McDonough & Rea Associates, Inc.

Traffic and Transportation Consulting

Kevin P. McDonough (1953-1994)
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October 14, 2022

Franklin Township Planning Board
475 DeMott Lane
Somerset, New Jersey 08873

Re: The Oscar and Ella Wilf Campus for Senior Living-Single Family Subdivision
Lots 54.05 & 55.03 in Block 386.07
Franklin Township, Somerset County
MRA File No. 22-213

Dear Board Members:

McDonough & Rea Associates (MRA) has prepared this *Traffic Impact Analysis* in connection with plans to construct 11 single family dwellings at the Berger Street western terminus and the southern portion of the referenced property, Lot 54.05. It is our understanding that the application to the Township will also include a solar field on Lot 54.04 with access via Lot 55.03 to the north. The traffic study herein will be limited to the proposed residential subdivision.

SCOPE OF STUDY

In order to prepare a thorough *Traffic Impact Analysis* for the residential subdivision, MRA conducted the following tasks:

1. Made field visits to inventory existing roadway and traffic conditions at the intersection of JFK Boulevard and Berger Street.

2. Conducted manual turning movement traffic counts at the JFK Boulevard and Berger Street intersection during traditional peak hours when traffic flow along the adjacent roadway will be at a maximum.

3. Prepared traffic generation estimates for the 11 single family homes.

4. Projected future 2027 traffic volumes at the JFK Boulevard and Berger Street intersection in consideration of background traffic growth based on the New Jersey Department of Transportation (NJDOT) *Annual Background Growth Rate Table* data for the area.

Please reply to:
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☐ **105 Elm Street, Lower Level, Westfield, NJ 07090 • (908) 789-7180 • Fax (908) 789-7181**

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5. Prepared level of service and capacity analyses for the signalized 4-way intersection of JFK Boulevard and Berger Street for the 2027 *post-development* condition during the AM and PM peak street hours.

6. Reviewed the *Subdivision Plan* prepared by Menlo Engineering with respect to compliance to the New Jersey Residential Site Improvement Standards (RSIS) and proper traffic engineering principles.

EXISTING CONDITIONS/TRAFFIC VOLUMES

The subject property is located north of the Berger Street terminus in Franklin Township, Somerset County. Berger Street extends in a southerly direction to the signalized 4-way intersection with JFK Boulevard.

MRA conducted peak hour traffic counts on a typical weekday from 7:00 AM to 9:00 AM and from 3:00 PM to 6:00 PM to inventory existing peak hour traffic conditions. The weekday peak periods occurred from 7:45 AM to 8:45 AM and from 5:00 PM to 6:00 PM. *Table 1* illustrates existing peak hour traffic flow at the JFK Boulevard and Berger Street intersection.

TABLE I
2022 EXISTING PEAK HOUR TRAFFIC VOLUMES
JFK BOULEVARD AND BERGER STREET

ROADWAY	APPROACH	MOVEMENT	AM PSH	PM PSH
JFK Boulevard	Northbound	Left	2	6
		Thru	374	501
		Right	9	19
	Southbound	Left	13	43
		Thru	343	424
		Right	10	6
Berger Street	Eastbound	Left	16	11
		Thru	3	1
		Right	7	12
	Westbound	Left	24	22
		Thru	3	4
		Right	46	33

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TRIP GENERATION/DISTRIBUTION

Estimates of traffic to be generated by the 11 single family homes were made after consulting the the *11th Edition* of the Institute of Transportation Engineers (ITE) *Trip Generation Manual.* The following *Table* illustrates the anticipated traffic generation from 11 single family homes.

TABLE II
TRIP GENERATION
11 SINGLE FAMILY HOMES

	IN	OUT	TOTAL
AM Peak Street Hour	2	8	10
PM Peak Street Hour	7	4	11

Traffic was distributed at the site access point to the JFK Boulevard and Berger Street intersection in accordance with existing, established traffic patterns in the area, based on the area roadway network and location of employment and shopping opportunities.

ANALYSIS OF FUTURE TRAFFIC

A design year of 2027 was selected for analysis as a reasonable time frame to construct the 11 dwellings. The NJDOT *Annual Background Growth Rate Table* suggests a growth rate of 1.75 percent per year for the area, which was added to the 2022 existing traffic volumes to establish 2027 *pre-development* traffic volumes. The site generated traffic volumes from the single family dwellings were surcharged onto the pre-development traffic volumes to arrive at the 2027 *post-development* traffic volumes. *Table 3* illustrates year 2027 traffic volumes utilizing the JFK Boulevard and Berger Street intersection following the completion of the new single family subdivision.

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TABLE III
2027 FUTURE POST-DEVELOPMENT TRAFFIC VOLUMES
JFK BOULEVARD AND BERGER STREET

ROADWAY	APPROACH	MOVEMENT	AM PSH	PM PSH
JFK Boulevard	Northbound	Left	3	10
		Thru	411	551
		Right	10	21
	Southbound	Left	14	47
		Thru	377	466
		Right	12	11
Berger Street	Eastbound	Left	22	14
		Thru	3	1
		Right	11	15
	Westbound	Left	26	24
		Thru	3	4
		Right	51	36

Traffic engineers calculate levels of service of unsignalized intersections which relate to the quality of traffic flow. Level of service is a measure of average control delay. Average control delay is the time lost due to deceleration and the amount of time from when a vehicle is stopped for a traffic control device (or at the end of the queue) to when the vehicle departs the intersection. Delay is a relative quantity of driver discomfort, frustration, fuel consumption, and loss in travel time.

Levels of service range from "A" to "F" with "A" being the highest or best attainable level of service. Level of service "E" with average control delays of not more than 50 seconds per vehicle at an unsignalized intersection indicates near to or at capacity conditions and is generally considered the limit of acceptable level of service and delay.

Full definitions of levels of service for unsignalized intersections and level of service summaries are included in the *Appendix*. The intersections studied by this report were analyzed according to the procedures set forth in the *Highway Capacity Manual 2010*, using the *Highway Capacity Software (HCS+)*, release 7.9.5.

The intersection of JFK Boulevard and Berger Street currently operates at level of service "A" for both the AM and PM peak street hours. The intersection will operate under 2027 traffic conditions at level of service "A" during both the AM and PM peak street hours. Therefore, this intersection will continue to operate well within acceptable traffic engineering parameters.

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SUBDIVISION PLAN

The *Subdivision Plan* was reviewed with respect to adherence to New Jersey RSIS. The 11 single family homes are proposed to be served by a single point of access which complies with the RSIS criteria for a single family subdivision with a single point of access. Internal roadways will be designed in accordance with RSIS with respect to right-of-way widths, cartway widths, sidewalks, etc.

CONCLUSIONS

It is concluded, based on the analysis set forth in this report, that plans to subdivide the noted property into 11 single family home lots can be approved and operate compatibility with future roadway and traffic conditions in the area. The off-site intersection of JFK Boulevard and Berger Street will operate at an acceptable level of service "A" during the AM peak street hour and level of service "A" during the PM peak street hour for the 2027 design year. The *Subdivision Plan* conforms to New Jersey RSIS roadway and accessibility standards.

A representative from MRA will attend a Franklin Township Planning Board meeting to provide testimony and answer any questions the board or the public may have with regard to traffic issues pertaining to this application.

Very truly yours,

John H. Rea, PE
Principal

Scott T. Kennel
Sr. Associate

cc: William Lane, PE
Howard Cohen

APPENDIX

McDONOUGH & REA ASSOCIATES

TRAFFIC AND TRANSPORTATION CONSULTING

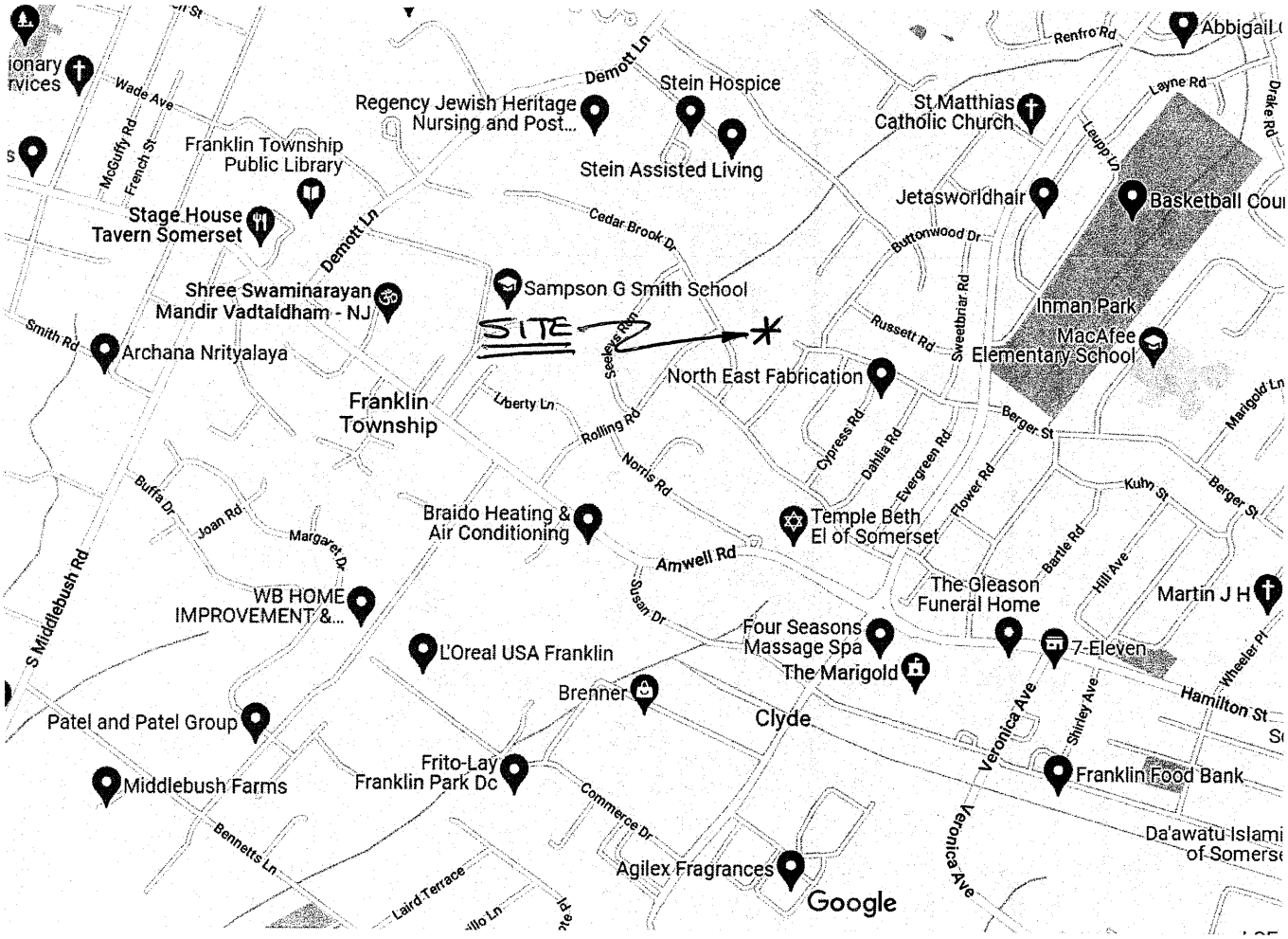
FIGURE 1

JOB NO. 22-213

DATE: OCT 2022

SUBJECT:

SITE LOCATION MAP



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WILF CAMPUS SUBDIVISION
JFK BLVD & BERGER STREET
FRANKLIN TOWNSHIP, SOMERSET COUNTY
MRA JOB 22-213 THURSDAY AM COUNT

File Name : 22213 jfk & berger am1
Site Code : 00022213
Start Date : 8/18/2022
Page No : 1

Groups Printed- CARS - TRUCKS - SCHOOL BUS

	JFK Blvd Southbound				Berger Street Westbound					JFK Blvd Northbound				Berger Street Eastbound					
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	RTOR	App. Total	Int. Total
07:00 AM	2	63	0	65	0	1	2	0	3	0	82	0	82	3	2	2	0	7	157
07:15 AM	2	69	0	71	1	0	1	2	4	0	85	0	85	0	0	0	0	0	160
07:30 AM	1	117	0	118	7	0	4	2	13	2	95	0	97	4	3	2	1	10	238
07:45 AM	5	92	3	100	6	2	8	3	19	0	90	2	92	4	1	1	1	7	218
Total	10	341	3	354	14	3	15	7	39	2	352	2	356	11	6	5	2	24	773
08:00 AM	2	70	3	75	5	0	3	6	14	1	83	0	84	5	0	2	0	7	180
08:15 AM	3	88	1	92	8	0	5	9	22	1	90	2	93	3	1	0	1	5	212
08:30 AM	3	93	3	99	5	1	3	9	18	0	111	5	116	4	1	0	2	7	240
08:45 AM	9	79	1	89	2	0	3	11	16	1	94	2	97	3	1	1	2	7	209
Total	17	330	8	355	20	1	14	35	70	3	378	9	390	15	3	3	5	26	841
Grand Total	27	671	11	709	34	4	29	42	109	5	730	11	746	26	9	8	7	50	1614
Apprch %	3.8	94.6	1.6		31.2	3.7	26.6	38.5		0.7	97.9	1.5		52.0	18.0	16.0	14.0		
Total %	1.7	41.6	0.7	43.9	2.1	0.2	1.8	2.6	6.8	0.3	45.2	0.7	46.2	1.6	0.6	0.5	0.4	3.1	

	JFK Blvd Southbound				Berger Street Westbound					JFK Blvd Northbound				Berger Street Eastbound					
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	RTOR	App. Total	Int. Total
Peak Hour From 07:00 AM to 08:45 AM - Peak 1 of 1																			
Intersection	07:45 AM																		
Volume	13	343	10	366	24	3	19	27	73	2	374	9	385	16	3	3	4	26	850
Percent	3.6	93.7	2.7		32.9	4.1	26.0	37.0		0.5	97.1	2.3		61.5	11.5	11.5	15.4		
08:30 Volume	3	93	3	99	5	1	3	9	18	0	111	5	116	4	1	0	2	7	240
Peak Factor																			0.885
High Int.	07:45 AM				08:15 AM					08:30 AM				07:45 AM					
Volume	5	92	3	100	8	0	5	9	22	0	111	5	116	4	1	1	1	7	
Peak Factor				0.915					0.830				0.830					0.929	

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WILF CAMPUS SUBDIVISION
JFK BLVD & BERGER STREET
FRANKLIN TOWNSHIP, SOMERSET COUNTY
MRA JOB 22-213 THURSDAY PM COUNT

File Name : 22213 jfk & berger pm1
Site Code : 00022213
Start Date : 8/18/2022
Page No : 1

Groups Printed- CARS - TRUCKS - SCHOOL BUS

	JFK Blvd Southbound				Berger Street Westbound					JFK Blvd Northbound				Berger Street Eastbound					
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	RTOR	App. Total	Int. Total
03:00 PM	8	84	6	98	5	0	1	3	9	2	95	6	103	2	0	2	1	5	215
03:15 PM	5	92	3	100	5	0	2	7	14	2	100	2	104	2	1	2	0	5	223
03:30 PM	10	82	2	94	8	1	2	1	12	3	143	3	149	2	1	0	0	3	258
03:45 PM	13	78	1	92	2	2	5	6	15	0	109	5	114	2	0	2	3	7	228
Total	36	336	12	384	20	3	10	17	50	7	447	16	470	8	2	6	4	20	924
04:00 PM	7	77	3	87	5	0	3	2	10	3	106	2	111	2	2	0	1	5	213
04:15 PM	9	92	5	106	7	2	4	4	17	3	110	4	117	5	3	1	1	10	250
04:30 PM	10	83	3	96	3	0	2	3	8	1	135	6	142	1	0	0	1	2	248
04:45 PM	13	79	5	97	2	0	1	5	8	0	96	4	100	2	0	2	1	5	210
Total	39	331	16	386	17	2	10	14	43	7	447	16	470	10	5	3	4	22	921
05:00 PM	10	102	2	114	5	0	2	3	10	0	145	2	147	0	0	1	0	1	272
05:15 PM	9	115	0	124	5	2	3	6	16	0	116	5	121	3	0	2	0	5	266
05:30 PM	14	110	3	127	7	1	0	6	14	3	130	2	135	5	0	2	5	12	288
05:45 PM	10	97	1	108	5	1	7	6	19	3	110	10	123	3	1	0	2	6	256
Total	43	424	6	473	22	4	12	21	59	6	501	19	526	11	1	5	7	24	1082
Grand Total	118	1091	34	1243	59	9	32	52	152	20	1395	51	1466	29	8	14	15	66	2927
Apprch %	9.5	87.8	2.7		38.8	5.9	21.1	34.2		1.4	95.2	3.5		43.9	12.1	21.2	22.7		
Total %	4.0	37.3	1.2	42.5	2.0	0.3	1.1	1.8	5.2	0.7	47.7	1.7	50.1	1.0	0.3	0.5	0.5	2.3	

	JFK Blvd Southbound				Berger Street Westbound					JFK Blvd Northbound				Berger Street Eastbound					
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	RTOR	App. Total	Int. Total
Peak Hour From 03:00 PM to 05:45 PM - Peak 1 of 1																			
Intersection	05:00 PM																		
Volume	43	424	6	473	22	4	12	21	59	6	501	19	526	11	1	5	7	24	1082
Percent	9.1	89.6	1.3		37.3	6.8	20.3	35.6		1.1	95.2	3.6		45.8	4.2	20.8	29.2		
05:30 Volume	14	110	3	127	7	1	0	6	14	3	130	2	135	5	0	2	5	12	288
Peak Factor																			0.939
High Int.	05:30 PM				05:45 PM					05:00 PM				05:30 PM					
Volume	14	110	3	127	5	1	7	6	19	0	145	2	147	5	0	2	5	12	
Peak Factor				0.931					0.776				0.895					0.500	

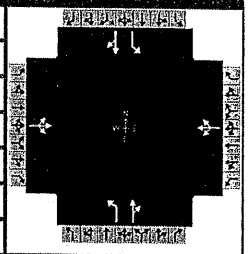
LEVEL OF SERVICE
FOR
SIGNALIZED INTERSECTIONS[1]

Level of Service	Description	Control (Signal) Delay Per Vehicle (Seconds)
A	Very short delay, good progression; most vehicles do not stop at intersection.	≤ 10.0
B	Generally good progression and/or short cycle length; more vehicles stop at intersection than at Level of Service "A."	> 10.0 and ≤ 20.0
C	Fair progression and/or longer cycle length; significant number of vehicles stop at intersection, though many still pass through without stopping.	> 20.0 and ≤ 35.0
D	Congestion becomes noticeable; longer delays from unfavorable progression, long cycle lengths, or high volume/capacity ratios; many vehicles stop at intersection.	> 35.0 and ≤ 55.0
E	Considered to be the limit of acceptable delay; indicative of poor progression, long cycle lengths, or high volume/capacity ratios; frequent individual cycles failures.	> 55.0 and ≤ 80.0
F	Often an indication of over-saturation (i.e., arrival flow exceeds capacity); also caused by poor progression and long cycles lengths; capacity is not necessarily exceeded under this level of service.	> 80.0

[1] Transportation Research Board, Highway Capacity Manual 2010, National Research Council, Washington, DC, 2010.

HCS7 Signalized Intersection Results Summary

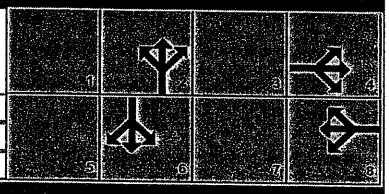
General Information				Intersection Information	
Agency	MRA			Duration, h	0.250
Analyst	STK	Analysis Date		Area Type	Other
Jurisdiction		Time Period	AM	PHF	0.90
Urban Street	JFK BLVD	Analysis Year	2022 EXIST	Analysis Period	1> 7:00
Intersection	BERGER ST	File Name	22-213AE.xus		
Project Description	22-213AE				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	16	3	7	24	3	46	2	374	9	13	343	10

Signal Information			
Cycle, s	70.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	47.0	13.0	0.0	0.0	0.0	0.0	
Yellow	3.0	3.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



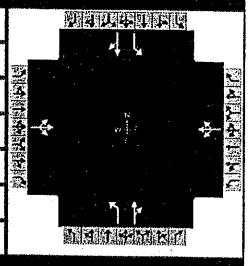
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		8.0		6.0		6.0
Phase Duration, s		18.0		18.0		52.0		52.0
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		5.0
Max Allow Headway (MAH), s		3.3		3.3		0.0		0.0
Queue Clearance Time (g_s), s		2.9		4.9				
Green Extension Time (g_e), s		0.1		0.1		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.00		0.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h		29			81		2	426		14	392	
Adjusted Saturation Flow Rate (s), veh/h/ln		1493			1573		992	1862		962	1861	
Queue Service Time (g_s), s		0.0			0.0		0.1	6.8		0.5	6.1	
Cycle Queue Clearance Time (g_c), s		0.9			2.9		6.2	6.8		7.3	6.1	
Green Ratio (g/C)		0.19			0.19		0.67	0.67		0.67	0.67	
Capacity (c), veh/h		360			361		682	1251		655	1249	
Volume-to-Capacity Ratio (X)		0.080			0.225		0.003	0.340		0.022	0.314	
Back of Queue (Q), ft/ln (85 th percentile)		19.3			57		0.6	85.9		3.8	79.1	
Back of Queue (Q), veh/ln (85 th percentile)		0.8			2.2		0.0	3.4		0.2	3.1	
Queue Storage Ratio (RQ) (85 th percentile)		0.00			0.00		0.00	0.00		0.00	0.00	
Uniform Delay (d_1), s/veh		23.6			24.4		6.1	4.9		6.4	4.8	
Incremental Delay (d_2), s/veh		0.4			1.4		0.0	0.7		0.1	0.7	
Initial Queue Delay (d_3), s/veh		0.0			0.0		0.0	0.0		0.0	0.0	
Control Delay (d), s/veh		24.0			25.8		6.1	5.6		6.5	5.4	
Level of Service (LOS)		C			C		A	A		A	A	
Approach Delay, s/veh / LOS	24.0	C		25.8	C		5.6	A		5.5	A	
Intersection Delay, s/veh / LOS	7.9						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS								
Bicycle LOS Score / LOS								

HCS7 Signalized Intersection Results Summary

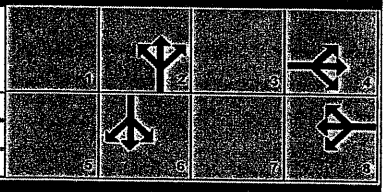
General Information				Intersection Information	
Agency	MRA			Duration, h	0.250
Analyst	STK	Analysis Date		Area Type	Other
Jurisdiction		Time Period	PM	PHF	0.90
Urban Street	JFK BLVD	Analysis Year	2022 EXIST	Analysis Period	1> 7:00
Intersection	BERGER ST	File Name	22-213PE.xus		
Project Description	22-213PE				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	11	1	12	22	4	33	6	501	19	43	424	6

Signal Information			
Cycle, s	70.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	47.0	13.0	0.0	0.0	0.0	0.0	
Yellow	3.0	3.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



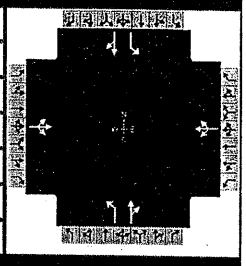
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		8.0		6.0		6.0
Phase Duration, s		18.0		18.0		52.0		52.0
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		5.0
Max Allow Headway (MAH), s		3.3		3.3		0.0		0.0
Queue Clearance Time (g_s), s		2.9		4.3				
Green Extension Time (g_e), s		0.1		0.1		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.00		0.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h		27			66		7	578		48	478	
Adjusted Saturation Flow Rate (s), veh/h/ln		1526			1568		917	1858		836	1866	
Queue Service Time (g_s), s		0.0			0.0		0.2	10.4		2.0	7.9	
Cycle Queue Clearance Time (g_c), s		0.9			2.3		8.1	10.4		12.4	7.9	
Green Ratio (g/C)		0.19			0.19		0.67	0.67		0.67	0.67	
Capacity (c), veh/h		358			362		615	1248		540	1253	
Volume-to-Capacity Ratio (X)		0.074			0.181		0.011	0.463		0.088	0.381	
Back of Queue (Q), ft/ln (85 th percentile)		17.9			45.3		1.9	120.8		15.9	96.6	
Back of Queue (Q), veh/ln (85 th percentile)		0.7			1.8		0.1	4.8		0.6	3.8	
Queue Storage Ratio (RQ) (85 th percentile)		0.00			0.00		0.00	0.00		0.00	0.00	
Uniform Delay (d_1), s/veh		23.6			24.1		6.9	5.5		8.4	5.1	
Incremental Delay (d_2), s/veh		0.4			1.1		0.0	1.2		0.3	0.9	
Initial Queue Delay (d_3), s/veh		0.0			0.0		0.0	0.0		0.0	0.0	
Control Delay (d), s/veh		24.0			25.2		6.9	6.7		8.8	6.0	
Level of Service (LOS)		C			C		A	A		A	A	
Approach Delay, s/veh / LOS	24.0	C		25.2	C		6.7	A		6.2	A	
Intersection Delay, s/veh / LOS	7.9						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS								
Bicycle LOS Score / LOS								

HCS7 Signalized Intersection Results Summary

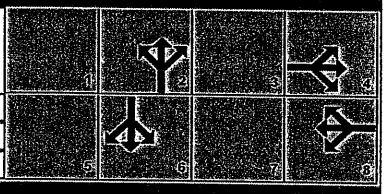
General Information				Intersection Information	
Agency	MRA			Duration, h	0.250
Analyst	STK	Analysis Date		Area Type	Other
Jurisdiction		Time Period	PM	PHF	0.90
Urban Street	JFK BLVD	Analysis Year	2027 BUILD	Analysis Period	1> 7:00
Intersection	BERGER ST	File Name	22-213PFB.xus		
Project Description	22-213PFB				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	14	1	15	24	4	36	10	551	21	47	466	11

Signal Information			
Cycle, s	70.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	47.0	13.0	0.0	0.0	0.0	0.0						
Yellow	3.0	3.0	0.0	0.0	0.0	0.0						
Red	2.0	2.0	0.0	0.0	0.0	0.0						



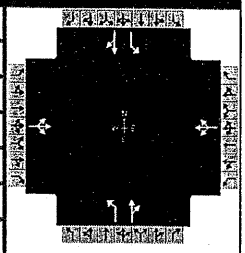
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		8.0		6.0		6.0
Phase Duration, s		18.0		18.0		52.0		52.0
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		5.0
Max Allow Headway (*MAH*), s		3.3		3.3		0.0		0.0
Queue Clearance Time (g_s), s		3.1		4.5				
Green Extension Time (g_e), s		0.1		0.1		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.00		0.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h		33			71		11	636		52	530	
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1522			1565		874	1858		792	1863	
Queue Service Time (g_s), s		0.0			0.0		0.4	12.0		2.5	9.1	
Cycle Queue Clearance Time (g_c), s		1.1			2.5		9.6	12.0		14.4	9.1	
Green Ratio (*g/C*)		0.19			0.19		0.67	0.67		0.67	0.67	
Capacity (*c*), veh/h		358			361		575	1248		499	1251	
Volume-to-Capacity Ratio (*X*)		0.093			0.197		0.019	0.509		0.105	0.424	
Back of Queue (*Q*), ft/ln (85 th percentile)		22.5			49.6		3.3	137.2		18.9	108.8	
Back of Queue (*Q*), veh/ln (85 th percentile)		0.9			2.0		0.1	5.4		0.7	4.3	
Queue Storage Ratio (*RQ*) (85 th percentile)		0.00			0.00		0.00	0.00		0.00	0.00	
Uniform Delay (d_1), s/veh		23.7			24.2		7.5	5.7		9.3	5.3	
Incremental Delay (d_2), s/veh		0.5			1.2		0.1	1.5		0.4	1.1	
Initial Queue Delay (d_3), s/veh		0.0			0.0		0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh		24.2			25.4		7.5	7.2		9.8	6.3	
Level of Service (LOS)		C			C		A	A		A	A	
Approach Delay, s/veh / LOS	24.2	C		25.4	C		7.2	A		6.6	A	
Intersection Delay, s/veh / LOS	8.4						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS								
Bicycle LOS Score / LOS								

HCS7 Signalized Intersection Results Summary

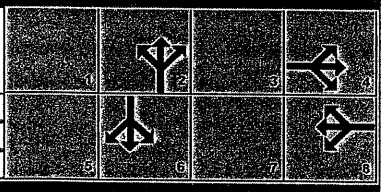
General Information				Intersection Information	
Agency	MRA			Duration, h	0.250
Analyst	STK	Analysis Date		Area Type	Other
Jurisdiction		Time Period	AM	PHF	0.90
Urban Street	JFK BLVD	Analysis Year	2027 BUILD	Analysis Period	1> 7:00
Intersection	BERGER ST	File Name	22-213AFB.xus		
Project Description	22-213AFB				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	22	3	11	26	3	51	3	411	10	14	377	12

Signal Information			
Cycle, s	70.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	47.0	13.0	0.0	0.0	0.0	0.0	
Yellow	3.0	3.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		8.0		6.0		6.0
Phase Duration, s		18.0		18.0		52.0		52.0
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		5.0
Max Allow Headway (*MAH*), s		3.3		3.3		0.0		0.0
Queue Clearance Time (g_s), s		3.3		5.2				
Green Extension Time (g_e), s		0.1		0.1		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.00		0.01				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h		40			89		3	468		16	432	
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1486			1572		956	1862		925	1860	
Queue Service Time (g_s), s		0.0			0.0		0.1	7.7		0.5	7.0	
Cycle Queue Clearance Time (g_c), s		1.3			3.2		7.1	7.7		8.2	7.0	
Green Ratio (*g/C*)		0.19			0.19		0.67	0.67		0.67	0.67	
Capacity (*c*), veh/h		359			360		650	1250		622	1249	
Volume-to-Capacity Ratio (*X*)		0.111			0.247		0.005	0.374		0.025	0.346	
Back of Queue (*Q*), ft/ln (85 th percentile)		27			63		0.9	94.9		4.3	87.1	
Back of Queue (*Q*), veh/ln (85 th percentile)		1.1			2.5		0.0	3.7		0.2	3.4	
Queue Storage Ratio (*RQ*) (85 th percentile)		0.00			0.00		0.00	0.00		0.00	0.00	
Uniform Delay (d_1), s/veh		23.7			24.5		6.4	5.0		6.9	4.9	
Incremental Delay (d_2), s/veh		0.6			1.6		0.0	0.9		0.1	0.8	
Initial Queue Delay (d_3), s/veh		0.0			0.0		0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh		24.4			26.1		6.4	5.9		6.9	5.7	
Level of Service (LOS)		C			C		A	A		A	A	
Approach Delay, s/veh / LOS	24.4	C		26.1	C		5.9	A		5.7	A	
Intersection Delay, s/veh / LOS	8.3						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS								
Bicycle LOS Score / LOS								