Technical Memorandum

To: Eric Almond, PE (Almond Engineering)

From: Wayne Petrone, PE (Peters and Yaffee)

Date: May 7, 2018

Re: **Episcopal School Traffic Analysis**

Introduction

This Traffic Analysis has been prepared in conjunction with MM-18-03 proposed at Episcopal School of Jacksonville. Episcopal School is proposing to modify the St. Elmo Drive/Munnerlyn Drive intersection and add a raised landscaped island with an information kiosk within the intersection. St. Elmo Drive is a public right-of-way. Munnerlyn Drive is a private street owned by the Episcopal School.

Existing Conditions

St. Elmo Drive intersects Munnerlyn Drive to form a "Y"-Type intersection. The north and east legs of the intersection are St. Elmo Drive and the west leg is Munnerlyn Drive. The north leg of St. Elmo Drive intersects at approximately 45 degrees. A Stop sign controls traffic leaving the north leg of St. Elmo Drive. The posted speed limit on St. Elmo Drive is 30 mph, while the posted speed limit on Munnerlyn Drive is 15 mph. The existing conditions are depicted in Attachment A.

During the school arrival period (7:20 AM to 8:20 AM), a security guard directs traffic at the St. Elmo Drive/Munnerlyn Drive intersection. During the school dismissal period (3:20 PM to 3:45 PM), a security guard directs traffic at the St. Elmo Drive/Munnerlyn Drive intersection and a police officer directs traffic at the Atlantic Boulevard/St. Elmo Drive/Hart Bridge Off-Ramp intersection.

All students and parents attending Episcopal School are provided a sticker to place on their vehicle and are allowed to enter school property without stopping at the security guard location.

A majority of the high school students that attend Episcopal and drive to campus utilize a separate entrance (Highland Drive) located to the west of the Hart Expressway.

Existing Traffic Data

Peters and Yaffee collected traffic data at the St. Elmo Drive/Munnerlyn Drive intersection on Monday April 30, 2018 during the school arrival period (7:20 AM to 8:20 AM), lunch period (12:00 PM to 1:20 PM) and school dismissal period (2:45 PM to 4:00 PM). The peak hour traffic counts are graphically depicted in Figure 1 with actual traffic counts provided in Attachment B. As indicated in this figure, most of the traffic entering from Atlantic Boulevard during the school arrival and dismissal peak hours turn right onto St. Elmo Drive.

Existing Field Observations

On April 17, 2018 during the school's arrival, lunchtime and dismissal peak periods, Peters and Yaffee staff observed traffic operations at the St. Elmo Drive/Munnerlyn Drive intersection.

During the school arrival period (7:30 AM to 8:20 AM), the following field observations were observed:

- Students and parents that have an Episcopal School sticker on their vehicle pass through the intersection without stopping.

- Three motorists stopped to talk to the security guard. One vehicle was stopped for 20 seconds (motorists told security about an accident on Atlantic Boulevard and wanted her to call the police), the second vehicle was stopped for 7 seconds and the third vehicle was stopped for 5 seconds. While these vehicles were stopped at the intersection, no other vehicle entered and, as such, there was no queuing of vehicles entering the school on St. Elmo Drive.
- The security guard also stopped traffic on the east leg of St. Elmo Drive (entering the school) and Munnerlyn Drive to direct traffic on the north leg of St. Elmo Drive to exit the school. During this activity, the vehicle queue on the east leg of St. Elmo Drive ranged between four and six vehicles.
- The vehicle queue on the east leg of St. Elmo Drive never backed up to Atlantic Boulevard.
- One student was observed walking to school on Munnerlyn Drive.

During the school lunch period (12 PM to 1 PM), the following field observations were observed:

- The security guard stopped student vehicles exiting the school via Munnerlyn Drive and checked each students ID. Depending on the number of students in the vehicle, this process took between 2 seconds and 7 seconds.
- Students arriving back from lunch passed through the intersection without stopping.
- The security guard stopped two commercial vehicles entering on St. Elmo Drive during this period. One vehicle was stopped for 35 seconds and the second vehicle was stopped for 29 seconds. While these vehicles were stopped at the intersection, no other vehicles entered and, as such, there was no queuing of vehicles entering the school on St. Elmo Drive.
- The maximum observed queue on the north leg of St. Elmo Drive was two vehicles.

During the school dismissal period 2:55 PM to 3:50 PM, the following field observations were observed:

- A police officer controlled the traffic signal at the Atlantic Boulevard/St. Elmo Drive intersection from 3:20 PM to 3:45 PM.
- Additional green time was given to motorists exiting St. Elmo Drive by the police officer until traffic cleared. This caused queuing on Atlantic Boulevard.
- A security guard controlled traffic flow at the St. Elmo Drive/Munnerlyn Drive intersection from 3:20 PM to 3:45 PM.
- A maximum vehicle queue of at least 40 vehicles was observed for vehicles on Munnerlyn Drive.
- A maximum vehicle queue of 12 vehicles was observed on the north leg of St. Elmo Drive.
- A maximum vehicle queue of 6 vehicles was observed on the east leg of St. Elmo Drive.
- No vehicles were blocked from entering onto St. Elmo Drive from Atlantic Boulevard.
- No motorists stopped to ask the security guard for directions or questions.
- Late arriving students can park their vehicles in the grass field adjacent to the north leg of St. Elmo Drive. Five students were observed walking from the school along Munnerlyn Drive to St. Elmo Drive to get to their parked vehicles before exiting school.

Proposed Project

Episcopal School is proposing to modify the St. Elmo Drive/Munnerlyn Drive intersection and add a raised landscaped island with an information kiosk within the intersection (refer to Attachment C for proposed plan). Modifications include:

- The north leg of St. Elmo Drive will be realigned to intersect Munnerlyn Drive and St. Elmo Drive (east leg) at 90 degrees rather than at 45 degrees.
- The distance from Atlantic Boulevard to the new St. Elmo Drive/Munnerlyn Drive intersection will be increased from approximately 200 feet to 300 feet.
- The east leg of St. Elmo Drive will be widened to provide two westbound lanes and two eastbound lanes separated by a landscaped island.

- Two westbound lanes will be provided on the east leg of St. Elmo Drive; an exclusive through lane and an exclusive right turn lane. At least six vehicles will be able to queue in the through lane at the information kiosk without blocking vehicles from entering the right turn lane.
- On the east leg of St. Elmo Drive between the kiosk and Atlantic Boulevard, two eastbound lanes will be provided; separate left and right-turn lanes.
- A security guard will be stationed inside the information kiosk. Only those motorists needing directions, have questions or do not have the Episcopal vehicle sticker will stop at the kiosk.
- Stop signs will be installed on both the north leg of St. Elmo Drive and Munnerlyn Drive approaches to the St. Elmo Drive/Munnerlyn Drive intersection.

Once all modifications are complete, the new intersection will be dedicated to the City for public use and the Episcopal School will execute a hold harmless agreement as to the kiosk.

Intersection Capacity Analysis

The methodology outlined in the Highway Capacity Manual (HCM) was used in the capacity and level of service analysis for the St. Elmo Drive/Munnerlyn Drive intersection. Traffic operations were analyzed using the Synchro/SimTraffic 10 software package, which used the data and methodology contained in the HCM.

The operating conditions of transportation facilities for stop-controlled intersections are evaluated based on the relationship of the theoretical capacity of a facility to the actual traffic volumes on that facility. Various factors affect capacity, including travel speed, roadway geometry, grade, number and width of travel lanes, and intersection control. The current standards for evaluating capacity and operating conditions are contained in the HCM. The procedures describe operating conditions in terms of a Level of Service (LOS). Facilities are given letter designations from "A", representing the best operating conditions, to "F", representing the worst. Generally, Level of Service "D" represents the threshold for acceptable overall intersection operating conditions during a peak hour. For non-signalized (stop-controlled) intersections, the LOS is based on the seconds of delay a vehicle experiences in attempting to maneuver through the intersection and is summarized in Table 1.

Table 1 – LOS Criteria

LOS	Control Delay Per Vehicle (sec./veh/)
	Non-Signalized Intersections
A	0-10
B	>10-15
C	>15-25
D	>25-35
E	>35-50
F	>50

Source: *Highway Capacity Manual 2010*
*Tra*nsportation Research Board, 2010.

The Synchro/SimTraffic 10 software package was utilized to conduct the intersection capacity analyses. The analyses were conducted for the existing and proposed conditions. A summary of the intersection capacity analyses results is presented in Table 2. The intersection capacity analyses worksheets are shown in Attachment D.

Table 2 – Intersection Analysis

Location	Approach	2018 Existing Conditions						2018 Proposed Conditions					
		Arrival		Lunch		Dismissal		Arrival		Lunch		Dismissal	
		LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	**Delay (sec.)**
Munnerlyn Drive at St. Elmo Drive	Eastbound Left	A	8.4	A	7.4	A	7.8	A	8.4	A	7.4	A	7.8
	Southbound Left/Right	C	16.4	A	9.5	D	31.9	B	13.1	A	9.4	D	25.8
	Intersection	A	5.6	A	1.5	A	9.3	A	4.5	A	1.5	A	7.6

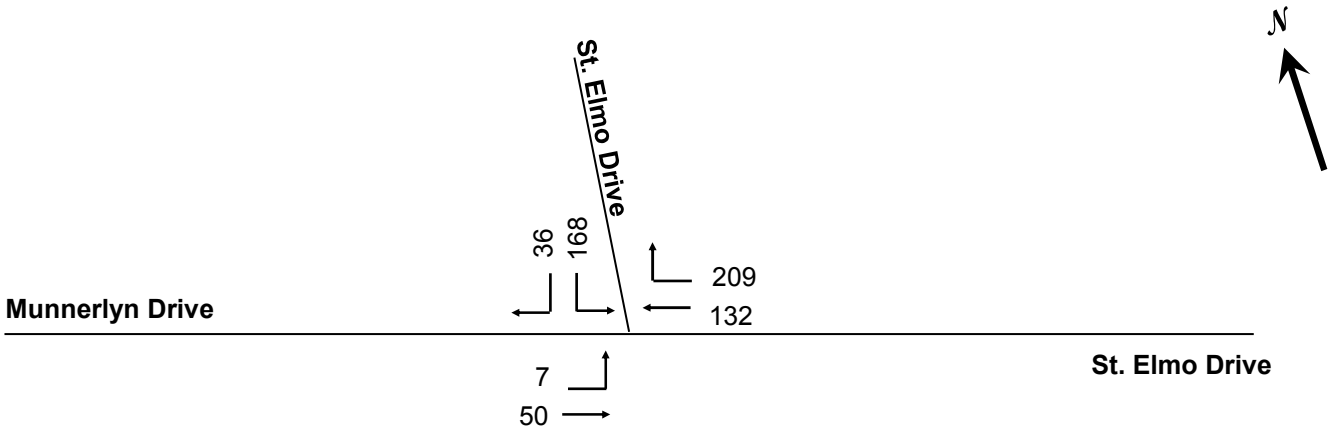
Source: Synchro 10

The critical turning movements at Munnerlyn Drive/St. Elmo intersection currently operate at LOS C or better during the arrival peak hour, at LOS A during the lunch hour peak, and at LOS D or better during the dismissal peak hour. Under proposed conditions, with the provision of an exclusive westbound right-turn lane on St. Elmo Drive, the critical movements are expected to operate at LOS B or better during the arrival peak hour, at LOS A during the lunch hour and at LOS D or better during the dismissal peak hour. With the provision of the exclusive westbound right-turn lane on St. Elmo Drive, traffic operations at the intersection will improve.

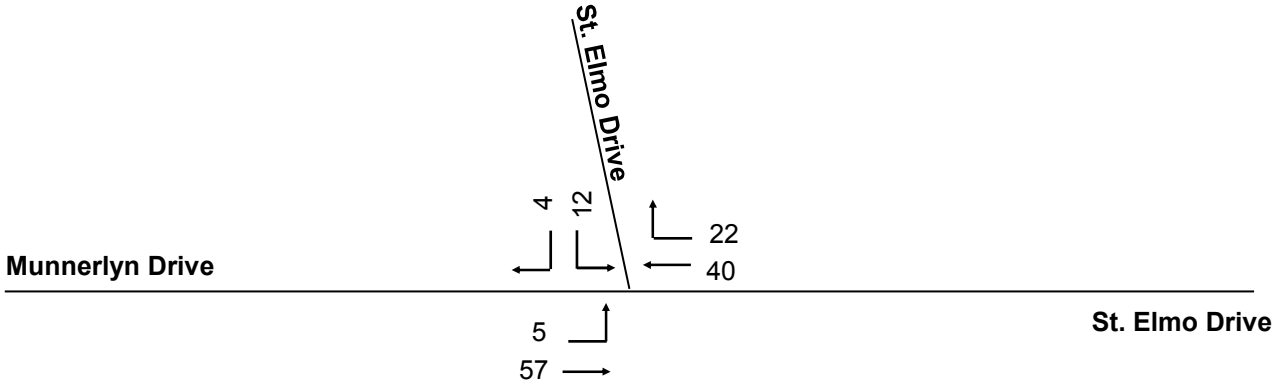
Conclusions

Episcopal School is proposing to modify the St. Elmo Drive/Munnerlyn Drive intersection and add a raised landscaped island with an information kiosk within the intersection. There are several benefits to this proposal:

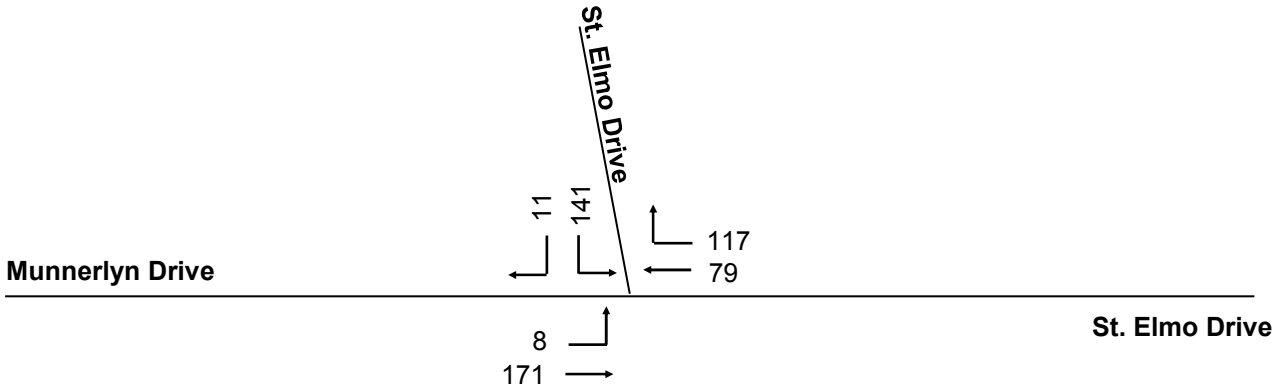
- By realigning the north leg of St. Elmo Drive to intersect Munnerlyn Drive at 90 degrees rather than the existing 45 degrees, motorists exiting the north leg of St. Elmo Drive will have a better sight line of traffic on Munnerlyn Drive.
- The St. Elmo Drive/Munnerlyn Drive intersection will be located an additional 100 feet further from Atlantic Boulevard. This allows for additional vehicle storage space for vehicles both entering from and exiting to Atlantic Boulevard.
- The proposed stop sign on the west leg of Munnerlyn Drive will provide gaps for traffic exiting the north leg of St. Elmo Drive.
- Based on the level of service analysis, with the provision of the exclusive westbound right-turn lane on St. Elmo Drive, traffic operations at the intersection will improve and vehicle delay of the critical movements will be reduced.
- The widening of the St. Elmo Drive westbound approach to two lanes will allow six vehicles to be queued in the through lane serving the kiosk without blocking traffic from entering the right turn lane to continue onto St. Elmo Drive. Under existing conditions, depending on where the motorists stop their vehicle to talk to the security guard, one vehicle could block motorists from turning right.
- A security guard will be stationed inside the information kiosk rather than in the middle of the intersection. Only those motorists needing directions, have questions or do not have the Episcopal vehicle sticker will stop at the kiosk. This is the same operation as today but is handled by an on-street security guard.
- Overall, this proposed modification will improve traffic safety and traffic operations entering and exiting the Episcopal Campus.
- The school has also reduced the number of special events at this site by constructing a sports complex on Atlantic Boulevard opposite Glynlea Road.



School Arrival Peak Hour (7:20 - 8:20 AM)



School Lunch Peak Hour (12:10 - 1:10 PM)



School Dismissal Peak Hour (3:00 - 4:00 PM)

peters yaffee TRANSPORTATION & TRAFFIC ENGINEERING	Scale: NTS Date: 4/30/18 Project No.: 18-008	**2018 EXISTING TURNING MOVEMENT COUNTS**	**FIGURE** 1

ATTACHMENT A
EXISTING CONDITIONS FIGURE

MAP SHOWING SPECIFIC PURPOSE SURVEY OF

A PORTION OF THE R. HOGAN GRANT, SECTION 42, TOWNSHIP 2 SOUTH, RANGE 27 EAST, DUVAL COUNTY, FLORIDA.

GENERAL NOTES :

1.) THE SPECIFIC PURPOSE OF THIS SURVEY IS TO LOCATE AND OBTAIN TOPOGRPAHIC DATA OF IMPROVEMENTS WITHIN THE PROJECT LIMITS.

2.) THIS SURVEY DOES NOT PURPORT TO BE A BOUNDARY SURVEY.

3.) ALL ELEVATIONS SHOWN THUS (20.0) REFERENCE NAVD-88.

4.) THIS PROPERTY HAS NOT BEEN ABSTRACTED FOR EASEMENTS, COVENANTS, RESTRICTIONS.

5.) UNDERGROUND UTILITIES SERVING THIS PROPERTY HAVE NOT BEEN LOCATED OR SHOWN.

6.) THERE MAY BE JURISDICTIONAL WETLANDS PRESENT ON THIS PROPERTY THAT HAVE NOT BEEN LOCATED OR SHOWN AS PART OF THIS SURVEY. CURRENT LAW PROVIDES THAT NO CONSTRUCTION, FILLING, REMOVAL OF EARTH, NOR CUTTING OF TREES OR PLANTS, SHALL TAKE PLACE WATER WARD OF ANY JURISDICTIONAL WETLAND LINES WITHOUT THE WRITTEN APPROVAL OF THE REGULATORY AGENCIES HAVING JURISDICTION OVER SUCH WETLANDS. IT SHALL BE THE RESPONSIBILITY OF THE PARCEL OWNER, HIS AGENT, AND THE ENTITY PERFORMING ANY ACTIVITY WITHIN THE WETLAND AREA TO ACQUIRE THE NECESSARY WRITTEN APPROVALS PRIOR TO THE BEGINNING OF ANY ACTIVITY WITHIN THE WETLAND. THE JURISDICTIONAL WETLAND MAY BE REDEFINED FROM TIME TO TIME BY THE APPROPRIATE GOVERNMENTAL AGENCIES. CH. 704.061(1)(A THROUGH G); FLORIDA STATUTES

7.) THIS PROPERTY APPEARS TO LIE WITHIN FLOOD ZONE "X" AS SCALED FROM F.E.M.A. FLOOD INSURANCE RATE MAP, PANEL 120077-0386H, DATED 6-3-2013.

8.) REFERENCE BENCHMARK: NATIONAL GEODETIC SURVEY MONUMENT (DUV 32) PID - DI0245. ELEVATION = 48.49 (NAVD-88)

TREE LEGEND	
ABBREVIATION	TYPE
CD	CEDAR
CY	CYPRESS
CM	CAMPHOR
HL	HOLLY
LO	LIVE OAK
P	PINE
MG	MAGNOLIA
P	PINE
PC	PECAN

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

PERRET AND ASSOCIATES, INC.

5627 ATLANTIC BOULEVARD SUITE #6 , JACKSONVILLE, FLORIDA 32207 ~ (904) 805-0030 ~ FAX (904) 805-9888

LEGEND

MH	MANHOLE	MES	MITERED END SECTION	P.C.	POINT OF CURVATURE	R	RADIUS
ELEC	ELECTRIC	INV.	INVERT	P.T.	POINT OF TANGENCY	Δ or D	DELTA (CENTRAL ANGLE)
WV	WATER VALVE	RCP	REINFORCED CONCRETE PIPE	P.R.C.	POINT OF REVERSE CURVE	A or L	ARC LENGTH
EL	ELEVATION	RCMP	ROUND CORRUGATED METAL PIPE	P.C.C.	POINT OF COMPOUND CURVE	C or CH	CHORD
TR	TRANSFORMER	RCPP	ROUND CORRUGATED PLASTIC PIPE	P.O.C.	POINT ON CURVE	CB	CHORD BEARING
WM	WATER METER	ECP	ELLIPTICAL CONCRETE PIPE	P.R.M.	PERMANENT REFERENCE MONUMENT	(R)	LINE RADIAL TO CURVE
CPP	CONCRETE POWER POLE	LF	LINEAR FEET	P.C.P.	PERMANENT CONTROL POINT	A/C	AIR CONDITIONER
BOC	BACK OF CURB	CB	CATCH BASIN	B.R.L.	BUILDING RESTRICTION LINE	CONC.	CONCRETE
EP	EDGE OF PAVEMENT	SMH	STORMWATER MANHOLE	CLF	CHAIN LINK FENCE	FD.	FOUND
FL	FLOW LINE	FFE	FINISHED FLOOR ELEVATION	R/W	RIGHT-OF-WAY	I.P.	IRON PIPE
	BREAK LINE	A	UNDERGROUND ATT LINES	O.R.B.	OFFICIAL RECORDS BOOK	(M)	MEASURED
	FENCE	G	GAS LINES	O/L	ON LINE	(D)	DEED

SCALE 1"=30' | 8-21-17 DATE OF FIELD SURVEY | NATHAN P. PERRET, FLA. CERT. NO. 6900 | LB ~ 6715

F.B. 600 PG. 2-10 NOT VALID WITHOUT THE SIGNATURE & ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR & MAPPER ORDER NO. 2017-1850

1 – EXISTING SITE PICTURE LOCATION (SEE SHEET C-4 FOR PHOTO)

2-15-2018
ERIC J. ALMOND, P.E.
FL# 59246

Date	Revision

EPISCOPAL SCHOOL of JACKSONVILLE

AE JOB NO.: 17-23
DESIGN: EJA
DRAWN: MAB
CHECKED: EJA
START DATE:SEP. 2017
PLOT DATE: 2-14-2018

EXISTING CONDITIONS

EPISCOPAL SCHOOL OF JACKSONVILLE
4455 ATLANTIC BOULEVARD
JACKSONVILLE, FLORIDA 32207

ALMOND ENGINEERING
CONSULTING CIVIL ENGINEERS
6277 DUPONT STATION COURT E., SUITE I
JACKSONVILLE, FL 32217
(904) 306-0162 PHONE (904) 306-2185 FAX

C-3

PRELIMINARY - NOT FOR CONSTRUCTION 2/14/2018

Plotted: Feb 14, 2018 - 4:13pm By: jung

P:\AE Projects\2017\17-23 ESJ Entrance\DESIGN\PLOT\EXISTING CONDITIONS.dwg

ATTACHMENT B
TRAFFIC COUNT DATA

School Arrival Peak Period Turning Movement Count
St. Elmo Drive at Munnerlyn Drive

Time Period	St. Elmo Drive Southbound			Munnerlyn Drive Eastbound			St. Elmo Drive Westbound			Grand Total
	Left	Right	Total	Left	Through	Total	Thru	Right	Total	
7:20 - 7:25 AM	3	6	9	0	2	2	6	12	18	**29**
7:25 - 7:30 AM	11	1	12	0	4	4	6	17	23	**39**
7:30 - 7:35 AM	7	1	8	0	2	2	8	14	22	**32**
7:35 - 7:40 AM	17	0	17	0	4	4	13	14	27	**48**
7:40 - 7:45 AM	1	17	18	1	9	10	12	19	31	**59**
7:45 - 7:50 AM	10	4	14	2	3	5	14	17	31	**50**
7:50 - 7:55 AM	19	1	20	1	5	6	13	29	42	**68**
7:55 - 8:00 AM	21	4	25	1	3	4	18	26	44	**73**
8:00 - 8:05 AM	27	0	27	1	5	6	12	24	36	**69**
8:05 - 8:10 AM	29	2	31	0	7	7	18	17	35	**73**
8:10 - 8:15 AM	14	0	14	0	5	5	7	17	24	**43**
8:15 - 8:20 AM	9	0	9	1	1	2	5	3	8	**19**
Peak Hour 7:20 - 8:20 AM	**168**	**36**	**204**	**7**	**50**	**57**	**132**	**209**	**341**	**602**

Source: Peters and Yaffee, Inc.
Monday April 30, 2018

School Lunch Peak Period Turning Movement Count
St. Elmo Drive at Munnerlyn Drive

Time Period	St. Elmo Drive			Munnerlyn Drive			St. Elmo Drive			Grand Total
	Southbound			Eastbound			Westbound			
	Left	Right	Total	Left	Through	Total	Thru	Right	Total	
12:00 - 12:05 PM	0	0	0	1	0	1	2	1	3	4
12:05 - 12:10 PM	2	1	3	0	0	0	2	2	4	7
12:10 - 12:15 PM	1	1	2	2	8	10	2	0	2	14
12:15 - 12:20 PM	3	0	3	0	19	19	2	1	3	25
12:20 - 12:25 PM	2	0	2	0	11	11	2	2	4	17
12:25 - 12:30 PM	1	1	2	0	2	2	2	2	4	8
12:30 - 12:35 PM	2	0	2	0	0	0	4	4	8	10
12:35 - 12:40 PM	0	0	0	0	3	3	3	1	4	7
12:40 - 12:45 PM	0	0	0	0	2	2	5	1	6	8
12:45 - 12:50 PM	2	1	3	1	4	5	2	1	3	11
12:50 - 12:55 PM	0	0	0	1	1	2	4	2	6	8
12:55 - 1:00 PM	1	0	1	0	2	2	7	1	8	11
1:00 - 1:05 PM	0	1	1	1	3	4	5	4	9	14
1:05 - 1:10 PM	0	0	0	0	2	2	2	3	5	7
1:10 - 1:15 PM	2	0	2	0	2	2	1	3	4	8
1:15 - 1:20 PM	0	0	0	0	1	1	2	2	4	5
Total	16	5	21	6	60	66	47	30	77	164
Peak Hour 12:10 - 1:10 PM	**12**	**4**	**16**	**5**	**57**	**62**	**40**	**22**	**62**	**140**

Source: Peters and Yaffee, Inc.
Monday April 30, 2018

School Dismissal Peak Period Turning Movement Count
St. Elmo Drive at Munnerlyn Drive

Time Period	St. Elmo Drive Southbound			Munnerlyn Drive Eastbound			St. Elmo Drive Westbound			Grand Total
	Left	Right	Total	Left	Through	Total	Thru	Right	Total	
2:45 - 2:50 PM	2	0	2	1	0	1	1	2	3	6
2:50 - 2:55 PM	2	0	2	0	1	1	3	3	6	9
2:55 - 3:00 PM	2	1	3	1	1	2	7	9	16	21
3:00 - 3:05 PM	4	0	4	1	0	1	6	8	14	19
3:05 - 3:10 PM	0	0	0	0	2	2	10	11	21	23
3:10 - 3:15 PM	4	1	5	0	1	1	7	11	18	24
3:15 - 3:20 PM	0	1	1	0	0	0	6	12	18	19
3:20 - 3:25 PM	7	0	7	0	6	6	12	13	25	38
3:25 - 3:30 PM	16	1	17	2	29	31	5	15	20	68
3:30 - 3:35 PM	20	1	21	3	56	59	9	10	19	99
3:35 - 3:40 PM	27	1	28	0	50	50	9	7	16	94
3:40 - 3:45 PM	24	1	25	0	14	14	6	11	17	56
3:45 - 3:50 PM	17	3	20	1	4	5	2	7	9	34
3:50 - 3:55 PM	10	1	11	1	6	7	5	8	13	31
3:55 - 4:00 PM	12	1	13	0	3	3	2	4	6	22
Total	147	12	159	10	173	183	90	131	221	563
Peak Hour 3:00 - 4:00 PM	**141**	**11**	**152**	**8**	**171**	**179**	**79**	**117**	**206**	**527**

Source: Peters and Yaffee, Inc.
Monday April 30, 2018

ATTACHMENT C
PROPOSED MODIFICATIONS

EPISCOPAL SCHOOL OF JACKSONVILLE

4455 ATLANTIC BOULEVARD, JACKSONVILLE, FLORIDA 32207

PROJECT CONTACTS:

OWNER
EPISCOPAL SCHOOL OF JACKSONVILLE, INC.
4455 ATLANTIC BLVD.
JACKSONVILLE, FL 32207
(904) 396 5751
ATTN: DAVID HODGES,JR.

CIVIL ENGINEERS
ALMOND ENGINEERING, P.A.
6277 DUPONT STA. COURT EAST, SUITE I
JACKSONVILLE, FL 32217
(904) 306-0162 PHONE

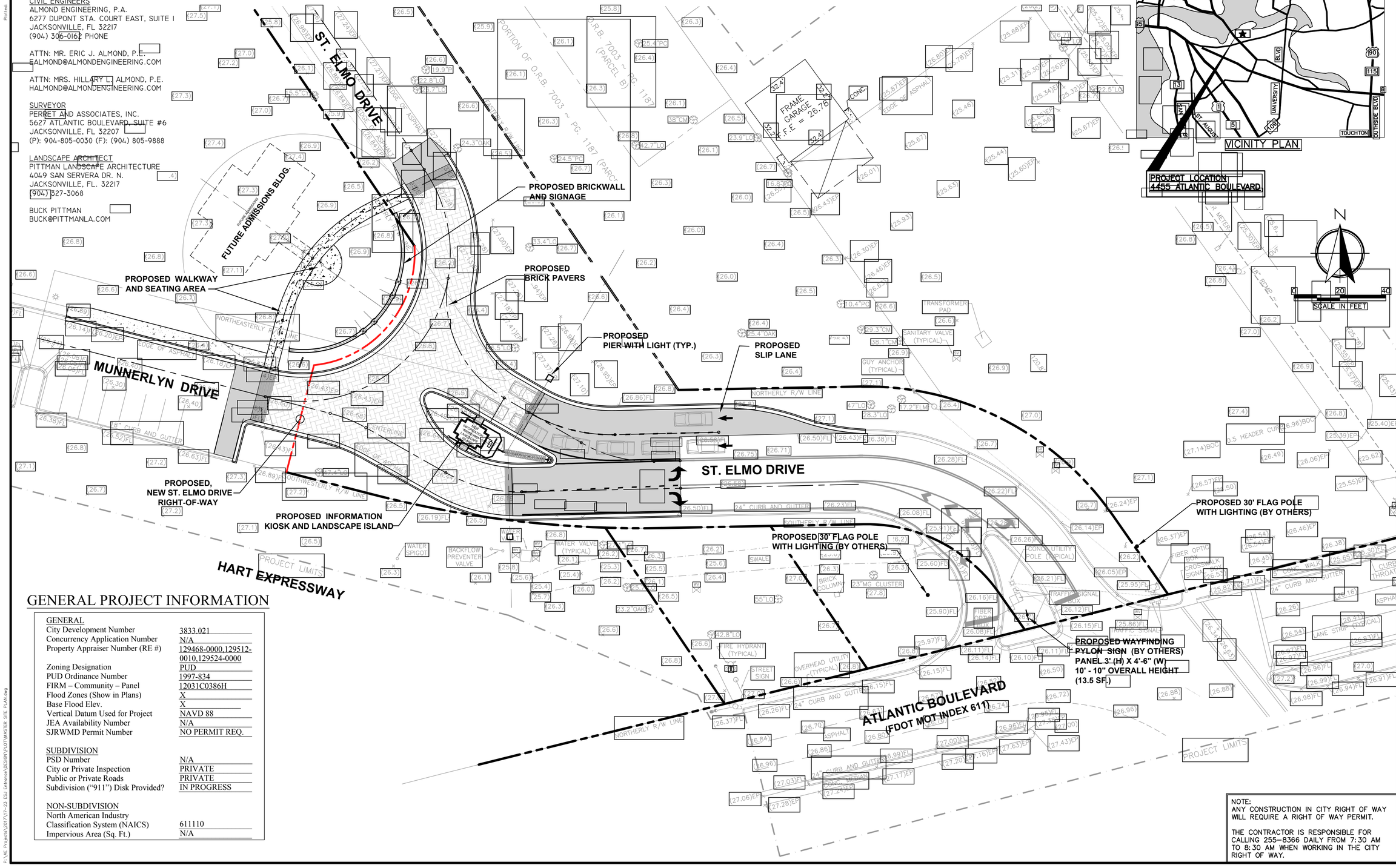
ATTN: MR. ERIC J. ALMOND, P.E.
EALMOND@ALMONDENGINEERING.COM

ATTN: MRS. HILLARY L. ALMOND, P.E.
HALMOND@ALMONDENGINEERING.COM

SURVEYOR
PERRET AND ASSOCIATES, INC.
5627 ATLANTIC BOULEVARD, SUITE #6
JACKSONVILLE, FL 32207
(P): 904-805-0030 (F): (904) 805-9888

LANDSCAPE ARCHITECT
PITTMAN LANDSCAPE ARCHITECTURE
4049 SAN SERVERA DR. N.
JACKSONVILLE, FL. 32217
(904) 527-3068

BUCK PITTMAN
BUCK@PITTMANLA.COM



GENERAL PROJECT INFORMATION

GENERAL	
City Development Number	3833.021
Concurrency Application Number	N/A
Property Appraiser Number (RE #)	129468-0000,129512-0010,129524-0000
Zoning Designation	PUD
PUD Ordinance Number	1997-834
FIRM – Community – Panel	12031C0386H
Flood Zones (Show in Plans)	X
Base Flood Elev.	X
Vertical Datum Used for Project	NAVD 88
JEA Availability Number	N/A
SJRWMD Permit Number	NO PERMIT REQ.
SUBDIVISION	
PSD Number	N/A
City or Private Inspection	PRIVATE
Public or Private Roads	PRIVATE
Subdivision ("911") Disk Provided?	IN PROGRESS
NON-SUBDIVISION	
North American Industry Classification System (NAICS)	611110
Impervious Area (Sq. Ft.)	N/A

NOTE:
ANY CONSTRUCTION IN CITY RIGHT OF WAY WILL REQUIRE A RIGHT OF WAY PERMIT.

THE CONTRACTOR IS RESPONSIBLE FOR CALLING 255-8366 DAILY FROM 7:30 AM TO 8:30 AM WHEN WORKING IN THE CITY RIGHT OF WAY.

04-21-2018
ERIC J. ALMOND, P.E.
FL# 59246

Date	Revision

EPISCOPAL SCHOOL of JACKSONVILLE

AE JOB NO.: 17-23
DESIGN: EJA/PET
DRAWN: MAB PET
CHECKED: EJA
START DATE: SEP. 2017
PLOT DATE: 4-21-2018

MASTER SITE PLAN

EPISCOPAL SCHOOL OF JACKSONVILLE
4455 ATLANTIC BOULEVARD
JACKSONVILLE, FLORIDA 32207

ALMOND ENGINEERING
CONSULTING CIVIL ENGINEERS
6277 DUPONT STATION COURT E., SUITE I
JACKSONVILLE, FL 32217
(904) 306-0162 PHONE (904) 306-2185 FAX

NOT FOR CONSTRUCTION, NOT FOR BIDDING - FOR REGULATORY REVIEW ONLY. - 04-21-2018

C-6

ATTACHMENT D
INTERSECTION CAPACITY ANALYSIS

Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Traffic Vol, veh/h	7	50	132	209	168	36
Future Vol, veh/h	7	50	132	209	168	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	75	70	70	71	71
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	67	189	299	237	51

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	488	0	-	0	424	339
Stage 1	-	-	-	-	339	-
Stage 2	-	-	-	-	85	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1075	-	-	-	587	703
Stage 1	-	-	-	-	722	-
Stage 2	-	-	-	-	938	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1075	-	-	-	582	703
Mov Cap-2 Maneuver	-	-	-	-	582	-
Stage 1	-	-	-	-	716	-
Stage 2	-	-	-	-	938	-

Approach	EB	WB	SE
HCM Control Delay, s	1	0	16.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SELn1
Capacity (veh/h)	1075	-	-	-	600
HCM Lane V/C Ratio	0.009	-	-	-	0.479
HCM Control Delay (s)	8.4	0	-	-	16.4
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	2.6

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Traffic Vol, veh/h	5	57	40	22	12	4
Future Vol, veh/h	5	57	40	22	12	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	48	48	86	86	57	57
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	119	47	26	21	7

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	73	0	-	0	199	60
Stage 1	-	-	-	-	60	-
Stage 2	-	-	-	-	139	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1527	-	-	-	790	1005
Stage 1	-	-	-	-	963	-
Stage 2	-	-	-	-	888	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1527	-	-	-	784	1005
Mov Cap-2 Maneuver	-	-	-	-	784	-
Stage 1	-	-	-	-	956	-
Stage 2	-	-	-	-	888	-

Approach	EB	WB	SE
HCM Control Delay, s	0.6	0	9.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SELn1
Capacity (veh/h)	1527	-	-	-	830
HCM Lane V/C Ratio	0.007	-	-	-	0.034
HCM Control Delay (s)	7.4	0	-	-	9.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	9.3

Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Traffic Vol, veh/h	8	171	79	117	141	11
Future Vol, veh/h	8	171	79	117	141	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	36	36	82	82	51	51
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	475	96	143	276	22

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	239	0	-	0	687	168
Stage 1	-	-	-	-	168	-
Stage 2	-	-	-	-	519	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1328	-	-	-	413	876
Stage 1	-	-	-	-	862	-
Stage 2	-	-	-	-	597	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1328	-	-	-	404	876
Mov Cap-2 Maneuver	-	-	-	-	404	-
Stage 1	-	-	-	-	842	-
Stage 2	-	-	-	-	597	-

Approach	EB	WB	SE
HCM Control Delay, s	0.3	0	31.9
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SELn1
Capacity (veh/h)	1328	-	-	-	420
HCM Lane V/C Ratio	0.017	-	-	-	0.71
HCM Control Delay (s)	7.8	0	-	-	31.9
HCM Lane LOS	A	A	-	-	D
HCM 95th %tile Q(veh)	0.1	-	-	-	5.4

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Traffic Vol, veh/h	7	50	132	209	168	36
Future Vol, veh/h	7	50	132	209	168	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	75	70	70	71	71
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	67	189	299	237	51

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	488	0	-	0	274	189
Stage 1	-	-	-	-	189	-
Stage 2	-	-	-	-	85	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1075	-	-	-	716	853
Stage 1	-	-	-	-	843	-
Stage 2	-	-	-	-	938	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1075	-	-	-	710	853
Mov Cap-2 Maneuver	-	-	-	-	710	-
Stage 1	-	-	-	-	835	-
Stage 2	-	-	-	-	938	-

Approach	EB	WB	SE
HCM Control Delay, s	1	0	13.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SELn1
Capacity (veh/h)	1075	-	-	-	732
HCM Lane V/C Ratio	0.009	-	-	-	0.393
HCM Control Delay (s)	8.4	0	-	-	13.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	1.9

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Traffic Vol, veh/h	5	57	40	22	12	4
Future Vol, veh/h	5	57	40	22	12	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	48	48	86	86	57	57
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	119	47	26	21	7

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	73	0	-	0	186	47
Stage 1	-	-	-	-	47	-
Stage 2	-	-	-	-	139	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1527	-	-	-	803	1022
Stage 1	-	-	-	-	975	-
Stage 2	-	-	-	-	888	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1527	-	-	-	797	1022
Mov Cap-2 Maneuver	-	-	-	-	797	-
Stage 1	-	-	-	-	968	-
Stage 2	-	-	-	-	888	-

Approach	EB	WB	SE
HCM Control Delay, s	0.6	0	9.4
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SELn1
Capacity (veh/h)	1527	-	-	-	843
HCM Lane V/C Ratio	0.007	-	-	-	0.033
HCM Control Delay (s)	7.4	0	-	-	9.4
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	7.6

Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Traffic Vol, veh/h	8	171	79	117	141	11
Future Vol, veh/h	8	171	79	117	141	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	36	36	82	82	51	51
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	475	96	143	276	22

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	239	0	-	0	615	96
Stage 1	-	-	-	-	96	-
Stage 2	-	-	-	-	519	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1328	-	-	-	455	960
Stage 1	-	-	-	-	928	-
Stage 2	-	-	-	-	597	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1328	-	-	-	445	960
Mov Cap-2 Maneuver	-	-	-	-	445	-
Stage 1	-	-	-	-	907	-
Stage 2	-	-	-	-	597	-

Approach	EB	WB	SE
HCM Control Delay, s	0.3	0	25.8
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SELn1
Capacity (veh/h)	1328	-	-	-	463
HCM Lane V/C Ratio	0.017	-	-	-	0.644
HCM Control Delay (s)	7.8	0	-	-	25.8
HCM Lane LOS	A	A	-	-	D
HCM 95th %tile Q(veh)	0.1	-	-	-	4.5