



TECHNICAL MEMORANDUM

TO: Cynthia Tarapani
 Tarapani Planning Strategies, LLC

FROM: Michael D. Raysor, P.E.
 RAYSOR Transportation Consulting, LLC

SUBJECT: McMullen Booth Road Medical Office Development
 Traffic Study Supplement

DATE: October 30, 2019



1.0 INTRODUCTION

This technical memorandum documents a traffic study supplement performed in association with the proposed development of an 18,000 square foot medical office on the two acre site consisting of Pinellas County parcel no. 16/28/16/00000/240/0140, located on the east side of McMullen Booth Road, approximately 700 feet north of Curlew Road, in Palm Harbor, Florida. This supplement expands upon the analysis documented in the traffic study report dated 08/01/19 (hereinafter referred to as the “original” traffic study), and relies upon certain data documented in that report. The purpose of this supplement is to (A) provide traffic operation information for the intersection of McMullen Booth Road at Oakhaven Drive, located north of the subject project site, as that intersection is expected to accommodate project generated u-turn traffic, and (B) provide trip generation estimates for certain land uses that are currently allowed for development within the project site’s current Comprehensive Plan future land use and zoning categories.

2.0 OAKHAVEN DRIVE INTERSECTION

Traffic operational analyses were performed for the intersection of McMullen Booth Road at Oakhaven Drive for AM and PM peak hour traffic conditions. The analysis was performed for two scenarios; one scenario that does not include the development of the subject medical office and one scenario that does include the development of the subject medical office. The analysis was performed consistent with the procedures used and documented in the “original” traffic study. The results of the analysis indicate that no material changes are anticipated as a result of the development of the subject medical office. Specifically, the analysis identified



that no changes to the operating levels of service for intersection traffic movements would result, and that any changes to other metrics such as vehicular delay and volume-to-capacity ratios are insignificant and would not be perceptible to the motoring public. Attachment “A” documents the analysis performed for the intersection of McMullen Booth Road at Oakhaven Drive.

3.0 CURRENTLY ALLOWABLE USE TRIP GENERATION ESTIMATES

Trip generation estimates were performed for certain land uses that are currently allowed for development within the project site’s current Comprehensive Plan future land use and zoning categories, and compared to the trip generation estimate for the subject medical office. The trip estimates were performed consistent with the procedures used and documented in the “original” traffic study, as summarized in Table 1.0 below; where allowable use data and development size was provided by Tarapani Planning Strategies, LLC.

TABLE 1.0 TRIP GENERATION ESTIMATE SUMMARY

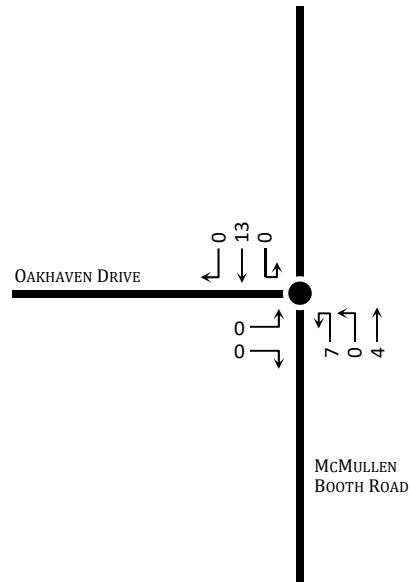
Scenario	ITE LUC	Land Use	Size	Daily Trips	Peak Hour Trips
Proposed Use	720	Medical Office	18,000 sf	604	63
Allowable Uses	492	Health/Fitness Club	18,000 sf	889	80
	493	Athletic Club	18,000 sf	1,255	113

4.0 CONCLUSIONS

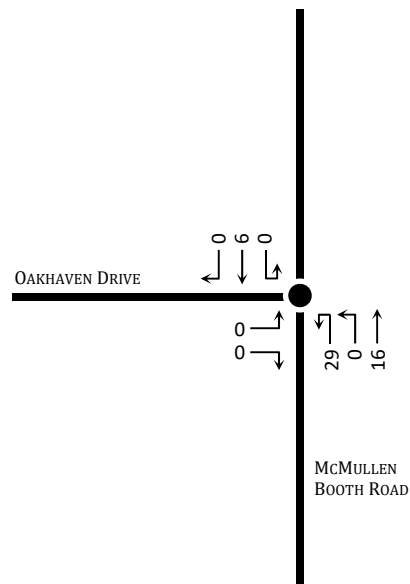
The data, analysis and findings documented in this supplemental traffic study concludes the following:

- ❖ No material changes to the traffic operating conditions at the intersection of McMullen Booth Road at Oakhaven Drive are anticipated as a result of the development of the subject medical office.
- ❖ Certain land uses that are currently allowed for development on the project site are anticipated to generate more traffic than the subject medical office.

ATTACHMENT "A"



AM PEAK HOUR

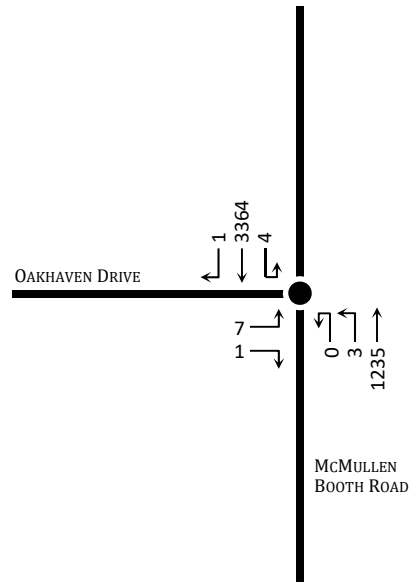


PM PEAK HOUR

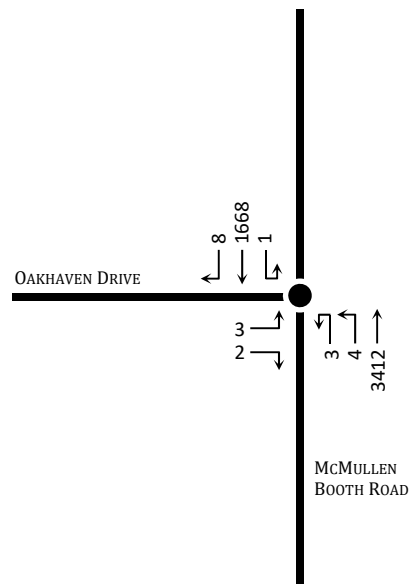
McMULLEN BOOTH ROAD MEDICAL OFFICE DEVELOPMENT
Peak Hour Project Generated Traffic Volumes



ATTACHMENT "A"



AM PEAK HOUR

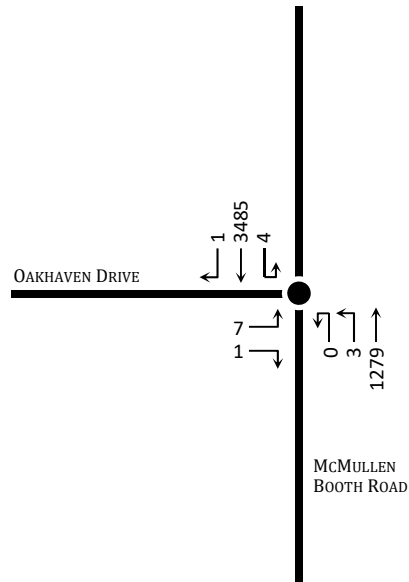


PM PEAK HOUR

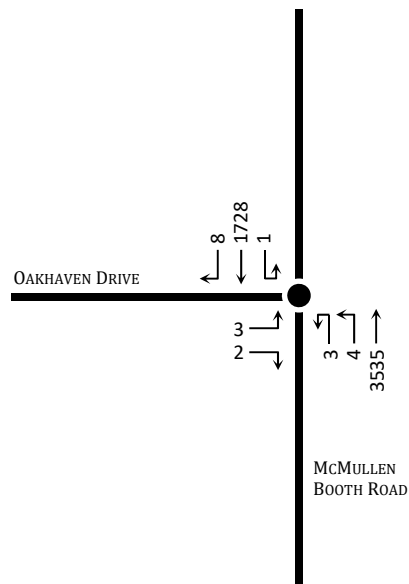
McMULLEN BOOTH ROAD MEDICAL OFFICE DEVELOPMENT
Peak Hour Existing Traffic Volumes



ATTACHMENT "A"



AM PEAK HOUR

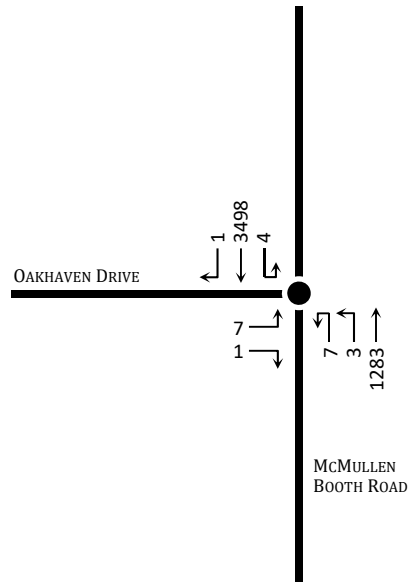


PM PEAK HOUR

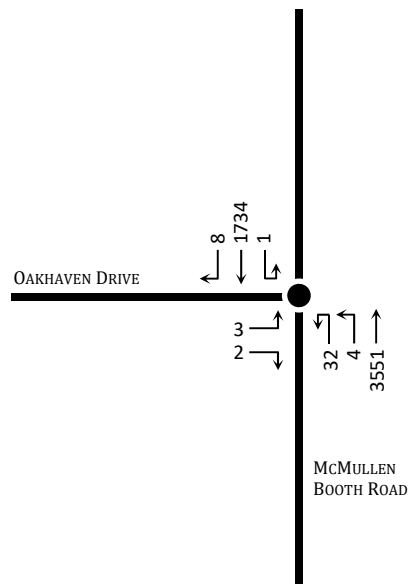
McMULLEN BOOTH ROAD MEDICAL OFFICE DEVELOPMENT
 Peak Hour Background Traffic Volumes



ATTACHMENT "A"



AM PEAK HOUR



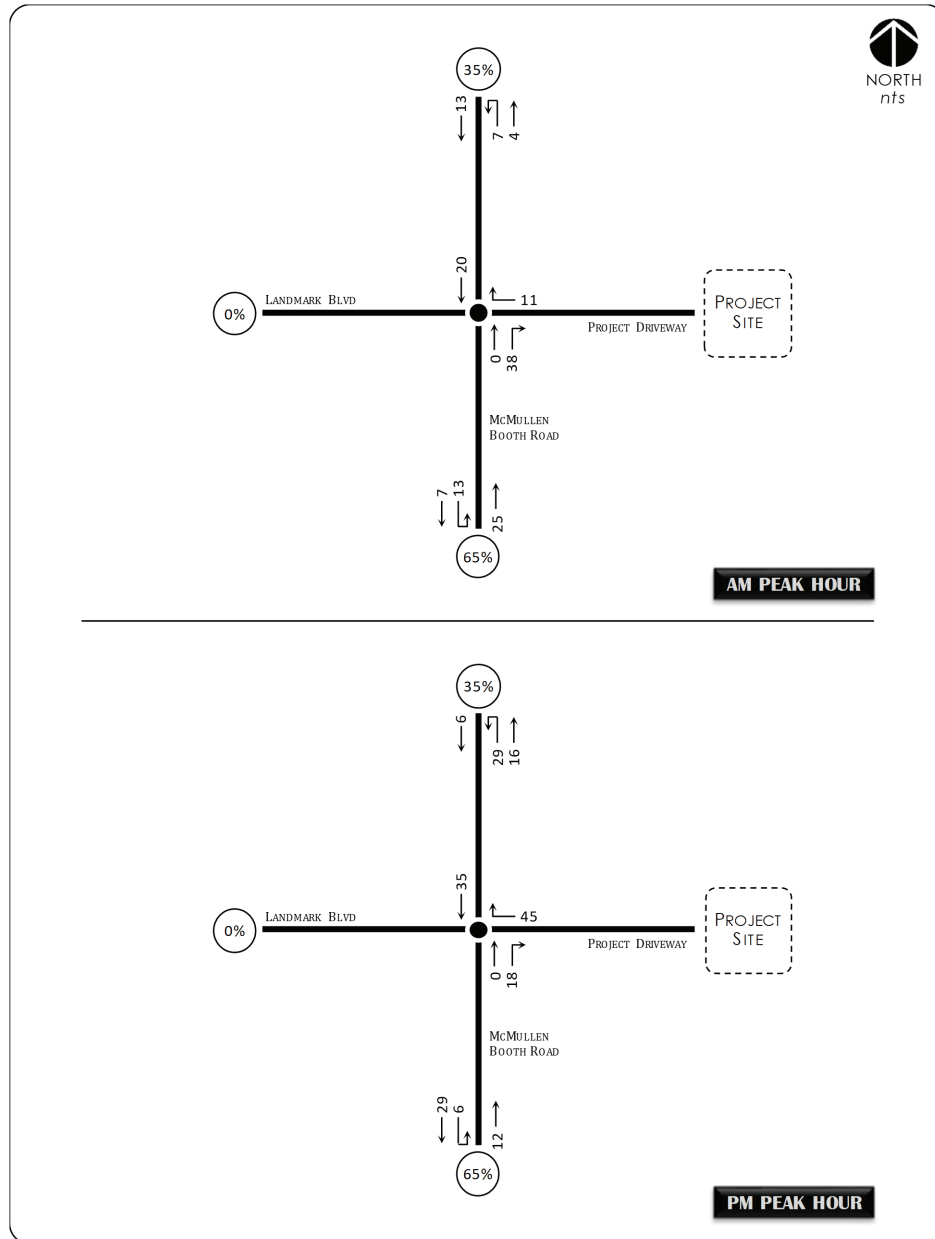
PM PEAK HOUR

McMULLEN BOOTH ROAD MEDICAL OFFICE DEVELOPMENT
Peak Hour Post-Development Total Traffic Volumes



ATTACHMENT "A"

FIGURE 1.0 PROPOSED MEDICAL OFFICE DEVELOPMENT PEAK HOUR TRIP DISTRIBUTION ESTIMATE



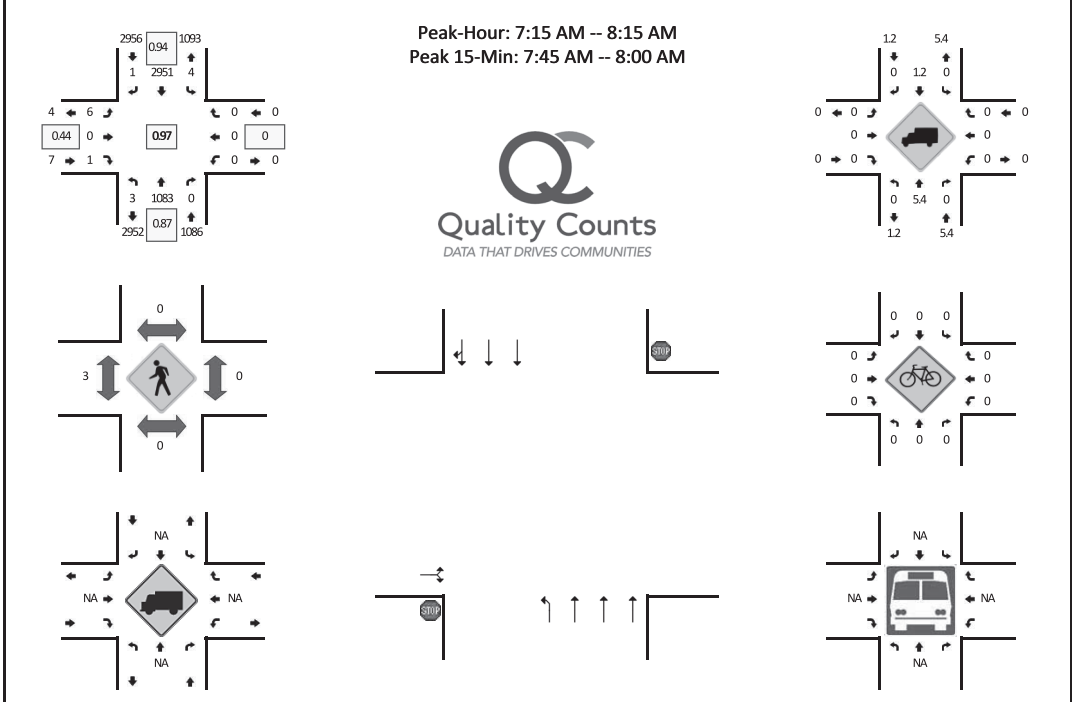
ATTACHMENT "A"

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: McMullen Booth Rd -- Oakhaven Dr
CITY/STATE: Pinellas, FL

QC JOB #: 15056301
DATE: Wed, Aug 28 2019



15-Min Count Period Beginning At	McMullen Booth Rd (Northbound)				McMullen Booth Rd (Southbound)				Oakhaven Dr (Eastbound)				Oakhaven Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	229	0	0	0	763	0	0	2	0	0	0	0	0	0	0	994	
7:15 AM	1	253	0	0	0	787	0	2	1	0	0	0	0	0	0	0	1044	
7:30 AM	1	254	0	0	0	698	1	0	1	0	0	0	0	0	0	0	955	
7:45 AM	1	312	0	0	0	733	0	0	1	0	0	0	0	0	0	0	1047	4040
8:00 AM	0	264	0	0	0	733	0	2	3	0	1	0	0	0	0	0	1003	4049
8:15 AM	1	265	0	0	0	688	1	0	2	0	3	0	0	0	0	0	960	3965
8:30 AM	0	285	0	0	0	644	2	0	0	0	2	0	0	0	0	0	933	3943
8:45 AM	0	299	0	0	0	615	2	0	0	0	1	0	0	0	0	0	917	3813
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	4	1248	0	0	0	2932	0	0	4	0	0	0	0	0	0	0	4188	
Heavy Trucks	0	96	0	0	0	28	0	0	0	0	0	0	0	0	0	0	124	
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Railroad																		
Stopped Buses																		

Comments:

Report generated on 9/3/2019 11:40 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

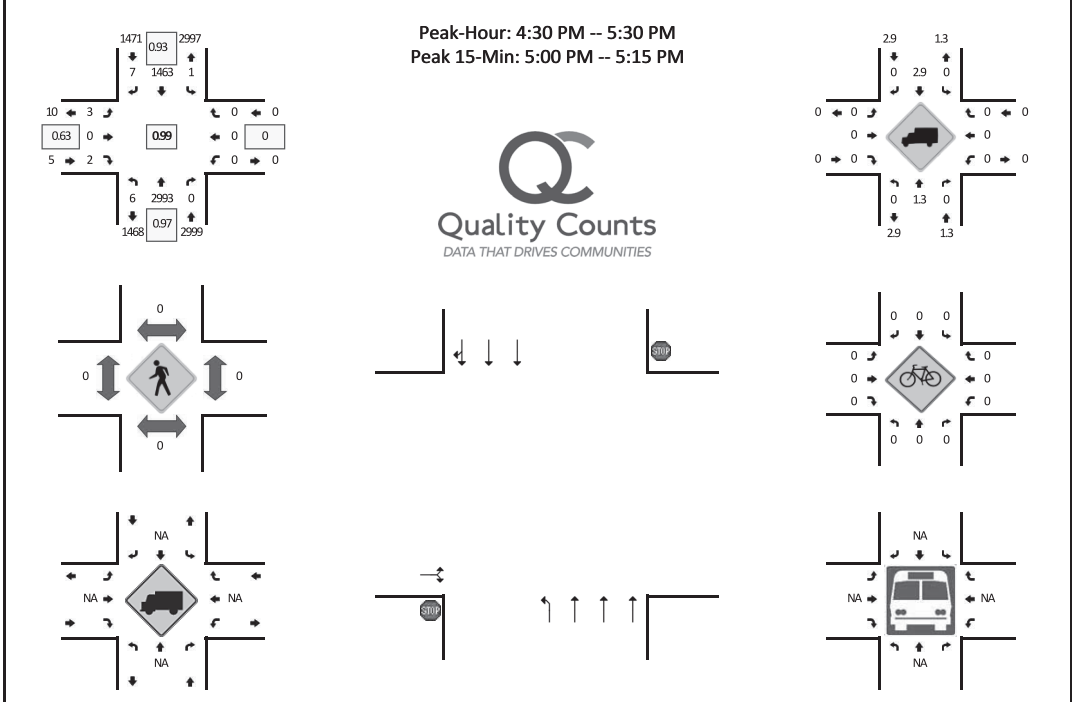
ATTACHMENT "A"

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: McMullen Booth Rd -- Oakhaven Dr
CITY/STATE: Pinellas, FL

QC JOB #: 15056302
DATE: Wed, Aug 28 2019



15-Min Count Period Beginning At	McMullen Booth Rd (Northbound)				McMullen Booth Rd (Southbound)				Oakhaven Dr (Eastbound)				Oakhaven Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	3	682	0	0	0	326	0	0	1	0	1	0	0	0	0	0	1013	
4:15 PM	1	726	0	0	0	278	3	0	1	0	1	0	0	0	0	0	1010	
4:30 PM	0	733	0	1	0	356	1	0	1	0	1	0	0	0	0	0	1093	
4:45 PM	0	722	0	0	0	391	3	0	2	0	0	0	0	0	0	0	1118	4234
5:00 PM	2	769	0	1	0	356	2	1	0	0	1	0	0	0	0	0	1132	4353
5:15 PM	1	769	0	1	0	360	1	0	0	0	0	0	0	0	0	0	1132	4475
5:30 PM	0	673	0	0	0	395	3	0	1	0	2	0	0	0	0	0	1074	4456
5:45 PM	1	679	0	0	0	375	0	0	0	0	1	0	0	0	0	0	1056	4394
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	8	3076	0	4	0	1424	8	4	0	0	4	0	0	0	0	0	4528	
Heavy Trucks	0	48	0		0	32	0		0	0	0		0	0	0		80	
Pedestrians	0	0			0	0			0	0			0	0			0	
Bicycles	0	0			0	0			0	0			0	0			0	
Railroad																		
Stopped Buses																		

Comments:

Report generated on 9/3/2019 11:40 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

ATTACHMENT "A"

2018 PEAK SEASON FACTOR CATEGORY REPORT - REPORT TYPE: ALL
 CATEGORY: 1500 PINELLAS COUNTYWIDE

MOCF: 0.93



















WEEK	DATES	SF	PSCF
1	01/01/2018 - 01/06/2018	1.07	1.15
2	01/07/2018 - 01/13/2018	1.06	1.14
3	01/14/2018 - 01/20/2018	1.04	1.12
4	01/21/2018 - 01/27/2018	1.02	1.10
5	01/28/2018 - 02/03/2018	0.99	1.06
* 6	02/04/2018 - 02/10/2018	0.96	1.03
* 7	02/11/2018 - 02/17/2018	0.93	1.00
* 8	02/18/2018 - 02/24/2018	0.93	1.00
* 9	02/25/2018 - 03/03/2018	0.92	0.99
*10	03/04/2018 - 03/10/2018	0.92	0.99
*11	03/11/2018 - 03/17/2018	0.91	0.98
*12	03/18/2018 - 03/24/2018	0.92	0.99
*13	03/25/2018 - 03/31/2018	0.92	0.99
*14	04/01/2018 - 04/07/2018	0.93	1.00
*15	04/08/2018 - 04/14/2018	0.93	1.00
*16	04/15/2018 - 04/21/2018	0.94	1.01
*17	04/22/2018 - 04/28/2018	0.96	1.03
*18	04/29/2018 - 05/05/2018	0.98	1.05
19	05/06/2018 - 05/12/2018	1.00	1.08
20	05/13/2018 - 05/19/2018	1.02	1.10
21	05/20/2018 - 05/26/2018	1.01	1.09
22	05/27/2018 - 06/02/2018	0.99	1.06
23	06/03/2018 - 06/09/2018	0.98	1.05
24	06/10/2018 - 06/16/2018	0.97	1.04
25	06/17/2018 - 06/23/2018	0.98	1.05
26	06/24/2018 - 06/30/2018	0.98	1.05
27	07/01/2018 - 07/07/2018	0.99	1.06
28	07/08/2018 - 07/14/2018	1.00	1.08
29	07/15/2018 - 07/21/2018	1.00	1.08
30	07/22/2018 - 07/28/2018	1.01	1.09
31	07/29/2018 - 08/04/2018	1.02	1.10
32	08/05/2018 - 08/11/2018	1.02	1.10
33	08/12/2018 - 08/18/2018	1.03	1.11
34	08/19/2018 - 08/25/2018	1.04	1.13
35	08/26/2018 - 09/01/2018	1.06	1.14
36	09/02/2018 - 09/08/2018	1.07	1.15
37	09/09/2018 - 09/15/2018	1.08	1.16
38	09/16/2018 - 09/22/2018	1.08	1.16
39	09/23/2018 - 09/29/2018	1.07	1.15
40	09/30/2018 - 10/06/2018	1.06	1.14
41	10/07/2018 - 10/13/2018	1.05	1.13
42	10/14/2018 - 10/20/2018	1.05	1.13
43	10/21/2018 - 10/27/2018	1.05	1.13
44	10/28/2018 - 11/03/2018	1.05	1.13
45	11/04/2018 - 11/10/2018	1.04	1.12
46	11/11/2018 - 11/17/2018	1.04	1.12
47	11/18/2018 - 11/24/2018	1.05	1.13
48	11/25/2018 - 12/01/2018	1.06	1.14
49	12/02/2018 - 12/08/2018	1.06	1.14
50	12/09/2018 - 12/15/2018	1.07	1.15
51	12/16/2018 - 12/22/2018	1.06	1.14
52	12/23/2018 - 12/29/2018	1.05	1.13
53	12/30/2018 - 12/31/2018	1.04	1.12

* PEAK SEASON

ATTACHMENT "A"

HCM Unsignalized Intersection Capacity Analysis 200: McMullen Booth Road & Oakhaven Drive



















McMullen Medical Development
AM Peak Hour Background Traffic

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	0	1	0	0	0	3	1279	0	4	3485	1
Future Volume (Veh/h)	7	0	1	0	0	0	3	1279	0	4	3485	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			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
Hourly flow rate (vph)	7	0	1	0	0	0	3	1319	0	4	3593	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	4047	4926	1198	2532	4927	440	3594			1319		
vC1, stage 1 conf vol	3602	3602		1325	1325							
vC2, stage 2 conf vol	446	1325		1207	3602							
vCu, unblocked vol	4047	4926	1198	2532	4927	440	3594			1319		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	100	99	100	100	100	96			99		
cM capacity (veh/h)	5	14	181	118	12	571	67			531		
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3			
Volume Total	7	1	3	440	440	440	902	1796	899			
Volume Left	7	0	3	0	0	0	4	0	0			
Volume Right	0	1	0	0	0	0	0	0	1			
cSH	5	181	67	1700	1700	1700	531	1700	1700			
Volume to Capacity	1.30	0.01	0.04	0.26	0.26	0.26	0.01	1.06	0.53			
Queue Length 95th (ft)	43	0	3	0	0	0	1	0	0			
Control Delay (s)	1367.2	25.0	60.8	0.0	0.0	0.0	0.2	0.0	0.0			
Lane LOS	F	D	F				A					
Approach Delay (s)	1199.4		0.1				0.1					
Approach LOS	F											
Intersection Summary												
Average Delay			2.0									
Intersection Capacity Utilization			80.1%			ICU Level of Service				D		
Analysis Period (min)			15									

ATTACHMENT "A"

HCM Unsignalized Intersection Capacity Analysis 200: McMullen Booth Road & Oakhaven Drive



















McMullen Medical Development
AM Peak Hour Post-Development Traffic

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	0	1	0	0	0	10	1283	0	4	3498	1
Future Volume (Veh/h)	7	0	1	0	0	0	10	1283	0	4	3498	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			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
Hourly flow rate (vph)	7	0	1	0	0	0	10	1323	0	4	3606	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	4076	4958	1202	2554	4958	441	3607			1323		
vC1, stage 1 conf vol	3614	3614		1343	1343							
vC2, stage 2 conf vol	461	1343		1211	3615							
vCu, unblocked vol	4076	4958	1202	2554	4958	441	3607			1323		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	100	99	100	100	100	85			99		
cM capacity (veh/h)	5	14	180	106	4	570	67			529		
Direction, Lane #												
	EB 1	EB 2	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3			
Volume Total	7	1	10	441	441	441	906	1803	902			
Volume Left	7	0	10	0	0	0	4	0	0			
Volume Right	0	1	0	0	0	0	0	0	1			
cSH	5	180	67	1700	1700	1700	529	1700	1700			
Volume to Capacity	1.32	0.01	0.15	0.26	0.26	0.26	0.01	1.06	0.53			
Queue Length 95th (ft)	43	0	12	0	0	0	1	0	0			
Control Delay (s)	1400.3	25.2	68.3	0.0	0.0	0.0	0.2	0.0	0.0			
Lane LOS	F	D	F				A					
Approach Delay (s)	1228.4		0.5				0.1					
Approach LOS	F											
Intersection Summary												
Average Delay			2.2									
Intersection Capacity Utilization			80.3%			ICU Level of Service				D		
Analysis Period (min)			15									

ATTACHMENT "A"

HCM Unsignalized Intersection Capacity Analysis 200: McMullen Booth Road & Oakhaven Drive






















McMullen Medical Development PM Peak Hour Background Traffic

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	0	2	0	0	0	7	3535	0	1	1728	8
Future Volume (Veh/h)	3	0	2	0	0	0	7	3535	0	1	1728	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
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
Hourly flow rate (vph)	3	0	2	0	0	0	7	3571	0	1	1745	8
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2955	5336	586	4171	5340	1190	1753			3571		
vC1, stage 1 conf vol	1751	1751		3585	3585							
vC2, stage 2 conf vol	1204	3585		586	1755							
vCu, unblocked vol	2955	5336	586	4171	5340	1190	1753			3571		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	100	100	100	100	100	98			99		
cM capacity (veh/h)	78	14	459	5	14	183	362			69		
Direction, Lane #												
	EB 1	EB 2	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3			
Volume Total	3	2	7	1190	1190	1190	437	872	444			
Volume Left	3	0	7	0	0	0	1	0	0			
Volume Right	0	2	0	0	0	0	0	0	8			
cSH	78	459	362	1700	1700	1700	69	1700	1700			
Volume to Capacity	0.04	0.00	0.02	0.70	0.70	0.70	0.01	0.51	0.26			
Queue Length 95th (ft)	3	0	1	0	0	0	1	0	0			
Control Delay (s)	53.3	12.9	15.1	0.0	0.0	0.0	1.3	0.0	0.0			
Lane LOS	F	B	C				A					
Approach Delay (s)	37.1		0.0				0.3					
Approach LOS	E											
Intersection Summary												
Average Delay			0.2									
Intersection Capacity Utilization			78.3%			ICU Level of Service				D		
Analysis Period (min)			15									

ATTACHMENT "A"

HCM Unsignalized Intersection Capacity Analysis 200: McMullen Booth Road & Oakhaven Drive

McMullen Medical Development
PM Peak Hour Post-Development Traffic

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  			  	
Traffic Volume (veh/h)	3	0	2	0	0	0	36	3551	0	1	1734	8
Future Volume (Veh/h)	3	0	2	0	0	0	36	3551	0	1	1734	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
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
Hourly flow rate (vph)	3	0	2	0	0	0	36	3587	0	1	1752	8
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
								Raised			Raised	
Median storage (veh)												
								2			2	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	3026	5417	588	4247	5421	1196	1760			3587		
vC1, stage 1 conf vol	1758	1758		3659	3659							
vC2, stage 2 conf vol	1268	3659		588	1762							
vCu, unblocked vol	3026	5417	588	4247	5421	1196	1760			3587		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	100	100	100	100	100	90			99		
cM capacity (veh/h)	74	11	457	4	12	182	360			68		
Direction, Lane #												
	EB 1	EB 2	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3			
Volume Total	3	2	36	1196	1196	1196	439	876	446			
Volume Left	3	0	36	0	0	0	1	0	0			
Volume Right	0	2	0	0	0	0	0	0	8			
cSH	74	457	360	1700	1700	1700	68	1700	1700			
Volume to Capacity	0.04	0.00	0.10	0.70	0.70	0.70	0.01	0.52	0.26			
Queue Length 95th (ft)	3	0	8	0	0	0	1	0	0			
Control Delay (s)	55.8	12.9	16.1	0.0	0.0	0.0	1.3	0.0	0.0			
Lane LOS	F	B	C				A					
Approach Delay (s)	38.7		0.2				0.3					
Approach LOS	E											
Intersection Summary												
Average Delay			0.2									
Intersection Capacity Utilization			78.6%		ICU Level of Service					D		
Analysis Period (min)			15									