TRAFFIC STUDY

TRAILHEAD LOGISTICS PARK NORTH

MARION COUNTY, FLORIDA

Prepared for:

TRANSWESTERN DEVELOPMENT COMPANY

Prepared by:

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142933004
January 2023

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EXECUTIVE SUMMARY

This Traffic Study has been prepared to support a Planned Unit Development (PUD) zoning application for a proposed industrial warehouse / distribution development generally located north of County Road (CR) 484, west of I-75, and east of SW 29th Avenue Road. This analysis has been performed in accordance with the City of Ocala/Marion County Traffic Impact Analysis (TIA) guidelines and the methodology, which was approved by Marion County.

The PUD proposes up to 3,600,000 square feet of industrial warehouse/distribution uses within three buildings. A conceptual site plan is included in the **Appendix**. For the purpose of this study, a single buildout year of 2027 was assumed.

Site access will be provided through the following:

- Connection to the south along SW 20th Avenue Road, which connects to CR 484 at a signalized intersection
- Connection as a new east leg of the intersection of SW 29th Avenue Road and Marion Oaks Trail

SW 20th Avenue Road is being constructed from the boundary of the Trailhead North development and Trailhead Logistics Park South site to the existing intersection of SW 20th Avenue Road and CR 484. The new roadway extension is being constructed by the Trailhead developer. The new roadway will be a combination of four-lane and two-lane roadway segments. A further extension of SW 20th Avenue Road north into the Trailhead North site is proposed as part of the site development. The roadway will continue west to connect to SW 29th Avenue Road at the intersection with Marion Oaks Trail.

Florida Department of Transportation (FDOT) has roadway improvements planned and funded for the segment of CR 484 from west of SW 20th Avenue Road to east of CR 475A (FPID 433651-1). Construction of these improvements is underway and expected to be complete by 2024, therefore the improvements were utilized when analyzing the roadway network for background traffic conditions. Improvements planned by Marion County at the intersection of Marion Oaks Boulevard and CR 484 (FPID 449277-1) were also included as background improvements prior to the addition of project traffic.

Additional roadway and intersection improvements were identified to be needed within the 2027 timeframe considering background traffic conditions (before the addition of project traffic). These improvements do not require proportionate share mitigation by the Project per Florida Statute. The following improvements were identified to be needed to provide acceptable level of service under future background traffic conditions:

- Widening of CR 484 from Marion Oaks Boulevard to CR 475A from 4 lanes to 6 lanes
- Signalization of the intersection of SW 29th Avenue Road at CR 484
- Constructing anticipated buildout geometry of the intersection of SW 20th Avenue Road at CR 484 per the prior Marco Polo PUD study

The following additional transportation improvements were found to be needed at project buildout to provide for acceptable level of service and traffic operations

- Lengthening of the westbound left-turn lane on CR 484 at Marion Oaks Boulevard by 120 feet
- Implementing a right-turn overlap for the northbound right-turn movement at the intersection of SW 20th Avenue Road and CR 484

Proportionate share mitigation is required for the improvements that are necessary in addition to those under future background traffic conditions to allow for acceptable traffic operations and level of service with the buildout traffic volumes.

SW 29th Avenue Road was previously contemplated to be four lanes with the Deltona development agreements. There is 100 feet of right-of-way and portions of the roadway are constructed with four lanes. The projected traffic volumes on SW 29th Avenue Road at project buildout do not require widening to four lanes to meet level of service standards; however, the developer has committed to constructing the widening. A traffic signal is shown to be needed at the intersection of SW 29th Avenue Road at CR 484 under future background traffic conditions. The developer has committed to constructing a traffic signal at this location, although no proportionate share mitigation is required per Florida Statute. The cost of the improvements to widen SW 29th Avenue Road and signalize the intersection with CR 484 will be in excess of the proportionate share requirements identified in this traffic study to mitigate for the traffic impacts of the development. The developer will enter into a Chapter 163 Concurrency Development Agreement and Impact Fee Reimbursement Agreement with Marion County to receive credit against the required proportionate share mitigation and transportation impact fees for the improvements to SW 29th Avenue Road.

An interim evaluation was performed for the intersection of SW 20th Avenue Road at CR 484 for the time period when the Trailhead Logistics Park North development will be fully built out, but considering that the Marco Polo PUD and Florida Crossroads Commerce Park may not be constructed, nor any associated future improvements at the intersection. The following interim improvements have been identified for the full buildout of the Trailhead Logistics Park North site prior to the full buildout improvements identified to support the Marco Polo PUD development:

- Restriping the north leg of the intersection to have a left-turn lane, shared through/left-turn lane, and right-turn lane
- Implementation of northbound/southbound split phasing and associated timing adjustments

The developer will enter into a Chapter 163 Concurrency Development Agreement with Marion County that will include a requirement to perform an operational study of the intersection with observed traffic volumes for specific development thresholds within the Trailhead Logistics Park North PUD. The findings of the study will be discussed with Marion County to identify if modifications to the north leg of the intersection and/or signal timing and phasing are required.

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TABLES

FIGURES

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INTRODUCTION

Kimley-Horn has performed this traffic study for the proposed Trailhead Logistics Park North industrial facility. The project site is generally located north of the intersection of SW 20th Avenue Road and CR 484, west of I-75 in Marion County, Florida. The proposed industrial park will be built in a single phase with an expected 2027 buildout year.

This traffic study was performed assuming 3,600,000 square feet of industrial uses at full buildout. The study identifies transportation needs within the study area under existing conditions, future background conditions (before the addition of project traffic) and project buildout conditions (with project traffic). The analysis has been performed in accordance with the City of Ocala/Marion County Traffic Impact Analysis guidelines and the methodology, which was approved by Marion County. The approved methodology and methodology correspondence are included in the **Appendix**.

Access to the property is proposed via the existing signalized intersection on CR 484 at SW 20th Avenue Road and SW 29th Avenue Road at Marion Oaks Trail.

To accommodate the Trailhead Logistics Park South development, SW 20th Avenue Road is being constructed as a new roadway north of CR 484 by the Trailhead developer. The new roadway will be a combination of a four-lane roadway near CR 484, transitioning to a two-lane roadway at the north end of the Trailhead Logistics South site. The proposed roadway construction has been discussed with the Marion County Office of the County Engineer and construction plans were prepared concurrently with the site plans for the development.

The Trailhead Logistics Park North development will be responsible for extending SW 20th Avenue Road to the SW 29th Avenue Road at Marion Oaks Trail intersection. A conceptual site plan is included in the **Appendix**.

The following committed improvements were utilized for the analysis:

- CR 484 Interchange Improvements (from west of SW 20th Avenue Road to east of CR 475A)
- Marion Oaks Boulevard at CR 484 intersection improvements
- SW 20th Avenue Road at CR 484 improvements

These improvements are expected to be completed before full project buildout of the Trailhead Logistics Park North project and were utilized for the background traffic conditions study area analysis. Excerpts detailing the planned improvements are provided in the **Appendix**.

This study is based on data collected by Kimley-Horn and supplemented by information obtained from City of Ocala, Marion County, and the FDOT sources. The study observed the established procedures found in Institute of Transportation Engineers sources, FDOT sources, and the 2016 Highway Capacity Manual (HCM 2016 or HCM6).

PROJECT TRAFFIC

TRIP GENERATION

The Institute of Transportation Engineers (ITE) *Trip Generation Manual, 11th Edition* was used to calculate trip generation potential for the industrial development. ITE Land Use Codes (LUC) 154 (High-Cube Transload and Short-Term Storage Warehouse) and 110 (General Light industrial) were applied in the trip generation calculations. Per the approved methodology, the PM peak hour of generator for ITE LUC 154 was utilized for the trip generation calculations.

No pass-by or internal capture was assumed for the trip generation calculations. Truck traffic was approximated based on information from the ITE Trip Generation Manual (for ITE LUC 110) and the ITE study "High-Cube Warehouse Vehicle Trip Generation Analysis" (for ITE LUC 154). The trip generation calculations are provided in **Table 1**.

Table 1 – Trip Generation

Land Use	Intensity			Daily Trips	AM Peak Hour of Adjacent Street			PM Peak Hour of Adjacent Street		
					Total	In	Out	Total	In	Out
NW Building - ITE LUC 154	1,742,000	Sq Ft GFA		2,439	139	107	32	296	101	195
SW Building - ITE LUC 110	684,000	Sq Ft GFA		2,622	469	413	56	161	23	138
E Building - ITE LUC 154	1,174,000	Sq Ft GFA		1,644	94	72	22	200	68	132
			Subtotal	6,705	702	592	110	657	192	465
Percent Trucks	Daily	AM	PM							
ITE LUC 154	32.2%	30.8%	21.7%	1,315	72	55	17	108	37	71
ITE LUC 110	0.25 / 1000 SF GFA	0.01 / 1000 SF	0.01 / 1000 SF	171	7	4	3	7	4	3
Buildout Automobile Driveway Trips				**5,219**	**623**	**533**	**90**	**542**	**151**	**391**
Buildout Truck Driveway Trips				**1,486**	**79**	**59**	**20**	**115**	**41**	**74**

Note 1: Trip generation calculations were derived from the ITE Trip Generation Manual, 11th Edition.
Note 2: The truck percentages for ITE LUC 110 were determined using the truck generation per 1,000 sf published in the ITE Trip Generation Manual, 11th Edition.
Note 3: The ITE study "High-Cube Warehouse Vehicle Trip Generation Analysis" (10/2016) study was used to determine the truck percentages for ITE LUC 154.

General Light Industrial [ITE 110]

Daily	T = 3.76*(X) + 50.47; (X is 1000 Sq. Ft. GFA); % trucks = 0.25 / 1000 SF GFA
AM Peak Hour of Adjacent Street	T = 0.68*(X) + 3.81; (X is 1000 Sq. Ft. GFA, 88% in, 12% out); % trucks = 0.01 / 1000 SF GFA (60% in, 40% out)
PM Peak Hour of Adjacent Street	Ln(T) = 0.72*Ln(X) + 0.38; (X is 1000 Sq. Ft. GFA, 14% in, 86% out); % trucks = 0.01 / 1000 SF GFA (50% in, 50% out)

High-Cube Transload and Short-Term Storage Warehouse [ITE 154]

Daily	T = 1.40*(X); (X is 1000 Sq. Ft. GFA); % trucks = 32.2%
AM Peak Hour of Adjacent Street	T =0.08*(X); (X is 1000 Sq. Ft. GFA, 77% in, 23% out); % trucks = 30.8%
PM Peak Hour of Generator	T = 0.17*(X); (X is 1000 Sq. Ft. GFA, 34% in, 66% out); % trucks = 21.7%

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TRIP EQUIVALENCY MATRIX

A trip equivalency matrix has been developed for the project, which allows for minor changes to land use types and intensities without increasing the PM peak hour external project trips generated by the development. The uses included in the Trip Equivalency Matrix are those allowed by the PUD zoning per the Master Plan. The gross trip rate for each land use was obtained by using the trip generation rates and pass by percentages provided in the ITE *Trip Generation, 11th Edition* and based on the trip generation calculations approved during the methodology review process. No internal capture was applied for the trip equivalency matrix calculations. Pass-by capture was applied within the trip equivalency gross trip calculations, based on the pass-by capture rates published in the ITE *Trip Generation, 11th Edition* for applicable land uses.

The trip equivalency matrix provides a methodology for conversion of land uses and intensities to result in an equal or lesser number of net new PM peak hour project trips. The trip equivalency matrix is provided in the **Appendix**.

TRIP DISTRIBUTION, ASSIGNMENT, AND STUDY AREA

The project trip distribution for the site was developed based on Version 7.0 of the Central Florida Regional Planning Model (CFRPM), which is based on the Florida Standard Urban Transportation Model Structure (FSUTMS). The CFRPM model distribution was used to estimate the distribution of automobile trips to and from the site. Manual adjustments were made to the FSUTMS model output based on engineering judgment, understanding of the local transportation network, land uses, and discussions with Marion County. The distribution was approved during the methodology process.

A separate distribution of truck traffic was developed based on the anticipated distribution to and from I-75. The existing traffic volumes on I-75 were utilized to estimate the cardinal distribution of truck traffic along this route. **Figure 1** illustrates the project automobile trip distribution, **Figure 2** illustrates the project truck trip distribution, and **Figure 3** illustrates the site access project traffic assignment on Marion Oaks Trail and SW 20th Avenue.

Project traffic was assigned within the study area by applying the external trip distribution to the trip generation potential. The study area for the project included all roadway segments where project traffic consumes three percent (3%) or more of the subject segment's peak hour directional service capacity, plus one segment beyond, consistent with the approved methodology. The service volumes for evaluated roadways were obtained utilizing functional classification and level of service information published by the Ocala Marion Transportation Planning Organization (TPO) and FDOT.

The project significance calculations are provided within the methodology document located in the **Appendix**.

The following roadway segments are included within the study area, and were evaluated for PM peak hour traffic conditions as approved during the methodology process:

- CR 484, from SW 105th Avenue to SR 200 (one segment beyond impact)
- CR 484, from SR 200 to SE 132nd Street Road
- SW 29th Avenue Road, from CR 484 to Marion Oaks Trail
- SE 132nd Street Road, from CR 484 to US 301

- SE 132nd Street Road, from US 301 to US 441 (one segment beyond impact)
- Marion Oaks Trail, from CR 484 W to SW 49th Avenue (one segment beyond impact)
- Marion Oaks Trail, from Marion Oaks Course to CR 484E

In addition to roadway segment analysis, the following intersections were evaluated for AM and/or PM peak hour traffic conditions, as approved during the methodology process:

- CR 484 & Marion Oaks Boulevard (PM)
- CR 484 & SW 29th Avenue Road (AM and PM)
- CR 484 & SW 20th Avenue Road (AM and PM)
- CR 484 & I-75 Southbound Ramp (AM and PM)
- CR 484 & I-75 Northbound Ramp (AM and PM)
- CR 484 & CR 475A (PM)
- CR 484 & CR 475 (PM)
- SW 29th Avenue Road & Marion Oaks Trail (AM and PM)

Figure 4 illustrates the project study area utilized for the analysis.

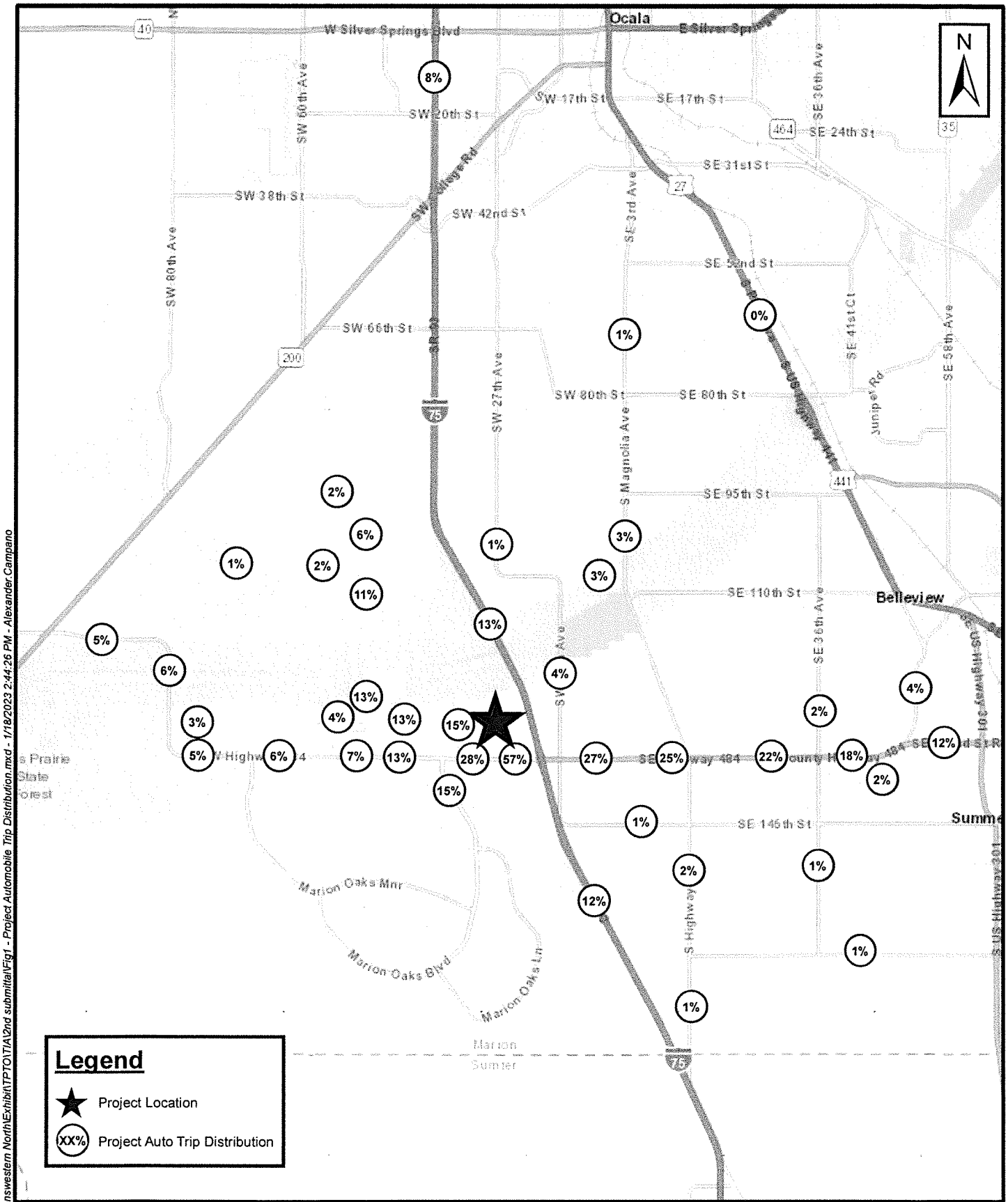

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FIGURE 1 - PROJECT AUTOMOBILE TRIP DISTRIBUTION

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MARION COUNTY, FLORIDA

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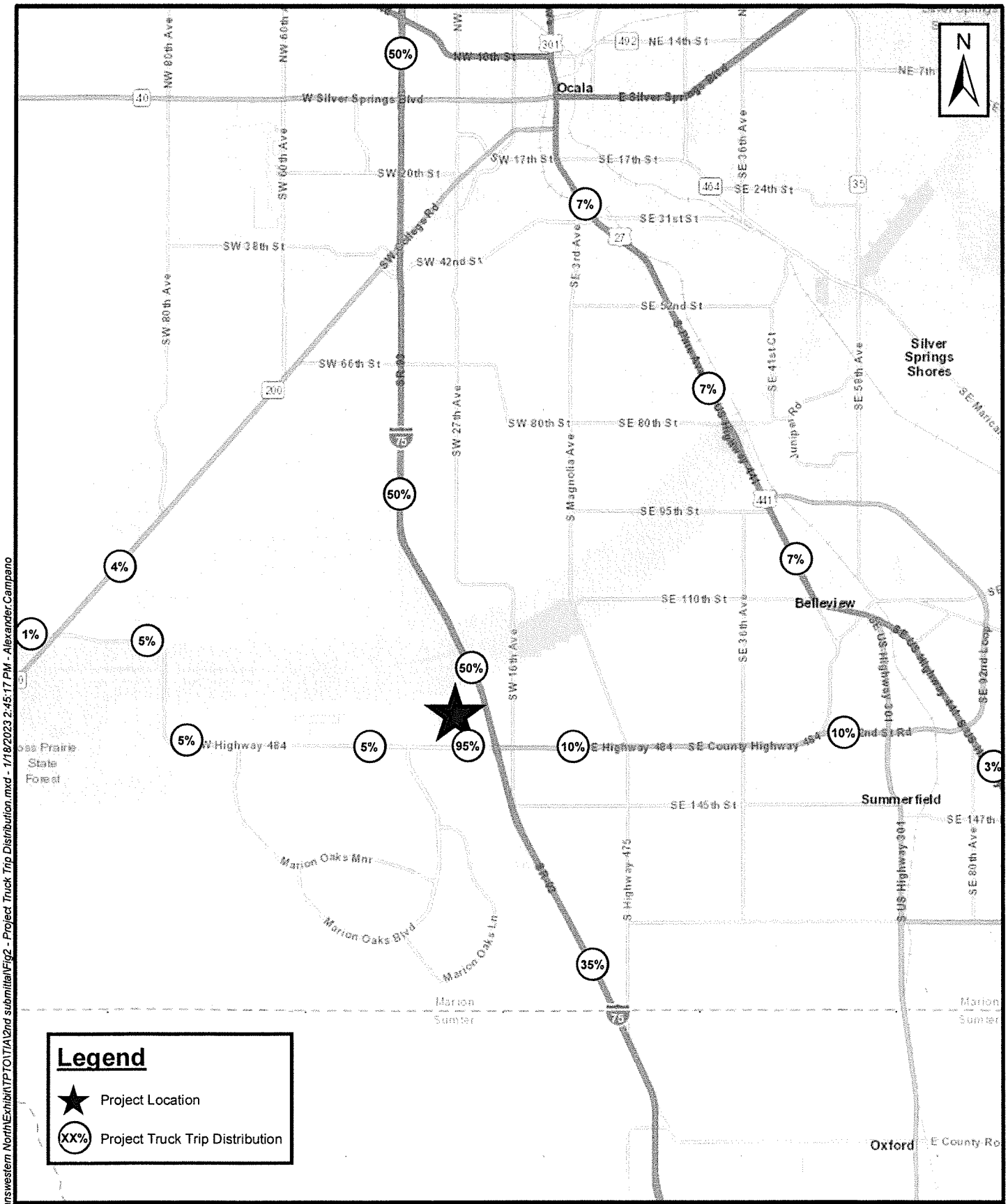

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FIGURE 2 - PROJECT TRUCK TRIP DISTRIBUTION

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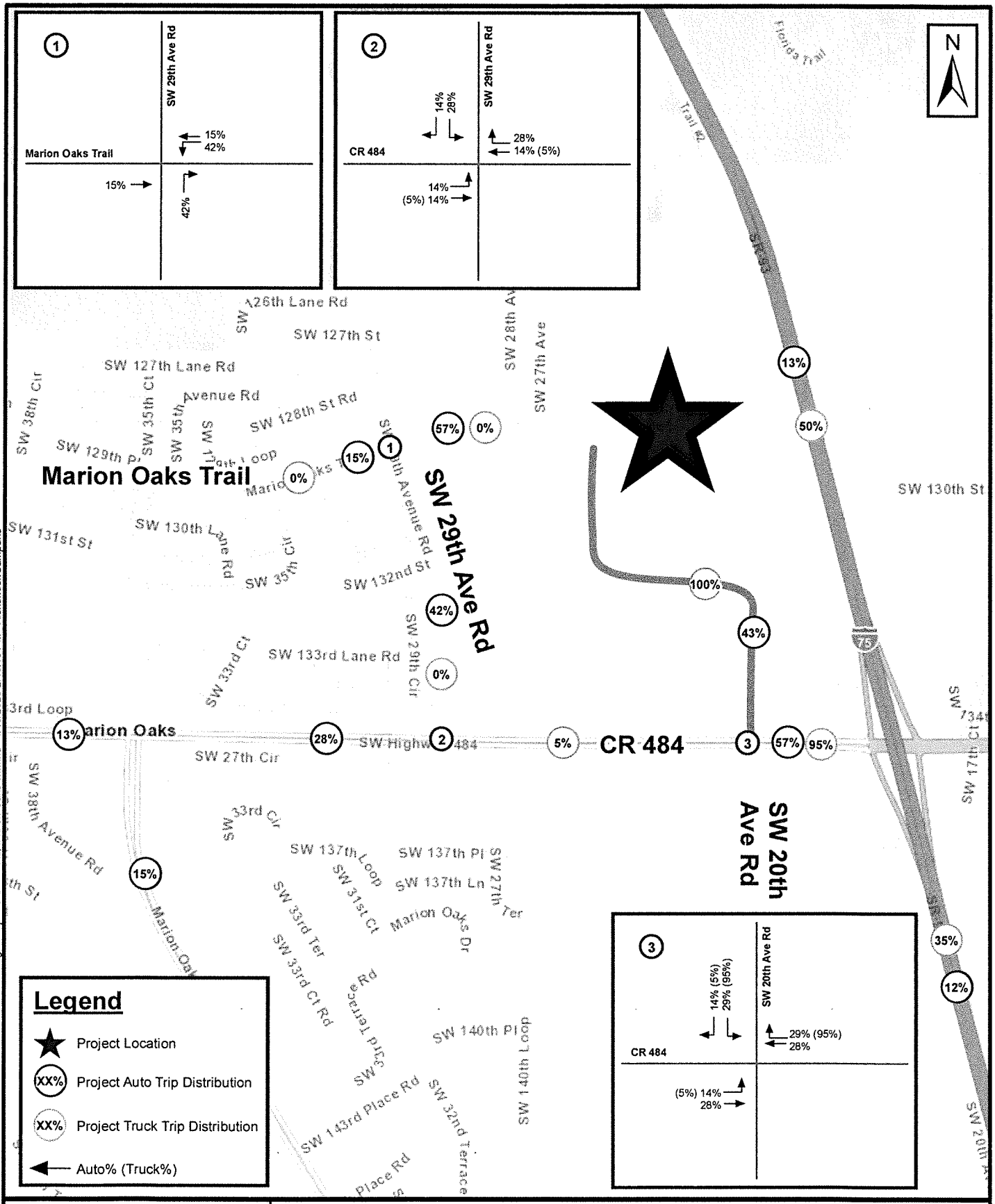

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FIGURE 3 - PROJECT TRIP DISTRIBUTION

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MARION COUNTY, FLORIDA

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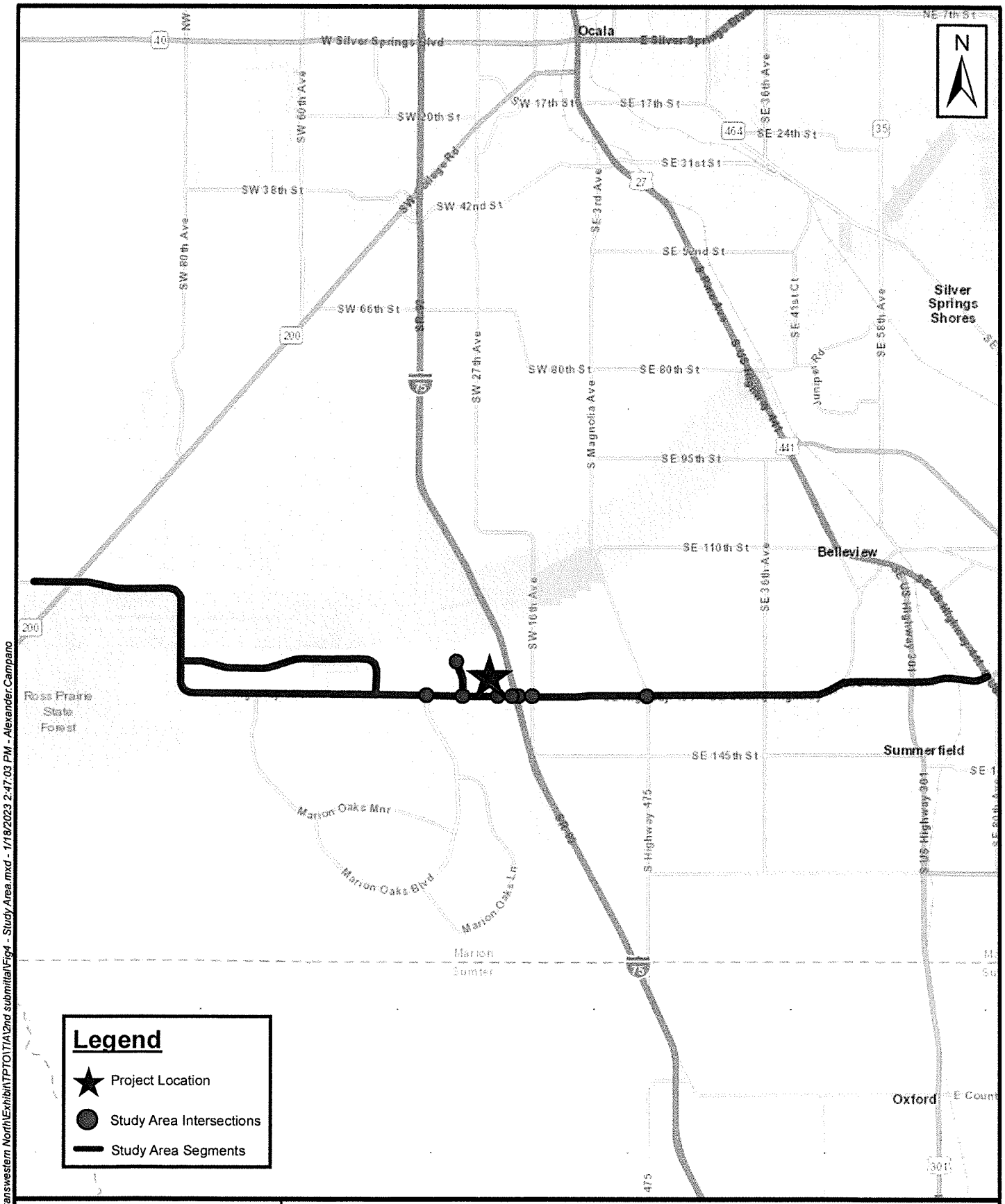

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FIGURE 4 - SITE LOCATION, STUDY AREA INTERSECTIONS AND ROADWAY SEGMENTS

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EXISTING CONDITIONS ANALYSIS

EXISTING TRAFFIC DATA AND VOLUME DEVELOPMENT

Turning movement counts (TMCs) were collected at the study area intersections during the AM and PM peak periods. AM peak hour TMCs were collected during the peak hour of the adjacent street (7AM – 9AM) and PM peak hour TMCs were collected from 3PM-5PM (which coincides with the 3PM - 4PM peak hour of ITE LUC 154).

An existing year of 2022 was utilized for the analysis. The 2021 peak season factors from FDOT were used to adjust the observed traffic volumes to peak season volumes. The peak season conversion factor report is provided in the **Appendix**.

The PM peak hour peak season approach and departure volumes at the study area intersections were used for the PM peak hour roadway segment analysis for segments near the study area intersections. For roadway segments further from the study area intersections, the existing PM peak hour traffic volumes were derived using annual average daily traffic (AADT) from the Ocala Marion TPO Congestion Management Process (CMP) and applying a K-factor and D-factor published on the FDOT Traffic Online.

The observed right turn on red percentages (RTOR%) and peak hour factors (PHF) were used for the intersection analysis. The TMC heavy vehicle percentages (%HV) were compared to data available from FDOT Traffic Online, the more conservative of the two were used for the intersection analysis. **Table 2** summarizes the %HV for the study area intersections. The intersection volume development sheets located in the **Appendix** detail the volume development for the study area intersections.

Table 2 – Study Area Intersections Percent Heavy Vehicles

Percent Heavy Vehicles, Observed Turning Movement Counts v FDOT Traffic Online													
		EB Approach			WB Approach			NB Approach			SB Approach		
Intersection	Heavy Vehicle Source	Count Station	T_{24} FDOT Traffic Online [1]	Design Hour Truck Factor [2]	Count Station	T_{24} FDOT Traffic Online [1]	Design Hour Truck Factor [2]	Count Station	T_{24} FDOT Traffic Online [1]	Design Hour Truck Factor [2]	Count Station	T_{24} FDOT Traffic Online [1]	Design Hour Truck Factor [2]
CR 484 & Marion Oaks Blvd	FDOT Traffic Online	--	--	--	--	--	--	368138	8.50%	4.25%	--	--	--
	AM Turning Movement Counts [3]		--			--			--			--	
	PM Turning Movement Counts [3]		4.90%			3.40%			4.30%			--	
CR 484 & SW 29th Ave Rd	FDOT Traffic Online	--	--	--	--	--	--	--	--	--	--	--	--
	AM Turning Movement Counts [3]		4.00%			10.00%			32.00%			2.00%	
	PM Turning Movement Counts [3]		7.10%			3.80%			2.00%			6.60%	
CR 484 & SW 20th Ave Rd	FDOT Traffic Online	--	--	--	--	--	--	--	--	--	--	--	--
	AM Turning Movement Counts [3]		4.00%			10.00%			32.00%			--	
	PM Turning Movement Counts [3]		5.80%			3.30%			30.40%			--	
CR 484 & I-75 SB Ramps	FDOT Traffic Online	--	--	--	--	--	--	--	--	--	362002	8.50%	4.25%
	AM Turning Movement Counts [3]		5%			14%			--			12%	
	PM Turning Movement Counts [3]		8%			5%			--			6%	
CR 484 & I-75 NB Ramps	FDOT Traffic Online	--	--	--	--	--	--	362000	9%	4.25%	--	-	--
	AM Turning Movement Counts [3]		4.90%			10.90%			16.80%			--	
	PM Turning Movement Counts [3]		7.20%			5.20%			9.00%			--	
CR 484 & CR 475A	FDOT Traffic Online	--	--	--	--	--	--	--	--	--	368087	5.30%	2.65%
	AM Turning Movement Counts [3]		--			--			--			--	
	PM Turning Movement Counts [3]		9.20%			7.40%			4.30%			5.30%	
CR 484 & CR 475	FDOT Traffic Online	--	--	--	367040	12.40%	6.20%	--	--	--	--	--	--
	AM Turning Movement Counts [3]		--			--			--			--	
	PM Turning Movement Counts [3]		7.60%			5.20%			6.70%			2.40%	
rion Oaks Trail & SW 29th Ave	FDOT Traffic Online	--	--	--	--	--	--	--	--	--	--	-	--
	AM Turning Movement Counts [3]		2.00%			2.00%			11.00%			2.00%	
	PM Turning Movement Counts [3]		8.70%			2.00%			2.00%			7.70%	

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Notes:

1. T_{24} Factors derived from the FDOT Traffic Online Historical AADT reports.
2. Design hourly truck factor calculated based on the FDOT Traffic Forecasting Handbook (T_{24} / 2).
3. Turning Movement Counts were observed in the field during traffic data collection utilized for this TIA, a minimum of 2% was utilized for the Synchro analysis.

EXISTING CONDITIONS ROADWAY SEGMENT ANALYSIS

Roadway segments within the study area were evaluated to determine the existing PM peak hour levels of service. The adopted service volumes were obtained from the latest Marion County Congestion Management Process (CMP) and the 2020 FDOT Quality/Level of Service Handbook. The roadway segment service volumes were approved during the methodology review process.

All the study area roadway segments are shown to operate within the adopted level of service standard under existing PM peak hour traffic conditions. **Table 3** illustrates the existing PM peak hour traffic volume and level of service for study area roadway segments.

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Table 3 – Existing Conditions PM Peak Hour Roadway Segment Analysis

Roadway		ROADWAY ATTRIBUTES [1]									EXISTING PEAK SEASON TRAFFIC CONDITIONS (2022)					
											PM Peak Hour [3]					
From	To	TPO CMP Station	FDOT Classification [2]	Area Type	Adopted LOS	Number of Lanes	Daily Service Volume	Pk. Hr. Dir. Service Volume	TPO Traffic Counts Growth Rate	TPO CMP Growth Rate	NB/EB Volume	SB/WB Volume	NB/EB V/C	SB/WB V/C	NB/EB LOS	SB/WB LOS
CR 484																
SW 105 AV	SR 200	2010.0	NS-UA	Urban	E	2	29,340	1,449	6.3%	3.36%	438	498	0.30	0.34	B	B
SR 200	W OF SW 57 AV	2020.1	NS-UA	Urban	E	2	32,600	1,610	16.4%	3.18%	379	431	0.24	0.27	B	B
W OF SW 57 AV	SW 49 AV	2020.1	NS-SA-C1	Urban	E	4	37,810	1,900	--	3.18%	379	431	0.20	0.23	C	C
SW 49 AV	MARION OAKS BLVD	2030.0	NS-SA-C1	Urban	E	4	35,820	1,800	--	3.93%	819	952	0.46	0.53	C	C
MARION OAKS BLVD	SW 20 AV RD	2030.0	NS-SA-C1	Urban	E	4	35,820	1,800	--	3.93%	1,037	1,191	0.58	0.66	C	C
SW 20 AV RD	I-75	2030.0	NS-SA-C1	Urban	E	4	35,820	1,800	1.8%	3.93%	1,148	1,730	0.64	0.96	C	D
I-75	CR 475A	2070.0	NS-SA-C1	Urban	D	4	35,820	1,800	4.3%	6.37%	1,187	1,177	0.66	0.65	C	C
CR 475A	CR 475	2080.0	NS-SA-C1	Urban	D	4	35,820	1,800	1.8%	4.34%	861	724	0.48	0.40	C	C
CR 475	CR 467	2090.0	NS-SA-C1	Urban	D	4	35,820	1,800	5.9%	4.57%	1,044	918	0.58	0.51	C	C
CR 467	SE 132 ST RD	2110.0	NS-SA-C1	Urban	D	4	35,820	1,800	1.5%	6.56%	905	796	0.50	0.44	C	C
SW 29th Avneue Road																
CR 484	MARION OAKS TRL	--	NS-SA-C2	Urban	E	2	10,920	560	--	1.00%	73	59	0.13	0.10	C	C
SE 132nd Street Road																
CR 484	US 301	7165.0	NS-SA-C1	Urban	E	4	35,820	1,800	5.0%	1.00%	555	489	0.31	0.27	C	C
US 301	US 441	7170.0	NS-SA-C1	Urban	E	4	35,820	1,800	8.4%	7.29%	608	535	0.34	0.30	C	C
Marion Oaks Trail																
CR 484 W	SW 49 AV	8150.0	NS-SA-C1	Urban	E	2	15,930	792	--	1.00%	113	85	0.14	0.11	C	C
MARION OAKS CRSE	CR 484 E	8180.0	NS-SC-C1	Urban	E	2	15,930	792	--	1.00%	113	85	0.14	0.11	C	C

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Notes:
1. The roadway attributes and AADT were obtained from the most recent Ocala Marion Transportation Planning Organization (TPO) Congestion Management Process (CMP) Database and Ocala Marion TPO 2022 Traffic Counts Report. For SW 29th Avenue Road the roadway attributes were derived using the 2020 FDOT Q/LOS Handbook, 2010 FDOT Functional Classification Map for Marion County, and the adopted level of service from the Marion County Comprehensive Plan (Transportation Element, Policy 2.1.2).
2. NS-SA-C1 = non-state, signalized arterial, class 1; NS-UC = non-state, unsignalized collector; NS-SC-C1 = non-state, signalized collector, class 1; ST-UA = state, unsiganlized arterial; NS-UA = non-state, unsignalized arterial.
3. The existing traffic volumes were derived from the observed turning movement counts. The existing volumes for SW 132nd Street, Marion Oaks Trail, and CR 484 (west of SW 45th Avenue/east of CR 475) were derived using the Ocala Marion TPO CMP AADTs and K/D factors from FDOT Traffic Online (count stations 368136, 368136, 367039, 367040/367046).

EXISTING CONDITIONS INTERSECTION ANALYSIS

The operating conditions at the study area intersections were analyzed using the Synchro 11 software package, which implements the procedures of the latest Highway Capacity Manual (HCM 6). The existing lane geometry and signal timings (provided by Marion County) were utilized for the analysis.

All study area intersections operate with acceptable overall intersection level of service (LOS) and volume to capacity (V/C) ratios less than 1.0 under existing AM and PM peak hour traffic conditions, with the exception of the stop-controlled approach at the intersection of SW 29th Avenue Road at CR 484. The delay experienced for the side-street stop-controlled approach during the AM peak hour represents level of service F for a stop-controlled condition.

The Synchro 11 analysis output is provided in the **Appendix**. **Table 4** provides a summary of the average delay, level of service, and V/C ratios during the AM peak hour and PM peak hour under existing traffic conditions.

Table 4 – Existing Conditions Intersection Analysis Summary

Intersection	AM Peak Hour			PM Peak Hour		
	LOS	Delay (s)	Max V/C	LOS	Delay (s)	Max V/C
Marion Oaks Blvd & CR 484	--	--	--	B	14.9	0.85
SW 29th Ave Rd & CR 484	F	82.5	0.89	C	22.5	0.24
SW 20th Ave Rd & CR 484	A	9.3	0.82	A	5.4	0.56
I-75 SB Ramp & CR 484	D	44.6	0.83	C	32.8	0.86
I-75 NB Ramp & CR 484	C	22.5	0.88	B	19.1	0.95
CR 475A & CR 484	--	--	--	C	27.0	0.90
CR 475 & CR 484	--	--	--	C	27.8	0.77
SW 29th Ave Rd & Marion Oaks Trail	A/B	8.8/10.2	0.12	A/A	8.8/0.0	0.06

Notes:

1. For stop controlled intersections MOEs were reported for the stop controlled approach(es). For signalized intersections the LOS and delay were reported for the overall intersection.

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FUTURE TRAFFIC CONDITIONS

COMMITTED TRANSPORTATION IMPROVEMENTS

There are planned improvements within the study area that have been included as background improvements in the future traffic conditions analysis.

FDOT has programmed improvements along CR 484 west of SW 20th Avenue Road to east of CR 475A that will improve local traffic operations. The improvements include access management restrictions, adding turn lanes, and extending turn lanes. Construction is funded for FY 2023-2024 (FPID 433651-1). The following improvements were included in the background evaluation per the FDOT plans:

CR 484 Interchange Improvements (from west of SW 20th Avenue Road to east of CR 475A)

- Construction of a second southbound right-turn lane on CR 484 at the I-75 SB Ramp
- Construction of a second eastbound left-turn lane on CR 484 at the I-75 NB Ramp
- Construction of a second northbound left-turn from the I-75 NB off-Ramp to CR 484
- Construction of a second eastbound left-turn lane on CR 484 at CR 475A
- Construction of a second northbound left-turn lane on CR 475A at CR 484
- Construction of a southbound right-turn lane on CR 475A at CR 484
- Signal timing adjustments

In addition, the Marion Oaks Boulevard at CR 484 intersection has planned improvements with construction funding from FDOT programmed for FY 2024 (FPID 449277-1). The following improvements were included in the background evaluation per the County plans:

Marion Oaks Boulevard at CR 484 intersection improvements

- Construction of dual westbound left-turn lanes
- Construction of dual northbound right-turn lanes
- Northbound right permitted/overlap phasing and signal timing adjustments

SW 20th Avenue Road is being extended north of CR 484 as part of the Trailhead Logistics South project. The improvements will be complete by end of 2023. The extension of SW 20th Avenue Road will include the following improvements at the intersection with CR 484:

SW 20th Avenue at CR 484 intersection improvements

- Construction of an eastbound left-turn lane
- Construction of a westbound right- turn lane
- Construction of a north leg of the intersection with a southbound left-turn lane, through lane, and right-turn lane
- Signal timing adjustments

The signal plans for the intersection of SW 20th Avenue Road and CR 484 are provided in the **Appendix**. The traffic study for the Marco Polo PUD included additional improvements at the intersection that would be needed for the projected traffic volumes at buildout of the Marco Polo PUD. Because the Marco Polo PUD is considered as a background/vested project per request of Marion County, the improvements identified in that study were included in the background conditions analysis of the intersection. The following buildout geometry was identified in the Marco Polo PUD study:

Buildout SW 20th Avenue at CR 484 intersection geometry

- One left, two through, and one eastbound through/right lane
- Two left, three through, and one westbound right turn lane
- One left, one through, and one northbound right turn lane
- Two left, and one southbound through/right lane

Additional excerpts detailing the background improvements are provided in the **Appendix**.

FUTURE TRAFFIC VOLUME DEVELOPMENT

The future traffic volumes within the study area were calculated based on the approved methodology. Future background traffic volumes were calculated using existing peak season traffic volumes and an annual background growth rate applied to the buildout year. A 3.0% background annual growth rate was utilized for the future traffic volume projections. In addition to background growth the following vested developments were added as background traffic:

- Trailhead Logistics Park South
- Gas/Convenience Store at CR 484 & SW 20th Ave Rd (included within the Marco Polo PUD)
- Marco Polo PUD
- McGinley Property Phase 2

The total buildout traffic volumes were calculated as the sum of the background traffic volumes and project traffic. For the roadway segment analysis, the PM peak hour project traffic volumes were calculated as an average across the segment length. Project traffic was separated between automobile traffic and truck traffic. A separate trip distribution was applied to each.

Vested traffic excerpts and worksheets detailing the future conditions intersection volume development are contained in the **Appendix**. Buildout total traffic volumes at the study area intersections during the weekday AM and PM peak hours are illustrated in **Figure 5** and **Figure 6**.

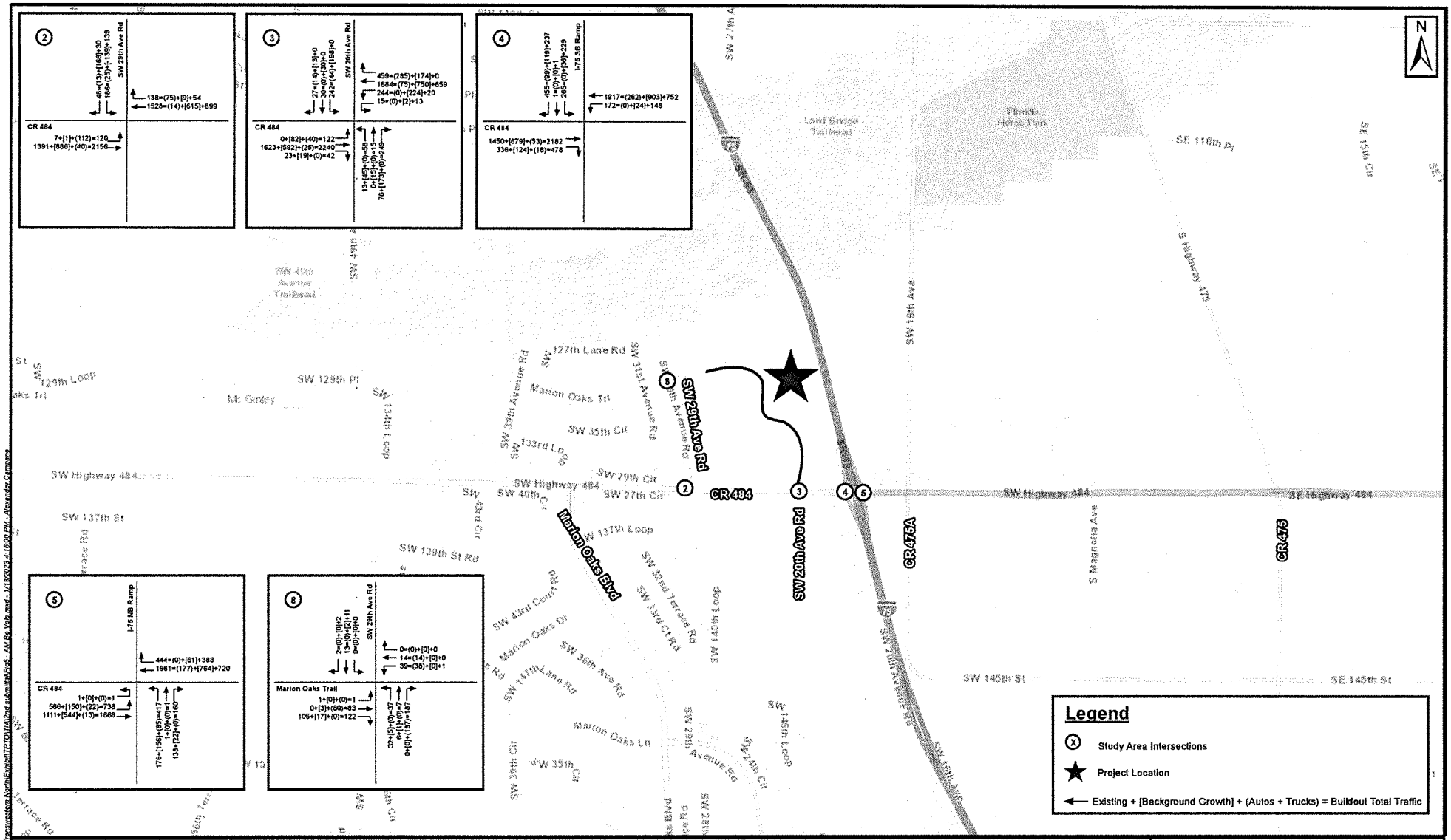

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FIGURE 5 - AM PEAK HOUR BUILDOUT TOTAL TRAFFIC VOLUMES

TRAILHEAD LOGISTICS PARK NORTH
MARION COUNTY, FLORIDA

Project No: 142933003

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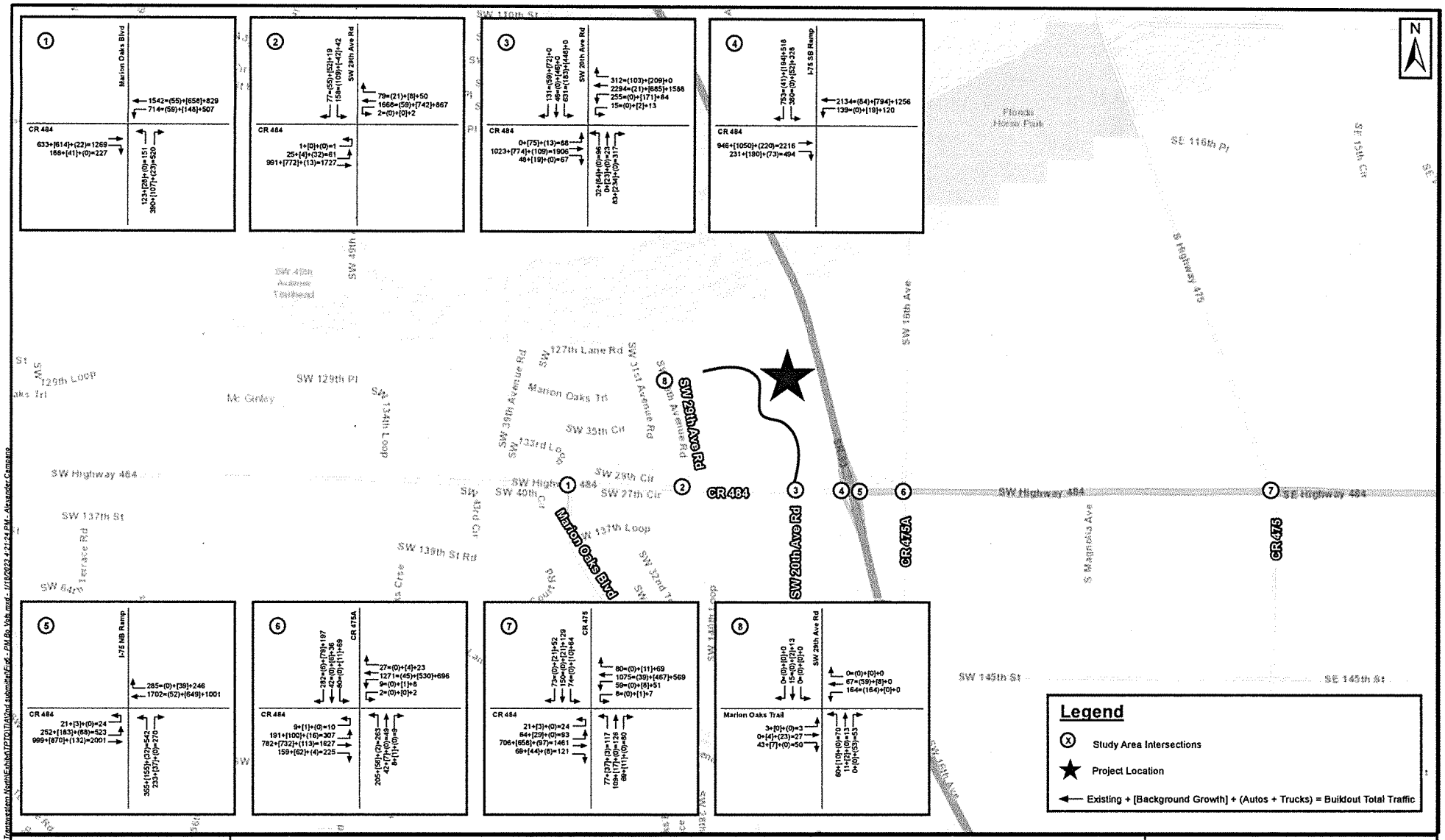

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FIGURE 6 - PM PEAK HOUR BUILDOUT TOTAL TRAFFIC VOLUMES

TRAILHEAD LOGISTICS PARK NORTH
MARION COUNTY, FLORIDA

Project No: 142933003

January 2023

FUTURE BACKGROUND ROADWAY SEGMENT ANALYSIS

The roadway segments within the study area were evaluated for level of service under future background traffic conditions (before the addition of project traffic) during the PM peak hour. The service volumes for roadways within the study area were obtained utilizing the most recent Ocala Marion TPO CMP and FDOT Quality/Level of Service Handbook per the approved methodology.

The following roadway segments were found to have V/C ratios greater than 1.0 with the addition of background traffic:

- CR 484, from Marion Oaks Boulevard to SW 20th Avenue Road (existing 4-lane roadway)
- CR 484, from SW 20th Avenue Road to I-75 (existing 4-lane roadway)
- CR 484, from I-75 to CR 475A (existing 4-lane roadway)

CR 484 is listed within the Ocala Marion TPO Long Range Transportation Plan (LRTP) as needing widening to six lanes from SW 29th Avenue to SW 20th Avenue Road (project R26) and SW 20th Avenue Road to CR 475A (project R27). These improvements are not listed in the cost feasible plan and do not have funding allocated in the current five-year Transportation Improvement Program (TIP). The traffic study performed for the Marco Polo PUD showed a need for CR 484 to be six lanes fronting the Marco Polo PUD.

Marion County has funding in the current five-year TIP for a planning study for widening of CR 484 to two lanes from Marion Oaks Pass to SR 200 (Project C5). No other phases have funding allocated in the five-year TIP.

The other roadway segments within the study area are shown to operate within the adopted service volume with 2027 PM peak hour background traffic conditions. The future background conditions roadway segment analyses are detailed in **Table 5**.

Table 5 – Future Background Conditions PM Peak Hour Roadway Segment Analysis (2027)

Roadway		ROADWAY ATTRIBUTES [1]			EXISTING PEAK SEASON TRAFFIC CONDITIONS (2022)		PM PEAK SEASON BACKGROUND TRAFFIC CONDITIONS (2027)									
					PM Peak Hour [2]		PM Peak Hour [3]									
From	To	Adopted LOS	Number of Lanes	Pk. Hr. Dir. Service Volume	NB/EB Volume	SB/WB Volume	NB/EB Volume	SB/WB Volume	Vested NB/EB	Vested SB/WB	Total NB/EB	Total SB/WB	NB/EB V/C	SB/WB V/C	NB/EB LOS	SB/WB LOS
CR 484																
SW 105 AV	SR 200	E	2	1,449	438	498	504	573	25	29	529	602	0.37	0.42	C	C
SR 200	W OF SW 57 AV	E	2	1,610	379	431	436	496	139	216	575	712	0.36	0.44	B	C
W OF SW 57 AV	SW 49 AV	E	4	1,900	379	431	436	496	691	633	1,127	1,129	0.59	0.59	C	C
SW 49 AV	MARION OAKS BLVD	E	4	1,800	819	952	942	1,095	524	534	1,466	1,629	0.81	0.91	C	C
MARION OAKS BLVD	SW 20 AV RD	E	4	1,800	1,037	1,191	1,192	1,369	596	591	1,788	1,960	0.99	1.09	D	F
SW 20 AV RD	I-75	E	4	1,800	1,148	1,730	1,320	1,989	1,166	752	2,486	2,741	1.38	1.52	F	F
I-75	CR 475A	D	4	1,800	1,187	1,177	1,364	1,354	713	490	2,077	1,844	1.15	1.02	F	F
CR 475A	CR 475	D	4	1,800	861	724	990	833	603	417	1,593	1,250	0.89	0.69	C	C
CR 475	CR 467	D	4	1,800	1,044	918	1,201	1,056	482	330	1,683	1,386	0.94	0.77	C	C
CR 467	SE 132 ST RD	D	4	1,800	905	796	1,041	915	386	264	1,427	1,179	0.79	0.66	C	C
SW 29th Avneue Road																
CR 484	MARION OAKS TRL	E	2	560	73	59	84	67	0	0	84	67	0.15	0.12	C	C
SE 132nd Street Road																
CR 484	US 301	E	4	1,800	555	489	638	562	294	202	932	764	0.52	0.42	C	C
US 301	US 441	E	4	1,800	608	535	699	615	294	202	993	817	0.55	0.45	C	C
Marion Oaks Trail																
CR 484 W	SW 49 AV	E	2	792	113	85	130	98	1	2	131	100	0.17	0.13	C	C
MARION OAKS CRSE	CR 484 E	E	2	792	113	85	130	98	51	8	181	106	0.23	0.13	C	C

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Notes:
1. The roadway attributes and AADT were obtained from the most recent Ocala Marion Transportation Planning Organization (TPO) Congestion Management Process (CMP) Database and Ocala Marion TPO 2022 Traffic Counts Report. For SW 29th Avenue Road the roadway attributes were derived using the 2020 FDOT Q/LOS Handbook, 2010 FDOT Functional Classification Map for Marion County, and the adopted level of service from the Marion County Comprehensive Plan (Transportation Element, Policy 2.1.2).
2. The existing traffic volumes were derived from the observed turning movement counts. The existing volumes for SW 132nd Street, Marion Oaks Trail, and CR 484 (west of SW 45th Avenue/east of CR 475) were derived using the Ocala Marion TPO CMP AADTs and K/D factors from FDOT Traffic Online (count stations 368136, 368136, 367039, 367040/367046).
3. Background volumes were derived by applying the study area growth rate to the existing volumes and adding vested traffic added.

FUTURE BUILDOUT ROADWAY SEGMENT ANALYSIS

The roadway segments within the study area were evaluated for level of service under future buildout traffic conditions during the PM peak hour. The service volumes utilized for the analysis are the same as those utilized for the future background conditions analysis, with the addition of background improvements. The following improvements were identified to be necessary to provide for acceptable level of service with the future background traffic volumes during the PM peak hour:

- CR 484, from Marion Oaks Boulevard to SW 20th Avenue Road (existing 4-lane roadway)
- CR 484, from SW 20th Avenue Road to I-75 (existing 4-lane roadway)
- CR 484, from I-75 to CR 475A (existing 4-lane roadway)

Service volumes for the improved condition were obtained from the 2020 FDOT Quality/Level of Service Handbook and using the roadway attributes from the Ocala Marion TPO CMP. The roadway segments within the study area are shown to operate within the adopted service volume with PM peak hour buildout traffic volumes and assuming the improvements identified to be needed in the background conditions analysis. No additional roadway widenings were identified to be needed due to the addition of traffic from the proposed Trailhead Logistics Park North site.

The future buildout conditions roadway segment analyses are detailed in **Table 6.**

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Traffic Impact Analysis
Trailhead Logistics Park North

Table 6 – Buildout Conditions PM Peak Hour Roadway Segment Analysis (2027)

Roadway From	Roadway To	Roadway Attributes[1]: Adopted LOS	Exist. Number of Lanes	Exis. Pk. Hr. Dir. Service Volume	Improved Number of Lanes	Improved Pk. Hr. Dir. Service Volume	PM Peak Season Background Traffic Conditions (2027), PM Peak Hour[2]: Total NB/EB	Total SB/WB	NB/EB V/C	SB/WB V/C	NB/EB LOS	SB/WB LOS	PM Peak Season PM Peak Hour Buildout Traffic Conditions (2027 w/ Background Improvements): Project Traffic - Auto % Assignment[3]	Auto NB / EB	Auto SB / WB	Project Traffic - Trucks % Assignment[3]	Trucks NB / EB	Trucks SB / WB	Project Peak Direction % Impact[3]	Total NB/EB	Total SB/WB	NB/EB V/C	SB/WB V/C	NB/EB LOS	SB/WB LOS
CR 484																									
SW 105 AV	SR 200	E	2	1,449	2	1,449	529	602	0.37	0.42	C	C	4.0%	6	16	1.0%	0	1	1.13%	535	618	0.37	0.43	C	C
SR 200	W OF SW 57 AV	E	2	1,610	2	1,610	575	712	0.36	0.44	C	C	5.5%	8	22	5.0%	2	4	1.57%	585	737	0.36	0.46	C	C
W OF SW 57 AV	SW 49 AV	E	4	1,900	4	1,900	1,127	1,129	0.59	0.59	C	C	6.5%	10	25	5.0%	2	4	1.53%	1,139	1,158	0.60	0.61	C	C
SW 49 AV	MARION OAKS BLVD	E	4	1,800	4	1,800	1,466	1,629	0.81	0.91	C	C	10.0%	15	39	5.0%	2	4	2.38%	1,483	1,672	0.82	0.93	C	C
MARION OAKS BLVD	SW 20 AV RD	E	4	1,800	6	2,869	1,788	1,960	0.62	0.68	C	C	28.0%	42	109	5.0%	2	4	6.29%	1,832	2,073	0.64	0.72	C	C
SW 20 AV RD	I-75	E	4	1,800	6	2,869	2,486	2,741	0.87	0.96	C	C	57.0%	223	86	95.0%	70	39	16.29%	2,779	2,866	0.970	0.999	C	D
I-75	CR 475A	D	4	1,800	6	2,869	2,077	1,844	0.72	0.64	C	C	32.0%	125	48	10.0%	7	4	7.36%	2,210	1,896	0.77	0.66	C	C
CR 475A	CR 475	D	4	1,800	4	1,800	1,593	1,250	0.89	0.69	C	C	26.0%	102	39	10.0%	7	4	6.06%	1,702	1,293	0.95	0.72	C	C
CR 475	CR 467	D	4	1,800	4	1,800	1,683	1,386	0.94	0.77	C	C	22.0%	86	33	10.0%	7	4	5.19%	1,776	1,423	0.99	0.79	D	C
CR 467	SE 132 ST RD	D	4	1,800	4	1,800	1,427	1,179	0.79	0.66	C	C	17.0%	66	26	10.0%	7	4	4.10%	1,501	1,209	0.83	0.67	C	C
SW 29th Avneue Road																									
CR 484	MARION OAKS TRL	E	2	560	2	560	64	67	0.15	0.12	C	C	42.0%	164	164	0.0%	0	0	29.33%	248	231	0.44	0.41	C	C
SE 132nd Street Road																									
CR 484	US 301	E	4	1,800	4	1,800	932	764	0.52	0.42	C	C	13.0%	51	20	10.0%	7	4	3.24%	990	788	0.55	0.44	C	C
US 301	US 441	E	4	1,800	4	1,800	993	817	0.55	0.45	C	C	12.0%	47	18	3.0%	2	1	2.73%	1,042	836	0.58	0.46	C	C
Marion Oaks Trail																									
CR 484 W	SW 49 AV	E	2	792	2	792	131	100	0.17	0.13	C	C	3.5%	5	14	0.0%	0	0	1.73%	136	114	0.17	0.14	C	C
MARION OAKS CRSE	CR 484 E	E	2	792	2	792	181	106	0.23	0.13	C	C	6.5%	10	25	0.0%	0	0	3.21%	191	131	0.24	0.17	C	C

Notes:

1. The existing roadway attributes and service volumes were obtained from the most recent Ocala Marion Transportation Planning Organization (TPO) Congestion Management Process (CMP) Database. For the improved condition, the roadway service volumes were derived using the 2020 FDOT Q/LOS Handbook. The improvements identified to be needed under future background traffic conditions (prior to adding project traffic) were assumed for the buildout conditions analysis.

2. Background volumes were derived by applying the study area growth rate to the existing volumes with vested traffic added.

3. Project traffic was assigned based on the CFRPM output (with manual adjustments) in the approved methodology.

FUTURE BACKGROUND CONDITIONS INTERSECTION ANALYSIS

The intersections within the study area were evaluated to determine if improvements are needed to provide an acceptable level of service and intersection operations with future background traffic conditions prior to the addition of project traffic.

Existing signal timings (as obtained from the City of Ocala and Marion County), peak hour factors (as obtained from the traffic counts), and right-turn on red percentages (obtained as previously described in this report) were input into Synchro 11 for analysis. The existing observed percent heavy vehicle percentage was updated for the background conditions analysis to reflect the projected vehicle mix from the addition of background and vested traffic.

Either existing geometry or planned/programmed geometry was utilized based on the committed transportation projects outlined previously.

The intersection of SW 29th Avenue Road at CR 484 was evaluated as a directional median opening (all southbound movements are limited to right-turn only) based on input from Marion County on a planned short-term safety improvement. The observed and projected traffic movements at the intersection were re-allocated based on the planned movement restriction at the intersection. Existing / projected southbound left-turn movements were allocated to the southbound right-turn movement and eastbound through movement, assuming these vehicles would make a u-turn at the median opening to the west of the intersection.

The background intersection analysis shows the following improvements are necessary to provide for acceptable level of service and operations with future background traffic volumes:

SW 29th Avenue Road at CR 484

- Signalization is warranted as a result of background traffic during the AM peak hour based on the FDOT Signal Warrant 3 volume thresholds and LOS F for southbound right-turn movement

SW 20th Avenue Road at CR 484

- Signal timing adjustments and assuming the improvements identified to be needed with the Marco Polo PUD buildout

An AM peak hour and PM peak hour signal warrant analysis was conducted for the intersection of SW 29th Avenue at CR 484 using the Manual on Uniform Traffic Control Devices (MUTCD) 2009 Edition for peak hour volume Warrant 3 criteria. Based on the Signal Warrant 3 criteria, a traffic signal is warranted for the background AM peak hour traffic conditions. The peak hour signal warrant analysis outputs are provided in the **Appendix**.

The I-75 at CR 484 interchange is currently under construction. The improvements include dual southbound right turn lanes for the southbound ramp terminal and dual northbound left turn lanes for the northbound ramp terminal. The I-75 Southbound Ramp at CR 484 southbound right-turn movement operates at LOS F (and v/c < 1.0) during the background AM peak hour. The I-75 Northbound Ramp at CR 484 northbound left-turn movement operates at LOS F (and v/c <1) during the AM and PM background scenarios.

No background improvements were applied to the intersection of CR 475A at CR 484. With future background traffic volumes, the intersection operates with all V/C ratios less than 1.0 and acceptable LOS for the overall intersection operations, but with LOS F for the eastbound left-turn, northbound left-turn, and

southbound right-turn movements during the PM peak hour. The high delay for these movements is due to the intersection being within the coordinated signal network and having a long cycle length that favors the through traffic on CR 484.

Table 7 summarizes the resultant intersection LOS with future background traffic volumes and existing and/or programmed intersection geometry. **Table 8** summarizes the resultant intersection LOS with future background traffic volumes and considering the improvements outlined above. The Synchro 11 output reports are provided in the **Appendix**.

Table 7 – Background Conditions Intersection Analysis (2027)

Intersection	AM Peak Hour			PM Peak Hour		
	LOS	Delay (s)	Max V/C	LOS	Delay (s)	Max V/C
Marion Oaks Blvd & CR 484	--	--	--	C	29.9	0.88
SW 29th Ave Rd & CR 484	F	50.6	0.77	C	21.9	0.26
SW 20th Ave Rd & CR 484	F	93.9	3.36	F	185.5	5.04
I-75 SB Ramp & CR 484	C	27.1	0.85	D	38.3	0.995
I-75 NB Ramp & CR 484	C	26.9	0.83	C	23.9	0.86
CR 475A & CR 484	--	--	--	C	33.6	0.92
CR 475 & CR 484	--	--	--	D	42.9	0.99
SW 29th Ave Rd & Marion Oaks Trail	A/B	9.1/10.5	0.15	A/B	9.0/10.6	0.07

Notes:

1. For stop controlled intersections MOEs were reported for the stop controlled approach(es). For signalized intersections the LOS and delay were reported for the overall intersection.

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Table 8 – Background Conditions with Improvements Intersection Analysis (2027)

Intersection	AM Peak Hour			PM Peak Hour		
	LOS	Delay (s)	Max V/C	LOS	Delay (s)	Max V/C
SW 29th Ave Rd & CR 484	B	14.8	0.88	A	7.6	0.75
SW 20th Ave Rd & CR 484	C	28.6	0.92	D	38.5	0.94

Notes:

1. For stop controlled intersections MOEs were reported for the stop controlled approach(es). For signalized intersections the LOS and delay were reported for the overall intersection.

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FUTURE BUILDOUT CONDITIONS INTERSECTION ANALYSIS

The intersection operations were evaluated under 2027 buildout traffic conditions. The buildout traffic volumes are a sum of the 2027 background traffic volumes and project traffic volumes from the Trailhead Logistics Park North site. Automobile traffic and truck traffic were assigned separately for the buildout conditions volume development. Buildout percent heavy vehicles were derived by summing the background truck volumes and project truck volumes divided by the total volumes for each approach.

The intersection analysis was performed using the geometry identified to be needed for the 2027 future background conditions analysis. The full buildout intersection geometry identified in the Marco Polo Study for the intersection of SW 20th Avenue Road at CR 484 was utilized.

The buildout intersection analysis shows the following improvements are needed to provide for acceptable level of service and traffic operations with the projected buildout traffic:

Marion Oaks Boulevard at CR 484

- Extend the westbound left-turn lane on CR 484 to 625 feet

SW 20th Avenue Road at CR 484

- Implement a northbound right-turn permitted/overlap phasing; a R10-16 sign is recommended to warn u-turning vehicles to yield to right-turn vehicles
- Signal timing adjustments

A third westbound through lane was included in the intersection analysis for the intersection of CR 484 at the I-75 southbound ramp based on the identified background improvement need of widening CR 484 to six lanes. This is considered a background traffic improvement based on the need for widening to six lanes to accommodate the future background (prior to the addition of project) traffic volumes.

The study area intersections are expected to operate with acceptable LOS and V/C ratios with the addition of project traffic and the above identified improvements, in addition to those implemented in the future background with improvement scenario.

Table 9 provides a summary of the intersection operations with buildout traffic volumes and the improvements identified to be needed for future background traffic conditions. **Table 10** provides a summary of the intersection operations with buildout traffic volumes and the additional improvements identified to be needed for the addition of project traffic. The Synchro 11 output reports are provided in the **Appendix**.

Table 9 – Buildout Conditions Intersection Analysis (2027)

Intersection	AM Peak Hour			PM Peak Hour		
	LOS	Delay (s)	Max V/C	LOS	Delay (s)	Max V/C
Marion Oaks Blvd & CR 484	--	--	--	C	33.4	0.90
SW 29th Ave Rd & CR 484	B	19.3	0.90	B	12.7	0.81
SW 20th Ave Rd & CR 484	C	30.7	0.95	D	52.0	1.14
I-75 SB Ramp & CR 484	C	26.6	0.89	C	32.2	0.95
I-75 NB Ramp & CR 484	C	32.7	0.87	C	26.7	0.87
CR 475A & CR 484	--	--	--	C	34.2	0.92
CR 475 & CR 484	--	--	--	D	39.5	0.96
SW 29th Ave Rd & Marion Oaks Trail	B/B	11.7/13.5	0.32	B/C	10.0/16.6	0.48

Notes:

1. For stop controlled intersections MOEs were reported for the stop controlled approach(es). For signalized intersections the LOS and delay were reported for the overall intersection.

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Table 10 – Buildout Conditions with Improvements Intersection Analysis (2027)

Intersection	AM Peak Hour			PM Peak Hour		
	LOS	Delay (s)	Max V/C	LOS	Delay (s)	Max V/C
SW 20th Ave Rd & CR 484	C	28.1	0.89	D	52.6	0.99

Notes:

1. For stop controlled intersections MOEs were reported for the stop controlled approach(es). For signalized intersections the LOS and delay were reported for the overall intersection.

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INTERIM SW 20TH AVENUE ROAD AT CR 484 INTERSECTION ANALYSIS

SW 20th Avenue Road at CR 484 was evaluated considering an "interim" scenario. The traffic volumes for the interim scenario included:

- Existing observed traffic volumes
- Background growth to a buildout year of 2027
- Trailhead Logistics Park South
- Marco Polo Gas/Convenience Store
- Trailhead Logistics Park North (full buildout)

The planned geometry that is currently under construction with the Trailhead Logistics Park South Project was utilized, which includes the following approach geometries:

- Eastbound – left-turn lane, through lane, through/right-turn lane
- Westbound – left-turn lane, two through lanes, right-turn lane
- Northbound – left-turn lane, through/right-turn lane
- Southbound – left-turn lane, through lane, right-turn lane

Re-striping of the southbound approach to a southbound left-turn lane, southbound through/left-turn lane, and southbound right-turn lane is required to accommodate the full buildout traffic from the Trailhead Logistics Park North project and the background traffic identified above. Due to restrictions on the south side of the intersection, the north leg must have the through movement in the center southbound lane. This geometry will necessitate a split phase for the northbound and southbound movements, which will require less green time for the CR 484 eastbound and westbound movements.

It is recommended that within 30 days of opening a cumulative development program of 500,000 square feet within the Trailhead Logistics Park North that an operational study be performed to determine what configuration and signal timings are required to accommodate future year traffic patterns; to be reviewed and approved by County staff.

The intersection volume development, Synchro outputs, and vested traffic excerpts utilized for the interim analysis are provided in the **Appendix**.

TURN LANE EVALUATION

The turn lanes at the study area intersections utilized by project traffic were evaluated to determine if the existing or planned/programmed length is sufficient for the traffic at buildout. The planned geometry as provided by the design plans for the committed projects on CR 484 at the I-75 interchange and CR 484 at Marion Oaks Boulevard were used. The existing/planned turn lane length was compared against the required deceleration from the FDOT Greenbook and the reported queue length from the Synchro output. The 50th percentile and 95th percentile queues from the background (with improvement) and buildout (without improvement) scenarios were utilized. The existing/planned turn lane length is considered sufficient if the turn lane can accommodate the required deceleration plus 50th percentile queue and the 95th percentile queue length can be contained within the turn lane.

Table 11 provides a summary of the turn lane evaluation. The turn lanes at the study area intersections that are utilized by project traffic will have sufficient storage to accommodate the buildout traffic volumes, with the exception of the following:

- The planned westbound left-turn lane length on CR 484 at Marion Oaks Boulevard needs to be extended by 120 feet to accommodate the increase in traffic in this movement from the project
- The northbound left-turn lane on CR 475A at CR 484 has deficient length for the future background (prior to project traffic) volumes. Traffic from the Trailhead Logistics Park North project does not change the queue length or create an additional deficiency
- The northbound left-turn lane on CR 475 at CR 484 has deficient length for the future background (prior to project traffic) volumes. Traffic from the Trailhead Logistics Park North project does not change the queue length or create an additional deficiency

Kimley»Horn

Table 11 – Turn Lane Evaluation

Intersection	Speed Limit	Required Deceleration (ft) [1]	Total Turn Lane Length (ft) [2]	AM Peak Hour				PM Peak Hour				Existing / Planned Storage Length Sufficient? (Y/N) [4,5]
				50th Percentile Queue Length (ft) [3]	95th Percentile Queue Length (ft) [3]	Decel L + 50th %tile Queue (ft)	Taper L + 95th %tile queue (ft)	50th Percentile Queue Length (ft) [3]	95th Percentile Queue Length (ft) [3]	Decel L + 50th %tile Queue (ft)	Taper L + 95th %tile queue (ft)	
Marion Oaks Blvd & CR 484												
WBL (background)	45	185	505	--	--	--	--	275	400	460	500	Y
WBL (buildout)	45	185	505	--	--	--	--	400	525	585	625	N
I-75 SB Ramp & CR 484												
SBR (background)	35	-	570	200	250	200	250	475	625	475	625	Y
SBR (buildout)	35	-	570	275	350	275	350	525	700	525	700	Y
I-75 NB Ramp & CR 484												
EBL (background)	45	185	675	350	400	535	500	225	250	410	350	Y
EBL (buildout)	45	185	695	375	400	560	500	275	275	460	375	Y
NBL (background)	35	-	530	225	300	225	300	325	425	325	425	Y
NBL (buildout)	35	-	530	275	400	275	400	350	475	350	475	Y
CR 475A & CR 484												
EBL (background)	45	185	410	--	--	--	--	200	250	385	300	Y
EBL (buildout)	45	185	410	--	--	--	--	225	225	410	275	Y
NBL (background)	45	185	345	--	--	--	--	175	225	360	275	N
NBL (buildout)	45	185	345	--	--	--	--	175	225	360	275	N
CR 475 & CR 484												
EBL (background)	55	350	500	--	--	--	--	75	125	425	175	Y
EBL (buildout)	55	350	500	--	--	--	--	75	150	425	200	Y
NBL (background)	55	350	295	--	--	--	--	75	150	425	200	N
NBL (buildout)	55	350	295	--	--	--	--	100	150	450	200	N

Notes:

1. Based on the 2018 FDOT Green Book (Table 3-31) and FDOT Design Manual (Exhibit 212-1).
2. Turn lane lengths were derived from the existing turn lane lengths. For the intersections of Marion Oaks Blvd, I-75 Ramps, and CR 475A at CR 484, the turn lane lengths were derived from the design plans for those projects. The I-75 off ramp turn lane lengths were not measured to the mainline gore striping, therefore additional storage length is available (SB Ramp ~690 ft, NB Ramp ~785 ft) to accomodate queued traffic exiting onto CR 484.
3. Based on the 50th and 95th percentile back of queue length (rounded up in 25 foot increments) as reported in Synchro 11.
4. The storage length was determined to be sufficient if the turn lane could accommodate the summation of the required deceleration length and 50th percentile queue length and the storage length could accommodate the 95th percentile queue length plus taper. For interchange off ramps turn lane length was determined to be sufficient if the turn lanes could accomodate the forecasted queue length.
5. The buildout queue lengths were derived from the buildout scenario (without improvements).

K:\OCA_Civil\142933003-TranswesternNorthTraffic\TIA\2nd submittal\calcs\xls\[2023-01- TLPN TIA.xlsm]turnLaneLengths *1/26/23*

SITE ACCESS ANALYSIS

The following access locations are proposed for the Project:

- Connection to the south along SW 20th Avenue Road, which connects to CR 484 at a signalized intersection
- Connection as a new east leg of the intersection of SW 29th Avenue Road and Marion Oaks Trail

The projected traffic volumes on SW 29th Avenue Road do not show a need to widen to four lanes. The widening of SW 29th Avenue Road to four lanes was previously contemplated with the Deltona development agreements. There is 100 feet of right-of-way and portions of the roadway are constructed with four lanes. The developer plans to widen the roadway to four lanes, although not shown to be necessary to meet level of service standards with the buildout traffic volumes.

SW 29TH AVENUE ROAD AT MARION OAKS TRAIL

The planned connection on SW 29th Avenue Road at Marion Oaks Trail was evaluated to determine if an ingress northbound right turn lane is warranted to accommodate project traffic. The FDOT Access Management Guidebook (November 2019) was reviewed to determine whether the projected ingress turning volumes warrant an exclusive northbound right-turn lane. The FDOT Guidebook recommends an ingress right-turn lane if turning volumes are between 80 and 125 vehicles per hour for roadways with a speed limit of 45 mph or less. The lower threshold is more appropriate for a higher volume two-lane roadway and the higher threshold is more appropriate for a multi-lane roadway. SW 29th Avenue Road serves minimal development north of Marion Oaks Trail, with very little through volumes expected. With the widening of SW 29th Avenue Road to four lanes, the outside lane could turn into a dedicated right-turn lane into the site as there a limited number of through volumes north of Marion Oaks Trail expected.

An excerpt from the FDOT Access Management Guidebook is provided in the **Appendix. Table 12** provides a summary of the right-turn lane analysis.

Table 12 – Right-Turn Lane Analysis

Access Connection	Buildout NBR Volumes (veh/hr)[1]		Buildout NBT Volumes (veh/hr)[1]		Threshold Right Turn Volumes (veh/hr)[2]	Right Turn Lane Required?
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour		
SW 29th Ave Rd at Marion Oaks Trail	187	53	7	13	80	NO

Notes:
1. Projected ingress traffic volumes at full buildout of the development.
2. NBR volumes exceed the FDOT recommended threshold, however based on NCRHP 457 guidance an exclusive right turn lane is not recommended.

SW 29TH AVENUE ROAD AT CR 484

The intersection of SW 29th Avenue Road at CR 484 will be signalized based on the results of the background conditions signal warrant analysis. The southbound approach will include two lanes due to the proposed widening of SW 29th Avenue Road. The existing eastbound left-turn lane is 285 feet long. The required deceleration length is 185 feet based on the FDOT Greenbook and the 50th percentile queues at buildout are less than 100 feet. The existing eastbound left-turn lane on CR 484 at SW 29th Avenue Road has sufficient length for project buildout. The FDOT Design Manual (Chapter 232.2) recommends exclusive right-turn lanes at signalized intersections when peak hour through and right turning volumes each exceed 300 vph. The projected westbound right-turn volume is 138 vehicles during the AM peak hour and 79 vehicles during the PM peak hour; therefore, based on FDOT criteria, an exclusive westbound right-turn lane is not warranted at the future signalized intersection of SW 29th Avenue Road at CR 484.

SW 20TH AVENUE ROAD AT CR 484

The intersection of SW 20th Avenue Road at CR 484 has planned improvements for the interim condition (under construction now; implemented prior to full Marco Polo buildout) and buildout condition (full Marco Polo buildout, as identified in the Marco Polo study). The interim improvements include a ±480-foot eastbound left-turn lane and +/- 160-foot westbound right-turn lane on CR 484. The north leg will be constructed to have an exclusive 200-foot southbound left turn lane, and a single southbound through and single southbound right turn lane that extend north of the intersection. The planned improvements illustrating the turn lane lengths are provided in the **Appendix.**

The eastbound left-turn lane on CR 484 at SW 20th Avenue Road has sufficient length for the projected queues at buildout. The planned westbound right-turn lane is less than the required deceleration length for a 45mph design speed. However, per feedback from Marion County, the westbound right turn lane cannot be lengthened due to the adjacent Popeye's driveway.

The projected 95th percentile queue length for the southbound left-turn movement on SW 20th Avenue Road at CR 484 is approximately 1,100 feet for project buildout. There is approximately 920 feet of queue storage for the southbound left-turn movement on SW 20th Avenue Road between CR 484 and the first median opening on SW 20th Avenue Road to the north. During peak egress traffic periods, the queues will extend past the median opening. A "do not block intersection" sign is recommended to minimize impacts between southbound left-turn movements at CR 484 and northbound left-turn movements at the median opening. A northbound left-turn lane is provided on SW 20th Avenue Road at the median opening to allow for left-turning traffic to queue outside of the through lanes. No impacts to the CR 484 traffic operations are anticipated from the occasional queueing during peak periods on SW 20th Avenue Road. Furthermore, SW 29th Avenue Road will be widened to four lanes with a traffic signal at CR 484, which will allow for an additional egress point during peak egress and queueing periods.

An interim evaluation was performed assuming the Trailhead Logistics Park North site may be operational prior to the Marco Polo development, and associated improvements to the intersection of SW 20th Avenue Road at CR 484. The results and recommendations from that evaluation were summarized previously and include restriping the southbound approach to have a left-turn lane, through/left-turn lane, and right-turn lane and converting the northbound and southbound signal phasing to split phasing. The timing of the interim improvements will be based on operational studies to be performed at various buildout stages within the Trailhead Logistics Park North development.

PROPORTIONATE SHARE

Per Chapter 163.3180 of the Florida Statutes, an acceptable method for a landowner to mitigate their transportation impacts to is pay a proportionate share cost towards subject improvements. Per the Florida Statutes, proportionate share contributions are not required for improvements identified to correct transportation deficiencies that occur prior to the addition of project traffic. Therefore, any transportation improvements identified to be needed in the background conditions analysis are assumed to be in place for the purposes of the proportionate share calculation.

Several transportation improvements were identified as being required within the study area to provide acceptable traffic operations with future background traffic conditions (before the addition of project traffic) and are therefore not subject to proportionate share mitigation. The improvements required to accommodate background traffic are listed in the background intersection analysis and background roadway segments analysis sections of this report. Background intersection and roadway improvements were assumed to be in place for the proportionate share calculations.

Additional transportation improvements were identified as being required within the study area to provide acceptable traffic operations at project buildout. Mitigation required to support project traffic was calculated based on the following methodology:

Marion Oaks Boulevard at CR 484

- Extend the westbound left-turn lane on CR 484 to 625 feet
- Proportionate share calculated as the project traffic utilizing the westbound left-turn movement (59 trips) divided by the total traffic utilizing the westbound left-turn movement (714 trips) at buildout = 8.26%

SW 20th Avenue Road at CR 484

- Implement a northbound right-turn permitted/overlap phasing and signal timing adjustments
- Install an R10-16 (U-TURN YIELD TO RIGHT TURN) for the westbound left-turn lane
- Proportionate share calculated as the project traffic at the intersection divided by the increase in capacity generated by the improvement. The total project traffic at the intersection is greater than the increase in capacity generated by the improvement, therefore the proportionate share is 100%.

SW 29th Avenue Road will be widened by the developer to four lanes from CR 484 to Marion Oaks Trail. The widening of SW 29th Avenue Road will include a new traffic signal at the intersection of SW 29th Avenue Road and CR 484. The widening to four lanes was a prior condition of the Deltona development but is not shown to be needed to accommodate project traffic from the Trailhead Logistics Park North site. A traffic signal at the intersection of SW 29th Avenue Road at CR 484 is warranted with future background traffic conditions, prior to the addition of traffic from the Trailhead Logistics Park North site. The cost of the improvements to SW 29th Avenue Road and the intersection with CR 484 will exceed the cost of the required proportionate share transportation mitigation for the project.

CONCLUSION

This traffic study has been performed to support the PUD rezoning for the Trailhead Logistics Park North industrial development. The traffic analysis provided is consistent with the approved methodology document.

The traffic analysis was performed considering a buildout timeframe of 5 years (2027) for the full proposed development program. The operating conditions within the study area were evaluated for existing, future background (before addition of project traffic) conditions and buildout traffic conditions.

The following offsite transportation improvements were identified to be needed based on the background traffic scenario (prior to the addition of project traffic):

- CR 484 - Widening to six lanes from Marion Oaks Boulevard to CR 475A
- SW 29th Avenue Road at CR 484 - Signalization is warranted with background AM peak hour traffic
- SW 20th Avenue Road at CR 484 - Signal timing adjustments

Additional off-site transportation improvements were identified to be needed due to the addition of project traffic from the Trailhead Logistics Park North development. The following mitigation improvements are needed to support project traffic:

- Marion Oaks Boulevard at CR 484 – extend the westbound left-turn lane to 625 feet (8.26% proportionate share allocation)
- SW 20th Avenue Road at CR 484 – northbound right-turn permitted/overlap phasing with signal timing adjustments and installing an R10-16 (U-TURN YIELD TO RIGHT TURN) sign (100% proportionate share allocation).

The following interim improvements were identified to be needed at the intersection of SW 20th Avenue Road at CR 484 to support buildout traffic volumes in advance of the ultimate improvements at the intersection identified within the Marco Polo PUD:

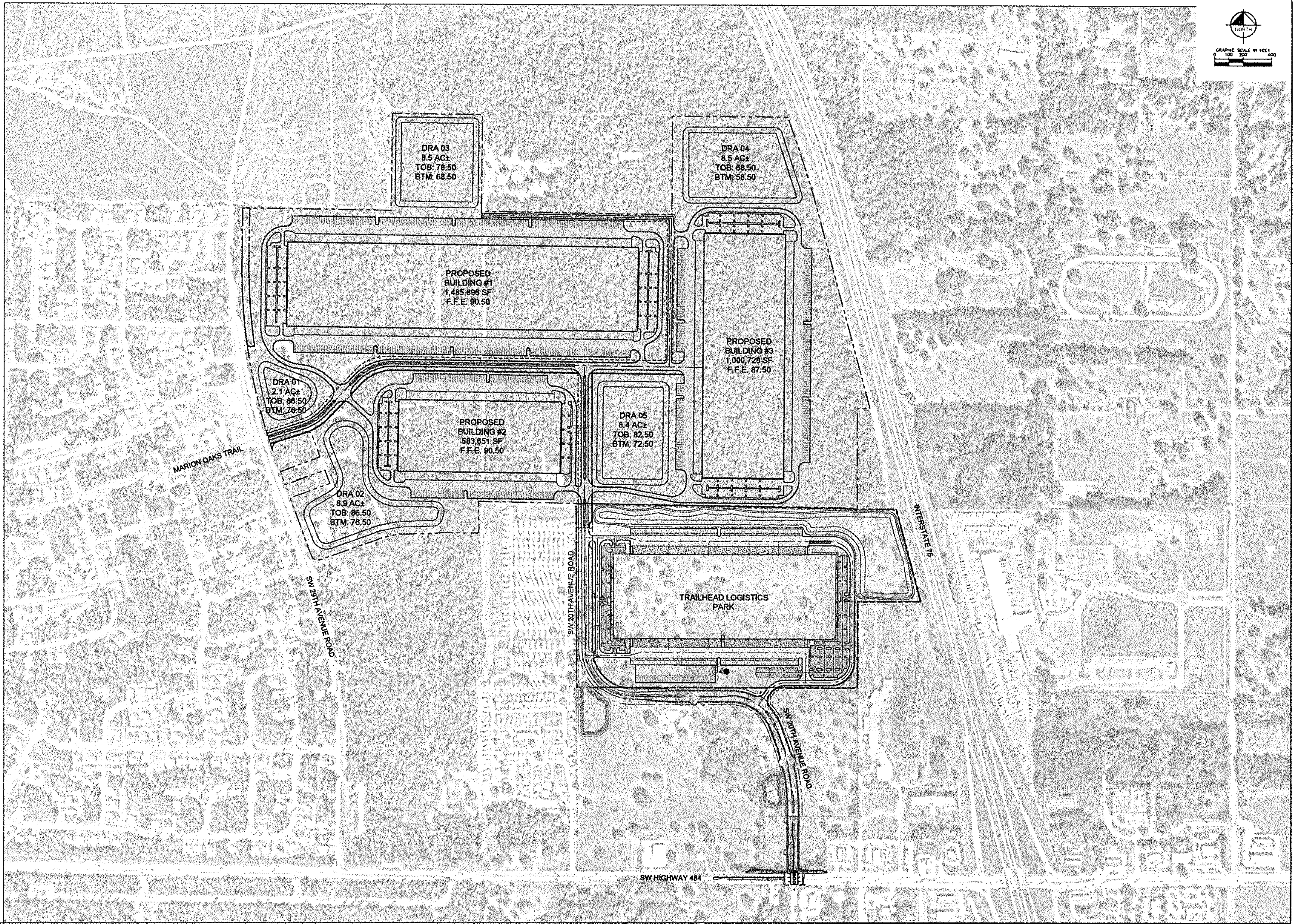
- Re-striping the southbound approach to have a left-turn lane, through/left-turn lane, and right-turn lane
- Implementing split phasing for the northbound and southbound approaches

The developer will enter into a Chapter 163 Concurrency Development Agreement for the widening of SW 29th Avenue Road to four lanes from CR 484 to Marion Oaks Trail and install a traffic signal at the intersection with CR 484. The Concurrency Development Agreement will also address impact fee credits per Section 10-323 of the Marion County Code of Ordinances. The cost of the improvements to SW 29th Avenue Road and the intersection with CR 484 will exceed the cost of the required proportionate share transportation mitigation for the project.

The Chapter 163 Concurrency Development Agreement will also require an operational study of the intersection of SW 20th Avenue Road at CR 484 at various stages of development to determine the timing of the interim improvements. This traffic impact analysis has been completed based on the standards set forth in the approved methodology and supports the PUD zoning application and future Concurrency Development Agreement for transportation concurrency reservation for the project.

APPENDICES

APPENDIX A: CONCEPTUAL SITE DEVELOPMENT PLAN



No.	REVISIONS	DATE	BY
△	UPDATED STORM PIPE SIZES	08-01-22	ND

Kimley»Horn

101 EAST SILVER SPRINGS BLVD, SUITE 400, OCALA, FL 34470
PHONE: 352-438-3000
WWW.KIMLEY-HORN.COM REGISTRY 35106

KHA PROJECT 142933003
DATE August 2022
SCALE AS SHOWN
DESIGNED BY KHA
DRAWN BY KHA
CHECKED BY KHA

TRANSWESTERN NORTH
PREPARED FOR
TDC ACQUISITIONS, LLC

MARION COUNTY FLORIDA

LICENSED PROFESSIONAL
RICHARD V. BUSCHE, PE
FLORIDA LICENSE NUMBER 58568
DATE

MASTER SITE PLAN

SHEET NUMBER
C002

APPENDIX B: TRAFFIC DATA

2021 PEAK SEASON FACTOR CATEGORY REPORT - REPORT TYPE: ALL
CATEGORY: 3600 MARION COUNTYWIDE

MOCF: 0.98

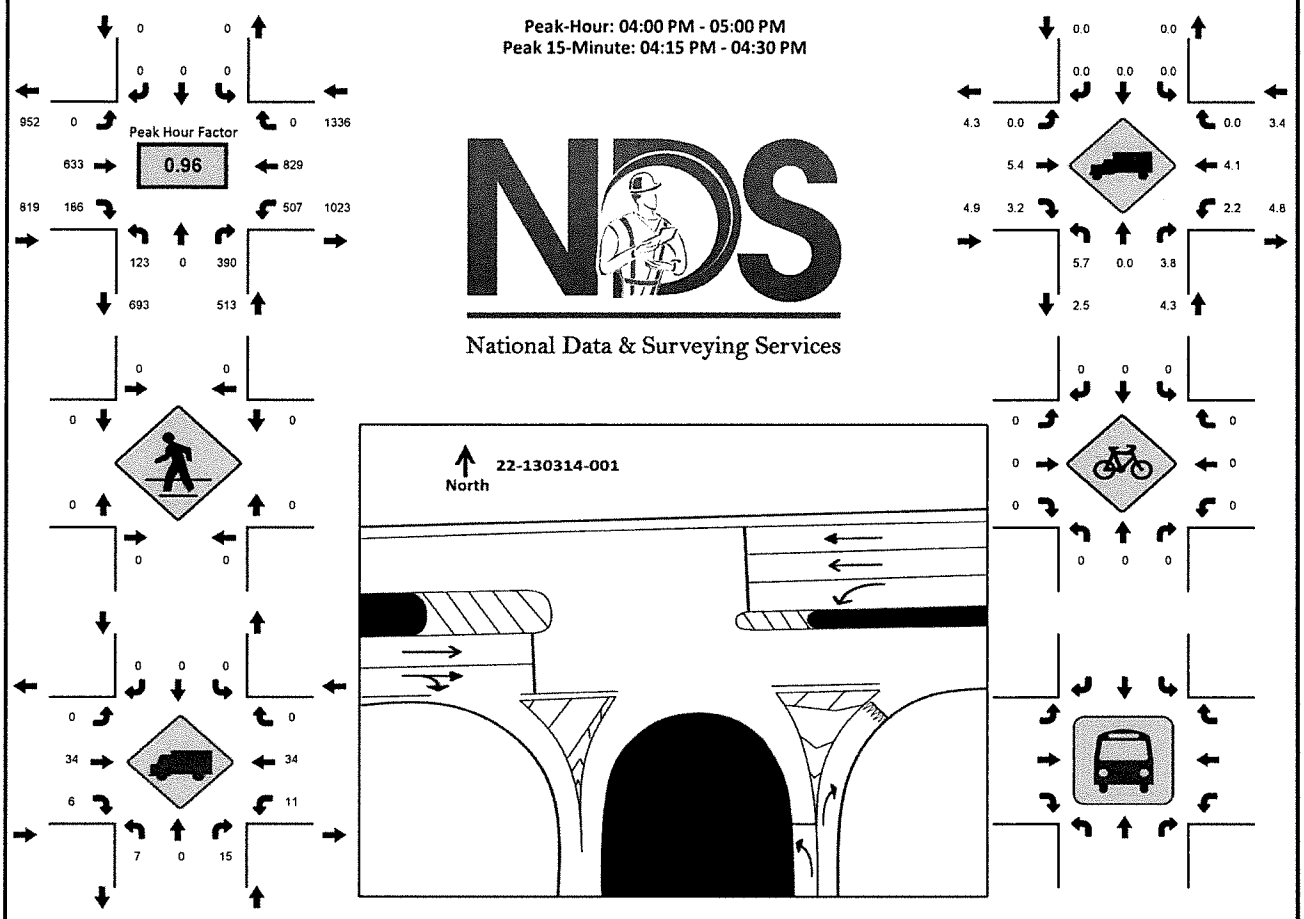
WEEK	DATES	SF	PSCF
1	01/01/2021 - 01/02/2021	0.98	1.00
2	01/03/2021 - 01/09/2021	1.04	1.06
3	01/10/2021 - 01/16/2021	1.10	1.12
4	01/17/2021 - 01/23/2021	1.09	1.11
5	01/24/2021 - 01/30/2021	1.08	1.10
6	01/31/2021 - 02/06/2021	1.07	1.09
7	02/07/2021 - 02/13/2021	1.06	1.08
8	02/14/2021 - 02/20/2021	1.06	1.08
9	02/21/2021 - 02/27/2021	1.03	1.05
10	02/28/2021 - 03/06/2021	1.01	1.03
11	03/07/2021 - 03/13/2021	0.99	1.01
*12	03/14/2021 - 03/20/2021	0.96	0.98
*13	03/21/2021 - 03/27/2021	0.96	0.98
*14	03/28/2021 - 04/03/2021	0.96	0.98
*15	04/04/2021 - 04/10/2021	0.96	0.98
*16	04/11/2021 - 04/17/2021	0.96	0.98
*17	04/18/2021 - 04/24/2021	0.97	0.99
*18	04/25/2021 - 05/01/2021	0.98	1.00
*19	05/02/2021 - 05/08/2021	0.99	1.01
*20	05/09/2021 - 05/15/2021	1.01	1.03
*21	05/16/2021 - 05/22/2021	1.00	1.02
*22	05/23/2021 - 05/29/2021	0.99	1.01
*23	05/30/2021 - 06/05/2021	0.98	1.00
*24	06/06/2021 - 06/12/2021	0.97	0.99
25	06/13/2021 - 06/19/2021	0.97	0.99
26	06/20/2021 - 06/26/2021	0.98	1.00
27	06/27/2021 - 07/03/2021	0.98	1.00
28	07/04/2021 - 07/10/2021	0.99	1.01
29	07/11/2021 - 07/17/2021	1.00	1.02
30	07/18/2021 - 07/24/2021	1.01	1.03
31	07/25/2021 - 07/31/2021	1.01	1.03
32	08/01/2021 - 08/07/2021	1.02	1.04
33	08/08/2021 - 08/14/2021	1.03	1.05
34	08/15/2021 - 08/21/2021	1.04	1.06
35	08/22/2021 - 08/28/2021	1.03	1.05
36	08/29/2021 - 09/04/2021	1.03	1.05
37	09/05/2021 - 09/11/2021	1.03	1.05
38	09/12/2021 - 09/18/2021	1.03	1.05
39	09/19/2021 - 09/25/2021	1.02	1.04
40	09/26/2021 - 10/02/2021	1.01	1.03
41	10/03/2021 - 10/09/2021	1.00	1.02
42	10/10/2021 - 10/16/2021	0.98	1.00
43	10/17/2021 - 10/23/2021	0.98	1.00
44	10/24/2021 - 10/30/2021	0.98	1.00
45	10/31/2021 - 11/06/2021	0.97	0.99
46	11/07/2021 - 11/13/2021	0.97	0.99
47	11/14/2021 - 11/20/2021	0.97	0.99
48	11/21/2021 - 11/27/2021	0.97	0.99
49	11/28/2021 - 12/04/2021	0.97	0.99
50	12/05/2021 - 12/11/2021	0.98	1.00
51	12/12/2021 - 12/18/2021	0.98	1.00
52	12/19/2021 - 12/25/2021	1.04	1.06
53	12/26/2021 - 12/31/2021	1.10	1.12

* PEAK SEASON

08-MAR-2022 12:36:27 830UPD 5_3600_PKSEASON.TXT

LOCATION: Marion Oaks Blvd & CR 484
CITY/STATE: Ocala, FL

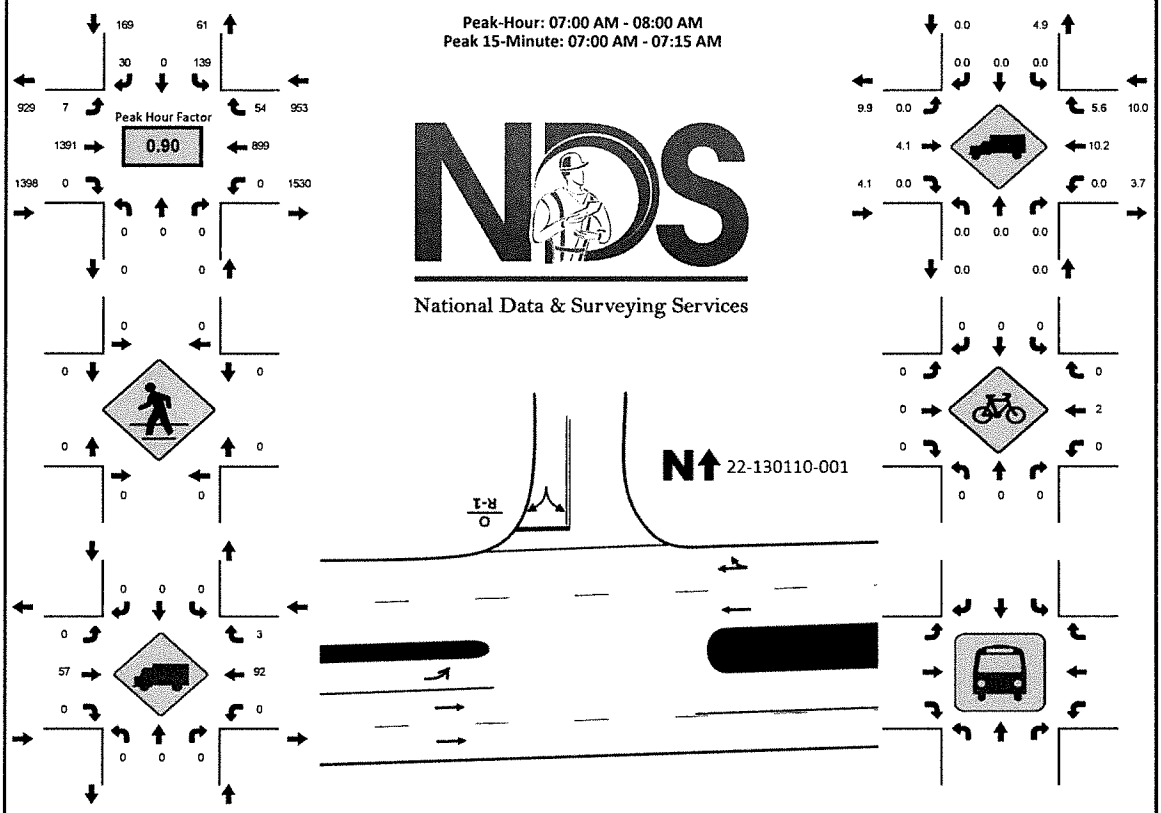
PROJECT ID: 22-130314-001
DATE: Tue, Oct 25, 2022



15-Min Count Period Beginning At	Marion Oaks Blvd Northbound					Marion Oaks Blvd Southbound					CR 484 Eastbound					CR 484 Westbound					Total	Hourly Total
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
03:00 PM	38	0	104	0		0	0	0	0		0	167	37	0		112	154	0	0		612	2480
03:15 PM	31	0	91	0		0	0	0	0		0	158	45	1		112	173	0	0		611	2535
03:30 PM	28	0	114	0		0	0	0	0		0	159	33	0		117	173	0	0		624	2619
03:45 PM	26	0	96	0		0	0	0	0		0	164	36	0		126	185	0	0		633	2645
04:00 PM	30	0	118	0		0	0	0	0		0	140	46	0		139	194	0	0		667	2668
04:15 PM	29	0	85	0		0	0	0	0		0	174	49	0		121	237	0	0		695	2001
04:30 PM	37	0	88	0		0	0	0	0		0	157	45	0		126	197	0	0		650	1306
04:45 PM	27	0	99	0		0	0	0	0		0	162	46	0		121	201	0	0		656	656
Peak 15-Min Flowrates	**Northbound**					**Southbound**					**Eastbound**					**Westbound**					**Total**	
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
All Vehicles	148	0	472	0		0	0	0	0		0	696	196	0		556	948	0	0		**3016**	
Heavy Trucks	16	0	24	0		0	0	0	0		0	48	16	0		12	48	0	0		**164**	
Pedestrians		0					0					0					0				**0**	
Bicycles	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		**0**	
Buses																						
Stopped Buses																						

LOCATION: SW 29th Avenue Rd & CR 484/SW Hwy 484
CITY/STATE: Ocala, FL

PROJECT ID: 22-130110-001
DATE: Tue, Apr 26, 2022



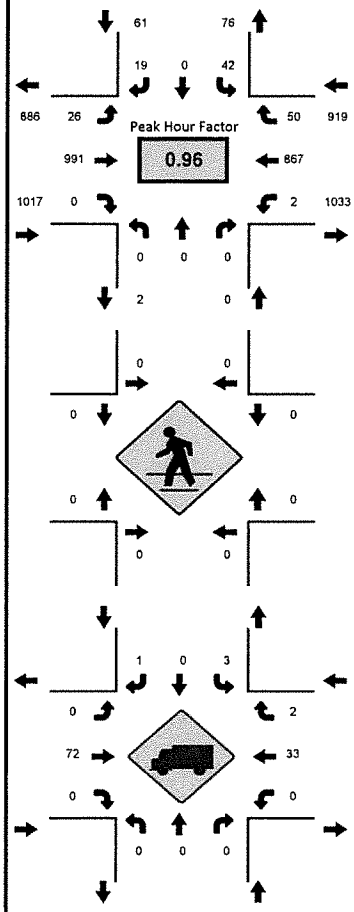
15-Min Count Period Beginning At	SW 29th Avenue Rd Northbound					SW 29th Avenue Rd Southbound					CR 484/SW Hwy 484 Eastbound					CR 484/SW Hwy 484 Westbound					Total	Hourly Total
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
07:00 AM	0	0	0	0		34	0	3	0		1	407	0	0		0	231	21	0		697	2520
07:15 AM	0	0	0	0		32	0	7	0		1	355	0	0		0	245	11	0		651	2357
07:30 AM	0	0	0	0		42	0	10	0		0	307	0	0		0	209	9	0		577	2246
07:45 AM	0	0	0	0		31	0	10	0		5	322	0	0		0	214	13	0		595	2203
08:00 AM	0	0	0	0		17	0	7	0		2	296	0	0		0	205	7	0		534	2065
08:15 AM	0	0	0	0		14	0	3	0		4	324	0	1		0	188	6	0		540	1531
08:30 AM	0	0	0	0		17	0	4	0		0	306	0	0		0	197	10	0		534	991
08:45 AM	0	0	0	0		15	0	3	0		2	241	0	0		0	190	6	0		457	457
Peak 15-Min Flowrates	**Northbound**					**Southbound**					**Eastbound**					**Westbound**					**Total**	
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
All Vehicles	0	0	0	0		168	0	40	0		20	1628	0	0		0	980	84	0		2920	
Heavy Trucks	0	0	0	0		0	0	0	0		0	76	0	0		0	112	8	0		196	
Pedestrians		0					0					0					0				0	
Bicycles	0	0	0	0		0	0	0	0		0	0	0	0		0	4	0	0		4	
Buses																						
Stopped Buses																						

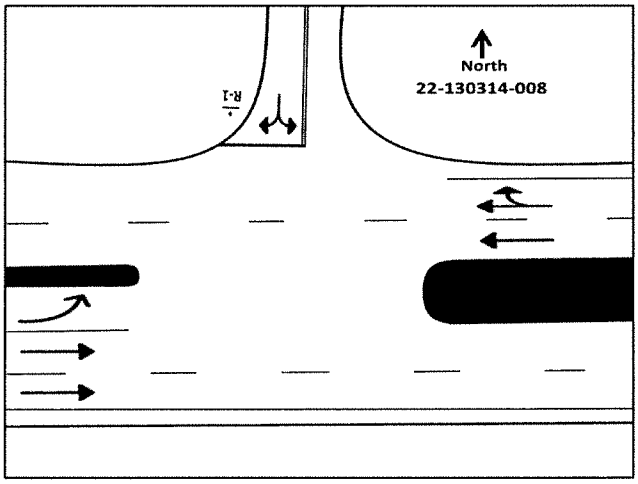
LOCATION: SW 29th Avenue Rd & CR 484
CITY/STATE: Ocala, FL

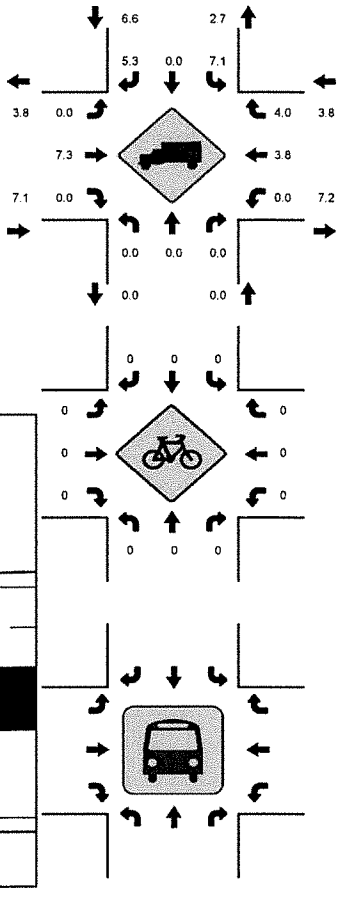
PROJECT ID: 22-130314-008
DATE: Wed, Oct 26, 2022

Peak-Hour: 04:00 PM - 05:00 PM
Peak 15-Minute: 04:30 PM - 04:45 PM

National Data & Surveying Services





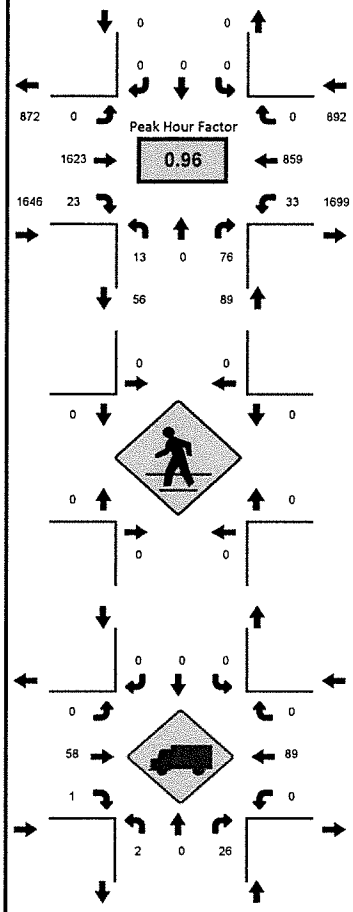


15-Min Count Period Beginning At	SW 29th Avenue Rd Northbound					SW 29th Avenue Rd Southbound					CR 484 Eastbound					CR 484 Westbound					Total	Hourly Total
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
03:00 PM	0	0	0	0		9	0	5	0		6	273	0	1		0	217	6	0		517	1977
03:15 PM	0	0	0	0		4	0	4	0		0	261	0	0		0	215	12	0		496	1934
03:30 PM	0	0	0	0		6	0	4	0		7	274	0	0		0	194	13	0		498	1930
03:45 PM	0	0	0	0		6	0	4	0		4	233	0	0		0	197	21	1		466	1952
04:00 PM	0	0	0	0		13	0	2	0		7	219	0	0		0	218	15	0		474	1997
04:15 PM	0	0	0	0		10	0	7	0		10	262	0	0		0	193	10	0		492	1523
04:30 PM	0	0	0	0		9	0	4	0		6	251	0	1		0	238	10	1		520	1031
04:45 PM	0	0	0	0		10	0	6	0		2	259	0	0		0	218	15	1		511	511
Peak 15-Min Flowrates	**Northbound**					**Southbound**					**Eastbound**					**Westbound**					**Total**	
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
All Vehicles	0	0	0	0		52	0	28	0		40	1048	0	4		0	952	60	4		**2188**	
Heavy Trucks	0	0	0	0		4	0	4	0		0	88	0	0		0	52	4	0		**152**	
Pedestrians		0					0					0					0				**0**	
Bicycles	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		**0**	
Buses																						
Stopped Buses																						

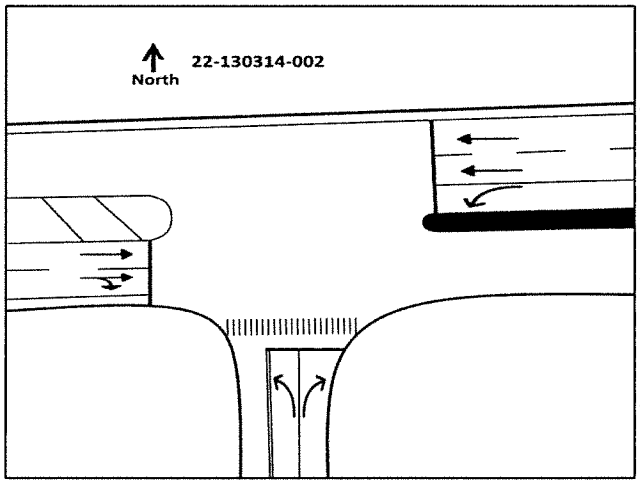
LOCATION: SW 20th Avenue Rd & CR 484
CITY/STATE: Ocala, FL

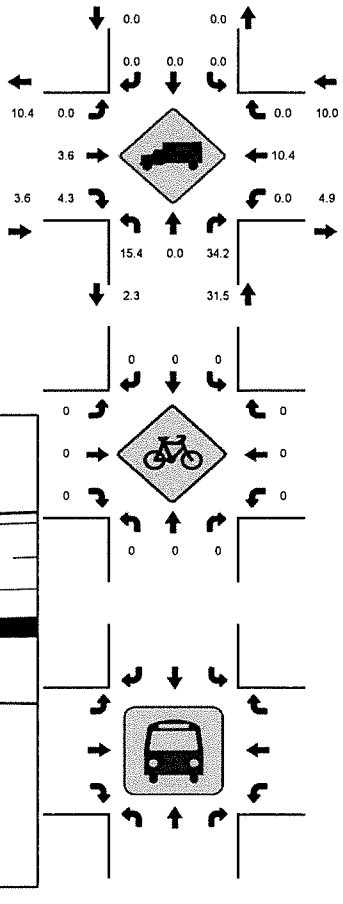
PROJECT ID: 22-130314-002
DATE: Tue, Oct 25, 2022

Peak-Hour: 07:00 AM - 08:00 AM
Peak 15-Minute: 07:00 AM - 07:15 AM



National Data & Surveying Services



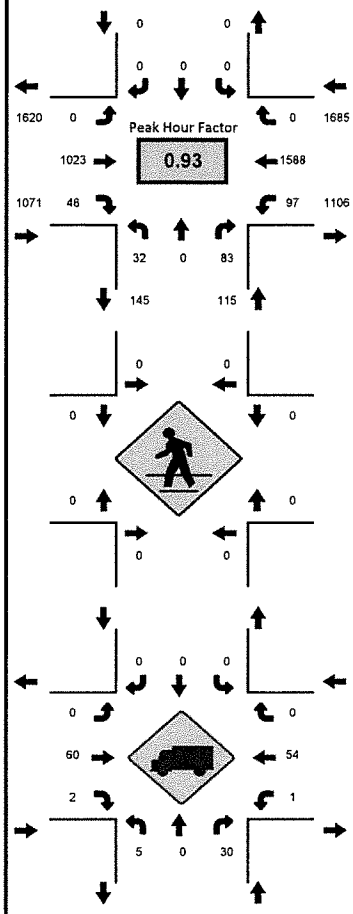


15-Min Count Period Beginning At	SW 20th Avenue Rd Northbound					SW 20th Avenue Rd Southbound					CR 484 Eastbound					CR 484 Westbound					Total	Hourly Total
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
07:00 AM	2	0	11	0		0	0	0	0		0	443	3	0		2	221	0	4		686	2627
07:15 AM	3	0	20	0		0	0	0	0		0	394	3	0		3	217	0	2		642	2585
07:30 AM	6	0	23	0		0	0	0	0		0	407	4	0		6	205	0	5		656	2523
07:45 AM	2	0	22	0		0	0	0	0		0	379	13	0		9	216	0	2		643	2424
08:00 AM	10	0	18	0		0	0	0	0		0	383	7	0		13	209	0	4		644	2319
08:15 AM	4	0	31	0		0	0	0	0		0	327	9	0		9	200	0	0		580	1675
08:30 AM	6	0	28	0		0	0	0	0		0	305	6	0		12	197	0	3		557	1095
08:45 AM	7	0	22	0		0	0	0	0		0	283	1	0		10	211	0	4		538	538
Peak 15-Min Flowrates	**Northbound**					**Southbound**					**Eastbound**					**Westbound**					**Total**	
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
All Vehicles	24	0	92	0		0	0	0	0		0	1772	52	0		36	884	0	20		2880	
Heavy Trucks	8	0	40	0		0	0	0	0		0	76	4	0		0	96	0	0		224	
Pedestrians		0					0					0					0				0	
Bicycles	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	
Buses																						
Stopped Buses																						

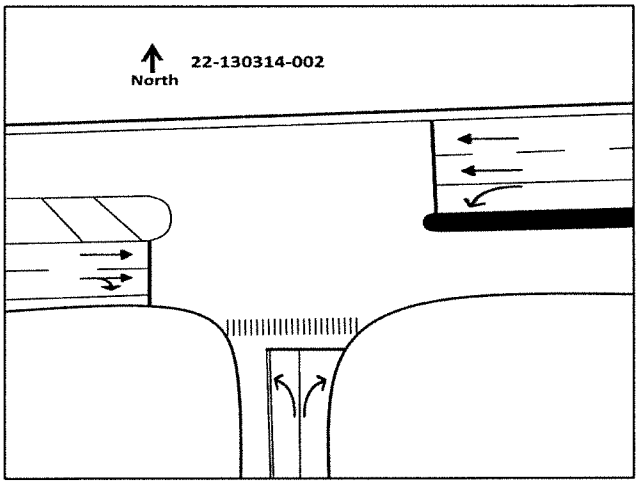
LOCATION: SW 20th Avenue Rd & CR 484
CITY/STATE: Ocala, FL

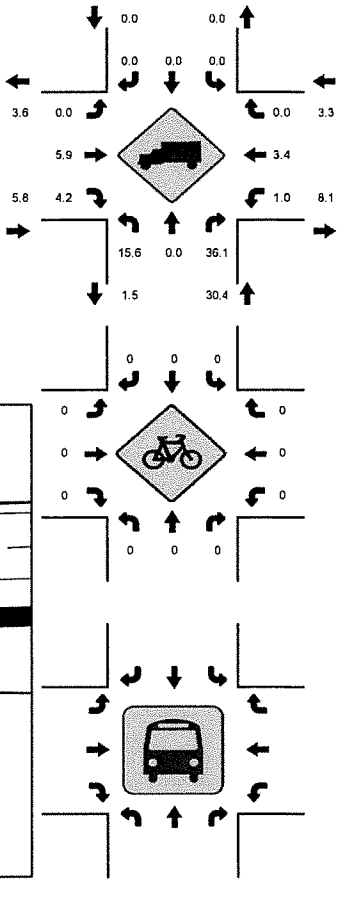
PROJECT ID: 22-130314-002
DATE: Tue, Oct 25, 2022

Peak-Hour: 04:00 PM - 05:00 PM
Peak 15-Minute: 04:45 PM - 05:00 PM



National Data & Surveying Services



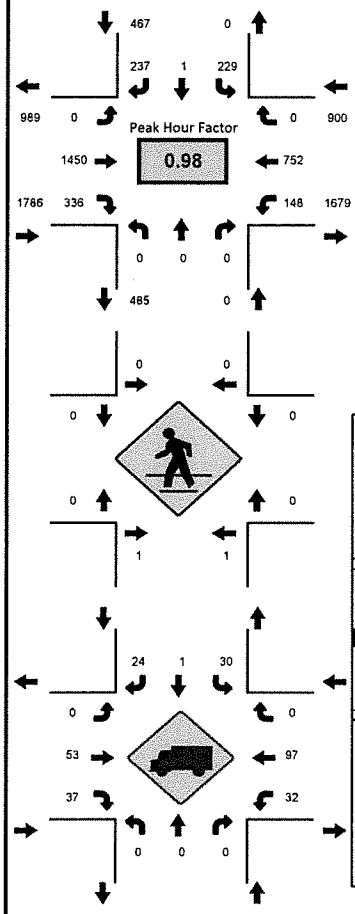


15-Min Count Period Beginning At	SW 20th Avenue Rd Northbound					SW 20th Avenue Rd Southbound					CR 484 Eastbound					CR 484 Westbound					Total	Hourly Total
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
03:00 PM	10	0	23	0		0	0	0	0		0	286	18	0		20	290	0	7		654	2670
03:15 PM	8	0	20	0		0	0	0	0		0	254	11	0		11	312	0	5		621	2696
03:30 PM	16	0	23	0		0	0	0	0		0	284	7	0		18	336	0	7		691	2816
03:45 PM	6	0	14	0		0	0	0	0		0	276	5	0		25	373	0	5		704	2806
04:00 PM	4	0	21	0		0	0	0	0		0	247	9	0		21	375	0	3		680	2871
04:15 PM	10	0	28	0		0	0	0	0		0	250	17	0		26	407	0	3		741	2191
04:30 PM	9	0	21	0		0	0	0	0		0	237	8	0		17	386	0	3		681	1450
04:45 PM	9	0	13	0		0	0	0	0		0	289	14	0		20	420	0	4		769	769
Peak 15-Min Flowrates	**Northbound**					**Southbound**					**Eastbound**					**Westbound**					**Total**	
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
All Vehicles	40	0	112	0		0	0	0	0		0	1156	68	0		104	1680	0	16		**3176**	
Heavy Trucks	8	0	48	0		0	0	0	0		0	68	4	0		0	80	0	4		**208**	
Pedestrians		0					0					0					0				**0**	
Bicycles	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		**0**	
Buses																						
Stopped Buses																						

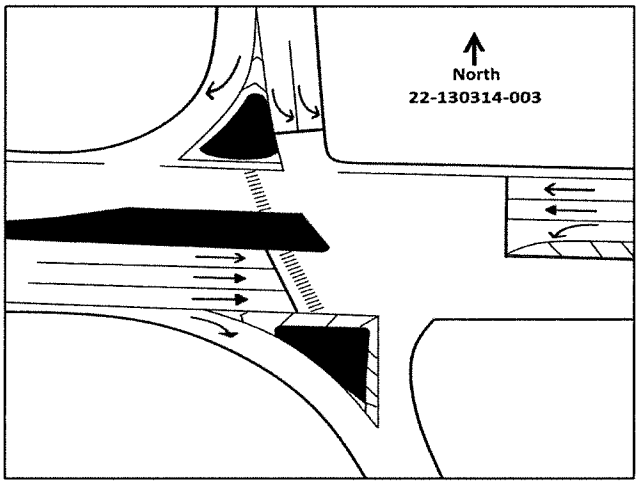
LOCATION: I 75/SR 93 SB Ramps & CR 484
CITY/STATE: Ocala, FL

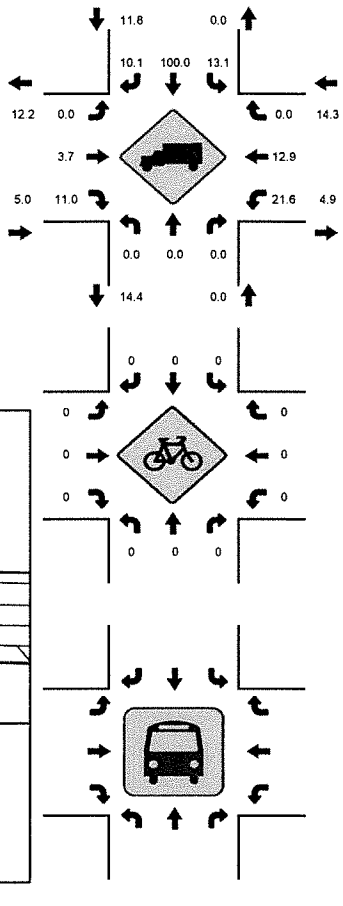
PROJECT ID: 22-130314-003
DATE: Tue, Oct 25, 2022

Peak-Hour: 07:00 AM - 08:00 AM
Peak 15-Minute: 07:00 AM - 07:15 AM



National Data & Surveying Services





15-Min Count Period Beginning At	I 75/SR 93 SB Ramps Northbound					I 75/SR 93 SB Ramps Southbound					CR 484 Eastbound					CR 484 Westbound					Total	Hourly Total
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
07:00 AM	0	0	0	0		43	0	58	0		0	384	87	0		44	189	0	0		805	3153
07:15 AM	0	0	0	0		69	0	68	0		0	360	88	0		25	176	0	0		786	3111
07:30 AM	0	0	0	0		54	1	53	0		0	367	87	0		45	178	0	0		785	3041
07:45 AM	0	0	0	0		63	0	58	0		0	339	74	0		34	209	0	0		777	2926
08:00 AM	0	0	0	0		67	0	60	0		0	341	82	0		32	181	0	0		763	2816
08:15 AM	0	0	0	0		69	0	57	0		0	295	76	0		32	187	0	0		716	2053
08:30 AM	0	0	0	0		55	0	46	0		0	306	60	0		34	169	0	0		670	1337
08:45 AM	0	0	0	0		61	0	42	0		0	250	75	0		32	207	0	0		667	667
Peak 15-Min Flowrates	**Northbound**					**Southbound**					**Eastbound**					**Westbound**					**Total**	
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
All Vehicles	0	0	0	0		276	4	272	0		0	1536	352	0		180	836	0	0		**3456**	
Heavy Trucks	0	0	0	0		36	4	32	0		0	80	52	0		84	112	0	0		**400**	
Pedestrians		4					0					0					0				**4**	
Bicycles	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		**0**	
Buses																						
Stopped Buses																						

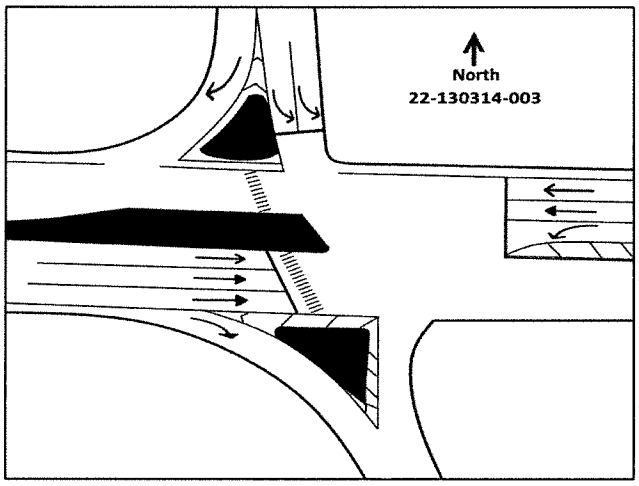
LOCATION: I 75/SR 93 SB Ramps & CR 484
CITY/STATE: Ocala, FL

PROJECT ID: 22-130314-003
DATE: Tue, Oct 25, 2022

Peak-Hour: 04:00 PM - 05:00 PM
Peak 15-Minute: 04:45 PM - 05:00 PM

Peak Hour Factor
0.92

National Data & Surveying Services

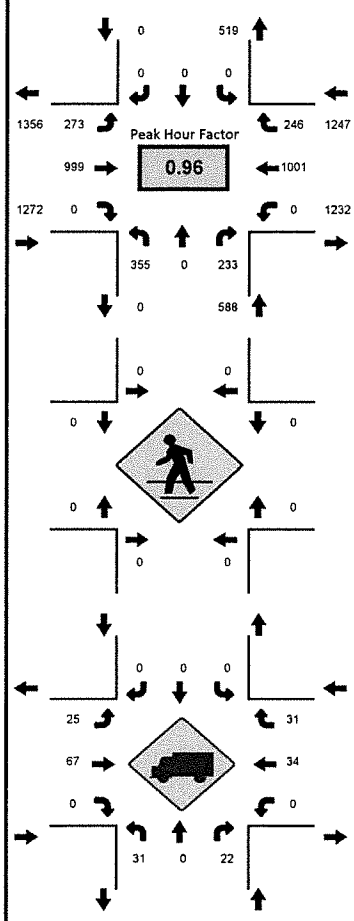


15-Min Count Period Beginning At	I 75/SR 93 SB Ramps Northbound					I 75/SR 93 SB Ramps Southbound					CR 484 Eastbound					CR 484 Westbound					Total	Hourly Total
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
03:00 PM	0	0	0	0		71	0	96	0		0	260	68	0		22	229	0	0		746	3191
03:15 PM	0	0	0	0		55	0	116	0		0	227	68	0		32	249	0	0		747	3258
03:30 PM	0	0	0	0		68	0	118	0		0	280	55	0		32	269	0	1		823	3366
03:45 PM	0	0	0	0		95	0	128	0		0	255	68	0		25	304	0	0		875	3354
04:00 PM	0	0	0	0		70	0	116	0		0	224	64	0		33	306	0	0		813	3399
04:15 PM	0	0	0	0		81	0	123	0		0	239	51	0		21	340	0	0		855	2586
04:30 PM	0	0	0	0		68	0	131	0		0	229	56	0		31	296	0	0		811	1731
04:45 PM	0	0	0	0		109	0	148	0		0	254	60	0		35	314	0	0		920	920
Peak 15-Min Flowrates	**Northbound**					**Southbound**					**Eastbound**					**Westbound**					**Total**	
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
All Vehicles	0	0	0	0		436	0	592	0		0	1016	256	0		140	1360	0	0		3800	
Heavy Trucks	0	0	0	0		36	0	32	0		0	80	52	0		20	68	0	0		288	
Pedestrians		4					0					0					0				4	
Bicycles	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	
Buses																						
Stopped Buses																						

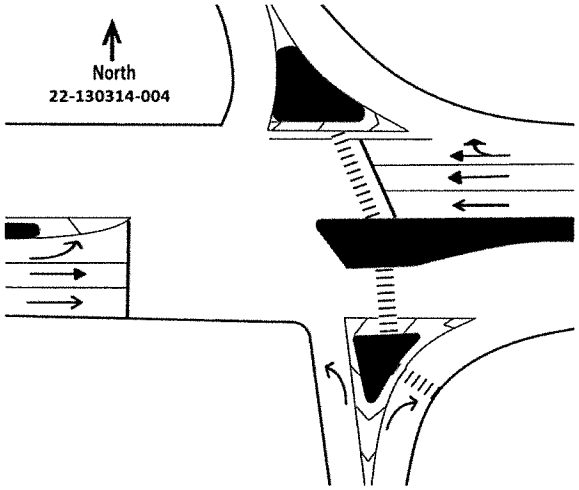
LOCATION: I 75/SR 93 NB Ramps & CR 484
CITY/STATE: Ocala, FL

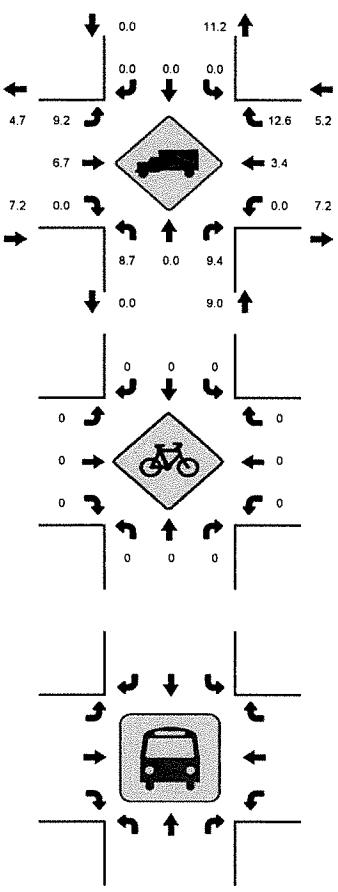
PROJECT ID: 22-130314-004
DATE: Tue, Oct 25, 2022

Peak-Hour: 04:00 PM - 05:00 PM
Peak 15-Minute: 04:45 PM - 05:00 PM



National Data & Surveying Services



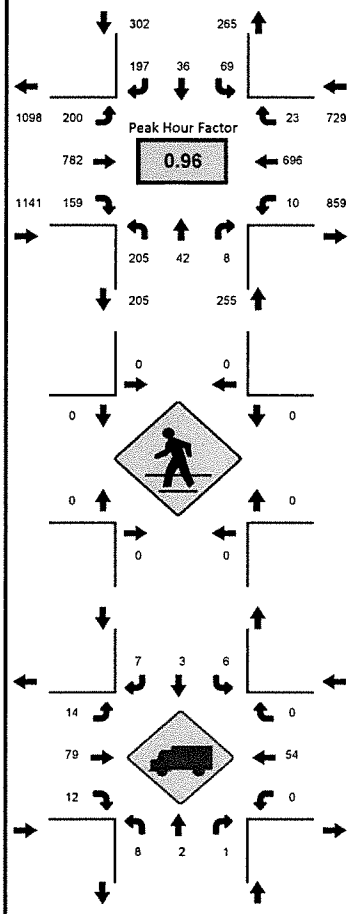


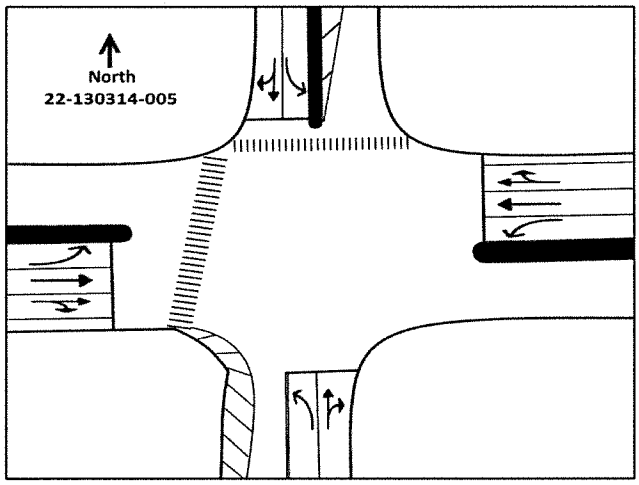
15-Min Count Period Beginning At	I 75/SR 93 NB Ramps Northbound					I 75/SR 93 NB Ramps Southbound					CR 484 Eastbound					CR 484 Westbound					Total	Hourly Total
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
03:00 PM	60	0	54	0		0	0	0	0		80	250	0	3		0	192	75	0		714	2970
03:15 PM	76	0	58	0		0	0	0	0		65	216	0	1		0	204	73	0		693	3026
03:30 PM	73	0	65	0		0	0	0	0		70	274	0	6		0	222	69	0		779	3105
03:45 PM	83	2	55	0		0	0	0	0		67	279	0	5		0	239	54	0		784	3085
04:00 PM	82	0	59	0		0	0	0	0		62	225	0	4		0	255	83	0		770	3107
04:15 PM	96	0	45	0		0	0	0	0		62	253	0	5		0	257	54	0		772	2337
04:30 PM	88	0	67	0		0	0	0	0		67	227	0	5		0	239	66	0		759	1565
04:45 PM	89	0	62	0		0	0	0	0		61	294	0	7		0	250	43	0		806	806
Peak 15-Min Flowrates	**Northbound**					**Southbound**					**Eastbound**					**Westbound**					**Total**	
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
All Vehicles	384	0	268	0		0	0	0	0		268	1176	0	28		0	1028	332	0		**3484**	
Heavy Trucks	36	0	32	0		0	0	0	0		36	72	0	0		0	48	44	0		**268**	
Pedestrians		0					0					0					0				**0**	
Bicycles	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		**0**	
Buses																						
Stopped Buses																						

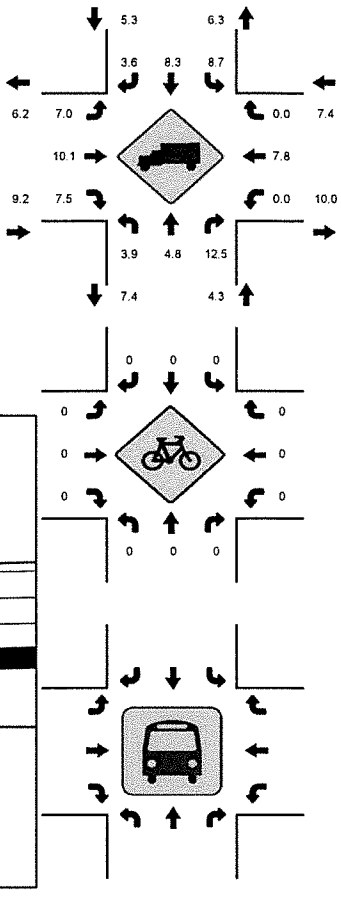
LOCATION: SW 16th Ave/CR 475A & CR 484
CITY/STATE: Ocala, FL

PROJECT ID: 22-130314-005
DATE: Tue, Oct 25, 2022

Peak-Hour: 03:30 PM - 04:30 PM
Peak 15-Minute: 03:45 PM - 04:00 PM







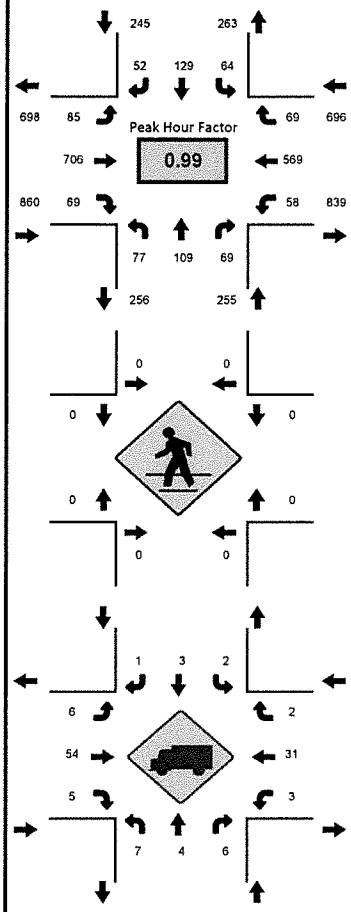
National Data & Surveying Services

15-Min Count Period Beginning At	SW 16th Ave/CR 475A Northbound					SW 16th Ave/CR 475A Southbound					CR 484 Eastbound					CR 484 Westbound					Total	Hourly Total
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
03:00 PM	49	8	6	0		19	14	46	0		45	181	34	9		3	152	5	0		571	2352
03:15 PM	39	12	1	0		17	7	47	0		52	169	29	6		4	157	6	0		546	2380
03:30 PM	39	11	2	0		18	11	54	0		45	208	39	3		1	166	6	1		604	2427
03:45 PM	55	11	0	0		19	7	47	0		55	211	45	2		1	173	5	0		631	2415
04:00 PM	58	12	4	0		15	13	49	0		44	179	36	1		2	178	7	1		599	2375
04:15 PM	53	8	2	0		17	5	47	0		47	184	39	3		4	179	5	0		593	1776
04:30 PM	65	9	1	0		17	12	52	0		39	184	33	5		1	166	8	0		592	1183
04:45 PM	65	8	4	0		10	16	41	0		52	196	39	4		4	146	4	2		591	591
Peak 15-Min Flowrates	**Northbound**					**Southbound**					**Eastbound**					**Westbound**					**Total**	
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
All Vehicles	232	48	16	0		76	52	216	0		220	844	180	12		16	716	28	4		**2660**	
Heavy Trucks	12	4	4	0		12	4	16	0		20	100	20	0		0	76	0	0		**268**	
Pedestrians		0					0					0					0				**0**	
Bicycles	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		**0**	
Buses																						
Stopped Buses																						

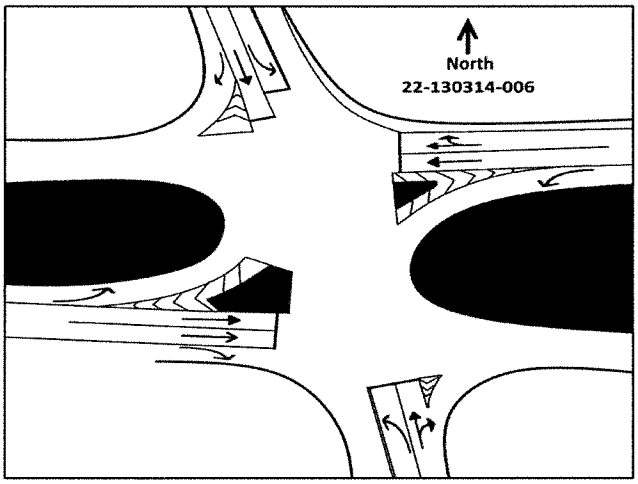
LOCATION: CR 475 & CR 484
CITY/STATE: Ocala, FL

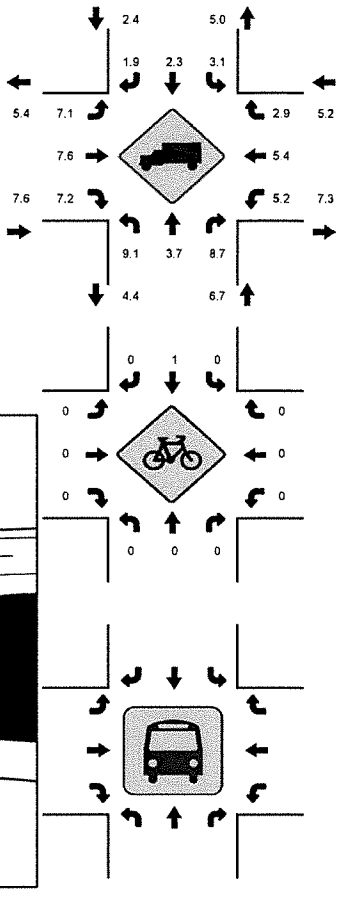
PROJECT ID: 22-130314-006
DATE: Tue, Oct 25, 2022

Peak-Hour: 04:00 PM - 05:00 PM
Peak 15-Minute: 04:00 PM - 04:15 PM



National Data & Surveying Services



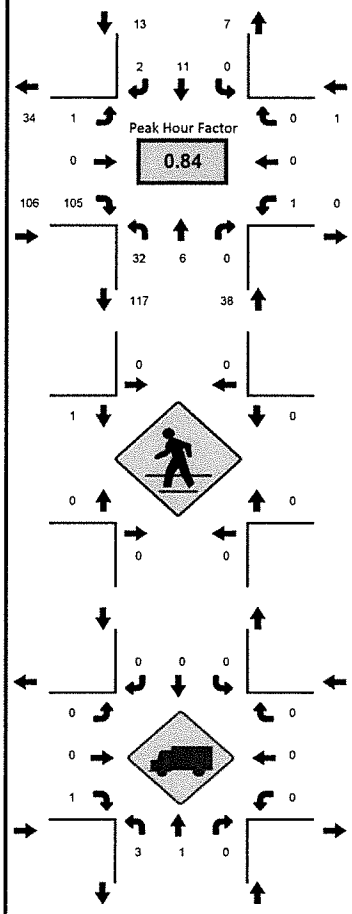


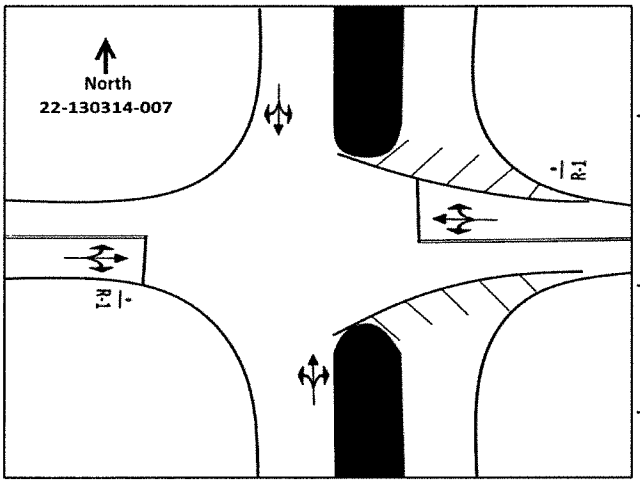
15-Min Count Period Beginning At	CR 475 Northbound					CR 475 Southbound					CR 484 Eastbound					CR 484 Westbound					Total	Hourly Total
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
03:00 PM	11	21	10	0		8	29	14	0		13	179	17	8		15	139	10	0		474	1932
03:15 PM	18	27	12	0		13	34	11	0		9	150	16	1		13	134	8	1		447	1979
03:30 PM	9	25	14	0		15	20	7	0		18	191	19	4		12	140	16	0		490	2035
03:45 PM	11	25	16	0		15	32	8	0		23	164	24	5		10	175	13	0		521	2056
04:00 PM	17	24	20	0		21	35	13	0		18	181	13	2		13	152	11	1		521	2056
04:15 PM	23	30	12	0		17	26	14	0		17	160	20	6		6	149	22	1		503	1535
04:30 PM	14	22	18	0		14	40	12	0		17	176	18	7		19	131	20	3		511	1032
04:45 PM	23	33	19	0		12	28	13	0		12	189	18	6		13	137	16	2		521	521
Peak 15-Min Flowrates	**Northbound**					**Southbound**					**Eastbound**					**Westbound**					**Total**	
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
All Vehicles	92	132	80	0		84	160	56	0		72	756	80	28		76	608	88	12		**2324**	
Heavy Trucks	12	8	12	0		8	8	4	0		12	56	8	0		4	48	4	0		**184**	
Pedestrians		0					0					0					0				**0**	
Bicycles	0	0	0	0		0	4	0	0		0	0	0	0		0	0	0	0		**4**	
Buses																						
Stopped Buses																						

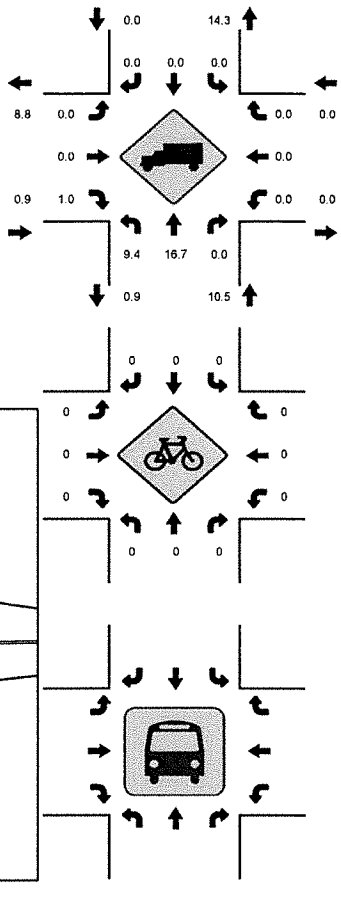
LOCATION: SW 29th Avenue Rd & Marion Oaks Trail
CITY/STATE: Ocala, FL

PROJECT ID: 22-130314-007
DATE: Tue, Oct 25, 2022

Peak-Hour: 07:00 AM - 08:00 AM
Peak 15-Minute: 07:30 AM - 07:45 AM





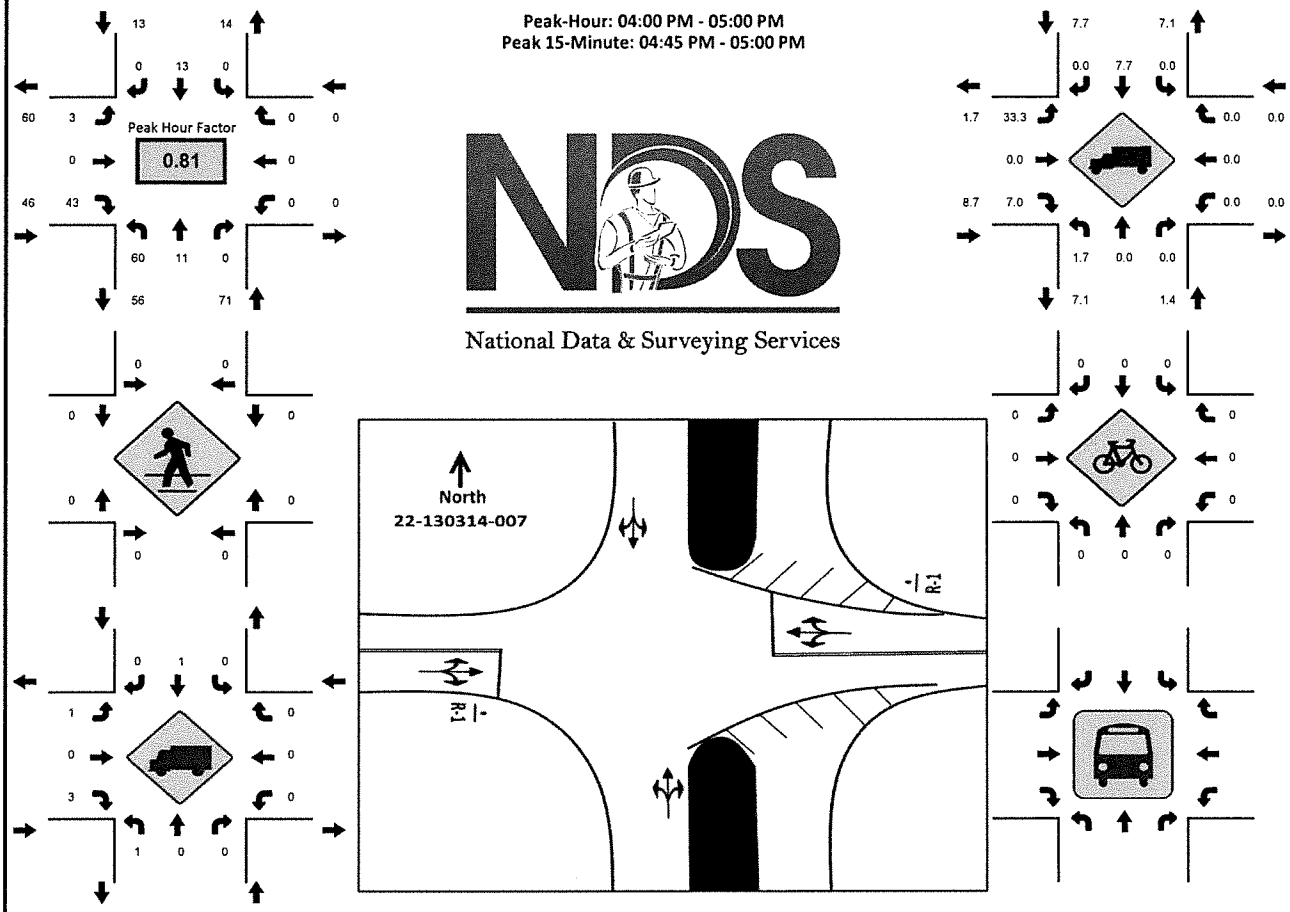


15-Min Count Period Beginning At	SW 29th Avenue Rd Northbound					SW 29th Avenue Rd Southbound					Marion Oaks Trail Eastbound					Marion Oaks Trail Westbound					Total	Hourly Total
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
07:00 AM	15	0	0	0		0	4	0	0		0	0	23	0		0	0	0	0		42	158
07:15 AM	8	1	0	0		0	3	1	0		0	0	26	0		1	0	0	0		40	149
07:30 AM	2	3	0	0		0	2	1	0		0	0	39	0		0	0	0	0		47	127
07:45 AM	7	2	0	0		0	2	0	0		1	0	17	0		0	0	0	0		29	105
08:00 AM	9	3	0	0		0	8	0	0		0	0	12	0		0	1	0	0		33	93
08:15 AM	6	2	0	0		0	5	0	0		0	0	5	0		0	0	0	0		18	60
08:30 AM	11	0	0	0		0	3	0	0		0	0	11	0		0	0	0	0		25	42
08:45 AM	6	2	1	0		0	2	0	0		0	0	6	0		0	0	0	0		17	17
Peak 15-Min Flowrates	**Northbound**					**Southbound**					**Eastbound**					**Westbound**					**Total**	
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
All Vehicles	60	12	0	0		0	16	4	0		4	0	156	0		4	0	0	0		**256**	
Heavy Trucks	8	4	0	0		0	0	0	0		0	0	4	0		0	0	0	0		**16**	
Pedestrians		0					0					4					0				**4**	
Bicycles	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		**0**	
Buses																						
Stopped Buses																						

LOCATION: SW 29th Avenue Rd & Marion Oaks Trail
CITY/STATE: Ocala, FL

PROJECT ID: 22-130314-007
DATE: Tue, Oct 25, 2022

Peak-Hour: 04:00 PM - 05:00 PM
Peak 15-Minute: 04:45 PM - 05:00 PM



15-Min Count Period Beginning At	SW 29th Avenue Rd Northbound					SW 29th Avenue Rd Southbound					Marion Oaks Trail Eastbound					Marion Oaks Trail Westbound					Total	Hourly Total
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
03:00 PM	9	6	0	0		0	2	0	0		0	0	9	0		0	0	0	0		26	124
03:15 PM	12	5	0	0		0	5	0	0		0	0	13	0		0	0	0	0		35	125
03:30 PM	17	4	0	0		0	1	0	0		0	0	11	0		0	0	0	0		33	118
03:45 PM	15	5	0	0		0	2	2	0		0	0	6	0		0	0	0	0		30	120
04:00 PM	15	1	0	0		0	4	0	0		1	0	6	0		0	0	0	0		27	130
04:15 PM	14	3	0	0		0	1	0	0		1	0	9	0		0	0	0	0		28	103
04:30 PM	10	4	0	0		0	6	0	0		1	0	14	0		0	0	0	0		35	75
04:45 PM	21	3	0	0		0	2	0	0		0	0	14	0		0	0	0	0		40	40
Peak 15-Min Flowrates	**Northbound**					**Southbound**					**Eastbound**					**Westbound**					**Total**	
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
All Vehicles	84	16	0	0		0	24	0	0		4	0	56	0		0	0	0	0		**184**	
Heavy Trucks	4	0	0	0		0	4	0	0		4	0	4	0		0	0	0	0		**16**	
Pedestrians		0					0					0					0				**0**	
Bicycles	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		**0**	
Buses																						
Stopped Buses																						

APPENDIX C: SIGNAL TIMING WORKSHEETS

Marion County
Office of the County Engineer

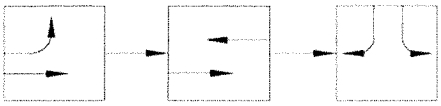
Field Notes

Signal ID	Major Street	Minor Street	Date	Technician
158	SW HWY 484	Marion Oaks Blvd	12/10/2020	Watson

Basic Timing

PHASE	Φ 1	Φ 2	Φ 3	Φ 4	Φ 5	Φ 6	Φ 7	Φ 8
DIRECTION		WB		NB	WBLT	EB		
MIN GRN		15		10	10	15		
GAP EXT		3.0		3.0	3.0	3.0		
MAX 1		52		35	25	52		
MAX 2								
YEL CLR		4.8		4.8	4.8	4.8		
RED CLR		2.0		3.7	2.0	2.0		
WALK								
PED CLR								
MIN RECALL		X				X		
MAX RECALL								
PED RECALL								
NON-LOCK CALL					X			
DUAL ENTRY		X				X		
REST IN WALK								

Signal Operating Plan



Additional Notes (Turning Retrictions?, Overlaps?, Etc.)
1) Detector switching used for Phase 5 and 6.

Coordination Yes (No)

Split	Movement Number								COMMENTS
	1	2	3	4	5	6	7	8	
1									
2									
3									

Time Patterns for Coordination

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION - DISTRICT FIVE
CR 484 - TSMO Signal Retiming
Marion County
FIN 440412-1-32-02

Designed By:	S.M.P.
Date:	6/8/2022
Checked By:	J.M.
Date:	6/8/2022

Section		Mile Post		Node	1
Sig ID	259	System ID		SOP	12
Maj. Street	CR 484	Orientation	E-W	Controller	Siemens m60
Min. Street	SW 20th Ave Rd	Orientation	N-S	Firmware	5.3.1

Data Inputs

Movement # (Controller Phase Ø)	1	2	3	4	5	6	7	8
Direction		WB		NB	WBL	EB		
Speed Limit (mph)		45		35	45	45		
Vehicle Traversed Width		98		89	106	93		
Approach Grades		0.4%		1.0%	0.4%	-1.7%		
Ped-X (curb to curb)								
Crossing Time								
Ped-X (button to curb)								
Ped-X (button to far curb)								
Crossing Time (to far curb)								

Controller Timings (seconds)

Movement # (Controller Phase Ø)	1	2	3	4	5	6	7	8
Direction		WB		NB	WBL	EB		
Turn Type					Prot/Perm			
Min Green		15		10	10	15		
Ext		4.0		5.0	4.0	5.0		
Yellow Change Interval		4.9		4.0	4.8	4.9		
Red Clearance Interval		2.0		2.0	2.5	2.0		
Max I		34		35	25	35		
Max II		0		0	0	0		
Walk								
Flashing Don't Walk								
Min Splits		22.0		16.0	18.0	22.0		
Non-Locking Memory				ON	ON			
Det. Cross Switch.					ON			
Recall		Min				Min		
Dual Entry		ON				ON		
Coord Phase		YES				YES		

Time Of Day

Weekday*

Plan	C-O-S	Time
FREE	254	0:01
AM	1	6:10
MIDDAY	19	9:00
PM	37	15:00
MIDDAY	19	18:30
FREE	254	21:00

Weekend

Saturday

Plan	C-O-S	Time
FREE	254	0:01
WKND OffPk	59	9:00
WKND	55	12:00
WKND OffPk	59	19:00
FREE	254	21:00

Sunday

Plan	C-O-S	Time
FREE	254	0:01
WKND	55	9:45
FREE	254	20:00

Coordination Timings (seconds)

Plan	Pattern	C-O-S	Splits								Cycle Length	Offset	Seq
AM	1		-	154	-	26	28	126	-	-	180	165	0
MIDDAY	19		-	116	-	24	23	93	-	-	140	100	0
PM	37		-	154	-	26	27	127	-	-	180	83	0
WKND	55		-	116	-	24	23	93	-	-	140	100	0
WKND OffPk	59		-	116	-	24	23	93	-	-	140	100	0

Notes:

1) Offset referenced to "end of mainstreet green"
2) Use Plan Force Offs
3) Use Inhibit Max termination during coordination

*Friday follows standard weekday plan except Pattern 37 begins at 14:00

All Plans

Ring-1		2		4
Ring-2	5	6		

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION - DISTRICT FIVE
CR 484 - TSMO Signal Retiming
Marion County
FIN 440412-1-32-02

Designed By:	S.M.P.
Date:	6/8/2022
Checked By:	J.M.
Date:	6/8/2022

Section		Mile Post		Node	2
Sig ID	58	System ID		SOP	14
Maj. Street	CR 484	Orientation	E-W	Controller	Siemens m60
Min. Street	I-75 SB Ramps	Orientation	N-S	Firmware	5.3.1

Data Inputs

Movement # (Controller Phase Ø)	1	2	3	4	5	6	7	8
Direction		WB		SB	WBL	EB		
Speed Limit (mph)		45		35	45	45		
Vehicle Traversed Width		114		120	78	105		
Approach Grades		1.6%		-1.0%	1.6%	-5.2%		
Ped-X (curb to curb)		26		104				
Crossing Time		8		30				
Ped-X (button to curb)		18		19				
Ped-X (button to far curb)		44		123				
Crossing Time (to far curb)		15		41				

Controller Timings (seconds)

Movement # (Controller Phase Ø)	1	2	3	4	5	6	7	8
Direction		WB		SB	WBL	EB		
Turn Type					Prot/Perm			
Min Green		18		7	7	18		
Ext		3.0		3.0	4.0	3.0		
Yellow Change Interval		5.4		4.1	5.4	5.4		
Red Clearance Interval		2.0		2.9	2.0	2.0		
Max I		50		25	20	50		
Max II		75		25	20	80		
Walk		7		7				
Flashing Don't Walk		12		30				
Min Splits		27.0		44.0	15.0	26.0		
Non-Locking Memory				ON	ON			
Det. Cross Switch.					ON			
Recall		Min				Min		
Dual Entry		ON				ON		
Coord Phase		YES				YES		

Time Of Day

Weekday*

Plan	C-O-S	Time
FREE	254	0:01
AM	1	5:30
MIDDAY	19	9:00
PM	37	15:00
MIDDAY	19	18:30
FREE	254	21:00

Weekend

Saturday

Plan	C-O-S	Time
FREE	254	0:01
WKND OffPk	59	9:00
WKND	55	12:00
WKND OffPk	59	19:00
FREE	254	21:00

Sunday

Plan	C-O-S	Time
FREE	254	0:01
WKND	55	9:45
FREE	254	20:00

Coordination Timings (seconds)

Plan	Pattern	C-O-S	Splits								Cycle Length	Offset	Seq
AM	1		-	134	-	46	28	106	-	-	180	6	2
MIDDAY	19		-	102	-	38	24	78	-	-	140	118	2
PM	37		-	120	-	60	27	93	-	-	180	58	2
WKND	55		-	102	-	38	27	75	-	-	140	114	2
WKND OffPk	59		-	103	-	37	27	76	-	-	140	114	2

Notes:

1) Offset referenced to "end of mainstreet green"
2) Use Plan Force Offs
3) Use Inhibit Max termination during coordination
4) Use Min Recall on phase 5 during coordination

*Friday follows standard weekday plan except 37 begins at 14:00

All Plans

Ring-1		2	4
Ring-2	6	5	

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION - DISTRICT FIVE
CR 484 - TSMO Signal Retiming
Marion County
FIN 440412-1-32-02

Designed By:	S.M.P.
Date:	6/8/2022
Checked By:	J.M.
Date:	6/8/2022

Section		Mile Post		Node	3
Sig ID	36	System ID		SOP	15
Maj. Street	CR 484	Orientation	E-W	Controller	Siemens m60
Min. Street	I-75 NB Ramps	Orientation	N-S	Firmware	5.3.1

Data Inputs

Movement # (Controller Phase Ø)	1	2	3	4	5	6	7	8
Direction	EBL	WB		NB		EB		
Speed Limit (mph)	45	45		35		45		
Vehicle Traversed Width	99	94		103		112		
Approach Grades	-1.5%	1.2%		-1.0%		-1.5%		
Ped-X (curb to curb)		22		101				
Crossing Time		7		29				
Ped-X (button to curb)		11		19				
Ped-X (button to far curb)		33		120				
Crossing Time (to far curb)		11		40				

Controller Timings (seconds)

Movement # (Controller Phase Ø)	1	2	3	4	5	6	7	8
Direction	EBL	WB		NB		EB		
Turn Type	Prot/Perm							
Min Green	7	20		7		20		
Ext	4.0	4.0		5.0		4.0		
Yellow Change Interval	4.9	4.9		4.1		4.9		
Red Clearance Interval	2.3	2.0		2.4		2.0		
Max I	15	70		45		70		
Max II	30	90		23		80		
Walk		7		7				
Flashing Don't Walk		12		29				
Min Splits	15.0	27.0		43.0		27.0		
Non-Locking Memory	ON			ON				
Det. Cross Switch.								
Recall		Max		Min		Max		
Dual Entry		ON				ON		
Coord Phase		YES				YES		

Time Of Day

Weekday*

Plan	C-O-S	Time
FREE	254	0:01
AM	1	5:30
MIDDAY	19	9:00
PM	37	15:00
PM Peak	7	16:45
PM OffPk	23	18:30
FREE	254	21:00

Weekend

Saturday

Plan	C-O-S	Time
FREE	254	0:01
WKND OffPk	59	9:00
WKND	55	12:00
WKND Pk	63	13:00
WKND	55	14:00
WKND OffPk	59	19:00
FREE	254	21:00

Sunday

Plan	C-O-S	Time
FREE	254	0:01
WKND	55	9:45
FREE	254	20:00

Coordination Timings (seconds)

Plan	Pattern	C-O-S	Splits								Cycle Length	Offset	Seq
AM	1		70	71	-	39	-	141	-	-	180	33	0
MIDDAY	19		44	59	-	37	-	103	-	-	140	137	0
PM	37		51	79	-	50	-	130	-	-	180	65	0
PM Peak	7		47	79	-	54	-	126	-	-	180	61	0
PM OffPk	23		44	52	-	44	-	96	-	-	140	137	0
WKND	55		36	67	-	37	-	103	-	-	140	134	0
WKND OffPk	59		34	70	-	36	-	104	-	-	140	135	0
WKND Pk	63		34	71	-	35	-	105	-	-	140	134	0

Notes:

1) Offset referenced to "end of mainstreet green"
2) Use Plan Force Offs
3) Use Inhibit Max termination during coordination
4) Use Max Recall on phase 1 during coordination
5) Following general recall configuration due to bad loop on phase 1

*Friday follows standard weekday plan except 37 begins at 14:00

All Plans

Ring-1	1	2	4
Ring-2		6	

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION - DISTRICT FIVE
CR 484 - TSMO Signal Retiming
Marion County
FIN 440412-1-32-02

Designed By:	S.M.P.
Date:	6/8/2022
Checked By:	J.M.
Date:	6/8/2022

Section		Mile Post		Node	4
Sig ID	38	System ID		SOP	10
Maj. Street	CR 484	Orientation	E-W	Controller	Siemens m60
Min. Street	CR 475A/SW 16th Ave	Orientation	N-S	Firmware	5.3.1

Data Inputs

Movement # (Controller Phase Ø)	1	2	3	4	5	6	7	8
Direction	WBL	EB	NBL	SB	EBL	WB	SBL	NB
Speed Limit (mph)	45	45	45	45	45	45	45	45
Vehicle Traversed Width	118	113	94	97	120	119	91	115
Approach Grades	-0.7%	-1.0%	-1.1%	-1.0%	-1.0%	-0.7%	-1.0%	-1.1%
Ped-X (curb to curb)				94		85		
Crossing Time				27		25		
Ped-X (button to curb)				13		14		
Ped-X (button to far curb)				107		99		
Crossing Time (to far curb)				36		33		

Controller Timings (seconds)

Movement # (Controller Phase Ø)	1	2	3	4	5	6	7	8
Direction	WBL	EB	NBL	SB	EBL	WB	SBL	NB
Turn Type	Prot/Perm		Prot/Perm		Prot/Perm		Prot/Perm	
Min Green	6	15	6	10	6	15	6	10
Ext	3.0	4.5	3.0	3.0	3.0	4.5	3.0	3.0
Yellow Change Interval	4.8	4.9	4.9	4.9	4.9	4.9	4.9	4.9
Red Clearance Interval	2.8	2.0	2.2	2.0	2.9	2.0	2.1	2.0
Max I	20	50	25	30	20	50	25	30
Max II	0	0	0	0	0	0	0	0
Walk				7		7		
Flashing Don't Walk				27		25		
Min Splits	14.0	22.0	14.0	41.0	14.0	39.0	13.0	17.0
Non-Locking Memory	ON		ON	ON	ON		ON	ON
Det. Cross Switch.	ON		ON		ON		ON	
Recall		Min				Min		
Dual Entry		ON		ON		ON		ON
Coord Phase		YES				YES		

Time Of Day

Weekday*

Plan	C-O-S	Time
FREE	254	0:01
AM	1	6:10
MIDDAY	19	9:00
PM	37	15:00
PM OffPk	41	17:30
MIDDAY	19	18:30
FREE	254	21:00

Weekend

Saturday

Plan	C-O-S	Time
FREE	254	0:01
WKND OffPk	59	9:00
WKND	55	12:00
WKND OffPk	59	19:00
FREE	254	21:00

Sunday

Plan	C-O-S	Time
FREE	254	0:01
WKND	55	9:45
FREE	254	20:00

Coordination Timings (seconds)

Plan	Pattern	C-O-S	Splits								Cycle Length	Offset	Seq
AM	1		18	91	30	41	50	59	21	50	180	10	0
MIDDAY	19		20	67	27	26	28	59	27	26	140	125	0
PM	37		18	97	34	31	29	86	26	39	180	58	0
PM OffPk	41		18	88	40	34	28	78	25	49	180	58	0
WKND	55		20	69	28	23	29	60	25	26	140	130	0
WKND OffPk	59		20	73	24	23	29	64	24	23	140	130	0

Notes:

1) Offset referenced to "end of mainstreet green"
2) Use Cycle Force Offs
3) Use Inhibit Max termination during coordination
*Friday follows standard weekday plan except 37 begins at 14:00

All Plans

Ring-1	1	2	3	4
Ring-2	5	6	7	8

Marion County
Office of the County Engineer

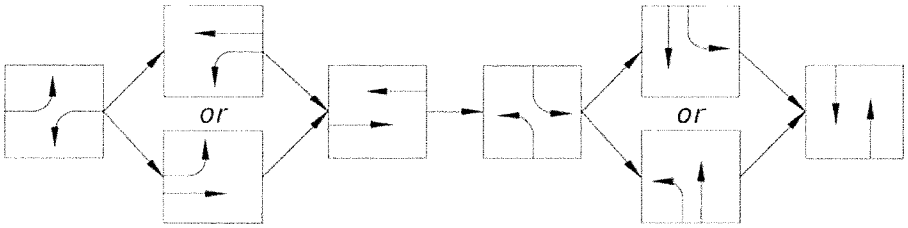
Field Notes

Signal ID	Major Street	Minor Street	Date	Technician
37	SE HWY 484	S HWY 475	12/10/2020	Watson

Basic Timing

PHASE	Φ 1	Φ 2	Φ 3	Φ 4	Φ 5	Φ 6	Φ 7	Φ 8
DIRECTION	EBLT	WB	SBLT	NB	WBLT	EB	NBLT	SB
MIN GRN	8	17	8	8	8	17	8	8
GAP EXT	3.0	3.0	3.5	3.0	3.0	3.0	3.0	3.0
MAX 1	25	45	25	25	20	45	25	25
MAX 2								
YEL CLR	5.5	5.7	5.5	5.5	5.5	5.7	5.5	5.5
RED CLR	4.1	2.0	4.5	2.7	3.0	2.0	4.5	2.7
WALK								
PED CLR								
MIN RECALL		X				X		
MAX RECALL								
PED RECALL								
NON-LOCK CALL			X	X			X	X
DUAL ENTRY				X				X
REST IN WALK								

Signal Operating Plan



Additional Notes (Turning Retrictions?, Overlaps?, Etc.)

Coordination Yes (No)

Split	Movement Number								COMMENTS
	1	2	3	4	5	6	7	8	
1									
2									
3									

Time Patterns for Coordination

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APPENDIX D: VESTED TRAFFIC INFO

PROJECT TRAFFIC

TRIP GENERATION

The Institute of Transportation Engineers (ITE) *Trip Generation Manual, 10th Edition* was used to calculate trip generation potential for the industrial development. ITE Land Use Code (LUC) 154 (High-Cube Transload and Short-Term Storage Warehouse) was applied in the trip generation calculations. The daily trip generation rate and AM Peak Hour of Adjacent Street Traffic rates published in the tables for ITE LUC 154 were utilized for those time periods.

The site is estimated to operate in three work shifts with approximately 220 employees in the first two shifts and 100 employees in the overnight shift. To estimate the trip generation of the site during the PM peak hour of generator, an hourly distribution of daily traffic was utilized. The hourly breakdown of daily traffic provided in ITE LUC 154 for the peak PM period was applied to the daily trip generation to estimate the trip generation during the PM peak hour of generator. A 0.294 rate of daily trips was applied, resulting in an estimated 395 trips during the PM peak hour. The entering and exiting percentages reported in the graph for the PM peak hour of generator (33% in, 67% out) was utilized.

Based on the methodology outlined above, the project is anticipated to generate 1,344 net new daily trips, 115 net new AM peak hour trips, and 395 net new PM peak hour trips at buildout.

A project truck percentage of 31.0% was utilized for the AM peak hour, 22.0% for the PM peak hour, and an average of the AM and PM peak hour percent trucks was utilized for the daily trips (26.5% daily percent truck traffic) based on guidance within ITE for this type of facility.

The trip generation calculations are provided in **Table 1**.

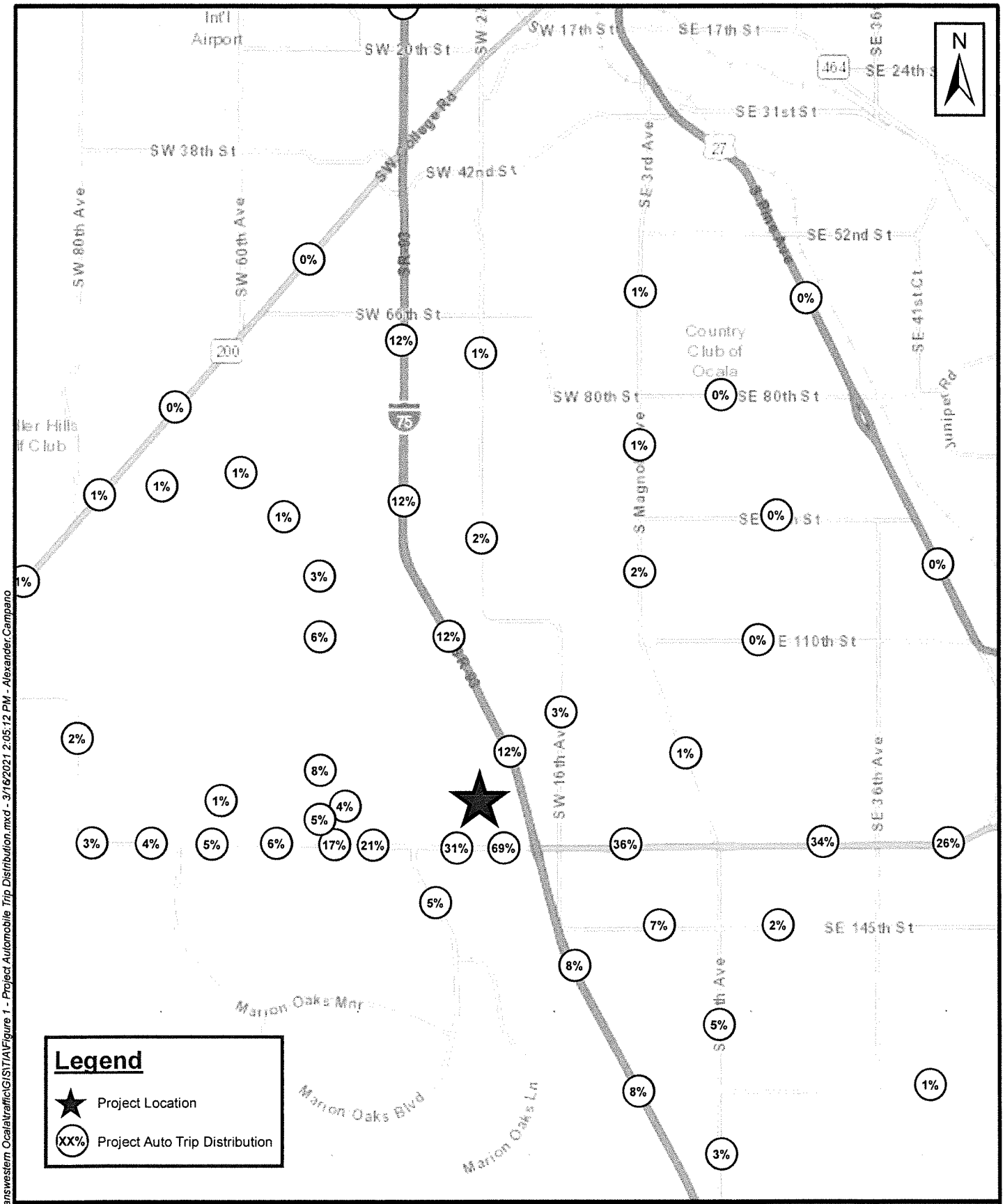
Table 1 - Trip Generation

Land Use	Intensity			Daily Trips	AM Peak Hour of Adjacent Street			PM Peak Hour of Generator		
					Total	In	Out	Total	In	Out
Proposed Site										
Industrial High Cube Warehouse	960,000 Sq Ft GFA			1,344	115	95	20	395	130	265
	Daily	AM	PM							
Percent Trucks	26.5%	31.0%	22.0%	356	36	28	8	87	24	63
Buildout Automobile Driveway Trips				**988**	**79**	**67**	**12**	**308**	**106**	**202**
Buildout Truck Driveway Trips				**356**	**36**	**28**	**8**	**87**	**24**	**63**

Note 1: Trip generation calculations based on ITE's Trip Generation Manual, 10th Edition.
Note 2: Proposed trip generation is based on ITE Trip Generation Manual, 10 Edition code 154.
Note 3: Percent trucks based on ITE Trip Generation (10/2016) study for ITE LUC 154 AM 31% and PM 22%, with an average of AM and PM used for daily trips.

High-Cube Transload and Short-Term Storage Warehouse [ITE 154]

Daily	T = 1.40*X; (X is 1000 Sq. Ft. GFA, 50% in, 50% out); Truck % = 31.0%
AM Peak Hour of Adjacent Street	T = 0.12*(X); (X is 1000 Sq. Ft. GFA, 83% in, 17% out); Truck % = 22.0%
PM Peak Hour of Generator	T = 0.294*(Daily Trip Generation); (33% in, 67% out) Truck % = 26.5%
	* Based on Hourly Distribution of Traffic from ITE for LUC 154



K:\OCA_Civil\142933000-Transwestern Ocala\traffic\GIS\TIA\Figure 1 - Project Automobile Trip Distribution.mxd - 3/16/2021 2:05:12 PM - Alexander.Campano

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101 E Silver Springs, Suite 400, Ocala, FL 34470
Phone: 352 438 3000
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FIGURE 1 - PROJECT AUTOMOBILE TRIP DISTRIBUTION

TRAILHEAD LOGISTICS PARK
MARION COUNTY, FLORIDA

Project No: 142933000	Not to Scale	March 2021	Page 4

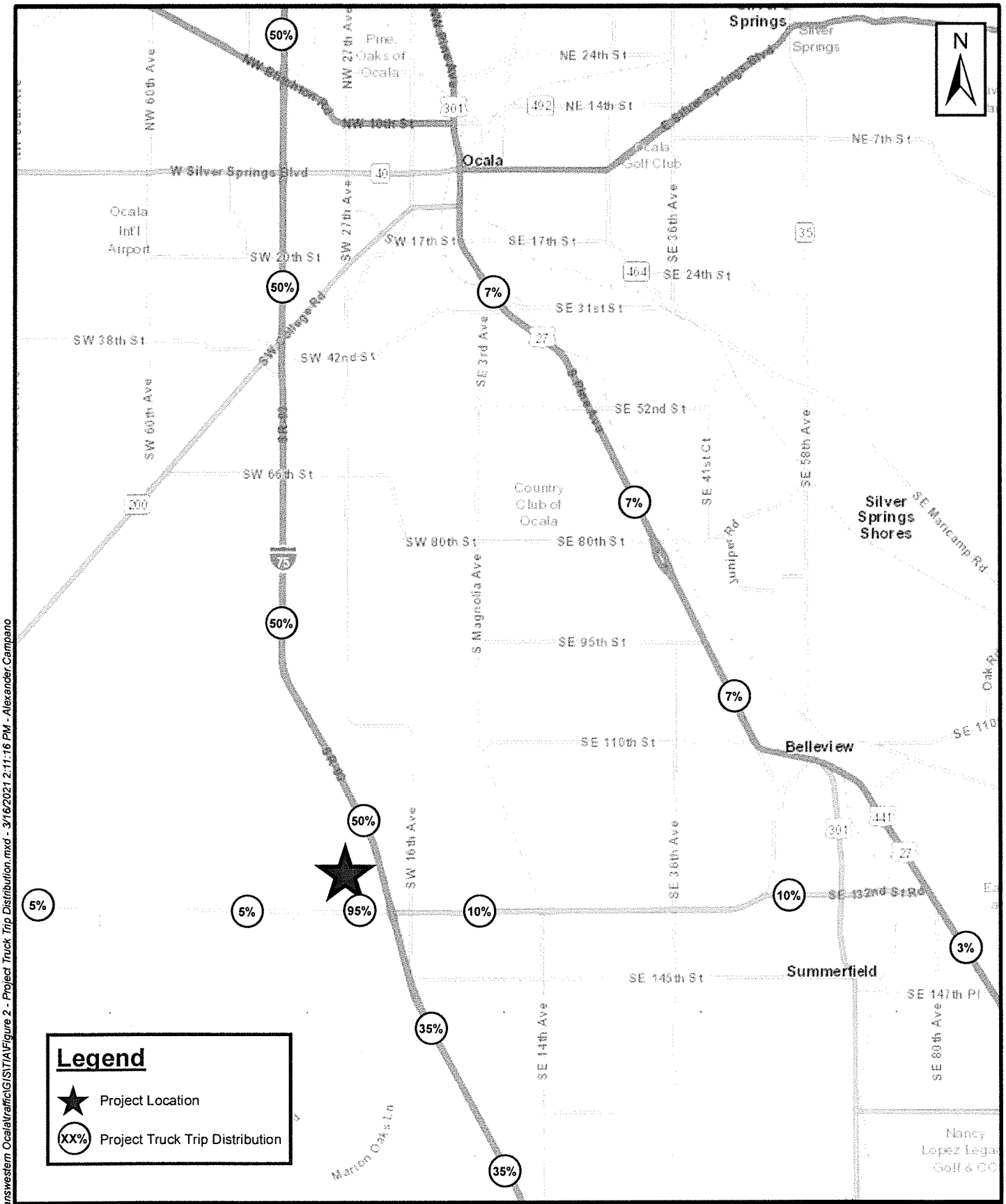

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FIGURE 2 - PROJECT TRUCK TRIP DISTRIBUTION

TRAILHEAD LOGISTICS PARK
MARION COUNTY, FLORIDA

Project No: 142933000	Not to Scale	March 2021	Page 5

K:\OCA_Civil\142933000-Transwestern Ocala\traffic\GIS\TIA\Figure 2 - Project Truck Trip Distribution.mxd - 3/16/2021 2:11:16 PM - Alexander.Campano

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Site Boundary

N

N.T.S.

vhb

Figure 1

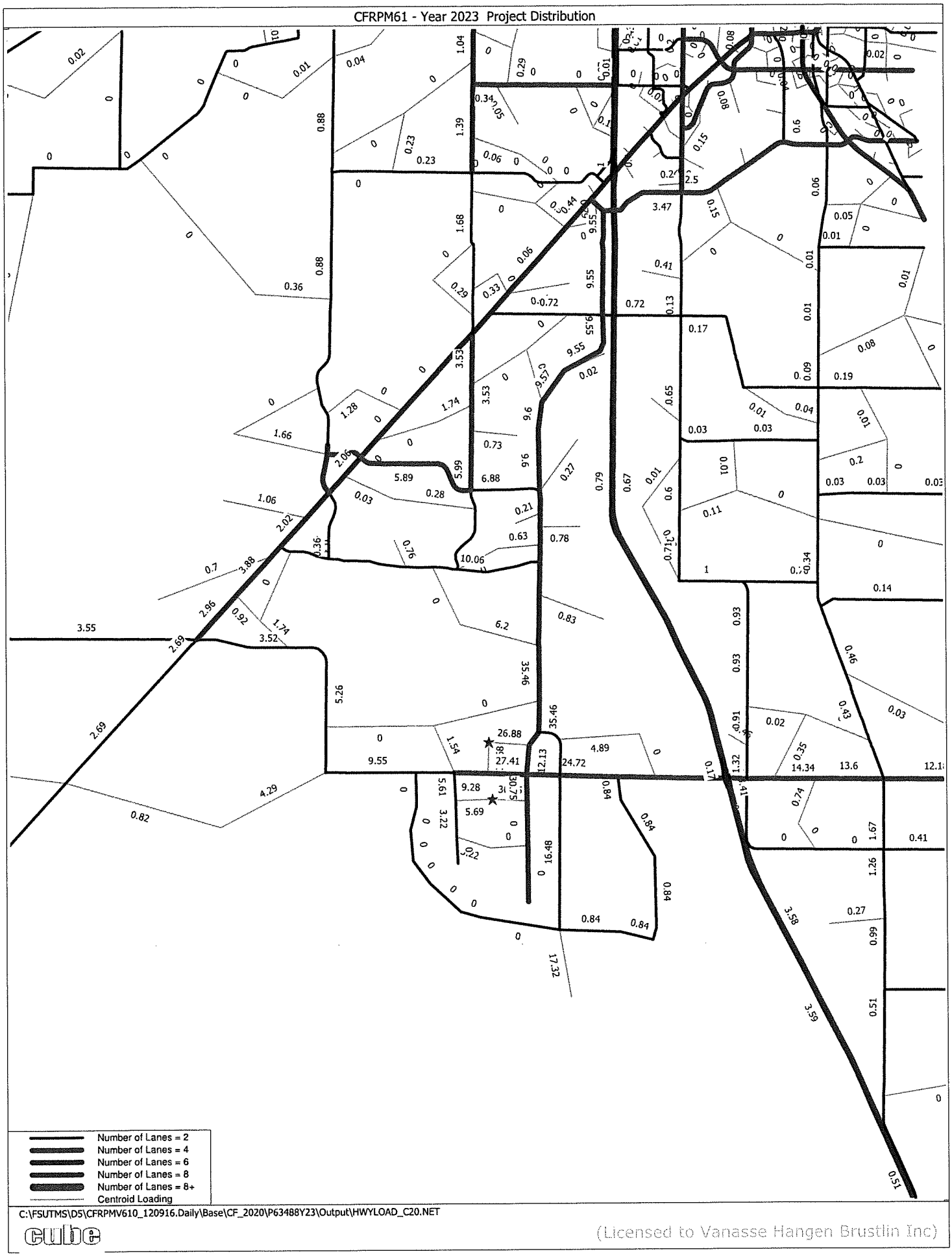
Project Location Map

Florida Crossroads Commerce Park

Table 1: Project Trip Generation

Land Use	ITE Code	Intensity	Daily Trip Ends	AM Peak Period In %	AM In Trips	AM Peak Period Out %	AM Out Trips	AM Total	PM Peak Period In %	PM In Trips	PM Peak Period Out %	PM Out Trips	PM Total
Phase 1 (Approved)													
High-Cube Warehouse/ Dist. Center	154	3,200 KSF	4,480	77%	197	23%	59	256	31%	99	69%	221	320
Buildout													
Manufacturing	140	758 KSF	2,920	78%	431	22%	122	553	36%	207	64%	368	575
Single Family	210	230 DU	2,237	25%	42	75%	126	168	63%	142	37%	84	226
Multi-Family Housing (Mid-Rise)	221	350 DU	1,906	26%	33	74%	93	126	61%	90	39%	57	147
Shopping Center	820	500 KSF	17,961	62%	291	38%	179	470	48%	858	52%	930	1,788
High-Cube Warehouse/ Dist. Center	154	8,400 KSF	11,760	77%	517	23%	155	672	31%	260	69%	580	840
Total			36,784		1,314		675	1,989		1,557		2,019	3,576
					Internal Capture (9%)					161		161	322
					Pass-by (34% of retail)					304		304	608
					Net New Trips (Buildout)					1,092		1,554	2,646
Phase 2 Trips (Buildout - Phase 1)			32,304		1,117		616	1,733		993		1,333	2,326

Source | *ITE Trip Generation, 10th Edition*


CFRPM61 - Year 2023 Project Distribution
Number of Lanes = 2
Number of Lanes = 4
Number of Lanes = 6
Number of Lanes = 8
Number of Lanes = 8+
Centroid Loading
C:\FSUTMS\D5\CFRPMV610_120916.Daily\Base\CF_2020\P63488Y23\Output\HWYLOAD_C20.NET
cube
(Licensed to Vanasse Hangen Brustlin Inc)

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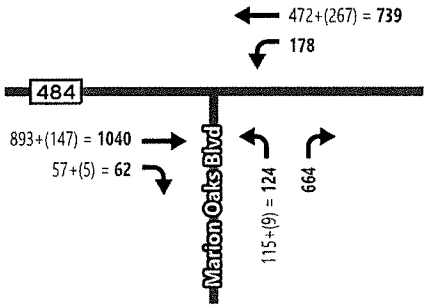
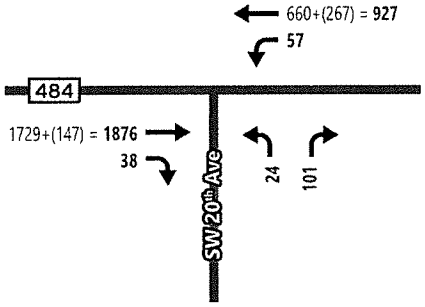
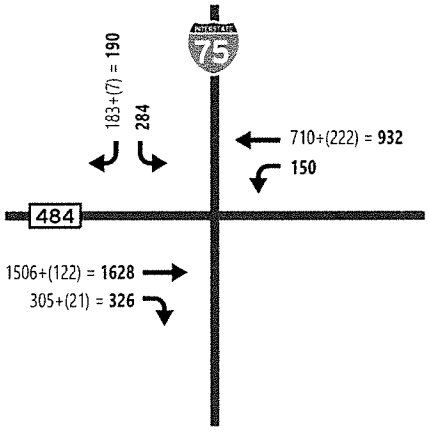


Marion Oaks Boulevard and CR 484



SW 20th Avenue and CR 484



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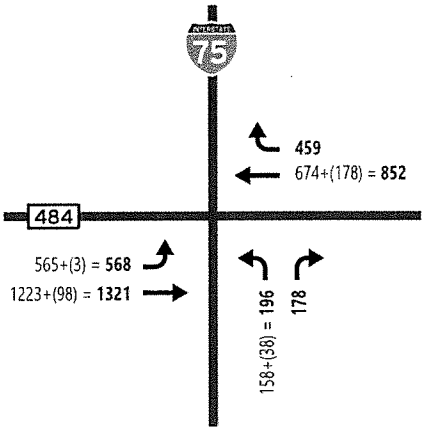

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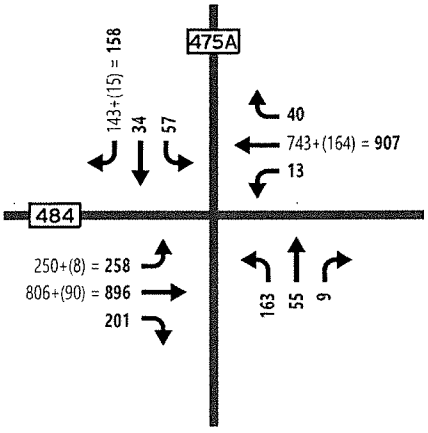
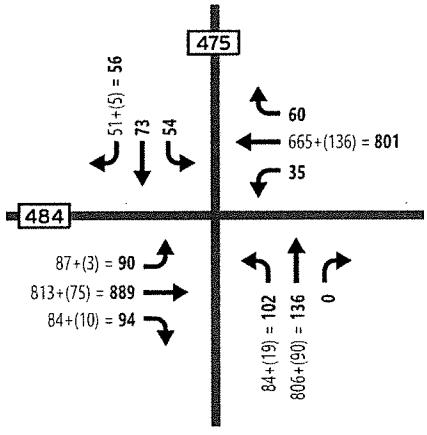


CR 475A and CR 484



CR 475 and CR 484

N.T.S.

X+(X) = XX
- Total Traffic
- Project Traffic
- Background Traffic

Figure 4-3
Phase 2 AM TMCs
McGinley Fam - Ocala TIA

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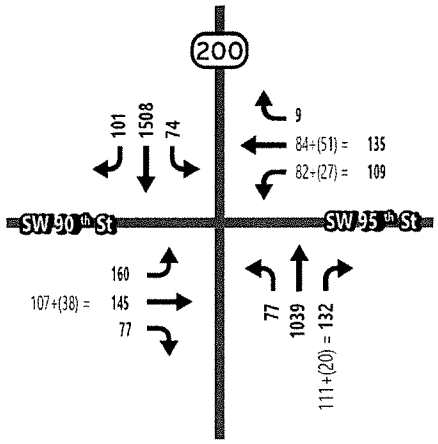
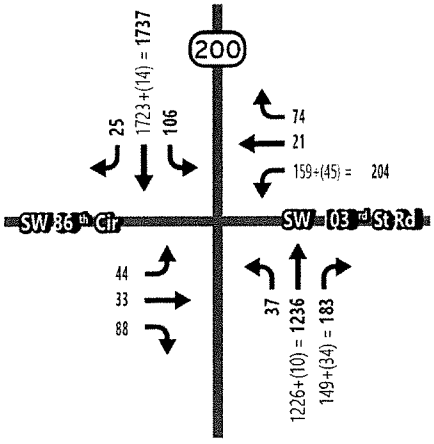
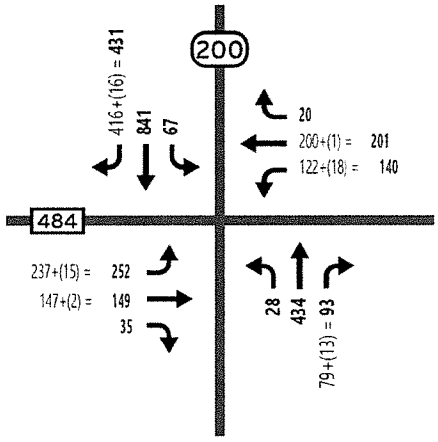


SR 200 and SW 90th Street/SW 95th Street



SR 200 and SW 86th Circle/SW 103rd Street Road



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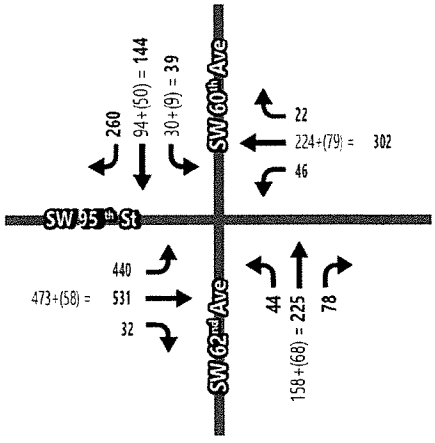
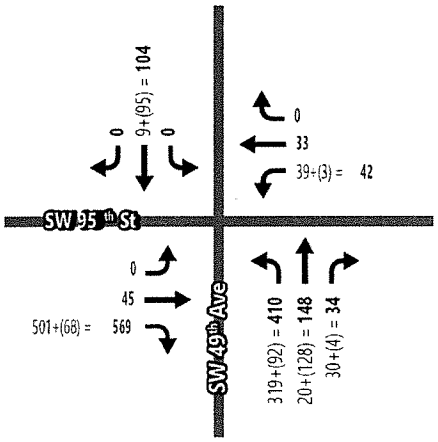
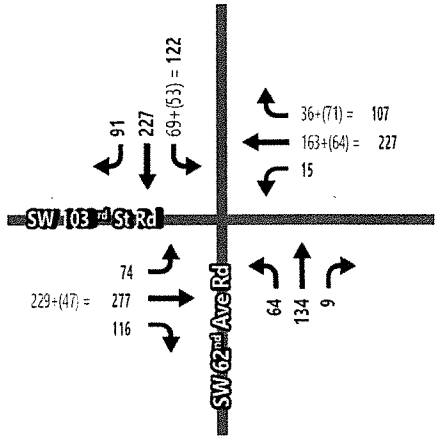


SW 60th Avenue/SW 62nd Avenue and SW 95th Street



SW 49th Avenue and SW 95th Street



SW 62nd Avenue Road and SW 103rd Street Road

N.T.S.

X+(X) = XX — Total Traffic
Project Traffic
Background Traffic

Figure 5-1
Phase 2 PM TMCs
McGinley Fam - Ocala TIA

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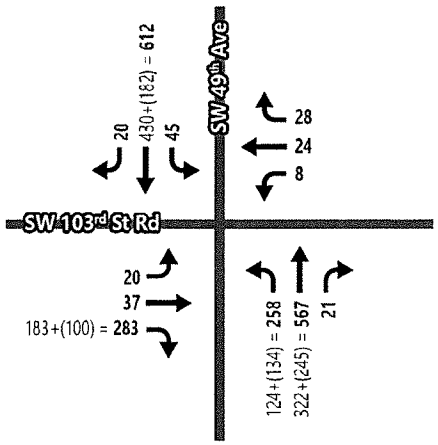
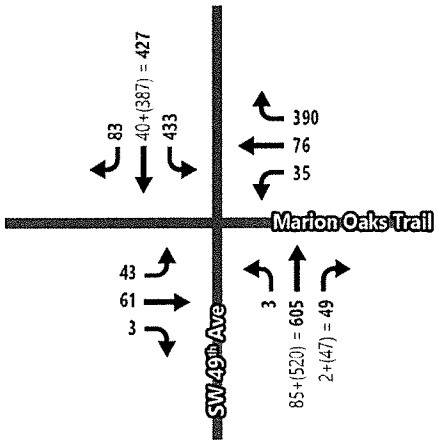
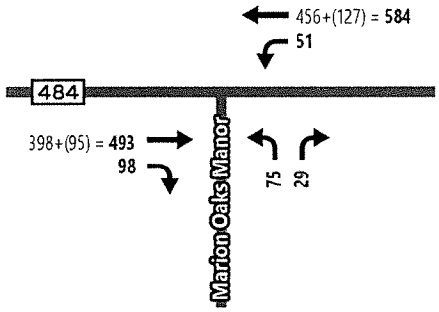


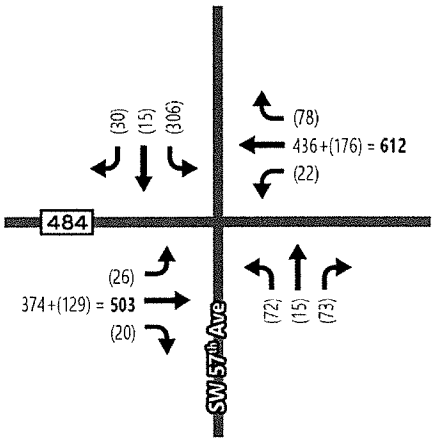
SW 49th Avenue and SW 103rd Street Road



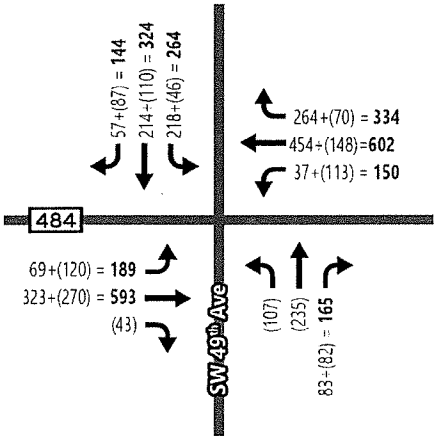
SW 49th Avenue and Marion Oaks Trail



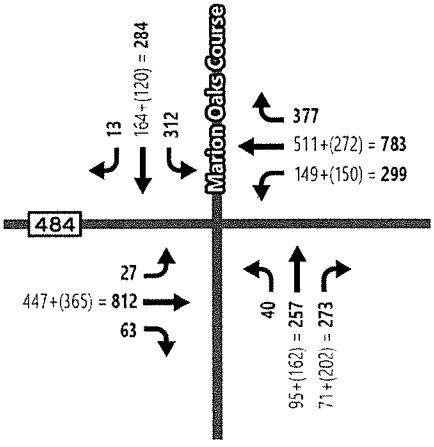
Marion Oaks Manor and CR 484



SW 57th Avenue and CR 484



SW 49th Avenue and CR 484



Marion Oaks Course and CR 484

N.T.S.

X+(X) = XX — Total Traffic
Project Traffic
Background Traffic

Figure 5-2
Phase 2 PM TMCs
McGinley Fam - Ocala TIA

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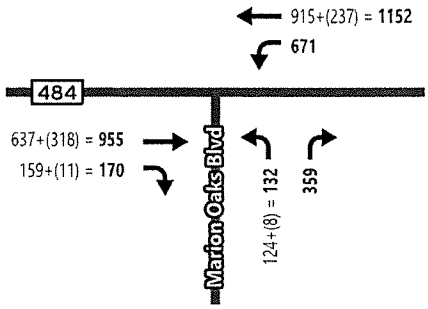
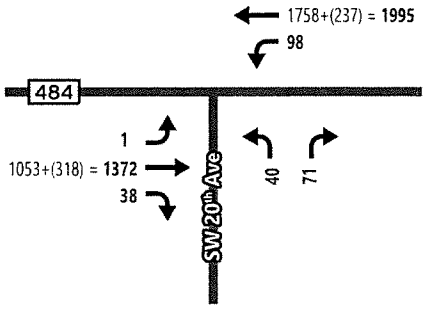
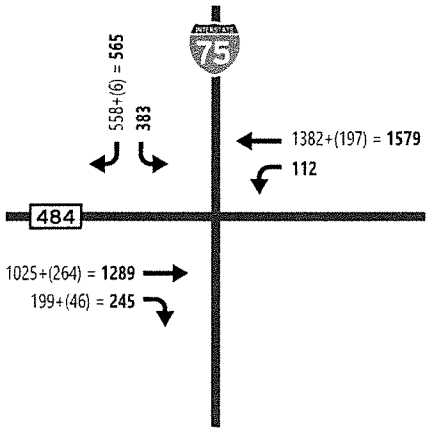


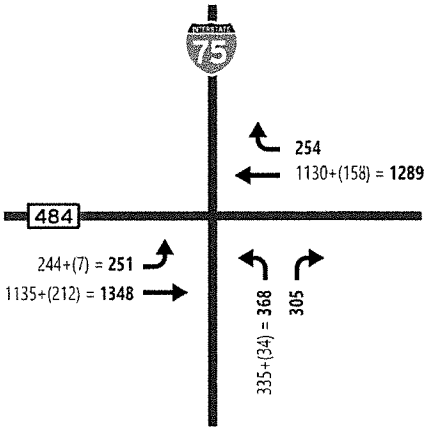
Marion Oaks Boulevard and CR 484



SW 20th Avenue and CR 484



I-75 and CR 484



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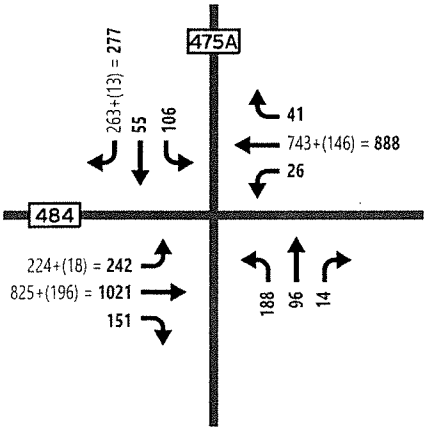
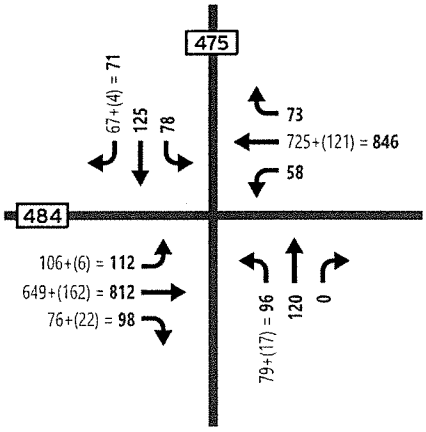


CR 475A and CR 484



CR 475 and CR 484

N.T.S.

X+(X) = XX — Total Traffic
Project Traffic
Background Traffic

Figure 5-3
Phase 2 PM TMCs
McGinley Fam - Ocala TIA

Marco Polo PUD Trip Generation with Trailhead Logistics Park Reduction

Land Use	Intensity	Daily Trips	AM Peak Hour of Adjacent Street			PM Peak Hour of Adjacent Street		
			Total	In	Out	Total	In	Out
Marco Polo PUD								
North Side								
Highway Commercial	158,600 Sq Ft GFA	13,467	1,212	606	606	1,212	606	606
General Light Industrial	59,100 Sq Ft GFA	282	54	47	7	41	7	34
Industrial Park	750,100 Sq Ft GFA	2,603	300	243	57	300	63	237
Reduction from Trailhead Logistics Park								
Industrial Park	480,000 Sq Ft GFA	-1,666	-192	-156	-36	-192	-40	-152
South Side								
Highway Commercial	110,400 Sq Ft GFA	9,371	843	422	422	843	422	422
Business Park	451,600 Sq Ft GFA	5,564	614	522	92	571	148	423
	Subtotal	29,621	2,831	1,684	1,148	2,775	1,206	1,570
Internal Capture								
North Side	6.5%							
Highway Commercial		875	79	39	39	79	39	39
General Light Industrial		18	4	3	0	3	0	2
Industrial Park		169	20	16	4	20	4	15
Reduction from Trailhead	6.5%							
Industrial Park		-108	-12	-10	-2	-12	-3	-10
South Side	6.5%							
Highway Commercial		609	55	27	27	55	27	27
Business Park		362	40	34	6	37	10	27
Pass-by								
Highway Commercial (North)	34%	4,281	385	193	193	385	193	193
Highway Commercial (South)	34%	2,979	268	134	134	268	134	134
	Subtotal	1,925	186	109	74	182	77	100
	Trucks							
North Side	AM / PM							
Highway Commercial	0.0% / 0.0%		0	0	0	0	0	0
General Light Industrial	8.1% / 4.1%		4	4	1	2	0	1
Industrial Park	3.4% / 14.0%		10	8	2	39	8	31
Reduction from Trailhead Logistics Park								
Industrial Park	3.4% / 14.0%		-6	-5	-1	-25	-5	-20
South Side								
Highway Commercial	0.0% / 0.0%		0	0	0	0	0	0
Business Park	4.7% / 6.3%		27	23	4	34	9	25
	Subtotal	0	35	30	6	50	12	37
Total Net New Trips								
Total Driveway Trips		**27,696**	**2,645**	**1,575**	**1,074**	**2,593**	**1,129**	**1,470**
Truck Driveway Trips		**0**	**35**	**30**	**6**	**50**	**12**	**37**
Automobile Driveway Trips		**27,696**	**2,610**	**1,545**	**1,068**	**2,543**	**1,117**	**1,433**

Notes:

1. Trip generation volumes, internal capture, and pass-by for daily, AM, and PM were taken from the Marco Polo Industrial PUD.
2. The reduction is based on the Transwestern facility use being separate from the rest of the proposed development.

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Marco Polo 484 Planned Unit Development

2040 CR 484 Needs Analysis

Introduction

Marco Polo Builders, Inc. has secured PUD approval from Marion County, Florida, of an industrial and business park development located on both the north and south sides of CR 484, west of I-75 in Marion County, Florida. The site location, boundaries, and a preliminary concept development plan are provided in Figure 1. The development is proposed to allow approximately 1.55 million square feet of highway commercial, business park, light industrial, and industrial park uses, to develop over the coming ten to 20 years. Table 1, below, provides a summary of a typical square footage of development and traffic generation estimates, based on the acreage of the site.

As a condition of the PUD approval was a requirement that a site access plan be developed and analyzed so that needed improvements on CR 484 and the site connections to CR 484 along the site frontage could be planned for and necessary right-of-way be reserved to support long-term needs. This study was undertaken to address these issues through a horizon year of 2040, and considers traffic not only from the Marco Polo 484 development, but additional traffic from other expected non-Marco Polo development as well.

Table 1
Summary of Typical Land Uses and Traffic Generation Estimate

Total Development:

			Daily		A.M. Peak Hour						P.M. Peak Hr					
Land Use	LUC	Size/Unit	Rate	VTE	Rate	2-Way	A.M. K	A.M. D_{in}	In	Out	Rate	2-Way	P.M. K	P.M. D_{in}	In	Out
Highway Commercial	mix	269 ksf	84.89	22,838	0.09	2,055	0.090	0.5	1,028	1,028	0.09	2,055	0.090	0.5	1,028	1,028
Business Park	770	452 ksf	12.32	5,564	1.36	614	0.110	0.85	522	92	1.26	571	0.103	0.26	148	423
General Light Industrial	110	59 ksf	4.77	282	0.92	54	0.193	0.87	47	7	0.69	41	0.146	0.18	7	34
Industrial Park	130	750 ksf	3.47	2,603	0.40	300	0.115	0.81	243	57	0.40	300	0.115	0.21	63	237
		Totals:		**31,287**		**3,023**			**1,840**	**1,184**		**2,968**			**1,247**	**1,721**
									D:	**0.608**					**D:**	**0.420**
									K:	**0.097**					**K:**	**0.095**

North Side:

			Daily		A.M. Peak Hour						P.M. Peak Hr					
Land Use	LUC	Size/Unit	Rate	VTE	Rate	2-Way	A.M. K	A.M. D_{in}	In	Out	Rate	2-Way	P.M. K	P.M. D_{in}	In	Out
Highway Commercial	mix	158.6 ksf	84.89	13,467	0.09	1,212	0.090	0.5	606	606	0.09	1,212	0.090	0.5	606	606
Business Park	770	0.0 ksf	n/a	358	n/a	0	0.000	n/a	0	0	n/a	0	0.000	0	0	0
General Light Industrial	110	59.1 ksf	4.77	282	0.92	54	0.193	0.87	47	7	0.69	41	0.146	0.18	7	34
Industrial Park	130	750.1 ksf	3.47	2,603	0.40	300	0.115	0.81	243	57	0.40	300	0.115	0.21	63	237
		Totals:		**16,710**		**1,567**			**896**	**670**		**1,553**			**676**	**877**
									D:	**0.572**					**D:**	**0.436**
									K:	**0.094**					**K:**	**0.093**

South Side:

			Daily		A.M. Peak Hour						P.M. Peak Hr					
Land Use	LUC	Size/Unit	Rate	VTE	Rate	2-Way	A.M. K	A.M. D_{in}	In	Out	Rate	2-Way	P.M. K	P.M. D_{in}	In	Out
Highway Commercial	mix	110.4 ksf	84.89	9,371	0.09	843	0.090	0.5	422	422	0.09	843	0.090	0.5	422	422
Business Park	770	451.6 ksf	12.32	5,564	1.36	614	0.110	0.85	522	92	1.26	571	0.103	0.26	148	423
General Light Industrial	110	0.0 ksf	n/a	0	n/a	0	n/a	n/a	0	0	n/a	0	0.000	0	0	0
Industrial Park	130	0.0 ksf	n/a	0	n/a	0	n/a	n/a	0	0	n/a	0	0.000	0	0	0
		Totals:		**14,935**		**1,457**			**943**	**514**		**1,415**			**570**	**844**
									D:	**0.647**					**D:**	**0.403**
									K:	**0.098**					**K:**	**0.095**

Figure 4: 2040 A.M. Peak Hour Design Volumes

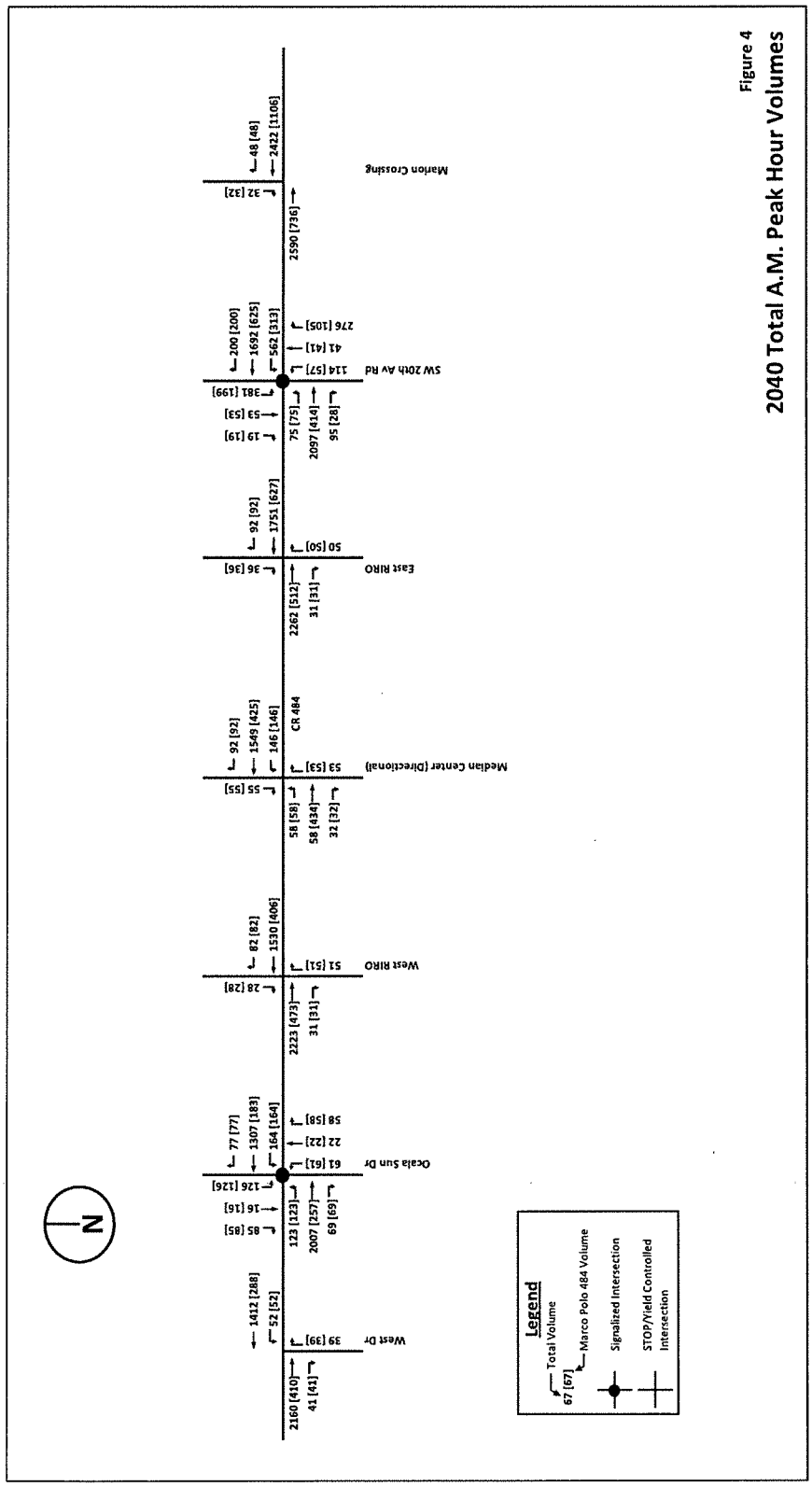
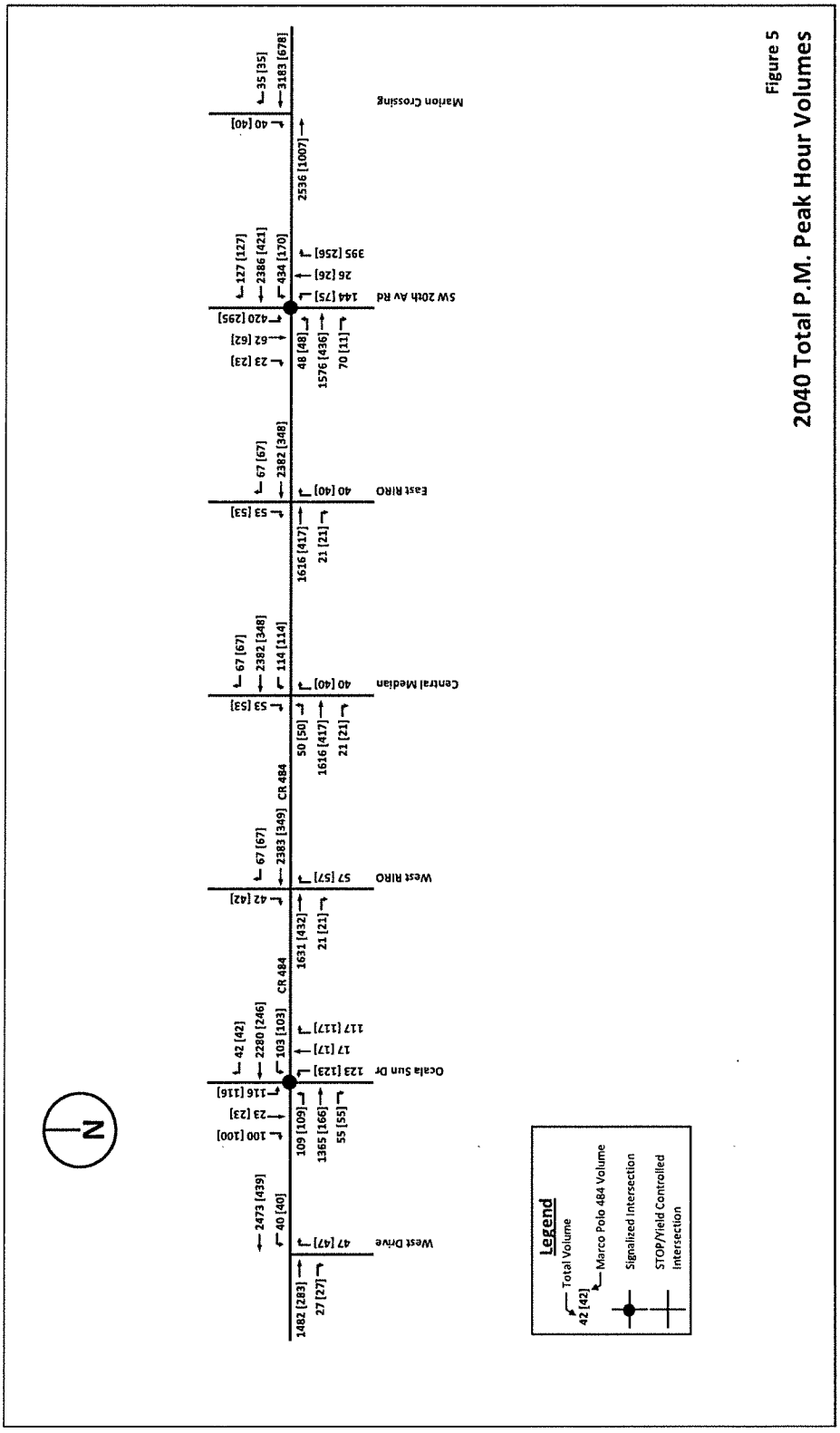
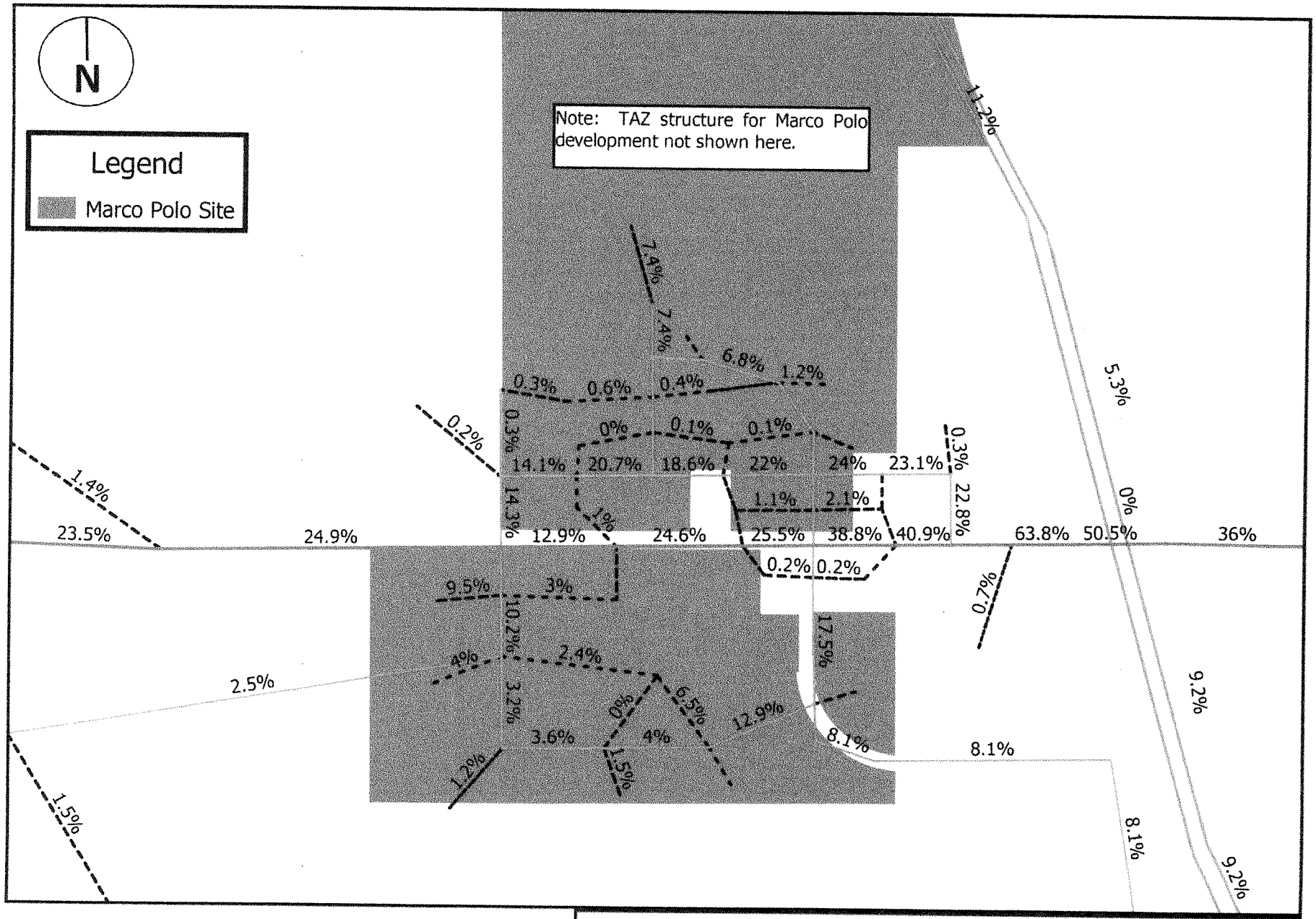


Figure 5: 2040 P.M. Peak Hour Design Volumes





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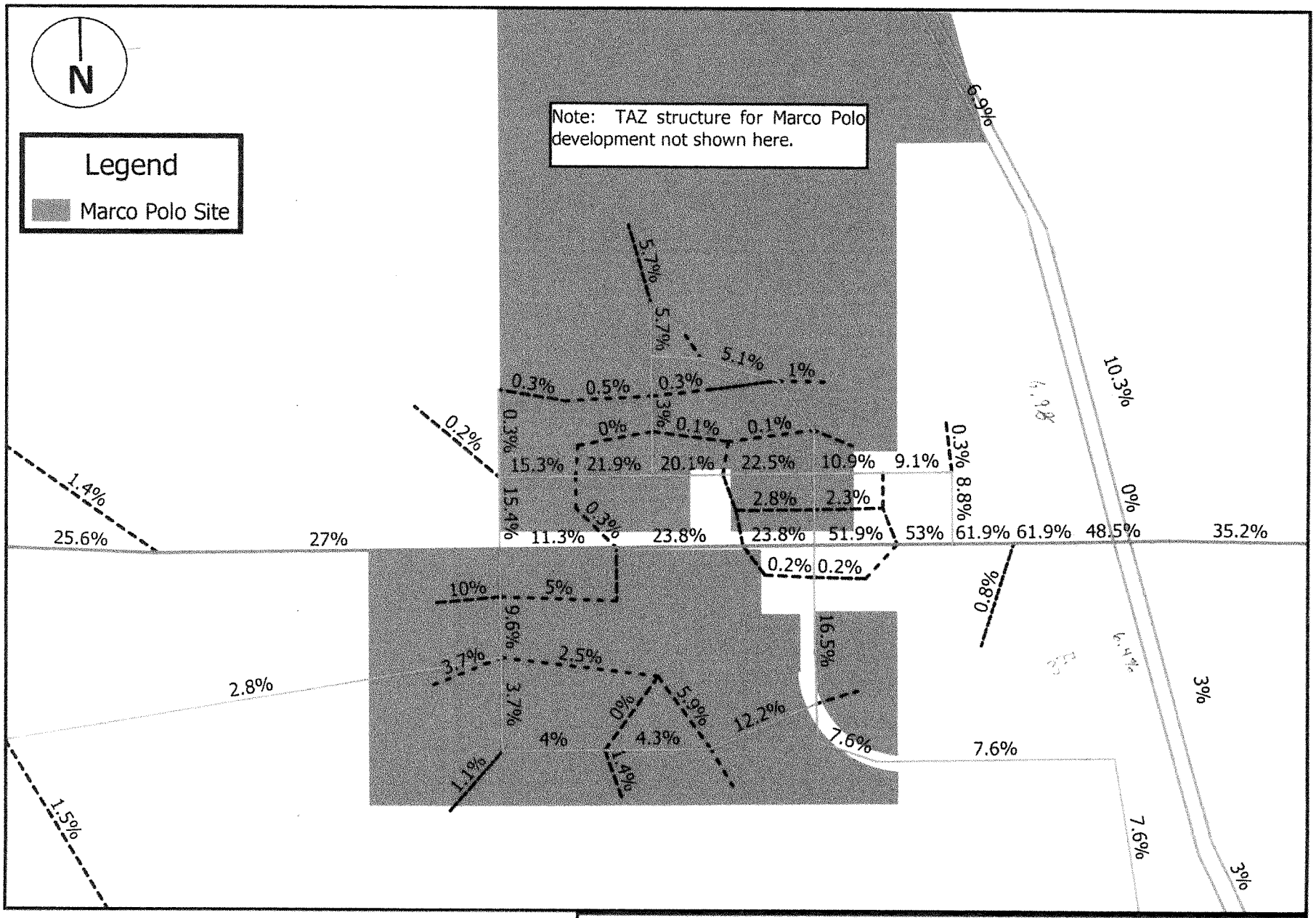
W.E. Oliver, P.E., LLC
Traffic Engineering
Transportation Planning

Figure ???
A.M. Peak Period Marco Polo Traffic Assignment



W.E. Oliver, P.E., LLC
Traffic Engineering
Transportation Planning

Figure ??
P.M. Peak Period Marco Polo Traffic Assignment

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Kimley»Horn

APPENDIX E: INTERSECTION VOLUME DEVELOPMENT WORKSHEETS

TRAFFIC VOLUMES
AT STUDY INTERSECTIONS

INTERSECTION: CR 484 & Marion Oaks Blvd
PM COUNT DATE: October 25, 2022
PM PEAK HOUR FACTOR: 0.96

"PM EXISTING TRAFFIC"	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
PM Raw Turning Movements	0	0	633	186	0	507	829	0	0	123	0	390	0	0	0	0
Peak Season Correction Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PM EXISTING CONDITIONS	**0**	**0**	**633**	**186**	**0**	**507**	**829**	**0**	**0**	**123**	**0**	**390**	**0**	**0**	**0**	**0**

"PM OPENING YEAR TRAFFIC"	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Trailhead Logistics Park South, Autos			18			10	34					5				
Trailhead Logistics Park South, Trucks			1				3									
McGinley Property Phase 2			318	11			237			8						
Marco Polo PUD			176			57	252					40				
Marco Polo PUD Pass-By																
VESTED TRAFFIC	0	0	513	11	0	67	526	0	0	8	0	45	0	0	0	0
Years To Buildout	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Yearly Growth Rate	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
PM TRAFFIC GROWTH	0	0	101	30	0	81	132	0	0	20	0	62	0	0	0	0
PM BACKGROUND TRAFFIC	**0**	**0**	**1,247**	**227**	**0**	**655**	**1,487**	**0**	**0**	**151**	**0**	**497**	**0**	**0**	**0**	**0**

TRAFFIC VOLUMES
AT STUDY INTERSECTIONS

INTERSECTION:	CR 484 & SW 29th Ave Rd
AM COUNT DATE:	April 26, 2022
PM COUNT DATE:	October 26, 2022
AM PEAK HOUR FACTOR:	0.90
PM PEAK HOUR FACTOR:	0.96

"AM EXISTING TRAFFIC"	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
AM Raw Turning Movements	0	7	1,391	0	0	0	899	54	0	0	0	0	0	139	0	30
Peak Season Correction Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AM EXISTING CONDITIONS	0	7	1,391	0	0	0	899	54	0	0	0	0	0	139	0	30

"PM EXISTING TRAFFIC"	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
PM Raw Turning Movements	1	25	991	0	2	0	867	50	0	0	0	0	0	42	0	19
Peak Season Correction Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PM EXISTING CONDITIONS	1	25	991	0	2	0	867	50	0	0	0	0	0	42	0	19

"AM OPENING YEAR TRAFFIC"	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Trailhead Logistics Park South, Autos			18				3									
Trailhead Logistics Park South, Trucks			1				0									
McGinley Property Phase 2			147				267									
Marco Polo PUD			337				202									
Marco Polo PUD Pass-By																
VESTED TRAFFIC	0	0	503	0	0	0	472	0	0	0	0	0	0	0	0	0
Years To Buildout	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Yearly Growth Rate	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
AM TRAFFIC GROWTH	0	1	222	0	0	0	143	9	0	0	0	0	0	22	0	5
AM BACKGROUND TRAFFIC	0	8	2,277	0	0	0	1,514	63	0	0	0	0	0	0	0	196

"PM OPENING YEAR TRAFFIC"	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Trailhead Logistics Park South, Autos			29				55									
Trailhead Logistics Park South, Trucks			1				3									
McGinley Property Phase 2			318				237									
Marco Polo PUD			217				309									
Marco Polo PUD Pass-By																
VESTED TRAFFIC	0	0	565	0	0	0	604	0	0	0	0	0	0	0	0	0
Years To Buildout	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Yearly Growth Rate	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
PM TRAFFIC GROWTH	0	4	158	0	0	0	138	8	0	0	0	0	0	7	0	3
PM BACKGROUND TRAFFIC	1	29	1,763	0	2	0	1,609	58	0	0	0	0	0	0	0	71

TRAFFIC VOLUMES
AT STUDY INTERSECTIONS

INTERSECTION:	CR 484 & SW 20th Avenue
AM COUNT DATE:	October 25, 2022
PM COUNT DATE:	October 25, 2022
AM PEAK HOUR FACTOR:	0.96
PM PEAK HOUR FACTOR:	0.93

"AM EXISTING TRAFFIC"	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
AM Raw Turning Movements	0	0	1,623	23	13	20	859	0	0	13	0	76	0	0	0	0
Peak Season Correction Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AM EXISTING CONDITIONS	**0**	**0**	**1,623**	**23**	**13**	**20**	**859**	**0**	**0**	**13**	**0**	**76**	**0**	**0**	**0**	**0**

"PM EXISTING TRAFFIC"	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
PM Raw Turning Movements	0	0	1,023	48	13	84	1,588	0	0	32	0	83	0	0	0	0
Peak Season Correction Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PM EXISTING CONDITIONS	**0**	**0**	**1,023**	**48**	**13**	**84**	**1,588**	**0**	**0**	**32**	**0**	**83**	**0**	**0**	**0**	**0**

"AM OPENING YEAR TRAFFIC"	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Trailhead Logistics Park South, Autos		18						8						8		3
Trailhead Logistics Park South, Trucks		1						8						8		0
McGinley Property Phase 2			147				267									
Marco Polo PUD		50	202	12		175	424	125		30	15	112		127	30	7
Marco Polo PUD Pass-By	0	13	-16	3	0	46	-78	33	0	13		49		55		3
VESTED TRAFFIC	0	82	333	15	0	221	613	174	0	43	15	161	0	198	30	13
Years To Buildout	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Yearly Growth Rate	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
AM TRAFFIC GROWTH	0	0	259	4	2	3	137	0	0	2	0	12	0	0	0	0
AM BACKGROUND TRAFFIC	**0**	**82**	**2,215**	**42**	**15**	**244**	**1,609**	**174**	**0**	**58**	**15**	**249**	**0**	**198**	**30**	**13**

"PM OPENING YEAR TRAFFIC"	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Trailhead Logistics Park South, Autos		29						73						139		55
Trailhead Logistics Park South, Trucks		1						23						60		3
McGinley Property Phase 2			318				237									
Marco Polo PUD		32	309	8		112	273	80		46	23	172		194	46	11
Marco Polo PUD Pass-By	0	13	-16	3	0	46	-78	33	0	13		49		55		3
VESTED TRAFFIC	0	75	611	11	0	158	432	209	0	59	23	221	0	448	46	72
Years To Buildout	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Yearly Growth Rate	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
PM TRAFFIC GROWTH	0	0	163	8	2	13	253	0	0	5	0	13	0	0	0	0
PM BACKGROUND TRAFFIC	**0**	**75**	**1,797**	**67**	**15**	**255**	**2,273**	**209**	**0**	**96**	**23**	**317**	**0**	**448**	**46**	**72**

TRAFFIC VOLUMES
AT STUDY INTERSECTIONS

INTERSECTION:	CR 484 & I-75 SB Ramp
AM COUNT DATE:	October 25, 2022
PM COUNT DATE:	October 25, 2022
AM PEAK HOUR FACTOR:	0.98
PM PEAK HOUR FACTOR:	0.92

"AM EXISTING TRAFFIC"	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
AM Raw Turning Movements	0	0	1,450	336	0	148	752	0	0	0	0	0	0	229	1	237
Peak Season Correction Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AM EXISTING CONDITIONS	**0**	**0**	**1,450**	**336**	**0**	**148**	**752**	**0**	**0**	**0**	**0**	**0**	**0**	**229**	**1**	**237**

"PM EXISTING TRAFFIC"	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
PM Raw Turning Movements	0	0	946	231	0	120	1,256	0	0	0	0	0	0	328	0	518
Peak Season Correction Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PM EXISTING CONDITIONS	**0**	**0**	**946**	**231**	**0**	**120**	**1,256**	**0**	**0**	**0**	**0**	**0**	**0**	**328**	**0**	**518**

"AM OPENING YEAR TRAFFIC"	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Trailhead Logistics Park South, Autos			7	1			36									8
Trailhead Logistics Park South, Trucks			5	3			13									14
McGinley Property Phase 2			122	21			222									7
Marco Polo PUD			314	45			512									52
Marco Polo PUD Pass-By																
VESTED TRAFFIC	0	0	448	70	0	0	783	0	0	0	0	0	0	0	0	81
Years To Buildout	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Yearly Growth Rate	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
AM TRAFFIC GROWTH	0	0	231	54	0	24	120	0	0	0	0	0	0	36	0	38
AM BACKGROUND TRAFFIC	**0**	**0**	**2,129**	**460**	**0**	**172**	**1,655**	**0**	**0**	**0**	**0**	**0**	**0**	**265**	**1**	**356**

"PM OPENING YEAR TRAFFIC"	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Trailhead Logistics Park South, Autos			117	16			57									13
Trailhead Logistics Park South, Trucks			38	22			11									12
McGinley Property Phase 2			264	46			197									6
Marco Polo PUD			480	69			329									80
Marco Polo PUD Pass-By																
VESTED TRAFFIC	0	0	899	153	0	0	594	0	0	0	0	0	0	0	0	111
Years To Buildout	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Yearly Growth Rate	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
PM TRAFFIC GROWTH	0	0	151	37	0	19	200	0	0	0	0	0	0	52	0	83
PM BACKGROUND TRAFFIC	**0**	**0**	**1,996**	**421**	**0**	**139**	**2,050**	**0**	**0**	**0**	**0**	**0**	**0**	**380**	**0**	**712**

TRAFFIC VOLUMES
AT STUDY INTERSECTIONS

INTERSECTION:	CR 484 & I-75 NB Ramp
AM COUNT DATE:	October 25, 2022
PM COUNT DATE:	October 25, 2022
AM PEAK HOUR FACTOR:	0.97
PM PEAK HOUR FACTOR:	0.96

"AM EXISTING TRAFFIC"	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
AM Raw Turning Movements	1	566	1,111	0	0	0	720	383	0	176	1	138	0	0	0	0
Peak Season Correction Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AM EXISTING CONDITIONS	**1**	**566**	**1,111**	**0**	**0**	**0**	**720**	**383**	**0**	**176**	**1**	**138**	**0**	**0**	**0**	**0**

"PM EXISTING TRAFFIC"	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
PM Raw Turning Movements	21	252	999	0	0	0	1,001	246	0	355	0	233	0	0	0	0
Peak Season Correction Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PM EXISTING CONDITIONS	**21**	**252**	**999**	**0**	**0**	**0**	**1,001**	**246**	**0**	**355**	**0**	**233**	**0**	**0**	**0**	**0**

"AM OPENING YEAR TRAFFIC"	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Trailhead Logistics Park South, Autos		1	6				31			5						
Trailhead Logistics Park South, Trucks		4	1				3			10						
McGinley Property Phase 2		3	98				178			38						
Marco Polo PUD		52	262				437			75						
Marco Polo PUD Pass-By																
VESTED TRAFFIC	0	60	367	0	0	0	649	0	0	128	0	0	0	0	0	0
Years To Buildout	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Yearly Growth Rate	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
AM TRAFFIC GROWTH	0	90	177	0	0	0	115	61	0	28	0	22	0	0	0	0
AM BACKGROUND TRAFFIC	**1**	**716**	**1,655**	**0**	**0**	**0**	**1,484**	**444**	**0**	**332**	**1**	**160**	**0**	**0**	**0**	**0**

"PM OPENING YEAR TRAFFIC"	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Trailhead Logistics Park South, Autos		24	93				49			8						
Trailhead Logistics Park South, Trucks		32	6				2			8						
McGinley Property Phase 2		7	212				158			34						
Marco Polo PUD		80	400				281			48						
Marco Polo PUD Pass-By																
VESTED TRAFFIC	0	143	711	0	0	0	490	0	0	98	0	0	0	0	0	0
Years To Buildout	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Yearly Growth Rate	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
PM TRAFFIC GROWTH	3	40	159	0	0	0	159	39	0	57	0	37	0	0	0	0
PM BACKGROUND TRAFFIC	**24**	**435**	**1,869**	**0**	**0**	**0**	**1,650**	**285**	**0**	**510**	**0**	**270**	**0**	**0**	**0**	**0**

TRAFFIC VOLUMES
AT STUDY INTERSECTIONS

INTERSECTION: CR 484 & CR 475A
PM COUNT DATE: October 25, 2022
PM PEAK HOUR FACTOR: 0.99

"PM EXISTING TRAFFIC"	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
PM Raw Turning Movements	9	191	782	159	2	8	696	23	0	205	42	8	0	69	36	197
Peak Season Correction Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PM EXISTING CONDITIONS	9	191	782	159	2	8	696	23	0	205	42	8	0	69	36	197

"PM OPENING YEAR TRAFFIC"	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Trailhead Logistics Park South, Autos		6	73	14			38			7						3
Trailhead Logistics Park South, Trucks			6				2									
McGinley Property Phase 2		18	196				146									13
Marco Polo PUD		46	332	23			233			16						32
Marco Polo PUD Pass-By																
VESTED TRAFFIC	0	70	607	37	0	0	419	0	0	23	0	0	0	0	0	48
Years To Buildout	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Yearly Growth Rate	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
PM TRAFFIC GROWTH	1	30	125	25	0	1	111	4	0	33	7	1	0	11	6	31
PM BACKGROUND TRAFFIC	10	291	1,514	221	2	9	1,226	27	0	261	49	9	0	80	42	276

TRAFFIC VOLUMES
AT STUDY INTERSECTIONS

INTERSECTION: CR 484 & CR 475
PM COUNT DATE: October 25, 2022
PM PEAK HOUR FACTOR: 0.96

"PM EXISTING TRAFFIC"	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
PM Raw Turning Movements	21	64	706	69	7	51	569	69	0	77	109	69	0	64	129	52
Peak Season Correction Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PM EXISTING CONDITIONS	**21**	**64**	**706**	**69**	**7**	**51**	**569**	**69**	**0**	**77**	**109**	**69**	**0**	**64**	**129**	**52**

"PM OPENING YEAR TRAFFIC"	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Trailhead Logistics Park South, Autos		2	69				36									1
Trailhead Logistics Park South, Trucks			6				2									
McGinley Property Phase 2		6	162	22			121			17						4
Marco Polo PUD		11	309	11			217			8						8
Marco Polo PUD Pass-By																
VESTED TRAFFIC	0	19	546	33	0	0	376	0	0	25	0	0	0	0	0	13
Years To Buildout	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Yearly Growth Rate	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
PM TRAFFIC GROWTH	3	10	112	11	1	8	91	11	0	12	17	11	0	10	21	8
PM BACKGROUND TRAFFIC	**24**	**93**	**1,364**	**113**	**8**	**59**	**1,036**	**80**	**0**	**114**	**126**	**80**	**0**	**74**	**150**	**73**

TRAFFIC VOLUMES
AT STUDY INTERSECTIONS

INTERSECTION: SW 29th Ave Rd & Marion Oaks Trail
PM COUNT DATE: October 25, 2022
PM PEAK HOUR FACTOR: 0.81

"PM EXISTING TRAFFIC"	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
PM Raw Turning Movements	0	3	0	43	0	0	0	0	0	60	11	0	0	0	13	0
Peak Season Correction Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PM EXISTING CONDITIONS	0	3	0	43	0	0	0	0	0	60	11	0	0	0	13	0

"PM OPENING YEAR TRAFFIC"	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Trailhead Logistics Park South, Autos			4				8									
Trailhead Logistics Park South, Trucks																
McGinley Property Phase 2																
Marco Polo PUD																
Marco Polo PUD Pass-By																
VESTED TRAFFIC	0	0	4	0	0	0	8	0	0	0	0	0	0	0	0	0
Years To Buildout	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Yearly Growth Rate	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
PM TRAFFIC GROWTH	0	0	0	7	0	0	0	0	0	10	2	0	0	0	2	0
PM BACKGROUND TRAFFIC	0	3	4	50	0	0	8	0	0	70	13	0	0	0	15	0

Kimley»Horn

APPENDIX F: SYNCHRO OUTPUT

F1: AM Peak Hour Existing Traffic Conditions (2022)

Lanes, Volumes, Timings
2: CR 484 & SW 29th Ave Rd

Existing Conditions
Timing Plan: AM Peak Hour

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	7	1391	899	54	139	30
Future Volume (vph)	7	1391	899	54	139	30
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	4%	10%	10%	2%	2%
Adj. Flow (vph)	8	1546	999	60	154	33
Shared Lane Traffic (%)						
Lane Group Flow (vph)	8	1546	1059	0	187	0
Sign Control		Free	Free		Stop	

Intersection Summary

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	7	1391	899	54	139	30
Future Vol, veh/h	7	1391	899	54	139	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	144	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	4	4	10	10	2	2
Mvmt Flow	8	1546	999	60	154	33

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1059	0	-	0	1818	530
Stage 1	-	-	-	-	1029	-
Stage 2	-	-	-	-	789	-
Critical Hdwy	4.18	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.24	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	642	-	-	-	~ 69	493
Stage 1	-	-	-	-	306	-
Stage 2	-	-	-	-	408	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	642	-	-	-	~ 68	493
Mov Cap-2 Maneuver	-	-	-	-	189	-
Stage 1	-	-	-	-	302	-
Stage 2	-	-	-	-	408	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	82.5
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	642	-	-	-	212
HCM Lane V/C Ratio	0.012	-	-	-	0.886
HCM Control Delay (s)	10.7	-	-	-	82.5
HCM Lane LOS	B	-	-	-	F
HCM 95th %tile Q(veh)	0	-	-	-	7

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lanes, Volumes, Timings
3: SW 20th Ave Rd & CR 484

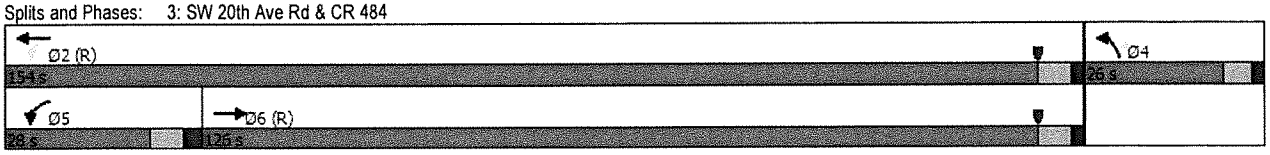
Existing Conditions
Timing Plan: AM Peak Hour

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1623	23	33	859	13	76
Future Volume (vph)	1623	23	33	859	13	76
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	4%	10%	10%	32%	32%
Adj. Flow (vph)	1691	24	34	895	14	79
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1715	0	34	895	14	79
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	6		5	2	4	
Permitted Phases			2			4
Detector Phase	6		5	2	4	4
Switch Phase						
Minimum Initial (s)	15.0		10.0	15.0	10.0	10.0
Minimum Split (s)	21.9		17.3	21.9	16.0	16.0
Total Split (s)	126.0		28.0	154.0	26.0	26.0
Total Split (%)	70.0%		15.6%	85.6%	14.4%	14.4%
Yellow Time (s)	4.9		4.8	4.9	4.0	4.0
All-Red Time (s)	2.0		2.5	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.9		7.3	6.9	6.0	6.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	C-Min		None	C-Min	None	None
v/c Ratio	0.63		0.15	0.31	0.17	0.53
Control Delay	9.9		2.4	2.2	83.5	27.1
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	9.9		2.4	2.2	83.5	27.1
Queue Length 50th (ft)	424		1	17	16	0
Queue Length 95th (ft)	551		14	298	43	59
Internal Link Dist (ft)	3132			1240	650	
Turn Bay Length (ft)			170			220
Base Capacity (vph)	2734		320	2842	151	206
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.63		0.11	0.31	0.09	0.38

Intersection Summary

Cycle Length: 180
Actual Cycle Length: 180
Offset: 165 (92%), Referenced to phase 2:WBTL and 6:EBT, Start of Yellow
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 3: SW 20th Ave Rd & CR 484



HCM 6th Signalized Intersection Summary
3: SW 20th Ave Rd & CR 484

Existing Conditions
Timing Plan: AM Peak Hour

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1623	23	33	859	13	76
Future Volume (veh/h)	1623	23	33	859	13	76
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1841	1841	1752	1752	1426	1426
Adj Flow Rate, veh/h	1691	24	34	895	14	55
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	4	4	10	10	32	32
Cap, veh/h	2778	39	273	2905	75	67
Arrive On Green	0.79	0.79	0.09	1.00	0.06	0.06
Sat Flow, veh/h	3622	50	1668	3416	1358	1208
Grp Volume(v), veh/h	836	879	34	895	14	55
Grp Sat Flow(s),veh/h/ln	1749	1832	1668	1664	1358	1208
Q Serve(g_s), s	35.2	35.4	0.6	0.0	1.8	8.1
Cycle Q Clear(g_c), s	35.2	35.4	0.6	0.0	1.8	8.1
Prop In Lane		0.03	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1376	1441	273	2905	75	67
V/C Ratio(X)	0.61	0.61	0.12	0.31	0.19	0.82
Avail Cap(c_a), veh/h	1376	1441	389	2905	151	134
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.93	0.93	1.00	1.00
Uniform Delay (d), s/veh	7.8	7.9	6.3	0.0	81.1	84.1
Incr Delay (d2), s/veh	2.0	1.9	0.3	0.3	2.5	38.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.1	12.8	0.3	0.1	0.7	6.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	9.8	9.8	6.6	0.3	83.6	122.6
LnGrp LOS	A	A	A	A	F	F
Approach Vol, veh/h	1715			929	69	
Approach Delay, s/veh	9.8			0.5	114.7	
Approach LOS	A			A	F	

Timer - Assigned Phs	2	4	5	6
Phs Duration (G+Y+Rc), s	164.0	16.0	15.5	148.5
Change Period (Y+Rc), s	6.9	6.0	7.3	6.9
Max Green Setting (Gmax), s	147.1	20.0	20.7	119.1
Max Q Clear Time (g_c+I1), s	2.0	10.1	2.6	37.4
Green Ext Time (p_c), s	11.1	0.2	0.1	49.6

Intersection Summary	
HCM 6th Ctrl Delay	9.3
HCM 6th LOS	A

Notes

User approved ignoring U-Turning movement.

Lanes, Volumes, Timings
4: CR 484 & I-75 SB Off-Ramp

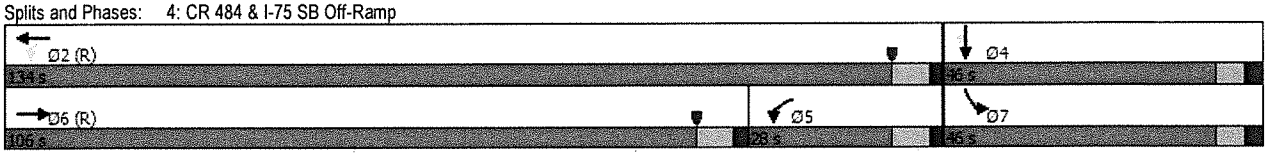
Existing Conditions
Timing Plan: AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1450	336	148	752	0	0	0	0	229	1	237
Future Volume (vph)	0	1450	336	148	752	0	0	0	0	229	1	237
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	5%	5%	5%	14%	14%	14%	2%	2%	2%	12%	12%	12%
Adj. Flow (vph)	0	1480	343	151	767	0	0	0	0	234	1	242
Shared Lane Traffic (%)										50%		
Lane Group Flow (vph)	0	1823	0	151	767	0	0	0	0	117	118	242
Turn Type		NA		pm+pt	NA					Prot	NA	Perm
Protected Phases		6		5	2					7	4	
Permitted Phases				2								4
Detector Phase		6		5	2					7	4	4
Switch Phase												
Minimum Initial (s)		18.0		7.0	18.0					7.0	7.0	7.0
Minimum Split (s)		25.4		14.4	25.4					14.0	14.0	14.0
Total Split (s)		106.0		28.0	134.0					46.0	46.0	46.0
Total Split (%)		58.9%		15.6%	74.4%					25.6%	25.6%	25.6%
Yellow Time (s)		5.4		5.4	5.4					4.1	4.1	4.1
All-Red Time (s)		2.0		2.0	2.0					2.9	2.9	2.9
Lost Time Adjust (s)		0.0		0.0	0.0					0.0	0.0	0.0
Total Lost Time (s)		7.4		7.4	7.4					7.0	7.0	7.0
Lead/Lag		Lead		Lag								
Lead-Lag Optimize?		Yes		Yes								
Recall Mode		C-Min		Min	C-Min					None	None	None
v/c Ratio		0.57		0.54	0.30					0.75	0.76	0.66
Control Delay		18.8		21.2	4.9					104.3	104.7	15.9
Queue Delay		0.0		0.0	0.4					0.0	0.0	0.0
Total Delay		18.8		21.2	5.3					104.3	104.7	15.9
Queue Length 50th (ft)		542		53	91					148	149	0
Queue Length 95th (ft)		633		m121	138					197	198	81
Internal Link Dist (ft)		1240			424			1185			1125	
Turn Bay Length (ft)										325		475
Base Capacity (vph)		3225		299	2590					331	156	502
Starvation Cap Reductn		0		0	1191					0	0	0
Spillback Cap Reductn		90		0	0					0	0	0
Storage Cap Reductn		0		0	0					0	0	0
Reduced v/c Ratio		0.58		0.51	0.55					0.35	0.76	0.48

Intersection Summary

Cycle Length: 180
Actuated Cycle Length: 180
Offset: 6 (3%), Referenced to phase 2:WBTL and 6:EBT, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: CR 484 & I-75 SB Off-Ramp



HCM 6th Signalized Intersection Summary
4: CR 484 & I-75 SB Off-Ramp

Existing Conditions
Timing Plan: AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1450	336	148	752	0	0	0	0	229	1	237
Future Volume (veh/h)	0	1450	336	148	752	0	0	0	0	229	1	237
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1826	1826	1693	1693	0				1722	1722	1722
Adj Flow Rate, veh/h	0	1480	0	151	767	0				235	0	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	5	5	14	14	0				12	12	12
Cap, veh/h	0	1836		750	2682	0				282	0	
Arrive On Green	0.00	0.25	0.00	0.85	1.00	0.00				0.09	0.00	0.00
Sat Flow, veh/h	0	5313	0	1612	3300	0				3280	0	1459
Grp Volume(v), veh/h	0	1480	0	151	767	0				235	0	0
Grp Sat Flow(s),veh/h/ln	0	1662	0	1612	1608	0				1640	0	1459
Q Serve(g_s), s	0.0	50.3	0.0	0.0	0.0	0.0				12.7	0.0	0.0
Cycle Q Clear(g_c), s	0.0	50.3	0.0	0.0	0.0	0.0				12.7	0.0	0.0
Prop In Lane	0.00		0.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1836		750	2682	0				282	0	
V/C Ratio(X)	0.00	0.81		0.20	0.29	0.00				0.83	0.00	
Avail Cap(c_a), veh/h	0	2731		750	2682	0				711	0	
HCM Platoon Ratio	1.00	0.67	0.67	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.74	0.00	0.49	0.49	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	61.7	0.0	6.7	0.0	0.0				81.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	2.9	0.0	0.1	0.1	0.0				6.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	22.2	0.0	1.0	0.0	0.0				5.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	64.7	0.0	6.7	0.1	0.0				87.3	0.0	0.0
LnGrp LOS	A	E		A	A	A				F	A	
Approach Vol, veh/h		1480	A		918						235	A
Approach Delay, s/veh		64.7			1.2						87.3	
Approach LOS		E			A						F	

Timer - Assigned Phs	2	4	5	6
Phs Duration (G+Y+Rc), s	157.5	22.5	83.8	73.7
Change Period (Y+Rc), s	7.4	7.0	7.4	7.4
Max Green Setting (Gmax), s	126.6	39.0	20.6	98.6
Max Q Clear Time (g_c+I1), s	2.0	14.7	2.0	52.3
Green Ext Time (p_c), s	5.8	0.8	0.6	14.0

Intersection Summary	
HCM 6th Ctrl Delay	44.6
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.
Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
5: I-75 NB Off-Ramp & CR 484

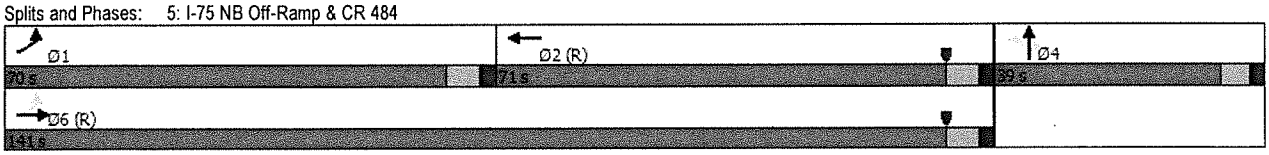
Existing Conditions
Timing Plan: AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	567	1111	0	0	720	383	176	1	138	0	0	0
Future Volume (vph)	567	1111	0	0	720	383	176	1	138	0	0	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	5%	5%	5%	11%	11%	11%	17%	17%	17%	2%	2%	2%
Adj. Flow (vph)	585	1145	0	0	742	395	181	1	142	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	585	1145	0	0	1137	0	0	182	142	0	0	0
Turn Type	pm+pt	NA			NA		Perm	NA	Perm			
Protected Phases	1	6			2			4				
Permitted Phases	6						4		4			
Detector Phase	1	6			2		4	4	4			
Switch Phase												
Minimum Initial (s)	7.0	20.0			20.0		7.0	7.0	7.0			
Minimum Split (s)	14.2	26.9			26.9		13.5	13.5	13.5			
Total Split (s)	70.0	141.0			71.0		39.0	39.0	39.0			
Total Split (%)	38.9%	78.3%			39.4%		21.7%	21.7%	21.7%			
Yellow Time (s)	4.9	4.9			4.9		4.1	4.1	4.1			
All-Red Time (s)	2.3	2.0			2.0		2.4	2.4	2.4			
Lost Time Adjust (s)	0.0	0.0			0.0			0.0	0.0			
Total Lost Time (s)	7.2	6.9			6.9			6.5	6.5			
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Recall Mode	Max	C-Min			C-Min		None	None	None			
v/c Ratio	0.74	0.43			0.80			0.77	0.43			
Control Delay	26.5	8.9			57.5			94.5	12.6			
Queue Delay	2.0	0.3			0.0			0.0	0.0			
Total Delay	28.5	9.2			57.5			94.5	12.6			
Queue Length 50th (ft)	502	484			426			209	0			
Queue Length 95th (ft)	#768	115			451			297	68			
Internal Link Dist (ft)		424			1171			1111			1102	
Turn Bay Length (ft)									320			
Base Capacity (vph)	791	2658			1631			279	365			
Starvation Cap Reductn	96	800			0			0	0			
Spillback Cap Reductn	0	0			0			0	0			
Storage Cap Reductn	0	0			0			0	0			
Reduced v/c Ratio	0.84	0.62			0.70			0.65	0.39			

Intersection Summary

Cycle Length: 180
Actuated Cycle Length: 180
Offset: 33 (18%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow
Natural Cycle: 80
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: I-75 NB Off-Ramp & CR 484



HCM 6th Signalized Intersection Summary
5: I-75 NB Off-Ramp & CR 484

Existing Conditions
Timing Plan: AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	567	1111	0	0	720	383	176	1	138	0	0	0
Future Volume (veh/h)	567	1111	0	0	720	383	176	1	138	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1826	1826	0	0	1737	1737	1648	1648	1648			
Adj Flow Rate, veh/h	585	1145	0	0	742	0	181	1	0			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	5	5	0	0	11	11	17	17	17			
Cap, veh/h	842	2756	0	0	1923		205	1				
Arrive On Green	0.70	1.00	0.00	0.00	0.27	0.00	0.13	0.13	0.00			
Sat Flow, veh/h	1739	3561	0	0	5055	0	1561	9	1397			
Grp Volume(v), veh/h	585	1145	0	0	742	0	182	0	0			
Grp Sat Flow(s),veh/h/ln	1739	1735	0	0	1581	0	1570	0	1397			
Q Serve(g_s), s	20.1	0.0	0.0	0.0	22.9	0.0	20.5	0.0	0.0			
Cycle Q Clear(g_c), s	20.1	0.0	0.0	0.0	22.9	0.0	20.5	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		0.00	0.99		1.00			
Lane Grp Cap(c), veh/h	842	2756	0	0	1923		206	0				
V/C Ratio(X)	0.70	0.42	0.00	0.00	0.39		0.88	0.00				
Avail Cap(c_a), veh/h	842	2756	0	0	1923		283	0				
HCM Platoon Ratio	2.00	2.00	1.00	1.00	0.67	0.67	1.00	1.00	1.00			
Upstream Filter(I)	0.79	0.79	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	4.7	0.0	0.0	0.0	47.3	0.0	76.8	0.0	0.0			
Incr Delay (d2), s/veh	3.8	0.4	0.0	0.0	0.6	0.0	27.0	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	3.5	0.1	0.0	0.0	9.5	0.0	9.8	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.5	0.4	0.0	0.0	47.9	0.0	103.8	0.0	0.0			
LnGrp LOS	A	A	A	A	D		F	A				
Approach Vol, veh/h		1730			742	A		182	A			
Approach Delay, s/veh		3.1			47.9			103.8				
Approach LOS		A			D			F				

Timer - Assigned Phs	1	2		4		6			
Phs Duration (G+Y+Rc), s	70.0	79.9		30.1		149.9			
Change Period (Y+Rc), s	* 7.2	6.9		6.5		6.9			
Max Green Setting (Gmax), s	* 63	64.1		32.5		134.1			
Max Q Clear Time (g_c+I1), s	22.1	24.9		22.5		2.0			
Green Ext Time (p_c), s	3.5	7.8		1.1		16.7			

Intersection Summary	
HCM 6th Ctrl Delay	22.5
HCM 6th LOS	C

Notes

User approved ignoring U-Turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
8: SW 29th Ave Rd & Marion Oaks Trail

Existing Conditions
Timing Plan: AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	1	0	105	1	0	0	32	6	0	0	11	2
Future Volume (vph)	1	0	105	1	0	0	32	6	0	0	11	2
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	11%	11%	11%	2%	2%	2%
Adj. Flow (vph)	1	0	125	1	0	0	38	7	0	0	13	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	126	0	0	1	0	0	45	0	0	15	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Control Type: Unsignalized

Intersection												
Int Delay, s/veh	7.5											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	0	105	1	0	0	32	6	0	0	11	2
Future Vol, veh/h	1	0	105	1	0	0	32	6	0	0	11	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	11	11	11	2	2	2
Mvmt Flow	1	0	125	1	0	0	38	7	0	0	13	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	97	97	14	160	98	7	15	0	0	7	0	0
Stage 1	14	14	-	83	83	-	-	-	-	-	-	-
Stage 2	83	83	-	77	15	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.21	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.299	-	-	2.218	-	-
Pot Cap-1 Maneuver	885	793	1066	806	792	1075	1546	-	-	1614	-	-
Stage 1	1006	884	-	925	826	-	-	-	-	-	-	-
Stage 2	925	826	-	932	883	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	868	773	1066	698	772	1075	1546	-	-	1614	-	-
Mov Cap-2 Maneuver	868	773	-	698	772	-	-	-	-	-	-	-
Stage 1	981	884	-	902	805	-	-	-	-	-	-	-
Stage 2	902	805	-	823	883	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.8	10.2	6.2	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1546	-	-	1064	698	1614	-	-
HCM Lane V/C Ratio	0.025	-	-	0.119	0.002	-	-	-
HCM Control Delay (s)	7.4	0	-	8.8	10.2	0	-	-
HCM Lane LOS	A	A	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0	0	-	-

F2: AM Peak Hour Future Year Background Traffic Conditions (2027)

Lanes, Volumes, Timings
2: CR 484 & SW 29th Ave Rd

Background Conditions
Timing Plan: AM Peak Hour

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	8	2277	1514	63	0	196
Future Volume (vph)	8	2277	1514	63	0	196
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	7%	4%	4%	7%	7%
Adj. Flow (vph)	9	2530	1682	70	0	218
Shared Lane Traffic (%)						
Lane Group Flow (vph)	9	2530	1752	0	218	0
Sign Control		Free	Free		Stop	

Intersection Summary

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	8	2277	1514	63	0	196
Future Vol, veh/h	8	2277	1514	63	0	196
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	144	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	7	7	4	4	7	7
Mvmt Flow	9	2530	1682	70	0	218

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1752	0	-	0	3000	876
Stage 1	-	-	-	-	1717	-
Stage 2	-	-	-	-	1283	-
Critical Hdwy	4.24	-	-	-	6.94	7.04
Critical Hdwy Stg 1	-	-	-	-	5.94	-
Critical Hdwy Stg 2	-	-	-	-	5.94	-
Follow-up Hdwy	2.27	-	-	-	3.57	3.37
Pot Cap-1 Maneuver	333	-	-	-	10	282
Stage 1	-	-	-	-	124	-
Stage 2	-	-	-	-	215	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	333	-	-	-	10	282
Mov Cap-2 Maneuver	-	-	-	-	75	-
Stage 1	-	-	-	-	121	-
Stage 2	-	-	-	-	215	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	50.6
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	333	-	-	-	282
HCM Lane V/C Ratio	0.027	-	-	-	0.772
HCM Control Delay (s)	16.1	-	-	-	50.6
HCM Lane LOS	C	-	-	-	F
HCM 95th %tile Q(veh)	0.1	-	-	-	5.9

Lanes, Volumes, Timings
3: SW 20th Ave Rd & CR 484

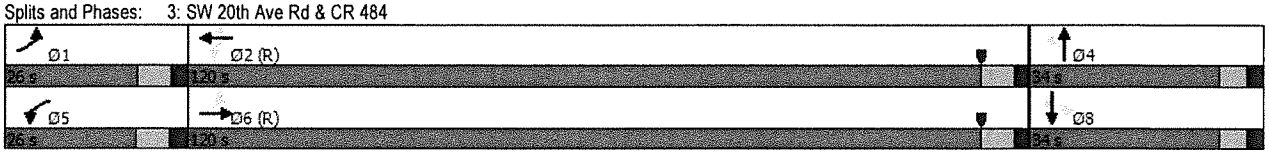
Background Conditions
Timing Plan: AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	2215	42	259	1609	174	58	15	249	198	30	13
Future Volume (vph)	82	2215	42	259	1609	174	58	15	249	198	30	13
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	6%	6%	6%	4%	4%	4%	11%	11%	11%	13%	13%	13%
Adj. Flow (vph)	85	2307	44	270	1676	181	60	16	259	206	31	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	85	2351	0	270	1676	181	0	335	0	206	31	14
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	1	6		5	2			4			8	
Permitted Phases	6			2		2	4			8		8
Detector Phase	1	6		5	2	2	4	4		8	8	8
Switch Phase												
Minimum Initial (s)	10.0	15.0		10.0	15.0	15.0	10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	17.0	21.9		17.3	21.9	21.9	16.6	16.6		16.6	16.6	16.6
Total Split (s)	26.0	120.0		26.0	120.0	120.0	34.0	34.0		34.0	34.0	34.0
Total Split (%)	14.4%	66.7%		14.4%	66.7%	66.7%	18.9%	18.9%		18.9%	18.9%	18.9%
Yellow Time (s)	4.8	4.9		4.8	4.9	4.9	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.2	2.0		2.5	2.0	2.0	2.6	2.6		2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)	7.0	6.9		7.3	6.9	6.9		6.6		6.6	6.6	6.6
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Recall Mode	None	C-Min		None	C-Min	C-Min	None	None		None	None	None
v/c Ratio	0.42	1.10		1.23	0.71	0.17		0.64		2.31	0.12	0.05
Control Delay	13.4	86.2		183.0	21.5	6.9		42.7		654.2	67.5	0.4
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Delay	13.4	86.2		183.0	21.5	6.9		42.7		654.2	67.5	0.4
Queue Length 50th (ft)	22	~1655		~342	913	44		103		~394	32	0
Queue Length 95th (ft)	37	#1766		#543	487	73		164		#578	69	0
Internal Link Dist (ft)		3132			1240			650			1393	
Turn Bay Length (ft)	114			170		144				114		
Base Capacity (vph)	284	2133		220	2349	1075		523		89	255	275
Starvation Cap Reductn	0	0		0	0	0		0		0	0	0
Spillback Cap Reductn	0	0		0	0	0		0		0	0	0
Storage Cap Reductn	0	0		0	0	0		0		0	0	0
Reduced v/c Ratio	0.30	1.10		1.23	0.71	0.17		0.64		2.31	0.12	0.05

Intersection Summary

Cycle Length: 180
Actuated Cycle Length: 180
Offset: 165 (92%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 150
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: SW 20th Ave Rd & CR 484



HCM 6th Signalized Intersection Summary
3: SW 20th Ave Rd & CR 484

Background Conditions
Timing Plan: AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	82	2215	42	259	1609	174	58	15	249	198	30	13
Future Volume (veh/h)	82	2215	42	259	1609	174	58	15	249	198	30	13
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1811	1811	1841	1841	1841	1737	1737	1737	1707	1707	1707
Adj Flow Rate, veh/h	85	2307	44	270	1676	181	60	16	181	206	31	14
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	6	6	6	4	4	4	11	11	11	13	13	13
Cap, veh/h	292	2170	41	222	2375	1059	180	44	204	61	260	220
Arrive On Green	0.07	0.84	0.84	0.14	0.90	0.90	0.15	0.15	0.15	0.15	0.15	0.15
Sat Flow, veh/h	1725	3454	66	1753	3497	1560	950	287	1340	1082	1707	1447
Grp Volume(v), veh/h	85	1145	1206	270	1676	181	76	0	181	206	31	14
Grp Sat Flow(s),veh/h/ln	1725	1721	1799	1753	1749	1560	1237	0	1340	1082	1707	1447
Q Serve(g_s), s	3.0	113.1	113.1	18.7	23.0	2.4	8.6	0.0	23.8	3.6	2.8	1.5
Cycle Q Clear(g_c), s	3.0	113.1	113.1	18.7	23.0	2.4	11.4	0.0	23.8	27.4	2.8	1.5
Prop In Lane	1.00		0.04	1.00		1.00	0.79		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	292	1081	1131	222	2375	1059	224	0	204	61	260	220
V/C Ratio(X)	0.29	1.06	1.07	1.22	0.71	0.17	0.34	0.00	0.89	3.36	0.12	0.06
Avail Cap(c_a), veh/h	380	1081	1131	222	2375	1059	224	0	204	61	260	220
HCM Platoon Ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.70	0.70	0.70	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.1	14.8	14.8	67.6	3.9	2.9	70.4	0.0	74.8	89.4	65.9	65.3
Incr Delay (d2), s/veh	0.5	44.6	46.4	122.4	1.3	0.2	0.9	0.0	34.3	1100.0	0.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	36.3	38.6	17.0	4.1	0.8	3.3	0.0	10.2	21.7	1.3	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.6	59.4	61.2	189.9	5.2	3.2	71.2	0.0	109.0	1189.4	66.1	65.4
LnGrp LOS	B	F	F	F	A	A	E	A	F	F	E	E
Approach Vol, veh/h		2436			2127			257			251	
Approach Delay, s/veh		58.6			28.4			97.9			988.0	
Approach LOS		E			C			F			F	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	16.9	129.1		34.0	26.0	120.0		34.0
Change Period (Y+Rc), s	* 7	6.9		6.6	7.3	6.9		6.6
Max Green Setting (Gmax), s	* 19	113.1		27.4	18.7	113.1		27.4
Max Q Clear Time (g_c+I1), s	5.0	25.0		25.8	20.7	115.1		29.4
Green Ext Time (p_c), s	0.1	23.3		0.2	0.0	0.0		0.0

Intersection Summary	
HCM 6th Ctrl Delay	93.9
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
4: CR 484 & I-75 SB Off-Ramp

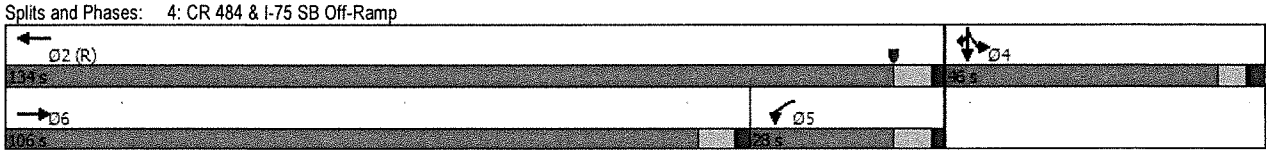
Background Conditions
Timing Plan: AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	2129	460	172	1655	0	0	0	0	265	1	356
Future Volume (vph)	0	2129	460	172	1655	0	0	0	0	265	1	356
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	9%	9%	9%	5%	5%	5%	0%	0%	0%	7%	7%	7%
Adj. Flow (vph)	0	2172	469	176	1689	0	0	0	0	270	1	363
Shared Lane Traffic (%)										50%		
Lane Group Flow (vph)	0	2641	0	176	1689	0	0	0	0	135	136	363
Turn Type		NA		Prot	NA					Split	NA	Prot
Protected Phases		6		5	2					4	4	4
Permitted Phases												
Detector Phase		6		5	2					4	4	4
Switch Phase												
Minimum Initial (s)		18.0		7.0	18.0					7.0	7.0	7.0
Minimum Split (s)		25.4		14.4	25.4					14.0	14.0	14.0
Total Split (s)		106.0		28.0	134.0					46.0	46.0	46.0
Total Split (%)		58.9%		15.6%	74.4%					25.6%	25.6%	25.6%
Yellow Time (s)		5.4		5.4	5.4					4.1	4.1	4.1
All-Red Time (s)		2.0		2.0	2.0					2.9	2.9	2.9
Lost Time Adjust (s)		0.0		0.0	0.0					0.0	0.0	0.0
Total Lost Time (s)		7.4		7.4	7.4					7.0	7.0	7.0
Lead/Lag		Lead		Lag								
Lead-Lag Optimize?		Yes		Yes								
Recall Mode		Min		Min	C-Min					None	None	None
v/c Ratio		0.73		0.88	0.64					0.57	0.57	0.80
Control Delay		22.0		114.2	37.8					80.1	80.1	71.0
Queue Delay		0.3		0.0	49.0					0.0	0.0	0.0
Total Delay		22.3		114.2	86.7					80.1	80.1	71.0
Queue Length 50th (ft)		324		184	741					158	161	192
Queue Length 95th (ft)		m325		m#269	810					229	231	246
Internal Link Dist (ft)		1240			424			1185			1125	
Turn Bay Length (ft)										325		475
Base Capacity (vph)		3605		203	2656					347	348	635
Starvation Cap Reductn		0		0	1401					0	0	0
Spillback Cap Reductn		362		0	0					0	0	0
Storage Cap Reductn		0		0	0					0	0	0
Reduced v/c Ratio		0.81		0.87	1.35					0.39	0.39	0.57

Intersection Summary

Cycle Length: 180
Actuated Cycle Length: 180
Offset: 6 (3%), Referenced to phase 2:WBT, Start of Yellow
Natural Cycle: 80
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: CR 484 & I-75 SB Off-Ramp



HCM 6th Signalized Intersection Summary
4: CR 484 & I-75 SB Off-Ramp

Background Conditions
Timing Plan: AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	2129	460	172	1655	0	0	0	0	265	1	356
Future Volume (veh/h)	0	2129	460	172	1655	0	0	0	0	265	1	356
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1767	1767	1826	1826	0				1796	1796	1796
Adj Flow Rate, veh/h	0	2172	0	176	1689	0				271	0	363
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	9	9	5	5	0				7	7	7
Cap, veh/h	0	2670		521	2706	0				479	0	426
Arrive On Green	0.00	0.58	0.00	0.40	1.00	0.00				0.14	0.00	0.14
Sat Flow, veh/h	0	6572	0	1739	3561	0				3421	0	3045
Grp Volume(v), veh/h	0	2172	0	176	1689	0				271	0	363
Grp Sat Flow(s),veh/h/ln	0	1519	0	1739	1735	0				1711	0	1522
Q Serve(g_s), s	0.0	51.0	0.0	12.7	0.0	0.0				13.3	0.0	21.0
Cycle Q Clear(g_c), s	0.0	51.0	0.0	12.7	0.0	0.0				13.3	0.0	21.0
Prop In Lane	0.00		0.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2670		521	2706	0				479	0	426
V/C Ratio(X)	0.00	0.81		0.34	0.62	0.00				0.57	0.00	0.85
Avail Cap(c_a), veh/h	0	3329		521	2706	0				741	0	660
HCM Platoon Ratio	1.00	1.33	1.33	1.33	1.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.09	0.00	0.40	0.40	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	31.6	0.0	41.7	0.0	0.0				72.3	0.0	75.6
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.2	0.4	0.0				1.1	0.0	6.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	16.6	0.0	5.2	0.2	0.0				5.9	0.0	17.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	31.7	0.0	42.0	0.4	0.0				73.3	0.0	82.1
LnGrp LOS	A	C		D	A	A				E	A	F
Approach Vol, veh/h		2172	A		1865						634	
Approach Delay, s/veh		31.7			4.4						78.3	
Approach LOS		C			A						E	

Timer - Assigned Phs	2	4	5	6
Phs Duration (G+Y+Rc), s	147.8	32.2	61.3	86.5
Change Period (Y+Rc), s	7.4	7.0	7.4	7.4
Max Green Setting (Gmax), s	126.6	39.0	20.6	98.6
Max Q Clear Time (g_c+I1), s	2.0	23.0	14.7	53.0
Green Ext Time (p_c), s	22.3	2.2	0.3	26.1

Intersection Summary	
HCM 6th Ctrl Delay	27.1
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
5: I-75 NB Off-Ramp & CR 484

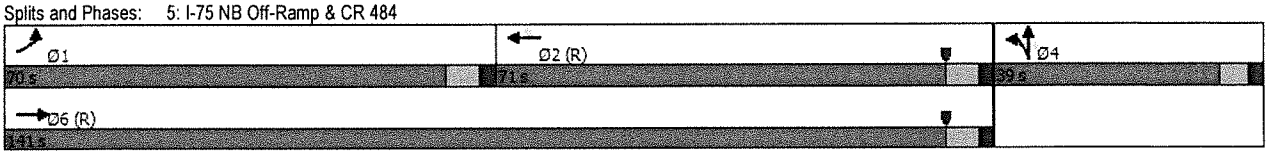
Background Conditions
Timing Plan: AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	717	1655	0	0	1484	444	332	1	160	0	0	0
Future Volume (vph)	717	1655	0	0	1484	444	332	1	160	0	0	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	8%	8%	8%	5%	5%	5%	9%	9%	9%	0%	0%	0%
Adj. Flow (vph)	739	1706	0	0	1530	458	342	1	165	0	0	0
Shared Lane Traffic (%)							50%					
Lane Group Flow (vph)	739	1706	0	0	1530	458	171	172	165	0	0	0
Turn Type	Prot	NA			NA	Perm	Split	NA	Perm			
Protected Phases	1	6			2		4	4				
Permitted Phases						2			4			
Detector Phase	1	6			2	2	4	4	4			
Switch Phase												
Minimum Initial (s)	7.0	20.0			20.0	20.0	7.0	7.0	7.0			
Minimum Split (s)	14.2	26.9			26.9	26.9	13.5	13.5	13.5			
Total Split (s)	70.0	141.0			71.0	71.0	39.0	39.0	39.0			
Total Split (%)	38.9%	78.3%			39.4%	39.4%	21.7%	21.7%	21.7%			
Yellow Time (s)	4.9	4.9			4.9	4.9	4.1	4.1	4.1			
All-Red Time (s)	2.3	2.0			2.0	2.0	2.4	2.4	2.4			
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Total Lost Time (s)	7.2	6.9			6.9	6.9	6.5	6.5	6.5			
Lead/Lag	Lead				Lag	Lag						
Lead-Lag Optimize?	Yes				Yes	Yes						
Recall Mode	Max	C-Min			C-Min	C-Min	None	None	None			
v/c Ratio	0.60	0.66			0.87	0.70	0.72	0.73	0.59			
Control Delay	32.5	16.6			60.6	36.3	89.4	89.6	49.6			
Queue Delay	1.5	2.8			21.2	0.0	77.3	77.2	0.0			
Total Delay	34.0	19.4			81.8	36.3	166.7	166.9	49.6			
Queue Length 50th (ft)	334	753			619	301	204	205	108			
Queue Length 95th (ft)	376	1084			683	445	292	293	190			
Internal Link Dist (ft)		424			1171			1111			1102	
Turn Bay Length (ft)						144	320		320			
Base Capacity (vph)	1227	2589			1759	658	284	284	322			
Starvation Cap Reductn	292	740			0	0	0	0	0			
Spillback Cap Reductn	0	0			281	0	189	189	0			
Storage Cap Reductn	0	0			0	0	0	0	0			
Reduced v/c Ratio	0.79	0.92			1.04	0.70	1.80	1.81	0.51			

Intersection Summary

Cycle Length: 180
Actuated Cycle Length: 180
Offset: 33 (18%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 5: I-75 NB Off-Ramp & CR 484



HCM 6th Signalized Intersection Summary
5: I-75 NB Off-Ramp & CR 484

Background Conditions
Timing Plan: AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	717	1655	0	0	1484	444	332	1	160	0	0	0
Future Volume (veh/h)	717	1655	0	0	1484	444	332	1	160	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1781	1781	0	0	1826	1826	1767	1767	1767			
Adj Flow Rate, veh/h	739	1706	0	0	1530	0	343	0	0			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	8	8	0	0	5	5	9	9	9			
Cap, veh/h	1148	2720	0	0	2067		411	0				
Arrive On Green	0.46	1.00	0.00	0.00	0.55	0.00	0.12	0.00	0.00			
Sat Flow, veh/h	3291	3474	0	0	5149	1547	3365	0	1497			
Grp Volume(v), veh/h	739	1706	0	0	1530	0	343	0	0			
Grp Sat Flow(s),veh/h/ln	1646	1692	0	0	1662	1547	1682	0	1497			
Q Serve(g_s), s	30.9	0.0	0.0	0.0	41.9	0.0	17.9	0.0	0.0			
Cycle Q Clear(g_c), s	30.9	0.0	0.0	0.0	41.9	0.0	17.9	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	1148	2720	0	0	2067		411	0				
V/C Ratio(X)	0.64	0.63	0.00	0.00	0.74		0.83	0.00				
Avail Cap(c_a), veh/h	1148	2720	0	0	2067		608	0				
HCM Platoon Ratio	1.33	1.33	1.00	1.00	1.33	1.33	1.00	1.00	1.00			
Upstream Filter(I)	0.62	0.62	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	39.7	0.0	0.0	0.0	33.0	0.0	77.2	0.0	0.0			
Incr Delay (d2), s/veh	1.7	0.7	0.0	0.0	2.4	0.0	10.3	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	11.9	0.3	0.0	0.0	15.7	0.0	8.4	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.4	0.7	0.0	0.0	35.5	0.0	87.6	0.0	0.0			
LnGrp LOS	D	A	A	A	D		F	A				
Approach Vol, veh/h		2445			1530	A		343	A			
Approach Delay, s/veh		13.0			35.5			87.6				
Approach LOS		B			D			F				

Timer - Assigned Phs	1	2		4		6			
Phs Duration (G+Y+Rc), s	70.0	81.5		28.5		151.5			
Change Period (Y+Rc), s	* 7.2	6.9		6.5		6.9			
Max Green Setting (Gmax), s	* 63	64.1		32.5		134.1			
Max Q Clear Time (g_c+I1), s	32.9	43.9		19.9		2.0			
Green Ext Time (p_c), s	4.7	13.4		2.0		40.7			

Intersection Summary	
HCM 6th Ctrl Delay	26.9
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
8: SW 29th Ave Rd & Marion Oaks Trail

Background Conditions
Timing Plan: AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	1	3	122	1	0	0	37	7	0	0	13	2
Future Volume (vph)	1	3	122	1	0	0	37	7	0	0	13	2
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	8%	8%	8%	0%	0%	0%	2%	2%	2%	7%	7%	7%
Adj. Flow (vph)	1	4	145	1	0	0	44	8	0	0	15	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	150	0	0	1	0	0	52	0	0	17	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	7.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	3	122	1	0	0	37	7	0	0	13	2
Future Vol, veh/h	1	3	122	1	0	0	37	7	0	0	13	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	8	8	8	0	0	0	2	2	2	7	7	7
Mvmt Flow	1	4	145	1	0	0	44	8	0	0	15	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	112	112	16	187	113	8	17	0	0	8	0	0
Stage 1	16	16	-	96	96	-	-	-	-	-	-	-
Stage 2	96	96	-	91	17	-	-	-	-	-	-	-
Critical Hdwy	7.18	6.58	6.28	7.1	6.5	6.2	4.12	-	-	4.17	-	-
Critical Hdwy Stg 1	6.18	5.58	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.18	5.58	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.572	4.072	3.372	3.5	4	3.3	2.218	-	-	2.263	-	-
Pot Cap-1 Maneuver	852	767	1046	778	781	1080	1600	-	-	1580	-	-
Stage 1	988	870	-	916	819	-	-	-	-	-	-	-
Stage 2	896	804	-	921	885	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	834	746	1046	654	759	1080	1600	-	-	1580	-	-
Mov Cap-2 Maneuver	834	746	-	654	759	-	-	-	-	-	-	-
Stage 1	960	870	-	890	796	-	-	-	-	-	-	-
Stage 2	871	781	-	790	885	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.1	10.5	6.2	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1600	-	-	1034	654	1580	-	-
HCM Lane V/C Ratio	0.028	-	-	0.145	0.002	-	-	-
HCM Control Delay (s)	7.3	0	-	9.1	10.5	0	-	-
HCM Lane LOS	A	A	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0	0	-	-

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F3: AM Peak Hour Future Year Background w/ Improvements Traffic Conditions (2027)

Lanes, Volumes, Timings
2: CR 484 & SW 29th Ave Rd

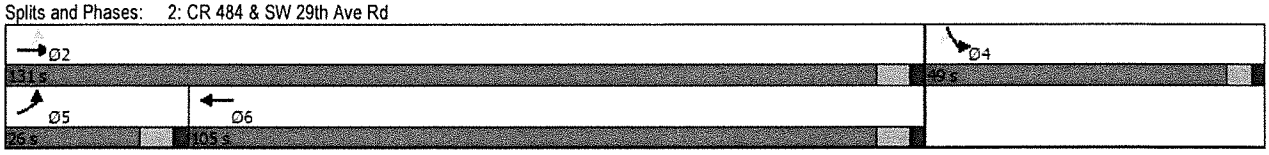
Background Conditions w/ Improvements
Timing Plan: AM Peak Hour

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	8	2116	1514	63	161	35
Future Volume (vph)	8	2116	1514	63	161	35
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	7%	4%	4%	7%	7%
Adj. Flow (vph)	9	2351	1682	70	179	39
Shared Lane Traffic (%)						
Lane Group Flow (vph)	9	2351	1752	0	179	39
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					4
Detector Phase	5	2	6		4	4
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	11.8	23.5	23.5		23.5	23.5
Total Split (s)	26.0	131.0	105.0		49.0	49.0
Total Split (%)	14.4%	72.8%	58.3%		27.2%	27.2%
Yellow Time (s)	4.8	4.8	4.8		3.7	3.7
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.8	6.8	6.8		5.7	5.7
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	None	None		None	None
v/c Ratio	0.05	0.89	0.68		0.77	0.16
Control Delay	5.5	19.0	13.4		87.2	17.0
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	5.5	19.0	13.4		87.2	17.0
Queue Length 50th (ft)	2	808	370		182	0
Queue Length 95th (ft)	8	1206	737		270	36
Internal Link Dist (ft)		3183	3132		3021	
Turn Bay Length (ft)	144					
Base Capacity (vph)	304	2640	2594		460	440
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.03	0.89	0.68		0.39	0.09

Intersection Summary

Cycle Length: 180
Actuated Cycle Length: 158.9
Natural Cycle: 100
Control Type: Actuated-Uncoordinated

Splits and Phases: 2: CR 484 & SW 29th Ave Rd



HCM 6th Signalized Intersection Summary
2: CR 484 & SW 29th Ave Rd

Background Conditions w/ Improvements
Timing Plan: AM Peak Hour

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	8	2116	1514	63	161	35
Future Volume (veh/h)	8	2116	1514	63	161	35
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1796	1796	1841	1841	1796	1796
Adj Flow Rate, veh/h	9	2351	1682	70	179	39
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	7	7	4	4	7	7
Cap, veh/h	191	2672	2467	102	210	186
Arrive On Green	0.01	0.78	0.72	0.72	0.12	0.12
Sat Flow, veh/h	1711	3503	3514	142	1711	1522
Grp Volume(v), veh/h	9	2351	856	896	179	39
Grp Sat Flow(s),veh/h/ln	1711	1706	1749	1815	1711	1522
Q Serve(g_s), s	0.2	63.5	35.4	36.0	13.6	3.0
Cycle Q Clear(g_c), s	0.2	63.5	35.4	36.0	13.6	3.0
Prop In Lane	1.00			0.08	1.00	1.00
Lane Grp Cap(c), veh/h	191	2672	1261	1309	210	186
V/C Ratio(X)	0.05	0.88	0.68	0.68	0.85	0.21
Avail Cap(c_a), veh/h	421	3207	1299	1349	560	499
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.9	10.0	10.1	10.2	56.8	52.2
Incr Delay (d2), s/veh	0.1	2.7	1.4	1.4	9.5	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	17.7	11.7	12.4	6.4	2.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	10.0	12.7	11.5	11.6	66.3	52.8
LnGrp LOS	B	B	B	B	E	D
Approach Vol, veh/h		2360	1752		218	
Approach Delay, s/veh		12.7	11.5		63.9	
Approach LOS		B	B		E	

Timer - Assigned Phs	2	4	5	6
Phs Duration (G+Y+Rc), s	110.3	21.9	8.2	102.1
Change Period (Y+Rc), s	6.8	* 5.7	6.8	6.8
Max Green Setting (Gmax), s	124.2	* 43	19.2	98.2
Max Q Clear Time (g_c+I1), s	65.5	15.6	2.2	38.0
Green Ext Time (p_c), s	38.0	0.6	0.0	20.2

Intersection Summary	
HCM 6th Ctrl Delay	14.8
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
3: SW 20th Ave Rd & CR 484

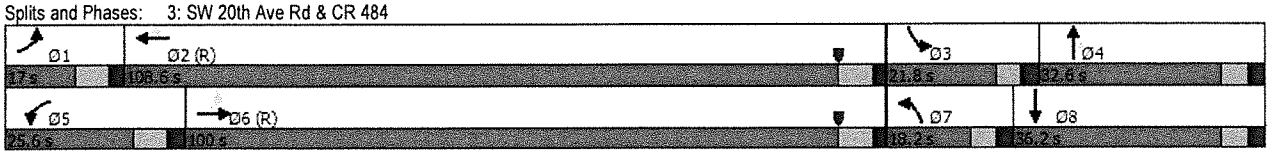
Background Conditions w/ Improvements
Timing Plan: AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	2215	42	259	1609	174	58	15	249	198	30	13
Future Volume (vph)	82	2215	42	259	1609	174	58	15	249	198	30	13
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	6%	6%	6%	4%	4%	4%	11%	11%	11%	13%	13%	13%
Adj. Flow (vph)	85	2307	44	270	1676	181	60	16	259	206	31	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	85	2351	0	270	1676	181	60	16	259	206	45	0
Turn Type	pm+pt	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6					2			4			
Detector Phase	1	6		5	2	2	7	4	4	3	8	
Switch Phase												
Minimum Initial (s)	5.0	15.0		10.0	15.0	15.0	5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	12.0	21.9		17.3	21.9	21.9	11.1	16.6	16.6	11.1	16.6	
Total Split (s)	17.0	100.0		25.6	108.6	108.6	18.2	32.6	32.6	21.8	36.2	
Total Split (%)	9.4%	55.6%		14.2%	60.3%	60.3%	10.1%	18.1%	18.1%	12.1%	20.1%	
Yellow Time (s)	4.8	4.9		4.8	4.9	4.9	3.5	4.0	4.0	3.5	4.0	
All-Red Time (s)	2.2	2.0		2.5	2.0	2.0	2.6	2.6	2.6	2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.0	6.9		7.3	6.9	6.9	6.1	6.6	6.6	6.1	6.6	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Min		None	C-Min	C-Min	None	None	None	None	None	
v/c Ratio	0.46	0.86		0.81	0.55	0.18	0.62	0.08	0.89	0.80	0.18	
Control Delay	19.6	39.5		106.0	28.1	10.9	109.8	69.3	64.0	102.3	53.0	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	19.6	39.5		106.0	28.1	10.9	109.8	69.3	64.0	102.3	53.0	
Queue Length 50th (ft)	31	896		158	687	45	70	17	137	125	36	
Queue Length 95th (ft)	58	1001		#224	599	73	126	43	#255	#184	78	
Internal Link Dist (ft)		3132			1240			650			1393	
Turn Bay Length (ft)	114			170		144	144			114		
Base Capacity (vph)	201	2718		348	3051	989	109	247	335	270	272	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.42	0.86		0.78	0.55	0.18	0.55	0.06	0.77	0.76	0.17	

Intersection Summary

Cycle Length: 180
Actuated Cycle Length: 180
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow
Natural Cycle: 110
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: SW 20th Ave Rd & CR 484



HCM 6th Signalized Intersection Summary
3: SW 20th Ave Rd & CR 484

Background Conditions w/ Improvements
Timing Plan: AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	82	2215	42	259	1609	174	58	15	249	198	30	13
Future Volume (veh/h)	82	2215	42	259	1609	174	58	15	249	198	30	13
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1811	1811	1841	1841	1841	1737	1737	1737	1707	1707	1707
Adj Flow Rate, veh/h	85	2307	44	270	1676	181	60	16	181	206	31	14
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	6	6	6	4	4	4	11	11	11	13	13	13
Cap, veh/h	238	2750	52	307	3064	951	74	232	196	241	184	83
Arrive On Green	0.04	0.73	0.73	0.12	0.81	0.81	0.04	0.13	0.13	0.08	0.16	0.16
Sat Flow, veh/h	1725	4995	95	3401	5025	1560	1654	1737	1472	3155	1114	503
Grp Volume(v), veh/h	85	1521	830	270	1676	181	60	16	181	206	0	45
Grp Sat Flow(s),veh/h/ln	1725	1648	1794	1700	1675	1560	1654	1737	1472	1577	0	1617
Q Serve(g_s), s	3.9	57.6	58.1	14.1	20.4	4.7	6.5	1.5	21.9	11.6	0.0	4.3
Cycle Q Clear(g_c), s	3.9	57.6	58.1	14.1	20.4	4.7	6.5	1.5	21.9	11.6	0.0	4.3
Prop In Lane	1.00		0.05	1.00		1.00	1.00		1.00	1.00		0.31
Lane Grp Cap(c), veh/h	238	1814	988	307	3064	951	74	232	196	241	0	267
V/C Ratio(X)	0.36	0.84	0.84	0.88	0.55	0.19	0.81	0.07	0.92	0.85	0.00	0.17
Avail Cap(c_a), veh/h	278	1814	988	346	3064	951	111	251	213	275	0	267
HCM Platoon Ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.35	0.35	0.35	0.70	0.70	0.70	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.6	18.5	18.6	78.2	8.6	7.1	85.2	68.2	77.1	82.1	0.0	64.6
Incr Delay (d2), s/veh	0.3	1.8	3.2	15.3	0.5	0.3	22.6	0.1	39.3	20.3	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	17.5	19.6	6.6	5.3	1.6	3.2	0.7	10.5	5.4	0.0	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.0	20.3	21.8	93.5	9.1	7.4	107.8	68.4	116.3	102.4	0.0	64.9
LnGrp LOS	B	C	C	F	A	A	F	E	F	F	A	E
Approach Vol, veh/h		2436			2127			257			251	
Approach Delay, s/veh		20.7			19.6			111.4			95.7	
Approach LOS		C			B			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.9	116.7	19.9	30.6	23.6	106.0	14.2	36.3
Change Period (Y+Rc), s	* 7	6.9	6.1	6.6	7.3	6.9	6.1	6.6
Max Green Setting (Gmax), s	* 10	101.7	15.7	26.0	18.3	93.1	12.1	29.6
Max Q Clear Time (g_c+I1), s	5.9	22.4	13.6	23.9	16.1	60.1	8.5	6.3
Green Ext Time (p_c), s	0.1	21.0	0.1	0.1	0.2	22.5	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	28.6
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Kimley»Horn

F4: AM Peak Hour Future Year Buildout Traffic Conditions (2027)

Lanes, Volumes, Timings
2: CR 484 & SW 29th Ave Rd

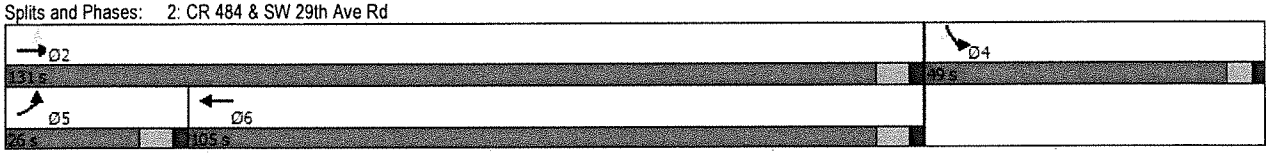
Buildout Conditions
Timing Plan: AM Peak Hour

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	120	2156	1528	138	186	48
Future Volume (vph)	120	2156	1528	138	186	48
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	7%	4%	4%	2%	2%
Adj. Flow (vph)	133	2396	1698	153	207	53
Shared Lane Traffic (%)						
Lane Group Flow (vph)	133	2396	1851	0	207	53
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					4
Detector Phase	5	2	6		4	4
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	11.8	23.5	23.5		23.5	23.5
Total Split (s)	26.0	131.0	105.0		49.0	49.0
Total Split (%)	14.4%	72.8%	58.3%		27.2%	27.2%
Yellow Time (s)	4.8	4.8	4.8		3.7	3.7
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.8	6.8	6.8		5.7	5.7
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	None	None		None	None
v/c Ratio	0.68	0.92	0.83		0.79	0.19
Control Delay	47.6	22.4	27.2		86.8	14.7
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	47.6	22.4	27.2		86.8	14.7
Queue Length 50th (ft)	69	920	739		213	0
Queue Length 95th (ft)	153	#1391	1083		307	41
Internal Link Dist (ft)		3183	3132		3021	
Turn Bay Length (ft)	144					
Base Capacity (vph)	258	2609	2231		477	465
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.52	0.92	0.83		0.43	0.11

Intersection Summary

Cycle Length: 180
Actuated Cycle Length: 160.8
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: CR 484 & SW 29th Ave Rd



HCM 6th Signalized Intersection Summary
2: CR 484 & SW 29th Ave Rd

Buildout Conditions
Timing Plan: AM Peak Hour

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	120	2156	1528	138	186	48
Future Volume (veh/h)	120	2156	1528	138	186	48
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1796	1796	1841	1841	1870	1870
Adj Flow Rate, veh/h	133	2396	1698	153	207	53
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	7	7	4	4	2	2
Cap, veh/h	198	2656	2251	200	238	211
Arrive On Green	0.04	0.78	0.69	0.69	0.13	0.13
Sat Flow, veh/h	1711	3503	3340	289	1781	1585
Grp Volume(v), veh/h	133	2396	904	947	207	53
Grp Sat Flow(s),veh/h/ln	1711	1706	1749	1789	1781	1585
Q Serve(g_s), s	3.1	74.0	46.6	48.9	16.1	4.2
Cycle Q Clear(g_c), s	3.1	74.0	46.6	48.9	16.1	4.2
Prop In Lane	1.00			0.16	1.00	1.00
Lane Grp Cap(c), veh/h	198	2656	1212	1240	238	211
V/C Ratio(X)	0.67	0.90	0.75	0.76	0.87	0.25
Avail Cap(c_a), veh/h	366	2992	1212	1240	545	485
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.0	11.7	13.8	14.2	60.2	55.0
Incr Delay (d2), s/veh	3.9	3.9	2.6	2.9	9.5	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	22.2	16.8	18.1	7.9	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	28.9	15.6	16.4	17.0	69.7	55.6
LnGrp LOS	C	B	B	B	E	E
Approach Vol, veh/h		2529	1851		260	
Approach Delay, s/veh		16.3	16.7		66.8	
Approach LOS		B	B		E	

Timer - Assigned Phs	2	4	5	6
Phs Duration (G+Y+Rc), s	117.1	24.6	12.1	105.0
Change Period (Y+Rc), s	6.8	* 5.7	6.8	6.8
Max Green Setting (Gmax), s	124.2	* 43	19.2	98.2
Max Q Clear Time (g_c+I1), s	76.0	18.1	5.1	50.9
Green Ext Time (p_c), s	34.3	0.8	0.3	21.3

Intersection Summary	
HCM 6th Ctrl Delay	19.3
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
3: SW 20th Ave Rd & CR 484

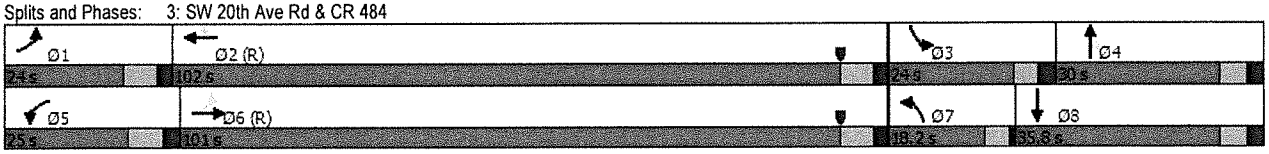
Buildout Conditions
Timing Plan: AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	122	2240	42	259	1684	459	58	15	249	242	30	27
Future Volume (vph)	122	2240	42	259	1684	459	58	15	249	242	30	27
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	11%	11%	11%	18%	18%	18%
Adj. Flow (vph)	127	2333	44	270	1754	478	60	16	259	252	31	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	127	2377	0	270	1754	478	60	16	259	252	59	0
Turn Type	pm+pt	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6					2			4			
Detector Phase	1	6		5	2	2	7	4	4	3	8	
Switch Phase												
Minimum Initial (s)	5.0	15.0		10.0	15.0	15.0	5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	12.0	21.9		17.3	21.9	21.9	9.5	16.6	16.6	11.1	16.6	
Total Split (s)	24.0	101.0		25.0	102.0	102.0	18.2	30.0	30.0	24.0	35.8	
Total Split (%)	13.3%	56.1%		13.9%	56.7%	56.7%	10.1%	16.7%	16.7%	13.3%	19.9%	
Yellow Time (s)	4.8	4.9		4.8	4.9	4.9	3.5	4.0	4.0	3.5	4.0	
All-Red Time (s)	2.2	2.0		2.5	2.0	2.0	1.0	2.6	2.6	2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.0	6.9		7.3	6.9	6.9	4.5	6.6	6.6	6.1	6.6	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Min		None	C-Min	C-Min	None	None	None	None	None	
v/c Ratio	0.64	0.89		0.82	0.61	0.49	0.59	0.09	0.90	0.88	0.23	
Control Delay	33.7	41.3		111.3	38.9	22.2	104.7	71.3	63.5	108.0	45.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	33.7	41.3		111.3	38.9	22.2	104.7	71.3	63.5	108.0	45.2	
Queue Length 50th (ft)	50	941		165	762	176	70	17	128	153	38	
Queue Length 95th (ft)	116	1009		#244	812	294	125	44	#267	#232	88	
Internal Link Dist (ft)		3132			1240			650			1393	
Turn Bay Length (ft)	114			170		144	144			114		
Base Capacity (vph)	247	2685		337	2868	981	123	222	323	295	266	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.51	0.89		0.80	0.61	0.49	0.49	0.07	0.80	0.85	0.22	

Intersection Summary

Cycle Length: 180
Actuated Cycle Length: 180
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow
Natural Cycle: 120
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: SW 20th Ave Rd & CR 484



HCM 6th Signalized Intersection Summary
3: SW 20th Ave Rd & CR 484

Buildout Conditions
Timing Plan: AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	122	2240	42	259	1684	459	58	15	249	242	30	27
Future Volume (veh/h)	122	2240	42	259	1684	459	58	15	249	242	30	27
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1811	1811	1811	1811	1811	1737	1737	1737	1633	1633	1633
Adj Flow Rate, veh/h	127	2333	44	270	1754	478	60	16	181	252	31	28
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	6	6	6	6	6	6	11	11	11	18	18	18
Cap, veh/h	233	2674	50	305	2879	894	74	226	191	284	149	134
Arrive On Green	0.06	0.71	0.71	0.12	0.77	0.77	0.04	0.13	0.13	0.09	0.19	0.19
Sat Flow, veh/h	1725	4996	94	3346	4944	1535	1654	1737	1472	3018	791	714
Grp Volume(v), veh/h	127	1537	840	270	1754	478	60	16	181	252	0	59
Grp Sat Flow(s),veh/h/ln	1725	1648	1794	1673	1648	1535	1654	1737	1472	1509	0	1505
Q Serve(g_s), s	6.1	63.7	64.4	14.3	27.3	21.6	6.5	1.5	22.0	14.9	0.0	6.0
Cycle Q Clear(g_c), s	6.1	63.7	64.4	14.3	27.3	21.6	6.5	1.5	22.0	14.9	0.0	6.0
Prop In Lane	1.00		0.05	1.00		1.00	1.00		1.00	1.00		0.47
Lane Grp Cap(c), veh/h	233	1764	960	305	2879	894	74	226	191	284	0	283
V/C Ratio(X)	0.54	0.87	0.87	0.88	0.61	0.53	0.81	0.07	0.95	0.89	0.00	0.21
Avail Cap(c_a), veh/h	317	1764	960	329	2879	894	126	226	191	300	0	283
HCM Platoon Ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.30	0.30	0.30	0.77	0.77	0.77	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.6	21.3	21.3	78.1	11.6	10.9	85.2	68.8	77.7	80.6	0.0	61.7
Incr Delay (d2), s/veh	0.6	2.0	3.7	18.4	0.7	1.8	18.1	0.1	49.6	24.9	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	20.1	22.5	6.7	7.4	6.5	3.2	0.7	11.0	6.8	0.0	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.2	23.3	25.0	96.5	12.3	12.7	103.3	68.9	127.2	105.5	0.0	62.1
LnGrp LOS	B	C	C	F	B	B	F	E	F	F	A	E
Approach Vol, veh/h		2504			2502			257			311	
Approach Delay, s/veh		23.6			21.5			118.0			97.3	
Approach LOS		C			C			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.2	111.7	23.1	30.0	23.7	103.2	12.6	40.5
Change Period (Y+Rc), s	* 7	6.9	6.1	6.6	7.3	6.9	4.5	6.6
Max Green Setting (Gmax), s	* 17	95.1	17.9	23.4	17.7	94.1	13.7	29.2
Max Q Clear Time (g_c+I1), s	8.1	29.3	16.9	24.0	16.3	66.4	8.5	8.0
Green Ext Time (p_c), s	0.2	26.0	0.1	0.0	0.1	20.1	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	31.1
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
4: I-75 SB Off-Ramp & CR 484

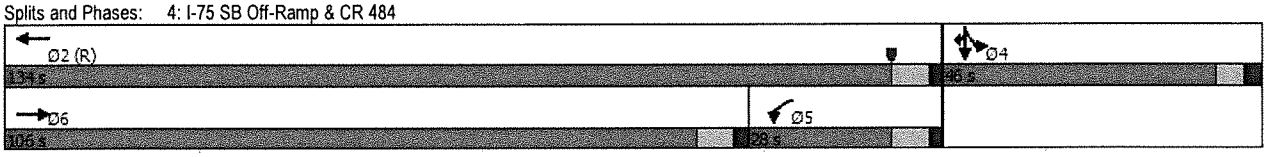
Buildout Conditions
Timing Plan: AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	2182	478	172	1917	0	0	0	0	265	1	455
Future Volume (vph)	0	2182	478	172	1917	0	0	0	0	265	1	455
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	10%	10%	10%	6%	6%	6%	0%	0%	0%	8%	8%	8%
Adj. Flow (vph)	0	2227	488	176	1956	0	0	0	0	270	1	464
Shared Lane Traffic (%)										50%		
Lane Group Flow (vph)	0	2715	0	176	1956	0	0	0	0	135	136	464
Turn Type		NA		Prot	NA					Split	NA	Prot
Protected Phases		6		5	2					4	4	4
Permitted Phases												
Detector Phase		6		5	2					4	4	4
Switch Phase												
Minimum Initial (s)		18.0		7.0	18.0					7.0	7.0	7.0
Minimum Split (s)		25.4		14.4	25.4					14.0	14.0	14.0
Total Split (s)		106.0		28.0	134.0					46.0	46.0	46.0
Total Split (%)		58.9%		15.6%	74.4%					25.6%	25.6%	25.6%
Yellow Time (s)		5.4		5.4	5.4					4.1	4.1	4.1
All-Red Time (s)		2.0		2.0	2.0					2.9	2.9	2.9
Lost Time Adjust (s)		0.0		0.0	0.0					0.0	0.0	0.0
Total Lost Time (s)		7.4		7.4	7.4					7.0	7.0	7.0
Lead/Lag		Lead		Lag								
Lead-Lag Optimize?		Yes		Yes								
Recall Mode		Min		Min	C-Min					None	None	None
v/c Ratio		0.80		0.92	0.54					0.46	0.46	0.85
Control Delay		29.5		111.4	27.8					69.8	69.8	75.1
Queue Delay		0.6		0.0	48.0					0.0	0.0	0.0
Total Delay		30.1		111.4	75.7					69.8	69.8	75.1
Queue Length 50th (ft)		478		191	557					150	151	260
Queue Length 95th (ft)		531		m214	m584					223	225	328
Internal Link Dist (ft)		1240			424			1185			1125	
Turn Bay Length (ft)										325		475
Base Capacity (vph)		3381		194	3601					344	345	626
Starvation Cap Reductn		0		0	1827					0	0	0
Spillback Cap Reductn		294		0	0					0	0	0
Storage Cap Reductn		0		0	0					0	0	0
Reduced v/c Ratio		0.88		0.91	1.10					0.39	0.39	0.74

Intersection Summary

Cycle Length: 180
Actuated Cycle Length: 180
Offset: 6 (3%), Referenced to phase 2:WBT, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: I-75 SB Off-Ramp & CR 484



HCM 6th Signalized Intersection Summary
4: I-75 SB Off-Ramp & CR 484

Buildout Conditions
Timing Plan: AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	2182	478	172	1917	0	0	0	0	265	1	455
Future Volume (veh/h)	0	2182	478	172	1917	0	0	0	0	265	1	455
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1752	1752	1811	1811	0				1781	1781	1781
Adj Flow Rate, veh/h	0	2227	0	176	1956	0				271	0	464
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	10	10	6	6	0				8	8	8
Cap, veh/h	0	2715		440	3691	0				589	0	524
Arrive On Green	0.00	0.60	0.00	0.34	0.99	0.00				0.17	0.00	0.17
Sat Flow, veh/h	0	6517	0	1725	5107	0				3393	0	3019
Grp Volume(v), veh/h	0	2227	0	176	1956	0				271	0	464
Grp Sat Flow(s),veh/h/ln	0	1507	0	1725	1648	0				1697	0	1510
Q Serve(g_s), s	0.0	52.4	0.0	14.0	1.1	0.0				12.9	0.0	27.0
Cycle Q Clear(g_c), s	0.0	52.4	0.0	14.0	1.1	0.0				12.9	0.0	27.0
Prop In Lane	0.00		0.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2715		440	3691	0				589	0	524
V/C Ratio(X)	0.00	0.82		0.40	0.53	0.00				0.46	0.00	0.89
Avail Cap(c_a), veh/h	0	3301		440	3691	0				735	0	654
HCM Platoon Ratio	1.00	1.33	1.33	1.33	1.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.34	0.00	0.19	0.19	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	30.3	0.0	49.0	0.2	0.0				66.8	0.0	72.6
Incr Delay (d2), s/veh	0.0	0.5	0.0	0.2	0.1	0.0				0.6	0.0	11.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	16.9	0.0	5.8	0.2	0.0				5.7	0.0	22.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	30.8	0.0	49.1	0.3	0.0				67.4	0.0	84.4
LnGrp LOS	A	C		D	A	A				E	A	F
Approach Vol, veh/h		2227	A		2132						735	
Approach Delay, s/veh		30.8			4.3						78.1	
Approach LOS		C			A						E	

Timer - Assigned Phs		2		4	5	6						
Phs Duration (G+Y+Rc), s		141.8		38.2	53.3	88.5						
Change Period (Y+Rc), s		7.4		7.0	7.4	7.4						
Max Green Setting (Gmax), s		126.6		39.0	20.6	98.6						
Max Q Clear Time (g_c+I1), s		3.1		29.0	16.0	54.4						
Green Ext Time (p_c), s		28.2		2.2	0.3	26.7						

Intersection Summary		
HCM 6th Ctrl Delay	26.6	
HCM 6th LOS	C	

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
5: I-75 NB Off-Ramp & CR 484

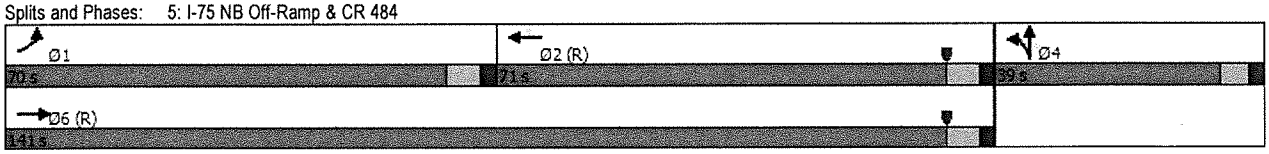
Buildout Conditions
Timing Plan: AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	739	1668	0	0	1661	444	417	1	160	0	0	0
Future Volume (vph)	739	1668	0	0	1661	444	417	1	160	0	0	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	9%	9%	9%	5%	5%	5%	11%	11%	11%	0%	0%	0%
Adj. Flow (vph)	762	1720	0	0	1712	458	430	1	165	0	0	0
Shared Lane Traffic (%)							50%					
Lane Group Flow (vph)	762	1720	0	0	1712	458	215	216	165	0	0	0
Turn Type	Prot	NA			NA	Perm	Split	NA	Perm			
Protected Phases	1	6			2		4	4				
Permitted Phases						2			4			
Detector Phase	1	6			2	2	4	4	4			
Switch Phase												
Minimum Initial (s)	7.0	20.0			20.0	20.0	7.0	7.0	7.0			
Minimum Split (s)	14.2	26.9			26.9	26.9	13.5	13.5	13.5			
Total Split (s)	70.0	141.0			71.0	71.0	39.0	39.0	39.0			
Total Split (%)	38.9%	78.3%			39.4%	39.4%	21.7%	21.7%	21.7%			
Yellow Time (s)	4.9	4.9			4.9	4.9	4.1	4.1	4.1			
All-Red Time (s)	2.3	2.0			2.0	2.0	2.4	2.4	2.4			
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Total Lost Time (s)	7.2	6.9			6.9	6.9	6.5	6.5	6.5			
Lead/Lag	Lead				Lag	Lag						
Lead-Lag Optimize?	Yes				Yes	Yes						
Recall Mode	Max	C-Min			C-Min	C-Min	None	None	None			
v/c Ratio	0.66	0.69			0.97	0.71	0.83	0.83	0.55			
Control Delay	35.8	13.9			72.5	39.2	97.7	97.8	47.0			
Queue Delay	2.2	7.8			0.1	0.0	71.1	71.1	0.0			
Total Delay	37.9	21.7			72.6	39.2	168.8	168.8	47.0			
Queue Length 50th (ft)	371	656			732	323	257	260	106			
Queue Length 95th (ft)	377	1127			#836	469	#390	#391	191			
Internal Link Dist (ft)		424			1171			1111			1102	
Turn Bay Length (ft)						144	320		320			
Base Capacity (vph)	1162	2510			1759	646	278	279	317			
Starvation Cap Reductn	257	758			0	0	0	0	0			
Spillback Cap Reductn	0	0			1	0	171	172	0			
Storage Cap Reductn	0	0			0	0	0	0	0			
Reduced v/c Ratio	0.84	0.98			0.97	0.71	2.01	2.02	0.52			

Intersection Summary

Cycle Length: 180
Actuated Cycle Length: 180
Offset: 33 (18%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: I-75 NB Off-Ramp & CR 484



HCM 6th Signalized Intersection Summary
5: I-75 NB Off-Ramp & CR 484

Buildout Conditions
Timing Plan: AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	739	1668	0	0	1661	444	417	1	160	0	0	0
Future Volume (veh/h)	739	1668	0	0	1661	444	417	1	160	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1767	1767	0	0	1826	1826	1737	1737	1737			
Adj Flow Rate, veh/h	762	1720	0	0	1712	0	431	0	0			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	9	9	0	0	5	5	11	11	11			
Cap, veh/h	1139	2606	0	0	1931		494	0				
Arrive On Green	0.46	1.00	0.00	0.00	0.52	0.00	0.15	0.00	0.00			
Sat Flow, veh/h	3264	3445	0	0	5149	1547	3309	0	1472			
Grp Volume(v), veh/h	762	1720	0	0	1712	0	431	0	0			
Grp Sat Flow(s),veh/h/ln	1632	1678	0	0	1662	1547	1654	0	1472			
Q Serve(g_s), s	32.7	0.0	0.0	0.0	55.2	0.0	22.9	0.0	0.0			
Cycle Q Clear(g_c), s	32.7	0.0	0.0	0.0	55.2	0.0	22.9	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	1139	2606	0	0	1931		494	0				
V/C Ratio(X)	0.67	0.66	0.00	0.00	0.89		0.87	0.00				
Avail Cap(c_a), veh/h	1139	2606	0	0	1931		597	0				
HCM Platoon Ratio	1.33	1.33	1.00	1.00	1.33	1.33	1.00	1.00	1.00			
Upstream Filter(I)	0.52	0.52	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	40.2	0.0	0.0	0.0	40.1	0.0	74.9	0.0	0.0			
Incr Delay (d2), s/veh	1.6	0.7	0.0	0.0	6.5	0.0	14.1	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	12.5	0.3	0.0	0.0	21.6	0.0	10.7	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.8	0.7	0.0	0.0	46.5	0.0	89.0	0.0	0.0			
LnGrp LOS	D	A	A	A	D		F	A				
Approach Vol, veh/h		2482			1712	A		431	A			
Approach Delay, s/veh		13.3			46.5			89.0				
Approach LOS		B			D			F				

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	70.0	76.6		33.4		146.6
Change Period (Y+Rc), s	* 7.2	6.9		6.5		6.9
Max Green Setting (Gmax), s	* 63	64.1		32.5		134.1
Max Q Clear Time (g_c+I1), s	34.7	57.2		24.9		2.0
Green Ext Time (p_c), s	4.8	5.9		1.9		41.6

Intersection Summary	
HCM 6th Ctrl Delay	32.7
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
6: CR 475A & CR 484

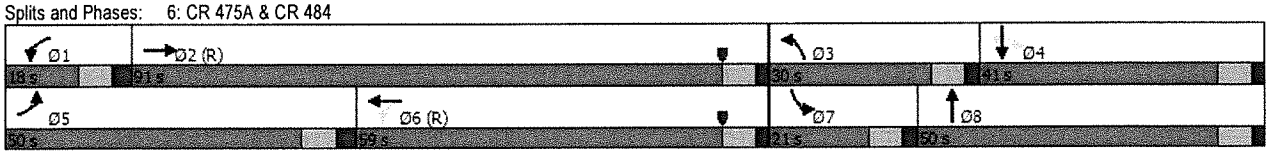
Buildout Conditions
Timing Plan: AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Factor	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Heavy Vehicles (%)	8%	8%	8%	7%	7%	7%	4%	4%	4%	5%	5%	5%
Adj. Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Turn Type	Prot			pm+pt			Prot			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases				6						4		4
Detector Phase	5	2		1	6		3	8		7	4	4
Switch Phase												
Minimum Initial (s)	6.0	15.0		6.0	15.0		6.0	10.0		6.0	10.0	10.0
Minimum Split (s)	13.8	21.9		13.6	21.9		13.1	16.9		13.0	16.9	16.9
Total Split (s)	50.0	91.0		18.0	59.0		30.0	50.0		21.0	41.0	41.0
Total Split (%)	27.8%	50.6%		10.0%	32.8%		16.7%	27.8%		11.7%	22.8%	22.8%
Yellow Time (s)	4.9	4.9		4.8	4.9		4.9	4.9		4.9	4.9	4.9
All-Red Time (s)	2.9	2.0		2.8	2.0		2.2	2.0		2.1	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	7.8	6.9		7.6	6.9		7.1	6.9		7.0	6.9	6.9
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	None
v/c Ratio												
Control Delay												
Queue Delay												
Total Delay												
Queue Length 50th (ft)												
Queue Length 95th (ft)												
Internal Link Dist (ft)		1171			10343			554			865	
Turn Bay Length (ft)												
Base Capacity (vph)												
Starvation Cap Reductn												
Spillback Cap Reductn												
Storage Cap Reductn												
Reduced v/c Ratio												

Intersection Summary

Cycle Length: 180
Actuated Cycle Length: 180
Offset: 10 (6%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 6: CR 475A & CR 484



HCM 6th Signalized Intersection Summary
6: CR 475A & CR 484

Buildout Conditions
Timing Plan: AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	0	0	0	0	0	0	0	0
Future Volume (veh/h)	0	0	0	0	0	0	0	0	0	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1781	1781	1781	1796	1796	1796	1841	1841	1841	1826	1826	1826
Adj Flow Rate, veh/h	0	0	-20	0	0	-4	0	0	-16	0	0	-232
Peak Hour Factor	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Percent Heavy Veh, %	8	8	8	7	7	7	4	4	4	5	5	5
Cap, veh/h	2	1627	705	1350	1641	441	2	0	374	41	1	1
Arrive On Green	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	3291	3474	0	1711	3503	0	3401	1841	0	1739	1826	1547
Grp Volume(v), veh/h	0	-20	-20	0	-4	-4	0	-16	-16	0	0	-232
Grp Sat Flow(s),veh/h/ln	1646	1692	1510	1711	1706	1522	1700	1841	1560	1739	1826	1547
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	2	1627	0	1350	1641	0	2	0	0	41	1	1
V/C Ratio(X)	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-269.85
Avail Cap(c_a), veh/h	772	1627	0	1448	1641	0	433	0	0	175	346	293
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		-40			-8			-32			-232	
Approach Delay, s/veh		0.0			0.0			0.0			0.0	
Approach LOS		A			A			A			A	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	0.0	180.0	0.0	0.0	0.0	180.0	0.0	0.0
Change Period (Y+Rc), s	* 7.6	6.9	* 7.1	6.9	7.8	6.9	7.0	6.9
Max Green Setting (Gmax), s	* 10	84.1	* 23	34.1	42.2	52.1	14.0	43.1
Max Q Clear Time (g_c+I1), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	0.0
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
8: SW 29th Ave Rd & Marion Oaks Trail

Buildout Conditions
Timing Plan: AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	83	122	39	14	0	37	7	187	0	13	2
Future Volume (vph)	1	83	122	39	14	0	37	7	187	0	13	2
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	6%	6%	6%	0%	0%	0%	1%	1%	1%	7%	7%	7%
Adj. Flow (vph)	1	99	145	46	17	0	44	8	223	0	15	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	245	0	0	63	0	44	231	0	0	17	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	6.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↰	↱			↕	
Traffic Vol, veh/h	1	83	122	39	14	0	37	7	187	0	13	2
Future Vol, veh/h	1	83	122	39	14	0	37	7	187	0	13	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	6	6	6	0	0	0	1	1	1	7	7	7
Mvmt Flow	1	99	145	46	17	0	44	8	223	0	15	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	232	335	16	346	225	120	17	0	0	231	0	0
Stage 1	16	16	-	208	208	-	-	-	-	-	-	-
Stage 2	216	319	-	138	17	-	-	-	-	-	-	-
Critical Hdwy	7.16	6.56	6.26	7.1	6.5	6.2	4.11	-	-	4.17	-	-
Critical Hdwy Stg 1	6.16	5.56	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.16	5.56	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.554	4.054	3.354	3.5	4	3.3	2.209	-	-	2.263	-	-
Pot Cap-1 Maneuver	714	579	1052	612	678	937	1607	-	-	1308	-	-
Stage 1	993	874	-	799	734	-	-	-	-	-	-	-
Stage 2	777	646	-	870	885	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	685	563	1052	447	660	937	1607	-	-	1308	-	-
Mov Cap-2 Maneuver	685	563	-	447	660	-	-	-	-	-	-	-
Stage 1	966	874	-	777	714	-	-	-	-	-	-	-
Stage 2	738	629	-	665	885	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.7	13.5	1.2	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1607	-	-	778	489	1308	-	-
HCM Lane V/C Ratio	0.027	-	-	0.315	0.129	-	-	-
HCM Control Delay (s)	7.3	-	-	11.7	13.5	0	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.4	0.4	0	-	-

F5: AM Peak Hour Future Year Buildout w/ Improvements Traffic Conditions (2027)

Lanes, Volumes, Timings
3: SW 20th Ave Rd & CR 484

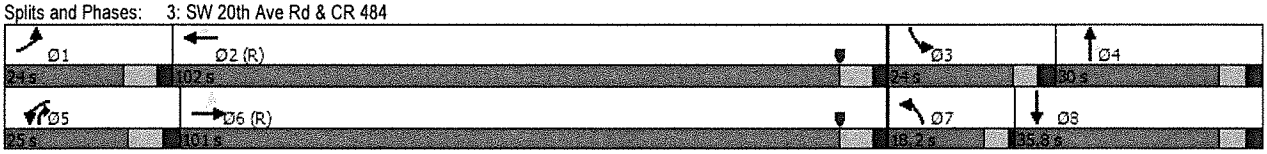
Buildout Conditions w/ Improvements
Timing Plan: AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	122	2240	42	259	1684	459	58	15	249	242	30	27
Future Volume (vph)	122	2240	42	259	1684	459	58	15	249	242	30	27
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	11%	11%	11%	18%	18%	18%
Adj. Flow (vph)	127	2333	44	270	1754	478	60	16	259	252	31	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	127	2377	0	270	1754	478	60	16	259	252	59	0
Turn Type	pm+pt	NA		Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	
Protected Phases	1	6		5	2		7	4	5	3	8	
Permitted Phases	6					2			4			
Detector Phase	1	6		5	2	2	7	4	5	3	8	
Switch Phase												
Minimum Initial (s)	5.0	15.0		10.0	15.0	15.0	5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	12.0	21.9		17.3	21.9	21.9	9.5	16.6	17.3	11.1	16.6	
Total Split (s)	24.0	101.0		25.0	102.0	102.0	18.2	30.0	25.0	24.0	35.8	
Total Split (%)	13.3%	56.1%		13.9%	56.7%	56.7%	10.1%	16.7%	13.9%	13.3%	19.9%	
Yellow Time (s)	4.8	4.9		4.8	4.9	4.9	3.5	4.0	4.8	3.5	4.0	
All-Red Time (s)	2.2	2.0		2.5	2.0	2.0	1.0	2.6	2.5	2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.0	6.9		7.3	6.9	6.9	4.5	6.6	7.3	6.1	6.6	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Min		None	C-Min	C-Min	None	None	None	None	None	
v/c Ratio	0.57	0.85		0.57	0.55	0.45	0.59	0.17	0.78	0.76	0.44	
Control Delay	25.3	36.4		87.7	26.8	15.6	104.4	85.4	69.8	92.3	61.0	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	25.3	36.4		87.7	26.8	15.6	104.4	85.4	69.8	92.3	61.0	
Queue Length 50th (ft)	40	842		168	759	176	70	18	234	153	41	
Queue Length 95th (ft)	92	1009		215	808	294	125	48	327	#232	96	
Internal Link Dist (ft)		3132			1240			650			1393	
Turn Bay Length (ft)	114			170		144	144			114		
Base Capacity (vph)	271	2810		475	3203	1071	123	222	330	332	261	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.47	0.85		0.57	0.55	0.45	0.49	0.07	0.78	0.76	0.23	

Intersection Summary

Cycle Length: 180
Actuated Cycle Length: 180
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow
Natural Cycle: 110
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: SW 20th Ave Rd & CR 484



HCM 6th Signalized Intersection Summary
3: SW 20th Ave Rd & CR 484

Buildout Conditions w/ Improvements
Timing Plan: AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	122	2240	42	259	1684	459	58	15	249	242	30	27
Future Volume (veh/h)	122	2240	42	259	1684	459	58	15	249	242	30	27
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1811	1811	1811	1811	1811	1737	1737	1737	1633	1633	1633
Adj Flow Rate, veh/h	127	2333	44	270	1754	478	60	16	181	252	31	28
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	6	6	6	6	6	6	11	11	11	18	18	18
Cap, veh/h	236	2714	51	305	2922	907	74	212	314	284	142	129
Arrive On Green	0.06	0.72	0.72	0.12	0.79	0.79	0.04	0.12	0.12	0.09	0.18	0.18
Sat Flow, veh/h	1725	4996	94	3346	4944	1535	1654	1737	1472	3018	791	714
Grp Volume(v), veh/h	127	1537	840	270	1754	478	60	16	181	252	0	59
Grp Sat Flow(s),veh/h/ln	1725	1648	1794	1673	1648	1535	1654	1737	1472	1509	0	1505
Q Serve(g_s), s	6.0	61.4	62.0	14.3	25.9	20.5	6.5	1.5	19.9	14.9	0.0	6.0
Cycle Q Clear(g_c), s	6.0	61.4	62.0	14.3	25.9	20.5	6.5	1.5	19.9	14.9	0.0	6.0
Prop In Lane	1.00		0.05	1.00		1.00	1.00		1.00	1.00		0.47
Lane Grp Cap(c), veh/h	236	1790	974	305	2922	907	74	212	314	284	0	271
V/C Ratio(X)	0.54	0.86	0.86	0.88	0.60	0.53	0.81	0.08	0.58	0.89	0.00	0.22
Avail Cap(c_a), veh/h	321	1790	974	329	2922	907	126	226	326	300	0	271
HCM Platoon Ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.30	0.30	0.30	0.77	0.77	0.77	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.8	19.9	20.0	78.1	10.6	10.1	85.2	70.0	63.5	80.6	0.0	63.0
Incr Delay (d2), s/veh	0.6	1.8	3.3	18.4	0.7	1.7	18.1	0.1	2.3	24.9	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	19.0	21.3	6.7	6.8	6.0	3.2	0.7	7.7	6.8	0.0	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.3	21.7	23.3	96.5	11.4	11.8	103.3	70.2	65.9	105.5	0.0	63.4
LnGrp LOS	B	C	C	F	B	B	F	E	E	F	A	E
Approach Vol, veh/h		2504			2502			257			311	
Approach Delay, s/veh		22.1			20.6			74.9			97.5	
Approach LOS		C			C			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.1	113.3	23.1	28.6	23.7	104.7	12.6	39.0
Change Period (Y+Rc), s	* 7	6.9	6.1	6.6	7.3	6.9	4.5	6.6
Max Green Setting (Gmax), s	* 17	95.1	17.9	23.4	17.7	94.1	13.7	29.2
Max Q Clear Time (g_c+I1), s	8.0	27.9	16.9	21.9	16.3	64.0	8.5	8.0
Green Ext Time (p_c), s	0.2	26.1	0.1	0.1	0.1	21.3	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	28.1
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

F6: PM Peak Hour Existing Traffic Conditions (2022)

Lanes, Volumes, Timings
1: Marion Oaks Blvd & CR 484

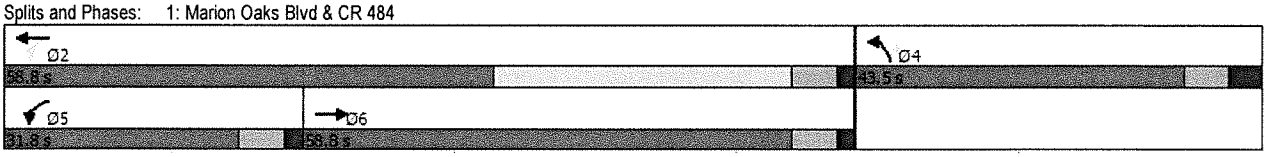
Existing Conditions
Timing Plan: PM Peak Hour

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	633	186	507	829	123	390
Future Volume (vph)	633	186	507	829	123	390
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	5%	5%	3%	3%	4%	4%
Adj. Flow (vph)	659	194	528	864	128	406
Shared Lane Traffic (%)						
Lane Group Flow (vph)	853	0	528	864	128	406
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	6		5	2	4	
Permitted Phases			2			4
Detector Phase	6		5	2	4	4
Switch Phase						
Minimum Initial (s)	15.0		10.0	15.0	10.0	10.0
Minimum Split (s)	21.8		16.8	21.8	18.5	18.5
Total Split (s)	58.8		31.8	58.8	43.5	43.5
Total Split (%)	43.8%		23.7%	43.8%	32.4%	32.4%
Yellow Time (s)	4.8		4.8	4.8	4.8	4.8
All-Red Time (s)	2.0		2.0	2.0	3.7	3.7
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.8		6.8	6.8	8.5	8.5
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	Min		None	Min	None	None
v/c Ratio	0.78		0.88	0.36	0.51	0.71
Control Delay	31.9		38.0	6.7	44.2	11.5
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	31.9		38.0	6.7	44.2	11.5
Queue Length 50th (ft)	214		204	90	67	0
Queue Length 95th (ft)	313		#493	151	136	89
Internal Link Dist (ft)	1332			3183	1673	
Turn Bay Length (ft)			360			
Base Capacity (vph)	1962		602	3249	685	859
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.43		0.88	0.27	0.19	0.47

Intersection Summary

Cycle Length: 134.1
Actuated Cycle Length: 89.6
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Marion Oaks Blvd & CR 484



HCM 6th Signalized Intersection Summary
1: Marion Oaks Blvd & CR 484

Existing Conditions
Timing Plan: PM Peak Hour

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	633	186	507	829	123	390
Future Volume (veh/h)	633	186	507	829	123	390
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1826	1826	1856	1856	1841	1841
Adj Flow Rate, veh/h	659	0	528	864	128	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	5	5	3	3	4	4
Cap, veh/h	945		623	2197	245	
Arrive On Green	0.27	0.00	0.24	0.62	0.14	0.00
Sat Flow, veh/h	3652	0	1767	3618	1753	1560
Grp Volume(v), veh/h	659	0	528	864	128	0
Grp Sat Flow(s),veh/h/ln	1735	0	1767	1763	1753	1560
Q Serve(g_s), s	11.0	0.0	12.4	7.9	4.4	0.0
Cycle Q Clear(g_c), s	11.0	0.0	12.4	7.9	4.4	0.0
Prop In Lane		0.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	945		623	2197	245	
V/C Ratio(X)	0.70		0.85	0.39	0.52	
Avail Cap(c_a), veh/h	2800		876	2845	952	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	21.0	0.0	11.8	6.1	25.7	0.0
Incr Delay (d2), s/veh	0.9	0.0	5.6	0.1	1.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	0.0	4.9	2.2	1.8	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	22.0	0.0	17.4	6.2	27.5	0.0
LnGrp LOS	C		B	A	C	
Approach Vol, veh/h	659	A		1392	128	A
Approach Delay, s/veh	22.0			10.5	27.5	
Approach LOS	C			B	C	

Timer - Assigned Phs	2		4	5	6
Phs Duration (G+Y+Rc), s	46.9		17.5	22.6	24.4
Change Period (Y+Rc), s	6.8		* 8.5	6.8	6.8
Max Green Setting (Gmax), s	52.0		* 35	25.0	52.0
Max Q Clear Time (g_c+I1), s	9.9		6.4	14.4	13.0
Green Ext Time (p_c), s	7.5		0.3	1.4	4.6

Intersection Summary	
HCM 6th Ctrl Delay	14.9
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
2: CR 484 & SW 29th Ave Rd

Existing Conditions
Timing Plan: PM Peak Hour

Lane Group	EBU	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations								
Traffic Volume (vph)	1	25	991	2	867	50	42	19
Future Volume (vph)	1	25	991	2	867	50	42	19
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	7%	7%	7%	4%	4%	4%	7%	7%
Adj. Flow (vph)	1	26	1032	2	903	52	44	20
Shared Lane Traffic (%)								
Lane Group Flow (vph)	0	27	1032	0	957	0	64	0
Sign Control			Free		Free		Stop	

Intersection Summary

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	0.8

Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations								
Traffic Vol, veh/h	1	25	991	2	867	50	42	19
Future Vol, veh/h	1	25	991	2	867	50	42	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	None
Storage Length	-	144	-	-	-	-	0	-
Veh in Median Storage, #	-	-	0	-	0	-	1	-
Grade, %	-	-	0	-	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96
Heavy Vehicles, %	7	7	7	4	4	4	7	7
Mvmt Flow	1	26	1032	2	903	52	44	20

Major/Minor	Major1			Major2			Minor2	
Conflicting Flow All	955	955	0	1032	-	0	1503	478
Stage 1	-	-	-	-	-	-	933	-
Stage 2	-	-	-	-	-	-	570	-
Critical Hdwy	6.54	4.24	-	6.48	-	-	6.94	7.04
Critical Hdwy Stg 1	-	-	-	-	-	-	5.94	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.94	-
Follow-up Hdwy	2.57	2.27	-	2.54	-	-	3.57	3.37
Pot Cap-1 Maneuver	341	686	-	311	-	-	107	520
Stage 1	-	-	-	-	-	-	332	-
Stage 2	-	-	-	-	-	-	515	-
Platoon blocked, %			-		-	-		
Mov Cap-1 Maneuver	659	659	-	311	-	-	101	520
Mov Cap-2 Maneuver	-	-	-	-	-	-	221	-
Stage 1	-	-	-	-	-	-	318	-
Stage 2	-	-	-	-	-	-	508	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	22.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	659	-	-	-	269
HCM Lane V/C Ratio	0.041	-	-	-	0.236
HCM Control Delay (s)	10.7	-	-	-	22.5
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.9

Lanes, Volumes, Timings
3: SW 20th Ave Rd & CR 484

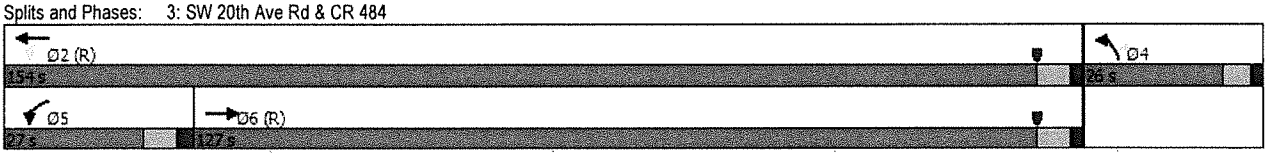
Existing Conditions
Timing Plan: PM Peak Hour

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1023	48	97	1588	32	83
Future Volume (vph)	1023	48	97	1588	32	83
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	6%	6%	3%	3%	30%	30%
Adj. Flow (vph)	1100	52	104	1708	34	89
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1152	0	104	1708	34	89
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	6		5	2	4	
Permitted Phases			2			4
Detector Phase	6		5	2	4	4
Switch Phase						
Minimum Initial (s)	15.0		10.0	15.0	10.0	10.0
Minimum Split (s)	21.9		17.3	21.9	16.0	16.0
Total Split (s)	127.0		27.0	154.0	26.0	26.0
Total Split (%)	70.6%		15.0%	85.6%	14.4%	14.4%
Yellow Time (s)	4.9		4.8	4.9	4.0	4.0
All-Red Time (s)	2.0		2.5	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.9		7.3	6.9	6.0	6.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	C-Min		None	C-Min	None	None
v/c Ratio	0.45		0.26	0.57	0.36	0.53
Control Delay	8.3		3.6	7.5	90.1	25.1
Queue Delay	0.0		0.0	0.2	0.0	0.0
Total Delay	8.3		3.6	7.7	90.1	25.1
Queue Length 50th (ft)	227		11	538	39	0
Queue Length 95th (ft)	294		m40	615	80	62
Internal Link Dist (ft)	3132			1240	650	
Turn Bay Length (ft)			170			220
Base Capacity (vph)	2586		480	3015	154	217
Starvation Cap Reductn	0		0	469	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.45		0.22	0.67	0.22	0.41

Intersection Summary

Cycle Length: 180
Actuated Cycle Length: 180
Offset: 83 (46%), Referenced to phase 2:WBTL and 6:EBT, Start of Yellow
Natural Cycle: 65
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: SW 20th Ave Rd & CR 484



HCM 6th Signalized Intersection Summary
3: SW 20th Ave Rd & CR 484

Existing Conditions
Timing Plan: PM Peak Hour

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1023	48	97	1588	32	83
Future Volume (veh/h)	1023	48	97	1588	32	83
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1811	1811	1856	1856	1455	1455
Adj Flow Rate, veh/h	1100	50	104	1708	34	37
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	6	6	3	3	30	30
Cap, veh/h	2610	119	463	3083	75	67
Arrive On Green	0.78	0.78	0.11	1.00	0.05	0.05
Sat Flow, veh/h	3442	152	1767	3618	1386	1233
Grp Volume(v), veh/h	564	586	104	1708	34	37
Grp Sat Flow(s),veh/h/ln	1721	1784	1767	1763	1386	1233
Q Serve(g_s), s	19.5	19.5	1.8	0.0	4.3	5.3
Cycle Q Clear(g_c), s	19.5	19.5	1.8	0.0	4.3	5.3
Prop In Lane		0.09	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1340	1389	463	3083	75	67
V/C Ratio(X)	0.42	0.42	0.22	0.55	0.45	0.56
Avail Cap(c_a), veh/h	1340	1389	559	3083	154	137
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.50	0.50	1.00	1.00
Uniform Delay (d), s/veh	6.6	6.6	3.7	0.0	82.6	83.0
Incr Delay (d2), s/veh	1.0	0.9	0.2	0.4	9.0	14.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	6.9	0.5	0.2	1.7	3.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	7.5	7.5	3.9	0.4	91.5	97.6
LnGrp LOS	A	A	A	A	F	F
Approach Vol, veh/h	1150			1812	71	
Approach Delay, s/veh	7.5			0.6	94.7	
Approach LOS	A			A	F	

Timer - Assigned Phs	2	4	5	6
Phs Duration (G+Y+Rc), s	164.3	15.7	17.2	147.0
Change Period (Y+Rc), s	6.9	6.0	7.3	6.9
Max Green Setting (Gmax), s	147.1	20.0	19.7	120.1
Max Q Clear Time (g_c+I1), s	2.0	7.3	3.8	21.5
Green Ext Time (p_c), s	41.1	0.3	0.3	23.4

Intersection Summary	
HCM 6th Ctrl Delay	5.4
HCM 6th LOS	A

Notes

User approved ignoring U-Turning movement.

Lanes, Volumes, Timings
4: CR 484 & I-75 SB Off-Ramp

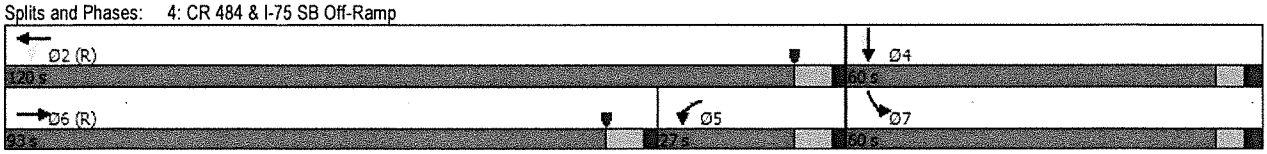
Existing Conditions
Timing Plan: PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	946	231	120	1256	0	0	0	0	328	0	518
Future Volume (vph)	0	946	231	120	1256	0	0	0	0	328	0	518
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	8%	8%	8%	5%	5%	5%	2%	2%	2%	6%	6%	6%
Adj. Flow (vph)	0	1028	251	130	1365	0	0	0	0	357	0	563
Shared Lane Traffic (%)										50%		
Lane Group Flow (vph)	0	1279	0	130	1365	0	0	0	0	178	179	563
Turn Type		NA		pm+pt	NA					Prot	NA	Perm
Protected Phases		6		5	2					7	4	
Permitted Phases				2								4
Detector Phase		6		5	2					7	4	4
Switch Phase												
Minimum Initial (s)		18.0		7.0	18.0					7.0	7.0	7.0
Minimum Split (s)		25.4		14.4	25.4					14.0	14.0	14.0
Total Split (s)		93.0		27.0	120.0					60.0	60.0	60.0
Total Split (%)		51.7%		15.0%	66.7%					33.3%	33.3%	33.3%
Yellow Time (s)		5.4		5.4	5.4					4.1	4.1	4.1
All-Red Time (s)		2.0		2.0	2.0					2.9	2.9	2.9
Lost Time Adjust (s)		0.0		0.0	0.0					0.0	0.0	0.0
Total Lost Time (s)		7.4		7.4	7.4					7.0	7.0	7.0
Lead/Lag		Lead		Lag								
Lead-Lag Optimize?		Yes		Yes								
Recall Mode		C-Min		Min	C-Min					None	None	None
v/c Ratio		0.76		0.49	0.79					0.27	0.27	0.84
Control Delay		48.3		37.9	27.6					38.7	38.7	52.8
Queue Delay		0.0		0.0	0.1					0.0	0.0	0.0
Total Delay		48.3		37.9	27.7					38.7	38.7	52.8
Queue Length 50th (ft)		485		57	323					142	142	519
Queue Length 95th (ft)		528		m100	235					258	260	#954
Internal Link Dist (ft)		1240			424			1185			1125	
Turn Bay Length (ft)										325		475
Base Capacity (vph)		2240		298	2150					670	670	673
Starvation Cap Reductn		0		0	122					0	0	0
Spillback Cap Reductn		0		0	0					0	0	0
Storage Cap Reductn		0		0	0					0	0	0
Reduced v/c Ratio		0.57		0.44	0.67					0.27	0.27	0.84

Intersection Summary

Cycle Length: 180
Actuated Cycle Length: 180
Offset: 58 (32%), Referenced to phase 2:WBTL and 6:EBT, Start of Yellow
Natural Cycle: 75
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: CR 484 & I-75 SB Off-Ramp



HCM 6th Signalized Intersection Summary
4: CR 484 & I-75 SB Off-Ramp

Existing Conditions
Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	946	231	120	1256	0	0	0	0	328	0	518
Future Volume (veh/h)	0	946	231	120	1256	0	0	0	0	328	0	518
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1781	1781	1826	1826	0				1811	1811	1811
Adj Flow Rate, veh/h	0	1028	0	130	1365	0				357	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	8	8	5	5	0				6	6	6
Cap, veh/h	0	1227		946	2776	0				413	0	
Arrive On Green	0.00	0.34	0.00	1.00	1.00	0.00				0.12	0.00	0.00
Sat Flow, veh/h	0	5184	0	1739	3561	0				3450	0	1535
Grp Volume(v), veh/h	0	1028	0	130	1365	0				357	0	0
Grp Sat Flow(s),veh/h/ln	0	1621	0	1739	1735	0				1725	0	1535
Q Serve(g_s), s	0.0	35.2	0.0	0.0	0.0	0.0				18.3	0.0	0.0
Cycle Q Clear(g_c), s	0.0	35.2	0.0	0.0	0.0	0.0				18.3	0.0	0.0
Prop In Lane	0.00		0.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1227		946	2776	0				413	0	
V/C Ratio(X)	0.00	0.84		0.14	0.49	0.00				0.86	0.00	
Avail Cap(c_a), veh/h	0	2313		946	2776	0				1016	0	
HCM Platoon Ratio	1.00	1.33	1.33	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.89	0.00	0.53	0.53	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	56.4	0.0	0.0	0.0	0.0				77.8	0.0	0.0
Incr Delay (d2), s/veh	0.0	6.2	0.0	0.0	0.3	0.0				5.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	14.3	0.0	0.0	0.1	0.0				8.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	62.6	0.0	0.0	0.3	0.0				83.2	0.0	0.0
LnGrp LOS	A	E		A	A	A				F	A	
Approach Vol, veh/h		1028	A		1495						357	A
Approach Delay, s/veh		62.6			0.3						83.2	
Approach LOS		E			A						F	

Timer - Assigned Phs	2	4	5	6
Phs Duration (G+Y+Rc), s	151.4	28.6	98.6	52.8
Change Period (Y+Rc), s	7.4	7.0	7.4	7.4
Max Green Setting (Gmax), s	112.6	53.0	19.6	85.6
Max Q Clear Time (g_c+I1), s	2.0	20.3	2.0	37.2
Green Ext Time (p_c), s	14.0	1.3	0.5	8.3

Intersection Summary	
HCM 6th Ctrl Delay	32.8
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.
Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
5: I-75 NB Off-Ramp & CR 484

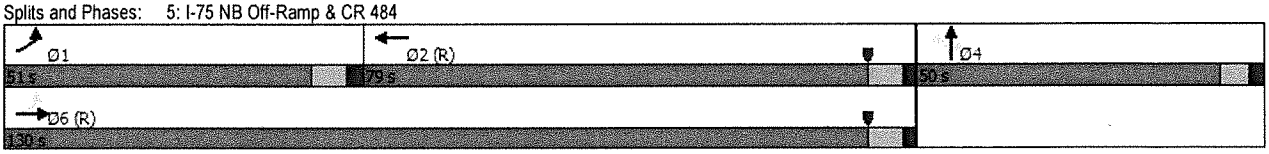
Existing Conditions
Timing Plan: PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	273	999	0	0	1001	246	355	0	233	0	0	0
Future Volume (vph)	273	999	0	0	1001	246	355	0	233	0	0	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	7%	7%	7%	5%	5%	5%	9%	9%	9%	2%	2%	2%
Adj. Flow (vph)	284	1041	0	0	1043	256	370	0	243	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	284	1041	0	0	1299	0	0	370	243	0	0	0
Turn Type	pm+pt	NA			NA		Perm	NA	Perm			
Protected Phases	1	6			2			4				
Permitted Phases	6						4		4			
Detector Phase	1	6			2		4	4	4			
Switch Phase												
Minimum Initial (s)	7.0	20.0			20.0		7.0	7.0	7.0			
Minimum Split (s)	14.2	26.9			26.9		13.5	13.5	13.5			
Total Split (s)	51.0	130.0			79.0		50.0	50.0	50.0			
Total Split (%)	28.3%	72.2%			43.9%		27.8%	27.8%	27.8%			
Yellow Time (s)	4.9	4.9			4.9		4.1	4.1	4.1			
All-Red Time (s)	2.3	2.0			2.0		2.4	2.4	2.4			
Lost Time Adjust (s)	0.0	0.0			0.0			0.0	0.0			
Total Lost Time (s)	7.2	6.9			6.9			6.5	6.5			
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Recall Mode	Max	C-Min			C-Min		None	None	None			
v/c Ratio	0.53	0.46			0.78			0.86	0.49			
Control Delay	58.2	9.3			51.5			83.2	24.9			
Queue Delay	0.8	0.3			0.0			0.0	0.0			
Total Delay	59.0	9.6			51.5			83.2	24.9			
Queue Length 50th (ft)	202	168			477			405	90			
Queue Length 95th (ft)	347	176			566			#623	193			
Internal Link Dist (ft)		424			1171			1111			1102	
Turn Bay Length (ft)									320			
Base Capacity (vph)	532	2322			1942			435	498			
Starvation Cap Reductn	76	568			0			0	0			
Spillback Cap Reductn	0	0			0			0	0			
Storage Cap Reductn	0	0			0			0	0			
Reduced v/c Ratio	0.62	0.59			0.67			0.85	0.49			

Intersection Summary

Cycle Length: 180
Actuated Cycle Length: 180
Offset: 65 (36%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow
Natural Cycle: 70
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: I-75 NB Off-Ramp & CR 484



HCM 6th Signalized Intersection Summary
5: I-75 NB Off-Ramp & CR 484

Existing Conditions
Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	273	999	0	0	1001	246	355	0	233	0	0	0
Future Volume (veh/h)	273	999	0	0	1001	246	355	0	233	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1796	1796	0	0	1826	1826	1767	1767	1767			
Adj Flow Rate, veh/h	284	1041	0	0	1043	0	370	0	0			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96			
Percent Heavy Veh, %	7	7	0	0	5	5	9	9	9			
Cap, veh/h	636	2366	0	0	2043		391	0				
Arrive On Green	0.49	1.00	0.00	0.00	0.82	0.00	0.23	0.00	0.00			
Sat Flow, veh/h	1711	3503	0	0	5313	0	1682	0	1497			
Grp Volume(v), veh/h	284	1041	0	0	1043	0	370	0	0			
Grp Sat Flow(s),veh/h/ln	1711	1706	0	0	1662	0	1682	0	1497			
Q Serve(g_s), s	10.2	0.0	0.0	0.0	11.7	0.0	39.0	0.0	0.0			
Cycle Q Clear(g_c), s	10.2	0.0	0.0	0.0	11.7	0.0	39.0	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		0.00	1.00		1.00			
Lane Grp Cap(c), veh/h	636	2366	0	0	2043		391	0				
V/C Ratio(X)	0.45	0.44	0.00	0.00	0.51		0.95	0.00				
Avail Cap(c_a), veh/h	636	2366	0	0	2043		407	0				
HCM Platoon Ratio	2.00	2.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00			
Upstream Filter(I)	0.65	0.65	0.00	0.00	0.86	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	8.6	0.0	0.0	0.0	10.6	0.0	68.0	0.0	0.0			
Incr Delay (d2), s/veh	1.5	0.4	0.0	0.0	0.8	0.0	31.8	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	3.1	0.1	0.0	0.0	3.1	0.0	20.2	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.1	0.4	0.0	0.0	11.4	0.0	99.8	0.0	0.0			
LnGrp LOS	B	A	A	A	B		F	A				
Approach Vol, veh/h		1325			1043	A		370	A			
Approach Delay, s/veh		2.5			11.4			99.8				
Approach LOS		A			B			F				

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	51.0	80.7		48.3		131.7						
Change Period (Y+Rc), s	* 7.2	6.9		6.5		6.9						
Max Green Setting (Gmax), s	* 44	72.1		43.5		123.1						
Max Q Clear Time (g_c+I1), s	12.2	13.7		41.0		2.0						
Green Ext Time (p_c), s	1.4	13.0		0.9		14.1						

Intersection Summary	
HCM 6th Ctrl Delay	19.0
HCM 6th LOS	B

Notes

User approved ignoring U-Turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
6: CR 475A & CR 484

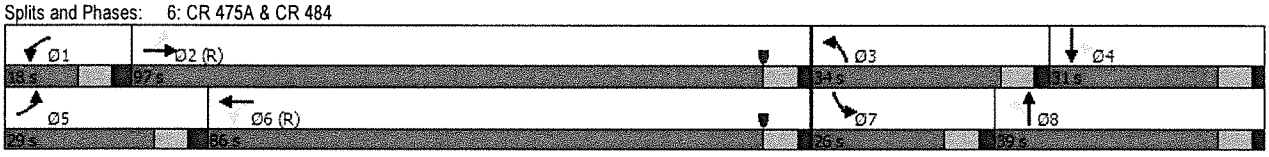
Existing Conditions
Timing Plan: PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	200	782	159	10	696	23	205	42	8	69	36	197
Future Volume (vph)	200	782	159	10	696	23	205	42	8	69	36	197
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	9%	9%	9%	7%	7%	7%	4%	4%	4%	5%	5%	5%
Adj. Flow (vph)	202	790	161	10	703	23	207	42	8	70	36	199
Shared Lane Traffic (%)												
Lane Group Flow (vph)	202	951	0	10	726	0	207	50	0	70	235	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	6.0	15.0		6.0	15.0		6.0	10.0		6.0	10.0	
Minimum Split (s)	13.8	21.9		13.6	21.9		13.1	16.9		13.2	16.9	
Total Split (s)	29.0	97.0		18.0	86.0		34.0	39.0		26.0	31.0	
Total Split (%)	16.1%	53.9%		10.0%	47.8%		18.9%	21.7%		14.4%	17.2%	
Yellow Time (s)	4.9	4.9		4.8	4.9		4.9	4.9		4.9	4.9	
All-Red Time (s)	2.9	2.0		2.8	2.0		2.2	2.0		2.1	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.8	6.9		7.6	6.9		7.1	6.9		7.0	6.9	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	
v/c Ratio	0.49	0.47		0.03	0.41		0.81	0.17		0.25	0.84	
Control Delay	28.0	29.2		16.4	29.2		78.4	55.1		49.9	59.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	28.0	29.2		16.4	29.2		78.4	55.1		49.9	59.4	
Queue Length 50th (ft)	126	322		4	263		206	46		64	129	
Queue Length 95th (ft)	158	313		16	413		258	82		97	226	
Internal Link Dist (ft)		1171			10343			554			865	
Turn Bay Length (ft)	295			360			270			265		
Base Capacity (vph)	458	2018		348	1790		293	353		336	330	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.44	0.47		0.03	0.41		0.71	0.14		0.21	0.71	

Intersection Summary

Cycle Length: 180
Actual Cycle Length: 180
Offset: 58 (32%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 6: CR 475A & CR 484



HCM 6th Signalized Intersection Summary
6: CR 475A & CR 484

Existing Conditions
Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	200	782	159	10	696	23	205	42	8	69	36	197
Future Volume (veh/h)	200	782	159	10	696	23	205	42	8	69	36	197
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1767	1767	1767	1796	1796	1796	1841	1841	1841	1826	1826	1826
Adj Flow Rate, veh/h	202	790	147	10	703	22	207	42	7	70	36	130
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	9	9	9	7	7	7	4	4	4	5	5	5
Cap, veh/h	446	1692	315	374	1833	57	256	284	47	271	40	144
Arrive On Green	0.14	1.00	1.00	0.01	0.54	0.54	0.11	0.18	0.18	0.05	0.12	0.12
Sat Flow, veh/h	1682	2825	526	1711	3378	106	1753	1538	256	1739	347	1253
Grp Volume(v), veh/h	202	469	468	10	355	370	207	0	49	70	0	166
Grp Sat Flow(s),veh/h/ln	1682	1678	1672	1711	1706	1777	1753	0	1795	1739	0	1600
Q Serve(g_s), s	10.0	0.0	0.0	0.5	21.6	21.7	18.3	0.0	4.1	6.3	0.0	18.4
Cycle Q Clear(g_c), s	10.0	0.0	0.0	0.5	21.6	21.7	18.3	0.0	4.1	6.3	0.0	18.4
Prop In Lane	1.00		0.31	1.00		0.06	1.00		0.14	1.00		0.78
Lane Grp Cap(c), veh/h	446	1005	1002	374	926	964	256	0	331	271	0	184
V/C Ratio(X)	0.45	0.47	0.47	0.03	0.38	0.38	0.81	0.00	0.15	0.26	0.00	0.90
Avail Cap(c_a), veh/h	529	1005	1002	450	926	964	317	0	331	376	0	214
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.88	0.88	0.88	0.71	0.71	0.71	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.6	0.0	0.0	17.9	23.8	23.8	60.2	0.0	61.5	66.1	0.0	78.6
Incr Delay (d2), s/veh	0.6	1.4	1.4	0.0	0.9	0.8	11.9	0.0	0.2	0.5	0.0	33.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	0.4	0.4	0.2	8.9	9.2	9.1	0.0	1.9	2.9	0.0	9.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.3	1.4	1.4	17.9	24.6	24.6	72.1	0.0	61.7	66.6	0.0	111.8
LnGrp LOS	B	A	A	B	C	C	E	A	E	E	A	F
Approach Vol, veh/h		1139			735			256			236	
Approach Delay, s/veh		4.0			24.5			70.1			98.4	
Approach LOS		A			C			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	114.7	27.7	27.6	20.1	104.6	15.2	40.1
Change Period (Y+Rc), s	* 7.6	6.9	* 7.1	6.9	7.8	6.9	7.0	6.9
Max Green Setting (Gmax), s	* 10	90.1	* 27	24.1	21.2	79.1	19.0	32.1
Max Q Clear Time (g_c+I1), s	2.5	2.0	20.3	20.4	12.0	23.7	8.3	6.1
Green Ext Time (p_c), s	0.0	15.2	0.3	0.3	0.4	8.6	0.1	0.2

Intersection Summary	
HCM 6th Ctrl Delay	27.0
HCM 6th LOS	C

Notes

User approved ignoring U-Turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
7: CR 475 & CR 484

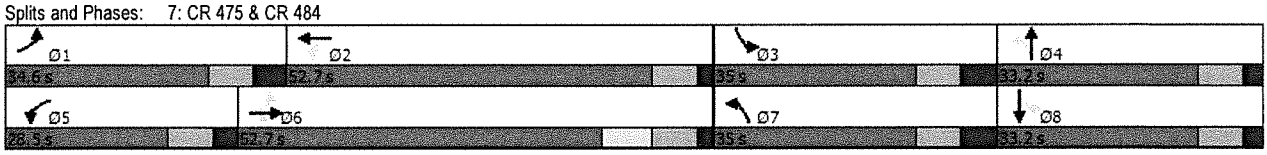
Existing Conditions
Timing Plan: PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	706	69	58	569	69	77	109	69	64	129	52
Future Volume (vph)	85	706	69	58	569	69	77	109	69	64	129	52
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	8%	8%	8%	6%	6%	6%	7%	7%	7%	2%	2%	2%
Adj. Flow (vph)	89	735	72	60	593	72	80	114	72	67	134	54
Shared Lane Traffic (%)												
Lane Group Flow (vph)	89	735	72	60	665	0	80	186	0	67	188	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6		6	2			4			8		
Detector Phase	1	6	6	5	2		7	4		3	8	
Switch Phase												
Minimum Initial (s)	8.0	17.0	17.0	8.0	17.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	17.6	24.7	24.7	16.5	24.7		18.0	16.2		18.0	16.2	
Total Split (s)	34.6	52.7	52.7	28.5	52.7		35.0	33.2		35.0	33.2	
Total Split (%)	22.3%	33.9%	33.9%	18.3%	33.9%		22.5%	21.4%		22.5%	21.4%	
Yellow Time (s)	5.5	5.7	5.7	5.5	5.7		5.5	5.5		5.5	5.5	
All-Red Time (s)	4.1	2.0	2.0	3.0	2.0		4.5	2.7		4.5	2.7	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	9.6	7.7	7.7	8.5	7.7		10.0	8.2		10.0	8.2	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Min	Min	None	Min		None	None		None	None	
v/c Ratio	0.30	0.62	0.11	0.19	0.70		0.26	0.60		0.21	0.60	
Control Delay	19.9	32.1	0.4	18.1	35.7		25.9	43.5		25.4	45.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	19.9	32.1	0.4	18.1	35.7		25.9	43.5		25.4	45.5	
Queue Length 50th (ft)	31	211	0	20	188		32	95		27	100	
Queue Length 95th (ft)	70	330	0	50	300		77	194		67	203	
Internal Link Dist (ft)		10343			1733			1031			1659	
Turn Bay Length (ft)	144		94	144			144			144		
Base Capacity (vph)	550	1918	928	518	1697		558	483		595	508	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.16	0.38	0.08	0.12	0.39		0.14	0.39		0.11	0.37	

Intersection Summary

Cycle Length: 155.5
Actuated Cycle Length: 94.1
Natural Cycle: 80
Control Type: Actuated-Uncoordinated

Splits and Phases: 7: CR 475 & CR 484



HCM 6th Signalized Intersection Summary
7: CR 475 & CR 484

Existing Conditions
Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	706	69	58	569	69	77	109	69	64	129	52
Future Volume (veh/h)	85	706	69	58	569	69	77	109	69	64	129	52
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1781	1781	1781	1811	1811	1811	1796	1796	1796	1870	1870	1870
Adj Flow Rate, veh/h	89	735	46	60	593	67	80	114	0	67	134	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	8	8	8	6	6	6	7	7	7	2	2	2
Cap, veh/h	322	960	428	321	885	100	270	191		287	188	
Arrive On Green	0.09	0.28	0.28	0.10	0.28	0.28	0.08	0.11	0.00	0.08	0.10	0.00
Sat Flow, veh/h	1697	3385	1510	1725	3117	351	1711	1796	0	1781	1870	0
Grp Volume(v), veh/h	89	735	46	60	327	333	80	114	0	67	134	0
Grp Sat Flow(s),veh/h/ln	1697	1692	1510	1725	1721	1748	1711	1796	0	1781	1870	0
Q Serve(g_s), s	2.8	15.8	1.8	1.8	13.4	13.4	3.2	4.8	0.0	2.6	5.5	0.0
Cycle Q Clear(g_c), s	2.8	15.8	1.8	1.8	13.4	13.4	3.2	4.8	0.0	2.6	5.5	0.0
Prop In Lane	1.00		1.00	1.00		0.20	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	322	960	428	321	489	496	270	191		287	188	
V/C Ratio(X)	0.28	0.77	0.11	0.19	0.67	0.67	0.30	0.60		0.23	0.71	
Avail Cap(c_a), veh/h	708	1913	853	581	972	988	665	564		708	587	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	18.0	26.1	21.1	17.4	25.2	25.2	28.0	34.0	0.0	28.1	34.7	0.0
Incr Delay (d2), s/veh	0.5	1.3	0.1	0.3	1.6	1.6	0.6	3.0	0.0	0.5	5.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	5.7	0.6	0.6	5.0	5.1	1.2	2.1	0.0	1.0	2.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.4	27.4	21.2	17.6	26.8	26.8	28.6	37.0	0.0	28.6	39.7	0.0
LnGrp LOS	B	C	C	B	C	C	C	D		C	D	
Approach Vol, veh/h		870			720			194	A		201	A
Approach Delay, s/veh		26.1			26.0			33.5			36.0	
Approach LOS		C			C			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.5	30.3	16.2	16.6	16.5	30.3	16.6	16.2
Change Period (Y+Rc), s	* 9.6	7.7	10.0	* 8.2	8.5	7.7	10.0	* 8.2
Max Green Setting (Gmax), s	* 25	45.0	25.0	* 25	20.0	45.0	25.0	* 25
Max Q Clear Time (g_c+I1), s	4.8	15.4	4.6	6.8	3.8	17.8	5.2	7.5
Green Ext Time (p_c), s	0.2	3.6	0.2	0.4	0.1	4.8	0.1	0.5

Intersection Summary	
HCM 6th Ctrl Delay	27.8
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
8: SW 29th Ave Rd & Marion Oaks Trail

Existing Conditions
Timing Plan: PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	3	0	43	0	0	0	60	11	0	0	13	0
Future Volume (vph)	3	0	43	0	0	0	60	11	0	0	13	0
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles (%)	9%	9%	9%	2%	2%	2%	2%	2%	2%	8%	8%	8%
Adj. Flow (vph)	4	0	53	0	0	0	74	14	0	0	16	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	57	0	0	0	0	0	88	0	0	16	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	6.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	3	0	43	0	0	0	60	11	0	0	13	0
Future Vol, veh/h	3	0	43	0	0	0	60	11	0	0	13	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	9	9	9	2	2	2	2	2	2	8	8	8
Mvmt Flow	4	0	53	0	0	0	74	14	0	0	16	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	178	178	16	205	178	14	16	0	0	14	0	0
Stage 1	16	16	-	162	162	-	-	-	-	-	-	-
Stage 2	162	162	-	43	16	-	-	-	-	-	-	-
Critical Hdwy	7.19	6.59	6.29	7.12	6.52	6.22	4.12	-	-	4.18	-	-
Critical Hdwy Stg 1	6.19	5.59	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.19	5.59	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.581	4.081	3.381	3.518	4.018	3.318	2.218	-	-	2.272	-	-
Pot Cap-1 Maneuver	769	703	1043	753	716	1066	1602	-	-	1566	-	-
Stage 1	986	868	-	840	764	-	-	-	-	-	-	-
Stage 2	824	751	-	971	882	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	741	670	1043	689	682	1066	1602	-	-	1566	-	-
Mov Cap-2 Maneuver	741	670	-	689	682	-	-	-	-	-	-	-
Stage 1	940	868	-	801	728	-	-	-	-	-	-	-
Stage 2	785	716	-	922	882	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.8	0	6.2	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1602	-	-	1016	-	1566	-	-
HCM Lane V/C Ratio	0.046	-	-	0.056	-	-	-	-
HCM Control Delay (s)	7.4	0	-	8.8	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	-	0	-	-

Kimley»Horn

F7: PM Peak Hour Future Year Background Traffic Conditions (2027)

Lanes, Volumes, Timings
1: Marion Oaks Blvd & CR 484

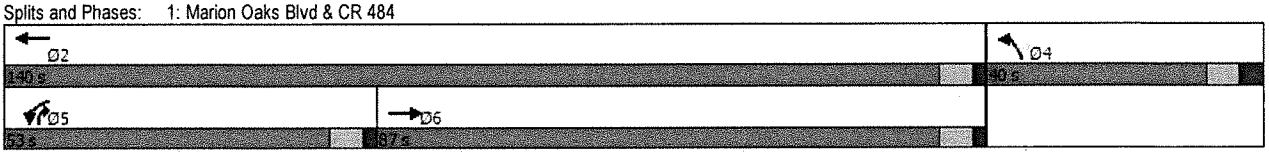
Background Conditions
Timing Plan: PM Peak Hour

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1247	227	655	1487	151	497
Future Volume (vph)	1247	227	655	1487	151	497
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	6%	6%	4%	4%	4%	4%
Adj. Flow (vph)	1299	236	682	1549	157	518
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1535	0	682	1549	157	518
Turn Type	NA		Prot	NA	Prot	pm+ov
Protected Phases	6		5	2	4	5
Permitted Phases						4
Detector Phase	6		5	2	4	5
Switch Phase						
Minimum Initial (s)	15.0		10.0	15.0	10.0	10.0
Minimum Split (s)	21.8		16.8	21.8	18.5	16.8
Total Split (s)	87.0		53.0	140.0	40.0	53.0
Total Split (%)	48.3%		29.4%	77.8%	22.2%	29.4%
Yellow Time (s)	4.8		4.8	4.8	4.8	4.8
All-Red Time (s)	2.0		2.0	2.0	3.7	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.8		6.8	6.8	8.5	6.8
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	Min		None	Min	None	None
v/c Ratio	0.92		0.85	0.57	0.73	0.45
Control Delay	47.8		69.8	8.4	88.6	32.0
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	47.8		69.8	8.4	88.6	32.0
Queue Length 50th (ft)	778		356	301	163	205
Queue Length 95th (ft)	#1115		459	437	256	259
Internal Link Dist (ft)	1332			3183	1673	
Turn Bay Length (ft)			360		114	
Base Capacity (vph)	1670		969	2880	340	1289
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.92		0.70	0.54	0.46	0.40

Intersection Summary

Cycle Length: 180
Actuated Cycle Length: 161.4
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Marion Oaks Blvd & CR 484



HCM 6th Signalized Intersection Summary
1: Marion Oaks Blvd & CR 484

Background Conditions
Timing Plan: PM Peak Hour

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1247	227	655	1487	151	497
Future Volume (veh/h)	1247	227	655	1487	151	497
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1811	1811	1841	1841	1841	1841
Adj Flow Rate, veh/h	1299	0	682	1549	157	518
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	6	6	4	4	4	4
Cap, veh/h	1506		773	2503	299	1092
Arrive On Green	0.44	0.00	0.23	0.72	0.17	0.17
Sat Flow, veh/h	3622	0	3401	3589	1753	2745
Grp Volume(v), veh/h	1299	0	682	1549	157	518
Grp Sat Flow(s),veh/h/ln	1721	0	1700	1749	1753	1373
Q Serve(g_s), s	45.8	0.0	26.0	30.4	11.0	18.8
Cycle Q Clear(g_c), s	45.8	0.0	26.0	30.4	11.0	18.8
Prop In Lane		0.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1506		773	2503	299	1092
V/C Ratio(X)	0.86		0.88	0.62	0.53	0.47
Avail Cap(c_a), veh/h	2054		1169	3467	411	1268
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.1	0.0	50.2	9.8	50.8	30.0
Incr Delay (d2), s/veh	3.0	0.0	5.5	0.3	1.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	18.8	0.0	11.7	10.8	5.0	15.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	37.1	0.0	55.7	10.0	52.2	30.4
LnGrp LOS	D		E	B	D	C
Approach Vol, veh/h	1299	A		2231	675	
Approach Delay, s/veh	37.1			24.0	35.4	
Approach LOS	D			C	D	

Timer - Assigned Phs	2		4	5	6
Phs Duration (G+Y+Rc), s	103.0		31.4	37.3	65.6
Change Period (Y+Rc), s	6.8		* 8.5	6.8	6.8
Max Green Setting (Gmax), s	133.2		* 32	46.2	80.2
Max Q Clear Time (g_c+I1), s	32.4		20.8	28.0	47.8
Green Ext Time (p_c), s	21.9		2.1	2.5	11.0

Intersection Summary	
HCM 6th Ctrl Delay	29.9
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
2: CR 484 & SW 29th Ave Rd

Background Conditions
Timing Plan: PM Peak Hour

Lane Group	EBU	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations								
Traffic Volume (vph)	1	29	1763	2	1609	58	0	71
Future Volume (vph)	1	29	1763	2	1609	58	0	71
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	7%	7%	7%	4%	4%	4%	7%	7%
Adj. Flow (vph)	1	30	1836	2	1676	60	0	74
Shared Lane Traffic (%)								
Lane Group Flow (vph)	0	31	1836	0	1738	0	74	0
Sign Control			Free		Free		Stop	

Intersection Summary

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	0.6

Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations								
Traffic Vol, veh/h	1	29	1763	2	1609	58	0	71
Future Vol, veh/h	1	29	1763	2	1609	58	0	71
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	None
Storage Length	-	144	-	-	-	-	0	-
Veh in Median Storage, #	-	-	0	-	0	-	1	-
Grade, %	-	-	0	-	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96
Heavy Vehicles, %	7	7	7	4	4	4	7	7
Mvmt Flow	1	30	1836	2	1676	60	0	74

Major/Minor	Major1			Major2			Minor2	
Conflicting Flow All	1736	1736	0	1836	-	0	2690	868
Stage 1	-	-	-	-	-	-	1710	-
Stage 2	-	-	-	-	-	-	980	-
Critical Hdwy	6.54	4.24	-	6.48	-	-	6.94	7.04
Critical Hdwy Stg 1	-	-	-	-	-	-	5.94	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.94	-
Follow-up Hdwy	2.57	2.27	-	2.54	-	-	3.57	3.37
Pot Cap-1 Maneuver	104	338	-	93	-	-	16	286
Stage 1	-	-	-	-	-	-	125	-
Stage 2	-	-	-	-	-	-	313	-
Platoon blocked, %			-		-	-		
Mov Cap-1 Maneuver	304	304	-	93	-	-	4	286
Mov Cap-2 Maneuver	-	-	-	-	-	-	43	-
Stage 1	-	-	-	-	-	-	112	-
Stage 2	-	-	-	-	-	-	78	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0.1	21.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	304	-	-	-	286
HCM Lane V/C Ratio	0.103	-	-	-	0.259
HCM Control Delay (s)	18.2	-	-	-	21.9
HCM Lane LOS	C	-	-	-	C
HCM 95th %tile Q(veh)	0.3	-	-	-	1

Lanes, Volumes, Timings
3: SW 20th Ave Rd & CR 484

Background Conditions
Timing Plan: PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	1797	67	270	2273	209	96	23	317	448	46	72
Future Volume (vph)	75	1797	67	270	2273	209	96	23	317	448	46	72
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	6%	6%	6%	4%	4%	4%	11%	11%	11%	13%	13%	13%
Adj. Flow (vph)	81	1932	72	290	2444	225	103	25	341	482	49	77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	81	2004	0	290	2444	225	0	469	0	482	49	77
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	1	6		5	2			4			8	
Permitted Phases	6			2		2	4			8		8
Detector Phase	1	6		5	2	2	4	4		8	8	8
Switch Phase												
Minimum Initial (s)	10.0	15.0		10.0	15.0	15.0	10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	17.0	21.9		17.3	21.9	21.9	16.6	16.6		16.6	16.6	16.6
Total Split (s)	25.0	121.0		25.0	121.0	121.0	34.0	34.0		34.0	34.0	34.0
Total Split (%)	13.9%	67.2%		13.9%	67.2%	67.2%	18.9%	18.9%		18.9%	18.9%	18.9%
Yellow Time (s)	4.8	4.9		4.8	4.9	4.9	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.2	2.0		2.5	2.0	2.0	2.6	2.6		2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)	7.0	6.9		7.3	6.9	6.9		6.6		6.6	6.6	6.6
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Recall Mode	None	C-Min		None	C-Min	C-Min	None	None		None	None	None
v/c Ratio	0.53	0.93		1.38	1.05	0.21		0.94dr		11.21	0.19	0.27
Control Delay	48.0	38.7		219.2	46.0	4.9		70.4		4645.2	68.9	14.7
Queue Delay	0.0	0.0		0.0	12.0	0.0		0.0		0.0	0.0	0.0
Total Delay	48.0	38.7		219.2	58.0	4.9		70.4		4645.2	68.9	14.7
Queue Length 50th (ft)	44	1071		~408	~1633	42		198		~1090	51	0
Queue Length 95th (ft)	103	1206		m#408	m#1667	m42		#304		#1332	97	54
Internal Link Dist (ft)		3132			1240			650			1393	
Turn Bay Length (ft)	114			170		144				114		
Base Capacity (vph)	210	2149		210	2318	1059		518		43	255	282
Starvation Cap Reductn	0	0		0	62	0		0		0	0	0
Spillback Cap Reductn	0	0		0	0	0		0		0	0	0
Storage Cap Reductn	0	0		0	0	0		0		0	0	0
Reduced v/c Ratio	0.39	0.93		1.38	1.08	0.21		0.91		11.21	0.19	0.27

Intersection Summary

Cycle Length: 180
Actuated Cycle Length: 180
Offset: 77 (43%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 150
Control Type: Actuated-Coordinated

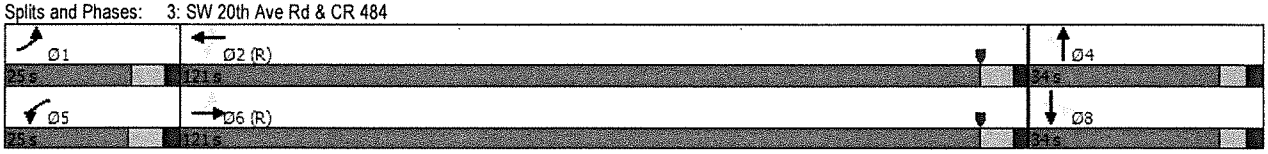
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 3: SW 20th Ave Rd & CR 484



HCM 6th Signalized Intersection Summary
3: SW 20th Ave Rd & CR 484

Background Conditions
Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	1797	67	270	2273	209	96	23	317	448	46	72
Future Volume (veh/h)	75	1797	67	270	2273	209	96	23	317	448	46	72
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1811	1811	1841	1841	1841	1737	1737	1737	1707	1707	1707
Adj Flow Rate, veh/h	81	1932	69	290	2444	225	103	25	144	482	49	77
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	6	6	6	4	4	4	11	11	11	13	13	13
Cap, veh/h	134	2149	76	266	2376	1060	164	31	204	96	260	220
Arrive On Green	0.07	0.84	0.84	0.13	0.90	0.90	0.15	0.15	0.15	0.15	0.15	0.15
Sat Flow, veh/h	1725	3390	120	1753	3497	1560	843	205	1340	1110	1707	1447
Grp Volume(v), veh/h	81	975	1026	290	2444	225	128	0	144	482	49	77
Grp Sat Flow(s),veh/h/ln	1725	1721	1789	1753	1749	1560	1047	0	1340	1110	1707	1447
Q Serve(g_s), s	3.9	64.9	68.3	17.7	122.3	3.1	17.9	0.0	18.4	9.0	4.5	8.6
Cycle Q Clear(g_c), s	3.9	64.9	68.3	17.7	122.3	3.1	22.4	0.0	18.4	27.4	4.5	8.6
Prop In Lane	1.00		0.07	1.00		1.00	0.80		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	134	1091	1134	266	2376	1060	196	0	204	96	260	220
V/C Ratio(X)	0.60	0.89	0.90	1.09	1.03	0.21	0.65	0.00	0.71	5.04	0.19	0.35
Avail Cap(c_a), veh/h	212	1091	1134	266	2376	1060	196	0	204	96	260	220
HCM Platoon Ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.09	0.09	0.09	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.1	10.3	10.5	54.2	8.7	2.9	76.4	0.0	72.5	87.4	66.6	68.3
Incr Delay (d2), s/veh	6.1	11.2	11.8	46.5	15.0	0.0	10.3	0.0	13.2	1841.2	0.7	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	15.7	17.2	14.8	10.6	0.9	6.3	0.0	7.1	53.4	2.0	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.2	21.5	22.3	100.7	23.7	3.0	86.6	0.0	85.7	1928.6	67.3	70.3
LnGrp LOS	E	C	C	F	F	A	F	A	F	F	E	E
Approach Vol, veh/h		2082			2959			272			608	
Approach Delay, s/veh		23.3			29.7			86.1			1543.3	
Approach LOS		C			C			F			F	

Timer - Assigned Phs	1	2	4	5	6	8
Phs Duration (G+Y+Rc), s	16.8	129.2	34.0	25.0	121.0	34.0
Change Period (Y+Rc), s	* 7	6.9	6.6	7.3	6.9	6.6
Max Green Setting (Gmax), s	* 18	114.1	27.4	17.7	114.1	27.4
Max Q Clear Time (g_c+I1), s	5.9	124.3	24.4	19.7	70.3	29.4
Green Ext Time (p_c), s	0.2	0.0	0.7	0.0	37.9	0.0

Intersection Summary	
HCM 6th Ctrl Delay	185.5
HCM 6th LOS	F

Notes

User approved ignoring U-Turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
4: CR 484 & I-75 SB Off-Ramp

Background Conditions
Timing Plan: PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1996	421	139	2050	0	0	0	0	380	0	712
Future Volume (vph)	0	1996	421	139	2050	0	0	0	0	380	0	712
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	9%	9%	9%	5%	5%	5%	0%	0%	0%	7%	7%	7%
Adj. Flow (vph)	0	2170	458	151	2228	0	0	0	0	413	0	774
Shared Lane Traffic (%)										50%		
Lane Group Flow (vph)	0	2628	0	151	2228	0	0	0	0	206	207	774
Turn Type		NA		Prot	NA					Split	NA	Prot
Protected Phases		6		5	2					4	4	4
Permitted Phases												
Detector Phase		6		5	2					4	4	4
Switch Phase												
Minimum Initial (s)		18.0		7.0	18.0					7.0	7.0	7.0
Minimum Split (s)		25.4		17.9	25.4					18.3	18.3	18.3
Total Split (s)		93.0		27.0	120.0					60.0	60.0	60.0
Total Split (%)		51.7%		15.0%	66.7%					33.3%	33.3%	33.3%
Yellow Time (s)		5.4		5.4	5.4					4.1	4.1	4.1
All-Red Time (s)		2.0		2.0	2.0					2.9	2.9	2.9
Lost Time Adjust (s)		0.0		0.0	0.0					0.0	0.0	0.0
Total Lost Time (s)		7.4		7.4	7.4					7.0	7.0	7.0
Lead/Lag		Lead		Lag								
Lead-Lag Optimize?		Yes		Yes								
Recall Mode		Min		Min	C-Min					None	None	None
v/c Ratio		0.93		0.81	1.03					0.45	0.45	0.95
Control Delay		47.0		78.7	60.6					55.6	55.7	77.1
Queue Delay		2.1		0.0	29.8					0.0	0.0	0.5
Total Delay		49.1		78.7	90.4					55.6	55.7	77.6
Queue Length 50th (ft)		793		162	~795					209	210	470
Queue Length 95th (ft)		m615		m214	#1575					301	303	#610
Internal Link Dist (ft)		1240			424			1185			1125	
Turn Bay Length (ft)										325		475
Base Capacity (vph)		2831		187	2170					471	471	832
Starvation Cap Reductn		0		0	397					0	0	0
Spillback Cap Reductn		112		0	296					0	0	5
Storage Cap Reductn		0		0	0					0	0	0
Reduced v/c Ratio		0.97		0.81	1.26					0.44	0.44	0.94

Intersection Summary

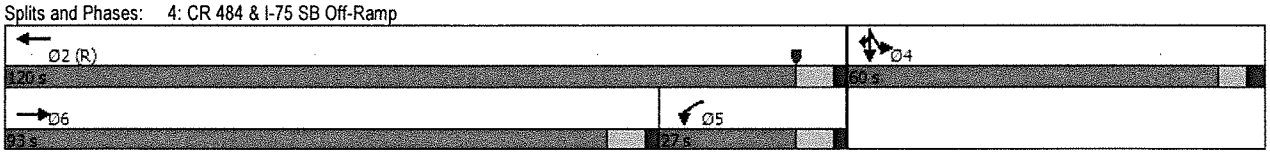
Cycle Length: 180
Actuated Cycle Length: 180
Offset: 58 (32%), Referenced to phase 2:WBT, Start of Yellow
Natural Cycle: 130
Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: CR 484 & I-75 SB Off-Ramp



HCM 6th Signalized Intersection Summary
4: CR 484 & I-75 SB Off-Ramp

Background Conditions
Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1996	421	139	2050	0	0	0	0	380	0	712
Future Volume (veh/h)	0	1996	421	139	2050	0	0	0	0	380	0	712
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1767	1767	1826	1826	0				1796	1796	1796
Adj Flow Rate, veh/h	0	2170	0	151	2228	0				413	0	774
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	9	9	5	5	0				7	7	7
Cap, veh/h	0	2561		319	2240	0				938	0	835
Arrive On Green	0.00	0.56	0.00	0.24	0.86	0.00				0.27	0.00	0.27
Sat Flow, veh/h	0	6572	0	1739	3561	0				3421	0	3045
Grp Volume(v), veh/h	0	2170	0	151	2228	0				413	0	774
Grp Sat Flow(s),veh/h/ln	0	1519	0	1739	1735	0				1711	0	1522
Q Serve(g_s), s	0.0	53.8	0.0	13.4	111.9	0.0				17.9	0.0	44.5
Cycle Q Clear(g_c), s	0.0	53.8	0.0	13.4	111.9	0.0				17.9	0.0	44.5
Prop In Lane	0.00		0.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2561		319	2240	0				938	0	835
V/C Ratio(X)	0.00	0.85		0.47	0.99	0.00				0.44	0.00	0.93
Avail Cap(c_a), veh/h	0	2890		319	2240	0				1007	0	896
HCM Platoon Ratio	1.00	1.33	1.33	1.33	1.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.09	0.00	0.40	0.40	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	34.7	0.0	60.6	12.4	0.0				53.9	0.0	63.6
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.6	10.8	0.0				0.3	0.0	14.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	17.8	0.0	5.7	21.2	0.0				7.8	0.0	35.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	34.9	0.0	61.3	23.2	0.0				54.2	0.0	78.4
LnGrp LOS	A	C		E	C	A				D	A	E
Approach Vol, veh/h		2170	A		2379						1187	
Approach Delay, s/veh		34.9			25.7						70.0	
Approach LOS		C			C						E	

Timer - Assigned Phs	2	4	5	6
Phs Duration (G+Y+Rc), s	123.6	56.4	40.4	83.2
Change Period (Y+Rc), s	7.4	7.0	7.4	7.4
Max Green Setting (Gmax), s	112.6	53.0	19.6	85.6
Max Q Clear Time (g_c+I1), s	113.9	46.5	15.4	55.8
Green Ext Time (p_c), s	0.0	2.8	0.2	20.0

Intersection Summary	
HCM 6th Ctrl Delay	38.3
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
5: I-75 NB Off-Ramp & CR 484

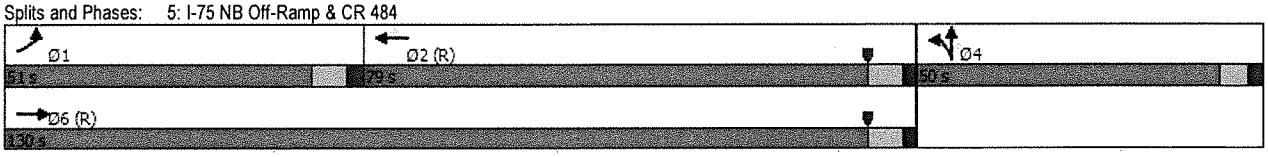
Background Conditions
Timing Plan: PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	459	1869	0	0	1650	285	510	0	270	0	0	0
Future Volume (vph)	459	1869	0	0	1650	285	510	0	270	0	0	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	8%	8%	8%	5%	5%	5%	9%	9%	9%	0%	0%	0%
Adj. Flow (vph)	478	1947	0	0	1719	297	531	0	281	0	0	0
Shared Lane Traffic (%)							50%					
Lane Group Flow (vph)	478	1947	0	0	1719	297	265	266	281	0	0	0
Turn Type	Prot	NA			NA	Perm	Split	NA	Perm			
Protected Phases	1	6			2		4	4				
Permitted Phases						2			4			
Detector Phase	1	6			2	2	4	4	4			
Switch Phase												
Minimum Initial (s)	7.0	20.0			20.0	20.0	7.0	7.0	7.0			
Minimum Split (s)	14.2	26.9			26.9	26.9	13.5	13.5	13.5			
Total Split (s)	51.0	130.0			79.0	79.0	50.0	50.0	50.0			
Total Split (%)	28.3%	72.2%			43.9%	43.9%	27.8%	27.8%	27.8%			
Yellow Time (s)	4.9	4.9			4.9	4.9	4.1	4.1	4.1			
All-Red Time (s)	2.3	2.0			2.0	2.0	2.4	2.4	2.4			
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Total Lost Time (s)	7.2	6.9			6.9	6.9	6.5	6.5	6.5			
Lead/Lag	Lead				Lag	Lag						
Lead-Lag Optimize?	Yes				Yes	Yes						
Recall Mode	Max	C-Min			C-Min	C-Min	None	None	None			
v/c Ratio	0.55	0.82			0.87	0.44	0.79	0.79	0.76			
Control Delay	65.0	14.5			44.5	17.5	83.0	83.3	63.1			
Queue Delay	0.5	19.5			0.3	0.0	67.8	67.7	0.0			
Total Delay	65.5	34.0			44.7	17.5	150.8	151.0	63.1			
Queue Length 50th (ft)	204	1275			708	89	309	310	240			
Queue Length 95th (ft)	m243	1344			624	123	425	425	353			
Internal Link Dist (ft)		424			1171			1111			1102	
Turn Bay Length (ft)						144	320		320			
Base Capacity (vph)	876	2375			1978	679	380	380	408			
Starvation Cap Reductn	125	487			0	0	0	0	0			
Spillback Cap Reductn	0	0			32	0	235	235	0			
Storage Cap Reductn	0	0			0	0	0	0	0			
Reduced v/c Ratio	0.64	1.03			0.88	0.44	1.83	1.83	0.69			

Intersection Summary

Cycle Length: 180
Actuated Cycle Length: 180
Offset: 65 (36%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: I-75 NB Off-Ramp & CR 484



HCM 6th Signalized Intersection Summary
5: I-75 NB Off-Ramp & CR 484

Background Conditions
Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	459	1869	0	0	1650	285	510	0	270	0	0	0
Future Volume (veh/h)	459	1869	0	0	1650	285	510	0	270	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1781	1781	0	0	1826	1826	1767	1767	1767			
Adj Flow Rate, veh/h	478	1947	0	0	1719	0	531	0	0			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96			
Percent Heavy Veh, %	8	8	0	0	5	5	9	9	9			
Cap, veh/h	801	2511	0	0	2285		618	0				
Arrive On Green	0.24	0.74	0.00	0.00	0.92	0.00	0.18	0.00	0.00			
Sat Flow, veh/h	3291	3474	0	0	5149	1547	3365	0	1497			
Grp Volume(v), veh/h	478	1947	0	0	1719	0	531	0	0			
Grp Sat Flow(s),veh/h/ln	1646	1692	0	0	1662	1547	1682	0	1497			
Q Serve(g_s), s	23.1	62.9	0.0	0.0	16.6	0.0	27.5	0.0	0.0			
Cycle Q Clear(g_c), s	23.1	62.9	0.0	0.0	16.6	0.0	27.5	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	801	2511	0	0	2285		618	0				
V/C Ratio(X)	0.60	0.78	0.00	0.00	0.75		0.86	0.00				
Avail Cap(c_a), veh/h	801	2511	0	0	2285		813	0				
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00			
Upstream Filter(I)	0.33	0.33	0.00	0.00	0.59	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	60.3	14.1	0.0	0.0	4.7	0.0	71.2	0.0	0.0			
Incr Delay (d2), s/veh	1.1	0.8	0.0	0.0	1.4	0.0	9.6	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	9.7	21.7	0.0	0.0	2.5	0.0	12.7	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.4	14.9	0.0	0.0	6.1	0.0	80.8	0.0	0.0			
LnGrp LOS	E	B	A	A	A		F	A				
Approach Vol, veh/h		2425			1719	A		531	A			
Approach Delay, s/veh		24.1			6.1			80.8				
Approach LOS		C			A			F				

Timer - Assigned Phs	1	2		4		6			
Phs Duration (G+Y+Rc), s	51.0	89.4		39.6		140.4			
Change Period (Y+Rc), s	* 7.2	6.9		6.5		6.9			
Max Green Setting (Gmax), s	* 44	72.1		43.5		123.1			
Max Q Clear Time (g_c+I1), s	25.1	18.6		29.5		64.9			
Green Ext Time (p_c), s	2.5	27.6		3.5		38.0			

Intersection Summary	
HCM 6th Ctrl Delay	23.9
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
6: CR 475A & CR 484

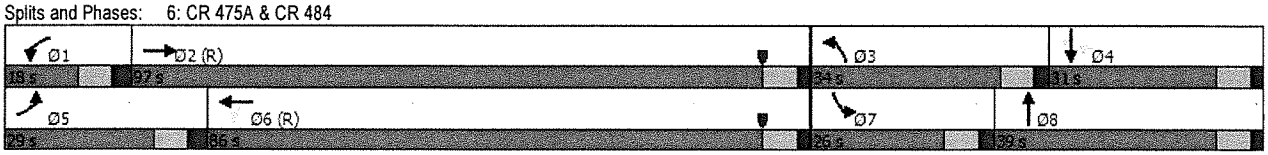
Background Conditions
Timing Plan: PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	301	1514	221	11	1226	27	261	49	9	80	42	276
Future Volume (vph)	301	1514	221	11	1226	27	261	49	9	80	42	276
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	8%	8%	8%	7%	7%	7%	4%	4%	4%	5%	5%	5%
Adj. Flow (vph)	304	1529	223	11	1238	27	264	49	9	81	42	279
Shared Lane Traffic (%)												
Lane Group Flow (vph)	304	1752	0	11	1265	0	264	58	0	81	42	279
Turn Type	Prot	NA		pm+pt	NA		Prot	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases				6						4		4
Detector Phase	5	2		1	6		3	8		7	4	4
Switch Phase												
Minimum Initial (s)	6.0	15.0		6.0	15.0		6.0	10.0		6.0	10.0	10.0
Minimum Split (s)	17.5	21.9		17.5	21.9		17.5	16.9		17.5	16.9	16.9
Total Split (s)	29.0	97.0		18.0	86.0		34.0	39.0		26.0	31.0	31.0
Total Split (%)	16.1%	53.9%		10.0%	47.8%		18.9%	21.7%		14.4%	17.2%	17.2%
Yellow Time (s)	4.9	4.9		4.8	4.9		4.9	4.9		4.9	4.9	4.9
All-Red Time (s)	2.9	2.0		2.8	2.0		2.2	2.0		2.1	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	7.8	6.9		7.6	6.9		7.1	6.9		7.0	6.9	6.9
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	None
v/c Ratio	0.80	0.82		0.09	0.72		0.73	0.25		0.30	0.25	0.86
Control Delay	104.4	18.1		15.9	37.8		89.4	65.1		55.5	76.6	46.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	104.4	18.1		15.9	37.8		89.4	65.1		55.5	76.6	46.3
Queue Length 50th (ft)	193	258		4	593		158	58		78	47	93
Queue Length 95th (ft)	m238	#1273		15	804		206	101		115	87	203
Internal Link Dist (ft)		1171			10343			554			865	
Turn Bay Length (ft)	295			360			270			114		114
Base Capacity (vph)	398	2141		159	1759		503	328		311	247	384
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.76	0.82		0.07	0.72		0.52	0.18		0.26	0.17	0.73

Intersection Summary

Cycle Length: 180
Actuated Cycle Length: 180
Offset: 58 (32%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 140
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: CR 475A & CR 484



HCM 6th Signalized Intersection Summary
6: CR 475A & CR 484

Background Conditions
Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	301	1514	221	11	1226	27	261	49	9	80	42	276
Future Volume (veh/h)	301	1514	221	11	1226	27	261	49	9	80	42	276
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1781	1781	1781	1796	1796	1796	1841	1841	1841	1826	1826	1826
Adj Flow Rate, veh/h	304	1529	204	11	1238	26	264	49	8	81	42	183
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	8	8	8	7	7	7	4	4	4	5	5	5
Cap, veh/h	339	1827	240	203	1770	37	311	262	43	297	235	199
Arrive On Green	0.21	1.00	1.00	0.01	0.52	0.52	0.09	0.17	0.17	0.05	0.13	0.13
Sat Flow, veh/h	3291	3007	396	1711	3418	72	3401	1543	252	1739	1826	1547
Grp Volume(v), veh/h	304	851	882	11	618	646	264	0	57	81	42	183
Grp Sat Flow(s),veh/h/ln	1646	1692	1710	1711	1706	1783	1700	0	1795	1739	1826	1547
Q Serve(g_s), s	16.2	0.0	0.0	0.5	49.3	49.3	13.8	0.0	4.9	7.2	3.7	21.0
Cycle Q Clear(g_c), s	16.2	0.0	0.0	0.5	49.3	49.3	13.8	0.0	4.9	7.2	3.7	21.0
Prop In Lane	1.00		0.23	1.00		0.04	1.00		0.14	1.00		1.00
Lane Grp Cap(c), veh/h	339	1029	1039	203	884	923	311	0	304	297	235	199
V/C Ratio(X)	0.90	0.83	0.85	0.05	0.70	0.70	0.85	0.00	0.19	0.27	0.18	0.92
Avail Cap(c_a), veh/h	388	1029	1039	278	884	923	508	0	320	392	244	207
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.48	0.48	0.48	0.31	0.31	0.31	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	70.6	0.0	0.0	19.8	32.8	32.8	80.6	0.0	64.1	63.6	70.0	77.5
Incr Delay (d2), s/veh	11.8	3.8	4.4	0.0	1.5	1.4	7.3	0.0	0.3	0.5	0.4	40.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.9	1.1	1.3	0.2	20.2	21.2	6.4	0.0	2.3	3.3	1.8	10.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	82.3	3.8	4.4	19.9	34.3	34.2	87.9	0.0	64.4	64.1	70.3	117.8
LnGrp LOS	F	A	A	B	C	C	F	A	E	E	E	F
Approach Vol, veh/h		2037			1275			321			306	
Approach Delay, s/veh		15.8			34.1			83.7			97.1	
Approach LOS		B			C			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.1	116.3	23.5	30.0	26.3	100.1	16.2	37.4
Change Period (Y+Rc), s	* 7.6	6.9	* 7.1	6.9	7.8	6.9	7.0	6.9
Max Green Setting (Gmax), s	* 10	90.1	* 27	24.1	21.2	79.1	19.0	32.1
Max Q Clear Time (g_c+I1), s	2.5	2.0	15.8	23.0	18.2	51.3	9.2	6.9
Green Ext Time (p_c), s	0.0	51.0	0.7	0.1	0.3	15.0	0.1	0.2

Intersection Summary	
HCM 6th Ctrl Delay	33.6
HCM 6th LOS	C

Notes

User approved ignoring U-Turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
7: CR 475 & CR 484

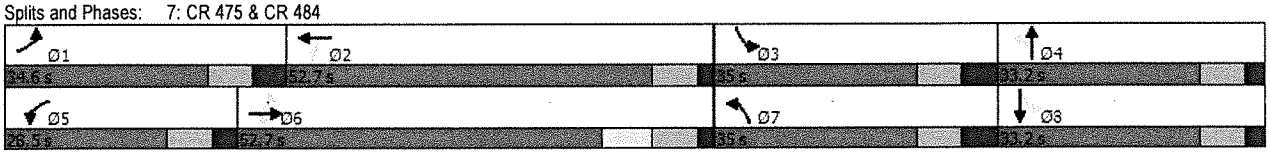
Background Conditions
Timing Plan: PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	117	1364	113	67	1036	80	114	126	80	74	150	73
Future Volume (vph)	117	1364	113	67	1036	80	114	126	80	74	150	73
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	7%	7%	7%	6%	6%	6%	7%	7%	7%	2%	2%	2%
Adj. Flow (vph)	122	1421	118	70	1079	83	119	131	83	77	156	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	122	1421	118	70	1162	0	119	214	0	77	232	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6		6	2			4			8		
Detector Phase	1	6	6	5	2		7	4		3	8	
Switch Phase												
Minimum Initial (s)	8.0	17.0	17.0	8.0	17.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	17.6	24.7	24.7	16.5	24.7		18.0	16.2		18.0	16.2	
Total Split (s)	34.6	52.7	52.7	28.5	52.7		35.0	33.2		35.0	33.2	
Total Split (%)	22.3%	33.9%	33.9%	18.3%	33.9%		22.5%	21.4%		22.5%	21.4%	
Yellow Time (s)	5.5	5.7	5.7	5.5	5.7		5.5	5.5		5.5	5.5	
All-Red Time (s)	4.1	2.0	2.0	3.0	2.0		4.5	2.7		4.5	2.7	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	9.6	7.7	7.7	8.5	7.7		10.0	8.2		10.0	8.2	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Min	Min	None	Min		None	None		None	None	
v/c Ratio	0.60	1.00	0.16	0.40	0.95		0.42	0.58		0.25	0.77	
Control Delay	36.9	62.6	1.6	26.6	56.0		35.4	49.5		32.3	65.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	36.9	62.6	1.6	26.6	56.0		35.4	49.5		32.3	65.9	
Queue Length 50th (ft)	52	~676	0	28	476		68	148		43	170	
Queue Length 95th (ft)	124	#924	13	64	#747		123	251		84	284	
Internal Link Dist (ft)		10343			1733			1031			1659	
Turn Bay Length (ft)	144		94	144			144			144		
Base Capacity (vph)	381	1459	746	327	1222		417	389		491	366	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.32	0.97	0.16	0.21	0.95		0.29	0.55		0.16	0.63	

Intersection Summary

Cycle Length: 155.5
Actuated Cycle Length: 125.1
Natural Cycle: 110
Control Type: Actuated-Uncoordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: CR 475 & CR 484



HCM 6th Signalized Intersection Summary
7: CR 475 & CR 484

Background Conditions
Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	117	1364	113	67	1036	80	114	126	80	74	150	73
Future Volume (veh/h)	117	1364	113	67	1036	80	114	126	80	74	150	73
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1811	1811	1811	1796	1796	1796	1870	1870	1870
Adj Flow Rate, veh/h	122	1421	74	70	1079	77	119	131	0	77	156	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	7	7	6	6	6	7	7	7	2	2	2
Cap, veh/h	248	1433	639	198	1341	96	231	211		247	196	
Arrive On Green	0.07	0.42	0.42	0.07	0.41	0.41	0.08	0.12	0.00	0.07	0.10	0.00
Sat Flow, veh/h	1711	3413	1522	1725	3257	232	1711	1796	0	1781	1870	0
Grp Volume(v), veh/h	122	1421	74	70	570	586	119	131	0	77	156	0
Grp Sat Flow(s),veh/h/ln	1711	1706	1522	1725	1721	1769	1711	1796	0	1781	1870	0
Q Serve(g_s), s	4.2	44.3	3.2	2.3	31.2	31.2	6.5	7.4	0.0	4.0	8.7	0.0
Cycle Q Clear(g_c), s	4.2	44.3	3.2	2.3	31.2	31.2	6.5	7.4	0.0	4.0	8.7	0.0
Prop In Lane	1.00		1.00	1.00		0.13	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	248	1433	639	198	708	728	231	211		247	196	
V/C Ratio(X)	0.49	0.99	0.12	0.35	0.80	0.80	0.52	0.62		0.31	0.79	
Avail Cap(c_a), veh/h	522	1433	639	391	723	743	494	419		543	436	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	21.5	30.9	18.9	23.8	27.7	27.7	38.7	45.0	0.0	38.6	46.8	0.0
Incr Delay (d2), s/veh	1.5	21.7	0.1	1.1	6.5	6.4	1.8	3.0	0.0	0.9	7.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	20.5	1.0	0.9	12.8	13.1	2.7	3.3	0.0	1.7	4.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.0	52.6	19.0	24.9	34.2	34.1	40.5	48.0	0.0	39.4	54.0	0.0
LnGrp LOS	C	D	B	C	C	C	D	D		D	D	
Approach Vol, veh/h		1617			1226			250	A		233	A
Approach Delay, s/veh		48.8			33.6			44.4			49.2	
Approach LOS		D			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.4	51.8	17.2	20.8	16.5	52.7	18.5	19.4
Change Period (Y+Rc), s	* 9.6	7.7	10.0	* 8.2	8.5	7.7	10.0	* 8.2
Max Green Setting (Gmax), s	* 25	45.0	25.0	* 25	20.0	45.0	25.0	* 25
Max Q Clear Time (g_c+I1), s	6.2	33.2	6.0	9.4	4.3	46.3	8.5	10.7
Green Ext Time (p_c), s	0.3	5.1	0.2	0.4	0.1	0.0	0.2	0.5

Intersection Summary	
HCM 6th Ctrl Delay	42.9
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
8: SW 29th Ave Rd & Marion Oaks Trail

Background Conditions
Timing Plan: PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	3	4	50	0	8	0	70	13	0	0	15	0
Future Volume (vph)	3	4	50	0	8	0	70	13	0	0	15	0
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles (%)	8%	8%	8%	0%	0%	0%	2%	2%	2%	7%	7%	7%
Adj. Flow (vph)	4	5	62	0	10	0	86	16	0	0	19	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	71	0	0	10	0	0	102	0	0	19	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	6.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	4	50	0	8	0	70	13	0	0	15	0
Future Vol, veh/h	3	4	50	0	8	0	70	13	0	0	15	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	8	8	8	0	0	0	2	2	2	7	7	7
Mvmt Flow	4	5	62	0	10	0	86	16	0	0	19	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	212	207	19	241	207	16	19	0	0	16	0	0
Stage 1	19	19	-	188	188	-	-	-	-	-	-	-
Stage 2	193	188	-	53	19	-	-	-	-	-	-	-
Critical Hdwy	7.18	6.58	6.28	7.1	6.5	6.2	4.12	-	-	4.17	-	-
Critical Hdwy Stg 1	6.18	5.58	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.18	5.58	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.572	4.072	3.372	3.5	4	3.3	2.218	-	-	2.263	-	-
Pot Cap-1 Maneuver	732	679	1042	717	693	1069	1597	-	-	1569	-	-
Stage 1	985	868	-	818	748	-	-	-	-	-	-	-
Stage 2	795	733	-	965	884	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	694	642	1042	643	656	1069	1597	-	-	1569	-	-
Mov Cap-2 Maneuver	694	642	-	643	656	-	-	-	-	-	-	-
Stage 1	932	868	-	774	708	-	-	-	-	-	-	-
Stage 2	742	693	-	903	884	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9	10.6	6.2	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1597	-	-	974	656	1569	-	-
HCM Lane V/C Ratio	0.054	-	-	0.072	0.015	-	-	-
HCM Control Delay (s)	7.4	0	-	9	10.6	0	-	-
HCM Lane LOS	A	A	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.2	0	0	-	-

F8: PM Peak Hour Future Year Background w/ Improvements Traffic Conditions (2027)

Lanes, Volumes, Timings
2: CR 484 & SW 29th Ave Rd

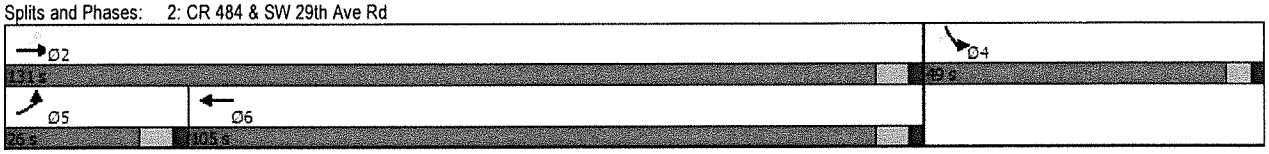
Background Conditions w/ Improvements
Timing Plan: PM Peak Hour

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	30	1714	1611	58	49	22
Future Volume (vph)	30	1714	1611	58	49	22
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	7%	7%	4%	4%	7%	7%
Adj. Flow (vph)	31	1785	1678	60	51	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	31	1785	1738	0	51	23
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					4
Detector Phase	5	2	6		4	4
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	11.8	22.5	22.5		22.5	22.5
Total Split (s)	26.0	131.0	105.0		49.0	49.0
Total Split (%)	14.4%	72.8%	58.3%		27.2%	27.2%
Yellow Time (s)	4.8	4.8	4.8		3.7	3.7
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.8	6.8	6.8		5.7	5.7
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	None	None		None	None
v/c Ratio	0.12	0.66	0.70		0.24	0.11
Control Delay	3.8	6.5	12.9		46.7	19.6
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	3.8	6.5	12.9		46.7	19.6
Queue Length 50th (ft)	4	221	380		28	0
Queue Length 95th (ft)	11	337	548		78	26
Internal Link Dist (ft)		3183	3132		3021	
Turn Bay Length (ft)	144					
Base Capacity (vph)	549	3374	3288		962	870
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.06	0.53	0.53		0.05	0.03

Intersection Summary

Cycle Length: 180
Actuated Cycle Length: 83.7
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 2: CR 484 & SW 29th Ave Rd



HCM 6th Signalized Intersection Summary
2: CR 484 & SW 29th Ave Rd

Background Conditions w/ Improvements
Timing Plan: PM Peak Hour

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	30	1714	1611	58	49	22
Future Volume (veh/h)	30	1714	1611	58	49	22
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1796	1796	1841	1841	1796	1796
Adj Flow Rate, veh/h	31	1785	1678	60	51	23
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	7	4	4	7	7
Cap, veh/h	237	2641	2232	80	91	81
Arrive On Green	0.03	0.77	0.65	0.65	0.05	0.05
Sat Flow, veh/h	1711	3503	3537	123	1711	1522
Grp Volume(v), veh/h	31	1785	849	889	51	23
Grp Sat Flow(s),veh/h/ln	1711	1706	1749	1819	1711	1522
Q Serve(g_s), s	0.4	18.0	24.0	24.4	2.1	1.1
Cycle Q Clear(g_c), s	0.4	18.0	24.0	24.4	2.1	1.1
Prop In Lane	1.00			0.07	1.00	1.00
Lane Grp Cap(c), veh/h	237	2641	1133	1179	91	81
V/C Ratio(X)	0.13	0.68	0.75	0.75	0.56	0.28
Avail Cap(c_a), veh/h	636	5852	2371	2466	1023	910
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.6	3.9	8.7	8.8	33.4	32.9
Incr Delay (d2), s/veh	0.2	0.3	1.0	1.0	5.2	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	1.9	6.1	6.4	1.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	8.8	4.2	9.7	9.8	38.7	34.8
LnGrp LOS	A	A	A	A	D	C
Approach Vol, veh/h		1816	1738		74	
Approach Delay, s/veh		4.3	9.8		37.5	
Approach LOS		A	A		D	

Timer - Assigned Phs	2		4	5	6
Phs Duration (G+Y+Rc), s	62.9		9.6	9.1	53.7
Change Period (Y+Rc), s	6.8		* 5.7	6.8	6.8
Max Green Setting (Gmax), s	124.2		* 43	19.2	98.2
Max Q Clear Time (g_c+I1), s	20.0		4.1	2.4	26.4
Green Ext Time (p_c), s	25.3		0.2	0.0	20.5

Intersection Summary	
HCM 6th Ctrl Delay	7.6
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
3: SW 20th Ave Rd & CR 484

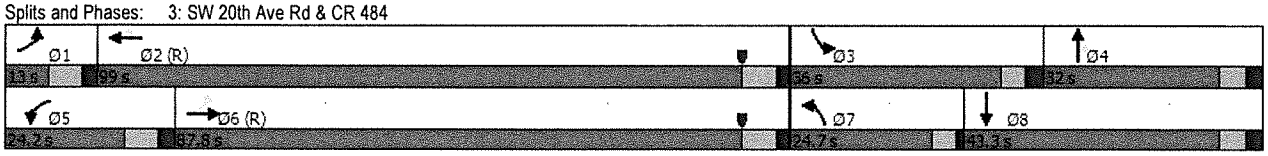
Background Conditions w/ Improvements
Timing Plan: PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	1797	67	270	2273	209	96	23	317	448	46	72
Future Volume (vph)	75	1797	67	270	2273	209	96	23	317	448	46	72
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	6%	6%	6%	4%	4%	4%	11%	11%	11%	13%	13%	13%
Adj. Flow (vph)	81	1932	72	290	2444	225	103	25	341	482	49	77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	81	2004	0	290	2444	225	103	25	341	482	126	0
Turn Type	pm+pt	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6					2			4			
Detector Phase	1	6		5	2	2	7	4	4	3	8	
Switch Phase												
Minimum Initial (s)	5.0	15.0		10.0	15.0	15.0	5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	12.0	21.9		17.3	21.9	21.9	9.5	16.6	16.6	11.1	16.6	
Total Split (s)	13.0	87.8		24.2	99.0	99.0	24.7	32.0	32.0	36.0	43.3	
Total Split (%)	7.2%	48.8%		13.4%	55.0%	55.0%	13.7%	17.8%	17.8%	20.0%	24.1%	
Yellow Time (s)	4.8	4.9		4.8	4.9	4.9	3.5	4.0	4.0	3.5	4.0	
All-Red Time (s)	2.2	2.0		2.5	2.0	2.0	1.0	2.6	2.6	2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.0	6.9		7.3	6.9	6.9	4.5	6.6	6.6	6.1	6.6	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Min		None	C-Min	C-Min	None	None	None	None	None	
v/c Ratio	0.79	0.91		0.91	0.96	0.26	0.71	0.11	0.97	0.95	0.34	
Control Delay	79.5	53.0		80.5	46.7	14.7	104.4	68.8	76.6	102.3	43.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	79.5	53.0		80.5	46.7	14.7	104.4	68.8	76.6	102.3	43.8	
Queue Length 50th (ft)	47	805		180	937	78	120	26	214	294	86	
Queue Length 95th (ft)	#157	873		m181	m913	m78	190	60	#428	#406	160	
Internal Link Dist (ft)		3132			1240			650			1393	
Turn Bay Length (ft)	114			170		144	144			114		
Base Capacity (vph)	102	2205		320	2556	858	182	241	355	514	369	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.79	0.91		0.91	0.96	0.26	0.57	0.10	0.96	0.94	0.34	

Intersection Summary

Cycle Length: 180
Actuated Cycle Length: 180
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow
Natural Cycle: 130
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: SW 20th Ave Rd & CR 484



HCM 6th Signalized Intersection Summary
3: SW 20th Ave Rd & CR 484

Background Conditions w/ Improvements
Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	1797	67	270	2273	209	96	23	317	448	46	72
Future Volume (veh/h)	75	1797	67	270	2273	209	96	23	317	448	46	72
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1811	1811	1841	1841	1841	1737	1737	1737	1707	1707	1707
Adj Flow Rate, veh/h	81	1932	69	290	2444	225	103	25	144	482	49	77
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	6	6	6	4	4	4	11	11	11	13	13	13
Cap, veh/h	115	2368	84	319	2741	851	121	192	163	514	125	197
Arrive On Green	0.04	0.64	0.64	0.12	0.73	0.73	0.07	0.11	0.11	0.16	0.21	0.21
Sat Flow, veh/h	1725	4901	175	3401	5025	1560	1654	1737	1472	3155	598	940
Grp Volume(v), veh/h	81	1298	703	290	2444	225	103	25	144	482	0	126
Grp Sat Flow(s),veh/h/ln	1725	1648	1780	1700	1675	1560	1654	1737	1472	1577	0	1538
Q Serve(g_s), s	4.3	53.2	53.5	15.2	68.1	8.8	11.1	2.3	17.4	27.2	0.0	12.7
Cycle Q Clear(g_c), s	4.3	53.2	53.5	15.2	68.1	8.8	11.1	2.3	17.4	27.2	0.0	12.7
Prop In Lane	1.00		0.10	1.00		1.00	1.00		1.00	1.00		0.61
Lane Grp Cap(c), veh/h	115	1593	860	319	2741	851	121	192	163	514	0	322
V/C Ratio(X)	0.70	0.82	0.82	0.91	0.89	0.26	0.85	0.13	0.89	0.94	0.00	0.39
Avail Cap(c_a), veh/h	115	1593	860	319	2741	851	186	245	208	524	0	322
HCM Platoon Ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.72	0.72	0.72	0.09	0.09	0.09	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	39.3	26.1	26.2	78.0	20.6	12.4	82.5	72.3	78.9	74.4	0.0	61.3
Incr Delay (d2), s/veh	14.0	3.4	6.3	4.0	0.5	0.1	20.2	0.6	34.4	24.5	0.0	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	18.7	20.9	6.6	20.9	3.0	5.4	1.1	8.2	12.8	0.0	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.3	29.6	32.4	82.0	21.1	12.5	102.7	72.9	113.4	98.9	0.0	62.9
LnGrp LOS	D	C	C	F	C	B	F	E	F	F	A	E
Approach Vol, veh/h		2082			2959			272			608	
Approach Delay, s/veh		31.5			26.4			105.6			91.5	
Approach LOS		C			C			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.0	105.1	35.4	26.5	24.2	93.9	17.6	44.3
Change Period (Y+Rc), s	*7	6.9	6.1	6.6	7.3	6.9	4.5	6.6
Max Green Setting (Gmax), s	*6	92.1	29.9	25.4	16.9	80.9	20.2	36.7
Max Q Clear Time (g_c+I1), s	6.3	70.1	29.2	19.4	17.2	55.5	13.1	14.7
Green Ext Time (p_c), s	0.0	20.3	0.2	0.5	0.0	22.1	0.1	1.2

Intersection Summary	
HCM 6th Ctrl Delay	38.5
HCM 6th LOS	D

Notes

User approved ignoring U-Turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

F9: PM Peak Hour Future Year Buildout Traffic Conditions (2027)

Lanes, Volumes, Timings
1: Marion Oaks Blvd & CR 484

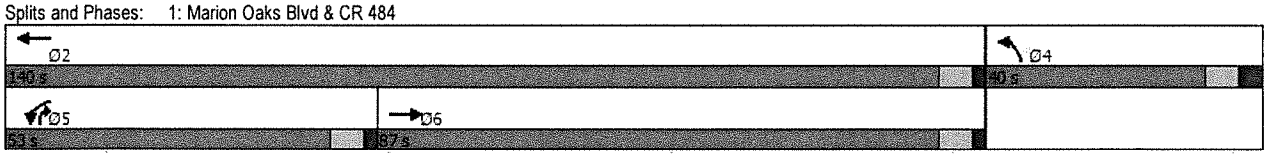
Buildout Conditions
Timing Plan: PM Peak Hour

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1269	227	714	1542	151	520
Future Volume (vph)	1269	227	714	1542	151	520
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	6%	6%	4%	4%	4%	4%
Adj. Flow (vph)	1322	236	744	1606	157	542
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1558	0	744	1606	157	542
Turn Type	NA		Prot	NA	Prot	pm+ov
Protected Phases	6		5	2	4	5
Permitted Phases						4
Detector Phase	6		5	2	4	5
Switch Phase						
Minimum Initial (s)	15.0		10.0	15.0	10.0	10.0
Minimum Split (s)	21.8		16.8	21.8	18.5	16.8
Total Split (s)	87.0		53.0	140.0	40.0	53.0
Total Split (%)	48.3%		29.4%	77.8%	22.2%	29.4%
Yellow Time (s)	4.8		4.8	4.8	4.8	4.8
All-Red Time (s)	2.0		2.0	2.0	3.7	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.8		6.8	6.8	8.5	6.8
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	Min		None	Min	None	None
v/c Ratio	0.95		0.87	0.59	0.74	0.46
Control Delay	53.9		71.4	8.7	90.6	32.0
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	53.9		71.4	8.7	90.6	32.0
Queue Length 50th (ft)	861		399	326	169	218
Queue Length 95th (ft)	#1144		508	466	256	275
Internal Link Dist (ft)	1332			3183	1673	
Turn Bay Length (ft)			360		114	
Base Capacity (vph)	1635		949	2820	333	1266
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.95		0.78	0.57	0.47	0.43

Intersection Summary

Cycle Length: 180
Actuated Cycle Length: 164.6
Natural Cycle: 110
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Marion Oaks Blvd & CR 484



HCM 6th Signalized Intersection Summary
1: Marion Oaks Blvd & CR 484

Buildout Conditions
Timing Plan: PM Peak Hour

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1269	227	714	1542	151	520
Future Volume (veh/h)	1269	227	714	1542	151	520
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1811	1811	1841	1841	1841	1841
Adj Flow Rate, veh/h	1322	0	744	1606	157	542
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	6	6	4	4	4	4
Cap, veh/h	1502		823	2535	300	1134
Arrive On Green	0.44	0.00	0.24	0.72	0.17	0.17
Sat Flow, veh/h	3622	0	3401	3589	1753	2745
Grp Volume(v), veh/h	1322	0	744	1606	157	542
Grp Sat Flow(s),veh/h/ln	1721	0	1700	1749	1753	1373
Q Serve(g_s), s	51.6	0.0	31.2	34.3	12.0	21.2
Cycle Q Clear(g_c), s	51.6	0.0	31.2	34.3	12.0	21.2
Prop In Lane		0.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1502		823	2535	300	1134
V/C Ratio(X)	0.88		0.90	0.63	0.52	0.48
Avail Cap(c_a), veh/h	1879		1070	3172	376	1253
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.9	0.0	54.0	10.3	55.4	31.5
Incr Delay (d2), s/veh	4.4	0.0	8.9	0.3	1.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	21.8	0.0	14.1	11.5	5.5	17.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	42.2	0.0	62.9	10.6	56.9	31.8
LnGrp LOS	D		E	B	E	C
Approach Vol, veh/h	1322	A		2350	699	
Approach Delay, s/veh	42.2			27.1	37.5	
Approach LOS	D			C	D	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		113.3		33.6	42.3	70.9
Change Period (Y+Rc), s		6.8		* 8.5	6.8	6.8
Max Green Setting (Gmax), s		133.2		* 32	46.2	80.2
Max Q Clear Time (g_c+I1), s		36.3		23.2	33.2	53.6
Green Ext Time (p_c), s		19.6		1.9	2.4	10.5

Intersection Summary	
HCM 6th Ctrl Delay	33.4
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
2: CR 484 & SW 29th Ave Rd

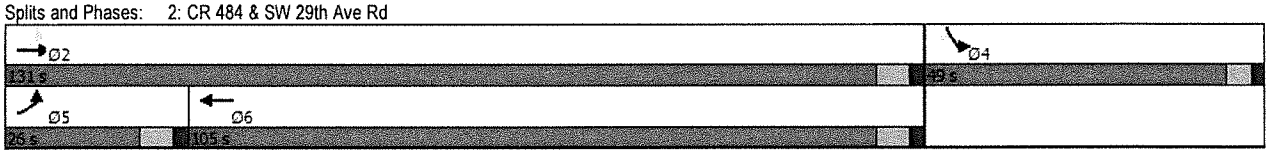
Buildout Conditions
Timing Plan: PM Peak Hour

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	62	1727	1670	79	158	77
Future Volume (vph)	62	1727	1670	79	158	77
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	7%	7%	4%	4%	2%	2%
Adj. Flow (vph)	65	1799	1740	82	165	80
Shared Lane Traffic (%)						
Lane Group Flow (vph)	65	1799	1822	0	165	80
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					4
Detector Phase	5	2	6		4	4
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	11.8	22.5	22.5		22.5	22.5
Total Split (s)	26.0	131.0	105.0		49.0	49.0
Total Split (%)	14.4%	72.8%	58.3%		27.2%	27.2%
Yellow Time (s)	4.8	4.8	4.8		3.7	3.7
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.8	6.8	6.8		5.7	5.7
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	None	None		None	None
v/c Ratio	0.35	0.72	0.82		0.62	0.26
Control Delay	14.3	10.7	22.2		64.9	13.5
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	14.3	10.7	22.2		64.9	13.5
Queue Length 50th (ft)	12	354	576		132	0
Queue Length 95th (ft)	48	548	867		239	49
Internal Link Dist (ft)		3183	3132		3021	
Turn Bay Length (ft)	144					
Base Capacity (vph)	325	3110	2707		645	627
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.20	0.58	0.67		0.26	0.13

Intersection Summary

Cycle Length: 180
Actual Cycle Length: 125.3
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 2: CR 484 & SW 29th Ave Rd



HCM 6th Signalized Intersection Summary
2: CR 484 & SW 29th Ave Rd

Buildout Conditions
Timing Plan: PM Peak Hour

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	62	1727	1670	79	158	77
Future Volume (veh/h)	62	1727	1670	79	158	77
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1796	1796	1841	1841	1870	1870
Adj Flow Rate, veh/h	65	1799	1740	82	165	80
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	7	4	4	2	2
Cap, veh/h	211	2562	2166	101	211	188
Arrive On Green	0.04	0.75	0.64	0.64	0.12	0.12
Sat Flow, veh/h	1711	3503	3493	159	1781	1585
Grp Volume(v), veh/h	65	1799	889	933	165	80
Grp Sat Flow(s),veh/h/ln	1711	1706	1749	1812	1781	1585
Q Serve(g_s), s	1.1	26.6	36.0	36.8	8.6	4.5
Cycle Q Clear(g_c), s	1.1	26.6	36.0	36.8	8.6	4.5
Prop In Lane	1.00			0.09	1.00	1.00
Lane Grp Cap(c), veh/h	211	2562	1113	1154	211	188
V/C Ratio(X)	0.31	0.70	0.80	0.81	0.78	0.43
Avail Cap(c_a), veh/h	481	4432	1795	1860	806	718
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.2	6.3	12.8	13.0	41.0	39.1
Incr Delay (d2), s/veh	0.8	0.4	1.4	1.4	6.2	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	5.9	11.4	12.2	4.1	4.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	16.0	6.6	14.2	14.4	47.2	40.7
LnGrp LOS	B	A	B	B	D	D
Approach Vol, veh/h		1864	1822		245	
Approach Delay, s/veh		7.0	14.3		45.0	
Approach LOS		A	B		D	

Timer - Assigned Phs	2	4	5	6
Phs Duration (G+Y+Rc), s	78.6	17.0	10.9	67.7
Change Period (Y+Rc), s	6.8	* 5.7	6.8	6.8
Max Green Setting (Gmax), s	124.2	* 43	19.2	98.2
Max Q Clear Time (g_c+I1), s	28.6	10.6	3.1	38.8
Green Ext Time (p_c), s	25.6	0.7	0.1	22.1

Intersection Summary	
HCM 6th Ctrl Delay	12.7
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
3: SW 20th Ave Rd & CR 484

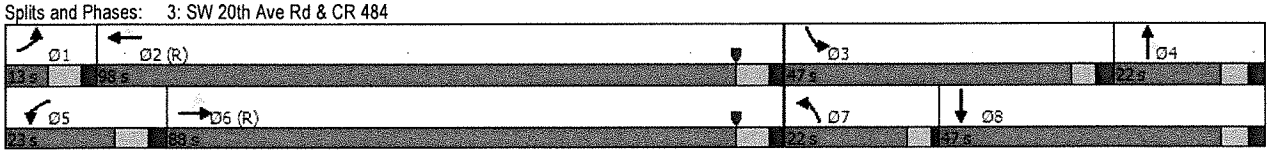
Buildout Conditions
Timing Plan: PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	1906	67	270	2294	312	96	23	317	631	46	131
Future Volume (vph)	88	1906	67	270	2294	312	96	23	317	631	46	131
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	11%	11%	11%	18%	18%	18%
Adj. Flow (vph)	95	2049	72	290	2467	335	103	25	341	678	49	141
Shared Lane Traffic (%)												
Lane Group Flow (vph)	95	2121	0	290	2467	335	103	25	341	678	190	0
Turn Type	pm+pt	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6					2			4			
Detector Phase	1	6		5	2	2	7	4	4	3	8	
Switch Phase												
Minimum Initial (s)	5.0	15.0		10.0	15.0	15.0	5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	12.0	21.9		17.3	21.9	21.9	9.5	16.6	16.6	11.1	16.6	
Total Split (s)	13.0	88.0		23.0	98.0	98.0	22.0	22.0	22.0	47.0	47.0	
Total Split (%)	7.2%	48.9%		12.8%	54.4%	54.4%	12.2%	12.2%	12.2%	26.1%	26.1%	
Yellow Time (s)	4.8	4.9		4.8	4.9	4.9	3.5	4.0	4.0	3.5	4.0	
All-Red Time (s)	2.2	2.0		2.5	2.0	2.0	1.0	2.6	2.6	2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.0	6.9		7.3	6.9	6.9	4.5	6.6	6.6	6.1	6.6	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Min		None	C-Min	C-Min	None	None	None	None	None	
v/c Ratio	0.99	0.97		1.01	1.00	0.40	0.75	0.17	1.20	1.01	0.48	
Control Delay	126.1	60.5		114.8	54.4	18.7	111.0	79.5	148.7	103.7	40.5	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	126.1	60.5		114.8	54.4	18.7	111.0	79.5	148.7	103.7	40.5	
Queue Length 50th (ft)	65	886		~183	1093	159	120	28	~288	~421	120	
Queue Length 95th (ft)	#201	#973		m#265	m#1157	m182	#196	64	#505	#561	210	
Internal Link Dist (ft)		3132			1240			650			1393	
Turn Bay Length (ft)	114			170		144	144			114		
Base Capacity (vph)	96	2195		288	2476	834	158	146	284	674	395	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.99	0.97		1.01	1.00	0.40	0.65	0.17	1.20	1.01	0.48	

Intersection Summary

Cycle Length: 180
Actuated Cycle Length: 180
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow
Natural Cycle: 150
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: SW 20th Ave Rd & CR 484



HCM 6th Signalized Intersection Summary
3: SW 20th Ave Rd & CR 484

Buildout Conditions
Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	1906	67	270	2294	312	96	23	317	631	46	131
Future Volume (veh/h)	88	1906	67	270	2294	312	96	23	317	631	46	131
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1811	1811	1811	1811	1811	1737	1737	1737	1633	1633	1633
Adj Flow Rate, veh/h	95	2049	69	290	2467	335	103	25	144	678	49	141
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	6	6	6	6	6	6	11	11	11	18	18	18
Cap, veh/h	99	2213	74	292	2502	777	120	149	126	686	93	266
Arrive On Green	0.04	0.60	0.60	0.12	0.67	0.67	0.07	0.09	0.09	0.23	0.25	0.25
Sat Flow, veh/h	1725	4912	165	3346	4944	1535	1654	1737	1472	3018	372	1069
Grp Volume(v), veh/h	95	1373	745	290	2467	335	103	25	144	678	0	190
Grp Sat Flow(s),veh/h/ln	1725	1648	1781	1673	1648	1535	1654	1737	1472	1509	0	1441
Q Serve(g_s), s	5.5	67.4	67.9	15.6	87.3	18.1	11.1	2.4	15.4	40.3	0.0	20.5
Cycle Q Clear(g_c), s	5.5	67.4	67.9	15.6	87.3	18.1	11.1	2.4	15.4	40.3	0.0	20.5
Prop In Lane	1.00		0.09	1.00		1.00	1.00		1.00	1.00		0.74
Lane Grp Cap(c), veh/h	99	1485	803	292	2502	777	120	149	126	686	0	359
V/C Ratio(X)	0.95	0.92	0.93	0.99	0.99	0.43	0.86	0.17	1.14	0.99	0.00	0.53
Avail Cap(c_a), veh/h	99	1485	803	292	2502	777	161	149	126	686	0	359
HCM Platoon Ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.64	0.64	0.64	0.47	0.47	0.47	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	43.4	33.3	33.4	79.5	28.8	17.5	82.5	76.4	82.3	69.3	0.0	58.5
Incr Delay (d2), s/veh	58.9	7.8	13.1	34.4	9.5	0.8	27.4	1.1	123.9	31.5	0.0	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	25.1	28.6	7.9	30.6	6.1	5.7	1.1	10.2	18.6	0.0	7.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	102.3	41.1	46.6	113.9	38.3	18.3	109.9	77.5	206.2	100.8	0.0	61.2
LnGrp LOS	F	D	D	F	D	B	F	E	F	F	A	E
Approach Vol, veh/h		2213			3092			272			868	
Approach Delay, s/veh		45.6			43.2			157.9			92.1	
Approach LOS		D			D			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.0	98.0	47.0	22.0	23.0	88.0	17.6	51.4
Change Period (Y+Rc), s	* 7	6.9	6.1	6.6	7.3	6.9	4.5	6.6
Max Green Setting (Gmax), s	* 6	91.1	40.9	15.4	15.7	81.1	17.5	40.4
Max Q Clear Time (g_c+I1), s	7.5	89.3	42.3	17.4	17.6	69.9	13.1	22.5
Green Ext Time (p_c), s	0.0	1.8	0.0	0.0	0.0	10.5	0.1	1.8

Intersection Summary	
HCM 6th Ctrl Delay	55.4
HCM 6th LOS	E

Notes

User approved ignoring U-Turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
4: I-75 SB Off-Ramp & CR 484

Buildout Conditions
Timing Plan: PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	2216	494	139	2134	0	0	0	0	380	0	753
Future Volume (vph)	0	2216	494	139	2134	0	0	0	0	380	0	753
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	10%	10%	10%	6%	6%	6%	0%	0%	0%	8%	8%	8%
Adj. Flow (vph)	0	2409	537	151	2320	0	0	0	0	413	0	818
Shared Lane Traffic (%)										50%		
Lane Group Flow (vph)	0	2946	0	151	2320	0	0	0	0	206	207	818
Turn Type		NA		Prot	NA					Split	NA	Prot
Protected Phases		6		5	2					4	4	4
Permitted Phases												
Detector Phase		6		5	2					4	4	4
Switch Phase												
Minimum Initial (s)		18.0		7.0	18.0					7.0	7.0	7.0
Minimum Split (s)		25.4		17.9	25.4					18.3	18.3	18.3
Total Split (s)		93.0		27.0	120.0					60.0	60.0	60.0
Total Split (%)		51.7%		15.0%	66.7%					33.3%	33.3%	33.3%
Yellow Time (s)		5.4		5.4	5.4					4.1	4.1	4.1
All-Red Time (s)		2.0		2.0	2.0					2.9	2.9	2.9
Lost Time Adjust (s)		0.0		0.0	0.0					0.0	0.0	0.0
Total Lost Time (s)		7.4		7.4	7.4					7.0	7.0	7.0
Lead/Lag		Lead		Lag								
Lead-Lag Optimize?		Yes		Yes								
Recall Mode		Min		Min	C-Min					None	None	None
v/c Ratio		1.06		0.85	0.76					0.43	0.44	0.98
Control Delay		64.5		84.2	19.3					54.7	54.7	82.4
Queue Delay		15.8		0.0	2.2					0.0	0.0	0.0
Total Delay		80.2		84.2	21.5					54.7	54.7	82.4
Queue Length 50th (ft)		~1102		164	356					209	210	514
Queue Length 95th (ft)		m#1091		m206	444					302	303	#676
Internal Link Dist (ft)		1240			424			1185			1125	
Turn Bay Length (ft)										325		475
Base Capacity (vph)		2771		185	3060					474	474	836
Starvation Cap Reductn		0		0	571					0	0	0
Spillback Cap Reductn		146		0	0					0	0	0
Storage Cap Reductn		0		0	0					0	0	0
Reduced v/c Ratio		1.12		0.82	0.93					0.43	0.44	0.98

Intersection Summary

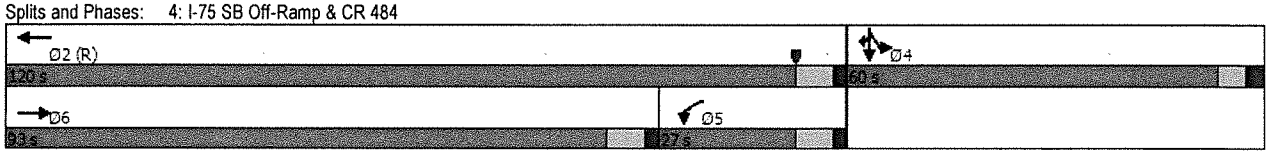
Cycle Length: 180
Actuated Cycle Length: 180
Offset: 58 (32%), Referenced to phase 2:WBT, Start of Yellow
Natural Cycle: 140
Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: I-75 SB Off-Ramp & CR 484



HCM 6th Signalized Intersection Summary
4: I-75 SB Off-Ramp & CR 484

Buildout Conditions
Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	2216	494	139	2134	0	0	0	0	380	0	753
Future Volume (veh/h)	0	2216	494	139	2134	0	0	0	0	380	0	753
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1752	1752	1811	1811	0				1781	1781	1781
Adj Flow Rate, veh/h	0	2409	0	151	2320	0				413	0	818
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	10	10	6	6	0				8	8	8
Cap, veh/h	0	2718		245	3135	0				971	0	864
Arrive On Green	0.00	0.60	0.00	0.19	0.84	0.00				0.29	0.00	0.29
Sat Flow, veh/h	0	6517	0	1725	5107	0				3393	0	3019
Grp Volume(v), veh/h	0	2409	0	151	2320	0				413	0	818
Grp Sat Flow(s),veh/h/ln	0	1507	0	1725	1648	0				1697	0	1510
Q Serve(g_s), s	0.0	61.5	0.0	14.5	35.2	0.0				17.8	0.0	47.8
Cycle Q Clear(g_c), s	0.0	61.5	0.0	14.5	35.2	0.0				17.8	0.0	47.8
Prop In Lane	0.00		0.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2718		245	3135	0				971	0	864
V/C Ratio(X)	0.00	0.89		0.62	0.74	0.00				0.43	0.00	0.95
Avail Cap(c_a), veh/h	0	2866		245	3135	0				999	0	889
HCM Platoon Ratio	1.00	1.33	1.33	1.33	1.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.09	0.00	0.34	0.34	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	32.1	0.0	68.5	7.9	0.0				52.2	0.0	62.9
Incr Delay (d2), s/veh	0.0	0.3	0.0	1.9	0.6	0.0				0.3	0.0	18.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	19.7	0.0	6.2	6.5	0.0				7.7	0.0	37.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	32.4	0.0	70.4	8.5	0.0				52.5	0.0	81.3
LnGrp LOS	A	C		E	A	A				D	A	F
Approach Vol, veh/h		2409	A		2471						1231	
Approach Delay, s/veh		32.4			12.3						71.7	
Approach LOS		C			B						E	

Timer - Assigned Phs		2		4	5	6						
Phs Duration (G+Y+Rc), s		121.5		58.5	32.9	88.6						
Change Period (Y+Rc), s		7.4		7.0	7.4	7.4						
Max Green Setting (Gmax), s		112.6		53.0	19.6	85.6						
Max Q Clear Time (g_c+I1), s		37.2		49.8	16.5	63.5						
Green Ext Time (p_c), s		37.5		1.7	0.2	17.7						

Intersection Summary		
HCM 6th Ctrl Delay	32.2	
HCM 6th LOS	C	

Notes

User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
5: I-75 NB Off-Ramp & CR 484

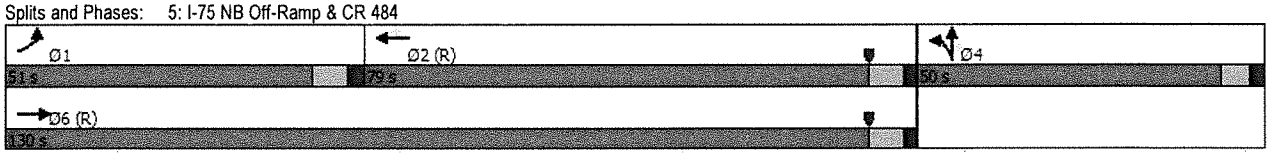
Buildout Conditions
Timing Plan: PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	547	2001	0	0	1702	285	542	0	270	0	0	0
Future Volume (vph)	547	2001	0	0	1702	285	542	0	270	0	0	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	9%	9%	9%	5%	5%	5%	11%	11%	11%	0%	0%	0%
Adj. Flow (vph)	570	2084	0	0	1773	297	565	0	281	0	0	0
Shared Lane Traffic (%)							50%					
Lane Group Flow (vph)	570	2084	0	0	1773	297	282	283	281	0	0	0
Turn Type	Prot	NA			NA	Perm	Split	NA	Perm			
Protected Phases	1	6			2		4	4				
Permitted Phases						2			4			
Detector Phase	1	6			2	2	4	4	4			
Switch Phase												
Minimum Initial (s)	7.0	20.0			20.0	20.0	7.0	7.0	7.0			
Minimum Split (s)	14.2	26.9			26.9	26.9	13.5	13.5	13.5			
Total Split (s)	51.0	130.0			79.0	79.0	50.0	50.0	50.0			
Total Split (%)	28.3%	72.2%			43.9%	43.9%	27.8%	27.8%	27.8%			
Yellow Time (s)	4.9	4.9			4.9	4.9	4.1	4.1	4.1			
All-Red Time (s)	2.3	2.0			2.0	2.0	2.4	2.4	2.4			
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Total Lost Time (s)	7.2	6.9			6.9	6.9	6.5	6.5	6.5			
Lead/Lag	Lead				Lag	Lag						
Lead-Lag Optimize?	Yes				Yes	Yes						
Recall Mode	Max	C-Min			C-Min	C-Min	None	None	None			
v/c Ratio	0.68	0.89			0.90	0.44	0.82	0.83	0.75			
Control Delay	70.4	16.6			45.0	17.4	85.8	86.1	61.8			
Queue Delay	1.0	46.1			0.0	0.0	0.5	0.6	0.0			
Total Delay	71.4	62.7			45.0	17.4	86.4	86.7	61.8			
Queue Length 50th (ft)	272	1370			741	78	329	330	237			
Queue Length 95th (ft)	m262	m1309			672	123	455	457	355			
Internal Link Dist (ft)		424			1171			1111			1102	
Turn Bay Length (ft)						144	320		320			
Base Capacity (vph)	843	2329			1978	677	373	373	402			
Starvation Cap Reductn	98	482			0	0	0	0	0			
Spillback Cap Reductn	0	0			0	0	9	9	0			
Storage Cap Reductn	0	0			0	0	0	0	0			
Reduced v/c Ratio	0.77	1.13			0.90	0.44	0.77	0.78	0.70			

Intersection Summary

Cycle Length: 180
Actuated Cycle Length: 180
Offset: 65 (36%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: I-75 NB Off-Ramp & CR 484



HCM 6th Signalized Intersection Summary
5: I-75 NB Off-Ramp & CR 484

Buildout Conditions
Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	547	2001	0	0	1702	285	542	0	270	0	0	0
Future Volume (veh/h)	547	2001	0	0	1702	285	542	0	270	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1767	1767	0	0	1826	1826	1737	1737	1737			
Adj Flow Rate, veh/h	570	2084	0	0	1773	0	565	0	0			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96			
Percent Heavy Veh, %	9	9	0	0	5	5	11	11	11			
Cap, veh/h	794	2449	0	0	2225		648	0				
Arrive On Green	0.24	0.73	0.00	0.00	0.89	0.00	0.20	0.00	0.00			
Sat Flow, veh/h	3264	3445	0	0	5149	1547	3309	0	1472			
Grp Volume(v), veh/h	570	2084	0	0	1773	0	565	0	0			
Grp Sat Flow(s),veh/h/ln	1632	1678	0	0	1662	1547	1654	0	1472			
Q Serve(g_s), s	28.8	79.7	0.0	0.0	23.8	0.0	29.8	0.0	0.0			
Cycle Q Clear(g_c), s	28.8	79.7	0.0	0.0	23.8	0.0	29.8	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	794	2449	0	0	2225		648	0				
V/C Ratio(X)	0.72	0.85	0.00	0.00	0.80		0.87	0.00				
Avail Cap(c_a), veh/h	794	2449	0	0	2225		800	0				
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00			
Upstream Filter(I)	0.09	0.09	0.00	0.00	0.55	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	62.4	17.3	0.0	0.0	6.6	0.0	70.2	0.0	0.0			
Incr Delay (d2), s/veh	0.5	0.4	0.0	0.0	1.7	0.0	10.9	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	11.9	27.5	0.0	0.0	3.3	0.0	13.6	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.9	17.7	0.0	0.0	8.3	0.0	81.1	0.0	0.0			
LnGrp LOS	E	B	A	A	A		F	A				
Approach Vol, veh/h		2654			1773	A		565	A			
Approach Delay, s/veh		27.4			8.3			81.1				
Approach LOS		C			A			F				

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	51.0	87.3		41.7		138.3
Change Period (Y+Rc), s	* 7.2	6.9		6.5		6.9
Max Green Setting (Gmax), s	* 44	72.1		43.5		123.1
Max Q Clear Time (g_c+I1), s	30.8	25.8		31.8		81.7
Green Ext Time (p_c), s	2.7	26.8		3.4		32.3

Intersection Summary	
HCM 6th Ctrl Delay	26.7
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
6: CR 475A & CR 484

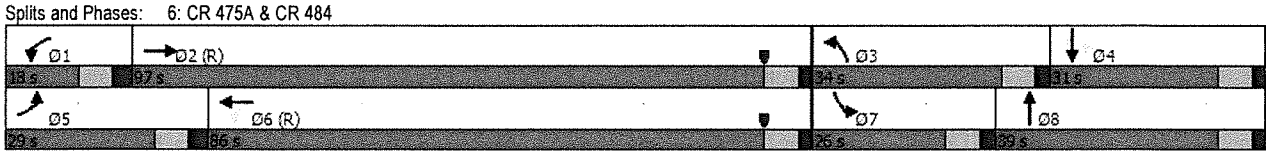
Buildout Conditions
Timing Plan: PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	317	1627	225	11	1271	27	263	49	9	80	42	282
Future Volume (vph)	317	1627	225	11	1271	27	263	49	9	80	42	282
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	8%	8%	8%	7%	7%	7%	4%	4%	4%	5%	5%	5%
Adj. Flow (vph)	320	1643	227	11	1284	27	266	49	9	81	42	285
Shared Lane Traffic (%)												
Lane Group Flow (vph)	320	1870	0	11	1311	0	266	58	0	81	42	285
Turn Type	Prot	NA		pm+pt	NA		Prot	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases				6						4		4
Detector Phase	5	2		1	6		3	8		7	4	4
Switch Phase												
Minimum Initial (s)	6.0	15.0		6.0	15.0		6.0	10.0		6.0	10.0	10.0
Minimum Split (s)	17.5	21.9		17.5	21.9		17.5	16.9		17.5	16.9	16.9
Total Split (s)	29.0	97.0		18.0	86.0		34.0	39.0		26.0	31.0	31.0
Total Split (%)	16.1%	53.9%		10.0%	47.8%		18.9%	21.7%		14.4%	17.2%	17.2%
Yellow Time (s)	4.9	4.9		4.8	4.9		4.9	4.9		4.9	4.9	4.9
All-Red Time (s)	2.9	2.0		2.8	2.0		2.2	2.0		2.1	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	7.8	6.9		7.6	6.9		7.1	6.9		7.0	6.9	6.9
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	None
v/c Ratio	0.81	0.88		0.11	0.76		0.73	0.25		0.30	0.24	0.86
Control Delay	103.2	19.7		17.3	40.2		89.5	64.4		55.0	75.9	48.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	103.2	19.7		17.3	40.2		89.5	64.4		55.0	75.9	48.0
Queue Length 50th (ft)	205	276		4	645		159	58		77	47	101
Queue Length 95th (ft)	m220	#1422		15	851		207	101		115	87	212
Internal Link Dist (ft)		1171			10343			554			865	
Turn Bay Length (ft)	295			360			270			114		114
Base Capacity (vph)	406	2132		137	1732		503	328		314	247	384
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.79	0.88		0.08	0.76		0.53	0.18		0.26	0.17	0.74

Intersection Summary

Cycle Length: 180
Actuated Cycle Length: 180
Offset: 58 (32%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 150
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: CR 475A & CR 484



HCM 6th Signalized Intersection Summary
6: CR 475A & CR 484

Buildout Conditions
Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	317	1627	225	11	1271	27	263	49	9	80	42	282
Future Volume (veh/h)	317	1627	225	11	1271	27	263	49	9	80	42	282
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1781	1781	1781	1796	1796	1796	1841	1841	1841	1826	1826	1826
Adj Flow Rate, veh/h	320	1643	208	11	1284	26	266	49	8	81	42	189
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	8	8	8	7	7	7	4	4	4	5	5	5
Cap, veh/h	353	1828	227	186	1742	35	313	268	44	302	241	204
Arrive On Green	0.21	1.00	1.00	0.01	0.51	0.51	0.09	0.17	0.17	0.05	0.13	0.13
Sat Flow, veh/h	3291	3029	377	1711	3421	69	3401	1543	252	1739	1826	1547
Grp Volume(v), veh/h	320	905	946	11	640	670	266	0	57	81	42	189
Grp Sat Flow(s),veh/h/ln	1646	1692	1714	1711	1706	1784	1700	0	1795	1739	1826	1547
Q Serve(g_s), s	17.1	0.0	0.0	0.6	53.0	53.1	13.9	0.0	4.9	7.2	3.7	21.7
Cycle Q Clear(g_c), s	17.1	0.0	0.0	0.6	53.0	53.1	13.9	0.0	4.9	7.2	3.7	21.7
Prop In Lane	1.00		0.22	1.00		0.04	1.00		0.14	1.00		1.00
Lane Grp Cap(c), veh/h	353	1021	1034	186	869	908	313	0	312	302	241	204
V/C Ratio(X)	0.91	0.89	0.91	0.06	0.74	0.74	0.85	0.00	0.18	0.27	0.17	0.92
Avail Cap(c_a), veh/h	388	1021	1034	261	869	908	508	0	320	397	244	207
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.36	0.36	0.36	0.37	0.37	0.37	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	69.8	0.0	0.0	20.6	34.7	34.7	80.5	0.0	63.4	63.0	69.4	77.2
Incr Delay (d2), s/veh	10.3	4.5	5.8	0.0	2.1	2.0	7.5	0.0	0.3	0.5	0.3	41.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.9	1.3	1.7	0.2	22.0	23.0	6.5	0.0	2.3	3.3	1.8	11.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	80.2	4.5	5.8	20.6	36.8	36.7	88.0	0.0	63.7	63.5	69.7	119.1
LnGrp LOS	F	A	A	C	D	D	F	A	E	E	E	F
Approach Vol, veh/h		2171			1321			323			312	
Approach Delay, s/veh		16.2			36.6			83.7			98.0	
Approach LOS		B			D			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.1	115.5	23.6	30.7	27.1	98.6	16.1	38.2
Change Period (Y+Rc), s	* 7.6	6.9	* 7.1	6.9	7.8	6.9	7.0	6.9
Max Green Setting (Gmax), s	* 10	90.1	* 27	24.1	21.2	79.1	19.0	32.1
Max Q Clear Time (g_c+I1), s	2.6	2.0	15.9	23.7	19.1	55.1	9.2	6.9
Green Ext Time (p_c), s	0.0	52.2	0.7	0.0	0.2	14.3	0.1	0.2

Intersection Summary	
HCM 6th Ctrl Delay	34.2
HCM 6th LOS	C

Notes

User approved ignoring U-Turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
7: CR 475 & CR 484

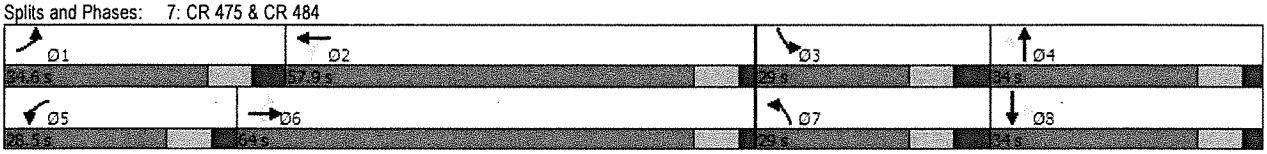
Buildout Conditions
Timing Plan: PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	117	1461	121	67	1075	80	117	126	80	74	150	73
Future Volume (vph)	117	1461	121	67	1075	80	117	126	80	74	150	73
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	7%	7%	7%	6%	6%	6%	7%	7%	7%	2%	2%	2%
Adj. Flow (vph)	122	1522	126	70	1120	83	122	131	83	77	156	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	122	1522	126	70	1203	0	122	214	0	77	232	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6		6	2			4			8		
Detector Phase	1	6	6	5	2		7	4		3	8	
Switch Phase												
Minimum Initial (s)	8.0	17.0	17.0	8.0	17.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	17.6	24.7	24.7	16.5	24.7		18.0	16.2		18.0	16.2	
Total Split (s)	34.6	64.0	64.0	28.5	57.9		29.0	34.0		29.0	34.0	
Total Split (%)	22.3%	41.2%	41.2%	18.3%	37.2%		18.6%	21.9%		18.6%	21.9%	
Yellow Time (s)	5.5	5.7	5.7	5.5	5.7		5.5	5.5		5.5	5.5	
All-Red Time (s)	4.1	2.0	2.0	3.0	2.0		4.5	2.7		4.5	2.7	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	9.6	7.7	7.7	8.5	7.7		10.0	8.2		10.0	8.2	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Min	Min	None	Min		None	None		None	None	
v/c Ratio	0.61	1.01	0.16	0.42	0.91		0.47	0.69		0.28	0.80	
Control Delay	39.8	63.9	1.9	29.0	50.8		40.0	59.2		35.8	71.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	39.8	63.9	1.9	29.0	50.8		40.0	59.2		35.8	71.6	
Queue Length 50th (ft)	56	~775	0	28	515		77	160		47	184	
Queue Length 95th (ft)	131	#1045	17	70	#796		133	263		89	298	
Internal Link Dist (ft)		10343			1733			1031			1659	
Turn Bay Length (ft)	144		94	144			144			144		
Base Capacity (vph)	361	1505	765	307	1317		335	359		387	356	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.34	1.01	0.16	0.23	0.91		0.36	0.60		0.20	0.65	

Intersection Summary

Cycle Length: 155.5
Actuated Cycle Length: 133.3
Natural Cycle: 120
Control Type: Actuated-Uncoordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: CR 475 & CR 484



HCM 6th Signalized Intersection Summary
7: CR 475 & CR 484

Buildout Conditions
Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	117	1461	121	67	1075	80	117	126	80	74	150	73
Future Volume (veh/h)	117	1461	121	67	1075	80	117	126	80	74	150	73
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1811	1811	1811	1796	1796	1796	1870	1870	1870
Adj Flow Rate, veh/h	122	1522	83	70	1120	77	122	131	0	77	156	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	7	7	6	6	6	7	7	7	2	2	2
Cap, veh/h	250	1586	707	185	1492	102	221	217		234	192	
Arrive On Green	0.07	0.46	0.46	0.07	0.46	0.46	0.08	0.12	0.00	0.06	0.10	0.00
Sat Flow, veh/h	1711	3413	1522	1725	3267	224	1711	1796	0	1781	1870	0
Grp Volume(v), veh/h	122	1522	83	70	590	607	122	131	0	77	156	0
Grp Sat Flow(s),veh/h/ln	1711	1706	1522	1725	1721	1771	1711	1796	0	1781	1870	0
Q Serve(g_s), s	4.4	51.7	3.7	2.4	34.0	34.1	7.5	8.3	0.0	4.5	9.8	0.0
Cycle Q Clear(g_c), s	4.4	51.7	3.7	2.4	34.0	34.1	7.5	8.3	0.0	4.5	9.8	0.0
Prop In Lane	1.00		1.00	1.00		0.13	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	250	1586	707	185	786	808	221	217		234	192	
V/C Ratio(X)	0.49	0.96	0.12	0.38	0.75	0.75	0.55	0.60		0.33	0.81	
Avail Cap(c_a), veh/h	494	1601	714	358	786	808	356	386		407	402	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	21.4	31.0	18.2	26.4	27.0	27.0	43.7	50.1	0.0	44.0	52.7	0.0
Incr Delay (d2), s/veh	1.5	14.1	0.1	1.3	4.1	4.0	2.2	2.7	0.0	1.0	8.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	22.1	1.2	0.9	13.5	13.9	3.2	3.7	0.0	2.0	4.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.9	45.1	18.3	27.7	31.0	30.9	45.8	52.8	0.0	45.0	60.8	0.0
LnGrp LOS	C	D	B	C	C	C	D	D		D	E	
Approach Vol, veh/h		1727			1267			253	A		233	A
Approach Delay, s/veh		42.3			30.8			49.4			55.5	
Approach LOS		D			C			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.5	62.5	17.4	22.7	16.5	63.5	19.5	20.5
Change Period (Y+Rc), s	* 9.6	7.7	10.0	* 8.2	8.5	7.7	10.0	* 8.2
Max Green Setting (Gmax), s	* 25	50.2	19.0	* 26	20.0	56.3	19.0	* 26
Max Q Clear Time (g_c+I1), s	6.4	36.1	6.5	10.3	4.4	53.7	9.5	11.8
Green Ext Time (p_c), s	0.3	5.9	0.1	0.4	0.1	2.0	0.2	0.5

Intersection Summary	
HCM 6th Ctrl Delay	39.5
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
8: SW 29th Ave Rd & Marion Oaks Trail

Buildout Conditions
Timing Plan: PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	27	50	164	67	0	70	13	53	0	15	0
Future Volume (vph)	3	27	50	164	67	0	70	13	53	0	15	0
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles (%)	6%	6%	6%	0%	0%	0%	1%	1%	1%	7%	7%	7%
Adj. Flow (vph)	4	33	62	202	83	0	86	16	65	0	19	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	99	0	0	285	0	86	81	0	0	19	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	11.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↰	↱			↕	
Traffic Vol, veh/h	3	27	50	164	67	0	70	13	53	0	15	0
Future Vol, veh/h	3	27	50	164	67	0	70	13	53	0	15	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	6	6	6	0	0	0	1	1	1	7	7	7
Mvmt Flow	4	33	62	202	83	0	86	16	65	0	19	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	281	272	19	288	240	49	19	0	0	81	0	0
Stage 1	19	19	-	221	221	-	-	-	-	-	-	-
Stage 2	262	253	-	67	19	-	-	-	-	-	-	-
Critical Hdwy	7.16	6.56	6.26	7.1	6.5	6.2	4.11	-	-	4.17	-	-
Critical Hdwy Stg 1	6.16	5.56	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.16	5.56	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.554	4.054	3.354	3.5	4	3.3	2.209	-	-	2.263	-	-
Pot Cap-1 Maneuver	663	628	1048	668	665	1025	1604	-	-	1486	-	-
Stage 1	990	872	-	786	724	-	-	-	-	-	-	-
Stage 2	734	690	-	948	884	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	572	594	1048	577	629	1025	1604	-	-	1486	-	-
Mov Cap-2 Maneuver	572	594	-	577	629	-	-	-	-	-	-	-
Stage 1	937	872	-	744	685	-	-	-	-	-	-	-
Stage 2	611	653	-	858	884	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10	16.6	3.8	0
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1604	-	-	813	591	1486	-	-
HCM Lane V/C Ratio	0.054	-	-	0.121	0.483	-	-	-
HCM Control Delay (s)	7.4	-	-	10	16.6	0	-	-
HCM Lane LOS	A	-	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.4	2.6	0	-	-

F10: PM Peak Hour Future Year Buildout w/ Improvements Traffic Conditions (2027)

Lanes, Volumes, Timings
3: SW 20th Ave Rd & CR 484

Buildout Conditions w/ Improvements
Timing Plan: PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	1906	67	270	2294	312	96	23	317	631	46	131
Future Volume (vph)	88	1906	67	270	2294	312	96	23	317	631	46	131
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	11%	11%	11%	18%	18%	18%
Adj. Flow (vph)	95	2049	72	290	2467	335	103	25	341	678	49	141
Shared Lane Traffic (%)												
Lane Group Flow (vph)	95	2121	0	290	2467	335	103	25	341	678	190	0
Turn Type	pm+pt	NA		Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	
Protected Phases	1	6		5	2		7	4	5	3	8	
Permitted Phases	6					2			4			
Detector Phase	1	6		5	2	2	7	4	5	3	8	
Switch Phase												
Minimum Initial (s)	5.0	15.0		10.0	15.0	15.0	5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	12.0	21.9		17.3	21.9	21.9	11.1	16.6	17.3	11.1	16.6	
Total Split (s)	13.0	88.0		23.0	98.0	98.0	22.0	22.0	23.0	47.0	47.0	
Total Split (%)	7.2%	48.9%		12.8%	54.4%	54.4%	12.2%	12.2%	12.8%	26.1%	26.1%	
Yellow Time (s)	4.8	4.9		4.8	4.9	4.9	3.5	4.0	4.8	3.5	4.0	
All-Red Time (s)	2.2	2.0		2.5	2.0	2.0	2.6	2.6	2.5	2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.0	6.9		7.3	6.9	6.9	6.1	6.6	7.3	6.1	6.6	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Min		None	C-Min	C-Min	None	None	None	None	None	
v/c Ratio	0.64	0.94		0.65	0.94	0.38	0.78	0.24	0.94	1.01	0.63	
Control Delay	57.2	54.5		72.6	42.1	16.3	116.2	86.2	84.4	103.7	50.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	57.2	54.5		72.6	42.1	16.3	116.2	86.2	84.4	103.7	50.2	
Queue Length 50th (ft)	61	886		181	1093	154	121	29	295	~421	126	
Queue Length 95th (ft)	#173	#973		m#237	m#1157	m175	#216	65	#486	#561	214	
Internal Link Dist (ft)		3132			1240			650			1393	
Turn Bay Length (ft)	114			170		144	144			114		
Base Capacity (vph)	148	2267		445	2634	884	143	146	362	674	378	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.64	0.94		0.65	0.94	0.38	0.72	0.17	0.94	1.01	0.50	

Intersection Summary

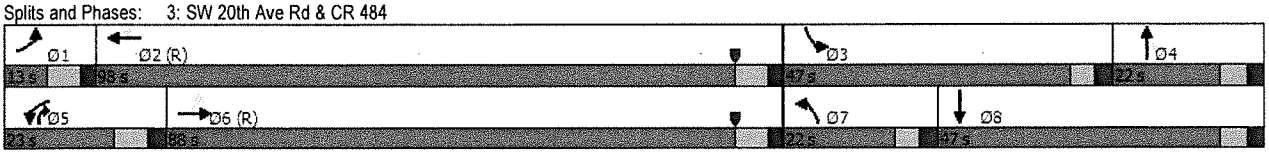
Cycle Length: 180
Actuated Cycle Length: 180
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow
Natural Cycle: 150
Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: SW 20th Ave Rd & CR 484



HCM 6th Signalized Intersection Summary
3: SW 20th Ave Rd & CR 484

Buildout Conditions w/ Improvements
Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	1906	67	270	2294	312	96	23	317	631	46	131
Future Volume (veh/h)	88	1906	67	270	2294	312	96	23	317	631	46	131
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1811	1811	1811	1811	1811	1737	1737	1737	1633	1633	1633
Adj Flow Rate, veh/h	95	2049	69	290	2467	335	103	25	144	678	49	141
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	6	6	6	6	6	6	11	11	11	18	18	18
Cap, veh/h	99	2213	74	292	2502	777	120	149	254	686	89	257
Arrive On Green	0.04	0.60	0.60	0.12	0.67	0.67	0.07	0.09	0.09	0.23	0.24	0.24
Sat Flow, veh/h	1725	4912	165	3346	4944	1535	1654	1737	1472	3018	372	1069
Grp Volume(v), veh/h	95	1373	745	290	2467	335	103	25	144	678	0	190
Grp Sat Flow(s),veh/h/ln	1725	1648	1781	1673	1648	1535	1654	1737	1472	1509	0	1441
Q Serve(g_s), s	5.5	67.4	67.9	15.6	87.3	18.1	11.1	2.4	15.4	40.3	0.0	20.8
Cycle Q Clear(g_c), s	5.5	67.4	67.9	15.6	87.3	18.1	11.1	2.4	15.4	40.3	0.0	20.8
Prop In Lane	1.00		0.09	1.00		1.00	1.00		1.00	1.00		0.74
Lane Grp Cap(c), veh/h	99	1485	803	292	2502	777	120	149	254	686	0	346
V/C Ratio(X)	0.95	0.92	0.93	0.99	0.99	0.43	0.86	0.17	0.57	0.99	0.00	0.55
Avail Cap(c_a), veh/h	99	1485	803	292	2502	777	146	149	254	686	0	346
HCM Platoon Ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.64	0.64	0.64	0.47	0.47	0.47	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	43.4	33.3	33.4	79.5	28.8	17.5	82.6	76.4	68.3	69.3	0.0	59.8
Incr Delay (d2), s/veh	58.9	7.8	13.1	34.4	9.5	0.8	32.3	1.1	4.8	31.5	0.0	3.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	25.1	28.6	7.9	30.6	6.1	5.8	1.1	6.5	18.6	0.0	8.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	102.3	41.1	46.6	113.9	38.3	18.3	114.9	77.5	73.1	100.8	0.0	63.1
LnGrp LOS	F	D	D	F	D	B	F	E	E	F	A	E
Approach Vol, veh/h		2213			3092			272			868	
Approach Delay, s/veh		45.6			43.2			89.3			92.5	
Approach LOS		D			D			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.0	98.0	47.0	22.0	23.0	88.0	19.2	49.8
Change Period (Y+Rc), s	* 7	6.9	6.1	6.6	7.3	6.9	6.1	6.6
Max Green Setting (Gmax), s	* 6	91.1	40.9	15.4	15.7	81.1	15.9	40.4
Max Q Clear Time (g_c+I1), s	7.5	89.3	42.3	17.4	17.6	69.9	13.1	22.8
Green Ext Time (p_c), s	0.0	1.8	0.0	0.0	0.0	10.5	0.1	1.8

Intersection Summary	
HCM 6th Ctrl Delay	52.6
HCM 6th LOS	D

Notes

User approved ignoring U-Turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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APPENDIX G: PROJECT DRIVEWAYS TURN LANE WARRANTS

Chapter 6: Turn Lanes and U-Turns

6.1 Overview

For driveways, medians and median openings, the placement and design of turn lanes and U-turns are critical to avoid potential traffic safety issues. For example, a median opening placed across a left-turn lane at an intersection could create conditions leading to a vehicular crash (See *Figure 16* or *Figure 17*). The locating of these roadway openings is discussed in greater detail in ***Locating Roadway Openings***. This chapter will instead focus on where to locate and design turn lanes and U-turns and how they relate to driveways, medians and median openings.

6.2 Exclusive Right-Turn Lanes

Exclusive right-turn lanes are useful where a combination of high roadway speeds, and high right-turn volumes into a driveway are expected. Congestion on the roadway may also be a good reason to use an exclusive right-turn lane. If properly built, they remove the turning vehicle from the through lanes, thereby decreasing the operational and safety impact of right turning vehicles on the through traffic.

Previous requirements in Standard Index 301 were removed and placed into FDM 212 – Intersections. There is no specific guidance on warrants for right-turn lanes based on number of turns in and out of unsignalized driveways, but the guidelines in this chapter were developed to assist in the decision-making process. *FDM 212* does contain the standards needed to design right-turn lanes.

6.2.1 When to Consider Exclusive Right-Turn Lanes

Here are some additional situations when adding an exclusive right-turn lane may be required:

- Facilities having a high volume of buses, trucks or trailers (2 or 3 per hour)
- Poor internal site design of a driveway facility causing potential backups in the through lanes
- Heavier than normal peak flows on the main roadway
- Very high operating speeds (such as 55 mph or above) and in rural locations where turns are not expected by through drivers
- Highways with curves or hills where sight distance is impacted
- Gated entrances
- Crash experience, especially rear end collisions
- Intersections or driveways just after signalized intersections where acceleration or driver expectancy would make a separate right-turn lane desirable
- Severe skewed angle of intersection requiring right-turn vehicle to slow greatly

When Not to Consider Exclusive Right-Turn Lanes

- Dense or built-out corridors with limited space
- Right-turn lane that would negatively impact pedestrians or bicyclists
- Vehicular movements from driveways or median openings that cross the right-turn lane resulting in multiple threat crashes
- Context classifications C2T, C4, C5, or C6

When Exclusive Right-Turn Lanes are Beneficial

There are instances when adding an exclusive right-turn lane for unsignalized driveways are beneficial to traffic operations and safety. ***Table 27*** provides some guidance for this situation based on the speed limit of the roadway and how many right turns occur per hour. Locations where the Auto and Truck Modal Emphasis is "High" may be appropriate for consideration of Exclusive Right Turn Lanes.

Table 27 – Recommended Guidelines for Exclusive Right-Turn Lanes to Unsignalized Driveway[10]

Roadway Posted Speed Limit	Number of Right Turns Per Hour
45 mph or less	80 – 125[1]
Over 45 mph	35 – 55[2]
Note: A posted speed limit of 45 mph may be used with these thresholds if the operating speeds are known to be over 45 mph during the time of peak right turn demand.	
Note on traffic projections: Projecting turning volumes is, at best, a knowledgeable estimate. Keep this in mind especially if the projections of right turns are close to meeting the guidelines. In that case, consider requiring the turn lane.	
[1] The lower threshold of 80 right-turn vehicles per hour would be most used for higher volume (greater than 600 vehicles per hour, per lane in one direction on the major roadway) or two-lane roads where lateral movement is restricted. The 125 right-turn vehicles per hour upper threshold would be most appropriate on lower volume roadways, multilane highways, or driveways with a large entry radius (50 feet or greater).	
[2] The lower threshold of 35 right-turn vehicles per hour would be most appropriately used on higher volume two-lane roadways where lateral movement is restricted. The 55 right-turn vehicles per hour upper threshold would be most appropriate on lower volume roadways, multilane highways, or driveways with large entry radius (50 feet or greater).	

Source: NCHRP Report 420 (Impacts of Access Management Techniques)

These recommendations are primarily based on the research done in NCHRP Report 420, Impacts of Access Management Techniques, Chapter 4 – Unsignalized Access Spacing (Technique 1B), and Use of Speed Differential as a Measure to Evaluate the Need for Right-Turn Deceleration Lane at Unsignalized Intersections.

In the *NCHRP Report 420*, the observed high-speed roads, 30 to 40 right-turn vehicles per hour caused evasive maneuvers on 5 - 10 percent of the following through vehicles. For lower speed roadways, 80 to 110 right-turn vehicles caused 15 - 20 percent of the following through vehicles to make evasive maneuvers. The choice of acceptable percentages of through vehicles impacted is a decision based on reasonable expectations of the different roadways.

In this study, by modeling speed differentials, a better understanding of the impacts of through volume and driveway radius was discovered.

[10] May not be appropriate for signalized locations where signal phasing plays an important role in determining the need for right turn lanes.

Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

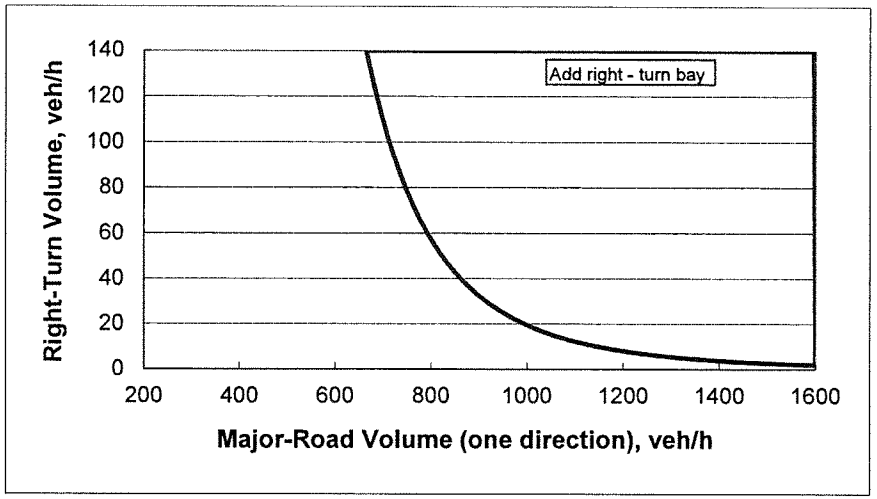
INPUT

Roadway geometry:	2-lane roadway

Variable	Value
Major-road speed, mph:	30
Major-road volume (one direction), veh/h:	231
Right-turn volume, veh/h:	187

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	22786
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



PM Peak Hour, Buildout - SW 29th Ave Rd at Marion Oaks Trail

Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

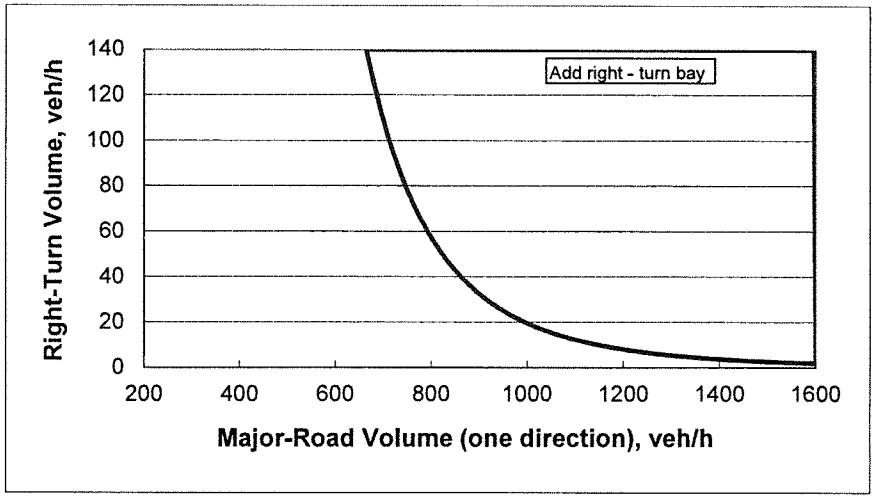
INPUT

Roadway geometry:	2-lane roadway

Variable	Value
Major-road speed, mph:	30
Major-road volume (one direction), veh/h:	136
Right-turn volume, veh/h:	53

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	292678
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



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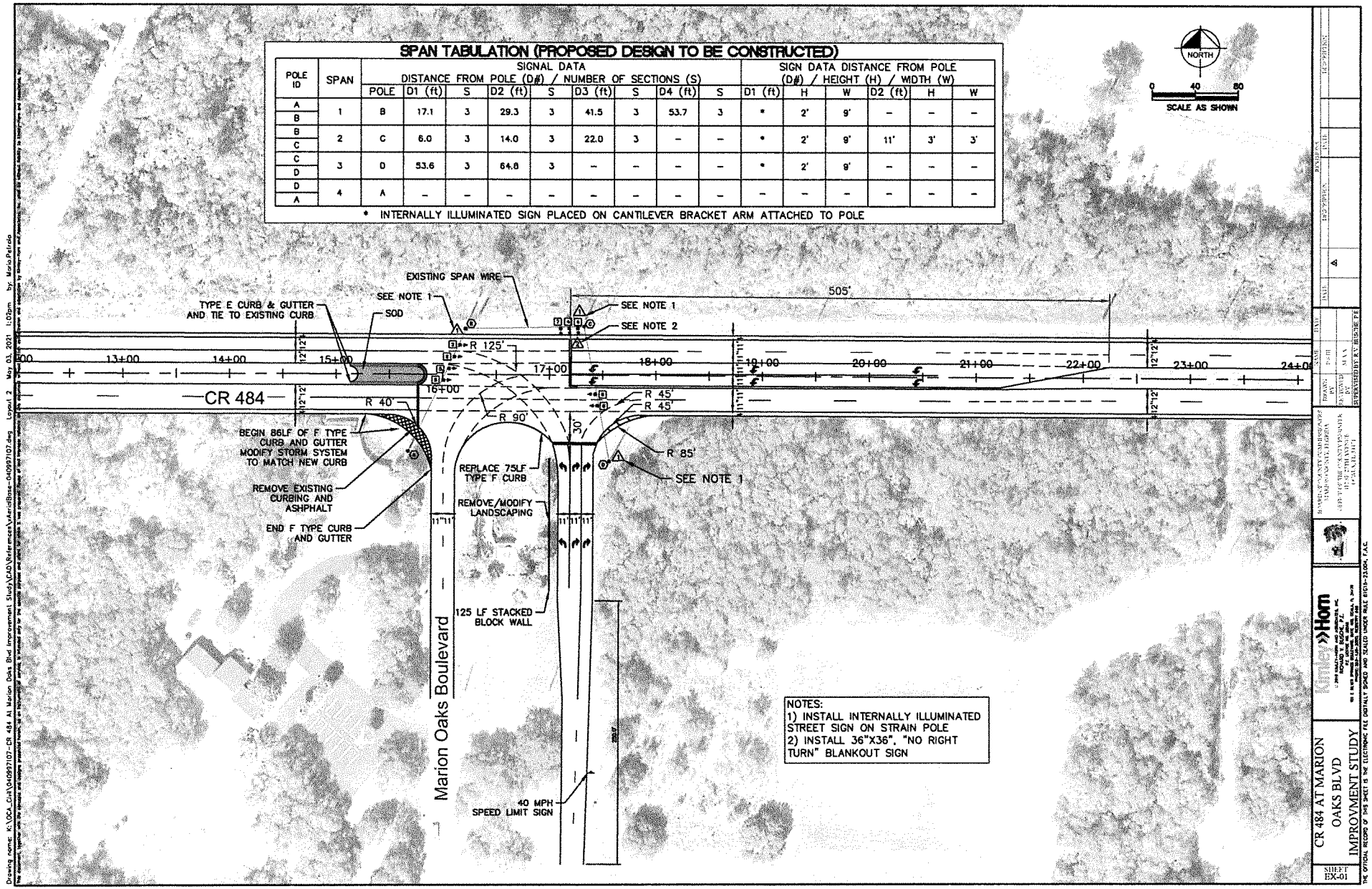
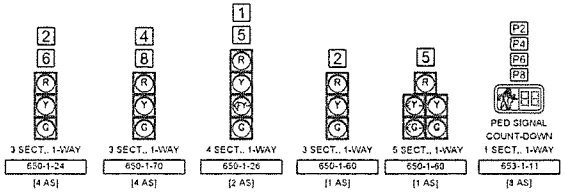
APPENDIX H: BACKGROUND IMPROVEMENTS EXCERPTS


SPAN TABULATION (PROPOSED DESIGN TO BE CONSTRUCTED)
SIGNAL DATA
DISTANCE FROM POLE (D#) / NUMBER OF SECTIONS (S)
SIGN DATA DISTANCE FROM POLE
(D#) / HEIGHT (H) / WIDTH (W)
POLE ID
SPAN
POLE
D1 (ft)
S
D2 (ft)
S
D3 (ft)
S
D4 (ft)
S
D1 (ft)
H
W
D2 (ft)
H
W
A
1
B
17.1
3
29.3
3
41.5
3
53.7
3
*
2'
9'
–
–
–
B
C
2
C
6.0
3
14.0
3
22.0
3
–
–
*
2'
9'
11'
3'
3'
C
D
3
D
53.6
3
64.8
3
–
–
–
–
*
2'
9'
–
–
–
D
A
4
A
–
–
–
–
–
–
–
–
–
–
–
–
–
–
* INTERNALLY ILLUMINATED SIGN PLACED ON CANTILEVER BRACKET ARM ATTACHED TO POLE
NORTH
0
40
80
SCALE AS SHOWN
EXISTING SPAN WIRE
SEE NOTE 1
SOD
TYPE E CURB & GUTTER AND TIE TO EXISTING CURB
505'
SEE NOTE 1
SEE NOTE 2
R 125'
CR 484
R 40
R 90'
R 45'
R 45'
R 85'
SEE NOTE 1
BEGIN 86LF OF F TYPE CURB AND GUTTER MODIFY STORM SYSTEM TO MATCH NEW CURB
REMOVE EXISTING CURBING AND ASPHALT
END F TYPE CURB AND GUTTER
REPLACE 75LF TYPE F CURB
REMOVE/MODIFY LANDSCAPING
125 LF STACKED BLOCK WALL
Marion Oaks Boulevard
40 MPH SPEED LIMIT SIGN
12'
11'
30'
12:00+00
13+00
14+00
15+00
16+00
17+00
18+00
19+00
20+00
21+00
22+00
23+00
24+00
NOTES:
1) INSTALL INTERNALLY ILLUMINATED STREET SIGN ON STRAIN POLE
2) INSTALL 36"X36", "NO RIGHT TURN" BLANKOUT SIGN
CR 484 AT MARION OAKS BLVD
IMPROVMENT STUDY
SHEET
EX-01

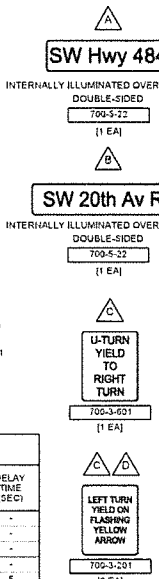
SIGNAL HEAD DETAILS



NOTES:

1. MAJOR STREET IS CR 484 (POSTED SPEED: 45 MPH).
2. MINOR STREET IS SW 20TH AVENUE ROAD (POSTED SPEED: 30 MPH SB, 35 MPH NB).
3. SIGNAL OPERATING PLAN SHALL BE SOP 7 AS SHOWN.
4. FLASHING OPERATION: SIGNAL HEADS 2 AND 6 YELLOW, SIGNAL HEADS 1, 4, 5 AND 8 - RED.
5. PROPOSED VIDEO DETECTION ZONES SHOWN ARE FOR GUIDANCE TO THE TECHNICIAN SETTING UP THE SYSTEM. DIMENSIONS GIVEN ARE NOMINAL AND SHOULD CONFORM AS CLOSELY AS POSSIBLE TO THOSE PLANNED WITHOUT CREATING OVERLAPS OR CONFLICTS IN COVERAGE AREAS.
6. DIMENSIONS FOR INTERNALLY ILLUMINATED ROADWAY SIGNS (PAY ITEM NO. 700-5-22) ARE INCLUDED ON SHEET T-6.

SIGN DETAILS



FTP-68B-06
[8 EA]
TO BE INCLUDED IN THE COST OF PAY ITEM 665-1-11

CONTROLLER TIMINGS

TIMING FUNCTION	MOVEMENT NUMBER	1	2	3	4	5	6	7	8
TIMING FUNCTION	MINIMUM GREEN	10	15	-	10	10	15	-	10
	EXTENSION	4	4	-	5	4	5	-	5
	MAXIMUM GREEN 1	25	34	-	35	25	35	-	35
	MAXIMUM GREEN 2	-	-	-	-	-	-	-	-
	YELLOW CLEARANCE	4.8	4.9	-	4.0	4.8	4.9	-	4.0
	ALL RED	2.2	2.0	-	2.6	2.5	2.0	-	2.6
	PEDESTRIAN WALK	-	7	-	7	-	7	-	7
	PED. CLEARANCE	-	22	-	27	-	23	-	24
	RECALL	-	MIN	-	-	-	MIN	-	-
	NON-LOCK	NL	-	-	NL	NL	-	-	NL
	DUAL ENTRY	-	-	-	YES	-	-	-	YES

VIDEO DETECTION ZONES

VIDEO CAMERA NO.	ZONE	COVERAGE AREA	DETECTOR OPERATION	DELAY TIME (SEC)
V2	VDZ-2	22' X 330'	NORMAL	-
	VDZ-5	10' X 40'	NORMAL	-
V6	VDZ-1	10' X 40'	NORMAL	-
	VDZ-6	22' X 330'	NORMAL	-
V4	VDZ-4R	10' X 35'	DELAY	5
	VDZ-4	10' X 135'	NORMAL	-
V8	VDZ-8	33' X 135'	NORMAL	-

COORDINATED TIMING SETTINGS

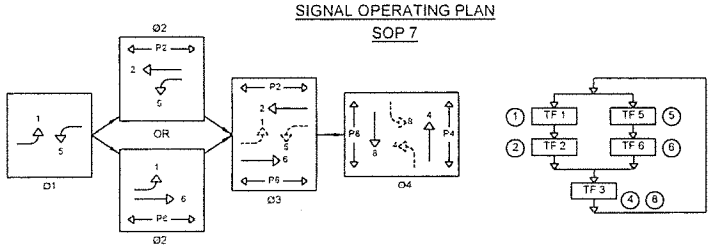
PATTERN	CYCLE LENGTH (SEC)	OFFSET (SEC)	MON.-THU. START TIME	MON.-THU. PATTERN #	FRIDAY START TIME	FRIDAY PATTERN #	SATURDAY START TIME	SATURDAY PATTERN #	SUNDAY START TIME	SUNDAY PATTERN #
1	180	165	0:00	FREE	0:00	FREE	0:00	FREE	0:00	FREE
19	140	100	6:10	1	6:10	1	9:00	59	9:45	55
37	180	77	9:00	19	9:00	19	12:00	55	20:00	FREE
55	140	100	15:00	37	14:00	37	19:00	59		
59	140	100	18:30	19	18:30	19	21:00	FREE		
			21:00	FREE	21:00	FREE				

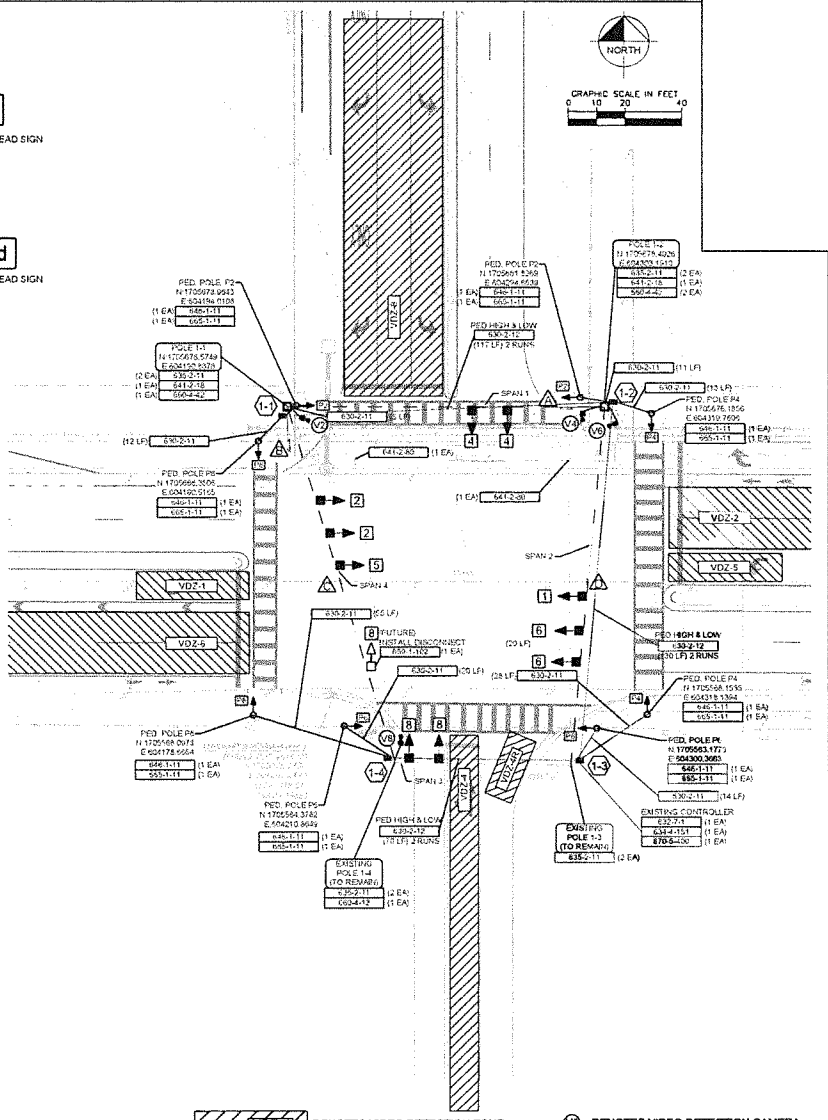
PHASE ALLOCATIONS (SECONDS)

PATTERN	1	2	3	4	5	6	7	8
1	26	120	--	34	26	120	--	34
19	23	93	--	24	23	93	--	24
37	25	121	--	34	25	121	--	34
55	23	93	--	24	23	93	--	24
59	23	93	--	24	23	93	--	24

NOTES:
OFFSET REFERENCED TO 'START OF YELLOW' FOR PHASES 2 & 6.

SIGNAL OPERATING PLAN
SOP 7





Kimley»Horn

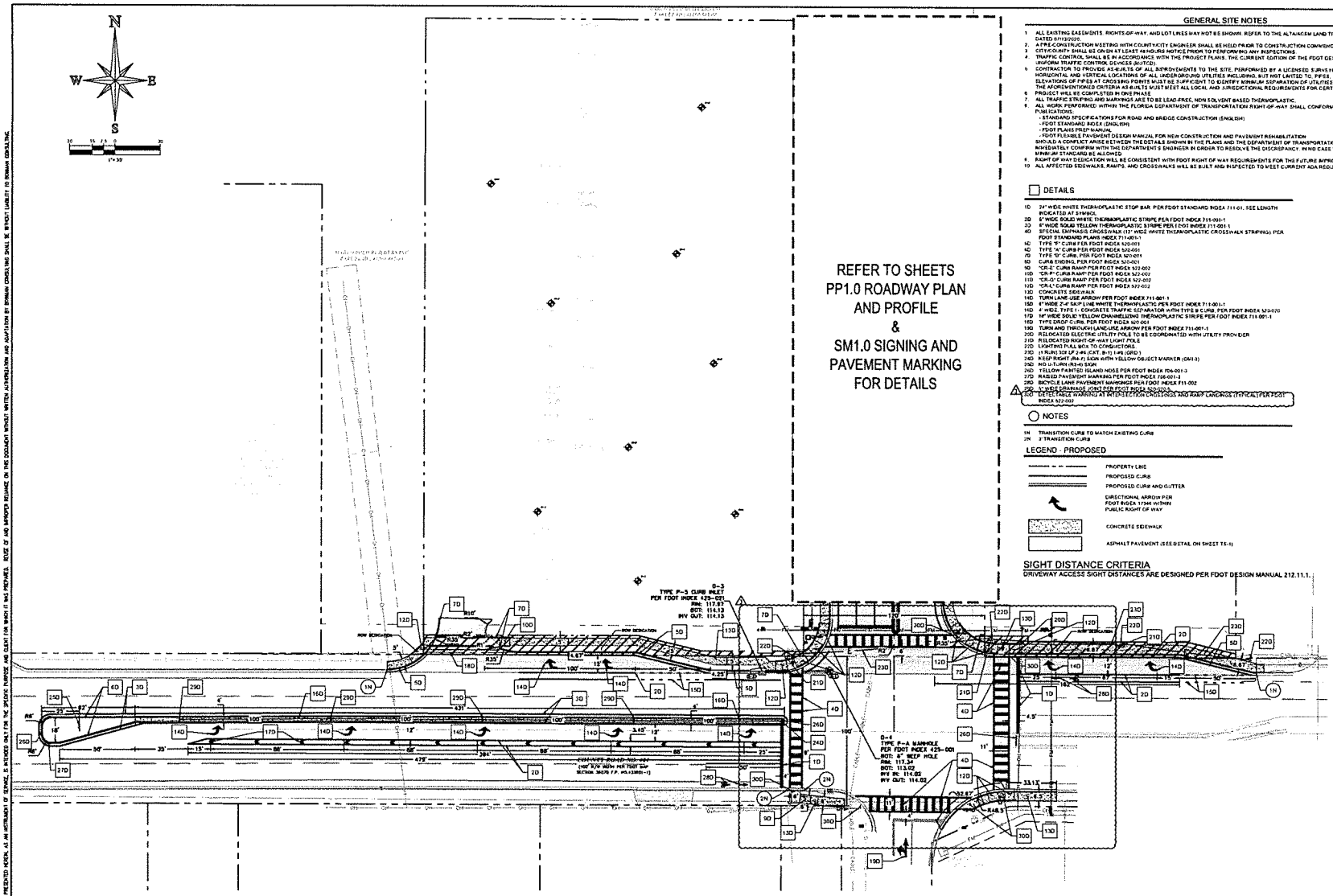
ISSUED FOR CONSTRUCTION 11-09-22 BD

TRAILHEAD LOGISTICS PARK
PREPARED FOR
TDC ACQUISITIONS, LLC
MARION COUNTY FLORIDA

SIGNALIZATION PLAN

MAJOR SITE PLANS

SHEET NUMBER T-3



GENERAL SITE NOTES

1. ALL EXISTING EASEMENTS, RIGHTS-OF-WAY, AND LOT LINES MAY NOT BE SHOWN. REFER TO THE ALTA/ACSM LAND TITLE SURVEY PREPARED BY DAVID L. BRUNING, DATED 07/13/2020.
2. A PRE-CONSTRUCTION MEETING WITH COUNTY/CITY ENGINEER SHALL BE HELD PRIOR TO CONSTRUCTION COMMENCEMENT
3. CITY/COUNTY SHALL BE GIVEN AT LEAST 48 HOURS NOTICE PRIOR TO PERFORMING ANY INSPECTIONS
4. TRAFFIC CONTROL SHALL BE IN ACCORDANCE WITH THE PROJECT PLANS. THE CURRENT EDITION OF THE FDOT DESIGN STANDARDS AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
5. CONTRACTOR TO PROVIDE AS-BUILTS OF ALL IMPROVEMENTS TO THE SITE, PERFORMED BY A LICENSED SURVEYOR IN THE STATE OF FLORIDA. AS-BUILTS TO INCLUDE HORIZONTAL AND VERTICAL LOCATIONS OF ALL UNDERGROUND UTILITIES INCLUDING, BUT NOT LIMITED TO, PIPES, FITTINGS, STRUCTURES, AND CLEANOUTS/APPURTENANCES. ELEVATIONS OF PIPES AT CROSSING POINTS MUST BE SUFFICIENT TO IDENTIFY MINIMUM SEPARATION OF UTILITIES AS DEFINED BY F.A.C. RULE 62-555.314. IN ADDITION TO THE AFOREMENTIONED CRITERIA AS-BUILTS MUST MEET ALL LOCAL AND JURISDICTIONAL REQUIREMENTS FOR CERTIFICATION OF CONSTRUCTION
6. PROJECT WILL BE COMPLETED IN ONE PHASE
7. ALL TRAFFIC STRIPING AND MARKINGS ARE TO BE LEAD-FREE, NON SOLVENT BASED THERMOPLASTIC.
8. ALL WORK PERFORMED WITHIN THE FLORIDA DEPARTMENT OF TRANSPORTATION RIGHT-OF-WAY SHALL CONFORM TO THE MOST CURRENT EDITION OF THE FOLLOWING PUBLICATIONS:
   - STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (ENGLISH)
   - FDOT STANDARD INDEX (ENGLISH)
   - FDOT PLANS PREP MANUAL
   - FDOT FLEXIBLE PAVEMENT DESIGN MANUAL FOR NEW CONSTRUCTION AND PAVEMENT REHABILITATION

   IN THE EVENT OF A CONFLICT BETWEEN THE DETAILS SHOWN IN THE PLANS AND THE DEPARTMENT OF TRANSPORTATION STANDARDS, THE ENGINEER OF RECORD SHALL IMMEDIATELY CONFIRM WITH THE DEPARTMENT'S ENGINEER IN ORDER TO RESOLVE THE DISCREPANCY. IN NO CASE WILL ANYTHING LESS THAN THE DEPARTMENT'S MINIMUM STANDARDS BE ALLOWED
9. RIGHT OF WAY DEDICATION WILL BE CONSISTENT WITH FDOT RIGHT OF WAY REQUIREMENTS FOR THE FUTURE IMPROVEMENTS AT THE INTERSECTION
10. ALL AFFECTED SIDEWALKS, RAMPS, AND CROSSWALKS WILL BE BUILT AND INSPECTED TO MEET CURRENT ADA REQUIREMENTS

DEVELOPMENT REVIEW COMMITTEE
9/13/22

DETAILS

1D 24" WIDE WHITE THERMOPLASTIC STOP BAR PER FDOT STANDARD INDEX 711-01, SEE LENGTH INDICATED AT SYMBOL
2D 6" WIDE SOLID WHITE THERMOPLASTIC STRIPE PER FDOT INDEX 711-001-1
3D 6" WIDE SOLID YELLOW THERMOPLASTIC STRIPE PER FDOT INDEX 711-001-1
4D SPECIAL EMPHASIS CROSSWALK (12" WIDE WHITE THERMOPLASTIC CROSSWALK STRIPING) PER FDOT STANDARD PLANS INDEX 711-001-1
5D TYPE "F" CURB PER FDOT INDEX 520-001
6D TYPE "A" CURB PER FDOT INDEX 520-001
7D TYPE "D" CURB, PER FDOT INDEX 520-001
8D CURB ENDING, PER FDOT INDEX 520-001
9D "CR-E" CURB RAMP PER FDOT INDEX 522-002
10D "CR-P" CURB RAMP PER FDOT INDEX 522-002
11D "CR-G" CURB RAMP PER FDOT INDEX 522-002
12D "CR-L" CURB RAMP PER FDOT INDEX 522-002
13D CONCRETE SIDEWALK
14D TURN LANE USE ARROW PER FDOT INDEX 711-001-1
15D 6" WIDE 2'-4" SKIP LINE WHITE THERMOPLASTIC PER FDOT INDEX 711-001-1
16D 4' WIDE, TYPE I - CONCRETE TRAFFIC SEPARATOR WITH TYPE B CURB PER FDOT INDEX 520-070
17D 18" WIDE SOLID YELLOW CHANNELIZING THERMOPLASTIC STRIPE PER FDOT INDEX 711-001-1
18D TYPE DROP CURB, PER FDOT INDEX 520-001
19D TURN AND THROUGH LANE USE ARROW PER FDOT INDEX 711-001-1
20D RELOCATED ELECTRIC UTILITY POLE TO BE COORDINATED WITH UTILITY PROVIDER
21D RELOCATED RIGHT-OF-WAY LIGHT POLE
22D LIGHTING PULL BOX TO CONJUCTIONS
23D (1 RUN) 3/0 LF 2-#6 (CAT. B-1) 1-#6 (GRD.)
24D KEEP RIGHT (R4-7) SIGN WITH YELLOW OBJECT MARKER (OM1-3)
25D NO U-TURN (R3-4) SIGN
26D 1 YELLOW PAINTED ISLAND NOSE PER FDOT INDEX 706-001-3
27D RAISED PAVEMENT MARKING PER FDOT INDEX 706-001-1
28D BICYCLE LANE PAVEMENT MARKINGS PER FDOT INDEX 711-002
29D 1" EXPANSION JOINT PER FDOT INDEX 300-000-2
30D DETECTABLE WARNING AT INTERSECTION CROSSINGS AND RAMP LANDINGS (TYPICAL) PER FDOT INDEX 522-002

NOTES

1N TRANSITION CURB TO MATCH EXISTING CURB
2N 2' TRANSITION CURB

LEGEND - PROPOSED

- PROPERTY LINE
- PROPOSED CURB
- PROPOSED CURB AND GUTTER
- DIRECTIONAL ARROW PER FDOT INDEX 17346 WITHIN PUBLIC RIGHT OF WAY
- CONCRETE SIDEWALK
- ASPHALT PAVEMENT (SEE DETAIL ON SHEET TS-1)

SIGHT DISTANCE CRITERIA

DRIVEWAY ACCESS SIGHT DISTANCES ARE DESIGNED PER FDOT DESIGN MANUAL 212.11.1.

Bowman

Bowman Consulting Group, Ltd
4450 W. Eau Gallie Blvd
Suite 144
Melbourne, FL 32934
Phone: (321) 255-5434
Fax: (321) 255-7751
www.bowmanconsulting.com
© Bowman Consulting Group, Ltd.

TURN LANE SITE PLAN
SOUTHWEST 20TH AVE RD
INTERSECTION IMPROVEMENTS
SW 20TH AVE RD & SW HWY 484
OCALA, FLORIDA 34473

MARION COUNTY, FL

811 KNOW WHAT'S BELOW ALWAYS CALL 811 BEFORE YOU DIG!

PLAN STATUS

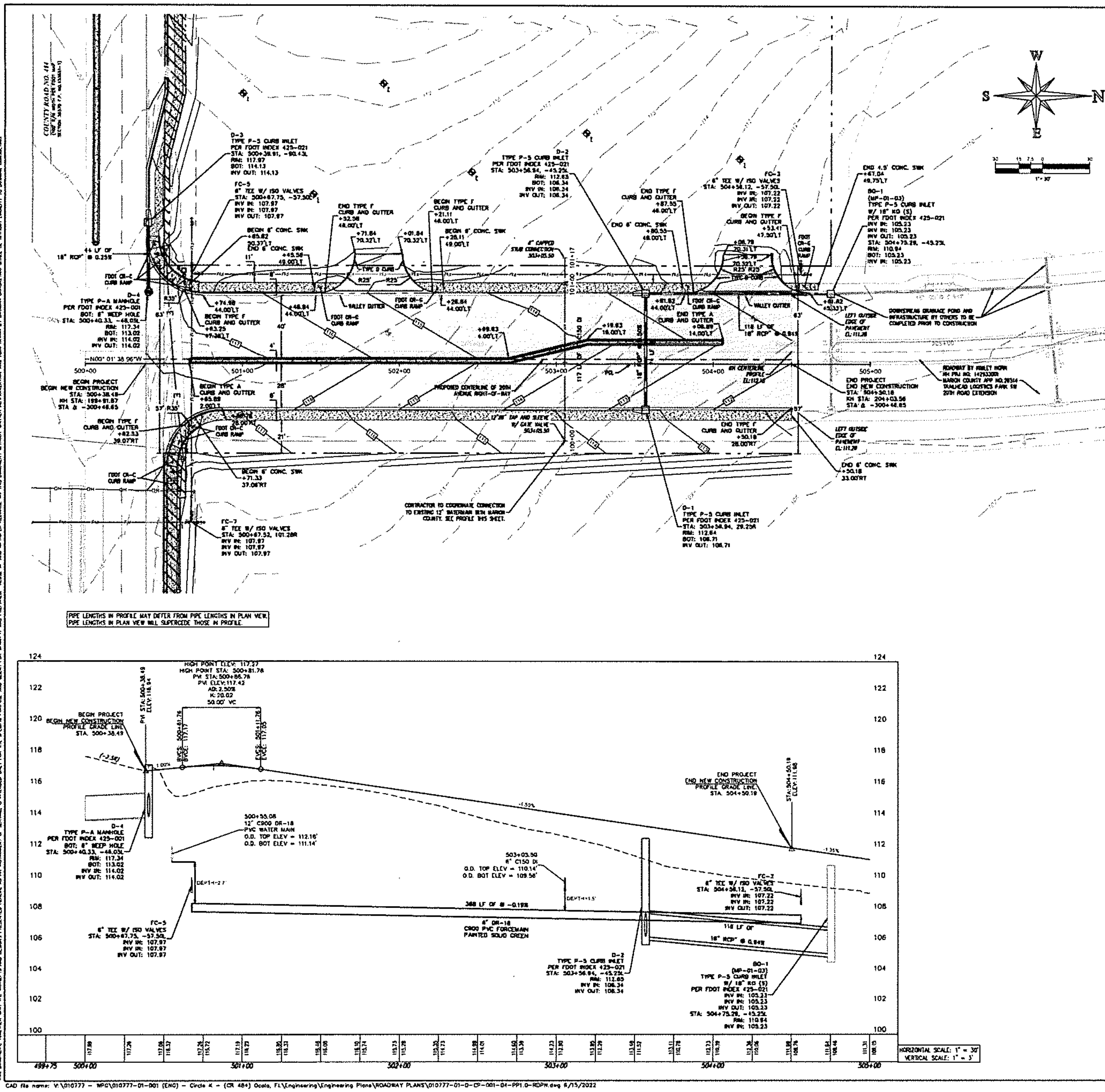
	DATE	COMMENT
1	10/27/2021	AHJ COMMENTS
2	02/14/2022	AHJ COMMENTS
3	04/13/2022	AHJ COMMENTS

CED DESIGN	CED DRAWN	ALC CHKD
SCALE	AS SHOWN	
JOB No.	010777-001-001	
DATE	07/26/2021	

010777-01-0A-01-04-TL1.0-SITE.DWG

SHEET TL1.0

CAD file name: V:\010777 - WPC\010777-01-001 (ENG) - Circle K - (CR 484) Ocala, FL\Engineering\Engineering Plans\ROADWAY PLANS\010777-01-0-CP-001-04-TL1.0-SITE.dwg 8/15/2022



LEGEND

- PROPOSED PROPERTY LINE
- PROPOSED STORM PIPE
- PROPOSED WATERMAIN
- PROPOSED 5' CONTOUR
- PROPOSED 1' CONTOUR
- EXISTING 5' CONTOUR
- EXISTING 1' CONTOUR
- PROPOSED STORM INLET
- PROPOSED STORM MANHOLE
- PROPOSED ASPHALT PAVEMENT (SEE PAVEMENT SECTIONS ON SHEET TS 1)
- PROPOSED CONCRETE SIDEWALK
- PROPOSED CONCRETE PAVEMENT

DEVELOPMENT REVIEW COMMITTEE
MARION COUNTY, FLORIDA

APPLICATION # 27157
APPROVAL DATE 9/12/22
EXPIRATION DATE 9/12/27

NOTES

1. CURB RAMPS AND DETECTABLE WARNING SURFACES SHALL BE CONSTRUCTED BASED ON FDOT FY 2021-22 STANDARD PLANS FOR ROAD AND BRIDGE CONSTRUCTION AND FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION JULY 2021. ALL CURB RAMPS SHALL INCLUDE DETECTABLE WARNING SURFACES.
2. BEFORE PLACING PAVEMENT, CONTRACTOR SHALL VERIFY THAT SUITABLE ACCESSIBLE PEDESTRIAN ROUTES EXIST ALONG SIDEWALKS, CROSSWALKS, AND ACCESSIBLE ROUTES. IN NO CASE SHALL AN ACCESSIBLE RAMP SLOPE EXCEED 8.33%. IN NO CASE SHALL SIDEWALK OR CROSSWALK CROSS SLOPE EXCEED 2.0%. IN NO CASE SHALL LONGITUDINAL SIDEWALK SLOPE EXCEED 5.0%.
3. CONTRACTOR SHALL TAKE FIELD SLOPE MEASUREMENTS ON FINISHED SUBGRADE AND FORM BOARDS PRIOR TO PLACING PAVEMENT TO VERIFY THAT ADA SLOPE REQUIREMENTS ARE PROVIDED. CONTRACTOR SHALL CONTACT ENGINEER PRIOR TO PAVING IF ANY EXCESSIVE SLOPES ARE ENCOUNTERED.
4. STORM PIPE MATERIALS SHALL BE A-2000 PVC, HP STORM, RIGID WALL WATER TIGHT HDPE, OR RCP, AND CONFORM WITH THE LATEST EDITION OF THE FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
5. ALL FINAL STORM DRAIN MATERIALS SHALL BE APPROVED BY THE ENGINEER OF RECORD PRIOR TO ORDERING AND PROCUREMENT AND NOTED ON THE RECORD DRAWINGS. LAST RUN OF STORM PIPE TO DRA SHALL BE RCP.
6. ALL DISTURBED AREAS IN THE RIGHT-OF-WAY TO BE SODDED WITH BAHIA.

UTILITY NOTES

1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE MARION COUNTY LAND DEVELOPMENT CODE, DETAILS AND SPECIFICATIONS, AS WELL AS ALL APPLICABLE STATE AND LOCAL REGULATIONS, EXCEPT AS MODIFIED HEREIN.
2. ALL PIPE TO BE C150 DUCTILE IRON PIPE.
3. VERTICAL LOCATIONS OF ALL EXISTING UTILITIES SHOWN ON THE PLAN AND PROFILE SHEETS ARE BASED UPON LIMITED INVESTIGATION TECHNIQUES AND SHOULD BE CONSIDERED APPROXIMATE ONLY. CONTRACTOR SHALL EXERCISE CAUTION DURING EXCAVATION NEAR EXISTING UTILITIES SHOWN ON THE PLANS AND NOTIFY THE ENGINEER IF THE LOCATION DIFFERS FROM THAT SHOWN BEFORE CONTINUING WITH THE CONSTRUCTION.
4. UNSUITABLE MATERIALS UNDER PROPOSED PIPING SHALL BE REMOVED AND REPLACED WITH SELECT BACKFILL, PROPERLY COMPACTED TO 95% OF MAXIMUM DENSITY PER AASHTO T-180.
5. FITTINGS SHALL BE USED AT LOCATIONS INDICATED ON THE PLANS, UNLESS OTHERWISE APPROVED BY THE ENGINEER OF RECORD.
6. THE LENGTH OF TRENCH OPEN AT ANY ONE TIME SHALL BE CONTROLLED BY THE PARTICULAR SURROUNDING CONDITIONS, BUT SHALL BE LIMITED TO 300 LINEAR FEET UNLESS APPROVED BY THE MARION COUNTY UTILITY ENGINEER IN WRITING.
7. NO CONNECTIONS TO EXISTING POTABLE WATER SYSTEMS SHALL BE ALLOWED UNTIL ALL PROPOSED WATER LINES HAVE BEEN PRESSURE TESTED, DISINFECTED, CLEARED FOR SERVICE AND ACCEPTED BY THE UTILITY COMPANY AND FDEP.
8. THE BACTERIOLOGICAL SAMPLE POINTS SHALL BE INDICATED IN RED ON THE "AS BUILT" DRAWINGS PRIOR TO THE REQUEST FOR A LETTER OF RELEASE TO PLACE THE CONSTRUCTION INTO SERVICE. THE SAMPLE NUMBERS WILL CORRESPOND TO THOSE ON THE BACTERIOLOGICAL SAMPLE LAB SHEETS.
9. ALL PIPE SHALL HAVE A MINIMUM 3' OF COVER BETWEEN THE GROUND AND THE TOP OF PIPE.

WATER DISTRIBUTION SYSTEMS

1. MATERIALS AND INSTALLATION FOR WATER DISTRIBUTION SYSTEM INCLUDING PIPE FITTINGS, VALVES, JOINT RESTRAINTS, FIRE HYDRANTS, SERVICE LINES, PRESSURE TESTING, AND DISINFECTION SHALL CONFORM TO SECTIONS 7.2 AND 7.3 OF THE MARION COUNTY LAND DEVELOPMENT CODE AND ALL APPLICABLE FDEP REGULATIONS.

Bowman

Bowman Consulting Group, Ltd.
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Fax: (321) 255-7751
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ROADWAY PLAN AND PROFILE
SOUTHWEST 20TH AVE RD
INTERSECTION IMPROVEMENTS
SW 20TH AVE RD & SW HWY 484
OCALA, FLORIDA 34473
MARION COUNTY, FL

811 KNOW WHAT'S BELOW ALWAYS CALL 811 BEFORE YOU DIG

PLAN STATUS

	DATE	COMMENT
1	10/22/2021	NFU COMMENTS
2	02/14/2022	NFU COMMENTS
3	06/13/2022	NFU COMMENTS

CED DESIGN	CED DRAWN	ALC CHKD
SCALE	AS SHOWN	
JOB No.	010777-001-001	
DATE	07/26/2021	

SHEET PP1.0

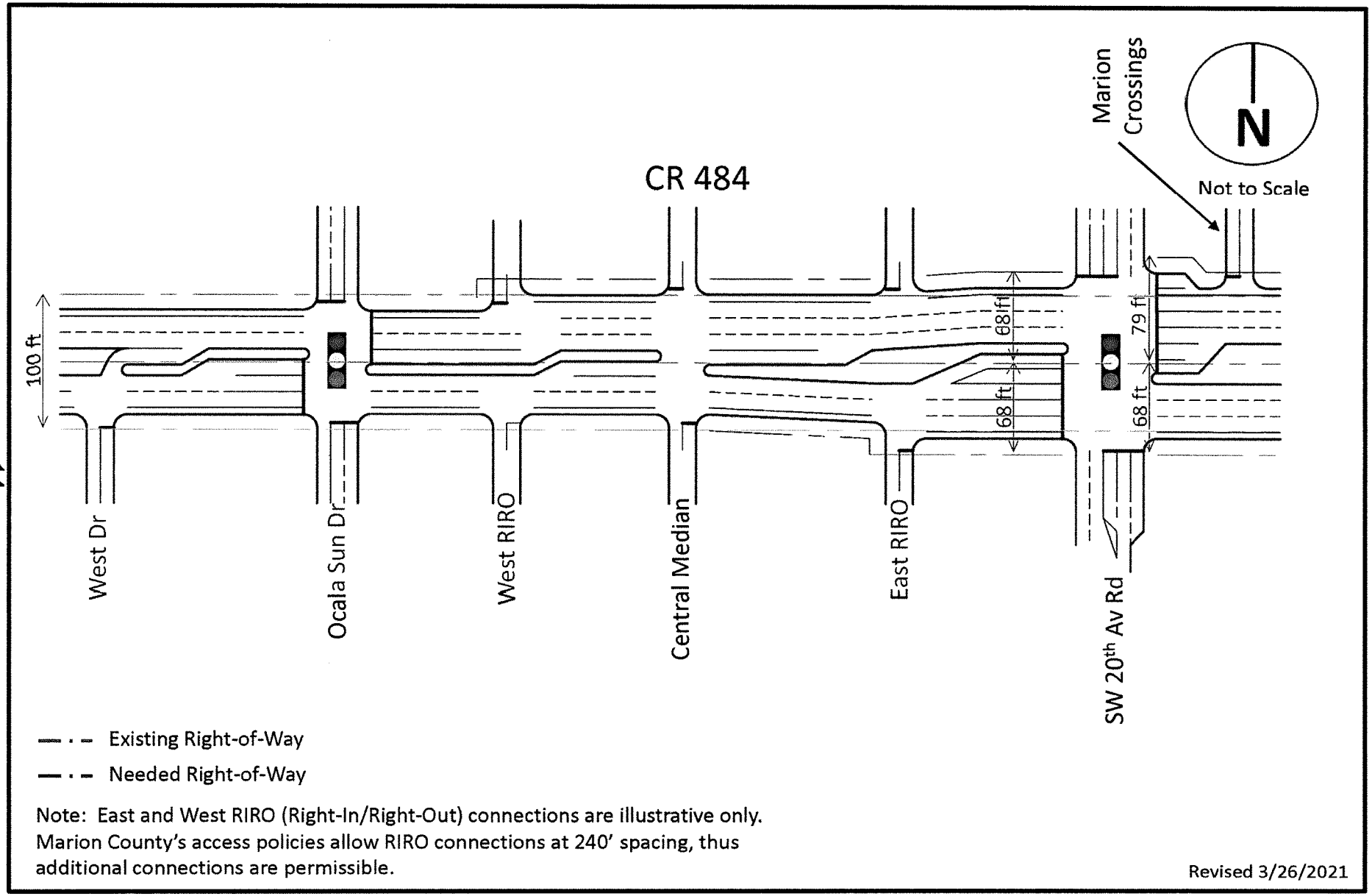
Table 3

Summary of Estimated 2040 Road Operating Conditions

Intersection Control Type	Move-ment	No. of Lanes	A.M. Peak Hour				P.M. Peak Hour				Recommended Lane Length[1]
			Volume	Delay	v:c Ratio	LOS	Volume	Delay	v:c Ratio	LOS	
@ West Drive	WL	1	52	26.8	0.25	D	40	14.5	0.10	B	235
Unsignalized	NR	1	39	28.8	0.21	D	47	17.6	0.15	C	
@ Ocala Sun Drive	EL	1	123	11.2	0.38	B	109	27.2	0.60	C	385
Signalized	E T/R	2	2,076	36.5	0.94	D	1,420	43.6	0.87	D	
	WL	1	164	61.4	0.72	E	103	23.6	0.20	C	460
	W T/R	2	1,384	2.0	0.58	A	2,322	24.7	1.00	C	
	NL	1	61	72.1	0.55	E	123	187.8	1.12	F[2]	385
	N T/R	1	80	59.7	0.46	E	140	68.2	0.69	E	
	SL	1	126	138.1	0.98	F	116	211.1	1.17	F	385
	S T/R	1	101	63.6	0.58	E	123	63.9	0.63	E	
@ Central Median	EL	1	58	36.2	0.35	E	50	165.9	0.81	F	285
Unsignalized	WL	1	146	55.1	0.72	F	114	19.2	0.32	C	310
	NR	1	53	31.6	0.29	D	40	18.8	0.14	C	
	SR	1	55	22.9	0.22	C	53	49.3	0.41	E	
@ SW 20th Av Rd	EL	1	75	77.8	0.80	E	48	37.7	0.16	D	335
Signalized	E T/R	3	2,192	46.8	0.99	D	1,646	32.1	0.93	C	
	WL	2	562	77.0	0.98	E	434	30.5	0.54	C	510
	WT	3	1,692	1.0	0.62	A	2,386	92.1	1.17	F	
	WR	1	200	0.6	0.24	A	127	2.7	0.20	A	285
	NL	1	114	54.4	0.40	D	144	54.6	0.50	D	410
	NT	1	41	63.3	0.33	E	26	62.0	0.21	E	
	NR	1	276	56.6	0.75	E	395	31.4	0.84	C	285
	SL	2	381	100.1	0.98	F	420	76.3	0.90	E	435
	S T/R	1	72	67.9	0.61	E	85	58.0	0.42	E	
@ Marion Crossing	SR	1	32	41.0	0.25	E	40	112.2	0.59	F	
Unsignalized											

Notes:

1. In feet, taper + deceleration + queue, assuming 45 mph design speed, and minimum queue length of 50 ft. Unsignalized 95%-ile queues from Synchro reports, signalized 95%-ile queues from supplemental worksheet in Appendix E.
2. See Appendix worksheets for improved LOS with third westbound through lane.



Note: East and West RIRO (Right-In/Right-Out) connections are illustrative only. Marion County's access policies allow RIRO connections at 240' spacing, thus additional connections are permissible.

Revised 3/26/2021

W.E. Oliver, P.E., LLC
Traffic Engineering
Transportation Planning

Marco Polo 484 Figure 6
Marco Polo 484 Access Plan Schematic

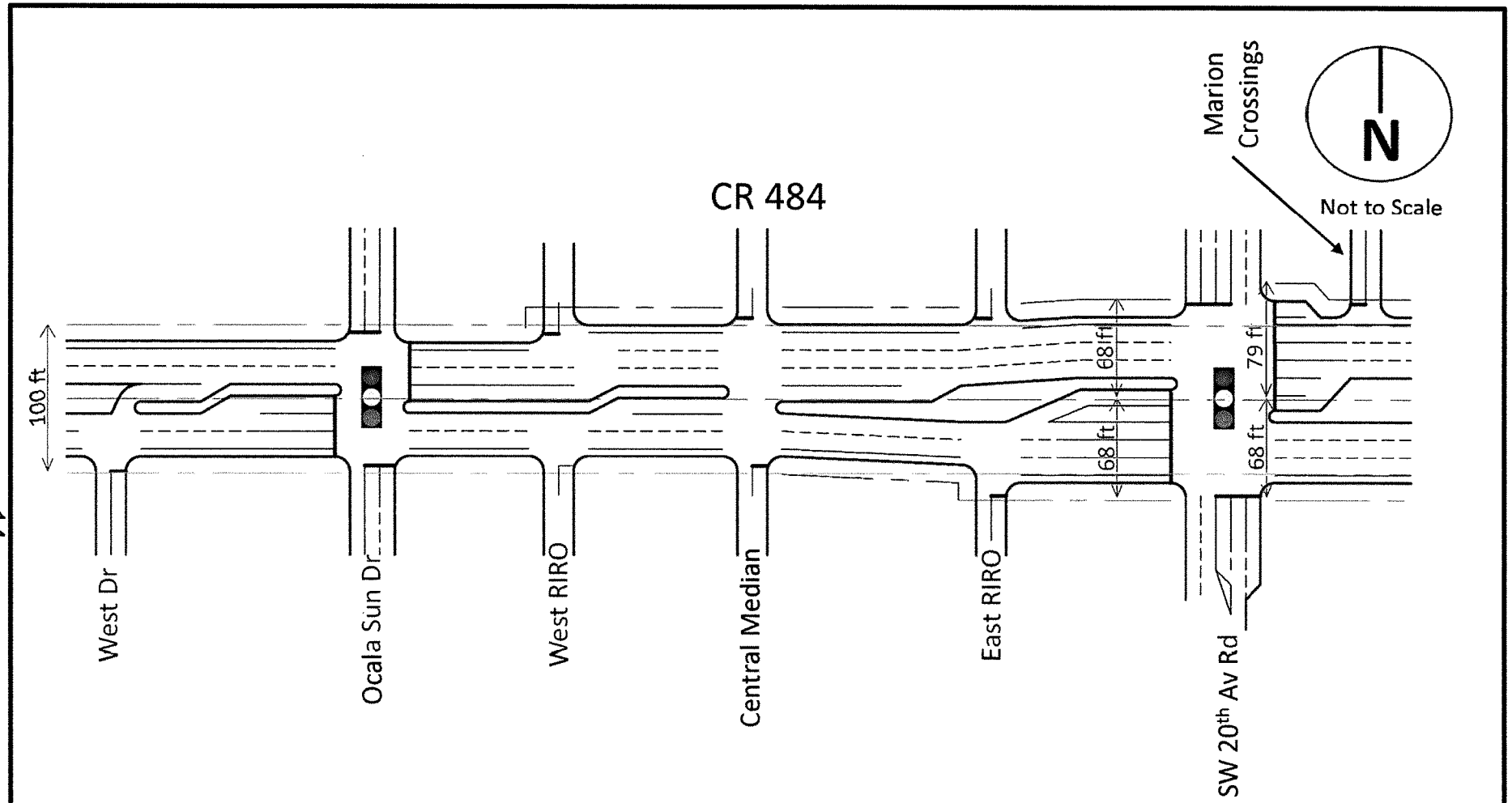
Table 3

Summary of Estimated 2040 Road Operating Conditions

Intersection Control Type	Move-ment	No. of Lanes	A.M. Peak Hour Volume	A.M. Peak Hour Delay	A.M. Peak Hour v:c Ratio	A.M. Peak Hour LOS	P.M. Peak Hour Volume	P.M. Peak Hour Delay	P.M. Peak Hour v:c Ratio	P.M. Peak Hour LOS	Recommended Lane Length[1]
@ West Drive	WL	1	52	26.8	0.25	D	40	14.5	0.10	B	235
Unsignalized	NR	1	39	28.8	0.21	D	47	17.6	0.15	C	
@ Ocala Sun Drive	EL	1	123	11.2	0.38	B	109	27.2	0.60	C	385
Signalized	E T/R	2	2,076	36.5	0.94	D	1,420	43.6	0.87	D	
	WL	1	164	61.4	0.72	E	103	23.6	0.20	C	460
	W T/R	2	1,384	2.0	0.58	A	2,322	24.7	1.00	C	
	NL	1	61	72.1	0.55	E	123	187.8	1.12	F[2]	385
	N T/R	1	80	59.7	0.46	E	140	68.2	0.69	E	
	SL	1	126	138.1	0.98	F	116	211.1	1.17	F	385
	S T/R	1	101	63.6	0.58	E	123	63.9	0.63	E	
@ Central Median	EL	1	58	36.2	0.35	E	50	165.9	0.81	F	285
Unsignalized	WL	1	146	55.1	0.72	F	114	19.2	0.32	C	310
	NR	1	53	31.6	0.29	D	40	18.8	0.14	C	
	SR	1	55	22.9	0.22	C	53	49.3	0.41	E	
@ SW 20th Av Rd	EL	1	75	77.8	0.80	E	48	37.7	0.16	D	335
Signalized	E T/R	3	2,192	46.8	0.99	D	1,646	32.1	0.93	C	
	WL	2	562	77.0	0.98	E	434	30.5	0.54	C	510
	WT	3	1,692	1.0	0.62	A	2,386	92.1	1.17	F	
	WR	1	200	0.6	0.24	A	127	2.7	0.20	A	285
	NL	1	114	54.4	0.40	D	144	54.6	0.50	D	410
	NT	1	41	63.3	0.33	E	26	62.0	0.21	E	
	NR	1	276	56.6	0.75	E	395	31.4	0.84	C	285
	SL	2	381	100.1	0.98	F	420	76.3	0.90	E	435
	S T/R	1	72	67.9	0.61	E	85	58.0	0.42	E	
@ Marion Crossing	SR	1	32	41.0	0.25	E	40	112.2	0.59	F	
Unsignalized											

Notes:

1. In feet, taper + deceleration + queue, assuming 45 mph design speed, and minimum queue length of 50 ft. Unsignalized 95%-ile queues from Synchro reports, signalized 95%-ile queues from supplemental worksheet in Appendix E.
2. See Appendix worksheets for improved LOS with third westbound through lane.

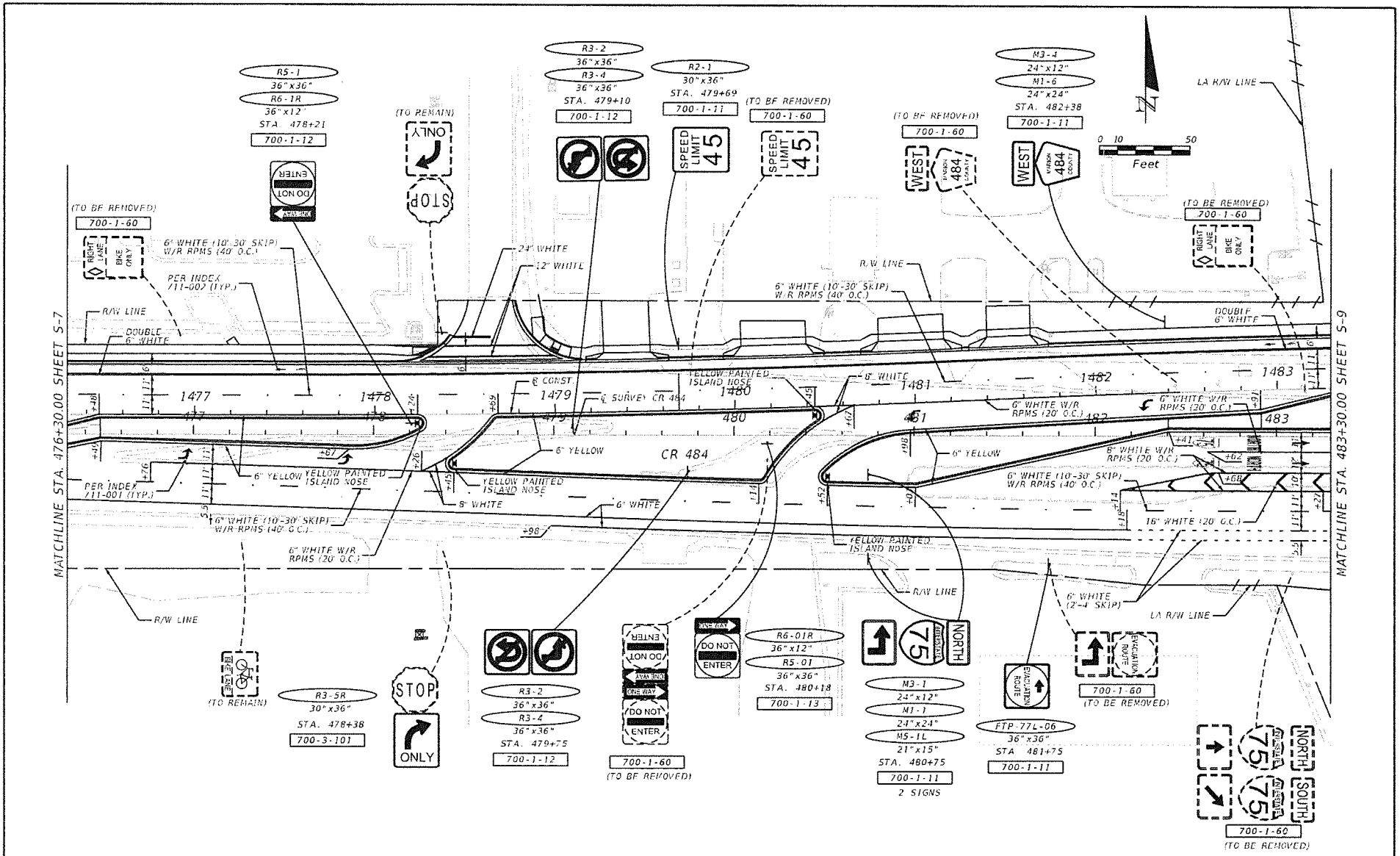


Note: East and West RIRO (Right-In/Right-Out) connections are illustrative only. Marion County's access policies allow RIRO connections at 240' spacing, thus additional connections are permissible.

Revised 3/26/2021

W.E. Oliver, P.E., LLC
Traffic Engineering
Transportation Planning

Marco Polo 484 Figure 6
Marco Polo 484 Access Plan Schematic



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

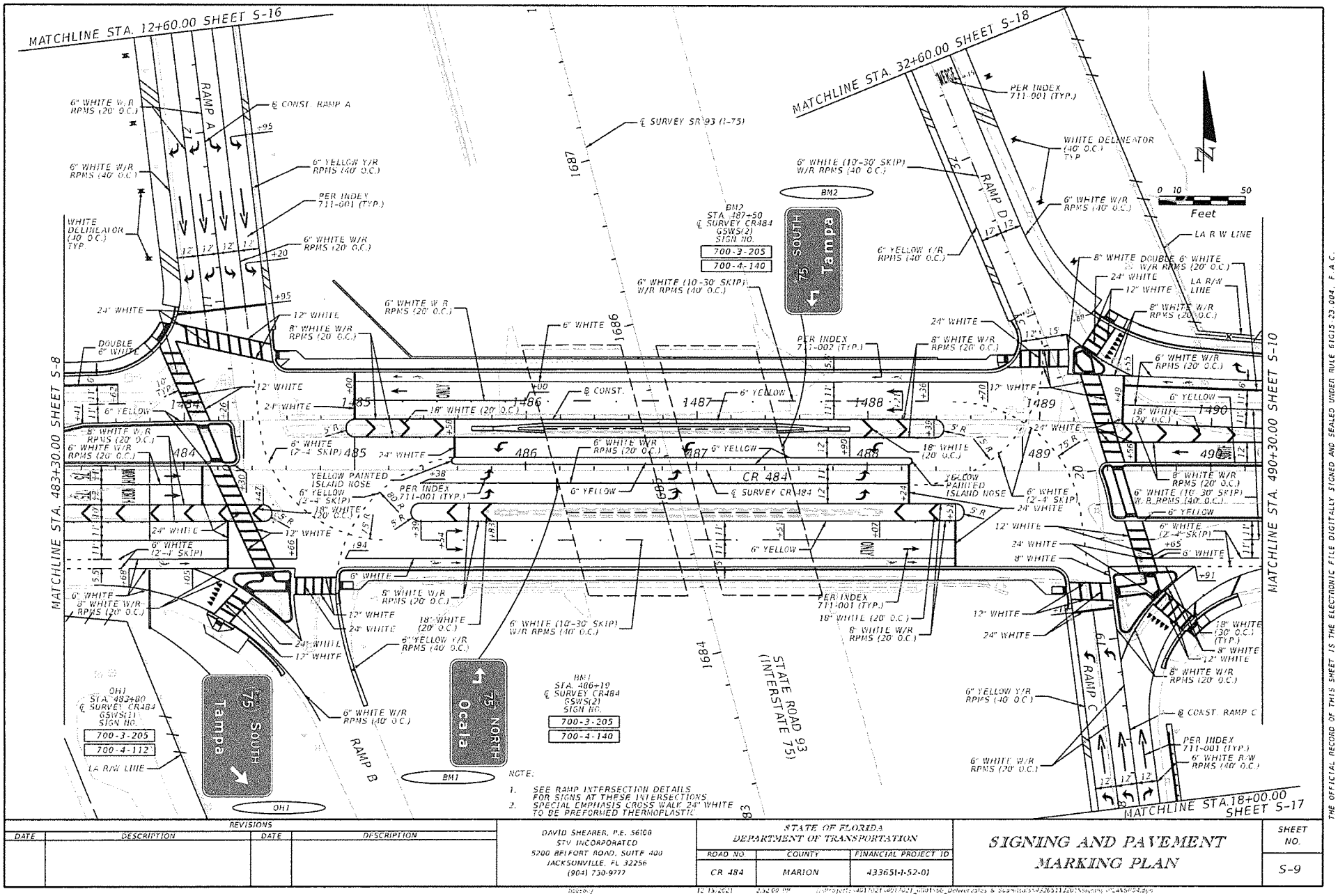
DAVID SHEARER, P.E. 56108
STV INCORPORATED
5700 BELFORT ROAD, SUITE 400
JACKSONVILLE, FL 32256
(904) 730-9777

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
CR 484	MARION	433651-1-52-01

SIGNING AND PAVEMENT MARKING PLAN

SHEET NO. S-8



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

DAVID SHEARER, P.E. 56108
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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
CR 484	MARION	433651-1-52-01

SIGNING AND PAVEMENT MARKING PLAN

SHEET NO. S-9

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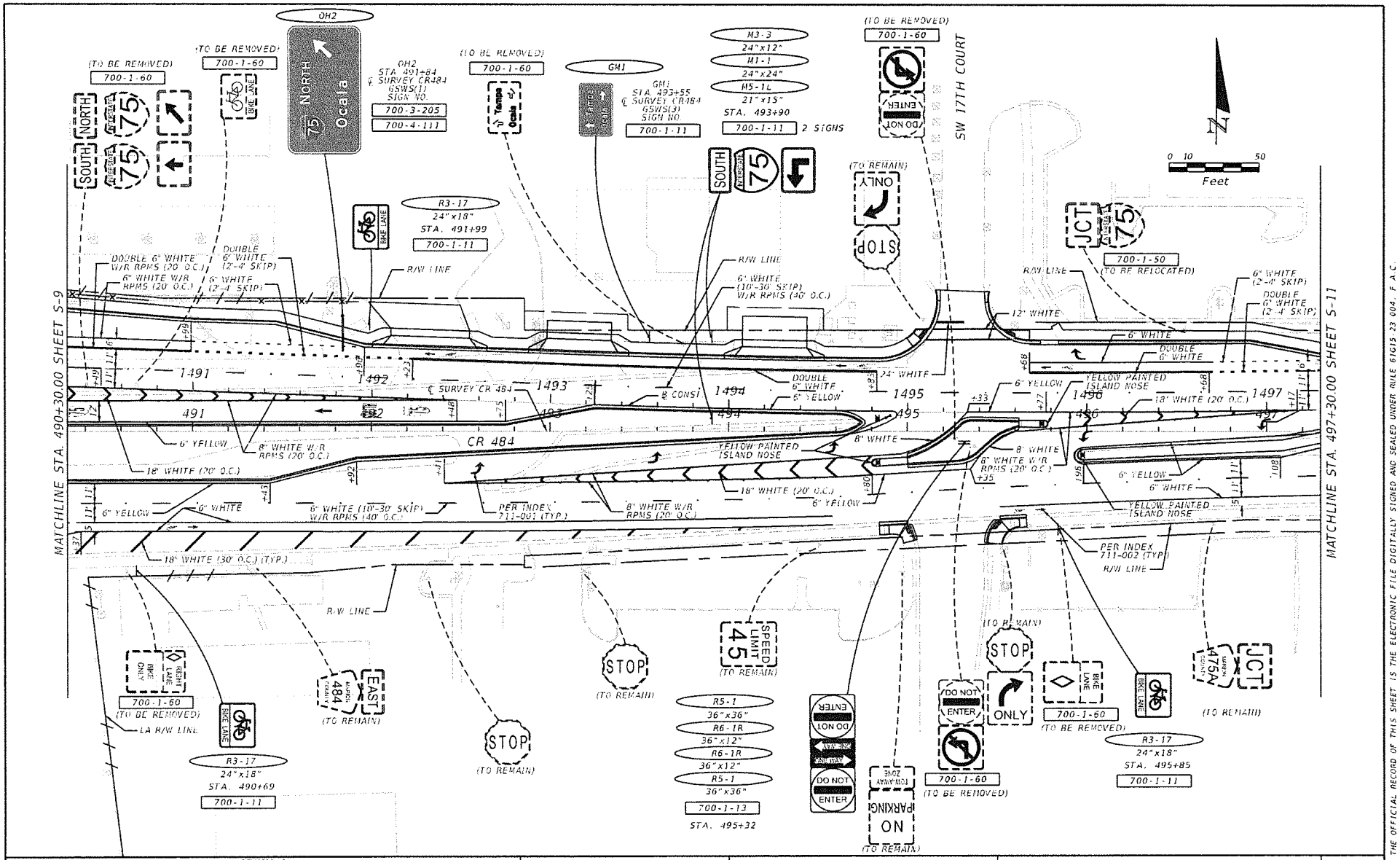

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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
CR 484	MARION	433651-1-52-01

SIGNING AND PAVEMENT MARKING PLAN

SHEET NO. S-10

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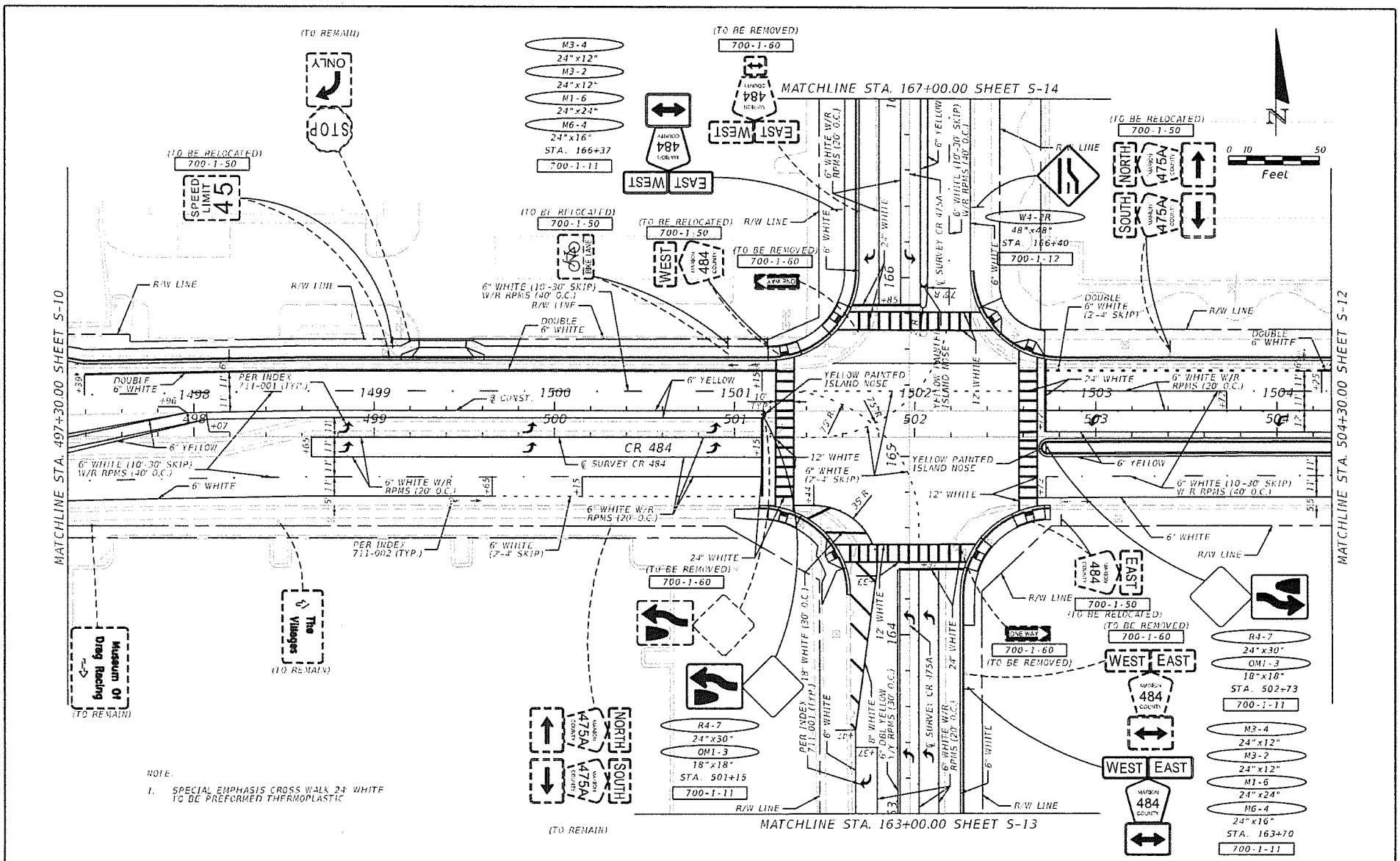

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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
CR 484	MARION	433651-1-52-01

SIGNING AND PAVEMENT MARKING PLAN

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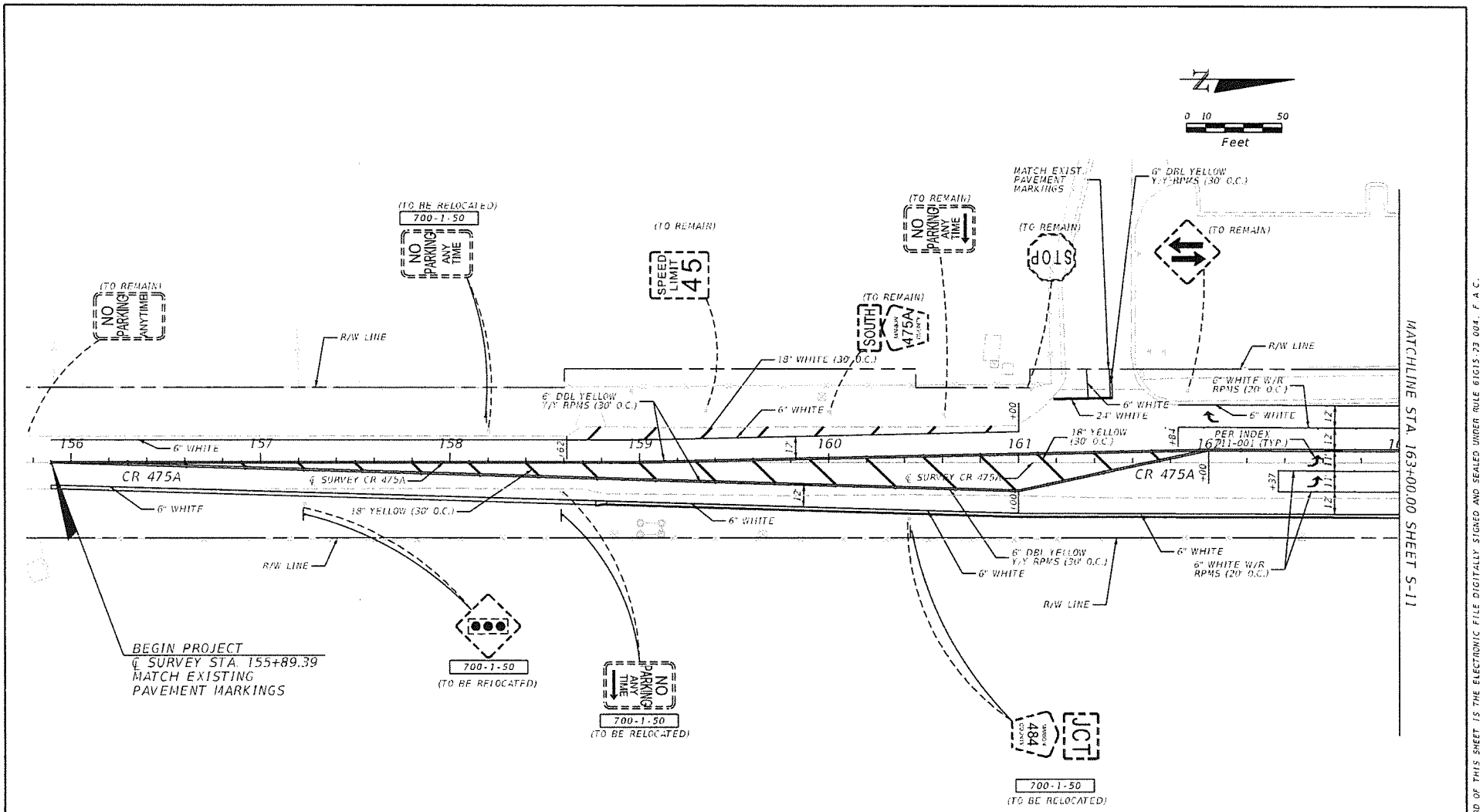

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

DAVID SHEARER, P.E. 56108
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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
CR 484	MARION	433651-1-52-01

SIGNING AND PAVEMENT MARKING PLAN

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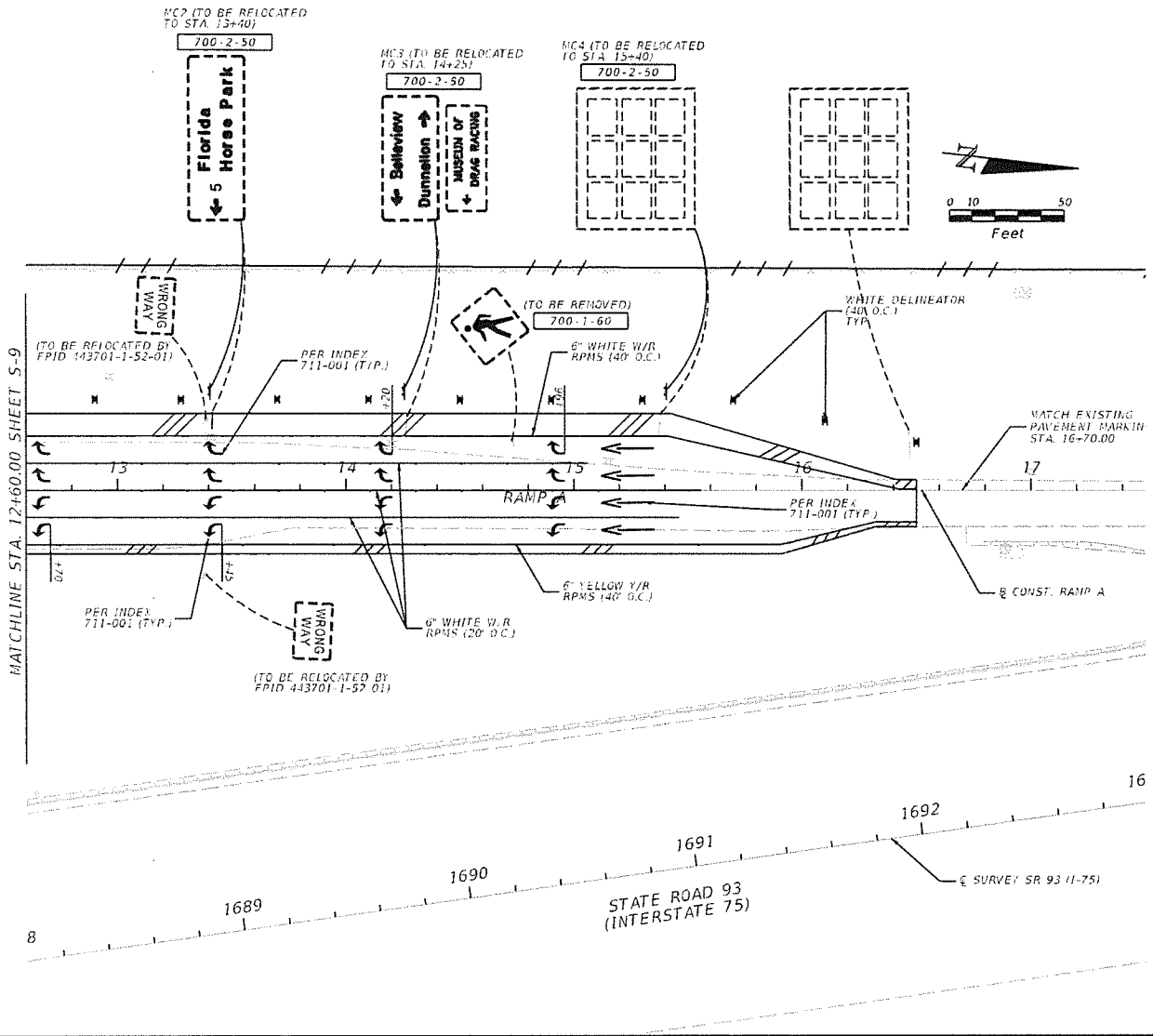

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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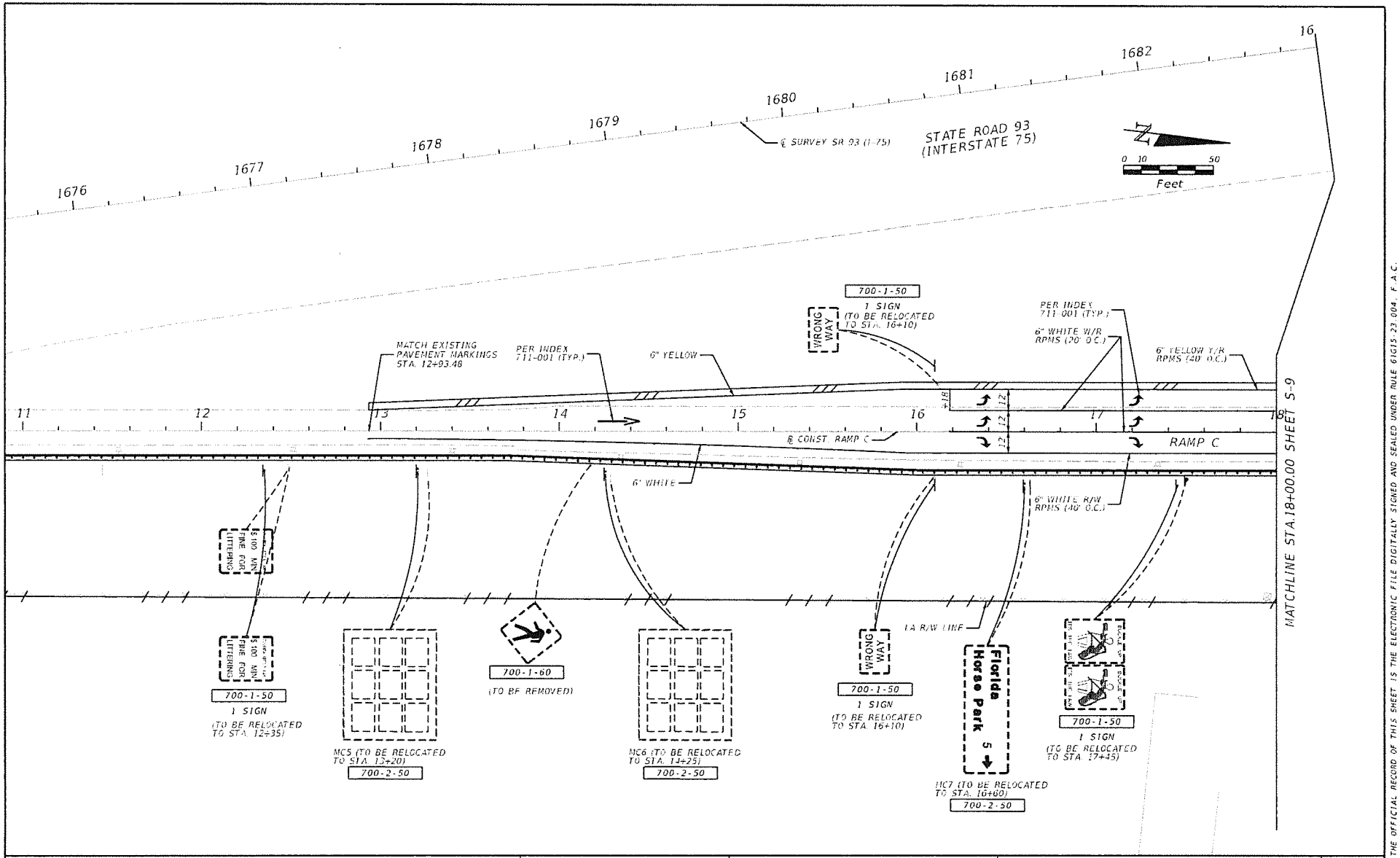
(904) 730-9777

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
CR 484	MARION	433651-1-52-01

SIGNING AND PAVEMENT MARKING PLAN

SHEET NO. S-16



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

DAVID SHEARER, P.E. 56108
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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
CR 484	MARION	433651-1-52-01

SIGNING AND PAVEMENT MARKING PLAN

SHEET NO. S-17

12/15/2021 3:52:15 PM

Kimley»Horn

APPENDIX I: SW 29TH AVE RD AT CR 484 SIGNAL WARRANT ANALYSIS

AM Peak Hour - Background Conditions (2027)

TABLE 3
TRAFFIC SIGNAL WARRANT SUMMARY

City: N/A
County: Marion
Engineer: Kimley-Horn
Date: January 23, 2023

Major Street: CR 484 Lanes: 2 Critical Approach Speed: 45
Minor Street: SW 29th Ave Rd Lanes: 1

Volume Level Criteria

1. Is the critical speed of major street traffic > 70 km/h (40 mph) ? ■ Yes ☐ No
2. Is the intersection in a built-up area of isolated community of <10,000 population? ☐ Yes ■ No

If Question 1 or 2 above is answered "Yes", then use "70%" volume level ■ 70% ☐ 100%

WARRANT 3 - PEAK HOUR

Applicable: ■ Yes ☐ No
Satisfied: ■ Yes ☐ No

If all three criteria are fullfilled or the plotted point lies above the appropriate line, then the warrant is satisfied.

Plot volume combination on the applicable figure below.

Unusual condition justifying use of warrant:

N/A

Record hour when criteria are fulfilled and the corresponding delay or volume in boxes provided.

Peak Hour Volumes	
AM Peak Hour - 12:00 AM	
Major Street	3,862
Minor Street	196

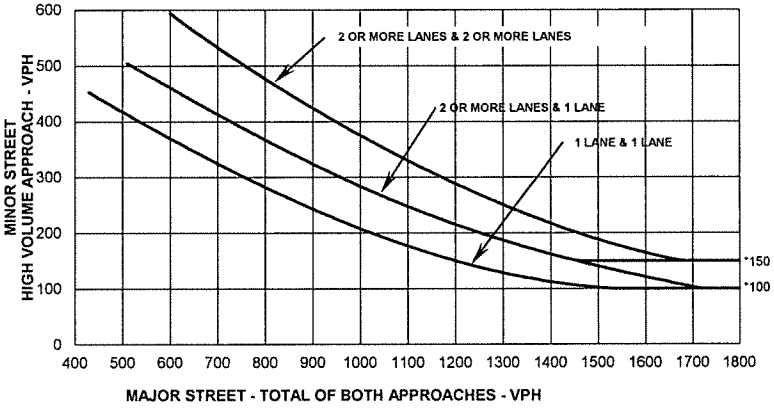
Criteria

1. Delay on Minor Approach *(vehicle-hours)		
Approach Lanes	1	2
Delay Criteria*	4.0	5.0
Delay*	2.8	
Fulfilled?: ☐ Yes	■ No	

2. Volume on Minor Approach *(vehicles per hour)		
Approach Lanes	1	2
Volume Criteria*	75	100
Volume*	196	196
Fulfilled?: ■ Yes	☐ No	

3. Total Entering Volume *(vehicles per hour)		
No. of Approaches	3	4
Volume Criteria*	650	800
Volume*	4,058	
Fulfilled?: ■ Yes	☐ No	

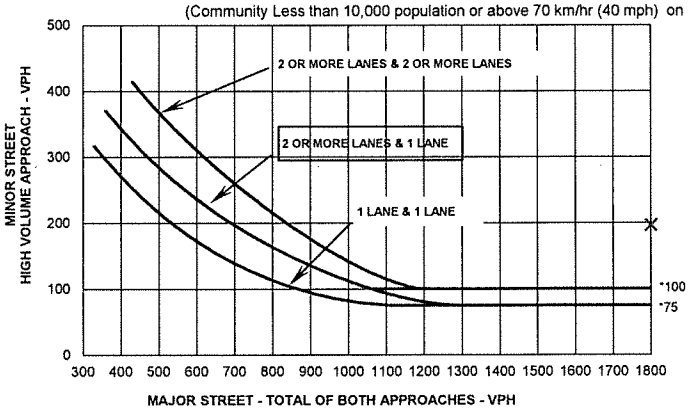
FIGURE 4C-3: Criteria for "100%" Volume Level



** Note: 150 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 100 vph applies as the lower threshold volume threshold for a minor street approach with one lane.*

FIGURE 4C-4: Criteria for "70%" Volume Level

(Community Less than 10,000 population or above 70 km/hr (40 mph) on



** Note: 100 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 75 vph applies as the lower threshold volume threshold for a minor street approach with one lane.*

Source: Revised from NCHRP Report 457

K:\OCA_Civil\142933003-Transwestern North\Traffic\TIA\2nd submittal\calcs\xls\[2023-01 - TLPN TIA.xlsm]turnLaneLengths

PM Peak Hour - Background Conditions (2027)

TABLE 3
TRAFFIC SIGNAL WARRANT SUMMARY

City: N/A
County: Marion
Engineer: Kimley-Horn
Date: January 23, 2023

Major Street: CR 484 Lanes: 2 Critical Approach Speed: 45
Minor Street: SW 29th Ave Rd Lanes: 1

Volume Level Criteria

1. Is the critical speed of major street traffic > 70 km/h (40 mph) ? ■ Yes ☐ No
2. Is the intersection in a built-up area of isolated community of <10,000 population? ☐ Yes ■ No

If Question 1 or 2 above is answered "Yes", then use "70%" volume level ■ 70% ☐ 100%

WARRANT 3 - PEAK HOUR

If all three criteria are fullfilled or the plotted point lies above the appropriate line, then the warrant is satisfied.

Applicable: ■ Yes ☐ No
Satisfied: ☐ Yes ■ No

Unusual condition justifying use of warrant:

N/A

Record hour when criteria are fulfilled and the corresponding delay or volume in boxes provided.

Peak Hour Volumes	
PM Peak Hour - 12:00 AM	
Major Street	3,462
Minor Street	71

Criteria

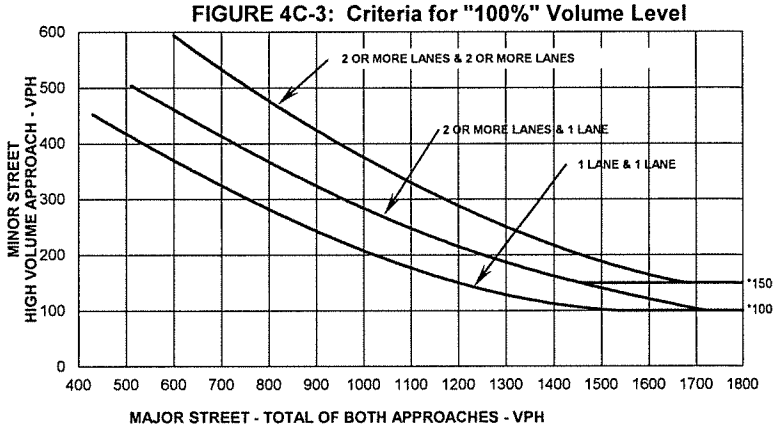
1. Delay on Minor Approach *(vehicle-hours)		
Approach Lanes	1	2
Delay Criteria*	4.0	5.0
Delay*	0.4	
Fulfilled?: ☐ Yes	■ No	

2. Volume on Minor Approach *(vehicles per hour)		
Approach Lanes	1	2
Volume Criteria*	75	100
Volume*	71	71
Fulfilled?: ☐ Yes	■ No	

3. Total Entering Volume *(vehicles per hour)		
No. of Approaches	3	4
Volume Criteria*	650	800
Volume*	3,533	
Fulfilled?: ■ Yes	☐ No	

Plot volume combination on the applicable figure below.

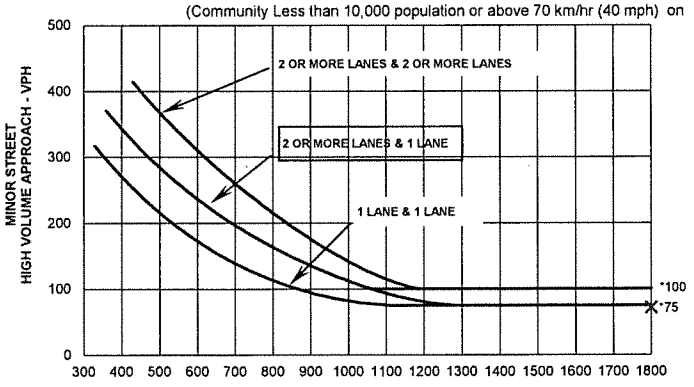
FIGURE 4C-3: Criteria for "100%" Volume Level



** Note: 150 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 100 vph applies as the lower threshold volume threshold for a minor street approach with one lane.*

FIGURE 4C-4: Criteria for "70%" Volume Level

(Community Less than 10,000 population or above 70 km/hr (40 mph) on



** Note: 100 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 75 vph applies as the lower threshold volume threshold for a minor street approach with one lane.*

Source: Revised from NCHRP Report 457

K:\OCA_Civil\142933003-Transwestern North\Traffic\TIA\2nd submittal\calcs\xls\[2023-01 - TLPN TIA.xlsm]turnLaneLengths

AM Peak Hour - Buildout Conditions (2027)

TABLE 3
TRAFFIC SIGNAL WARRANT SUMMARY

City: N/A
County: Marion
Engineer: Kimley-Horn
Date: January 23, 2023

Major Street: CR 484 Lanes: 2 Critical Approach Speed: 45
Minor Street: SW 29th Ave Rd Lanes: 2

Volume Level Criteria

1. Is the critical speed of major street traffic > 70 km/h (40 mph) ? ■ Yes ☐ No
2. Is the intersection in a built-up area of isolated community of <10,000 population? ☐ Yes ■ No

If Question 1 or 2 above is answered "Yes", then use "70%" volume level ■ 70% ☐ 100%

WARRANT 3 - PEAK HOUR

Applicable: ■ Yes ☐ No
Satisfied: ■ Yes ☐ No

If all three criteria are fullfilled or the plotted point lies above the appropriate line, then the warrant is satisfied.

Plot volume combination on the applicable figure below.

Unusual condition justifying use of warrant:

N/A

Record hour when criteria are fulfilled and the corresponding delay or volume in boxes provided.

Peak Hour Volumes	
AM Peak Hour - 12:00 AM	
Major Street	4,128
Minor Street	234

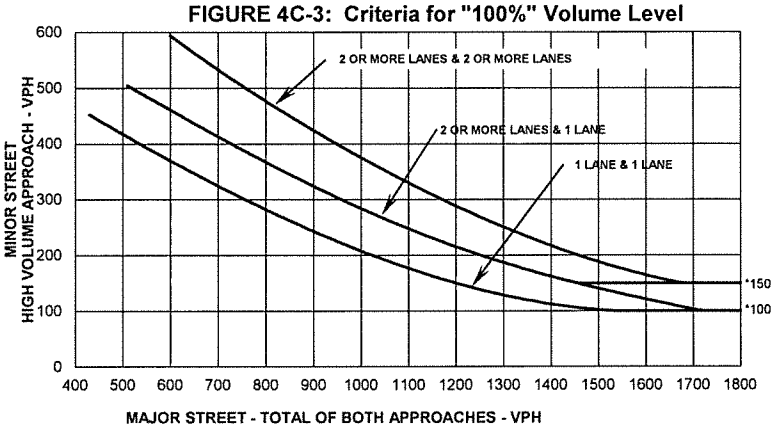
Criteria

1. Delay on Minor Approach *(vehicle-hours)		
Approach Lanes	1	2
Delay Criteria*	4.0	5.0
Delay*		5.6
Fulfilled?: ■ Yes ☐ No		

2. Volume on Minor Approach *(vehicles per hour)		
Approach Lanes	1	2
Volume Criteria*	75	100
Volume*		234
Fulfilled?: ■ Yes ☐ No		

3. Total Entering Volume *(vehicles per hour)		
No. of Approaches	3	4
Volume Criteria*	650	800
Volume*	4,362	
Fulfilled?: ■ Yes ☐ No		

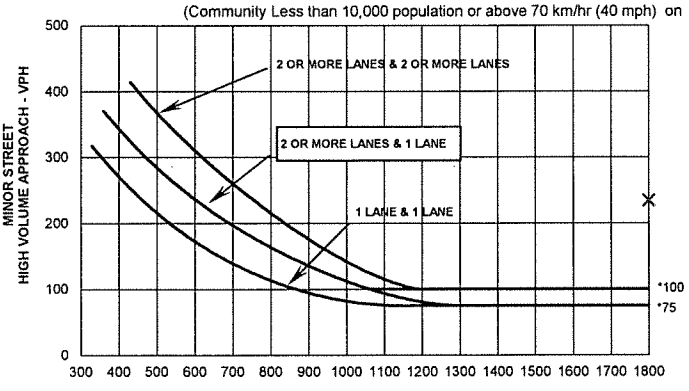
FIGURE 4C-3: Criteria for "100%" Volume Level



** Note: 150 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 100 vph applies as the lower threshold volume threshold for a minor street approach with one lane.*

FIGURE 4C-4: Criteria for "70%" Volume Level

(Community Less than 10,000 population or above 70 km/hr (40 mph) on



** Note: 100 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 75 vph applies as the lower threshold volume threshold for a minor street approach with one lane.*

Source: Revised from NCHRP Report 457

K:\OCA_Civil\142933003-Transwestern North\Traffic\TIA\2nd submittal\calcs\xls\[2023-01 - TLPN TIA.xlsm]turnLaneLengths

PM Peak Hour - Buildout Conditions (2027)

TABLE 3
TRAFFIC SIGNAL WARRANT SUMMARY

City: N/A
County: Marion
Engineer: Kimley-Horn
Date: January 23, 2023

Major Street: CR 484 Lanes: 2 Critical Approach Speed: 45
Minor Street: SW 29th Ave Rd Lanes: 2

Volume Level Criteria

1. Is the critical speed of major street traffic > 70 km/h (40 mph) ? ■ Yes ☐ No
2. Is the intersection in a built-up area of isolated community of <10,000 population? ☐ Yes ■ No

If Question 1 or 2 above is answered "Yes", then use "70%" volume level ■ 70% ☐ 100%

WARRANT 3 - PEAK HOUR

Applicable: ■ Yes ☐ No
Satisfied: ☐ Yes ■ No

If all three criteria are fullfilled or the plotted point lies above the appropriate line, then the warrant is satisfied.

Plot volume combination on the applicable figure below.

Unusual condition justifying use of warrant:

N/A

Record hour when criteria are fulfilled and the corresponding delay or volume in boxes provided.

Peak Hour Volumes	
PM Peak Hour - 12:00 AM	
Major Street	3,696
Minor Street	235

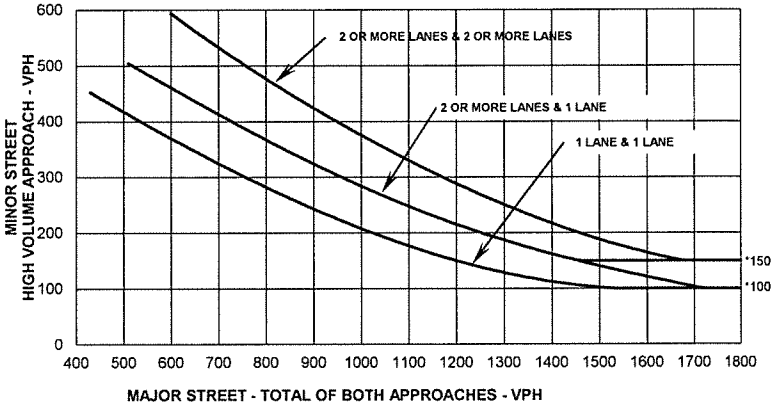
Criteria

1. Delay on Minor Approach *(vehicle-hours)		
Approach Lanes	1	2
Delay Criteria*	4.0	5.0
Delay*		4.5
Fulfilled?: ☐ Yes	■ No	

2. Volume on Minor Approach *(vehicles per hour)		
Approach Lanes	1	2
Volume Criteria*	75	100
Volume*		235
Fulfilled?: ■ Yes	☐ No	

3. Total Entering Volume *(vehicles per hour)		
No. of Approaches	3	4
Volume Criteria*	650	800
Volume*	3,931	
Fulfilled?: ■ Yes	☐ No	

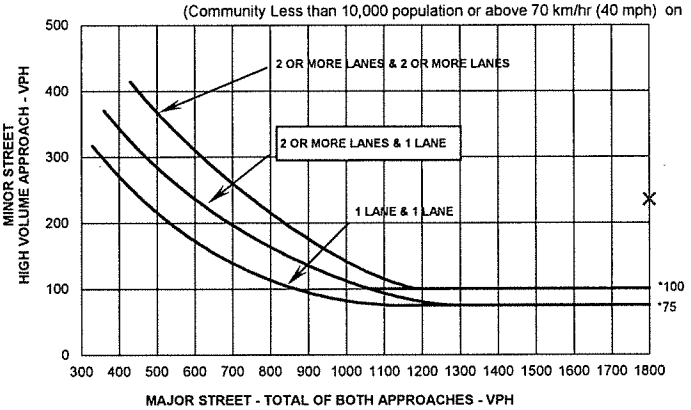
FIGURE 4C-3: Criteria for "100%" Volume Level



* Note: *150 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 100 vph applies as the lower threshold volume threshold for a minor street approach with one lane.*

FIGURE 4C-4: Criteria for "70%" Volume Level

(Community Less than 10,000 population or above 70 km/hr (40 mph) on



* Note: *100 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 75 vph applies as the lower threshold volume threshold for a minor street approach with one lane.*

Source: Revised from NCHRP Report 457

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APPENDIX J: APPROVED TRAFFIC ANALYSIS METHODOLOGY CORRESPONDENCE

Marion County
Board of County Commissioners

Office of the County Engineer

412 SE 25th Ave.
Ocala, FL 34471
Phone: 352-671-8686
Fax: 352-671-8687

December 12, 2022

KIMLEY-HORN
AMBER GARTNER
101 E SVR SPRGS BLVD, SUT 400
OCALA, FL 34470

SUBJECT: **TRAFFIC METHODOLOGY APPROVAL LETTER**
PROJECT NAME: TRAILHEAD LOGISTICS PARK NORTH
PROJECT #2022090087 APPLICATION: #29192 PARCEL #41200-086-01

Dear Amber,

The Traffic Methodology dated November 30, 2022 for the above referenced project was approved by Marion County on December 12, 2022. Please submit the Traffic Study in accordance with this approved Methodology. The following comments are for your review. You need not reply to the comments, and if the comments have been previously completed, simply disregard.

DEPARTMENT: ENGIN - DEVELOPMENT REVIEW
REVIEW ITEM: Provide one signed original after approval
STATUS OF REVIEW: INFO
REMARKS:

Feel free to contact the Office of the County Engineer at (352) 671-8686 or DevelopmentReview@marionfl.org should you have questions.

Sincerely,

Your Development Review Team
Office of the County Engineer

Kimley»Horn

November 30, 2022

Mr. Christopher Zeigler
Engineering Project Manager
Marion County Office of the County Engineer
412 SE 25th Avenue
Ocala, Florida 34471

RE: ***Trailhead Logistics Park North – Traffic Study Methodology; Marion County, Florida***
Kimley-Horn Project No. 142933003

Dear Mr. Zeigler:

This methodology document has been prepared for the forthcoming traffic study to support a PUD master plan for the proposed Trailhead Logistics Park North industrial site. The methodology contained herein has been developed consistent with the Ocala Marion County Traffic Impact Analysis (TIA) Guidelines. The project peak hour trip generation is estimated to be 100 or more trips, and therefore a "Traffic Study" is required. The methodology has been updated to reflect input from Maron County on the prior methodology submittals.

Tables, figures, and pertinent information are attached which detail the project's trip generation potential, trip distribution, proposed study area, and historic traffic trends. Following is a discussion related to the preliminary analyses and proposed methodology for the Traffic Study.

PROJECT BACKGROUND

The project site is generally located in the northwest corner of CR 484 and I-75 in Marion County, Florida. The project site includes several platted lots within the Deltona Development that will be combined for the proposed industrial development. A majority of the project area has a future land use designation of Employment Center. A PUD zoning application and master plan is being filed to include approximately 3.6 million square feet of industrial warehouse uses within multiple buildings. A conceptual site plan is provided as an attachment.

The Trailhead Logistics Park South development is currently under construction, and is located south of the proposed Trailhead North site. The Trailhead Logistics Park South project includes the extension of SW 20th Avenue Road north to the property boundary between the two developments. A traffic study was approved in May 2021 for the Trailhead Logistics Park South site, and traffic from that study will be added to background traffic volumes as a vested development.

PROJECT TRIP GENERATION

The Institute of Transportation Engineers (ITE) *Trip Generation Manual, 11th Edition* was used to calculate trip generation potential for the development. ITE Land Use Code (LUC) 154 (High-Cube Transload and Short-Term Storage Warehouse) and ITE LUC 110 (General Light Industrial) were used to derive the trip generation potential. The development is proposed to have approximately 3.6 million square feet total within

three separate buildings. Each individual building was assigned an ITE LUC based on information provided by the developer and reviewing ITE land use descriptions and building size.

The trip generation rates for the PM peak hour of generator were used for the PM peak hour calculations for ITE LUC 154 per methodology comments provided by Marion County. According to data from the ITE Trip Generation Manual, 11th Edition the peak hour of generator for ITE LUC 154 is from 3 PM to 4 PM. An excerpt detailing the hourly distribution of ITE LUC 154 is provided as an attachment.

Truck trip generation potential for ITE LUC 110 was derived using data from the ITE *Trip Generation Manual, 11th Edition*. The ITE Study "High-Cube Warehouse Vehicle Trip Generation Analysis" (published October 2016) was used to derive the truck trip generation potential for ITE LUC 154. Excerpts from these sources are provided as an attachment.

The trip generation calculations detailing the automobile and truck trip generation potential of the development are provided in the attached **Table 1**. The site is expected to generate 6,705 daily trips, 702 AM peak hour trips, and 657 PM peak hour trips (automobile and truck).

TRIP EQUIVALENCY MATRIX

A trip equivalency matrix will be developed for the project, which will allow for minor changes to land use types and intensities without increasing the PM peak hour external project trips generated by the development. The trip equivalency matrix will provide a methodology for conversion of land uses and intensities to result in an equal or lesser number of net new PM peak hour project trips than will be evaluated in the study. Any conversions of land uses will be consistent with allowable uses outlined within the PUD submittal.

PROJECT TRIP DISTRIBUTION

The traffic distribution for the site was developed based on Version 7.0 of the Central Florida Regional Planning Model (CFRPM), which is based on the Florida Standard Urban Transportation Model Structure (FSUTMS). The model output was refined based on the local transportation network, engineering judgment, and for consistency with the prior evaluations for the Trailhead Logistics South site. The FSUTMS model outputs with manual adjustments is included as an attachment.

The trip distribution was reviewed with Marion County staff on November 4th, 2022. The project trips were locally assigned to the access locations on Marion Oaks Trail, SW 29th Avenue Road, and SW 20th Avenue Road based on the building locations, internal site access and external trip distribution.

The CFRPM model distribution was used to estimate the distribution of automobile trips to and from the site. A separate distribution of truck traffic was developed based on the anticipated distribution to and from I-75. The existing traffic volumes on I-75 were utilized to estimate the cardinal distribution of truck traffic along this route.

The attached **Figure 1A** illustrates the automobile trip distribution and **Figure 1B** illustrates the truck trip distribution. **Figure 2** illustrates the automobile and truck trip distribution utilizing SW 29th Avenue Road and Marion Oaks Trail, which has been updated based on input from Marion County.

SITE ACCESS

Site access will be provided through the following:

- Connection to the south along SW 20th Avenue Road, which connects to CR 484 at a signalized intersection
- Connection as a new east leg of the intersection of SW 29th Avenue Road and Marion Oaks Trail

SW 20th Avenue Road is being constructed from the boundary of the Trailhead North development and Trailhead Logistics Park South site to the existing intersection of SW 20th Avenue Road and CR 484. The new roadway extension is being constructed by the Trailhead developer. The new roadway will be a combination of four-lane and two-lane roadway segments. A further extension of SW 20th Avenue Road north into the Trailhead North site is proposed as part of the site development. The roadway will continue west to connect to SW 29th Avenue Road at the intersection with Marion Oaks Trail.

SW 29th Avenue Road was previously contemplated to be four lanes with the Deltona development agreements. There is 100 feet of right-of-way and portions of the roadway are constructed with four lanes. The traffic study will evaluate the need for improvement along SW 29th Avenue Road to accommodate the site traffic, as well as necessary improvements at the intersection with CR 484.

PROJECT STUDY AREA

The trip generation potential of the proposed site warrants a Traffic Study according to the Ocala Marion County TIA Guidelines. The Ocala Marion County TIA Guidelines requires that the adjacent roadway segments, site access locations, and roadway segments with a 3% or greater impact plus one link beyond be included in the study.

Project traffic impact calculations were performed for the proposed project. The project impact was calculated as the average PM peak hour trip assignment from the development on each roadway segment divided by the segment's peak hour directional service volume. The roadway segment service volumes were obtained from the most recent Ocala Marion Transportation Planning Organization (TPO) Congestion Management Plan (CMP).

SW 29th Avenue Road is not a classified roadway segment within the CMP. The service volume for this roadway was derived using the 2020 FDOT Quality/Level of Service Handbook, FDOT Urban Area Boundary & Classification Map for Marion County and adopted LOS from the Marion County Comprehensive Plan.

The following roadway segments will be included in the study area and evaluated for PM peak hour traffic conditions:

- CR 484, from SW 105th Avenue to SR 200 (one segment beyond impact)
- CR 484, from SR 200 to SW 49th Avenue
- CR 484, from SW 49th Avenue to SW 45th Avenue
- CR 484, from SW 45th Avenue to Marion Oaks Boulevard
- CR 484, from Marion Oaks Boulevard to SW 20th Avenue Road
- CR 484, from SW 20th Avenue Road to I-75
- CR 484, from I-75 to CR 475A
- CR 484, from CR 475A to CR 475
- CR 484, from CR 475 to CR 467

- CR 484, from CR 467 to SE 132nd Street Road
- SW 29th Avenue Road, from CR 484 to Marion Oaks Trail
- SE 132nd Street Road, from CR 484 to US 301
- SE 132nd Street Road, from US 301 to US 441 (one segment beyond impact)
- Marion Oaks Trail, from CR 484 W to SW 49th Avenue (one segment beyond impact)
- Marion Oaks Trail, from Marion Oaks Course to CR 484E

In addition, the following intersections will be included in the study area and evaluated during the AM and/or PM peak hour:

- SW 29th Avenue Road & Marion Oaks Trail (unsignalized, AM and PM)
- CR 484 & Marion Oaks Boulevard (signalized, PM)
- CR 484 & SW 29th Avenue Road (unsignalized, AM and PM)
- CR 484 & SW 20th Avenue Road (signalized, AM and PM)
- CR 484 & I-75 Southbound Ramp (signalized, AM and PM)
- CR 484 & I-75 Northbound Ramp (signalized, AM and PM)
- CR 484 & CR 475A (signalized, PM)
- CR 484 & CR 475 (signalized, PM)

The AM peak hour analysis will be performed for the AM peak hour of adjacent street (7AM to 9AM). The PM peak hour analysis will be performed from 3PM to 4PM based on input from Marion County to evaluate the PM peak hour of generator for ITE LUC 154.

Figure 3 illustrates the proposed study area intersections and roadway segments. The attached **Table 2** outlines the study area determination calculations and proposed service volumes for the forthcoming analysis.

COMMITTED TRANSPORTATION IMPROVEMENTS

There are planned improvements within the study area that will be included as background improvements in the forthcoming analysis.

FDOT has programmed improvements along CR 484 west of SW 20th Avenue Road to east of CR 475A that will improve local traffic operations. The improvements include access management restrictions, adding turn lanes, and extending turn lanes. Construction is funded for FY 2023-2024 (FPID 433651-1).

In addition, the Marion Oaks Boulevard at CR 484 intersection has planned improvements with construction funding from FDOT programmed for FY 2024 (FPID 449277-1).

CR 484 is listed within the Ocala Marion TPO Long Range Transportation Plan (LRTP) as needing widening to six lanes from SW 29th Avenue to SW 20th Avenue Road (project R26) and SW 20th Avenue Road to CR 475A (project R27). These improvements are not listed in the cost feasible plan, therefore no additional through lanes on CR 484 are planned at this time.

SW 49th Avenue is currently under construction as a new four-lane roadway from CR 484 to Marion Oaks Trail. Marion County has construction funds allocated for the widening of SW 49th Avenue to four lanes from Marion Oaks Trail to SW 95th Street in FY 2024-2025 (Project C13).

FUTURE TRAFFIC VOLUME DEVELOPMENT

AM (7AM-9AM) and PM peak period (3PM-5PM) turning movement counts will be collected at the study area intersections. The turning movement counts will be collected when there are no lane closures resulting from the FDOT interchange improvement project (FPID 433651-1). The turning movement counts will also be collected while schools are in session.

The observed turning movement counts will be adjusted to peak season using the 2021 Peak Season Conversion Factors for Marion County published by FDOT. The approach and departure volumes from the traffic counts will be utilized to calculate the existing traffic volumes on roadway segments within the study area.

A buildout year of 2027 will be utilized for the future year analysis. A background growth rate will be applied to calculate future background traffic volumes, prior to addition of project traffic from the proposed site. Vested traffic will be provided by Marion County for the following developments which will be added as background traffic:

- Trailhead Logistics Park South
- Gas/Convenience Store at CR 484 & SW 20th Ave Rd
- Marco Polo PUD (South Side/Apartments Only)
- McGinley Property Phase 2

The background growth rate was derived using data from the most recent Ocala Marion TPO CMP and Ocala Marion TPO Traffic Counts and Trends Manual. Historical annual average daily traffic (AADT) and growth rate data on CR 484 near the project site were reviewed to identify historical traffic growth trends. An areawide average growth rate of 3.0% is proposed for the future traffic volume projections, in addition to the project traffic from the above listed vested developments. Excerpts from the Ocala Marion TPO CMP and Traffic Counts and Trends Manual, and areawide growth rate calculations are provided as attachments.

Project traffic from the proposed Trailhead North site will be added to the future background traffic volumes to estimate traffic volumes in 2027 after project buildout.

FUTURE CONDITIONS ANALYSIS

The traffic study will identify transportation impacts and improvement needs within the study area. The analysis will be performed for the following conditions during the PM peak hour:

- 2022 existing conditions
- 2027 future background (without project)
- 2027 future buildout (with project)

The *Synchro 11* software package will be utilized to evaluate the intersection operations. The observed peak hour factors (PHF), percent heavy vehicles (%HV) and right turn on red percentages (RTOR%) will be used for the analysis. The percent heavy vehicles will be reviewed and adjusted for project buildout

Kimley»Horn

conditions based on the anticipated truck distribution from the site. All Synchro files will be provided to Marion County upon request.

Future roadway segment volumes will be compared to adopted service volumes using the FDOT Quality/Level of Service tables. The roadway evaluation will identify improvement needs to meet the adopted level of service standards for the future background traffic conditions, and any additional improvement needs that would be due to addition of project traffic from the Trailhead North site. The traffic study will identify proportionate share calculations to mitigate transportation improvements shown to be needed due to the addition of project traffic for the buildout timeframe. Per Florida Statutes, transportation improvements identified to be needed prior to addition of project traffic are not subject to proportionate share contribution from the proposed development.

An AM peak hour and PM peak hour signal warrant analysis will be performed for the intersection of SW 29th Avenue Road at CR 484 per the Signal Warrant 3 criteria within the Manual on Uniform Traffic Control Devices (MUTCD).

This methodology is being submitted for concurrence prior to Kimley-Horn conducting the traffic study. Please do not hesitate to call to discuss any questions or comments during your review.

Sincerely,

KIMLEY-HORN

Amber L. Gartner, PE

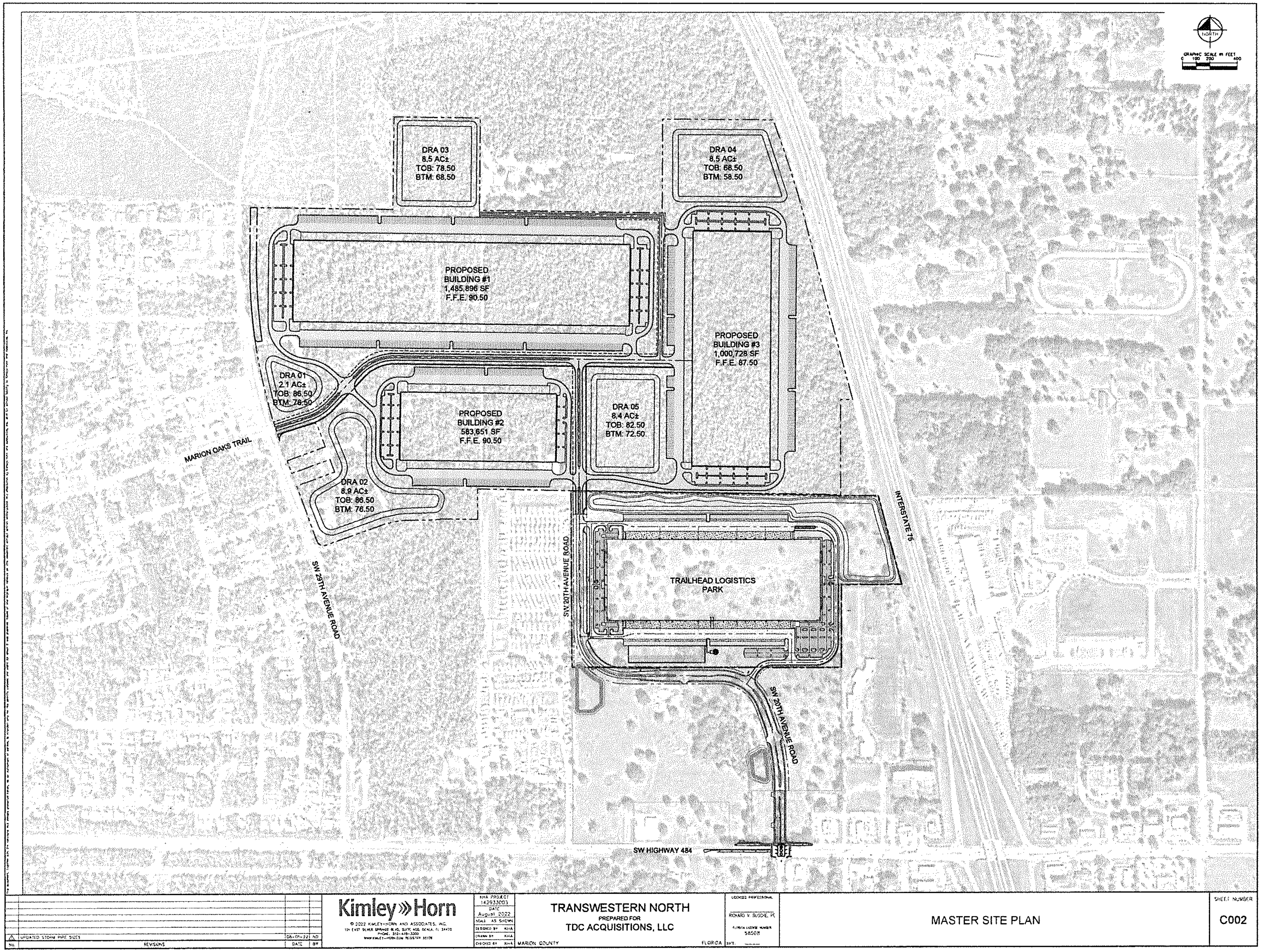
Attachments: Conceptual Master Plan
Project Trip Generation and Trip Distribution
Project Significance and Study Area
Historic Traffic Trends

K:\OCA_Civil\142933003-Transwestern North\Traffic\methodology\doc\Lcz221108alg - Trailhead Logistics Park N Traffic Methodology.docx

Attachments

Kimley»Horn

Conceptual Master Plan


DRA 03
8.5 AC±
TOB: 78.50
BTM: 68.50
DRA 04
8.5 AC±
TOB: 68.50
BTM: 58.50
PROPOSED
BUILDING #1
1,485,896 SF
F.F.E. 90.50
PROPOSED
BUILDING #3
1,000,728 SF
F.F.E. 87.50
DRA 01
2.1 AC±
TOB: 86.50
BTM: 76.50
PROPOSED
BUILDING #2
583,651 SF
F.F.E. 90.50
DRA 05
8.4 AC±
TOB: 82.50
BTM: 72.50
MARION OAKS TRAIL
DRA 02
8.9 AC±
TOB: 86.50
BTM: 76.50
INTERSTATE 75
TRAILHEAD LOGISTICS
PARK
SW 29TH AVENUE ROAD
SW 20TH AVENUE ROAD
SW 20TH AVENUE ROAD
SW HIGHWAY 484
NORTH
GRAPHIC SCALE IN FEET
Kimley»Horn
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TRANSWESTERN NORTH
PREPARED FOR
TDC ACQUISITIONS, LLC
MARION COUNTY
FLORIDA
RICHARD V. BUSCHE, PE
58508
MASTER SITE PLAN
SHEET NUMBER
C002
KHA PROJECT
142933003
DATE
August 2022
SCALE AS SHOWN
DESIGNED BY KHA
DRAWN BY KHA
CHECKED BY KHA
UPDATED STORM PIPE SIZES
REVISIONS
DATE
BY

Kimley»Horn

Project Trip Generation and Trip Distribution

Table 1: Trip Generation

Land Use	Intensity			Daily Trips	AM Peak Hour of Adjacent Street			PM Peak Hour of Adjacent Street		
					Total	In	Out	Total	In	Out
NW Building - ITE LUC 154	1,742,000	Sq Ft GFA		2,439	139	107	32	296	101	195
SW Building - ITE LUC 110	684,000	Sq Ft GFA		2,622	469	413	56	161	23	138
E Building - ITE LUC 154	1,174,000	Sq Ft GFA		1,644	94	72	22	200	68	132
			Subtotal	6,705	702	592	110	657	192	465
Percent Trucks	Daily	AM	PM							
ITE LUC 154	32.2%	30.8%	21.7%	1,315	72	55	17	108	37	71
ITE LUC 110	0.25 / 1000 SF GFA	0.01 / 1000 SF	0.01 / 1000 SF	171	7	4	3	7	4	3
Buildout Automobile Driveway Trips				**5,219**	**623**	**533**	**90**	**542**	**151**	**391**
Buildout Truck Driveway Trips				**1,486**	**79**	**59**	**20**	**115**	**41**	**74**

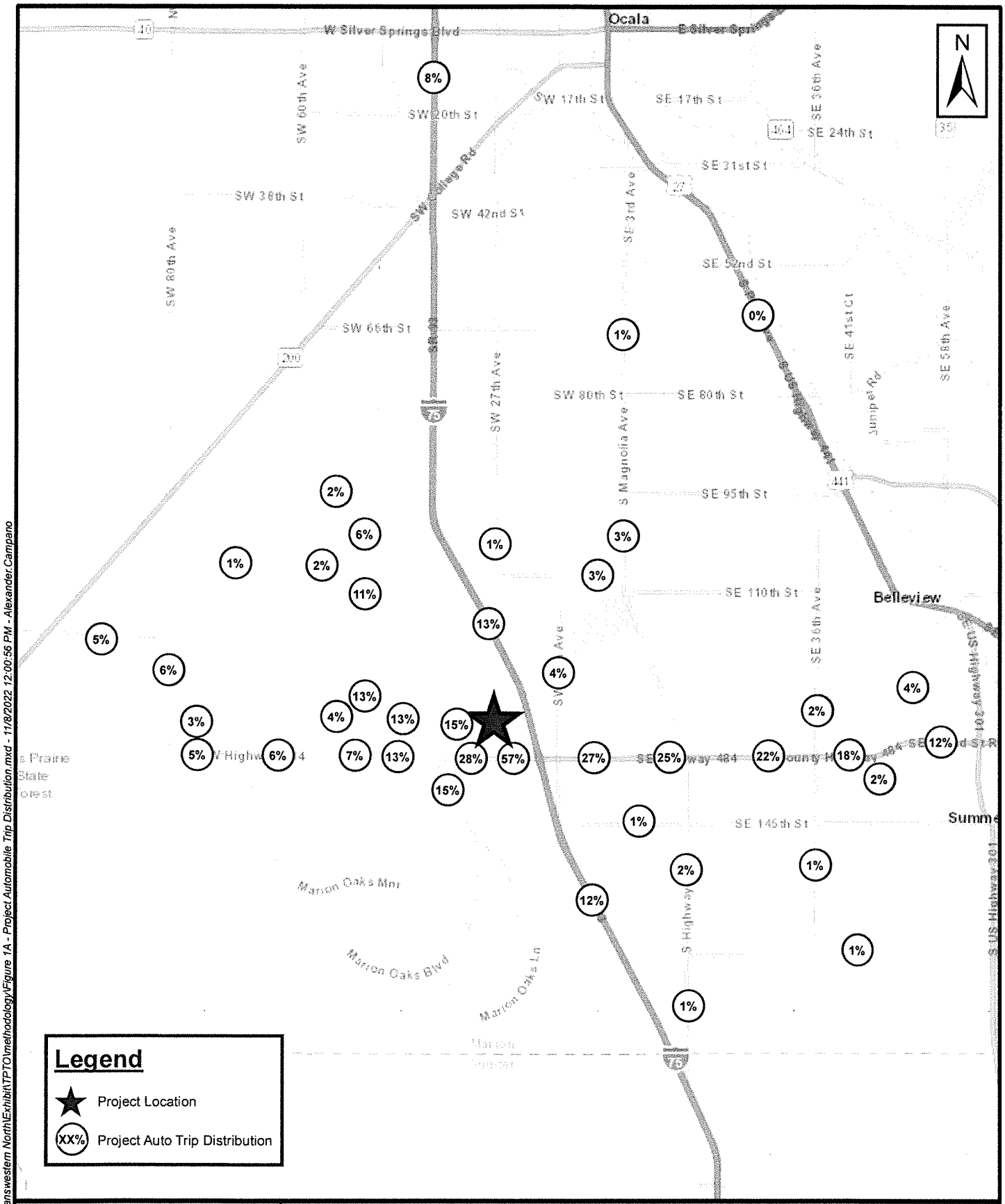
Note 1: Trip generation calculations were derived from the ITE Trip Generation Manual, 11th Edition.
Note 2: The truck percentages for ITE LUC 110 were determined using the truck generation per 1,000 sf published in the ITE Trip Generation Manual, 11th Edition.
Note 3: The ITE study "High-Cube Warehouse Vehicle Trip Generation Analysis" (10/2016) study was used to determine the truck percentages for ITE LUC 154.

General Light Industrial [ITE 110]

Daily	T = 3.76*(X) + 50.47; (X is 1000 Sq. Ft. GFA); % trucks = 0.25 / 1000 SF GFA
AM Peak Hour of Adjacent Street	T = 0.68*(X) + 3.81; (X is 1000 Sq. Ft. GFA, 88% in, 12% out); % trucks = 0.01 / 1000 SF GFA (60% in, 40% out)
PM Peak Hour of Adjacent Street	Ln(T) = 0.72*Ln(X) + 0.38; (X is 1000 Sq. Ft. GFA, 14% in, 86% out); % trucks = 0.01 / 1000 SF GFA (50% in, 50% out)

High-Cube Transload and Short-Term Storage Warehouse [ITE 154]

Daily	T = 1.40*(X); (X is 1000 Sq. Ft. GFA); % trucks = 32.2%
AM Peak Hour of Adjacent Street	T =0.08*(X); (X is 1000 Sq. Ft. GFA, 77% in, 23% out); % trucks = 30.8%
PM Peak Hour of Generator	T = 0.17*(X); (X is 1000 Sq. Ft. GFA, 34% in, 66% out); % trucks = 21.7%



K:\OCA_GIS\142933003-Transwestern North\Exhibit\TPTO\methodology\Figure 1A - Project Automobile Trip Distribution.mxd - 11/8/2022 12:00:56 PM - Alexander.Campano

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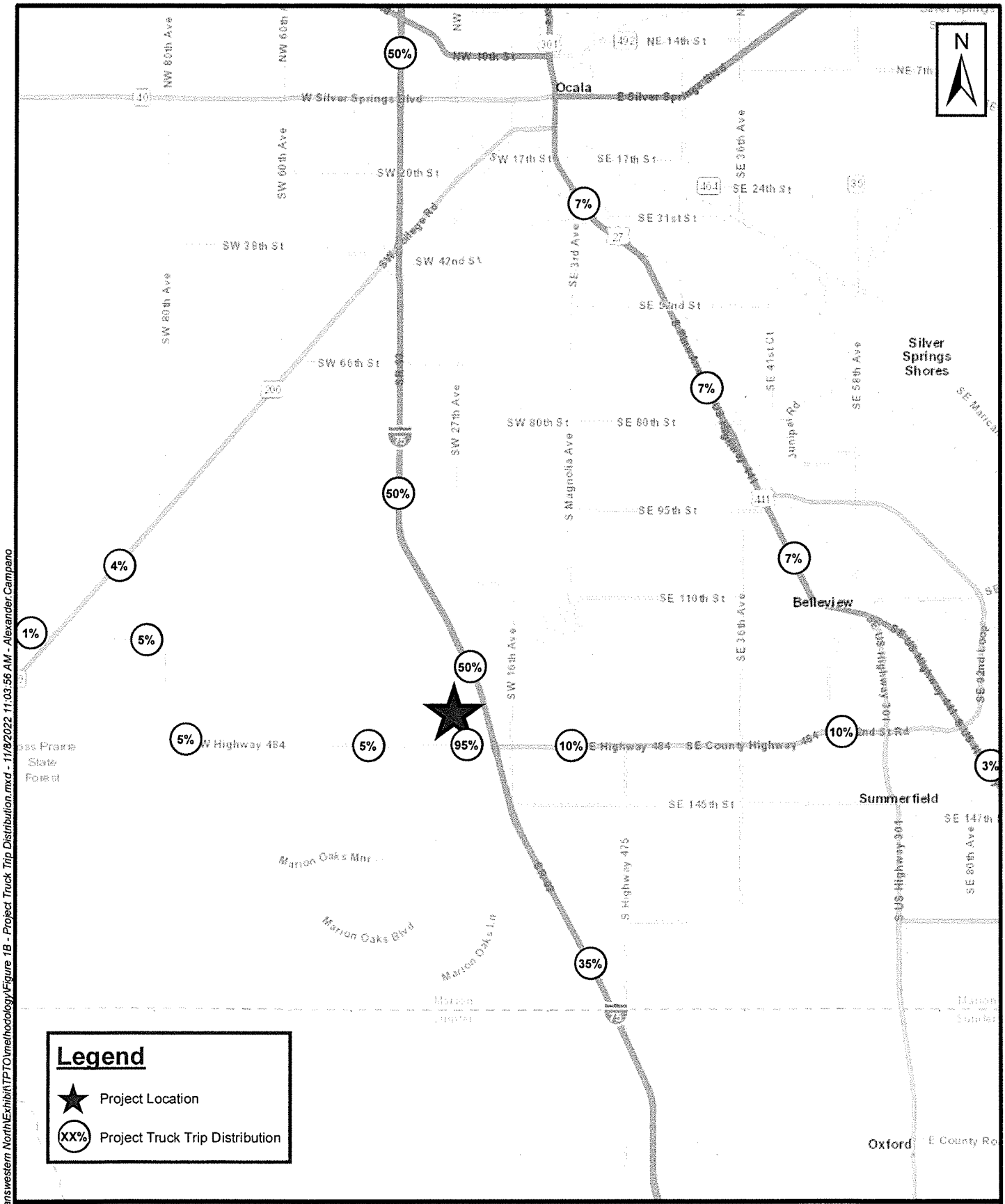
1700 SE 17th Street, Suite 200, Ocala, FL 34471
Phone: 352 438 3000
www.kimley-horn.com Registry No 35106

PROJECT AUTOMOBILE TRIP DISTRIBUTION

TRAILHEAD LOGISTICS PARK NORTH
MARION COUNTY, FLORIDA

Project No: 142933003	Not to Scale	November 2022	Figure 1A



K:\OCA_GIS\142933003-Transwestern North\Exhibit\TPTO\methodology\Figure 1B - Project Truck Trip Distribution.mxd - 11/8/2022 11:03:56 AM - Alexander.Campano

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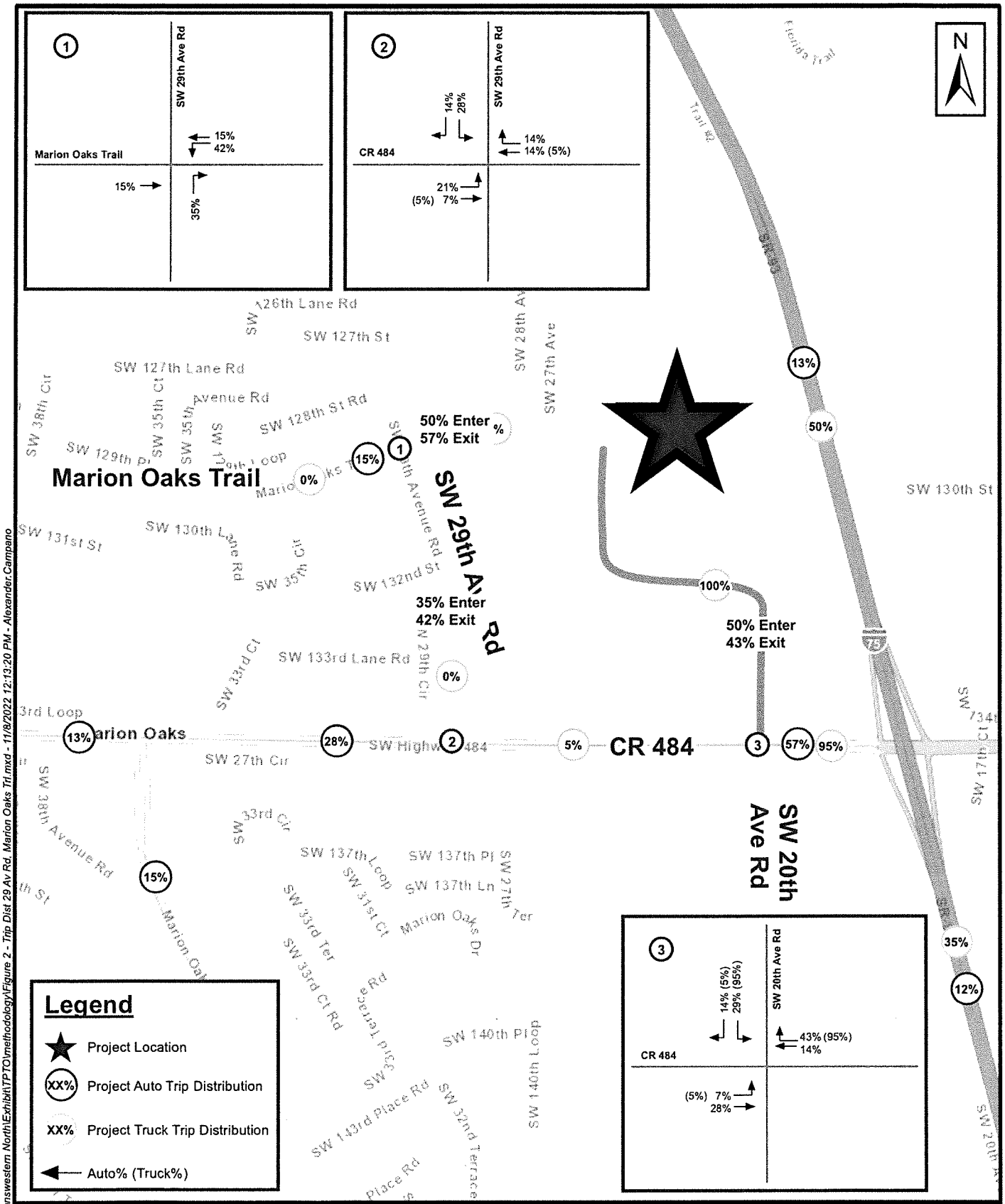
Phone: 352 438 3000
www.kimley-horn.com Registry No 35106

PROJECT TRUCK TRIP DISTRIBUTION

TRAILHEAD LOGISTICS PARK NORTH
MARION COUNTY, FLORIDA

Project No: 142933003	Not to Scale	November 2022	Figure 1B



K:\OCA GIS\142933003-Transwestern North\Exhibit\TPTO\methodology\Figure 2 - Trip Dist 29 Av Rd, Marion Oaks Trl.mxd - 11/8/2022 12:13:20 PM - Alexander.Campano

Kimley»Horn

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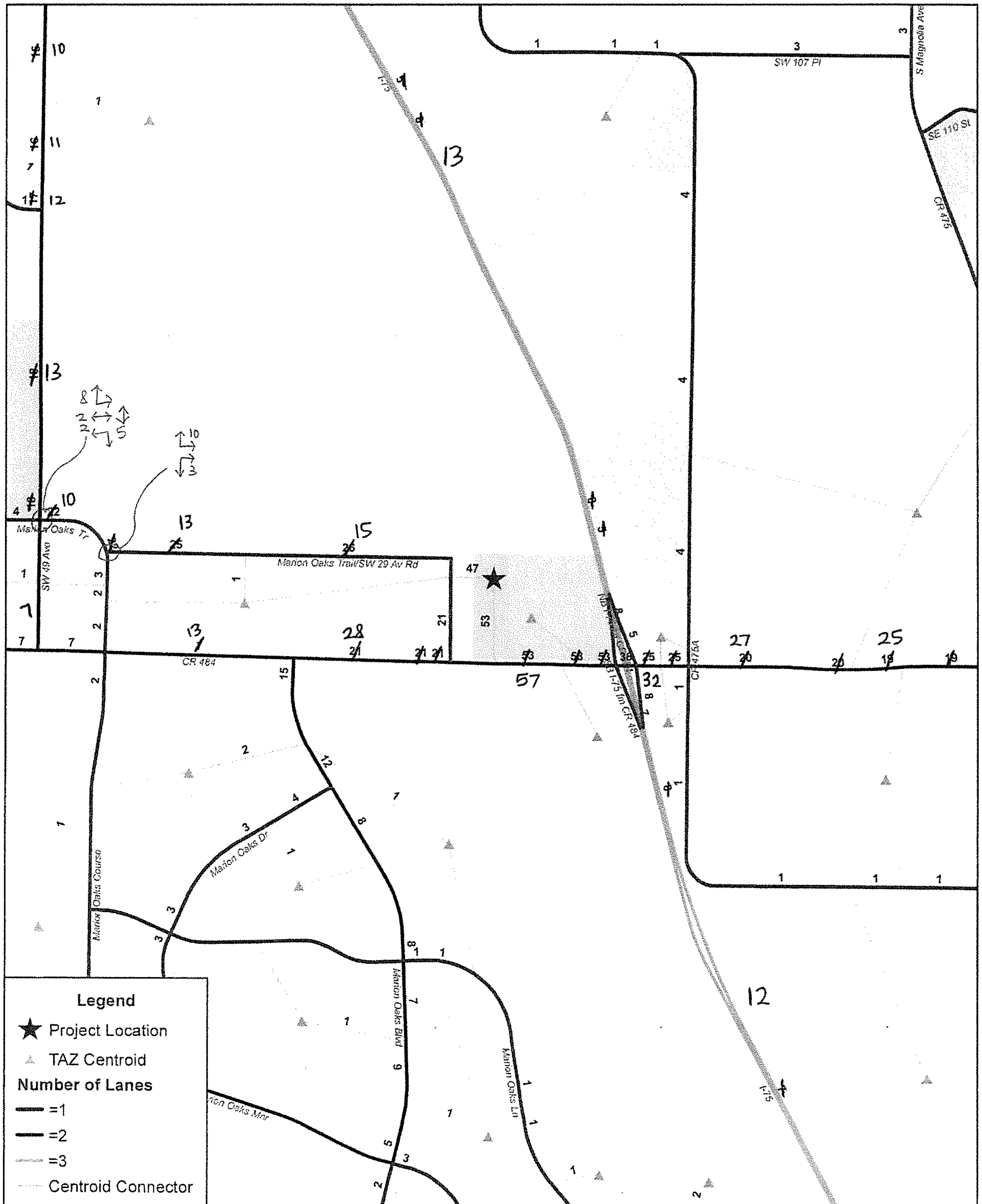
Phone: 352 438 3000
www.kimley-horn.com Registry No 35106

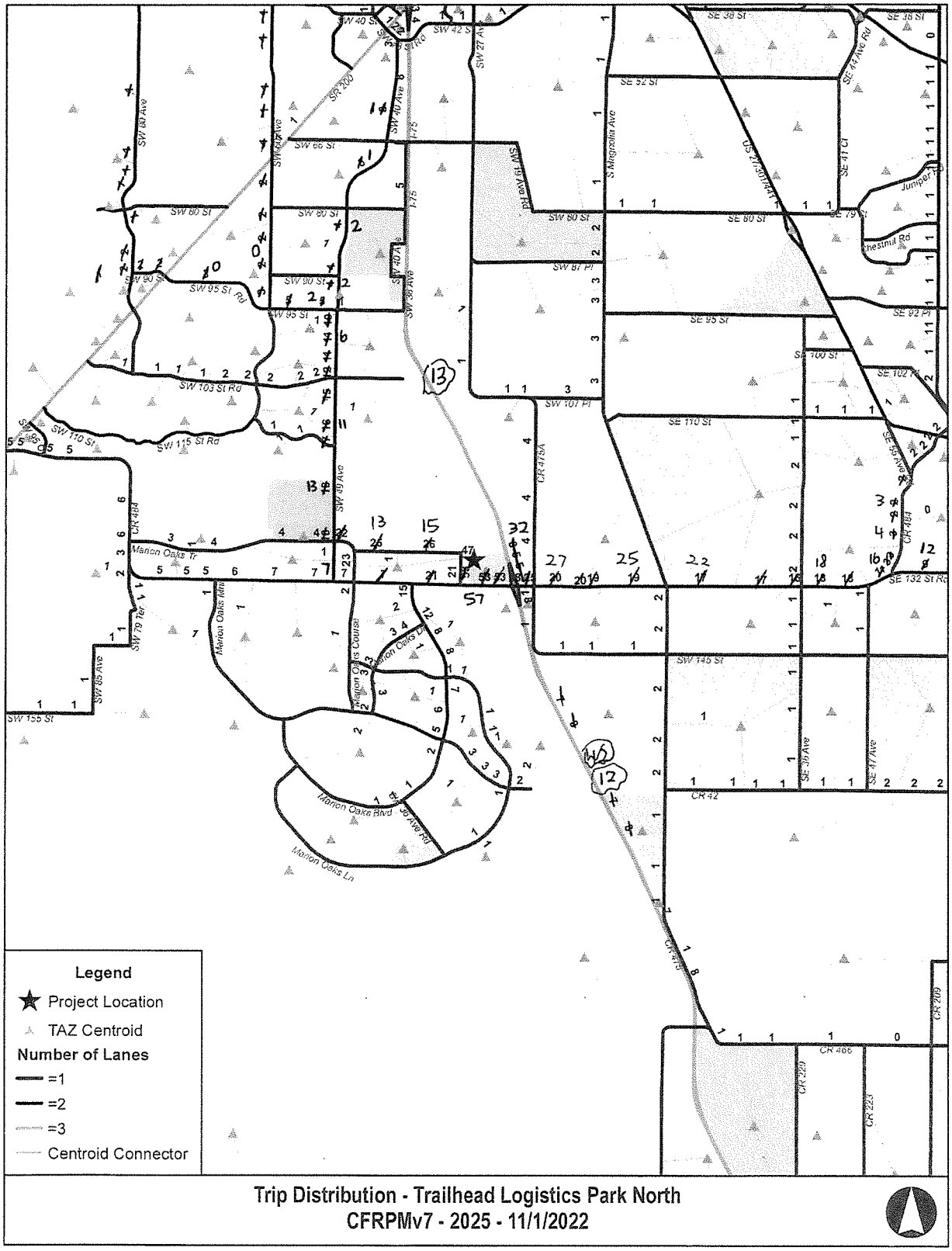
PROJECT TRIP DISTRIBUTION

TRAILHEAD LOGISTICS PARK NORTH
MARION COUNTY, FLORIDA

Project No: 142933003	Not to Scale	November 2022	Figure 2



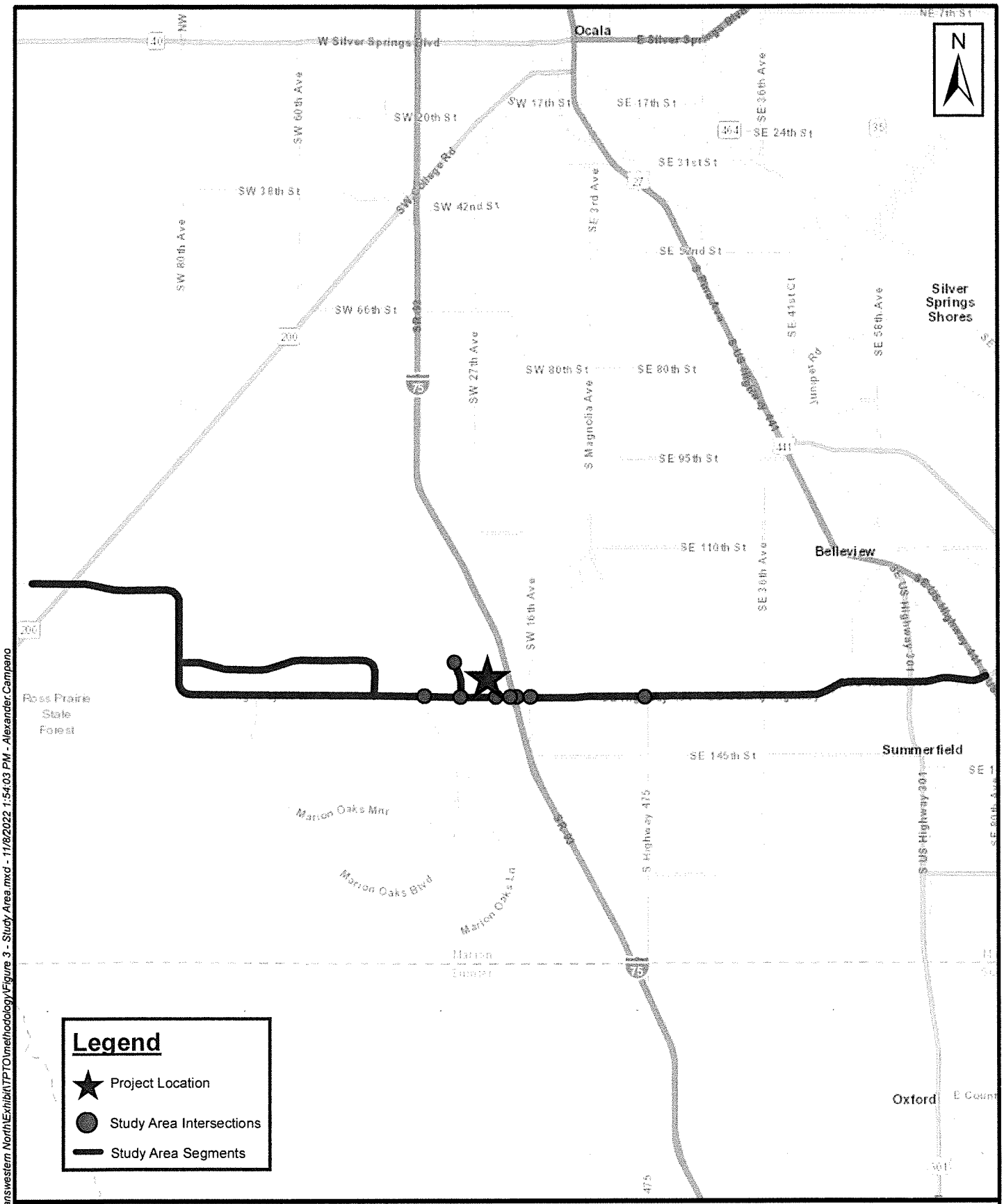
Trip Distribution - Trailhead Logistics Park North
CFRPMv7 - 2025 - 11/1/2022


Legend
Project Location
TAZ Centroid
Number of Lanes
=1
=2
=3
Centroid Connector
Trip Distribution - Trailhead Logistics Park North
CFRPMv7 - 2025 - 11/1/2022

Hourly Distribution of Entering and Exiting Vehicle Trips by Land Use			
Source: ITE *Trip Generation Manual*, 11th Edition			
Land Use Code	154		
Land Use	High-Cube Transload and Short-Term Storage Warehouse		
Setting	General Urban/Suburban		
Time Period	Weekday		
# Data Sites	3		
	% of 24-Hour Vehicle Trips		
Time	Total	Entering	Exiting
12:00 - 1:00 AM	1.5%	1.0%	2.0%
1:00 - 2:00 AM	1.4%	0.9%	2.0%
2:00 - 3:00 AM	1.0%	0.8%	1.2%
3:00 - 4:00 AM	0.4%	0.4%	0.3%
4:00 - 5:00 AM	2.3%	1.3%	3.2%
5:00 - 6:00 AM	4.1%	3.1%	5.1%
6:00 - 7:00 AM	6.2%	10.2%	2.1%
7:00 - 8:00 AM	4.8%	7.3%	2.3%
8:00 - 9:00 AM	3.9%	5.1%	2.8%
9:00 - 10:00 AM	7.2%	11.8%	2.6%
10:00 - 11:00 AM	6.2%	9.5%	2.9%
11:00 - 12:00 PM	3.7%	3.8%	3.7%
12:00 - 1:00 PM	6.0%	5.1%	6.9%
1:00 - 2:00 PM	5.9%	5.9%	5.9%
2:00 - 3:00 PM	5.2%	6.0%	4.3%
3:00 - 4:00 PM	7.6%	5.3%	10.0%
4:00 - 5:00 PM	4.7%	3.1%	6.3%
5:00 - 6:00 PM	5.0%	2.2%	7.8%
6:00 - 7:00 PM	5.7%	2.7%	8.8%
7:00 - 8:00 PM	7.6%	5.8%	9.4%
8:00 - 9:00 PM	5.6%	5.4%	5.8%
9:00 - 10:00 PM	1.1%	0.6%	1.5%
10:00 - 11:00 PM	1.3%	1.2%	1.4%
11:00 - 12:00 AM	1.6%	1.3%	1.9%

Kimley»Horn

Project Significance and Study Area



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1700 SE 17th Street, Suite 200, Ocala, FL 34471
Phone: 352 438 3000
www.kimley-horn.com Registry No 35106

SITE LOCATION, STUDY AREA INTERSECTIONS AND ROADWAY SEGMENTS

TRAILHEAD LOGISTICS PARK NORTH
MARION COUNTY, FLORIDA

Project No: 142933003	Not to Scale	November 2022	Figure 3

Table 2: Study Area Determination

Roadway		ROADWAY ATTRIBUTES [1]									EXISTING DAILY TRAFFIC CONDITIONS					PM PEAK HOUR SIGNIFICANCE CALCULATIONS						
																Project Traffic - Auto		Project Traffic - Trucks				
From	To	TPO CMP Station	FDOT Classification [2]	Area Type	Adopted LOS	Number of Lanes	Daily Service Volume	Pk. Hr. Dir. Service Volume	TPO Traffic Counts Growth Rate	TPO CMP Growth Rate	2021 AADT [3]	V/C	LOS	Auto % Assignment [4]	Truck % Assignment [4]	NB / EB	SB / WB	NB / EB	SB / WB	Project Peak Direction % Impact [5]	Significant Impact? [6]	Include in Study Area? [7]
CR 484																						
SW 105 AV	SR 200	2010.0	NS-UA	Urban	E	2	29,340	1,449	6.3%	3.36%	10,400	0.35	B	4.0%	1.0%	6	16	0	1	1.13%	NO	YES
SR 200	SW 49 AV	2020.1	NS-SA-C1	Urban	E	2	12,744	634	16.4%	3.18%	9,000	0.71	C	6.0%	5.0%	9	23	2	4	4.28%	YES	YES
SW 49 AV	SW 45 AV	2020.1	NS-SA-C1	Urban	E	2	12,744	634	--	3.18%	9,000	0.71	C	7.0%	5.0%	11	27	2	4	4.90%	YES	YES
SW 45 AV	MARION OAKS BLVD	2030.0	NS-SA-C1	Urban	E	4	35,820	1,800	--	3.93%	35,100	0.98	D	13.0%	5.0%	20	51	2	4	3.03%	YES	YES
MARION OAKS BLVD	SW 20 AV RD	2030.0	NS-SA-C1	Urban	E	4	35,820	1,800	--	3.93%	35,100	0.98	D	28.0%	5.0%	42	109	2	4	6.29%	YES	YES
SW 20 AV RD	I-75 RAMP (W)	2030.0	NS-SA-C1	Urban	E	4	35,820	1,800	1.8%	3.93%	35,100	0.98	D	57.0%	95.0%	223	86	70	39	16.29%	YES	YES
I-75 RAMP (W)	I-75 RAMP (E)	2060.0	NS-SA-C1	Urban	D	6	53,910	2,718	--	3.93%	35,100	0.65	C	44.5%	52.5%	174	67	39	22	7.83%	YES	YES
I-75 RAMP (E)	CR 475A	2070.0	NS-SA-C1	Urban	D	4	35,820	1,800	4.3%	6.37%	36,200	1.01	F	32.0%	10.0%	125	48	7	4	7.36%	YES	YES
CR 475A	CR 475	2080.0	NS-SA-C1	Urban	D	4	35,820	1,800	1.8%	4.34%	27,900	0.78	C	26.0%	10.0%	102	39	7	4	6.06%	YES	YES
CR 475	CR 467	2090.0	NS-SA-C1	Urban	D	4	35,820	1,800	5.9%	4.57%	21,800	0.61	C	22.0%	10.0%	86	33	7	4	5.19%	YES	YES
CR 467	SE 132 ST RD	2110.0	NS-SA-C1	Urban	D	4	35,820	1,800	1.5%	6.56%	23,300	0.65	C	17.0%	10.0%	66	26	7	4	4.10%	YES	YES
SE 132 ST RD	US 441	2120.2	NS-UC	Urban	E	2	29,340	1,449	-1.0%	1.00%	Not Counted	--	--	2.7%	0.0%	10	4	0	0	0.72%	NO	NO
SW 49th Avenue																						
MARION OAKS	SW 95 ST	6100.0	NS-SC-C1	Urban	E	2	12,744	3,357	12.1%	1.00%	10,200	0.80	C	9.1%	0.0%	14	36	0	0	1.06%	NO	NO
SW 95 ST	SW 85 ST	6110.0	NS-UC	Urban	E	4	67,770	3,357	--	1.00%	10,200	0.15	B	2.0%	0.0%	3	8	0	0	0.23%	NO	NO
SW 29th Avneue Road																						
CR 484	MARION OAKS TRL	--	NS-SA-C2	Urban	E	2	10,920	560	--	1.00%	2,200	0.20	C	42.0%	0.0%	164	164	0	0	29.33%	YES	YES
SE 132nd Street Road																						
CR 484	US 301	7165.0	NS-SA-C1	Urban	E	4	35,820	1,800	5.0%	1.00%	11,600	0.32	C	13.0%	10.0%	51	20	7	4	3.24%	YES	YES
US 301	US 441	7170.0	NS-SA-C1	Urban	E	4	35,820	1,800	8.4%	7.29%	12,700	0.35	C	12.0%	3.0%	47	18	2	1	2.73%	NO	YES
Marion Oaks Trail																						
CR 484 W	SW 49 AV	8150.0	NS-SA-C1	Urban	E	2	15,930	792	--	1.00%	1,800	0.11	C	3.5%	0.0%	5	14	0	0	1.73%	NO	YES
MARION OAKS CRSE	CR 484 E	8180.0	NS-SC-C1	Urban	E	2	15,930	792	--	1.00%	6,800	0.43	C	6.5%	0.0%	10	25	0	0	3.21%	YES	YES
Marion Oaks Blvd																						
CR 484	MARION OAKS MNR	8140.0	NS-SC-C1	Urban	E	4	35,820	1,800	3.3%	1.00%	14,800	0.41	C	6.4%	0.0%	10	25	0	0	1.39%	NO	NO
MARION OAKS MNR	SE 67 AVE RD	786.0	NS-SC-C1	Urban	E	2	15,930	792	--	1.00%	15,100	0.95	B	1.5%	0.0%	2	6	0	0	0.74%	NO	NO
I-75																						
COUNTY LINE (S)	URBAN AREA BOUNDARY	2260.1	ST-UA	Rural	C	6	69,000	3,990	-1.6%	1.77%	83,900	1.22	E	12.0%	35.0%	18	47	14	26	1.83%	NO	NO
URBAN AREA BOUNDARY	CR 484	2260.2	ST-UA	Urban	D	6	113,600	5,780	-1.6%	1.77%	83,900	0.74	C	12.0%	35.0%	18	47	14	26	1.26%	NO	NO
CR 484	SR 200	2280.0	ST-UA	Urban	D	6	113,600	5,780	2.7%	2.81%	102,700	0.90	D	13.0%	50.0%	51	20	37	21	1.52%	NO	NO
SR 200	SR 40	2290.0	ST-UA	Urban	D	6	113,600	5,780	6.3%	3.82%	106,100	0.93	D	8.0%	50.0%	31	12	37	21	1.18%	NO	NO
CR 475A																						
CR 475B	SW 27 AV	5560.0	NS-UA	Urban	C	2	16,200	801	4.6%	2.62%	6,400	0.40	B	1.0%	0.0%	4	2	0	0	0.49%	NO	NO
CR 475B	CR 484	1930.1	NS-SA-C1	Urban	E	2	12,744	634	3.5%	4.89%	7,600	0.60	C	2.0%	0.0%	8	3	0	0	1.23%	NO	NO

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11/9/22

Notes:

1. The roadway attributes and AADT were obtained from the most recent Ocala Marion Transportation Planning Organization (TPO) Congestion Management Process (CMP) Database and Ocala Marion TPO 2022 Traffic Counts Report. For SW 29th Avenue Road the roadway attributes were derived using the 2020 FDOT Q/LOS Handbook, 2010 FDOT Functional Classification Map for Marion County, and the adopted level of service from the Marion County Comprehensive Plan (Transportation Element, Policy 2.1.2).
2. NS-SA-C1 = non-state, signalized arterial, class 1; NS-UC = non-state, unsignalized collector; NS-SC-C1 = non-state, signalized collector, class 1; ST-UA = state, unsiganlized arterial; NS-UA = non-state, unsignalized arterial.
3. The 2022 AADT was derived by applying the roadway segment growth rate to the 2021 AADT volumes derived from the most recent Ocala Marion TPO CMP. For SW 29th Avenue Road the AADT volumes were derived from turning movement counts collected on 04/26/2022.
4. Project traffic assignment was calculated as the average across the segment based on the trip distribution and assignment.
5. Project impact is calculated as the peak hour peak direction project traffic on a roadway segment divided by the peak hour peak direction service volume.
6. A segment is considered significantly impacted if the project impact is 3% or greater per the Marion County TIA Guidelines.
7. Per the Marion County TIA Guidelines all roadway segments with a 3% or greater impact to the peak hour peak direction service volume plus one segment beyond is included within the study area.

Historic Traffic Trends

Table 3: Growth Rate Calculations

Roadway TPO Traffic Count Location	2021 AADT [1]	TPO Traffic Counts Growth Rate
CR 484		
West of I-75	35,100	1.80%
East of I-75	36,200	4.30%
East of CR 475A	27,900	1.80%
East of CR 475	21,800	5.90%
East of CR 467	23,300	1.50%
Weighted Average [2]		3.00%

Notes:
1. AADTs and growth rates were derived from the latest Ocala/Marion County TPO Traffic Counts and Trends.
2. The average growth rate was weighted by the 2021 AADT.

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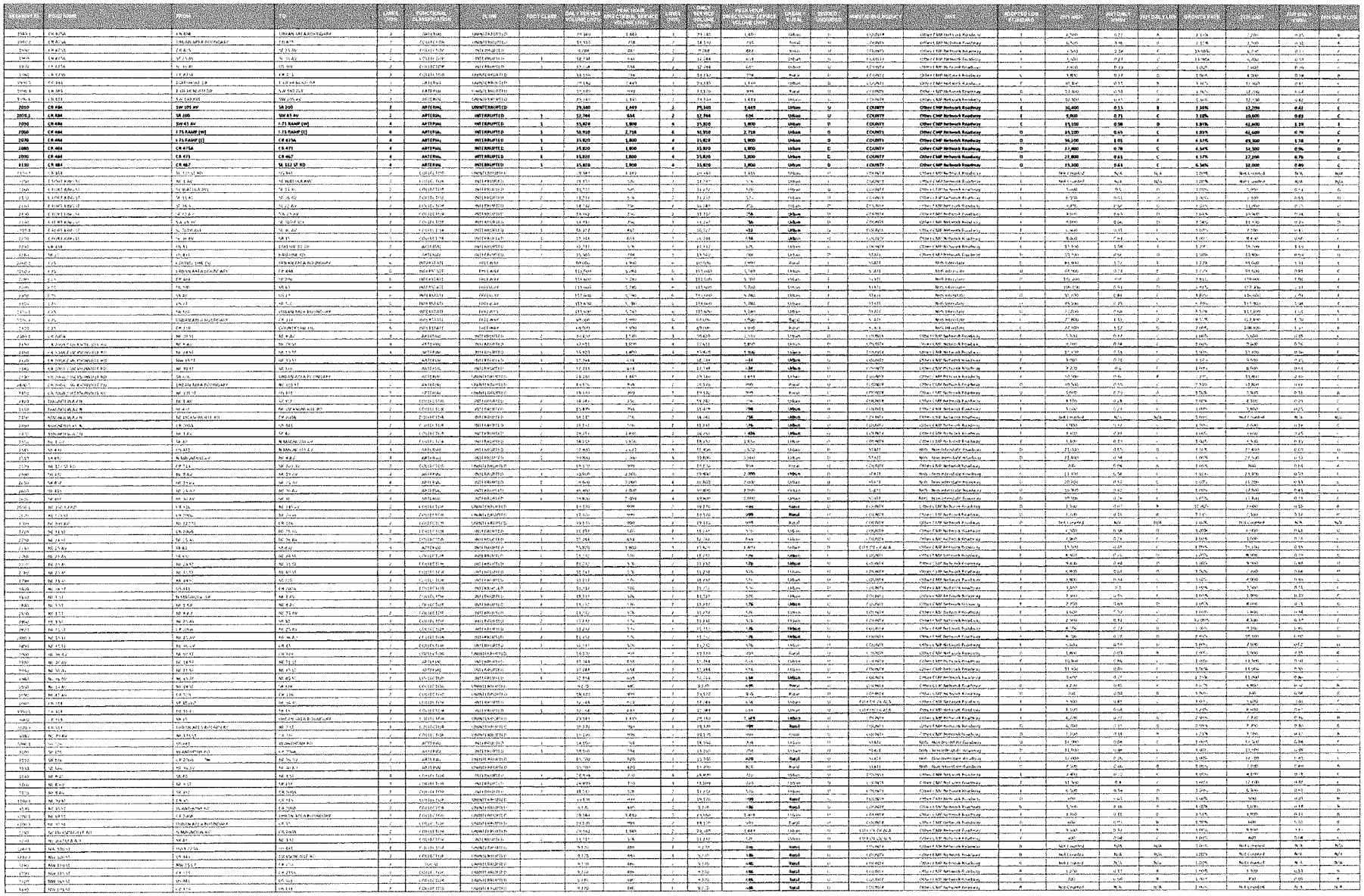
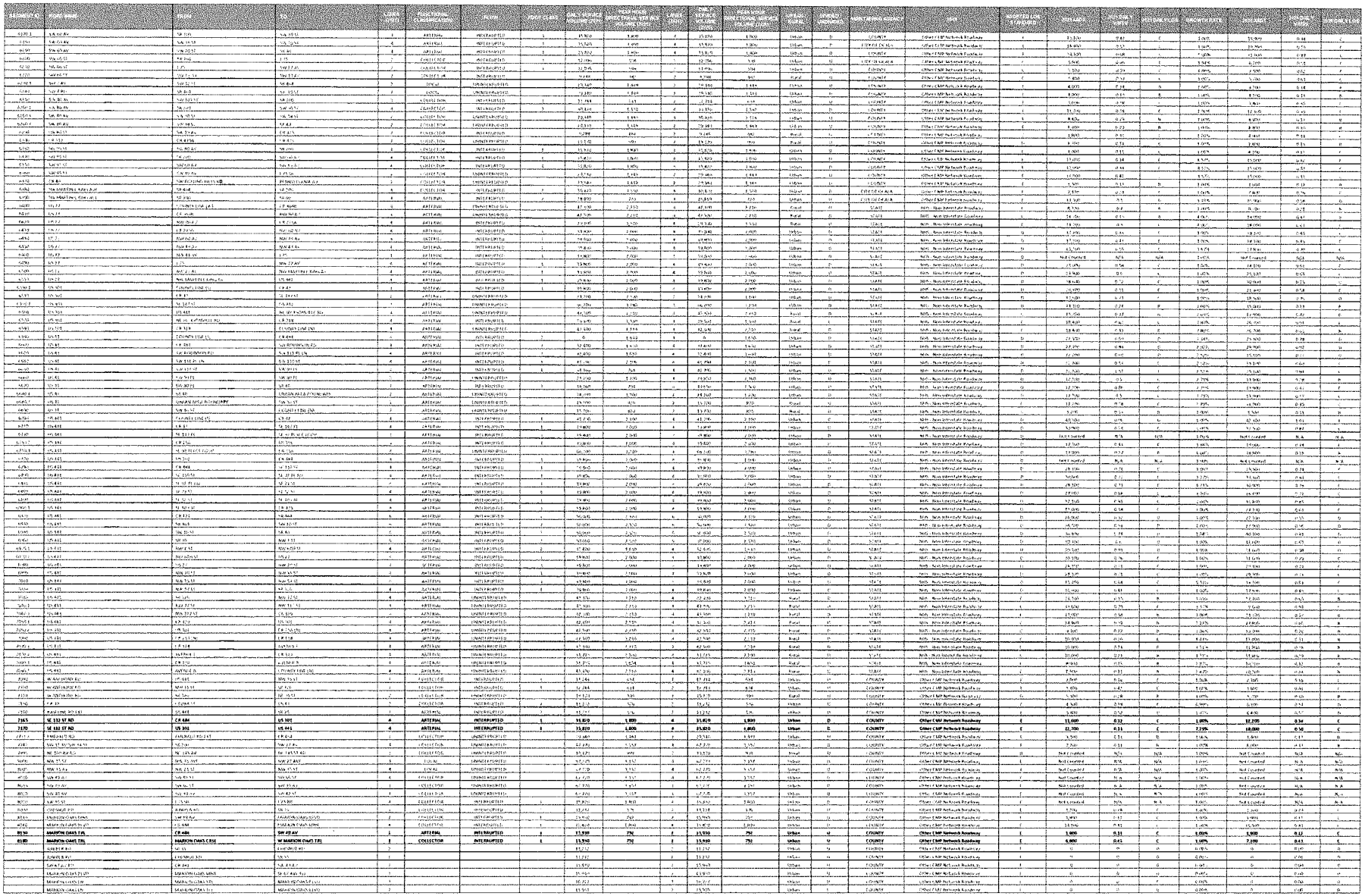
Location	Source	Count Type	2017	2018	2019	2020	2021	Ave Annual Growth Rate (%)
CR 464C								
E of SE 141st Terrace Road	MC	3	4,400	4,600	4,700	4,900	4,800	2.2%
CR 467								
S of SE 95th Street	MC	3	3,300	3,700	4,100	4,700	4,600	8.9%
N of CR 484	MC	3	4,300	4,500	4,700	5,400	6,000	8.8%
S of CR 484	MC	3	3,800	4,100	4,200	4,400	4,500	4.3%
CR 475								
N of SE 52nd Street	MC	3	7,600	7,800	7,800	7,900	8,000	1.3%
N of CR 328	MC	3	6,700	6,700	6,500	6,600	7,200	1.9%
N of CR 312	MC	3	6,500	6,600	6,400	7,000	7,600	4.1%
N of CR 484	MC	3	4,900	5,300	5,300	5,500	5,500	3.0%
S of CR 484	MC	3	5,100	5,400	5,600	5,500	5,400	1.5%
S of CR 475A	MC	3	7,500	8,100	8,500	8,000	9,000	4.9%
CR 475A								
N of SW 66th Street	MC	3	12,000	12,500	12,400	12,200	13,600	3.3%
S of SW 66th Street	MC	3	9,300	9,800	9,500	7,200	10,300	5.3%
W of CR 475B	MC	3	5,700	5,700	6,100	6,800	6,800	4.6%
N of CR 484	MC	3	6,200	6,800	6,900	6,800	7,100	3.5%
S of CR 484	MC	3	5,700	6,200	6,200	5,700	5,800	0.6%
E of CR 475	MC	3	2,100	2,500	2,700	1,600	1,500	-5.0%
W of US 301/SR 35	MC	3	2,100	2,200	2,400	2,700	2,200	2.0%
CR 475B								
W of I-75	MC	3	3,400	3,300	3,700	2,600	11,000	75.6%
CR 484								
E of US 41	MC	3	8,500	9,200	9,400	9,800	9,400	2.6%
W of SR 200	MC	3	8,900	9,400	9,700	11,300	11,300	6.3%
E of SR 200	MC	3	7,700	8,400	8,500	3,800	8,000	16.4%
W of I-75	MC	3	29,200	30,100	32,500	30,700	NC	1.8%
E of I-75	MC	3	27,500	30,000	32,000	31,100	NC	4.3%
E of CR 475A	MC	3	21,500	24,100	25,600	24,000	22,800	1.8%
E of CR 475	MC	3	18,300	20,400	20,800	18,500	22,400	5.9%
E of CR 467	MC	3	18,000	20,000	20,500	18,300	18,900	1.5%
W of US 441	MC	3	9,500	10,400	11,200	10,700	8,900	-1.0%

Location	Source	Count Type	2017	2018	2019	2020	2021	Ave Annual Growth Rate (%)
SE 38st Street								
CR 464A to SE 36th Ave	OCA	3	7,900	NC	4,900	6,600	NC	N/A
W of SE 36th Ave	MC	3	5,900	5,400	6,000	6,400	5,400	-1.6%
SE 52nd Street								
W of US 441	MC	3	3,000	3,200	3,100	3,000	3,100	0.9%
E of US 441	MC	3	6,000	6,200	6,100	6,700	5,500	-1.6%
SE 80th Street								
W of US 441	MC	3	4,900	5,200	5,000	4,800	6,200	6.9%
E of US 441	MC	3	4,300	4,400	4,400	4,300	5,900	9.3%
SE 95th Street								
W of US 441	MC	3	5,200	5,600	5,700	6,000	6,500	5.8%
SE 110th Street								
W of US 441	MC	3	5,400	5,600	5,800	5,600	6,500	5.0%
SE 132nd Street Road								
E of CR 484	MC	3	11,300	12,000	11,400	11,200	13,500	5.0%
W of US 441	MC	3	9,900	10,500	11,000	10,000	13,200	8.4%
SE 100th Avenue								
S of CR 25	MC	3	4,600	5,300	5,400	5,100	4,700	0.9%
SE 147th Street/147th Place								
W of US 441	MC	3	4,000	4,300	4,400	5,500	4,800	5.5%
SE 110th Street Road								
E of Oak Rd	MC	3	2,600	2,800	2,900	3,300	3,200	5.5%
SE 114th Street Road								
W of CR 464C	MC	3	3,200	3,500	3,600	4,200	4,500	9.0%
SE Oak Road								
S of CR 464	MC	3	2,900	3,200	3,500	5,000	5,100	16.1%
SE 44th Avenue Road								
N of SE 52nd St	MC	3	7,200	7,300	7,500	7,600	8,100	3.0%
SE 92nd Place Road								
E of US 441	MC	3	5,800	7,100	7,200	7,000	9,900	15.6%
SE 92nd Loop								
SE 110th St Rd and East Highway 25	MC	3	NC	NC	NC	NC	8,100	N/A
South Magnolia Avenue								
SE 3rd St to SE 8th Street	OCA	3	3,600	4,800	4,000	3,200	5,900	20.3%

Ocala Marion TPO CMP Databse - September 2021



Ocala Marion TPO CMP Databse - September 2021



APPENDIX K: TRIP EQUIVELANCY MATRIX

A. LAND USE EQUIVALENCY RATES

CHANGE FROM \ CHANGE TO	General Light Industrial (1,000 SF)	High-Cube Transload and Short-Term Storage Warehouse (1,000 SF)	General Office (1,000 SF)	Research and Development Center (1,000 SF)	Business Park (1,000 SF)	Commercial Retail (ITE LUC 820 (> 150k SF)) (1,000 SF)	Commercial Retail (ITE LUC 821 (40k-150k SF w/ supermarket)) (1,000 SF)	Commercial Retail (ITE LUC 821 (40k-150k SF w/o supermarket)) (1,000 SF)	Commercial Retail (ITE LUC 822 (< 40k SF)) (1,000 SF)	Single-Family Attached Housing (DU)	Multi-family (Low-Rise) Apartments (DU)
General Light Industrial (1,000 SF)	--	1.3824	0.1632	0.2398	0.1926	0.0853	0.0434	0.0755	0.0540	0.4123	0.4608
High-Cube Transload and Short-Term Storage Warehouse (1,000 SF)	0.7234	--	0.1181	0.1735	0.1393	0.0617	0.0314	0.0546	0.0391	0.2982	0.3333
General Office (1,000 SF)	6.1277	8.4706	--	1.4694	1.1803	0.5229	0.2658	0.4624	0.3311	2.5263	2.8235
Research and Development Center (1,000 SF)	4.1702	5.7647	0.6806	--	0.8033	0.3558	0.1809	0.3147	0.2253	1.7193	1.9216
Business Park (1,000 SF)	5.1915	7.1765	0.8472	1.2449	--	0.4430	0.2252	0.3918	0.2805	2.1404	2.3922
Commercial Retail (ITE LUC 820 (> 150k SF)) (1,000 SF)	11.7191	16.2000	1.9125	2.8102	2.2574	--	0.5083	0.8844	0.6332	4.8316	5.4000
Commercial Retail (ITE LUC 821 (40k-150k SF w/ supermarket))	23.0553	31.8706	3.7625	5.5286	4.4410	1.9673	--	1.7399	1.2458	9.5053	10.6235
Commercial Retail (ITE LUC 821 (40k-150k SF w/o supermarket))	13.2511	18.3176	2.1625	3.1776	2.5525	1.1307	0.5748	--	0.7160	5.4632	6.1059
Commercial Retail (ITE LUC 822 (< 40k SF))	18.5064	25.5824	3.0201	4.4378	3.5648	1.5792	0.8027	1.3966	--	7.6298	8.5275
Single-family Attached Housing (DU)	2.4255	3.3529	0.3958	0.5816	0.4672	0.2070	0.1052	0.1830	0.1311	--	1.1176
Multi-family (Low-Rise) Apartments (DU)	2.1702	3.0000	0.3542	0.5204	0.4180	0.1852	0.0941	0.1638	0.1173	0.8947	--

B. EQUIVALENCY EXAMPLES

EXAMPLE 1: TRADE FROM GENERAL LIGHT INDUSTRIAL TO MULTI-FAMILY HOUSING

Trade 100,000 SF of General Light Industrial for ? DU of Multi-Family Housing
= (100 KSF) General Light Industrial x 0.4608 DU of Multi-Family Housing
= 46.08 x (DU) Multi-Family Housing
= 46 DU of Multi-Family Housing

EXAMPLE 2: ADD GENERAL OFFICE FROM HIGH-CUBE TRANSLOAD AND SHORT-TERM STORAGE WAREHOUSE

Add 30 KSF of Office from ? (1,000) SF of High-Cube Transload and Short-Term Storage Warehouse
= (30 KSF) Office / 0.1181 (1,000 SF) of High Cube Warehouse
= 254.022 x (1,000) SF High Cube Warehouse
= Remove 254,022 SF of High Cube Transload and Short-Term Storage Warehouse

C. SOURCE INFORMATION AND DOCUMENTATION FOR EQUIVALENCY RATES

Land Use	Units	Gross Trip Rate [1]	% New Trips [2]	Trips / Unit
General Light Industrial (ITE 110)	1 (1,000 SF)	0.235	100.00%	0.235
High-Cube Transload and Short-Term Storage Warehouse (ITE 154)	1 (1,000 SF)	0.170	100.00%	0.170
General Office (ITE 710)	1 (1,000 SF)	1.440	100.00%	1.440
Research and Development Center (ITE 760)	1 (1,000 SF)	0.980	100.00%	0.980
Business Park (ITE 770)	1 (1,000 SF)	1.220	100.00%	1.220
Commercial Retail (ITE LUC 820 (> 150k SF))	1 (1,000 SF)	3.400	81.00%	2.754
Commercial Retail (ITE LUC 821 (40k-150k SF w/ supermarket))	1 (1,000 SF)	9.030	60.00%	5.418
Commercial Retail (ITE LUC 821 (40k-150k SF w/o supermarket))	1 (1,000 SF)	5.190	60.00%	3.114
Commercial Retail (ITE LUC 822 (< 40k SF))	1 (1,000 SF)	6.590	66.00%	4.349
Single-family Attached Housing (ITE 215)	1 DU	0.570	100.00%	0.570
Multi-family (Low-Rise) Apartments (ITE 220)	1 DU	0.510	100.00%	0.510

D. FOOTNOTES

[1]: Trip Rate based upon ITE *Trip Generation, 11th Edition*, p.m. peak-hour trip generation rates as follows:

General Light Industrial	Obtained using the Trip Generation equation for ITE LUC 110 and the approved trip generation for the project.
High-Cube Transload and Short-Term Storage Warehouse	Obtained using the Trip Generation equation for ITE LUC 154 and the approved trip generation for the project.
General Office	Obtained using the Trip Generation rate for ITE LUC 710.
Research and Development Center	Obtained using the Trip Generation rate for ITE LUC 760.
Business Park	Obtained using the Trip Generation rate for ITE LUC 770.
Commercial Retail (ITE LUC 820 (> 150k SF))	Obtained using the Trip Generation rate for ITE LUC 820 (> 150k SF).
Commercial Retail (ITE LUC 821 (40k-150k SF w/ supermarket))	Obtained using the Trip Generation rate for ITE LUC 821 (40k-150k SF w/ supermarket)).
Commercial Retail (ITE LUC 821 (40k-150k SF w/o supermarket))	Obtained using the Trip Generation rate for ITE LUC 821 (40k-150k SF w/o supermarket)).
Commercial Retail (ITE LUC 822 (< 40k SF))	Obtained using the Trip Generation rate for ITE LUC 822 (< 40k SF).
Single-Family Attached Housing	Obtained using the Trip Generation rate for ITE LUC 215.
Multi-family (Low-Rise) Apartments	Obtained using the Trip Generation rate for ITE LUC 220.

Other land uses allowed within the PUD that have an ITE Land Use Code can be utilized for the land use equivalency matrix conversion.

[2]: % New is based upon the Internal Capture and Pass-by Capture = (1 - IC%) * (1 - PB%). No internal capture was applied. Pass-by was applied based on guidance from the ITE Trip Generation Manual (11th Edition), for ITE LUC 822 pass-by was applied based on the Trip Generation Handbook (3rd Edition) for ITE LUC 820 (prior to 11th edition recategorization into multiple different land uses).

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APPENDIX L: INTERIM SW 20TH AVENUE ROAD AT CR 484 INTERSECTION ANALYSIS

W.E. OLIVER, P.E., LLC
P.O. Box 10367, Tampa, Florida 33679
(813) 748-9188 www.weo-pe.com

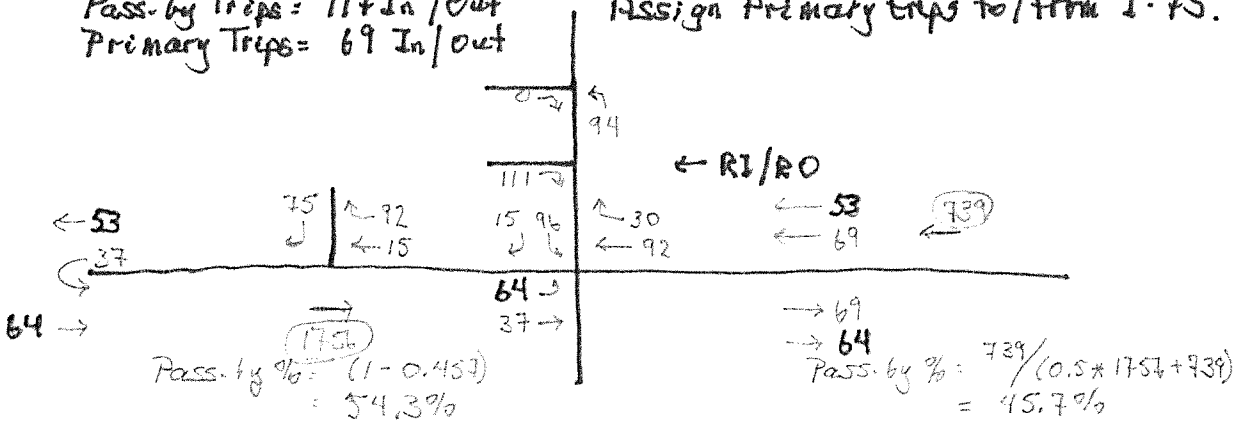
Project No: _____
Project Name/Task: _____
Date/Analyst: _____ / _____

A.M. Assignment:

Trip Gen = 186 In, 186 Out
A.M. Pass-by = 63%

Pass-by Trips: 117 In/Out
Primary Trips: 69 In/Out

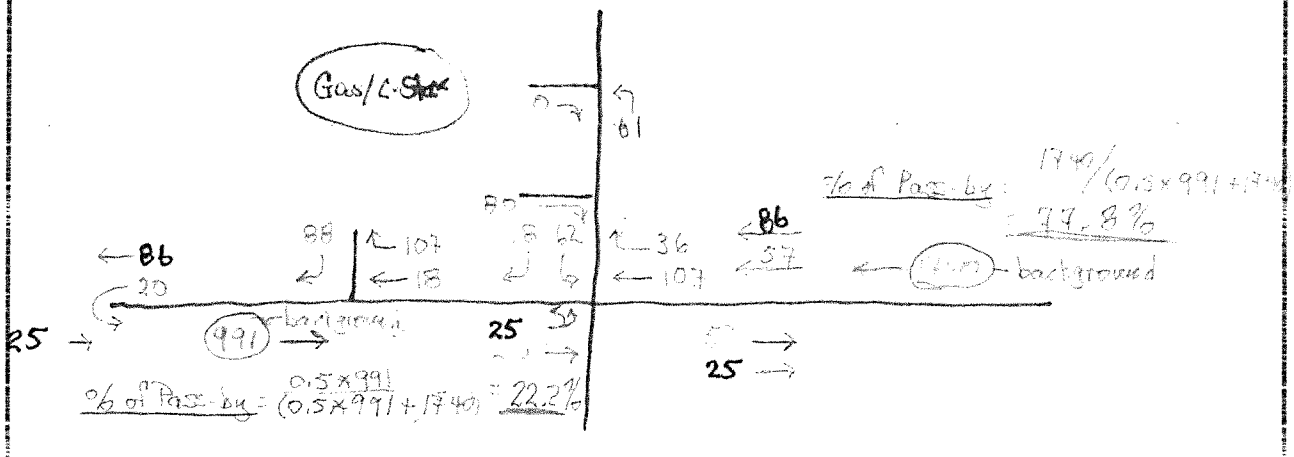
Assign Pass-by based on adjacent street traffic, near-side weighted @ 100%, far-side weighted @ 50%.
Assign Primary trips to/from I-75.



P.M. Assignment

Trip Gen = 168 In, 168 Out
P.M. Pass-by % = 34% 66%

Pass-by Trips: 111 In, 111 Out
Primary Trips: 57 In, 57 Out



TRAFFIC VOLUMES
AT STUDY INTERSECTIONS

INTERSECTION:	CR 484 & SW 20th Avenue, interim
AM COUNT DATE:	October 25, 2022
PM COUNT DATE:	October 25, 2022
AM PEAK HOUR FACTOR:	0.96
PM PEAK HOUR FACTOR:	0.93

"AM EXISTING TRAFFIC"	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
AM Raw Turning Movements	0	0	1,623	23	13	20	859	0	0	13	0	76	0	0	0	0
Peak Season Correction Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AM EXISTING CONDITIONS	**0**	**0**	**1,623**	**23**	**13**	**20**	**859**	**0**	**0**	**13**	**0**	**76**	**0**	**0**	**0**	**0**

"PM EXISTING TRAFFIC"	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
PM Raw Turning Movements	0	0	1,023	48	13	84	1,588	0	0	32	0	83	0	0	0	0
Peak Season Correction Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PM EXISTING CONDITIONS	**0**	**0**	**1,023**	**48**	**13**	**84**	**1,588**	**0**	**0**	**32**	**0**	**83**	**0**	**0**	**0**	**0**

"AM OPENING YEAR TRAFFIC"	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Trailhead Logistics Park South, Autos		18						8						8		3
Trailhead Logistics Park South, Trucks		1						8						8		0
Marco Polo C-Store/Gas Station		64	37				92	30						96		15
VESTED TRAFFIC	0	83	37	0	0	0	92	46	0	0	0	0	0	112	0	18
Years To Buildout	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Yearly Growth Rate	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
AM TRAFFIC GROWTH	0	0	259	4	2	3	137	0	0	2	0	12	0	0	0	0
AM BACKGROUND TRAFFIC	**0**	**83**	**1,919**	**27**	**15**	**23**	**1,088**	**46**	**0**	**15**	**0**	**88**	**0**	**112**	**0**	**18**

"PM OPENING YEAR TRAFFIC"	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Trailhead Logistics Park South, Autos		29						73						139		55
Trailhead Logistics Park South, Trucks		1						23						60		3
Marco Polo C-Store/Gas Station		25	20				107	36						62		18
VESTED TRAFFIC	0	55	20	0	0	0	107	132	0	0	0	0	0	261	0	76
Years To Buildout	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Yearly Growth Rate	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
PM TRAFFIC GROWTH	0	0	163	8	2	13	253	0	0	5	0	13	0	0	0	0
PM BACKGROUND TRAFFIC	**0**	**55**	**1,206**	**56**	**15**	**97**	**1,948**	**132**	**0**	**37**	**0**	**96**	**0**	**261**	**0**	**76**

Lanes, Volumes, Timings
3: SW 20th Ave Rd & CR 484

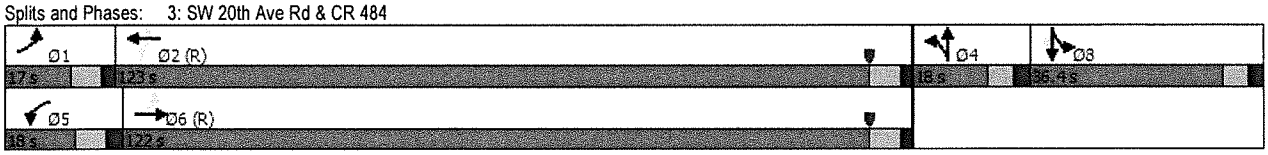
Interim Buildout Conditions
Timing Plan: AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	123	1944	27	38	1163	331	15	0	88	157	0	32
Future Volume (vph)	123	1944	27	38	1163	331	15	0	88	157	0	32
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	4%	4%	12%	12%	12%	31%	31%	31%	20%	20%	20%
Adj. Flow (vph)	128	2025	28	40	1211	345	16	0	92	164	0	33
Shared Lane Traffic (%)										50%		
Lane Group Flow (vph)	128	2053	0	40	1211	345	0	108	0	82	82	33
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	1	6		5	2		4	4		8	8	
Permitted Phases	6			2		2						8
Detector Phase	1	6		5	2	2	4	4		8	8	8
Switch Phase												
Minimum Initial (s)	10.0	15.0		10.0	15.0	15.0	5.0	5.0		10.0	10.0	10.0
Minimum Split (s)	17.0	21.9		17.3	21.9	21.9	11.6	11.6		16.6	16.6	16.6
Total Split (s)	17.0	122.0		18.0	123.0	123.0	18.0	18.0		36.4	36.4	36.4
Total Split (%)	8.7%	62.8%		9.3%	63.3%	63.3%	9.3%	9.3%		18.7%	18.7%	18.7%
Yellow Time (s)	4.8	4.9		4.8	4.9	4.9	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.2	2.0		2.5	2.0	2.0	2.6	2.6		2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)	7.0	6.9		7.3	6.9	6.9		6.6		6.6	6.6	6.6
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Recall Mode	None	C-Min		None	C-Min	C-Min	None	None		None	None	None
v/c Ratio	0.41	0.87		0.33	0.57	0.34		0.53		0.61	0.61	0.15
Control Delay	11.0	30.8		25.9	19.9	8.4		27.7		102.5	102.5	1.5
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Delay	11.0	30.8		25.9	19.9	8.4		27.7		102.5	102.5	1.5
Queue Length 50th (ft)	39	1070		12	411	85		6		108	108	0
Queue Length 95th (ft)	74	#1418		52	573	172		43		172	172	0
Internal Link Dist (ft)		3132			1240			650			1393	
Turn Bay Length (ft)	114			170		144				114		
Base Capacity (vph)	314	2368		126	2137	1013		232		219	219	289
Starvation Cap Reductn	0	0		0	0	0		0		0	0	0
Spillback Cap Reductn	0	0		0	0	0		0		0	0	0
Storage Cap Reductn	0	0		0	0	0		0		0	0	0
Reduced v/c Ratio	0.41	0.87		0.32	0.57	0.34		0.47		0.37	0.37	0.11

Intersection Summary

Cycle Length: 194.4
Actuated Cycle Length: 194.4
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 130
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: SW 20th Ave Rd & CR 484



HCM 6th Signalized Intersection Summary
3: SW 20th Ave Rd & CR 484

Interim Buildout Conditions
Timing Plan: AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	123	1944	27	38	1163	331	15	0	88	157	0	32
Future Volume (veh/h)	123	1944	27	38	1163	331	15	0	88	157	0	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1722	1722	1722	1441	1441	1441	1604	1604	1604
Adj Flow Rate, veh/h	128	2025	28	40	1211	345	16	0	64	164	0	33
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	4	4	4	12	12	12	31	31	31	20	20	20
Cap, veh/h	327	2419	33	200	2226	993	81	0	72	213	0	95
Arrive On Green	0.07	0.91	0.91	0.06	0.90	0.90	0.06	0.00	0.06	0.07	0.00	0.07
Sat Flow, veh/h	1753	3532	49	1640	3272	1459	1372	0	1221	3054	0	1359
Grp Volume(v), veh/h	128	1000	1053	40	1211	345	16	0	64	164	0	33
Grp Sat Flow(s),veh/h/ln	1753	1749	1832	1640	1636	1459	1372	0	1221	1527	0	1359
Q Serve(g_s), s	4.1	41.4	42.2	1.3	13.4	6.4	2.2	0.0	10.1	10.2	0.0	4.5
Cycle Q Clear(g_c), s	4.1	41.4	42.2	1.3	13.4	6.4	2.2	0.0	10.1	10.2	0.0	4.5
Prop In Lane	1.00		0.03	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	327	1197	1254	200	2226	993	81	0	72	213	0	95
V/C Ratio(X)	0.39	0.84	0.84	0.20	0.54	0.35	0.20	0.00	0.89	0.77	0.00	0.35
Avail Cap(c_a), veh/h	327	1197	1254	215	2226	993	81	0	72	469	0	209
HCM Platoon Ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.09	0.09	0.09	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.1	4.6	4.6	12.8	3.6	3.2	86.9	0.0	90.7	88.7	0.0	86.0
Incr Delay (d2), s/veh	1.1	7.0	6.8	0.1	0.1	0.1	2.5	0.0	73.2	11.8	0.0	4.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	6.8	7.2	0.5	2.8	1.5	0.8	0.0	4.7	4.4	0.0	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.2	11.5	11.5	12.9	3.7	3.3	89.5	0.0	163.9	100.5	0.0	90.7
LnGrp LOS	A	B	B	B	A	A	F	A	F	F	A	F
Approach Vol, veh/h		2181			1596			80			197	
Approach Delay, s/veh		11.4			3.8			149.0			98.9	
Approach LOS		B			A			F			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	17.0	138.9		18.0	16.1	139.7		20.1				
Change Period (Y+Rc), s	* 7	6.9		6.6	7.3	6.9		6.6				
Max Green Setting (Gmax), s	* 10	116.1		11.4	10.7	115.1		29.8				
Max Q Clear Time (g_c+I1), s	6.1	15.4		12.1	3.3	44.2		12.2				
Green Ext Time (p_c), s	0.1	24.4		0.0	0.0	58.3		1.3				

Intersection Summary	
HCM 6th Ctrl Delay	15.4
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
3: SW 20th Ave Rd & CR 484

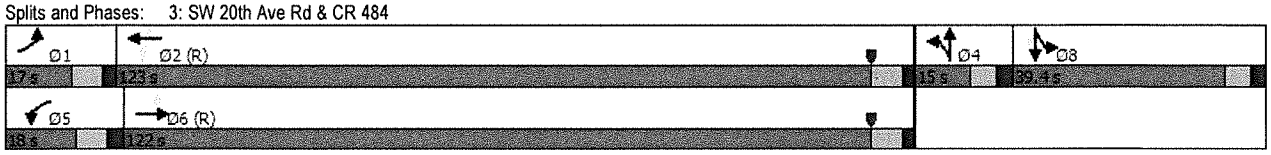
Interim Buildout Conditions
Timing Plan: PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	1315	56	112	1969	236	37	0	96	444	0	135
Future Volume (vph)	68	1315	56	112	1969	236	37	0	96	444	0	135
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	5%	5%	5%	6%	6%	6%	30%	30%	30%	24%	24%	24%
Adj. Flow (vph)	73	1414	60	120	2117	254	40	0	103	477	0	145
Shared Lane Traffic (%)										50%		
Lane Group Flow (vph)	73	1474	0	120	2117	254	0	143	0	238	239	145
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	1	6		5	2		4	4		8	8	
Permitted Phases	6			2		2						8
Detector Phase	1	6		5	2	2	4	4		8	8	8
Switch Phase												
Minimum Initial (s)	10.0	15.0		10.0	15.0	15.0	5.0	5.0		10.0	10.0	10.0
Minimum Split (s)	17.0	21.9		17.3	21.9	21.9	11.6	11.6		16.6	16.6	16.6
Total Split (s)	17.0	122.0		18.0	123.0	123.0	15.0	15.0		39.4	39.4	39.4
Total Split (%)	8.7%	62.8%		9.3%	63.3%	63.3%	7.7%	7.7%		20.3%	20.3%	20.3%
Yellow Time (s)	4.8	4.9		4.8	4.9	4.9	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.2	2.0		2.5	2.0	2.0	2.6	2.6		2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)	7.0	6.9		7.3	6.9	6.9		6.6		6.6	6.6	6.6
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Recall Mode	None	C-Min		None	C-Min	C-Min	None	None		None	None	None
v/c Ratio	0.58	0.73		0.62	1.04	0.27		0.71		1.02	1.02	0.47
Control Delay	54.2	30.9		27.8	69.4	11.9		47.7		139.1	139.9	25.7
Queue Delay	0.0	0.0		0.0	16.5	0.0		0.0		0.0	0.0	0.0
Total Delay	54.2	30.9		27.8	85.9	11.9		47.7		139.1	139.9	25.7
Queue Length 50th (ft)	42	692		50	~1531	90		26		~337	~341	40
Queue Length 95th (ft)	106	777		91	#1645	144		#71		#544	#546	121
Internal Link Dist (ft)		3132			1240			650			1393	
Turn Bay Length (ft)	114			170		144				114		
Base Capacity (vph)	125	2029		196	2034	949		204		234	234	311
Starvation Cap Reductn	0	0		0	77	0		0		0	0	0
Spillback Cap Reductn	0	0		0	0	0		0		0	0	0
Storage Cap Reductn	0	0		0	0	0		0		0	0	0
Reduced v/c Ratio	0.58	0.73		0.61	1.08	0.27		0.70		1.02	1.02	0.47

Intersection Summary

Cycle Length: 194.4
Actuated Cycle Length: 194.4
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 150
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: SW 20th Ave Rd & CR 484



HCM 6th Signalized Intersection Summary
3: SW 20th Ave Rd & CR 484

Interim Buildout Conditions
Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	1315	56	112	1969	236	37	0	96	444	0	135
Future Volume (veh/h)	68	1315	56	112	1969	236	37	0	96	444	0	135
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1811	1811	1811	1455	1455	1455	1544	1544	1544
Adj Flow Rate, veh/h	73	1414	57	120	2117	254	40	0	43	477	0	145
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	5	5	5	6	6	6	30	30	30	24	24	24
Cap, veh/h	134	2123	85	288	2157	962	60	0	53	497	0	221
Arrive On Green	0.07	0.83	0.83	0.07	0.83	0.83	0.04	0.00	0.04	0.17	0.00	0.17
Sat Flow, veh/h	1739	3399	137	1725	3441	1535	1386	0	1233	2942	0	1309
Grp Volume(v), veh/h	73	720	751	120	2117	254	40	0	43	477	0	145
Grp Sat Flow(s),veh/h/ln	1739	1735	1801	1725	1721	1535	1386	0	1233	1471	0	1309
Q Serve(g_s), s	2.8	30.5	30.7	4.7	109.1	6.8	5.5	0.0	6.7	31.2	0.0	20.1
Cycle Q Clear(g_c), s	2.8	30.5	30.7	4.7	109.1	6.8	5.5	0.0	6.7	31.2	0.0	20.1
Prop In Lane	1.00		0.08	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	134	1083	1125	288	2157	962	60	0	53	497	0	221
V/C Ratio(X)	0.54	0.67	0.67	0.42	0.98	0.26	0.67	0.00	0.81	0.96	0.00	0.66
Avail Cap(c_a), veh/h	136	1083	1125	295	2157	962	60	0	53	497	0	221
HCM Platoon Ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.09	0.09	0.09	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.9	8.8	8.8	14.4	15.1	6.6	91.4	0.0	92.0	79.9	0.0	75.3
Incr Delay (d2), s/veh	5.6	3.2	3.1	0.1	2.9	0.1	31.7	0.0	63.8	30.5	0.0	9.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	8.1	8.4	1.8	25.5	2.0	2.5	0.0	3.1	14.0	0.0	7.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.5	12.0	11.9	14.5	18.0	6.6	123.2	0.0	155.7	110.5	0.0	84.5
LnGrp LOS	D	B	B	B	B	A	F	A	F	F	A	F
Approach Vol, veh/h		1544			2491			83			622	
Approach Delay, s/veh		13.9			16.7			140.0			104.4	
Approach LOS		B			B			F			F	

Timer - Assigned Phs	1	2	4	5	6	8
Phs Duration (G+Y+Rc), s	16.8	128.5	15.0	17.3	128.1	39.4
Change Period (Y+Rc), s	* 7	6.9	6.6	7.3	6.9	6.6
Max Green Setting (Gmax), s	* 10	116.1	8.4	10.7	115.1	32.8
Max Q Clear Time (g_c+I1), s	4.8	111.1	8.7	6.7	32.7	33.2
Green Ext Time (p_c), s	0.1	4.8	0.0	0.1	37.2	0.0

Intersection Summary	
HCM 6th Ctrl Delay	29.4
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

TRAFFIC STUDY

TRAILHEAD LOGISTICS PARK NORTH

MARION COUNTY, FLORIDA

Prepared for:

TRANSWESTERN DEVELOPMENT COMPANY

Prepared by:

KIMLEY-HORN AND ASSOCIATES, INC.

142933004
January 2023

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Ocala, FL 34471
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Kimley»Horn

EXECUTIVE SUMMARY

This Traffic Study has been prepared to support a Planned Unit Development (PUD) zoning application for a proposed industrial warehouse / distribution development generally located north of County Road (CR) 484, west of I-75, and east of SW 29th Avenue Road. This analysis has been performed in accordance with the City of Ocala/Marion County Traffic Impact Analysis (TIA) guidelines and the methodology, which was approved by Marion County.

The PUD proposes up to 3,600,000 square feet of industrial warehouse/distribution uses within three buildings. A conceptual site plan is included in the **Appendix**. For the purpose of this study, a single buildout year of 2027 was assumed.

Site access will be provided through the following:

- Connection to the south along SW 20th Avenue Road, which connects to CR 484 at a signalized intersection
- Connection as a new east leg of the intersection of SW 29th Avenue Road and Marion Oaks Trail

SW 20th Avenue Road is being constructed from the boundary of the Trailhead North development and Trailhead Logistics Park South site to the existing intersection of SW 20th Avenue Road and CR 484. The new roadway extension is being constructed by the Trailhead developer. The new roadway will be a combination of four-lane and two-lane roadway segments. A further extension of SW 20th Avenue Road north into the Trailhead North site is proposed as part of the site development. The roadway will continue west to connect to SW 29th Avenue Road at the intersection with Marion Oaks Trail.

Florida Department of Transportation (FDOT) has roadway improvements planned and funded for the segment of CR 484 from west of SW 20th Avenue Road to east of CR 475A (FPID 433651-1). Construction of these improvements is underway and expected to be complete by 2024, therefore the improvements were utilized when analyzing the roadway network for background traffic conditions. Improvements planned by Marion County at the intersection of Marion Oaks Boulevard and CR 484 (FPID 449277-1) were also included as background improvements prior to the addition of project traffic.

Additional roadway and intersection improvements were identified to be needed within the 2027 timeframe considering background traffic conditions (before the addition of project traffic). These improvements do not require proportionate share mitigation by the Project per Florida Statute. The following improvements were identified to be needed to provide acceptable level of service under future background traffic conditions:

- Widening of CR 484 from Marion Oaks Boulevard to CR 475A from 4 lanes to 6 lanes
- Signalization of the intersection of SW 29th Avenue Road at CR 484
- Constructing anticipated buildout geometry of the intersection of SW 20th Avenue Road at CR 484 per the prior Marco Polo PUD study

The following additional transportation improvements were found to be needed at project buildout to provide for acceptable level of service and traffic operations

- Lengthening of the westbound left-turn lane on CR 484 at Marion Oaks Boulevard by 120 feet
- Implementing a right-turn overlap for the northbound right-turn movement at the intersection of SW 20th Avenue Road and CR 484

Proportionate share mitigation is required for the improvements that are necessary in addition to those under future background traffic conditions to allow for acceptable traffic operations and level of service with the buildout traffic volumes.

SW 29th Avenue Road was previously contemplated to be four lanes with the Deltona development agreements. There is 100 feet of right-of-way and portions of the roadway are constructed with four lanes. The projected traffic volumes on SW 29th Avenue Road at project buildout do not require widening to four lanes to meet level of service standards; however, the developer has committed to constructing the widening. A traffic signal is shown to be needed at the intersection of SW 29th Avenue Road at CR 484 under future background traffic conditions. The developer has committed to constructing a traffic signal at this location, although no proportionate share mitigation is required per Florida Statute. The cost of the improvements to widen SW 29th Avenue Road and signalize the intersection with CR 484 will be in excess of the proportionate share requirements identified in this traffic study to mitigate for the traffic impacts of the development. The developer will enter into a Chapter 163 Concurrency Development Agreement and Impact Fee Reimbursement Agreement with Marion County to receive credit against the required proportionate share mitigation and transportation impact fees for the improvements to SW 29th Avenue Road.

An interim evaluation was performed for the intersection of SW 20th Avenue Road at CR 484 for the time period when the Trailhead Logistics Park North development will be fully built out, but considering that the Marco Polo PUD and Florida Crossroads Commerce Park may not be constructed, nor any associated future improvements at the intersection. The following interim improvements have been identified for the full buildout of the Trailhead Logistics Park North site prior to the full buildout improvements identified to support the Marco Polo PUD development:

- Restriping the north leg of the intersection to have a left-turn lane, shared through/left-turn lane, and right-turn lane
- Implementation of northbound/southbound split phasing and associated timing adjustments

The developer will enter into a Chapter 163 Concurrency Development Agreement with Marion County that will include a requirement to perform an operational study of the intersection with observed traffic volumes for specific development thresholds within the Trailhead Logistics Park North PUD. The findings of the study will be discussed with Marion County to identify if modifications to the north leg of the intersection and/or signal timing and phasing are required.

CONTENTS

TABLES

FIGURES

APPENDICES

INTRODUCTION

Kimley-Horn has performed this traffic study for the proposed Trailhead Logistics Park North industrial facility. The project site is generally located north of the intersection of SW 20th Avenue Road and CR 484, west of I-75 in Marion County, Florida. The proposed industrial park will be built in a single phase with an expected 2027 buildout year.

This traffic study was performed assuming 3,600,000 square feet of industrial uses at full buildout. The study identifies transportation needs within the study area under existing conditions, future background conditions (before the addition of project traffic) and project buildout conditions (with project traffic). The analysis has been performed in accordance with the City of Ocala/Marion County Traffic Impact Analysis guidelines and the methodology, which was approved by Marion County. The approved methodology and methodology correspondence are included in the **Appendix**.

Access to the property is proposed via the existing signalized intersection on CR 484 at SW 20th Avenue Road and SW 29th Avenue Road at Marion Oaks Trail.

To accommodate the Trailhead Logistics Park South development, SW 20th Avenue Road is being constructed as a new roadway north of CR 484 by the Trailhead developer. The new roadway will be a combination of a four-lane roadway near CR 484, transitioning to a two-lane roadway at the north end of the Trailhead Logistics South site. The proposed roadway construction has been discussed with the Marion County Office of the County Engineer and construction plans were prepared concurrently with the site plans for the development.

The Trailhead Logistics Park North development will be responsible for extending SW 20th Avenue Road to the SW 29th Avenue Road at Marion Oaks Trail intersection. A conceptual site plan is included in the **Appendix**.

The following committed improvements were utilized for the analysis:

- CR 484 Interchange Improvements (from west of SW 20th Avenue Road to east of CR 475A)
- Marion Oaks Boulevard at CR 484 intersection improvements
- SW 20th Avenue Road at CR 484 improvements

These improvements are expected to be completed before full project buildout of the Trailhead Logistics Park North project and were utilized for the background traffic conditions study area analysis. Excerpts detailing the planned improvements are provided in the **Appendix**.

This study is based on data collected by Kimley-Horn and supplemented by information obtained from City of Ocala, Marion County, and the FDOT sources. The study observed the established procedures found in Institute of Transportation Engineers sources, FDOT sources, and the 2016 Highway Capacity Manual (HCM 2016 or HCM6).

PROJECT TRAFFIC

TRIP GENERATION

The Institute of Transportation Engineers (ITE) *Trip Generation Manual, 11th Edition* was used to calculate trip generation potential for the industrial development. ITE Land Use Codes (LUC) 154 (High-Cube Transload and Short-Term Storage Warehouse) and 110 (General Light industrial) were applied in the trip generation calculations. Per the approved methodology, the PM peak hour of generator for ITE LUC 154 was utilized for the trip generation calculations.

No pass-by or internal capture was assumed for the trip generation calculations. Truck traffic was approximated based on information from the ITE Trip Generation Manual (for ITE LUC 110) and the ITE study "High-Cube Warehouse Vehicle Trip Generation Analysis" (for ITE LUC 154). The trip generation calculations are provided in **Table 1**.

Table 1 – Trip Generation

Land Use	Intensity			Daily Trips	AM Peak Hour of Adjacent Street			PM Peak Hour of Adjacent Street		
					Total	In	Out	Total	In	Out
NW Building - ITE LUC 154	1,742,000	Sq Ft GFA		2,439	139	107	32	296	101	195
SW Building - ITE LUC 110	684,000	Sq Ft GFA		2,622	469	413	56	161	23	138
E Building - ITE LUC 154	1,174,000	Sq Ft GFA		1,644	94	72	22	200	68	132
			Subtotal	6,705	702	592	110	657	192	465
Percent Trucks	Daily	AM	PM							
ITE LUC 154	32.2%	30.8%	21.7%	1,315	72	55	17	108	37	71
ITE LUC 110	0.25 / 1000 SF GFA	0.01 / 1000 SF	0.01 / 1000 SF	171	7	4	3	7	4	3
Buildout Automobile Driveway Trips				**5,219**	**623**	**533**	**90**	**542**	**151**	**391**
Buildout Truck Driveway Trips				**1,486**	**79**	**59**	**20**	**115**	**41**	**74**

Note 1: Trip generation calculations were derived from the ITE Trip Generation Manual, 11th Edition.
Note 2: The truck percentages for ITE LUC 110 were determined using the truck generation per 1,000 sf published in the ITE Trip Generation Manual, 11th Edition.
Note 3: The ITE study "High-Cube Warehouse Vehicle Trip Generation Analysis" (10/2016) study was used to determine the truck percentages for ITE LUC 154.

General Light Industrial (ITE 110)

Daily	T = 3.76*(X) + 50.47; (X is 1000 Sq. Ft. GFA); % trucks = 0.25 / 1000 SF GFA
AM Peak Hour of Adjacent Street	T = 0.68*(X) + 3.81; (X is 1000 Sq. Ft. GFA, 88% in, 12% out); % trucks = 0.01 / 1000 SF GFA (60% in, 40% out)
PM Peak Hour of Adjacent Street	Ln(T) = 0.72*Ln(X) + 0.38; (X is 1000 Sq. Ft. GFA, 14% in, 86% out); % trucks = 0.01 / 1000 SF GFA (50% in, 50% out)

High-Cube Transload and Short-Term Storage Warehouse (ITE 154)

Daily	T = 1.40*(X); (X is 1000 Sq. Ft. GFA); % trucks = 32.2%
AM Peak Hour of Adjacent Street	T =0.08*(X); (X is 1000 Sq. Ft. GFA, 77% in, 23% out); % trucks = 30.8%
PM Peak Hour of Generator	T = 0.17*(X); (X is 1000 Sq. Ft. GFA, 34% in, 66% out); % trucks = 21.7%

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TRIP EQUIVALENCY MATRIX

A trip equivalency matrix has been developed for the project, which allows for minor changes to land use types and intensities without increasing the PM peak hour external project trips generated by the development. The uses included in the Trip Equivalency Matrix are those allowed by the PUD zoning per the Master Plan. The gross trip rate for each land use was obtained by using the trip generation rates and pass by percentages provided in the ITE *Trip Generation, 11th Edition* and based on the trip generation calculations approved during the methodology review process. No internal capture was applied for the trip equivalency matrix calculations. Pass-by capture was applied within the trip equivalency gross trip calculations, based on the pass-by capture rates published in the ITE *Trip Generation, 11th Edition* for applicable land uses.

The trip equivalency matrix provides a methodology for conversion of land uses and intensities to result in an equal or lesser number of net new PM peak hour project trips. The trip equivalency matrix is provided in the **Appendix**.

TRIP DISTRIBUTION, ASSIGNMENT, AND STUDY AREA

The project trip distribution for the site was developed based on Version 7.0 of the Central Florida Regional Planning Model (CFRPM), which is based on the Florida Standard Urban Transportation Model Structure (FSUTMS). The CFRPM model distribution was used to estimate the distribution of automobile trips to and from the site. Manual adjustments were made to the FSUTMS model output based on engineering judgment, understanding of the local transportation network, land uses, and discussions with Marion County. The distribution was approved during the methodology process.

A separate distribution of truck traffic was developed based on the anticipated distribution to and from I-75. The existing traffic volumes on I-75 were utilized to estimate the cardinal distribution of truck traffic along this route. **Figure 1** illustrates the project automobile trip distribution, **Figure 2** illustrates the project truck trip distribution, and **Figure 3** illustrates the site access project traffic assignment on Marion Oaks Trail and SW 20th Avenue.

Project traffic was assigned within the study area by applying the external trip distribution to the trip generation potential. The study area for the project included all roadway segments where project traffic consumes three percent (3%) or more of the subject segment's peak hour directional service capacity, plus one segment beyond, consistent with the approved methodology. The service volumes for evaluated roadways were obtained utilizing functional classification and level of service information published by the Ocala Marion Transportation Planning Organization (TPO) and FDOT.

The project significance calculations are provided within the methodology document located in the **Appendix**.

The following roadway segments are included within the study area, and were evaluated for PM peak hour traffic conditions as approved during the methodology process:

- CR 484, from SW 105th Avenue to SR 200 (one segment beyond impact)
- CR 484, from SR 200 to SE 132nd Street Road
- SW 29th Avenue Road, from CR 484 to Marion Oaks Trail
- SE 132nd Street Road, from CR 484 to US 301

- SE 132nd Street Road, from US 301 to US 441 (one segment beyond impact)
- Marion Oaks Trail, from CR 484 W to SW 49th Avenue (one segment beyond impact)
- Marion Oaks Trail, from Marion Oaks Course to CR 484E

In addition to roadway segment analysis, the following intersections were evaluated for AM and/or PM peak hour traffic conditions, as approved during the methodology process:

- CR 484 & Marion Oaks Boulevard (PM)
- CR 484 & SW 29th Avenue Road (AM and PM)
- CR 484 & SW 20th Avenue Road (AM and PM)
- CR 484 & I-75 Southbound Ramp (AM and PM)
- CR 484 & I-75 Northbound Ramp (AM and PM)
- CR 484 & CR 475A (PM)
- CR 484 & CR 475 (PM)
- SW 29th Avenue Road & Marion Oaks Trail (AM and PM)

Figure 4 illustrates the project study area utilized for the analysis.

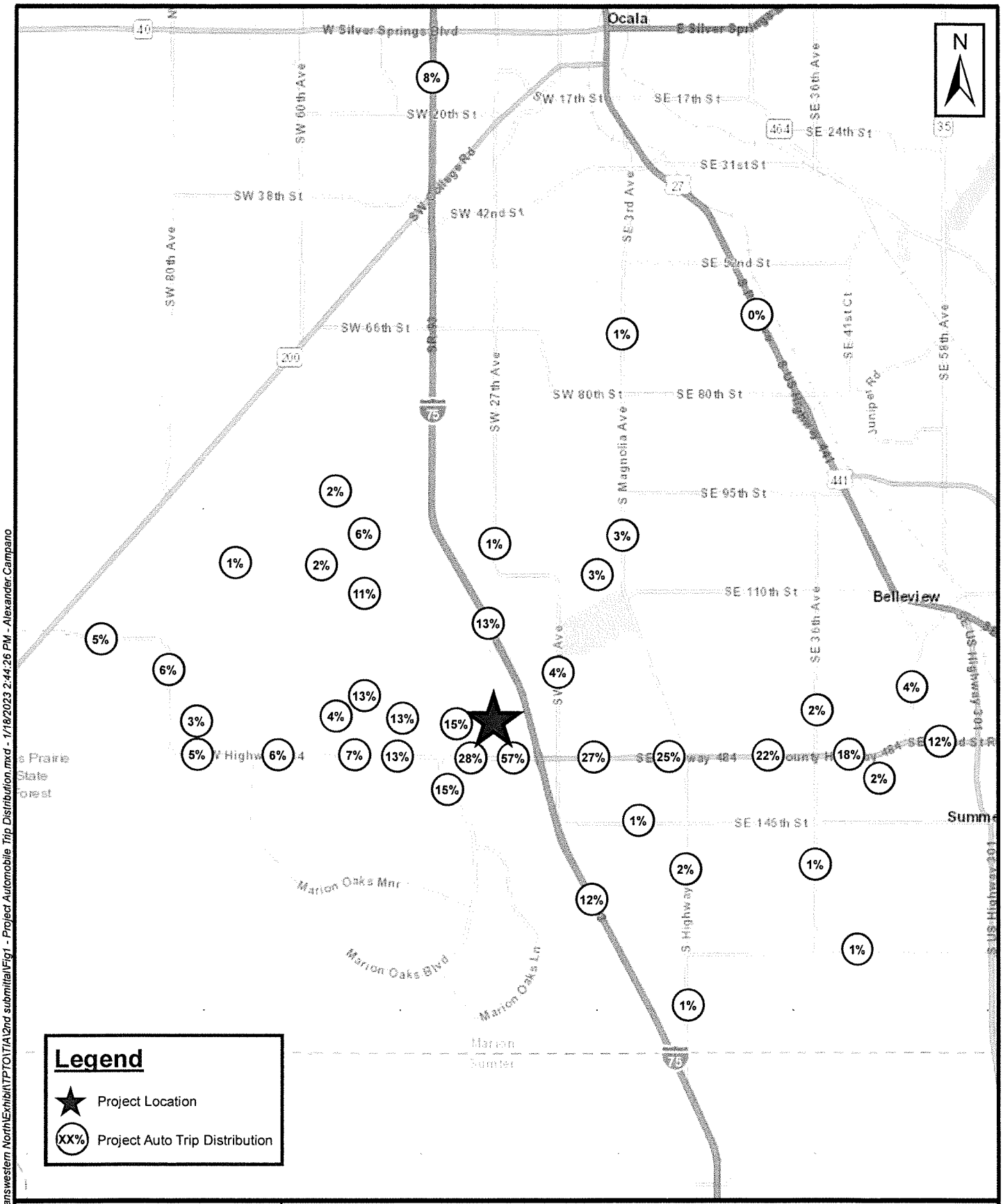

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FIGURE 1 - PROJECT AUTOMOBILE TRIP DISTRIBUTION

TRAILHEAD LOGISTICS PARK NORTH
MARION COUNTY, FLORIDA

Project No: 142933003	Not to Scale	January 2023	Page 5

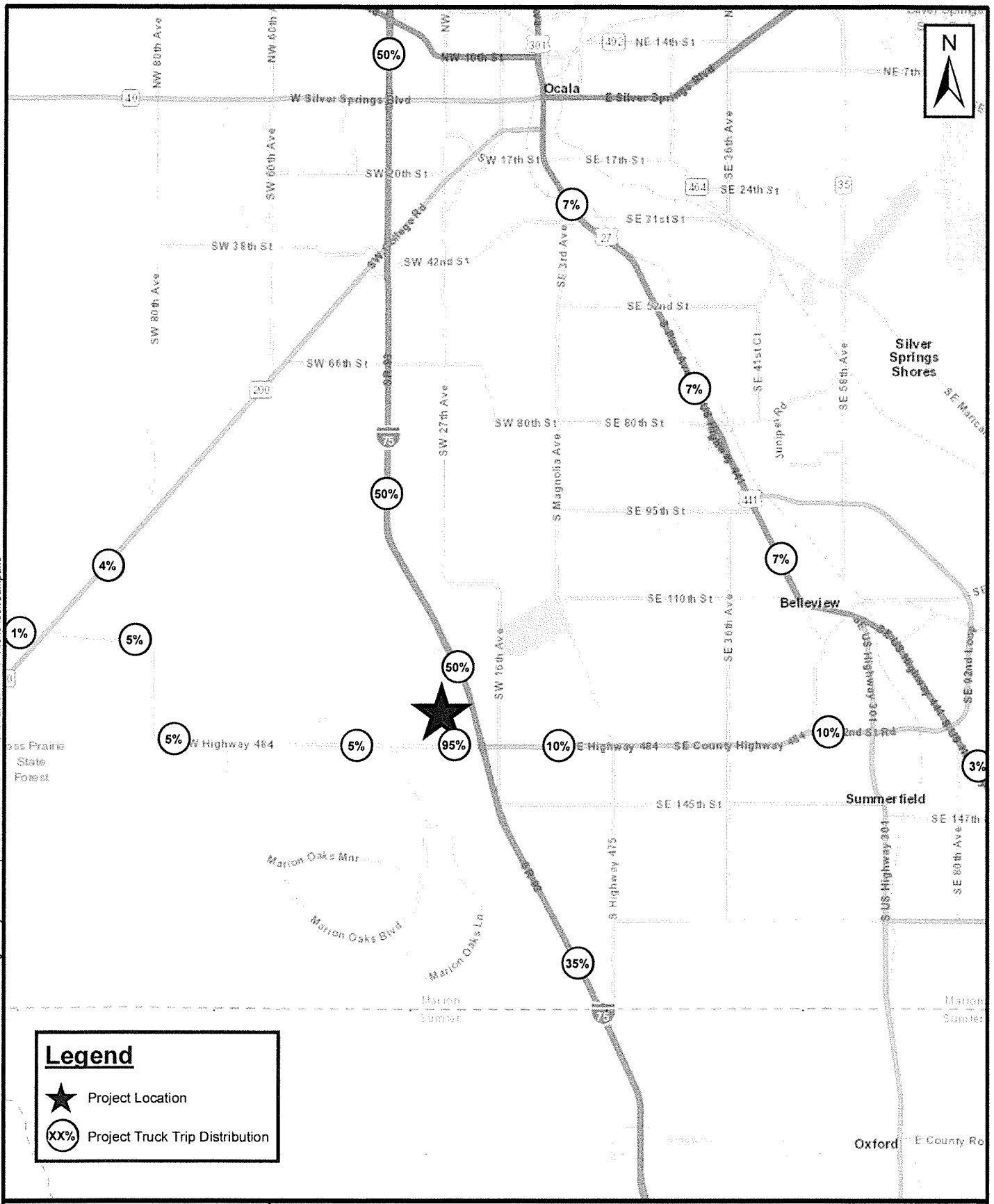

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FIGURE 2 - PROJECT TRUCK TRIP DISTRIBUTION

TRAILHEAD LOGISTICS PARK NORTH
MARION COUNTY, FLORIDA

Project No: 142933003	Not to Scale	January 2023	Page 6

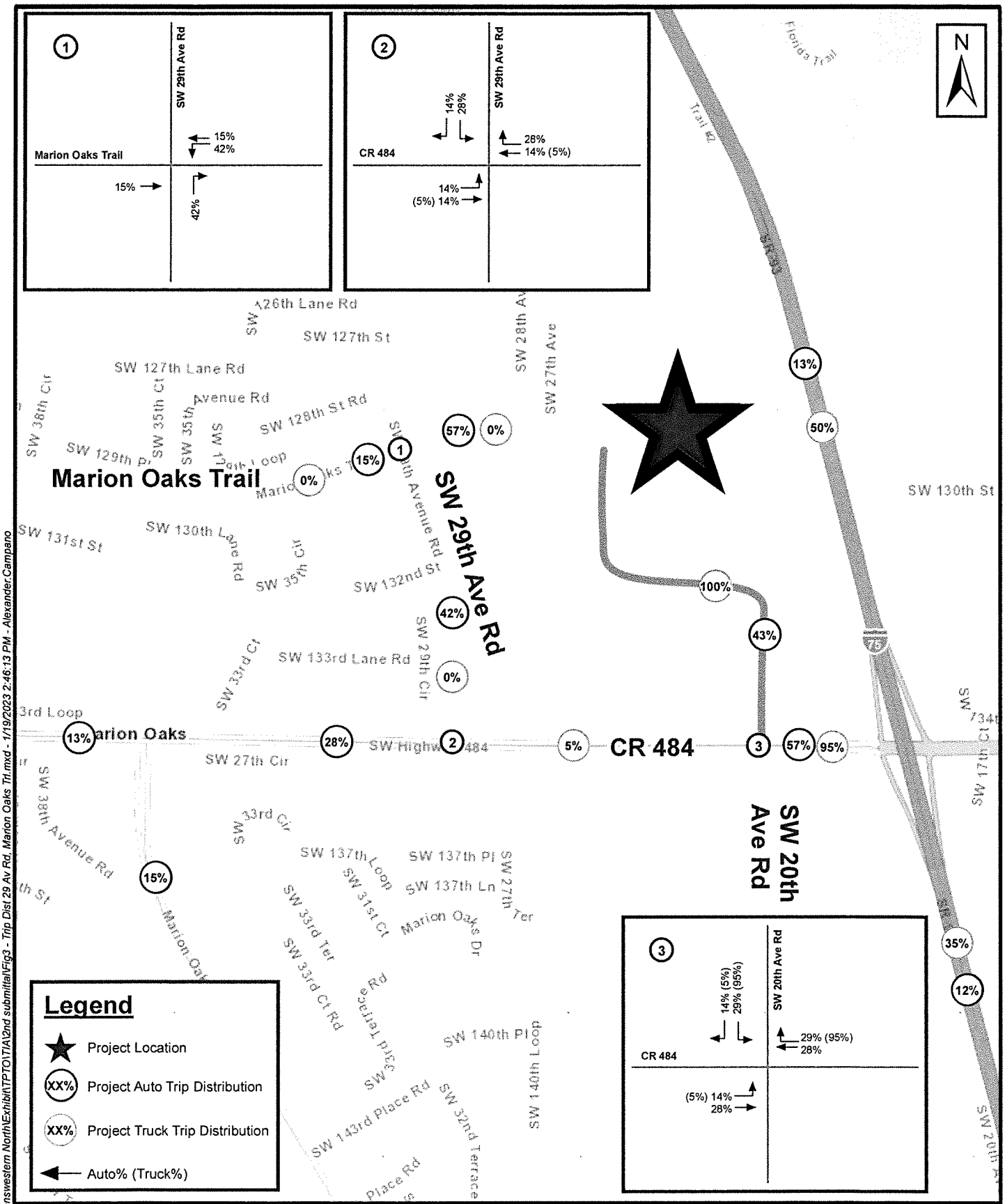

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FIGURE 3 - PROJECT TRIP DISTRIBUTION

TRAILHEAD LOGISTICS PARK NORTH
MARION COUNTY, FLORIDA

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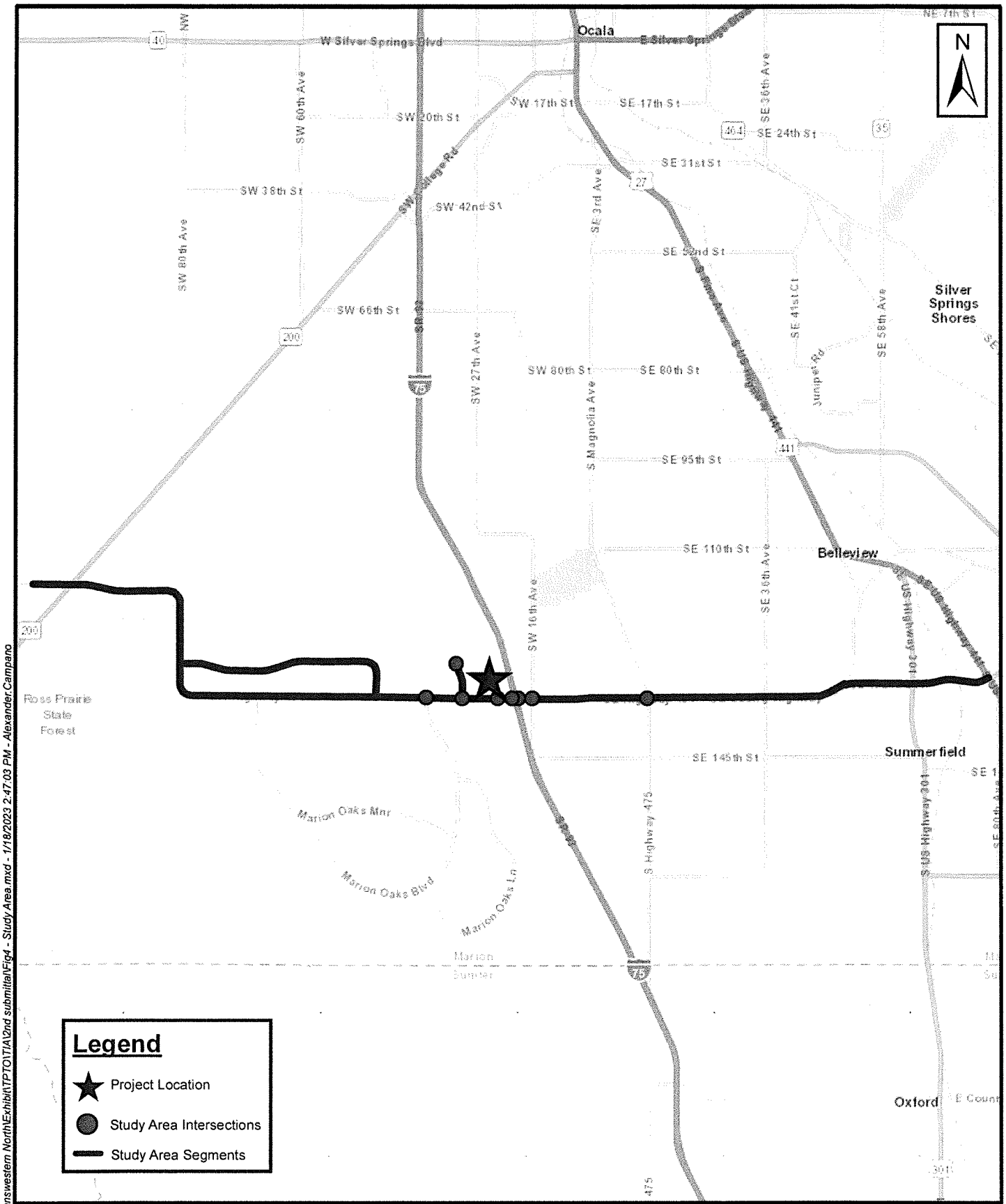

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FIGURE 4 - SITE LOCATION, STUDY AREA INTERSECTIONS AND ROADWAY SEGMENTS

TRAILHEAD LOGISTICS PARK NORTH
MARION COUNTY, FLORIDA

Project No: 142933003	Not to Scale	January 2023	Page 8

EXISTING CONDITIONS ANALYSIS

EXISTING TRAFFIC DATA AND VOLUME DEVELOPMENT

Turning movement counts (TMCs) were collected at the study area intersections during the AM and PM peak periods. AM peak hour TMCs were collected during the peak hour of the adjacent street (7AM – 9AM) and PM peak hour TMCs were collected from 3PM-5PM (which coincides with the 3PM - 4PM peak hour of ITE LUC 154).

An existing year of 2022 was utilized for the analysis. The 2021 peak season factors from FDOT were used to adjust the observed traffic volumes to peak season volumes. The peak season conversion factor report is provided in the **Appendix**.

The PM peak hour peak season approach and departure volumes at the study area intersections were used for the PM peak hour roadway segment analysis for segments near the study area intersections. For roadway segments further from the study area intersections, the existing PM peak hour traffic volumes were derived using annual average daily traffic (AADT) from the Ocala Marion TPO Congestion Management Process (CMP) and applying a K-factor and D-factor published on the FDOT Traffic Online.

The observed right turn on red percentages (RTOR%) and peak hour factors (PHF) were used for the intersection analysis. The TMC heavy vehicle percentages (%HV) were compared to data available from FDOT Traffic Online, the more conservative of the two were used for the intersection analysis. **Table 2** summarizes the %HV for the study area intersections. The intersection volume development sheets located in the **Appendix** detail the volume development for the study area intersections.

Table 2 – Study Area Intersections Percent Heavy Vehicles

Percent Heavy Vehicles, Observed Turning Movement Counts v FDOT Traffic Online														
		EB Approach			WB Approach			NB Approach			SB Approach			
Intersection	Heavy Vehicle Source	Count Station	T_{24} FDOT Traffic Online [1]	Design Hour Truck Factor [2]	Count Station	T_{24} FDOT Traffic Online [1]	Design Hour Truck Factor [2]	Count Station	T_{24} FDOT Traffic Online [1]	Design Hour Truck Factor [2]	Count Station	T_{24} FDOT Traffic Online [1]	Design Hour Truck Factor [2]
CR 484 & Marion Oaks Blvd	FDOT Traffic Online	--	--	--	--	--	--	368138	8.50%	4.25%	--	--	--
	AM Turning Movement Counts [3]		--			--			--			--	
	PM Turning Movement Counts [3]		4.90%			3.40%			4.30%			--	
CR 484 & SW 29th Ave Rd	FDOT Traffic Online	--	--	--	--	--	--	--	--	--	--	--	--
	AM Turning Movement Counts [3]		4.00%			10.00%			32.00%			2.00%	
	PM Turning Movement Counts [3]		7.10%			3.80%			2.00%			6.60%	
CR 484 & SW 20th Ave Rd	FDOT Traffic Online	--	--	--	--	--	--	--	--	--	--	--	--
	AM Turning Movement Counts [3]		4.00%			10.00%			32.00%			--	
	PM Turning Movement Counts [3]		5.80%			3.30%			30.40%			--	
CR 484 & I-75 SB Ramps	FDOT Traffic Online	--	--	--	--	--	--	--	--	--	362002	8.50%	4.25%
	AM Turning Movement Counts [3]		5%			14%			--			12%	
	PM Turning Movement Counts [3]		8%			5%			--			6%	
CR 484 & I-75 NB Ramps	FDOT Traffic Online	--	--	--	--	--	--	362000	9%	4.25%	--	-	--
	AM Turning Movement Counts [3]		4.90%			10.90%			16.80%			--	
	PM Turning Movement Counts [3]		7.20%			5.20%			9.00%			--	
CR 484 & CR 475A	FDOT Traffic Online	--	--	--	--	--	--	--	--	--	368087	5.30%	2.65%
	AM Turning Movement Counts [3]		--			--			--			--	
	PM Turning Movement Counts [3]		9.20%			7.40%			4.30%			5.30%	
CR 484 & CR 475	FDOT Traffic Online	--	--	--	367040	12.40%	6.20%	--	--	--	--	--	--
	AM Turning Movement Counts [3]		--			--			--			--	
	PM Turning Movement Counts [3]		7.60%			5.20%			6.70%			2.40%	
rion Oaks Trail & SW 29th Ave	FDOT Traffic Online	--	--	--	--	--	--	--	--	--	--	-	--
	AM Turning Movement Counts [3]		2.00%			2.00%			11.00%			2.00%	
	PM Turning Movement Counts [3]		8.70%			2.00%			2.00%			7.70%	

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1/26/2023

Notes:

1. T_{24} Factors derived from the FDOT Traffic Online Historical AADT reports.
2. Design hourly truck factor calculated based on the FDOT Traffic Forecasting Handbook (T_{24} / 2).
3. Turning Movement Counts were observed in the field during traffic data collection utilized for this TIA, a minimum of 2% was utilized for the Synchro analysis.

EXISTING CONDITIONS ROADWAY SEGMENT ANALYSIS

Roadway segments within the study area were evaluated to determine the existing PM peak hour levels of service. The adopted service volumes were obtained from the latest Marion County Congestion Management Process (CMP) and the 2020 FDOT Quality/Level of Service Handbook. The roadway segment service volumes were approved during the methodology review process.

All the study area roadway segments are shown to operate within the adopted level of service standard under existing PM peak hour traffic conditions. **Table 3** illustrates the existing PM peak hour traffic volume and level of service for study area roadway segments.

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Table 3 – Existing Conditions PM Peak Hour Roadway Segment Analysis

Roadway		ROADWAY ATTRIBUTES [1]									EXISTING PEAK SEASON TRAFFIC CONDITIONS (2022)					
											PM Peak Hour [3]					
From	To	TPO CMP Station	FDOT Classification [2]	Area Type	Adopted LOS	Number of Lanes	Daily Service Volume	Pk. Hr. Dir. Service Volume	TPO Traffic Counts Growth Rate	TPO CMP Growth Rate	NB/EB Volume	SB/WB Volume	NB/EB V/C	SB/WB V/C	NB/EB LOS	SB/WB LOS
CR 484																
SW 105 AV	SR 200	2010.0	NS-UA	Urban	E	2	29,340	1,449	6.3%	3.36%	438	498	0.30	0.34	B	B
SR 200	W OF SW 57 AV	2020.1	NS-UA	Urban	E	2	32,600	1,610	16.4%	3.18%	379	431	0.24	0.27	B	B
W OF SW 57 AV	SW 49 AV	2020.1	NS-SA-C1	Urban	E	4	37,810	1,900	--	3.18%	379	431	0.20	0.23	C	C
SW 49 AV	MARION OAKS BLVD	2030.0	NS-SA-C1	Urban	E	4	35,820	1,800	--	3.93%	819	952	0.46	0.53	C	C
MARION OAKS BLVD	SW 20 AV RD	2030.0	NS-SA-C1	Urban	E	4	35,820	1,800	--	3.93%	1,037	1,191	0.58	0.66	C	C
SW 20 AV RD	I-75	2030.0	NS-SA-C1	Urban	E	4	35,820	1,800	1.8%	3.93%	1,148	1,730	0.64	0.96	C	D
I-75	CR 475A	2070.0	NS-SA-C1	Urban	D	4	35,820	1,800	4.3%	6.37%	1,187	1,177	0.66	0.65	C	C
CR 475A	CR 475	2080.0	NS-SA-C1	Urban	D	4	35,820	1,800	1.8%	4.34%	861	724	0.48	0.40	C	C
CR 475	CR 467	2090.0	NS-SA-C1	Urban	D	4	35,820	1,800	5.9%	4.57%	1,044	918	0.58	0.51	C	C
CR 467	SE 132 ST RD	2110.0	NS-SA-C1	Urban	D	4	35,820	1,800	1.5%	6.56%	905	796	0.50	0.44	C	C
SW 29th Avneue Road																
CR 484	MARION OAKS TRL	--	NS-SA-C2	Urban	E	2	10,920	560	--	1.00%	73	59	0.13	0.10	C	C
SE 132nd Street Road																
CR 484	US 301	7165.0	NS-SA-C1	Urban	E	4	35,820	1,800	5.0%	1.00%	555	489	0.31	0.27	C	C
US 301	US 441	7170.0	NS-SA-C1	Urban	E	4	35,820	1,800	8.4%	7.29%	608	535	0.34	0.30	C	C
Marion Oaks Trail																
CR 484 W	SW 49 AV	8150.0	NS-SA-C1	Urban	E	2	15,930	792	--	1.00%	113	85	0.14	0.11	C	C
MARION OAKS CRSE	CR 484 E	8180.0	NS-SC-C1	Urban	E	2	15,930	792	--	1.00%	113	85	0.14	0.11	C	C

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Notes:
1. The roadway attributes and AADT were obtained from the most recent Ocala Marion Transportation Planning Organization (TPO) Congestion Management Process (CMP) Database and Ocala Marion TPO 2022 Traffic Counts Report. For SW 29th Avenue Road the roadway attributes were derived using the 2020 FDOT Q/LOS Handbook, 2010 FDOT Functional Classification Map for Marion County, and the adopted level of service from the Marion County Comprehensive Plan (Transportation Element, Policy 2.1.2).
2. NS-SA-C1 = non-state, signalized arterial, class 1; NS-UC = non-state, unsignalized collector; NS-SC-C1 = non-state, signalized collector, class 1; ST-UA = state, unsiganlized arterial; NS-UA = non-state, unsignalized arterial.
3. The existing traffic volumes were derived from the observed turning movement counts. The existing volumes for SW 132nd Street, Marion Oaks Trail, and CR 484 (west of SW 45th Avenue/east of CR 475) were derived using the Ocala Marion TPO CMP AADTs and K/D factors from FDOT Traffic Online (count stations 368136, 368136, 367039, 367040/367046).

EXISTING CONDITIONS INTERSECTION ANALYSIS

The operating conditions at the study area intersections were analyzed using the Synchro 11 software package, which implements the procedures of the latest Highway Capacity Manual (HCM 6). The existing lane geometry and signal timings (provided by Marion County) were utilized for the analysis.

All study area intersections operate with acceptable overall intersection level of service (LOS) and volume to capacity (V/C) ratios less than 1.0 under existing AM and PM peak hour traffic conditions, with the exception of the stop-controlled approach at the intersection of SW 29th Avenue Road at CR 484. The delay experienced for the side-street stop-controlled approach during the AM peak hour represents level of service F for a stop-controlled condition.

The Synchro 11 analysis output is provided in the **Appendix**. **Table 4** provides a summary of the average delay, level of service, and V/C ratios during the AM peak hour and PM peak hour under existing traffic conditions.

Table 4 – Existing Conditions Intersection Analysis Summary

Intersection	AM Peak Hour			PM Peak Hour		
	LOS	Delay (s)	Max V/C	LOS	Delay (s)	Max V/C
Marion Oaks Blvd & CR 484	--	--	--	B	14.9	0.85
SW 29th Ave Rd & CR 484	F	82.5	0.89	C	22.5	0.24
SW 20th Ave Rd & CR 484	A	9.3	0.82	A	5.4	0.56
I-75 SB Ramp & CR 484	D	44.6	0.83	C	32.8	0.86
I-75 NB Ramp & CR 484	C	22.5	0.88	B	19.1	0.95
CR 475A & CR 484	--	--	--	C	27.0	0.90
CR 475 & CR 484	--	--	--	C	27.8	0.77
SW 29th Ave Rd & Marion Oaks Trail	A/B	8.8/10.2	0.12	A/A	8.8/0.0	0.06

Notes:

1. For stop controlled intersections MOEs were reported for the stop controlled approach(es). For signalized intersections the LOS and delay were reported for the overall intersection.

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FUTURE TRAFFIC CONDITIONS

COMMITTED TRANSPORTATION IMPROVEMENTS

There are planned improvements within the study area that have been included as background improvements in the future traffic conditions analysis.

FDOT has programmed improvements along CR 484 west of SW 20th Avenue Road to east of CR 475A that will improve local traffic operations. The improvements include access management restrictions, adding turn lanes, and extending turn lanes. Construction is funded for FY 2023-2024 (FPID 433651-1). The following improvements were included in the background evaluation per the FDOT plans:

CR 484 Interchange Improvements (from west of SW 20th Avenue Road to east of CR 475A)

- Construction of a second southbound right-turn lane on CR 484 at the I-75 SB Ramp
- Construction of a second eastbound left-turn lane on CR 484 at the I-75 NB Ramp
- Construction of a second northbound left-turn from the I-75 NB off-Ramp to CR 484
- Construction of a second eastbound left-turn lane on CR 484 at CR 475A
- Construction of a second northbound left-turn lane on CR 475A at CR 484
- Construction of a southbound right-turn lane on CR 475A at CR 484
- Signal timing adjustments

In addition, the Marion Oaks Boulevard at CR 484 intersection has planned improvements with construction funding from FDOT programmed for FY 2024 (FPID 449277-1). The following improvements were included in the background evaluation per the County plans:

Marion Oaks Boulevard at CR 484 intersection improvements

- Construction of dual westbound left-turn lanes
- Construction of dual northbound right-turn lanes
- Northbound right permitted/overlap phasing and signal timing adjustments

SW 20th Avenue Road is being extended north of CR 484 as part of the Trailhead Logistics South project. The improvements will be complete by end of 2023. The extension of SW 20th Avenue Road will include the following improvements at the intersection with CR 484:

SW 20th Avenue at CR 484 intersection improvements

- Construction of an eastbound left-turn lane
- Construction of a westbound right- turn lane
- Construction of a north leg of the intersection with a southbound left-turn lane, through lane, and right-turn lane
- Signal timing adjustments

The signal plans for the intersection of SW 20th Avenue Road and CR 484 are provided in the **Appendix**. The traffic study for the Marco Polo PUD included additional improvements at the intersection that would be needed for the projected traffic volumes at buildout of the Marco Polo PUD. Because the Marco Polo PUD is considered as a background/vested project per request of Marion County, the improvements identified in that study were included in the background conditions analysis of the intersection. The following buildout geometry was identified in the Marco Polo PUD study:

Buildout SW 20th Avenue at CR 484 intersection geometry

- One left, two through, and one eastbound through/right lane
- Two left, three through, and one westbound right turn lane
- One left, one through, and one northbound right turn lane
- Two left, and one southbound through/right lane

Additional excerpts detailing the background improvements are provided in the **Appendix**.

FUTURE TRAFFIC VOLUME DEVELOPMENT

The future traffic volumes within the study area were calculated based on the approved methodology. Future background traffic volumes were calculated using existing peak season traffic volumes and an annual background growth rate applied to the buildout year. A 3.0% background annual growth rate was utilized for the future traffic volume projections. In addition to background growth the following vested developments were added as background traffic:

- Trailhead Logistics Park South
- Gas/Convenience Store at CR 484 & SW 20th Ave Rd (included within the Marco Polo PUD)
- Marco Polo PUD
- McGinley Property Phase 2

The total buildout traffic volumes were calculated as the sum of the background traffic volumes and project traffic. For the roadway segment analysis, the PM peak hour project traffic volumes were calculated as an average across the segment length. Project traffic was separated between automobile traffic and truck traffic. A separate trip distribution was applied to each.

Vested traffic excerpts and worksheets detailing the future conditions intersection volume development are contained in the **Appendix**. Buildout total traffic volumes at the study area intersections during the weekday AM and PM peak hours are illustrated in **Figure 5** and **Figure 6**.

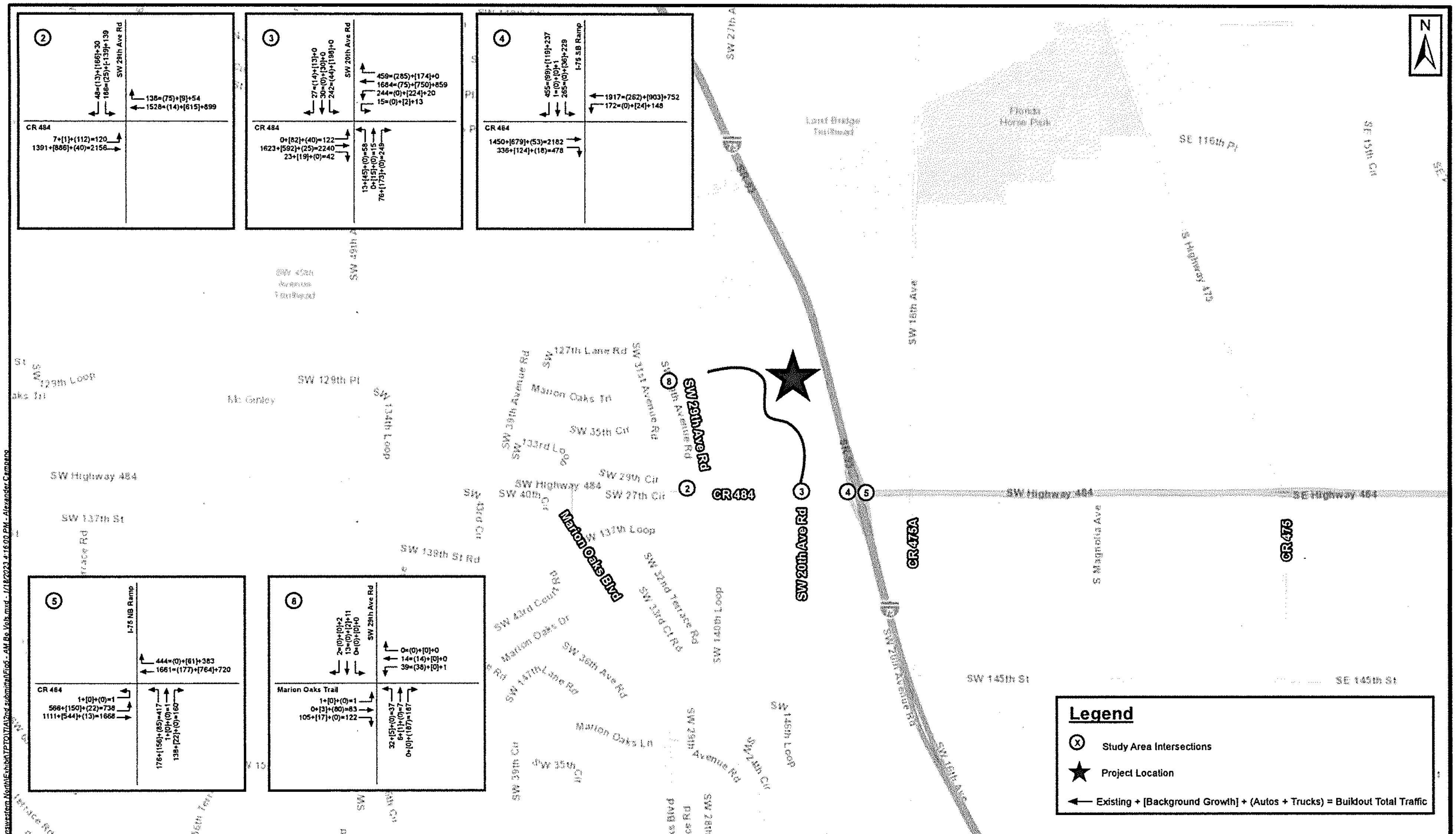

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FIGURE 5 - AM PEAK HOUR BUILDOUT TOTAL TRAFFIC VOLUMES

TRAILHEAD LOGISTICS PARK NORTH
MARION COUNTY, FLORIDA

Project No: 142933003

January 2023

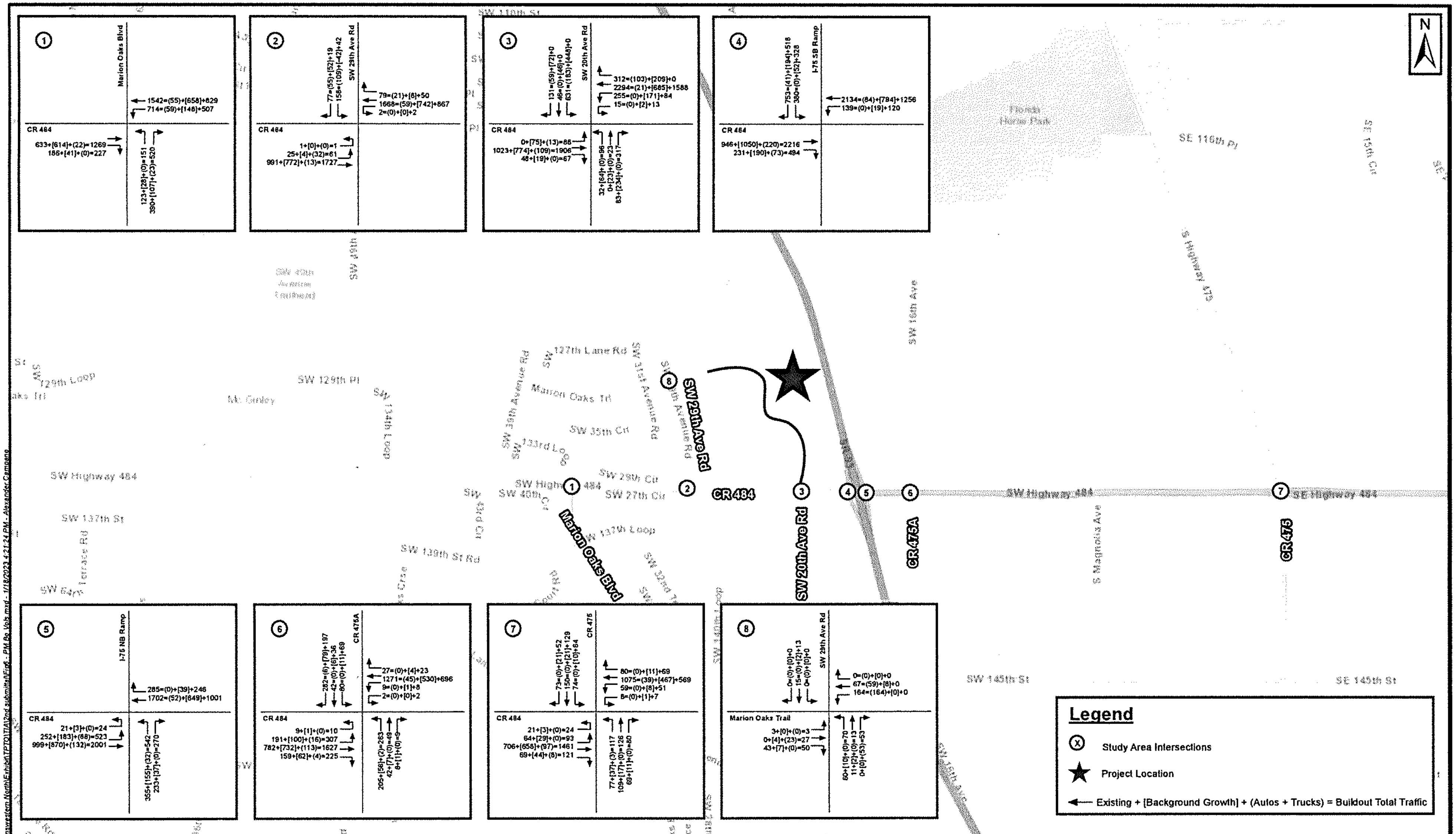

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FIGURE 6 - PM PEAK HOUR BUILDOUT TOTAL TRAFFIC VOLUMES

TRAILHEAD LOGISTICS PARK NORTH
MARION COUNTY, FLORIDA

Project No: 142933003

January 2023

FUTURE BACKGROUND ROADWAY SEGMENT ANALYSIS

The roadway segments within the study area were evaluated for level of service under future background traffic conditions (before the addition of project traffic) during the PM peak hour. The service volumes for roadways within the study area were obtained utilizing the most recent Ocala Marion TPO CMP and FDOT Quality/Level of Service Handbook per the approved methodology.

The following roadway segments were found to have V/C ratios greater than 1.0 with the addition of background traffic:

- CR 484, from Marion Oaks Boulevard to SW 20th Avenue Road (existing 4-lane roadway)
- CR 484, from SW 20th Avenue Road to I-75 (existing 4-lane roadway)
- CR 484, from I-75 to CR 475A (existing 4-lane roadway)

CR 484 is listed within the Ocala Marion TPO Long Range Transportation Plan (LRTP) as needing widening to six lanes from SW 29th Avenue to SW 20th Avenue Road (project R26) and SW 20th Avenue Road to CR 475A (project R27). These improvements are not listed in the cost feasible plan and do not have funding allocated in the current five-year Transportation Improvement Program (TIP). The traffic study performed for the Marco Polo PUD showed a need for CR 484 to be six lanes fronting the Marco Polo PUD.

Marion County has funding in the current five-year TIP for a planning study for widening of CR 484 to two lanes from Marion Oaks Pass to SR 200 (Project C5). No other phases have funding allocated in the five-year TIP.

The other roadway segments within the study area are shown to operate within the adopted service volume with 2027 PM peak hour background traffic conditions. The future background conditions roadway segment analyses are detailed in **Table 5**.

Table 5 – Future Background Conditions PM Peak Hour Roadway Segment Analysis (2027)

Roadway		ROADWAY ATTRIBUTES [1]			EXISTING PEAK SEASON TRAFFIC CONDITIONS (2022)		PM PEAK SEASON BACKGROUND TRAFFIC CONDITIONS (2027)									
					PM Peak Hour [2]		PM Peak Hour [3]									
From	To	Adopted LOS	Number of Lanes	Pk. Hr. Dir. Service Volume	NB/EB Volume	SB/WB Volume	NB/EB Volume	SB/WB Volume	Vested NB/EB	Vested SB/WB	Total NB/EB	Total SB/WB	NB/EB V/C	SB/WB V/C	NB/EB LOS	SB/WB LOS
CR 484																
SW 105 AV	SR 200	E	2	1,449	438	498	504	573	25	29	529	602	0.37	0.42	C	C
SR 200	W OF SW 57 AV	E	2	1,610	379	431	436	496	139	216	575	712	0.36	0.44	B	C
W OF SW 57 AV	SW 49 AV	E	4	1,900	379	431	436	496	691	633	1,127	1,129	0.59	0.59	C	C
SW 49 AV	MARION OAKS BLVD	E	4	1,800	819	952	942	1,095	524	534	1,466	1,629	0.81	0.91	C	C
MARION OAKS BLVD	SW 20 AV RD	E	4	1,800	1,037	1,191	1,192	1,369	596	591	1,788	1,960	0.99	1.09	D	F
SW 20 AV RD	I-75	E	4	1,800	1,148	1,730	1,320	1,989	1,166	752	2,486	2,741	1.38	1.52	F	F
I-75	CR 475A	D	4	1,800	1,187	1,177	1,364	1,354	713	490	2,077	1,844	1.15	1.02	F	F
CR 475A	CR 475	D	4	1,800	861	724	990	833	603	417	1,593	1,250	0.89	0.69	C	C
CR 475	CR 467	D	4	1,800	1,044	918	1,201	1,056	482	330	1,683	1,386	0.94	0.77	C	C
CR 467	SE 132 ST RD	D	4	1,800	905	796	1,041	915	386	264	1,427	1,179	0.79	0.66	C	C
SW 29th Avneue Road																
CR 484	MARION OAKS TRL	E	2	560	73	59	84	67	0	0	84	67	0.15	0.12	C	C
SE 132nd Street Road																
CR 484	US 301	E	4	1,800	555	489	638	562	294	202	932	764	0.52	0.42	C	C
US 301	US 441	E	4	1,800	608	535	699	615	294	202	993	817	0.55	0.45	C	C
Marion Oaks Trail																
CR 484 W	SW 49 AV	E	2	792	113	85	130	98	1	2	131	100	0.17	0.13	C	C
MARION OAKS CRSE	CR 484 E	E	2	792	113	85	130	98	51	8	181	106	0.23	0.13	C	C

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Notes:
1. The roadway attributes and AADT were obtained from the most recent Ocala Marion Transportation Planning Organization (TPO) Congestion Management Process (CMP) Database and Ocala Marion TPO 2022 Traffic Counts Report. For SW 29th Avenue Road the roadway attributes were derived using the 2020 FDOT Q/LOS Handbook, 2010 FDOT Functional Classification Map for Marion County, and the adopted level of service from the Marion County Comprehensive Plan (Transportation Element, Policy 2.1.2).
2. The existing traffic volumes were derived from the observed turning movement counts. The existing volumes for SW 132nd Street, Marion Oaks Trail, and CR 484 (west of SW 45th Avenue/east of CR 475) were derived using the Ocala Marion TPO CMP AADTs and K/D factors from FDOT Traffic Online (count stations 368136, 368136, 367039, 367040/367046).
3. Background volumes were derived by applying the study area growth rate to the existing volumes and adding vested traffic added.

FUTURE BUILDOUT ROADWAY SEGMENT ANALYSIS

The roadway segments within the study area were evaluated for level of service under future buildout traffic conditions during the PM peak hour. The service volumes utilized for the analysis are the same as those utilized for the future background conditions analysis, with the addition of background improvements. The following improvements were identified to be necessary to provide for acceptable level of service with the future background traffic volumes during the PM peak hour:

- CR 484, from Marion Oaks Boulevard to SW 20th Avenue Road (existing 4-lane roadway)
- CR 484, from SW 20th Avenue Road to I-75 (existing 4-lane roadway)
- CR 484, from I-75 to CR 475A (existing 4-lane roadway)

Service volumes for the improved condition were obtained from the 2020 FDOT Quality/Level of Service Handbook and using the roadway attributes from the Ocala Marion TPO CMP. The roadway segments within the study area are shown to operate within the adopted service volume with PM peak hour buildout traffic volumes and assuming the improvements identified to be needed in the background conditions analysis. No additional roadway widenings were identified to be needed due to the addition of traffic from the proposed Trailhead Logistics Park North site.

The future buildout conditions roadway segment analyses are detailed in **Table 6.**

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Traffic Impact Analysis
Trailhead Logistics Park North

Table 6 – Buildout Conditions PM Peak Hour Roadway Segment Analysis (2027)

Roadway		ROADWAY ATTRIBUTES [1]					PM PEAK SEASON BACKGROUND TRAFFIC CONDITIONS (2027)						PM PEAK SEASON PM PEAK HOUR BUILDOUT TRAFFIC CONDITIONS (2027 w/ Background Improvements)													
							PM Peak Hour [2]						Project Traffic - Auto			Project Traffic - Trucks			Project Peak Direction % Impact [5]							
From	To	Adopted LOS	Exist. Number of Lanes	Exis. Pk. Hr. Dir. Service Volume	Improved Number of Lanes	Improved Pk. Hr. Dir. Service Volume	Total NB/EB	Total SB/WB	NB/EB V/C	SB/WB V/C	NB/EB LOS	SB/WB LOS	% Assignment [5]	NB / EB	SB / WB	% Assignment [3]	NB / EB	SB / WB		Total NB/EB	Total SB/WB	NB/EB V/C	SB/WB V/C	NB/EB LOS	SB/WB LOS
CR 484																										
SW 105 AV	SR 200	E	2	1,449	2	1,449	529	602	0.37	0.42	C	C	4.0%	6	16	1.0%	0	1	1.13%	535	618	0.37	0.43	C	C
SR 200	W OF SW 57 AV	E	2	1,610	2	1,610	575	712	0.36	0.44	C	C	5.5%	8	22	5.0%	2	4	1.57%	585	737	0.36	0.46	C	C
W OF SW 57 AV	SW 49 AV	E	4	1,900	4	1,900	1,127	1,129	0.59	0.59	C	C	6.5%	10	25	5.0%	2	4	1.53%	1,139	1,158	0.60	0.61	C	C
SW 49 AV	MARION OAKS BLVD	E	4	1,800	4	1,800	1,466	1,629	0.81	0.91	C	C	10.0%	15	39	5.0%	2	4	2.38%	1,483	1,672	0.82	0.93	C	C
MARION OAKS BLVD	SW 20 AV RD	E	4	1,800	6	2,869	1,788	1,960	0.62	0.68	C	C	28.0%	42	109	5.0%	2	4	6.29%	1,832	2,073	0.64	0.72	C	C
SW 20 AV RD	I-75	E	4	1,800	6	2,869	2,486	2,741	0.87	0.96	C	C	57.0%	223	86	95.0%	70	39	16.29%	2,779	2,866	0.970	0.999	C	D
I-75	CR 475A	D	4	1,800	6	2,869	2,077	1,844	0.72	0.64	C	C	32.0%	125	48	10.0%	7	4	7.36%	2,210	1,896	0.77	0.66	C	C
CR 475A	CR 475	D	4	1,800	4	1,800	1,593	1,250	0.89	0.69	C	C	26.0%	102	39	10.0%	7	4	6.06%	1,702	1,293	0.95	0.72	C	C
CR 475	CR 467	D	4	1,800	4	1,800	1,683	1,386	0.94	0.77	C	C	22.0%	86	33	10.0%	7	4	5.19%	1,776	1,423	0.99	0.79	D	C
CR 467	SE 132 ST RD	D	4	1,800	4	1,800	1,427	1,179	0.79	0.66	C	C	17.0%	66	26	10.0%	7	4	4.10%	1,501	1,209	0.83	0.67	C	C
SW 29th Avneue Road																										
CR 484	MARION OAKS TRL	E	2	560	2	560	84	67	0.15	0.12	C	C	42.0%	164	164	0.0%	0	0	29.33%	248	231	0.44	0.41	C	C
SE 132nd Street Road																										
CR 484	US 301	E	4	1,800	4	1,800	932	764	0.52	0.42	C	C	13.0%	51	20	10.0%	7	4	3.24%	990	788	0.55	0.44	C	C
US 301	US 441	E	4	1,800	4	1,800	993	817	0.55	0.45	C	C	12.0%	47	18	3.0%	2	1	2.73%	1,042	836	0.58	0.46	C	C
Marion Oaks Trail																										
CR 484 W	SW 49 AV	E	2	792	2	792	131	100	0.17	0.13	C	C	3.5%	5	14	0.0%	0	0	1.73%	136	114	0.17	0.14	C	C
MARION OAKS CRSE	CR 484 E	E	2	792	2	792	181	106	0.23	0.13	C	C	6.5%	10	25	0.0%	0	0	3.21%	191	131	0.24	0.17	C	C

Notes:

1. The existing roadway attributes and service volumes were obtained from the most recent Ocala Marion Transportation Planning Organization (TPO) Congestion Management Process (CMP) Database. For the improved condition, the roadway service volumes were derived using the 2020 FDOT Q/LOS Handbook. The improvements identified to be needed under future background traffic conditions (prior to adding project traffic) were assumed for the buildout conditions analysis.
2. Background volumes were derived by applying the study area growth rate to the existing volumes with vested traffic added.
3. Project traffic was assigned based on the CFRPM output (with manual adjustments) in the approved methodology.

FUTURE BACKGROUND CONDITIONS INTERSECTION ANALYSIS

The intersections within the study area were evaluated to determine if improvements are needed to provide an acceptable level of service and intersection operations with future background traffic conditions prior to the addition of project traffic.

Existing signal timings (as obtained from the City of Ocala and Marion County), peak hour factors (as obtained from the traffic counts), and right-turn on red percentages (obtained as previously described in this report) were input into Synchro 11 for analysis. The existing observed percent heavy vehicle percentage was updated for the background conditions analysis to reflect the projected vehicle mix from the addition of background and vested traffic.

Either existing geometry or planned/programmed geometry was utilized based on the committed transportation projects outlined previously.

The intersection of SW 29th Avenue Road at CR 484 was evaluated as a directional median opening (all southbound movements are limited to right-turn only) based on input from Marion County on a planned short-term safety improvement. The observed and projected traffic movements at the intersection were re-allocated based on the planned movement restriction at the intersection. Existing / projected southbound left-turn movements were allocated to the southbound right-turn movement and eastbound through movement, assuming these vehicles would make a u-turn at the median opening to the west of the intersection.

The background intersection analysis shows the following improvements are necessary to provide for acceptable level of service and operations with future background traffic volumes:

SW 29th Avenue Road at CR 484

- Signalization is warranted as a result of background traffic during the AM peak hour based on the FDOT Signal Warrant 3 volume thresholds and LOS F for southbound right-turn movement

SW 20th Avenue Road at CR 484

- Signal timing adjustments and assuming the improvements identified to be needed with the Marco Polo PUD buildout

An AM peak hour and PM peak hour signal warrant analysis was conducted for the intersection of SW 29th Avenue at CR 484 using the Manual on Uniform Traffic Control Devices (MUTCD) 2009 Edition for peak hour volume Warrant 3 criteria. Based on the Signal Warrant 3 criteria, a traffic signal is warranted for the background AM peak hour traffic conditions. The peak hour signal warrant analysis outputs are provided in the **Appendix**.

The I-75 at CR 484 interchange is currently under construction. The improvements include dual southbound right turn lanes for the southbound ramp terminal and dual northbound left turn lanes for the northbound ramp terminal. The I-75 Southbound Ramp at CR 484 southbound right-turn movement operates at LOS F (and v/c < 1.0) during the background AM peak hour. The I-75 Northbound Ramp at CR 484 northbound left-turn movement operates at LOS F (and v/c <1) during the AM and PM background scenarios.

No background improvements were applied to the intersection of CR 475A at CR 484. With future background traffic volumes, the intersection operates with all V/C ratios less than 1.0 and acceptable LOS for the overall intersection operations, but with LOS F for the eastbound left-turn, northbound left-turn, and