	Concept

DESCRIPTION		LOCAL	STATE	FEDERAL	TOTAL
		0%	0%	0%	
Construction Items					
Removal Items		$0	$0	$0	$632,000
Asphalt Paving		$0	$0	$0	$1,080,000
Concrete Pavement		$0	$0	$0	$551,000
Drainage		$0	$0	$0	$1,030,000
Appurtenances		$0	$0	$0	$354,000
Structures		$0	$0	$0	$1,720,000
Fencing		$0	$0	$0	$75,500
Signalization & Lighting		$0	$0	$0	$250,000
Railroad Crossing		$0	$0	$0	$0
Earthwork		$0	$0	$0	$973,000
Clearing and Grubbing		$0	$0	$0	$61,000
Seeding & Sodding		$0	$0	$0	$31,700
Rip-Rap or Slope Protection		$0	$0	$0	$112,000
Guardrail		$0	$0	$0	$81,300
Signing		$0	$0	$0	$14,100
Pavement Markings		$0	$0	$0	$18,800
Maintenance of Traffic		$0	$0	$0	$148,000
Mobilization	5%	$0	$0	$0	$357,000
Other Items and Annual Inflation	10%	$0	$0	$0	$749,000
Const. Contingency (Structures Not Included)	30%	$0	$0	$0	$1,960,000
Const. Eng. & Inspec.	10%	$0	$0	$0	$1,020,000
Construction Estimate		$0	$0	$0	$11,200,000
Interchanges & Unique Intersections					
Roundabouts		$0	$0	$0	$0
Interchanges		$0	$0	$0	$0
Right-of-Way & Utilties		LOCAL	STATE	FEDERAL	TOTAL
		0%	0%	0%	
Right-of-Way		$0	$0	$0	$595,000
Utilities		$0	$0	$0	$356,000
Preliminary Engineering		LOCAL	STATE	FEDERAL	TOTAL
		0%	0%	0%	
Prelim. Eng.	9.1%	$0	$0	$0	$1,030,000
Total Project Cost (2021)		$ -	$ -	$ -	$ 13,200,000

COST ESTIMATE TOOL - 2021

STRATEGIC TRANSPORT

Project Cost Summary

Description	Estimate	Contingency
Construction:	$ 11,200,000	30%
Right-of-Way:	$ 595,000	
Utility Relocation:	$ 356,000	
Interchanges & Roundabouts:	$ -	
Preliminary Engineering:	$ 1,030,000	
Construction Engineering:	$ 1,020,000	10%
Total Estimated Project Cost:	$ 13,200,000	

Additional Specifications

Graded Solid Rock:	Moderate
Number of Traffic Signals:	
Length of ITS Installation:	
Include Tool Generated Guardrail Quantities?	Yes

Notifications

Roadway:	No Errors
Median:	No Errors
Right-of-Way:	No Errors
Contingency:	Default
General:	No Errors

Construction Estimate

Category	Cost	Contribution
Pavement Removal	$ 632,000	8.86%
Asphalt Paving	$ 1,080,000	15.14%
Concrete Pavement	$ 551,000	7.73%
Drainage	$ 1,030,000	14.44%
Appurtenances	$ 354,000	4.96%
Structures	$ 1,720,000	24.12%
Fencing	$ 75,500	1.06%
Signalization	$ 250,000	3.51%
RR X or Seperation	$ -	0.00%
Earthwork	$ 973,000	13.64%
Clear & Grub	$ 61,000	0.86%
Seeding & Sodding	$ 31,700	0.44%
Rip-Rap or Slope Prot.	$ 112,000	1.57%
Guardrail	$ 81,300	1.14%
Signing	$ 14,100	0.20%
Pavement Markings	$ 18,800	0.26%
Maint. of Traffic	$ 148,000	2.08%
Mobilization (5%)	$ 357,000	
Other Items (25%)	$ 749,000	
Contingency	$ 1,960,000	
Total:	$ 11,200,000	

Pavement Calculator

Area (SQFT):

TRAVELED-WAY

415-01.02	COLD PLANE	SqYd =	0.0
Item #	**Description**	**Thickness (in)**	**Tons**
411-03.10	"D" mix	6	0.0
403-01	1st Layer - Tack	N/A	0.0
307-02.08	"BM-2" mix	2	0.0
403-01	2nd Layer - Tack	N/A	0.0
307-02.01	"A" mix	3.5	0.0
403-01	3rd Layer - Tack	N/A	0.0
307-02.21	GR "A-S" Mix	3	0.0
402-01	Prime Coat	N/A	0.0
402-02	Agg. Cover	N/A	0.0
303-01	Base Stone	6	0.0

<- Resurfacing
<- Resurfacing
<- Resurfacing

SHOULDERS

Area (SQFT):

Item #	Description	Thickness	Tons
411-01	"E" mix	1.5	0.0
403-01	Tack	N/A	0.0
307-02.08	"BM-2" mix	2	0.0
402-01	Prime Coat	N/A	0.0
402-02	Agg. Cover	N/A	0.0
303-01	Base Stone	20.25	0.0

Project Location and Termini

Location Information

Route:	SR 71 - James White Parkway	Project Begin (mi):	0.000
County:	Knox		
Unit Prices:	Statewide	Project End (mi):	1.489
PIN:	129840.00		

ROADWAY DESIGN

INPUT ROAD SEGMENT CHARACTERISTICS

PAVEMENT

Construction Estimate: $ 11,200,000
Total Estimated Project Cost: $ 13,200,000
How Many Segments (1-30)? 7

ROADSIDE DESIGN

Sidewalk Width (ft): 6
Grass Strip Width (ft): 2.5

Segment	Begin (mi)	End (mi)	Pavement Design (ft)	Proposed Full Depth Pavement Width (ft)	Outside Shldr Width (ft)	Existing Pavement Width	Replace Existing Full Depth Pavement?	Rural or Urban Drainage	Urban Drainage on one side or both?	Sidewalk on One Side or Both Sides	Terrain Type	Widen to One Side or Both?	Foreslope H:V Rate
1	0.000	0.161	Arterial	44	0	0	No	Urban/C&G	Both Sides	None	Mountainous	Both Sides	3H:1V
2	0.161	0.691	Arterial	44	6	56	No	Rural/Ditch	Both Sides	None	Flat	Both Sides	6H:1V
3	0.691	1.202	Arterial	44	6	56	Yes	Rural/Ditch	Both Sides	None	Flat	Both Sides	6H:1V
4	1.202	1.259	Concrete	16	8	16	No	Rural/Ditch	Both Sides	None	Flat	One Side	6H:1V
5	1.259	1.309	Local	56	0	56	Yes	Urban/C&G	Both Sides	Both Sides	Rolling	Both Sides	4H:1V
6	1.309	1.389	Local	24	0	24	Yes	Urban/C&G	Both Sides	Both Sides	Rolling	Both Sides	4H:1V
7	1.389	1.489	Local	24	2	0	No	Rural/Ditch	Both Sides	None	Flat	Both Sides	6H:1V

te - Last Segment

MEDIAN INPUTS

How Many Segments (1-20)? 1

Segments	Begin (mi)	End (mi)	Median Type	# Travel Lanes in Each Direction	Terrain Type	Inside Shldr. Width (ft)	Interior Width (ft)
1	0.000	1.142	Raised Median (RD11-TS-6)	2	Flat	0	14

Pavement Removal

AREA OF PAVEMENT REMOVAL (SF)	
Asphalt:	
Concrete:	

Concrete Islands

Total Concrete Island Area (SF)	
SQFT:	14000

Terrain Assumptions

Terrain Type	Cut/Fill Depth	Foreslope Rate
Flat (1 - 3ft):	3.0	6H:1V
Rolling (4 - 7 ft):	5.0	4H:1V
Mountainous (8 - 11 ft):	9.0	3H:1V
Heavy Moutainous (12 - 25 ft):	16.0	2H:1V

Shared Use Path

Terrain Type	Length (mi)	Grass Strip Width (ft)	Pav Width (8 - 12 ft)
Flat :			
Rolling:			
Mountainous:			
Heavy Mountainous:			

BRIDGES AND STRUCTURES

Structure Removal

How Many (1-20)?			2
Number	Length	Width	Type
1	152.0	10.0	Box
2	320.0	17.0	Box

New Structures

How Many (1-20)?				3
Number	Length	Width	Type	Feature Crossed / No Spans
1	170.0	10.0	Box	
2	320.0	18.0	Box	
3	120.0	16.0	Steel	

Structure Rehabiltation & Widenings

How Many (1-20)?					1
Number	Length (ft)	Width (ft)	Type	Add'l Width	Bridge Location
1					

Retaining Walls

Average Height:	6
Total Length:	250

RIGHT-OF-WAY AND UTILTIES

Utility Relocation

Overhead	
Distribution (mi):	
Transmission (mi):	
Underground	
Power (mi):	
Water (mi):	0.15
Gas (mi):	
Comm. (mi):	
Sewer (mi):	0.15

Additional ROW & Utilities Cost

Right-of-Way:	
Utilities:	

Right-of-Way Properties

Enter Segments (1-20):					6
Segments	Begin	End	Land Use	Existing Width	Proposed Width (ft)
1	0.000	0.161	Resdential	200	230
2	0.161	0.691	Resdential	420	420
3	0.691	1.202	Resdential	420	420
4	1.202	1.259	Resdential	420	420
5	1.259	1.309	Resdential	420	420
6	1.309	1.389	Resdential	50	52

PAY ITEM SUMMARY

TDOT PAY ITEM	TDOT DESCRIPTION	UNIT	TOOL QUANTITIES	ADDITIONAL QUANTITIES	TOOL QUANTITIES + ADDITIONAL QUANTITIES	Statewide UNIT COST	TOTAL COST
							<-- Unit Cost Trends with Quantities
Pavment Removal							
202-03.01	REMOVAL OF ASPHALT PAVEMENT	SY	15960	31700	47660	$ 11.50	$ 548,091.67
202-08.15	REMOVAL OF CURB AND GUTTER	LF		2400	2400	$ 3.38	$ 8,112.00
415-01.02	COLD PLANING BITUMINOUS PAVEMENT	SY	13681	15798	29479	$ 2.57	$ 75,848.37
						PAVEMENT REMOVAL TOTAL (ROUNDED)	$ 632,100
Asphalt Roads							
303-01	MINERAL AGGREGATE, TYPE A BASE, GRADING D	TON	22934		22934	$ 26.00	$ 596,331.08
307-(01, 02, 03).01	ASPHALT CONCRETE MIX (All Grades) (BPMB-HM) GRADING A	TON	721		721	$ 97.33	$ 70,132.04
307-(01 & 02 & 03).08	ASPHALT CONCRETE MIX (ALL GRADES) (BPMB-HM) GRADING B-M2	TON	1327		1327	$ 119.53	$ 158,572.78
402-01	BITUMINOUS MATERIAL FOR PRIME COAT (PC)	TON	16		16	$ 807.84	$ 13,138.53
402-02	AGGREGATE FOR COVER MATERIAL (PC)	TON	59		59	$ 59.35	$ 3,483.66
403-01	BITUMINOUS MATERIAL FOR TACK COAT (TC)	TON	10		10	$ 747.73	$ 7,653.07
411-01.07	ACS MIX (PG64-22) GRADING E SHOULDER	TON	610		610	$ 113.54	$ 69,232.95
411-(01 & 02 & 03).10	ACS MIX(ALL GRADES) GRADING D	TON	1284		1284	$ 127.54	$ 163,707.76
						PAVING TOTAL (ROUNDED)	$ 1,082,300
Concrete Roads							
313-03	TREATED PERMEABLE BASE	SY	1070		1070	$ 30.22	$ 32,334.12
501-01.03	PORTLAND CEMENT CONCRETE PAVEMENT (PLAIN) 10"	SY	535		535	$ 108.57	$ 58,089.29
604-01.01	CLASS A CONCRETE (ROADWAY)	CY	778		778	$ 591.74	$ 460,242.22
						CONCRETE RAMPS AND ROADWAYS TOTAL (ROUNDED)	$ 550,700
Drainage							
209-02.05	12" TEMPORARY SLOPE DRAIN	LF		200	200	$ 11.77	$ 2,354.00
209-05	SEDIMENT REMOVAL	CY		300	300	$ 7.60	$ 2,280.00
209-08.02	TEMPORARY SILT FENCE (WITH BACKING)	LF		3500	3500	$ 3.52	$ 12,320.00
209-08.03	TEMPORARY SILT FENCE (WITHOUT BACKING)	LF		8500	8500	$ 1.10	$ 9,350.00
209-08.07	ROCK CHECK DAM PER	EACH		5	5	$ 186.64	$ 933.20
209-08.08	ENHANCED ROCK CHECK DAM	EACH		5	5	$ 492.59	$ 2,462.95
209-09.03	SEDIMENT FILTER BAG (15' X 15')	EACH		10	10	$ 472.59	$ 4,725.90
209-09.43	CURB INLET PROTECTION (TYPE 4)	EACH		15	15	$ 154.77	$ 2,321.55
209-40.33	CATCH BASIN PROTECTION (TYPE D)	EACH		20	20	$ 237.16	$ 4,743.20
209-65.01	TEMPORARY STREAM DIVERSION (DESCRIPTION)	LS		4	4	$ 34,600.00	$ 138,400.00
209-65.02	TEMPORARY STREAM DIVERSION (DESCRIPTION)	LS		4	4	$ 15,000.00	$ 60,000.00
607-05.02	24" CONCRETE PIPE CULVERT (CLASS III)	LF	5447		5447	$ 86.55	$ 471,429.25
611-07.01	CLASS A CONCRETE (PIPE ENDWALLS)	CY	39		39	$ 1,425.66	$ 54,995.83
611-07.02	STEEL BAR REINFORCEMENT (PIPE ENDWALLS)	LB	3666		3666	$ 3.12	$ 11,432.28
611-12.02	CATCH BASINS, TYPE 12, > 4' - 8' DEPTH	EA	11	6	17	$ 4,727.84	$ 81,322.50
611-14.02	CATCH BASINS, TYPE 14, > 4' - 8' DEPTH	EA	1		1	$ 8,964.99	$ 5,160.12
611-42.02	CATCH BASINS, TYPE 42, > 4' - 8' DEPTH	EA	0	10	10	$ 5,541.90	$ 56,868.95
621-03.02	18" TEMPORARY DRAINAGE PIPE	LF		200	200	$ 34.12	$ 6,824.00
710-02	Aggregate Underdrains (with pipe)	LF	14050		14050	$ 7.10	$ 99,715.12
740-11.03	TEMPORARY SEDIMENT TUBE 18IN (18 IN)	LF		1200	1200	$ 3.43	$ 4,116.00
						DRAINAGE TOTAL (ROUNDED)	$ 1,031,800
Appurtenances							
701-01.01	CONCRETE SIDEWALK (4 ")	SF	8237		8237	$ 7.30	$ 60,097.82
701-02.03	CONCRETE CURB RAMP	SF		720	720	$ 13.01	$ 9,367.20
702-01.02	CONCRETE CURB	LF		10500	10500	$ 20.77	$ 218,085.00
702-03	CONCRETE COMBINED CURB & GUTTER	CY	460	-300	160	$ 413.61	$ 66,359.89
						ROADWAY AND PAVEMENT APPURTENANCES TOTAL (ROUNDED)	$ 354,000
Earthwork & Mineral							
105-01	CONSTRUCTION STAKES, LINES AND GRADES	LS	1		1	$ 93,658.10	$ 93,658.10
203-01	ROAD & DRAINAGE EXCAVATION (UNCLASSIFIED)	CY	49701		49701	$ 11.29	$ 561,010.29
203-02.01	BORROW EXCAVATION (GRADED SOLID ROCK)	TON	6213		6213	$ 32.33	$ 200,852.81

PAY ITEM SUMMARY

203-03	BORROW EXCAVATION (UNCLASSIFIED)	CY	9319		9319	$ 12.56	$ 117,033.98
						EARTHWORK & MINERAL TOTAL (ROUNDED)	$ 972,600
Structures							
N/A	Removal of Bridge	SF	6960		6960	$ 20.00	$ 139,200.00
N/A	New Bridge (Box):	SF	7460		7460	$ 126.00	$ 939,960.00
N/A	New Bridge (Steel Girder):	SF	1920		1920	$ 250.00	$ 480,000.00
604-07.01	RETAINING WALL	SF	1500		1500	$ 109.37	$ 164,057.83
						STRUCTURES TOTAL (ROUNDED)	$ 1,723,300
Interchanges and Unique Intersections							
						INTERCHANGES AND UNIQUE INTERSECTIONS TOTAL (ROUNDED)	$ -
Lighting & Signalization							
N/A	Traffic Signal	EA	0	1	1	$ 250,000.00	$ 250,000.00
						LIGHTING & SIGNALIZATION TOTAL (ROUNDED)	$ 250,000
Guardrail							
705-01.01	GUARDRAIL AT BRIDGE ENDS	LF	300		300	$ 66.52	$ 19,955.52
705-06.01	W Beam GR (Type 2) Mash TL3	LF	562	400	962.32	$ 20.07	$ 19,313.76
705-06.20	Tangent Energy Absorbing Term Mash TL-3	EA	16		16	$ 2,626.00	$ 42,016.00
						GUARDRAIL TOTAL (ROUNDED)	$ 81,300
Seeding and Sodding							
801-01	SEEDING (WITH MULCH)	UNIT	553		553	$ 27.26	$ 15,082.36
801-01.07	TEMPORARY SEEDING (WITH MULCH)	UNIT	415		415	$ 22.31	$ 9,257.72
801-02	SEEDING (WITHOUT MULCH)	UNIT	415		415	$ 17.70	$ 7,344.77
						SODDING TOTAL (ROUNDED)	$ 31,700
Maintenace of Traffic							
N/A	Traffic Control	LS	1		1		$ 114,478.32
712-02.02	INTERCONNECTED PORTABLE BARRIER RAIL	LF	393	700	1093	$ 30.18	$ 32,989.64
						MAINTENANCE OF TRAFFIC TOTAL (ROUNDED)	$ 147,500
Signs							
713-99.91	Signs	LS		1	1	$ 7,100.00	$ 7,100.00
Not Listed	Signs (Construction)	LS	1		1	$ -	$ 7,000
						SIGNING TOTAL (ROUNDED)	$ 14,100
Pavement Markings							
716-02.03	Plastic Pavement Marking (Cross-Walk)	LF		115	115	$ 9.81	$ 1,128.15
716-02.05	Plastic Pavement Marking (Stop Line)	LF		65	65	$ 11.37	$ 739.05
716-02.06	Plastic Pavement Marking (Turn Lane Arrow)	EA		7	7	$ 138.38	$ 968.66
716-03.01	Plastic Word Pavement Marking (Only)	EA		6	6	$ 207.32	$ 1,243.92
716-03.05	Plastic Word Pavement Marking (Bike Lane)	EA		7	7	$ 177.88	$ 1,245.16
716-04.05	Plastic Pavement Marking (Straight Arrow)	EA		3	3	$ 62.10	$ 186.30
716-13.06	Spray Thermo P.M. (40 mil 4")	LM	6.0	2	8.0	$ 1,654.23	$ 13,235.80
						PAVEMENT MARKINGS TOTAL (ROUNDED)	$ 18,800
Fencing							
707-01.11	Chain Link Fence (6 Foot)	LF		6000	6000	$ 10.03	$ 60,180.00
707-01.12	End & Corner Post ASM(CL Fence 6')	EA		40	40	$ 165.92	$ 6,636.80
707-01.13	Gate -CL Fence-6 Foot	EA		2	2	$ 1,411.20	$ 2,822.40
707-08.11	High Visibility Construction Fence	LF		3500	3500	$ 1.67	$ 5,845.00
						FENCE TOTAL (ROUNDED)	$ 75,500.00
Rip-Rap							
709-05.05	Machined Rip-Rap (Class A-3)	TON	2400		2400	$ 39.85	$ 95,640.00
709-05.08	Machined Rip-Rap (Class B)	TON		300	300	$ 31.09	$ 9,327.00
709-05.09	Machined Rip-Rap (Class C)	TON		200	200	$ 33.59	$ 6,718.00
						RIP-RAP & SLOPE PROTECTION TOTAL (ROUNDED)	$ 111,700.00

Clearing and Grubing

PAY ITEM SUMMARY

201-01	Clearing and Grubbing	LS		1	1	$ 60,931.51	$ 60,931.51
						CLEAR AND GRUBBING TOTAL (ROUNDED)	$ 61,000.00
Railroad At-Grade Crossing							
						RAILROAD CROSSING OR SEPARATION TOTAL (ROUNDED)	$ -
Utilties							
N/A	Underground Water	LM	0.15		0.15	$ 700,000	$ 105,000
N/A	Underground Sewer	LM	0.15		0.15	$ 1,670,000	$ 250,500
						UTILITIES TOTAL (ROUNDED)	$ 355,500.00
Right-of-Way							
N/A	Right-of-Way	LS	1	2	3	$ 198,163.64	$ 594,490.91
						RIGHT-OF-WAY TOTAL (ROUNDED)	$ 594,500.00

COST ESTIMATE SUMMARY (2021)						
PIN	Project Type of Work	Preliminary Engineering:	Right-of-Way:	Utilities:	Construction:	Total Project Cost (2021):
129840.00	Widen	$ 1,030,000	$ 595,000	$ 356,000	$ 11,200,000	$ 13,200,000

INFLATED COST ESTIMATE SUMMARY					Report Type:	Technical Report
No. of Years	Year	Preliminary Engineering:	Right-of-Way:	Utilities:	Construction:	Total Inflated Project Cost
1	2023	$ 1,080,000	$ 625,000	$ 374,000	$ 11,800,000	$ 13,900,000
2	2024	$ 1,140,000	$ 656,000	$ 392,000	$ 12,300,000	$ 14,600,000
3	2025	$ 1,190,000	$ 689,000	$ 412,000	$ 13,000,000	$ 15,300,000
4	2026	$ 1,250,000	$ 723,000	$ 433,000	$ 13,600,000	$ 16,000,000
5	2027	$ 1,310,000	$ 759,000	$ 454,000	$ 14,300,000	$ 16,800,000
6	2028	$ 1,380,000	$ 797,000	$ 477,000	$ 15,000,000	$ 17,700,000
7	2029	$ 1,450,000	$ 837,000	$ 501,000	$ 15,800,000	$ 18,600,000
8	2030	$ 1,520,000	$ 879,000	$ 526,000	$ 16,500,000	$ 19,500,000
9	2031	$ 1,600,000	$ 923,000	$ 552,000	$ 17,400,000	$ 20,500,000
10	2032	$ 1,680,000	$ 969,000	$ 580,000	$ 18,200,000	$ 21,500,000

INFLATION INPUTS	
Inflation Rate:	5.00%

APPPENDIX B

Technical Memorandum – Exising Traffic Counts

TECHNICAL MEMORANDUM

James White Parkway Urban Wilderness Corridor Study
Existing Traffic Counts

INTRODUCTION

As a part of the City of Knoxville's James White Parkway Urban Wilderness corridor study, Gresham Smith is tasked with assisting the City of Knoxville in evaluating the transportation corridor adjacent to James White Parkway south of the Tennessee River and developing a Transportation Investment Report (TIR) for TDOT review.

Due to the current Covid-19 situation, the existing traffic patterns on James White Parkway and adjacent roadways are anticipated to be low and different compared to the actual demand. The required traffic counts along the study area were obtained from the previous studies performed in the last three years. These counts are proposed to have better representation of the actual travel demand within the study area than any that could be currently collected.

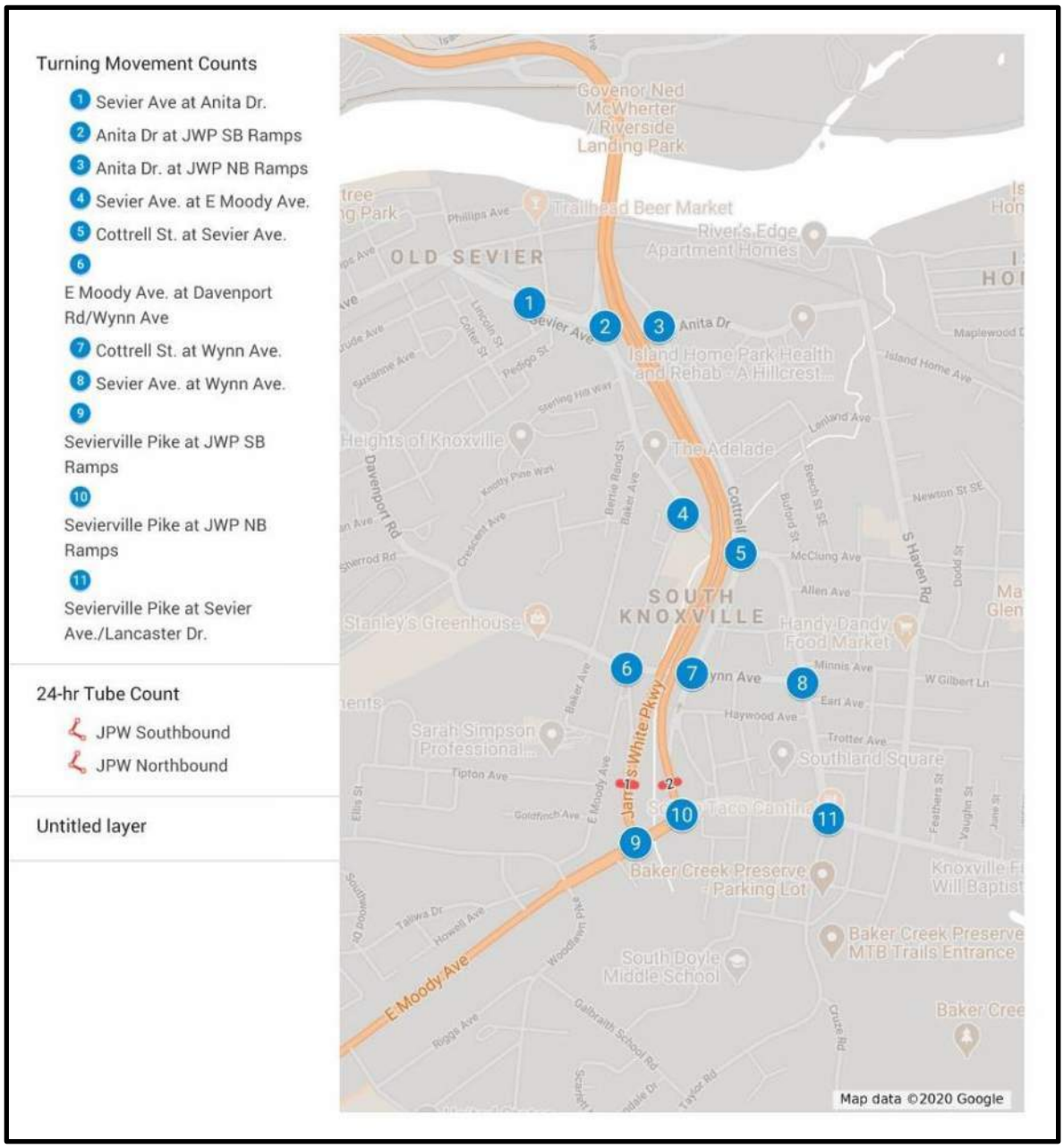
The purpose of this memo is to present traffic data from previous studies and obtain TDOT concurrence that the traffic counts can be used for this study.

TRAFFIC COUNTS LOCATIONS

Available turning movement traffic counts at eleven locations and one 24-hour tube count from previous studies are listed in the table below. A count location map is shown in Figure 1.

INTERSECTION	DATE AND TIME
Sevier Avenue at Anita Drive	Feb 2018; 6-9am & 3-6pm
James White Parkway Southbound on/off ramp at Anita Drive	May 2017; 7-9am, 11am-12pm, 4-6pm
James White Parkway Northbound on/off ramp at Anita Drive	May 2017; 7-9am, 11am-12pm, 4-6pm
Sevier Avenue at E Moody Avenue	May 2017; 7-9am, 11am-12pm, 4-6pm
Cottrell Street at Sevier Street	May 2017; 7-9am, 11am-12pm, 4-6pm
E Moody Avenue at Wynn Avenue/Davenport Road	May 2017; 7-9am, 11am-12pm, 4-6pm
Cottrell Street at Wynn Avenue	May 2017; 7-9am, 11am-12pm, 4-6pm
Sevier Avenue at Wynn Avenue	Feb 2018; 6-9am & 3-6pm
James White Parkway Southbound off ramp at Sevierville Pike	Feb 2016; 7-9am, 11am-12pm, 4-6pm
James White Parkway Northbound on ramp at Sevierville Pike	Feb 2016; 7-9am, 11am-12pm, 4-6pm
Sevierville Pike at Sevier Avenue	August 2017; 7-9am, 11am-12pm, 4-6pm
24-hour Tube Count, North of Sevierville Pike	June 2017

FIGURE 1: COUNT LOCATION MAP



GROWTH RATE METHODOLOGY (TO BE COMPLETED IN FUTURE MEMORANDUM)

Using the TDOT's traffic history website, the history trend in traffic counts will be evaluated for all count stations within the study area. The Knoxville TPO's TDM data will also be evaluated for the base and future years to determine traffic growth in the study area. A growth rate to be used for this study will be determined using TDOT's traffic history website and the Knoxville TPO's TDM data. This growth rate will be applied to traffic counts obtained from previous studies to determine the base and future year peak hour traffic counts.

A detailed technical memorandum summarizing traffic data and future year projections will be submitted for this study.

CONCLUSION

Considering the current Covid-19 situation, for this study it is recommended to use the data collected from previous studies and apply a growth rate to these counts to determine base and future year volumes.

If you have questions, please do not hesitate to contact Jon Storey at jon.storey@greshamsmith.com

APPPENDIX C

Technical Memorandum – Traffic Data and Projection Summary

James White Parkway Urban Wilderness Corridor Study Technical Memorandum #1 Traffic Data and Projection Summary

City of Knoxville, TN

Executive Summary

This memorandum summarizes the base year (2020) and design year (2040) projected turning movement volumes for both the "No-Build" and "Build" Alternatives within the *James White Parkway Urban Wilderness Corridor Study* Area. The traffic projections assume a 1.5 percent annual growth in traffic, consistent with the Knoxville Transportation Planning Organization's Travel Demand Model. Calculations of the projections are provided.

For
City of Knoxville Engineering
3131 Morris Avenue
Knoxville, TN 37909

By
Gresham Smith
2095 Lakeside Centre Way #120
Knoxville, TN 37922

Gresham Smith Project No. 44686

August 18, 2020

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Table of Contents

1.0 TRAFFIC PROJECTION SUMMARY

The traffic projections were developed for the modification of James White Parkway as the primary entrance to the Urban Wilderness Park with a parallel greenway. The limits of the study area along James White Parkway will extend from the bridge over the Tennessee River to the north, to Sevierville Pike to the south. In addition, the study area includes Cottrell Street to the east, Sevier Avenue/E. Moody Avenue to the west, and the interchange of James White Parkway at Sevier Avenue / Anita Drive.

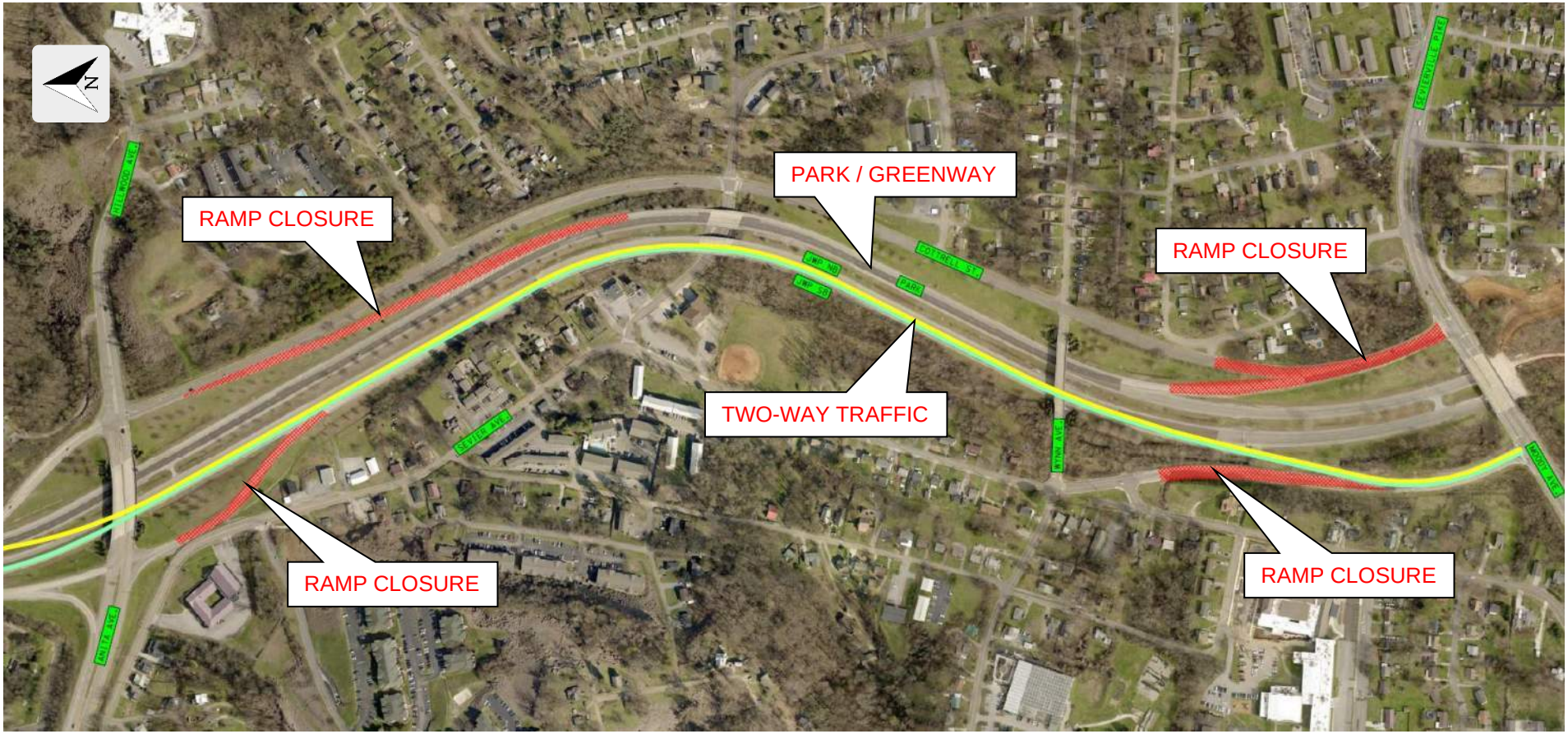


FIGURE 1 :BUILD ALTERNATIVE SINGLE-LINE SKETCH

Figure 2 summarizes the base year (2020) turning movement volumes with existing geometry. Figure 3 and Figure 4 summarize the design year (2040) turning movement volumes for both the "No-Build" and "Build" Alternatives within the James White Parkway Urban Wilderness Corridor Study area. The traffic projections assume a 1.5 percent annual growth in traffic, consistent with the Knoxville Transportation Planning Organization's Travel Demand Model.

FIGURE 2

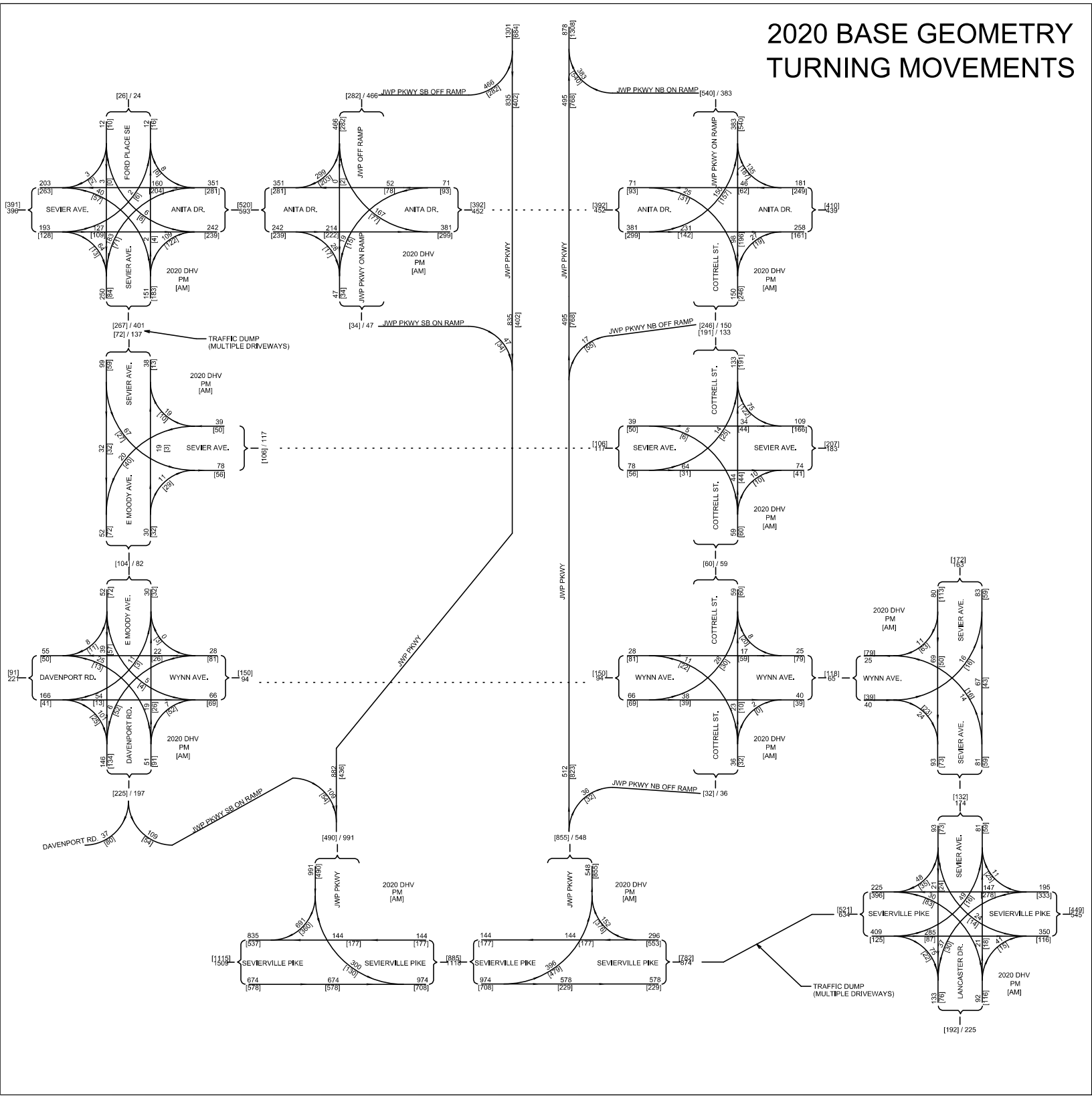

2020 BASE GEOMETRY
TURNING MOVEMENTS
FORD PLACE SE
SEVIER AVE.
ANITA DR.
JWP OFF RAMP
JWP PKWY SB OFF RAMP
JWP PKWY SB ON RAMP
JWP PKWY NB ON RAMP
JWP PKWY NB OFF RAMP
JWP PKWY
COTTRELL ST.
JWP PKWY ON RAMP
E MOODY AVE.
DAVENPORT RD.
WYNN AVE.
DAVENPORT RD
SEVIERVILLE PIKE
LANCASTER DR.
2020 DHV
PM
[AM]
TRAFFIC DUMP
(MULTIPLE DRIVEWAYS)

FIGURE 3

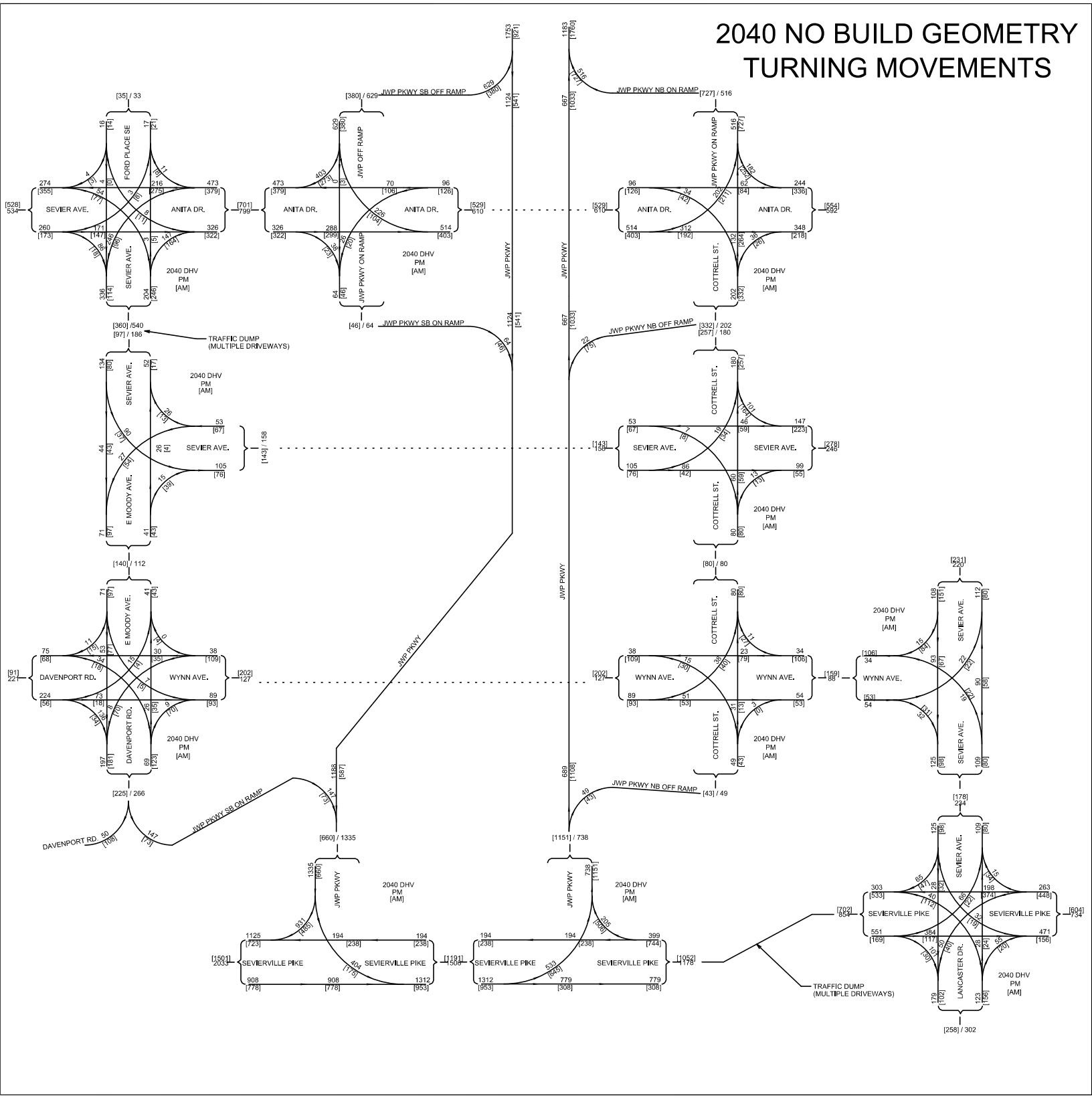
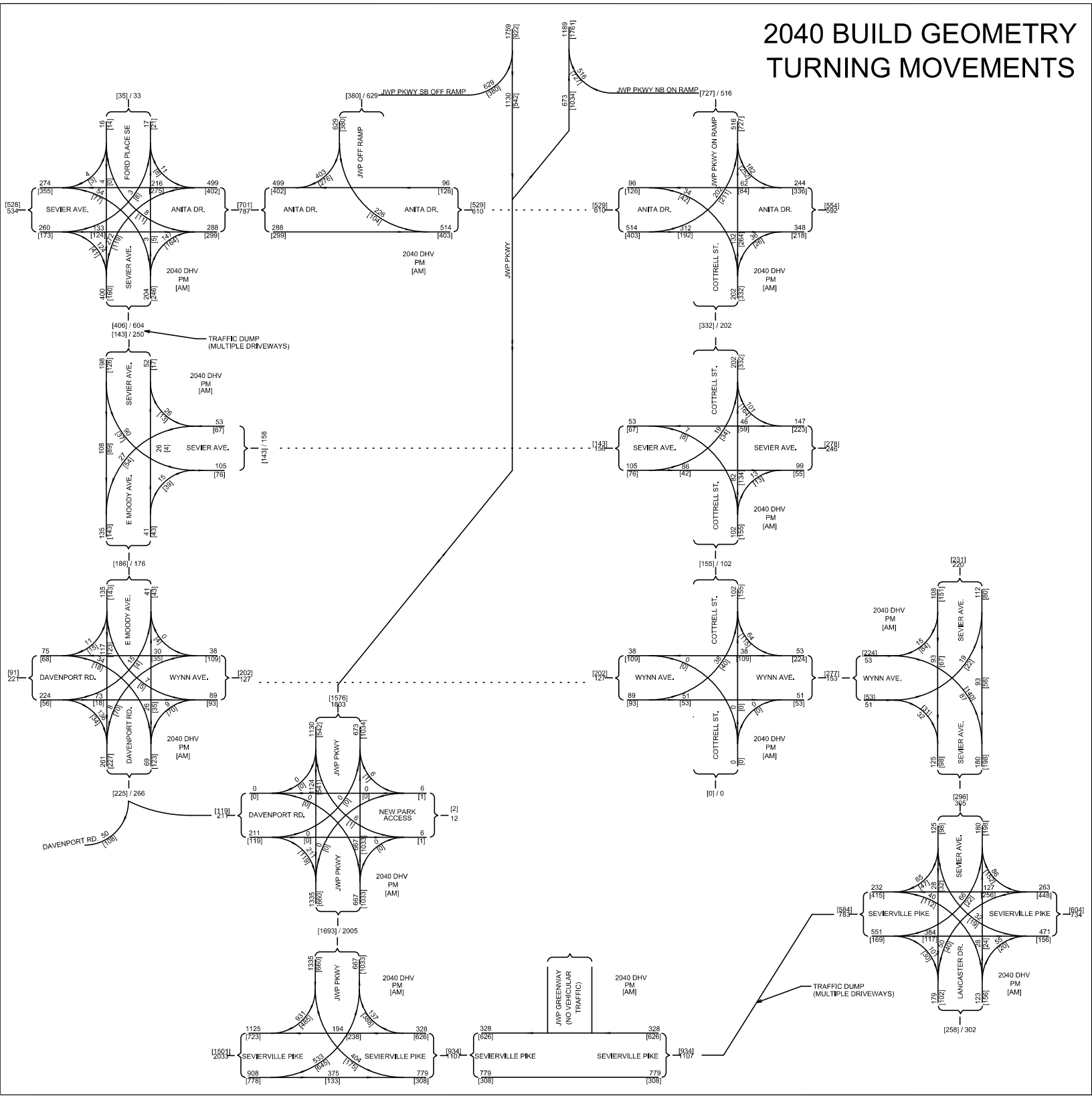

2040 NO BUILD GEOMETRY
TURNING MOVEMENTS
SEVIER AVE.
ANITA DR.
FORD PLACE SE
JWP OFF RAMP
JWP PKWY ON RAMP
JWP PKWY SB OFF RAMP
JWP PKWY SB ON RAMP
JWP PKWY NB ON RAMP
JWP PKWY NB OFF RAMP
JWP PKWY
COTTRELL ST.
E MOODY AVE.
DAVENPORT RD.
WYNN AVE.
SEVIERVILLE PIKE
LANCASTER DR.
2040 DHV
PM
[AM]
TRAFFIC DUMP
(MULTIPLE DRIVEWAYS)
DAVENPORT RD

FIGURE 4


2040 BUILD GEOMETRY
TURNING MOVEMENTS
JWP PKWY SB OFF RAMP
JWP PKWY NB ON RAMP
JWP OFF RAMP
JWP PKWY ON RAMP
JWP PKWY
FORD PLACE SE
SEVIER AVE.
ANITA DR.
COTTRELL ST.
E MOODY AVE.
DAVENPORT RD.
WYNN AVE.
NEW PARK ACCESS
SEVIERVILLE PIKE
LANCASTER DR.
JWP GREENWAY (NO VEHICULAR TRAFFIC)
TRAFFIC DUMP (MULTIPLE DRIVEWAYS)
2040 DHV
PM
[AM]

2.0 TRAFFIC DATA SOURCES

Traffic data from three primary sources are utilized in the *James White Parkway Urban Wilderness Corridor Study* traffic projections:

- Tennessee Department of Transportation (TDOT) Annual Average Daily Traffic (AADT) Data
- Field Collected Data
- Knoxville Area Transportation Planning Organization (TPO) Travel Demand Model (TDM) Data

2.1 TDOT AADT DATA

Figure 6 shows the 2018 Annual Average Daily Traffic (AADT) volumes reported by TDOT along the major roadways in the study area. The James White Parkway Bridge has an AADT of 20,679 vehicles with 10 percent trucks, Henley Street Bridge 34,281 vehicles with 4 percent trucks, and Gay Street Bridge 5,556 vehicles with 2 percent trucks. E. Moody Avenue has an AADT of 9,297 vehicles. TDOT AADT data is available on their website at:

https://www.arcgis.com/apps/webappviewer/index.html?id=075987cdae37474b88fa400d65681354.

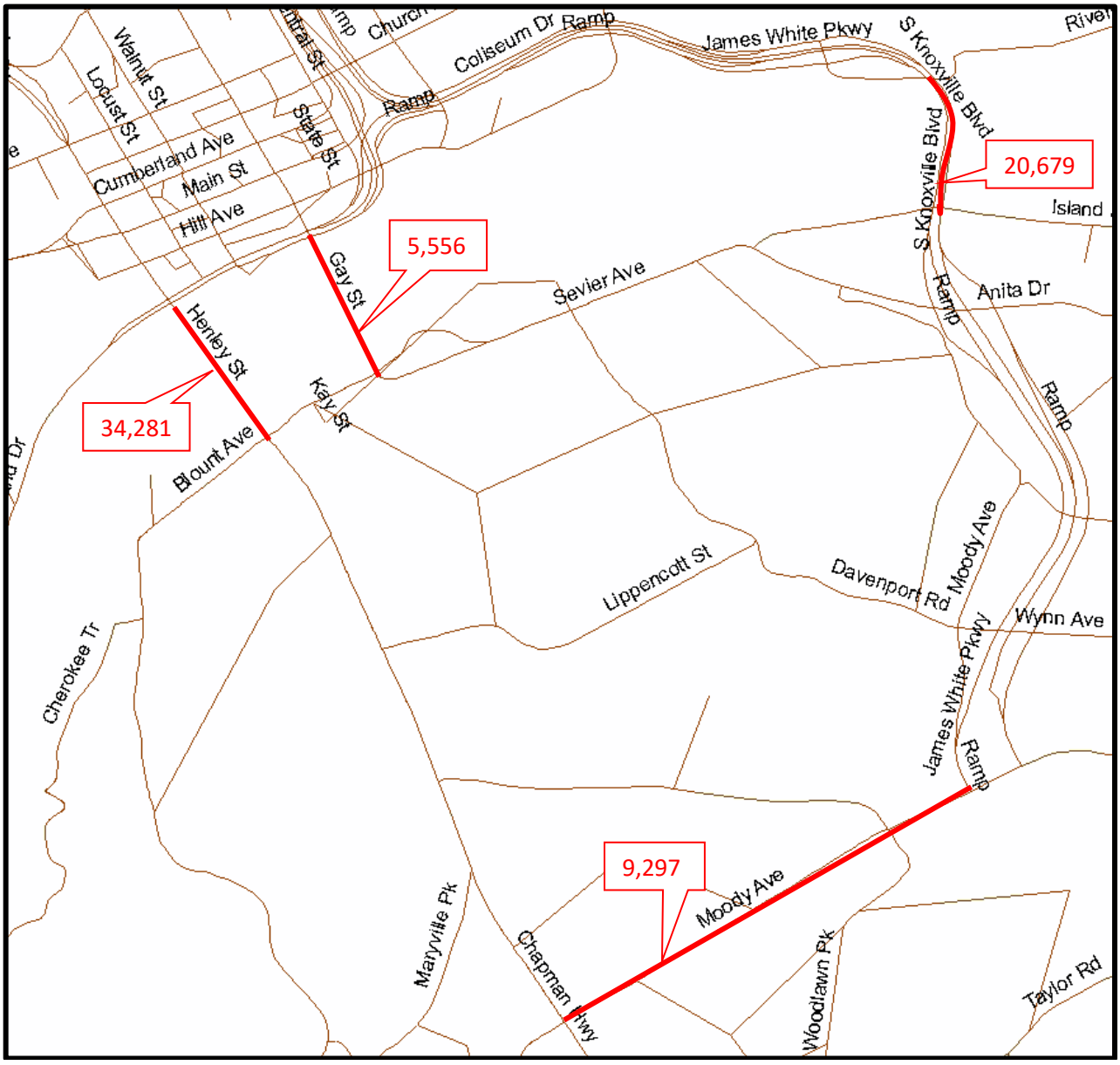


FIGURE 5: ANNUAL AVERAGE DAILY TRAFFIC
Source: TDOT 2018 (most recent year available)

2.2 FIELD COLLECTED DATA

Due to the current Covid-19 situation, the existing traffic patterns on James White Parkway and adjacent roadways are anticipated to be low and different compared to the actual demand. Turning movement count traffic data for the *James White Parkway Urban Wilderness Study* area were obtained from the previous studies performed within the last three years. Data at eleven (11) intersections within the vicinity of this project were previously collected. Figure 6 identifies the data locations. The locations are labeled with a Site ID. Table 1 identifies the AM and PM peak hours at each location. TDOT's seasonal variation factors for urban roadways were used to convert these peak hour counts based on the existing month and day of the week collected. Table 2 identifies the variation factor used for each time period.

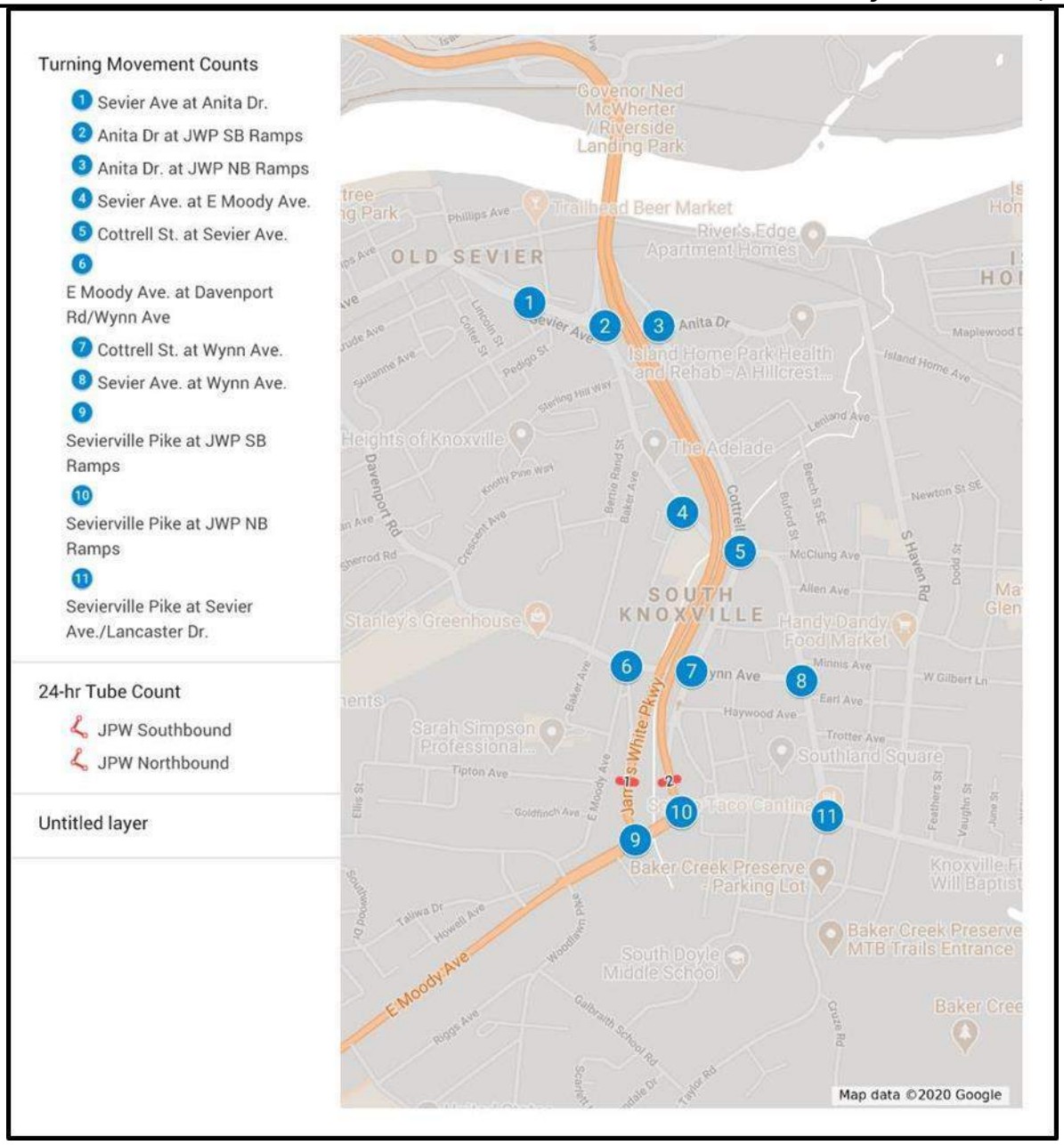


FIGURE 6: TRAFFIC DATA LOCATIONS WITH TRAFFIC CONTROL FEATURES

TABLE 1: PEAK HOUR BY LOCATION

James White Parkway Corridor Study Peak Hours by Intersection				
ID	**Intersection**	**Month and Year**	**AM Peak Hour**	**PM Peak Hour**
1	Sevier Ave. at Anita Dr.	Feb-18	7:15 – 8:15	4:45 – 5:45
2	Anita Dr. at JWP SB Ramps	May-17	7:15 – 8:15	4:00 – 5:00
3	Anita Dr. at JWP NB Ramps	May-17	7:15 – 8:15	4:30 – 5:30
4	Sevier Ave. at Moody E Moody Ave.	May-17	7:15 – 8:15	4:30 – 5:30
5	Cottrell St.at Sevier Ave.	May-17	7:15 – 8:15	4:00 – 5:00
6	E Moody Ave, at Davenport Rd./Wynn Ave.	May-17	7:00 – 8:00	5:00 – 6:00
7	Cottrell St. at Wynn Ave.	May-17; June-17	7:00 – 8:00	4:30 – 5:30
8	Sevier Ave. at Wynn Ave.	Feb-18	7:00 – 8:00	3:00 – 4:00
9	Sevierville Pike at JWP SB Ramps	Feb-16	7:15 – 8:15	4:30 – 5:30
10	Sevierville Pike at JWP NB Ramps	Feb-16	7:15 – 8:15	4:45 – 5:45
11	Sevierville Pike at Sevier Ave./Lancaster Dr.	Aug-17	7:15 – 8:15	5:00 – 6:00
12	JPW Southbound, North of Sevierville Pike	June 2017	24 Hour Count	
13	JPW Northbound, North of Sevierville Pike	June 2017	24 Hour Count	

Source: Field Counts

TABLE 2: SEASONAL VARIATION FACTORS

ID	Intersection	AM Count Month/Day	AM Variation Factor	PM Count Month/Day	PM Variation Factor
1	Sevier Ave. at Anita Dr.	Feb/ Thurs	0.99	Feb/ Thurs	0.99
2	Anita Dr. at JWP SB Ramps	May/Fri	0.82	May/Thurs	0.88
3	Anita Dr. at JWP NB Ramps	May/Tues	0.93	May/Mon	0.98
4	Sevier Ave. at Moody E Moody Ave.	May/Tues	0.93	May/Tues	0.93
5	Cottrell St.at Sevier Ave.	May/Wed	0.92	May/Tues	0.98
6	E Moody Ave, at Davenport Rd./Wynn Ave.	May/Mon	0.98	May/Thurs	0.88
7	Cottrell St. at Wynn Ave.	June/Tues	0.95	May/Thurs	0.88
8	Sevier Ave. at Wynn Ave.	Feb/ Thurs	0.99	Feb/ Thurs	0.99
9	Sevierville Pike at JWP SB Ramps	Feb/ Thurs	0.99	Feb/Mon	1.06
10	Sevierville Pike at JWP NB Ramps	Feb/ Thurs	0.99	Feb/Mon	1.06
11	Sevierville Pike at Sevier Ave./Lancaster Dr.	Aug/Thurs	0.93	Aug/Thurs	0.93

Source: Field Counts

3.0 TRAFFIC PROJECTION DATA

3.1 TDOT AADT DATA

TDOT AADT data from the past ten (10) years was reviewed. The AADT data was from nine (9) nearby TDOT count stations (Station 270, 360, 93, 154, 111, 94, 456, 374 and 310). Table 2 summarizes the AADT data collected at these nine (9) count stations along with their location. Table 3 charts the last ten (10) years of traffic data. All locations, with the exception of I-40, have experienced growth of 1% or less. Some locations experienced a negative growth. A conservative growth rate of 1.5% is recommended for this project based on the Travel Demand Model Forecast shown in Section 3.4.

TABLE 3: TDOT AADT HISTORICAL DATA (1 OF 3)

James White Pkwy Sta. 270	
2009	44,869
2010	45,274
2011	46,089
2012	47,108
2013	44,777
2014	45,953
2015	31,575
2016	35,537
2017	38,732
2018	38,404

James White Pkwy Sta. 360	
2009	17,100
2010	15,846
2011	16,486
2012	16,816
2013	17,220
2014	14,280
2015	12,410
2016	14,452
2017	14,597
2018	20,679

Henley St. Bridge Sta. 93	
2009	39,229
2010	40,790
2011	42,099
2012	42,487
2013	42,558
2014	43,104
2015	43,225
2016	49,896
2017	35,774
2018	34,281

Henley Street Sta. 154	
2009	43,220
2010	38,635
2011	47,351
2012	42,789
2013	19,880
2014	29,532
2015	26,520
2016	26,785
2017	30,105
2018	36,013

Chapman Highway Sta. 111	
2009	29,714
2010	29,966
2011	26,620
2012	26,764
2013	27,768
2014	28,414
2015	30,379
2016	31,449
2017	30,935
2018	28,908

Gay Street Bridge Sta. 94	
2009	7,767
2010	8,383
2011	8,634
2012	8,807
2013	8,828
2014	8,993
2015	9,012
2016	5,205
2017	5,297
2018	5,556

I-40 Sta. 456	
2009	114,840
2010	110,566
2011	119,005
2012	119,584
2013	137,337
2014	107,546
2015	136,067
2016	137,591
2017	145,208
2018	126,779

E. Moody Ave SE Sta. 374	
2009	8,465
2010	8,558
2011	9,415
2012	9,149
2013	17,799
2014	10,269
2015	9,407
2016	9,008
2017	9,098
2018	9,297

Sevier Ave S of Ft Louden Lake Sta. 310	
2009	7,072
2010	5,002
2011	4,824
2012	4,969
2013	4,425
2014	4,009
2015	5,052
2016	4,400
2017	5,043
2018	4,916

FIGURE 7: TDOT AADT HISTORICAL DATA (2 OF 3)

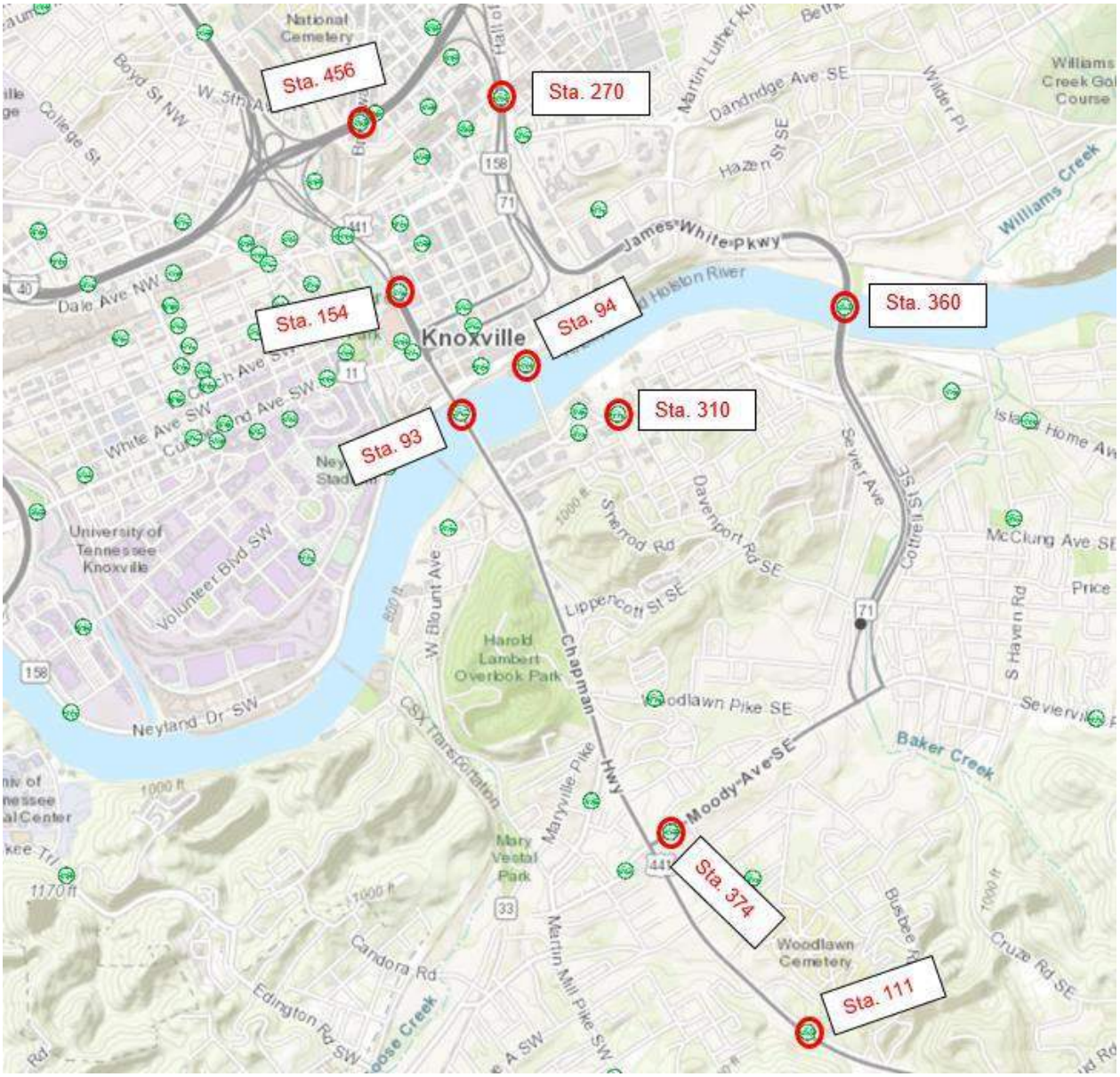
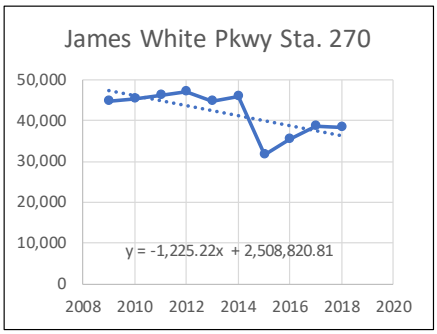


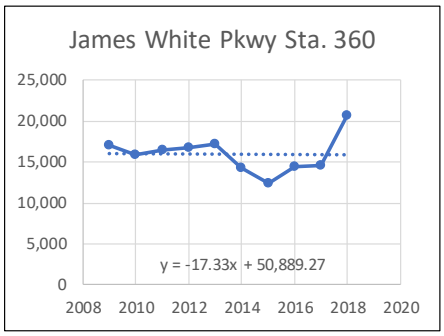
TABLE 4: TDOT AADT HISTORICAL DATA (3 OF 3)



Count Station Data	
2009	47,354
2018	36,327
Diff:	-11,027
Diff/Yr:	-1,225
%:	-3.37%

Projected	
2018	36,500
2020	37,600
2040	48,900

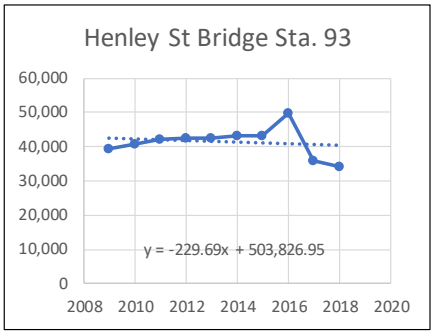
Use 1.5%



Count Station Data	
2009	16,073
2018	15,917
Diff:	-156
Diff/Yr:	-17
%:	-0.11%

Projected	
2018	16,000
2020	16,500
2040	21,500

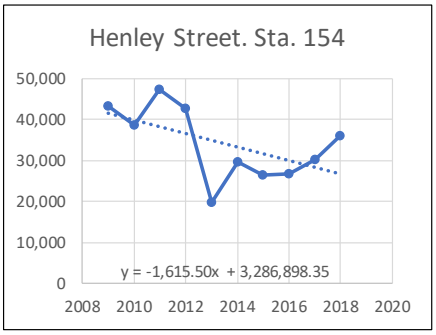
Use 1.5%



Count Station Data	
2009	42,380
2018	40,313
Diff:	-2,067
Diff/Yr:	-230
%:	-0.57%

Projected	
2018	40,500
2020	41,700
2040	54,200

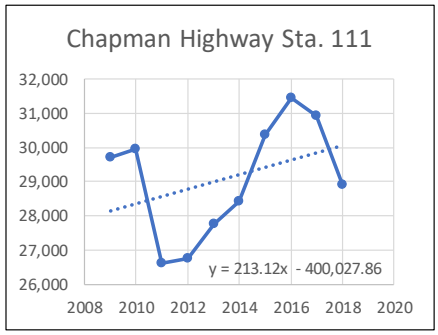
Use 1.5%



Count Station Data	
2009	41,359
2018	26,819
Diff:	-14,540
Diff/Yr:	-1,616
%:	-6.02%

Projected	
2018	27,000
2020	27,800
2040	36,100

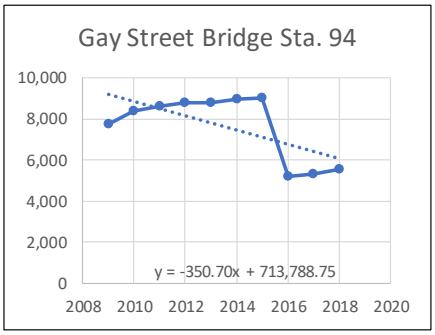
Use 1.5%



Count Station Data	
2009	28,130
2018	30,048
Diff:	1,918
Diff/Yr:	213
%:	0.71%

Projected	
2018	30,500
2020	31,400
2040	40,800

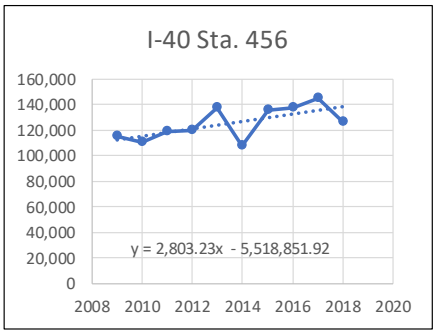
Use 1.5%



Count Station Data	
2009	9,232
2018	6,076
Diff:	-3,156
Diff/Yr:	-351
%:	-5.77%

Projected	
2018	6,500
2020	6,700
2040	8,700

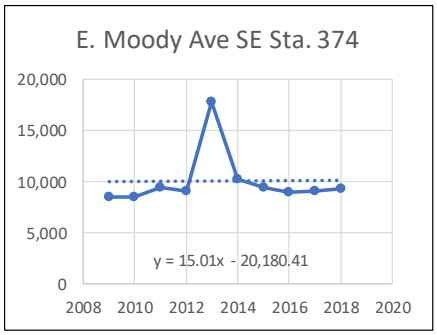
Use 1.5%



Count Station Data	
2009	112,837
2018	138,066
Diff:	25,229
Diff/Yr:	2,803
%:	2.03%

Projected	
2018	138,500
2020	142,700
2040	185,500

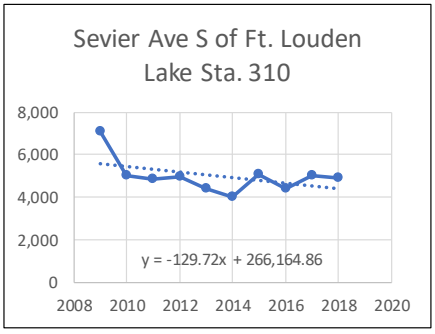
Use 1.5%



Count Station Data	
2009	9,975
2018	10,110
Diff:	135
Diff/Yr:	15
%:	0.15%

Projected	
2018	10,500
2020	10,800
2040	14,000

Use 1.5%



Count Station Data	
2009	5,557
2018	4,390
Diff:	-1,167
Diff/Yr:	-130
%:	-2.95%

Projected	
2018	4,500
2020	4,600
2040	6,000

Use 1.5%

3.2 TPO TDM DATA

Table 4 summarizes the AADT volumes at four (4) locations along James White Parkway predicted in the TPO's TDM. The TPO's growth projections take into account future new development and infill opportunities within and surrounding the study area. Segment 1 of James White Parkway is predicted to see an annual 1.06% increase in traffic volumes. Segment 2 is predicted to see a 1.28% increase in traffic volumes. Segment 3 is predicted to see a 1.28% increase in traffic volumes. Segment 4 is predicted to see a 1.27% increase in traffic volumes. The *James White Parkway Urban Wilderness Corridor Study* assumes an annual traffic growth rate of 1.5%.

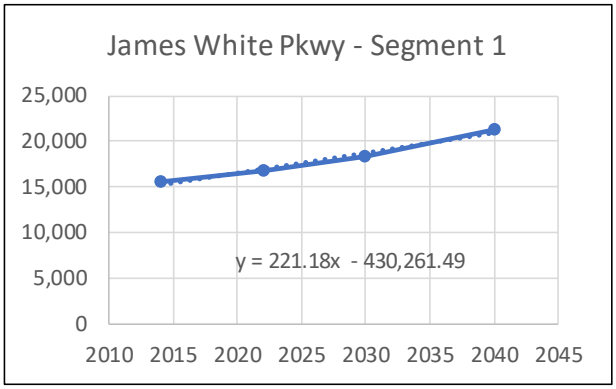
TABLE 5: TPO TDM TRAFFIC PROJECTIONS (1 of 2)

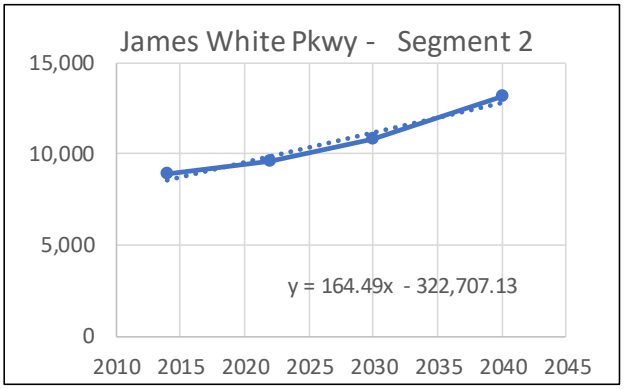
James White Pkwy Segment 1	
2014	15,506
2022	16,724
2030	18,350
2040	21,253
Growth Rate:	1.06%

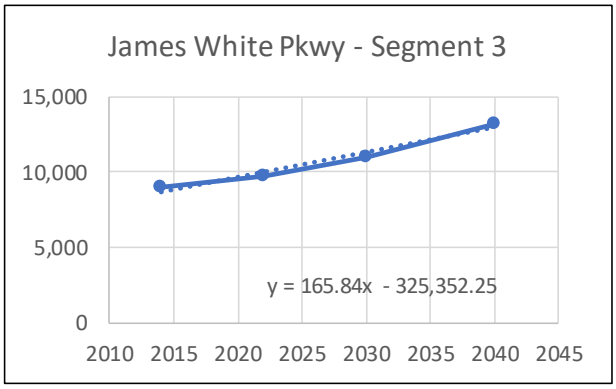
James White Pkwy Segment 2	
2014	8,886
2022	9,640
2030	10,860
2040	13,146
Growth Rate:	1.28%

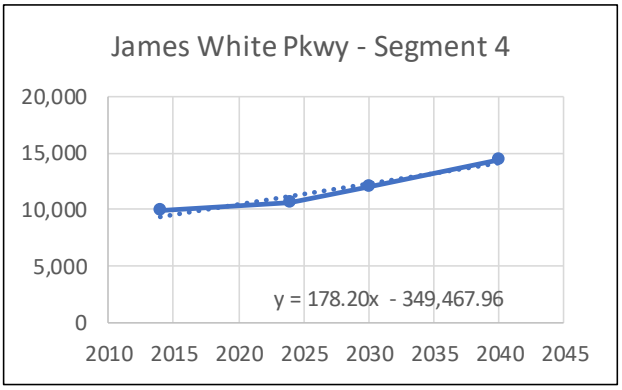
James White Pkwy Segment 3	
2014	8,961
2022	9,719
2030	10,952
2040	13,255
Growth Rate:	1.28%

James White Pkwy Segment 4	
2014	9,859
2024	10,662
2030	12,053
2040	14,418
Growth Rate:	1.27%









Segment 1	
2014	15,195
2040	20,946
Diff:	5,751
Diff/Yr:	221
%:	1.06%

Segment 2	
2014	8,576
2040	12,852
Diff:	4,277
Diff/Yr:	164
%:	1.28%

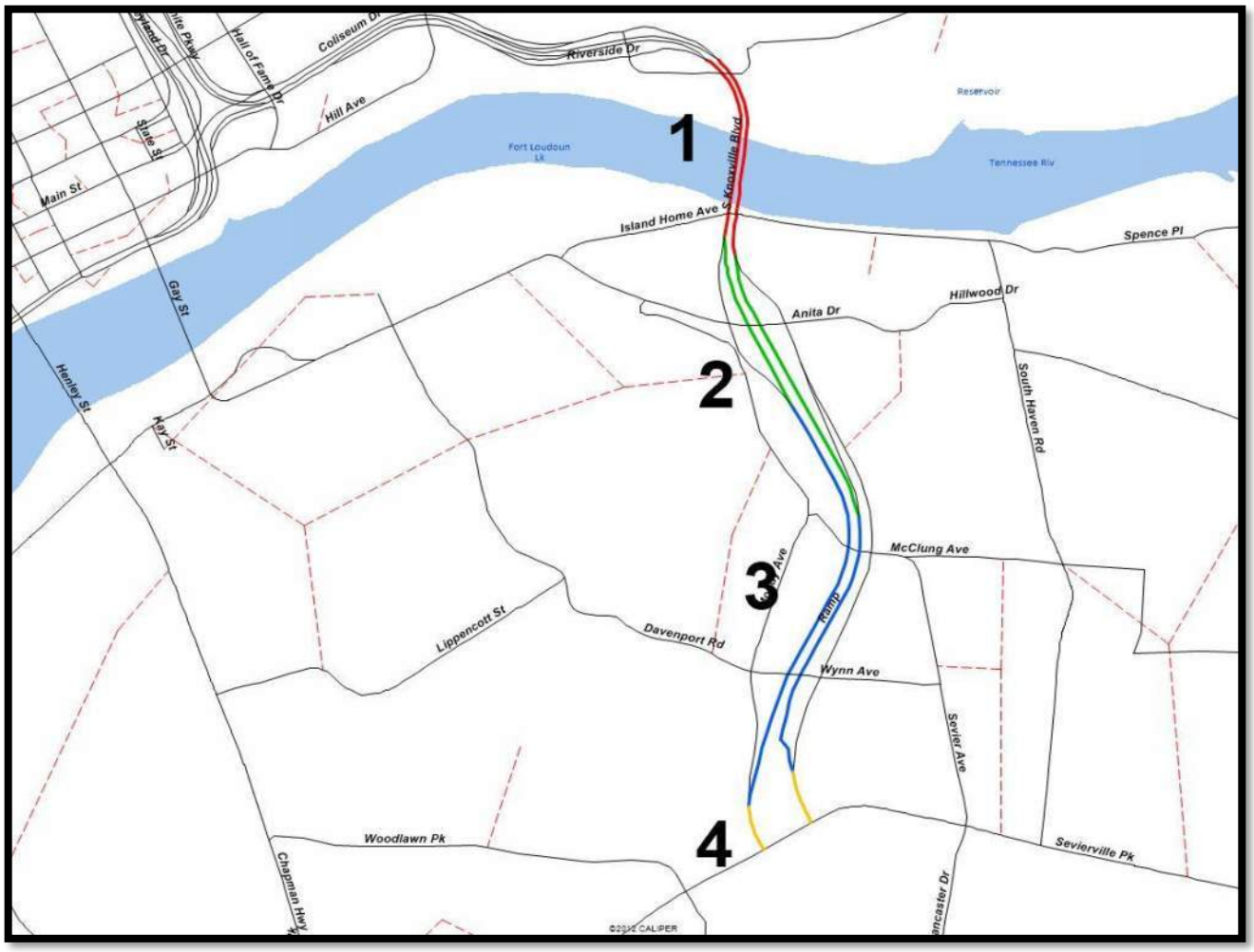
Segment 3	
2014	8,650
2040	12,961
Diff:	4,312
Diff/Yr:	166
%:	1.28%

Segment 4	
2014	9,427
2040	14,060
Diff:	4,633
Diff/Yr:	178
%:	1.27%

Use 1.5% Growth Rate

Note: Growth rate and volumes developed from linear regression equations of TPO TDM data (see charts)

FIGURE 8: TPO TDM TRAFFIC PROJECTIONS (2 of 2)



4.0 URBAN WILDERNESS GATEWAY PARK

The Urban Wilderness Gateway Park site was acquired by the City of Knoxville via an excess land transfer from TDOT. It is located between the terminus of the James White Parkway and Baker Creek Preserve. Figure 9 shows the proposed site map overview and Figure 10 shows the gateway park in detail. Both figures are an excerpt from the *Urban Wilderness Gateway Park Concept Design* report dated August 31, 2018.

As part of the Urban Wilderness project, the existing northbound lanes of James White Parkway will be converted into a continuous bike and pedestrian greenway and vehicular traffic will be shifted to the west where the existing southbound lanes are located. Therefore, James White Parkway will be two-way traffic on the current southbound lanes. A new access point to the gateway park will be located just north of E. Moody Avenue on James White Parkway.

To determine the new trips that will be entering and exiting the park, the Institute of Transportation Engineers (ITE) 10th Edition Trip Generation Manual was used. The *Urban Wilderness Gateway Park Concept Design* report stated a total of 113 acres of park will be created with the extension of the park up the James White Parkway. For 113 acres of public park (land use 411), a total of 88 daily trips will enter and exit the site – 1 enter and 1 exit in the AM peak period and 6 enter and 6 exit in the PM peak period. Since there will be multiple access points to the park area outside of the study area, it was assumed that all generated trips would be from James White Parkway north of the bridge. The newly generated peak hour trips are minimal and are not expected to negatively impact the surrounding roadways in the peak hours. Table 6 shows the trip generation calculations.

FIGURE 9: URBAN WILDERNESS GATEWAY OVERVIEW MAP

FIGURE 10: URBAN WILDERNESS GATEWAY PARK MAP

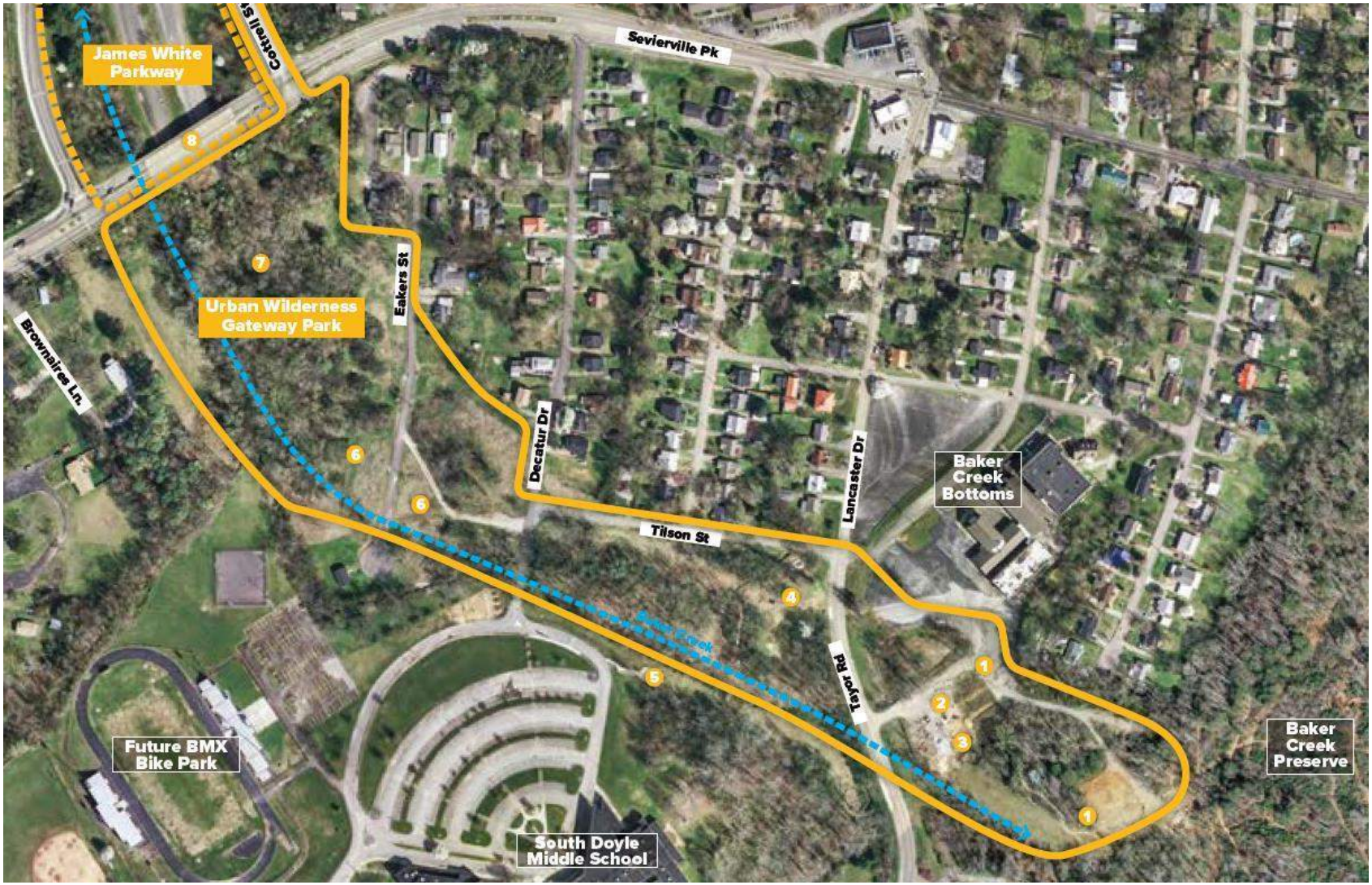


TABLE 6: TRIP GENERATION CALCULATIONS

WEEKDAY TOTAL DATA STATISTICS
Land Use:
Public Park (411)
Click for more details
Independent Variable: 113
Acres
Time Period:
Weekday
Setting/Location:
General Urban/Suburban
Trip Type:
Vehicle
Number of Studies:
5
Avg. Num. of Acres:
612
Average Rate:
0.78
Range of Rates:
0.55 - 34.00
Standard Deviation:
1.36
Fitted Curve Equation:
T = 0.64(X) + 88.46
R2:
0.82
Directional Distribution:
50% entering, 50% exiting
Calculated Trip Ends:
Average Rate: 88 (Total), 44 (Entry), 44 (Exit)
Fitted Curve: 161 (Total), 80 (Entry), 81 (Exit)

AM PEAK DATA STATISTICS
Land Use:
Public Park (411)
Click for more details
Independent Variable: 113
Acres
Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 7 and 9 a.m.
Setting/Location:
General Urban/Suburban
Trip Type:
Vehicle
Number of Studies:
5
Avg. Num. of Acres:
398
Average Rate:
0.02
Range of Rates:
0.00 - 4.50
Standard Deviation:
0.23
Fitted Curve Equation:
Not Given
R2:
****
Directional Distribution:
59% entering, 41% exiting
Calculated Trip Ends:
Average Rate: 2 (Total), 1 (Entry), 1 (Exit)

PM PEAK DATA STATISTICS
Land Use:
Public Park (411)
Click for more details
Independent Variable: 113
Acres
Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 4 and 6 p.m.
Setting/Location:
General Urban/Suburban
Trip Type:
Vehicle
Number of Studies:
6
Avg. Num. of Acres:
516
Average Rate:
0.11
Range of Rates:
0.05 - 3.50
Standard Deviation:
0.24
Fitted Curve Equation:
T = 0.06(X) + 22.60
R2:
0.53
Directional Distribution:
55% entering, 45% exiting
Calculated Trip Ends:
Average Rate: 12 (Total), 6 (Entry), 6 (Exit)
Fitted Curve: 29 (Total), 16 (Entry), 13 (Exit)

5.0 TRAFFIC PROJECTION CALCULATIONS

The traffic projection calculations are described below with the calculations provided on the following pages. The projections utilize the field-collected turning movement volumes and increase them 1.5% per year, consistent with the TPO's TDM growth estimate.

5.1 AM PROJECTION CALCULATIONS

Field Collected Peak Hour Turning Movement Volumes – Existing Geometry AM summarizes the morning peak-hour field collected turning movements. The counts were collected were obtained from the previous studies performed in the last three (3) years, shown in Table 1.

Baseline / Unbalanced Peak Hour Turning Movement Volumes – Existing Geometry 2020 AM applies the seasonal variation factors as shown in Table 2 as well as uses a 1.5% annual growth rate to the volumes to inflate them to the year 2020.

Baseline / Balanced Peak Hour Turning Movement Volumes – Existing Geometry 2020 AM adjusts the 2020 unbalanced volumes. There were small discrepancies between intersections in the field counts where vehicles departing one intersection did not sum to those entering the next. These volumes were balanced so they would be equal. The volumes at the Sevier Avenue at Anita Drive intersection were not balanced with the Sevier Avenue at E. Moody Avenue intersection due to the presence of multiple local intersecting roadways. Also, the volumes at Sevierville Pike at James White Parkway northbound ramps were not balanced with Sevierville Pike at Sevier Avenue due to the presence of multiple local intersecting roadways. In addition, since counts were not collected for the on and off ramps to James White Parkway, volumes were distributed based on the 2022 TPO TDM percentages. **These volumes will be utilized in the "No Build" alternative.**

Projected / Balanced Peak Hour Turning Movement Volumes – Existing Geometry 2040 AM a pplies a 1.5% annual growth rate to the 2020 AM balanced volumes to inflate them to the year 2040. There were small rounding discrepancies that were adjusted in order to balance intersections. The same volume discrepancies shown in the 2020 models apply to 2040 as well. **These volumes will be utilized in the "No Build" alternative.**

Projected / Balanced Peak Hour Turning Movement Volumes – Proposed Geometry 2040 AM redistributes the balanced No Build volumes to account for two way travel on the western portion of James White Parkway and the new access to Urban Wilderness Gateway Park. In addition, it takes into account the removal of the two James White Parkway northbound off ramps to Cottrell Street and the James White Parkway southbound on ramp from Davenport Road. The same volume discrepancies shown in the 2040 No Build volumes still apply. The newly generated park peak hour trips are also added to this scenario. Table 6 shows the trip generation calculations. The average rate formula was used due to the lack of fitted curve for the AM trips. **These volumes will be utilized in the "Build" alternative(s).**

5.2 PM PROJECTION CALCULATIONS

Field Collected Peak Hour Turning Movement Volumes – Existing Geometry PM summarizes the evening peak-hour field collected turning movements. The counts were collected were obtained from the previous studies performed in the last three (3) years, shown in Table 1.

Baseline / Unbalanced Peak Hour Turning Movement Volumes – Existing Geometry 2020 PM applies the seasonal variation factors as shown in Table 2 as well as uses a 1.5% annual growth rate to the volumes to inflate them to the year 2020.

Baseline / Balanced Peak Hour Turning Movement Volumes – Existing Geometry 2020 PM adjusts the 2020 unbalanced volumes. There were small discrepancies between intersections in the field counts where vehicles departing one intersection did not sum to those entering the next. These volumes were balanced so they would be equal. The volumes at the Sevier Avenue at Anita Drive intersection were not balanced with the Sevier Avenue at E. Moody Avenue intersection due to the presence of multiple local intersecting roadways. Also, the volumes at Sevierville Pike at James White Parkway northbound ramps were not balanced with Sevierville Pike at Sevier Avenue due to the presence of multiple local intersecting roadways. In addition, since counts were not collected for the on and off ramps to James White Parkway, volumes were distributed based on the 2022 TPO TDM percentages. **These volumes will be utilized in the "No Build" alternative.**

Projected / Balanced Peak Hour Turning Movement Volumes – Existing Geometry 2040 PM a pplies a 1.5% annual growth rate to the 2020 PM balanced volumes to inflate them to the year 2040. There were small rounding discrepancies that were adjusted in order to balance intersections. The same volume discrepancies shown in the 2020 models apply to 2040 as well. **These volumes will be utilized in the "No Build" alternative.**

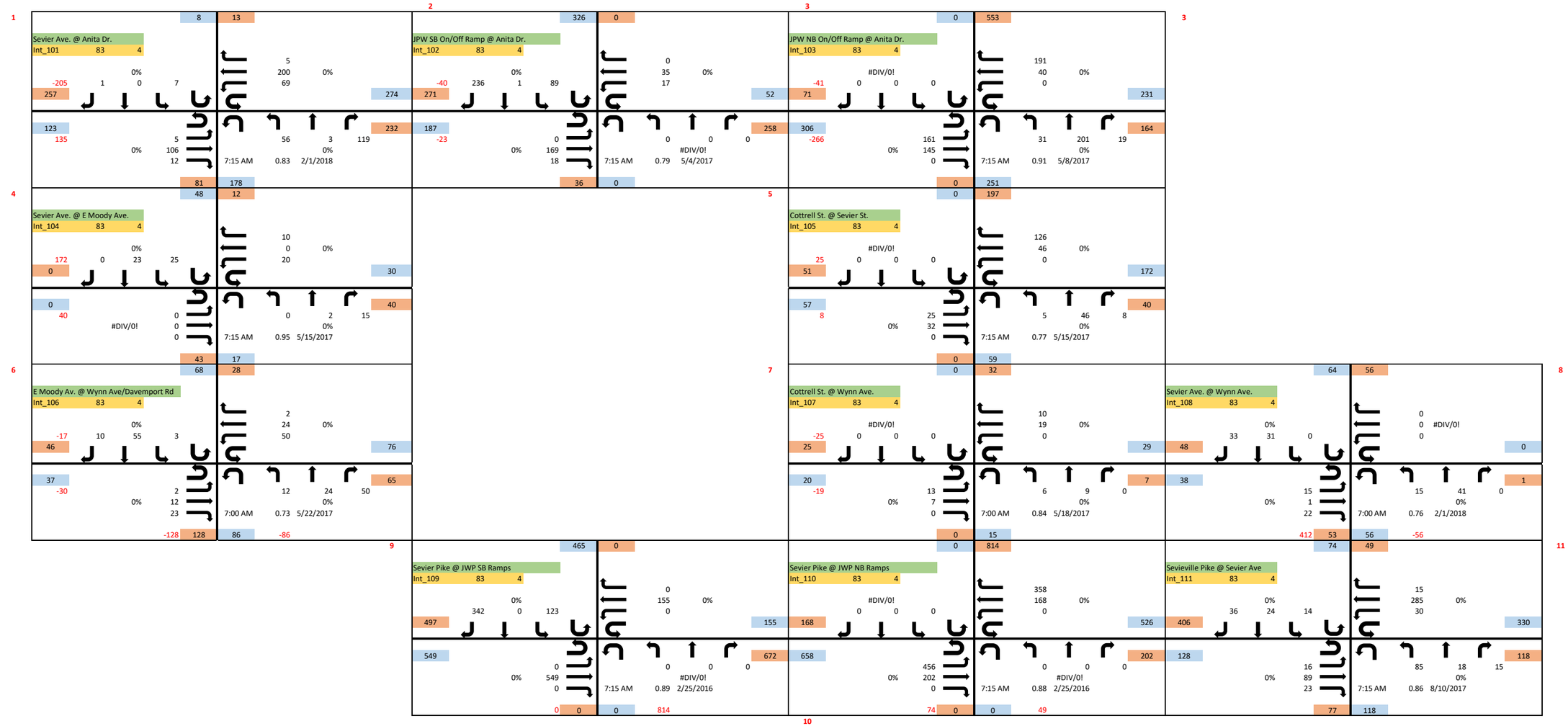
Projected / Balanced Peak Hour Turning Movement Volumes – Proposed Geometry 2040 PM redistributes the balanced No Build volumes to account for two way travel on the western portion of James White Parkway and the new access to Urban Wilderness Gateway Park. In addition, it takes into account the removal of the two James White Parkway northbound off ramps to Cottrell Street and the James White Parkway northbound on ramp from Davenport Road. The same volume discrepancies shown in the 2040 No Build volumes still apply. The newly generated park peak hour trips are also added to this scenario. Table 6 shows the trip generation calculations. The average rate formula was used due to the lack of fitted curve for the AM trips. **These volumes will be utilized in the "Build" alternative(s).**

Traffic Data

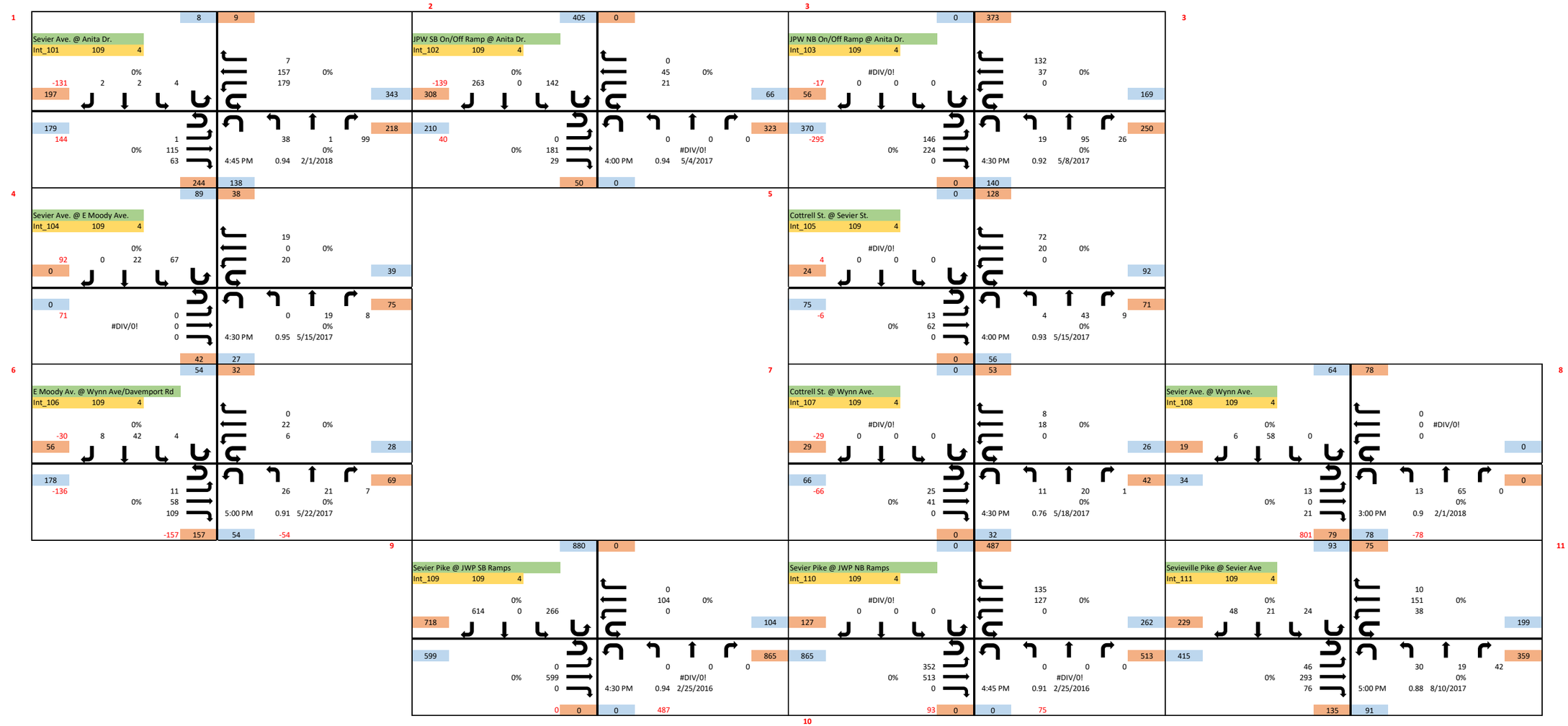
Field Collected Peak Hour Turning Movement Volumes - Existing Geometry

2020 AM and PM

Field Collected - AM_TMC



Field Collected - PM-TMC

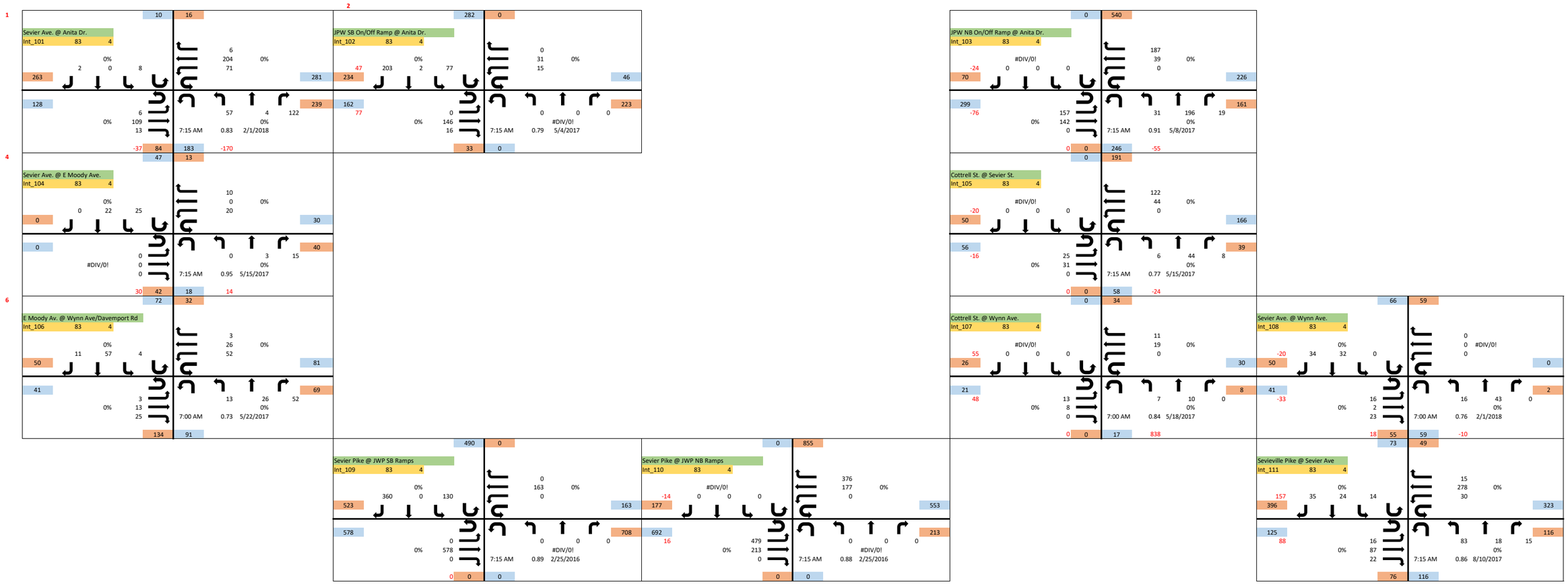


Traffic Data

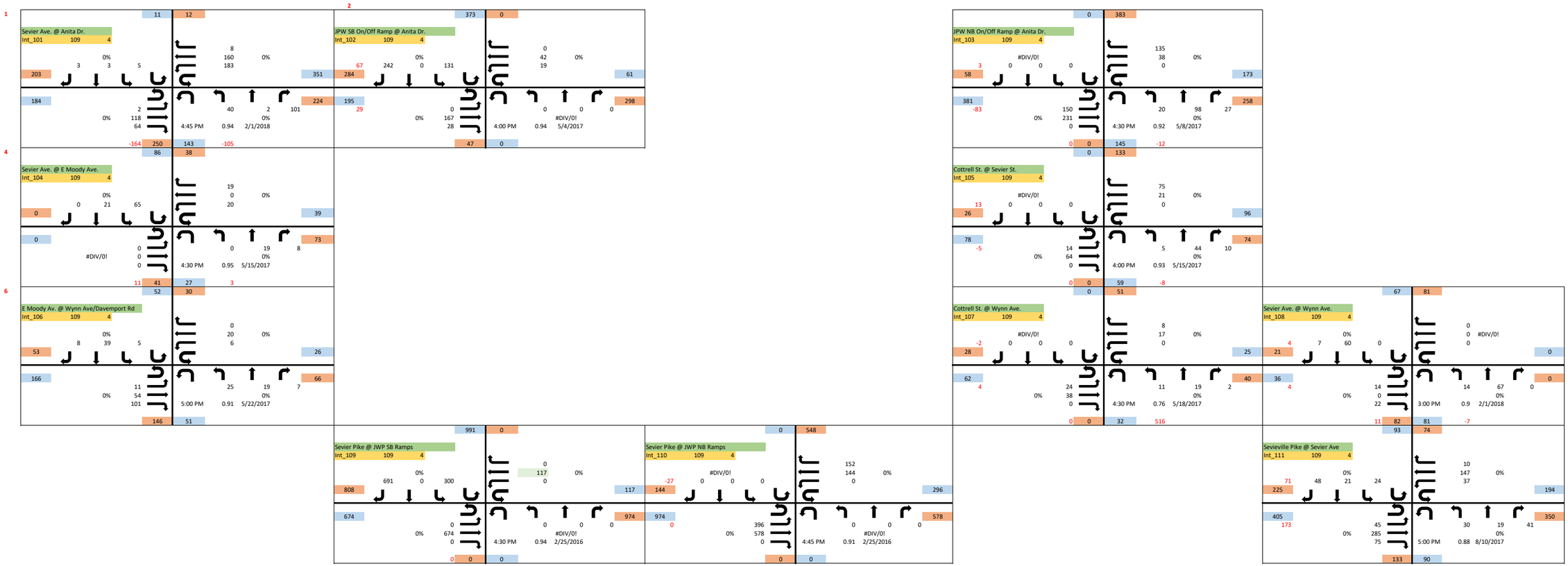
Baseline / Unbalanced Peak Hour Turning Movement Volumes - Existing Geometry

2020 AM and PM

2020 Baseline Unbalanced AM_TMC



2020 Baseline Unbalanced PM_TMC

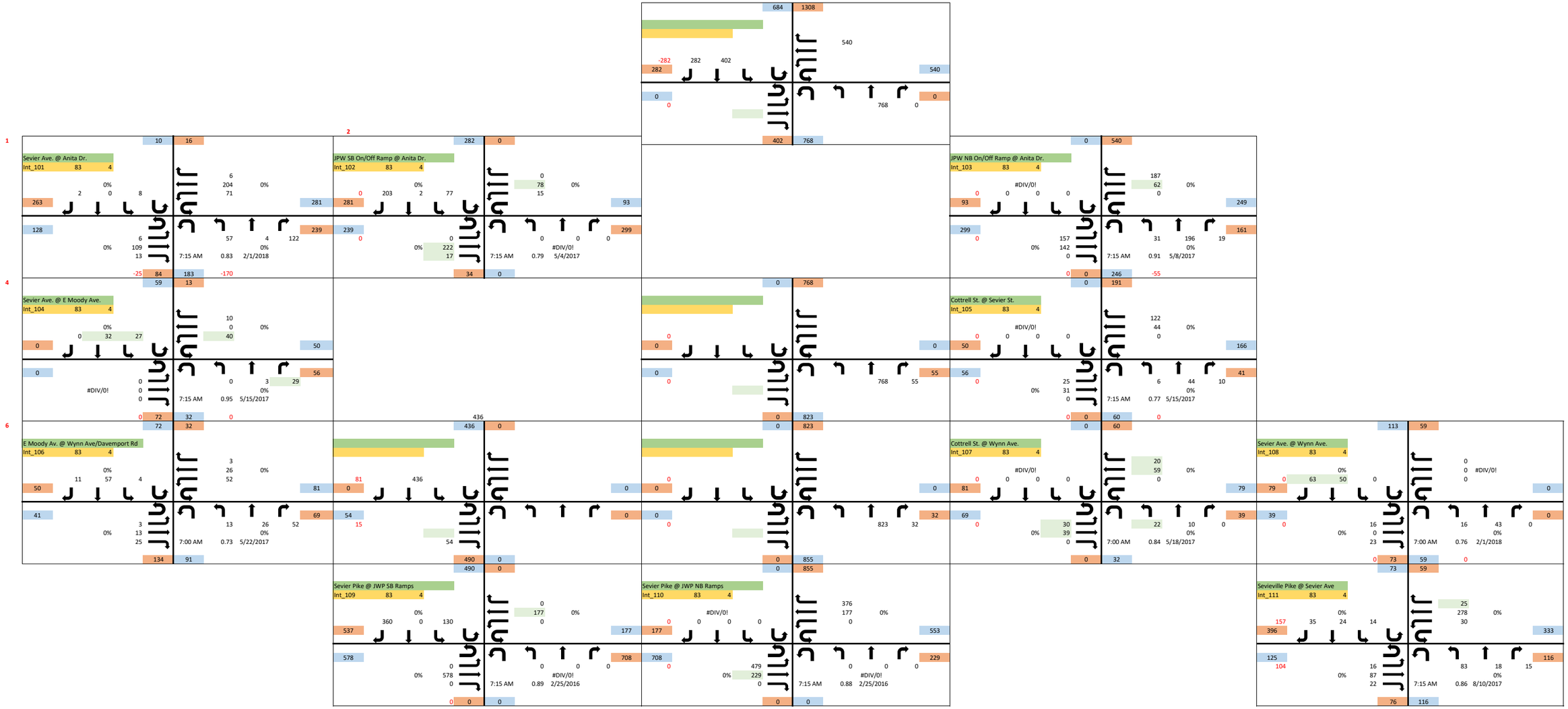


Traffic Data

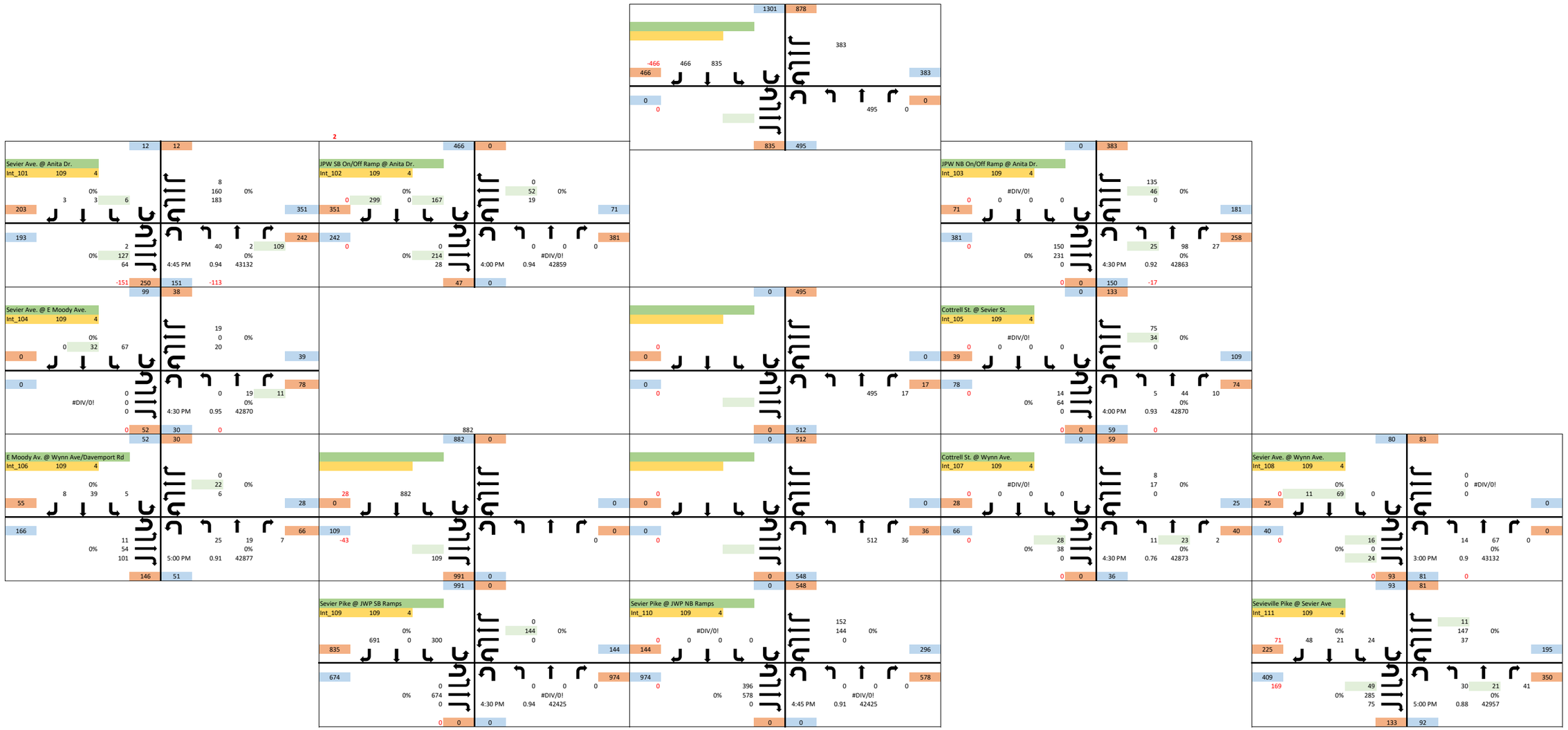
Baseline / Balanced Peak Hour Turning Movement Volumes - Existing Geometry

2020 AM and PM

2020 Baseline Balanced
AM_TMC (Bal)



2020 Baseline Balanced
PM_TMC (Bal)

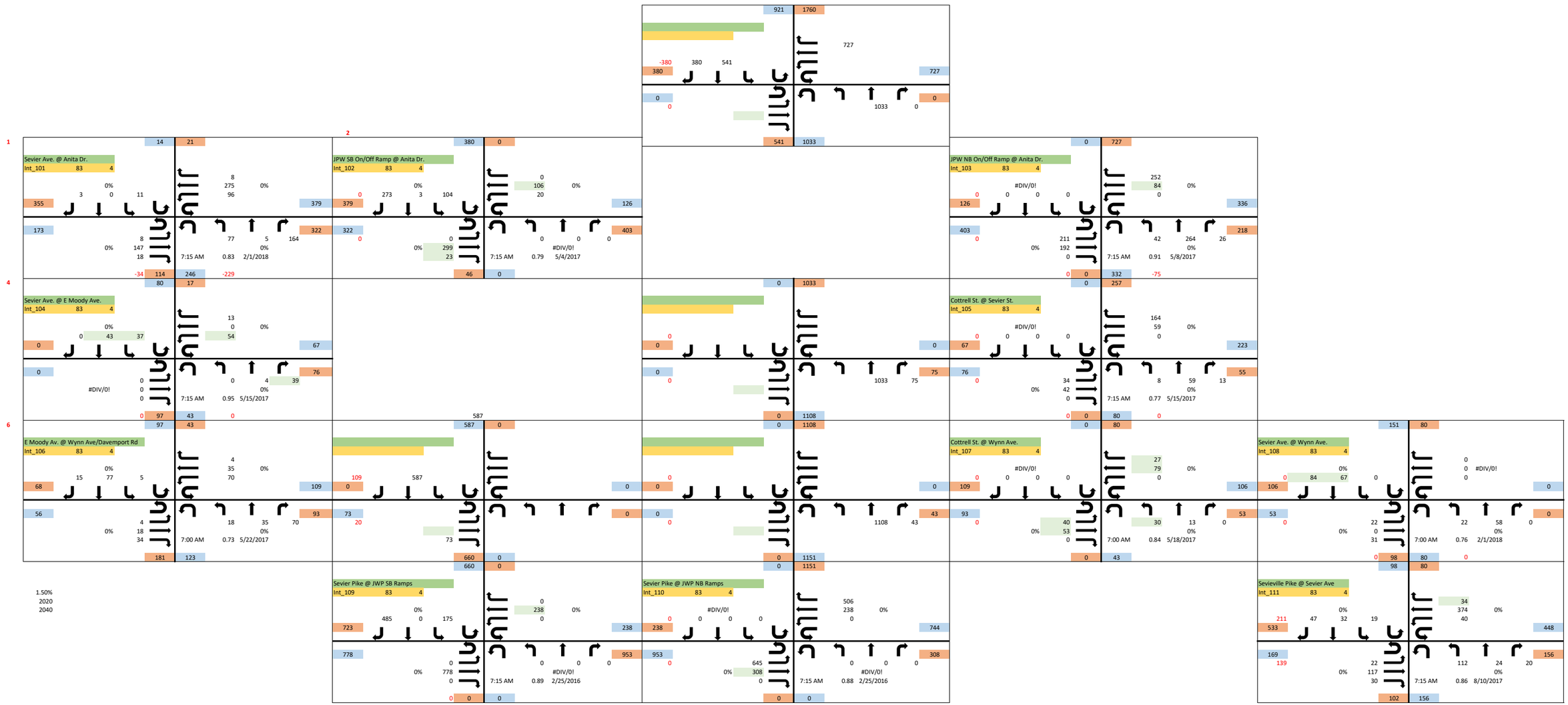


Traffic Data

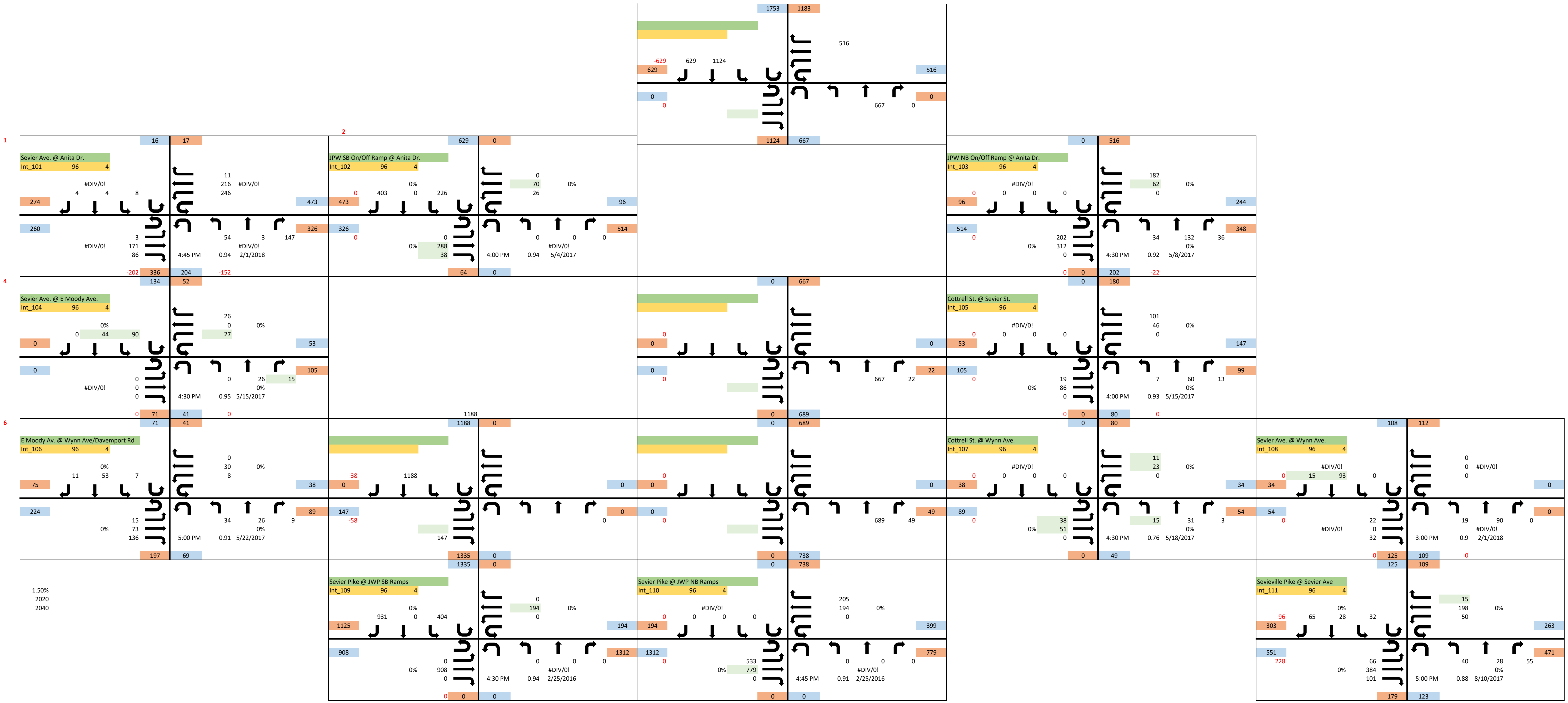
Future / Balanced Peak Hour Turning Movement Volumes - Existing Geometry

2040 AM and PM

2040 Projected Balanced - No Build
AM_TMC (2040)



2040 Projected Balanced - No Build
PM_TMC (2040)

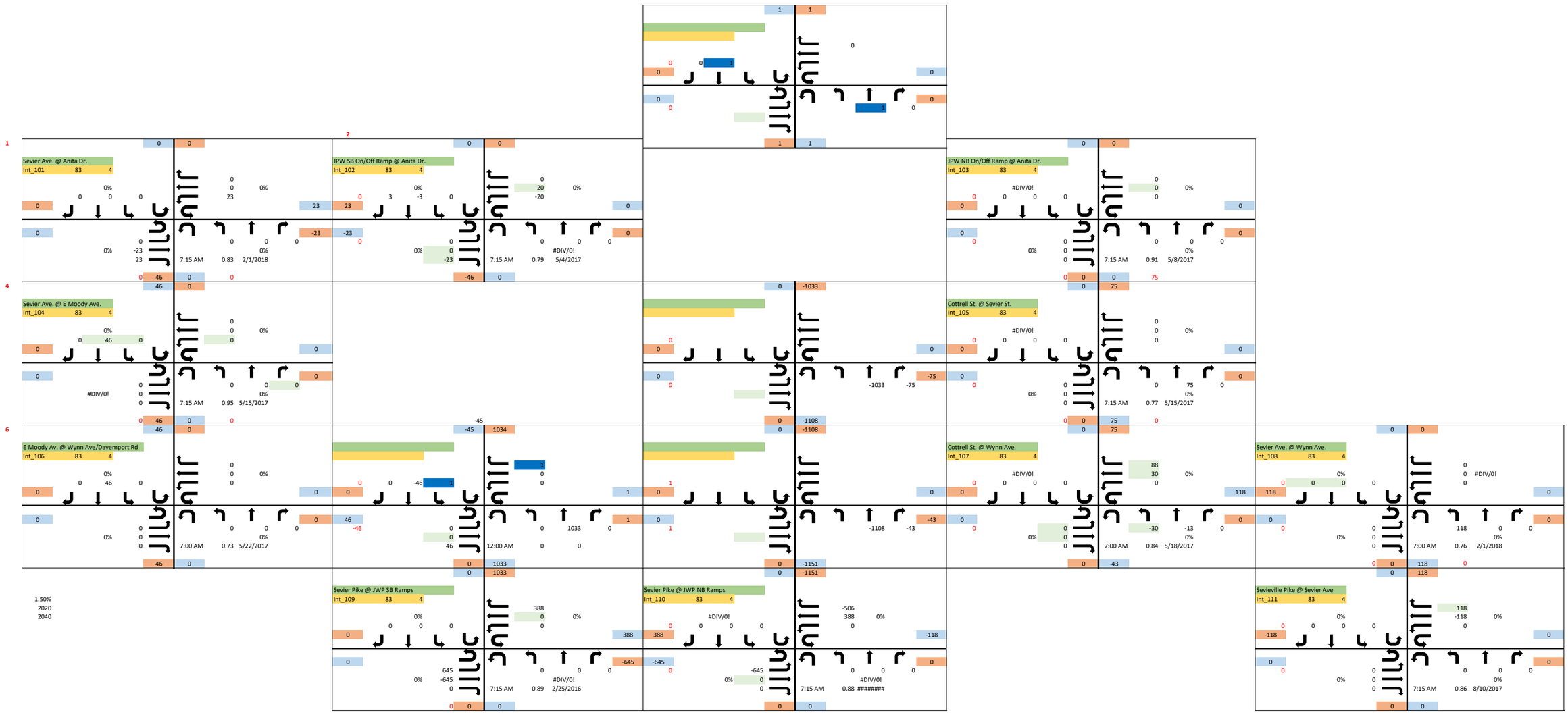


Traffic Data

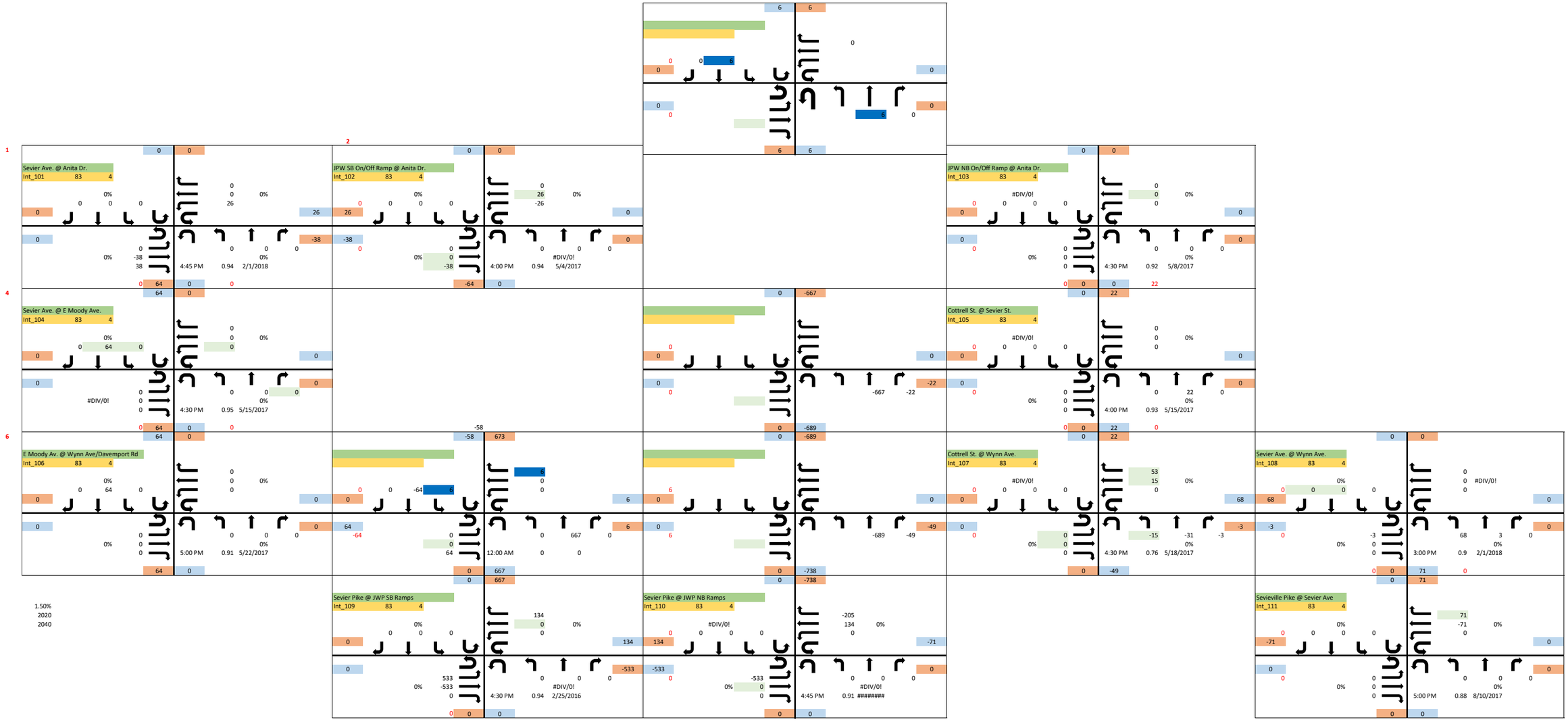
Future / Balanced Peak Hour Turning Movement Volumes - Proposed Geometry

2040 AM and PM

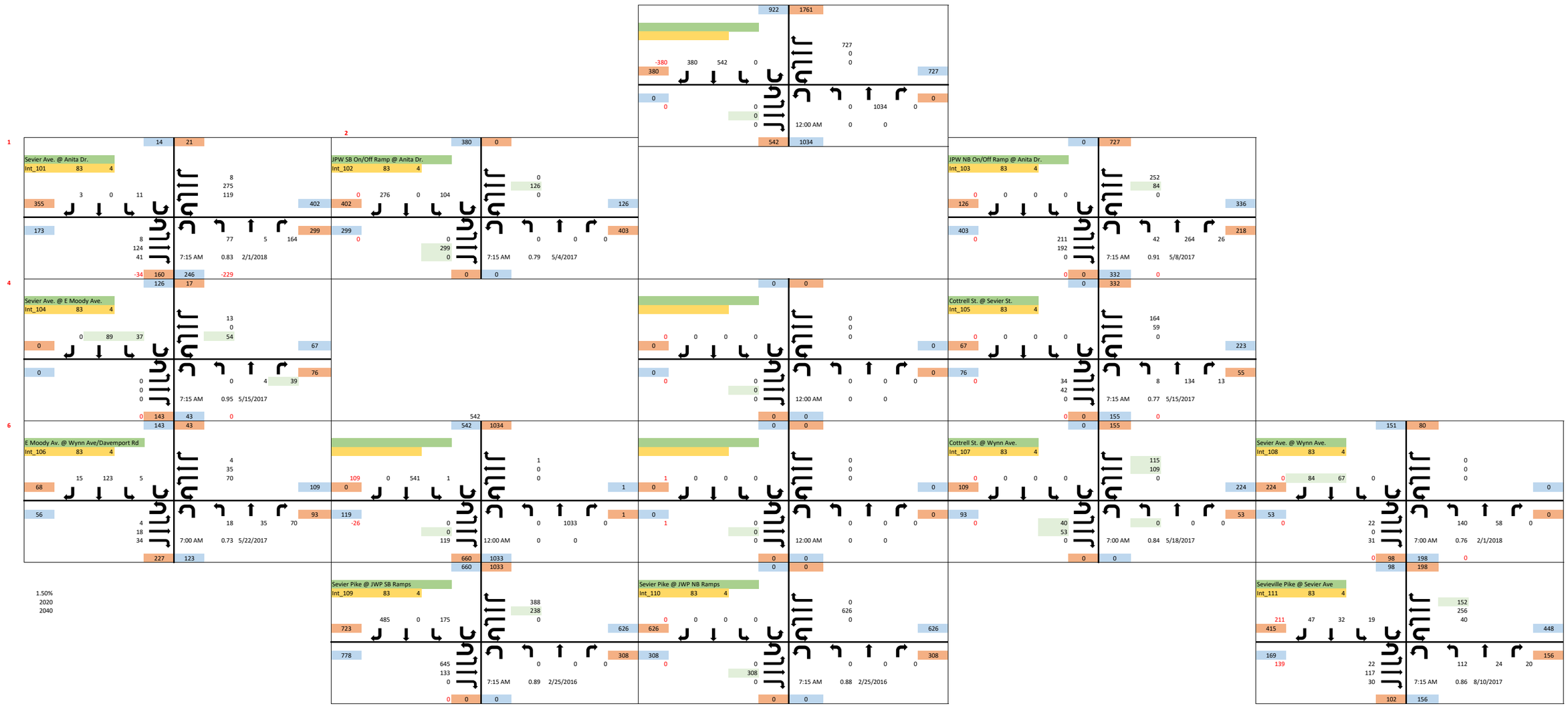
2040 Re-Routed and New Trips Volume Distribution
AM_TMC (Re-route)



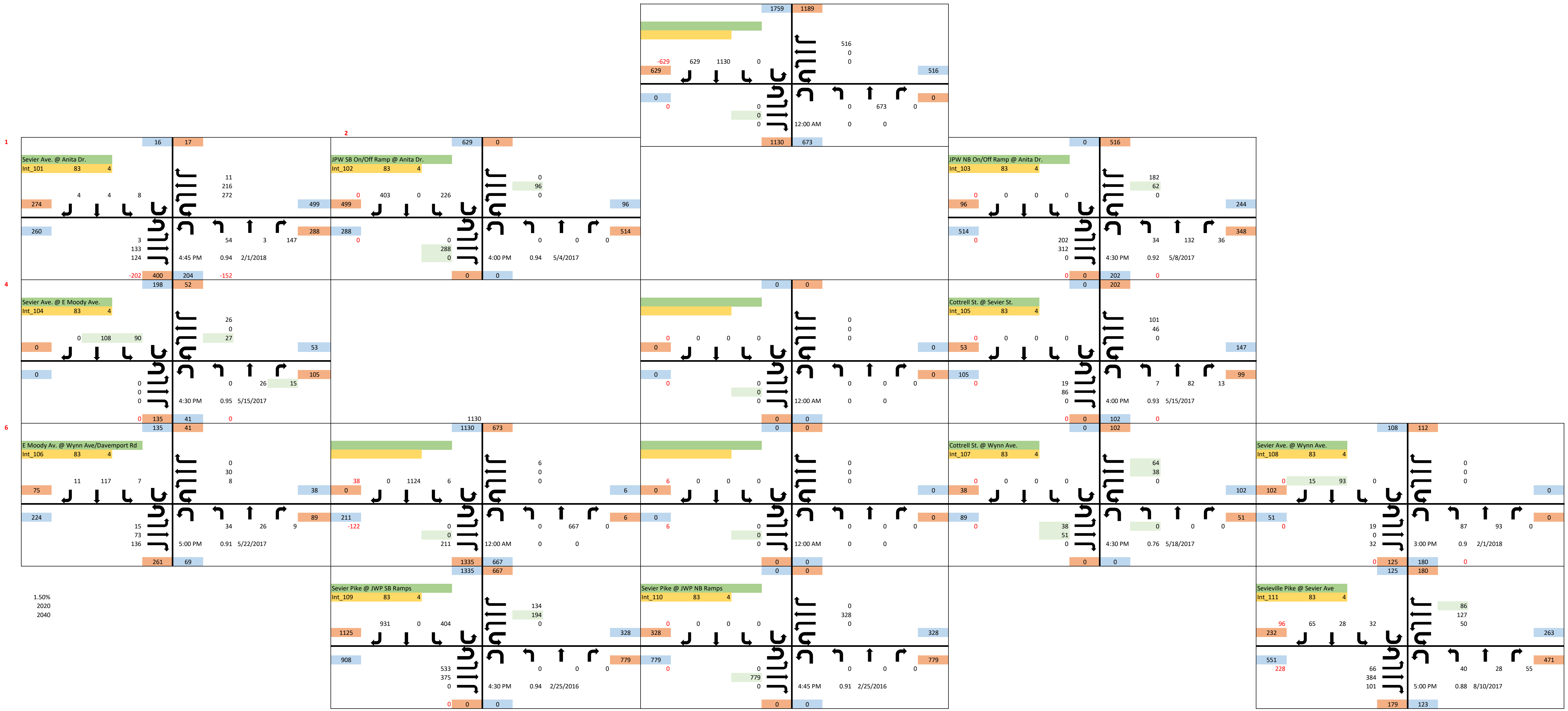
2040 Re-Routed and New Trips Volume Distribution
PM_TMC (Re-route)



2040 Projected Balanced - Build
AM_TMC (2040 Build)



2040 Projected Balanced - Build
PM_TMC (2040 Build)



APPPENDIX D

Technical Memorandum – Traffic Analysis

James White Parkway Urban Wilderness Corridor Study Traffic Analysis

City of Knoxville, TN

For
City of Knoxville Engineering
3131 Morris Avenue
Knoxville, TN 37909

By
Gresham Smith
2095 Lakeside Centre Way #120
Knoxville, TN 37922

Gresham Smith Project No. 44686.00
December 11, 2020

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STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
SUITE 1000, JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TENNESSEE 37243-1402
(615) 741-2208

CLAY BRIGHT
COMMISSIONER

BILL LEE
GOVERNOR

August 19, 2020

Mr. Jon Story
Greshan Smith, Partners
222 second Avenue, Suite 1400
Nashville, TN 37201-2308

RE: James White Parkway Urban Wilderness Traffic Data Projection Study
Knoxville, Knox County

Dear Mr. Story,

The Special Projects Office has reviewed the revised Traffic Data Projection Study and DHV Traffic schematics you submitted on August 18, 2020. The Study and DHV schematics have our approval. If I can be of further assisitance, please contact me.

Sincerely,

Tony Armstrong

Tony Armstrong
Transportation Manager 2

Cc: Shaun Armstrong
File

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1.0 EXECUTIVE SUMMARY

Crash Data

Crash data along James White Parkway, Anita Drive, and Sevierville Pike within the Study Area were obtained from the Tennessee Integrated Traffic Analysis Network (TITAN) database. Crash data from the most recent three years of data were utilized in the analysis (June 1, 2017 through May 31, 2020). The majority of the crashes were rear-end (39 percent) followed closely by angle (35 percent). Seventy-four (74) percent of the crashes were at intersections. Compared to statewide corridor crash rates at similar non-intersection locations, the actual corridor crash rates compared to the statewide rates (A/SW) are as follows:

- James White Parkway A/SW = 0.17
- Anita Drive from Ford Place to James White Parkway A/SW = 0.54
- Anita Drive from Hillwood Drive to James White Parkway A/SW = 0.00*
- Sevierville Pike from Woodlawn Pike to James White Parkway A/SW = 1.06
- Sevierville Pike from James White Parkway to Compton Street A/SW = 0.66

* There were no crashes along Anita Drive

Two (2) intersections had crash rates higher than the statewide average for similar intersections:

- Anita Drive at Cottrell Street A/SW = 1.16
- Sevierville Pike at Woodlawn Pike A/SW = 2.31

Signal Warrant Analysis

Signal warrant analysis was performed at the intersections of Anita Drive at James White Parkway Southbound On/Off Ramps, Anita Drive at Cottrell Street and Sevierville Pike at Sevier Avenue/ Lancaster Drive. The study intersections did not meet any of the studied warrants.

Traffic Analysis

The No Build Alternative and the Build Alternative provide adequate traffic operations through the design year of 2040. With the proposed roadway changes, the Build Alternative will adequately service the projected traffic demand**.**

2.0 JAMES WHITE PARKWAY STUDY AREA CRASH ANALYSIS

Figure 1 provides a map of the Study Area. Crash data along James White Parkway, Anita Drive, and Sevierville Pike within the Study Area were obtained from the Tennessee Integrated Traffic Analysis Network (TITAN) database. Crash data from the most recent three years of data were utilized in the analysis (June 1, 2017 through May 31, 2020).

In these years there were:

1. James White Parkway
    a. Seven (7) reported crashes along the 1.1 miles between the beginning of James White Parkway and the Island Home overpass.
    b. There were no (0) fatal crashes, two (2) incapacitating injury crashes, no (0) other injury crashes, and five (5) property damage only crashes.
2. Anita Drive - Segment A
    a. Eight (8) reported crashes along the 0.215 miles between Sevier Avenue/Ford Place and James White Parkway.
    b. There were no (0) fatal crashes, no (0) incapacitating injury crashes, no (0) other injury crashes and eight (8) property damage only crashes.
3. Anita Drive – Segment B
    a. Six (6) reported crashes along the 0.23 miles between Hillwood Drive and James White Parkway.
    b. There were no (0) fatal crashes, no (0) incapacitating injury crashes, three (3) other injury crashes and three (3) property damage only crashes.
4. Sevierville Pike – Segment A
    a. Forty-one (41) reported crashes along the 0.208 miles between Woodlawn Pike and James White Parkway.
    b. There were no (0) fatal crashes, one (1) incapacitating injury crash, nine (9) other injury crashes and thirty-one (31) property damage only crashes.
5. Sevierville Pike – Segment B
    a. Ten (10) reported crashes along the 0.115 miles between James White Parkway and Compton Street.
    b. There were no (0) fatal crashes, no (0) incapacitating injury crashes, no (0) other injury crashes and ten (10) property damage only crashes.

Figure 2 plots the crash locations within the Study Area. **Figure 3** charts the crashes by time of day along James White Parkway, Anita Drive and Sevierville Pike. The majority of crashes occurred between 1:00 PM and 7:00 PM. **Table 1** through **Table 4** summarizes the crash statistics along James White Parkway, Anita Drive and Sevierville Pike.

Table 1 lists information concerning the types of crashes observed. The majority of the crashes were rear-end (39 percent) followed closely by angle (35 percent). These types of crashes are typically intersection-related, and the data demonstrate that 74 percent of the crashes were at intersections. Seventy-six (76) percent of the crashes occurred in dry road conditions and 74 percent during daylight hours. The data do not demonstrate any roadway condition in need of improvement.

Table 2 lists overall crash data. Seven (7) of the 72 crashes occurred along James White Parkway. Two (2) were incapacitating injury crashes, none (0) were minor injury crashes and five (5) were property damage only crashes. Fourteen (14) of the 72 crashes occurred along Anita Drive. Three (3) were minor injury cashes and eleven (11) were property damage only crashes.

Fifty-one (51) of the 72 crashes occurred along Sevierville Pike. One (1) was an incapacitating injury crash, nine (9) were minor injury crashes, and forty-one (41) were property damage only crashes.

Corridor crash rates are calculated with non-intersection crashes. **Table 3** lists all non-intersection crashes and shows:

James White Parkway had a crash rate of 0.410 crashes per million vehicle miles travelled. The statewide rate for similar roadways (Urban Functional Route, Freeway) is 2.457. Therefore, the ratio of the actual crash rate to the statewide crash rate (A/SW) at non-intersection locations is 0.17.

Segment A of Anita Drive from Sevier Avenue/Ford Place to James White Parkway had a crash rate of 1.634 crashes per million vehicle miles travelled. The statewide rate for similar roadways (Urban Functional Route, 4-Lane Divided) is 3.047. Therefore, the ratio of the actual crash rate to the statewide crash rate (A/SW) at non-intersection locations is 0.54.

Segment B of Anita Drive from Hillwood Drive to James White Parkway did not have any non-intersection crashes.

Segment A of Sevierville Pike from Woodlawn Pike to James White Parkway had a crash rate of 4.04 crashes per million vehicle miles travelled. The statewide rate for similar roadways (Urban Functional Route, 2 Lane W/TL) is 3.817. Therefore, the ratio of the actual crash rate to the statewide crash rate (A/SW) at non-intersection locations is 1.06.

Segment B of Sevierville Pike from James White Parkway to Compton Street had a crash rate of 2.529 crashes per million vehicle miles travelled. The statewide rate for similar roadways (Urban Functional Route, 2 Lane W/TL) is 3.817. Therefore, the ratio of the actual crash rate to the statewide crash rate (A/SW) at non-intersection locations is 0.66.

Therefore, the actual corridor crash rate at non-intersection locations along all corridors is less than the statewide average crash rates for similar corridors except Segment A of Sevierville Pike from Woodlawn Pike to James White Parkway.

Table 4 lists the crash rates of intersections that had five (5) or more crashes between June 1, 2017 and May 31, 2020 within the analysis area. Of the four (4) intersections with five (5) or more crashes, two (2) had crash rates higher than the statewide average for similar intersections. The intersection of Anita Drive at Cottrell Street is stop controlled on all approaches. This intersection has a median along Anita Drive that allows travel across Anita Drive. The crash rate is 1.16x higher than the statewide average of similar intersections. The intersection of Sevierville Pike at Woodlawn Pike is a signalized intersection. This intersection allows full movements and has left-turn lanes on both Sevierville Pike and Woodlawn Pike approaches. The crash rate of Sevierville Pike at Woodlawn Pike is 2.31x higher than the statewide average of similar intersections.

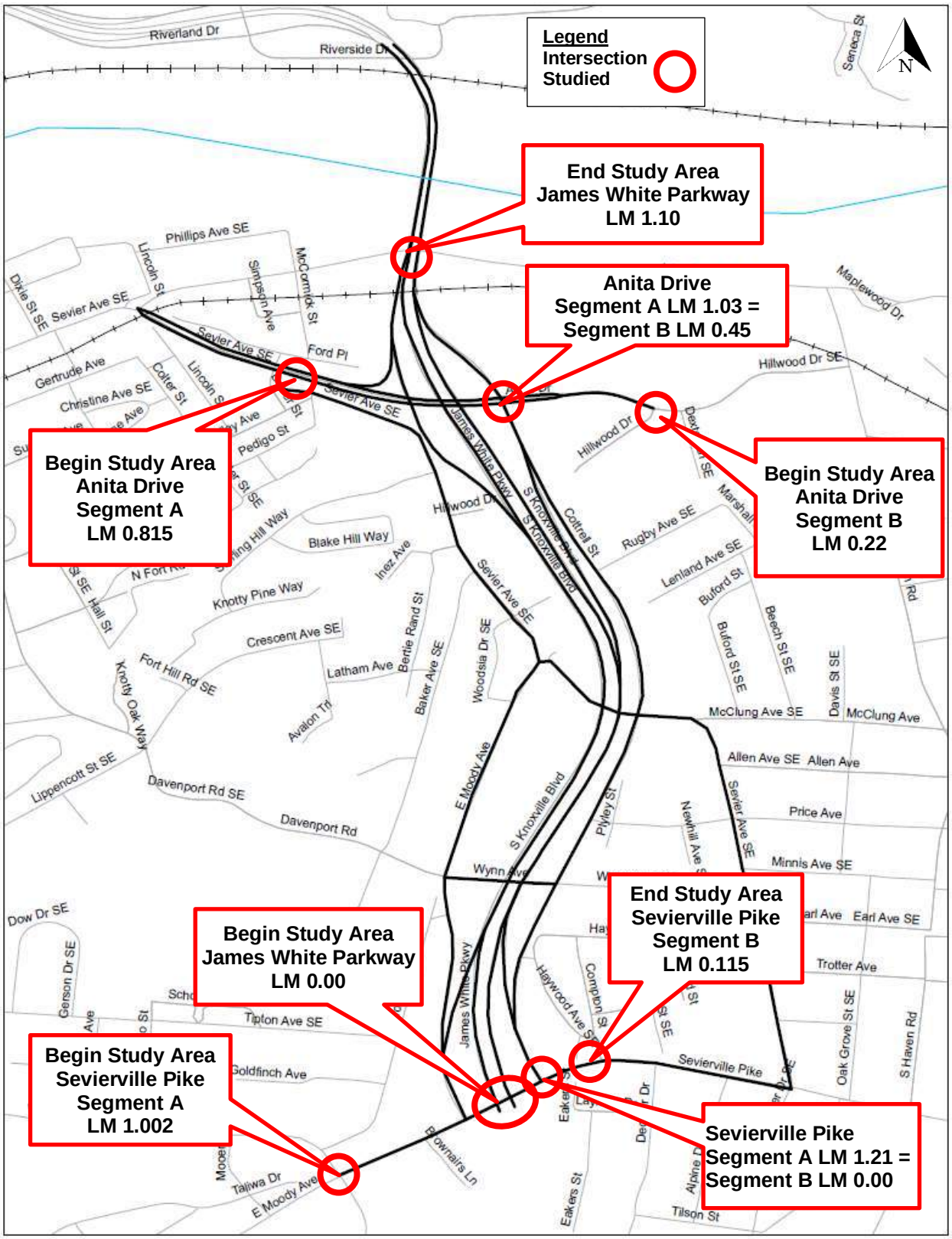


FIGURE 1: JAMES WHITE PARKWAY CRASH ANALYSIS STUDY AREA

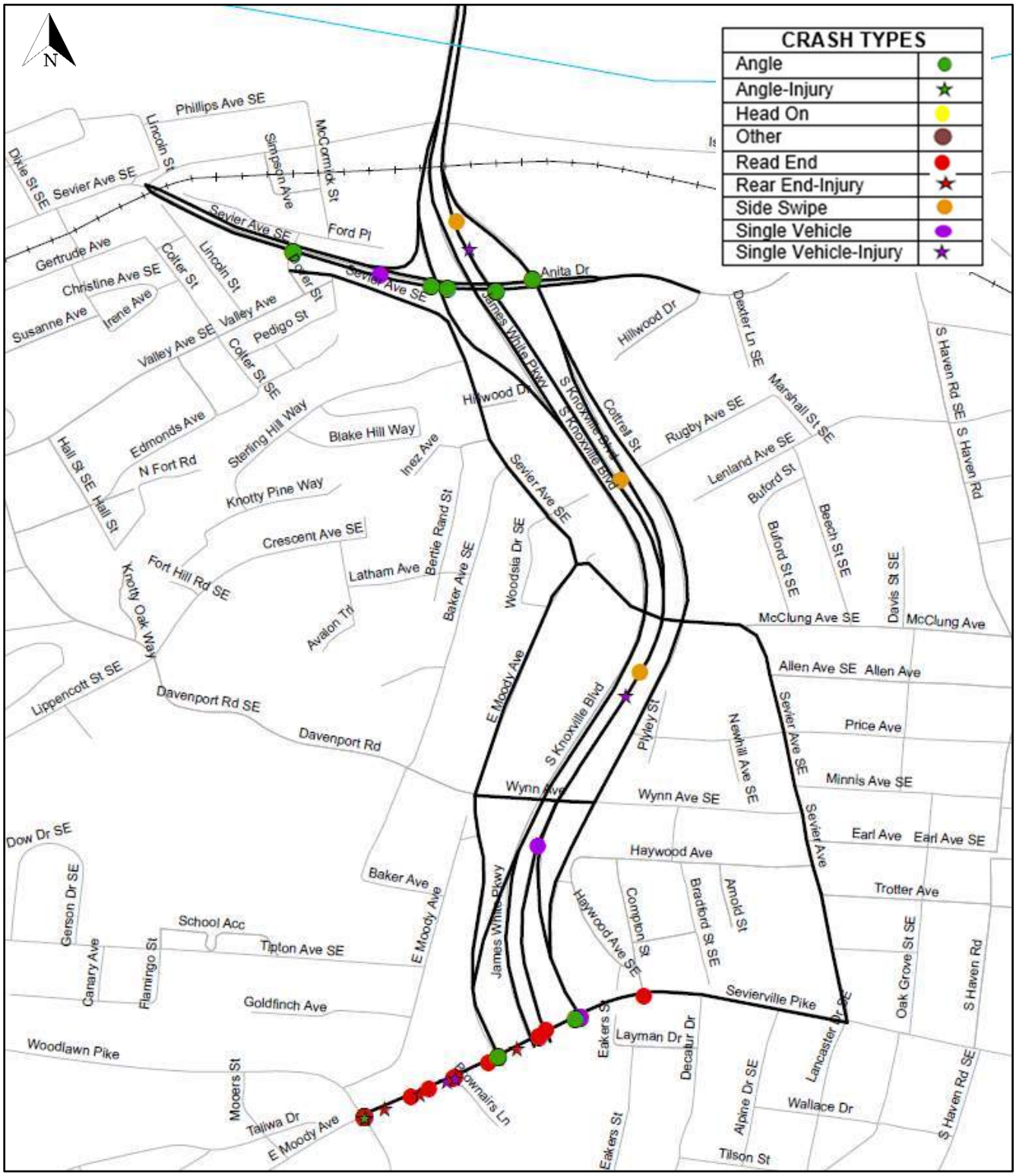


FIGURE 2: JAMES WHITE PARKWAY STUDY AREA, CRASH HISTORY (6/1/17 – 5/31/20)
Source: TITAN Database

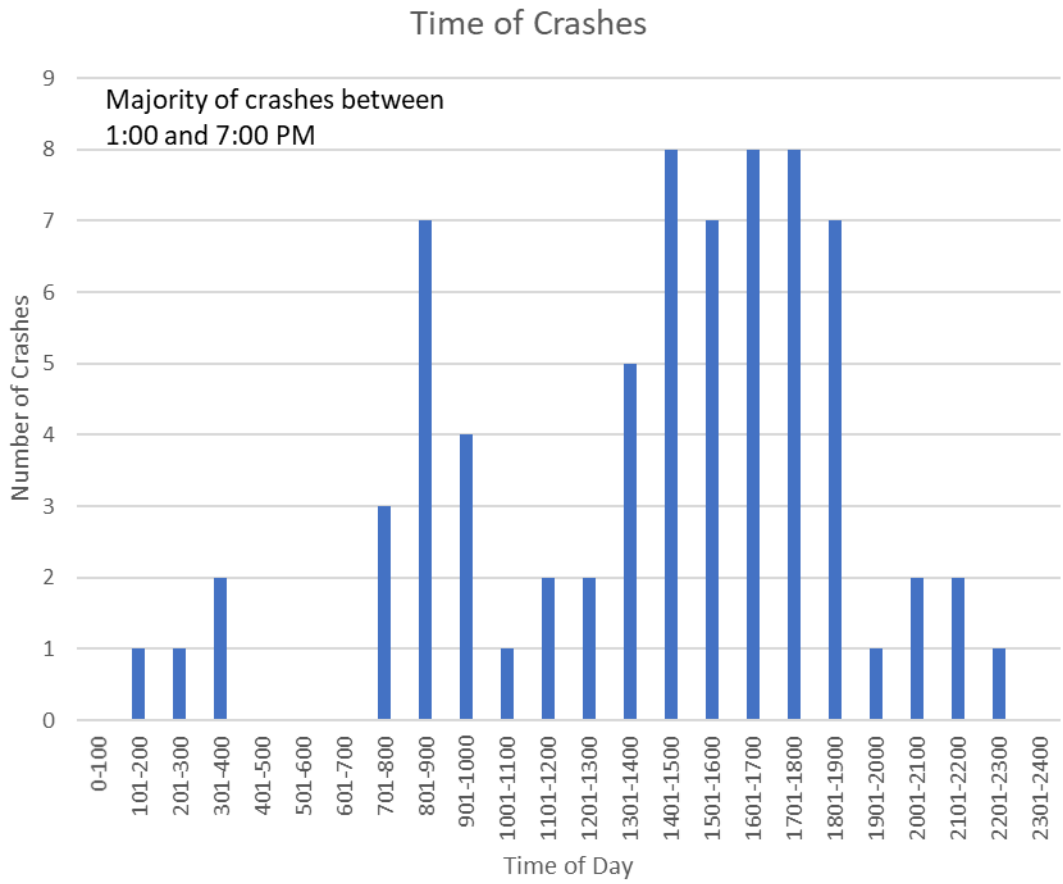


FIGURE 3: JAMES WHITE PARKWAY STUDY AREA, CRASHES BY TIME OF DAY (6/1/17 – 5/31/20)

TABLE 1: JAMES WHITE PARKWAY STUDY AREA, CRASH STATISTICS, TYPE OF CRASHES (6/1/17 – 5/31/20)

Condition	Study Area	
	Number of Crashes	Percentage of Total
	Severity	
Fatal	0	0%
Incap. Injury	3	4%
Other Injury	12	17%
PDO	57	79%
	Manner of Collision	
Angle	25	35%
Rear-End	28	39%
Single Car	8	11%
Sideswipe Same Dir.	3	4%
Head-On	1	1%
Rear-to-Rear	6	8%
Unknown	1	1%
	Road Conditions	
Ice	0	0%
Snow	0	0%
Sand/Mud/Dirt	0	0%
Wet	17	24%
Dry	55	76%
	Light Condition	
Daylight	53	74%
Dusk	3	4%
Dark/Lighted	13	18%
Dark/Not Lighted	3	4%
Not Indicated	0	0%
	Crash Location	
Along Roadway	19	26%
At Intersection	53	74%
Total	**72**	

TABLE 2: CRASH STATISTICS (6/1/17 – 5/31/20)- JAMES WHITE PARKWAY STUDY AREA SUMMARY

Route	Begin		End		Dist.	AADT	Crashes					Overall	Severity
	LM	Description	LM	Description		2019	Total	Fatal	Incap. Inj.	Other Inj.	PDO	Rate	Index
James White Pkwy	0	Begin	1.1	Island Home Overpass	1.100	14,160	7		2		5	0.410	0.57
Anita Dr	0.815	Sevier Ave/Ford Pl	1.03	James White Pkwy	0.215	5,200	8				8	6.535	0.00
Anita Dr	0.22	Hillwood Drive	0.45	James White Pkwy	0.230	4,000	6			3	3	5.956	0.50
Sevierville Pike	1.002	Woodlawn Pike	1.21	James White Pkwy	0.208	9,780	41		1	9	31	18.406	0.27
Sevierville Pike	0.000	James White Pkwy	0.115	Compton Street	0.115	3,140	10				10	25.291	0.00
	Total:				1.9		72	0	3	12	57		

TABLE 3: CRASH STATISTICS (6/1/17 – 5/31/20)- JAMES WHITE PARKWAY STUDY AREA, NON-INTERSECTIONS

Route	Begin		End		Dist.	AADT	Crashes					Overall	Severity	Statewide	Actual/
	LM	Description	LM	Description		2019	Total	Fatal	Incap. Inj.	Other Inj.	PDO	Rate	Index	Rate	Statewide
James White Pkwy	0	Begin	1.1	Island Home Overpass	1.100	14,160	7		2		5	0.410	0.57	2.457	0.17
Anita Dr	0.815	Sevier Ave/Ford Pl	1.03	James White Pkwy	0.215	5,200	2				2	1.634	0.00	3.047	0.54
Anita Dr	0.22	Hillwood Drive	0.45	James White Pkwy	0.230	4,000	0					0.000	0.00	3.047	0.00
Sevierville Pike	1.002	Woodlawn Pike	1.21	James White Pkwy	0.208	9,780	9		1	3	5	4.040	0.56	3.817	1.06
Sevierville Pike	0.000	James White Pkwy	0.115	Compton Street	0.115	3,140	1				1	2.529	0.00	3.817	0.66

Notes: Statewide average crash rate for similar facilities (Urban Functional Route, Freeway) is 2.457 crashes per million vehicle miles
Statewide average crash rate for similar facilities (Urban Functional Route, 4-Lane Divided) is 3.047 crashes per million vehicle miles
Statewide average crash rate for similar facilities (Urban Functional Route, 2-Lane W/TL) is 3.817 crashes per million vehicle miles

TABLE 4: CRASH STATISTICS (6/1/17 – 5/31/20), JAMES WHITE PARKWAY STUDY AREA, INTERSECTIONS WITH 5 OR MORE CRASHES

				ADT Mainline		ADT Side Road		Three Year Total		Statewide	Actual/
ID	LM	Route	Side Road	West	East	North	South	# Crashes	Rate	Rate	Statewide
1	0.39	Anita Drive	Cottrell Street	4,000	4,000	2,460	2,460	6	0.85	0.731	1.16
2	1.002	Sevierville Pike	Woodlawn Pike	9,780	9,780	2,220	2,220	18	1.37	0.592	2.31
3	1.153	Sevierville Pike	James White Parkway SB Ramp	9,780	9,780	14,160	14,160	9	0.34	0.592	0.58
4	0.048	Sevierville Pike	James White Parkway NB Ramp	3,140	3,140	14,160	14,160	8	0.42	0.592	0.71

Notes: SW Rate for urban full stop intersections on multi-lane divided facilities (2014-2016): 0.731
SW Rate for urban signalized intersections on two lane facilities with turn lanes (2014-2016): 0.592

2.1 JAMES WHITE PARKWAY CRASH ANALYSIS

Figure 4 plots the crash locations along James White Parkway. **Figure 5** charts the crashes by time of day along James White Parkway. The majority of crashes occurred between 2:00 PM and 3:00 PM. **Table 5** summarizes the crash statistics along James White Parkway and lists information concerning the types of crashes observed. The majority of the crashes were single car (43 percent) and sideswipe (43 percent). Eighty-six (86) percent of the crashes occurred in dry road conditions and 86 percent during daylight hours. The data do not demonstrate any roadway condition in need of improvement.

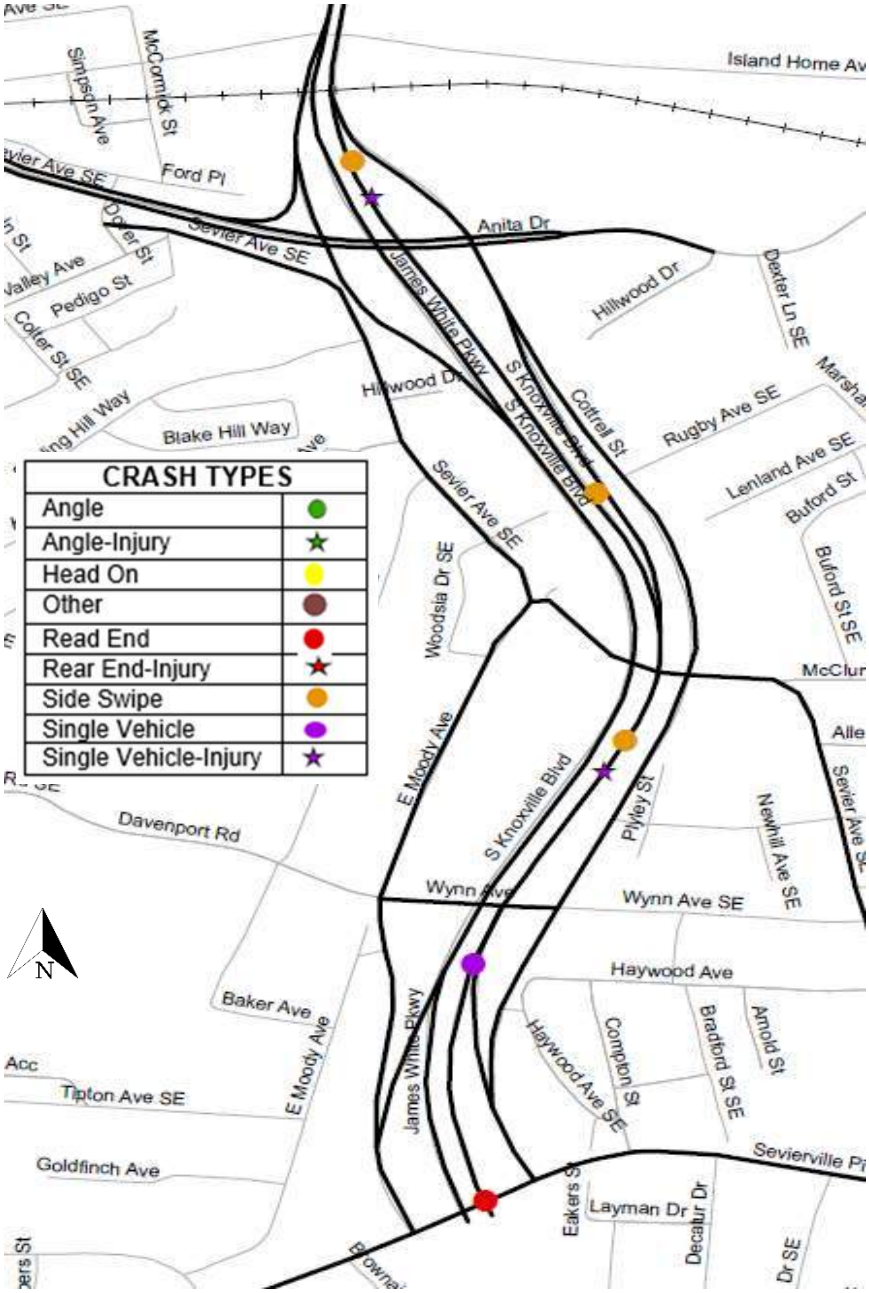


FIGURE 4: JAMES WHITE PARKWAY, CRASH HISTORY (6/1/17-5/31/20)
Source: TITAN Database

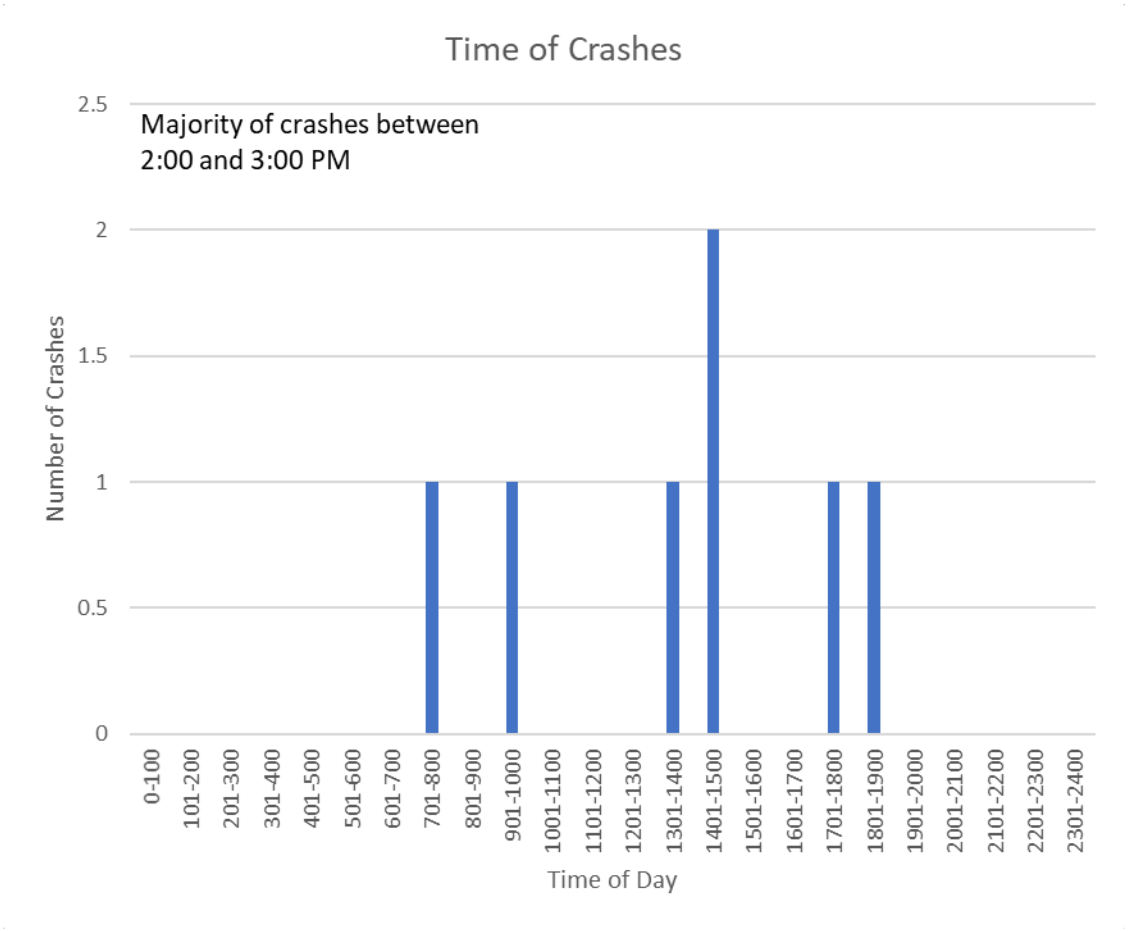


FIGURE 5: JAMES WHITE PARKWAY, CRASHES BY TIME OF DAY (6/1/17-5/31/20)

TABLE 5: JAMES WHITE PARKWAY, CRASH STATISTICS, TPE OF CRASHES (6/1/17 – 5/31/20)

Condition	Study Area	
	Number of Crashes	Percentage of Total
	Severity	
Fatal	0	0%
Incap. Injury	2	29%
Other Injury	0	0%
PDO	5	71%
	Manner of Collision	
Angle	0	0%
Rear-End	0	0%
Single Car	3	43%
Sideswipe Same Dir.	3	43%
Head-On	0	0%
Rear-to-Rear	1	14%
Unknown	0	0%
	Road Conditions	
Ice	0	0%
Snow	0	0%
Sand/Mud/Dirt	0	0%
Wet	1	14%
Dry	6	86%
	Light Condition	
Daylight	6	86%
Dark/Lighted	1	14%
Not Indicated	0	0%
	Crash Location	
Along Roadway	7	100%
At Intersection	0	0%
Total	**7**	

2.2 ANITA DRIVE CRASH ANALYSIS

Figure 6 plots the crash locations along Anita Drive. **Figure 7** charts the crashes by time of day along Anita Drive. The majority of crashes occurred between 8:00 AM and 9:00 AM. **Table 6** summarizes the crash statistics along Anita Drive and lists information concerning the types of crashes observed. The majority of the crashes were angle (79 percent). These types of crashes are typically intersection-related, and the data demonstrate that 86 percent of the crashes were at intersections. Seventy-nine (79) percent of the crashes occurred in dry road conditions and 93 percent during daylight hours. The data do not demonstrate any roadway condition in need of improvement.

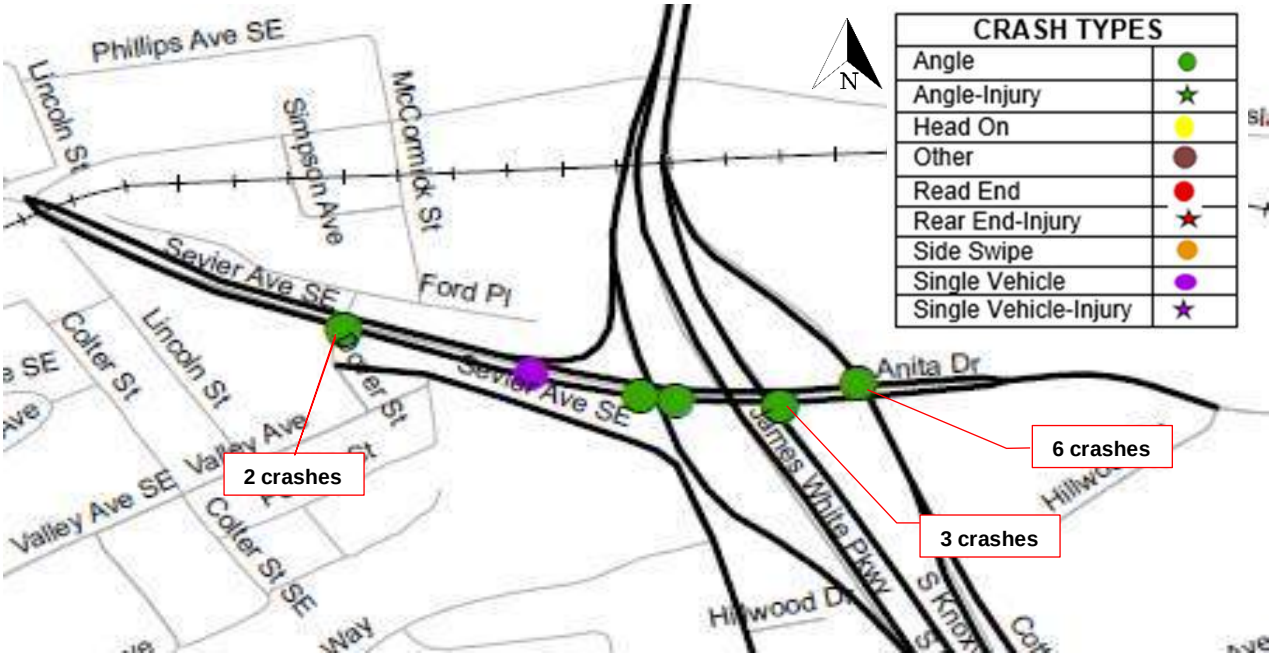


FIGURE 6: ANITA DRIVE, CRASH HISTORY (6/1/17-5/31/20)
Source: TITAN Database

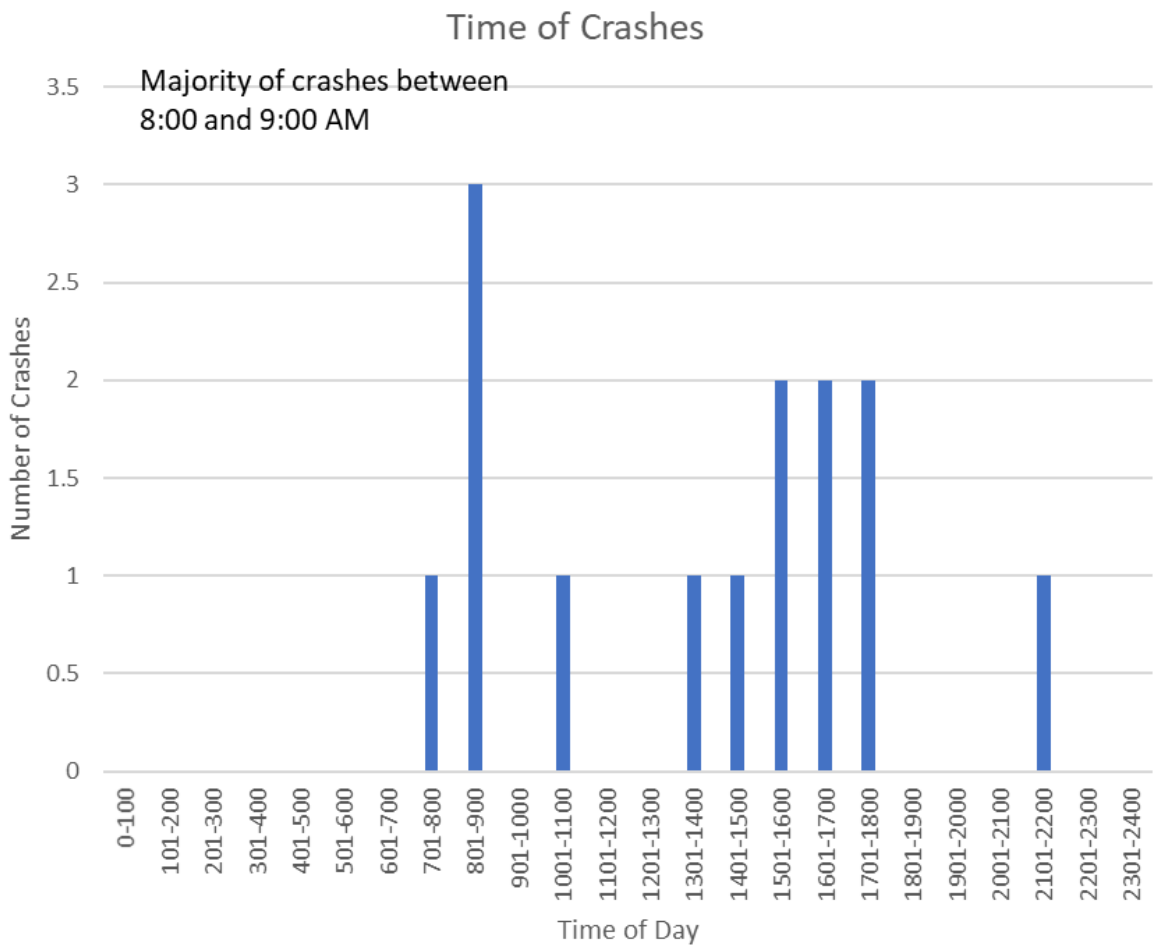


FIGURE 7: ANITA DRIVE, CRASHES BY TIME OF DAY (6/1/17-5/31/20)

TABLE 6: ANITA DRIVE, CRASH STATISTICS, TYPE OF CRASHES (6/1/17-5/31/20)

Condition	Study Area	
	Number of Crashes	Percentage of Total
	Severity	
Fatal	0	0%
Incap. Injury	0	0%
Other Injury	3	21%
PDO	11	79%
	Manner of Collision	
Angle	11	79%
Rear-End	1	7%
Single Car	1	7%
Sideswipe Same Dir.	0	0%
Head-On	0	0%
Rear-to-Rear	0	0%
Unknown	1	7%
	Road Conditions	
Ice	0	0%
Snow	0	0%
Sand/Mud/Dirt	0	0%
Wet	3	21%
Dry	11	79%
	Light Condition	
Daylight	13	93%
Dark/Lighted	1	7%
Not Indicated	0	0%
	Crash Location	
Along Roadway	2	14%
At Intersection	12	86%
Total	**14**	

2.3 SEVIERVILLE PIKE CRASH ANALYSIS

Figure 8 plots the crash locations along Sevierville Pike. **Figure 9** charts the crashes by time of day along Sevierville Pike. The majority of crashes occurred between 2:00 PM and 7:00 PM. **Table 7** summarizes the crash statistics along Sevierville Pike and lists information concerning the types of crashes observed. The majority of the crashes were rear-end (53 percent) followed by angle (27 percent). These types of crashes are typically intersection-related, and the data demonstrate that 80 percent of the crashes were at intersections. Seventy-five (75) percent of the crashes occurred in dry road conditions and 67 percent during daylight hours. The data do not demonstrate any roadway condition in need of improvement.

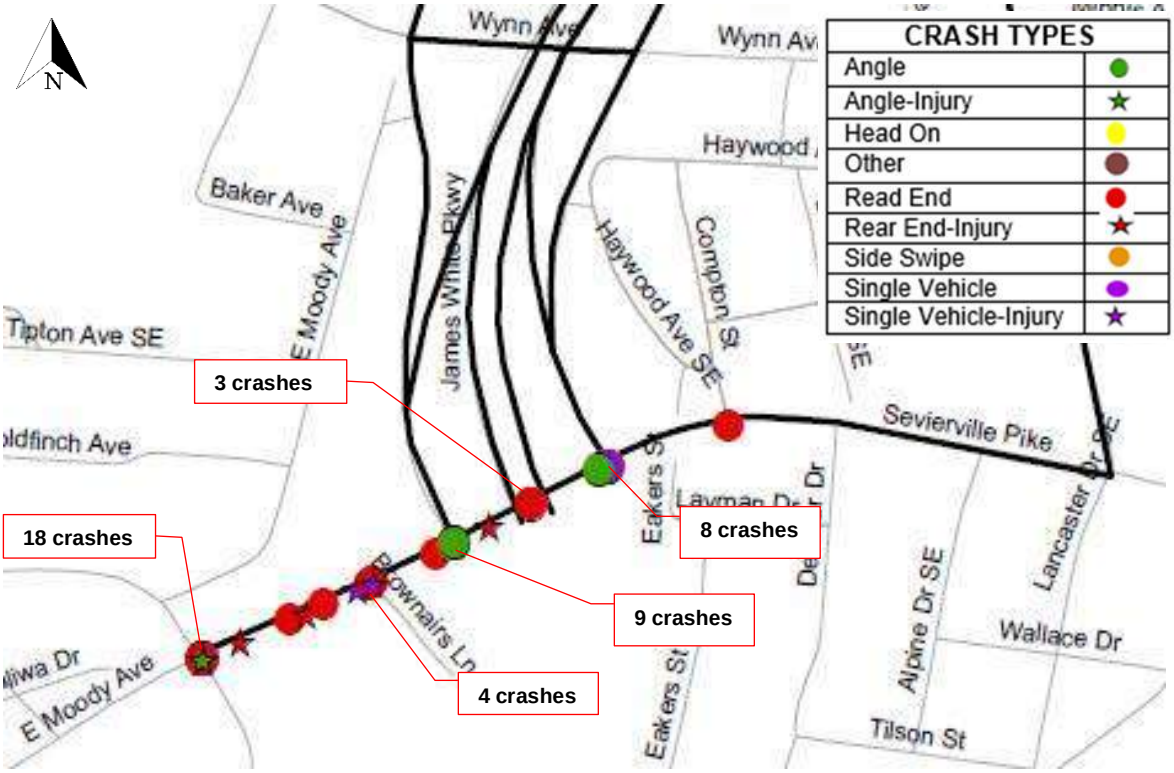


FIGURE 8: SEVIERVILLE PIKE, CRASH HISTORY (6/1/17-5/31/20)
Source: TITAN Database

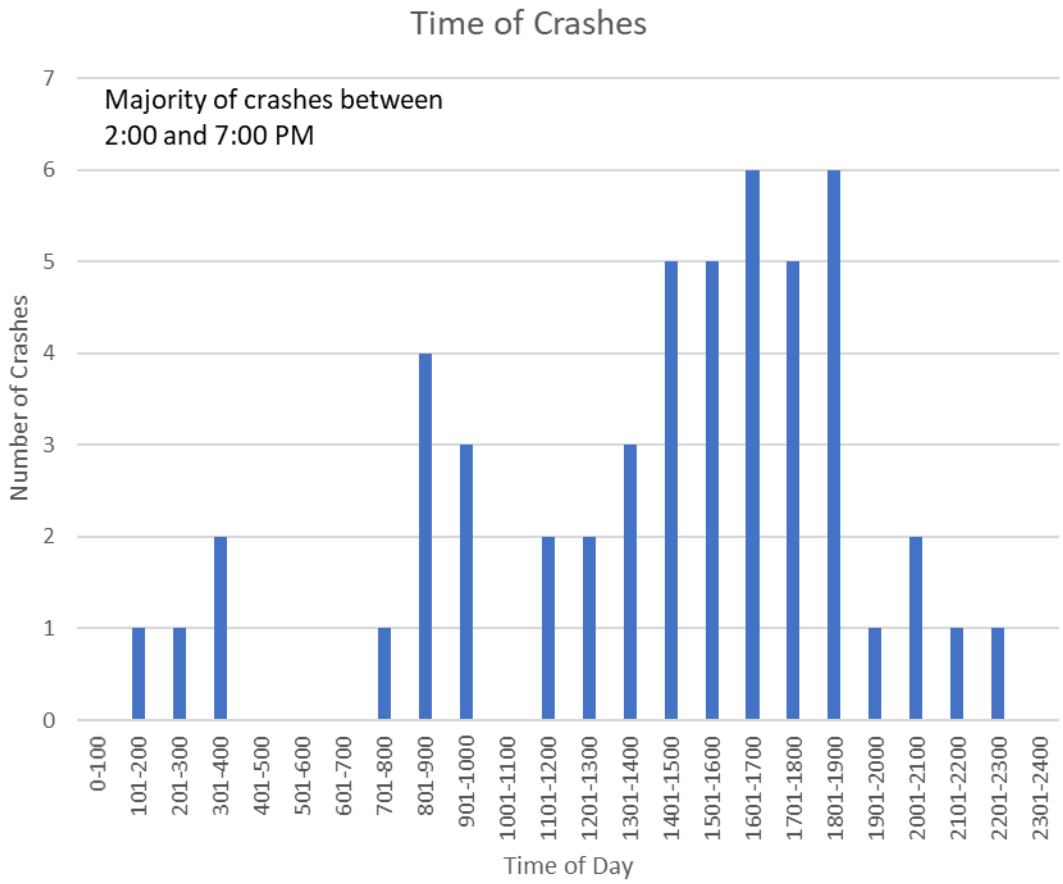


FIGURE 9: SEVIERVILLE PIKE, CRASHES BY TIME OF DAY (6/1/17-5/31/20)

TABLE 7: SEVIERVILLE PIKE, CRASH STATISTICS, TYPE OF CRASHES (6/1/17-5/31/20)

Condition	Study Area	
	Number of Crashes	Percentage of Total
	Severity	
Fatal	0	0%
Incap. Injury	1	2%
Other Injury	9	18%
PDO	41	80%
	Manner of Collision	
Angle	14	27%
Rear-End	27	53%
Single Car	4	8%
Sideswipe Same Dir.	0	0%
Head-On	1	2%
Rear-to-Rear	5	10%
Unknown	0	0%
	Road Conditions	
Ice	0	0%
Snow	0	0%
Sand/Mud/Dirt	0	0%
Wet	13	25%
Dry	38	75%
	Light Condition	
Daylight	34	67%
Dusk	3	6%
Dark/Lighted	11	22%
Dark/Not Lighted	3	6%
Not Indicated	0	0%
	Crash Location	
Along Roadway	10	20%
At Intersection	41	80%
Total	**51**	

2.4 SUMMARY

Crash data along James White Parkway, Anita Drive, and Sevierville Pike within the Study Area were obtained from the Tennessee Integrated Traffic Analysis Network (TITAN) database. Crash data from the most recent three years of data were utilized in the analysis (June 1, 2017 through May 31, 2020). The majority of the crashes were rear-end (39 percent) followed closely by angle (35 percent). Seventy-four (74) percent of the crashes were at intersections. One corridor segment, Sevierville Pike between Woodlawn Pike and James White Parkway, had a crash rate higher than the statewide average for a similar roadway type. Two (2) intersections had crash rates higher than the statewide average for similar intersections; Anita Drive at Cottrell Street and Sevierville Pike at Woodlawn Pike. The Sevierville Pike at Woodlawn Pike has the highest crash rate at 2.31x the statewide average of similar intersections.

3.0 SIGNAL WARRANT ANALYSIS

3.1 SIGNAL WARRANT LOCATIONS

Gresham Smith, at the request of The City of Knoxville Engineering Department, conducted an engineering study of traffic conditions, pedestrian characteristics, and physical characteristics of three study area intersections to determine whether installation of a traffic control signal is justified. A traffic signal warrant analysis was performed for the existing year at the following intersections:

1. Anita Drive at James White Parkway's Southbound On/Off Ramps
2. Anita Drive at Cottrell Street
3. Sevierville Pike at Sevier Avenue/Lancaster Drive

A map of the intersections is provided in **Figure 10**.

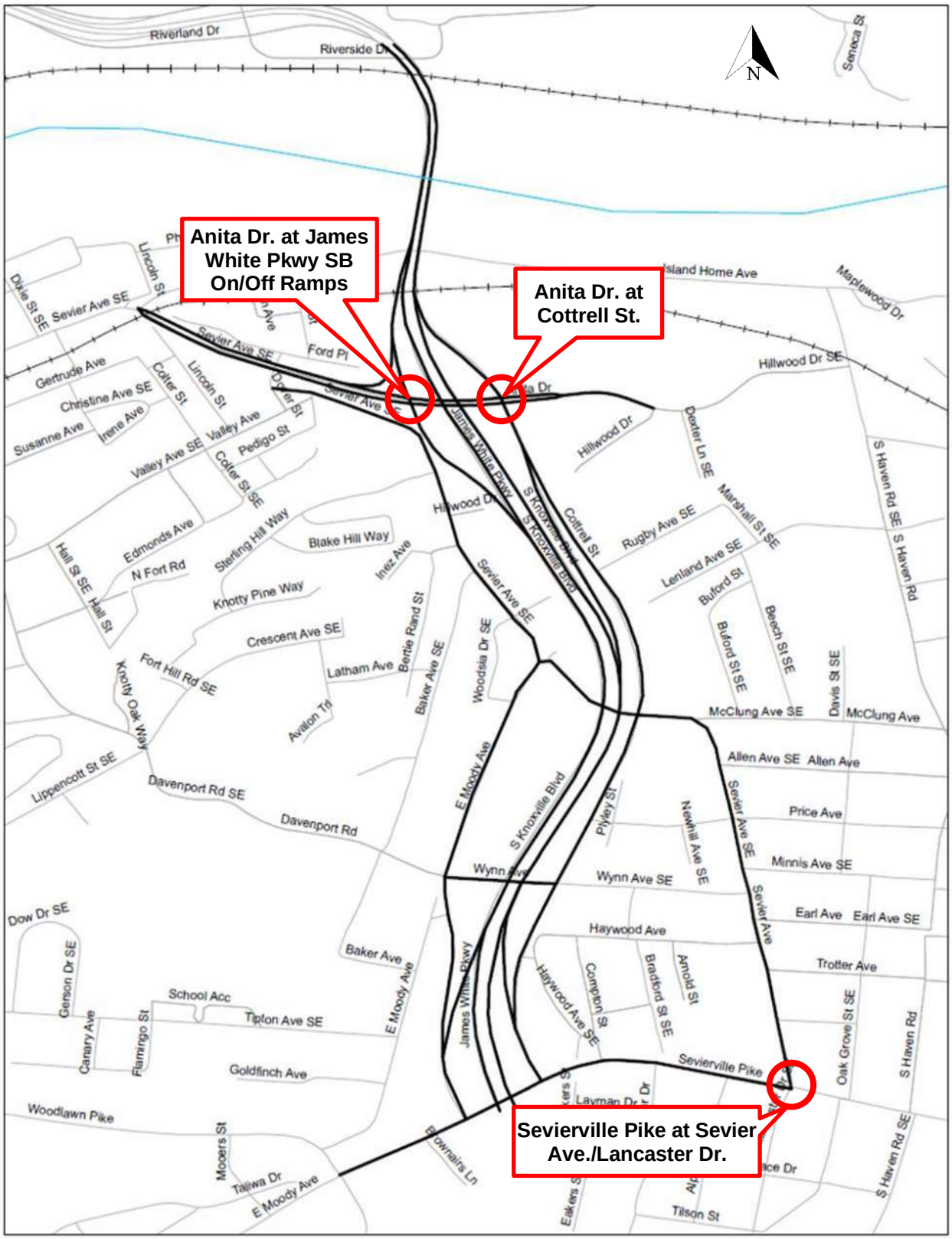


FIGURE 10: JAMES WHITE PARKWAY SIGNAL WARRANT ANALYSIS LOCATION

3.1.1 Data Used in the Analysis

- Traffic Volumes (approved in Traffic Data memo dated 8/18/2020)
    - Baseline Turning Movement Volumes: Counts collected in 2017 adjusted to 2020 using TDOT's seasonal variation factors and an annual 1.5% growth rate (6 hours: 7AM-9AM; 11AM-1PM; 4PM-6PM)
- Manual on Uniform Traffic Control Devices (MUTCD) 2009 Edition, Revision 2 dated May 2012
- Highway Capacity Software (HCS7) Warrants Module (2020 Version 7.8.5)

3.1.2 Intersection Descriptions

- Anita Drive at James White Parkway Southbound On/Off Ramps

  Anita Drive is an east-west roadway with a posted speed limit of 35 miles per hour. It is functionally classified as an Urban Minor Arterial. Anita Drive has two travel lanes in each direction that are separated by a raised concrete and grass median with a westbound left turn lane at the James White Parkway Southbound ramp intersection. Anita Drive free flows at this intersection. The closest signalized intersection along Anita Drive to the subject intersection is approximately 0.55 miles to the west, at Barber Street.

  James White Parkway is a north-south roadway with a posted speed limit of 55 miles per hour on the mainline and a 35 mile per hour advisory speed plaque on the southbound off ramp. It is functionally classified as a Freeway. The southbound approach is stop sign controlled approaching Anita Drive. A stop sign is present, but a stop line is not. The southbound approach consists of a single left turn lane and a channelized yield-control right turn lane. There are no crosswalks at this intersection.

- Anita Drive at Cottrell Street/James White Parkway Northbound On Ramp

  Anita Drive is an east-west roadway with a posted speed limit of 35 miles per hour. It is functionally classified as an Urban Minor Arterial. Anita Drive has two travel lanes in each direction that are separated by a raised concrete median with an eastbound left turn lane at the Cottrell Street intersection. Anita Drive is controlled by stop signs and stop lines on both approaches at this intersection. The closest signalized intersection along Anita Drive to the subject intersection is approximately 0.66 miles to the west, at Barber Street.

  Cottrell Street is a north-south roadway with a posted speed limit of 35 miles per hour. It is functionally classified as an Urban Local Route. The northbound approach is stop sign controlled approaching Anita Drive. A stop sign with a stop line is present on the northbound approach. The southbound approach consists of a single shared thru-left turn lane and a channelized yield-control right turn lane. There are no crosswalks at this intersection.

- Sevierville Pike at Sevier Avenue/Lancaster Drive

  Sevierville Pike is an east-west roadway with a posted speed limit of 30 miles per hour. It is functionally classified as a Major Collector. Sevierville Pike is an undivided two-lane roadway and is stop controlled at the Sevier Avenue/Lancaster Drive intersection. There is a westbound yield controlled channelized right turn. The closest signalized intersection

along Sevierville Pike to the subject intersection is approximately 0.25 miles to the west, at the James White Parkway Northbound On ramp.

North of Sevierville Pike, Sevier Avenue is an undivided two-lane roadway with a posted speed limit of 30 miles per hour. It is functionally classified as an Urban Local Road. South of Sevierville Pike, Lancaster Drive is an undivided two-lane roadway with a posted speed limit of 30 miles per hour. It is functionally classified as an Urban Local Road.
Both approaches are single lanes and are controlled by a stop sign with a stop line approaching Sevierville Pike. There are no crosswalks at this Intersection.

3.1.3 Methodology

Traffic data were collected between the hours of 6:00 to 9:00 AM, 11:00 AM to 1:00 PM, and 4:00 to 6:00 PM, consistent with Tennessee Department of Transportation (TDOT) guidance for traffic turning movement data collection. The signal warrant analysis was developed based upon standards in the MUTCD and developed with the HCS Warrants Module. The traffic volumes for the hours from 9:00 to 11:00 AM and 1:00 to 4:00 PM were interpolated using engineering judgment in order to input 12 continuous hours into the HCS Warrants Module.

3.1.4 Findings

Traffic signal warrant analysis for the existing year at all three study intersections were completed and the vehicular volume warrants (Warrants 1-3) were not met for any of the intersections.

4.0 TRAFFIC ANALYSIS

4.1 JAMES WHITE PARKWAY CORRIDOR STUDY AREA

Figure 11 provides a map of the Study Area. The limits of the study area along James White Parkway will extend from the bridge over the Tennessee River to the north, to Sevierville Pike to the south. In addition, the study area includes Cottrell Street to the east, Sevier Avenue/E. Moody Avenue to the west, and the interchange of James White Parkway at Sevier Avenue / Anita Drive. **Table 8** shows the intersections included in the traffic analysis with their control type.

4.1.1 Traffic Projections and Proposed Geometry

The traffic projections were developed for three primary concepts, the "2020 Existing," "2040 No-Build," and "2040 Build" Alternatives. The Existing Alternative models the study area intersections under current geometric conditions. The No Build Alternative models the study area intersections under current geometric conditions except for the number of travel lanes on Anita Drive. There is a proposed re-striping project on Anita Drive from Sevier Avenue to Cottrell Street that will reduce the number of through lanes to one lane in each direction with bikes lanes. Therefore, the No Build Alternative models single lane thru movements on Anita Drive.

In addition to the planned re-striping on Anita Drive, the Build Alternative includes the proposed Urban Wilderness Park project that will convert the existing northbound lanes of James White Parkway into a continuous bike and pedestrian greenway. The vehicular traffic will be shifted to where the existing southbound lanes are located making James White Parkway a two-way roadway on the current southbound lanes. Also, vehicular traffic entering and exiting the Urban Wilderness Gateway Park parking area will have access to James White Parkway just south of the Wynn Avenue overpass bridge. Existing southbound vehicular traffic entering James White Parkway at Anita Drive and at Moody Avenue no longer have access to James White Parkway and have been routed to nearby local roads to access their destination. .

For the Build Alternative, all traffic control will remain the same as existing conditions; however, the James White Parkway at Sevierville Pike intersection will be realigned to accommodate traffic entering and exiting James White Parkway. The proposed posted speed limit on James White Parkway is to be set to 35 miles per hour. **Figure 12** shows a single line sketch of the Build Alternative to note where ramps and other movements are removed due to the relocation of the northbound travel lanes on James White Parkway. The figure also shows the approximate location of the new access to the Urban Wilderness Park parking area from James White Parkway. **Figure 13** shows the proposed geometry for the James White Parkway at Sevierville Pike intersection. The traffic data collection and projection methodology are described in Technical Memorandum 1: Traffic Data and Projection Summary.

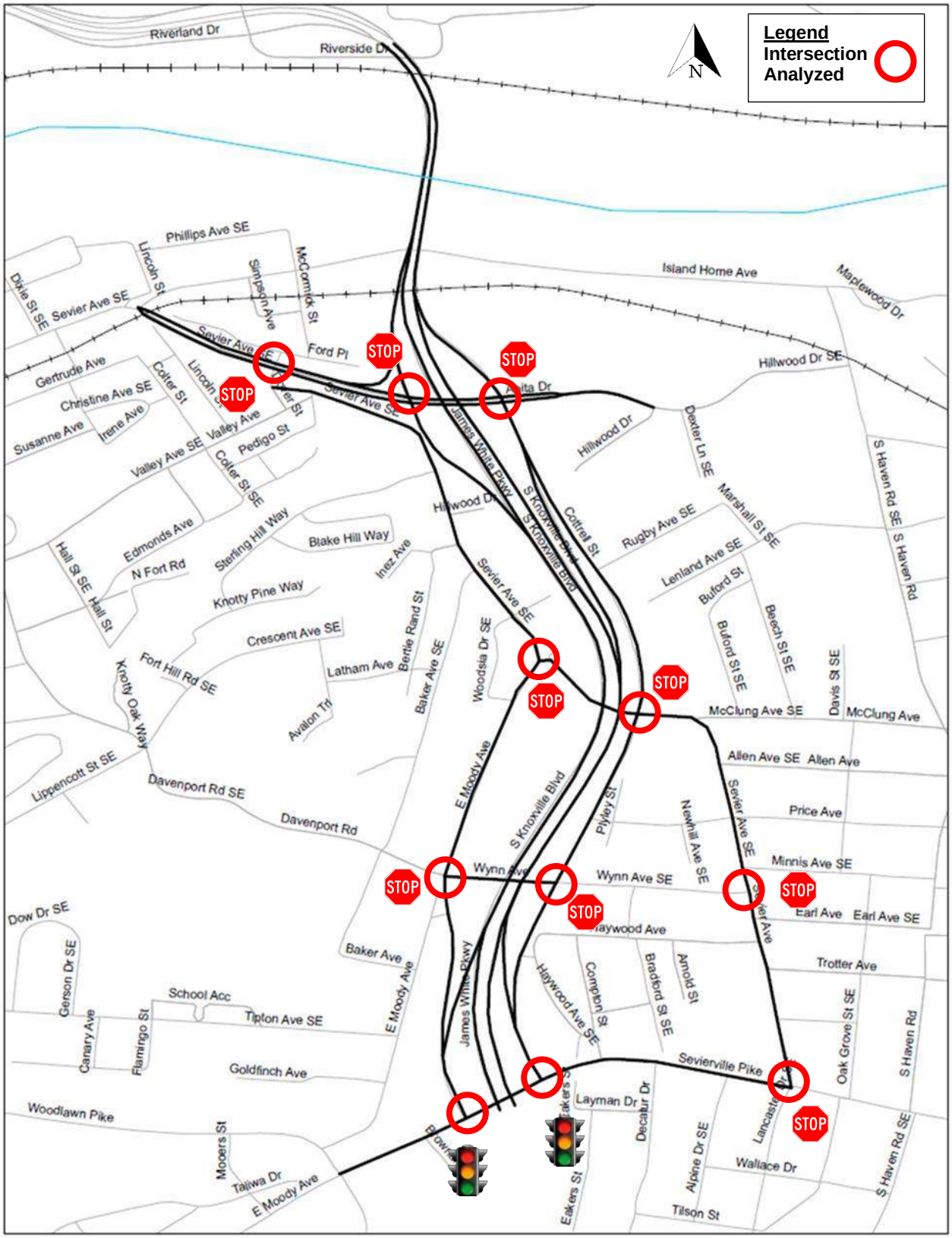


FIGURE 11: JAMES WHITE PARKWAY STUDY INTERSECTIONS

TABLE 8: INTERSECTIONS ANALYZED WITH CONTROL TYPE

Intersection	Existing Control	Proposed Control
Sevier Avenue at Anita Drive	TWSC	TWSC
Anita Drive at James White Parkway SB Ramp	TWSC	TWSC
Anita Drive at Cottrell Street	AWSC	AWSC
Sevier Avenue at E. Moody Avenue	TWSC	TWSC
Sevier Avenue at Cottrell Street	AWSC	AWSC
E. Moody Avenue at Davenport Road/Wynn Avenue	AWSC	AWSC
Cottrell Street at Wynn Avenue	TWSC	TWSC
Sevier Avenue at Wynn Avenue	TWSC	TWSC
Sevierville Pike at James White Parkway SB Ramp	Signal	Signal
Sevierville Pike at James White Parkway NB Ramp	Signal	n/a
Sevierville Pike at Sevier Avenue/Lancaster Drive	AWSC	AWSC
New Connector Road: James White Parkway and Park Connector	n/a	TWSC

*TWSC = Two Way Stop Control; AWSC = All Way Stop Control

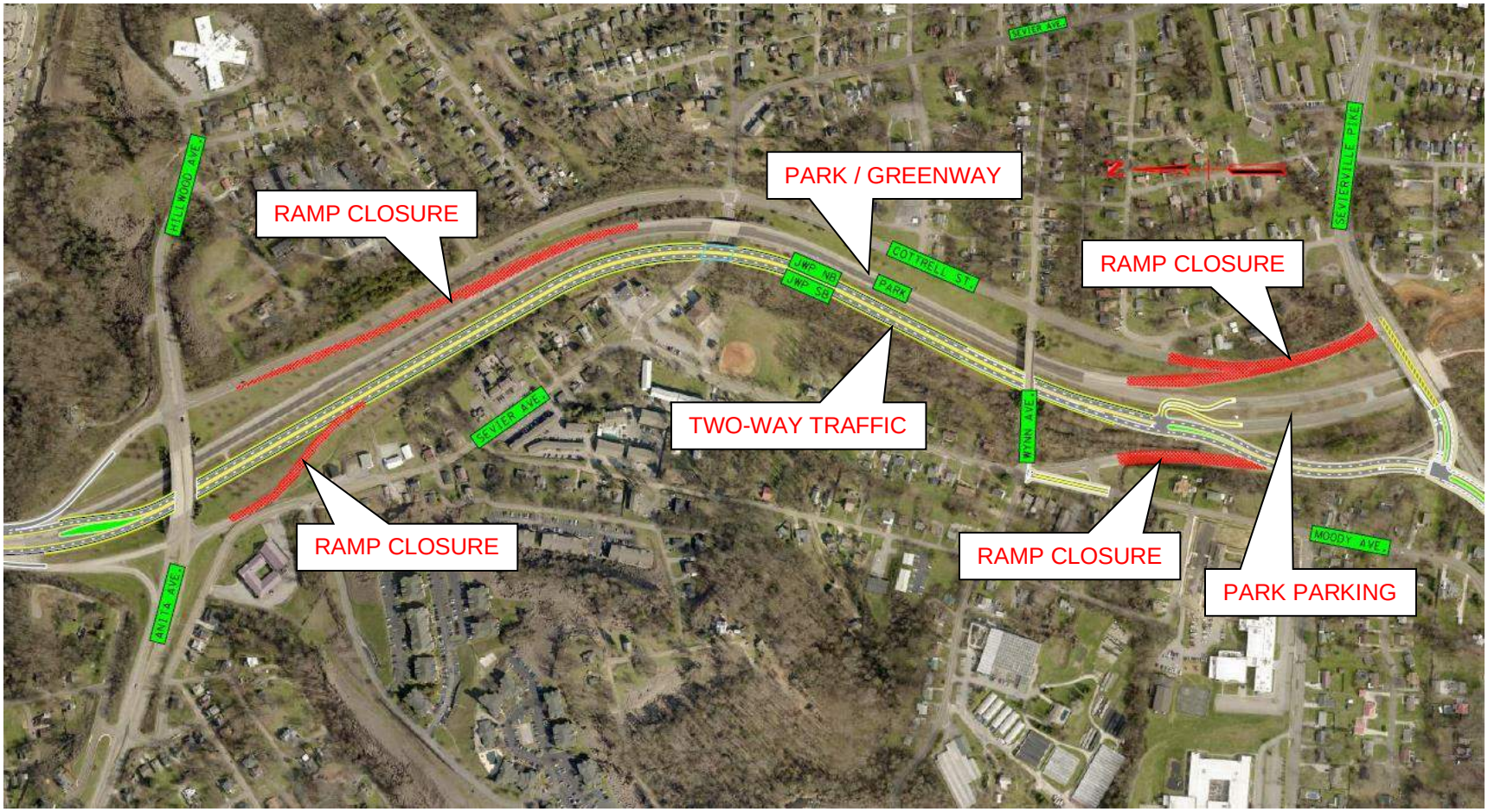


FIGURE 12: BUILD ALTERNATIVE SINGLE-LINE SKETCH

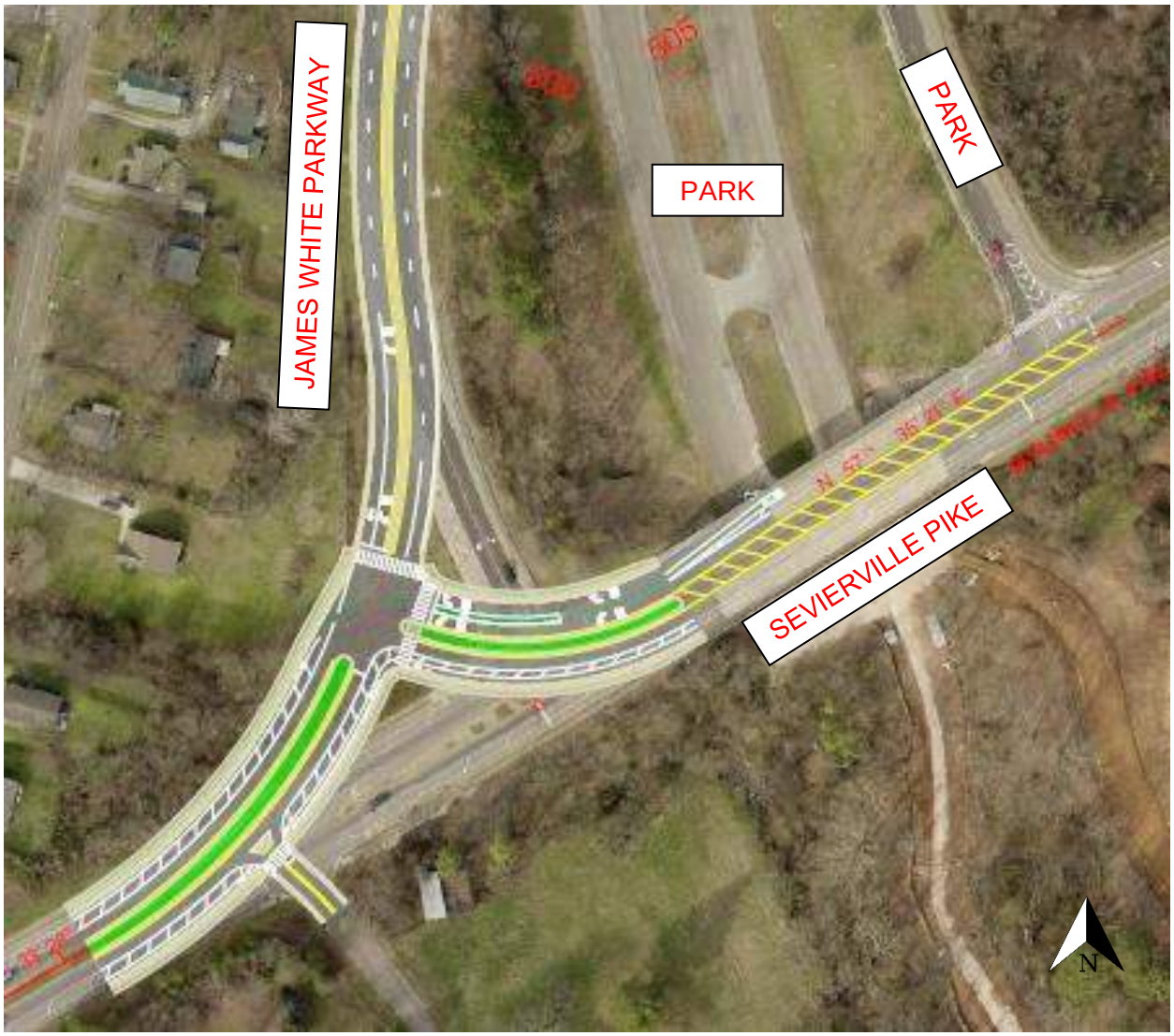


FIGURE 13: JAMES WHITE PARKWAY AT SEVIERVILLE PIKE REALIGNMENT

4.1.2 Traffic Analysis Methodology

Traffic analyses were developed for the No Build and Build conditions. The studied intersections were analyzed with the Synchro software application, Version 11. Synchro follows the methodology found in the 6th Edition of the Highway Capacity Manual (HCM). The James White Parkway roadway analysis was performed for the final build condition using the most recent version of the Highway Capacity Software (HCS), Version 7.8.5 which follows the methodology found in the 6th Edition of the Highway Capacity Manual (HCM). The traffic analysis output is provided in the Attachments.

Level-of-Service (LOS) is a qualitative traffic capacity measure that is used to gauge the operational performance of an intersection or roadway segment. There are six (6) levels ranging from 'A' to 'F' with 'F' being the worst. Each level represents a range of operating conditions. **Table 9** defines the traffic flow conditions and approximate driver comfort at each LOS for signalized and unsignalized intersections. **Table 10** outlines the LOS definitions for multilane highways.

TABLE 9: LEVEL-OF-SERVICE INDEX FOR INTERSECTIONS

LOS	TRAFFIC FLOW CONDITIONS	SIGNALIZED INTERSECTIONS DELAY (SEC/VEH)	UNSIGNALIZED INTERSECTIONS DELAY (SEC/VEH)
A	Progression is extremely favorable, and most vehicles do not stop at all.	0-10	0-10
B	Good progression, some delay.	10-20	10-15
C	Fair progression, higher delay.	20-35	15-25
D	Unfavorable progression, congestion becomes apparent.	35-55	25-35
E	Poor progression, significant delay.	55-80	35-50
F	Poor progression, extreme delay.	>80	>50

TABLE 10: LEVEL OF SERVICE INDEX (MULTILANE HIGHWAYS)

LOS	TRAFFIC FLOW CONDITIONS	MULTILANE HIGHWAY
		DENSITY (pc/mi/ln)
A	Motorists are able to travel at free-flow speeds and are almost completely unimpeded in their ability to maneuver within the traffic stream. The effects of incidents or point breakdowns are easily absorbed.	≤ 11
B	Free-flow speeds are maintained and the ability to maneuver within the traffic stream is only slightly restricted. The general level of physical and psychological comfort provided to drivers is still high. The effects of minor incidents and point breakdowns are still easily absorbed.	> 11 – 18
C	Traffic flows at speeds near the free-flow speed. Freedom to maneuver within the traffic stream is noticeably restricted, and lane changes still require more care and vigilance on the part of the driver. Minor incidents may still be absorbed, but the local deterioration in service quality will be significant.	> 18 – 26
D	Speeds begin to decline with increasing flows, with density increasing more quickly. Freedom to maneuver within the traffic stream is seriously limited and drivers experience reduced physical and psychological comfort levels. Even minor incidents can be expected to create queuing because the stream has little space to absorb disruptions.	> 26 – 35
E	Freeway is operating at capacity. Operations are highly volatile because there are virtually no usable gaps within the traffic stream, leaving little room to maneuver. Any disruption to the traffic stream, such as vehicles entering from a ramp or a vehicle changing lanes, can establish a disruption wave that propagates throughout the upstream traffic flow.	> 35 – 45
F	Breakdown, or unstable flow. Demand flow in one or both directions exceeds the capacity of the segment.	> 45 or v/c > 1.0

4.1.3 Traffic Analysis Summary

Table 11 through **Table 14** summarizes the traffic analysis. The LOS are reported for the entire intersection and for each approach with the maximum volume to capacity ratio. The years 2025 and 2045 AM and PM Peak Hours were analyzed.

Table 11 summarizes the 2020 Existing Alternative. For all study intersections, the overall LOS is B or better. A few approaches operate at a LOS C, but the delay is less than 22 seconds and is considered to have minimal delay overall. Therefore, under existing conditions, all intersections operate satisfactorily.

Table 12 summarizes the 2040 No Build Alternative. For all study intersections, the overall LOS is C or better with the exception of two study intersections. In the PM peak hour, the Sevierville Pike at James White Parkway Off Ramp intersection operates at a LOS E with the eastbound approach failing at a LOS F. This approach is a single lane with over 900 vehicles in the peak hour. In addition, the Sevierville Pike at Sevier Avenue/Lancaster Drive intersection is an all-way stop intersection that operates at a LOS C in the AM peak hour and a LOS D in the PM peak hour. The higher delay can be associated with the heavy AM WB movement and heavy PM EB movement.

Table 13 summarizes the 2040 Build Alternative, which includes the re-routed traffic volumes due to the relocation of the northbound James White Parkway travel lanes. With these proposed changes, the intersection of Sevierville Pike at James White Parkway Northbound ramps is removed and not shown in the analysis results. Proposed changes also include the realignment of Sevierville Pike at James White Parkway as shown in **Figure 13** and the stop control at the intersection of Cottrell Street at Wynn Avenue is modified to allow free flowing movements on Wynn Avenue with stop control for the northbound approach of Cottrell Street. In addition, intersection 112 was added to the model to provide access to the Urban Wilderness Park. Consistent with the 2040 No Build Alternative, the LOS are typically C or better with the exception of the Sevierville Pike at Sevier Avenue/Lancaster Drive intersection. However, with the re-distributed trips, the intersection of Sevierville Pike at Sevier Avenue/Lancaster Drive operates at a slightly lower delay than No Build conditions. In addition, the realignment of Sevierville Pike at James White Parkway slightly increases the overall intersection delay in the AM peak hour while significantly reducing the overall intersection delay in the PM peak hour. The failing eastbound approach in the PM 2040 No Build scenario now operates at a LOS C.

Table 14 summarizes the roadway analysis results for James White Parkway under 2040 Build Conditions. Input data for the roadway included lane width, lateral clearance, access point density, and base free flow speed (BFFS). The proposed posted speed limit is to be set to 35 miles per hour but the BFFS was set to 45 miles per hour due to it being the minimum allowable speed in the software. The results show that the four-lane divided highway will operate satisfactorily in the AM and PM build year peak hours.

TABLE 11: TRAFFIC ANALYSIS – 2020 EXISTING ALTERNATIVE

		AM						PM					
Study Area Intersection	Intersection Control Type	Overall Intersection		EB	WB	NB	SB	Overall Intersection		EB	WB	NB	SB
		LOS *Delay (s)*	Max v/c	LOS *Delay (s)*				LOS *Delay (s)*	Max v/c	LOS *Delay (s)*			
101: Sevier Avenue & Anita Drive	TWSC	A *5.3*	0.343	A *0.4*	A *1.9*	B *13.5*	C *15.9*	A *5.4*	0.285	A *0.1*	A *4.2*	B *13.9*	C *17.4*
102: Anita Drive & James White Parkway SB Ramp	TWSC	A *4.9*	0.255	A *0.0*	A *1.3*	- -	B *10.2*	A *6.5*	0.306	A *0.0*	A *2.1*	- -	B *10.5*
103: Cottrell Street & Anita Drive	AWSC	B *10.8*	0.354	B *10.6*	B *11.0*	B *11.0*	- -	A *9.5*	0.273	A *9.4*	A *9.6*	A *9.7*	- -
104: E. Moody Avenue & Sevier Avenue	TWSC	A *4.7*	0.058	- -	A *9.2*	A *0.0*	A *3.4*	A *5.1*	0.047	- -	A *9.3*	A *0.0*	A *5.0*
105: Cottrell Street & Sevier Avenue	AWSC	A *7.9*	0.226	A *7.9*	A *7.8*	A *8.0*	- -	A *7.5*	0.122	A *7.7*	A *7.3*	A *7.8*	- -
106: E. Moody Avenue & Davenport Road/Wynn Avenue	AWSC	A *8.0*	0.143	A *7.5*	A *8.4*	A *7.8*	A *8.0*	A *7.8*	0.196	A *7.8*	A *7.6*	A *7.8*	A *7.7*
107: Cottrell Street & Wynn Avenue	TWSC	A *8.0*	0.107	A *9.9*	A *9.6*	A *0.0*	- -	A *6.8*	0.101	A *9.6*	A *9.2*	A *0.0*	- -
108: Sevier Avenue & Wynn Avenue	TWSC	A *2.3*	0.059	A *9.4*	- -	A *2.0*	A *0.0*	A *2.4*	0.05	A *9.2*	- -	A *1.3*	A *0.0*
109: Sevierville Pike & James White Pkwy Off-Ramp	Signal	B *13.5*	0.600	B *16.5*	A *8.4*	- -	B *11.7*	B *17.0*	0.750	C *21.6*	A *9.7*	- -	B *15.0*
110: Sevierville Pike & James White Pkwy Ramps	Signal	A *2.6*	0.480	A *2.1*	A *3.3*	- -	- -	A *1.0*	0.390	A *0.8*	A *1.8*	- -	- -
111: Lancaster Drive/Sevier Avenue & Sevierville Pike	AWSC	B *10.9*	0.502	A *9.2*	B *12.4*	A *9.8*	A *8.9*	B *12.8*	0.613	C *15.2*	B *10.6*	A *9.8*	A *9.7*

TABLE 12: TRAFFIC ANALYSIS – 2040 NO BUILD ALTERNATIVE

		AM						PM					
Study Area Intersection	Intersection Control Type	Overall Intersection		EB	WB	NB	SB	Overall Intersection		EB	WB	NB	SB
		LOS *Delay (s)*	Max v/c	LOS *Delay (s)*				LOS *Delay (s)*	Max v/c	LOS *Delay (s)*			
101: Sevier Avenue & Anita Drive	TWSC	A *7.7*	0.572	A *0.4*	A *2.0*	C *20.8*	C *22.4*	A *7.5*	0.522	A *0.1*	A *4.4*	C *22.7*	D *26.6*
102: Anita Drive & James White Parkway SB Ramp	TWSC	A *5.9*	0.378	A *0.0*	A *1.3*	- -	B *12.5*	A *8.0*	0.434	A *0.0*	A *2.1*	- -	B *13.1*
103: Cottrell Street & Anita Drive	AWSC	C *15.3*	0.602	B *13.6*	C *15.1*	C *17.6*	- -	B *12.3*	0.515	B *13.3*	B *10.8*	B *11.8*	- -
104: E. Moody Avenue & Sevier Avenue	TWSC	A *4.8*	0.082	- -	A *9.6*	A *0.0*	A *3.4*	A *5.2*	0.069	- -	A *9.8*	A *0.0*	A *5.0*
105: Cottrell Street & Sevier Avenue	AWSC	A *8.5*	0.312	A *8.2*	A *8.6*	A *8.4*	- -	A *7.9*	0.169	A *8.0*	A *7.7*	A *8.0*	- -
106: E. Moody Avenue & Davenport Road/Wynn Avenue	AWSC	A *8.5*	0.202	A *8.0*	A *9.0*	A *8.4*	A *8.5*	A *8.3*	0.273	A *8.5*	A *7.9*	A *8.2*	A *8.1*
107: Cottrell Street & Wynn Avenue	TWSC	A *8.3*	0.147	B *10.4*	A *9.9*	A *0.0*	- -	A *7.0*	0.141	B *10.0*	A *9.4*	A *0.0*	- -
108: Sevier Avenue & Wynn Avenue	TWSC	A *2.4*	0.087	A *9.9*	- -	A *2.1*	A *0.0*	A *2.4*	0.072	A *9.6*	- -	A *1.3*	A *0.0*
109: Sevierville Pike & James White Pkwy Off-Ramp	Signal	B *18.9*	0.81	C *24.1*	B *15.3*	- -	B *14.1*	E *57.3*	1.14	F *104.1*	B *12.0*	- -	C *32.1*
110: Sevierville Pike & James White Pkwy Ramps	Signal	A *9.3*	0.63	A *4.1*	B *15.9*	- -	- -	A *1.8*	0.52	A *0.9*	A *4.8*	- -	- -
111: Lancaster Drive/Sevier Avenue & Sevierville Pike	AWSC	C *16.5*	0.741	B *11.0*	C *21.5*	B *11.9*	B *10.4*	D *27.3*	0.918	E *40.2*	B *14.6*	B *12.0*	B *11.9*

TABLE 13: TRAFFIC ANALYSIS – 2040 BUILD ALTERNATIVE

		AM						PM					
Study Area Intersection	Intersection Control Type	Overall Intersection		EB	WB	NB	SB	Overall Intersection		EB	WB	NB	SB
		LOS *Delay (s)*	Max v/c	LOS *Delay (s)*				LOS *Delay (s)*	Max v/c	LOS *Delay (s)*			
101: Sevier Avenue & Anita Drive	TWSC	A *8.2*	0.595	A *0.4*	A *2.3*	C *22.3*	C *23.7*	A *7.9*	0.544	A *0.1*	A *4.7*	C *24.3*	D *28.4*
102: Anita Drive & James White Parkway SB Ramp	TWSC	A *5.9*	0.394	A *0.0*	A *0.0*	- -	B *12.5*	A *8.0*	0.401	A *0.0*	A *0.0*	- -	B *12.9*
103: Cottrell Street & Anita Drive	AWSC	C *15.3*	0.602	B *13.6*	C *15.1*	C *17.6*	- -	B *12.3*	0.515	B *13.3*	B *10.8*	B *11.8*	- -
104: E. Moody Avenue & Sevier Avenue	TWSC	A *4.0*	0.087	- -	A *9.8*	A *0.0*	A *2.2*	A *4.1*	0.073	- -	B *10.1*	A *0.0*	A *3.4*
105: Cottrell Street & Sevier Avenue	AWSC	A *9.0*	0.333	A *8.6*	A *9.2*	A *9.0*	- -	A *8.0*	0.172	A *8.1*	A *7.7*	A *8.2*	- -
106: E. Moody Avenue & Davenport Road/Wynn Avenue	AWSC	A *8.9*	0.253	A *8.2*	A *9.3*	A *8.6*	A *9.2*	A *8.7*	0.285	A *8.9*	A *8.1*	A *8.3*	A *8.7*
107: Cottrell Street & Wynn Avenue	TWSC	A *1.0*	0.037	A *3.4*	A *0.0*	A *0.0*	- -	A *1.5*	0.034	A *3.2*	A *0.0*	A *0.0*	- -
108: Sevier Avenue & Wynn Avenue	TWSC	A *4.4*	0.134	B *11.8*	- -	A *5.7*	A *0.0*	A *3.5*	0.076	B *10.2*	- -	A *3.7*	A *0.0*
109: Sevierville Pike & James White Pkwy	Signal	C *24.7*	0.84	- -	C *20.4*	C *32.0*	C *20.1*	C *26.7*	0.84	- -	C *30.1*	C *27.7*	C *25.2*
111: Lancaster Drive/Sevier Avenue & Sevierville Pike	AWSC	C *15.6*	0.715	B *11.0*	C *19.7*	B *11.8*	B *10.4*	D *26.8*	0.918	E *39.6*	B *13.9*	B *11.9*	B *11.8*
112: James White Pkwy/Jame White Pkwy & Proposed Park Connection	TWSC	A *0.8*	0.184	B *11.3*	B *12.7*	A *0.0*	A *0.0*	A *2.4*	0.525	C *22.0*	B *10.7*	A *0.0*	A *0.1*

TABLE 14: MULTILANE ROADWAY ANALYSIS

	AM		PM	
Travel Direction	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
Northbound	14.5	B	8.9	A
Southbound	7.6	A	15	B

4.1.4 Summary

The No Build Alternative and the Build Alternative options provide adequate traffic operations through the design year of 2040. All options will adequately service the projected traffic demand.

Attachments

Raw Crash Data
Statewide Crash Rate Data
Signal Warrant Analysis Calculations
Existing 2020 Analysis
No Build Alternative 2040 Analysis
Build Alternative 2040 Analysis

RAW CRASH DATA

Crash Summary Report

County: KNOX **Route:** 00071 **Spcl Cse:** 0-NONE **Cnty Seq:** 1

Log Miles: 0.000 to 1.100 - Crash Dates: 6/1/2017 to 5/31/2020
Vehicle Filter: None - Other Factors Filter: None

Statistics

Fatal Crashes:	0
Total Killed:	0
Incap Injury Crashes:	2
Total Incap Injuries:	2
Other Injury Crashes:	0
Total Other Injuries:	0
Prop Damage Crashes:	5
Total Crashes:	**7**

Crash Location

Along Roadway:	7
At Intersection:	0
Railroad Crossing:	0
Bridge:	0
Underpass:	0
Ramp:	0
Private Property:	0
Other:	0

Crashes Involving

Pedestrians:	0
Hazardous Cargo:	0
Work / Constr Zones:	0
Fixed Objects:	2
Single Unit Trucks	0
Tractor - Trailer Trucks:	0
Bicycles:	0
Motorcycles:	1
Lane Departures:	3
Distracted Drivers:	0

Road Conditions

Ice:	0
Snow or Slush:	0
Sand, Mud, Dirt or Oil:	0
Wet:	1
Dry:	6

First Harmful Event

Pedestrian:	0
Pedalcycle:	0
Railway Train:	0
Deer (Animal):	1
Other Animal:	0
Motor Vehicle in Transport:	4
Motor Vehicle in Transport in Other Roadway:	0
Parked Motor Vehicle:	0
Other Type Non-Motorist:	0
Fixed Object:	2
Other Object (Not Fixed):	0
Non Collision:	0
Overturn:	0
Jackknife:	0
Cross Median:	0
Ran Off Road:	0

Manner of Collision

Rear End:	1
Head On:	0
Rear-to-Side / Rear:	0
Angle:	0
Sideswipe Same Dir:	3
Sideswipe Opp Dir:	0
Unknown:	0

Light Conditions

Dawn:	0
Daylight:	6
Dusk:	0
Dark / Lighted:	1
Dark / Not Lighted:	0
Not Indicated:	0

Weather Conditions

No Adverse Conditions:	7
Rain:	0
Sleet and Hail:	0
Snow:	0
Foggy:	0
Smog, Smoke:	0
Crosswind:	0

Fixed Objects

Boulder:	0	Other Barrier:	0	Ditch:	0
Building:	0	Highway Traffic Sign Post	0	Embankment:	0
Impact Attenuator:	0	Overhead Sign Support:	0	Fence:	0
Overhead Structure:	0	Luminaire/Light Support:	0	Wall:	0
Bridge Pier/Abutment/End:	0	Traffic Signal Support:	0	Mail Box:	0
Bridge Rail:	0	Utility Pole:	0	Shrubbery:	0
Guardrail:	0	Other Post, Pole Supports:	0	Tree:	1
Cable Barrier:	0	Culvert:	0	Fire Hydrant:	0
		Curb:	0	Other Fixed Object:	1

This report was generated by E-TRIMS

Crash Summary Report

County: KNOX **Route:** 03783 **Spcl Cse:** 0-NONE **Cnty Seq:** 1

Log Miles: 0.815 to 1.030 - Crash Dates: 6/1/2017 to 5/31/2020
Vehicle Filter: None - Other Factors Filter: None

Statistics

Fatal Crashes:	0
Total Killed:	0
Incap Injury Crashes:	0
Total Incap Injuries:	0
Other Injury Crashes:	0
Total Other Injuries:	0
Prop Damage Crashes:	8
Total Crashes:	**8**

Crash Location

Along Roadway:	1
At Intersection:	6
Railroad Crossing:	0
Bridge:	0
Underpass:	0
Ramp:	1
Private Property:	0
Other:	0

Crashes Involving

Pedestrians:	0
Hazardous Cargo:	0
Work / Constr Zones:	0
Fixed Objects:	1
Single Unit Trucks	0
Tractor - Trailer Trucks:	0
Bicycles:	0
Motorcycles:	0
Lane Departures:	1
Distracted Drivers:	1

Road Conditions

Ice:	0
Snow or Slush:	0
Sand, Mud, Dirt or Oil:	0
Wet:	1
Dry:	7

First Harmful Event

Pedestrian:	0
Pedalcycle:	0
Railway Train:	0
Deer (Animal):	0
Other Animal:	0
Motor Vehicle in Transport:	7
Motor Vehicle in Transport in Other Roadway:	0
Parked Motor Vehicle:	0
Other Type Non-Motorist:	0
Fixed Object:	1
Other Object (Not Fixed):	0
Non Collision:	0
Overturn:	0
Jackknife:	0
Cross Median:	0
Ran Off Road:	0

Manner of Collision

Rear End:	0
Head On:	0
Rear-to-Side / Rear:	0
Angle:	6
Sideswipe Same Dir:	0
Sideswipe Opp Dir:	0
Unknown:	1

Light Conditions

Dawn:	0
Daylight:	7
Dusk:	0
Dark / Lighted:	1
Dark / Not Lighted:	0
Not Indicated:	0

Weather Conditions

No Adverse Conditions:	7
Rain:	1
Sleet and Hail:	0
Snow:	0
Foggy:	0
Smog, Smoke:	0
Crosswind:	0

Fixed Objects

Boulder:	0	Other Barrier:	0	Ditch:	0
Building:	0	Highway Traffic Sign Post	0	Embankment:	0
Impact Attenuator:	0	Overhead Sign Support:	0	Fence:	0
Overhead Structure:	0	Luminaire/Light Support:	0	Wall:	0
Bridge Pier/Abutment/End:	0	Traffic Signal Support:	0	Mail Box:	0
Bridge Rail:	0	Utility Pole:	0	Shrubbery:	0
Guardrail:	0	Other Post, Pole Supports:	0	Tree:	1
Cable Barrier:	0	Culvert:	0	Fire Hydrant:	0
		Curb:	0	Other Fixed Object:	0

Crash Summary Report

County: KNOX **Route:** 05665 **Spcl Cse:** 0-NONE **Cnty Seq:** 1

Log Miles: 0.220 to 0.450 - Crash Dates: 6/1/2017 to 5/31/2020
Vehicle Filter: None - Other Factors Filter: None

Statistics

Fatal Crashes:	0
Total Killed:	0
Incap Injury Crashes:	0
Total Incap Injuries:	0
Other Injury Crashes:	3
Total Other Injuries:	4
Prop Damage Crashes:	3
Total Crashes:	**6**

Crash Location

Along Roadway:	0
At Intersection:	6
Railroad Crossing:	0
Bridge:	0
Underpass:	0
Ramp:	0
Private Property:	0
Other:	0

Crashes Involving

Pedestrians:	0
Hazardous Cargo:	0
Work / Constr Zones:	0
Fixed Objects:	0
Single Unit Trucks	0
Tractor - Trailer Trucks:	0
Bicycles:	0
Motorcycles:	0
Lane Departures:	0
Distracted Drivers:	0

Road Conditions

Ice:	0
Snow or Slush:	0
Sand, Mud, Dirt or Oil:	0
Wet:	2
Dry:	4

First Harmful Event

Pedestrian:	0
Pedalcycle:	0
Railway Train:	0
Deer (Animal):	0
Other Animal:	0
Motor Vehicle in Transport:	6
Motor Vehicle in Transport in Other Roadway:	0
Parked Motor Vehicle:	0
Other Type Non-Motorist:	0
Fixed Object:	0
Other Object (Not Fixed):	0
Non Collision:	0
Overturn:	0
Jackknife:	0
Cross Median:	0
Ran Off Road:	0

Manner of Collision

Rear End:	1
Head On:	0
Rear-to-Side / Rear:	0
Angle:	5
Sideswipe Same Dir:	0
Sideswipe Opp Dir:	0
Unknown:	0

Light Conditions

Dawn:	0
Daylight:	6
Dusk:	0
Dark / Lighted:	0
Dark / Not Lighted:	0
Not Indicated:	0

Weather Conditions

No Adverse Conditions:	5
Rain:	1
Sleet and Hail:	0
Snow:	0
Foggy:	0
Smog, Smoke:	0
Crosswind:	0

Fixed Objects

Boulder:	0	Other Barrier:	0	Ditch:	0
Building:	0	Highway Traffic Sign Post	0	Embankment:	0
Impact Attenuator:	0	Overhead Sign Support:	0	Fence:	0
Overhead Structure:	0	Luminaire/Light Support:	0	Wall:	0
Bridge Pier/Abutment/End:	0	Traffic Signal Support:	0	Mail Box:	0
Bridge Rail:	0	Utility Pole:	0	Shrubbery:	0
Guardrail:	0	Other Post, Pole Supports:	0	Tree:	0
Cable Barrier:	0	Culvert:	0	Fire Hydrant:	0
		Curb:	0	Other Fixed Object:	0

This report was generated by E-TRIMS

Crash Summary Report

County: KNOX **Route:** 03781 **Spcl Cse:** 0-NONE **Cnty Seq:** 1

Log Miles: 1.002 to 1.210 - Crash Dates: 6/1/2017 to 5/31/2020
Vehicle Filter: None - Other Factors Filter: None

Statistics

Fatal Crashes:	0
Total Killed:	0
Incap Injury Crashes:	1
Total Incap Injuries:	1
Other Injury Crashes:	9
Total Other Injuries:	12
Prop Damage Crashes:	31
Total Crashes:	**41**

Crash Location

Along Roadway:	9
At Intersection:	32
Railroad Crossing:	0
Bridge:	0
Underpass:	0
Ramp:	0
Private Property:	0
Other:	0

Crashes Involving

Pedestrians:	0
Hazardous Cargo:	0
Work / Constr Zones:	0
Fixed Objects:	3
Single Unit Trucks	0
Tractor - Trailer Trucks:	0
Bicycles:	0
Motorcycles:	0
Lane Departures:	3
Distracted Drivers:	0

Road Conditions

Ice:	0
Snow or Slush:	0
Sand, Mud, Dirt or Oil:	0
Wet:	13
Dry:	28

First Harmful Event

Pedestrian:	0
Pedalcycle:	0
Railway Train:	0
Deer (Animal):	0
Other Animal:	0
Motor Vehicle in Transport:	38
Motor Vehicle in Transport in Other Roadway:	0
Parked Motor Vehicle:	0
Other Type Non-Motorist:	0
Fixed Object:	3
Other Object (Not Fixed):	0
Non Collision:	0
Overturn:	0
Jackknife:	0
Cross Median:	0
Ran Off Road:	0

Manner of Collision

Rear End:	27
Head On:	1
Rear-to-Side / Rear:	0
Angle:	10
Sideswipe Same Dir:	0
Sideswipe Opp Dir:	0
Unknown:	0

Light Conditions

Dawn:	0
Daylight:	29
Dusk:	1
Dark / Lighted:	9
Dark / Not Lighted:	2
Not Indicated:	0

Weather Conditions

No Adverse Conditions:	32
Rain:	9
Sleet and Hail:	0
Snow:	0
Foggy:	0
Smog, Smoke:	0
Crosswind:	0

Fixed Objects

Boulder:	0	Other Barrier:	0	Ditch:	0
Building:	0	Highway Traffic Sign Post	0	Embankment:	0
Impact Attenuator:	0	Overhead Sign Support:	0	Fence:	0
Overhead Structure:	0	Luminaire/Light Support:	0	Wall:	0
Bridge Pier/Abutment/End:	0	Traffic Signal Support:	0	Mail Box:	0
Bridge Rail:	0	Utility Pole:	1	Shrubbery:	0
Guardrail:	0	Other Post, Pole Supports:	1	Tree:	1
Cable Barrier:	0	Culvert:	0	Fire Hydrant:	0
		Curb:	0	Other Fixed Object:	0

This report was generated by E-TRIMS

Crash Summary Report

County: KNOX **Route:** 05664 **Spcl Cse:** 0-NONE **Cnty Seq:** 1

Log Miles: 0.000 to 0.115 - Crash Dates: 6/1/2017 to 5/31/2020
Vehicle Filter: None - Other Factors Filter: None

Statistics

Fatal Crashes:	0
Total Killed:	0
Incap Injury Crashes:	0
Total Incap Injuries:	0
Other Injury Crashes:	0
Total Other Injuries:	0
Prop Damage Crashes:	10
Total Crashes:	**10**

Crash Location

Along Roadway:	1
At Intersection:	9
Railroad Crossing:	0
Bridge:	0
Underpass:	0
Ramp:	0
Private Property:	0
Other:	0

Crashes Involving

Pedestrians:	0
Hazardous Cargo:	0
Work / Constr Zones:	0
Fixed Objects:	1
Single Unit Trucks	0
Tractor - Trailer Trucks:	0
Bicycles:	0
Motorcycles:	0
Lane Departures:	1
Distracted Drivers:	0

Road Conditions

Ice:	0
Snow or Slush:	0
Sand, Mud, Dirt or Oil:	0
Wet:	0
Dry:	10

First Harmful Event

Pedestrian:	0
Pedalcycle:	0
Railway Train:	0
Deer (Animal):	0
Other Animal:	0
Motor Vehicle in Transport:	9
Motor Vehicle in Transport in Other Roadway:	0
Parked Motor Vehicle:	0
Other Type Non-Motorist:	0
Fixed Object:	1
Other Object (Not Fixed):	0
Non Collision:	0
Overturn:	0
Jackknife:	0
Cross Median:	0
Ran Off Road:	0

Manner of Collision

Rear End:	5
Head On:	0
Rear-to-Side / Rear:	0
Angle:	4
Sideswipe Same Dir:	0
Sideswipe Opp Dir:	0
Unknown:	0

Light Conditions

Dawn:	0
Daylight:	5
Dusk:	2
Dark / Lighted:	2
Dark / Not Lighted:	1
Not Indicated:	0

Weather Conditions

No Adverse Conditions:	10
Rain:	0
Sleet and Hail:	0
Snow:	0
Foggy:	0
Smog, Smoke:	0
Crosswind:	0

Fixed Objects

Boulder:	0	Other Barrier:	0	Ditch:	0
Building:	0	Highway Traffic Sign Post	0	Embankment:	0
Impact Attenuator:	0	Overhead Sign Support:	0	Fence:	0
Overhead Structure:	0	Luminaire/Light Support:	0	Wall:	0
Bridge Pier/Abutment/End:	0	Traffic Signal Support:	0	Mail Box:	0
Bridge Rail:	0	Utility Pole:	0	Shrubbery:	0
Guardrail:	1	Other Post, Pole Supports:	0	Tree:	0
Cable Barrier:	0	Culvert:	0	Fire Hydrant:	0
		Curb:	0	Other Fixed Object:	0

This report was generated by E-TRIMS

BLM	Relation to First Junction	County	Route	Case Number	Year Of Crash	Date of Crash	Time of Crash	Type of Crash	Total Killed	Total Inj	Incap Injuries	Other Injuries	Total Veh	Manner of First Collision	Weather Cond	Light Conditions
0.004	NON_JUNCTION	KNOX	00071	300439027	2018	4/20/2018	1355	Prop Damage (under)	0	0	0	0	2	REAR-END	Clear	Daylight
0.231	NON_JUNCTION	KNOX	00071	300403722	2017	11/26/2017	1824	Prop Damage (over)	0	0	0	0	1	NO COLLISION W/ VEHICLE	Clear	Dark-Lighted
0.466	NON_JUNCTION	KNOX	00071	300506615	2019	1/8/2019	1705	Prop Damage (over)	0	0	0	0	2	SIDESWIPE, SAME DIR	Clear	Daylight
0.709	NON_JUNCTION	KNOX	00071	300607047	2020	2/7/2020	757	Prop Damage (over)	0	0	0	0	2	SIDESWIPE, SAME DIR	Clear	Daylight
1.062	NON_JUNCTION	KNOX	00071	300426656	2018	3/2/2018	925	Prop Damage (over)	0	0	0	0	2	SIDESWIPE, SAME DIR	Clear	Daylight
0.434	NON_JUNCTION	KNOX	00071	300625430	2020	5/15/2020	1457	Suspected Serious Injury	0	1	1	0	1	NO COLLISION W/ VEHICLE	Clear	Daylight
1.028	NON_JUNCTION	KNOX	00071	300378242	2017	8/19/2017	1443	Suspected Serious Injury	0	1	1	0	1	NO COLLISION W/ VEHICLE	Clear	Daylight
0.815	INTERSECTION	KNOX	03783	300405038	2017	11/29/2017	830	Prop Damage (over)	0	0	0	0	2	ANGLE	Clear	Daylight
0.815	INTERSECTION	KNOX	03783	300413770	2018	1/5/2018	2119	Prop Damage (over)	0	0	0	0	2	ANGLE	Clear	Dark-Lighted
0.963	INTERSECTION	KNOX	03783	300454410	2018	6/17/2018	1303	Prop Damage (over)	0	0	0	0	2	ANGLE	Clear	Daylight
1.03	INTERSECTION	KNOX	03783	300580767	2019	10/30/2019	1738	Prop Damage (over)	0	0	0	0	2	OTHER	Rain	Daylight
1.03	INTERSECTION	KNOX	03783	300611493	2020	2/27/2020	1547	Prop Damage (over)	0	0	0	0	2	ANGLE	Clear	Daylight
1.03	INTERSECTION F	KNOX	03783	300389072	2017	9/29/2017	1636	Prop Damage (over)	0	0	0	0	2	ANGLE	Clear	Daylight
0.98	ENTRENCE/EXIT	KNOX	03783	300503372	2018	12/22/2018	1406	Prop Damage (over)	0	0	0	0	2	ANGLE	Clear	Daylight
0.909	OTHER	KNOX	03783	300366929	2017	6/30/2017	1504	Prop Damage (under)	0	0	0	0	1	NO COLLISION W/ VEHICLE	Clear	Daylight
0.39	INTERSECTION	KNOX	05665	300382316	2017	9/2/2017	1750	Suspected Minor Injury	0	1	0	1	2	ANGLE	Clear	Daylight
0.39	INTERSECTION	KNOX	05665	300404165	2017	11/27/2017	1649	Suspected Minor Injury	0	2	0	2	2	ANGLE	Clear	Daylight
0.39	INTERSECTION	KNOX	05665	300498174	2018	12/6/2018	854	Prop Damage (over)	0	0	0	0	2	ANGLE	Clear	Daylight
0.39	INTERSECTION	KNOX	05665	300540802	2019	5/23/2019	751	Prop Damage (over)	0	0	0	0	2	REAR-END	Clear	Daylight
0.39	INTERSECTION	KNOX	05665	300552795	2019	7/13/2019	1038	Suspected Minor Injury	0	1	0	1	2	ANGLE	Clear	Daylight
0.39	INTERSECTION	KNOX	05665	300553702	2019	7/17/2019	818	Prop Damage (over)	0	0	0	0	2	ANGLE	Rain	Daylight
1.024	NON_JUNCTION	KNOX	03781	300489730	2018	11/5/2018	803	Suspected Minor Injury	0	2	0	2	2	REAR-END	Cloudy	Daylight
1.054	NON_JUNCTION	KNOX	03781	300599586	2020	1/9/2020	1700	Prop Damage (over)	0	0	0	0	2	REAR-END	Clear	Dusk
1.064	NON_JUNCTION	KNOX	03781	300415417	2018	1/12/2018	1650	Suspected Minor Injury	0	1	0	1	2	REAR-END	Rain	Daylight
1.074	NON_JUNCTION	KNOX	03781	300475373	2018	9/14/2018	1849	Prop Damage (over)	0	0	0	0	2	REAR-END	Clear	Daylight
1.101	NON_JUNCTION	KNOX	03781	300471071	2018	8/27/2018	2115	Prop Damage (over)	0	0	0	0	2	REAR-END	Clear	Dark-Lighted
1.103	NON_JUNCTION	KNOX	03781	300489732	2018	11/5/2018	743	Prop Damage (over)	0	0	0	0	3	REAR-END	Rain	Daylight
1.142	NON_JUNCTION	KNOX	03781	300522866	2019	3/15/2019	2042	Prop Damage (over)	0	0	0	0	2	REAR-END	Clear	Dark-Lighted
1.179	NON_JUNCTION	KNOX	03781	300407776	2017	12/12/2017	337	Suspected Minor Injury	0	1	0	1	3	REAR-END	Clear	Dark-Lighted
1.094	NON_JUNCTION	KNOX	03781	300422462	2018	2/14/2018	125	Suspected Serious Injury	0	2	1	1	1	NO COLLISION W/ VEHICLE	Clear	Dark-Lighted
1.002	INTERSECTION	KNOX	03781	300366200	2017	6/28/2017	1141	Prop Damage (over)	0	0	0	0	2	REAR-END	Clear	Daylight
1.002	INTERSECTION	KNOX	03781	300372445	2017	7/26/2017	847	Prop Damage (over)	0	0	0	0	2	ANGLE	Clear	Daylight
1.002	INTERSECTION	KNOX	03781	300372961	2017	7/27/2017	1140	Prop Damage (over)	0	0	0	0	2	ANGLE	Clear	Daylight
1.002	INTERSECTION	KNOX	03781	300402421	2017	11/20/2017	1815	Prop Damage (over)	0	0	0	0	2	REAR-END	Clear	Daylight
1.002	INTERSECTION	KNOX	03781	300427716	2018	3/7/2018	825	Prop Damage (over)	0	0	0	0	2	REAR-END	Cloudy	Daylight
1.002	INTERSECTION	KNOX	03781	300499336	2018	12/10/2018	1208	Suspected Minor Injury	0	1	0	1	2	REAR-END	Clear	Daylight
1.002	INTERSECTION	KNOX	03781	300543994	2019	6/5/2019	1648	Prop Damage (over)	0	0	0	0	2	REAR-END	Clear	Daylight
1.002	INTERSECTION	KNOX	03781	300558797	2019	8/7/2019	1531	Prop Damage (over)	0	0	0	0	2	REAR-END	Clear	Daylight
1.002	INTERSECTION	KNOX	03781	300562408	2019	8/22/2019	813	Prop Damage (over)	0	0	0	0	2	ANGLE	Rain	Daylight
1.002	INTERSECTION	KNOX	03781	300587229	2019	11/22/2019	1851	Prop Damage (over)	0	0	0	0	2	ANGLE	Rain	Dark-Not Lighted
1.002	INTERSECTION	KNOX	03781	300609092	2020	2/17/2020	2035	Prop Damage (over)	0	0	0	0	2	ANGLE	Clear	Dark-Lighted
1.002	INTERSECTION	KNOX	03781	300614864	2020	3/7/2020	1450	Prop Damage (over)	0	0	0	0	2	REAR-END	Clear	Daylight
1.103	INTERSECTION	KNOX	03781	300573218	2019	10/3/2019	1553	Prop Damage (over)	0	0	0	0	3	REAR-END	Clear	Daylight
1.153	INTERSECTION	KNOX	03781	300366285	2017	6/28/2017	1654	Prop Damage (under)	0	0	0	0	2	REAR-END	Clear	Daylight
1.153	INTERSECTION	KNOX	03781	300428456	2018	3/10/2018	941	Prop Damage (over)	0	0	0	0	2	HEAD-ON	Cloudy	Daylight
1.153	INTERSECTION	KNOX	03781	300455572	2018	6/25/2018	1420	Prop Damage (over)	0	0	0	0	2	REAR-END	Rain	Daylight
1.153	INTERSECTION	KNOX	03781	300476538	2018	9/18/2018	1354	Prop Damage (over)	0	0	0	0	2	ANGLE	Clear	Daylight
1.153	INTERSECTION	KNOX	03781	300542232	2019	5/29/2019	1750	Prop Damage (over)	0	0	0	0	2	REAR-END	Clear	Daylight
1.153	INTERSECTION	KNOX	03781	300576367	2019	10/16/2019	1000	Suspected Minor Injury	0	1	0	1	2	REAR-END	Rain	Daylight
1.153	INTERSECTION	KNOX	03781	300623285	2020	5/6/2020	1239	Prop Damage (over)	0	0	0	0	2	REAR-END	Cloudy	Daylight
1.21	INTERSECTION	KNOX	03781	300391623	2017	10/9/2017	1545	Prop Damage (over)	0	0	0	0	2	ANGLE	Clear	Daylight
1.21	INTERSECTION	KNOX	03781	300409281	2017	12/17/2017	1804	Prop Damage (over)	0	0	0	0	3	REAR-END	Rain	Dark-Lighted
1.002	INTERSECTION	KNOX	03781	300456966	2018	7/1/2018	1446	Prop Damage (over)	0	0	0	0	1	NO COLLISION W/ VEHICLE	Clear	Daylight
1.002	INTERSECTION F	KNOX	03781	300431795	2018	3/19/2018	1515	Prop Damage (over)	0	0	0	0	2	REAR-END	Clear	Daylight

BLM	Relation to First Junction	County	Route	Case Number	Year Of Crash	Date of Crash	Time of Crash	Type of Crash	Total Killed	Total Inj	Incap Injuries	Other Injuries	Total Veh	Manner of First Collision	Weather Cond	Light Conditions
1.002	INTERSECTION F	KNOX	03781	300499819	2018	12/11/2018	1643	Prop Damage (over)	0	0	0	0	2	REAR-END	Clear	Daylight
1.002	INTERSECTION F	KNOX	03781	300504611	2018	12/28/2018	1454	Suspected Minor Injury	0	1	0	1	2	ANGLE	Rain	Daylight
1.002	INTERSECTION F	KNOX	03781	300505952	2019	1/5/2019	1844	Suspected Minor Injury	0	1	0	1	4	REAR-END	Clear	Dark-Lighted
1.002	INTERSECTION F	KNOX	03781	300554553	2019	7/21/2019	1420	Suspected Minor Injury	0	2	0	2	2	ANGLE	Clear	Daylight
1.153	INTERSECTION F	KNOX	03781	300471520	2018	8/29/2018	1600	Prop Damage (over)	0	0	0	0	2	REAR-END	Clear	Daylight
1.153	INTERSECTION F	KNOX	03781	300599574	2020	1/9/2020	1812	Prop Damage (over)	0	0	0	0	3	ANGLE	Clear	Dark-Not Lighted
1.21	INTERSECTION F	KNOX	03781	300587228	2019	11/7/2019	1750	Prop Damage (over)	0	0	0	0	2	REAR-END	Rain	Dark-Lighted
1.103	OTHER	KNOX	03781	300554173	2019	7/20/2019	210	Suspected Minor Injury	0	1	0	1	1	NO COLLISION W/ VEHICLE	Clear	Dark-Lighted
0.048	INTERSECTION	KNOX	05664	300376350	2017	8/9/2017	1715	Prop Damage (under)	0	0	0	0	2	REAR-END	Clear	Daylight
0.048	INTERSECTION	KNOX	05664	300398678	2017	11/5/2017	1747	Prop Damage (under)	0	0	0	0	2	ANGLE	Clear	Dusk
0.048	INTERSECTION	KNOX	05664	300400575	2017	11/13/2017	2232	Prop Damage (over)	0	0	0	0	2	ANGLE	Clear	Dark-Not Lighted
0.048	INTERSECTION	KNOX	05664	300510913	2019	1/25/2019	1309	Prop Damage (over)	0	0	0	0	2	REAR-END	Clear	Daylight
0.048	INTERSECTION	KNOX	05664	300518377	2019	2/26/2019	1315	Prop Damage (over)	0	0	0	0	2	REAR-END	Clear	Daylight
0.048	INTERSECTION	KNOX	05664	300525066	2019	3/26/2019	934	Prop Damage (over)	0	0	0	0	2	ANGLE	Clear	Daylight
0.048	INTERSECTION	KNOX	05664	300525137	2019	3/26/2019	1628	Prop Damage (over)	0	0	0	0	2	REAR-END	Clear	Daylight
0.115	INTERSECTION	KNOX	05664	300498158	2018	12/6/2018	1722	Prop Damage (over)	0	0	0	0	2	REAR-END	Clear	Dusk
0.048	INTERSECTION	KNOX	05664	300558767	2019	8/8/2019	330	Prop Damage (over)	0	0	0	0	1	NO COLLISION W/ VEHICLE	Clear	Dark-Lighted
0.043	CROSSOVER RE	KNOX	05664	300480775	2018	10/4/2018	1951	Prop Damage (over)	0	0	0	0	2	ANGLE	Clear	Dark-Lighted

STATEWIDE CRASH RATE DATA

Tennessee Department of Transportation
Statewide Intersection Crash Rates

Study: OFFICIAL HSIP STUDY 2014 - 2016

Begin Date: 1/1/2014 End Date: 12/31/2016

	Rural					Urban				
			Multi-Lane					Multi-Lane		
	2 Lane	2 Ln w/Turn	Univided	Divided	Turn Lane	2 Lane	2 Ln w/Turn	Univided	Divided	Turn Lane
Signalized Intersections										
Non-injury	0.456	0.525	0.699	0.401	0.392	0.595	0.452	0.633	0.545	0.507
Injury	0.109	0.109	0.134	0.141	0.129	0.167	0.130	0.180	0.157	0.160
Incap Inj	0.020	0.027	0.017	0.032	0.027	0.012	0.010	0.016	0.018	0.013
Fatal	0.001	0.000	0.000	0.004	0.000	0.001	0.000	0.001	0.001	0.001
Total	**0.586**	**0.661**	**0.850**	**0.577**	**0.549**	**0.774**	**0.592**	**0.830**	**0.721**	**0.682**
Full Stop Intersections										
Non-injury	0.425	0.898	0.564	0.443	0.900	0.379	0.653	0.110	0.550	0.000
Injury	0.088	0.225	0.564	0.194	0.053	0.100	0.087	0.110	0.167	0.000
Incap Inj	0.006	0.000	0.000	0.000	0.000	0.010	0.000	0.000	0.015	0.000
Fatal	0.000	0.000	0.000	0.000	0.000	0.002	0.044	0.000	0.000	0.000
Total	**0.519**	**1.122**	**1.128**	**0.637**	**0.953**	**0.490**	**0.783**	**0.219**	**0.731**	**0.000**
Other Intersections										
Non-injury	0.079	0.073	0.075	0.048	0.042	0.127	0.117	0.165	0.120	0.105
Injury	0.033	0.020	0.026	0.025	0.016	0.040	0.033	0.049	0.039	0.033
Incap Inj	0.008	0.007	0.003	0.008	0.003	0.005	0.004	0.005	0.006	0.004
Fatal	0.001	0.000	0.001	0.002	0.001	0.001	0.001	0.001	0.001	0.001
Total	**0.121**	**0.099**	**0.104**	**0.083**	**0.062**	**0.173**	**0.154**	**0.220**	**0.166**	**0.143**

Intersection Rates: Crashes / Million Entering Vehicles

Tennessee Department of Transportation
Statewide Average Crash Rates for Sections and Spots

Study: OFFICIAL HSIP STUDY 2014 - 2016

Begin Date: 1/1/2014 End Date: 12/31/2016

Route Type	Rural / Urban	Location Type	Highway Type	Fatal Rate	Incap. Rate	Other Inj. Rate	Pd. Rate	Total Rate	Severe Crash Rate	Total Veh. Miles (in millions)
Functionally Classified Local Roads										
FUNCT.	Rural	Section	2 OR 3 LN	0.034	0.179	0.676	1.943	**2.832**	0.213	7,033
FUNCT.	Rural	Section	2 OR 3 LN W/TL	0.024	0.096	0.358	1.194	**1.671**	0.119	42
FUNCT.	Rural	Section	4 OR MORE UNDIV	0.000	0.000	1.814	4.405	**6.219**	0.000	4
FUNCT.	Rural	Section	4 OR MORE DIV	0.000	0.000	0.000	0.000	**0.000**	0.000	0
FUNCT.	Rural	Section	4 OR MORE W TL	0.000	0.000	0.000	0.000	**0.000**	0.000	0
FUNCT.	Rural	Section	FREEWAY	0.000	1.323	2.646	6.615	**10.583**	1.323	1
FUNCT.	Rural	Spot	2 OR 3 LN	0.016	0.083	0.313	0.901	**1.312**	0.098	15,243
FUNCT.	Rural	Spot	2 OR 3 LN W/TL	0.000	0.022	0.076	0.305	**0.403**	0.022	183
FUNCT.	Rural	Spot	4 OR MORE UNDIV	0.000	0.041	0.326	0.856	**1.223**	0.041	25
FUNCT.	Rural	Spot	FREEWAY	0.000	0.151	0.302	0.905	**1.357**	0.151	7
FUNCT.	Urban	Section	2 OR 3 LN	0.011	0.098	0.734	2.776	**3.618**	0.109	15,443
FUNCT.	Urban	Section	2 OR 3 LN W/TL	0.004	0.068	0.692	3.053	**3.817**	0.072	1,639
FUNCT.	Urban	Section	4 OR MORE UNDIV	0.011	0.076	0.924	3.518	**4.529**	0.087	2,736
FUNCT.	Urban	Section	4 OR MORE DIV	0.007	0.044	0.552	2.445	**3.047**	0.050	3,750
FUNCT.	Urban	Section	4 OR MORE W TL	0.016	0.064	0.737	2.713	**3.530**	0.079	4,650
FUNCT.	Urban	Section	FREEWAY	0.004	0.025	0.470	1.958	**2.457**	0.030	475
FUNCT.	Urban	Spot	2 OR 3 LN	0.002	0.017	0.128	0.497	**0.643**	0.018	94,012
FUNCT.	Urban	Spot	2 OR 3 LN W/TL	0.001	0.009	0.094	0.428	**0.532**	0.010	12,328
FUNCT.	Urban	Spot	4 OR MORE UNDIV	0.001	0.009	0.110	0.456	**0.576**	0.010	27,060
FUNCT.	Urban	Spot	4 OR MORE DIV	0.001	0.006	0.074	0.330	**0.410**	0.006	32,186
FUNCT.	Urban	Spot	4 OR MORE W TL	0.002	0.008	0.091	0.342	**0.443**	0.010	39,317
FUNCT.	Urban	Spot	FREEWAY	0.001	0.003	0.064	0.277	**0.344**	0.004	4,234

SIGNAL WARRANT ANALYSIS CALCULATIONS

HCS7 Warrants Report

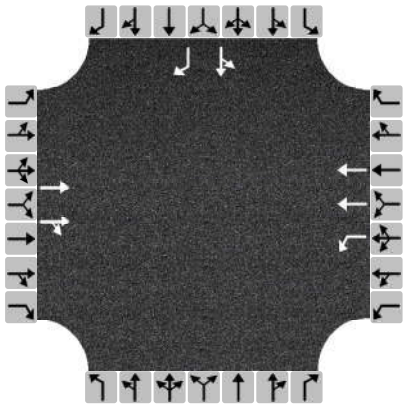
Project Information

Analyst	RLM	Date	09/04/2020
Agency	Gresham Smith	Analysis Year	2020
Jurisdiction	City of Knoxville	Time Period Analyzed	
Project Description	Anita Drive at James White Parkway SB Ramps		

General

Major Street Direction	East-West	Population < 10,000	No
Starting Time Interval	7	Coordinated Signal System	No
Median Type	Divided	Crashes (crashes/year)	1
Major Street Speed (mi/h)	35	Adequate Trials of Crash Exp. Alt.	No
Nearest Signal (ft)	3000		

Geometry and Traffic



Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Number of Lanes, N	0	2	0	1	2	0	0	0	0	0	1	1
Lane Usage		TR		L	T						LT	R
Vehicle Volumes Averages (veh/h)	0	130	21	15	35	0	0	0	0	101	0	0
Pedestrian Averages (peds/h)	0			0			0			0		
Gap Averages (gaps/h)	0			0			0			0		
Delay (s/veh)	0.0			0.0			0.0			0.0		
Delay (veh-hrs)	0.0			0.0			0.0			0.0		

School Crossing and Roadway Network

Number of Students in Highest Hour	0	Two or More Major Routes	No
Number of Adequate Gaps in Period	0	Weekend Counts	No
Number of Minutes in Period	0	5-year Growth Factor (%)	0

Railroad Crossing

Grade Crossing Approach	None	Rail Traffic (trains/day)	0
Highest Volume Hour with Trains	Unknown	High Occupancy Buses (%)	0
Distance to Stop Line (ft)		Tractor-Trailer Trucks (%)	0

HCS7 Warrants Report

Volume Summary

Hour	Major Volume	Minor Volume	Total Volume	Peds/h	Gaps/h	1A (100%)	1A (80%)	1B (100%)	1B (80%)	2 (100%)	3A (100%)	3B (100%)	4A (100%)	4B (100%)
07 - 08	205	71	276	0	0	No	No	No	No	No	No	No	No	No
08 - 09	153	80	233	0	0	No	No	No	No	No	No	No	No	No
09 - 10	166	79	245	0	0	No	No	No	No	No	No	No	No	No
10 - 11	179	78	257	0	0	No	No	No	No	No	No	No	No	No
11 - 12	192	77	269	0	0	No	No	No	No	No	No	No	No	No
12 - 13	181	82	263	0	0	No	No	No	No	No	No	No	No	No
13 - 14	201	95	296	0	0	No	No	No	No	No	No	No	No	No
14 - 15	219	107	326	0	0	No	No	No	No	No	No	No	No	No
15 - 16	238	119	357	0	0	No	No	No	No	No	No	No	No	No
16 - 17	256	131	387	0	0	No	No	No	No	No	No	No	No	No
17 - 18	223	153	376	0	0	No	No	No	No	No	No	No	No	No
18 - 19	223	153	376	0	0	No	No	No	No	No	No	No	No	No
Total	2436	1225	3661	0	0	0	0	0	0	0	0	0	0	0

Warrants

Warrant 1: Eight-Hour Vehicular Volume	
A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	
B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	
80% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	
Warrant 2: Four-Hour Vehicular Volume	
Four-Hour Vehicular Volume (Both major approaches --and-- higher minor approach)	
Warrant 3: Peak Hour	
A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--	
B. Peak-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	
Warrant 4: Pedestrian Volume	
A. Four Hour Volumes --or--	
B. One-Hour Volumes	
Warrant 5: School Crossing	
Gaps Same Period --and--	
Student Volumes	
Nearest Traffic Control Signal (optional)	✓
Warrant 6: Coordinated Signal System	
Degree of Platooning (Predominant direction or both directions)	
Warrant 7: Crash Experience	
A. Adequate trials of alternatives, observance and enforcement failed --and--	
B. Reported crashes susceptible to correction by signal (12-month period) --and--	
C. 80% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied	
Warrant 8: Roadway Network	
A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2, or 3) --or--	
B. Weekend Volume (Five hours total)	
Warrant 9: Grade Crossing	
A. Grade Crossing within 140 ft --and--	
B. Peak-Hour Vehicular Volumes	

HCS7 Warrants Report

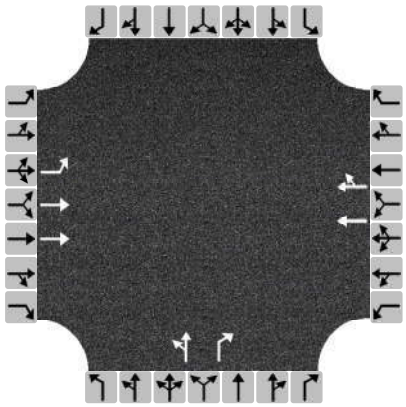
Project Information

Analyst	RLM	Date	09/04/2020
Agency	Gresham Smith	Analysis Year	2020
Jurisdiction	City of Knoxville	Time Period Analyzed	
Project Description	Anita Drive at Cottrell Street		

General

Major Street Direction	East-West	Population < 10,000	No
Starting Time Interval	7	Coordinated Signal System	No
Median Type	Divided	Crashes (crashes/year)	2
Major Street Speed (mi/h)	35	Adequate Trials of Crash Exp. Alt.	No
Nearest Signal (ft)	3500		

Geometry and Traffic



Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Number of Lanes, N	1	2	0	0	2	0	0	1	1	0	0	0
Lane Usage	L	T			TR			LT	R			
Vehicle Volumes Averages (veh/h)	130	141	0	0	30	131	21	92	17	0	0	0
Pedestrian Averages (peds/h)	0			0			0			0		
Gap Averages (gaps/h)	0			0			0			0		
Delay (s/veh)	0.0			0.0			0.0			0.0		
Delay (veh-hrs)	0.0			0.0			0.0			0.0		

School Crossing and Roadway Network

Number of Students in Highest Hour	0	Two or More Major Routes	No
Number of Adequate Gaps in Period	0	Weekend Counts	No
Number of Minutes in Period	0	5-year Growth Factor (%)	0

Railroad Crossing

Grade Crossing Approach	None	Rail Traffic (trains/day)	0
Highest Volume Hour with Trains	Unknown	High Occupancy Buses (%)	0
Distance to Stop Line (ft)		Tractor-Trailer Trucks (%)	0

HCS7 Warrants Report

Volume Summary

Hour	Major Volume	Minor Volume	Total Volume	Peds/h	Gaps/h	1A (100%)	1A (80%)	1B (100%)	1B (80%)	2 (100%)	3A (100%)	3B (100%)	4A (100%)	4B (100%)
07 - 08	496	235	731	0	0	No	Yes	No	No	No	No	No	No	No
08 - 09	503	144	647	0	0	No	No	No	No	No	No	No	No	No
09 - 10	291	123	414	0	0	No	No	No	No	No	No	No	No	No
10 - 11	262	104	366	0	0	No	No	No	No	No	No	No	No	No
11 - 12	342	83	425	0	0	No	No	No	No	No	No	No	No	No
12 - 13	334	114	448	0	0	No	No	No	No	No	No	No	No	No
13 - 14	390	116	506	0	0	No	No	No	No	No	No	No	No	No
14 - 15	447	119	566	0	0	No	No	No	No	No	No	No	No	No
15 - 16	502	121	623	0	0	No	No	No	No	No	No	No	No	No
16 - 17	557	123	680	0	0	No	No	No	No	No	No	No	No	No
17 - 18	534	148	682	0	0	No	No	No	No	No	No	No	No	No
18 - 19	534	148	682	0	0	No	No	No	No	No	No	No	No	No
Total	5192	1578	6770	0	0	0	1	0	0	0	0	0	0	0

Warrants

Warrant 1: Eight-Hour Vehicular Volume	
A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	
B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	
80% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	
Warrant 2: Four-Hour Vehicular Volume	
Four-Hour Vehicular Volume (Both major approaches --and-- higher minor approach)	
Warrant 3: Peak Hour	
A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--	
B. Peak-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	
Warrant 4: Pedestrian Volume	
A. Four Hour Volumes --or--	
B. One-Hour Volumes	
Warrant 5: School Crossing	
Gaps Same Period --and--	
Student Volumes	
Nearest Traffic Control Signal (optional)	✓
Warrant 6: Coordinated Signal System	
Degree of Platooning (Predominant direction or both directions)	
Warrant 7: Crash Experience	
A. Adequate trials of alternatives, observance and enforcement failed --and--	
B. Reported crashes susceptible to correction by signal (12-month period) --and--	
C. 80% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied	
Warrant 8: Roadway Network	
A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2, or 3) --or--	
B. Weekend Volume (Five hours total)	
Warrant 9: Grade Crossing	
A. Grade Crossing within 140 ft --and--	
B. Peak-Hour Vehicular Volumes	

HCS7 Warrants Report

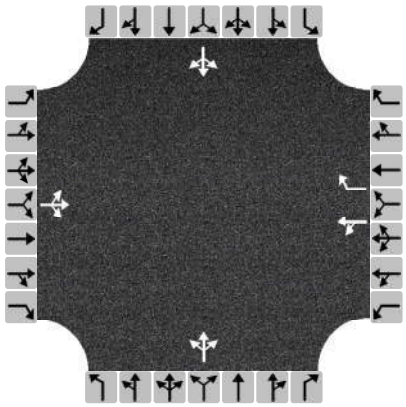
Project Information

Analyst	RLM	Date	09/04/2020
Agency	Gresham Smith	Analysis Year	2020
Jurisdiction	City of Knoxville	Time Period Analyzed	
Project Description	Sevierville Pike at Sevier Avenue/Lancaster Drive		

General

Major Street Direction	East-West	Population < 10,000	No
Starting Time Interval	7	Coordinated Signal System	No
Median Type	Undivided	Crashes (crashes/year)	1
Major Street Speed (mi/h)	30	Adequate Trials of Crash Exp. Alt.	No
Nearest Signal (ft)	1400		

Geometry and Traffic



Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Number of Lanes, N	0	1	0	0	1	1	0	1	0	0	1	0
Lane Usage		LTR			LT	R		LTR			LTR	
Vehicle Volumes Averages (veh/h)	27	158	42	28	135	11	43	19	25	17	17	29
Pedestrian Averages (peds/h)	0			0			0			0		
Gap Averages (gaps/h)	0			0			0			0		
Delay (s/veh)	0.0			0.0			0.0			0.0		
Delay (veh-hrs)	0.0			0.0			0.0			0.0		

School Crossing and Roadway Network

Number of Students in Highest Hour	0	Two or More Major Routes	No
Number of Adequate Gaps in Period	0	Weekend Counts	No
Number of Minutes in Period	0	5-year Growth Factor (%)	0

Railroad Crossing

Grade Crossing Approach	None	Rail Traffic (trains/day)	0
Highest Volume Hour with Trains	Unknown	High Occupancy Buses (%)	0
Distance to Stop Line (ft)		Tractor-Trailer Trucks (%)	0

HCS7 Warrants Report

Volume Summary

Hour	Major Volume	Minor Volume	Total Volume	Peds/h	Gaps/h	1A (100%)	1A (80%)	1B (100%)	1B (80%)	2 (100%)	3A (100%)	3B (100%)	4A (100%)	4B (100%)
07 - 08	429	112	610	0	0	No	No	No	No	No	No	No	No	No
08 - 09	319	86	445	0	0	No	No	No	No	No	No	No	No	No
09 - 10	309	79	431	0	0	No	No	No	No	No	No	No	No	No
10 - 11	297	70	413	0	0	No	No	No	No	No	No	No	No	No
11 - 12	287	63	399	0	0	No	No	No	No	No	No	No	No	No
12 - 13	356	86	502	0	0	No	No	No	No	No	No	No	No	No
13 - 14	380	92	536	0	0	No	No	No	No	No	No	No	No	No
14 - 15	403	97	569	0	0	No	No	No	No	No	No	No	No	No
15 - 16	425	101	597	0	0	No	No	No	No	No	No	No	No	No
16 - 17	447	106	628	0	0	No	No	No	No	No	No	No	No	No
17 - 18	599	93	783	0	0	No	No	No	No	No	No	No	No	No
18 - 19	599	93	783	0	0	No	No	No	No	No	No	No	No	No
Total	4850	1078	6696	0	0	0	0	0	0	0	0	0	0	0

Warrants

Warrant 1: Eight-Hour Vehicular Volume	
A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	
B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	
80% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	
Warrant 2: Four-Hour Vehicular Volume	
Four-Hour Vehicular Volume (Both major approaches --and-- higher minor approach)	
Warrant 3: Peak Hour	
A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--	
B. Peak-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	
Warrant 4: Pedestrian Volume	
A. Four Hour Volumes --or--	
B. One-Hour Volumes	
Warrant 5: School Crossing	
Gaps Same Period --and--	
Student Volumes	
Nearest Traffic Control Signal (optional)	✓
Warrant 6: Coordinated Signal System	
Degree of Platooning (Predominant direction or both directions)	
Warrant 7: Crash Experience	
A. Adequate trials of alternatives, observance and enforcement failed --and--	
B. Reported crashes susceptible to correction by signal (12-month period) --and--	
C. 80% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied	
Warrant 8: Roadway Network	
A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2, or 3) --or--	
B. Weekend Volume (Five hours total)	
Warrant 9: Grade Crossing	
A. Grade Crossing within 140 ft --and--	
B. Peak-Hour Vehicular Volumes	

EXISTING 2020 ANALYSIS

Intersection	
Int Delay, s/veh	5.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	109	13	71	204	6	57	4	122	8	0	2
Future Vol, veh/h	6	109	13	71	204	6	57	4	122	8	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	131	16	86	246	7	69	5	147	10	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	253	0	0	147	0	0	576	578	139	651	583	250
Stage 1	-	-	-	-	-	-	153	153	-	422	422	-
Stage 2	-	-	-	-	-	-	423	425	-	229	161	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1312	-	-	1435	-	-	428	427	909	382	424	789
Stage 1	-	-	-	-	-	-	849	771	-	609	588	-
Stage 2	-	-	-	-	-	-	609	586	-	774	765	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1312	-	-	1435	-	-	405	399	909	301	396	789
Mov Cap-2 Maneuver	-	-	-	-	-	-	405	399	-	301	396	-
Stage 1	-	-	-	-	-	-	845	767	-	606	553	-
Stage 2	-	-	-	-	-	-	571	551	-	641	761	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	1.9	13.5	15.9
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	642	1312	-	-	1435	-	-	343
HCM Lane V/C Ratio	0.343	0.006	-	-	0.06	-	-	0.035
HCM Control Delay (s)	13.5	7.8	-	-	7.7	-	-	15.9
HCM Lane LOS	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.5	0	-	-	0.2	-	-	0.1

Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	222	17	15	78	0	0	0	0	77	2	203
Future Vol, veh/h	0	222	17	15	78	0	0	0	0	77	2	203
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	-	75	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	79	79	79	79	79	79	79	79	79
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	281	22	19	99	0	0	0	0	97	3	257

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	0	281	0	0			278	418	50
Stage 1	-	-	-	-	-	-			137	137	-
Stage 2	-	-	-	-	-	-			141	281	-
Critical Hdwy	-	-	-	4.14	-	-			6.84	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-			5.84	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.84	5.54	-
Follow-up Hdwy	-	-	-	2.22	-	-			3.52	4.02	3.32
Pot Cap-1 Maneuver	0	-	-	1278	-	0			689	524	1008
Stage 1	0	-	-	-	-	0			875	782	-
Stage 2	0	-	-	-	-	0			871	677	-
Platoon blocked, %		-	-		-						
Mov Cap-1 Maneuver	-	-	-	1278	-	-			679	0	1008
Mov Cap-2 Maneuver	-	-	-	-	-	-			679	0	-
Stage 1	-	-	-	-	-	-			875	0	-
Stage 2	-	-	-	-	-	-			858	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	1.3	10.2
HCM LOS			B

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1278	-	679	1008
HCM Lane V/C Ratio	-	-	0.015	-	0.147	0.255
HCM Control Delay (s)	-	-	7.9	-	11.2	9.8
HCM Lane LOS	-	-	A	-	B	A
HCM 95th %tile Q(veh)	-	-	0	-	0.5	1

Intersection	
Intersection Delay, s/veh	10.8
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	157	142	0	0	62	187	31	196	19	0	0	0
Future Vol, veh/h	157	142	0	0	62	187	31	196	19	0	0	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	173	156	0	0	68	205	34	215	21	0	0	0
Number of Lanes	1	2	0	0	2	0	0	2	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	3	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	3
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	2
HCM Control Delay	10.6	11	11
HCM LOS	B	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2
Vol Left, %	24%	0%	100%	0%	0%	0%	0%
Vol Thru, %	76%	84%	0%	100%	100%	100%	10%
Vol Right, %	0%	16%	0%	0%	0%	0%	90%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	129	117	157	71	71	41	208
LT Vol	31	0	157	0	0	0	0
Through Vol	98	98	0	71	71	41	21
RT Vol	0	19	0	0	0	0	187
Lane Flow Rate	142	129	173	78	78	45	228
Geometry Grp	8	8	8	8	8	8	8
Degree of Util (X)	0.251	0.22	0.316	0.132	0.094	0.078	0.353
Departure Headway (Hd)	6.386	6.151	6.59	6.084	4.33	6.215	5.576
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	563	584	545	589	825	576	644
Service Time	4.123	3.888	4.327	3.821	2.066	3.954	3.316
HCM Lane V/C Ratio	0.252	0.221	0.317	0.132	0.095	0.078	0.354
HCM Control Delay	11.3	10.6	12.4	9.7	7.5	9.5	11.3
HCM Lane LOS	B	B	B	A	A	A	B
HCM 95th-tile Q	1	0.8	1.3	0.5	0.3	0.3	1.6

Intersection	
Int Delay, s/veh	4.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	40	10	3	29	27	32
Future Vol, veh/h	40	10	3	29	27	32
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	42	11	3	31	28	34

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	109	19	0	0	34	0
Stage 1	19	-	-	-	-	-
Stage 2	90	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	888	1059	-	-	1578	-
Stage 1	1004	-	-	-	-	-
Stage 2	934	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	872	1059	-	-	1578	-
Mov Cap-2 Maneuver	872	-	-	-	-	-
Stage 1	1004	-	-	-	-	-
Stage 2	917	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.2	0	3.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	904	1578	-
HCM Lane V/C Ratio	-	-	0.058	0.018	-
HCM Control Delay (s)	-	-	9.2	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Intersection	
Intersection Delay, s/veh	7.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	31	0	0	44	122	6	44	10	0	0	0
Future Vol, veh/h	25	31	0	0	44	122	6	44	10	0	0	0
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	32	40	0	0	57	158	8	57	13	0	0	0
Number of Lanes	0	1	0	0	1	0	0	2	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	7.9	7.8	8
HCM LOS	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1
Vol Left, %	21%	0%	45%	0%
Vol Thru, %	79%	69%	55%	27%
Vol Right, %	0%	31%	0%	73%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	28	32	56	166
LT Vol	6	0	25	0
Through Vol	22	22	31	44
RT Vol	0	10	0	122
Lane Flow Rate	36	42	73	216
Geometry Grp	7	7	2	2
Degree of Util (X)	0.052	0.056	0.089	0.22
Departure Headway (Hd)	5.138	4.81	4.422	3.681
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	688	734	815	957
Service Time	2.935	2.607	2.422	1.775
HCM Lane V/C Ratio	0.052	0.057	0.09	0.226
HCM Control Delay	8.2	7.9	7.9	7.8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.2	0.3	0.8

Intersection	
Intersection Delay, s/veh	8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	13	25	52	26	3	13	26	52	4	57	11
Future Vol, veh/h	3	13	25	52	26	3	13	26	52	4	57	11
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	18	34	71	36	4	18	36	71	5	78	15
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.5	8.4	7.8	8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	14%	7%	64%	6%
Vol Thru, %	29%	32%	32%	79%
Vol Right, %	57%	61%	4%	15%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	91	41	81	72
LT Vol	13	3	52	4
Through Vol	26	13	26	57
RT Vol	52	25	3	11
Lane Flow Rate	125	56	111	99
Geometry Grp	1	1	1	1
Degree of Util (X)	0.142	0.066	0.141	0.12
Departure Headway (Hd)	4.114	4.2	4.588	4.369
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	874	854	783	823
Service Time	2.129	2.218	2.606	2.385
HCM Lane V/C Ratio	0.143	0.066	0.142	0.12
HCM Control Delay	7.8	7.5	8.4	8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.5	0.2	0.5	0.4

Intersection	
Int Delay, s/veh	8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	39	0	0	59	20	22	10	0	0	0	0
Future Vol, veh/h	30	39	0	0	59	20	22	10	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	36	46	0	0	70	24	26	12	0	0	0	0

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	93	64	-	-	64	6	0	0	0
Stage 1	0	0	-	-	64	-	-	-	-
Stage 2	93	64	-	-	0	-	-	-	-
Critical Hdwy	7.54	6.54	-	-	6.54	6.94	4.14	-	-
Critical Hdwy Stg 1	-	-	-	-	5.54	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	-	-	4.02	3.32	2.22	-	-
Pot Cap-1 Maneuver	881	826	0	0	826	1075	-	-	-
Stage 1	-	-	0	0	841	-	-	-	-
Stage 2	904	841	0	0	-	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	805	826	-	-	826	1075	-	-	-
Mov Cap-2 Maneuver	805	826	-	-	826	-	-	-	-
Stage 1	-	-	-	-	841	-	-	-	-
Stage 2	810	841	-	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	9.9	9.6	
HCM LOS	A	A	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1
Capacity (veh/h)	-	-	-	817	877
HCM Lane V/C Ratio	-	-	-	0.101	0.107
HCM Control Delay (s)	-	-	-	9.9	9.6
HCM Lane LOS	-	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0.3	0.4

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	16	23	16	43	50	63
Future Vol, veh/h	16	23	16	43	50	63
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	76	76	76	76	76	76
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	21	30	21	57	66	83

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	207	108	149	0	-	0
Stage 1	108	-	-	-	-	-
Stage 2	99	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	781	946	1432	-	-	-
Stage 1	916	-	-	-	-	-
Stage 2	925	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	769	946	1432	-	-	-
Mov Cap-2 Maneuver	769	-	-	-	-	-
Stage 1	902	-	-	-	-	-
Stage 2	925	-	-	-	-	-

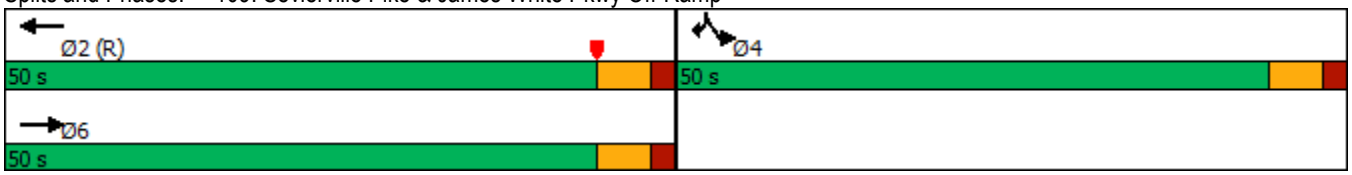
Approach	EB	NB	SB
HCM Control Delay, s	9.4	2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1432	-	864	-	-
HCM Lane V/C Ratio	0.015	-	0.059	-	-
HCM Control Delay (s)	7.6	0	9.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Lane Group	EBT	WBT	SBL	SBR
Lane Configurations				
Traffic Volume (vph)	578	177	130	360
Future Volume (vph)	578	177	130	360
Turn Type	NA	NA	Prot	Prot
Protected Phases	6	2	4	4
Permitted Phases				
Detector Phase	6	2	4	4
Switch Phase				
Minimum Initial (s)	8.0	8.0	30.0	30.0
Minimum Split (s)	30.0	30.0	36.0	36.0
Total Split (s)	50.0	50.0	50.0	50.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Min	C-Min	None	None
Act Effct Green (s)	58.0	58.0	30.0	30.0
Actuated g/C Ratio	0.58	0.58	0.30	0.30
v/c Ratio	0.60	0.18	0.27	0.53
Control Delay	16.5	8.4	28.5	5.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	16.5	8.4	28.5	5.7
LOS	B	A	C	A
Approach Delay	16.5	8.4	11.7	
Approach LOS	B	A	B	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 2:WBT, Start of Yellow, Master Intersection	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.60	
Intersection Signal Delay: 13.5	Intersection LOS: B
Intersection Capacity Utilization 65.4%	ICU Level of Service C
Analysis Period (min) 15	

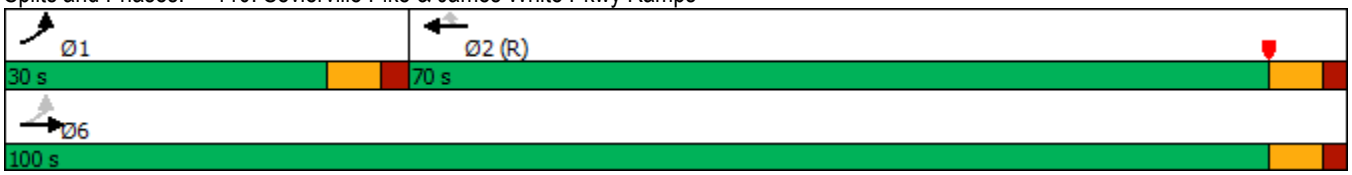
Splits and Phases: 109: Sevierville Pike & James White Pkwy Off-Ramp



Lane Group	EBL	EBT	WBT	WBR
Lane Configurations				
Traffic Volume (vph)	479	229	177	376
Future Volume (vph)	479	229	177	376
Turn Type	pm+pt	NA	NA	Perm
Protected Phases	1	6	2	
Permitted Phases	6			2
Detector Phase	1	6	2	2
Switch Phase				
Minimum Initial (s)	6.0	10.0	10.0	10.0
Minimum Split (s)	15.0	30.0	30.0	30.0
Total Split (s)	30.0	100.0	70.0	70.0
Total Split (%)	30.0%	100.0%	70.0%	70.0%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes
Recall Mode	None	Min	C-Min	C-Min
Act Effct Green (s)	94.0	100.0	73.3	73.3
Actuated g/C Ratio	0.94	1.00	0.73	0.73
v/c Ratio	0.48	0.14	0.15	0.34
Control Delay	2.9	0.1	5.9	2.1
Queue Delay	0.1	0.0	0.0	0.0
Total Delay	3.0	0.1	5.9	2.1
LOS	A	A	A	A
Approach Delay		2.1	3.3	
Approach LOS		A	A	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 65 (65%), Referenced to phase 2:WBT, Start of Yellow	
Natural Cycle: 45	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.48	
Intersection Signal Delay: 2.6	Intersection LOS: A
Intersection Capacity Utilization 65.4%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 110: Sevierville Pike & James White Pkwy Ramps



Intersection	
Intersection Delay, s/veh	10.9
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	87	22	30	278	25	83	18	15	14	24	35
Future Vol, veh/h	16	87	22	30	278	25	83	18	15	14	24	35
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	19	101	26	35	323	29	97	21	17	16	28	41
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.2	12.4	9.8	8.9
HCM LOS	A	B	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	72%	13%	9%	19%
Vol Thru, %	16%	70%	83%	33%
Vol Right, %	13%	18%	8%	48%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	116	125	333	73
LT Vol	83	16	30	14
Through Vol	18	87	278	24
RT Vol	15	22	25	35
Lane Flow Rate	135	145	387	85
Geometry Grp	1	1	1	1
Degree of Util (X)	0.201	0.197	0.501	0.121
Departure Headway (Hd)	5.362	4.888	4.658	5.134
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	662	727	771	690
Service Time	3.45	2.967	2.718	3.229
HCM Lane V/C Ratio	0.204	0.199	0.502	0.123
HCM Control Delay	9.8	9.2	12.4	8.9
HCM Lane LOS	A	A	B	A
HCM 95th-tile Q	0.7	0.7	2.8	0.4

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	127	64	183	160	8	40	2	109	6	3	3
Future Vol, veh/h	2	127	64	183	160	8	40	2	109	6	3	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	135	68	195	170	9	43	2	116	6	3	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	179	0	0	203	0	0	741	742	169	797	772	175
Stage 1	-	-	-	-	-	-	173	173	-	565	565	-
Stage 2	-	-	-	-	-	-	568	569	-	232	207	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1397	-	-	1369	-	-	332	344	875	305	330	868
Stage 1	-	-	-	-	-	-	829	756	-	510	508	-
Stage 2	-	-	-	-	-	-	508	506	-	771	731	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1397	-	-	1369	-	-	292	295	875	234	283	868
Mov Cap-2 Maneuver	-	-	-	-	-	-	292	295	-	234	283	-
Stage 1	-	-	-	-	-	-	828	755	-	509	436	-
Stage 2	-	-	-	-	-	-	431	434	-	666	730	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	4.2	13.9	17.4
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	563	1397	-	-	1369	-	-	302
HCM Lane V/C Ratio	0.285	0.002	-	-	0.142	-	-	0.042
HCM Control Delay (s)	13.9	7.6	-	-	8.1	-	-	17.4
HCM Lane LOS	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.2	0	-	-	0.5	-	-	0.1

Intersection	
Int Delay, s/veh	6.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	214	28	19	52	0	0	0	0	167	0	299
Future Vol, veh/h	0	214	28	19	52	0	0	0	0	167	0	299
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	-	75	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	228	30	20	55	0	0	0	0	178	0	318

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	0	228	0	0			209	323	28
Stage 1	-	-	-	-	-	-			95	95	-
Stage 2	-	-	-	-	-	-			114	228	-
Critical Hdwy	-	-	-	4.14	-	-			6.84	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-			5.84	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.84	5.54	-
Follow-up Hdwy	-	-	-	2.22	-	-			3.52	4.02	3.32
Pot Cap-1 Maneuver	0	-	-	1337	-	0			760	593	1041
Stage 1	0	-	-	-	-	0			918	815	-
Stage 2	0	-	-	-	-	0			898	714	-
Platoon blocked, %		-	-		-						
Mov Cap-1 Maneuver	-	-	-	1337	-	-			749	0	1041
Mov Cap-2 Maneuver	-	-	-	-	-	-			749	0	-
Stage 1	-	-	-	-	-	-			918	0	-
Stage 2	-	-	-	-	-	-			885	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	2.1	10.5
HCM LOS			B

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1337	-	749	1041
HCM Lane V/C Ratio	-	-	0.015	-	0.237	0.306
HCM Control Delay (s)	-	-	7.7	-	11.3	10
HCM Lane LOS	-	-	A	-	B	B
HCM 95th %tile Q(veh)	-	-	0	-	0.9	1.3

Intersection	
Intersection Delay, s/veh	9.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	150	231	0	0	46	135	25	98	27	0	0	0
Future Vol, veh/h	150	231	0	0	46	135	25	98	27	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	163	251	0	0	50	147	27	107	29	0	0	0
Number of Lanes	1	2	0	0	2	0	0	2	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	3	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	3
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	2
HCM Control Delay	9.4	9.6	9.7
HCM LOS	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2
Vol Left, %	34%	0%	100%	0%	0%	0%	0%
Vol Thru, %	66%	64%	0%	100%	100%	100%	10%
Vol Right, %	0%	36%	0%	0%	0%	0%	90%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	74	76	150	116	116	31	150
LT Vol	25	0	150	0	0	0	0
Through Vol	49	49	0	116	116	31	15
RT Vol	0	27	0	0	0	0	135
Lane Flow Rate	80	83	163	126	126	33	163
Geometry Grp	8	8	8	8	8	8	8
Degree of Util (X)	0.14	0.135	0.27	0.19	0.129	0.055	0.24
Departure Headway (Hd)	6.285	5.866	5.956	5.453	3.708	5.923	5.289
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	573	614	597	650	949	608	683
Service Time	3.996	3.577	3.751	3.247	1.501	3.623	2.989
HCM Lane V/C Ratio	0.14	0.135	0.273	0.194	0.133	0.054	0.239
HCM Control Delay	10	9.5	11	9.5	7.1	9	9.7
HCM Lane LOS	A	A	B	A	A	A	A
HCM 95th-tile Q	0.5	0.5	1.1	0.7	0.4	0.2	0.9

Intersection	
Int Delay, s/veh	5.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	19	19	11	67	32
Future Vol, veh/h	20	19	19	11	67	32
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	21	20	20	12	71	34

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	202	26	0	0	32	0
Stage 1	26	-	-	-	-	-
Stage 2	176	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	787	1050	-	-	1580	-
Stage 1	997	-	-	-	-	-
Stage 2	855	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	751	1050	-	-	1580	-
Mov Cap-2 Maneuver	751	-	-	-	-	-
Stage 1	997	-	-	-	-	-
Stage 2	816	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.3	0	5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	872	1580	-
HCM Lane V/C Ratio	-	-	0.047	0.045	-
HCM Control Delay (s)	-	-	9.3	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	64	0	0	34	75	5	44	10	0	0	0
Future Vol, veh/h	14	64	0	0	34	75	5	44	10	0	0	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	69	0	0	37	81	5	47	11	0	0	0
Number of Lanes	0	1	0	0	1	0	0	2	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	7.7	7.3	7.8
HCM LOS	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1
Vol Left, %	19%	0%	18%	0%
Vol Thru, %	81%	69%	82%	31%
Vol Right, %	0%	31%	0%	69%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	27	32	78	109
LT Vol	5	0	14	0
Through Vol	22	22	64	34
RT Vol	0	10	0	75
Lane Flow Rate	29	34	84	117
Geometry Grp	7	7	2	2
Degree of Util (X)	0.04	0.045	0.097	0.12
Departure Headway (Hd)	4.973	4.661	4.169	3.694
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	714	761	851	958
Service Time	2.745	2.433	2.237	1.767
HCM Lane V/C Ratio	0.041	0.045	0.099	0.122
HCM Control Delay	8	7.7	7.7	7.3
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.1	0.3	0.4

Intersection	
Intersection Delay, s/veh	7.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	54	101	6	22	0	25	19	7	5	39	8
Future Vol, veh/h	11	54	101	6	22	0	25	19	7	5	39	8
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	59	111	7	24	0	27	21	8	5	43	9
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.8	7.6	7.8	7.7
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	49%	7%	21%	10%
Vol Thru, %	37%	33%	79%	75%
Vol Right, %	14%	61%	0%	15%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	51	166	28	52
LT Vol	25	11	6	5
Through Vol	19	54	22	39
RT Vol	7	101	0	8
Lane Flow Rate	56	182	31	57
Geometry Grp	1	1	1	1
Degree of Util (X)	0.068	0.193	0.037	0.068
Departure Headway (Hd)	4.364	3.801	4.316	4.274
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	808	930	816	825
Service Time	2.46	1.878	2.414	2.37
HCM Lane V/C Ratio	0.069	0.196	0.038	0.069
HCM Control Delay	7.8	7.8	7.6	7.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.7	0.1	0.2

Intersection	
Int Delay, s/veh	6.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	28	38	0	0	17	8	11	23	2	0	0	0
Future Vol, veh/h	28	38	0	0	17	8	11	23	2	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	76	76	76	76	76	76	76	76	76	76	76	76
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	37	50	0	0	22	11	14	30	3	0	0	0

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	54	61	-	-	60	17	0	0	0
Stage 1	0	0	-	-	60	-	-	-	-
Stage 2	54	61	-	-	0	-	-	-	-
Critical Hdwy	7.54	6.54	-	-	6.54	6.94	4.14	-	-
Critical Hdwy Stg 1	-	-	-	-	5.54	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	-	-	4.02	3.32	2.22	-	-
Pot Cap-1 Maneuver	938	829	0	0	830	1058	-	-	-
Stage 1	-	-	0	0	844	-	-	-	-
Stage 2	952	843	0	0	-	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	910	829	-	-	830	1058	-	-	-
Mov Cap-2 Maneuver	910	829	-	-	830	-	-	-	-
Stage 1	-	-	-	-	844	-	-	-	-
Stage 2	918	843	-	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	9.6	9.2	
HCM LOS	A	A	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1
Capacity (veh/h)	-	-	-	862	891
HCM Lane V/C Ratio	-	-	-	0.101	0.037
HCM Control Delay (s)	-	-	-	9.6	9.2
HCM Lane LOS	-	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0.3	0.1

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	16	24	14	67	69	11
Future Vol, veh/h	16	24	14	67	69	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	27	16	74	77	12

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	189	83	89	0	-	0
Stage 1	83	-	-	-	-	-
Stage 2	106	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	800	976	1506	-	-	-
Stage 1	940	-	-	-	-	-
Stage 2	918	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	791	976	1506	-	-	-
Mov Cap-2 Maneuver	791	-	-	-	-	-
Stage 1	930	-	-	-	-	-
Stage 2	918	-	-	-	-	-

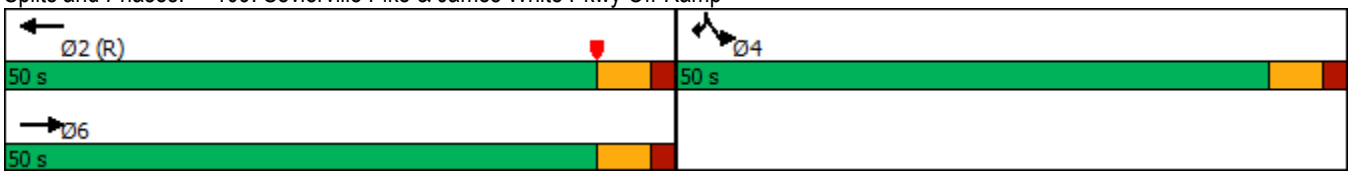
Approach	EB	NB	SB
HCM Control Delay, s	9.2	1.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1506	-	893	-	-
HCM Lane V/C Ratio	0.01	-	0.05	-	-
HCM Control Delay (s)	7.4	0	9.2	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Lane Group	EBT	WBT	SBL	SBR
Lane Configurations				
Traffic Volume (vph)	674	144	300	691
Future Volume (vph)	674	144	300	691
Turn Type	NA	NA	Prot	Prot
Protected Phases	6	2	4	4
Permitted Phases				
Detector Phase	6	2	4	4
Switch Phase				
Minimum Initial (s)	8.0	8.0	30.0	30.0
Minimum Split (s)	30.0	30.0	36.0	36.0
Total Split (s)	50.0	50.0	50.0	50.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Min	C-Min	None	None
Act Effct Green (s)	55.6	55.6	32.4	32.4
Actuated g/C Ratio	0.56	0.56	0.32	0.32
v/c Ratio	0.69	0.15	0.56	0.75
Control Delay	21.6	9.7	31.5	7.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	21.6	9.7	31.5	7.9
LOS	C	A	C	A
Approach Delay	21.6	9.7	15.0	
Approach LOS	C	A	B	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 2:WBT, Start of Yellow, Master Intersection	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 17.0	Intersection LOS: B
Intersection Capacity Utilization 70.5%	ICU Level of Service C
Analysis Period (min) 15	

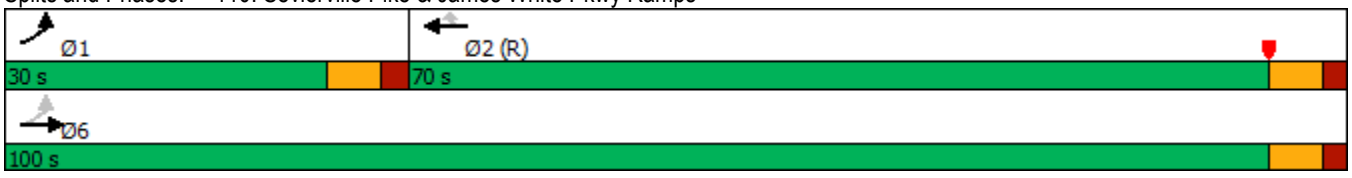
Splits and Phases: 109: Sevierville Pike & James White Pkwy Off-Ramp



Lane Group	EBL	EBT	WBT	WBR
Lane Configurations				
Traffic Volume (vph)	396	578	144	152
Future Volume (vph)	396	578	144	152
Turn Type	pm+pt	NA	NA	Perm
Protected Phases	1	6	2	
Permitted Phases	6			2
Detector Phase	1	6	2	2
Switch Phase				
Minimum Initial (s)	6.0	10.0	10.0	10.0
Minimum Split (s)	15.0	30.0	30.0	30.0
Total Split (s)	30.0	100.0	70.0	70.0
Total Split (%)	30.0%	100.0%	70.0%	70.0%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes
Recall Mode	None	Min	C-Min	C-Min
Act Effct Green (s)	94.0	100.0	79.8	79.8
Actuated g/C Ratio	0.94	1.00	0.80	0.80
v/c Ratio	0.39	0.34	0.11	0.13
Control Delay	1.1	0.4	2.8	0.8
Queue Delay	0.2	0.0	0.0	0.0
Total Delay	1.3	0.4	2.8	0.8
LOS	A	A	A	A
Approach Delay		0.8	1.8	
Approach LOS		A	A	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 65 (65%), Referenced to phase 2:WBT, Start of Yellow	
Natural Cycle: 45	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.39	
Intersection Signal Delay: 1.0	Intersection LOS: A
Intersection Capacity Utilization 70.5%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 110: Sevierville Pike & James White Pkwy Ramps



Intersection	
Intersection Delay, s/veh	12.8
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	49	285	75	37	147	11	30	21	41	24	21	48
Future Vol, veh/h	49	285	75	37	147	11	30	21	41	24	21	48
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	56	324	85	42	167	13	34	24	47	27	24	55
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	15.2	10.6	9.8	9.7
HCM LOS	C	B	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	33%	12%	19%	26%
Vol Thru, %	23%	70%	75%	23%
Vol Right, %	45%	18%	6%	52%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	92	409	195	93
LT Vol	30	49	37	24
Through Vol	21	285	147	21
RT Vol	41	75	11	48
Lane Flow Rate	105	465	222	106
Geometry Grp	1	1	1	1
Degree of Util (X)	0.163	0.618	0.317	0.163
Departure Headway (Hd)	5.617	4.785	5.146	5.56
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	638	758	698	645
Service Time	3.659	2.785	3.177	3.602
HCM Lane V/C Ratio	0.165	0.613	0.318	0.164
HCM Control Delay	9.8	15.2	10.6	9.7
HCM Lane LOS	A	C	B	A
HCM 95th-tile Q	0.6	4.3	1.4	0.6

NO BUILD ALTERNATIVE 2040 ANALYSIS

Intersection	
Int Delay, s/veh	7.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	147	18	96	275	8	77	5	164	11	0	3
Future Vol, veh/h	8	147	18	96	275	8	77	5	164	11	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	177	22	116	331	10	93	6	198	13	0	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	341	0	0	199	0	0	778	781	188	878	787	336
Stage 1	-	-	-	-	-	-	208	208	-	568	568	-
Stage 2	-	-	-	-	-	-	570	573	-	310	219	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1218	-	-	1373	-	-	314	326	854	268	324	706
Stage 1	-	-	-	-	-	-	794	730	-	508	506	-
Stage 2	-	-	-	-	-	-	506	504	-	700	722	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1218	-	-	1373	-	-	290	296	854	189	295	706
Mov Cap-2 Maneuver	-	-	-	-	-	-	290	296	-	189	295	-
Stage 1	-	-	-	-	-	-	788	724	-	504	463	-
Stage 2	-	-	-	-	-	-	461	462	-	529	716	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	2	20.8	22.4
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	518	1218	-	-	1373	-	-	224
HCM Lane V/C Ratio	0.572	0.008	-	-	0.084	-	-	0.075
HCM Control Delay (s)	20.8	8	-	-	7.9	-	-	22.4
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	3.6	0	-	-	0.3	-	-	0.2

Intersection	
Int Delay, s/veh	5.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	299	23	20	106	0	0	0	0	104	3	273
Future Vol, veh/h	0	299	23	20	106	0	0	0	0	104	3	273
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	-	75	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	79	79	79	79	79	79	79	79	79
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	378	29	25	134	0	0	0	0	132	4	346

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	0	378	0	0			562	562	134
Stage 1	-	-	-	-	-	-			184	184	-
Stage 2	-	-	-	-	-	-			378	378	-
Critical Hdwy	-	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	1180	-	0			488	436	915
Stage 1	0	-	-	-	-	0			848	747	-
Stage 2	0	-	-	-	-	0			693	615	-
Platoon blocked, %		-	-		-						
Mov Cap-1 Maneuver	-	-	-	1180	-	-			478	0	915
Mov Cap-2 Maneuver	-	-	-	-	-	-			478	0	-
Stage 1	-	-	-	-	-	-			848	0	-
Stage 2	-	-	-	-	-	-			678	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	1.3	12.5
HCM LOS			B

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1180	-	478	915
HCM Lane V/C Ratio	-	-	0.021	-	0.283	0.378
HCM Control Delay (s)	-	-	8.1	-	15.5	11.3
HCM Lane LOS	-	-	A	-	C	B
HCM 95th %tile Q(veh)	-	-	0.1	-	1.2	1.8

Intersection	
Intersection Delay, s/veh	15.3
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	211	192	0	0	84	252	42	264	26	0	0	0
Future Vol, veh/h	211	192	0	0	84	252	42	264	26	0	0	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	232	211	0	0	92	277	46	290	29	0	0	0
Number of Lanes	1	1	0	0	1	0	0	1	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	13.6	15.1	17.6
HCM LOS	B	C	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1
Vol Left, %	13%	100%	0%	0%
Vol Thru, %	80%	0%	100%	25%
Vol Right, %	8%	0%	0%	75%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	332	211	192	336
LT Vol	42	211	0	0
Through Vol	264	0	192	84
RT Vol	26	0	0	252
Lane Flow Rate	365	232	211	369
Geometry Grp	2	7	7	5
Degree of Util (X)	0.602	0.433	0.364	0.555
Departure Headway (Hd)	5.937	6.718	6.21	5.411
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	606	533	578	665
Service Time	3.992	4.48	3.971	3.469
HCM Lane V/C Ratio	0.602	0.435	0.365	0.555
HCM Control Delay	17.6	14.6	12.5	15.1
HCM Lane LOS	C	B	B	C
HCM 95th-tile Q	4	2.2	1.7	3.4

Intersection	
Int Delay, s/veh	4.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	54	13	4	39	37	43
Future Vol, veh/h	54	13	4	39	37	43
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	57	14	4	41	39	45

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	148	25	0	0	45	0
Stage 1	25	-	-	-	-	-
Stage 2	123	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	844	1051	-	-	1563	-
Stage 1	998	-	-	-	-	-
Stage 2	902	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	822	1051	-	-	1563	-
Mov Cap-2 Maneuver	822	-	-	-	-	-
Stage 1	998	-	-	-	-	-
Stage 2	879	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.6	0	3.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	858	1563	-
HCM Lane V/C Ratio	-	-	0.082	0.025	-
HCM Control Delay (s)	-	-	9.6	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

Intersection	
Intersection Delay, s/veh	8.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	34	42	0	0	59	164	8	59	13	0	0	0
Future Vol, veh/h	34	42	0	0	59	164	8	59	13	0	0	0
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	44	55	0	0	77	213	10	77	17	0	0	0
Number of Lanes	0	1	0	0	1	0	0	2	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	8.2	8.6	8.4
HCM LOS	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1
Vol Left, %	21%	0%	45%	0%
Vol Thru, %	79%	69%	55%	26%
Vol Right, %	0%	31%	0%	74%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	38	43	76	223
LT Vol	8	0	34	0
Through Vol	30	30	42	59
RT Vol	0	13	0	164
Lane Flow Rate	49	55	99	290
Geometry Grp	7	7	2	2
Degree of Util (X)	0.074	0.079	0.125	0.312
Departure Headway (Hd)	5.445	5.122	4.572	3.877
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	658	700	786	930
Service Time	3.173	2.85	2.591	1.89
HCM Lane V/C Ratio	0.074	0.079	0.126	0.312
HCM Control Delay	8.6	8.3	8.2	8.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.3	0.4	1.3

Intersection	
Intersection Delay, s/veh	8.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	18	34	70	35	4	18	35	70	5	77	15
Future Vol, veh/h	4	18	34	70	35	4	18	35	70	5	77	15
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	25	47	96	48	5	25	48	96	7	105	21
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8	9	8.4	8.5
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	15%	7%	64%	5%
Vol Thru, %	28%	32%	32%	79%
Vol Right, %	57%	61%	4%	15%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	123	56	109	97
LT Vol	18	4	70	5
Through Vol	35	18	35	77
RT Vol	70	34	4	15
Lane Flow Rate	168	77	149	133
Geometry Grp	1	1	1	1
Degree of Util (X)	0.202	0.095	0.199	0.169
Departure Headway (Hd)	4.318	4.451	4.807	4.58
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	831	803	745	783
Service Time	2.349	2.489	2.843	2.612
HCM Lane V/C Ratio	0.202	0.096	0.2	0.17
HCM Control Delay	8.4	8	9	8.5
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.8	0.3	0.7	0.6

Intersection	
Int Delay, s/veh	8.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	53	0	0	79	27	30	13	0	0	0	0
Future Vol, veh/h	40	53	0	0	79	27	30	13	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	48	63	0	0	94	32	36	15	0	0	0	0

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	127	87	-	-	87	8	0	0	0
Stage 1	0	0	-	-	87	-	-	-	-
Stage 2	127	87	-	-	0	-	-	-	-
Critical Hdwy	7.54	6.54	-	-	6.54	6.94	4.14	-	-
Critical Hdwy Stg 1	-	-	-	-	5.54	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	-	-	4.02	3.32	2.22	-	-
Pot Cap-1 Maneuver	834	802	0	0	802	1072	-	-	-
Stage 1	-	-	0	0	822	-	-	-	-
Stage 2	863	822	0	0	-	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	736	802	-	-	802	1072	-	-	-
Mov Cap-2 Maneuver	736	802	-	-	802	-	-	-	-
Stage 1	-	-	-	-	822	-	-	-	-
Stage 2	741	822	-	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	10.4	9.9	
HCM LOS	B	A	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1
Capacity (veh/h)	-	-	-	772	857
HCM Lane V/C Ratio	-	-	-	0.143	0.147
HCM Control Delay (s)	-	-	-	10.4	9.9
HCM Lane LOS	-	-	-	B	A
HCM 95th %tile Q(veh)	-	-	-	0.5	0.5

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	22	31	22	58	67	84
Future Vol, veh/h	22	31	22	58	67	84
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	76	76	76	76	76	76
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	41	29	76	88	111

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	278	144	199	0	-	0
Stage 1	144	-	-	-	-	-
Stage 2	134	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	712	903	1373	-	-	-
Stage 1	883	-	-	-	-	-
Stage 2	892	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	696	903	1373	-	-	-
Mov Cap-2 Maneuver	696	-	-	-	-	-
Stage 1	864	-	-	-	-	-
Stage 2	892	-	-	-	-	-

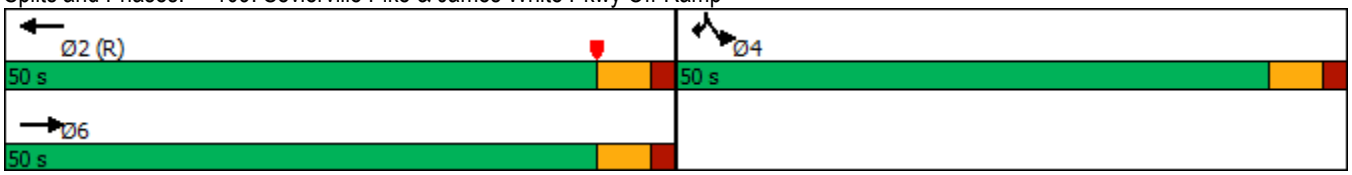
Approach	EB	NB	SB
HCM Control Delay, s	9.9	2.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1373	-	804	-	-
HCM Lane V/C Ratio	0.021	-	0.087	-	-
HCM Control Delay (s)	7.7	0	9.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Lane Group	EBT	WBT	SBL	SBR
Lane Configurations				
Traffic Volume (vph)	778	238	175	485
Future Volume (vph)	778	238	175	485
Turn Type	NA	NA	Prot	Prot
Protected Phases	6	2	4	4
Permitted Phases				
Detector Phase	6	2	4	4
Switch Phase				
Minimum Initial (s)	8.0	8.0	30.0	30.0
Minimum Split (s)	30.0	30.0	36.0	36.0
Total Split (s)	50.0	50.0	50.0	50.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Min	C-Min	None	None
Act Effct Green (s)	58.0	58.0	30.0	30.0
Actuated g/C Ratio	0.58	0.58	0.30	0.30
v/c Ratio	0.81	0.25	0.37	0.66
Control Delay	24.1	15.3	30.1	8.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	24.1	15.3	30.1	8.3
LOS	C	B	C	A
Approach Delay	24.1	15.3	14.1	
Approach LOS	C	B	B	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 2:WBT, Start of Yellow, Master Intersection	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 18.9	Intersection LOS: B
Intersection Capacity Utilization 77.1%	ICU Level of Service D
Analysis Period (min) 15	

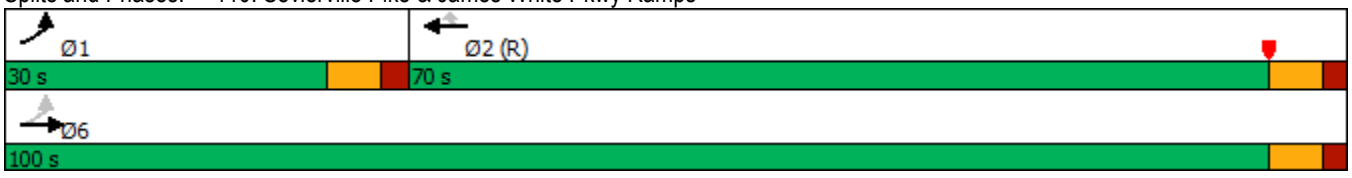
Splits and Phases: 109: Sevierville Pike & James White Pkwy Off-Ramp



Lane Group	EBL	EBT	WBT	WBR
Lane Configurations				
Traffic Volume (vph)	645	308	238	506
Future Volume (vph)	645	308	238	506
Turn Type	pm+pt	NA	NA	Perm
Protected Phases	1	6	2	
Permitted Phases	6			2
Detector Phase	1	6	2	2
Switch Phase				
Minimum Initial (s)	6.0	10.0	10.0	10.0
Minimum Split (s)	15.0	30.0	30.0	30.0
Total Split (s)	30.0	100.0	70.0	70.0
Total Split (%)	30.0%	100.0%	70.0%	70.0%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes
Recall Mode	None	Min	C-Min	C-Min
Act Effct Green (s)	94.0	100.0	54.6	54.6
Actuated g/C Ratio	0.94	1.00	0.55	0.55
v/c Ratio	0.63	0.19	0.27	0.59
Control Delay	5.7	0.2	17.3	15.3
Queue Delay	0.3	0.0	0.0	0.0
Total Delay	6.0	0.2	17.3	15.3
LOS	A	A	B	B
Approach Delay		4.1	15.9	
Approach LOS		A	B	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 65 (65%), Referenced to phase 2:WBT, Start of Yellow	
Natural Cycle: 50	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.63	
Intersection Signal Delay: 9.3	Intersection LOS: A
Intersection Capacity Utilization 77.1%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 110: Sevierville Pike & James White Pkwy Ramps



Intersection	
Intersection Delay, s/veh	16.5
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	22	117	30	40	374	34	112	24	20	19	32	47
Future Vol, veh/h	22	117	30	40	374	34	112	24	20	19	32	47
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	26	136	35	47	435	40	130	28	23	22	37	55
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	11	21.5	11.9	10.4
HCM LOS	B	C	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	72%	13%	9%	19%
Vol Thru, %	15%	69%	83%	33%
Vol Right, %	13%	18%	8%	48%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	156	169	448	98
LT Vol	112	22	40	19
Through Vol	24	117	374	32
RT Vol	20	30	34	47
Lane Flow Rate	181	197	521	114
Geometry Grp	1	1	1	1
Degree of Util (X)	0.308	0.303	0.742	0.189
Departure Headway (Hd)	6.117	5.547	5.13	5.966
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	586	645	703	598
Service Time	4.18	3.607	3.175	4.037
HCM Lane V/C Ratio	0.309	0.305	0.741	0.191
HCM Control Delay	11.9	11	21.5	10.4
HCM Lane LOS	B	B	C	B
HCM 95th-tile Q	1.3	1.3	6.7	0.7

Intersection	
Int Delay, s/veh	7.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	171	86	246	216	11	54	3	147	8	4	4
Future Vol, veh/h	3	171	86	246	216	11	54	3	147	8	4	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	182	91	262	230	12	57	3	156	9	4	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	242	0	0	273	0	0	998	1000	228	1073	1039	236
Stage 1	-	-	-	-	-	-	234	234	-	760	760	-
Stage 2	-	-	-	-	-	-	764	766	-	313	279	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1324	-	-	1290	-	-	223	243	811	198	231	803
Stage 1	-	-	-	-	-	-	769	711	-	398	414	-
Stage 2	-	-	-	-	-	-	396	412	-	698	680	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1324	-	-	1290	-	-	184	193	811	133	184	803
Mov Cap-2 Maneuver	-	-	-	-	-	-	184	193	-	133	184	-
Stage 1	-	-	-	-	-	-	767	710	-	397	330	-
Stage 2	-	-	-	-	-	-	310	328	-	560	679	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	4.4	22.7	26.6
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	416	1324	-	-	1290	-	-	184
HCM Lane V/C Ratio	0.522	0.002	-	-	0.203	-	-	0.093
HCM Control Delay (s)	22.7	7.7	-	-	8.5	-	-	26.6
HCM Lane LOS	C	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	2.9	0	-	-	0.8	-	-	0.3

Intersection	
Int Delay, s/veh	8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	288	38	26	70	0	0	0	0	226	0	403
Future Vol, veh/h	0	288	38	26	70	0	0	0	0	226	0	403
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	-	75	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	306	40	28	74	0	0	0	0	240	0	429

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	0	306	0	0			436	436	74
Stage 1	-	-	-	-	-	-			130	130	-
Stage 2	-	-	-	-	-	-			306	306	-
Critical Hdwy	-	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	1255	-	0			578	514	988
Stage 1	0	-	-	-	-	0			896	789	-
Stage 2	0	-	-	-	-	0			747	662	-
Platoon blocked, %		-	-		-						
Mov Cap-1 Maneuver	-	-	-	1255	-	-			565	0	988
Mov Cap-2 Maneuver	-	-	-	-	-	-			565	0	-
Stage 1	-	-	-	-	-	-			896	0	-
Stage 2	-	-	-	-	-	-			731	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	2.1	13.1
HCM LOS			B

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1255	-	565	988
HCM Lane V/C Ratio	-	-	0.022	-	0.426	0.434
HCM Control Delay (s)	-	-	7.9	-	16	11.4
HCM Lane LOS	-	-	A	-	C	B
HCM 95th %tile Q(veh)	-	-	0.1	-	2.1	2.2

Intersection	
Intersection Delay, s/veh	12.3
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	202	312	0	0	62	182	34	132	36	0	0	0
Future Vol, veh/h	202	312	0	0	62	182	34	132	36	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	220	339	0	0	67	198	37	143	39	0	0	0
Number of Lanes	1	1	0	0	1	0	0	1	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	13.3	10.8	11.8
HCM LOS	B	B	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1
Vol Left, %	17%	100%	0%	0%
Vol Thru, %	65%	0%	100%	25%
Vol Right, %	18%	0%	0%	75%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	202	202	312	244
LT Vol	34	202	0	0
Through Vol	132	0	312	62
RT Vol	36	0	0	182
Lane Flow Rate	220	220	339	265
Geometry Grp	2	7	7	5
Degree of Util (X)	0.348	0.367	0.519	0.364
Departure Headway (Hd)	5.714	6.012	5.506	4.941
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	630	602	658	732
Service Time	3.743	3.718	3.213	2.951
HCM Lane V/C Ratio	0.349	0.365	0.515	0.362
HCM Control Delay	11.8	12.2	14	10.8
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	1.6	1.7	3	1.7

Intersection	
Int Delay, s/veh	5.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	27	26	26	15	90	44
Future Vol, veh/h	27	26	26	15	90	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	27	27	16	95	46

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	271	35	0	0	43	0
Stage 1	35	-	-	-	-	-
Stage 2	236	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	718	1038	-	-	1566	-
Stage 1	987	-	-	-	-	-
Stage 2	803	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	673	1038	-	-	1566	-
Mov Cap-2 Maneuver	673	-	-	-	-	-
Stage 1	987	-	-	-	-	-
Stage 2	753	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.8	0	5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	813	1566	-
HCM Lane V/C Ratio	-	-	0.069	0.06	-
HCM Control Delay (s)	-	-	9.8	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.2	-

Intersection	
Intersection Delay, s/veh	7.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	19	86	0	0	46	101	7	60	13	0	0	0
Future Vol, veh/h	19	86	0	0	46	101	7	60	13	0	0	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	92	0	0	49	109	8	65	14	0	0	0
Number of Lanes	0	1	0	0	1	0	0	2	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	8	7.7	8
HCM LOS	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1
Vol Left, %	19%	0%	18%	0%
Vol Thru, %	81%	70%	82%	31%
Vol Right, %	0%	30%	0%	69%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	37	43	105	147
LT Vol	7	0	19	0
Through Vol	30	30	86	46
RT Vol	0	13	0	101
Lane Flow Rate	40	46	113	158
Geometry Grp	7	7	2	2
Degree of Util (X)	0.057	0.063	0.136	0.169
Departure Headway (Hd)	5.199	4.891	4.347	3.859
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	691	735	830	933
Service Time	2.912	2.604	2.347	1.868
HCM Lane V/C Ratio	0.058	0.063	0.136	0.169
HCM Control Delay	8.2	7.9	8	7.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.2	0.5	0.6

Intersection	
Intersection Delay, s/veh	8.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	15	73	136	8	30	0	34	26	9	7	53	11
Future Vol, veh/h	15	73	136	8	30	0	34	26	9	7	53	11
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	80	149	9	33	0	37	29	10	8	58	12
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.5	7.9	8.2	8.1
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	49%	7%	21%	10%
Vol Thru, %	38%	33%	79%	75%
Vol Right, %	13%	61%	0%	15%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	69	224	38	71
LT Vol	34	15	8	7
Through Vol	26	73	30	53
RT Vol	9	136	0	11
Lane Flow Rate	76	246	42	78
Geometry Grp	1	1	1	1
Degree of Util (X)	0.098	0.273	0.053	0.099
Departure Headway (Hd)	4.659	3.997	4.59	4.564
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	770	901	782	786
Service Time	2.681	2.01	2.609	2.586
HCM Lane V/C Ratio	0.099	0.273	0.054	0.099
HCM Control Delay	8.2	8.5	7.9	8.1
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	1.1	0.2	0.3

Intersection	
Int Delay, s/veh	7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	38	51	0	0	23	11	15	31	3	0	0	0
Future Vol, veh/h	38	51	0	0	23	11	15	31	3	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	76	76	76	76	76	76	76	76	76	76	76	76
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	50	67	0	0	30	14	20	41	4	0	0	0

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	76	85	-	-	83	23	0	0	0
Stage 1	0	0	-	-	83	-	-	-	-
Stage 2	76	85	-	-	0	-	-	-	-
Critical Hdwy	7.54	6.54	-	-	6.54	6.94	4.14	-	-
Critical Hdwy Stg 1	-	-	-	-	5.54	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	-	-	4.02	3.32	2.22	-	-
Pot Cap-1 Maneuver	905	804	0	0	806	1048	-	-	-
Stage 1	-	-	0	0	825	-	-	-	-
Stage 2	924	824	0	0	-	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	867	804	-	-	806	1048	-	-	-
Mov Cap-2 Maneuver	867	804	-	-	806	-	-	-	-
Stage 1	-	-	-	-	825	-	-	-	-
Stage 2	878	824	-	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	10	9.4	
HCM LOS	B	A	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1
Capacity (veh/h)	-	-	-	830	871
HCM Lane V/C Ratio	-	-	-	0.141	0.051
HCM Control Delay (s)	-	-	-	10	9.4
HCM Lane LOS	-	-	-	B	A
HCM 95th %tile Q(veh)	-	-	-	0.5	0.2

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	22	32	19	90	93	15
Future Vol, veh/h	22	32	19	90	93	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	36	21	100	103	17

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	254	112	120	0	-	0
Stage 1	112	-	-	-	-	-
Stage 2	142	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	735	941	1468	-	-	-
Stage 1	913	-	-	-	-	-
Stage 2	885	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	724	941	1468	-	-	-
Mov Cap-2 Maneuver	724	-	-	-	-	-
Stage 1	899	-	-	-	-	-
Stage 2	885	-	-	-	-	-

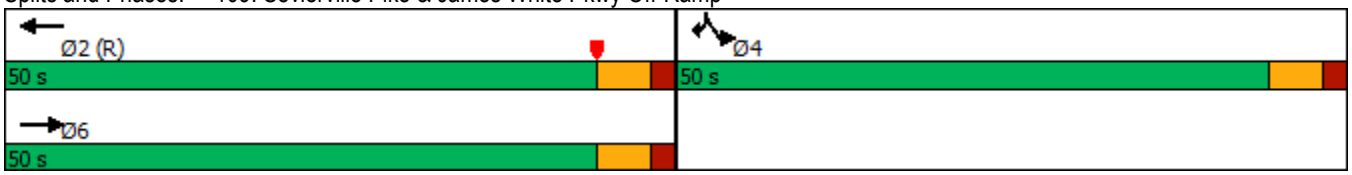
Approach	EB	NB	SB
HCM Control Delay, s	9.6	1.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1468	-	839	-	-
HCM Lane V/C Ratio	0.014	-	0.072	-	-
HCM Control Delay (s)	7.5	0	9.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Lane Group	EBT	WBT	SBL	SBR
Lane Configurations				
Traffic Volume (vph)	908	194	404	931
Future Volume (vph)	908	194	404	931
Turn Type	NA	NA	Prot	Prot
Protected Phases	6	2	4	4
Permitted Phases				
Detector Phase	6	2	4	4
Switch Phase				
Minimum Initial (s)	8.0	8.0	30.0	30.0
Minimum Split (s)	30.0	30.0	36.0	36.0
Total Split (s)	50.0	50.0	50.0	50.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Min	C-Min	None	None
Act Effct Green (s)	45.6	45.6	42.4	42.4
Actuated g/C Ratio	0.46	0.46	0.42	0.42
v/c Ratio	1.14	0.24	0.57	0.98
Control Delay	104.1	12.0	25.2	35.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	104.1	12.0	25.2	35.1
LOS	F	B	C	D
Approach Delay	104.1	12.0	32.1	
Approach LOS	F	B	C	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 2:WBT, Start of Yellow, Master Intersection	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.14	
Intersection Signal Delay: 57.3	Intersection LOS: E
Intersection Capacity Utilization 133.1%	ICU Level of Service H
Analysis Period (min) 15	

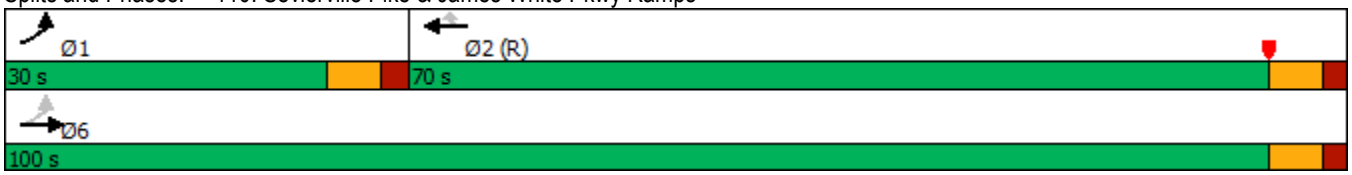
Splits and Phases: 109: Sevierville Pike & James White Pkwy Off-Ramp



Lane Group	EBL	EBT	WBT	WBR
Lane Configurations				
Traffic Volume (vph)	533	779	194	205
Future Volume (vph)	533	779	194	205
Turn Type	pm+pt	NA	NA	Perm
Protected Phases	1	6	2	
Permitted Phases	6			2
Detector Phase	1	6	2	2
Switch Phase				
Minimum Initial (s)	6.0	10.0	10.0	10.0
Minimum Split (s)	15.0	30.0	30.0	30.0
Total Split (s)	30.0	100.0	70.0	70.0
Total Split (%)	30.0%	100.0%	70.0%	70.0%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes
Recall Mode	None	Min	C-Min	C-Min
Act Effct Green (s)	94.0	100.0	69.5	69.5
Actuated g/C Ratio	0.94	1.00	0.70	0.70
v/c Ratio	0.52	0.46	0.16	0.19
Control Delay	1.3	0.3	7.9	2.0
Queue Delay	0.6	0.0	0.0	0.0
Total Delay	1.8	0.3	7.9	2.0
LOS	A	A	A	A
Approach Delay		0.9	4.8	
Approach LOS		A	A	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 65 (65%), Referenced to phase 2:WBT, Start of Yellow	
Natural Cycle: 45	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.52	
Intersection Signal Delay: 1.8	Intersection LOS: A
Intersection Capacity Utilization 133.1%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 110: Sevierville Pike & James White Pkwy Ramps



Intersection	
Intersection Delay, s/veh	27.3
Intersection LOS	D

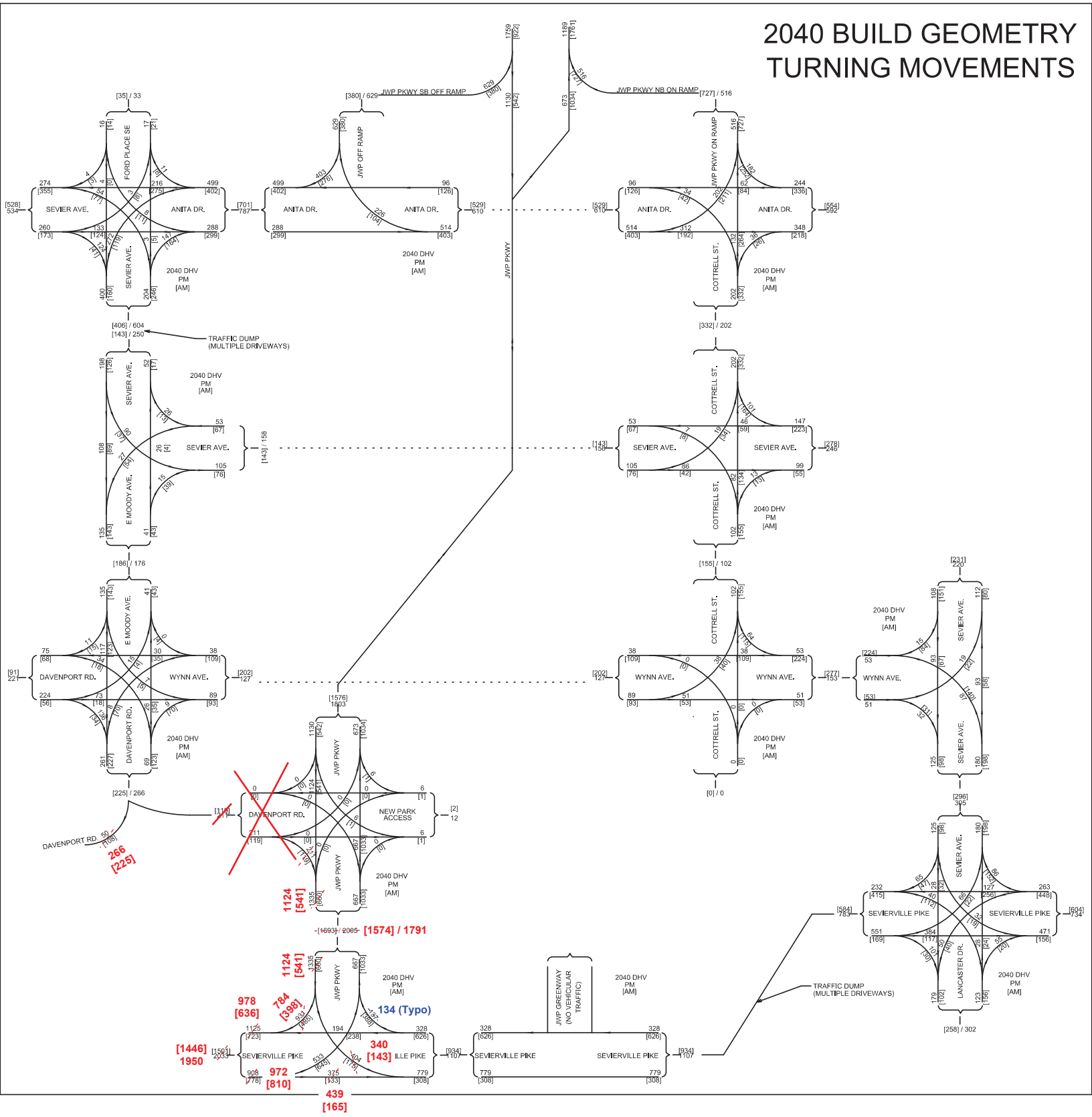
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	66	384	101	50	198	15	40	28	55	32	28	65
Future Vol, veh/h	66	384	101	50	198	15	40	28	55	32	28	65
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	75	436	115	57	225	17	45	32	63	36	32	74
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	40.2	14.6	12	11.9
HCM LOS	E	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	33%	12%	19%	26%
Vol Thru, %	23%	70%	75%	22%
Vol Right, %	45%	18%	6%	52%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	123	551	263	125
LT Vol	40	66	50	32
Through Vol	28	384	198	28
RT Vol	55	101	15	65
Lane Flow Rate	140	626	299	142
Geometry Grp	1	1	1	1
Degree of Util (X)	0.258	0.916	0.493	0.259
Departure Headway (Hd)	6.639	5.368	5.934	6.576
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	542	682	610	547
Service Time	4.663	3.368	3.934	4.602
HCM Lane V/C Ratio	0.258	0.918	0.49	0.26
HCM Control Delay	12	40.2	14.6	11.9
HCM Lane LOS	B	E	B	B
HCM 95th-tile Q	1	12.1	2.7	1

BUILD ALTERNATIVE 2040 ANALYSIS

2040 BUILD GEOMETRY
TURNING MOVEMENTS



***NOTE: The changes shown on this figure were made after discussions with TDOT and the City of Knoxville determined that there would be no connection from Davenport Road/E. Moody Road to James White Parkway. These changes were made on 12/9/2020.**

Intersection	
Int Delay, s/veh	8.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	124	41	119	275	8	77	5	164	11	0	3
Future Vol, veh/h	8	124	41	119	275	8	77	5	164	11	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	149	49	143	331	10	93	6	198	13	0	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	341	0	0	198	0	0	818	821	174	918	840	336
Stage 1	-	-	-	-	-	-	194	194	-	622	622	-
Stage 2	-	-	-	-	-	-	624	627	-	296	218	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1218	-	-	1375	-	-	295	309	869	252	302	706
Stage 1	-	-	-	-	-	-	808	740	-	474	479	-
Stage 2	-	-	-	-	-	-	473	476	-	712	723	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1218	-	-	1375	-	-	268	275	869	175	268	706
Mov Cap-2 Maneuver	-	-	-	-	-	-	268	275	-	175	268	-
Stage 1	-	-	-	-	-	-	802	734	-	470	429	-
Stage 2	-	-	-	-	-	-	422	426	-	541	717	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	2.3	22.3	23.7
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	498	1218	-	-	1375	-	-	209
HCM Lane V/C Ratio	0.595	0.008	-	-	0.104	-	-	0.081
HCM Control Delay (s)	22.3	8	-	-	7.9	-	-	23.7
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	3.8	0	-	-	0.3	-	-	0.3

Intersection	
Int Delay, s/veh	5.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↰	↱
Traffic Vol, veh/h	0	299	126	0	104	276
Future Vol, veh/h	0	299	126	0	104	276
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	378	159	0	132	349

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	537	159
Stage 1	-	-	-	-	159	-
Stage 2	-	-	-	-	378	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	0	-	-	0	505	886
Stage 1	0	-	-	0	870	-
Stage 2	0	-	-	0	693	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	505	886
Mov Cap-2 Maneuver	-	-	-	-	505	-
Stage 1	-	-	-	-	870	-
Stage 2	-	-	-	-	693	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	12.5
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	505	886
HCM Lane V/C Ratio	-	-	0.261	0.394
HCM Control Delay (s)	-	-	14.6	11.7
HCM Lane LOS	-	-	B	B
HCM 95th %tile Q(veh)	-	-	1	1.9

Intersection	
Intersection Delay, s/veh	15.3
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	211	192	0	0	84	252	42	264	26	0	0	0
Future Vol, veh/h	211	192	0	0	84	252	42	264	26	0	0	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	232	211	0	0	92	277	46	290	29	0	0	0
Number of Lanes	1	1	0	0	1	0	0	1	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	13.6	15.1	17.6
HCM LOS	B	C	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1
Vol Left, %	13%	100%	0%	0%
Vol Thru, %	80%	0%	100%	25%
Vol Right, %	8%	0%	0%	75%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	332	211	192	336
LT Vol	42	211	0	0
Through Vol	264	0	192	84
RT Vol	26	0	0	252
Lane Flow Rate	365	232	211	369
Geometry Grp	2	7	7	5
Degree of Util (X)	0.602	0.433	0.364	0.555
Departure Headway (Hd)	5.937	6.718	6.21	5.411
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	606	533	578	665
Service Time	3.992	4.48	3.971	3.469
HCM Lane V/C Ratio	0.602	0.435	0.365	0.555
HCM Control Delay	17.6	14.6	12.5	15.1
HCM Lane LOS	C	B	B	C
HCM 95th-tile Q	4	2.2	1.7	3.4

Intersection	
Int Delay, s/veh	4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	54	13	4	39	37	89
Future Vol, veh/h	54	13	4	39	37	89
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	57	14	4	41	39	94

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	197	25	0	0	45	0
Stage 1	25	-	-	-	-	-
Stage 2	172	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	792	1051	-	-	1563	-
Stage 1	998	-	-	-	-	-
Stage 2	858	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	771	1051	-	-	1563	-
Mov Cap-2 Maneuver	771	-	-	-	-	-
Stage 1	998	-	-	-	-	-
Stage 2	836	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.8	0	2.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	813	1563	-
HCM Lane V/C Ratio	-	-	0.087	0.025	-
HCM Control Delay (s)	-	-	9.8	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

Intersection	
Intersection Delay, s/veh	9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	34	42	0	0	59	164	8	134	13	0	0	0
Future Vol, veh/h	34	42	0	0	59	164	8	134	13	0	0	0
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	44	55	0	0	77	213	10	174	17	0	0	0
Number of Lanes	0	1	0	0	1	0	0	2	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	8.6	9.2	9
HCM LOS	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1
Vol Left, %	11%	0%	45%	0%
Vol Thru, %	89%	84%	55%	26%
Vol Right, %	0%	16%	0%	74%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	75	80	76	223
LT Vol	8	0	34	0
Through Vol	67	67	42	59
RT Vol	0	13	0	164
Lane Flow Rate	97	104	99	290
Geometry Grp	7	7	2	2
Degree of Util (X)	0.147	0.152	0.133	0.332
Departure Headway (Hd)	5.424	5.256	4.846	4.133
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	659	681	739	872
Service Time	3.17	3.002	2.881	2.157
HCM Lane V/C Ratio	0.147	0.153	0.134	0.333
HCM Control Delay	9.1	9	8.6	9.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.5	0.5	0.5	1.5

Intersection	
Intersection Delay, s/veh	8.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	18	34	70	35	4	18	35	70	5	123	15
Future Vol, veh/h	4	18	34	70	35	4	18	35	70	5	123	15
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	25	47	96	48	5	25	48	96	7	168	21
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.2	9.3	8.6	9.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	15%	7%	64%	3%
Vol Thru, %	28%	32%	32%	86%
Vol Right, %	57%	61%	4%	10%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	123	56	109	143
LT Vol	18	4	70	5
Through Vol	35	18	35	123
RT Vol	70	34	4	15
Lane Flow Rate	168	77	149	196
Geometry Grp	1	1	1	1
Degree of Util (X)	0.206	0.098	0.206	0.251
Departure Headway (Hd)	4.406	4.61	4.96	4.62
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	812	773	721	776
Service Time	2.449	2.664	3.008	2.663
HCM Lane V/C Ratio	0.207	0.1	0.207	0.253
HCM Control Delay	8.6	8.2	9.3	9.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.8	0.3	0.8	1

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	53	0	0	109	115	0	0	0	0	0	0
Future Vol, veh/h	40	53	0	0	109	115	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	48	63	0	0	130	137	0	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	267	0	-	-	-	0	358	426	63
Stage 1	-	-	-	-	-	-	159	159	-
Stage 2	-	-	-	-	-	-	199	267	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1297	-	0	0	-	-	640	520	1002
Stage 1	-	-	0	0	-	-	870	766	-
Stage 2	-	-	0	0	-	-	835	688	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1297	-	-	-	-	-	616	0	1002
Mov Cap-2 Maneuver	-	-	-	-	-	-	616	0	-
Stage 1	-	-	-	-	-	-	837	0	-
Stage 2	-	-	-	-	-	-	835	0	-

Approach	EB	WB	NB
HCM Control Delay, s	3.4	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (veh/h)	-	-	1297	-	-	-
HCM Lane V/C Ratio	-	-	0.037	-	-	-
HCM Control Delay (s)	0	0	7.9	0	-	-
HCM Lane LOS	A	A	A	A	-	-
HCM 95th %tile Q(veh)	-	-	0.1	-	-	-

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	22	31	140	58	67	84
Future Vol, veh/h	22	31	140	58	67	84
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	76	76	76	76	76	76
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	41	184	76	88	111

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	588	144	199	0	-	0
Stage 1	144	-	-	-	-	-
Stage 2	444	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	471	903	1373	-	-	-
Stage 1	883	-	-	-	-	-
Stage 2	646	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	405	903	1373	-	-	-
Mov Cap-2 Maneuver	405	-	-	-	-	-
Stage 1	759	-	-	-	-	-
Stage 2	646	-	-	-	-	-

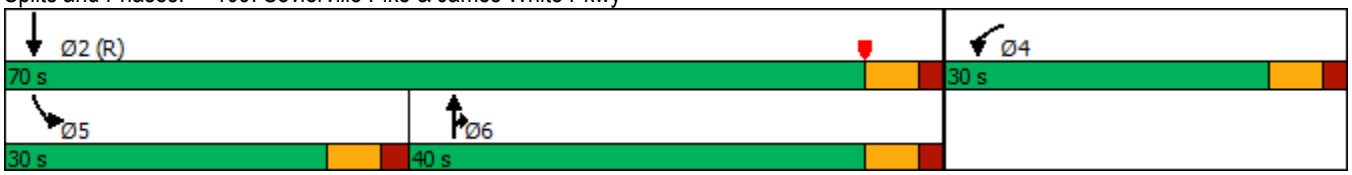
Approach	EB	NB	SB
HCM Control Delay, s	11.8	5.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1373	-	598	-	-
HCM Lane V/C Ratio	0.134	-	0.117	-	-
HCM Control Delay (s)	8	0	11.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.5	-	0.4	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	238	388	645	165	143	398
Future Volume (vph)	238	388	645	165	143	398
Turn Type	Prot	Free	NA	Prot	Prot	NA
Protected Phases	4		6	6	5	2
Permitted Phases		Free				
Detector Phase	4		6	6	5	2
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0
Minimum Split (s)	30.0		30.0	30.0	30.0	30.0
Total Split (s)	30.0		40.0	40.0	30.0	70.0
Total Split (%)	30.0%		40.0%	40.0%	30.0%	70.0%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None		Max	Max	None	C-Max
Act Effct Green (s)	19.6	100.0	48.1	48.1	14.4	68.4
Actuated g/C Ratio	0.20	1.00	0.48	0.48	0.14	0.68
v/c Ratio	0.77	0.28	0.81	0.22	0.63	0.35
Control Delay	53.0	0.4	33.3	5.6	51.1	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.0	0.4	33.3	5.6	51.1	8.1
LOS	D	A	C	A	D	A
Approach Delay	20.4		27.7			19.5
Approach LOS	C		C			B

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 34 (34%), Referenced to phase 2:SBT, Start of Yellow	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 23.1	Intersection LOS: C
Intersection Capacity Utilization 70.1%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 109: Sevierville Pike & James White Pkwy



Intersection	
Intersection Delay, s/veh	15.6
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	22	117	30	40	256	152	112	24	20	19	32	47
Future Vol, veh/h	22	117	30	40	256	152	112	24	20	19	32	47
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	26	136	35	47	298	177	130	28	23	22	37	55
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	11	19.7	11.8	10.4
HCM LOS	B	C	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	72%	13%	9%	19%
Vol Thru, %	15%	69%	57%	33%
Vol Right, %	13%	18%	34%	48%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	156	169	448	98
LT Vol	112	22	40	19
Through Vol	24	117	256	32
RT Vol	20	30	152	47
Lane Flow Rate	181	197	521	114
Geometry Grp	1	1	1	1
Degree of Util (X)	0.306	0.301	0.718	0.187
Departure Headway (Hd)	6.067	5.514	4.962	5.913
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	590	648	729	604
Service Time	4.128	3.571	3.005	3.983
HCM Lane V/C Ratio	0.307	0.304	0.715	0.189
HCM Control Delay	11.8	11	19.7	10.4
HCM Lane LOS	B	B	C	B
HCM 95th-tile Q	1.3	1.3	6.1	0.7

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	1	1033	0	1	541
Future Vol, veh/h	0	1	1033	0	1	541
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1	1123	0	1	588

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	562	0	0	1123	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	0	470	-	-	618	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	470	-	-	618	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.7	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	470	618	-
HCM Lane V/C Ratio	-	-	0.002	0.002	-
HCM Control Delay (s)	-	-	12.7	10.8	0
HCM Lane LOS	-	-	B	B	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	7.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	133	124	272	216	11	54	3	147	8	4	4
Future Vol, veh/h	3	133	124	272	216	11	54	3	147	8	4	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	141	132	289	230	12	57	3	156	9	4	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	242	0	0	273	0	0	1031	1033	207	1107	1093	236
Stage 1	-	-	-	-	-	-	213	213	-	814	814	-
Stage 2	-	-	-	-	-	-	818	820	-	293	279	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1324	-	-	1290	-	-	211	232	833	188	214	803
Stage 1	-	-	-	-	-	-	789	726	-	372	391	-
Stage 2	-	-	-	-	-	-	370	389	-	715	680	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1324	-	-	1290	-	-	170	180	833	124	166	803
Mov Cap-2 Maneuver	-	-	-	-	-	-	170	180	-	124	166	-
Stage 1	-	-	-	-	-	-	787	725	-	371	303	-
Stage 2	-	-	-	-	-	-	282	302	-	577	679	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	4.7	24.3	28.4
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	399	1324	-	-	1290	-	-	171
HCM Lane V/C Ratio	0.544	0.002	-	-	0.224	-	-	0.1
HCM Control Delay (s)	24.3	7.7	-	-	8.6	-	-	28.4
HCM Lane LOS	C	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	3.1	0	-	-	0.9	-	-	0.3

Intersection	
Int Delay, s/veh	8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↰	↱
Traffic Vol, veh/h	0	288	96	0	226	403
Future Vol, veh/h	0	288	96	0	226	403
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	306	102	0	240	429

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	408	102
Stage 1	-	-	-	-	102	-
Stage 2	-	-	-	-	306	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	0	-	-	0	599	953
Stage 1	0	-	-	0	922	-
Stage 2	0	-	-	0	747	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	599	953
Mov Cap-2 Maneuver	-	-	-	-	599	-
Stage 1	-	-	-	-	922	-
Stage 2	-	-	-	-	747	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	12.9
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	599	953
HCM Lane V/C Ratio	-	-	0.401	0.45
HCM Control Delay (s)	-	-	15	11.8
HCM Lane LOS	-	-	C	B
HCM 95th %tile Q(veh)	-	-	1.9	2.4

Intersection	
Intersection Delay, s/veh	12.3
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	202	312	0	0	62	182	34	132	36	0	0	0
Future Vol, veh/h	202	312	0	0	62	182	34	132	36	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	220	339	0	0	67	198	37	143	39	0	0	0
Number of Lanes	1	1	0	0	1	0	0	1	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	13.3	10.8	11.8
HCM LOS	B	B	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1
Vol Left, %	17%	100%	0%	0%
Vol Thru, %	65%	0%	100%	25%
Vol Right, %	18%	0%	0%	75%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	202	202	312	244
LT Vol	34	202	0	0
Through Vol	132	0	312	62
RT Vol	36	0	0	182
Lane Flow Rate	220	220	339	265
Geometry Grp	2	7	7	5
Degree of Util (X)	0.348	0.367	0.519	0.364
Departure Headway (Hd)	5.714	6.012	5.506	4.941
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	630	602	658	732
Service Time	3.743	3.718	3.213	2.951
HCM Lane V/C Ratio	0.349	0.365	0.515	0.362
HCM Control Delay	11.8	12.2	14	10.8
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	1.6	1.7	3	1.7

Intersection	
Int Delay, s/veh	4.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	27	26	26	15	90	108
Future Vol, veh/h	27	26	26	15	90	108
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	27	27	16	95	114

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	339	35	0	0	43	0
Stage 1	35	-	-	-	-	-
Stage 2	304	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	657	1038	-	-	1566	-
Stage 1	987	-	-	-	-	-
Stage 2	748	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	614	1038	-	-	1566	-
Mov Cap-2 Maneuver	614	-	-	-	-	-
Stage 1	987	-	-	-	-	-
Stage 2	699	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.1	0	3.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	768	1566	-
HCM Lane V/C Ratio	-	-	0.073	0.06	-
HCM Control Delay (s)	-	-	10.1	7.4	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.2	-

Intersection	
Intersection Delay, s/veh	8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	19	86	0	0	46	101	7	82	13	0	0	0
Future Vol, veh/h	19	86	0	0	46	101	7	82	13	0	0	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	92	0	0	49	109	8	88	14	0	0	0
Number of Lanes	0	1	0	0	1	0	0	2	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	8.1	7.7	8.2
HCM LOS	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1
Vol Left, %	15%	0%	18%	0%
Vol Thru, %	85%	76%	82%	31%
Vol Right, %	0%	24%	0%	69%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	48	54	105	147
LT Vol	7	0	19	0
Through Vol	41	41	86	46
RT Vol	0	13	0	101
Lane Flow Rate	52	58	113	158
Geometry Grp	7	7	2	2
Degree of Util (X)	0.074	0.08	0.138	0.172
Departure Headway (Hd)	5.183	4.94	4.403	3.924
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	693	727	817	918
Service Time	2.9	2.657	2.414	1.933
HCM Lane V/C Ratio	0.075	0.08	0.138	0.172
HCM Control Delay	8.3	8.1	8.1	7.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.3	0.5	0.6

Intersection	
Intersection Delay, s/veh	8.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	73	136	8	30	0	34	26	9	7	117	11
Future Vol, veh/h	15	73	136	8	30	0	34	26	9	7	117	11
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	80	149	9	33	0	37	29	10	8	129	12
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.9	8.1	8.3	8.7
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	49%	7%	21%	5%
Vol Thru, %	38%	33%	79%	87%
Vol Right, %	13%	61%	0%	8%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	69	224	38	135
LT Vol	34	15	8	7
Through Vol	26	73	30	117
RT Vol	9	136	0	11
Lane Flow Rate	76	246	42	148
Geometry Grp	1	1	1	1
Degree of Util (X)	0.1	0.285	0.055	0.19
Departure Headway (Hd)	4.768	4.169	4.78	4.621
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	751	864	749	776
Service Time	2.8	2.19	2.811	2.651
HCM Lane V/C Ratio	0.101	0.285	0.056	0.191
HCM Control Delay	8.3	8.9	8.1	8.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	1.2	0.2	0.7

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	38	51	0	0	38	64	0	0	0	0	0	0
Future Vol, veh/h	38	51	0	0	38	64	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	76	76	76	76	76	76	76	76	76	76	76	76
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	50	67	0	0	50	84	0	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	134	0	-	-	-	0	259	301	67
Stage 1	-	-	-	-	-	-	167	167	-
Stage 2	-	-	-	-	-	-	92	134	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1451	-	0	0	-	-	730	612	997
Stage 1	-	-	0	0	-	-	863	760	-
Stage 2	-	-	0	0	-	-	932	785	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1451	-	-	-	-	-	704	0	997
Mov Cap-2 Maneuver	-	-	-	-	-	-	704	0	-
Stage 1	-	-	-	-	-	-	832	0	-
Stage 2	-	-	-	-	-	-	932	0	-

Approach	EB	WB	NB
HCM Control Delay, s	3.2	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (veh/h)	-	-	1451	-	-	-
HCM Lane V/C Ratio	-	-	0.034	-	-	-
HCM Control Delay (s)	0	0	7.6	0	-	-
HCM Lane LOS	A	A	A	A	-	-
HCM 95th %tile Q(veh)	-	-	0.1	-	-	-

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	19	32	87	93	93	15
Future Vol, veh/h	19	32	87	93	93	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	21	36	97	103	103	17

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	409	112	120	0	-	0
Stage 1	112	-	-	-	-	-
Stage 2	297	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	599	941	1468	-	-	-
Stage 1	913	-	-	-	-	-
Stage 2	754	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	557	941	1468	-	-	-
Mov Cap-2 Maneuver	557	-	-	-	-	-
Stage 1	849	-	-	-	-	-
Stage 2	754	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.2	3.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1468	-	749	-	-
HCM Lane V/C Ratio	0.066	-	0.076	-	-
HCM Control Delay (s)	7.6	0	10.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.2	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	194	134	533	439	340	784
Future Volume (vph)	194	134	533	439	340	784
Turn Type	Prot	Free	NA	Prot	Prot	NA
Protected Phases	4		6	6	5	2
Permitted Phases		Free				
Detector Phase	4		6	6	5	2
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0
Minimum Split (s)	30.0		30.0	30.0	30.0	30.0
Total Split (s)	30.0		39.0	39.0	31.0	70.0
Total Split (%)	30.0%		39.0%	39.0%	31.0%	70.0%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None		Max	Max	None	C-Max
Act Effct Green (s)	16.8	100.0	40.6	40.6	24.6	71.2
Actuated g/C Ratio	0.17	1.00	0.41	0.41	0.25	0.71
v/c Ratio	0.69	0.09	0.75	0.51	0.83	0.63
Control Delay	50.9	0.1	35.5	4.6	52.7	11.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.9	0.1	35.5	4.6	52.7	11.1
LOS	D	A	D	A	D	B
Approach Delay	30.1		21.5			23.7
Approach LOS	C		C			C

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 34 (34%), Referenced to phase 2:SBT, Start of Yellow	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay: 23.7	Intersection LOS: C
Intersection Capacity Utilization 72.6%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 109: Sevierville Pike & James White Pkwy

Intersection	
Intersection Delay, s/veh	26.8
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	66	384	101	50	127	86	40	28	55	32	28	65
Future Vol, veh/h	66	384	101	50	127	86	40	28	55	32	28	65
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	75	436	115	57	144	98	45	32	63	36	32	74
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	39.6	13.9	11.9	11.8
HCM LOS	E	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	33%	12%	19%	26%
Vol Thru, %	23%	70%	48%	22%
Vol Right, %	45%	18%	33%	52%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	123	551	263	125
LT Vol	40	66	50	32
Through Vol	28	384	127	28
RT Vol	55	101	86	65
Lane Flow Rate	140	626	299	142
Geometry Grp	1	1	1	1
Degree of Util (X)	0.257	0.913	0.478	0.258
Departure Headway (Hd)	6.608	5.347	5.761	6.545
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	545	682	631	550
Service Time	4.631	3.347	3.761	4.57
HCM Lane V/C Ratio	0.257	0.918	0.474	0.258
HCM Control Delay	11.9	39.6	13.9	11.8
HCM Lane LOS	B	E	B	B
HCM 95th-tile Q	1	12	2.6	1

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	6	667	0	6	1124
Future Vol, veh/h	0	6	667	0	6	1124
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	7	725	0	7	1222

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	363	0	0	725	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	0	634	-	-	874	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	634	-	-	874	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.7	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	634	874	-
HCM Lane V/C Ratio	-	-	0.01	0.007	-
HCM Control Delay (s)	-	-	10.7	9.2	0.1
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

HCS7 Multilane Highway Report

Project Information

Analyst	Gresham Smith; RLM	Date	10/6/2020
Agency		Analysis Year	2040
Jurisdiction	City of Knoxville	Time Period Analyzed	AM
Project Description	James White Parkway - Urban Wilderness	Unit	United States Customary

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	2	Terrain Type	Rolling
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Access Point Density, pts/mi	1.0
Lane Width, ft	11	Left-Side Lateral Clearance (LC_R), ft	4
Median Type	Divided	Total Lateral Clearance (TLC), ft	7
Free-Flow Speed (FFS), mi/h	41.6		

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	1034	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor	0.89	Flow Rate (V_p), pc/h/ln	604
Total Trucks, %	2.00	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.32

Direction 1 Speed and Density

Lane Width Adjustment (f_{LW})	1.9	Average Speed (S), mi/h	41.6
Total Lateral Clearance Adj. (f_{LLC})	1.3	Density (D), pc/mi/ln	14.5
Median Type Adjustment (f_M)	0.0	Level of Service (LOS)	B
Access Point Density Adjustment (f_A)	0.3		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (v_{OL}),veh/h	581	Effective Speed Factor (S_t)	4.62
Effective Width of Volume (W_v), ft	18	Bicyle LOS Score (BLOS)	2.90
Average Effective Width (W_e), ft	24	Bicycle Level of Service (LOS)	C

HCS7 Multilane Highway Report

Project Information

Analyst	Gresham Smith; RLM	Date	10/6/2020
Agency		Analysis Year	2040
Jurisdiction	City of Knoxville	Time Period Analyzed	AM
Project Description	James White Parkway - Urban Wilderness	Unit	United States Customary

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	2	Terrain Type	Rolling
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Access Point Density, pts/mi	1.0
Lane Width, ft	11	Left-Side Lateral Clearance (LC_R), ft	4
Median Type	Divided	Total Lateral Clearance (TLC), ft	7
Free-Flow Speed (FFS), mi/h	41.6		

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	542	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor	0.89	Flow Rate (V_p), pc/h/ln	316
Total Trucks, %	2.00	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.17

Direction 2 Speed and Density

Lane Width Adjustment (f_{LW})	1.9	Average Speed (S), mi/h	41.6
Total Lateral Clearance Adj. (f_{LLC})	1.3	Density (D), pc/mi/ln	7.6
Median Type Adjustment (f_M)	0.0	Level of Service (LOS)	A
Access Point Density Adjustment (f_A)	0.3		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (v_{OL}),veh/h	304	Effective Speed Factor (S_t)	4.62
Effective Width of Volume (W_v), ft	18	Bicyle LOS Score (BLOS)	2.57
Average Effective Width (W_e), ft	24	Bicycle Level of Service (LOS)	C

HCS7 Multilane Highway Report

Project Information

Analyst	Gresham Smith; RLM	Date	10/6/2020
Agency		Analysis Year	2040 Build
Jurisdiction	City of Knoxville	Time Period Analyzed	PM
Project Description	James White Parkway - Urban Wilderness	Unit	United States Customary

Direction 1 Geometric Data

Direction 1	NB		
Number of Lanes (N), ln	2	Terrain Type	Rolling
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Access Point Density, pts/mi	1.0
Lane Width, ft	11	Left-Side Lateral Clearance (LC_R), ft	4
Median Type	Divided	Total Lateral Clearance (TLC), ft	7
Free-Flow Speed (FFS), mi/h	41.6		

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume(V) veh/h	673	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	372
Total Trucks, %	2.00	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.20

Direction 1 Speed and Density

Lane Width Adjustment (f_{LW})	1.9	Average Speed (S), mi/h	41.6
Total Lateral Clearance Adj. (f_{LLC})	1.3	Density (D), pc/mi/ln	8.9
Median Type Adjustment (f_M)	0.0	Level of Service (LOS)	A
Access Point Density Adjustment (f_A)	0.3		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (v_{OL}),veh/h	358	Effective Speed Factor (S_t)	4.62
Effective Width of Volume (W_v), ft	18	Bicyle LOS Score (BLOS)	2.65
Average Effective Width (W_e), ft	24	Bicycle Level of Service (LOS)	C

HCS7 Multilane Highway Report

Project Information

Analyst	Gresham Smith; RLM	Date	10/6/2020
Agency		Analysis Year	2040 Build
Jurisdiction	City of Knoxville	Time Period Analyzed	PM
Project Description	James White Parkway - Urban Wilderness	Unit	United States Customary

Direction 2 Geometric Data

Direction 2	SB		
Number of Lanes (N), ln	2	Terrain Type	Rolling
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Access Point Density, pts/mi	1.0
Lane Width, ft	11	Left-Side Lateral Clearance (LC_R), ft	4
Median Type	Divided	Total Lateral Clearance (TLC), ft	7
Free-Flow Speed (FFS), mi/h	41.6		

Direction 2 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 2 Demand and Capacity

Volume(V) veh/h	1130	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor	0.94	Flow Rate (V_p), pc/h/ln	625
Total Trucks, %	2.00	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.33

Direction 2 Speed and Density

Lane Width Adjustment (f_{LW})	1.9	Average Speed (S), mi/h	41.6
Total Lateral Clearance Adj. (f_{LLC})	1.3	Density (D), pc/mi/ln	15.0
Median Type Adjustment (f_M)	0.0	Level of Service (LOS)	B
Access Point Density Adjustment (f_A)	0.3		

Direction 2 Bicycle LOS

Flow Rate in Outside Lane (v_{OL}),veh/h	601	Effective Speed Factor (S_t)	4.62
Effective Width of Volume (W_v), ft	18	Bicyle LOS Score (BLOS)	2.91
Average Effective Width (W_e), ft	24	Bicycle Level of Service (LOS)	C

APPPENDIX E

Field Review Documentation

James White Parkway Field Visit Summary Sheet

Location:	Knox County
Roadway:	James White Parkway from Tennessee River to Moody Avenue
Section:	L.M. 1.10 to L.M. 0.00
Field Review:	December 4, 2020

Description of Project and Background

This project involves James White Parkway from the Tennessee River to Moody Avenue. James White Parkway is currently a four-lane divided highway with 22' inside shoulders and 10' outside shoulders. It is proposed that northbound and southbound traffic be combined into the existing southbound lanes; in a separate project the northbound lanes will be converted into a linear park with a greenway. The proposed typical section includes two 11' lanes in each direction, 2' paved inside shoulders, 2' paved outside shoulders, 6' stabilized grass outside shoulders, and a 4' raised median. The attached conceptual typical sections show the two proposed options that includes leaving the roadway superelevated as-is or reconstructing half of the roadway to normal crown tangent sections. The proposed project also encompasses realigning the interchange at Moody Avenue to allow the through movement to be James White Parkway to Moody Avenue.

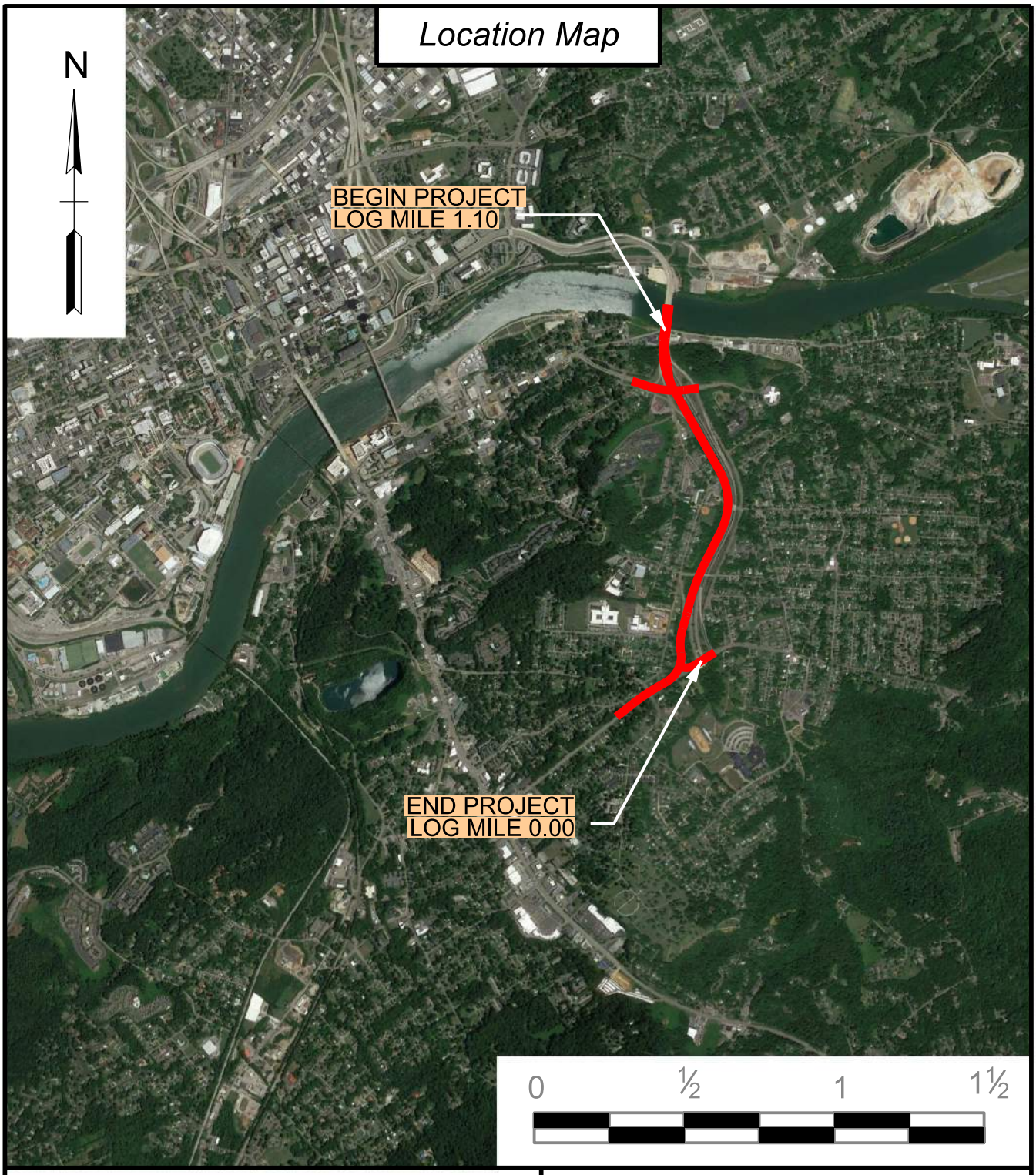
Segment Overview

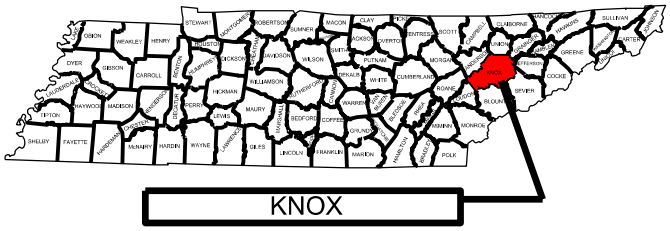
- The project location is between L.M. 1.10 and L.M. 0.00 on James White Parkway.
- James White Parkway is classified as an urban expressway.
- The posted speed limit south of the bridge on James White Parkway is 55 mph and 45 mph north of the bridge. The proposed speed limit is 35 mph.
- The AADT of James White Parkway at the Bridge is 20,679.
- There have been 72 total crashes (57 property damage, 12 non-incapacitating injury, and 3 incapacitating injury).
- 39% of the crashes involved rear-end.
- 76% of the crashes occurred during dry conditions.
- 74% of the crashes occurred at an intersection

Structures

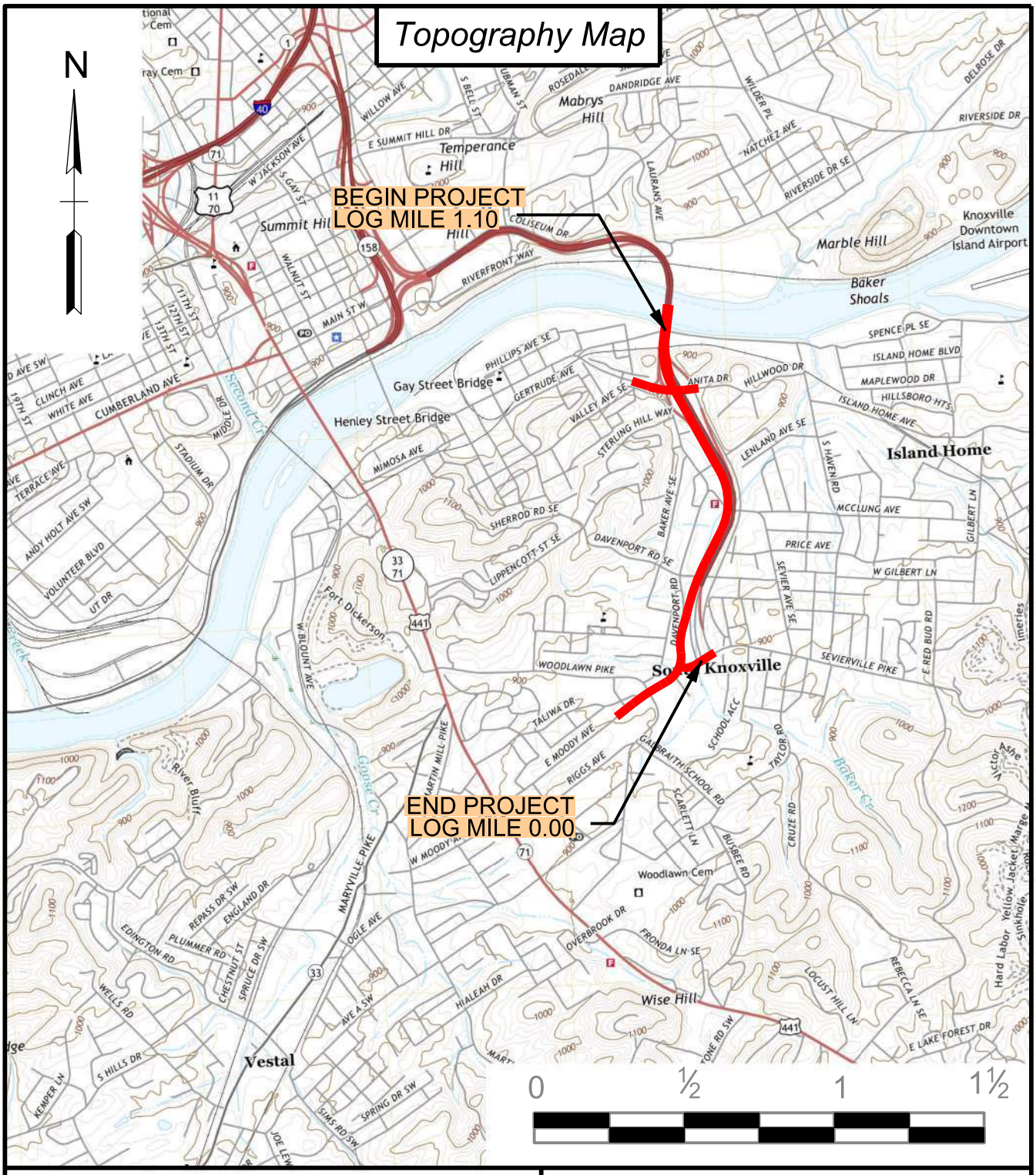
Route	Crossing	Log Mile	Structure #	Type*	Length (ft) (Max Span (ft))	Sufficiency Rating	Verticle Clearance	Condition
Moody Avenue	James White Parkway	1.20	47000710009	CC	220 (118)	96.80	16' - 00"	Good
Wynn Avenue	James White Parkway	1.01	47000710011	CC	242 (121)	78.40	18' - 02"	Good
James White Parkway	Sevier Avenue	0.53	47000710013	PC	110 (105)	96.00	16' - 09"	Good
James White Parkway	Sevier Avenue	0.53	47000710014	PC	110 (105)	97.00	17' - 03"	Good
Sevier Avenue	James White Parkway	0.43	47000710015	CC	255 (130)	99.00	16' - 08"	Good
Baker Creek	-	-	47000710019	Box Culvert	1 @ 18'	-	-	Good
Baker Creek	-	-	47000710021	Box Culvert	2 @ 8'	-	-	Good
*Note: PC = Prestressed Concrete, CC = Continuous Concrete								

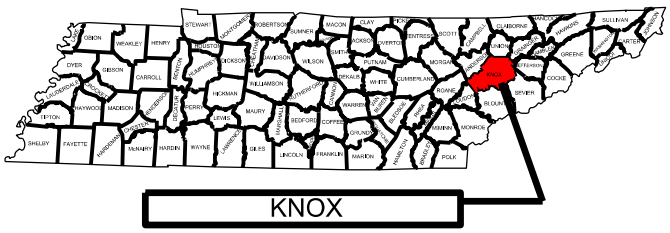
Location Map





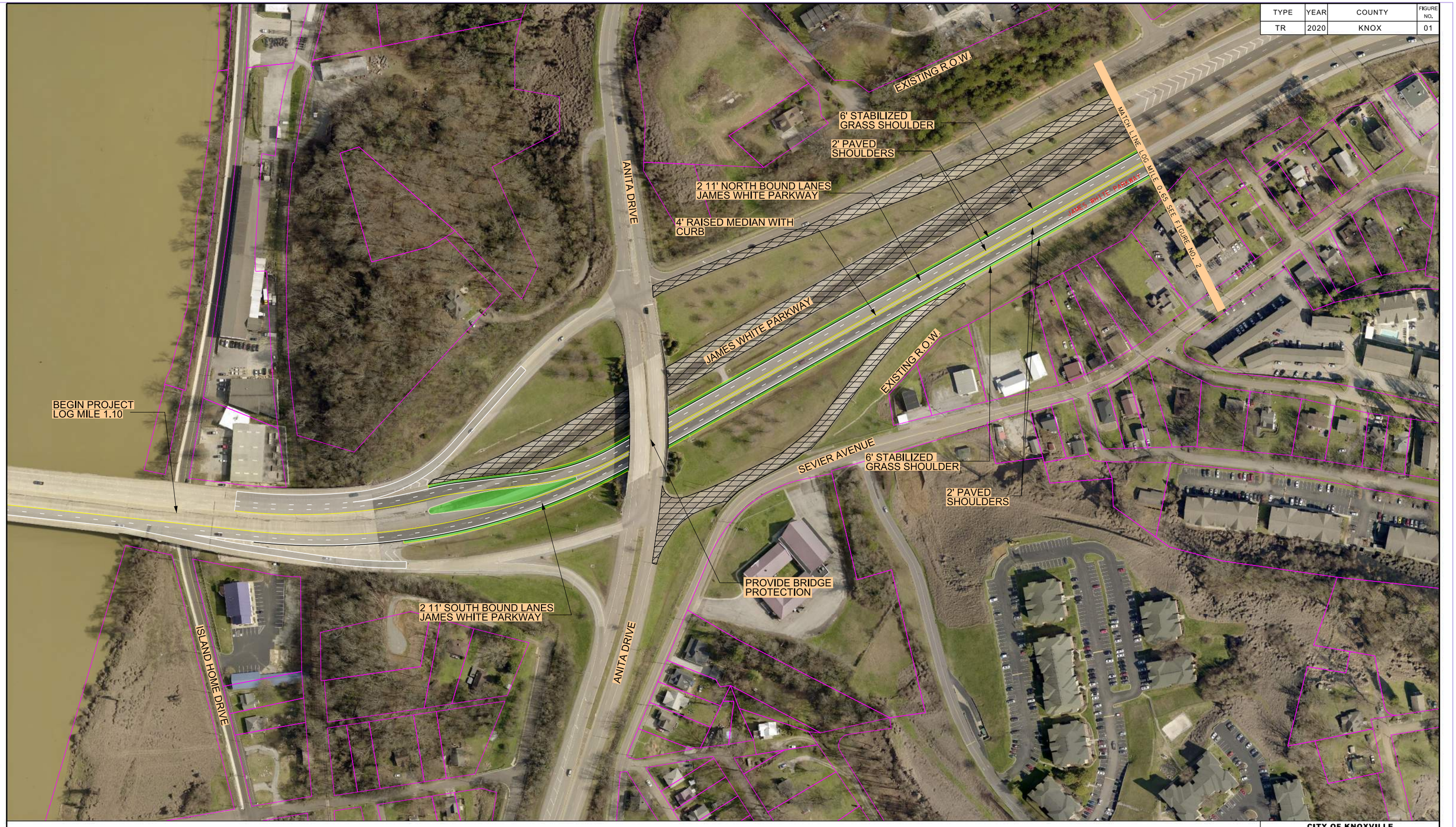
JAMES WHITE PARKWAY
LOG MILE 0.00 TO LOG MILE 1.10
KNOX COUNTY
PIN 129840.00





JAMES WHITE PARKWAY
LOG MILE 0.00 TO LOG MILE 1.10
KNOX COUNTY
PIN 129840.00

TYPE	YEAR	COUNTY	FIGURE NO.
TR	2020	KNOX	01



0 200' 400' 600'

TECHNICAL REPORT

JAMES WHITE PARKWAY
FROM SEVIERVILLE PIKE (L.M. 0.00) TO ISLAND HOME DRIVE (L.M. 1.10)
CITY OF KNOXVILLE

CITY OF KNOXVILLE
HOUSING AND NEIGHBORHOOD
DEVELOPMENT DEPARTMENT

FIGURE 01
JAMES WHITE
PARKWAY
L.M. 1.10 TO L.M. 0.65

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TYPE	YEAR	COUNTY	FIGURE NO.
TR	2020	KNOX	02

0 200' 400' 600'

TECHNICAL REPORT

JAMES WHITE PARKWAY
FROM SEVIERVILLE PIKE (L.M. 0.00) TO ISLAND HOME DRIVE (L.M. 1.10)
CITY OF KNOXVILLE

N

CITY OF KNOXVILLE
HOUSING AND NEIGHBORHOOD
DEVELOPMENT DEPARTMENT

FIGURE 02
JAMES WHITE
PARKWAY
L.M. 0.65 TO L.M. 0.12

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TYPE	YEAR	COUNTY	FIGURE NO.
TR	2020	KNOX	03

MATCH LINE LOG MILE .12 SEE SHEET 2

6-30 CURB AND GUTTER

SOUTH BOUND JAMES WHITE PARKWAY

4' RAISED MEDIAN WITH CURB

EXISTING R.O.W.

JAMES WHITE PARKWAY

COTTRELL ST.

HAYWOOD AVE.

EXISTING R.O.W.

SEVIERVILLE PIKE

PROPOSED GREENWAY

END PROJECT LOG MILE 0.00

6' BIKE LANE

2' GRASS STRIP

5' SIDEWALK MM-SW-1

E. MOODY AVE.

WOODLAWN PIKE

SEVIERVILLE PIKE

E. MOODY AVE.

0 200' 400' 600'

TECHNICAL REPORT

JAMES WHITE PARKWAY
FROM SEVIERVILLE PIKE (L.M. 0.00) TO ISLAND HOME DRIVE (L.M. 1.10)
CITY OF KNOXVILLE

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CITY OF KNOXVILLE
HOUSING AND NEIGHBORHOOD DEVELOPMENT DEPARTMENT

FIGURE 03
JAMES WHITE PARKWAY
L.M. 0.12 TO L.M. 0.00

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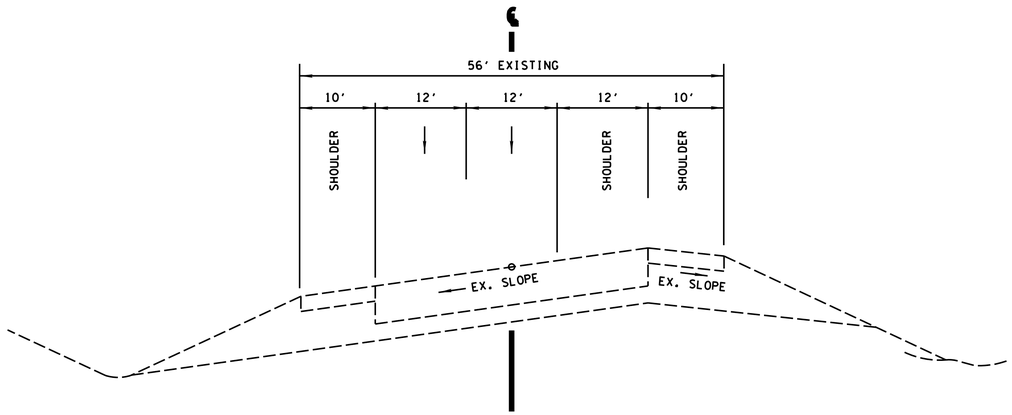
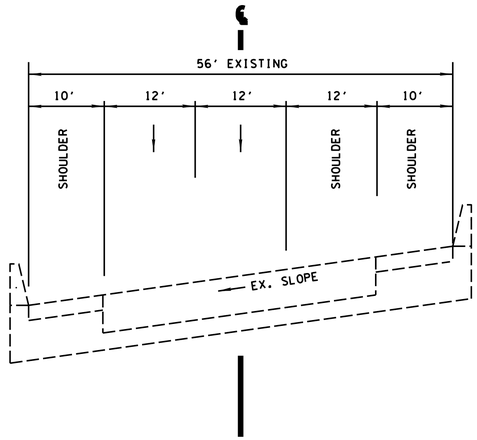
TYPE	YEAR	COUNTY	FIGURE NO.
TR	2020	KNOX	TYP1



EXISTING TYPICAL SECTION



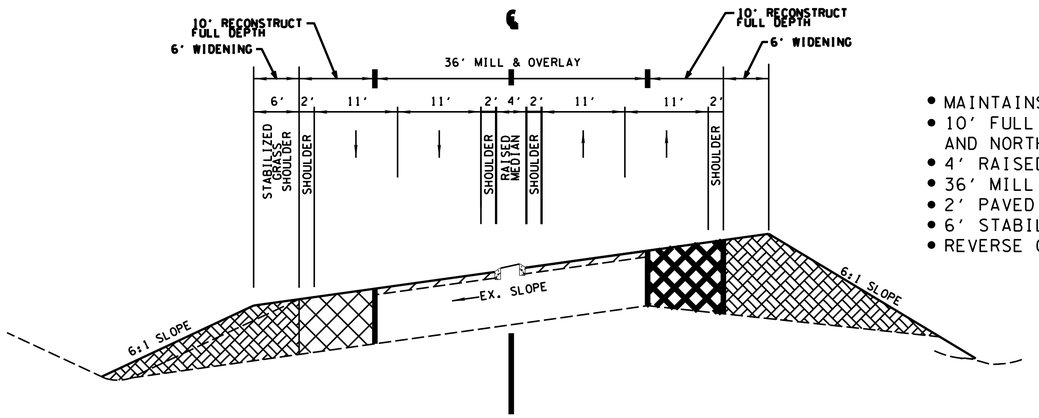
EXISTING BRIDGE OVER SEVIER AVENUE TYPICAL SECTION

CONCEPTUAL TYPICAL SECTIONS

CITY OF KNOXVILLE
HOUSING AND NEIGHBORHOOD DEVELOPMENT DEPARTMENT

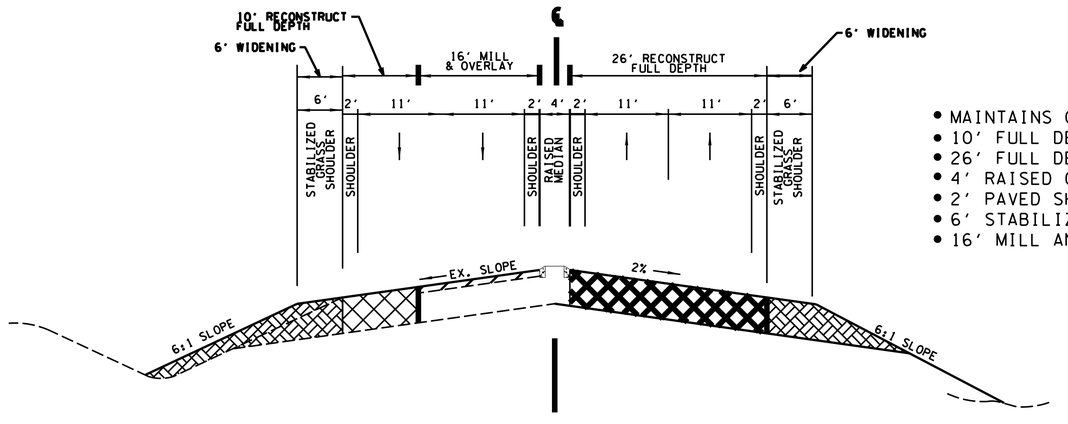
JAMES WHITE PARKWAY
CONCEPTUAL PLANS

TYPE	YEAR	COUNTY	FIGURE NO.
TR	2020	KNOX	TYP2



- MAINTAINS ORIGINAL 56' PAVEMENT STRUCTURE
- 10' FULL DEPTH SHOULDER RECONSTRUCTION SOUTHBOUND AND NORTHBOUND
- 4' RAISED CENTER MEDIAN WITH CURB
- 36' MILL AND OVERLAY
- 2' PAVED SHOULDERS
- 6' STABILIZED GRASS SHOULDERS
- REVERSE CROWN SUPERELEVATION ON NORTHBOUND LANE

PROPOSED SUPER ELEVATION SECTION



- MAINTAINS ORIGINAL 56' PAVEMENT STRUCTURE
- 10' FULL DEPTH SHOULDER RECONSTRUCTION SOUTHBOUND
- 26' FULL DEPTH RECONSTRUCTION NORTHBOUND
- 4' RAISED CENTER MEDIAN WITH CURB
- 2' PAVED SHOULDERS
- 6' STABILIZED GRASS SHOULDERS
- 16' MILL AND OVERLAY

PROPOSED TANGENT SECTION

CONCEPTUAL TYPICAL SECTIONS

CITY OF KNOXVILLE
HOUSING AND NEIGHBORHOOD DEVELOPMENT DEPARTMENT

JAMES WHITE PARKWAY CONCEPTUAL PLANS

CITY OF KNOXVILLE

Gresham Smith

CITY OF KNOXVILLE URBAN WILDERNESS PROJECT – JAMES WHITE PARKWAY

FIELD REVIEW MEETING NOTES

City of Knoxville Contract: C-20-0270
TDOT PIN: 129840.00
Gresham Smith Project No. 44686.00

Meeting Date: Friday, December 4th, 2020
Meeting Time: 10:00 AM EDT
Meeting Location: James White Parkway Project Site

1. Roll Call

Name	Organization	In Attendance
Shap Stiles	Gresham Smith	X
Jason Brady	Gresham Smith	X
Adam Davidson	Gresham Smith	X
Ben Nicholas	Gresham Smith	X
Patrick Fiveash	Gresham Smith	X
George Daws	City of Knoxville	X
Shawn Fitzpatrick	City of Knoxville	X
Zach Roberts	City of Knoxville	X
Ellen Zavisca	Knoxville-Knox County Planning	X
Michael Gilbert	TDOT STID	X
Caleb Smith	TDOT STID	X
Douglas Tarwater	TDOT Region 1	X
Jason Sholtz	TDOT Region 1	X
Nick Barnard	TDOT Region 1	X

2. Project Introduction –
   - Introductions of all in attendance and organization.
   - Stiles gave project overview.
     - The project started in July and anticipates submitting the completed Draft Technical Report in December. The project has had interim submittals that includes Traffic Data (approved), Traffic Projections (approved), and Traffic Analysis (submitted October).
     - Reviewed Concept Plans – Project is proposing shifting the northbound (NB) lanes over to the southbound (SB) side of the roadway. The proposed typical section would consist of 2-11 foots lane in both NB and SB direction, 2 foot inside shoulders and 4 foot raised median, and 2 foot paved outside shoulder with 6 foot reinforced grass shoulder. The project proposes removing three ramps which include SB onramp at Anita Drive, NB offramp at Anita

KICKOFF MEETING AGENDA (Cont'd):

Drive and the NB onramp at Sevierville Pike (this ramp is being merged with SB ramp). The project is also proposing realignment of the intersection at James White Parkway (JWP) and Sevierville Pike to change the through movement of the three-legged intersection to be inline with the turning movements at the intersection. The posted speed limit proposed for the corridor is 35 mph.

3. Field Review Comments
    - Question was raised the typical section does not correlate to TDOT standards. The discussion from project team was the functional classification of the corridor is being modified with this project from an expressway to a local street. The 2 foot paved and 6 foot grass shoulders along the roadway are proposed to maintain a natural scenic atmosphere and aesthetics to match the intent for the area while still providing safe area for someone to pull off the roadway. With the consolidation to the SB side of the roadway, space is limited but the project team did not want to propose a 4-lane facility with double yellow stripe. The raised 4 foot median and 2 foot inside shoulder provide separation between the opposing lanes. At the southern limit of the project, once the corridor is past the park entrance, the typical changes to an urban section for approximately 1000 feet.
    - Question was asked about ability to maintain a 35 mph posted speed. Discussion from project team was with the typical proposed, the reduction in lane width, adjacent opposing lanes, and lack of paved shoulder within what will become a park atmosphere are the goals for changing the feel of driving the corridor. The entire project corridor length is around 1 mile.
    - Question was asked if roundabout was considered at the terminus at JWP and Sevierville Pike. The discussion from project team was a review of a roundabout was considered. The current traffic volumes and proposed volumes are at the limits of single lane roundabout. Also, one of the project goals was to maintain the ability of the corridor to be utilized as a four-lane detour route. JWP is staying four lanes and to convert would mean re-striping Moddy Avenue only.
    - Question was asked about why is the project removing the SB onramp at Anita. Discussion from project teams was it removes the free-flow access at Anita Drive where bike lanes are proposed and always a safety issue. Also, the goal of the project is to have this corridor not resemble an expressway with the free-flowing access points and to start operating like a boulevard through a park setting.
    - Question was asked if a dual left at JWP to Sevierville Pike is warranted. The traffic projections in the future are exceeding typical single lane volumes. Discussion from project team included the approach from JWP to the intersection is two lanes with one dedicated completely to the left turn volume and one to the through volume. The accepting lanes on Sevierville Pike is only a single lane and would require widening the bridge to accommodate accepting dual lefts. It is also a three legged intersection which means more time can be dedicated to the a protected left phase

KICKOFF MEETING AGENDA (Cont'd):

and then with the single left, the ability to still operate a permissive move during the all green phase. A single left will operate better for the majority of the day because of the protected / permissive operations allowed for lefts vs. a double left that would require protected only operations. Basically, a double would likely work slightly better during the peak hours, but worse the rest of the day. With the proposed project and implementation of the park, there is anticipation of high pedestrian and bike volumes and the ability to reduce crossing distance is a benefit to these movements.

- Question was asked if TDOT Multimodal has reviewed the plans or do we want to wait until the complete technical report is submitted. Project team stated they would send along updated concept plans that take into account some of the comments from the meeting. One was to incorporate the pedestrian projects under design/construction so multimodal understands this project is solely concerned with traffic movements from the bridge to the termini.
- The Access Control fence is currently along Cottrell Street. When the NB lanes are moved to the SB side of the corridor, the report will propose moving the access control fence to the location of the existing median. This will enable the linear park that takes the place of the existing NB lanes to have access to the Cottrell Street Greenway while maintaining access control to James White Parkway.
- Question was asked about providing connection from JWP over to Moddy Avenue. This access point was aligned with the entrance to the Park of JWP. Everyone agreed with the access to the Park but had concerns about the connection to the neighborhoods. Concerns include sight distance and it being small local street it might encourage pedestrian traffic to use it to cross JWP which is not a goal of the project. The project proposes no pedestrian access along the corridor until the termini at the signalized intersection.
- Question was asked about the design speed at the realigned intersection of JWP and Sevierville Pike. Project team noted it is design to an urban 35 mph design speed with max SE of 4% (510 foot radius).
- Question about ROW for realignment of JWP and Sevierville Pike intersection. Project Team answer ROW will be required. It will also mean removal of existing box culvert and realignment of stream with construction of new box. The new alignment of the stream will reduce the amount of stream encapsulation compared to the existing condition.

The notes represent our understanding of the items discussed at this meeting. If you have any questions or comments concerning any of the information contained herein, please contact me.

Prepared by: Shap Stiles
Project Manger