

Memorandum

To: Honorable Mayor Brian Pugh, Village Board Members, and Village Planning Board Members

From: Carlito Holt, P.E, PTOE
Managing Partner

Subject: Updated Traffic Analysis
25 South Riverside Avenue
Village of Croton-on-Hudson, NY

Date: October 22, 2020

Project No.: 20-049

INTRODUCTION

Provident Design Engineering, PLLC (PDE) has performed an updated traffic analysis for the proposed residential development to be located at 25 South Riverside Avenue, in the Village of Croton-on-Hudson, Westchester County, New York. PDE previously performed a trip generation analysis, which was summarized in a letter dated August 20, 2020. Additionally, an off-site traffic analysis was performed, which was summarized in a Memorandum dated October 9, 2020. Based upon feedback received from the Planning Board, PDE has prepared an updated traffic analysis that does not take any credit for the existing permitted use at the site and reflects the latest unit count of 39 residential units. Therefore, the analysis undertaken in association with this Memorandum considers the incremental impacts of the proposed Project as though the current site is a fully undeveloped property.

TRAFFIC VOLUME DEVELOPMENT

All base parameters from the October 9, 2020 Memorandum are the same for this Memorandum with the exception of the consideration of the existing permitted use and the change in unit count. Based upon these updated parameters, the following Table summarizes the anticipated Project-generated Traffic Volumes:

TABLE NO. 1 TRIP GENERATION COMPARISON TABLE 25 SO. RIVERSIDE AVE. REDEVELOPMENT – CROTON-ON HUDSON, NY			
	Peak AM Hour	Peak PM Hour	Peak Saturday Hour
Proposed Project	22	26	27

Notes:

1. Proposed project trip generation rates based upon ITE Land Use Code 220 – Multifamily Housing for 39 units.
2. No credit taken for existing permitted use at the project site.

ANALYSIS / FINDINGS

Traffic analyses were performed with the updated traffic volumes. The following Table summarizes the results of the capacity analysis:

TABLE NO. 2 OVERALL LEVEL OF SERVICE SUMMARY				
INTERSECTION	PEAK AM HOUR		PEAK PM HOUR	
	No-Build	Build	No-Build	Build
	LOS Delay	LOS Delay	LOS Delay	LOS Delay
Brook St. & South Riverside Ave.	b 11.0	b 11.1	b 12.1	b 12.1
Grand St. & South Riverside Ave.	b 11.9	b 12.1	b 13.1	b 13.2
Site Driveway & South Riverside Ave.	n/a	b 10.2	n/a	b 10.9

NOTES:

1. Average delay is represented in seconds per vehicle.
2. No-build conditions do not include traffic volumes from existing permitted use, thus providing a very conservative incremental impact comparison.

As can be seen in the Table above, the proposed Project will not result in any change to Levels of Service at the study locations and average delays remain essentially unchanged. Based on the foregoing, the proposed Project will not have a significant traffic impact on the adjacent roadway network. This updated analysis conservatively assumed no credit for the existing permitted use. Therefore, the incremental impacts identified herein conservatively assume the proposed Project site as an undeveloped piece of property.

Q:\PROJECTS-20\20-049 25 South Riverside Traffic Study\Memo\20-049 Updated Traffic Analysis Memorandum.docx

ATTACHMENT A

FIGURES

Q:\PROJECTS-20\20-049 25 South Riverside Traffic Study\AutoCAD\Traffic\Figures 8.5x11 Portrait.dwg



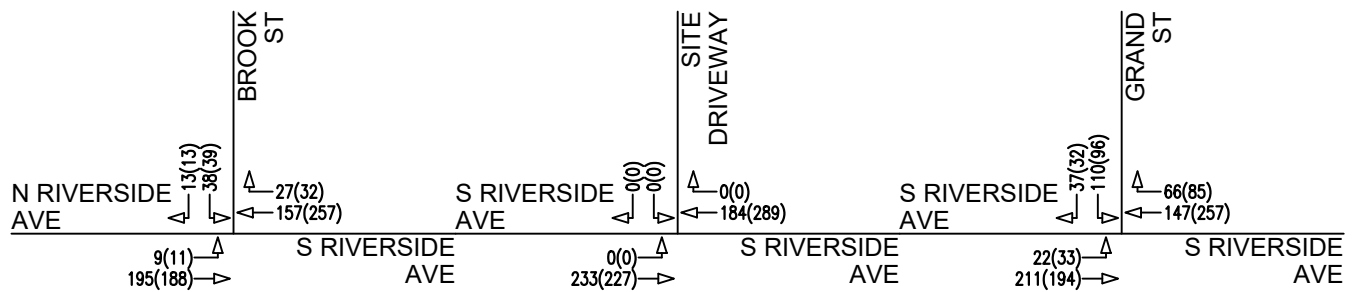
7 SKYLINE DRIVE, HAWTHORNE, NEW YORK 10532
TEL: (914) 592-4040 WWW.PDERESULTS.COM

© PROVIDENT DESIGN ENGINEERING, PLLC

Site Location
25 South Riverside Avenue
Village of Croton-On-Hudson, Westchester County, NY

Project No. 20-049
Scale: 1"=200'
October 2020

Figure No. 01



LEGEND

00 - VPH-PEAK AM HOUR (9:00-10:00)
 (00) - VPH-PEAK PM HOUR (5:00-6:00)



7 SKYLINE DRIVE, HAWTHORNE, NEW YORK 10532
 TEL: (914) 592-4040 WWW.PDERESULTS.COM

© PROVIDENT DESIGN ENGINEERING, PLLC

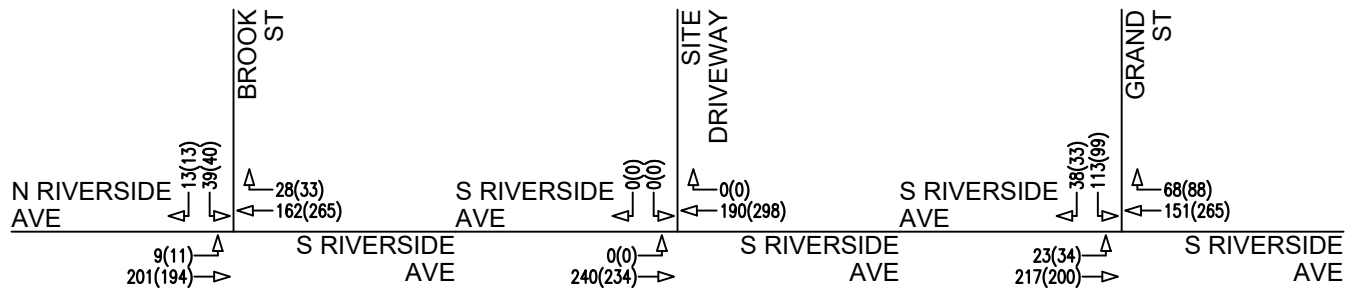
Existing Traffic Volumes
 25 South Riverside Avenue

Village of Croton-On-Hudson, Westchester County, NY

Project No. 20-049
 Scale: N.T.S.
 October 2020

Figure No. 02

Q:\PROJECTS-20\20-049 25 South Riverside Traffic Study\AutoCAD\Traffic\TrafficFigures 8.5x11 Portrait.dwg



LEGEND

00 - VPH-PEAK AM HOUR (9:00-10:00)
 (00) - VPH-PEAK PM HOUR (5:00-6:00)



7 SKYLINE DRIVE, HAWTHORNE, NEW YORK 10532
 TEL: (914) 592-4040 WWW.PDERESULTS.COM

© PROVIDENT DESIGN ENGINEERING, PLLC

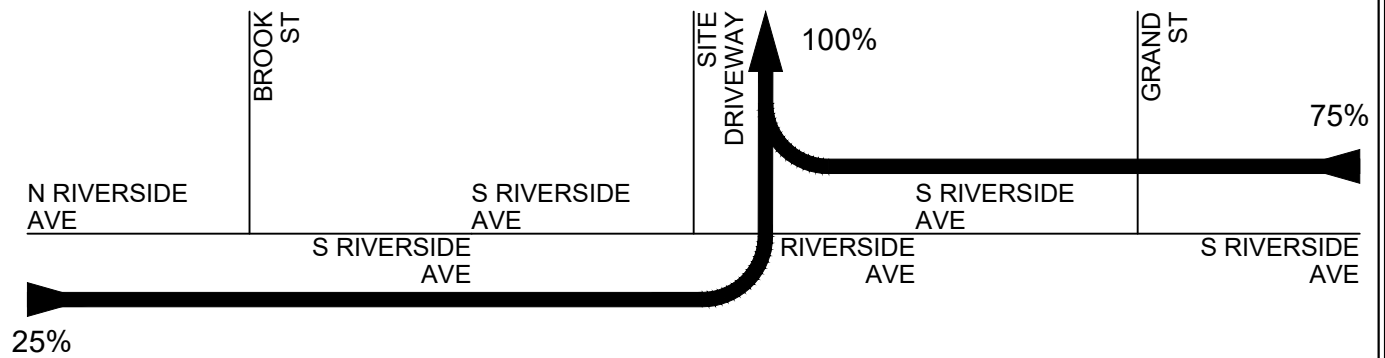
No-Build Traffic Volumes
 25 South Riverside Avenue

Village of Croton-On-Hudson, Westchester County, NY

Project No. 20-049
 Scale: N.T.S.
 October 2020

Figure No. 03

Q:\PROJECTS-20\20-049 25 South Riverside Traffic Study\AutoCAD\Traffic\Figures 8.5x11 Portrait.dwg



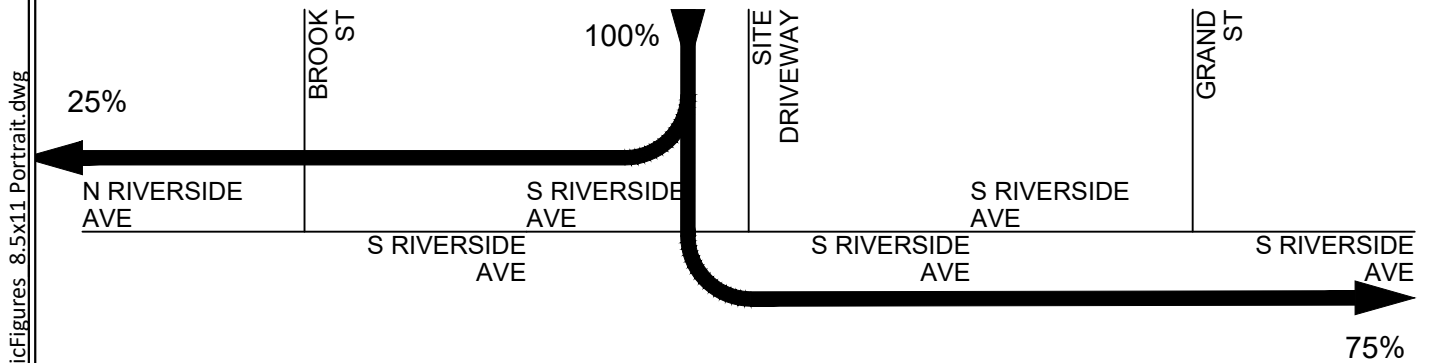
7 SKYLINE DRIVE, HAWTHORNE, NEW YORK 10532
TEL: (914) 592-4040 WWW.PDERESULTS.COM

© PROVIDENT DESIGN ENGINEERING, PLLC

Arrival Distribution
25 South Riverside Avenue
Village of Croton-On-Hudson, Westchester County, NY

Project No. 20-049
Scale: N.T.S.
October 2020

Figure No. 04



Q:\PROJECTS-20\20-049 25 South Riverside Traffic Study\AutoCAD\Traffic\Figures 8.5x11 Portrait.dwg



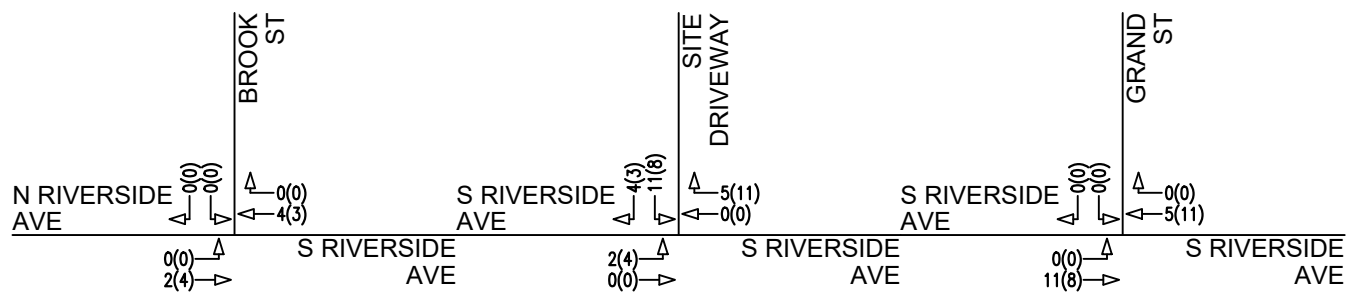
7 SKYLINE DRIVE, HAWTHORNE, NEW YORK 10532
TEL: (914) 592-4040 WWW.PDERESULTS.COM

© PROVIDENT DESIGN ENGINEERING, PLLC

Departure Distribution
25 South Riverside Avenue
Village of Croton-On-Hudson, Westchester County, NY

Project No. 20-049
Scale: N.T.S.
October 2020

Figure No. 05



LEGEND

00 - VPH-PEAK AM HOUR (9:00-10:00)
 (00) - VPH-PEAK PM HOUR (5:00-6:00)



7 SKYLINE DRIVE, HAWTHORNE, NEW YORK 10532
 TEL: (914) 592-4040 WWW.PDERESULTS.COM

© PROVIDENT DESIGN ENGINEERING, PLLC

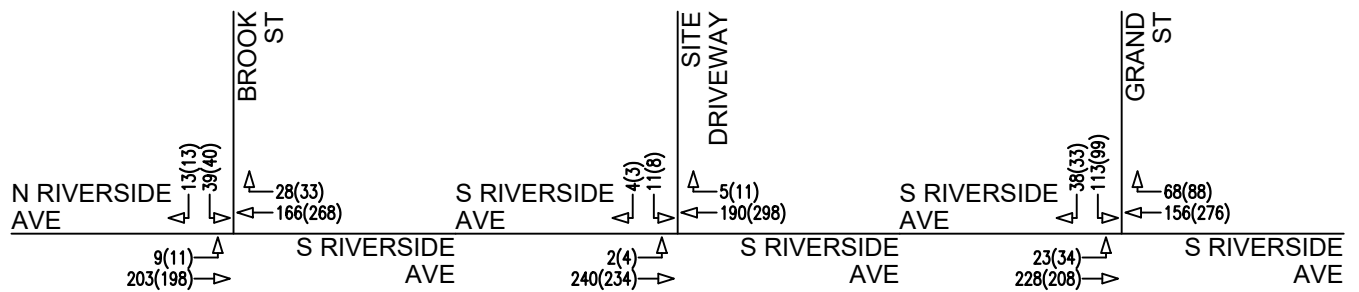
Site Generated Traffic Volumes
 25 South Riverside Avenue

Village of Croton-On-Hudson, Westchester County, NY

Project No. 20-049
 Scale: N.T.S.
 October 2020

Figure No. 06

Q:\PROJECTS-20\20-049 25 South Riverside Traffic Study\AutoCAD\Traffic\TrafficFigures 8.5x11 Portrait.dwg



LEGEND

00 - VPH-PEAK AM HOUR (9:00-10:00)
 (00) - VPH-PEAK PM HOUR (5:00-6:00)



7 SKYLINE DRIVE, HAWTHORNE, NEW YORK 10532
 TEL: (914) 592-4040 WWW.PDERESULTS.COM

© PROVIDENT DESIGN ENGINEERING, PLLC

Build Traffic Volumes
 25 South Riverside Avenue

Village of Croton-On-Hudson, Westchester County, NY

Project No. 20-049
 Scale: N.T.S.
 October 2020

Figure No. 07

Q:\PROJECTS-20\20-049 25 South Riverside Traffic Study\AutoCAD\Traffic\Figures 8.5x11 Portrait.dwg

ATTACHMENT B

CAPACITY ANALYSIS WORKSHEETS

Intersection						
Int Delay, s/veh	1.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	38	13	157	27	9	195
Future Vol, veh/h	38	13	157	27	9	195
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-2	-	-3	-	-	-2
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	41	14	171	29	10	212
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	418	186	0	0	200	0
Stage 1	186	-	-	-	-	-
Stage 2	232	-	-	-	-	-
Critical Hdwy	6.02	6.02	-	-	4.12	-
Critical Hdwy Stg 1	5.02	-	-	-	-	-
Critical Hdwy Stg 2	5.02	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	620	865	-	-	1372	-
Stage 1	863	-	-	-	-	-
Stage 2	828	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	615	865	-	-	1372	-
Mov Cap-2 Maneuver	615	-	-	-	-	-
Stage 1	863	-	-	-	-	-
Stage 2	821	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	10.9	0		0.3		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	-		664	1372	-
HCM Lane V/C Ratio	-	-		0.083	0.007	-
HCM Control Delay (s)	-	-		10.9	7.6	0
HCM Lane LOS	-	-		B	A	A
HCM 95th %tile Q(veh)	-	-		0.3	0	-

HCM 6th TWSC
4: South Riverside Ave & Site Driveway

10/22/2020

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	184	0	0	233
Future Vol, veh/h	0	0	184	0	0	233
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-7	-	-3	-	-	3
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	200	0	0	253
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	453	200	0	0	200	0
Stage 1	200	-	-	-	-	-
Stage 2	253	-	-	-	-	-
Critical Hdwy	5.02	5.52	-	-	4.12	-
Critical Hdwy Stg 1	4.02	-	-	-	-	-
Critical Hdwy Stg 2	4.02	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	673	874	-	-	1372	-
Stage 1	901	-	-	-	-	-
Stage 2	871	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	673	874	-	-	1372	-
Mov Cap-2 Maneuver	673	-	-	-	-	-
Stage 1	901	-	-	-	-	-
Stage 2	871	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	0	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	-	1372	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s)	-	-	0	0	-	
HCM Lane LOS	-	-	A	A	-	
HCM 95th %tile Q(veh)	-	-	-	0	-	

HCM 6th TWSC
6: South Riverside Ave & Grand St

10/22/2020

Intersection						
Int Delay, s/veh	3.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	110	37	147	66	22	211
Future Vol, veh/h	110	37	147	66	22	211
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-7	-	1	-	-	3
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	120	40	160	72	24	229
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	473	196	0	0	232	0
Stage 1	196	-	-	-	-	-
Stage 2	277	-	-	-	-	-
Critical Hdwy	5.02	5.52	-	-	4.12	-
Critical Hdwy Stg 1	4.02	-	-	-	-	-
Critical Hdwy Stg 2	4.02	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	661	878	-	-	1336	-
Stage 1	903	-	-	-	-	-
Stage 2	857	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	647	878	-	-	1336	-
Mov Cap-2 Maneuver	647	-	-	-	-	-
Stage 1	903	-	-	-	-	-
Stage 2	839	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	11.7	0		0.7		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	-		693	1336	
HCM Lane V/C Ratio	-	-		0.231	0.018	
HCM Control Delay (s)	-	-		11.7	7.7	
HCM Lane LOS	-	-		B	A	
HCM 95th %tile Q(veh)	-	-		0.9	0.1	

Intersection

Int Delay, s/veh 1.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	39	13	257	32	11	188
Future Vol, veh/h	39	13	257	32	11	188
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-2	-	-3	-	-	-2
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	42	14	279	35	12	204

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	525	297	0
Stage 1	297	-	-
Stage 2	228	-	-
Critical Hdwy	6.02	6.02	-
Critical Hdwy Stg 1	5.02	-	-
Critical Hdwy Stg 2	5.02	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	544	755	-
Stage 1	779	-	-
Stage 2	831	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	538	755	-
Mov Cap-2 Maneuver	538	-	-
Stage 1	779	-	-
Stage 2	822	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.9	0	0.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	580	1246
HCM Lane V/C Ratio	-	-	0.097	0.01
HCM Control Delay (s)	-	-	11.9	7.9
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.3	0

HCM 6th TWSC
4: South Riverside Ave & Site Driveway

10/22/2020

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	289	0	0	227
Future Vol, veh/h	0	0	289	0	0	227
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-7	-	-3	-	-	3
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	314	0	0	247
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	561	314	0	0	314	0
Stage 1	314	-	-	-	-	-
Stage 2	247	-	-	-	-	-
Critical Hdwy	5.02	5.52	-	-	4.12	-
Critical Hdwy Stg 1	4.02	-	-	-	-	-
Critical Hdwy Stg 2	4.02	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	608	772	-	-	1246	-
Stage 1	837	-	-	-	-	-
Stage 2	874	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	608	772	-	-	1246	-
Mov Cap-2 Maneuver	608	-	-	-	-	-
Stage 1	837	-	-	-	-	-
Stage 2	874	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	0	0	0			
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	-	1246	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s)	-	-	0	0	-	
HCM Lane LOS	-	-	A	A	-	
HCM 95th %tile Q(veh)	-	-	-	0	-	

HCM 6th TWSC
6: South Riverside Ave & Grand St

10/22/2020

Intersection						
Int Delay, s/veh	2.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	96	32	257	85	33	194
Future Vol, veh/h	96	32	257	85	33	194
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-7	-	1	-	-	3
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	104	35	279	92	36	211
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	608	325	0	0	371	0
Stage 1	325	-	-	-	-	-
Stage 2	283	-	-	-	-	-
Critical Hdwy	5.02	5.52	-	-	4.12	-
Critical Hdwy Stg 1	4.02	-	-	-	-	-
Critical Hdwy Stg 2	4.02	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	581	763	-	-	1188	-
Stage 1	831	-	-	-	-	-
Stage 2	854	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	561	763	-	-	1188	-
Mov Cap-2 Maneuver	561	-	-	-	-	-
Stage 1	831	-	-	-	-	-
Stage 2	825	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	12.8	0	1.2			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	601	1188	-	
HCM Lane V/C Ratio	-	-	0.231	0.03	-	
HCM Control Delay (s)	-	-	12.8	8.1	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	0.9	0.1	-	

Intersection						
Int Delay, s/veh	1.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	39	13	162	28	9	201
Future Vol, veh/h	39	13	162	28	9	201
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-2	-	-3	-	-	-2
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	42	14	176	30	10	218
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	429	191	0	0	206	0
Stage 1	191	-	-	-	-	-
Stage 2	238	-	-	-	-	-
Critical Hdwy	6.02	6.02	-	-	4.12	-
Critical Hdwy Stg 1	5.02	-	-	-	-	-
Critical Hdwy Stg 2	5.02	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	611	860	-	-	1365	-
Stage 1	859	-	-	-	-	-
Stage 2	823	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	606	860	-	-	1365	-
Mov Cap-2 Maneuver	606	-	-	-	-	-
Stage 1	859	-	-	-	-	-
Stage 2	816	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	11	0		0.3		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	-		654	1365	
HCM Lane V/C Ratio	-	-		0.086	0.007	
HCM Control Delay (s)	-	-		11	7.7	
HCM Lane LOS	-	-		B	A	
HCM 95th %tile Q(veh)	-	-		0.3	0	

HCM 6th TWSC
4: South Riverside Ave & Site Driveway

10/22/2020

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	190	0	0	240
Future Vol, veh/h	0	0	190	0	0	240
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-7	-	-3	-	-	3
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	207	0	0	261
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	468	207	0	0	207	0
Stage 1	207	-	-	-	-	-
Stage 2	261	-	-	-	-	-
Critical Hdwy	5.02	5.52	-	-	4.12	-
Critical Hdwy Stg 1	4.02	-	-	-	-	-
Critical Hdwy Stg 2	4.02	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	664	868	-	-	1364	-
Stage 1	897	-	-	-	-	-
Stage 2	866	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	664	868	-	-	1364	-
Mov Cap-2 Maneuver	664	-	-	-	-	-
Stage 1	897	-	-	-	-	-
Stage 2	866	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	0	0	0			
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	-	1364	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s)	-	-	0	0	-	
HCM Lane LOS	-	-	A	A	-	
HCM 95th %tile Q(veh)	-	-	-	0	-	

HCM 6th TWSC
6: South Riverside Ave & Grand St

10/22/2020

Intersection						
Int Delay, s/veh	3.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	113	38	151	68	23	217
Future Vol, veh/h	113	38	151	68	23	217
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-7	-	1	-	-	3
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	123	41	164	74	25	236

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	487	201	0
Stage 1	201	-	-
Stage 2	286	-	-
Critical Hdwy	5.02	5.52	-
Critical Hdwy Stg 1	4.02	-	-
Critical Hdwy Stg 2	4.02	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	652	873	-
Stage 1	901	-	-
Stage 2	852	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	638	873	-
Mov Cap-2 Maneuver	638	-	-
Stage 1	901	-	-
Stage 2	833	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.9	0	0.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	684	1329
HCM Lane V/C Ratio	-	-	0.24	0.019
HCM Control Delay (s)	-	-	11.9	7.8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.9	0.1

Intersection						
Int Delay, s/veh	1.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	40	13	265	33	11	194
Future Vol, veh/h	40	13	265	33	11	194
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-2	-	-3	-	-	-2
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	43	14	288	36	12	211
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	541	306	0	0	324	0
Stage 1	306	-	-	-	-	-
Stage 2	235	-	-	-	-	-
Critical Hdwy	6.02	6.02	-	-	4.12	-
Critical Hdwy Stg 1	5.02	-	-	-	-	-
Critical Hdwy Stg 2	5.02	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	533	746	-	-	1236	-
Stage 1	773	-	-	-	-	-
Stage 2	825	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	527	746	-	-	1236	-
Mov Cap-2 Maneuver	527	-	-	-	-	-
Stage 1	773	-	-	-	-	-
Stage 2	816	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	12.1	0	0.4			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	568	1236	-	
HCM Lane V/C Ratio	-	-	0.101	0.01	-	
HCM Control Delay (s)	-	-	12.1	7.9	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	0.3	0	-	

HCM 6th TWSC
4: South Riverside Ave & Site Driveway

10/22/2020

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	298	0	0	234
Future Vol, veh/h	0	0	298	0	0	234
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-7	-	-3	-	-	3
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	324	0	0	254
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	578	324	0	0	324	0
Stage 1	324	-	-	-	-	-
Stage 2	254	-	-	-	-	-
Critical Hdwy	5.02	5.52	-	-	4.12	-
Critical Hdwy Stg 1	4.02	-	-	-	-	-
Critical Hdwy Stg 2	4.02	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	598	764	-	-	1236	-
Stage 1	831	-	-	-	-	-
Stage 2	870	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	598	764	-	-	1236	-
Mov Cap-2 Maneuver	598	-	-	-	-	-
Stage 1	831	-	-	-	-	-
Stage 2	870	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	0	0	0			
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	-	1236	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s)	-	-	0	0	-	
HCM Lane LOS	-	-	A	A	-	
HCM 95th %tile Q(veh)	-	-	-	0	-	

HCM 6th TWSC
6: South Riverside Ave & Grand St

10/22/2020

Intersection						
Int Delay, s/veh	2.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	99	33	265	88	34	200
Future Vol, veh/h	99	33	265	88	34	200
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-7	-	1	-	-	3
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	108	36	288	96	37	217
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	627	336	0	0	384	0
Stage 1	336	-	-	-	-	-
Stage 2	291	-	-	-	-	-
Critical Hdwy	5.02	5.52	-	-	4.12	-
Critical Hdwy Stg 1	4.02	-	-	-	-	-
Critical Hdwy Stg 2	4.02	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	571	754	-	-	1174	-
Stage 1	825	-	-	-	-	-
Stage 2	850	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	550	754	-	-	1174	-
Mov Cap-2 Maneuver	550	-	-	-	-	-
Stage 1	825	-	-	-	-	-
Stage 2	819	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	13.1	0	1.2			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	590	1174	-	
HCM Lane V/C Ratio	-	-	0.243	0.031	-	
HCM Control Delay (s)	-	-	13.1	8.2	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	0.9	0.1	-	

Intersection						
Int Delay, s/veh	1.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	39	13	166	28	9	203
Future Vol, veh/h	39	13	166	28	9	203
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-2	-	-3	-	-	-2
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	42	14	180	30	10	221
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	436	195	0	0	210	0
Stage 1	195	-	-	-	-	-
Stage 2	241	-	-	-	-	-
Critical Hdwy	6.02	6.02	-	-	4.12	-
Critical Hdwy Stg 1	5.02	-	-	-	-	-
Critical Hdwy Stg 2	5.02	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	606	856	-	-	1361	-
Stage 1	856	-	-	-	-	-
Stage 2	821	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	601	856	-	-	1361	-
Mov Cap-2 Maneuver	601	-	-	-	-	-
Stage 1	856	-	-	-	-	-
Stage 2	814	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	11.1	0		0.3		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	-		649	1361	
HCM Lane V/C Ratio	-	-		0.087	0.007	
HCM Control Delay (s)	-	-		11.1	7.7	
HCM Lane LOS	-	-		B	A	
HCM 95th %tile Q(veh)	-	-		0.3	0	

HCM 6th TWSC
4: South Riverside Ave & Site Driveway

10/22/2020

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	11	4	190	5	2	240
Future Vol, veh/h	11	4	190	5	2	240
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-7	-	-3	-	-	3
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	4	207	5	2	261
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	475	210	0	0	212	0
Stage 1	210	-	-	-	-	-
Stage 2	265	-	-	-	-	-
Critical Hdwy	5.02	5.52	-	-	4.12	-
Critical Hdwy Stg 1	4.02	-	-	-	-	-
Critical Hdwy Stg 2	4.02	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	660	865	-	-	1358	-
Stage 1	895	-	-	-	-	-
Stage 2	864	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	659	865	-	-	1358	-
Mov Cap-2 Maneuver	659	-	-	-	-	-
Stage 1	895	-	-	-	-	-
Stage 2	862	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	10.2	0	0.1			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	704	1358	-	
HCM Lane V/C Ratio	-	-	0.023	0.002	-	
HCM Control Delay (s)	-	-	10.2	7.7	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	0.1	0	-	

HCM 6th TWSC
6: South Riverside Ave & Grand St

10/22/2020

Intersection						
Int Delay, s/veh	3.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	113	38	156	68	23	228
Future Vol, veh/h	113	38	156	68	23	228
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-7	-	1	-	-	3
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	123	41	170	74	25	248
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	505	207	0	0	244	0
Stage 1	207	-	-	-	-	-
Stage 2	298	-	-	-	-	-
Critical Hdwy	5.02	5.52	-	-	4.12	-
Critical Hdwy Stg 1	4.02	-	-	-	-	-
Critical Hdwy Stg 2	4.02	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	641	868	-	-	1322	-
Stage 1	897	-	-	-	-	-
Stage 2	846	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	627	868	-	-	1322	-
Mov Cap-2 Maneuver	627	-	-	-	-	-
Stage 1	897	-	-	-	-	-
Stage 2	827	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	12.1	0	0.7			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	674	1322	-	
HCM Lane V/C Ratio	-	-	0.244	0.019	-	
HCM Control Delay (s)	-	-	12.1	7.8	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	1	0.1	-	

Intersection

Int Delay, s/veh 1.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	40	13	268	33	11	198
Future Vol, veh/h	40	13	268	33	11	198
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-2	-	-3	-	-	-2
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	43	14	291	36	12	215

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	548	309	0
Stage 1	309	-	-
Stage 2	239	-	-
Critical Hdwy	6.02	6.02	4.12
Critical Hdwy Stg 1	5.02	-	-
Critical Hdwy Stg 2	5.02	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	529	744	1233
Stage 1	771	-	-
Stage 2	822	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	523	744	1233
Mov Cap-2 Maneuver	523	-	-
Stage 1	771	-	-
Stage 2	813	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.1	0	0.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	564	1233	-
HCM Lane V/C Ratio	-	0.102	0.01	-
HCM Control Delay (s)	-	12.1	7.9	0
HCM Lane LOS	-	B	A	A
HCM 95th %tile Q(veh)	-	0.3	0	-

HCM 6th TWSC
4: South Riverside Ave & Site Driveway

10/22/2020

Intersection						
Int Delay, s/veh	0.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	3	298	11	4	234
Future Vol, veh/h	8	3	298	11	4	234
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-7	-	-3	-	-	3
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	3	324	12	4	254
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	592	330	0	0	336	0
Stage 1	330	-	-	-	-	-
Stage 2	262	-	-	-	-	-
Critical Hdwy	5.02	5.52	-	-	4.12	-
Critical Hdwy Stg 1	4.02	-	-	-	-	-
Critical Hdwy Stg 2	4.02	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	590	759	-	-	1223	-
Stage 1	828	-	-	-	-	-
Stage 2	866	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	588	759	-	-	1223	-
Mov Cap-2 Maneuver	588	-	-	-	-	-
Stage 1	828	-	-	-	-	-
Stage 2	863	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	10.9	0		0.1		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	626	1223	-	
HCM Lane V/C Ratio	-	-	0.019	0.004	-	
HCM Control Delay (s)	-	-	10.9	8	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	0.1	0	-	

HCM 6th TWSC
6: South Riverside Ave & Grand St

10/22/2020

Intersection						
Int Delay, s/veh	2.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	99	33	276	88	34	208
Future Vol, veh/h	99	33	276	88	34	208
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-7	-	1	-	-	3
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	108	36	300	96	37	226
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	648	348	0	0	396	0
Stage 1	348	-	-	-	-	-
Stage 2	300	-	-	-	-	-
Critical Hdwy	5.02	5.52	-	-	4.12	-
Critical Hdwy Stg 1	4.02	-	-	-	-	-
Critical Hdwy Stg 2	4.02	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	560	744	-	-	1163	-
Stage 1	818	-	-	-	-	-
Stage 2	845	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	540	744	-	-	1163	-
Mov Cap-2 Maneuver	540	-	-	-	-	-
Stage 1	818	-	-	-	-	-
Stage 2	815	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	13.2	0		1.2		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	580	1163	-	
HCM Lane V/C Ratio	-	-	0.247	0.032	-	
HCM Control Delay (s)	-	-	13.2	8.2	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	1	0.1	-	