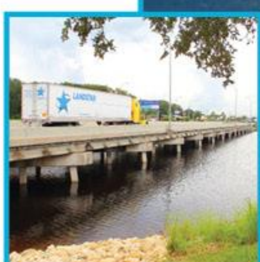
FINAL

DESIGN TRAFFIC TECHNICAL MEMORANDUM

US 301 (SR 43)

from SR 60 (Adamo Drive) to I-4 (SR 400)

Project Development and Environment Study



WPI Segment No. 430050-1

September 2016

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From State Road 60 (Adamo Drive) to I-4 (SR 400)
Hillsborough County, Florida

Work Program Item Segment Number: 430050-1
ETDM Number: 3097

This roadway capacity improvement project involves widening US 301 from the existing four-lane divided arterial to a six-lane divided arterial to accommodate the projected future travel demand within the study corridor. The study limits extend from the intersection with State Road 60 (Adamo Drive) to the southern end of the eastbound I-4 (SR 400) on- and off-ramps in Hillsborough County. The total project length is approximately 3.3 miles.

Florida Department of Transportation
District Seven

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Tampa, Florida

September 2016

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SECTION 1.0 INTRODUCTION/PURPOSE OF STUDY

The Florida Department of Transportation (FDOT) District Seven is conducting a Project Development and Environment (PD&E) Study for a portion of US 301 in Hillsborough County. The limits of the PD&E Study extend from SR 60 (Adamo Drive) to south of I-4 (SR 400) and are illustrated in **Figure 1-1**. The purpose of the PD&E Study is to document the need for capacity improvements within the US 301 corridor and to determine the "optimal" improvements that should be implemented in this corridor. The purpose of the US 301 Design Traffic Technical Memorandum is to document the existing and future year traffic volumes throughout the study corridor, and identify the additional geometric improvements that will be needed to provide acceptable levels of service in the future.

Figure 1-1: Project Location Map

SECTION 2.0 EXISTING CONDITIONS

2.1 Existing Roadway and Intersection Characteristics

The existing US 301 roadway (Roadway ID No. 10010000) is a four-lane divided north/south roadway; however, three through lanes are provided in both the northbound and southbound directions in the vicinity of the SR 574 (Dr. Martin Luther King, Jr. Boulevard) intersection. According to the 2010 Urban Area Boundaries and Federal Functional Classification Map, this roadway is functionally classified as an urban other principal arterial. The posted speed limit for the majority of the US 301 study corridor is 50 miles per hour (mph); however, the speed limit is reduced to 45 mph in the southbound direction when approaching the SR 60 intersection, and in the northbound direction when approaching the eastbound I-4 on-ramp. The study corridor includes the three signalized intersections listed below:

- SR 60 (Adamo Drive) – Milepost 22.510
- Sabal Industrial Boulevard – Milepost 24.245
- SR 574 (Dr. Martin Luther King, Jr. Boulevard) – Milepost 24.816

In addition to the three signalized intersections, there are also seven unsignalized intersections that are included in this Design Traffic Technical Memorandum. These intersections are as follows:

- Old Hopewell Road/Meadow Creek Driveway – Milepost 22.981
- Stannum Street/Massaro Boulevard – Milepost 23.137
- Columbus Drive/Tampa E. Boulevard – Milepost 23.327
- Overpass Road/21st Avenue – Milepost 24.058
- 27th Avenue – Milepost 24.354
- Oak Fair Boulevard – Milepost 25.202
- Elm Fair Boulevard – Milepost 25.426

The 27th Avenue and Oak Fair Boulevard intersections are T-intersections, while the other eight locations are four-legged intersections. Although Elm Fair Boulevard is a four-legged intersection, the west leg serves as a gated entrance to the Florida State Fairgrounds and is only used by vehicles during special events. **Figure 2-1** depicts the existing intersection laneage within the US 301 study corridor, as well as the lengths of the full width turn lanes. Exclusive left-turn and right-turn lanes are provided on US 301 at all ten of the study intersections and dual left-turn lanes are provided on all four approaches to the SR 60 and SR 574 intersections.

2.2 Existing Traffic Volumes

A traffic count program was conducted by Adams Traffic, Inc. during the months of February and March in 2013, and the count locations are illustrated on **Figure 2-2**. Within the study corridor, 72-hour bi-directional volume counts were conducted at 32 locations (including cross streets) during the periods from February 26th to February 28th and March 5th to March 7th. A series of graphics illustrating the specific locations of the 72-hour bi-directional volume counts are provided

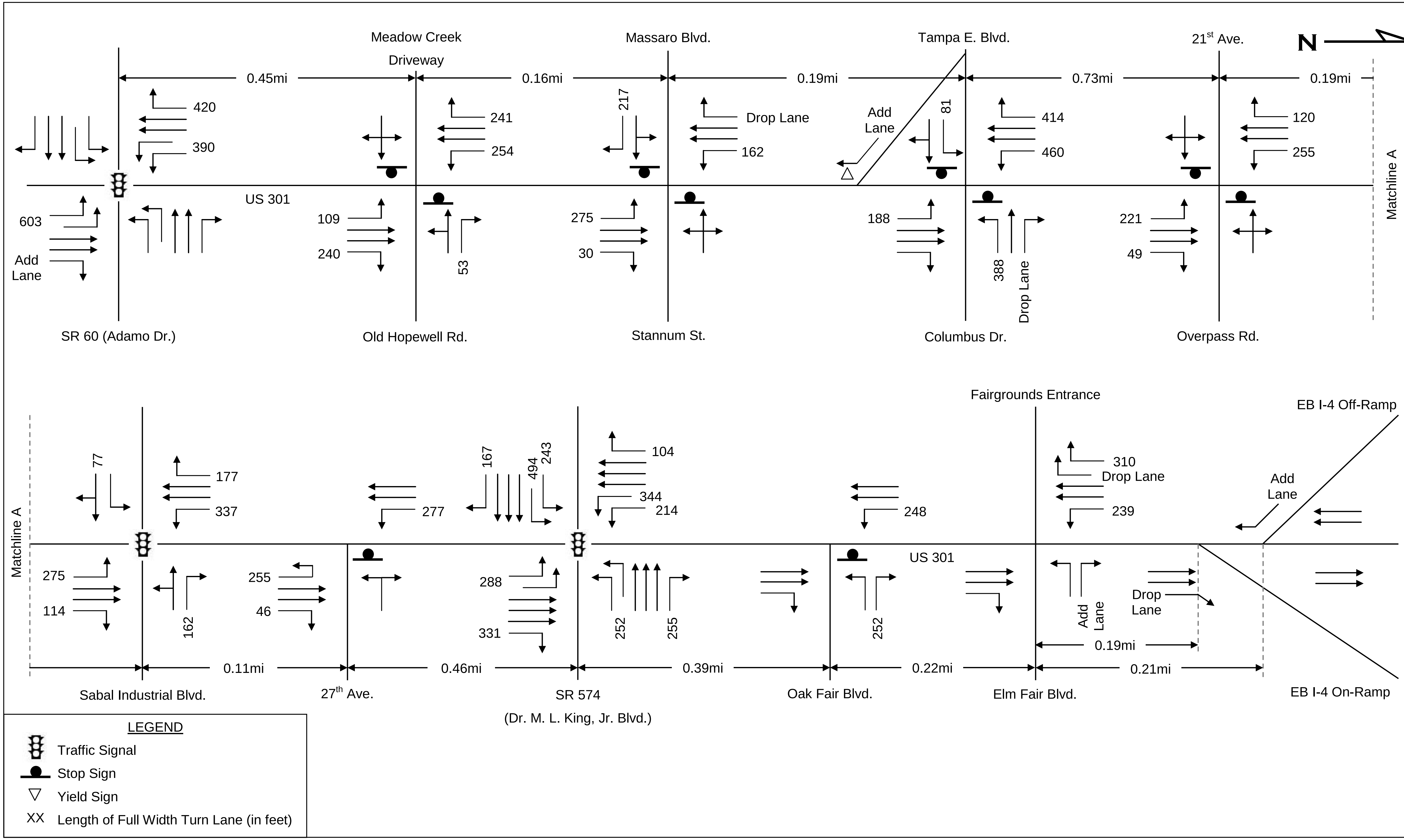

Figure 2-1: Existing Year (2013) Intersection Laneage

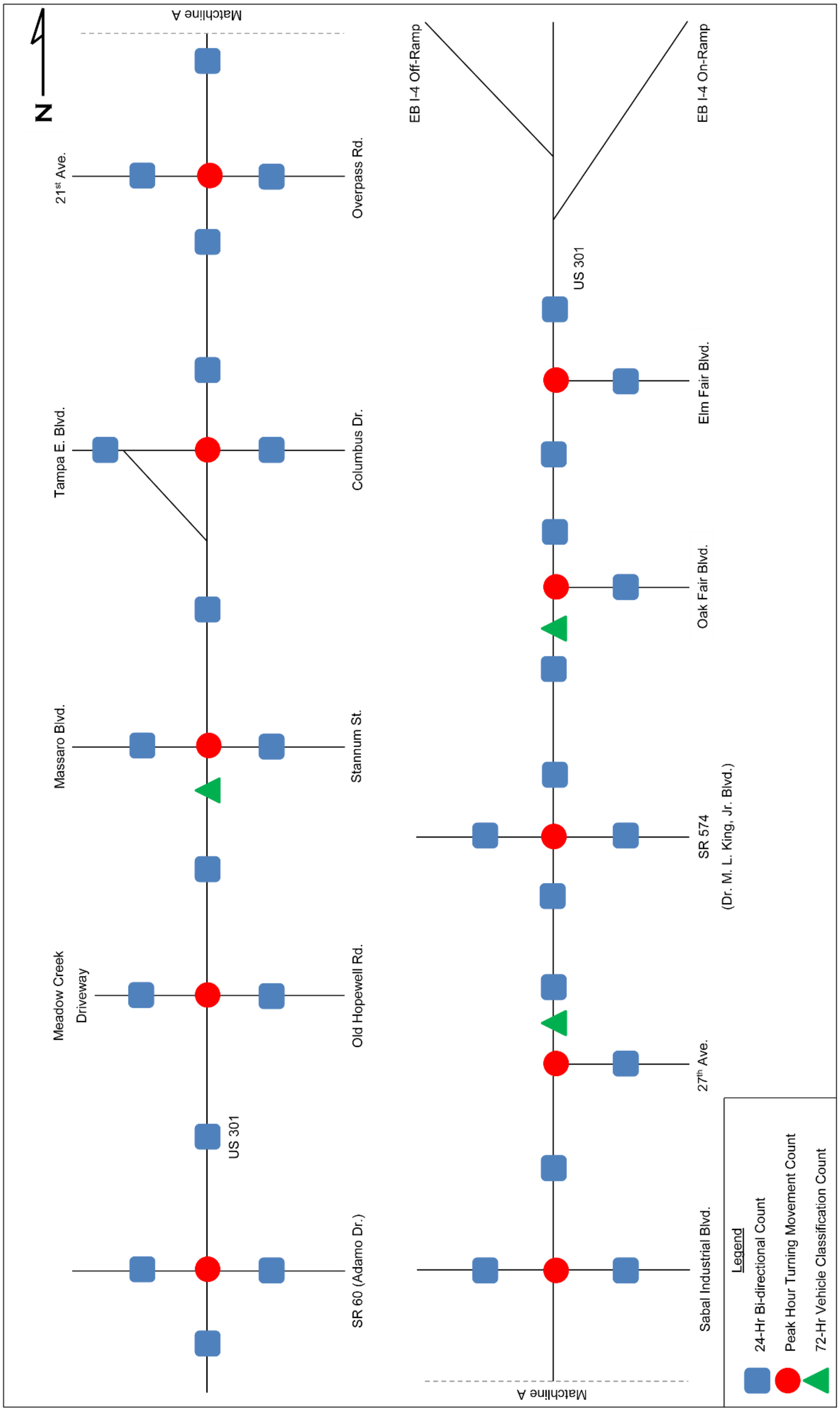

Figure 2-2: Traffic Count Locations

in **Appendix A** along with the actual traffic count data. Bi-directional vehicle classification counts were also conducted during two 72-hour periods at three locations along US 301 and this count data is also provided in **Appendix A**. The locations and the dates of the vehicle classification counts are as follows:

- South of Stannum Street/Massaro Boulevard – March 5th through March 7th
- North of 27th Avenue – February 26th through February 28th
- South of Oak Fair Boulevard – February 26th through February 28th

The specific locations of the vehicle classification counts are also identified on the graphics in **Appendix A**.

The 2013 Annual Average Daily Traffic (AADT) volumes were calculated by multiplying the 72-hour count data by seasonal and axle adjustment factors. The 2012 seasonal and axle adjustment factors were obtained from FDOT's Florida Traffic Online website and are provided in **Appendix B**. According to the 2012 Peak Season Factor Category Report, the Hillsborough countywide weekly adjustment factor associated with the weeks of February 26th through March 3rd and March 4th through March 10th is 0.92. The 2012 Weekly Axle Factor Category Report indicates that the axle adjustment factor for the portion of US 301 from I-75 to I-4 is 0.95. The three 24-hour bi-directional volume counts on US 301 between SR 60 and Old Hopewell Road that were conducted on March 5th, 6th and 7th were multiplied by 0.92 and 0.95, and then averaged to obtain an estimated AADT volume of approximately 34,100 vehicles/day (vpd). This estimated 2013 AADT volume was compared to the 2012 AADT volume recorded at FDOT Count Station No. 105326 (located approximately 0.16 miles north of SR 60). This comparison indicated that the estimated 2013 AADT volume was approximately 3,400 vpd less than the 2012 AADT volume. Consequently, a need existed to assess the reasonableness of the axle adjustment factor for this specific study corridor.

The three 24-hour bi-directional vehicle classification counts conducted on US 301 south of Stannum Street/Massaro Boulevard were divided by the three 24-hour bi-directional volume counts conducted on US 301 at this same location, and these three ratios were subsequently averaged to obtain an estimate of the 2013 axle adjustment factor for this location. This average value is equal 0.975 and is higher than the 2012 value contained in the FDOT database. This same procedure was also conducted at the two other locations where vehicle classification counts and volume counts were conducted simultaneously and the results of these calculations are summarized in **Table 2-1**. A review of this table indicated that the 2013 axle adjustment factors are approximately the same for all three locations. The three 24-hour bi-directional counts on US 301 between SR 60 and Old Hopewell Road conducted on March 5th, 6th and 7th were multiplied by 0.92 and 0.975 (the 2013 study corridor axle adjustment factor) and then averaged to obtain an estimated 2013 AADT volume of approximately 35,000 vpd. This estimated 2013 AADT volume is still lower than the 2012 AADT volume recorded at FDOT Count Station No. 105326, but is slightly higher than the 2011 AADT volume recorded at this location. Since this estimate of the 2013 AADT volume was slightly higher than the 2011 AADT volume and closer to the 2012 AADT volume, and all three of the individual axle adjustment factors were approximately equal to the overall average value, an axle adjustment factor of 0.975 was viewed as being more

Table 2-1: Existing Year (2013) Axle Adjustment Factors for the US 301 Mainline

Location	Count Date	24-Hour Volume Count	24-Hour Vehicle Classification Count	Axle Adjustment Factor (1)
US 301 South of Stannum St./Massaro Blvd.	3/5/13	40,007	39,323	0.983
	3/6/13	39,843	38,879	0.976
	3/7/13	41,313	39,952	0.967
	3-Day Avg.	**40,388**	**39,385**	**0.975**
US 301 North of 27th Ave.	2/26/13	35,630	34,790	0.976
	2/27/13	37,910	37,043	0.977
	2/28/13	39,327	38,628	0.982
	3-Day Avg.	**37,622**	**36,820**	**0.979**
US 301 South of Oak Fair Blvd.	2/26/13	30,829	30,161	0.978
	2/27/13	34,221	32,616	0.953
	2/28/13	34,703	34,059	0.981
	3-Day Avg.	**33,251**	**32,279**	**0.971**
			Overall Average	**0.975**

(1) Axle adjustment factor calculated as the ratio of the 24-hour vehicle classification count to the 24-hour volume count

representative of the US 301 PD&E study corridor and was used to convert the 24-hour traffic count data into AADT volumes. **Table 2-2** summarizes the two-way 24-hour volumes obtained from the traffic counts, as well as the estimated 2013 AADT volumes for the US 301 mainline, while **Table 2-3** summarizes this same information for the US 301 cross streets. The 2013 AADT volumes are also graphically illustrated in **Figure 2-3**. The 2013 AADT volumes on US 301 range between 29,700 vpd (south of Elm Fair Boulevard) and 36,200 vpd (between Old Hopewell Road and Stannum Street/Massaro Boulevard). It should be noted that the eastbound I-4 off-ramp and on-ramp AADT volumes were obtained from the FDOT's Florida Traffic Online website. The AADT volume on US 301 north of the eastbound ramps was obtained by subtracting the ramp volumes from the AADT volume on US 301 south of these ramps.

Table 2-4 summarizes the 24-hour total volumes and 24-hour heavy vehicle volumes recorded for each of the three consecutive days, as well as the 3-day average volumes. **Table 2-4** indicates that the 24-hour truck percentages at the three classification count locations range between approximately 7.5% (north of 27th Avenue) and 8.6% (south of Stannum Street/Massaro Boulevard).

There are three FDOT count stations located on US 301 between SR 60 and the eastbound I-4 on- and off-ramps. These count stations and their locations are as follows:

- Station No. 105326 – Milepost 22.665 (approximately 0.16 miles north of SR 60)
- Station No. 105327 – Milepost 24.182 (approximately 0.06 miles south of Sabal Industrial Boulevard)
- Station No. 100010 – Milepost 25.512 (approximately 0.09 miles north of Elm Fair Drive)

Table 2-2: Existing Year (2013) AADT Volumes – US 301 Mainline

Location	Count Date	24-Hour Volume	Seasonal Factor (1)	Axle Factor (2)	AADT Volume	Avg. AADT Volume	Avg. AADT Volume (3)
South of SR 60	3/5/13	35,156	0.92	0.975	31,535	31,910	31,900
	3/6/13	35,246	0.92	0.975	31,616		
	3/7/13	36,321	0.92	0.975	32,580		
Between SR 60 & Old Hopewell Rd.	3/5/13	39,985	0.92	0.975	35,867	35,043	35,000
	3/6/13	38,967	0.92	0.975	34,953		
	3/7/13	38,247	0.92	0.975	34,308		
Between Old Hopewell Rd. & Stannum St./Massaro Blvd.	3/5/13	40,007	0.92	0.975	35,886	36,228	36,200
	3/6/13	39,843	0.92	0.975	35,739		
	3/7/13	41,313	0.92	0.975	37,058		
South of Columbus Dr.	3/5/13	39,877	0.92	0.975	35,770	36,013	36,000
	3/6/13	39,481	0.92	0.975	35,414		
	3/7/13	41,086	0.92	0.975	36,854		
North of Columbus Dr.	3/5/13	36,024	0.92	0.975	32,314	32,501	32,500
	3/6/13	35,566	0.92	0.975	31,903		
	3/7/13	37,109	0.92	0.975	33,287		
South of Overpass Rd./ 21st Ave.	2/26/13	34,251	0.92	0.975	30,723	32,490	32,500
	2/27/13	36,479	0.92	0.975	32,722		
	2/28/13	37,931	0.92	0.975	34,024		
Between Overpass Rd./21st Ave. & Sabal Industrial Blvd.	2/26/13	35,631	0.92	0.975	31,961	33,780	33,800
	2/27/13	37,967	0.92	0.975	34,056		
	2/28/13	39,380	0.92	0.975	35,324		
Between Sabal Industrial Blvd. & 27th Ave.	2/26/13	35,552	0.92	0.975	31,890	33,694	33,700
	2/27/13	37,821	0.92	0.975	33,925		
	2/28/13	39,315	0.92	0.975	35,266		
North of 27th Ave.	2/26/13	35,630	0.92	0.975	31,960	33,747	33,700
	2/27/13	37,910	0.92	0.975	34,005		
	2/28/13	39,327	0.92	0.975	35,276		
South of SR 574	2/26/13	35,646	0.92	0.975	31,974	33,849	33,800
	2/27/13	38,016	0.92	0.975	34,100		
	2/28/13	39,547	0.92	0.975	35,474		
North of SR 574	2/26/13	30,994	0.92	0.975	27,802	29,848	29,800
	2/27/13	33,871	0.92	0.975	30,382		
	2/28/13	34,961	0.92	0.975	31,360		
South of Oak Fair Dr.	2/26/13	30,829	0.92	0.975	27,654	29,826	29,800
	2/27/13	34,221	0.92	0.975	30,696		
	2/28/13	34,703	0.92	0.975	31,129		
North of Oak Fair Dr.	2/26/13	31,039	0.92	0.975	27,842	29,820	29,800
	2/27/13	33,845	0.92	0.975	30,359		
	2/28/13	34,850	0.92	0.975	31,260		
South of Elm Fair Dr.	2/26/13	31,006	0.92	0.975	27,812	29,746	29,700
	2/27/13	33,718	0.92	0.975	30,245		
	2/28/13	34,763	0.92	0.975	31,182		
North of Elm Fair Dr.	2/26/13	34,457	0.92	0.975	30,908	32,462	32,500
	2/27/13	37,239	0.92	0.975	33,403		
	2/28/13	36,872	0.92	0.975	33,074		

(1) 2012 Weekly Seasonal Adjustment Factor obtained from FDOT Database

(2) Corridor-specific Axle Adjustment Factor calculated using the 2013 US 301 study corridor traffic data

(3) Rounded AADT volume

Table 2-3: Existing Year (2013) AADT Volumes – US 301 Cross Streets

Location	Count Date	24-Hour Volume	Seasonal Factor (1)	Axle Factor (2)	AADT Volume	Avg. AADT Volume	Avg. AADT Volume (3)
SR 60 West of US 301	3/5/13	40,396	0.92	0.97	36,049	36,651	36,700
	3/6/13	40,681	0.92	0.97	36,304		
	3/7/13	42,132	0.92	0.97	37,599		
SR 60 East of US 301	3/5/13	43,235	0.92	0.98	38,981	39,601	39,600
	3/6/13	43,641	0.92	0.98	39,347		
	3/7/13	44,892	0.92	0.98	40,475		
Meadow Creek Driveway West of US 301	3/5/13	378	0.92	0.94	327	321	320
	3/6/13	339	0.92	0.94	293		
	3/7/13	398	0.92	0.94	344		
Old Hopewell Rd. East of US 301	3/5/13	2,376	0.92	0.94	2,055	1,921	1,900
	3/6/13	2,169	0.92	0.94	1,876		
	3/7/13	2,119	0.92	0.94	1,833		
Massaro Blvd. West of US 301	3/5/13	2,204	0.92	0.94	1,906	1,841	1,800
	3/6/13	2,085	0.92	0.94	1,803		
	3/7/13	2,096	0.92	0.94	1,813		
Stannum St. East of US 301	3/5/13	1,108	0.92	0.94	958	1,018	1,000
	3/6/13	1,184	0.92	0.94	1,024		
	3/7/13	1,241	0.92	0.94	1,073		
Tampa E. Blvd. West of US 301	3/5/13	5,567	0.92	0.94	4,814	4,622	4,600
	3/6/13	5,470	0.92	0.94	4,730		
	3/7/13	4,999	0.92	0.94	4,323		
Columbus Dr. East of US 301	3/5/13	2,175	0.92	0.94	1,881	1,885	1,900
	3/6/13	2,161	0.92	0.94	1,869		
	3/7/13	2,204	0.92	0.94	1,906		
21st Ave. West of US 301	2/26/13	1,838	0.92	0.94	1,590	1,577	1,600
	2/27/13	1,830	0.92	0.94	1,583		
	2/28/13	1,802	0.92	0.94	1,558		
Overpass Rd. East of US 301	2/26/13	1,612	0.92	0.94	1,394	1,403	1,400
	2/27/13	1,660	0.92	0.94	1,436		
	2/28/13	1,595	0.92	0.94	1,379		
Sabal Industrial Blvd. West of US 301	2/26/13	738	0.92	0.94	638	685 (4)	690 (4)
	2/27/13	847	0.92	0.94	732		
	2/28/13	1,372	0.92	0.94	1,187		
Sabal Industrial Blvd. East of US 301	2/26/13	4,624	0.92	0.94	3,999	4,045	4,000
	2/27/13	4,748	0.92	0.94	4,106		
	2/28/13	4,661	0.92	0.94	4,031		
27th Ave. East of US 301	2/26/13	377	0.92	0.94	326	377	380
	2/27/13	428	0.92	0.94	370		
	2/28/13	503	0.92	0.94	435		
SR 574 West of US 301	2/26/13	33,600	0.92	0.97	29,985	31,395	31,400
	2/27/13	35,462	0.92	0.97	31,646		
	2/28/13	36,479	0.92	0.97	32,554		
SR 574 East of US 301	2/26/13	30,483	0.92	0.97	27,203	28,891	28,900
	2/27/13	32,817	0.92	0.97	29,286		
	2/28/13	33,824	0.92	0.97	30,185		
Oak Fair Blvd. East of US 301	2/26/13	2,489	0.92	0.94	2,152	2,119	2,100
	2/27/13	2,401	0.92	0.94	2,076		
	2/28/13	2,463	0.92	0.94	2,130		
Elm Fair Blvd. East of US 301	2/26/13	3,424	0.92	0.94	2,961	3,079	3,100
	2/27/13	3,535	0.92	0.94	3,057		
	2/28/13	3,722	0.92	0.94	3,219		

(1) 2012 Weekly Seasonal Adjustment Factor obtained from FDOT Database
(2) 2012 Axle Adjustment Factor obtained from FDOT Database
(3) Rounded AADT volume
(4) AADT volume calculated using only February 26, 2013 and February 27, 2013 traffic count data

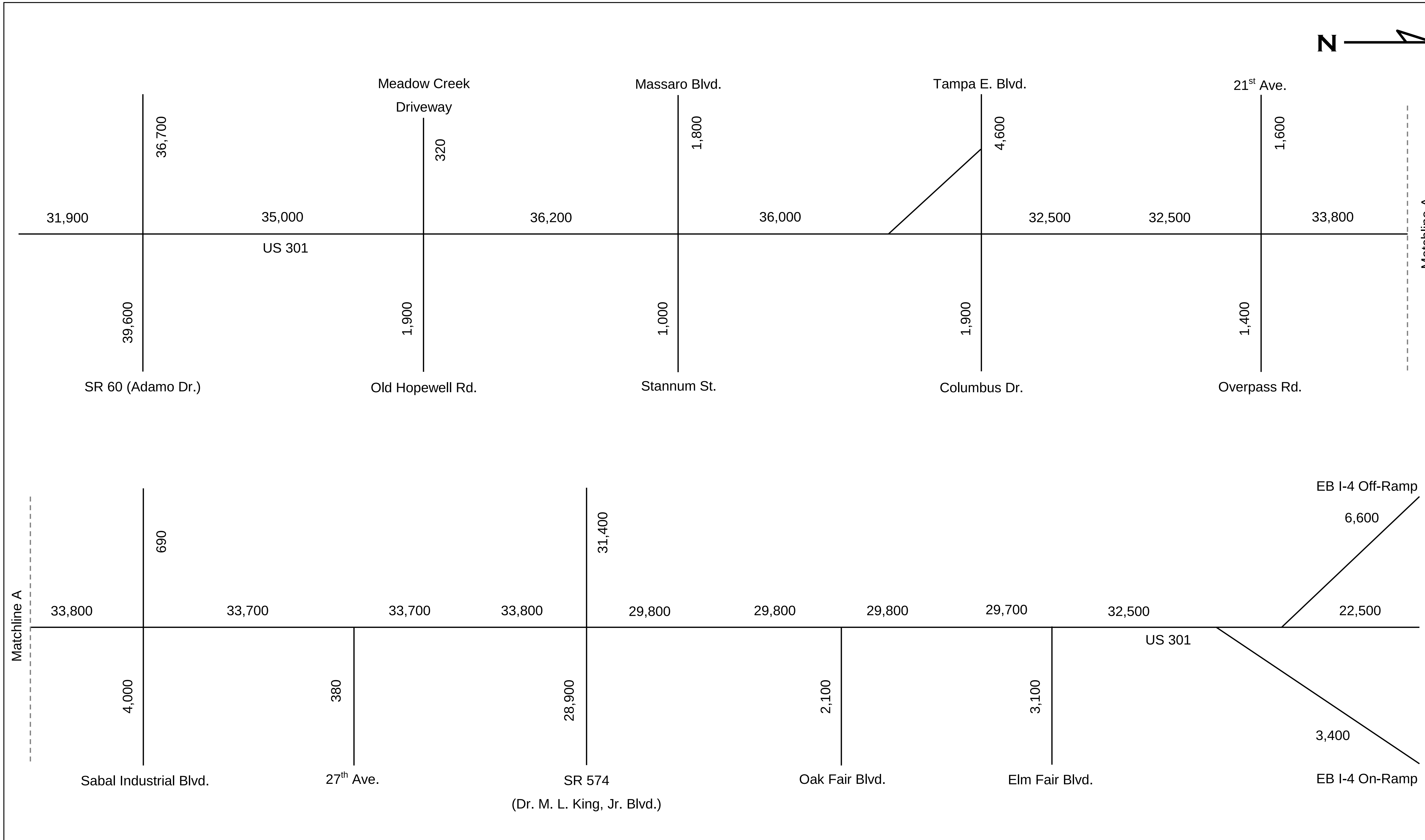

Figure 2-3: Existing Year (2013) AADT Volumes

Table 2-4: Existing Year (2013) 24-Hour Vehicle Classification Counts – US 301 Mainline

Location	Date	Direction	Total Volume	Heavy Vehicle Volume	Unclassified Volume	Percent Heavy Vehicles	Percent Unclassified
South of Stannum St./ Massaro Blvd.	3/5/2013	Northbound	19,220	1,537	227	8.00%	1.18%
		Southbound	20,103	1,775	153	8.83%	0.76%
		Two-Way	39,323	3,312	380	8.42%	0.97%
	3/6/2013	Northbound	18,597	1,445	178	7.77%	0.96%
		Southbound	20,282	1,826	555	9.00%	2.74%
		Two-Way	38,879	3,271	733	8.41%	1.89%
	3/7/2013	Northbound	19,228	1,579	202	8.21%	1.05%
		Southbound	20,724	1,975	983	9.53%	4.74%
		Two-Way	39,952	3,554	1185	8.90%	2.97%
	3-Day Avg.	Northbound	19,015	1,520	202	7.99%	1.06%
		Southbound	20,370	1,859	564	9.13%	2.77%
		Two-Way	39,385	3,379	766	8.58%	1.94%
North of 27th Ave.	2/26/2013	Northbound	16,742	1,286	153	7.68%	0.91%
		Southbound	18,048	1,411	96	7.82%	0.53%
		Two-Way	34,790	2,697	249	7.75%	0.72%
	2/27/2013	Northbound	17,451	1,360	196	7.79%	1.12%
		Southbound	19,592	1,492	98	7.62%	0.50%
		Two-Way	37,043	2,852	294	7.70%	0.79%
	2/28/2013	Northbound	18,744	1,350	245	7.20%	1.31%
		Southbound	19,884	1,395	119	7.02%	0.60%
		Two-Way	38,628	2,745	364	7.11%	0.94%
	3-Day Avg.	Northbound	17,646	1,332	198	7.55%	1.12%
		Southbound	19,175	1,433	104	7.47%	0.54%
		Two-Way	36,821	2,765	302	7.51%	0.82%
South of Oak Fair Blvd.	2/26/2013	Northbound	14,770	1,303	98	8.82%	0.66%
		Southbound	15,391	1,326	66	8.62%	0.43%
		Two-Way	30,161	2,629	164	8.72%	0.54%
	2/27/2013	Northbound	15,498	1,367	92	8.82%	0.59%
		Southbound	17,118	1,515	414	8.85%	2.42%
		Two-Way	32,616	2,882	506	8.84%	1.55%
	2/28/2013	Northbound	16,675	1,326	102	7.95%	0.61%
		Southbound	17,384	1,354	82	7.79%	0.47%
		Two-Way	34,059	2,680	184	7.87%	0.54%
	3-Day Avg.	Northbound	15,648	1,332	97	8.51%	0.62%
		Southbound	16,631	1,398	187	8.41%	1.12%
		Two-Way	32,279	2,730	284	8.46%	0.88%

Table 2-5 provides a comparison of the 24-hour heavy vehicle percentages (i.e., the T_{24}-factors) calculated from the 2013 classification count data and the 2011/2012 T_{24}-factors obtained from the Florida Traffic Online website. A review of this table indicated that the 2013 T_{24}-factors are slightly lower than the 2011/2012 values; however, it should be noted that the 2011/2012 data and the 2013 data are not associated with the exact same locations. The three FDOT count stations included in the Florida Traffic Online website are located much closer to SR 60, Sabal Industrial Boulevard and I-4, compared to the 2013 classification count locations. Also, there are no cross streets located between the count station locations and these three roadways.

Four-hour manual turning movement counts were conducted at the ten intersections previously identified on either a Tuesday, Wednesday or Thursday, between February 26th and March 6th, 2013 within the hours of 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m. Heavy vehicles (i.e., trucks and buses), bicyclists, and pedestrians were counted in addition to passenger vehicles. The peak hour intersection turning movement count data is provided in **Appendix C**.

Table 2-5: T_{24}-Factor Comparison

General Location	Specific Location	2011 T_{24}-Factor(1)	2012 T_{24}-Factor(1)	General Location	2013 T_{24}-Factor(2)
North of SR 60 (Count Station No. 105326)	0.155 mi. North of SR 60	9.0%	9.0%	South of Massaro Blvd./Stannum St.	8.60%
South of SR 574 (Count Station No. 105327)	0.063 mi. South of Sabal Industrial Blvd.	7.9%*	8.2%*	North of 27th Ave.	7.50%
South of I-4 (Count Station No. 100010)	0.086 mi. North of Elm Fair Blvd.	10.1%	10.1%*	South of Oak Fair Blvd.	8.50%

(1) Based on FDOT count station data obtained from the Florida Traffic Online website
(2) Based on 72-hour classification count data obtained in February and March 2013
* No classification count data was collected at this count station for this year

2.3 Existing Peak Hour Traffic Characteristics

A review of the a.m. peak hour turning movement counts indicated that the highest 60-minute volumes occurred between 7:15 a.m. and 8:15 a.m. at nine of the 10 intersections. Although the highest 60-minute volume at the Columbus Drive/Tampa E. Boulevard intersection occurred between 7:30 a.m. and 8:30 a.m., there were only eight more vehicles counted during this time period than during the 7:15 a.m. to 8:15 a.m. time period. Consequently, the a.m. peak hour was defined to be from 7:15 a.m. to 8:15 a.m. A review of the p.m. peak hour turning movement counts indicated more variability with respect to when the highest 60-minute volumes occurred. The time periods of the highest p.m. peak hour volumes and the number of intersections that "peaked" during these time periods are as follows:

- 4:45 p.m. to 5:45 p.m. (five intersections)
- 5:00 p.m. to 6:00 p.m. (five intersections)

To determine the most appropriate p.m. peak hour to use in the existing conditions analysis, the intersection approach volumes for each of the 10 study corridor intersections were summed to obtain a total "corridor" peak hour volume. The p.m. peak hour totals are summarized in **Table 2-6** Since the highest total p.m. peak hour corridor volume occurs between 5:00 p.m. and 6:00 p.m., this hour was used to represent the p.m. peak hour. The raw turning movement counts recorded between 7:15 a.m. and 8:15 a.m. and between 5:00 p.m. and 6:00 p.m. are summarized in **Appendix C**.

The percentage of the two-way peak hour volume that occurs in the peak direction was calculated for the US 301 mainline using the 72-hour bi-directional volume counts. These a.m. and p.m. peak hour directional distribution percentages (i.e., D-factors) are summarized in **Table 2-7** and **Table 2-8**, respectively. A review of these tables indicated that the directionality of peak hour traffic flow is different north and south of Sabal Industrial Boulevard. North of Sabal Industrial Boulevard, the peak travel directions are southbound in the a.m. and northbound in the p.m.; while south of this roadway, the peak travel directions are northbound in the a.m. and southbound in the p.m.

Table 2-6: Existing Year (2013) PM Peak Hour Corridor Volumes

Intersection	Approach	PM Peak Hour Volume	
		4:45 to 5:45	5:00 to 6:00
SR 60	Northbound	1,143	1,093
	Southbound	1,842	1,940
	Westbound	1,284	1,250
	Eastbound	1,931	1,888
	Total	6,200	6,171
Old Hopewell Rd.	Northbound	1,368	1,372
	Southbound	1,962	1,942
	Westbound	93	86
	Eastbound	23	21
	Total	3,446	3,421
Stannum St./Massaro Blvd.	Northbound	1,416	1,447
	Southbound	2,112	2,250
	Westbound	33	28
	Eastbound	52	43
	Total	3,613	3,768
Columbus Dr./Tampa E. Blvd.	Northbound	1,510	1,491
	Southbound	1,767	1,720
	Westbound	111	96
	Eastbound	193	185
	Total	3,581	3,492
Overpass Rd./21st Ave.	Northbound	1,428	1,397
	Southbound	1,670	1,724
	Westbound	82	76
	Eastbound	89	91
	Total	3,269	3,288
Sabal Industrial Blvd.	Northbound	1,566	1,481
	Southbound	1,652	1,660
	Westbound	431	428
	Eastbound	44	41
	Total	3,693	3,610
27th Ave.	Northbound	1,761	1,698
	Southbound	1,558	1,612
	Westbound	9	11
	Total	3,328	3,321
SR 574	Northbound	1,742	1,732
	Southbound	1,215	1,236
	Westbound	1,413	1,421
	Eastbound	1,647	1,658
	Total	6,017	6,047
Oak Fair Blvd.	Northbound	1,882	1,903
	Southbound	1,479	1,543
	Westbound	166	161
	Total	3,527	3,607
Elm Fair Blvd.	Northbound	1,913	1,968
	Southbound	1,237	1,286
	Westbound	179	188
	Total	3,329	3,442
Total (All 10 Intersections)		**40,003**	**40,167**

Table 2-7 indicates that the average a.m. peak hour D-factors are 57.28% (south of Sabal Industrial Boulevard) and 55.25% (north of Sabal Industrial Boulevard). **Table 2-8** indicates that the average p.m. peak hour D-factors are 57.99% (south of Sabal Industrial Boulevard) and 54.49% (north of Sabal Industrial Boulevard). Both tables indicate that the directional distribution increases with increasing distance from Sabal Industrial Boulevard.

Table 2-9 summarizes the peak hour total volumes and heavy vehicle volumes recorded for each of the three consecutive days that vehicle classification counts were conducted on US 301, as well as the three-day average peak hour values. A review of this table indicated that the percentage of heavy vehicles is significantly higher in the a.m. peak hour than in the p.m. peak hour. The average a.m. peak hour heavy vehicle percentages range from approximately 7.7% (north of 27th Avenue) to 8.9% (south of Oak Fair Boulevard), while the average p.m. peak hour heavy vehicle percentages range from approximately 3.6% (north of 27th Avenue) to 5.9% (south of Stannum Street/Massaro Boulevard). A comparison of **Table 2-8** and **Table 2-9** indicated that the a.m. peak hour percentages are similar to the 24-hour percentages while the p.m. peak hour percentages are between 45.0% and 69.0% of the 24-hour percentages.

Table 2-10 summarizes the peak hour total volumes and heavy vehicle volumes that were recorded on the US 301 cross street approaches during the intersection turning movement counts. This table indicates that the cross street heavy vehicle volumes (and percentages) in the a.m. peak hour are higher than in the p.m. peak hour.

One of the inputs used to conduct the noise analysis for the PD&E study is the percentage of medium and heavy trucks in the peak hour. **Table 2-11** summarizes the peak hour medium and heavy truck volumes and percentages that were calculated using the 72-hour vehicle classification count data. The three-day average medium truck percentages range from 48.68% to 52.61% in the a.m. peak hour with an overall corridor average of 50.43%, while the three-day average heavy truck percentages range from 46.99% to 51.32% with an overall corridor average of 49.44%. In the p.m. peak hour, the three-day average medium truck percentages range from 49.49% to 57.03% with an overall corridor average of 52.89%, while the three-day average heavy truck percentages range from 42.97% to 50.51% with an overall corridor average of 47.11%.

2.4 Design Traffic Factors

A review of the FDOT's 2012 AADT Reports for the three FDOT Count Stations within the US 301 study corridor indicated the following values for the K- and D- factors:

- K-factor = 9.0%
- D-factor = 59.0%

Copies of the 2012 AADT Reports are included in **Appendix D**. The K-factor value of 9.0% represents the "Standard" K-factor (as opposed to the K_{30}-factor). In 2011, Standard K-factors were established statewide by using data obtained from telemetered (permanent) count stations and these factors are based on area type and facility type. FDOT decided to replace the K_{30}-factors with Standard K-factors due to the widespread recognition that it is no longer cost-effective

Table 2-7: Existing Year (2013) AM Peak Hour Directional Distributions

Location	Direction	AM Peak Hour Volume					D-Factor	Peak Direction	Average D-Factor
		3/5/13	3/6/13	3/7/13	Average	Average Two-Way			
South of SR 60	NB	1,697	1,593	1,633	1,641	2,597	63.19%	NB	57.28%
	SB	968	948	951	956				
Between SR 60 & Old Hopewell Rd.	NB	2,002	1,831	1,750	1,861	3,137	59.32%	NB	
	SB	1,326	1,210	1,291	1,276				
Between Old Hopewell Rd. & Massaro Blvd.	NB	2,002	1,875	1,924	1,934	3,240	59.67%	NB	
	SB	1364	1237	1316	1,306				
Between Massaro Blvd. & Columbus Dr.	NB	1,948	1,814	1,863	1,875	3,248	57.73%	NB	
	SB	1,424	1,311	1,384	1,373				
North of Columbus Dr.	NB	1,757	1,611	1,706	1,691	2,993	56.50%	NB	
	SB	1,349	1,230	1,327	1,302				
Location	**Direction**	**AM Peak Hour Volume**					**D-Factor**	**Peak Direction**	
		2/26/13	**2/27/13**	**2/28/13**	**Average**	**Average Two-Way**			
South of Overpass Rd./21st Ave.	NB	1,580	1,562	1,702	1,615	3,065	52.69%	NB	
	SB	1,382	1,596	1,373	1,450				
Between Overpass Rd./21st Ave. & Sabal	NB	1,583	1,579	1,733	1,632	3,148	51.84%	NB	
	SB	1,441	1,664	1,442	1,516				
Between Sabal Industrial Blvd. & 27th Ave.	NB	1,405	1,372	1,521	1,433	3,023	52.60%	SB	55.25%
	SB	1,529	1,733	1,508	1,590				
North of 27th Ave.	NB	1,416	1,386	1,538	1,447	3,023	52.13%	SB	
	SB	1,509	1,717	1,501	1,576				
South of SR 574	NB	1,407	1,393	1,539	1,446	3,029	52.26%	SB	
	SB	1,500	1,743	1,505	1,583				
North of SR 574	NB	1,182	1,212	1,293	1,229	2,751 (1)	55.33%	SB	
	SB	1,505	1,930	1,538	1,522 (1)				
South of Oak Fair Blvd.	NB	1,159	1,195	1,237	1,197	2,691 (1)	55.52%	SB	
	SB	1,480	2,376	1,508	1,494 (1)				
North of Oak Fair Blvd.	NB	1,119	1,155	1,205	1,160	2,700 (1)	57.04%	SB	
	SB	1,534	2,028	1,545	1,540 (1)				
South of Elm Fair Blvd.	NB	1,127	1,169	1,221	1,172	2,716 (1)	56.85%	SB	
	SB	1,541	2,024	1,547	1,544 (1)				
North of Elm Fair Blvd.	NB	1,178	1,201	1,254	1,211	3,047 (1)	60.26%	SB	
	SB	1,867	2,876	1,804	1,836 (1)				

(1) This value was calculated using only the 2/26/13 and 2/28/13 southbound count data

Table 2-8: Existing Year (2013) PM Peak Hour Directional Distributions

Location	Direction	PM Peak Hour Volume 3/5/13	3/6/13	3/7/13	Average	Average Two-Way	D-Factor	Peak Dir.	Average D-Factor
South of SR 60	NB	1,143	1,155	1,238	1,179	3,047	61.31%	SB	57.99%
	SB	1,864	1,846	1,893	1,868				
Between SR 60 & Old Hopewell Rd.	NB	1,392	1,298	1,148	1,279	3,278	60.98%	SB	
	SB	1,948	2,041	2,007	1,999				
Between Old Hopewell Rd. & Massaro Blvd.	NB	1,414	1,394	1,462	1,423	3,568	60.12%	SB	
	SB	1,925	2265	2244	2,145				
Between Massaro Blvd. & Columbus Dr.	NB	1,444	1,442	1,506	1,464	3,512	58.31%	SB	
	SB	1,870	2,070	2,203	2,048				
North of Columbus Dr.	NB	1,347	1,369	1,437	1,384	3,240	57.28%	SB	
	SB	1,707	1,896	1,964	1,856				
Location	**Direction**	**PM Peak Hour Volume 2/26/13**	**2/27/13**	**2/28/13**	**Average**	**Average Two-Way**	**D-Factor**	**Peak Dir.**	
South of Overpass Rd./21st Ave.	NB	1,373	1,417	1,416	1,402	3,092	54.66%	SB	
	SB	1,600	1,781	1,688	1,690				
Between Overpass Rd./21st Ave. & Sabal	NB	1,485	1,513	1,534	1,511	3,234	53.28%	SB	
	SB	1,612	1,820	1,738	1,723				
Between Sabal Industrial Blvd. & 27th Ave.	NB	1,643	1,668	1,685	1,665	3,260	51.07%	NB	54.49%
	SB	1,469	1,706	1,611	1,595				
North of 27th Ave.	NB	1,645	1,695	1,680	1,673	3,247	51.52%	NB	
	SB	1,453	1,674	1,594	1,574				
South of SR 574	NB	1,677	1,728	1,739	1,715	3,288	52.16%	NB	
	SB	1,448	1,669	1,603	1,573				
North of SR 574	NB	1,771	1,838	1,876	1,828	3,327	54.94%	NB	
	SB	1,271	1,593	1,634	1,499				
South of Oak Fair Blvd.	NB	1,764	1,838	1,850	1,817	3,289	55.24%	NB	
	SB	1,243	1,575	1,597	1,472				
North of Oak Fair Blvd.	NB	1,853	1,917	1,932	1,901	3,341	56.90%	NB	
	SB	1,227	1,531	1,562	1,440				
South of Elm Fair Blvd.	NB	1,845	1,919	1,934	1,899	3,333	56.98%	NB	
	SB	1,227	1,521	1,554	1,434				
North of Elm Fair Blvd.	NB	1,959	2,002	2,053	2,005	3,512	57.09%	NB	
	SB	1,352	1,594	1,575	1,507				

Table 2-9: Existing Year (2013) Peak Hour Vehicle Classification Counts – US 301 Mainline

Location	Date	Direction	AM Peak Hour			PM Peak Hour		
			Total Vehicles	Heavy Vehicles	Heavy Vehicle Percent	Total Vehicles	Heavy Vehicles	Heavy Vehicle Percent
South of Stannum St./ Massaro Blvd.	3/5/2013	Northbound	1,980	116	5.86%	1,435	76	5.30%
		Southbound	1,333	153	11.48%	1,952	72	3.69%
		Two-Way	3,313	269	8.12%	3,387	148	4.37%
	3/6/2013	Northbound	1,848	103	5.57%	1,417	67	4.73%
		Southbound	1,214	122	10.05%	1,963	159	8.10%
		Two-Way	3,062	225	7.35%	3,380	226	6.69%
	3/7/2013	Northbound	1,900	119	6.26%	1,493	65	4.35%
		Southbound	1,302	134	10.29%	1,836	157	8.55%
		Two-Way	3,202	253	7.90%	3,329	222	6.67%
	3-Day Avg.	Northbound	1,909	113	5.92%	1,448	69	4.77%
		Southbound	1,283	136	10.60%	1,917	129	6.73%
		Two-Way	3,192	249	7.80%	3,365	198	5.88%
North of 27th Ave.	2/26/2013	Northbound	1,377	116	8.42%	1,674	52	3.11%
		Southbound	1,499	104	6.94%	1,473	52	3.53%
		Two-Way	2,876	220	7.65%	3,147	104	3.30%
	2/27/2013	Northbound	1,357	108	7.96%	1,705	55	3.23%
		Southbound	1,711	135	7.89%	1,684	74	4.39%
		Two-Way	3,068	243	7.92%	3,389	129	3.81%
	2/28/2013	Northbound	1,492	122	8.18%	1,689	64	3.79%
		Southbound	1,501	99	6.60%	1,612	54	3.35%
		Two-Way	2,993	221	7.38%	3,301	118	3.57%
	3-Day Avg.	Northbound	1,409	115	8.16%	1,689	57	3.37%
		Southbound	1,570	113	7.20%	1,590	60	3.77%
		Two-Way	2,979	228	7.65%	3,279	117	3.57%
South of Oak Fair Blvd.	2/26/2013	Northbound	1,129	111	9.83%	1,796	50	2.78%
		Southbound	1,482	109	7.35%	1,269	41	3.23%
		Two-Way	2,611	220	8.43%	3,065	91	2.97%
	2/27/2013	Northbound	1,158	102	8.81%	1,878	73	3.89%
		Southbound	1,687	192	11.38%	1,572	75	4.77%
		Two-Way	2,845	294	10.33%	3,450	148	4.29%
	2/28/2013	Northbound	1,212	102	8.42%	1,885	78	4.14%
		Southbound	1,511	109	7.21%	1,616	66	4.08%
		Two-Way	2,723	211	7.75%	3,501	144	4.11%
	3-Day Avg.	Northbound	1,166	105	9.01%	1,853	67	3.62%
		Southbound	1,560	137	8.78%	1,486	61	4.10%
		Two-Way	2,726	242	8.88%	3,339	128	3.83%

Table 2-10: Existing Year (2013) Peak Hour Heavy Vehicle Percentages – US 301 Cross Streets

Location	Date	Direction	AM Peak Hour			PM Peak Hour		
			Total Vehicles	Heavy Vehicles	Heavy Vehicle Percent	Total Vehicles	Heavy Vehicles	Heavy Vehicle Percent
SR 60	3/6/2013	Westbound	2,031	57	2.81%	1,250	55	4.40%
		Eastbound	937	75	8.00%	1,888	28	1.48%
Old Hopewell Rd.	3/5/2013	Westbound	38	22	57.89%	86	7	8.14%
		Eastbound	3	0	0.00%	21	3	14.29%
Stannum St./Massaro Blvd.	3/6/2013	Westbound	8	4	50.00%	28	2	7.14%
		Eastbound	19	7	36.84%	43	4	9.30%
Columbus Dr./Tampa E. Blvd.	3/5/2013	Westbound	50	1	2.00%	96	1	1.04%
		Eastbound	169	28	16.57%	185	12	6.49%
Overpass Rd./21st Ave.	2/28/2013	Westbound	43	3	6.98%	76	5	6.58%
		Eastbound	35	6	17.14%	91	2	2.20%
Sabal Industrial Blvd.	2/27/2013	Westbound	105	38	36.19%	428	18	4.21%
		Eastbound	5	1	20.00%	41	0	0.00%
27th Ave.	2/28/2013	Westbound	35	3	8.57%	11	0	0.00%
		Eastbound	N/A	N/A	N/A	N/A	N/A	N/A
SR 574	2/26/2013	Westbound	1,172	34	2.90%	1,421	21	1.48%
		Eastbound	1,475	66	4.47%	1,658	45	2.71%
Oak Fair Blvd.	2/27/2013	Westbound	66	20	30.30%	161	0	0.00%
		Eastbound	N/A	N/A	N/A	N/A	N/A	N/A
Elm Fair Blvd.	2/26/2013	Westbound	107	50	46.73%	188	1	0.53%
		Eastbound	0	0	0.00%	1	0	0.00%

Table 2-11: Existing Year (2013) Peak Hour Heavy and Medium Truck Percentages – US 301 Mainline

Location	Date	Direction	AM Peak Hour					PM Peak Hour				
			Total Trucks	Heavy Trucks	Heavy Truck Percent	Medium Trucks	Medium Truck Percent	Total Trucks	Heavy Trucks	Heavy Truck Percent	Medium Trucks	Medium Truck Percent
South of Stannum St./ Masaro Blvd.	3/5/2013	Northbound	116	62	53.45%	54	46.55%	76	39	51.32%	37	48.68%
		Southbound	153	61	39.87%	92	60.13%	72	24	33.33%	48	66.67%
		Two-Way	269	123	45.72%	146	54.28%	148	63	42.57%	85	57.43%
	3/6/2013	Northbound	103	53	51.46%	50	48.54%	67	33	49.25%	34	50.75%
		Southbound	122	57	46.72%	65	53.28%	159	78	49.06%	81	50.94%
		Two-Way	225	110	48.89%	115	51.11%	226	111	49.12%	115	50.88%
	3/7/2013	Northbound	119	60	50.42%	59	49.58%	65	30	46.15%	35	53.85%
		Southbound	134	59	44.03%	75	55.97%	157	96	61.15%	61	38.85%
		Two-Way	253	119	47.04%	134	52.96%	222	126	56.76%	96	43.24%
	3-Day Avg.	Northbound	113	58	51.33%	54	47.79%	69	34	49.28%	35	50.72%
		Southbound	136	59	43.38%	77	56.62%	129	66	51.16%	63	48.84%
		Two-Way	249	117	46.99%	132	52.61%	198	100	50.51%	98	49.49%
North of 27th Ave.	2/26/2013	Northbound	116	58	50.00%	58	50.00%	52	27	51.92%	25	48.08%
		Southbound	104	55	52.88%	49	47.12%	52	21	40.38%	31	59.62%
		Two-Way	220	113	51.36%	107	48.64%	104	48	46.15%	56	53.85%
	2/27/2013	Northbound	108	58	53.70%	50	46.30%	55	29	52.73%	26	47.27%
		Southbound	136	78	57.35%	58	42.65%	74	38	51.35%	36	48.65%
		Two-Way	244	136	55.74%	108	44.26%	129	67	51.94%	62	48.06%
	2/28/2013	Northbound	122	58	47.54%	64	52.46%	64	29	45.31%	35	54.69%
		Southbound	99	43	43.43%	56	56.57%	54	26	48.15%	28	51.85%
		Two-Way	221	101	45.70%	120	54.30%	118	55	46.61%	63	53.39%
	3-Day Avg.	Northbound	115	58	50.43%	57	49.57%	57	28	49.12%	29	50.88%
		Southbound	113	59	52.21%	54	47.79%	60	28	47.67%	32	53.33%
		Two-Way	228	117	51.32%	111	48.68%	117	56	47.86%	61	52.14%
South of Oak Fair Blvd.	2/26/2013	Northbound	111	55	49.55%	56	50.45%	50	21	42.00%	29	58.00%
		Southbound	109	49	44.95%	60	55.05%	41	18	43.90%	23	56.10%
		Two-Way	220	104	47.27%	116	52.73%	91	39	42.86%	52	57.14%
	2/27/2013	Northbound	102	52	50.98%	50	49.02%	73	26	35.62%	47	64.38%
		Southbound	192	104	54.17%	88	45.83%	75	39	52.00%	36	48.00%
		Two-Way	294	156	53.06%	138	46.94%	148	65	43.92%	83	56.08%
	2/28/2013	Northbound	102	53	51.96%	49	48.04%	78	34	43.59%	44	56.41%
		Southbound	109	50	45.87%	59	54.13%	66	26	39.39%	40	60.61%
		Two-Way	211	103	48.82%	108	51.18%	144	60	41.67%	84	58.33%
	3-Day Avg.	Northbound	105	53	50.48%	52	49.52%	67	27	40.30%	40	59.70%
		Southbound	137	68	49.64%	69	50.36%	61	28	45.90%	33	54.10%
		Two-Way	242	121	50.00%	121	50.00%	128	55	42.97%	73	57.03%
Average (All Three Locations)					49.44%		50.43%			47.11%		52.89%

to design long-term improvements for roadways located in urban areas based on the 30th-highest hourly volume that is estimated to occur throughout the design year.

Since the three FDOT count stations located within the US 301 study corridor are not permanent count stations, the D-factor value of 59.0% in the FDOT's 2012 AADT Reports does not actually represent the directional distribution observed at these locations during the 30th-highest hour of the year (or the median D-factor of the 200 highest hours). The D-factor of 59.0% represents the average D-factor calculated based on permanent count station data recorded at the following six locations within Hillsborough County:

- US 92 west of Turkey Creek Road (Count Station No. 100080)
- SR 60 east of US 41 (Count Station No. 100162)
- SR 582 (Fowler Avenue) east of 15th Street (Count Station No. 100321)
- US 92 (Hillsborough Avenue) west of Westshore Boulevard (Count Station No. 100372)
- US 41/S. 50th Street south of Causeway Boulevard (Count Station No. 100373)
- I-75 north of SR 60 (Count Station No. 109926)

Only two of these six roadways (i.e., US 41/S. 50th Street and I-75) are north/south roadways and of these two, only US 41/S. 50th Street is a signalized arterial. In addition, the median D-factor associated with the count station on US 41/S. 50th Street is extremely high (i.e., 72.9%). It should be noted that the average of the other five median D-factors is approximately 56.2%.

As discussed earlier in **Section 2.3** the 2013 peak hour volumes obtained from the 72-hour bi-directional volume counts yielded average D-factors of 57.28% in the a.m. peak hour and 57.99% in the p.m. peak hour for the portion of the study corridor south of Sabal Industrial Boulevard. The average of these two values is approximately 57.6%. North of Sabal Industrial Boulevard, the peak hour volumes obtained from the 72-hour bi-directional volume counts yielded average D-factors of 55.25% in the a.m. peak hour and 54.49% in the p.m. peak hour. The average of these two values is approximately 54.9%.

Based on a review of the data contained in the FDOT's database, as well as the 2013 traffic data collected for the PD&E study, the following K- and D-factor values were used to derive the future year peak hour traffic volumes:

- K-factor = 9.0%
- D-factor = 57.0%

The 2013 AADT volumes were multiplied by these same factors to obtain a preliminary estimate of the 2013 peak hour Directional Design Hour Volumes (DDHVs) for the US 301 mainline. The peak and off-peak DDHVs calculated for the US 301 mainline are provided in **Appendix E**, along with the actual peak hour volumes that were recorded. The 2013 two-way peak hour volumes for the US 301 cross streets were also calculated by multiplying the 2013 AADT volumes by a K-factor of 9.0%. These two-way peak hour volumes were subsequently multiplied by D-factors that were calculated using the existing peak hour approach and departure volumes. The peak and off-peak DDHVs that were calculated for the US 301 cross streets are also provided in **Appendix E**, along with the actual peak hour volumes that were recorded.

The existing peak hour turning movement percentages were calculated using the a.m. and p.m. peak hour intersection turning movement counts and are provided in **Appendix E**. The peak hour intersection approach volumes were then multiplied by the existing peak hour turning movement percentages to obtain an initial estimate of the 2013 peak hour intersection turning movement volumes. These calculations are provided in **Appendix E**. The intersection departure volumes on the US 301 mainline were compared to the intersection approach volumes for adjacent intersections and the differences in these volumes were calculated. Aerial photography of the study corridor was reviewed to determine whether there were any additional cross streets or entrances/exits to large traffic generators located between the study corridor intersections on either side of US 301. This review indicated the following:

- E. Meadow Boulevard (located on the west side of US 301 between Columbus Drive/Tampa E. Boulevard and Overpass Road/21st Avenue) has right-in/right-out access only; however, this roadway provides access to a large number of businesses located at the north end of both Tampa E. Boulevard and Massaro Boulevard.

- The Center Point Business Park (located on the east side of US 301) has two access points located between Columbus Drive/Tampa E. Boulevard and Overpass Road/21st Avenue and a full median opening is provided at the southern access point.

Consequently, it is reasonable to expect that the approach (and departure) volumes north of Columbus Drive/Tampa E. Boulevard would be different than the departure (and approach) volumes south of Overpass Road/21st Avenue. Manual adjustments were subsequently made to individual movement volumes to equalize the departure and approach volumes for each of the other roadway segments.

A summary table containing the actual peak hour volumes that were counted, the peak hour volumes that were calculated using the K- and D-factors along with the existing turning movement percentages, and the final peak hour volumes that were obtained based on the manual adjustments is provided in **Appendix E**. The specific volumes that were adjusted are denoted in red. The final adjusted a.m. and p.m. peak hour volumes are also graphically illustrated in **Figure 2-4** and **Figure 2-5**, respectively.

2.5 Existing Year (2013) Peak Hour Traffic Operations

The US 301 roadway segments were analyzed as multilane highway segments using the 2010 Highway Capacity Manual software (HCS). A review of the peak hour vehicle classification count data summarized in **Table 2-9** indicated that the overall average a.m. and p.m. peak hour truck percentages for the study corridor were approximately 8.0% and 4.0%, respectively. The number of access points located within each US 301 roadway segment was determined using aerial photography and then divided by the roadway segment length to obtain the access point density (i.e., number of access points per mile) for the northbound and southbound travel directions. The multilane highway segment analyses were conducted using a Base Free Flow Speed (BFFS) of 50 mph, a Peak Hour Factor (PHF) of 0.93 and a driver population factor of 0.99. The driver population factor reflects the fact that US 301 is used as a commuter route and most of the drivers

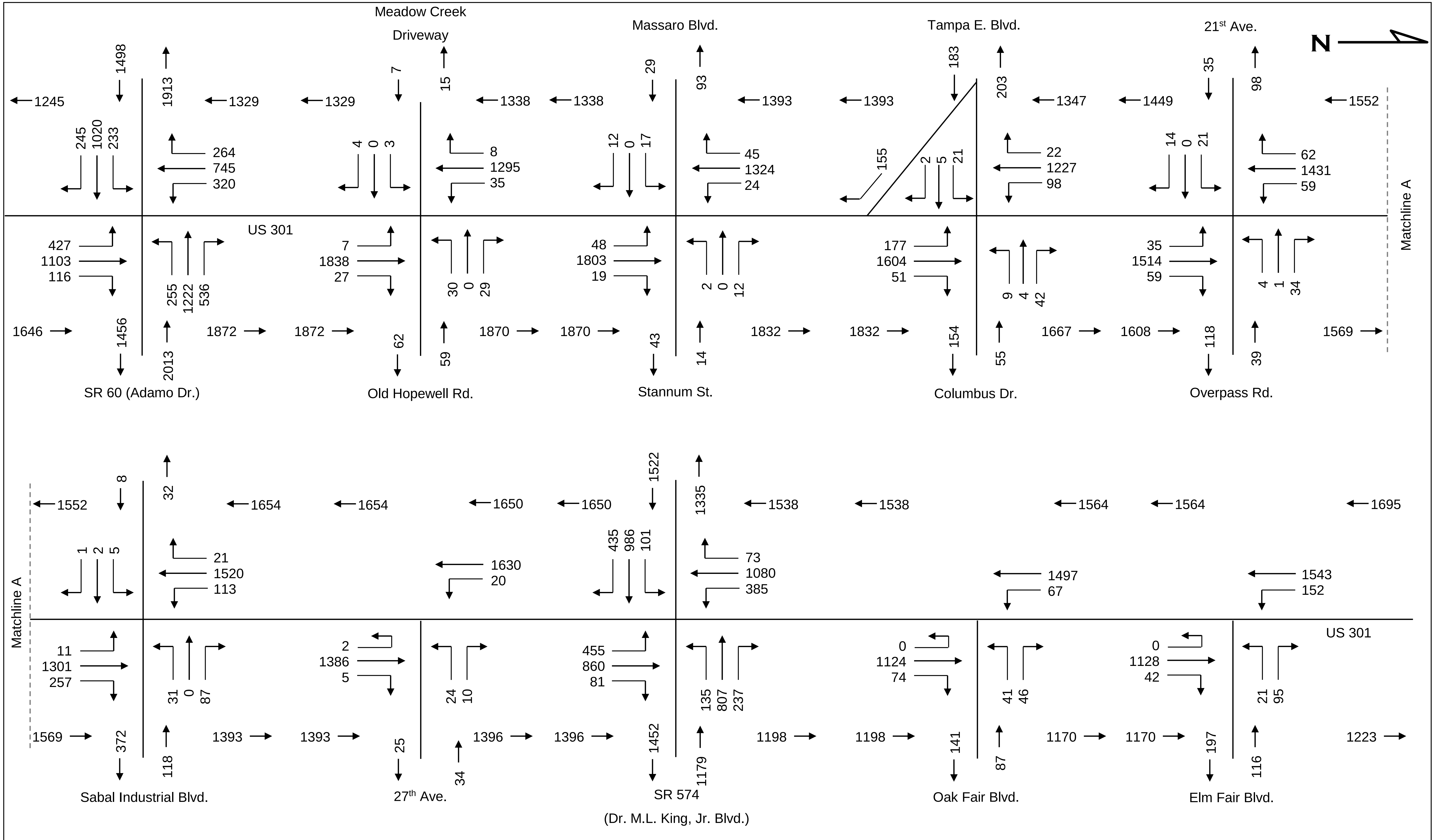

Figure 2-4: Existing Year (2013) AM Peak Hour Volumes

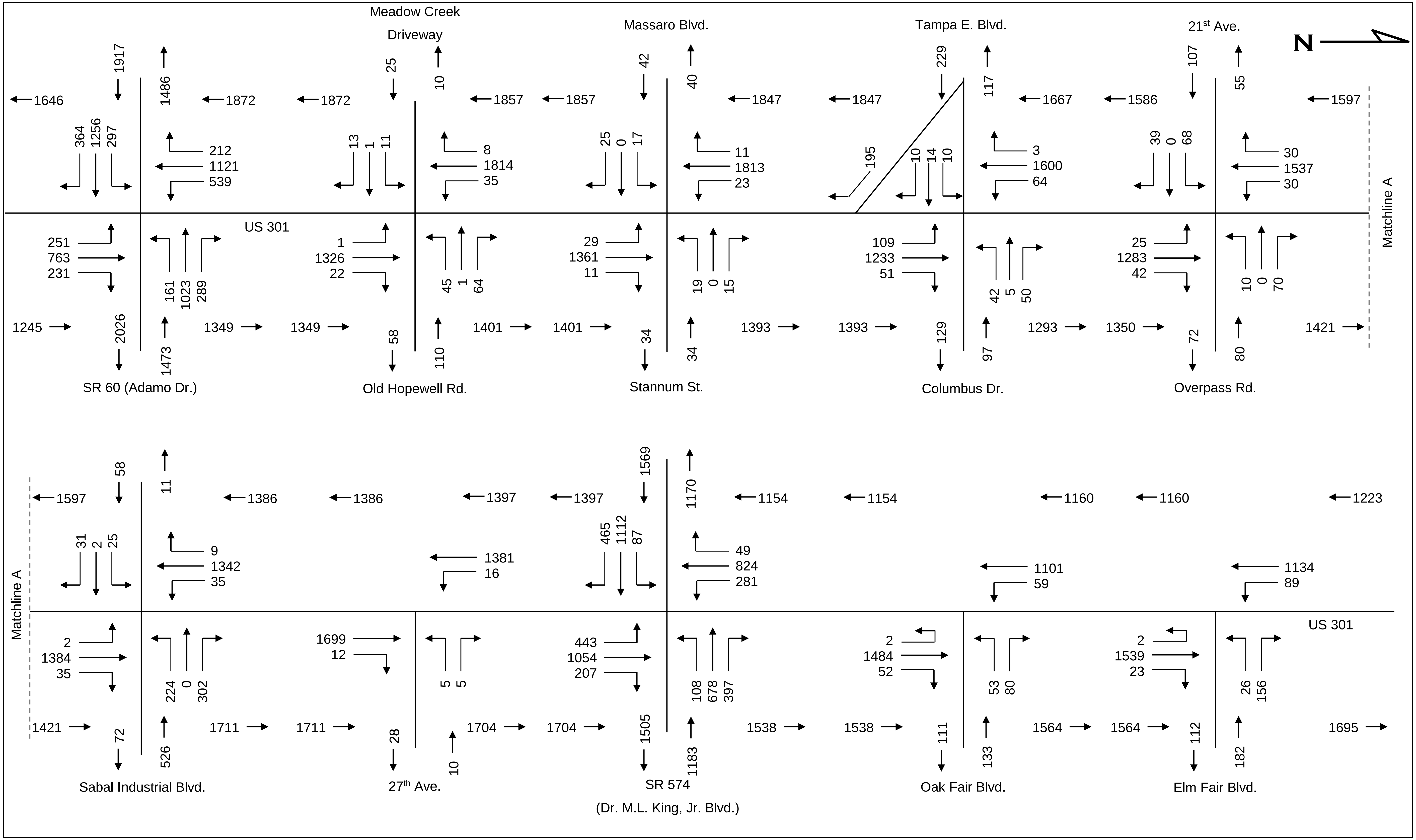

Figure 2-5: Existing Year (2013) PM Peak Hour Volumes

are regular users who are familiar with the characteristics of the facility.

Table 2-12 summarizes the results of the multilane highway segment analyses for both the a.m. and p.m. peak hours. This table includes the peak hour volumes, densities, and levels of service for both the peak and off-peak travel directions. All of the roadway segments are operating at Level of Service (LOS) C or better in both travel directions during the a.m. and p.m. peak hours. The existing conditions HCS multilane highway segment analysis reports are provided in **Appendix F**.

Table 2-12: Existing Year (2013) Peak Hour Roadway Segment Analysis Summary

Roadway Segment	Direction	AM Peak Hour			PM Peak Hour		
		Volume (1)	Density (2)	LOS (3)	Volume (1)	Density (2)	LOS (3)
Btwn SR 60 and Old Hopewell Rd.	NB	1,872	21.1	C	1,349	14.9	B
	SB	1,329	15.0	B	1,872	20.7	C
Btwn Old Hopewell Rd. and Stannum St./Massaro Blvd.	NB	1,870	21.1	C	1,401	15.5	B
	SB	1,338	15.1	B	1,857	20.6	C
Btwn Stannum St./Massaro Blvd. and Columbus Dr./Tampa E. Blvd.	NB	1,832	20.7	C	1,393	15.4	B
	SB	1,393	15.7	B	1,847	20.5	C
Btwn Columbus Dr./Tampa E. Blvd. and Overpass Rd./21st Ave.	NB	1,638	18.5	C	1,322	14.6	B
	SB	1,398	17.5	B	1,627	20.0	C
Btwn Overpass Rd./21st Ave. and Sabal Industrial Blvd.	NB	1,569	19.7	C	1,421	17.5	B
	SB	1,552	19.5	C	1,597	19.6	C
Btwn Sabal Industrial Blvd. and 27th Ave.	NB	1,393	15.7	B	1,711	18.9	C
	SB	1,654	18.7	C	1,386	15.3	B
Btwn 27th Ave. and SR 574	NB	1,396	17.5	B	1,704	21.0	C
	SB	1,650	18.6	C	1,397	15.5	B
Btwn SR 574 and Oak Fair Blvd.	NB	1,198	15.0	B	1,538	18.9	C
	SB	1,538	17.4	B	1,154	12.8	B
Btwn Oak Fair Blvd. and Elm Fair Blvd.	NB	1,170	13.2	B	1,564	17.3	B
	SB	1,564	17.7	B	1,160	12.8	B
Btwn Elm Fair Blvd. and I-4	NB	1,223	10.2	A	1,695	13.9	B
	SB	1,695	12.8	B	1,223	9.0	A

(1) Volume (vehicles/hour)
(2) Average Density (passenger cars/mile/lane)
(3) Level of Service

Unsignalized intersection analyses were conducted for the seven existing unsignalized intersections identified in **Section 2.1** of this report using the 2010 HCS. The peak hour truck percentages and PHFs that were calculated from the 2013 turning movement counts were used in the unsignalized intersection analyses.

Table 2-13 summarizes the results of the unsignalized intersection analyses conducted for both the a.m. and p.m. peak hours. This table includes the volume-to-capacity (v/c) ratios, average vehicle delays and levels of service for the northbound and southbound US 301 left-turn movements, as well as the eastbound and westbound cross street movements. With one exception, all of the northbound and southbound US 301 left-turn movements are operating at LOS C or better during both peak hours. The northbound left-turn movement at the Columbus Drive/Tampa E. Boulevard intersection is operating at LOS D during the p.m. peak hour.

Table 2-13: Existing Year (2013) Peak Hour Unsignalized Intersection Operations Summary

Intersection	Approach	Movement	AM Peak Hour			PM Peak Hour		
			V/C (1)	Delay (2)	LOS (3)	V/C (1)	Delay (2)	LOS (3)
Old Hopewell Road	Northbound	LT	0.01	12.3	B	0.00	18.5	C
	Southbound	LT	0.15	22.5	C	0.10	14.9	B
	Eastbound	LT/TH/RT	0.13	35.7	E	0.60	118.1	F
	Westbound	LT/TH	1.88	748.3	F	0.78	159.9	F
	Westbound	RT	0.23	28.8	D	0.17	15.4	C
Stannum Street/ Massaro Boulevard	Northbound	LT	0.11	13.8	B	0.12	20.7	C
	Southbound	LT	0.09	18.8	C	0.06	14.4	B
	Eastbound	LT/TH	0.50	139.3	F	0.77	214.3	F
	Eastbound	RT	0.05	15.1	C	0.16	18.5	C
	Westbound	LT/TH/RT	0.09	32.7	D	0.70	92.2	F
Columbus Drive/ Tampa E. Boulevard	Northbound	LT	0.38	16.3	C	0.44	27.6	D
	Southbound	LT	0.29	19.3	C	0.15	13.5	B
	Eastbound	LT	*	**	F	*	**	F
	Eastbound	TH/RT	*	**	F	1.32	559.9	F
	Westbound	LT	*	**	F	4.06	1,833.0	F
	Westbound	TH	*	**	F	*	**	F
	Westbound	RT (4)	0.00	0.0	N/A	0.00	0.0	N/A
Overpass Road/ 21st Avenue	Northbound	LT	0.11	16.4	C	0.09	17.3	C
	Southbound	LT	0.17	16.6	C	0.07	13.6	B
	Eastbound	LT/TH/RT	0.58	106.4	F	2.27	686.8	F
	Westbound	LT/TH/RT	0.14	22.7	C	0.22	23.2	C
27th Avenue	Northbound	LT	0.01	15.0	B	0.00	0.0	N/A
	Southbound	LT	0.05	14.0	B	0.05	17.7	C
	Westbound	LT/RT	0.30	41.8	E	0.16	39.9	E
Oak Fair Boulevard	Southbound	LT	0.13	13.0	B	0.16	16.2	C
	Westbound	LT	0.56	79.4	F	1.04	173.7	F
	Westbound	RT	0.15	15.2	C	0.44	21.5	C
Elm Fair Boulevard	Northbound	LT	0.00	0.0	N/A	0.00	11.1	B
	Southbound	LT	0.31	14.4	B	0.33	23.7	C
	Westbound	LT	0.38	84.0	F	0.37	71.0	F
	Westbound	RT (4)	0.00	0.0	N/A	0.00	0.0	N/A

(1) Volume-to-Capacity Ratio

(2) Average Delay (seconds/vehicle)

(3) Level of Service

(4) Free-flow right-turn lane

* Theoretically, the capacity for this movement is equal to zero. Therefore, the v/c ratio is infinite.

** No estimate of delay is provided since the v/c ratio is infinite.

A significant number of cross street movements are operating at LOS F during one or both of the peak hours. In the a.m. peak hour, there are 14 cross street movements operating at LOS F and these include the following:

- Westbound left-turn and through movements at Old Hopewell Road
- Eastbound left-turn and through movements at Massaro Boulevard
- Eastbound left-turn, through and right-turn movements at Tampa E. Boulevard
- Westbound left-turn and through movements at Columbus Drive
- Eastbound left-turn, through and right-turn movements at 21st Avenue
- Westbound left-turn movement at Oak Fair Boulevard
- Westbound left-turn movement at Elm Fair Boulevard

In the p.m. peak hour, there are 20 cross street movements operating at LOS F and these include the following:

- Eastbound left-turn, through and right-turn movements at the Meadow Creek driveway
- Westbound left-turn and through movements at Old Hopewell Road
- Eastbound left-turn and through movements at Massaro Boulevard
- Westbound left-turn, through and right-turn movements at Stannum Street
- Eastbound left-turn, through and right-turn movements at Tampa E. Boulevard
- Westbound left-turn and through movements at Columbus Drive
- Eastbound left-turn, through and right-turn movements at 21st Avenue
- Westbound left-turn movement at Oak Fair Boulevard
- Westbound left-turn movement at Elm Fair Boulevard

Although LOS F vehicle delays were estimated for all of the cross street movements identified above, not all of these movements were operating overcapacity (i.e., with v/c ratios greater than 1.00). In the a.m. peak hour, seven movements were estimated to have v/c ratios greater than 1.00 and these included the following:

- Westbound left-turn and through movements at Old Hopewell Road
- Eastbound left-turn, through and right-turn movements at Tampa E. Boulevard
- Westbound left-turn and through movements at Columbus Drive

In the p.m. peak hour, nine movements were estimated to have v/c ratios greater than 1.00 and these included the following:

- Eastbound left-turn, through and right-turn movements at Tampa E. Boulevard
- Westbound left-turn and through movements at Columbus Drive
- Eastbound left-turn, through and right-turn movements at 21st Avenue
- Westbound left-turn movement at Oak Fair Boulevard

The existing conditions HCS unsignalized intersection analysis summary reports are provided in **Appendix F**.

Signalized intersection analyses were conducted for the SR 60, Sabal Industrial Boulevard, and SR 574 intersections using the 2010 HCS. Signal timing observations (i.e., individual phase times and total cycle lengths) were recorded during the same time periods that the peak hour turning movement counts were conducted and the observed phase times were averaged. Traffic signal timing data for these three intersections was also obtained from Hillsborough County. The average phase times that were previously calculated using the peak hour observations were compared to the minimum and maximum phase times obtained from Hillsborough County to verify that the average peak hour phase timings were within these ranges and therefore, were reasonable to use in the HCS analyses. Since the 2010 HCS does not allow the use of movement-specific PHFs with signalized intersections, an overall average PHF was calculated for each intersection and used in the analyses. The peak hour truck percentages that were calculated from the 2013 turning movement counts were also used in the signalized intersection analyses.

Table 2-14 summarizes the results of the signalized intersection analyses conducted for both the a.m. and p.m. peak hours. This table includes the v/c ratios, average vehicle delays and levels of service for each individual movement, as well as the average vehicle delay and level of service for the overall intersection. The SR 60 intersection is currently operating at LOS F overall during both the a.m. and p.m. peak hours. Several individual movements at this intersection are operating overcapacity and these include the following:

- Northbound US 301 through movement (both peak hours)
- Southbound US 301 left-turn and through movement (a.m. peak hour)
- Eastbound SR 60 through movement (p.m. peak hour)
- Westbound SR 60 through movement (both peak hours)

The Sabal Industrial Boulevard intersection is currently operating at LOS C or better overall during the a.m. and p.m. peak hours; however, the westbound approach movements are overcapacity during the p.m. peak hour. Similarly, the SR 574 intersection is currently operating at LOS D overall during the a.m. and p.m. peak hours; however, the northbound US 301 left-turn movement is overcapacity during the a.m. peak hour. The existing conditions HCS signalized intersection analysis summary reports are also provided in **Appendix F**.

Table 2-14: Existing Year (2013) Peak Hour Signalized Intersection Operations Summary

Approach	Movement	AM Peak Hour			PM Peak Hour		
		V/C (1)	Delay (2)	LOS (3)	V/C (1)	Delay (2)	LOS (3)
US 301 at SR 60							
Northbound US 301	Left	0.81	75.2	E	0.70	77.4	E
	Thru	1.11	118.2	F	1.06	115.2	F
	Right	0.11	30.8	C	0.32	47.1	D
	Approach	N/A	103.3	F	N/A	98.7	F
Southbound US 301	Left	1.27	218.3	F	0.73	65.3	E
	Thru	1.04	101.9	F	0.98	74.1	E
	Right	0.63	51.4	D	0.01	23.3	C
	Approach	N/A	119.9	F	N/A	71.0	E
Eastbound SR 60	Left	0.98	127.9	F	0.59	67.3	E
	Thru	0.95	67.9	E	1.06	96.7	F
	Right	0.22	5.1	A	0.33	5.6	A
	Approach	N/A	70.6	E	N/A	80.1	F
Westbound SR 60	Left	0.94	111.1	F	0.74	88.6	F
	Thru	1.06	96.2	F	1.20	160.8	F
	Right	0.55	21.5	C	0.14	14.4	B
	Approach	N/A	84.2	F	N/A	141.1	F
Overall Intersection		**N/A**	**93.5**	**F**	**N/A**	**95.0**	**F**
US 301 at Sabal Industrial Blvd.							
Northbound US 301	Left	0.06	15.9	B	0.01	14.0	B
	Thru	0.91	21.5	C	0.65	8.3	A
	Right	0.34	13.7	B	0.03	4.8	A
	Approach	N/A	20.3	C	N/A	8.3	A
Southbound US 301	Left	0.33	14.4	B	0.18	16.1	B
	Thru	0.72	8.3	A	0.66	8.6	A
	Right	0.02	3.9	A	0.01	4.8	A
	Approach	N/A	8.6	A	N/A	8.8	A
Eastbound Sabal Industrial Blvd.	Left	0.03	33.5	C	0.33	35.7	D
	Thru	0.02	30.9	C	0.13	25.5	C
	Right	0.02	30.9	C	0.13	25.5	C
	Approach	N/A	32.5	C	N/A	30.7	C
Westbound Sabal Industrial Blvd.	Left	0.18	32.2	C	1.03	93.2	F
	Thru	0.18	32.2	C	1.03	93.2	F
	Right	0.42	33.2	C	1.18	144.0	F
	Approach	N/A	32.8	C	N/A	117.8	F
Overall Intersection		**N/A**	**14.8**	**B**	**N/A**	**26.6**	**C**

Table 2-14: Existing Year (2013) Peak Hour Signalized Intersection Operations Summary (Continued)

Approach	Movement	AM Peak Hour			PM Peak Hour		
		V/C [1]	Delay [2]	LOS [3]	V/C [1]	Delay [2]	LOS [3]
US 301 at SR 574							
Northbound US 301	Left	1.03	100.2	F	0.68	54.0	D
	Thru	0.80	56.8	E	0.63	38.4	D
	Right	0.09	9.0	A	0.23	10.1	B
	Approach	N/A	69.9	E	N/A	40.2	D
Southbound US 301	Left	0.62	59.4	E	0.66	61.6	E
	Thru	0.78	52.2	D	0.62	44.5	D
	Right	0.06	29.1	C	0.03	28.2	C
	Approach	N/A	53.5	D	N/A	48.6	D
Eastbound SR 574	Left	0.42	69.3	E	0.34	61.8	E
	Thru	0.71	50.5	D	0.87	54.9	D
	Right	0.39	4.5	A	0.32	6.0	A
	Approach	N/A	43.5	D	N/A	47.8	D
Westbound SR 574	Left	0.60	74.5	E	0.64	72.1	E
	Thru	0.61	49.3	D	0.60	48.3	D
	Right	0.19	22.6	C	0.30	31.1	C
	Approach	N/A	49.1	D	N/A	48.1	D
Overall Intersection		**N/A**	**54.4**	**D**	**N/A**	**45.6**	**D**

[1] Volume-to-Capacity Ratio

[2] Average Vehicle Delay (seconds/vehicle)

[3] Level of Service

SECTION 3.0 FUTURE YEAR TRAFFIC VOLUMES

The methodology that was used to obtain the future year AADT volumes for the US 301 PD&E Study was initially developed and documented in the US 301 Traffic Forecasting Methodology Statement (July 2013). This Traffic Forecasting Methodology Statement was reviewed and approved by FDOT on July 30, 2013. Each of the basic steps in the methodology is discussed in the following sections along with the pertinent results.

3.1 2006 Tampa Bay Regional Planning Model (TBRPM) Modifications

The first step in the travel demand forecasting methodology involved a review of the validation accuracy of the 2006 Base Year Tampa Bay Regional Planning Model (TBRPM), Version 7.1. The 2006 AADT volumes obtained from the TBRPM were compared to the actual 2006 AADT volumes for those locations on the US 301 mainline and US 301 cross streets where actual 2006 AADT volumes were available. The 2006 Peak Season Weekday Average Daily Traffic (PSWADT) volumes obtained from the model were converted to AADT volumes by multiplying the PSWADT volumes by the Model Output Conversion Factor (MOCF) of 0.94. The 2006 model AADT volumes, counts (i.e., actual volumes), and volume-to-count (V/C) ratios are summarized in **Table 3-1**.

Table 3-1: 2006 Base Year Model Volume-to-Count Comparison

Location	2006 Count (Actual AADT Volume)	2006 Model AADT Volume	V/C Ratio [(1)]
US 301 South of SR 60	40,000	29,000	0.73
US 301 North of SR 60	43,200	38,500	0.89
SR 60 East of US 301	48,900	35,000	0.72
SR 60 West of US 301	41,800	34,900	0.83
US 301 South of SR 574	39,500	28,900	0.73
SR 574 East of US 301	35,900	38,100	1.06
SR 574 West of US 301	39,000	48,000	1.23
US 301 South of I-4	35,300	26,000	0.74

(1) Model Volume-to-Count Ratio

A review of this table indicated that only one of the eight V/C ratios was within the acceptable range established for travel demand model validation purposes (i.e., 0.90 to 1.10). Given these results, there existed a need to review the base year model highway network coding. The items that were reviewed included the Facility Types, Area Types, and Traffic Analysis Zone (TAZ) centroid connectors. Based on the results of this review, the following Facility Type and Area Type coding modifications were made:

- The Facility Type (FT) coding for the portion of US 301 from SR 60 to I-4 was revised from FT 23 (Class Ia signalized divided arterial) to FT 21 (55 mph unsignalized divided arterial) while the Facility Type coding for the portion of US 301 from Palm River Road to SR 60 was revised from FT 24 (Class Ib signalized divided arterial) to FT 23. These revised Facility Types reflect higher speeds and higher capacities than those associated with the original Facility Types and are more representative of the current travel speeds and operational characteristics/signalized intersection spacing within these portions of US 301.

- The Area Type (AT) coding for the portions of US 301 from Tampa E. Boulevard to SR 574, SR 574 from Sabal Park Drive/Riga Boulevard to I-75, and Falkenburg Road from Broadway Avenue to SR 574 was revised from AT 31 (residential area) to AT 42 (other outlying business district). The revised Area Type better reflects the concentration of businesses located along these areas including Sabal Industrial Park, Center Point Business Park, River Gate, and Tampa East Industrial Park.

There are nine TAZs located immediately adjacent to the US 301 study corridor and these include TAZ Nos. 513, 514, 523, 524, 525, 587, 598, 608, and 609. The locations of these TAZ centroids and their associated connectors were reviewed to verify the locations of land use centers within the TAZs and the primary access points to the roadway network. Although the primary focus was on these nine TAZs, the review also included several other TAZs that were adjacent to these. Based on this review, a series of modifications were made to improve the "traffic loading" (i.e., the assignment of traffic volumes onto the highway network). The types of modifications that were made consisted of the following:

- Relocation of TAZ centroids (TAZ Nos. 513, 523, 525, 610, 628, and 675)

- Relocation of TAZ centroid connectors (TAZ Nos. 526, 598, and 609)

- Addition of TAZ centroid connectors (TAZ Nos. 523, 524, 525, 597, and 609)

- Deletion of TAZ centroid connectors (TAZ No. 523)

Three of the centroid connector additions (as well as the one deletion) involved connections to US 301. Centroid connections to US 301 were added for both TAZ Nos. 524 and 525 to represent Sabal Industrial Boulevard and for TAZ No. 597 to represent Massaro Boulevard. The original centroid connection to US 301 associated with TAZ No. 523 was deleted and replaced with a connection to Broadway Avenue (in the vicinity of N. 76th Street).

The revised version of the 2006 base year TBRPM was then run and the revised 2006 PSWADT volumes obtained from the model were once again converted to AADT volumes and compared to the actual AADT volumes. The results of this comparison are summarized in **Table 3-2**. The revised 2006 model AADT volumes at four of the eight study area locations are within ± 10.0% of the actual 2006 AADT volumes (i.e., the V/C ratios are between 0.90 and 1.10). The V/C ratios associated with the other four study area locations are still either less than 0.90 or greater than 1.10; however, a comparison between **Table 3-1** and **Table 3-2** indicates that all four of these ratios are closer to the acceptable range with the revised 2006 TBRPM. The revisions to the 2006 TBRPM (and the improved validation accuracy) were discussed with FDOT staff during a meeting held on October 1, 2013 and were approved by FDOT on November 15, 2013.

Table 3-2: Revised 2006 Base Year Model Volume-to-Count Comparison

Location	2006 Count (Actual AADT Volume)	2006 Revised Model AADT Volume	V/C Ratio (1)
US 301 South of SR 60	40,000	37,000	0.93
US 301 North of SR 60	43,200	47,700	1.10
SR 60 East of US 301	48,900	39,000	0.80
SR 60 West of US 301	41,800	37,400	0.89
US 301 South of SR 574	39,500	33,600	0.85
SR 574 East of US 301	35,900	37,900	1.06
SR 574 West of US 301	39,000	44,400	1.14
US 301 South of I-4	35,300	32,700	0.93

(1) Model Volume-to-Count Ratio

3.2 2035 Tampa Bay Regional Planning Model (TBRPM) Modifications

Upon completion of the revised base year model sub-area validation accuracy assessment, the highway network coding revisions made to the 2006 TBRPM were incorporated into the 2035 Cost-Affordable TBRPM. Several additional modifications to the 2035 Cost Affordable TBRPM were also necessary and a majority of these additional modifications were made to ensure that the 2035 model matched the 2006 model. These “consistency” modifications included the following:

- The Area Type coding for the portion of SR 60 from the southbound I-75 ramps to the northbound I-75 ramps, as well as all of the I-75/SR 60 interchange ramps, was revised from AT 31 to AT 42.

- The number of lanes on the portion of US 301 from Delaney Creek Boulevard to the Lee Roy Selmon Crosstown Expressway was revised from four lanes to six lanes.

- The number of lanes on the portion of the southbound I-75 roadway link between Woodberry Road and SR 60 was revised from six lanes to eight lanes.

Two Facility Type coding modifications were made to the 2035 Cost-Affordable TBRPM and these consisted of the following:

- The Facility Type coding for the portion of US 301 from 21st Avenue/Overpass Road to SR 574 was revised from FT 22 (45 miles/hour unsignalized divided arterial) to FT 23.

- The Facility Type coding for the portion of SR 60 from S. 78th Street to US 301 was revised from FT 24 to FT 23.

Two additional centroid connector modifications associated with TAZ No. 598 were also made to the 2035 TBRPM. The centroid connection to Falkenburg Road was relocated from the Falkenburg Road/Columbus Drive intersection to a location in the general vicinity of Fisher Drive and the connection to Broadway Avenue was eliminated. It should be noted that Columbus Drive is included in the 2035 TBRPM as a four-lane divided roadway and extends from US 301 to Falkenburg Road. Since this roadway did not exist in the year 2006 it is not included in the 2006 TBRPM.

It should also be noted that the portion of US 301 from SR 60 to I-4 is coded as a four-lane roadway in the 2035 Cost-Affordable TBRPM. This is the same as the existing laneage and reflects the fact that although the widening of this portion of US 301 is currently included in the Hillsborough County Metropolitan Planning Organization's (MPO's) 2035 Needs Plan it is ***not*** included in the MPO's Cost-Affordable Long Range Transportation Plan (LRTP).

3.3 Development of Design Year (2040) and Opening Year (2020) AADT Volumes

After the network coding modifications were made, the revised 2035 TBRPM was run and the 2035 PSWADT volumes were converted to 2035 AADT volumes using an MOCF of 0.94. Since the revised 2035 TBRPM still maintains four lanes on the portion of US 301 between SR 60 and I-4, the AADT volumes obtained from this model run represent the 2035 No-Build Alternative volumes. **Table 3-3** provides a comparison between the original 2035 Cost-Affordable TBRPM AADT volumes and the revised 2035 Cost-Affordable TBRPM AADT volumes for the nine study corridor locations where 2006 AADT volumes were available.

A review of **Table 3-3** indicated that the revised 2035 AADT volumes are not significantly different than the original 2035 AADT volumes at most of these locations. The largest differences occur on US 301 just south of SR 60 and on SR 60 both east and west of US 301. The revised 2035 AADT volumes at these three locations are between 3,100 vpd and 4,700 vpd higher than the original 2035 AADT volumes and represent increases between 6.1% and 14.7%.

Historic growth trend analyses were also conducted using the historical AADT volumes obtained from the three FDOT count stations located on US 301 and the FDOT's TRENDS software. The AADT volumes for the 16-year period from 1997 to 2012 were used along with the 2013 AADT volumes derived from the PD&E traffic count program. Copies of these growth trend analyses are provided in **Appendix G**. **Table 3-4** provides a comparison of the 2035 AADT volumes obtained from the historic growth trend analysis and the 2035 AADT volumes derived from the revised TBRPM. These two independent AADT volume forecasts are comparable at two of the three locations; however, a significant difference between these two forecasts exists on US 301 just north of SR 60 (i.e., approximately 11,000 vpd difference). It should be noted that the R^2 values associated with all three growth trend analyses are extremely low. This statistic measures how well the linear growth trend equation (i.e., the straight line) "fits" the data points. A review of the graphs of the growth trend analyses indicated that many of the data points (i.e., the historic AADT volumes) are either higher or lower than the volumes that were estimated from the growth trend equations.

Table 3-3: 2035 Cost-Affordable TBRPM AADT Volume Comparison

Location	2035 Original CA Model	2035 Revised CA Model	Difference
US 301 South of SR 60	31,900	36,600	4,700
US 301 North of SR 60	52,200	52,600	400
SR 60 East of US 301	50,500	53,600	3,100
SR 60 West of US 301	44,000	48,700	4,700
US 301 South of SR 574	42,900	42,400	-500
US 301 North of SR 574	40,300	39,400	-900
SR 574 East of US 301	51,100	51,000	-100
SR 574 West of US 301	60,000	60,700	+700
US 301 South of I-4	42,900	42,300	-600

Table 3-4: 2035 AADT Volume Comparison –
Revised TBRPM vs. Historic Growth Trend Analysis

Location	2013 AADT	2035 AADT Revised CA TBRPM	Average Yearly Growth Rate	2035 AADT Growth Trend Analysis	Average Yearly Growth Rate
US 301 0.16 miles north of SR 60	35,000	52,600	2.29%	41,700	0.87%
US 301 0.06 miles south of Sabal Industrial Blvd.	33,800	42,100	1.12%	39,900	0.82%
US 301 0.09 miles north of Elm Fair Blvd.	32,500	42,300	1.37%	43,900	1.59%
Average			**1.59%**		**1.09%**

A review of the 2035 centroid connector AADT volumes for the No-Build Alternative model indicated that some manual redistributions of these volumes were also necessary to obtain more realistic AADT volumes for several of the US 301 cross streets that are included in the TBRPM highway network (i.e., Tampa E. Boulevard, 21st Avenue and Overpass Road) and several roadways that are represented in the TBRPM as centroid connectors (i.e., Massaro Boulevard and Sabal Industrial Boulevard). Once these manual redistributions were completed, the resulting 2035 AADT volumes within the US 301 study corridor were adjusted using the methodology described in the National Cooperative Highway Research Program's (NCHRP) Report No. 255. These adjustments were made to the volumes to compensate for the levels of underestimation and overestimation that were present in the revised 2006 TBRPM for US 301 north of SR 60 and south of SR 574, respectively. This NCHRP methodology was also used to adjust the AADT volumes on SR 60 both east and west of US 301 and on SR 574 to the west of US 301. The NCHRP methodology calculations are contained in **Appendix H**.

There are several study corridor intersections whose cross streets are not included in the TBRPM (either as a local road or as a centroid connector). These cross streets are as follows:

- Old Hopewell Road
- The Meadow Creek driveway
- Stannum Street
- 27th Avenue
- Elm Fair Drive

The 2035 AADT volumes for Old Hopewell Road, the Meadow Creek driveway, Stannum Street and 27th Avenue were derived by applying a 1.55% per year growth rate to the 2013 AADT volumes. This growth rate was approximately equal to the average growth rate calculated for the portion of the US 301 mainline from just south of SR 60 to 27th Avenue. Although the west leg of Sabal Industrial Boulevard is included in the TBRPM as a centroid connector, the 2035 model AADT volume associated with this centroid connector was less than the 2013 AADT volume. Consequently, the 1.55% per year growth rate was also applied to the 2013 AADT volume on the west leg of Sabal Industrial Boulevard to derive the 2035 AADT volume. The 2035 AADT volumes for Oak Fair Boulevard and Elm Fair Boulevard were derived by proportioning the Oak Fair Boulevard centroid connector volume. The 2013 AADT volumes on Oak Fair Boulevard and Elm Fair Boulevard were divided by the combined total on both roadways to obtain the existing distribution percentages. The 2035 Oak Fair Boulevard centroid connector volume was then multiplied by these percentages to obtain the 2035 AADT volumes for both roadways.

The design year established for the US 301 PD&E Study is 2040, therefore, the design year AADT volumes were derived by extrapolation using the 2013 and 2035 AADT volumes. An opening year of 2020 was also established for the PD&E study and the opening year AADT volumes were derived through interpolation using the 2013 and 2035 AADT volumes.

A 2035 Build Alternative model was also created by revising the laneage coded on US 301 from four lanes to six lanes. The 2035 AADT volumes derived from this Build Alternative model run are provided in **Table 3-5** along with the 2035 AADT volumes derived from the revised No-Build Alternative model run and the 2013 AADT volumes. The differences between the 2035 No-Build and Build Alternative AADT volumes are also provided in **Table 3-5**.

This table indicates that the additional two lanes of capacity provided on US 301 results in significant increases in the 2035 model AADT volumes for the study corridor. These increases are in the range of 12,300 vpd (north of SR 574) to 19,700 (north of SR 60). These preliminary 2035 model AADT volumes were presented to FDOT at a meeting held on October 1, 2013. Subsequent discussions with FDOT staff revealed that the TBRPM has historically had difficulty producing “reasonable” future year traffic forecasts in the area bordered by US 301 (to the west), I-75 (to the east), SR 60 (to the south) and I-4 (to the north).This difficulty is due in part, to the geographical orientation of I-4 between US 301 and I-75, as well as the limited capacity provided on I-75 between SR 60 and SR 574 (i.e., six lanes) and on a majority of the I-75 on-/off-ramps at the I-75/I-4 and I-75/SR 574 interchanges (i.e., one-lane ramps). Based on direction from FDOT staff, the 2035 Build Alternative model AADT volumes within the US 301 study corridor were reduced by 7,000 vpd. This reduction was also applied to the 2035 AADT volume on SR 60 to the east of US 301. The same redistribution of centroid connector volumes that was conducted for the No-Build Alternative was also conducted for the Build Alternative and the resulting 2035 AADT volumes were subsequently adjusted using the NCHRP Report No. 255 methodology. The 2020 and 2040 Build Alternative AADT volumes were then derived through the use of interpolation and extrapolation, respectively.

Table 3-6 summarizes the 2020 and 2040 No-Build and Build Alternative AADT volumes for the US 301 mainline segments as well as the cross streets. The 2020 and 2040 AADT volumes for the No-Build Alternative are also graphically illustrated in **Figure 3-1** while the 2020 and 2040 AADT volumes for the Build Alternative are illustrated in **Figure 3-2**.

3.4 Development of Design Year (2040) and Opening Year (2020) Peak Hour Volumes

The 2040 AADT volumes were used along with a K-factor of 9.0%, a D-factor of 57.0% and the existing peak hour turning movement percentages to derive preliminary estimates of the 2040 a.m. and p.m. peak hour intersection volumes for the No-Build and Build Alternatives. The intersection departure volumes on the US 301 mainline were compared to the intersection approach volumes for adjacent intersections and the differences in these volumes were calculated. Manual adjustments were subsequently made to individual movement volumes to equalize the departure and approach volumes for each of the mainline roadway segments except the segment between Columbus Drive/Tampa E. Boulevard and 21st Avenue/Overpass Road. The 2020 peak hour volumes were derived by interpolating between the 2013 and 2040 peak hour volumes. The 2020 No-Build Alternative a.m. and p.m. peak hour volumes are depicted in **Figure 3-3** and **Figure 3-4** respectively; while the 2040 No-Build Alternative a.m. and p.m. peak hour volumes are depicted in **Figure 3-5** and **Figure 3-6**, respectively.

Table 3-5: 2035 TBRPM AADT Volume Comparison – Four-Lane US 301 vs. Six-Lane US 301

Location	2013 AADT	2035 AADT Revised TBRPM (4-Lane US 301)	2035 AADT Revised TBRPM (6-Lane US 301)	Difference
US 301 South of SR 60	31,900	36,600	39,300	2,700
US 301 North of SR 60	35,000	52,600	72,300	19,700
SR 60 East of US 301	39,600	53,600	60,800	7,200
SR 60 West of US 301	36,700	48,700	47,700	-1,000
US 301 South of Columbus Dr./ Tampa E. Blvd.	36,000	52,600	68,100	15,500
US 301 North of Columbus Dr./ Tampa E. Blvd.	32,500	41,300	58,100	16,800
US 301 South of SR 574	33,800	42,400	59,400	17,000
US 301 North of SR 574	29,800	39,400	51,700	12,300
SR 574 East of US 301	28,900	51,000	48,700	-2,300
SR 574 West of US 301	31,400	60,700	63,200	2,500
US 301 South of I-4	32,500	42,300	54,900	12,600

Maximum LOS D volume for a four-lane divided Class I signalized arterial in an urbanized area is 39,800 vpd.
Maximum LOS D volume for a six-lane divided Class I signalized arterial in an urbanized area is 59,900 vpd.

Table 3-6: Opening Year (2020) and Design Year (2040) AADT Volumes

Roadway	From	To	2013 AADT	No-Build Alternative (4-lane US 301)					Build Alternative (6-lane US 301)				
				2035 AADT(1)	2035 AADT(2)	2035 AADT(3)	2020 AADT	2040 AADT	2035 AADT(1)	2035 AADT(2)	2035 AADT(3)	2020 AADT	2040 AADT
US 301	South of SR 60	SR 60	31,900	36,615	36,262	40,200	34,541	42,086	39,272	38,893	45,936	36,366	49,126
	SR 60	Old Hopewell Rd./Meadow Creek Entrance	35,000	52,625	51,263	*46,603*	38,692	49,240	65,296	63,606	*58,365*	42,434	63,675
	Old Hopewell Rd./Meadow Creek Entrance	Stannum St./Massaro Blvd.	36,200	52,625	51,263	*46,603*	39,510	48,967	65,296	63,606	*58,365*	43,253	63,403
	Stannum St./Massaro Blvd.	Columbus Dr./Tampa E Blvd.	36,000	48,817	51,063	46,467	39,331	48,846	61,115	63,927	58,813	43,259	63,997
	Columbus Dr./Tampa E Blvd.	Overpass Rd./21st Ave.	32,500	41,315	40,519	47,002	37,114	50,298	51,108	50,123	57,141	40,340	62,741
	Overpass Rd./21st Ave.	Sabal Industrial Blvd.	33,800	42,097	41,291	47,898	38,286	51,102	52,389	51,386	58,580	41,685	64,212
	Sabal Industrial Blvd.	27th Ave.	33,700	42,429	41,633	*48,215*	38,318	51,514	52,375	51,392	*58,826*	41,695	64,536
	27th Ave.	SR 574	33,750	42,429	41,633	*48,215*	38,353	51,503	52,375	51,392	*58,826*	41,729	64,525
	SR 574	Oak Fair Blvd.	29,800	39,436	39,230	45,507	34,798	49,077	44,720	44,486	50,714	36,455	55,468
	Oak Fair Blvd.	Elm Fair Blvd.	29,750	40,402	40,196	46,627	35,120	50,463	45,836	45,602	51,987	36,825	57,040
	Elm Fair Blvd.	EB I-4 Ramps	32,500	42,300	42,094	48,829	37,696	52,540	47,873	47,640	54,309	39,439	59,266
SR 60	East of US 301		39,600	53,554	53,022	64,723	47,594	70,433	53,767	53,233	64,961	47,669	70,725
	West of US 301		36,700	48,713	48,236	53,321	41,989	57,099	47,744	47,276	52,304	41,665	55,850
Old Hopewell Rd.	East of US 301		1,900	N/A	2,548	2,548	2,106	2,695	N/A	2,548	2,548	2,106	2,695
Meadow Creek Entrance	West of US 301		320	N/A	429	429	355	454	N/A	429	429	355	454
Stannum St.	East of US 301		1,000	N/A	1,341	1,341	1,109	1,419	N/A	1,341	1,341	1,109	1,419
Massaro Blvd.	West of US 301		1,800	10,494	5,082	5,082	2,844	5,828	10,272	4,974	4,974	2,810	5,696
Columbus Dr.	East of US 301		1,900	25,545	25,545	25,545	9,423	30,919	27,962	27,962	27,962	10,192	33,885
Tampa E Blvd.	West of US 301		4,600	12,327	16,169	16,169	8,281	18,798	12,439	16,316	16,316	8,328	18,979
Overpass Rd.	East of US 301		1,400	1,983	5,715	5,715	2,773	6,696	1,762	5,078	5,078	2,570	5,914
21st Ave.	West of US 301		1,600	6,825	5,827	5,827	2,945	6,788	7,591	6,481	6,481	3,153	7,590
Sabal Industrial Blvd.	East of US 301		4,000	18,909	10,615	10,615	6,105	12,118	19,335	10,854	10,854	6,181	12,412
	West of US 301		690	515	925	925	765	978	103	925	925	765	978
27th Ave.	East of US 301		380	N/A	510	510	421	540	N/A	510	510	421	540
SR 574	East of US 301		28,900	50,999	55,290	55,290	37,297	61,288	48,656	52,750	52,750	36,489	58,170
	West of US 301		31,400	60,680	60,361	53,958	38,578	59,085	63,207	62,875	56,319	39,329	61,982
Oak Fair Blvd.	East of US 301		2,100	16,058	6,485	6,485	3,495	7,482	16,049	6,476	6,476	3,492	7,470
Elm Fair Blvd.	East of US 301		3,100	N/A	9,573	9,573	5,160	11,044	N/A	9,568	9,568	5,158	11,038
I-4 EB On-Ramp	East of US 301		3,400	5,598	5,598	5,598	4,099	6,098	7,877	7,877	7,877	4,825	8,895
I-4 EB Off-Ramp	West of US 301		6,600	8,743	8,743	8,743	7,282	9,230	13,118	13,118	13,118	8,674	14,599

(1) 2035 AADT volume from revised TBRPM
(2) 2035 AADT volume based on manual redistribution of centroid connector volumes
(3) Final 2035 AADT volume (includes NCHRP Report No. 255 adjustments)
XX = 2035 AADT volume provided by FDOT
XX = 2035 Model AADT volume proportioned between Oak Fair & Elm Fair based on existing 2013 volumes
XX = 2035 AADT volume adjusted using NCHRP Report No. 255
XX = 2035 Model AADT volume adjusted for overestimation*
2035 AADT volume derived by applying a 1.55% per year growth rate to the 2013 AADT volume

***Manual adjustments were made to account for the overestimation of induced travel within the modeled corridor. The TBRPM has historically overestimated this area due to the Interstate 4 and Interstate 75 interchange. This was estimated to be 7,000 vehicles/day (AADT) at the project's southern boundary.**

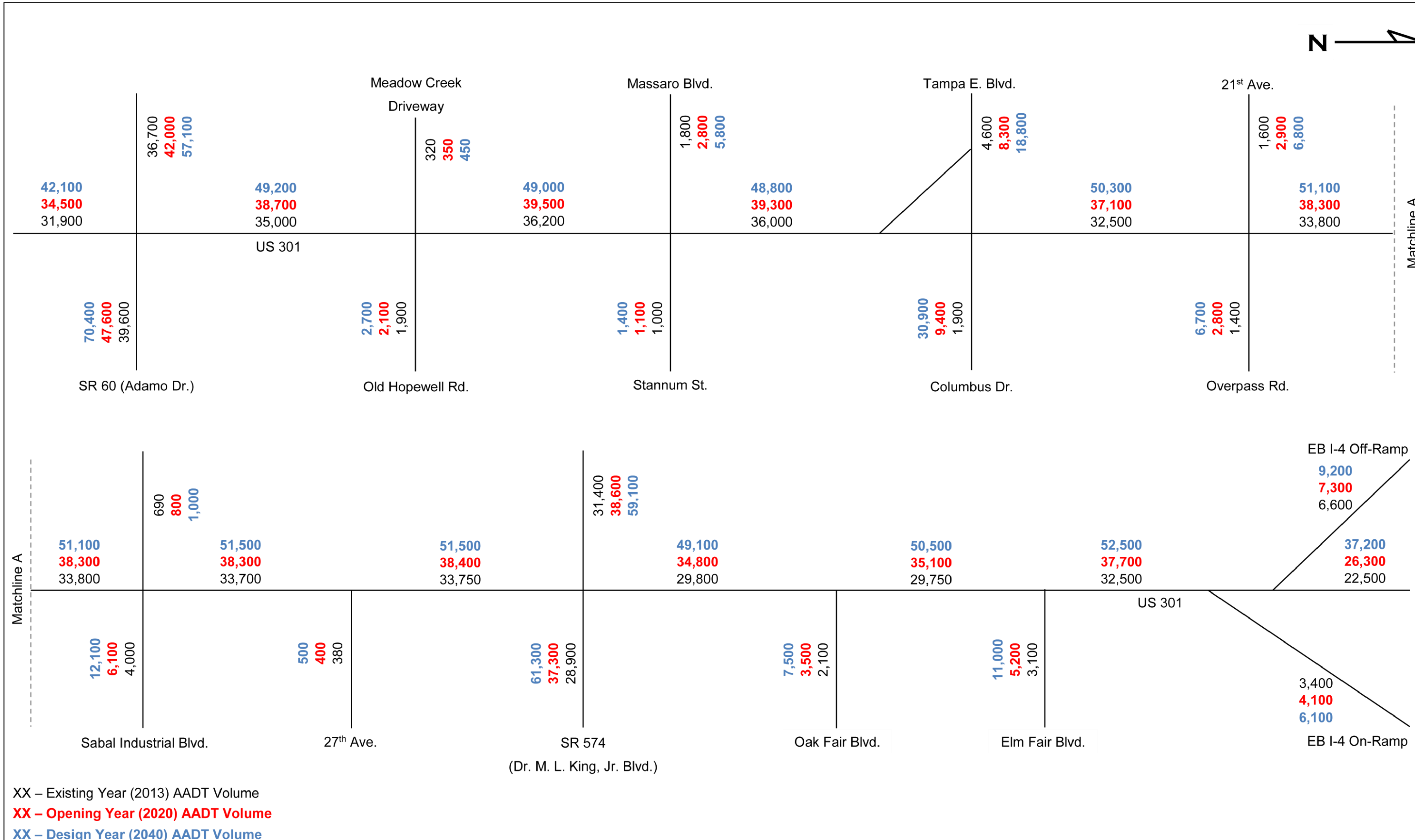

Figure 3-1: Existing and Future Year AADT Volumes – No-Build Alternative

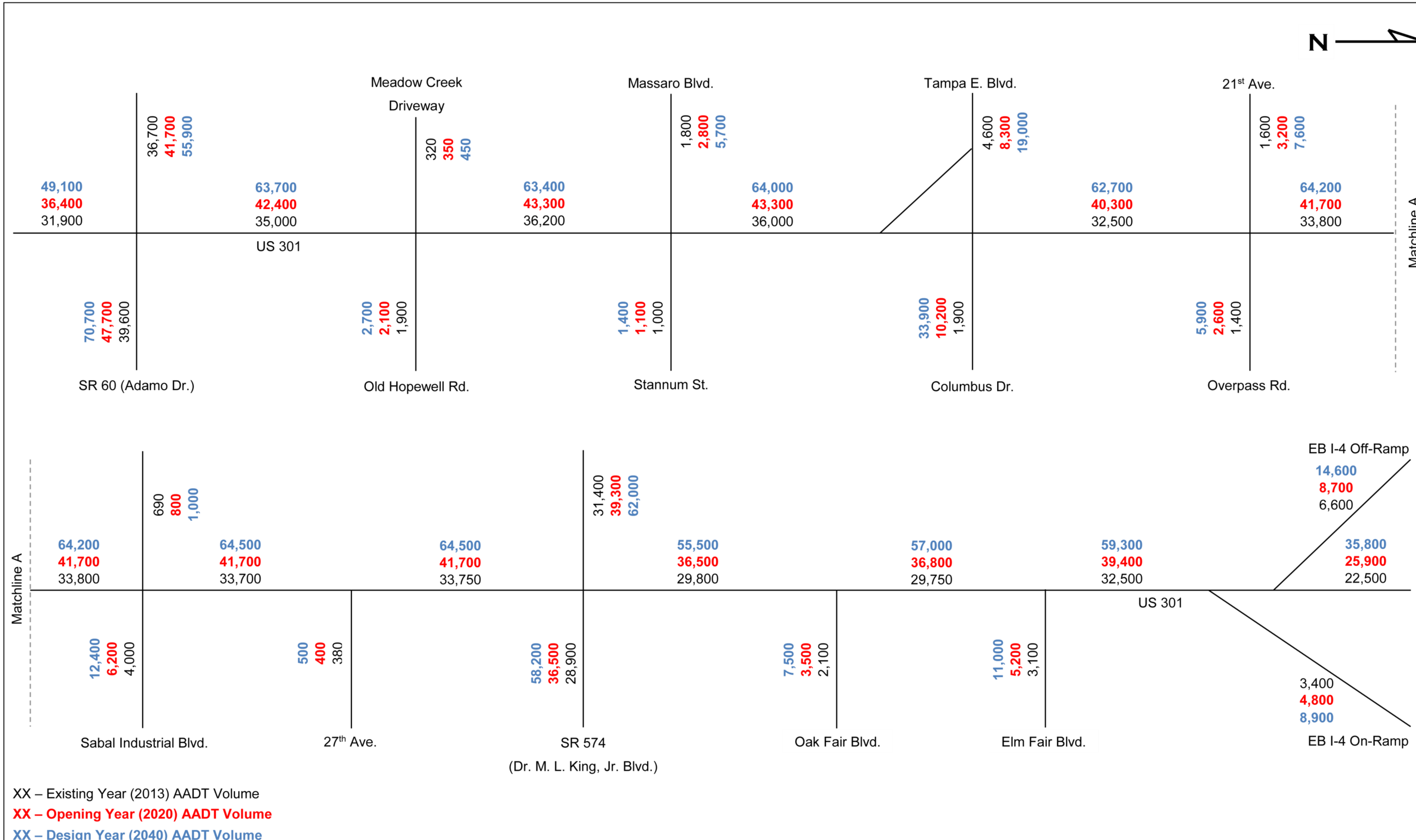

Figure 3-2: Existing and Future Year AADT Volumes – Build Alternative

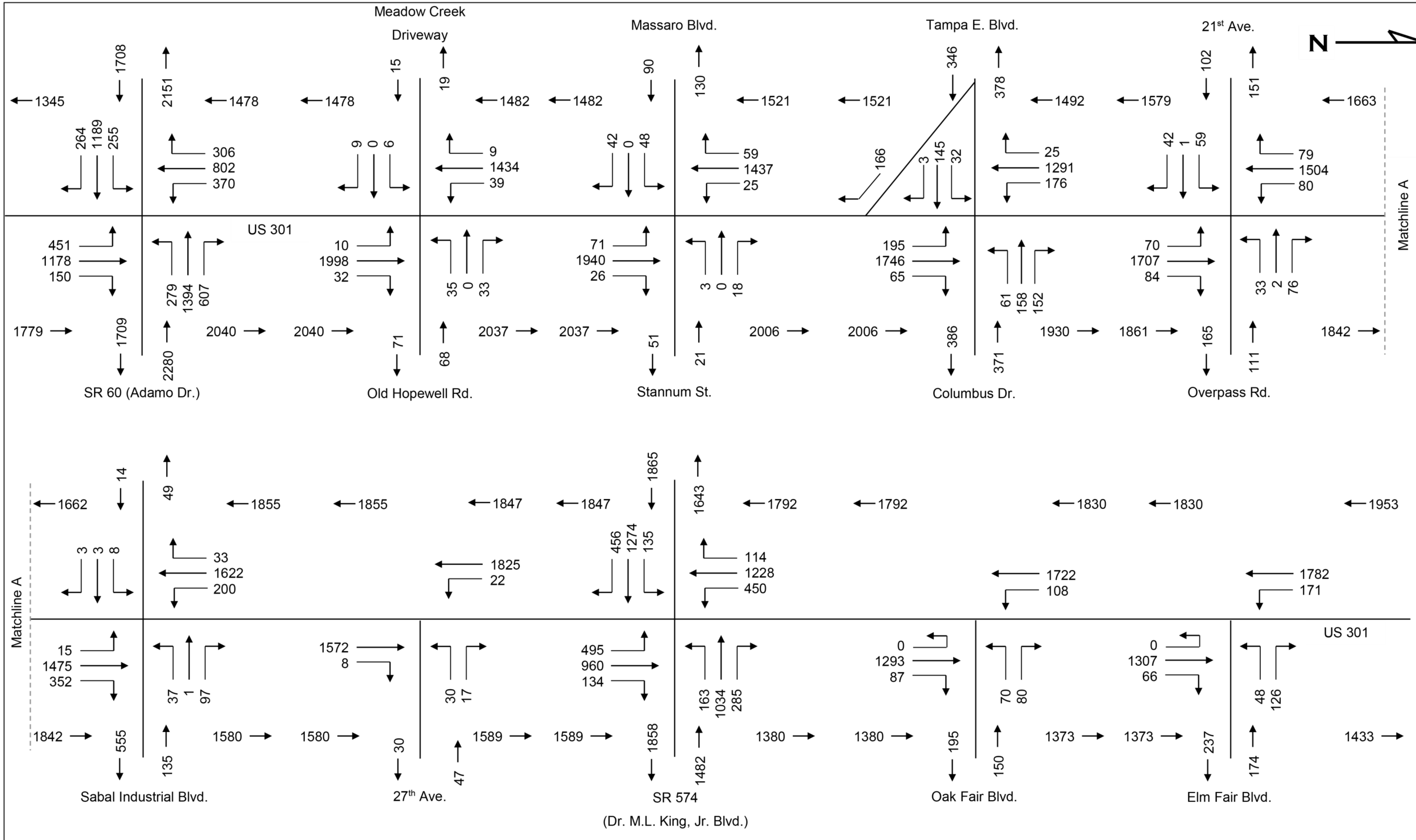

Figure 3-3: Opening Year (2020) AM Peak Hour Volumes – No-Build Alternative

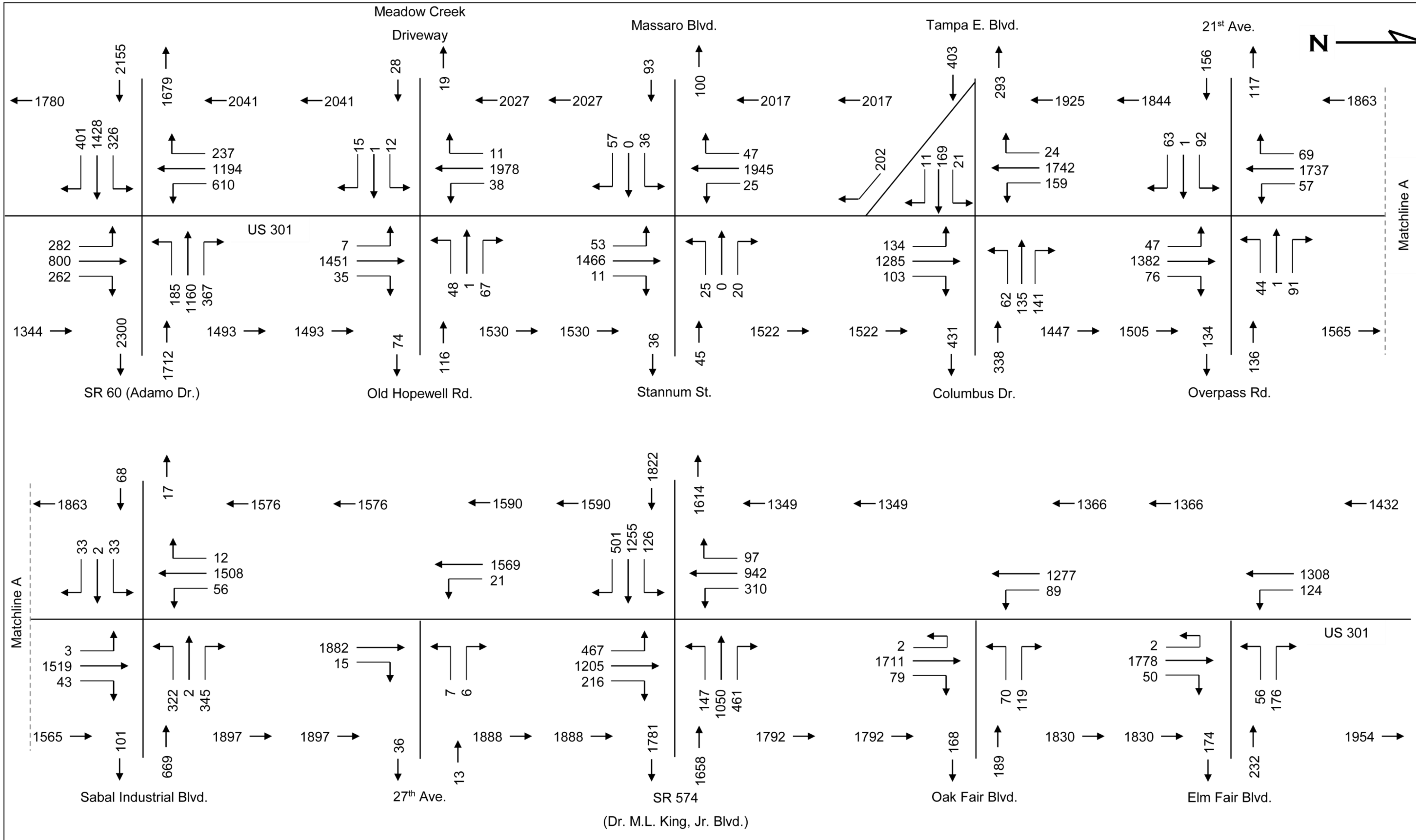

Figure 3-4: Opening Year (2020) PM Peak Hour Volumes – No-Build Alternative

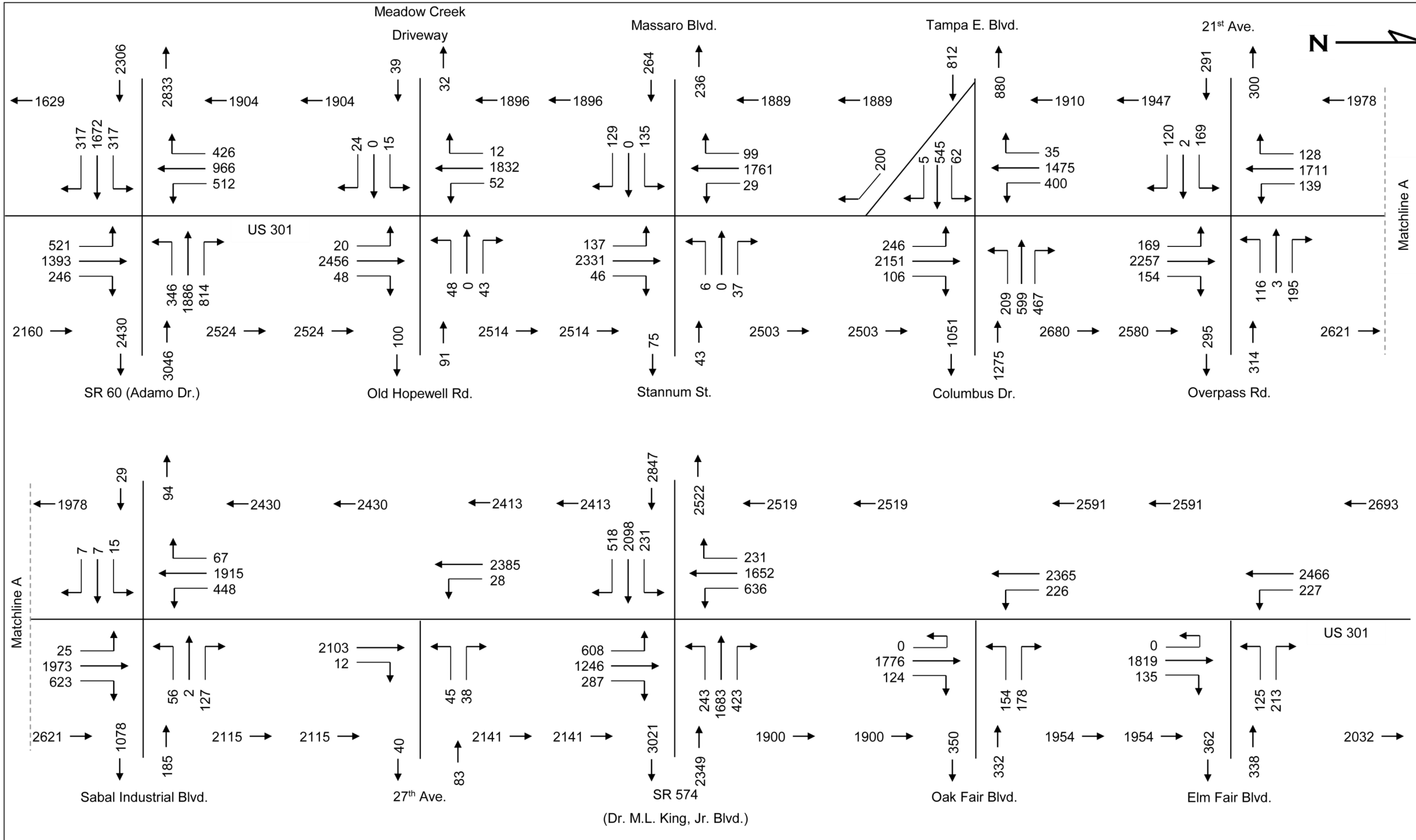

Figure 3-5: Design Year (2040) AM Peak Hour Volumes – No-Build Alternative

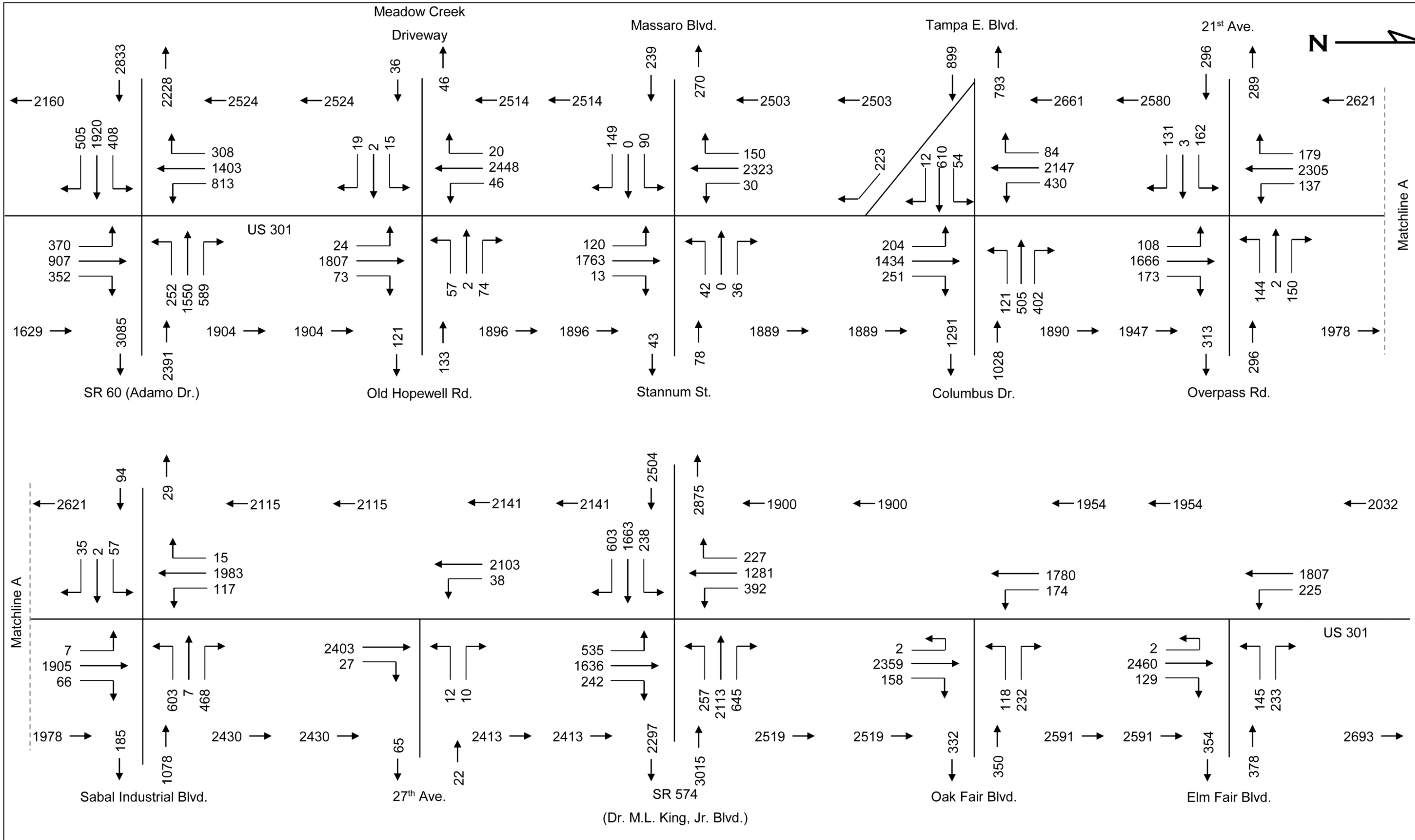

Figure 3-6: Design Year (2040) PM Peak Hour Volumes – No-Build Alternative

A preliminary access management plan was developed for the US 301 study corridor as a part of the PD&E study. The type of median opening to be provided at each of the study corridor intersections is as follows:

- SR 60 – Full median opening
- Old Hopewell Road – Full median opening
- Stannum Street/Massaro Boulevard – Dual directional median opening
- Columbus Drive/Tampa E. Boulevard – Full median opening
- Overpass Road/21st Avenue – Dual directional median opening
- Sabal Industrial Boulevard – Full median opening
- 27th Avenue – Southbound directional median opening
- SR 574 – Full median opening
- Oak Fair Boulevard – Full median opening
- Elm Fair Boulevard – No median opening (right-in/right-out only)

Some of the preliminary 2020 and 2040 peak hour volumes that were developed for the Build Alternative were manually redistributed to reflect the median openings associated with the access management plan. The 2020 a.m. and p.m. peak hour volumes that resulted from this process are depicted in **Figure 3-7** and **Figure 3-8**, respectively; while the 2040 a.m. and p.m. peak hour volumes are depicted in **Figure 3-9** and **Figure 3-10**, respectively.

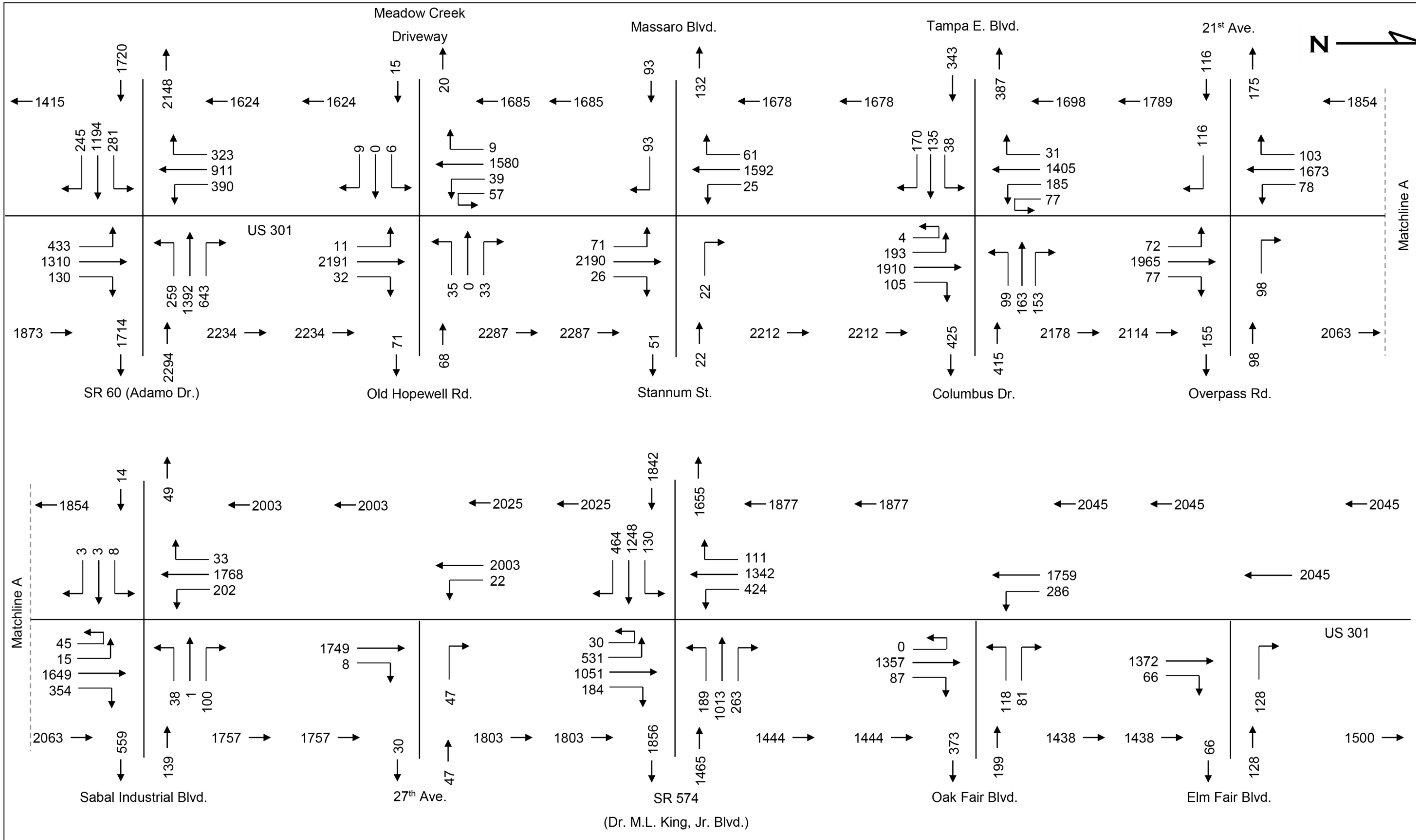

Figure 3-7: Opening Year (2020) AM Peak Hour Volumes – Build Alternative with Preliminary Access Management Plan Redistribution

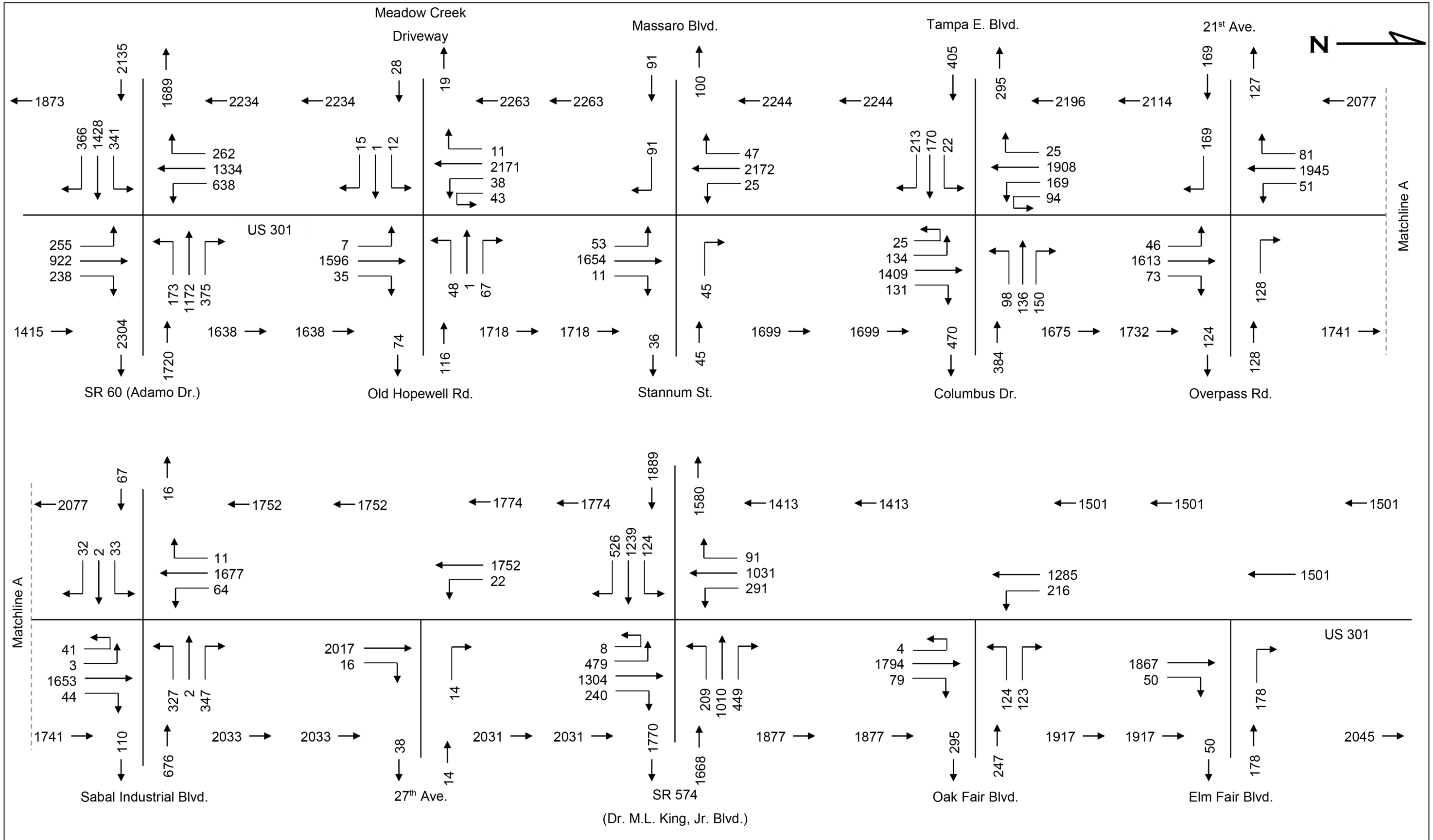

Figure 3-8: Opening Year (2020) PM Peak Hour Volumes – Build Alternative with Preliminary Access Management Plan Redistribution

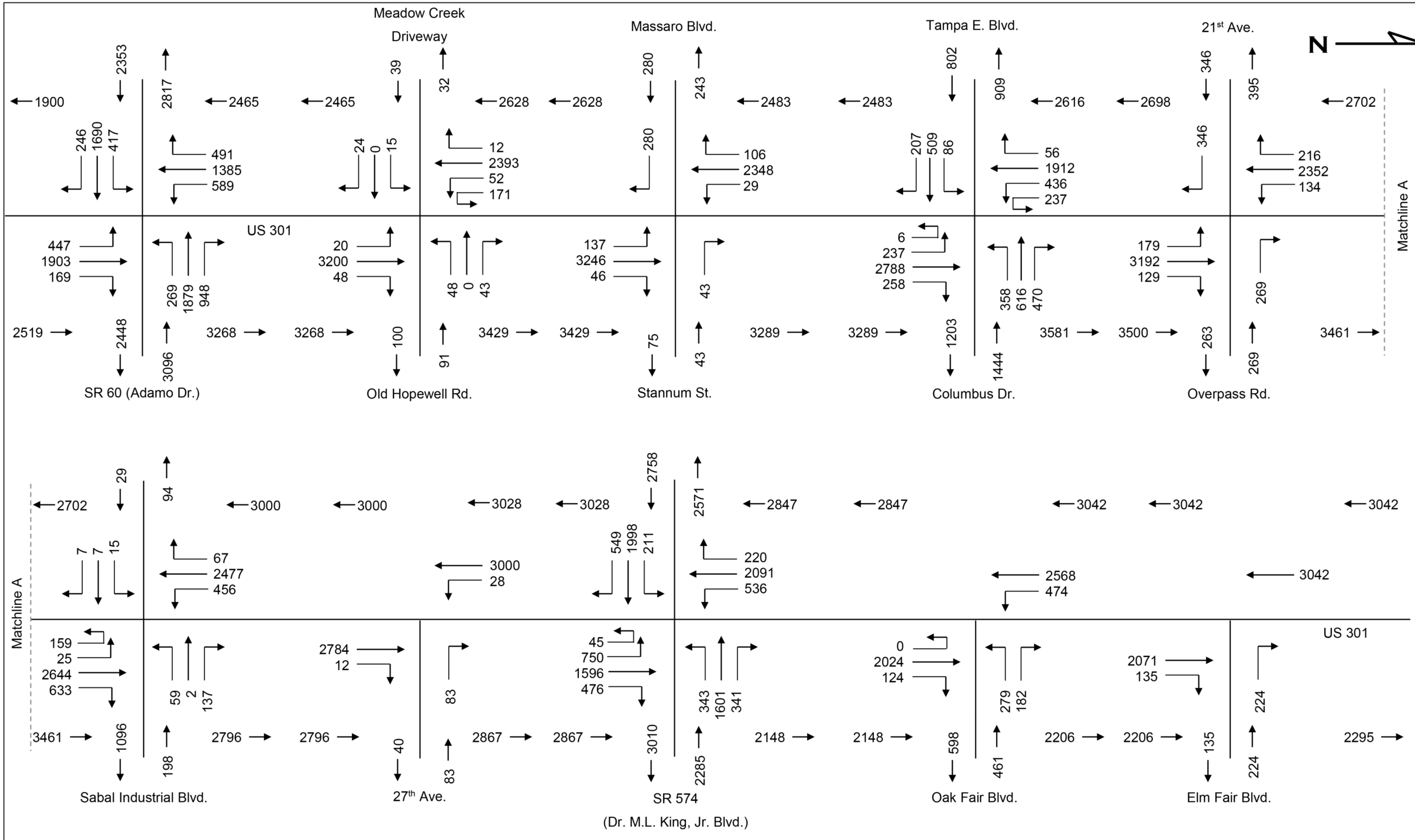

Figure 3-9: Design Year (2040) AM Peak Hour Volumes – Build Alternative with Preliminary Access Management Plan Redistribution

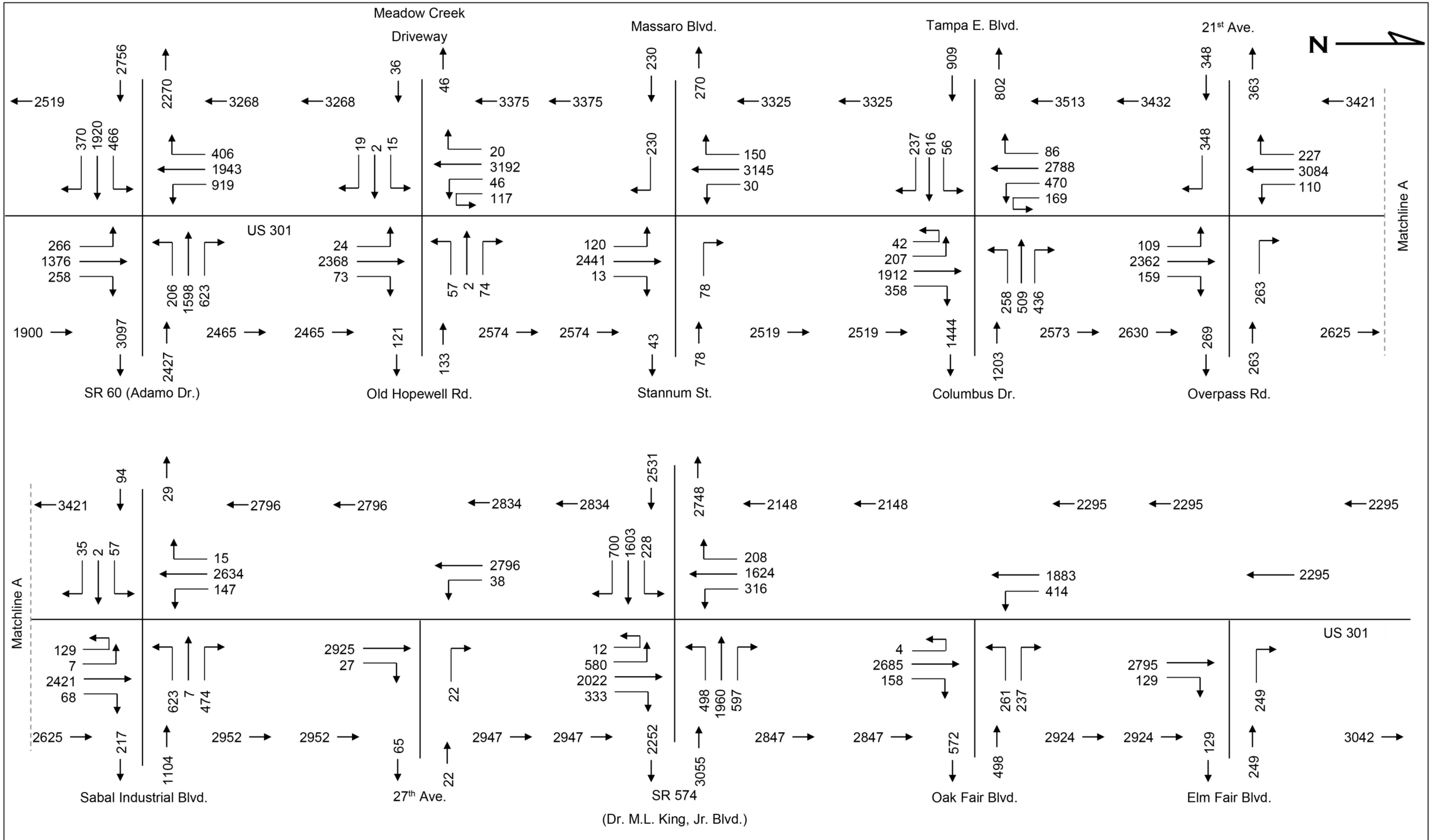

Figure 3-10: Design Year (2040) PM Peak Hour Volumes – Build Alternative with Preliminary Access Management Plan Redistribution

SECTION 4.0 NO-BUILD ALTERNATIVE LEVEL OF SERVICE ANALYSIS

4.1 Opening Year (2020) No-Build Alternative Level of Service Analysis

The opening year (2020) No-Build Alternative multilane highway segment analyses were conducted using the same parameter values that were used in the existing conditions analyses. **Table 4-1** summarizes the results of the 2020 peak hour multilane highway segment analyses. All of the roadway segments are projected to operate at LOS C or better in both travel directions during the a.m. and p.m. peak hours. The 2020 No-Build Alternative HCS multilane highway segment analysis reports are provided in **Appendix I**.

Table 4-1: Opening Year (2020) Peak Hour Roadway Segment Analysis Summary – No-Build Alternative

Roadway Segment	Direction	AM Peak Hour			PM Peak Hour		
		Volume (1)	Density (2)	LOS (3)	Volume (1)	Density (2)	LOS (3)
Btwn SR 60 and Old Hopewell Rd.	NB	2,040	23.0	C	1,493	16.5	B
	SB	1,478	16.7	B	2,041	22.6	C
Btwn Old Hopewell Rd. and Stannum St./Massaro Blvd.	NB	2,037	23.0	C	1,530	16.9	B
	SB	1,482	16.7	B	2,027	22.4	C
Btwn Stannum St./Massaro Blvd. and Columbus Dr./Tampa E. Blvd.	NB	2,006	22.6	C	1,522	16.9	B
	SB	1,521	17.2	B	2,017	22.3	C
Btwn Columbus Dr./Tampa E. Blvd. and Overpass Rd./21st Ave.	NB	1,896	21.4	C	1,476	16.3	B
	SB	1,536	19.3	C	1,885	23.2	C
Btwn Overpass Rd./21st Ave. and Sabal Industrial Blvd.	NB	1,842	23.1	C	1,565	19.2	C
	SB	1,663	20.9	C	1,863	22.9	C
Btwn Sabal Industrial Blvd. and 27th Ave.	NB	1,580	17.8	B	1,897	21.0	C
	SB	1,855	20.9	C	1,576	17.4	B
Btwn 27th Ave. and SR 574	NB	1,589	19.9	C	1,888	23.2	C
	SB	1,847	20.9	C	1,590	17.6	B
Btwn SR 574 and Oak Fair Blvd.	NB	1,380	17.3	B	1,792	22.0	C
	SB	1,792	20.2	C	1,349	14.9	B
Btwn Oak Fair Blvd. and Elm Fair Blvd.	NB	1,373	15.5	B	1,830	20.3	C
	SB	1,830	20.7	C	1,366	15.1	B
Btwn Elm Fair Blvd. and I-4	NB	1,433	12.0	B	1,954	16.0	B
	SB	1,953	14.7	B	1,432	10.6	A

(1) Volume (vehicles/hour)

(2) Average Density (passenger cars/mile/lane)

(3) Level of Service

Table 4-2 summarizes the results of the 2020 unsignalized intersection analyses. With one exception, all of the northbound and southbound left-turn movements are projected to operate at LOS D or better during both of the peak hours. Only the southbound left-turn movement onto Stannum Street is projected to operate at LOS E and only during the a.m. peak hour. A majority of the northbound and southbound left-turn movements are projected to operate at LOS C or better during both of the peak hours.

Table 4-2: Opening Year (2020) Peak Hour Unsignalized Intersection Operations Summary – No-Build Alternative

Intersection	Approach	Movement	AM Peak Hour			PM Peak Hour		
			V/C (1)	Delay (2)	LOS (3)	V/C (1)	Delay (2)	LOS (3)
Old Hopewell Road	Northbound	LT	0.02	13.7	B	0.03	19.6	C
	Southbound	LT	0.19	25.3	D	0.10	15.5	C
	Eastbound	LT/TH/RT	0.35	54.1	F	0.67	128.0	F
	Westbound	LT/TH	2.50	1,052.0	F	0.93	213.6	F
	Westbound	RT	0.28	31.9	D	0.19	16.1	C
Stannum Street/Massaro Boulevard	Northbound	LT	0.29	24.4	C	0.23	24.4	C
	Southbound	LT	0.20	39.5	E	0.07	15.1	C
	Eastbound	LT/TH	0.81	171.1	F	1.23	440.9	F
	Eastbound	RT	0.15	19.0	C	0.24	24.1	C
	Westbound	LT/TH/RT	0.09	36.9	E	0.73	150.3	F
Columbus Drive/ Tampa E. Boulevard	Northbound	LT	0.42	17.4	C	0.47	27.6	D
	Southbound	LT	0.58	30.6	D	0.34	15.9	C
	Eastbound	LT	*	**	F	*	**	F
	Eastbound	TH/RT	*	**	F	*	**	F
	Westbound	LT	*	**	F	*	**	F
	Westbound	TH	*	**	F	*	**	F
	Westbound	RT	0.00	0.0	A	0.00	0.0	A
Overpass Road/ 21st Avenue	Northbound	LT	0.20	17.0	C	0.16	19.2	C
	Southbound	LT	0.27	21.2	C	0.14	15.0	B
	Eastbound	LT/TH/RT	*	**	F	2.67	901.2	F
	Westbound	LT/TH/RT	*	**	F	1.08	165.5	F
27th Avenue	Northbound	LT	0.00	0.0	A	0.00	0.0	A
	Southbound	LT	0.06	15.3	C	0.08	19.2	C
	Westbound	LT/RT	0.38	50.7	F	0.25	48.0	E
Oak Fair Boulevard	Southbound	LT	0.23	14.5	B	0.28	20.1	C
	Westbound	LT	0.85	143.8	F	1.66	449.7	F
	Westbound	RT	0.21	16.2	C	0.64	35.8	E
Elm Fair Boulevard	Northbound	LT	0.00	0.0	A	0.00	12.5	B
	Southbound	LT	0.37	16.7	C	0.42	24.7	C
	Westbound	LT	0.70	132.3	F	1.00	234.2	F
	Westbound	RT	0.00	0.0	A	0.00	0.0	A

(1) Volume-to-Capacity Ratio
(2) Average Delay (seconds/vehicle)
(3) Level of Service
* Theoretically, the capacity for this movement is equal to zero. Therefore, the v/c ratio is infinite.
** No estimate of delay is provided since the v/c ratio is infinite.

In contrast, many of the cross street movements are projected to operate overcapacity (or at capacity) during one or both of the peak hours. These movements include the following:

- Westbound left-turn and through movements from Old Hopewell Road (a.m. peak hour)
- Eastbound left-turn and through movements from Massaro Boulevard (p.m. peak hour)
- Eastbound left-turn and through movements from Tampa E. Boulevard (both peak hours)
- Westbound left-turn and through movements from Columbus Drive (both peak hours)
- Eastbound left-turn, through and right-turn movements from 21st Avenue (both peak hours)
- Westbound left-turn, through and right-turn movements from Overpass Road (both peak hours)
- Westbound left-turn movement from Oak Fair Boulevard (p.m. peak hour)
- Westbound left-turn movement from Elm Fair Boulevard (p.m. peak hour)

Some of the other cross street movements that are projected to operate under capacity are projected to experience average delays greater than two minutes/vehicle (i.e., 120 seconds). These include the following movements:

- Eastbound left-turn, through and right-turn movements from Meadow Creek driveway (p.m. peak hour)
- Westbound left-turn and through movements from Old Hopewell Road (p.m. peak hour)
- Eastbound left-turn and through movements from Massaro Boulevard (a.m. peak hour)
- Westbound left-turn, through and right-turn movements from Stannum Street (p.m. peak hour)
- Westbound left-turn movement from Oak Fair Boulevard (a.m. peak hour)
- Westbound left-turn movement from Elm Fair Boulevard (a.m. peak hour)

The 2020 No-Build Alternative HCS unsignalized intersection analysis summary reports are provided in **Appendix I**.

Table 4-3 summarizes the results of the 2020 No-Build Alternative signalized intersection analyses conducted for the SR 60, Sabal Industrial Boulevard and SR 574 intersections. With one exception, all of the existing intersection geometrics were assumed to be present in the year 2020 with the No-Build Alternative. It was assumed that by the year 2020, SR 60 would be widened to a six-lane divided roadway both east and west of US 301 in accordance with the recommended

Table 4-3: Opening Year (2020) Peak Hour Signalized Intersection Operations Summary – No-Build Alternative

Approach	Movement	AM Peak Hour			PM Peak Hour		
		V/C (1)	Delay (2)	LOS (3)	V/C (1)	Delay (2)	LOS (3)
US 301 at SR 60							
Northbound US 301	Left	0.79	57.5	E	0.71	59.7	E
	Thru	0.98	61.8	E	0.87	53.5	D
	Right	N/A*	0.0*	N/A	N/A*	0.0*	N/A
	Approach	N/A	55.5**	E**	N/A	44.4**	D**
Southbound US 301	Left	0.94	71.4	E	0.86	52.0	D
	Thru	0.76	42.1	D	0.91	41.8	D
	Right	0.42	29.2	C	0.31	31.2	C
	Approach	N/A	47.4	D	N/A	43.9	D
Eastbound SR 60	Left	0.94	94.7	F	0.88	76.0	E
	Thru	0.97	66.2	E	0.98	63.3	E
	Right	N/A*	0.0*	N/A	N/A*	0.0*	N/A
	Approach	N/A	60.2**	E**	N/A	53.4**	D**
Westbound SR 60	Left	0.70	59.0	E	0.68	63.2	E
	Thru	0.99	66.7	E	0.89	52.1	D
	Right	N/A*	0.0*	N/A	N/A*	0.0*	N/A
	Approach	N/A	48.0**	D**	N/A	42.1**	D**
Overall Intersection		**N/A**	**52.6****	**D****	**N/A**	**46.4****	**D****
US 301 at Sabal Industrial Boulevard							
Northbound US 301	Left	0.06	18.3	B	0.01	22.9	C
	Thru	0.96	30.5	C	0.96	42.8	D
	Right	0.41	18.4	B	0.03	15.9	B
	Approach	N/A	28.5	C	N/A	42.4	D
Southbound US 301	Left	0.58	27.5	C	0.27	24.5	C
	Thru	0.88	24.5	C	0.95	38.9	D
	Right	0.02	11.0	B	0.01	15.7	B
	Approach	N/A	24.7	C	N/A	38.3	D
Eastbound Sabal Industrial Blvd.	Left	0.06	45.8	D	0.27	49.5	D
	Thru	0.05	45.7	D	0.31	49.8	D
	Right	0.05	45.7	D	0.31	49.8	D
	Approach	N/A	45.7	D	N/A	49.7	D
Westbound Sabal Industrial Blvd.	Left	0.30	47.2	D	1.30	207.6	F
	Thru	0.30	47.2	D	1.30	207.6	F
	Right	0.20	32.3	C	0.82	53.5	D
	Approach	N/A	38.0	D	N/A	137.1	F
Overall Intersection		**N/A**	**27.0**	**C**	**N/A**	**55.8**	**E**

Table 4-3: Opening Year (2020) Peak Hour Signalized Intersection Operations Summary – No-Build Alternative (Continued)

Approach	Movement	AM Peak Hour			PM Peak Hour		
		V/C (1)	Delay (2)	LOS (3)	V/C (1)	Delay (2)	LOS (3)
US 301 at SR 574							
Northbound US 301	Left	0.90	57.7	E	0.90	59.7	E
	Thru	0.64	37.0	D	0.73	38.2	D
	Right	0.14	24.2	C	0.26	1.0	A
	Approach	N/A	43.0	D	N/A	40.4	D
Southbound US 301	Left	0.83	61.5	E	0.70	57.2	E
	Thu	0.80	43.1	D	0.61	37.3	D
	Right	0.10	24.4	C	0.07	23.8	C
	Approach	N/A	47.2	D	N/A	41.6	D
Eastbound SR 574	Left	0.54	59.1	E	0.51	58.3	E
	Thru	0.94	57.2	E	0.91	53.4	D
	Right	0.59	5.7	A	0.67	30.1	C
	Approach	N/A	45.9	D	N/A	48.1	D
Westbound SR 574	Left	0.65	62.9	E	0.59	60.4	E
	Thru	0.76	44.7	D	0.76	44.4	D
	Right	0.34	10.0	A	0.64	14.0	B
	Approach	N/A	41.1	D	N/A	38.1	D
Overall Intersection		**N/A**	**44.5**	**D**	**N/A**	**42.2**	**D**

(1) Volume-to-Capacity Ratio
(2) Average Delay (seconds/vehicle)
(3) Level of Service
* Free-Flow Right-Turn Lane
** Values based on manual calculation of weighted average delay (including the zero delay for the free-flow right-turn movements)

alternative that was documented in the FHWA-approved SR 60 PD&E Study (from west of 50th Street to east of Falkenburg Road). In the a.m. peak hour, all three existing signalized intersections are projected to operate at LOS D or better overall. In the p.m. peak hour, both the SR 60 and SR 574 intersections are projected to operate at LOS D overall, while the Sabal Industrial Boulevard intersection is projected to operate at LOS E overall. The 2020 No-Build Alternative HCS signalized intersection analysis summary reports are provided in **Appendix I**.

4.2 Design Year (2040) No-Build Alternative Level of Service Analysis

The US 301 roadway segments were initially analyzed as multilane highway segments for the design year (2040) No-Build Alternative using the 2010 HCS. These analyses were conducted using a PHF equal to 0.95, a truck percentage equal to 4.0%, and a driver population factor equal to 0.99. **Table 4-4** summarizes the results of the initial 2040 No-Build Alternative multilane highway segment analyses for both the a.m. and p.m. peak hours. A review of this table indicated that LOS D operations were projected to occur in the peak travel directions and LOS C operations were projected to occur in the non-peak travel directions for the portion of US 301 between SR 60 and Elm Fair Boulevard during both the a.m. and p.m. peak hours. The segment of US 301 between Elm Fair Boulevard and the eastbound I-4 ramps is projected to operate at LOS C or better for both travel directions during both peak hours. The 2040 No-Build Alternative multilane highway segment analysis reports are provided in **Appendix J**.

Table 4-4: Design Year (2040) Peak Hour Roadway Segment Analysis Summary – No-Build Alternative

Roadway Segment	Direction	AM Peak Hour			PM Peak Hour		
		Volume (1)	Density (2)	LOS (3)	Volume (1)	Density (2)	LOS (3)
Btwn SR 60 and Old Hopewell Rd.	NB	2,524	27.4	D	1,904	20.6	C
	SB	1,904	20.6	C	2,524	27.4	D
Btwn Old Hopewell Rd. and Stannum St./Massaro Blvd.	NB	2,514	27.3	D	1,896	20.6	C
	SB	1,896	20.6	C	2,514	27.3	D
Btwn Stannum St./Massaro Blvd. and Columbus Dr./Tampa E. Blvd.	NB	2,503	27.1	D	1,889	20.5	C
	SB	1,889	20.5	C	2,503	27.1	D
Btwn Columbus Dr./Tampa E. Blvd. and Overpass Rd./21st Ave.	NB	2,630	28.6	D	1,919	20.8	C
	SB	1,929	23.2	C	2,621	31.6	D
Btwn Overpass Rd./21st Ave. and Sabal Industrial Blvd.	NB	2,621	31.6	D	1,978	23.8	C
	SB	1,978	23.8	C	2,621	31.6	D
Btwn Sabal Industrial Blvd. and 27th Ave.	NB	2,115	22.9	C	2,430	26.3	D
	SB	2,430	26.3	D	2,115	22.9	C
Btwn 27th Ave. and SR 574	NB	2,141	25.8	C	2,413	29.1	D
	SB	2,413	26.2	D	2,141	23.2	C
Btwn SR 574 and Oak Fair Blvd.	NB	1,900	22.9	C	2,519	30.3	D
	SB	2,519	27.3	D	1,900	20.6	C
Btwn Oak Fair Blvd. and Elm Fair Blvd.	NB	1,954	21.2	C	2,591	28.1	D
	SB	2,591	28.1	D	1,954	21.2	C
Btwn Elm Fair Blvd. and I-4	NB	2,032	16.3	B	2,693	21.6	C
	SB	2,693	19.5	C	2,032	14.7	B

(1) Volume (vehicles/hour)
(2) Average Density (passenger cars/mile/lane)
(3) Level of Service

Table 4-5 summarizes the results of the 2040 unsignalized intersection analyses. There are several southbound left-turn movements that are projected to operate overcapacity during one or both of the peak hours. These include the following:

- Southbound left-turn onto Columbus Drive (a.m. and p.m. peak hours)
- Southbound left-turn onto Oak Fair Boulevard (p.m. peak hour)
- Southbound left-turn onto Elm Fair Boulevard (p.m. peak hour)

Although the northbound left-turn movement onto Tampa E. Boulevard is not projected to operate overcapacity in the p.m. peak hour, the v/c ratio for this movement is projected to be equal to 0.99 and the average delay is projected to exceed 100 seconds/vehicle.

Table 4-5: Design Year (2040) Peak Hour Unsignalized Intersection Operations Summary – No-Build Alternative

Intersection	Approach	Movement	AM Peak Hour			PM Peak Hour		
			V/C(1)	Delay(2)	LOS(3)	V/C(1)	Delay(2)	LOS(3)
Old Hopewell Road	Northbound	LT	0.07	18.3	C	0.16	31.8	D
	Southbound	LT	0.34	38.2	E	0.16	19.2	C
	Eastbound	LT/TH/RT	*	**	F	1.76	754.4	F
	Westbound	LT/TH	*	**	F	3.65	1,650.0	F
	Westbound	RT	0.28	35.6	E	0.29	24.0	C
Stannum Street/ Massaro Boulevard	Northbound	LT	0.46	25.7	D	0.69	59.5	F
	Southbound	LT	0.17	30.0	D	0.10	17.9	C
	Eastbound	LT/TH	*	**	F	*	**	F
	Eastbound	RT	0.47	28.4	D	0.83	79.8	F
	Westbound	LT/TH/RT	*	**	F	*	**	F
Columbus Drive/ Tampa E. Boulevard	Northbound	LT	0.62	27.2	D	0.99	104.3	F
	Southbound	LT	1.95	480.6	F	1.05	88.9	F
	Eastbound	LT	*	**	F	*	**	F
	Eastbound	TH/RT	*	**	F	*	**	F
	Westbound	LT	*	**	F	*	**	F
	Westbound	TH	*	**	F	*	**	F
	Westbound	RT	0.00	0.0	A	0.00	0.0	A
Overpass Road/ 21st Avenue	Northbound	LT	0.61	34.6	D	0.72	72.7	F
	Southbound	LT	0.87	93.1	F	0.49	28.8	D
	Eastbound	LT/TH/RT	*	**	F	*	**	F
	Westbound	LT/TH/RT	*	**	F	*	**	F
27th Avenue	Northbound	LT	0.00	0.0	A	0.00	0.0	A
	Southbound	LT	0.13	23.4	C	0.24	33.7	D
	Westbound	LT/RT	1.18	258.4	F	0.42	114.5	F
Oak Fair Boulevard	Southbound	LT	0.76	46.1	E	1.03	130.5	F
	Westbound	LT	9.00	4,017.0	F	*	**	F
	Westbound	RT	0.66	39.7	E	1.28	210.5	F
Elm Fair Boulevard	Northbound	LT	0.00	0.0	A	0.01	17.0	C
	Southbound	LT	0.80	51.7	F	1.48	296.7	F
	Westbound	LT	8.19	3,703.0	F	*	**	F
	Westbound	RT	0.00	0.0	A	0.00	0.0	A

(1) Volume-to-Capacity Ratio
(2) Average Delay (seconds/vehicle)
(3) Level of Service
* Theoretically, the capacity for this movement is equal to zero. Therefore, the v/c ratio is infinite.
** No estimate of delay is provided since the v/c ratio is infinite.

All of the US 301 cross street left-turn and through movements are projected to operate significantly overcapacity during one or both of the peak hours. In addition, many of the cross street right-turn movements are also projected to operate overcapacity during one or both peak hours. Some of these overcapacity conditions are due to the lack of exclusive right-turn lanes on the cross street approaches. Although the westbound right-turn movement from Old Hopewell Road and the eastbound right-turn movement from Massaro Boulevard are both projected to operate under capacity with average peak hour delays ranging between 24.0 seconds/vehicle and 79.8 seconds/vehicle; the westbound and eastbound shared left-turn/through lanes are projected to operate significantly over capacity. Given the lengths of the exclusive right-turn lanes on these two cross streets and the overcapacity conditions projected for the adjacent left-turn/through lanes; it is quite likely that the vehicle queues in the left-turn/through lanes will extend back and block the access to the right-turn lanes – thus resulting in significantly higher right-turn vehicle delays. The 2040 No-Build Alternative HCS unsignalized intersection analysis summary reports are provided in **Appendix J**.

Although the results of the 2040 No-Build Alternative multilane highway segment analyses indicate that LOS D or better operations are projected to occur for all of the study corridor segments, the results of the 2040 unsignalized intersection analyses conducted for this alternative indicate that unacceptable operations are projected to occur for one or more movements at each of the seven unsignalized intersections during one or both of the peak hours. Given the severe overcapacity conditions that are projected to occur at these unsignalized intersections, it is extremely unlikely that all seven of these locations would remain unsignalized through the year 2040. As traffic signals are implemented at some of these unsignalized intersections, the study corridor will begin to operate more like a signalized arterial and less like an uninterrupted flow highway. Consequently, a second analysis was conducted for the study corridor using the Urban Streets module of the 2010 HCS. For the purposes of this analysis, it was assumed that the existing unsignalized intersections at Old Hopewell Road, Columbus Drive/Tampa E. Boulevard and Oak Fair Boulevard would be signalized by the year 2040. These intersections were selected based on their projected 2040 peak hour operations as well as the distances between the existing signalized intersections.

Table 4-6 summarizes the results of the 2040 No-Build Alternative signalized intersection analyses. Three of the six intersections are projected to operate at LOS F overall during both the a.m. and p.m. peak hours. These include the existing signalized intersections at SR 60 and SR 574, as well as the Columbus Drive/Tampa E. Boulevard intersection. The Sabal Industrial Boulevard intersection is also projected to operate at LOS F overall, but only during the p.m. peak hour. In the a.m. peak hour this intersection is projected to operate at LOS E overall. The Old Hopewell Road and Oak Fair Boulevard intersections are projected to operate at LOS D or better overall during both peak hours with the implementation of traffic signal control. The HCS signalized Intersection analysis summary reports for the 2040 No-Build Alternative are provided in **Appendix J**.

Table 4-7 summarizes the results of the 2040 No-Build Alternative signalized arterial analyses. In the a.m. peak hour, two of the six roadway segments analyzed are projected to operate at LOS F in the peak travel direction and one additional segment is projected to operate at LOS E. In the

Table 4-6: Design Year (2040) Peak Hour Signalized Intersection Operations Summary – No-Build Alternative

Approach	Movement	AM Peak Hour			PM Peak Hour		
		V/C (1)	Delay (2)	LOS (3)	V/C (1)	Delay (2)	LOS (3)
US 301 at SR 60							
Northbound US 301	Left	1.11	141.4	F	1.20	190.5	F
	Thru	0.99	68.7	E	0.72	46.1	D
	Right	N/A*	0.0*	N/A	N/A*	0.0*	N/A
	Approach	N/A	78.4**	E**	N/A	68.9**	E**
Southbound US 301	Left	1.24	192.8	F	1.43	269.4	F
	Thru	0.66	37.7	D	0.74	25.4	C
	Right	0.50	28.3	C	0.24	12.4	B
	Approach	N/A	78.5	E	N/A	104.0	F
Eastbound SR 60	Left	1.41	281.3	F	1.11	149.1	F
	Thru	1.22	162.0	F	1.27	182.9	F
	Right	N/A*	0.0*	N/A	N/A*	0.0*	N/A
	Approach	N/A	156.1**	F**	N/A	145.4**	F**
Westbound SR 60	Left	1.41	279.3	F	1.03	137.2	F
	Thru	1.34	216.4	F	1.17	141.7	F
	Right	N/A*	0.0*	N/A	N/A*	0.0*	N/A
	Approach	N/A	165.7**	F**	N/A	106.3**	F**
Overall Intersection		**N/A**	**125.9****	**F****	**N/A**	**111.1****	**F****
US 301 at Old Hopewell Road							
Northbound US 301	Left	0.08	13.6	B	0.12	25.9	C
	Thru	1.02	50.0	F	0.84	22.6	C
	Right	0.02	13.4	B	0.04	12.5	B
	Approach	N/A	49.4	D	N/A	22.4	C
Southbound US 301	Left	0.31	45.4	D	0.16	25.2	C
	Thu	0.70	15.9	B	0.83	25.9	C
	Right	0.01	7.4	A	0.01	11.8	B
	Approach	N/A	16.6	B	N/A	25.9	C
Eastbound Meadow Creek Driveway	Left	0.49	74.2	E	0.30	68.1	E
	Thru	0.49	74.2	E	0.30	68.1	E
	Right	0.49	74.2	E	0.30	68.1	E
	Approach	N/A	74.2	E	N/A	68.1	E
Westbound Old Hopewell Rd.	Left	0.56	77.5	E	0.46	69.5	E
	Thru	0.56	77.5	E	0.46	69.5	E
	Right	0.14	62.5	E	0.19	58.9	E
	Approach	N/A	72.8	E	N/A	65.4	E
Overall Intersection		**N/A**	**36.9**	**D**	**N/A**	**25.6**	**C**

Table 4-6: Design Year (2040) Peak Hour Signalized Intersection Operations Summary – No-Build Alternative (Continued)

Approach	Movement	AM Peak Hour			PM Peak Hour		
		V/C (1)	Delay (2)	LOS (3)	V/C (1)	Delay (2)	LOS (3)
US 301 at Columbus Drive/Tampa E. Boulevard							
Northbound US 301	Left	0.99	68.4	E	1.11	136.9	F
	Thru	1.23	127.4	F	1.00	39.8	D
	Right	0.07	9.3	A	0.29	11.6	B
	Approach	N/A	118.6	F	N/A	47.4	D
Southbound US 301	Left	1.98	512.2	F	1.35	221.5	F
	Thu	0.87	33.5	C	1.20	136.2	F
	Right	0.02	13.2	B	0.04	24.5	C
	Approach	N/A	134.5	F	N/A	148.6	F
Eastbound Tampa E. Blvd.	Left	0.43	47.6	D	0.48	45.6	D
	Thru	1.50	302.3	F	1.36	231.0	F
	Right	1.50	302.3	F	1.36	231.0	F
	Approach	N/A	276.5	F	N/A	216.2	F
Westbound Columbus Dr.	Left	1.46	291.5	F	1.07	153.0	F
	Thru	1.63	359.7	F	1.10	127.9	F
	Right	0.95	83.5	F	0.60	37.3	D
	Approach	N/A	253.4	F	N/A	98.1	F
Overall Intersection		**N/A**	**166.6**	**F**	**N/A**	**116.5**	**F**
US 301 at Sabal Industrial Boulevard							
Northbound US 301	Left	0.12	50.7	D	0.16	111.0	F
	Thru	0.91	44.1	D	1.06	90.8	F
	Right	0.60	45.4	D	0.05	36.7	D
	Approach	N/A	44.5	D	N/A	89.8	F
Southbound US 301	Left	1.29	193.4	F	0.92	82.7	F
	Thru	0.81	39.2	D	1.01	64.2	F
	Right	0.03	98.8	F	0.01	27.9	C
	Approach	N/A	68.8	E	N/A	65.1	E
Eastbound Sabal Industrial Blvd.	Left	0.17	71.4	E	0.91	154.4	F
	Thru	0.16	71.3	E	0.66	94.6	F
	Right	0.16	71.3	E	0.66	94.6	F
	Approach	N/A	71.4	E	N/A	130.9	F
Westbound Sabal Industrial Blvd.	Left	0.54	73.8	E	1.55	316.1	F
	Thru	0.54	73.8	E	1.55	316.1	F
	Right	0.27	48.0	D	1.02	102.5	F
	Approach	N/A	58.7	E	N/A	228.7	F
Overall Intersection		**N/A**	**57.0**	**E**	**N/A**	**108.7**	**F**

Table 4-6: Design Year (2040) Peak Hour Signalized Intersection Operations Summary – No-Build Alternative (Continued)

Approach	Movement	AM Peak Hour			PM Peak Hour		
		V/C (1)	Delay (2)	LOS (3)	V/C (1)	Delay (2)	LOS (3)
US 301 at SR 574							
Northbound US 301	Left	1.31	225.0	F	1.07	109.4	F
	Thru	0.67	33.5	C	0.92	50.7	D
	Right	0.36	22.3	C	0.29	26.4	C
	Approach	N/A	87.8	F	N/A	61.9	E
Southbound US 301	Left	1.51	299.1	F	1.03	115.8	F
	Thu	0.98	53.5	D	0.84	56.9	E
	Right	0.30	26.3	C	0.32	36.6	D
	Approach	N/A	114.6	F	N/A	67.4	E
Eastbound SR 574	Left	1.12	171.5	F	1.15	183.2	F
	Thru	1.32	204.4	F	0.99	72.1	E
	Right	0.68	36.6	D	0.76	8.4	A
	Approach	N/A	173.3	F	N/A	68.4	E
Westbound SR 574	Left	1.18	191.9	F	0.99	127.0	F
	Thru	1.06	95.0	F	1.21	149.6	F
	Right	0.55	32.0	C	0.83	30.4	C
	Approach	N/A	94.9	F	N/A	123.6	F
Overall Intersection		**N/A**	**121.6**	**F**	**N/A**	**83.8**	**F**
US 301 at Oak Fair Boulevard							
Northbound US 301	Left	N/A	N/A	N/A	N/A	N/A	N/A
	Thru	0.74	22.7	C	1.00	39.5	D
	Right	0.07	11.9	B	0.11	15.5	B
	Approach	N/A	22.3	C	N/A	38.4	D
Southbound US 301	Left	0.77	47.8	D	0.66	60.3	E
	Thu	0.90	17.3	B	0.65	6.5	A
	Right	N/A	N/A	N/A	N/A	N/A	N/A
	Approach	N/A	20.0	B	N/A	11.3	B
Eastbound Oak Fair Blvd.	Left	N/A	N/A	N/A	N/A	N/A	N/A
	Thru	N/A	N/A	N/A	N/A	N/A	N/A
	Right	N/A	N/A	N/A	N/A	N/A	N/A
	Approach	N/A	N/A	N/A	N/A	N/A	N/A
Westbound Oak Fair Blvd.	Left	0.75	77.7	E	0.70	78.5	E
	Thru	N/A	N/A	N/A	N/A	N/A	N/A
	Right	0.57	54.7	D	0.71	60.5	E
	Approach	N/A	65.4	E	N/A	66.6	E
Overall Intersection		**N/A**	**24.1**	**C**	**N/A**	**29.0**	**C**

(1) Volume-to-Capacity Ratio
(2) Average Delay (seconds/vehicle)
(3) Level of Service

* Free-Flow Right-Turn Lane
** Values based on manual calculation of weighted average delay (including the zero delay for the free-flow right-turn movements)

Table 4-7: Design Year (2040) Peak Hour Signalized Arterial Analysis Summary – No-Build Alternative

Segment	Travel Direction	AM Peak Hour		PM Peak Hour	
		Travel Speed (1)	LOS (2)	Travel Speed (1)	LOS (2)
Btwn SR 60 and Old Hopewell Rd.	NB	18.98	F	27.80	C
	SB	22.06	D	26.31	C
Btwn Old Hopewell Rd. and Columbus Dr./Tampa E. Blvd.	NB	7.92	F	18.04	E
	SB	27.71	C	22.60	D
Btwn Columbus Dr./Tampa E. Blvd. and Sabal Industrial Blvd.	NB	28.31	C	20.35	F
	SB	31.31	C	15.80	F
Btwn Sabal Industrial Blvd. and SR 574	NB	26.00	C	21.24	D
	SB	23.76	D	18.46	F
Btwn SR 574 and Oak Fair Blvd.	NB	25.77	C	19.63	D
	SB	16.62	E	16.07	E
Overall Corridor	NB	19.55	D	21.04	D
	SB	24.34	D	18.37	E

(1) Average Travel Speed (miles per hour)

(2) Level of Service

p.m. peak hour, two segments are projected to operate at LOS F and two segments are projected to operate at LOS E in the peak travel directions. In addition, LOS F operations are also projected to occur in the off-peak travel direction for the segment between Columbus Drive/Tampa E. Boulevard and Sabal Industrial Boulevard. The overall corridor travel speeds are indicative of LOS D conditions for both travel directions in the a.m. peak hour and for the northbound direction in the p.m. peak hour. The southbound travel direction is projected to operate at LOS E overall in the p.m. peak hour. The HCS urban street segment analysis summary reports for the 2040 No-Build Alternative are provided in **Appendix J**.

SECTION 5.0 BUILD ALTERNATIVE LEVEL OF SERVICE ANALYSES

5.1 Design Year (2040) Build Alternative Level of Service Analyses

The US 301 roadway segments were initially analyzed as multilane highway segments for the design year (2040) Build Alternative using the 2010 HCS. These analyses were conducted using a PHF equal to 0.95, a truck percentage equal to 4.0%, and a driver population factor equal to 0.99. **Table 5-1** summarizes the results of the initial 2040 Build Alternative multilane highway segment analyses for both the a.m. and p.m. peak hours. A review of this table indicated that with one exception, LOS C or better operations were projected to occur in both travel directions for all segments during the a.m. peak hour. The segment between Overpass Road/21st Avenue and Sabal Industrial Boulevard was projected to operate at LOS D in the northbound travel direction. A similar set of conditions was projected to occur during the p.m. peak hour with LOS C or better operations projected in both travel directions for all but two segments. The segments between Columbus Drive/Tampa E. Boulevard and Overpass Road/21st Avenue and between Overpass Road/21st Avenue and Sabal Industrial Boulevard were both projected to operate at LOS D in the southbound travel direction. The 2040 Build Alternative multilane highway segment analysis reports are provided in **Appendix K**.

Table 5-1: Design Year (2040) Peak Hour Roadway Segment Analysis Summary – Build Alternative

Roadway Segment	Direction	AM Peak Hour			PM Peak Hour		
		Volume (1)	Density (2)	LOS (3)	Volume (1)	Density (2)	LOS (3)
Btwn SR 60 and Old Hopewell Rd.	NB	3,268	23.6	C	2,465	17.8	B
	SB	2,465	17.8	B	3,268	23.6	C
Btwn Old Hopewell Rd. and Stannum St./Massaro Blvd.	NB	3,429	24.8	C	2,574	18.6	C
	SB	2,628	19.0	C	3,375	24.4	C
Btwn Stannum St./Massaro Blvd. and Columbus Dr./Tampa E. Blvd.	NB	3,289	23.8	C	2,519	18.2	C
	SB	2,483	17.9	B	3,325	24.0	C
Btwn Columbus Dr./Tampa E. Blvd. and Overpass Rd./21st Ave.	NB	3,541	25.6	C	2,602	18.8	C
	SB	2,657	21.3	C	3,473	27.9	D
Btwn Overpass Rd./21st Ave. and Sabal Industrial Blvd.	NB	3,461	27.8	D	2,625	21.1	C
	SB	2,702	21.7	C	3,421	27.5	D
Btwn Sabal Industrial Blvd. and 27th Ave.	NB	2,796	20.2	C	2,952	21.3	C
	SB	3,000	21.7	C	2,796	20.2	C
Btwn 27th Ave. and SR 574	NB	2,867	23.0	C	2,947	23.7	C
	SB	3,028	21.9	C	2,834	20.5	C
Btwn SR 574 and Oak Fair Blvd.	NB	2,148	17.2	B	2,847	22.9	C
	SB	2,847	20.6	C	2,148	15.5	B
Btwn Oak Fair Blvd. and Elm Fair Blvd.	NB	2,206	15.9	B	2,924	21.1	C
	SB	3,042	22.0	C	2,295	16.6	B
Btwn Elm Fair Blvd. and I-4	NB	2,295	18.4	C	3,042	24.4	C
	SB	3,042	22.0	C	2,295	16.6	B

(1) Volume (vehicles/hour)
(2) Average Density (passenger cars/mile/lane)
(3) Level of Service

Unsignalized intersection analyses were conducted for the seven existing unsignalized intersections using the 2010 HCS. Since the current version of the 2010 HCS does not allow the user to directly analyze unsignalized intersections on six-lane divided roadways, several adjustments to the input data (i.e., through volumes, base critical headways and base follow-up headways) were required. First, the six-lane peak hour through volumes were multiplied by 0.667 to obtain four-lane equivalent per lane volumes. Next, the base critical headways ($t_{c,base}$) were adjusted (i.e., increased) to reflect the six-lane values listed in Exhibit 19-10 (on page 19-15) of the 2010 HCM. The base critical headway is defined as the minimum time interval in the major street traffic stream that drivers consider to be acceptable for use in accomplishing their maneuver. The base critical headway values that were used to conduct the Build Alternative unsignalized intersection analyses are as follows:

- Left-turn from the major street: $t_{c,base}$ = 5.3 seconds
- Right-turn from the minor street: $t_{c,base}$ = 7.1 seconds
- Through movement from the minor street: $t_{c,base}$ = 6.5 seconds
- Left-turn from the minor street: $t_{c,base}$ = 6.4 seconds

Lastly, the base follow-up headways ($t_{f,base}$) were adjusted (i.e., increased) to reflect the six-lane values listed in Exhibit 19-11 (on page 19-16) of the 2010 HCM. The base follow-up headway is defined to be the time interval between the departure of one vehicle entering or crossing the major street traffic stream and the departure of the next vehicle using the same major street headway under a condition of continuous queuing for the specific movement. The base follow-up headways that were used to conduct the Build Alternative unsignalized intersection analyses are as follows:

- Left-turn from the major street: $t_{f,base}$ = 3.1 seconds
- Right-turn from the minor street: $t_{f,base}$ = 3.9 seconds
- Through movement from the minor street: $t_{f,base}$ = 4.0 seconds
- Left-turn from the minor street: $t_{f,base}$ = 3.8 seconds

Table 5-2 summarizes the results of the 2040 Build Alternative unsignalized intersection analyses. There are seven northbound and southbound left-turn movements that are projected to operate significantly overcapacity during one or both of the peak hours. These include the following:

- Southbound left-turn onto Old Hopewell Road (a.m. and p.m. peak hour)
- Northbound left-turn onto Massaro Boulevard (p.m. peak hour)
- Northbound left-turn onto Tampa E. Boulevard (a.m. and p.m. peak hours)
- Southbound left-turn onto Columbus Drive (a.m. and p.m. peak hours)
- Northbound left-turn onto 21st Avenue (a.m. and p.m. peak hours)
- Southbound left-turn onto Overpass Road (a.m. peak hour)
- Southbound left-turn onto Oak Fair Boulevard (a.m. and p.m. peak hours)

In addition, all of the US 301 cross street left-turn and through movements are projected to operate significantly overcapacity during one or both of the peak hours. The only cross street movements that are not projected to operate overcapacity are the following:

- Westbound right-turn from Stannum Street (a.m. and p.m. peak hours)
- Westbound right-turn from 27th Avenue (a.m. and p.m. peak hours)
- Westbound right-turn from Elm Fair Boulevard (a.m. peak hour only)

The 2040 Build Alternative HCS unsignalized intersection results summary reports are provided in **Appendix K**.

Table 5-2: Design Year (2040) Peak Hour Unsignalized Intersection Operations Summary – Build Alternative

Intersection	Approach	Movement	AM Peak Hour			PM Peak Hour		
			V/C (1)	Delay (2)	LOS (3)	V/C (1)	Delay (2)	LOS (3)
Old Hopewell Road	Northbound	LT	0.12	28.2	D	0.28	59.7	F
	Southbound	LT	2.72	882.6	F	1.02	131.8	F
	Eastbound	LT/TH/RT	*	**	F	*	**	F
	Westbound	LT/TH/RT	*	**	F	*	**	F
Stannum Street/Massaro Boulevard	Northbound	LT	0.78	71.0	F	1.31	277.4	F
	Southbound	LT	0.36	71.1	F	0.18	31.0	D
	Eastbound	RT	1.17	153.0	F	1.52	316.3	F
	Westbound	RT	0.30	39.0	E	0.34	27.9	D
Columbus Drive/Tampa E. Boulevard	Northbound	LT	1.34	213.1	F	2.66	821.7	F
	Southbound	LT	6.41	2,514.0	F	3.44	1,147.0	F
	Eastbound	LT	*	**	F	*	**	F
	Eastbound	TH/RT	*	**	F	*	**	F
	Westbound	LT	*	**	F	*	**	F
	Westbound	TH	*	**	F	*	**	F
	Westbound	RT	2.64	786.2	F	1.38	217.8	F
Overpass Road/21st Avenue	Northbound	LT	1.02	122.5	F	1.13	207.2	F
	Southbound	LT	1.53	367.3	F	0.63	53.1	F
	Eastbound	RT	1.35	218.1	F	2.02	521.3	F
	Westbound	RT	1.65	366.8	F	1.03	104.3	F
27th Avenue	Southbound	LT	0.23	41.2	E	0.36	54.0	F
	Westbound	RT	0.41	33.3	D	0.12	26.2	D
Oak Fair Boulevard	Southbound	LT	2.07	527.2	F	3.09	1,005.0	F
	Westbound	LT	*	**	F	*	**	F
	Westbound	TH/RT	*	**	F	*	**	F
Elm Fair Boulevard	Westbound	RT	0.78	49.5	E	1.31	217.2	F

(1) Volume-to-Capacity Ratio
(2) Average Delay (seconds/vehicle)
(3) Level of Service

* Theoretically, the capacity for this movement is equal to zero; therefore, the v/c ratio is infinite.
** No estimate of delay is provided since the v/c ratio is infinite.

The results of the 2040 unsignalized intersection analyses conducted for the Build Alternative indicate that overcapacity operations are projected to occur for one or more movements at six of the seven unsignalized intersections. Given the severe overcapacity conditions that are projected to occur at these unsignalized intersections, it is extremely unlikely that all seven of these locations would remain unsignalized through the year 2040 with the Build Alternative. Consequently, a second analysis was also conducted for the Build Alternative using the Urban Streets module of the 2010 HCS. To maintain consistency with the previous No-Build Alternative signalized arterial analysis, it was once again assumed that the existing unsignalized intersections at Old Hopewell Road, Columbus Drive/Tampa E. Boulevard and Oak Fair Boulevard would be signalized by the year 2040.

Table 5-3 summarizes the results of the 2040 Build Alternative signalized intersection analyses. Three of the six intersections are projected to operate at LOS F overall during both the a.m. and p.m. peak hours. These include the existing signalized intersections at SR 60 and SR 574, as well as the Columbus Drive/Tampa E. Boulevard intersection. The Sabal Industrial Boulevard intersection is projected to operate at LOS E overall in the p.m. peak hour and LOS D overall in the a.m. peak hour. The Old Hopewell Road and Oak Fair Boulevard intersections are projected to operate at LOS D or better overall during both peak hours with the implementation of traffic signal control. The HCS signalized intersection results summary reports for the 2040 No-Build Alternative are provided in **Appendix K**. The geometrics that were analyzed at each of the ten intersections with the Build Alternative are graphically illustrated in **Figure 5-1**.

Table 5-3: Design Year (2040) Peak Hour Signalized Intersection Operations Summary – Build Alternative

Approach	Movement	AM Peak Hour			PM Peak Hour		
		V/C (1)	Delay (2)	LOS (3)	V/C (1)	Delay (2)	LOS (3)
US 301 at SR 60							
Northbound US 301	Left	1.15	162.5	F	0.87	92.1	F
	Thru	1.21	155.8	F	1.10	116.0	F
	Right	N/A*	0.0*	N/A	N/A*	0.0*	N/A
	Approach	N/A	146.5**	F	N/A	96.9**	F
Southbound US 301	Left	1.24	188.5	F	1.16	131.2	F
	Thru	0.78	47.5	D	0.91	32.8	D
	Right	0.61	33.7	C	0.40	15.7	B
	Approach	N/A	79.3	E	N/A	58.9	E
Eastbound SR 60	Left	1.13	157.7	F	1.11	146.2	F
	Thru	1.06	92.4	F	1.13	116.6	F
	Right	0.30	3.7	A	0.48	4.0	A
	Approach	N/A	96.5	F	N/A	108.2	F
Westbound SR 60	Left	0.85	88.6	F	0.84	93.2	F
	Thru	1.23	165.5	F	1.10	113.1	F
	Right	1.34	182.6	F	0.77	25.5	C
	Approach	N/A	163.7	F	N/A	90.1	F
Overall Intersection		**N/A**	**124.6****	**F**	**N/A**	**86.3****	**F**

Table 5-3: Design Year (2040) Peak Hour Signalized Intersection Operations Summary – Build Alternative (Continued)

Approach	Movement	AM Peak Hour			PM Peak Hour		
		V/C (1)	Delay (2)	LOS (3)	V/C (1)	Delay (2)	LOS (3)
US 301 at Old Hopewell Road							
Northbound US 301	Left	0.07	55.1	E	0.21	75.9	E
	Thru	0.81	28.8	C	0.89	39.0	D
	Right	0.02	16.8	B	0.04	29.8	C
	Approach	N/A	28.9	C	N/A	39.2	D
Southbound US 301	Left	0.83	79.3	E	0.64	75.0	E
	Thu	0.68	20.5	C	0.95	35.4	D
	Right	0.01	10.2	B	0.01	14.6	B
	Approach	N/A	25.5	C	N/A	37.2	D
Eastbound Meadow Creek Driveway	Left	0.29	68.7	E	0.23	63.7	E
	Thru	0.29	68.7	E	0.23	63.7	E
	Right	0.29	68.7	E	0.23	63.7	E
	Approach	N/A	68.7	E	N/A	63.7	E
Westbound Old Hopewell Rd.	Left	0.66	80.0	E	0.85	99.1	F
	Thru	0.66	80.0	E	0.85	99.1	F
	Right	0.66	80.0	E	0.85	99.1	F
	Approach	N/A	80.0	E	N/A	99.1	F
Overall Intersection		**N/A**	**28.5**	**C**	**N/A**	**39.9**	**D**
US 301 at Columbus Drive/Tampa E. Boulevard							
Northbound US 301	Left	0.85	85.9	F	1.11	150.5	F
	Thru	1.07	58.4	F	0.85	22.4	C
	Right	0.21	9.4	A	0.38	11.7	B
	Approach	N/A	57.2	E	N/A	34.0	C
Southbound US 301	Left	1.42	275.0	F	1.07	106.6	F
	Thu	0.86	30.8	C	1.14	114.7	F
	Right	0.04	12.9	B	0.05	26.8	C
	Approach	N/A	93.5	F	N/A	112.2	F
Eastbound Tampa E. Blvd.	Left	0.60	52.2	D	0.49	49.8	D
	Thru	1.03	115.2	F	1.20	176.4	F
	Right	1.03	119.4	F	1.21	178.7	F
	Approach	N/A	110.2	F	N/A	169.7	F
Westbound Columbus Dr.	Left	1.09	145.7	F	1.03	135.9	F
	Thru	1.40	252.2	F	1.17	157.8	F
	Right	0.76	47.2	D	0.64	37.9	D
	Approach	N/A	162.7	F	N/A	112.4	F
Overall Intersection		**N/A**	**96.2**	**F**	**N/A**	**96.1**	**F**

Table 5-3: Design Year (2040) Peak Hour Signalized Intersection Operations Summary – Build Alternative (Continued)

Approach	Movement	AM Peak Hour			PM Peak Hour		
		V/C (1)	Delay (2)	LOS (3)	V/C (1)	Delay (2)	LOS (3)
US 301 at Sabal Industrial Boulevard							
Northbound US 301	Left	0.94	89.1	F	0.91	101.7	F
	Thru	0.81	49.7	D	0.83	52.4	D
	Right	0.58	55.4	E	0.04	35.1	D
	Approach	N/A	52.8	D	N/A	54.8	D
Southbound US 301	Left	1.00	60.4	E	0.83	77.7	E
	Thru	0.69	19.7	B	0.99	54.8	D
	Right	0.02	13.1	B	0.01	31.0	C
	Approach	N/A	25.9	C	N/A	55.7	E
Eastbound Sabal Industrial Blvd.	Left	0.17	71.4	E	0.71	94.7	F
	Thru	0.16	71.3	E	0.51	75.9	E
	Right	0.16	71.3	E	0.51	75.9	E
	Approach	N/A	71.4	E	N/A	87.3	F
Westbound Sabal Industrial Blvd.	Left	0.29	71.9	E	0.96	86.7	F
	Thru	0.02	70.4	E	0.02	51.0	D
	Right	0.25	41.8	D	1.11	136.2	F
	Approach	N/A	53.8	D	N/A	105.9	F
Overall Intersection		**N/A**	**39.8**	**D**	**N/A**	**64.5**	**E**
US 301 at SR 574							
Northbound US 301	Left	1.31	228.6	F	1.11	139.2	F
	Thru	0.64	31.9	C	0.99	51.9	D
	Right	0.46	21.0	C	0.33	15.7	B
	Approach	N/A	85.6	F	N/A	66.2	E
Southbound US 301	Left	1.19	168.8	F	1.04	129.9	F
	Thu	1.10	93.5	F	0.99	72.3	E
	Right	0.25	22.5	C	0.26	31.9	C
	Approach	N/A	103.5	F	N/A	77.9	E
Eastbound SR 574	Left	0.93	112.9	F	0.88	99.4	F
	Thru	1.34	212.3	F	1.10	110.2	F
	Right	0.82	11.1	B	1.09	65.9	F
	Approach	N/A	167.2	F	N/A	97.5	F
Westbound SR 574	Left	1.28	222.5	F	1.03	114.8	F
	Thru	1.03	85.2	F	1.09	100.7	F
	Right	0.47	13.9	B	0.84	30.4	C
	Approach	N/A	96.8	F	N/A	90.2	F
Overall Intersection		**N/A**	**115.3**	**F**	**N/A**	**83.3**	**F**

Table 5-3: Design Year (2040) Peak Hour Signalized Intersection Operations Summary – Build Alternative (Continued)

Approach	Movement	AM Peak Hour			PM Peak Hour		
		V/C (1)	Delay (2)	LOS (3)	V/C (1)	Delay (2)	LOS (3)
US 301 at Oak Fair Boulevard							
Northbound US 301	Left	N/A	N/A	N/A	N/A	N/A	N/A
	Thru	0.92	40.7	D	1.00	47.5	D
	Right	0.12	17.8	B	0.14	23.2	C
	Approach	N/A	39.9	D	N/A	46.5	D
Southbound US 301	Left	0.94	77.9	E	1.06	120.4	F
	Thu	0.76	16.1	B	0.51	7.0	A
	Right	N/A	N/A	N/A	N/A	N/A	N/A
	Approach	N/A	25.7	C	N/A	27.5	C
Eastbound Oak Fair Blvd.	Left	N/A	N/A	N/A	N/A	N/A	N/A
	Thru	N/A	N/A	N/A	N/A	N/A	N/A
	Right	N/A	N/A	N/A	N/A	N/A	N/A
	Approach	N/A	N/A	N/A	N/A	N/A	N/A
Westbound Oak Fair Blvd.	Left	0.87	79.1	E	1.10	152.0	F
	Thru	N/A	N/A	N/A	N/A	N/A	N/A
	Right	0.27	20.6	C	0.45	35.6	D
	Approach	N/A	56.0	E	N/A	96.6	F
Overall Intersection		**N/A**	**33.1**	**C**	**N/A**	**43.0**	**D**

(1) Volume-to-Capacity Ratio
(2) Average Delay (seconds/vehicle)
(3) Level of Service
* Free-Flow Right-Turn Lane
** Values based on manual calculation of weighted average delay (including the zero delay for the free-flow right-turn movement)

Although the SR 60, Columbus Drive/Tampa E. Boulevard and SR 574 intersections are all projected to operate at LOS F overall in the design year, the 2040 peak hour volumes projected to occur at these locations with the Build Alternative are significantly higher than the existing peak hour volumes. **Table 5-4** provides a comparison of the 2013 and 2040 peak hour approach volumes for these three intersections. A review of this table indicated that the 2040 peak hour approach volumes at the SR 60 intersection are approximately 59.0% higher than the 2013 peak hour approach volumes. Even larger increases are projected to occur at the SR 574 intersection (approximately 90.6%) and the Tampa E. Boulevard/Columbus Drive intersection (approximately 139.5%).

The overall average peak hour vehicle delays that are projected to occur at the Tampa E. Boulevard/Columbus Drive and SR 574 intersections are less than 120 seconds/vehicle; while the average peak hour delays at the SR 60 intersection are projected to range between 86 seconds/vehicle and 125 seconds/vehicle. Since the signalized intersection analyses were conducted using a total cycle length of 160 seconds, the results indicate that the overall average peak hour intersection delays are expected to be lower than the peak hour cycle lengths. This suggests that many of the peak hour vehicles will likely be able to clear these intersections within one signal cycle.

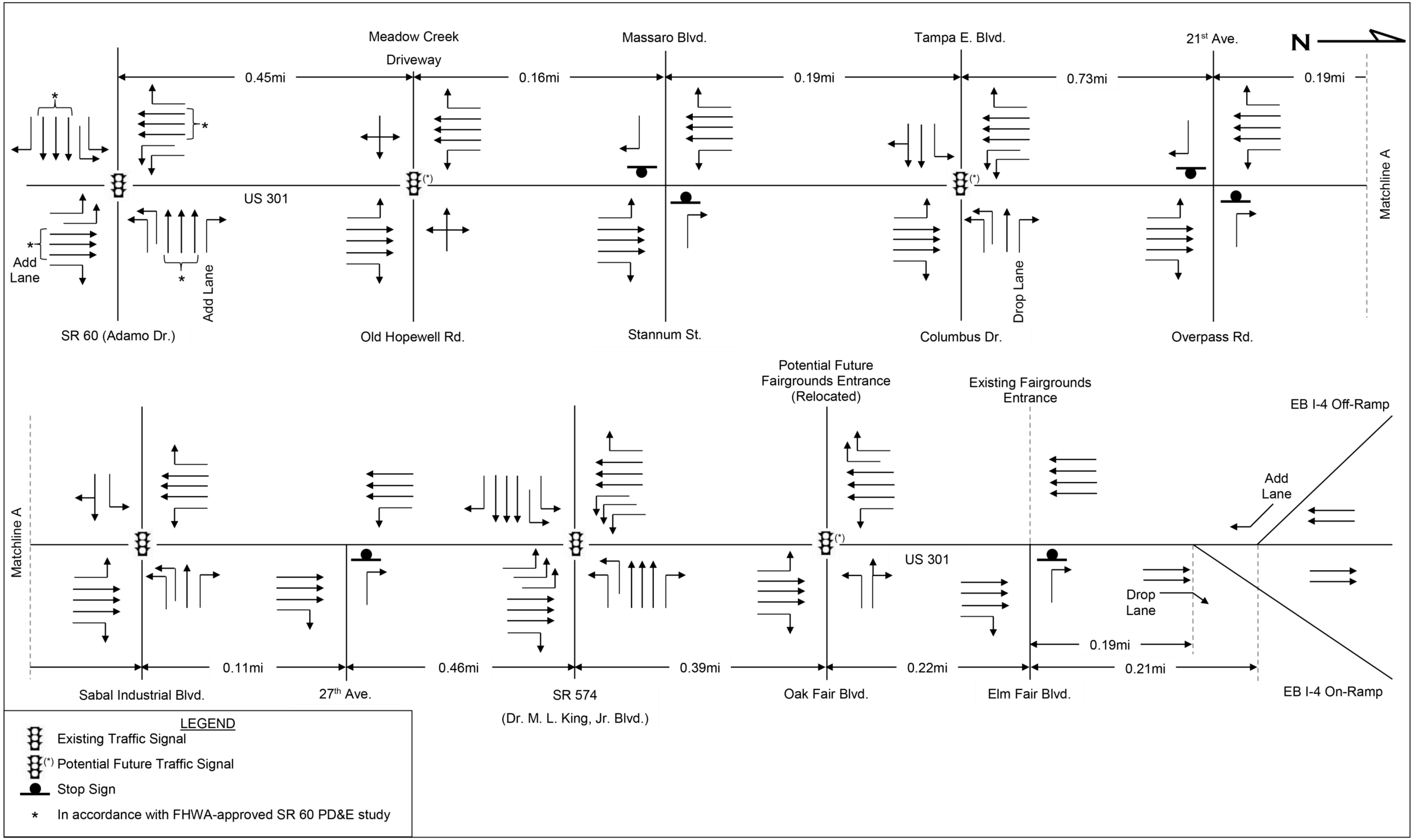

Figure 5-1: Design Year (2040) Recommended Intersection Geometry – Build Alternative

Table 5-4: Peak Hour Volume Comparison – 2013 vs. 2040 Build Alternative

Intersection Approach	AM Peak Hour Volume				PM Peak Hour Volume			
	2013	2040	Increase	% Increase	2013	2040	Increase	% Increase
US 301 at SR 60								
NB US 301	1,646	2,519	873	53.04%	1,245	1,900	655	52.61%
SB US 301	1,329	2,465	1,136	85.48%	1,872	3,268	1,396	74.57%
EB SR 60	1,498	2,293	795	53.07%	1,917	2,756	839	43.77%
WB SR 60	2,013	3,066	1,053	52.31%	1,473	2,387	914	62.05%
Total	**6,486**	**10,343**	**3,857**	**59.47%**	**6,507**	**10,311**	**3,804**	**58.46%**
US 301 at Tampa E. Boulevard/Columbus Drive								
NB US 301	1,832	3,289	1,457	79.53%	1,393	2,519	1,126	80.83%
SB US 301	1,347	2,616	1,269	94.21%	1,667	3,513	1,846	110.74%
EB Tampa E. Blvd.	183	802	619	338.25%	229	909	680	296.94%
WB Columbus Dr.	55	1,444	1,389	2525.45%	97	1,203	1,106	1140.21%
Total	**3,417**	**8,151**	**4,734**	**138.54%**	**3,386**	**8,144**	**4,758**	**140.52%**
US 301 at SR 574								
NB US 301	1,396	2,867	1,471	105.37%	1,704	2,947	1,243	72.95%
SB US 301	1,538	2,847	1,309	85.11%	1,154	2,148	994	86.14%
EB SR 574	1,522	2,758	1,236	81.21%	1,569	2,531	962	61.31%
WB SR 574	1,179	2,285	1,106	93.81%	1,183	3,055	1,872	158.24%
Total	**5,635**	**10,757**	**5,122**	**90.90%**	**5,610**	**10,681**	**5,071**	**90.39%**

Table 5-5 summarizes the results of the 2040 Build Alternative signalized arterial analyses. In the a.m. peak hour, two of the six roadway segments analyzed are projected to operate at LOS F. In the p.m. peak hour, two segments are also projected to operate at LOS F. The overall a.m. peak hour corridor travel speeds are indicative of LOS D conditions in both the northbound and southbound travel directions. In the p.m. peak hour, the overall corridor travel speeds are indicative of LOS D conditions in the northbound direction and LOS E conditions in the southbound direction. The HCS urban street segment summary reports for the 2040 Build Alternative are provided in **Appendix K**.

5.2 Design Year (2040) Build Alternative Queue Lengths

Two different methodologies were used to obtain estimates of the peak hour queue lengths for the northbound and southbound left-turn, through and right-turn lanes at the US 301 signalized intersections. The first methodology involved the use of the FDOT Plans Preparation Manual while the second methodology involved the use of the 50th- percentile "back of queue" estimates obtained from the 2010 HCS analyses. **Table 5-6** summarizes the design year (2040) a.m. and p.m. peak hour queue length estimates obtained using these two methodologies. Ideally, the lengths of the exclusive left-turn and right-turn lanes should be designed to:

- Minimize the possibility of left-turn and right-turn vehicle queues extending back into the adjacent through lanes
- Minimize the possibility of through vehicle queues extending back and blocking the access to the exclusive turn lanes
- Provide both adequate deceleration length and adequate queue storage

Table 5-5: Design Year (2040) Peak Hour Signalized Arterial Analysis Summary – Build Alternative

Segment	Travel Direction	AM Peak Hour		PM Peak Hour	
		Travel Speed (1)	LOS (2)	Travel Speed (1)	LOS (2)
Btwn SR 60 and Old Hopewell Rd.	NB	24.99	C	21.76	D
	SB	19.56	D	23.55	D
Btwn Old Hopewell Rd. and Columbus Dr./Tampa E. Blvd.	NB	14.22	F	24.22	D
	SB	25.18	C	19.27	E
Btwn Columbus Dr./Tampa E. Blvd. and Sabal Industrial Blvd.	NB	27.28	C	26.80	C
	SB	32.42	C	17.67	F
Btwn Sabal Industrial Blvd. and SR 574	NB	26.47	C	20.90	D
	SB	31.20	C	20.27	D
Btwn SR 574 and Oak Fair Blvd.	NB	19.64	D	17.87	E
	SB	11.35	F	13.69	F
Overall Corridor	NB	22.77	D	22.58	D
	SB	22.62	D	18.35	E

(1) Average Travel Speed (miles per hour)
(2) Level of Service

However, the distances between adjacent median openings (including median openings that were not included in the traffic operations analyses) and the locations of driveways impose constraints on the maximum turn lane lengths that can be provided at certain locations. **Table 5-6** also includes the total lengths of the exclusive left-turn and right-turn lanes that are provided with the Build Alternative roadway concept, along with a description of the constraints that limit the total lengths that can be provided (where applicable).

The peak hour queue lengths for the northbound and southbound left-turn lanes at the US 301 unsignalized intersections were estimated using the 95th-percentile queue lengths obtained from the 2010 HCS analyses. **Table 5-7** summarizes the design year (2040) a.m. and p.m. peak hour queue length estimates for the unsignalized intersections along with the total lengths of the left-turn lanes that are provided with the Build Alternative roadway concept.

Table 5-6: Design Year (2040) Build Alternative Queue Length Estimates – Signalized Intersections

Intersection	Movement	No. of Lanes	AM Peak Hour				PM Peak Hour				Total Turn Lane Length [3] (feet)		Constraint (Why Turn Lane Length cannot be Longer)
			Volume	Volume (veh/lane)	Queue Length (feet) PPM[1]	Queue Length (feet) 50% HCS[2]	Volume	Volume (veh/lane)	Queue Length (feet) PPM[1]	Queue Length (feet) 50% HCS[2]	Desirable	Provided	
SR 60	NB LT	2	447	224	**498**	**330**	266	133	296	160	705	N/A	N/A
	NB TH	3	1,903	634	**1,409**	**905**	1,376	459	1,020	593	N/A	N/A	-
	NB RT	1	169	169	N/A	N/A	258	258	N/A	N/A	365	N/A	N/A
	SB LT	2	589	295	656	373	919	460	**1,022**	**523**	1,025	1,025	None
	SB TH	3	1,385	462	1,027	303	1,943	648	**1,440**	**455**	N/A	N/A	-
	SB RT	1	446	446	**991**	**140**	361	361	802	80	1,025	N/A	N/A
Old Hopewell Rd.	NB LT	1	20	20	44	15	24	24	**53**	**23**	340	340	None
	NB TH	3	3,200	1,067	**2,371**	**738**	2,368	789	1,753	608	N/A	N/A	-
	NB RT	1	48	48	107	10	73	73	**162**	**23**	400	400	None
	SB LT	1	223	223	**496**	**223**	163	163	362	153	750	405	NB left-turn lane for Massaro Blvd.
	SB TH	3	2,393	798	1,773	428	3,192	1,064	**2,364**	**718**	N/A	N/A	-
	SB RT	1	12	12	27	3	20	20	**44**	**3**	290	415	None
Columbus Dr./ Tampa E. Blvd.	NB LT	1	243	243	540	248	249	249	**553**	**343**	800	610	SB left-turn lane for Stannum St.
	NB TH	3	2,788	929	**2,064**	**393**	1,912	637	1,416	148	N/A	N/A	-
	NB RT	1	258	258	573	33	358	358	**796**	**45**	1,050	745	Stannum St curb return
	SB LT	2	673	337	**749**	**588**	639	320	711	370	1,125	900	NB left-turn lane for business access
	SB TH	3	1,912	637	1,416	375	2,788	929	**2,064**	**1,118**	N/A	N/A	-
	SB RT	1	56	56	124	10	86	86	**191**	**35**	450	390	Driveway conflicts
Sabal Industrial Blvd.	NB LT	1	184	184	**409**	**188**	136	136	302	148	725	495	SB left-turn lane for Overpass Rd.
	NB TH	3	2,644	881	**1,958**	675	2,421	807	1,793	**718**	N/A	N/A	-
	NB RT	1	633	633	**1,407**	**598**	68	68	151	30	850	685	Overpass Rd. curb return and driveway
	SB LT	1	456	456	**1,013**	**413**	120	120	267	128	925	465	SB left-turn lane for 27th Ave.
	SB TH	3	2,477	826	1,836	450	2,634	878	**1,951**	**918**	N/A	N/A	-
	SB RT	1	67	67	**149**	**8**	15	15	33	5	925	600	Tampa Bypass Canal Bridge
SR 574	NB LT	3	795	265	**589**	**363**	592	197	438	248	825	480	SB left-turn lane for business access
	NB TH	3	1,596	532	1,182	280	2,022	674	**1,498**	**575**	N/A	N/A	-
	NB RT	1	476	476	**1,058**	**158**	333	333	740	98	1,050	800	Additional driveway conflicts
	SB LT	3	536	179	**398**	**265**	316	105	233	148	850	850	None
	SB TH	3	2,091	697	**1,549**	**845**	1,624	541	1,202	635	N/A	N/A	-
	SB RT	1	220	220	**489**	3	208	208	462	**118**	850	760	Driveway conflict to Fairgrounds
Oak Fair Blvd.	NB LT	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	570	570	None
	NB TH	3	2,024	675	1,500	478	2,685	895	**1,989**	**835**	N/A	N/A	-
	NB RT	1	124	124	276	25	158	158	**351**	**58**	850	495	Driveway conflicts
	SB LT	1	474	474	**1,053**	563	414	414	920	**590**	1,050	1,050	None
	SB TH	3	2,568	856	**1,902**	**458**	1,883	628	1,396	183	N/A	N/A	-
	SB RT	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,500	1,500	None

[1] Queue Length Based on FDOT Plans Preparation Manual = (2.0 x Per lane Volume x 25)/(3600/Cycle Length)
[2] 50th Percentile Queue Length Estimated from 2010 Highway Capacity Software = Back of Queue (veh/lane) x 25
[3] Includes Queue Storage, Decel and Taper [Decel length = 240 feet (Based on a 50 mph Urban Roadway from the FDOT Design Standards)]
Denotes Higher of the Two Peak Hour Queue Lengths

Table 5-7: Design Year (2040) Build Alternative Queue Length Estimates – Unsignalized Intersections

Intersection	Movement	No. of Lanes	AM Peak Hour		PM Peak Hour		Total Turn Lane Length [(2)] (feet)		Constraint (Why Turn Lane Length Cannot be Longer)
			Volume	Queue Length [(1)] (feet)	Volume	Queue Length [(1)] (feet)	Desirable	Provided	
Stannum St./ Massaro Blvd.	NB LT	1	137	131	120	**225**	465	340	SB left-turn lane for Old Hopewell Rd.
	SB LT	1	29	**35**	30	16	340	340	None
Overpass Rd./ 21st Ave.	NB LT	1	179	**294**	109	233	535	535	None
	SB LT	1	134	**305**	110	117	545	390	NB left-turn lane for Sabal Industrial Blvd.
27th Ave.	SB LT	1	28	21	38	**36**	340	390	None

(1) 95th Percentile Queue Length Estimated from 2010 Highway Capacity Software = 95th Percentile Back of Queue (veh/lane) x 25

(2) Includes Queue Storage, Decel and Taper [Decel length = 240 feet (Based on a 50 mph Urban Roadway from the FDOT Design Standards)]

Denotes Higher of the Two Peak Hour Queue Lengths

5.3 Opening Year (2020) Build Alternative Level of Service Analyses

Table 5-8 summarizes the results of the 2020 unsignalized intersection analyses conducted for the Build Alternative. The HCS unsignalized intersection analysis summary reports for the 2020 Build Alternative are provided in **Appendix L**. With one exception, all of the northbound and southbound left-turn movements are projected to operate under capacity during the peak hours. The southbound US 301 left-turn movement at the Columbus Drive/Tampa E. Boulevard intersection is projected to operate over capacity with a v/c ratio equal to 1.25 during the a.m. peak hour. In the p.m. peak hour, the v/c ratio for this movement is projected to be equal to 0.99; thus indicating the capacity for this left-turn movement will likely be achieved during the p.m. peak hour. In addition, several US 301 cross street movements are projected to operate significantly overcapacity during both of the peak hours. These movements include the following:

- Westbound left-turn, through and right-turn movements from Old Hopewell Road (a.m. peak hour only)
- Eastbound left-turn, through and right-turn movements from Tampa E. Boulevard (both peak hours)
- Westbound left-turn and through movements from Columbus Drive (both peak hours)
- Westbound left-turn movement from Oak Fair Boulevard (both peak hours)

Given the severe overcapacity conditions that are projected to occur in the opening year at the Old Hopewell Road, Columbus Drive/Tampa E. Boulevard and Oak Fair Boulevard unsignalized intersections, a second analysis was conducted for the study corridor using the Urban Streets module of the 2010 HCS. For the purposes of this analysis, it was assumed that the existing unsignalized intersections at Old Hopewell Road, Columbus Drive/Tampa E. Boulevard and Oak Fair Boulevard would be signalized in the opening year 2020.

Table 5-9 summarizes the results of the 2020 Build Alternative signalized intersection analyses. Five of the six intersections are projected to operate at LOS D or better overall during both the a.m. and p.m. peak hours. The SR 60 intersection is also projected to operate at LOS D overall, but only during the p.m. peak hour. In the a.m. peak hour this intersection is projected to operate at LOS E overall. The HCS signalized Intersection analysis summary reports for the 2020 Build Alternative are provided in **Appendix L**.

Table 5-10 summarizes the results of the 2020 Build Alternative signalized arterial analyses. A majority of the roadway segments are projected to operate at LOS D or better in both travel directions during both peak hours. In the a.m. peak hour, the segments located between SR 60 and Old Hopewell Road and between SR 574 and Oak Fair Boulevard are projected to operate at LOS E in the southbound travel direction. In the p.m. peak hour, the segment located between SR 574 and Oak Fair Boulevard is also projected to operate at LOS E in the southbound travel direction. The overall corridor travel speeds are indicative of LOS C conditions for both travel directions during both peak hours. The HCS urban street segment analysis summary reports for the 2020 Build Alternative are provided in **Appendix L**.

Table 5-8: Design Year (2020) Peak Hour Unsignalized Intersection Operations Summary – Build Alternative

Intersection	Approach	Movement	AM Peak Hour			PM Peak Hour		
			V/C (1)	Delay (2)	LOS (3)	V/C (1)	Delay (2)	LOS (3)
Old Hopewell Rd.	Northbound	LT	0.03	15.8	C	0.04	25.1	D
	Southbound	LT	0.60	53.1	F	0.33	24.2	C
	Eastbound	LT/TH/RT	0.28	41.4	E	0.40	55.1	F
	Westbound	LT/TH/RT	1.35	315.1	F	0.72	65.5	F
Stannum St./Massaro Blvd.	Northbound	LT	0.23	19.1	C	0.15	16.3	C
	Southbound	LT	0.13	26.2	D	0.05	12.2	B
	Eastbound	RT	0.38	21.4	C	0.37	19.0	C
	Westbound	RT	0.16	26.7	D	0.16	14.1	B
Columbus Dr./Tampa E. Blvd.	Northbound	LT	0.56	25.8	D	0.87	81.2	F
	Southbound	LT	1.25	189.1	F	0.99	84.6	F
	Eastbound	LT	*	**	F	*	**	F
	Eastbound	TH/RT	*	**	F	*	**	F
	Westbound	LT	*	**	F	*	**	F
	Westbound	TH	*	**	F	*	**	F
	Westbound	RT	0.56	29.4	D	0.50	21.5	C
Overpass Rd./21st Ave.	Northbound	LT	0.27	22.3	C	0.24	26.2	D
	Southbound	LT	0.34	26.8	D	0.18	19.0	C
	Eastbound	RT	0.41	22.1	C	0.80	49.0	E
	Westbound	RT	0.46	25.9	D	0.43	22.1	C
27th Ave.	Southbound	LT	0.08	19.1	C	0.11	24.0	C
	Westbound	RT	0.18	18.8	C	0.08	18.3	C
Oak Fair Blvd.	Southbound	LT	0.80	44.1	E	0.86	65.1	F
	Westbound	LT	3.40	1,256.0	F	4.38	1,697.0	F
	Westbound	TH/RT	0.29	18.0	C	0.58	28.3	D
Elm Fair Blvd.	Westbound	RT	0.39	18.6	C	0.71	41.3	E

(1) Volume-to-Capacity Ratio
(2) Average Delay (seconds/vehicle)
(3) Level of Service

* Theoretically, the capacity for this movement is equal to zero; therefore, the v/c ratio is infinite.
** No estimate of delay is provided since the v/c ratio is infinite.

Table 5-9: Opening Year (2020) Peak Hour Signalized Intersection Operations Summary – Build Alternative

Approach	Movement	AM Peak Hour			PM Peak Hour		
		V/C (1)	Delay (2)	LOS (3)	V/C (1)	Delay (2)	LOS (3)
US 301 at SR 60							
Northbound US 301	Left	0.96	98.2	F	0.81	83.5	F
	Thru	0.92	63.2	E	0.79	60.7	E
	Right	N/A*	0.0*	A	N/A*	0.0*	A
	Approach	N/A	66.9**	E	N/A	54.6**	D
Southbound US 301	Left	0.87	74.1	E	0.88	68.5	E
	Thru	0.70	48.0	D	0.75	45.2	D
	Right	0.53	35.3	D	0.30	23.2	C
	Approach	N/A	52.2	D	N/A	49.8	D
Eastbound SR 60	Left	0.92	101.9	F	0.85	82.0	F
	Thru	0.82	53.8	D	0.94	63.2	E
	Right	0.30	4.1	A	0.52	4.4	A
	Approach	N/A	55.9	E	N/A	57.2	E
Westbound SR 60	Left	0.91	100.9	F	0.73	81.7	F
	Thru	0.97	71.2	E	0.92	66.5	E
	Right	0.86	31.3	C	0.45	17.0	B
	Approach	N/A	64.0	E	N/A	58.3	E
Overall Intersection		**N/A**	**60.4****	**E**	**N/A**	**54.8****	**D**
US 301 at Old Hopewell Road							
Northbound US 301	Left	0.05	56.1	E	0.07	70.2	E
	Thru	0.70	25.4	C	0.51	23.8	C
	Right	0.02	16.6	B	0.02	19.0	B
	Approach	N/A	25.5	C	N/A	23.9	C
Southbound US 301	Left	0.50	69.3	E	0.40	72.3	E
	Thu	0.60	13.5	B	0.63	7.3	A
	Right	0.01	7.8	A	0.01	3.8	A
	Approach	N/A	16.7	B	N/A	9.6	A
Eastbound Meadow Creek Driveway	Left	0.12	68.5	E	0.20	65.1	E
	Thru	0.12	68.5	E	0.20	65.1	E
	Right	0.12	68.5	E	0.20	65.1	E
	Approach	N/A	68.5	E	N/A	65.1	E
Westbound Old Hopewell Rd.	Left	0.54	74.2	E	0.73	83.7	F
	Thru	0.54	74.2	E	0.73	83.7	F
	Right	0.54	74.2	E	0.73	83.7	F
	Approach	N/A	74.2	E	N/A	83.7	F
Overall Intersection		**N/A**	**22.3**	**C**	**N/A**	**17.9**	**B**

Table 5-9: Opening Year (2020) Peak Hour Signalized Intersection Operations Summary – Build Alternative (Continued)

Approach	Movement	AM Peak Hour			PM Peak Hour		
		V/C (1)	Delay (2)	LOS (3)	V/C (1)	Delay (2)	LOS (3)
US 301 at Columbus Drive/Tampa E. Boulevard							
Northbound US 301	Left	0.79	80.2	F	0.81	95.3	F
	Thru	0.93	27.4	C	0.54	7.4	A
	Right	0.08	9.2	A	0.10	3.7	A
	Approach	N/A	31.7	C	N/A	15.6	B
Southbound US 301	Left	0.63	75.7	E	0.68	73.9	E
	Thu	0.79	24.9	C	0.72	31.9	C
	Right	0.02	10.6	B	0.01	17.5	B
	Approach	N/A	32.7	C	N/A	36.9	D
Eastbound Tampa E. Blvd.	Left	0.14	46.5	D	0.11	53.6	D
	Thru	0.43	57.1	E	0.69	70.5	E
	Right	0.65	63.3	E	1.02	133.6	F
	Approach	N/A	59.0	E	N/A	102.8	F
Westbound Columbus Dr.	Left	0.33	67.3	E	0.53	74.0	E
	Thru	0.43	52.0	D	0.48	59.5	E
	Right	0.21	32.7	C	0.26	43.0	D
	Approach	N/A	50.5	D	N/A	58.6	E
Overall Intersection		**N/A**	**35.6**	**D**	**N/A**	**36.8**	**D**
US 301 at Sabal Industrial Boulevard							
Northbound US 301	Left	0.44	73.1	E	0.34	68.0	E
	Thru	0.72	54.2	D	0.64	34.8	C
	Right	0.44	51.8	D	0.03	23.9	C
	Approach	N/A	54.4	D	N/A	35.5	D
Southbound US 301	Left	0.50	50.0	D	0.47	72.7	E
	Thru	0.56	22.4	C	0.64	36.8	D
	Right	0.02	16.6	B	0.01	30.0	C
	Approach	N/A	25.2	C	N/A	38.1	D
Eastbound Sabal Industrial Blvd.	Left	0.09	70.9	E	0.42	74.2	E
	Thru	0.07	70.7	E	0.48	75.0	E
	Right	0.07	70.7	E	0.48	75.0	E
	Approach	N/A	70.8	E	N/A	74.6	E
Westbound Sabal Industrial Blvd.	Left	0.19	71.3	E	0.57	60.7	E
	Thru	0.01	70.4	E	0.01	53.7	D
	Right	0.15	40.4	D	0.91	83.1	F
	Approach	N/A	53.2	D	N/A	71.4	E
Overall Intersection		**N/A**	**40.8**	**D**	**N/A**	**42.7**	**D**

Table 5-9: Opening Year (2020) Peak Hour Signalized Intersection Operations Summary – Build Alternative (Continued)

Approach	Movement	AM Peak Hour			PM Peak Hour		
		V/C (1)	Delay (2)	LOS (3)	V/C (1)	Delay (2)	LOS (3)
US 301 at SR 574							
Northbound US 301	Left	1.00	107.8	F	0.83	80.0	E
	Thru	0.59	25.1	C	0.73	27.5	C
	Right	0.21	15.2	B	0.28	11.6	B
	Approach	N/A	50.8	D	N/A	38.8	D
Southbound US 301	Left	0.69	68.7	E	0.55	68.0	E
	Thu	0.69	42.3	D	0.59	44.5	D
	Right	0.10	23.5	C	0.07	26.6	C
	Approach	N/A	47.7	D	N/A	48.9	D
Eastbound SR 574	Left	0.66	79.0	E	0.57	74.3	E
	Thru	0.98	78.0	E	0.90	62.2	E
	Right	0.72	7.0	A	0.79	9.7	A
	Approach	N/A	61.5	E	N/A	49.3	D
Westbound SR 574	Left	0.87	99.9	F	0.70	76.1	E
	Thru	0.78	55.9	E	0.68	48.3	D
	Right	0.37	11.6	B	0.64	17.5	B
	Approach	N/A	54.9	D	N/A	44.2	D
Overall Intersection		**N/A**	**53.6**	**D**	**N/A**	**45.0**	**D**
US 301 at Oak Fair Boulevard							
Northbound US 301	Left	N/A	N/A	N/A	N/A	N/A	N/A
	Thru	0.81	33.1	C	0.79	25.3	C
	Right	0.08	17.6	B	0.06	15.7	B
	Approach	N/A	32.6	C	N/A	25.1	C
Southbound US 301	Left	0.58	47.8	D	0.56	54.8	D
	Thu	0.53	11.2	B	0.37	7.0	A
	Right	N/A	N/A	N/A	N/A	N/A	N/A
	Approach	N/A	16.4	B	N/A	13.9	B
Eastbound Oak Fair Blvd.	Left	N/A	N/A	N/A	N/A	N/A	N/A
	Thru	N/A	N/A	N/A	N/A	N/A	N/A
	Right	N/A	N/A	N/A	N/A	N/A	N/A
	Approach	N/A	N/A	N/A	N/A	N/A	N/A
Westbound Oak Fair Blvd.	Left	0.37	52.7	D	0.46	58.6	E
	Thru	N/A	N/A	N/A	N/A	N/A	N/A
	Right	0.12	18.8	B	0.22	29.6	C
	Approach	N/A	38.9	D	N/A	44.1	D
Overall Intersection		**N/A**	**24.0**	**C**	**N/A**	**21.7**	**C**

(1) Volume-to-Capacity Ratio
(2) Average Delay (seconds/vehicle)
(3) Level of Service

* Free-Flow Right-Turn Lane
** Values based on manual calculation of weighted average delay (including the zero delay for the free-flow right-turn movement)

Table 5-10: Opening Year (2020) Peak Hour Signalized Arterial Analysis Summary – Build Alternative

Segment	Travel Direction	AM Peak Hour		PM Peak Hour	
		Travel Speed (1)	LOS (2)	Travel Speed (1)	LOS (2)
Btwn SR 60 and Old Hopewell Rd.	NB	26.43	C	27.34	C
	SB	19.50	E	20.08	D
Btwn Old Hopewell Rd. and Columbus Dr./Tampa E. Blvd.	NB	22.07	D	34.51	B
	SB	29.46	C	34.36	B
Btwn Columbus Dr./Tampa E. Blvd. and Sabal Industrial Blvd.	NB	26.43	C	31.47	C
	SB	34.62	B	32.15	C
Btwn Sabal Industrial Blvd. and SR 574	NB	29.12	C	28.08	C
	SB	30.22	C	24.96	C
Btwn SR 574 and Oak Fair Blvd.	NB	21.96	D	24.83	C
	SB	19.21	E	18.72	E
Overall Corridor	NB	25.51	C	29.15	C
	SB	26.53	C	25.48	C

(1) Average Travel Speed (miles per hour)

(2) Level of Service

SECTION 6.0 SUMMARY

This Design Traffic Technical Memorandum was prepared in support of the FDOT District Seven US 301 Project Development and Environment (PD&E) Study. The limits of the PD&E study extend from SR 60 (Adamo Drive) to just south of the eastbound I-4 (SR 400) on-/off-ramps in Hillsborough County. The purpose of the US 301 Design Traffic Technical Memorandum is to document the existing and future year traffic volumes throughout the study corridor and identify the additional geometric improvements that will be needed to provide acceptable traffic operations in the future.

The existing US 301 roadway is a four-lane divided north/south roadway; however, three through lanes are provided in both the northbound and southbound directions in the vicinity of the SR 574 (Dr. Martin Luther King, Jr. Boulevard) intersection. The 2013 AADT volumes on US 301 range between 29,700 vpd (south of Elm Fair Boulevard) and 36,200 vpd (between Old Hopewell Road and Stannum Street/Massaro Boulevard). The results of the existing conditions multilane highway segment analyses indicate that all of the roadway segments are operating at LOS C or better in both travel directions during the a.m. and p.m. peak hours. Signalized intersection analyses were conducted for the SR 60, Sabal Industrial Boulevard, and SR 574 intersections. The Sabal Industrial Boulevard intersection is currently operating at LOS C or better overall during both peak hours, while the SR 574 intersection is currently operating at LOS D overall during both peak hours. In contrast, the SR 60 intersection is currently operating at LOS F overall during the a.m. and p.m. peak hours.

Unsignalized intersection analyses were also conducted for seven existing unsignalized intersections. With one exception, all of the northbound and southbound US 301 left-turn movements are currently operating at LOS C or better during both peak hours. The northbound left-turn movement at the Columbus Drive/Tampa E. Boulevard intersection is operating at LOS D during the p.m. peak hour. A significant number of cross street movements are currently operating at LOS F during one or both of the peak hours.

Future year daily and peak hour traffic projections for the US 301 study corridor were estimated with the use of the 2035 Cost-Affordable Tampa Bay Regional Planning Model (TBRPM) and the methodology described in the National Cooperative Highway Research Program's (NCHRP) Report No. 255. The daily and peak hour traffic volumes were developed for an assumed opening year of 2020 and a design year of 2040. Traffic projections were developed for both the No-Build Alternative (i.e., four-lane divided roadway) and the Build Alternative (i.e., six-lane divided roadway). The 2040 AADT volumes for the No-Build Alternative are projected to range between 48,800 vpd and 52,500 vpd, while the 2040 AADT volumes for the Build Alternative are projected to range between 55,500 vpd and 64,500 vpd.

Although the results of the 2040 No-Build Alternative multilane highway segment analyses indicate that LOS D or better operations are projected to occur for all of the study corridor segments, the results of the 2040 unsignalized intersection analyses conducted for this alternative indicate that unacceptable operations are projected to occur for one or more movements at each of the seven unsignalized intersections during one or both of the peak hours. Given the severe overcapacity conditions that are projected to occur at these unsignalized intersections, it is extremely unlikely that all seven of these locations will remain unsignalized through the year 2040. Consequently, a second analysis was conducted for the study corridor. For the purposes of this second analysis, it was assumed that the existing unsignalized intersections at Old Hopewell Road, Columbus Drive/Tampa E. Boulevard and Oak Fair Boulevard would be signalized by the year 2040. These intersections were selected based on their projected 2040 peak hour operations as well as the distances between the existing signalized intersections.

The results of the 2040 No-Build Alternative signalized intersection analyses indicate that three of the six intersections are projected to operate at LOS F overall during both the a.m. and p.m. peak hours. These include the existing signalized intersections at SR 60 and SR 574, as well as the Columbus Drive/Tampa E. Boulevard intersection. The Sabal Industrial Boulevard intersection is also projected to operate at LOS F overall, but only during the p.m. peak hour. In the a.m. peak hour this intersection is projected to operate at LOS E overall. The Old Hopewell Road and Oak Fair Boulevard intersections are projected to operate at LOS D or better overall during both peak hours with the implementation of traffic signal control.

The results of the 2040 Build Alternative unsignalized intersection analyses indicate that overcapacity operations are projected to occur for one or more movements at six of the seven unsignalized intersections. Consequently, a second analysis was also conducted for the Build Alternative. Once again, it was assumed that the existing unsignalized intersections at Old Hopewell Road, Columbus Drive/Tampa E. Boulevard and Oak Fair Boulevard would be signalized by the year 2040. The results of the 2040 Build Alternative signalized intersection analyses indicate that three of the six intersections are projected to operate at LOS F overall during both the a.m. and p.m. peak hours. These include the existing signalized intersections at SR 60 and SR 574, as well as the Columbus Drive/Tampa E. Boulevard intersection. The Sabal Industrial Boulevard intersection is projected to operate at LOS E overall in the p.m. peak hour and LOS D overall in the a.m. peak hour. The Old Hopewell Road and Oak Fair Boulevard intersections are projected to operate at LOS D or better overall during both peak hours with the implementation of traffic signal control.

Although the SR 60, Columbus Drive/Tampa E. Boulevard and SR 574 intersections are all projected to operate at LOS F overall in the design year with both the No-Build and Build Alternatives; the 2040 peak hour volumes projected to occur at these locations with the Build Alternative are significantly higher than the 2040 peak hour volumes projected to occur with the No-Build Alternative. In addition, the overall average vehicle delays at these intersections are projected to be lower with the Build Alternative than with the No-Build Alternative. Consequently, the six-laning of US 301 is expected to provide better peak hour traffic operations for a higher level of travel demand as compared to the No-Build Alternative, thus improving the mobility within this corridor.

APPENDICES

Provided on the CD located on the back cover.