O'ROURKE
ENGINEERING & PLANNING

TRAFFIC ANALYSIS

FOR

SHOPPES ON COLORADO

Prepared for:

Kristen Brown
Ted Glasrud Associates, Inc
759 SW Federal Highway, Suite 217
Stuart, FL 34994

Prepared by:

O'Rourke Engineering & Planning
969 SE Federal Highway, Suite 402
Stuart, Florida 34994
772-781-7918

October 3, 2019

MR19082.0

Prepared by: O'Rourke Engineering & Planning Certificate of Authorization: #26869 969 SE Federal Highway, Ste. 402 Stuart, Florida 34994 772-781-7918	Professional Engineer Susan E. O'Rourke, P.E. Date signed and sealed: 10/7/19 License #: 42684

O'ROURKE
ENGINEERING & PLANNING

October 3, 2019

Ms. Kristen Brown
Ted Glasrud Associates, Inc
759 SW Federal Highway, Suite 217
Stuart, FL 34994

Re: Shoppes on Colorado

Dear Ms. Brown:

O'Rourke Engineering & Planning has completed the traffic analysis of the proposed development of 4,359 square feet of retail; 4,837 square feet of office and 2,592 square feet of restaurant in Stuart, Florida. The steps in the analysis and the ensuing results are presented herein.

It has been a pleasure working with you. If you have any questions or comments, please do not hesitate to contact our office.

Respectfully submitted,
O'Rourke Engineering & Planning

Susan E. O'Rourke, P.E.
President

C2 – Report - Shoppes at Colorado – 10.3.19

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INTRODUCTION

O'Rourke Engineering & Planning was retained to prepare a traffic analysis for the proposed 4,359 square feet of retail, 4,837 square feet of office and 2,592 square feet of restaurant to be located west of Colorado Avenue and north of A Street in Stuart, Florida. The purpose of this report is to determine the project impact on the surrounding roadway system.

In order to make the determination that the project complies with City of Stuart Concurrency Guidelines, the following analytical steps were taken:

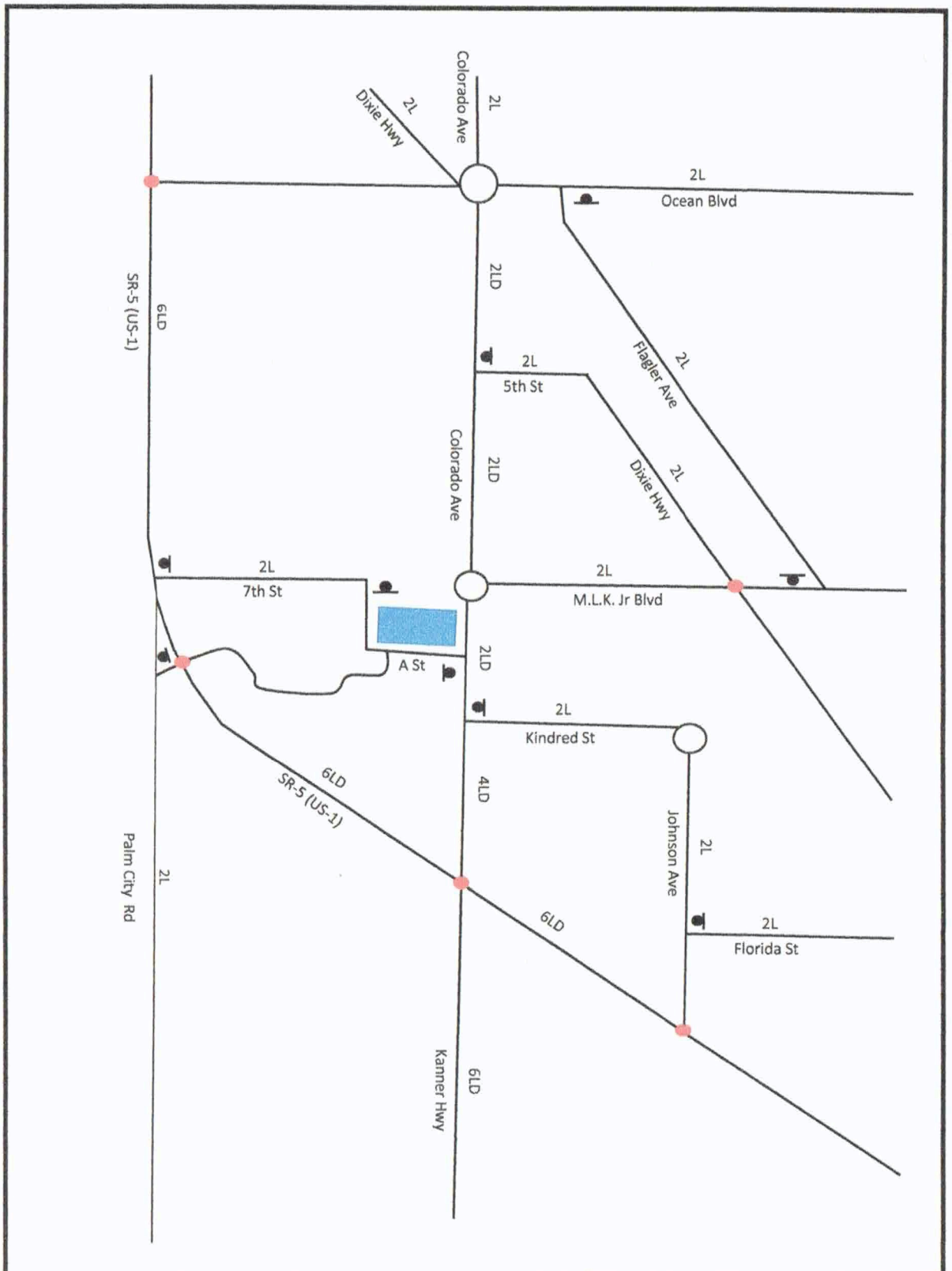
- summary of the project
- summary of existing lane geometries
- summary of existing traffic volumes
- assessment of project traffic
- determination of impact area
- summary of short-term cumulative traffic volumes
- summary of levels of service with project traffic added

Each of these steps is outlined herein.

PROJECT DESCRIPTION

The project is 4,359 square feet of retail, 4,837 square feet of office and 2,592 square feet of restaurant to be located west of Colorado Avenue and north of A Street. The project location is shown in **Figure 1**.

The project site plan is provided in **APPENDIX A.**



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Job #:

Date:

Legend

= Project Location

= Signalized Intersection

= Stop Sign

#L = Number of Lanes

Figure 1

Project Location

Shoppes at Colorado

EXISTING CONDITIONS

The study area is defined as the roadways upon which the project has an impact of 5% of the level of service capacity of the roadway and immediate accessed link. Once the project traffic was assigned, the study area was refined based on the impact percentages.

The study area roadways were defined in terms of existing lane geometrics and existing traffic volumes.

Existing Lane Geometrics and Traffic Control

The study area was reviewed to determine the existing number and type of lanes, and the traffic control along the roadway. Each roadway is described below.

- Federal Highway (US-1) is a six-lane divided arterial roadway with a north/south alignment.
- A Street is a two-lane local roadway with an east/west alignment.
- Colorado Avenue is a two-lane arterial roadway with a north/south alignment.

Existing Traffic Volumes/ Service Volume

Traffic volumes were obtained from the Martin County 2018 Roadway Level of Service Inventory Report and from traffic counts. The number of lanes and the associated peak hour/peak direction service volumes will be summarized in the upcoming sections of the report. The service volumes were developed based on the functional classification contained in the County Comprehensive Plan and the 2018 Martin County Level of Service Report. The FDOT 2012 Quality/Level of Service Handbook Tables were used to develop service volumes for roadways not included in the Martin County Level of Service Report. These documents are included in **APPENDIX B.**

PROJECT TRAFFIC

To estimate traffic generated by the project, the ITE Trip Generation, 10th Edition trip rates were applied. Pass by percentage rates were obtained from the Martin County Impact Fee Study. These calculations provide an estimate of the typical generation. Trip generation for the project is shown in **Table 1.** The internal trip matrix is included in **APPENDIX A.**

As shown, the project will generate 470 net new daily trips. There will be 20 AM peak hour trips and 38 PM peak hour trips.

Table 1 - Trip Generation

Table 1a: Daily

Land Use	ITE Code	Intensity	Units	Trip Generation Rate	Directional Split		Gross Trips			Internalization Trips				Net External Trips			Pass-by Trips				Net New Trips		
					In	Out	In	Out	Total	In	Out	Total	%	In	Out	Total	In	Out	Total	%	In	Out	Total
Small Office Building	712	4,837	Sft	T = 16.19(X)	50%	50%	39	39	78	7	36	43	55.1%	32	3	35	2	2	4	10.0%	30	1	31
Shopping Center	820	4,359	Sft	Ln(T) = 0.68Ln(X) + 5.57	50%	50%	357	357	714	31	48	79	11.1%	326	309	635	153	152	305	48.0%	173	157	330
High-Turnover (Sit-Down) Restaurant	932	2,592	Sft	T = 112.18(X)	50%	50%	146	145	291	71	25	96	33.0%	75	120	195	43	43	86	44.0%	32	77	109
TOTALS							**542**	**541**	**1,083**	**109**	**109**	**218**	**20.1%**	**433**	**432**	**865**	**198**	**197**	**395**	**45.7%**	**235**	**235**	**470**

Source: ITE 10th Edition Trip Generation Rates

Table 1b: AM Peak Hour

Land Use	ITE Code	Intensity	Units	Trip Generation Rate	Directional Split		Gross Trips			Internalization Trips				Net External Trips			Pass-by Trips				Net New Trips		
					In	Out	In	Out	Total	In	Out	Total	%	In	Out	Total	In	Out	Total	%	In	Out	Total
Small Office Building	712	4,837	Sft	T = 1.92(X)	83%	17%	7	2	9	1	2	3	33.3%	6	-	6	1	-	1	10.0%	5	-	5
Shopping Center	820	4,359	Sft	T = 0.94(X)	62%	38%	2	2	4	1	-	1	25.0%	1	2	3	1	-	1	48.0%	-	2	2
High-Turnover (Sit-Down) Restaurant	932	2,592	Sft	T = 9.94(X)	55%	45%	14	12	26	1	1	2	7.7%	13	11	24	6	5	11	44.0%	7	6	13
TOTALS							**23**	**16**	**39**	**3**	**3**	**6**	**15.4%**	**20**	**13**	**33**	**8**	**5**	**13**	**39.4%**	**12**	**8**	**20**

Source: ITE 10th Edition Trip Generation Rates

Table 1c: PM Peak Hour

Land Use	ITE Code	Intensity	Units	Trip Generation Rate	Directional Split		Gross Trips			Internalization Trips				Net External Trips			Pass-by Trips				Net New Trips		
					In	Out	In	Out	Total	In	Out	Total	%	In	Out	Total	In	Out	Total	%	In	Out	Total
Small Office Building	712	4,837	Sft	T = 2.45(X)	32%	68%	4	8	12	1	2	3	25.0%	3	6	9	-	1	1	10.0%	3	5	8
Shopping Center	820	4,359	Sft	Ln(T) = 0.74Ln(X) + 2.89	48%	52%	25	28	53	6	6	12	22.6%	19	22	41	9	11	20	48.0%	10	11	21
High-Turnover (Sit-Down) Restaurant	932	2,592	Sft	T = 9.77(X)	62%	38%	16	9	25	5	4	9	36.0%	11	5	16	4	3	7	44.0%	7	2	9
TOTALS							**45**	**45**	**90**	**12**	**12**	**24**	**26.7%**	**33**	**33**	**66**	**13**	**15**	**28**	**42.4%**	**20**	**18**	**38**

Source: ITE 10th Edition Trip Generation Rates

PROJECT DISTRIBUTION/ ASSIGNMENT/IMPACT

The project traffic was distributed by general geographic direction and then assigned to the roadway network.

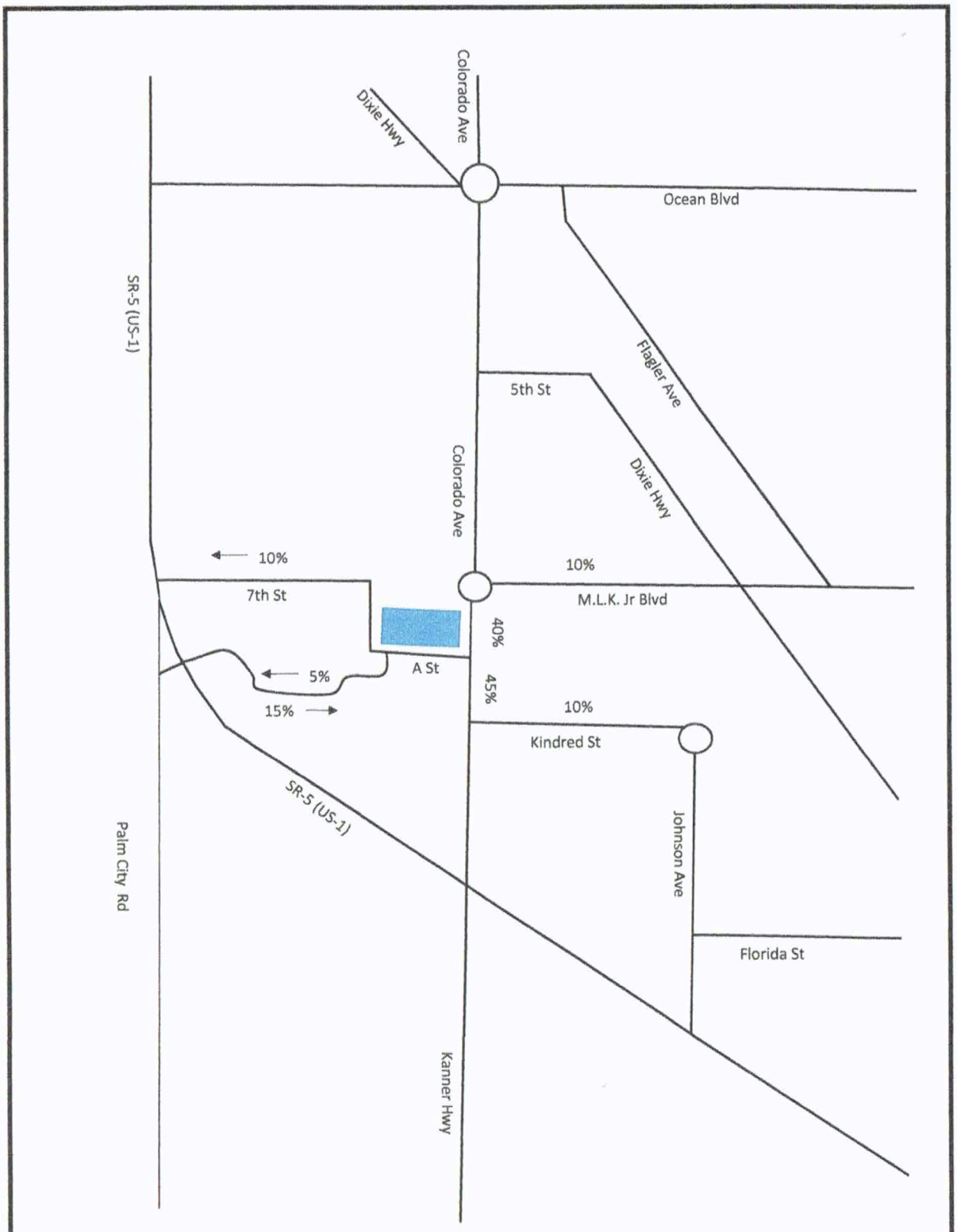
Distribution/ Assignment – This general distribution led to an assignment of trips based on the anticipated ultimate destinations and the roadway paths used to reach those destinations. The project assignment is shown in **Figure 2**.

Impact – Tables 2a and 2b summarize the project impact as a percent of service volume capacity. Project traffic is considered significant when the impact is 5% or more of LOS D. As shown, there are no links with a 5% or greater impact. Therefore, only the first directly accessed link will be analyzed.

LINK ANALYSIS / CONCURRENCY REVIEW

In order to assess the impact on the adjacent links, the total traffic on the links at project buildout were compared to the roadway capacity. To estimate the total traffic in 2021, turning movement counts were conducted at the intersections of Colorado Avenue at Kindred Street and Colorado Avenue at A Street. The counts were used to establish the existing traffic on A Street and Colorado Avenue. The existing volumes were grown two years using a 1.4% growth rate from the average growth rate on SR-5 (US-1) in the area of the project. The project traffic was then added to determine the 2021 Total Traffic.

Tables 3a and 3b summarize the results of the link analysis. As shown, the roadways will operate at acceptable levels of service.



N O'ROURKE ENGINEERING & PLANNING NTS 969 SE Federal Hwy, Suite 402 Stuart, Fl, 34994 Job #: Date:	Legend = Project Location	Figure 2 Percent Assignment Shoppes at Colorado

Table 2a: Percent Impact - AM Peak Hour

Segment	From	To	Direction		Lanes	Is Project Traffic 5% or More of Capacity?	LOS D [1] Directional Peak Hour	Directional Peak Project Volume	Project Percent Assignment	Directional Percent Project of Capacity
Colorado Ave	SR-5	A Street	NB	IN	2L	no	1,190	5	45%	0.42%
	SR-5	A Street	SB	OUT	2L	no	1,190	4	45%	0.34%
	A Street	Ocean Blvd	NB	OUT	2L	no	1,190	3	40%	0.25%
	A Street	Ocean Blvd	SB	IN	2L	no	1,190	5	40%	0.42%
A Street	Colorado Ave	SW 7th St	EB	OUT	2L	no	750	7	85%	0.93%
	Colorado Ave	SW 7th St	WB	IN	2L	no	750	10	85%	1.33%

(1) 2012 FDOT Quality Level of Service Handbook Tables

In: 12
Out: 8

Table 2b: Percent Impact - PM Peak Hour

Segment	From	To	Direction		Lanes	Is Project Traffic 5% or More of Capacity?	LOS D [1] Directional Peak Hour	Directional Peak Project Volume	Project Percent Assignment	Directional Percent Project of Capacity
Colorado Ave	SR-5	A Street	NB	IN	2L	no	1,190	9	45%	0.76%
	SR-5	A Street	SB	OUT	2L	no	1,190	8	45%	0.67%
	A Street	Ocean Blvd	NB	OUT	2L	no	1,190	7	40%	0.59%
	A Street	Ocean Blvd	SB	IN	2L	no	1,190	8	40%	0.67%
A Street	Colorado Ave	SW 7th St	EB	OUT	2L	no	750	15	85%	2.00%
	Colorado Ave	SW 7th St	WB	IN	2L	no	750	17	85%	2.27%

(1) 2012 FDOT Quality Level of Service Handbook Tables

In: 20
Out: 18

Table 3a: Link Analysis - AM Peak Hour

Segment	From	To	Direction		Lanes	Is Project Traffic 5% or More of Capacity?	2019 Volume Peak Hour [2] Peak Direction	Growth Rate [3]	2021 Volume Peak Hour Peak Direction	LOS D [1] Directional Peak Hour	Directional Peak Project Volume	Project Percent Assignment	Directional Percent Project of Capacity	Total Traffic (Peak Direction)	Does Project Meet Concurrency?
Colorado Ave	SR-5	A Street	NB	IN	2L	no	1102	1.014	1,133	1,190	5	45%	0.42%	1,138	Yes
	SR-5	A Street	SB	OUT	2L	no	475	1.014	488	1,190	4	45%	0.34%	492	Yes
	A Street	Ocean Blvd	NB	OUT	2L	no	1102	1.014	1,133	1,190	3	40%	0.25%	1,136	Yes
	A Street	Ocean Blvd	SB	IN	2L	no	475	1.014	488	1,190	5	40%	0.42%	493	Yes
A Street	Colorado Ave	SW 7th St	EB	OUT	2L	no	15	1.014	15	750	7	85%	0.93%	22	Yes
	Colorado Ave	SW 7th St	WB	IN	2L	no	66	1.014	68	750	10	85%	1.33%	78	Yes

(1) 2012 FDOT Quality Level of Service Handbook Tables
(2) From Turning Movement Counts
(3) Martin County Level of Service Inventory Report for US 1

In: 12
Out: 8
Years Grown: 2

Table 3b: Link Analysis - PM Peak Hour

Segment	From	To	Direction		Lanes	Is Project Traffic 5% or More of Capacity?	2019 Volume Peak Hour [2] Peak Direction	Growth Rate [3]	2021 Volume Peak Hour Peak Direction	LOS D [1] Directional Peak Hour	Directional Peak Project Volume	Project Percent Assignment	Directional Percent Project of Capacity	Total Traffic (Peak Direction)	Does Project Meet Concurrency?
Colorado Ave	SR-5	A Street	NB	IN	2L	no	964	1.014	991	1,190	9	45%	0.76%	1,000	Yes
	SR-5	A Street	SB	OUT	2L	no	1139	1.014	1,171	1,190	8	45%	0.67%	1,179	Yes
	A Street	Ocean Blvd	NB	OUT	2L	no	964	1.014	991	1,190	7	40%	0.59%	998	Yes
	A Street	Ocean Blvd	SB	IN	2L	no	1139	1.014	1,171	1,190	8	40%	0.67%	1,179	Yes
A Street	Colorado Ave	SW 7th St	EB	OUT	2L	no	152	1.014	156	750	15	85%	2.00%	171	Yes
	Colorado Ave	SW 7th St	WB	IN	2L	no	53	1.014	54	750	17	85%	2.27%	71	Yes

(1) 2012 FDOT Quality Level of Service Handbook Tables
(2) From Turning Movement Counts
(3) Martin County Level of Service Inventory Report for US 1

In: 20
Out: 18
Years Grown: 2

INTERSECTION ANALYSIS

Turning movement counts were conducted in September of 2019 at the intersections of Colorado Avenue at Kindred Street and Colorado Avenue at A Street. A seasonal factor of 1.29 was applied. The existing volumes were grown two years using a 1.4% growth rate from the average growth rate on SR-5 (US-1) in the area of the project. The project traffic was then added to determine the 2021 Total Traffic at the intersections.

The intersections were analyzed using the Highway Capacity Software. The intersection of Colorado Avenue and Kindred Street has a delay of 35.3 seconds per vehicle for the westbound approach and an overall delay of 2.4 seconds per vehicle in the AM peak hour and a delay of 34.3 seconds per vehicle for the westbound approach and an overall delay of 3.3 seconds per vehicle in the PM peak hour with the existing traffic. The intersection of Colorado Avenue and A Street has a delay of 11.6 seconds per vehicle for the eastbound approach and an overall delay of 0.1 seconds per vehicle for the AM peak hour and a delay of 47.8 seconds per vehicle for the eastbound approach and an overall delay of 3.2 seconds per vehicle for the PM peak hour with the existing traffic.

Under buildout conditions, the intersection of Colorado Avenue and Kindred Street will have a delay of 39.2 seconds per vehicle for the westbound approach and an overall delay of 2.6 seconds per vehicle in the AM peak hour and a delay of 39.0 seconds per vehicle for the westbound approach and an overall delay of 3.7 seconds per vehicle in the PM peak hour. The intersection of Colorado Avenue and A Street will have a delay of 11.9 seconds per vehicle for the eastbound approach and an overall delay of 0.2 seconds per vehicle for the AM peak hour and a delay of 68.0 seconds per vehicle for the eastbound approach and an overall delay of 5.0 seconds per vehicle for the PM peak hour.

As shown, both intersections will operate at acceptable levels of service based on overall delay with more delay to the side streets. Adequate storage is available for queueing vehicles.

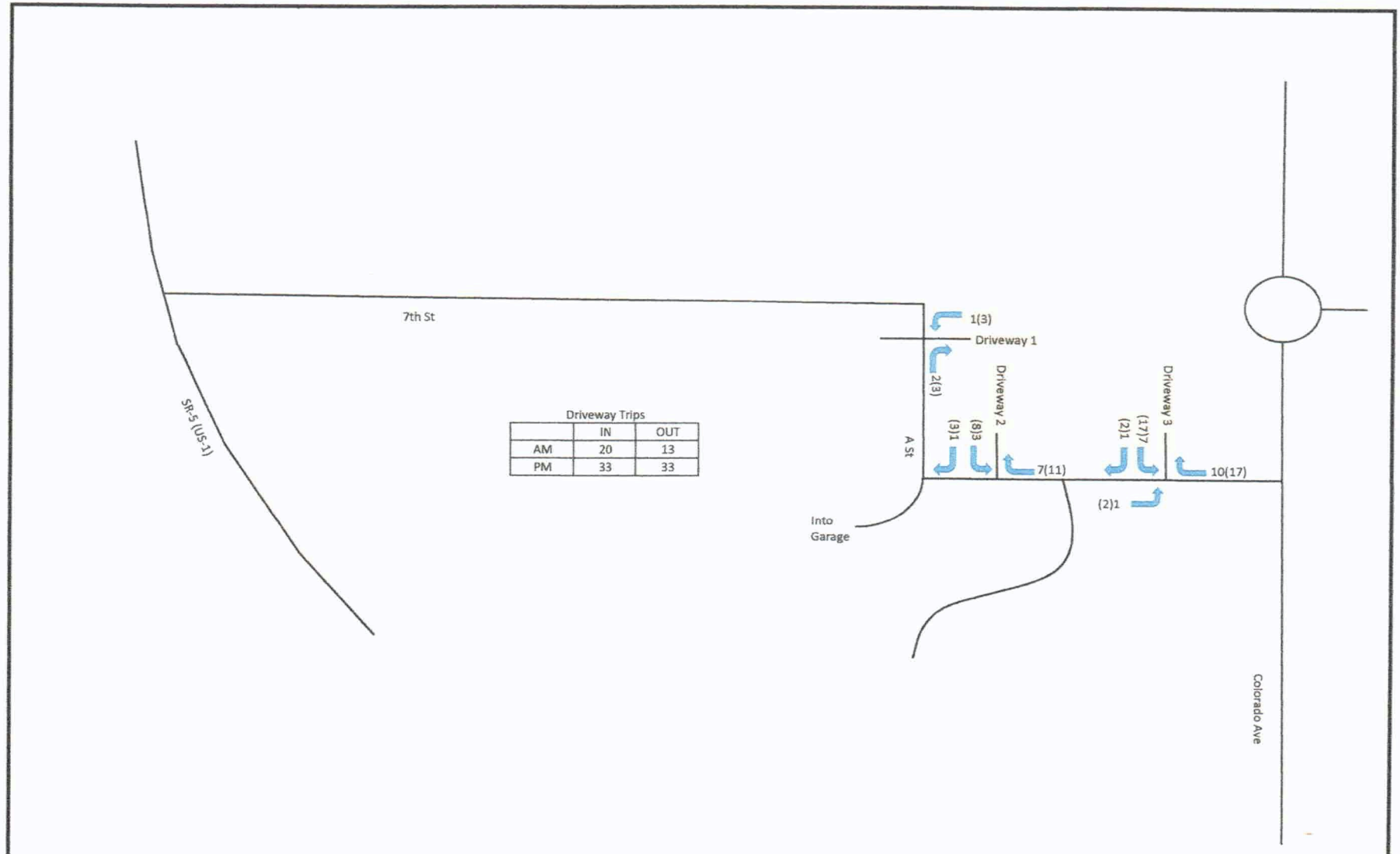
The intersection data and turning movement counts data are shown in **APPENDIX C.**

DRIVEWAY ANALYSIS

The site will have access via three full access driveways onto A Street. **Figure 3** shows the driveway locations and volumes in the AM and PM peak hour.

CONCLUSION

With 470 daily trips, 20 AM peak hour trips and 38 PM peak hour trips, the project does not create the need for additional improvements to the roadway network. Therefore, the project meets the requirements for concurrency.



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969 SE Federal Hwy, Suite 402
Stuart, Fl, 34994

Job Number:

Date:

Legend

XX(XX) = AM(PM)

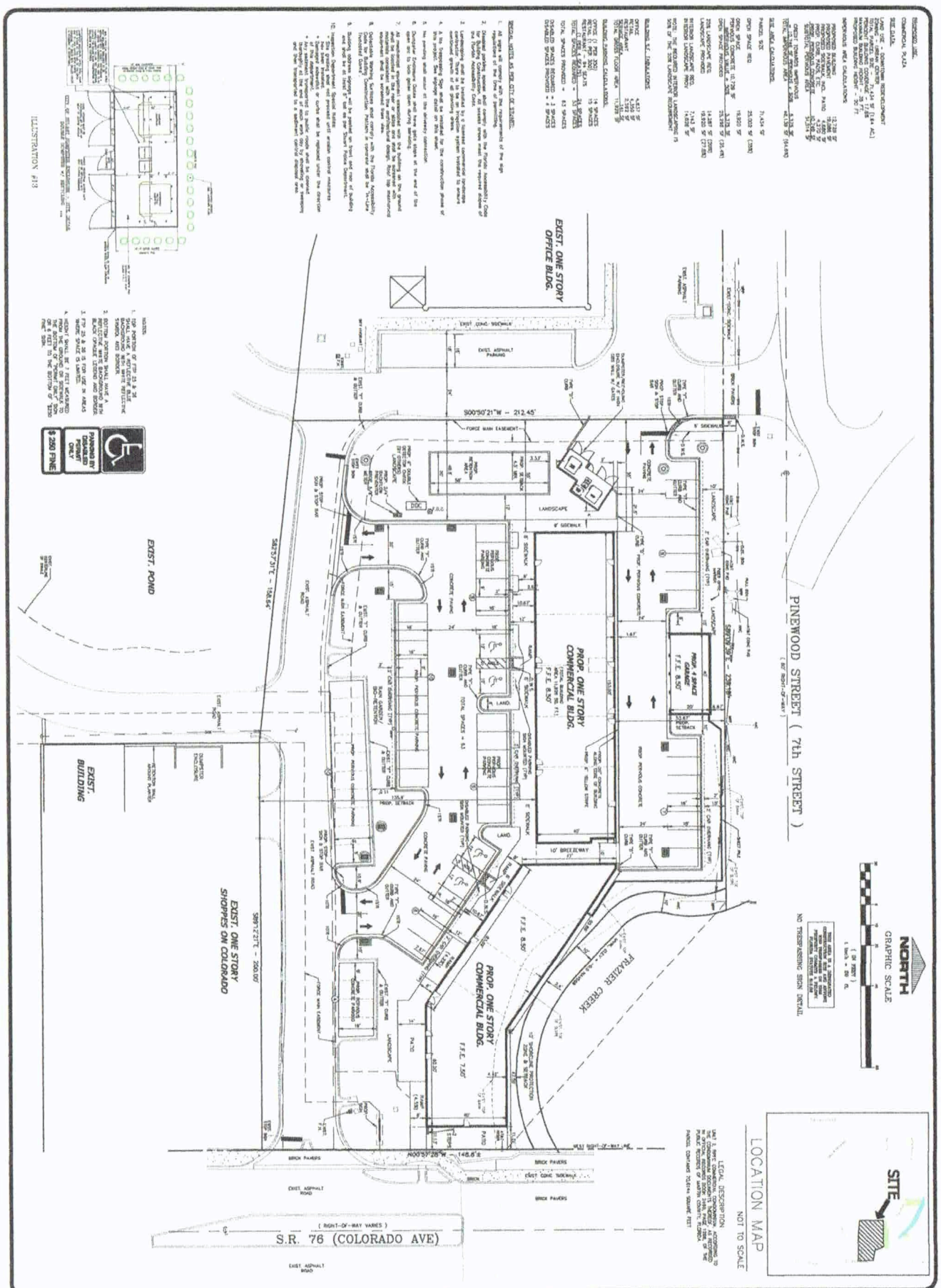
Figure 3

Driveway Volumes

Shoppes at Colorado

APPENDIX A

Site Plan



SHOPPES ON COLORADO ANNEX
CITY OF STUART, FLORIDA
SITE PLAN

3431 SE DIXIE HIGHWAY
STUART, FL 34995
PHONE: (772) 287-0525
MATHERS ENGINEERING CORPORATION

TABLE 1: Daily Internal Traffic

PROJECT
TRIP INTERNALIZATION - Daily

Name of Devlpt: Shoppes on Colorado
Time Period: Daily Peak Hour

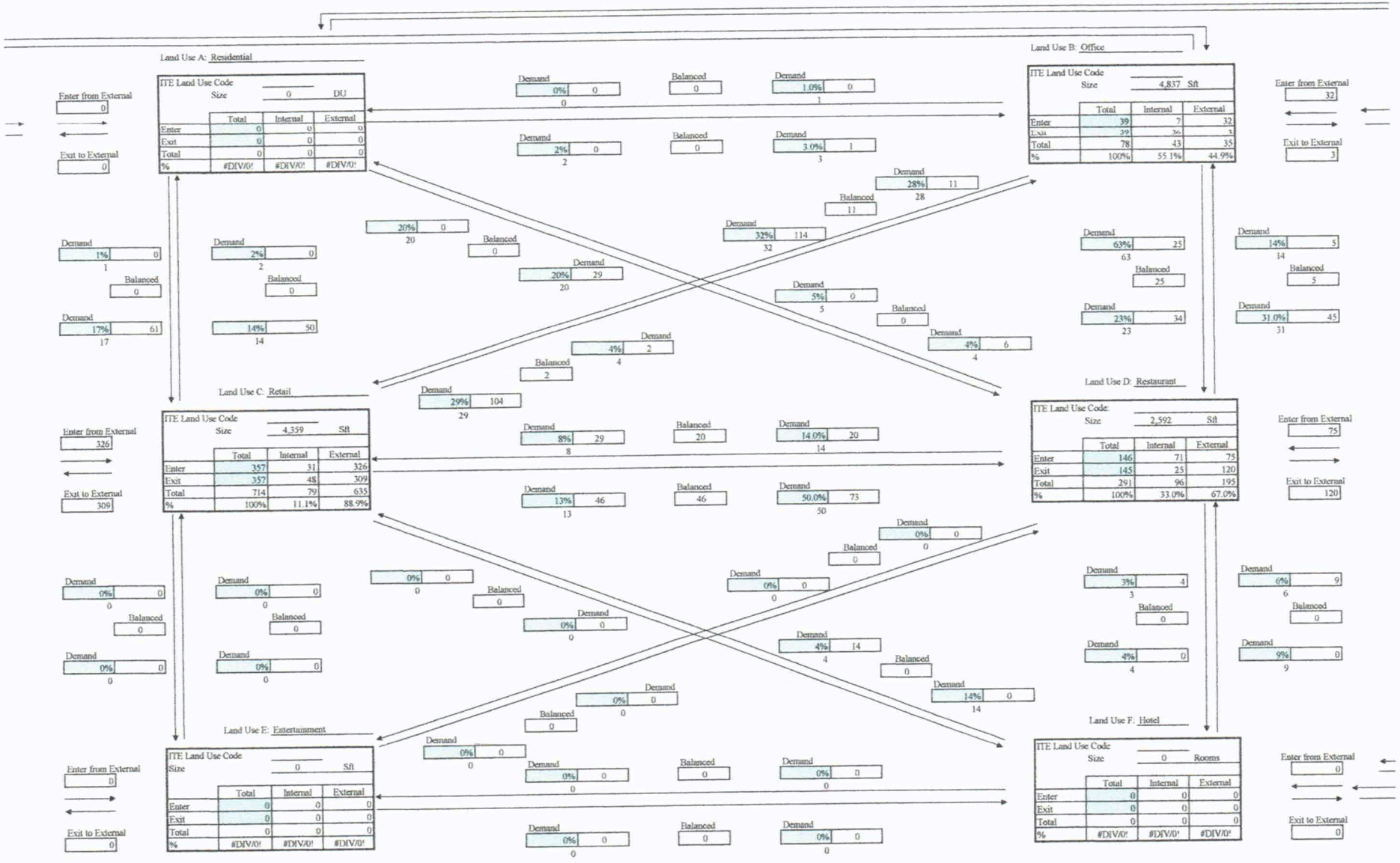


TABLE 1: AM Internal Traffic

PROJECT
TRIP INTERNALIZATION - AM

Name of Devlpt: Shoppes on Colorado
Time Period: AM Peak Hour

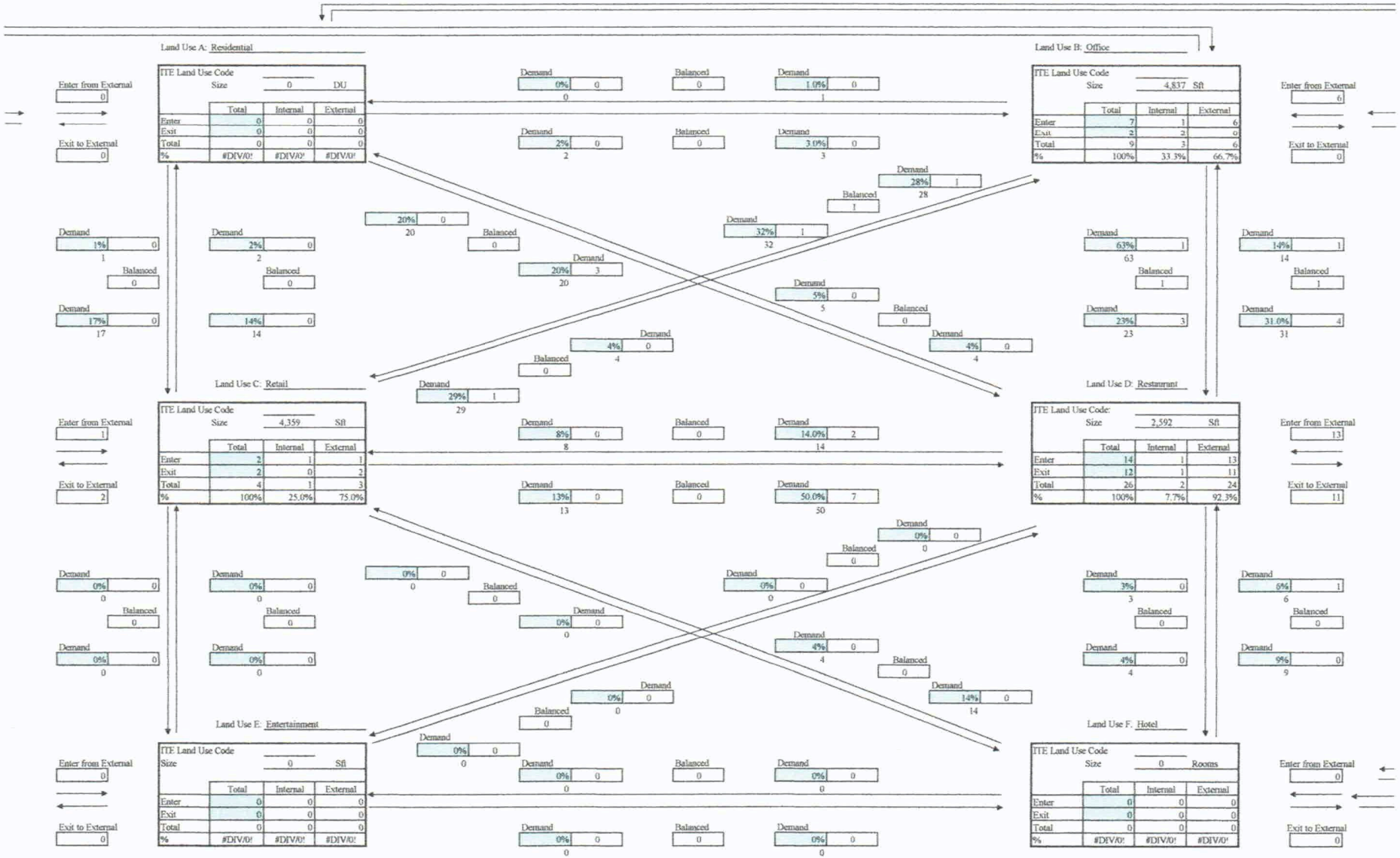
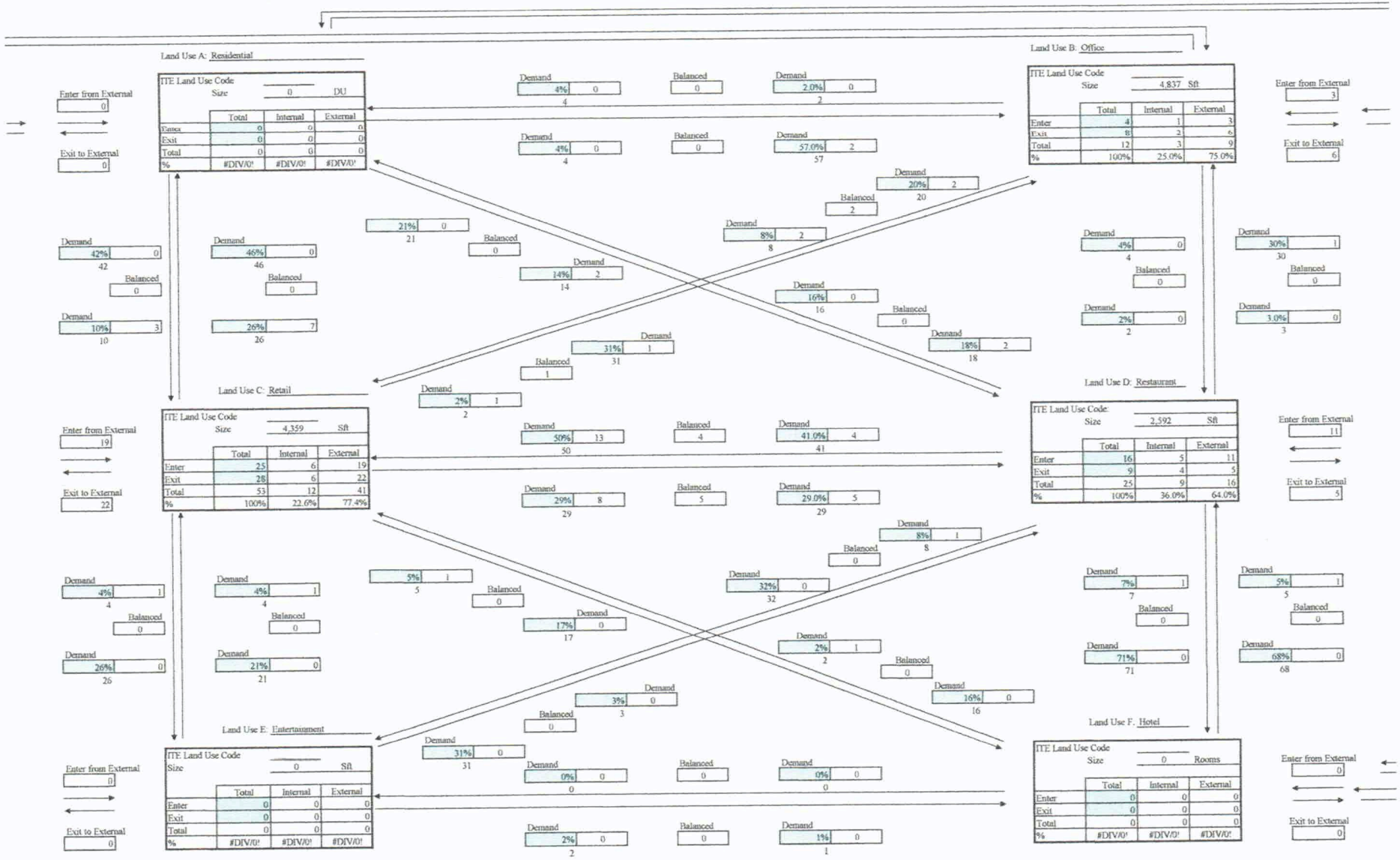


TABLE 1: PM Internal Traffic

PROJECT
TRIP INTERNALIZATION - PM

Name of Devlpt: Shoppes on Colorado
Time Period: PM Peak Hour



APPENDIX B

Martin County 2018 LOS Report

Martin County 2018 Roadway Level of Service Inventory Report

Road Name	From	To	Generalized Service Capacity	2018 Average Annual Daily Traffic	Peak Hour Factor K_{30}	Directional Distribution D_{100}	2018 Peak Hour Directional Volume	2018 Generalized LOS	Avg. Annual Growth Rate
Salerno Rd	Willoughby Blvd	SR-5	790	9,765	0.12	0.62	727	D	1.8%
Salerno Rd	SR-5	Commerce Ave	750	9,439	0.08	0.55	431	D	0.5%
Salerno Rd	Commerce Ave	CR-A1A	750	7,502	0.09	0.51	337	C	0.5%
Seabranch Blvd	Doubletree Dr	SR-5	2000	6,403	0.09	0.55	310	C	0.5%
Sewalls Pt Rd	SR-A1A	Palmer St	675	9,542	0.09	0.52	461	D	1.0%
Skyline Dr	CR-707A	CR-707	675	2,064	0.08	0.55	87	C	3.0%
SR-5 (US-1)	Palm Beach County	CR-A1A	3110	21,690	0.09	0.56	1,032	A/B	3.8%
SR-5 (US-1)	CR-A1A	CR-708	2000	17,113	0.09	0.68	1,094	C	3.1%
SR-5 (US-1)	CR-708	Osprey St	2000	24,451	0.10	0.65	1,589	C	2.0%
SR-5 (US-1)	Osprey St	Seabranch Blvd	2000	24,010	0.08	0.61	1,128	C	1.2%
SR-5 (US-1)	Seabranch Blvd	Cove Rd	3020	30,639	0.08	0.51	1,313	C	0.5%
SR-5 (US-1)	Cove Rd	Salerno Rd	3020	34,682	0.08	0.54	1,461	C	0.5%
SR-5 (US-1)	Salerno Rd	Monroe St	3020	42,146	0.08	0.52	1,775	C	0.9%
SR-5 (US-1)	Monroe St	Indian St	3020	45,627	0.08	0.52	1,922	C	1.3%
SR-5 (US-1)	Indian St	SR-714	3020	45,758	0.09	0.51	2,194	C	0.9%
SR-5 (US-1)	SR-714	SR-5A	3020	38,109	0.09	0.54	1,934	C	0.7%
SR-5 (US-1)	SR-5A(Cut-off Rd)	SR-76	3020	36,130	0.09	0.51	1,640	C	0.5%
SR-5 (US-1)	SR-76	Palm City Rd	2520	49,890	0.08	0.57	2,247	D	1.4%
SR-5 (US-1)	Palm City Rd	Joan Jefferson Wy	2520	55,868	0.08	0.64	2,860	F	0.8%
SR-5 (US-1)	Joan Jefferson Wy	Wright Blvd	3020	59,857	0.08	0.60	2,892	C	1.4%
SR-5 (US-1)	Wright Blvd	Baker Rd	3020	54,975	0.08	0.50	2,172	C	1.1%

Segments with shaded LOS require additional analysis.
The peaks are: CR-A1A (PM/SB); CR-713 (PM/NB); Murphy Rd (PM/NB); SR-5 (AM/SB); SR-714 [Palm City Bridge] (PM/WB) and SR-714 (PM/WB).

Martin County 2018 Roadway Level of Service Inventory Report

Road Name	From	To	Generalized Service Capacity	2018 Average Annual Daily Traffic	Peak Hour Factor K_{30}	Directional Distribution D_{100}	2018 Peak Hour Directional Volume	2018 Generalized LOS	Avg. Annual Growth Rate
SR-732 (Causeway Blvd)	CR-707	SR-A1A	1190	13,403	0.10	0.51	684	C	0.8%
SR-732 (Jensen Beach Blvd)	SR-5	Green River Pkwy	2000	25,891	0.10	0.52	1,319	C	0.5%
SR-732 (Jensen Beach Blvd)	Green River Pkwy	CR-723	2000	24,869	0.09	0.56	1,253	C	0.5%
SR-76 (Kanner Hwy)	SR-15	SR-710	740	2,117	0.09	0.57	105	A/B	8.0%
SR-76 (Kanner Hwy)	SR-710	CR-708	740	3,488	0.08	0.59	171	A/B	8.0%
SR-76 (Kanner Hwy)	CR-708	CR-711/CR-76A	1200	3,027	0.11	0.54	180	A/B	1.9%
SR-76 (Kanner Hwy)	CR-711/CR76A	Locks Rd	2000	12,928	0.12	0.52	813	C	1.2%
SR-76 (Kanner Hwy)	Locks Rd	Jack James	2000	20,494	0.09	0.60	1,082	C	2.0%
SR-76 (Kanner Hwy)	Jack James	Cove Rd	3020	45,918	0.10	0.52	2,409	C	2.4%
SR-76 (Kanner Hwy)	Cove Rd	Salerno Rd	3020	31,734	0.09	0.52	1,436	C	0.9%
SR-76 (Kanner Hwy)	Salerno Rd	Indian St	3020	29,492	0.10	0.52	1,468	C	2.6%
SR-76 (Kanner Hwy)	Indian St	SR-714	3020	21,161	0.07	0.52	759	C	0.5%
SR-76 (Kanner Hwy)	SR-714	SR-5	3020	25,033	0.08	0.50	1,001	C	0.5%
SR-A1A (Ocean Blvd)	SR-714	St Lucie Blvd	1630	19,372	0.11	0.57	1,193	D	1.4%
SR-A1A (Ocean Blvd)	St Lucie Blvd	Sewalls Point Rd	2000	21,532	0.09	0.51	1,010	C	0.5%
SR-A1A (Ocean Blvd)	Sewalls Point Rd	Macarthur Blvd	925	12,803	0.09	0.54	650	C	0.5%
SR-A1A (Ocean Blvd)	MacArthur Blvd	SR-732	1190	8,278	0.09	0.53	395	A/B	2.5%
SR-A1A (Ocean Blvd)	SR-732	St Lucie County	1190	14,957	0.12	0.54	953	D	3.6%
St Lucie Blvd	CR-A1A	Indian St	675	3,083	0.10	0.55	163	C	0.5%
St Lucie Blvd	Indian St	SR-A1A	675	7,420	0.11	0.54	421	D	0.8%
Westmoreland Blvd	St Lucie County	SR-5	790	12,542	0.08	0.60	632	D	2.6%

Segments with shaded LOS require additional analysis.
The peaks are: CR-A1A (PM/SB); CR-713 (PM/NB); Murphy Rd (PM/NB); SR-5 (AM/SB); SR-714 [Palm City Bridge] (PM/WB) and SR-714 (PM/WB).

TABLE 7

Generalized **Peak Hour Directional** Volumes for Florida's **Urbanized Areas**[1]

12/18/12

INTERRUPTED FLOW FACILITIES

STATE SIGNALIZED ARTERIALS

Class I (40 mph or higher posted speed limit)

Lanes	Median	B	C	D	E
1	Undivided	*	830	880	**
2	Divided	*	1,910	2,000	**
3	Divided	*	2,940	3,020	**
4	Divided	*	3,970	4,040	**

Class II (35 mph or slower posted speed limit)

Lanes	Median	B	C	D	E
1	Undivided	*	370	750	800
2	Divided	*	730	1,630	1,700
3	Divided	*	1,170	2,520	2,560
4	Divided	*	1,610	3,390	3,420

Non-State Signalized Roadway Adjustments

(Alter corresponding state volumes by the indicated percent.)

Non-State Signalized Roadways - 10%

Median & Turn Lane Adjustments

Lanes	Median	Exclusive Left Lanes	Exclusive Right Lanes	Adjustment Factors
1	Divided	Yes	No	+5%
1	Undivided	No	No	-20%
Multi	Undivided	Yes	No	-5%
Multi	Undivided	No	No	-25%
–	–	–	Yes	+ 5%

One-Way Facility Adjustment

Multiply the corresponding directional volumes in this table by 1.2

UNINTERRUPTED FLOW FACILITIES

FREEWAYS

Lanes	B	C	D	E
2	2,260	3,020	3,660	3,940
3	3,360	4,580	5,500	6,080
4	4,500	6,080	7,320	8,220
5	5,660	7,680	9,220	10,360
6	7,900	10,320	12,060	12,500

Freeway Adjustments

Auxiliary Lane	Ramp Metering
+ 1,000	+ 5%

UNINTERRUPTED FLOW HIGHWAYS

Lanes	Median	B	C	D	E
1	Undivided	420	840	1,190	1,640
2	Divided	1,810	2,560	3,240	3,590
3	Divided	2,720	3,840	4,860	5,380

Uninterrupted Flow Highway Adjustments

Lanes	Median	Exclusive left lanes	Adjustment factors
1	Divided	Yes	+5%
Multi	Undivided	Yes	-5%
Multi	Undivided	No	-25%

BICYCLE MODE[2]

(Multiply motorized vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)

Paved Shoulder/Bicycle Lane Coverage	B	C	D	E
0-49%	*	150	390	1,000
50-84%	110	340	1,000	>1,000
85-100%	470	1,000	>1,000	**

PEDESTRIAN MODE[2]

(Multiply motorized vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)

Sidewalk Coverage	B	C	D	E
0-49%	*	*	140	480
50-84%	*	80	440	800
85-100%	200	540	880	>1,000

BUS MODE (Scheduled Fixed Route)[3]

(Buses in peak hour in peak direction)

Sidewalk Coverage	B	C	D	E
0-84%	> 5	≥ 4	≥ 3	≥ 2
85-100%	> 4	≥ 3	≥ 2	≥ 1

[1] Values shown are presented as peak hour directional volumes for levels of service and are for the automobile/truck modes unless specifically stated. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the Highway Capacity Manual and the Transit Capacity and Quality of Service Manual.

[2] Level of service for the bicycle and pedestrian modes in this table is based on number of motorized vehicles, not number of bicyclists or pedestrians using the facility.

[3] Buses per hour shown are only for the peak hour in the single direction of the higher traffic flow.

* Cannot be achieved using table input value defaults.

** Not applicable for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.

Source:
Florida Department of Transportation
Systems Planning Office
www.dot.state.fl.us/planning/systems/sm/los/default.shtm

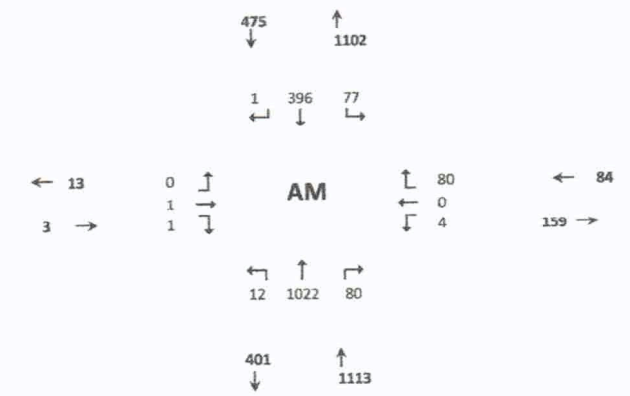
APPENDIX C

Intersection Analysis Data

TURNING MOVEMENT VOLUME COUNTS

N/S STREET: Colorado Ave
E/W STREET: Kindred St
CONTROL: TWSC
FILENAME:
COUNT DATE: 9/19/2019
DAY: Thursday
CITY: Stuart
INTERSECTION:
REPORT DATE: 9/20/2019
ANALYSIS YEAR: 2019

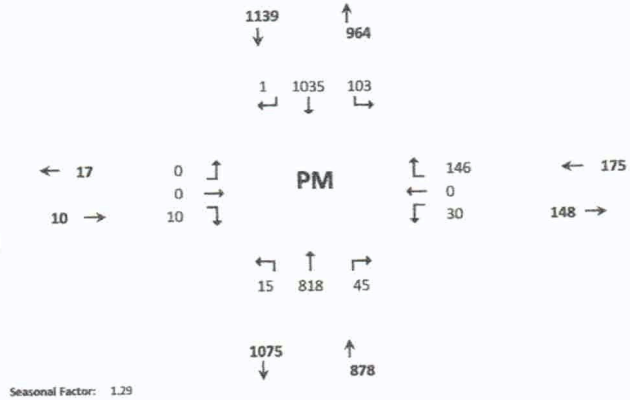
15 Min Period	Northbound			Southbound			Eastbound			Westbound				ONE HOUR SUM
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTAL	
7:00-7:15	1	100	8	5	51	0	0	0	0	0	0	9	174	987
7:15-7:30	1	143	14	8	59	1	0	0	0	1	0	5	232	1076
7:30-7:45	17	150	16	8	62	0	0	0	0	1	0	6	260	1189
7:45-8:00	3	204	22	9	69	1	0	0	2	1	0	10	321	1265
8:00-8:15	1	155	15	17	60	0	0	0	0	0	0	15	263	1298
8:15-8:30	3	209	22	18	74	1	0	1	0	1	0	16	345	
8:30-8:45	2	209	11	7	91	0	0	0	0	0	0	16	336	
8:45-9:00	3	219	14	18	82	0	0	0	1	2	0	15	354	
AM PEAK HOUR IS FROM:				8:00AM TO 9:00AM										
Volumes	9	792	62	60	307	1	0	1	1	3	0	62	1298	
Season Factor	12	1022	80	77	396	1	0	1	1	4	0	80	1674	
Growth	12	1022	80	77	396	1	0	1	1	4	0	80	1674	
In/Out	-	-	-	-	-	-	-	-	-	-	-	-	-	
Percentage	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
PROJECT	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	12	1022	80	77	396	1	0	1	1	4	0	80	1674	



Seasonal Factor: 1.29
Trips In
Trips Out
Growth Rate: 1
Years Grown:

COUNT DATE: 9/18/2019
DAY: Wednesday

15 Min Period lanes	Northbound			Southbound			Eastbound			Westbound				ONE HOUR SUM
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTAL	
4:00-4:15	7	157	7	15	194	2	1	0	1	2	0	26	412	1607
4:15-4:30	7	176	8	18	160	1	0	0	1	1	0	22	394	1633
4:30-4:45	2	146	8	23	201	0	0	0	1	6	0	21	408	1708
4:45-5:00	1	149	9	21	170	0	0	0	2	12	0	29	393	1668
5:00-5:15	3	161	10	15	221	0	0	0	2	1	0	25	438	1585
5:15-5:30	6	178	8	21	210	1	0	0	3	4	0	38	469	
5:30-5:45	3	153	6	16	158	0	1	0	0	6	0	25	368	
5:45-6:00	5	145	3	13	127	0	0	0	0	5	0	12	310	
PM PEAK HOUR IS FROM:				4:30 PM TO 5:30PM										
Volumes	12	634	35	80	802	1	0	0	8	23	0	113	1708	
Season Factor	15	818	45	103	1035	1	0	0	10	30	0	146	2203	
Growth	15	818	45	103	1035	1	0	0	10	30	0	146	2203	
In/Out	-	-	-	-	-	-	-	-	-	-	-	-	-	
Percentage	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Project	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	15	818	45	103	1035	1	0	0	10	30	0	146	2203	



Seasonal Factor: 1.29
Growth Rate: 1
Trips In:
Trips Out:
Years Grown: 0

C-1

HCS7 Two-Way Stop-Control Report

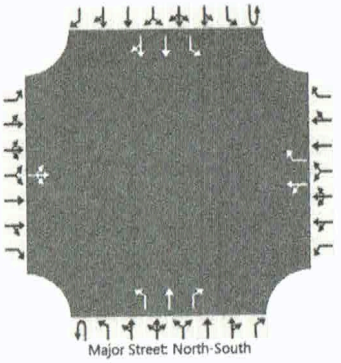
General Information

Analyst	James Kemp
Agency/Co.	O'Rourke Engineering
Date Performed	9/19/2019
Analysis Year	2019
Time Analyzed	AM Peak Hour
Intersection Orientation	North-South
Project Description	Existing

Site Information

Intersection	Colorado & Kindred
Jurisdiction	Stuart
East/West Street	Kindred St
North/South Street	Colorado Ave
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	1	0	1	1	1	0	1	2	0
Configuration			LTR			LT		R		L	T	R		L	T	TR
Volume (veh/h)		0	1	1		4	0	80	0	12	1022	80		77	396	1
Percent Heavy Vehicles (%)		3	3	3		3	3	3	3	3				3		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized					No				No							
Median Type | Storage	Left + Thru								1							

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.56	6.56	6.96		7.56	6.56	6.96		4.16				4.16		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.03	3.33		3.53	4.03	3.33		2.23				2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			2			4		87		13				84		
Capacity, c (veh/h)			222			162		202		1117				573		
v/c Ratio			0.01			0.03		0.43		0.01				0.15		
95% Queue Length, Q_{95} (veh)			0.0			0.1		2.0		0.0				0.5		
Control Delay (s/veh)			21.4			27.8		35.7		8.3				12.4		
Level of Service (LOS)			C			D		E		A				B		
Approach Delay (s/veh)	21.4				35.3				0.1				2.0			
Approach LOS	C				E											

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Avg Intersection Delay = 2.4 s/v

$= 21.4(2) + 35.3(84) + 0.1(12+1022+80) + 2.0(77+396+1) = \frac{42.8+2965.2+111.4+94}{1674}$

HCS7 Two-Way Stop-Control Report

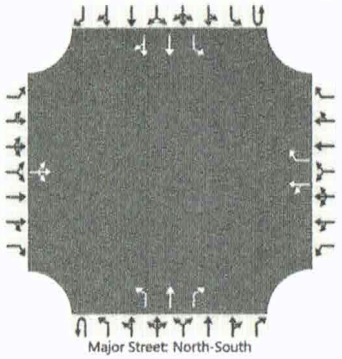
General Information

Analyst	James Kemp
Agency/Co.	O'Rourke Engineering
Date Performed	9/19/2019
Analysis Year	2019
Time Analyzed	PM Peak Hour
Intersection Orientation	North-South
Project Description	Existing

Site Information

Intersection	Colorado & Kindred
Jurisdiction	Stuart
East/West Street	Kindred St
North/South Street	Colorado Ave
Peak Hour Factor	0.91
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	1	0	1	1	1	0	1	2	0
Configuration			LTR			LT		R		L	T	R		L	T	TR
Volume (veh/h)		0	0	10		30	0	146	0	15	818	45		103	1035	1
Percent Heavy Vehicles (%)		3	3	3		3	3	3	3	3				3		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized						No				No						
Median Type | Storage		Left + Thru								1						

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.56	6.56	6.96		7.56	6.56	6.96		4.16				4.16		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.03	3.33		3.53	4.03	3.33		2.23				2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			11			33		160		16				113		
Capacity, c (veh/h)						146		280		604				714		
v/c Ratio						0.23		0.57		0.03				0.16		
95% Queue Length, Q_{95} (veh)						0.8		3.3		0.1				0.6		
Control Delay (s/veh)						36.7		33.8		11.1				11.0		
Level of Service (LOS)						E		D		B				B		
Approach Delay (s/veh)						34.3				0.2				1.0		
Approach LOS						D										

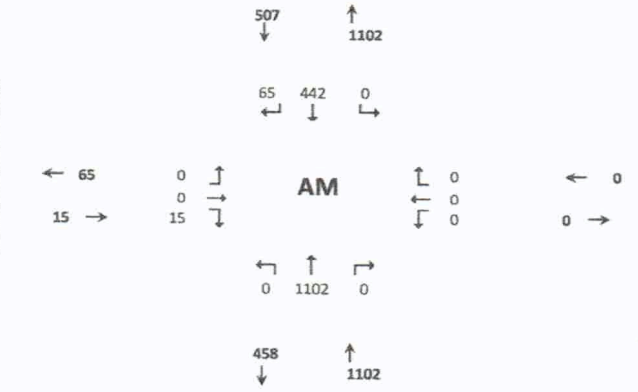
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Avg Intersection Delay = 3.3 s/v

TURNING MOVEMENT VOLUME COUNTS

N/S STREET: Colorado Ave **E/W STREET:** A St **CONTROL:** TWSC
FILENAME:
COUNT DATE: 9/19/2019 **DAY:** Thursday **CITY:** Stuart **INTERSECTION:**
REPORT DATE: 9/20/2019 **ANALYSIS YEAR:** 2019

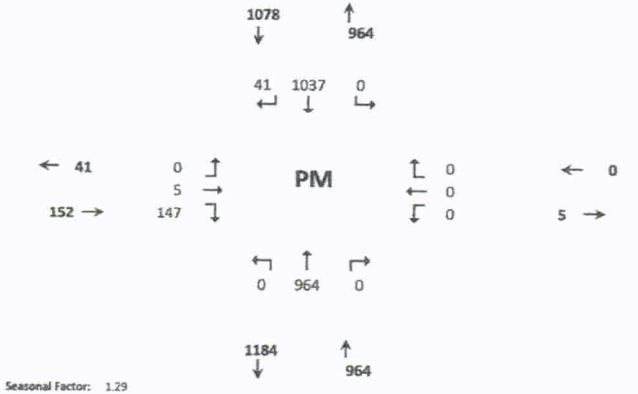
15 Min Period	Northbound			Southbound			Eastbound			Westbound				ONE HOUR SUM
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTAL	
7:00-7:15	0	109	0	0	48	3	0	0	4	0	0	0	164	933
7:15-7:30	0	148	0	0	67	9	0	0	2	0	0	0	226	1032
7:30-7:45	0	156	0	0	68	8	0	0	2	0	0	0	234	1139
7:45-8:00	0	214	0	1	76	15	0	0	3	0	0	0	309	1228
8:00-8:15	0	170	0	0	75	15	0	0	3	0	0	0	263	1259
8:15-8:30	0	225	0	0	89	15	0	0	4	0	0	0	333	
8:30-8:45	0	225	0	0	84	10	0	0	4	0	0	0	323	
8:45-9:00	0	234	0	0	95	10	0	0	1	0	0	0	340	
AM PEAK HOUR IS FROM:			8:00AM TO 9:00AM											
Volumes	0	854	0	0	343	50	0	0	12	0	0	0	1259	
Season Factor	0	1102	0	0	442	65	0	0	15	0	0	0	1624	
Growth	0	1102	0	0	442	65	0	0	15	0	0	0	1624	
In/Out	-	-	-	-	-	-	-	-	-	-	-	-	-	
Percentage	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
PROJECT	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	0	1102	0	0	442	65	0	0	15	0	0	0	1624	



Seasonal Factor: 1.29
Trips In
Trips Out
Growth Rate: 1
Years Grown:

COUNT DATE: 9/18/2019 **DAY:** Wednesday

15 Min Period lanes	Northbound			Southbound			Eastbound			Westbound				ONE HOUR SUM
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTAL	
4:00-4:15	0	183	0	0	196	7	0	0	14	0	0	0	400	1526
4:15-4:30	0	198	0	0	142	5	0	0	5	0	0	0	350	1594
4:30-4:45	0	167	0	0	204	8	0	0	19	0	0	0	398	1701
4:45-5:00	0	178	0	0	164	7	0	0	29	0	0	0	378	1671
5:00-5:15	0	186	0	0	226	12	0	3	41	0	0	0	468	1626
5:15-5:30	0	216	0	0	210	5	0	1	25	0	0	0	457	
5:30-5:45	0	178	0	0	160	6	0	0	24	0	0	0	368	
5:45-6:00	0	157	0	0	154	6	0	0	16	0	0	0	333	
PM PEAK HOUR IS FROM:			4:30 PM TO 5:30PM											
Volumes	0	747	0	0	804	32	0	4	114	0	0	0	1701	
Season Factor	0	964	0	0	1037	41	0	5	147	0	0	0	2194	
Growth	0	964	0	0	1037	41	0	5	147	0	0	0	2194	
In/Out	-	-	-	-	-	-	-	-	-	-	-	-	-	
Percentage	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Project	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	0	964	0	0	1037	41	0	5	147	0	0	0	2194	



Seasonal Factor: 1.29
Growth Rate: 1
Trips In:
Trips Out:
Years Grown: 0

HCS7 Two-Way Stop-Control Report

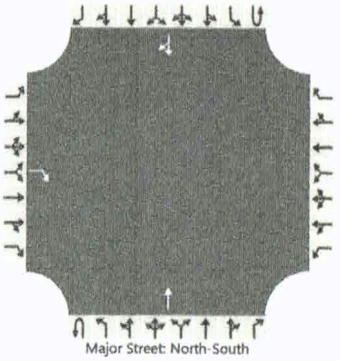
General Information

Analyst	James Kemp
Agency/Co.	O'Rourke Engineering
Date Performed	9/19/2019
Analysis Year	2019
Time Analyzed	AM Peak Hour
Intersection Orientation	North-South
Project Description	Existing

Site Information

Intersection	Colorado & A St
Jurisdiction	Stuart
East/West Street	A St
North/South Street	Colorado Ave
Peak Hour Factor	0.93
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	1		0	0	0	0	0	1	0	0	0	1	0
Configuration				R							T					TR
Volume (veh/h)				15							1102				442	65
Percent Heavy Vehicles (%)				3												
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No														
Median Type | Storage		Left + Thru								1						

Critical and Follow-up Headways

Base Critical Headway (sec)				6.2												
Critical Headway (sec)				6.23												
Base Follow-Up Headway (sec)				3.3												
Follow-Up Headway (sec)				3.33												

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				16												
Capacity, c (veh/h)				561												
v/c Ratio				0.03												
95% Queue Length, Q_{95} (veh)				0.1												
Control Delay (s/veh)				11.6												
Level of Service (LOS)				B												
Approach Delay (s/veh)		11.6														
Approach LOS		B														

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Average Intersection Delay = 0.1 s/v

HCS7 Two-Way Stop-Control Report

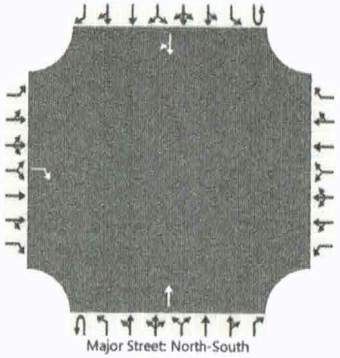
General Information

Analyst	James Kemp
Agency/Co.	O'Rourke Engineering
Date Performed	9/19/2019
Analysis Year	2019
Time Analyzed	PM Peak Hour
Intersection Orientation	North-South
Project Description	Existing

Site Information

Intersection	Colorado & A St
Jurisdiction	Stuart
East/West Street	A St
North/South Street	Colorado Ave
Peak Hour Factor	0.91
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	1		0	0	0	0	0	1	0	0	0	1	0
Configuration				R							T					TR
Volume (veh/h)				147							964				1037	41
Percent Heavy Vehicles (%)				3												
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No														
Median Type | Storage		Left + Thru								1						

Critical and Follow-up Headways

Base Critical Headway (sec)				6.2												
Critical Headway (sec)				6.23												
Base Follow-Up Headway (sec)				3.3												
Follow-Up Headway (sec)				3.33												

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				162												
Capacity, c (veh/h)				236												
v/c Ratio				0.68												
95% Queue Length, Q_{95} (veh)				4.4												
Control Delay (s/veh)				47.8												
Level of Service (LOS)				E												
Approach Delay (s/veh)		47.8														
Approach LOS		E														

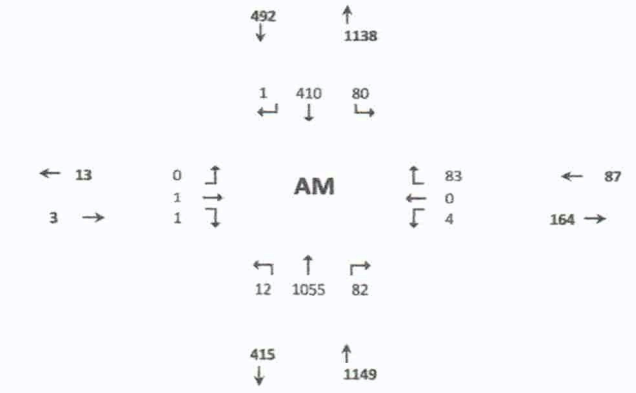
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Avg. Intersection Delay = 3.21/v

TURNING MOVEMENT VOLUME COUNTS

N/S STREET: Colorado Ave **E/W STREET:** Kindred St **CONTROL:** TWSC
FILENAME:
COUNT DATE: 9/19/2019 **DAY:** Thursday **CITY:** Stuart **INTERSECTION:**
REPORT DATE: 9/20/2019 **ANALYSIS YEAR:** 2021

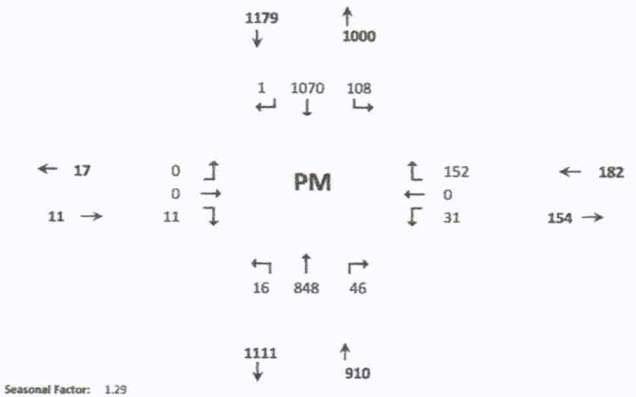
15 Min Period	Northbound NBL	NBT	NBR	Southbound SBL	SBT	SBR	Eastbound EBL	EBT	EBR	Westbound WBL	WBT	WBR	TOTAL	ONE HOUR SUM
7:00-7:15	1	100	8	5	51	0	0	0	0	0	0	9	174	987
7:15-7:30	1	143	14	8	59	1	0	0	0	1	0	5	232	1076
7:30-7:45	17	150	16	8	62	0	0	0	0	1	0	6	260	1189
7:45-8:00	3	204	22	9	69	1	0	0	2	1	0	10	321	1265
8:00-8:15	1	155	15	17	60	0	0	0	0	0	0	15	263	1298
8:15-8:30	3	209	22	18	74	1	0	1	0	1	0	16	345	
8:30-8:45	2	209	11	7	91	0	0	0	0	0	0	16	336	
8:45-9:00	3	219	14	18	82	0	0	0	1	2	0	15	354	
AM PEAK HOUR IS FROM:			8:00AM TO 9:00AM											
Volumes	9	792	62	60	307	1	0	1	1	3	0	62	1298	
Season Factor	12	1022	80	77	396	1	0	1	1	4	0	80	1674	
Growth	12	1050	82	80	407	1	0	1	1	4	0	82	1722	
In/Out	-	IN	-	OUT	OUT	-	-	-	-	-	-	IN	-	
Percentage	0%	35%	0%	10%	35%	0%	0%	0%	0%	0%	0%	10%	0%	
PROJECT	0	4	0	1	3	0	0	0	0	0	0	1	**0**	
Total	12	1055	82	80	410	1	0	1	1	4	0	83	1730	



Seasonal Factor: 1.29
Trips In 12
Trips Out 8
Growth Rate: 1.014
Years Grown. 2

COUNT DATE: 9/18/2019 **DAY:** Wednesday

15 Min Period lanes	Northbound NBL	NBT	NBR	Southbound SBL	SBT	SBR	Eastbound EBL	EBT	EBR	Westbound WBL	WBT	WBR	TOTAL	ONE HOUR SUM
4:00-4:15	7	157	7	15	194	2	1	0	1	2	0	26	412	1607
4:15-4:30	7	176	8	18	160	1	0	0	1	1	0	22	394	1633
4:30-4:45	2	146	8	23	201	0	0	0	1	6	0	21	408	1708
4:45-5:00	1	149	9	21	170	0	0	0	2	12	0	29	393	1668
5:00-5:15	3	161	10	15	221	0	0	0	2	1	0	25	438	1585
5:15-5:30	6	178	8	21	210	1	0	0	3	4	0	38	469	
5:30-5:45	3	153	6	16	158	0	1	0	0	6	0	25	368	
5:45-6:00	5	145	3	13	127	0	0	0	0	5	0	12	310	
PM PEAK HOUR IS FROM:			4:30 PM TO 5:30PM											
Volumes	12	634	35	80	802	1	0	0	8	23	0	113	1708	
Season Factor	15	818	45	103	1035	1	0	0	10	30	0	146	2203	
Growth	16	841	46	106	1064	1	0	0	11	31	0	150	2265	
In/Out	-	IN	-	OUT	OUT	-	-	-	-	-	-	IN	-	
Percentage	0%	35%	0%	10%	35%	0%	0%	0%	0%	0%	0%	10%	0%	
Project	0	7	0	2	6	0	0	0	0	0	0	2	**0**	
Total	16	848	46	108	1070	1	0	0	11	31	0	152	2283	



Seasonal Factor: 1.29
Growth Rate: 1.014
Trips In: 20
Trips Out: 18
Years Grown. 2

HCS7 Two-Way Stop-Control Report

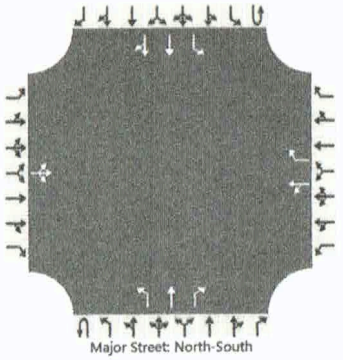
General Information

Analyst	James Kemp
Agency/Co.	O'Rourke Engineering
Date Performed	9/19/2019
Analysis Year	2021
Time Analyzed	AM Peak Hour
Intersection Orientation	North-South
Project Description	With Project

Site Information

Intersection	Colorado & Kindred
Jurisdiction	Stuart
East/West Street	Kindred St
North/South Street	Colorado Ave
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	1	0	1	1	1	0	1	2	0
Configuration			LTR			LT		R		L	T	R		L	T	TR
Volume (veh/h)		0	1	1		4	0	83	0	12	1055	82		80	410	1
Percent Heavy Vehicles (%)		3	3	3		3	3	3	3	3				3		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized					Yes				No							
Median Type | Storage	Left + Thru								1							

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.56	6.56	6.96		7.56	6.56	6.96		4.16				4.16		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.03	3.33		3.53	4.03	3.33		2.23				2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			2			4		90		13				87		
Capacity, c (veh/h)			207			153		191		1103				554		
v/c Ratio			0.01			0.03		0.47		0.01				0.16		
95% Queue Length, Q_{95} (veh)			0.0			0.1		2.3		0.0				0.6		
Control Delay (s/veh)			22.6			29.1		39.6		8.3				12.7		
Level of Service (LOS)			C			D		E		A				B		
Approach Delay (s/veh)	22.6				39.2				0.1				2.1			
Approach LOS	C				E											

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Avg Intersection Delay = 2.6 s/v

HCS7 Two-Way Stop-Control Report

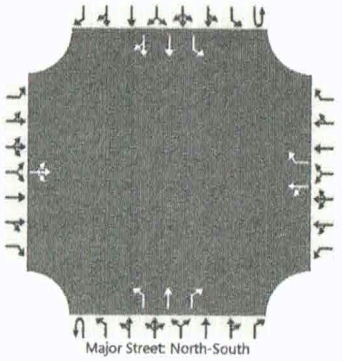
General Information

Analyst	James Kemp
Agency/Co.	O'Rourke Engineering
Date Performed	9/19/2019
Analysis Year	2021
Time Analyzed	PM Peak Hour
Intersection Orientation	North-South
Project Description	With Project

Site Information

Intersection	Colorado & Kindred
Jurisdiction	Stuart
East/West Street	Kindred St
North/South Street	Colorado Ave
Peak Hour Factor	0.91
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	1	0	1	1	1	0	1	2	0
Configuration			LTR			LT		R		L	T	R		L	T	TR
Volume (veh/h)		0	0	11		31	0	152	0	16	848	46		108	1070	1
Percent Heavy Vehicles (%)		3	3	3		3	3	3	3	3				3		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized						Yes				No						
Median Type | Storage		Left + Thru								1						

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.56	6.56	6.96		7.56	6.56	6.96		4.16				4.16		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.03	3.33		3.53	4.03	3.33		2.23				2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			12			34		167		18				119		
Capacity, c (veh/h)						136		266		584				693		
v/c Ratio						0.25		0.63		0.03				0.17		
95% Queue Length, Q_{95} (veh)						0.9		3.9		0.1				0.6		
Control Delay (s/veh)						40.1		38.8		11.4				11.3		
Level of Service (LOS)						E		E		B				B		
Approach Delay (s/veh)						39.0				0.2				1.0		
Approach LOS						E										

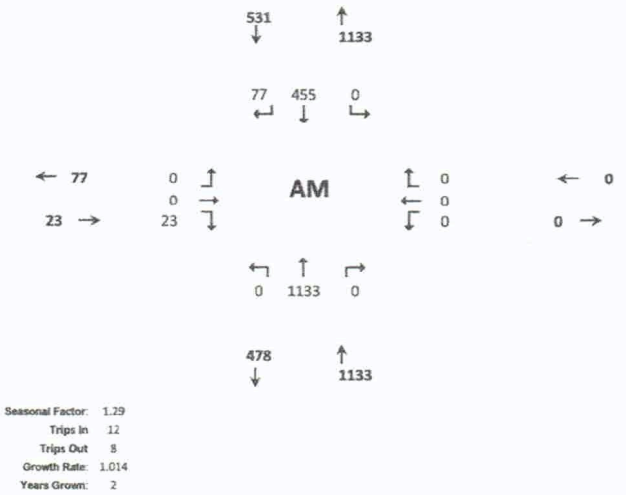
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Avg. Intersection Delay = 3.7 s/v

TURNING MOVEMENT VOLUME COUNTS

N/S STREET: Colorado Ave **E/W STREET:** A St **CONTROL:** TWSC
FILENAME:
COUNT DATE: 9/19/2019 **DAY:** Thursday **CITY:** Stuart **INTERSECTION:**
REPORT DATE: 9/20/2019 **ANALYSIS YEAR:** 2021

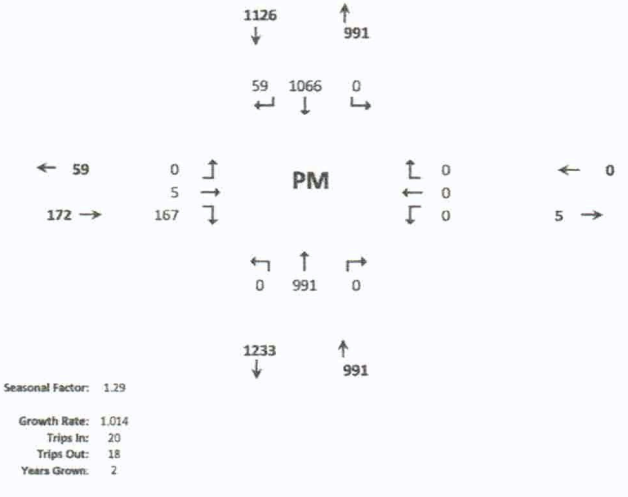
15 Min Period	Northbound			Southbound			Eastbound			Westbound				ONE HOUR SUM
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTAL	
7:00-7:15	0	109	0	0	48	3	0	0	4	0	0	0	164	933
7:15-7:30	0	148	0	0	67	9	0	0	2	0	0	0	226	1032
7:30-7:45	0	156	0	0	68	8	0	0	2	0	0	0	234	1139
7:45-8:00	0	214	0	1	76	15	0	0	3	0	0	0	309	1228
8:00-8:15	0	170	0	0	75	15	0	0	3	0	0	0	263	1259
8:15-8:30	0	225	0	0	89	15	0	0	4	0	0	0	333	
8:30-8:45	0	225	0	0	84	10	0	0	4	0	0	0	323	
8:45-9:00	0	234	0	0	95	10	0	0	1	0	0	0	340	
AM PEAK HOUR IS FROM:			8:00AM TO 9:00AM											
Volumes	0	854	0	0	343	50	0	0	12	0	0	0	1259	
Season Factor	0	1102	0	0	442	65	0	0	15	0	0	0	1624	
Growth	0	1133	0	0	455	66	0	0	16	0	0	0	1670	
In/Out	-	-	-	-	-	IN	-	-	OUT	-	-	-	-	
Percentage	0%	0%	0%	0%	0%	85%	0%	0%	85%	0%	0%	0%	0%	
PROJECT	0	0	0	0	0	10	0	0	7	0	0	0	0	
Total	0	1133	0	0	455	77	0	0	23	0	0	0	1687	



Seasonal Factor: 1.29
Trips In 12
Trips Out 8
Growth Rate: 1.014
Years Grown: 2

COUNT DATE: 9/18/2019 **DAY:** Wednesday

15 Min Period lanes	Northbound			Southbound			Eastbound			Westbound				ONE HOUR SUM
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTAL	
4:00-4:15	0	183	0	0	196	7	0	0	14	0	0	0	400	1526
4:15-4:30	0	198	0	0	142	5	0	0	5	0	0	0	350	1594
4:30-4:45	0	167	0	0	204	8	0	0	19	0	0	0	398	1701
4:45-5:00	0	178	0	0	164	7	0	0	29	0	0	0	378	1671
5:00-5:15	0	186	0	0	226	12	0	3	41	0	0	0	468	1626
5:15-5:30	0	216	0	0	210	5	0	1	25	0	0	0	457	
5:30-5:45	0	178	0	0	160	6	0	0	24	0	0	0	368	
5:45-6:00	0	157	0	0	154	6	0	0	16	0	0	0	333	
PM PEAK HOUR IS FROM:			4:30 PM TO 5:30PM											
Volumes	0	747	0	0	804	32	0	4	114	0	0	0	1701	
Season Factor	0	964	0	0	1037	41	0	5	147	0	0	0	2194	
Growth	0	991	0	0	1066	42	0	5	151	0	0	0	2256	
In/Out	-	-	-	-	-	IN	-	-	OUT	-	-	-	-	
Percentage	0%	0%	0%	0%	0%	85%	0%	0%	85%	0%	0%	0%	0%	
Project	0	0	0	0	0	17	0	0	15	0	0	0	0	
Total	0	991	0	0	1066	59	0	5	167	0	0	0	2288	



Seasonal Factor: 1.29
Growth Rate: 1.014
Trips In: 20
Trips Out: 18
Years Grown: 2

HCS7 Two-Way Stop-Control Report

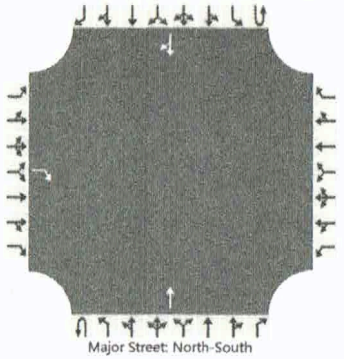
General Information

Analyst	James Kemp
Agency/Co.	O'Rourke Engineering
Date Performed	9/19/2019
Analysis Year	2021
Time Analyzed	AM Peak Hour
Intersection Orientation	North-South
Project Description	With Project

Site Information

Intersection	Colorado & A St
Jurisdiction	Stuart
East/West Street	A St
North/South Street	Colorado Ave
Peak Hour Factor	0.93
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	1		0	0	0	0	0	1	0	0	0	1	0
Configuration				R							T					TR
Volume (veh/h)				23							1133				455	77
Percent Heavy Vehicles (%)				3												
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		Yes														
Median Type | Storage		Left + Thru								1						

Critical and Follow-up Headways

Base Critical Headway (sec)				6.2												
Critical Headway (sec)				6.23												
Base Follow-Up Headway (sec)				3.3												
Follow-Up Headway (sec)				3.33												

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				25												
Capacity, c (veh/h)				546												
v/c Ratio				0.05												
95% Queue Length, Q_{95} (veh)				0.1												
Control Delay (s/veh)				11.9												
Level of Service (LOS)				B												
Approach Delay (s/veh)		11.9														
Approach LOS		B														

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Avg Intersection Delay = 0.2 s/v

HCS7 Two-Way Stop-Control Report

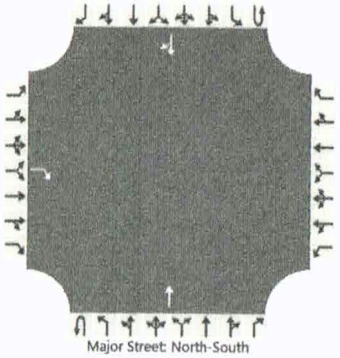
General Information

Analyst	James Kemp
Agency/Co.	O'Rourke Engineering
Date Performed	9/19/2019
Analysis Year	2021
Time Analyzed	PM Peak Hour
Intersection Orientation	North-South
Project Description	With Project

Site Information

Intersection	Colorado & A St
Jurisdiction	Stuart
East/West Street	A St
North/South Street	Colorado Ave
Peak Hour Factor	0.91
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	1		0	0	0	0	0	1	0	0	0	1	0
Configuration				R							T					TR
Volume (veh/h)				167							991				1066	59
Percent Heavy Vehicles (%)				3												
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		Yes														
Median Type | Storage		Left + Thru									1					

Critical and Follow-up Headways

Base Critical Headway (sec)				6.2												
Critical Headway (sec)				6.23												
Base Follow-Up Headway (sec)				3.3												
Follow-Up Headway (sec)				3.33												

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				184												
Capacity, c (veh/h)				223												
v/c Ratio				0.82												
95% Queue Length, Q_{95} (veh)				6.2												
Control Delay (s/veh)				68.0												
Level of Service (LOS)				F												
Approach Delay (s/veh)		68.0														
Approach LOS		F														

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HCS™ TWSC Version 7.8
C6 - Colorado & A St - PM - 2021.xtw

Generated: 10/1/2019 3:41:59 PM

Avg Intersection Delay = 5.0 sec/v

2018 PEAK SEASON FACTOR CATEGORY REPORT - REPORT TYPE: ALL
CATEGORY: 8900 EAST- A1A TO US1

WEEK	DATES	SF	MOCF: 0.87 PSCF
1	01/01/2018 - 01/06/2018	1.02	1.17
2	01/07/2018 - 01/13/2018	0.98	1.13
3	01/14/2018 - 01/20/2018	0.94	1.08
* 4	01/21/2018 - 01/27/2018	0.91	1.05
* 5	01/28/2018 - 02/03/2018	0.89	1.02
* 6	02/04/2018 - 02/10/2018	0.86	0.99
* 7	02/11/2018 - 02/17/2018	0.84	0.97
* 8	02/18/2018 - 02/24/2018	0.84	0.97
* 9	02/25/2018 - 03/03/2018	0.84	0.97
*10	03/04/2018 - 03/10/2018	0.84	0.97
*11	03/11/2018 - 03/17/2018	0.84	0.97
*12	03/18/2018 - 03/24/2018	0.85	0.98
*13	03/25/2018 - 03/31/2018	0.87	1.00
*14	04/01/2018 - 04/07/2018	0.88	1.01
*15	04/08/2018 - 04/14/2018	0.90	1.03
*16	04/15/2018 - 04/21/2018	0.92	1.06
17	04/22/2018 - 04/28/2018	0.96	1.10
18	04/29/2018 - 05/05/2018	1.01	1.16
19	05/06/2018 - 05/12/2018	1.06	1.22
20	05/13/2018 - 05/19/2018	1.11	1.28
21	05/20/2018 - 05/26/2018	1.11	1.28
22	05/27/2018 - 06/02/2018	1.10	1.26
23	06/03/2018 - 06/09/2018	1.10	1.26
24	06/10/2018 - 06/16/2018	1.09	1.25
25	06/17/2018 - 06/23/2018	1.09	1.25
26	06/24/2018 - 06/30/2018	1.09	1.25
27	07/01/2018 - 07/07/2018	1.09	1.25
28	07/08/2018 - 07/14/2018	1.09	1.25
29	07/15/2018 - 07/21/2018	1.10	1.26
30	07/22/2018 - 07/28/2018	1.10	1.26
31	07/29/2018 - 08/04/2018	1.10	1.26
32	08/05/2018 - 08/11/2018	1.11	1.28
33	08/12/2018 - 08/18/2018	1.11	1.28
34	08/19/2018 - 08/25/2018	1.11	1.28
35	08/26/2018 - 09/01/2018	1.12	1.29
36	09/02/2018 - 09/08/2018	1.12	1.29
37	09/09/2018 - 09/15/2018	1.12	1.29
38	09/16/2018 - 09/22/2018	1.12	1.29
39	09/23/2018 - 09/29/2018	1.12	1.29
40	09/30/2018 - 10/06/2018	1.12	1.29
41	10/07/2018 - 10/13/2018	1.12	1.29
42	10/14/2018 - 10/20/2018	1.12	1.29
43	10/21/2018 - 10/27/2018	1.10	1.26
44	10/28/2018 - 11/03/2018	1.09	1.25
45	11/04/2018 - 11/10/2018	1.07	1.23
46	11/11/2018 - 11/17/2018	1.05	1.21
47	11/18/2018 - 11/24/2018	1.04	1.20
48	11/25/2018 - 12/01/2018	1.03	1.18
49	12/02/2018 - 12/08/2018	1.02	1.17
50	12/09/2018 - 12/15/2018	1.02	1.17
51	12/16/2018 - 12/22/2018	0.99	1.14
52	12/23/2018 - 12/29/2018	0.96	1.10
53	12/30/2018 - 12/31/2018	0.94	1.08

* PEAK SEASON

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