September 28, 2022

Dr. Jeff Rubman
Amber Lanterns LLC
P.O. Box 3009
Burlington, VT 05408-3009

RE: Traffic Impact Assessment
Village at Autumn Pond - Phase II Redevelopment, Essex Jct.

Dear Dr. Rubman,

As requested, we have updated the traffic impact assessment originally prepared by Lamoureux & Dickinson Consulting Engineers, Inc. (dated August 16, 2021) for the redevelopment of the Amber Lanterns apartment complex (the Project) located at 167-199 Autumn Pond Way in the City of Essex Junction. The Project is also known as Phase II of the Village at Autumn Pond redevelopment project. The results of the requested analyses are presented in the following sections.

Introduction

The Project will demolish Amber Lantern's four two-story apartment buildings (48 apartment units). In their place will be constructed three new four-story buildings providing 117 new apartment units, for a net gain of 69 units. Access will continue to be via Autumn Pond Way, which is a private road intersecting with Old Colchester Road just south of the Fairview Cemetery and the Tree Farm Recreational Facility.

The Project includes new on-site parking and internal driveways. It also includes new sidewalks both internally and linking with the adjacent Phase I apartments, and upgrading Autumn Pond Way.

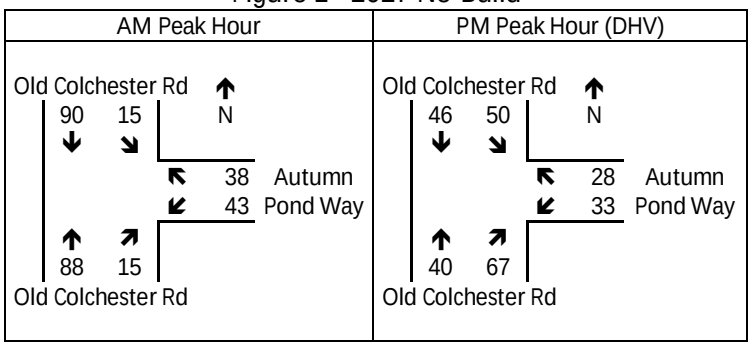
Background Traffic Volumes

Background traffic volumes at the Old Colchester Rd/Autumn Pond Way intersection were obtained from morning and afternoon peak period turning movement counts performed by Lamoureux & Dickinson on November 28, 2012 and July 29 & 30, 2021. The 2012 counts were used to provide through traffic volumes on Old Colchester Rd during the nearby Essex Educational Center's school year, particularly during the morning peak hour. The 2021 counts were used to provide existing (post-Phase I) turning movement volumes entering and exiting Autumn Pond Way, together with the northbound through volume on Old Colchester Rd (which was higher than observed in 2012 most likely due to the nearby soccer complex).

The observed afternoon peak hour volumes from those counts were adjusted to a design hour volume (the 30th highest hour of traffic volumes in a year) using data from VTrans Continuous Count Station (CTC) D530, located nearby on VT Route 289 (Circumferential Highway) in Essex. The resulting DHV adjustment factors increased the observed 2012 morning and afternoon peak hour through volumes on Old Colchester Rd by 7.8%.

The observed peak hour volumes were also adjusted to account for future background traffic growth using historical background traffic growth rates and projections obtained from VTrans' Red Book.[1] From that, a 3.2% background growth rate was also applied to adjust the observed 2012 morning and afternoon peak hour through volumes on Old Colchester Rd to the year 2027. Additionally, a 3.0% background growth rate was also applied to the observed peak hour turning movement volumes entering and exiting Autumn Pond Way to adjust them to the year 2027. Figure 1 presents the resulting estimated 2027 background (No-Build) morning and afternoon peak hour turning movement volumes at the Old Colchester Rd/Autumn Pond Way intersection.

Figure 1 - 2027 No-Build



Project-Generated Traffic

Anticipated peak hour trips for this Project were calculated using trip generation data compiled by the Institute of Transportation Engineers (ITE) for multi-family residential units.[2] In this Project, the existing buildings which will be demolished are low-rise multi-family residential (ITE Land-Use Category #220). The new buildings which will replace them will also be low-rise multi-family residential. The resulting estimated average weekday peak hour trip generation of this Project is shown in Table 1 on the following page.

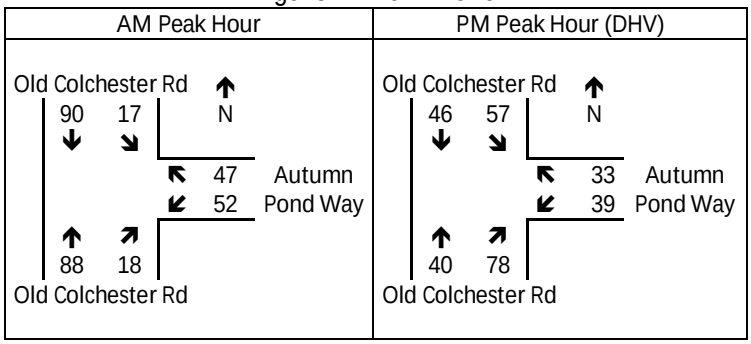
[1] *Continuous Traffic Counter Report Based on 2020 Traffic Data*, Vermont Agency of Transportation, May 2021
[2] *Trip Generation*, Institute of Transportation Engineers, 11th Edition

Table 1 - Average Weekday Trip Generation

	AM Peak Hour (vte/hr)			PM Peak Hour (vte/hr)		
	Enter	Exit	Total	Enter	Exit	Total
Proposed - Low-Rise MF Residential (117 units)	11	36	47	38	22	60
Existing - Low-Rise MF Residential (48 units)	6	18	24	20	11	31
Net Increase	5	18	23	18	11	29

The directional distributions of peak hour project-generated trips were estimated using the existing peak hour directional splits at the Old Colchester Rd/Autumn Pond Way intersection. Combining the project-generated trips with the no-build volumes provides the 2027 Build volumes shown in Figure 2.

Figure 2 - 2027 Build



Traffic Congestion

Levels of service (LOS) at intersections are determined by the average control delay; measured in seconds per vehicle. The methodology for analyzing LOS is established by the *Highway Capacity Manual* (*HCM*).[3] Table 2 summarizes the LOS delay thresholds for unsignalized intersections.

Table 2 - Unsignalized Intersection
Level of Service Delay Thresholds

LOS	Avg. Delay*	LOS	Avg. Delay*
A	≤10	D	≤35
B	≤15	E	≤50
C	≤25	F	>50

* seconds per vehicle

[3] *Highway Capacity Manual*, Transportation Research Board, 6th Edition

In Vermont, VTrans' level of service policy[4] establishes LOS D as the desired design standard for two-way stop controlled (unsignalized) intersections having greater than 100 vph approach volume on a single-lane side street approach or greater than 150 vph approach volume on a two-lane side street approach. There is no level of service standard for unsignalized intersections not meeting the above side street volume thresholds. Additionally, reduced levels of service are acceptable in densely settled areas where volume/capacity ratios remain below 1.0 and/or the improvements required to achieve LOS D would create adverse environmental and cultural impacts.

With Autumn Pond Way being a one-lane side street approach, the 100 vph threshold applies. As can be seen in Figures 1 and 2, the peak hour volumes of traffic exiting Autumn Pond Way do not satisfy this volume threshold during either peak hour period.

Although future peak hour volumes exiting Autumn Pond Way will be less than the 100 vph minor street approach volume threshold in the VTrans level of service policy, intersection capacity analyses were nonetheless performed to determine future levels of service during both the morning and afternoon peak hours. All analyses were performed using *Highway Capacity Software* v5.6 two-way stop control procedures. The results are presented in Table 3. Detailed analysis worksheets are enclosed in Appendix A.

Table 3 - 2027 Intersection Levels of Service & Avg. Delays*

Approach	No-Build		Build	
	LOS	Delay	LOS	Delay
AM Peak Hour				
Old Colchester Rd SB LT/TH	A	7.4	A	7.5
Autumn Pond Way WB LT/RT	A	9.7	A	9.8
PM Peak Hour				
Old Colchester Rd SB LT/TH	A	7.5	A	7.5
Autumn Pond Way WB LT/RT	A	9.6	A	9.8

* seconds per vehicle

Traffic Safety

The posted speed limit on Old Colchester Rd is 25 mph in both the Village of Essex Jct. and in the Town of Essex. Being a private roadway, Autumn Pond Way does not have a municipally established posted speed limit, however there is a 10 mph speed limit sign on Autumn Pond Way as one enters from Old Colchester Rd. Inasmuch as Vermont state[5] law establishes 25 mph as the minimum speed limit on public roadways, the 10 mph speed limit on Autumn Pond Way is both generally exceeded and likely unenforceable.

The first 700± ft of Autumn Pond Way from Old Colchester Rd is located on a 50 ft wide right-of-way through the Tree Farm Recreational Facility (jointly owned by the Village of Essex Jct. and the Town of

[4] Vermont Agency of Transportation Highway Design "Level of Service" Policy, May 31, 2007
[5] 23 V.S.A. § 1007 - Local speed limits

Essex) before entering the Project site. The roadway pavement between Old Colchester Rd and Autumn Pond Phase 1 varies between 23-25 ft wide and has no shoulders. Trees and other vegetation have been allowed in the past to grow in close proximity to the roadway along most of its length. There is a relatively sharp S-curve as Autumn Pond Way enters the Project site. The upper curve of this S-curve is the sharpest, with a centerline radius varying between 100-110 ft. There is also an existing speed bump immediately above (east) of the upper S-curve which limits speeds at that location to 10-15 mph.

Considering the above, it is our opinion that 20 mph represents a reasonable design speed for Autumn Pond Way.

Stopping sight distances were measured at the upper curve in the S-curve, where the existing access to Amber Lantern apartments intersects. Stopping sight distances are measured using a driver eye height of 3.5 ft and an object height of 2.0 ft.[6] Traveling eastbound (entering), the available sight distance is limited to 115± ft. Traveling westbound (exiting), the available sight distance is limited to 70± ft. The existing available sight distances are limited by an embankment on the inside of the upper curve and by vegetation.

The proposed sketch plan for the Project shows Autumn Pond Way as being upgraded to Village Public Works standards, with the roadway having a new pavement width of 28 ft. We recommend that the proposed roadway improvements also include improving available sight distances, particularly along the insides of the S-curve as Autumn Pond Rd enters the Project site. At the upper S-curve in particular, based on a 20 mph design speed, the minimum safe stopping sight distance for a vehicle traveling westbound (exiting) down a 6% grade equals 120 ft. That distance represents the minimum sight distance needed to provide acceptable safety conditions.

Existing available sight distances along Old Colchester Rd at its intersection with Autumn Pond Way well exceed the recommended intersection sight distance of 280 ft for the 25 mph posted speed limit on Old Colchester Rd.

The 2016-2020 five-year crash history of Old Colchester Rd and Autumn Pond Way (formerly Thasha Lane) were also examined in the immediate vicinity of the Project using VTrans' Public Crash Data Query Tool. The results show only one crash during this five-year period at the Old Colchester Rd/Autumn Pond Way intersection. This was a single-vehicle crash with no injuries. Additionally, the one crash reported on Autumn Pond Way was a parking lot fender-bender at #331 Autumn Pond Way.

Based on the above results, it is our opinion that with the proposed upgrading of Autumn Pond Way, the small amount of additional traffic generated by this Project can be reasonably expected have little, if any, effect on future traffic safety conditions or on the crash experience of nearby highways and intersections.

[6] *A Policy on Geometric Design of Highways and Streets*, American Association of State Highway and Transportation Officials, 7th Edition

TDM Strategies & Multi-Modal Connections

As noted in the introduction, this Project includes the installation of a new sidewalk connection to the existing sidewalks in Phase I of the Village at Autumn Pond. Those sidewalks link to the Village's existing sidewalk on Athens Drive and to a gravel path which travels through the Tree Farm Recreational Facility to reach the shared-use path along Old Colchester Rd.

Although somewhat distant, local transit service can also be accessed at the Amtrak station on Railroad Ave and on Upper Main St (VT Route 15) at Fairview Dr.

State Act 145 Transportation Impact Fee

Several designated Act 145 highway improvement projects exist within the three-mile road distance threshold for projects generating less than 75 pm peak hour trips. They include:

- VT 289/VT 2A/Susie Wilson Rd, Essex - This Project is estimated to add 7 pm peak hour vehicle trip ends through this location. At the Act 145 impact fee of $241 per pm peak hour trip, the resulting impact fee will equal $1,687.
- Crescent Connector (Five Corners), Essex Jct. - This Project is estimated to add 13 pm peak hour vehicle trip ends through this location. At the Act 145 impact fee of $2,788 per pm peak hour trip, the resulting impact fee will equal $36,244.
- VT 2A/James Brown Dr, Williston - This Project is estimated to add 8 pm peak hour vehicle trip ends through this location. At the Act 145 impact fee of $189 per pm peak hour trip, the resulting impact fee will equal $1,512.
- VT Route 2A/Mountain View Rd/Industrial Ave, Williston - This Project is estimated to add 7 pm peak hour vehicle trip ends through this location. At the Act 145 impact fee of $252 per pm peak hour trip, the resulting impact fee will equal $1,764.

The above total impact fee equals $41,207. This Project, with its proposed sidewalk connections, is eligible for a 10% reduction in the above impact fees. Incorporating that, the total Act 145 impact fee required of this Project will be $37,086. Detailed calculations of the added pm peak hour trips at each of the above locations are included in Appendix B.

Conclusions & Recommendations

In conclusion, the foregoing analyses show that Old Colchester Rd and the upgraded Autumn Pond Way will have adequate capacity and safety to accommodate the peak hour trips that will be generated by this Project.

We recommend that, in addition to widening Autumn Pond Way, the proposed modifications to upgrade it to Village Public Works Standards also include providing a minimum of 120 ft of stopping sight distance along its entire length. This will require cutting back the embankment along the inside of the upper curve in the S-curve. It will also require maintaining a clear zone of mowed vegetation along Autumn Pond Rd, particularly along the insides of curves.

We thank you for this opportunity to be of assistance. Should you have any questions concerning the above or if additional information is desired, please feel free to contact us.

Sincerely,

Roger Dickinson

Roger Dickinson, PE, PTOE

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APPENDIX A

Intersection Capacity Analyses

Intersection	
Int Delay, s/veh	3.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	43	38	88	15	15	90
Future Vol, veh/h	43	38	88	15	15	90
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, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	43	38	88	15	15	90

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	216	96	0	0	103	0
Stage 1	96	-	-	-	-	-
Stage 2	120	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	772	960	-	-	1489	-
Stage 1	928	-	-	-	-	-
Stage 2	905	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	764	960	-	-	1489	-
Mov Cap-2 Maneuver	764	-	-	-	-	-
Stage 1	928	-	-	-	-	-
Stage 2	895	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.7	0	1.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	845	1489	-
HCM Lane V/C Ratio	-	-	0.096	0.01	-
HCM Control Delay (s)	-	-	9.7	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0	-

Intersection	
Int Delay, s/veh	3.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	52	47	88	18	17	90
Future Vol, veh/h	52	47	88	18	17	90
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, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	52	47	88	18	17	90

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	221	97	0	0	106	0
Stage 1	97	-	-	-	-	-
Stage 2	124	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	767	959	-	-	1485	-
Stage 1	927	-	-	-	-	-
Stage 2	902	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	758	959	-	-	1485	-
Mov Cap-2 Maneuver	758	-	-	-	-	-
Stage 1	927	-	-	-	-	-
Stage 2	891	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.8	0	1.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	842	1485	-
HCM Lane V/C Ratio	-	-	0.118	0.011	-
HCM Control Delay (s)	-	-	9.8	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Intersection						
Int Delay, s/veh	3.6					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	33	28	40	67	50	46
Future Vol, veh/h	33	28	40	67	50	46
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, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	33	28	40	67	50	46

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	220	74	0	0	107	0
Stage 1	74	-	-	-	-	-
Stage 2	146	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	768	988	-	-	1484	-
Stage 1	949	-	-	-	-	-
Stage 2	881	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	741	988	-	-	1484	-
Mov Cap-2 Maneuver	741	-	-	-	-	-
Stage 1	949	-	-	-	-	-
Stage 2	850	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.6	0	3.9
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	837	1484	-
HCM Lane V/C Ratio	-	-	0.073	0.034	-
HCM Control Delay (s)	-	-	9.6	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Intersection	
Int Delay, s/veh	3.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	39	33	40	78	57	46
Future Vol, veh/h	39	33	40	78	57	46
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, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	39	33	40	78	57	46

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	239	79	0	0	118	0
Stage 1	79	-	-	-	-	-
Stage 2	160	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	749	981	-	-	1470	-
Stage 1	944	-	-	-	-	-
Stage 2	869	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	719	981	-	-	1470	-
Mov Cap-2 Maneuver	719	-	-	-	-	-
Stage 1	944	-	-	-	-	-
Stage 2	834	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.8	0	4.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	819	1470	-
HCM Lane V/C Ratio	-	-	0.088	0.039	-
HCM Control Delay (s)	-	-	9.8	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

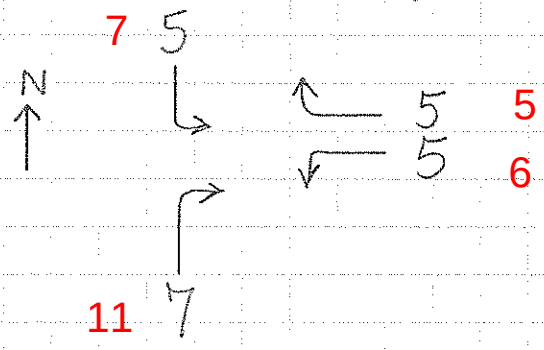
APPENDIX B

Act 145 Impact Fee Calculations

Lamoureux & Dickinson
14 Morse Drive, Essex, VT 05452
T: (802) 878-4450
www.LDengineering.com

Project AUTUMN POND PH II
Project No. 21056 Sheet No. 1 of ____
Calculated by RD Date 8-13-2021
Checked by rev. RD Date 9-28-2022
Subject ACT 145 IMPACT FEE CALCS.

(1) FROM THE TIA: PROJECT PM PEAK HOUR TRIP DISTRIBUTION (NET INCREASE)



(2) TO/FROM THE NORTH

A. VT 2A / VT 289 / SUSIE WILSON RD BYPASS

LT ENTER = 75 × 0.542 = 2.71 3.79
RT EXIT = 5 × 0.625 = 3.13
Σ = 5.84 ROUND TO 6
6.92 7

(3) TO/FROM THE SOUTH

A. CRESCENT CONNECTOR

ENTER 11 7 × 0.796 = 5.6 8.76
EXIT 6 5 × 0.763 = 3.8 4.58
13
Σ = 9.4 ROUND TO 9
13.34

B. JAMES BROWN DR. / VT 2A

ENTER 11 7 × 0.796 × 0.822 × 0.907 × 0.838 = 3.5 5.5
EXIT 6 5 × 0.763 × 0.650 × 0.881 × 0.881 = 1.9 2.3
5.4 7.8

ROUND TO 5 8

Lamoureux & Dickinson
14 Morse Drive, Essex, VT 05452
T: (802) 878-4450
www.LDengineering.com

Project AUTUMN POND ϕ II
Project No. 21056 Sheet No. 2 of
Calculated by RD Date 8-16-21
Checked by Date
Subject ACT 145 IMPACT FEE CALCS.

(3) CONT.

C. MOUNTAIN VIEW RD/INDUSTRIAL AVE/VT 2A

ENTER 11 7 × 0.796 × 0.822 × 0.907 × 0.838 × 0.917
= 3.2 5.0

EXIT 6 5 × 0.763 × 0.650 × 0.881 × 0.881 × 0.976
= 1.9 2.3

Σ = 5.1 7.3

ROUND TO 5 7

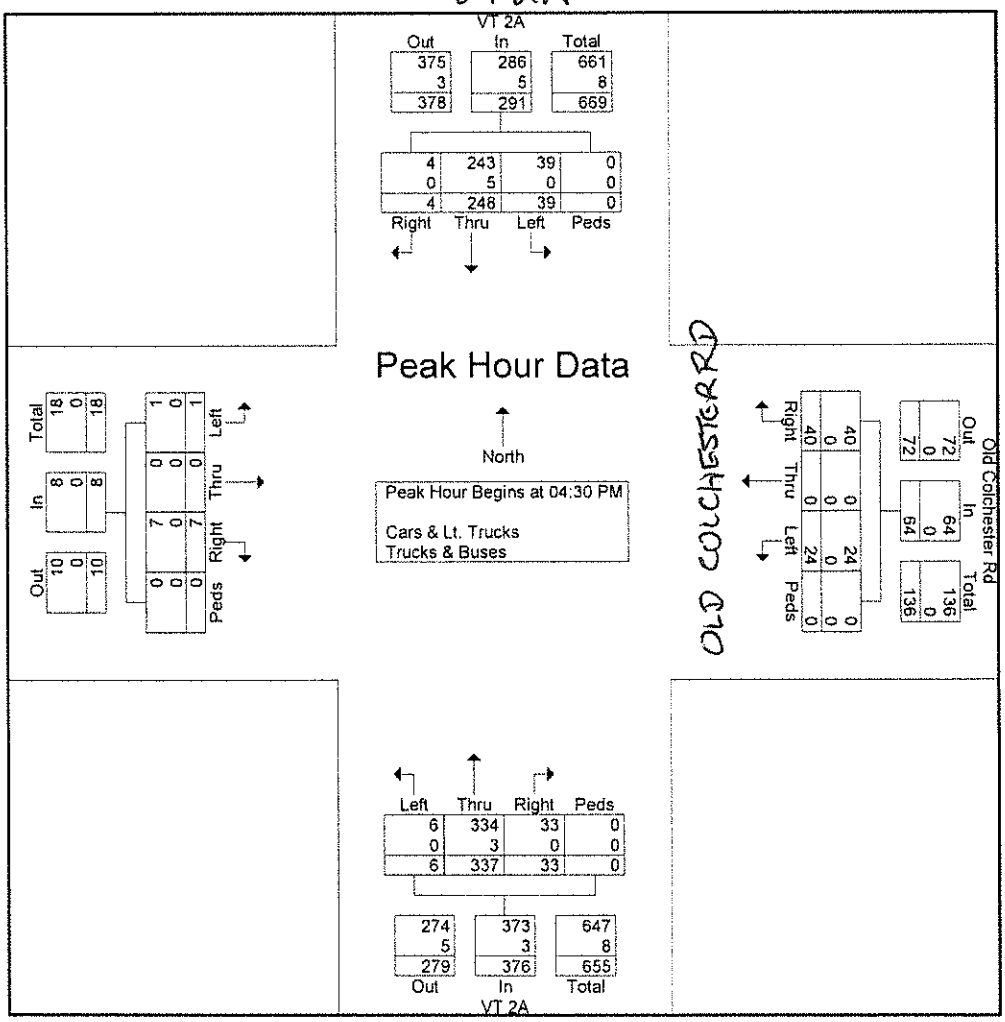
Lamoureux & Dickinson

14 Morse Drive, Essex, VT 05452
www.LDengineering.com

File Name : 2021-08-12 pm
Site Code : 21056
Start Date : 8/12/2021
Page No : 2

	VT 2A Southbound					Old Colchester Rd Westbound					VT 2A Northbound					Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	7	57	**2**	0	66	5	0	**13**	0	18	0	88	**9**	0	97	**1**	0	0	0	1	182
04:45 PM	**13**	63	1	0	77	6	0	10	0	16	2	81	9	0	92	0	0	2	0	2	187
05:00 PM	11	55	1	0	67	**9**	0	10	0	**19**	1	**94**	8	0	**103**	0	0	**4**	0	**4**	**193**
05:15 PM	8	**73**	0	0	**81**	4	0	7	0	11	**3**	74	7	0	84	0	0	1	0	1	177
Total Volume	39	248	4	0	291	24	0	40	0	64	6	337	33	0	376	1	0	7	0	8	739
% App. Total	13.4	85.2	1.4	0		37.5	0	62.5	0		1.6	89.6	8.8	0		12.5	0	87.5	0		
PHF	.750	.849	.500	.000	.898	.667	.000	.769	.000	.842	.500	.896	.917	.000	.913	.250	.000	.438	.000	.500	.957
Cars & Lt. Trucks % Cars & Lt. Trucks	100	98.0	100	0	98.3	100	0	100	0	100	100	99.1	100	0	99.2	100	0	100	0	100	98.9
Trucks & Buses % Trucks & Buses	0	2.0	0	0	1.7	0	0	0	0	0	0	0.9	0	0	0.8	0	0	0	0	0	1.1

VT2A



VT 2A

ENTER

LT = 39/72
= 0.542

RT = 33/72
= 0.458

EXIT

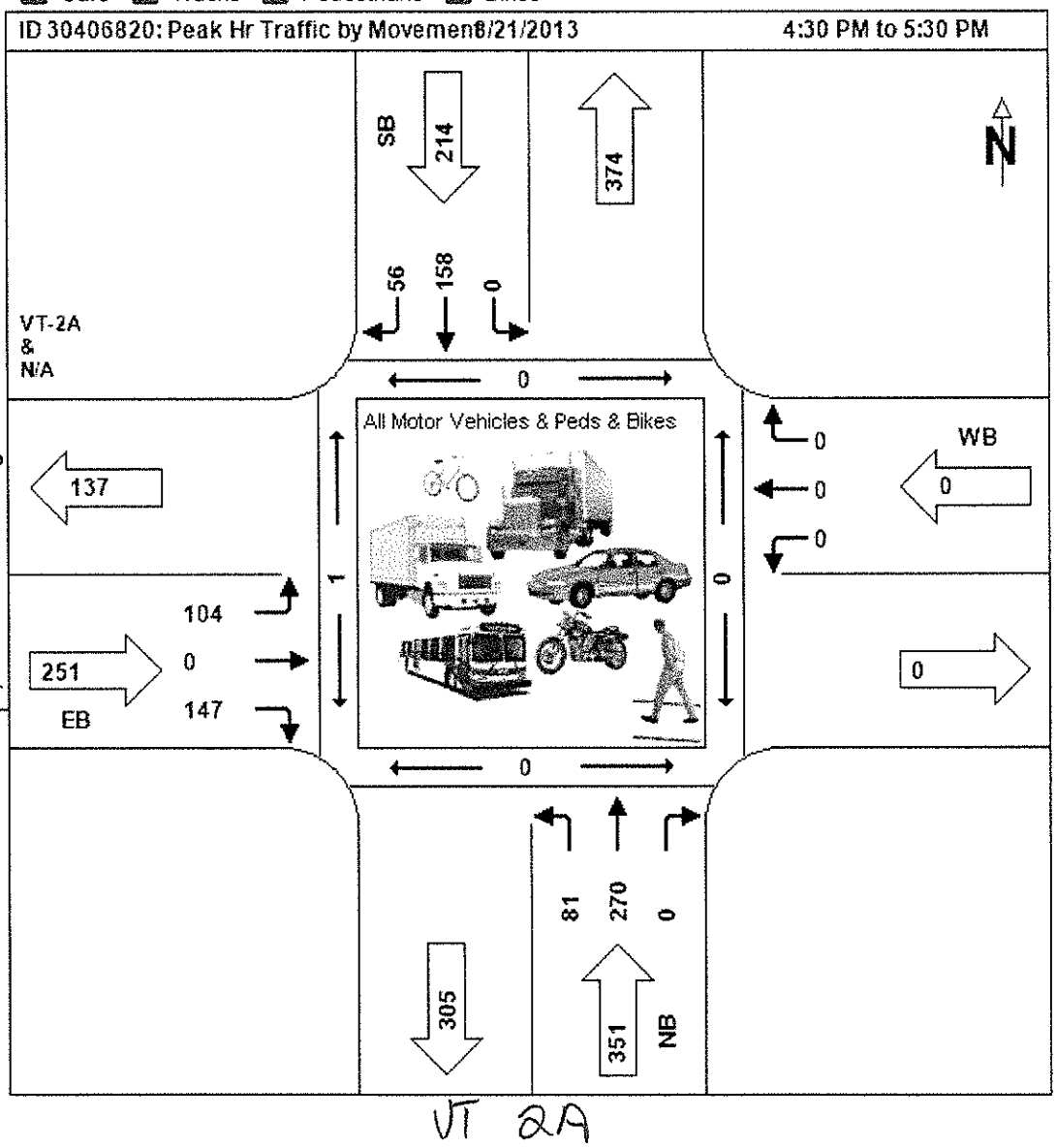
LT = 24/64
= 0.375

RT = 40/64
= 0.625

PM Peak Hour
08/21/2013

Start Time	NB Left	NB Thru	NB Right	NB Ped	NB App Total	EB Left	EB Thru	EB Right	EB Ped	EB App Total	SB Left	SB Thru	SB Right	SB Ped	SB App Total	WB Left	WB Thru	WB Right	WB Ped	WB App Total	Int Total
4:30 PM	20	57	0	0	77	23	0	31	0	54	0	36	18	0	54	0	0	0	0	0	185
4:45 PM	21	78	0	0	99	21	0	35	0	56	0	41	16	0	57	0	0	0	0	0	212
5:00 PM	15	75	0	0	90	29	0	40	0	69	0	40	12	0	52	0	0	0	0	0	211
5:15 PM	25	60	0	0	85	31	0	41	0	72	0	41	10	1	51	0	0	0	0	0	208
Total	81	270	0	0	351	104	0	147	0	251	0	158	56	1	214	0	0	0	0	0	816
PHF	0.81	0.87			0.89	0.84		0.90		0.87		0.96	0.78		0.94						
HV %	0	1				0		0				2	0								

☑ Cars ☑ Trucks ☑ Pedestrians ☑ Bikes



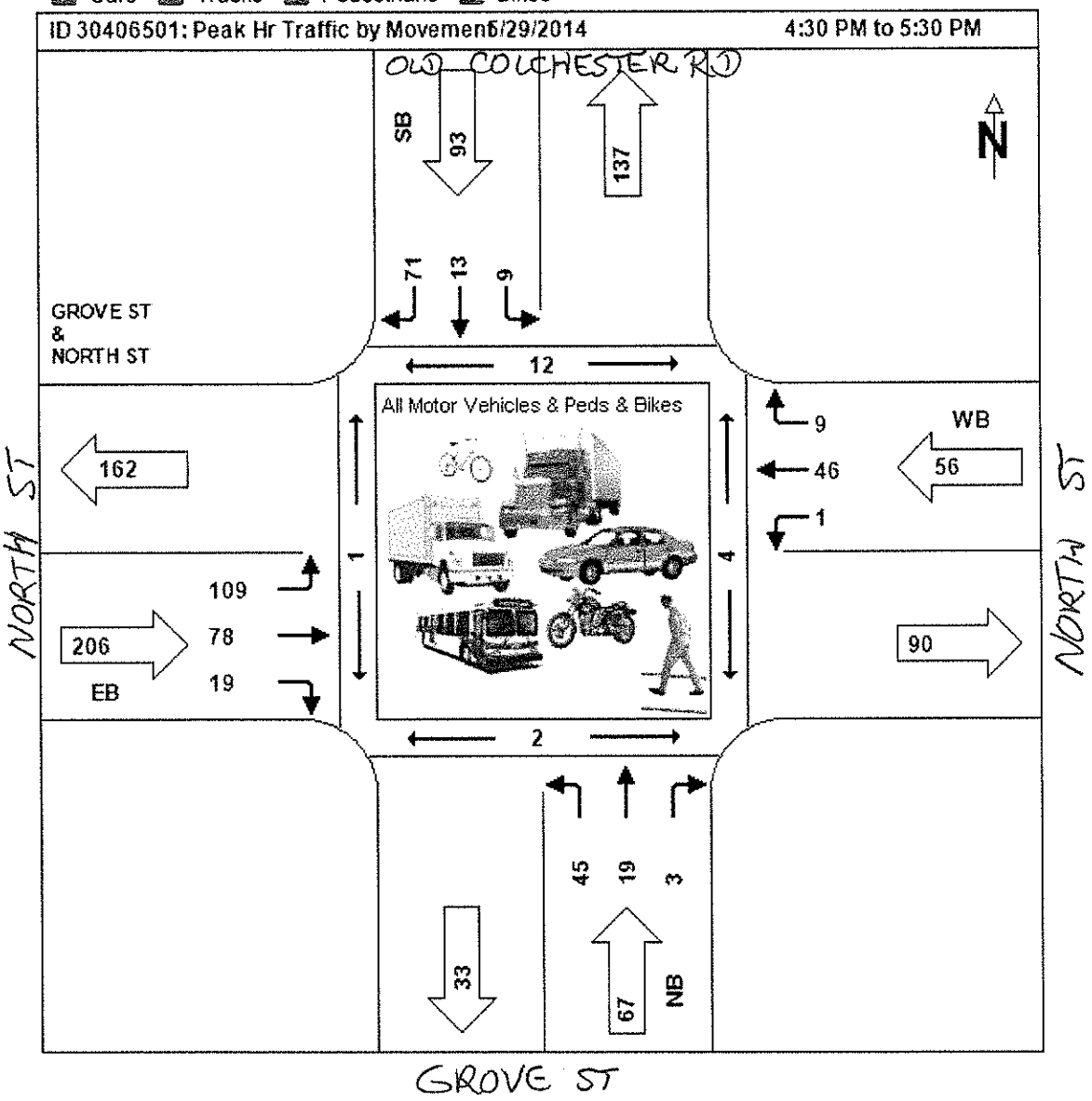
100% TO/FROM PINECREST DR

PINECREST DR IS A SHORTER & QUICKER ROUTE TO VT 15 THAN SUSIE WILSON RD BYPASS

PM Peak Hour
05/29/2014

Start Time	NB Left	NB Thru	NB Right	NB Ped	NB App Total	EB Left	EB Thru	EB Right	EB Ped	EB App Total	SB Left	SB Thru	SB Right	SB Ped	SB App Total	WB Left	WB Thru	WB Right	WB Ped	WB App Total	Int Total
4:30 PM	13	5	2	1	20	28	19	3	0	50	1	4	24	0	29	1	12	2	1	15	114
4:45 PM	10	3	1	0	14	25	18	1	2	44	3	4	21	1	28	0	12	1	6	13	99
5:00 PM	15	4	0	0	19	26	13	9	0	48	1	4	12	0	17	0	10	2	1	12	96
5:15 PM	7	7	0	3	14	30	28	6	0	64	4	1	14	0	19	0	12	4	4	16	113
Total	45	19	3	4	67	109	78	19	2	206	9	13	71	1	93	1	46	9	12	56	422
PHF	0.75	0.68	0.38			0.84	0.91	0.70	0.53	0.80	0.56	0.81	0.74		0.80	0.25	0.96	0.56		0.88	
HV %	0	5	0			1	0	0			0	8	1			100	0	0			

☑ Cars ☑ Trucks ☑ Pedestrians ☑ Bikes



ENTER FROM LINCOLN ST (VT 2A)

109/137 = 0.796

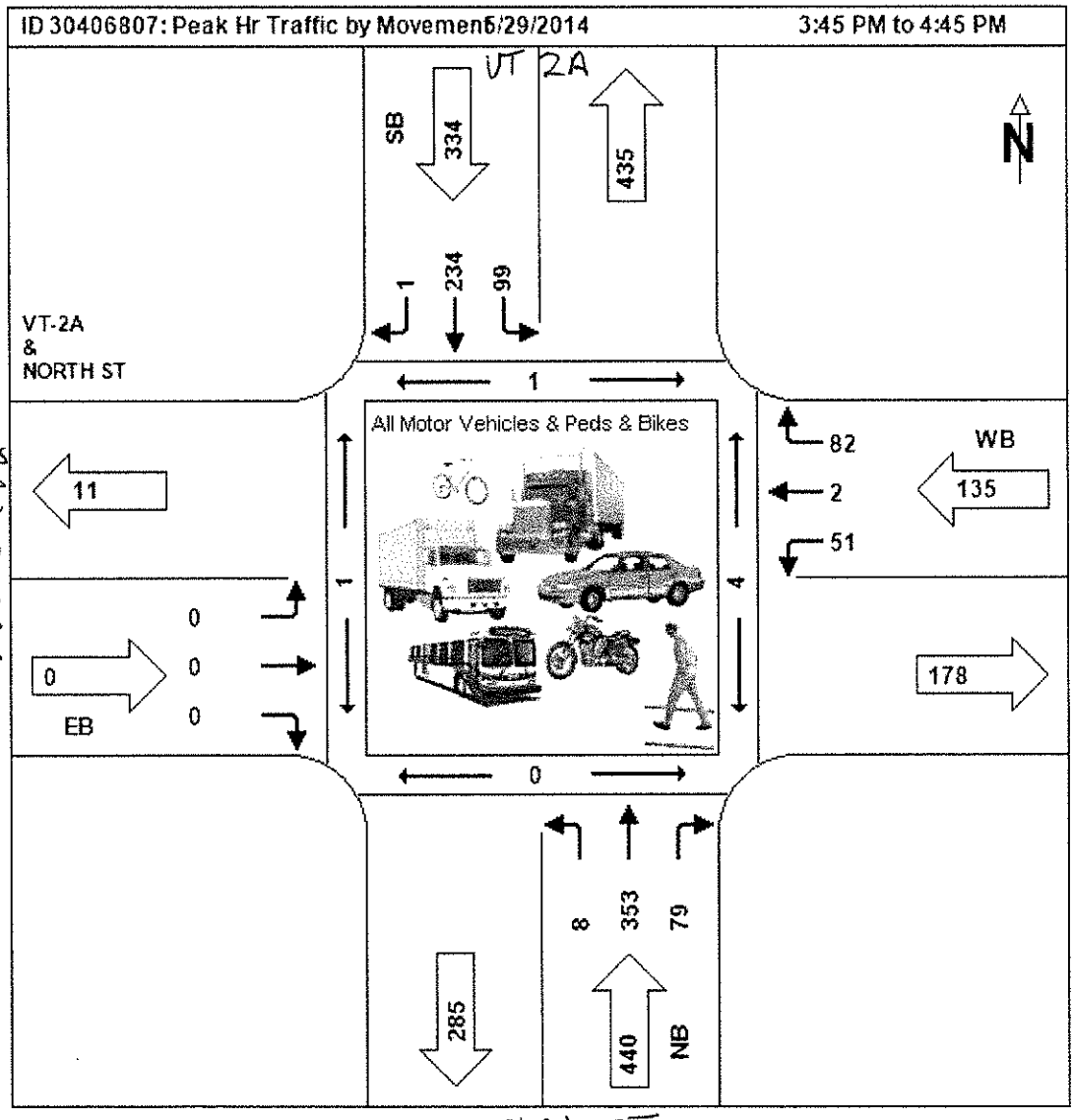
EXIT TO LINCOLN ST

71/93 = 0.763

PM Peak Hour
05/29/2014

Start Time	NB Left	NB Thru	NB Right	NB Ped	NB App Total	EB Left	EB Thru	EB Right	EB Ped	EB App Total	SB Left	SB Thru	SB Right	SB Ped	SB App Total	WB Left	WB Thru	WB Right	WB Ped	WB App Total	Int Total
3:45 PM	2	94	18	1	114	0	0	0	0	0	24	60	0	0	84	12	0	17	0	29	227
4:00 PM	0	76	13	1	89	0	0	0	0	0	25	59	0	0	84	12	1	17	0	30	203
4:15 PM	3	94	20	2	117	0	0	0	0	0	25	59	0	0	84	8	0	20	1	28	229
4:30 PM	3	89	28	0	120	0	0	0	0	0	25	56	1	1	82	19	1	28	0	48	250
Total	8	353	79	4	440	0	0	0	0	0	99	234	1	1	334	51	2	82	1	135	909
PHF	0.67	0.94	0.71		0.92						0.99	0.98	0.25		0.99	0.67	0.50	0.73		0.70	
HV %	0	5	4								1	8	0			0	0	1			

☑ Cars ☑ Trucks ☑ Pedestrians ☑ Bikes



100% TO/FROM SOUTH ON LINCOLN ST

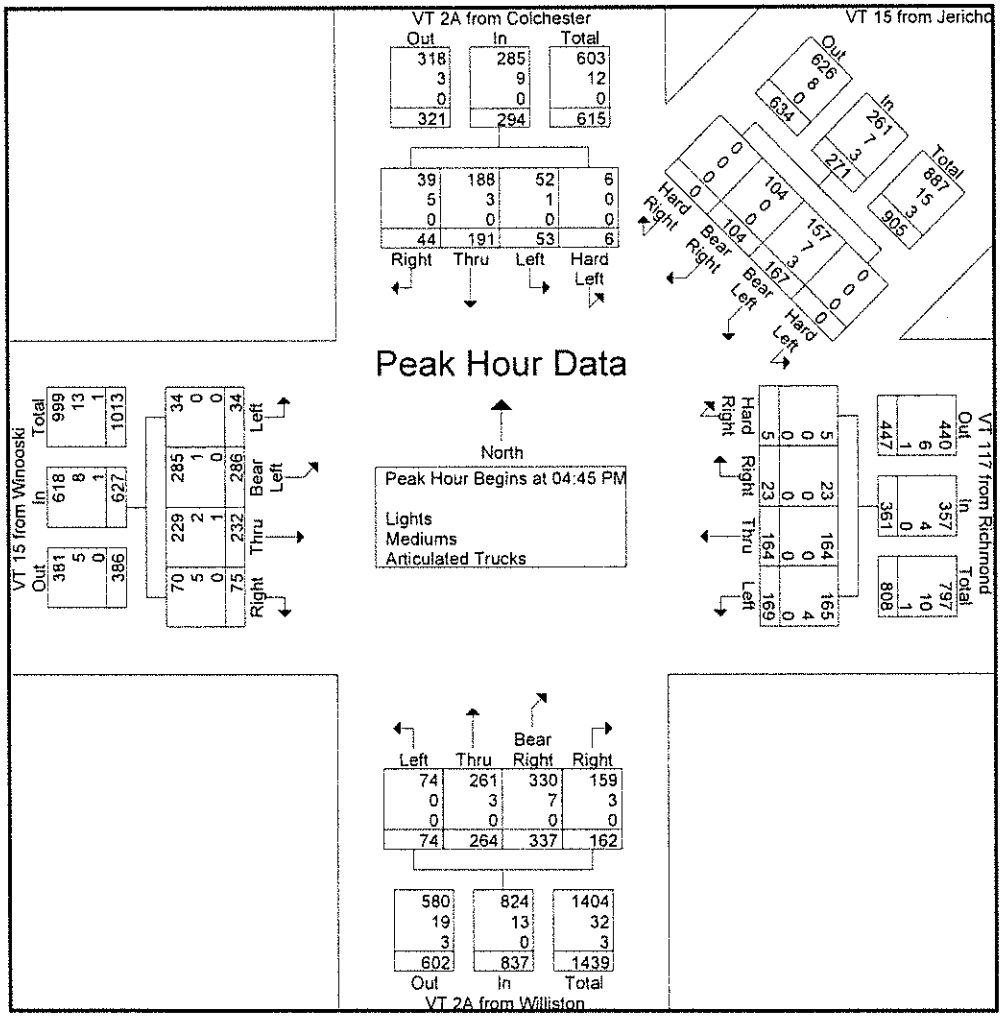
Vermont Agency of Transportation

Traffic Research/Highway Division
Turning Movement Report

ɔunter: Miovision Video
ɔunted By: R Gustafson
eather: Sunny
ɔwn: 2A-2.3 Essex

File Name : 2A-2_3pm
Site Code : 30406810
Start Date : 5/30/2018
Page No : 3

	VT 2A from Colchester From North					VT 15 from Jericho From Northeast					VT 117 from Richmond From East					VT 2A from Williston From South					VT 15 from Winooski From West					
art Time	Right	Thru	Left	Hard Left	App. Total	Hard Right	Bear Right	Bear Left	Hard Left	App. Total	Hard Right	Right	Thru	Left	App. Total	Right	Bear Right	Thru	Left	App. Total	Right	Thru	Bear Left	Left	App. Total	Int. Tota
ak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																									
ak Hour for Entire Intersection Begins at 04:45 PM																									
4:45 PM	12	44	12	**2**	70	0	24	42	0	66	0	**9**	33	41	83	33	88	**75**	19	215	**25**	53	72	9	159	593
5:00 PM	9	51	11	1	72	0	30	**46**	0	**76**	1	8	49	38	96	43	88	54	**25**	210	14	52	67	6	139	593
5:15 PM	8	44	10	2	64	0	**32**	40	0	72	1	3	32	**49**	85	42	67	63	21	193	25	**68**	**81**	**10**	**184**	598
5:30 PM	**15**	**52**	**20**	1	**88**	0	18	39	0	57	**3**	3	**50**	41	**97**	**44**	**94**	72	9	**219**	11	59	66	9	145	**606**
tal Volume	44	191	53	6	294	0	104	167	0	271	5	23	164	169	361	162	337	264	74	837	75	232	286	34	627	2390
App. Total	15	65	18	2		0	38.4	61.6	0		1.4	6.4	45.4	46.8		19.4	40.3	31.5	8.8		12	37	45.6	5.4		
PHF	.733	.918	.663	.750	.835	.000	.813	.908	.000	.891	.417	.639	.820	.862	.930	.920	.896	.880	.740	.955	.750	.853	.883	.850	.852	.986
Lights	39	188	52	6	285	0	104	157	0	261	5	23	164	165	357	159	330	261	74	824	70	229	285	34	618	2345
% Lights	88.6	98.4	98.1	100	96.9	0	100	94.0	0	96.3	100	100	100	97.6	98.9	98.1	97.9	98.9	100	98.4	93.3	98.7	99.7	100	98.6	98.1
lediums	5	3	1	0	9	0	0	7	0	7	0	0	0	4	4	3	7	3	0	13	5	2	1	0	8	41
Mediums	11.4	1.6	1.9	0	3.1	0	0	4.2	0	2.6	0	0	0	2.4	1.1	1.9	2.1	1.1	0	1.6	6.7	0.9	0.3	0	1.3	1.7
ɔculated Trucks	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	4
rticulated Trucks	0	0	0	0	0	0	0	1.8	0	1.1	0	0	0	0	0	0	0	0	0	0	0	0.4	0	0	0.2	0.2



TO/FROM
VT 2A (PARK ST)

ENTER
264/321
= 0.822

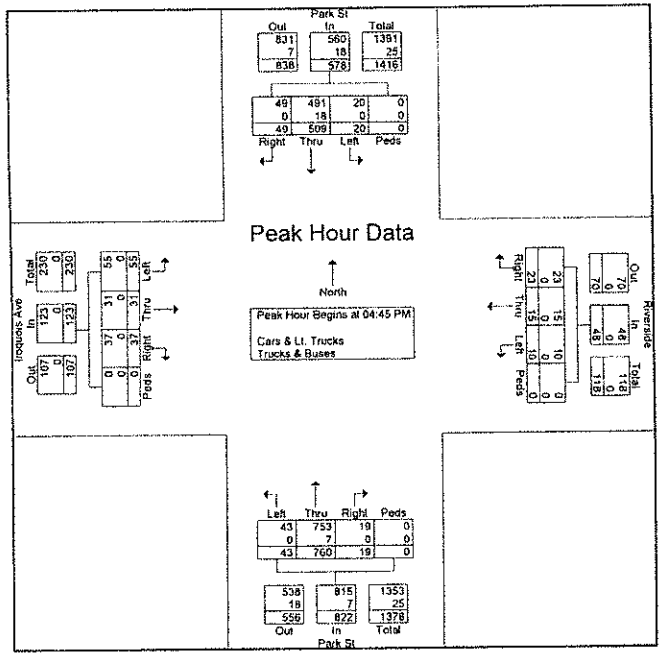
EXIT
191/294
= 0.650

Lamoureux & Dickinson

14 Morse Drive, Essex, VT 05452
www.LDengineering.com

File Name : Park-Iroquois PM TMC
Site Code : 16024A
Start Date : 6/26/2019
Page No : 2

Start Time	Park St Southbound Left	Thru	Right	Peds	App. Total	Riverside Westbound Left	Thru	Right	Peds	App. Total	Park St Northbound Left	Thru	Right	Peds	App. Total	Iroquois Ave Eastbound Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	2	135	14	0	151	5	3	5	0	13	7	200	4	0	211	10	4	10	0	24	399
05:00 PM	4	121	8	0	133	1	5	5	0	11	14	187	10	0	211	13	9	5	0	27	382
05:15 PM	5	139	16	0	160	2	4	4	0	10	10	185	2	0	197	21	8	8	0	37	404
05:30 PM	9	114	11	0	134	2	3	9	0	14	12	188	3	0	203	11	10	14	0	35	386
Total Volume	20	509	49	0	578	10	15	23	0	48	43	760	19	0	822	55	31	37	0	123	1571
% App. Total	3.5	88.1	8.5	0		20.8	31.2	47.9	0		5.2	92.5	2.3	0		44.7	25.2	30.1	0		
PHF	.556	.915	.766	.000	.903	.500	.750	.639	.000	.857	.768	.950	.475	.000	.974	.655	.775	.661	.000	.831	.972
Cars & Lt. Trucks																					
% Cars & Lt. Trucks	100	96.5	100	0	96.9	100	100	100	0	100	100	99.1	100	0	99.1	100	100	100	0	100	98.4
Trucks & Buses																					
% Trucks & Buses	0	3.5	0	0	3.1	0	0	0	0	0	0	0.9	0	0	0.9	0	0	0	0	0	1.6



Lamoureux & Dickinson

14 Morse Drive, Essex, VT 05452
www.LDengineering.com

Intersection: Park & Iroquois
City/Town: Essex Jct.
By: R. Dickinson
Weather: sunny then rain

File Name : Park-Iroquois PM TMC
Site Code : 16024A
Start Date : 6/26/2019
Page No : 1

Groups Printed- Cars & Lt. Trucks - Trucks & Buses

Start Time	Park St Southbound Left	Thru	Right	Peds	App. Total	Riverside Westbound Left	Thru	Right	Peds	App. Total	Park St Northbound Left	Thru	Right	Peds	App. Total	Iroquois Ave Eastbound Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	0	117	6	0	123	2	0	5	0	7	12	174	4	0	190	16	5	10	0	31	351
04:15 PM	1	122	5	0	128	4	0	4	0	8	10	204	2	0	216	10	3	7	0	20	372
04:30 PM	2	134	9	0	145	3	4	4	0	11	7	169	5	0	181	9	2	15	0	26	363
04:45 PM	2	135	14	0	151	5	3	5	0	13	7	200	4	0	211	10	4	10	0	24	399
Total	5	508	34	0	547	14	7	18	0	39	36	747	15	0	798	45	14	42	0	101	1485
05:00 PM	4	121	8	0	133	1	5	5	0	11	14	187	10	0	211	13	9	5	0	27	382
05:15 PM	5	139	16	0	160	2	4	4	0	10	10	185	2	0	197	21	8	8	0	37	404
05:30 PM	9	114	11	0	134	2	3	9	0	14	12	188	3	0	203	11	10	14	0	35	386
05:45 PM	6	95	10	0	111	1	2	2	0	5	13	190	8	0	211	13	7	6	0	26	353
Total	24	469	45	0	538	6	14	20	0	40	49	750	23	0	822	58	34	33	0	125	1525
Grand Total	29	977	79	0	1085	20	21	38	0	79	85	1497	38	0	1620	103	48	75	0	226	3010
Apprch %	2.7	90	7.3	0		25.3	26.6	48.1	0		5.2	92.4	2.3	0		45.6	21.2	33.2	0		
Total %	1	32.5	2.6	0	36	0.7	0.7	1.3	0	2.6	2.8	49.7	1.3	0	53.8	3.4	1.6	2.5	0	7.5	
Cars & Lt. Trucks												1480									
% Cars & Lt. Trucks	100	95.9	100	0	96.3	100	100	100	0	100	98.8	98.9	100	0	98.9	100	100	100	0	100	98.1
Trucks & Buses																					
% Trucks & Buses	0	4.1	0	0	3.7	0	0	0	0	0	1.2	1.1	0	0	1.1	0	0	0	0	0	1.9

↕ TO/FROM PARK ST SOUTH

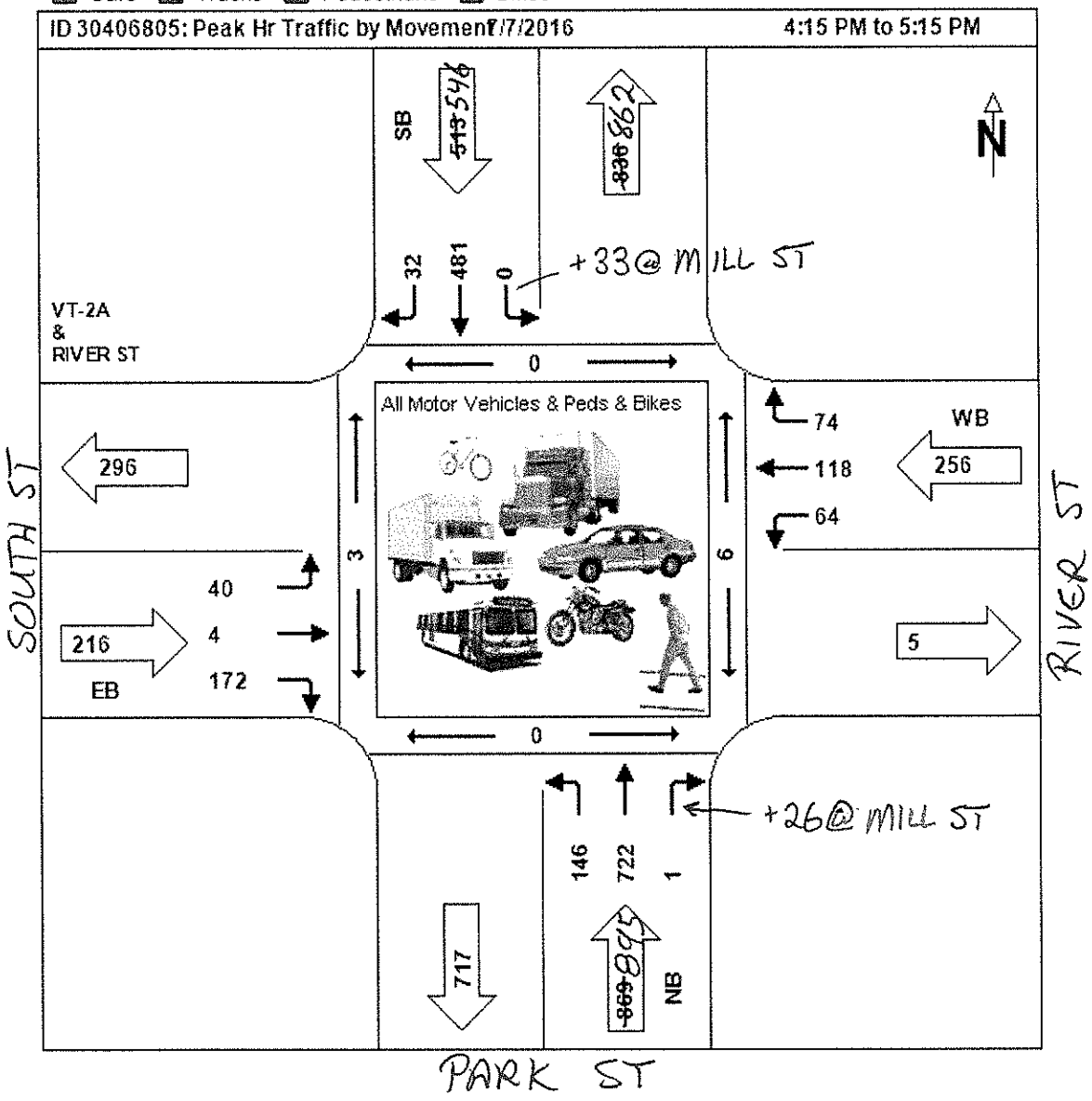
ENTER = 760/838 = 0.907

EXIT = 509/578 = 0.881

PM Peak Hour
07/07/2016

Start Time	NB Left	NB Thru	NB Right	NB Ped	NB App Total	EB Left	EB Thru	EB Right	EB Ped	EB App Total	SB Left	SB Thru	SB Right	SB Ped	SB App Total	WB Left	WB Thru	WB Right	WB Ped	WB App Total	Int Total
4:15 PM	34	205	1	2	240	17	0	37	0	54	0	131	7	0	138	9	29	15	0	53	485
4:30 PM	34	147	0	3	181	6	3	47	0	56	0	122	6	1	128	23	31	28	0	82	447
4:45 PM	37	186	0	1	223	8	0	46	0	54	0	110	10	1	120	21	29	19	0	69	466
5:00 PM	41	184	0	0	225	9	1	42	0	52	0	118	9	1	127	11	29	12	0	52	456
Total	146	722	1	6	869	40	4	172	0	216	0	481	32	3	513	64	118	74	0	256	1854
PHF	0.89	0.88	0.25		0.91	0.59	0.33	0.91		0.96		0.92	0.80		0.93	0.70	0.95	0.66		0.78	
HV %	1	2	0			5	0	2				4	3			3	0	1			

☑ Cars ☑ Trucks ☑ Pedestrians ☑ Bikes



TO/FROM PARK ST SOUTH

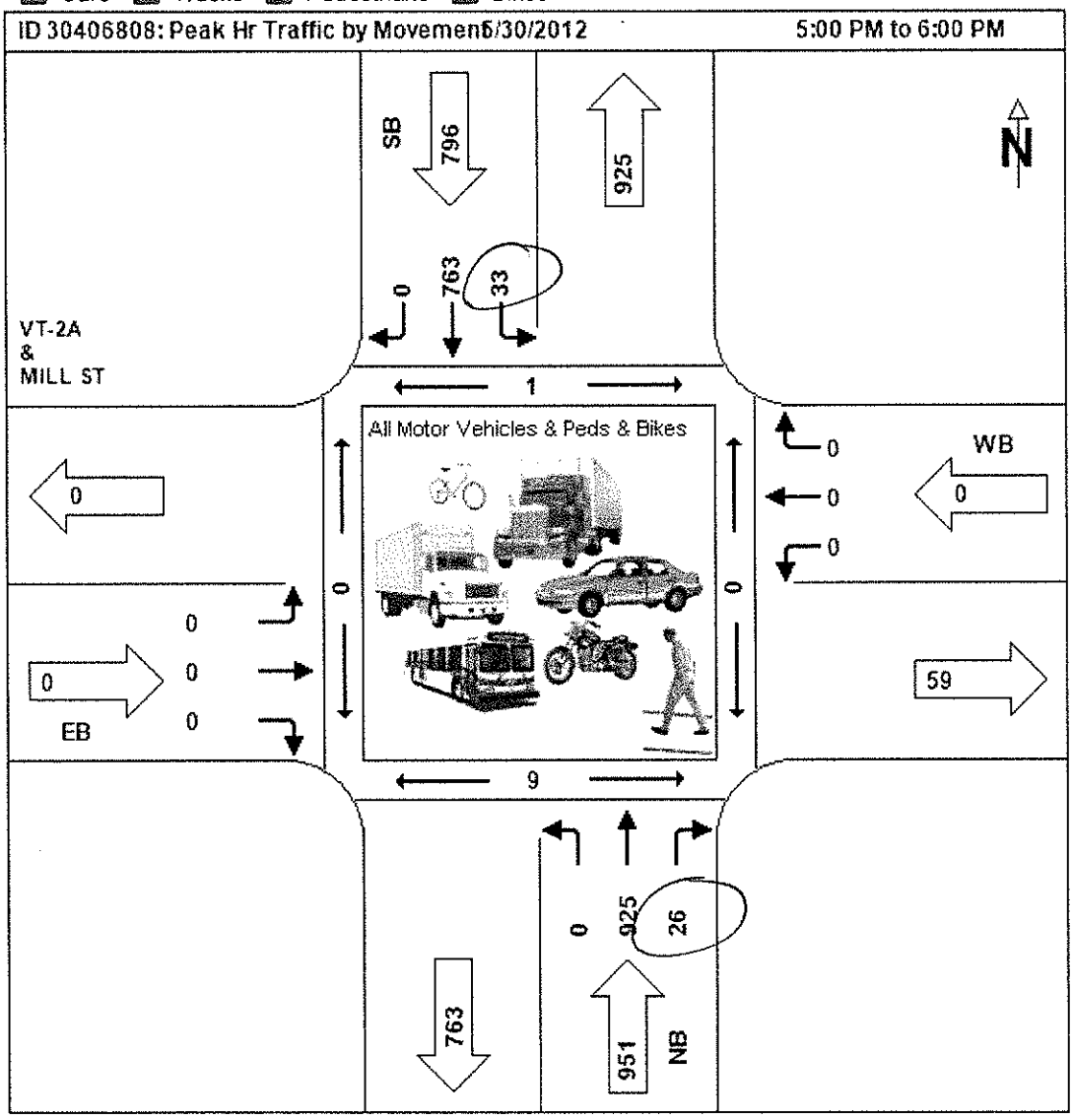
ENTER = 722/862 = 0.838

EXIT = 481/546 = 0.881

PM Peak Hour
05/30/2012

Start Time	NB Left	NB Thru	NB Right	NB Ped	NB App Total	EB Left	EB Thru	EB Right	EB Ped	EB App Total	SB Left	SB Thru	SB Right	SB Ped	SB App Total	WB Left	WB Thru	WB Right	WB Ped	WB App Total	Int Total
5:00 PM	0	231	7	0	238	0	0	0	3	0	6	197	0	0	203	0	0	0	0	0	441
5:15 PM	0	237	7	0	244	0	0	0	4	0	11	204	0	0	215	0	0	0	1	0	459
5:30 PM	0	213	5	0	218	0	0	0	0	0	6	201	0	0	207	0	0	0	0	0	425
5:45 PM	0	244	7	0	251	0	0	0	2	0	10	161	0	0	171	0	0	0	0	0	422
Total	0	925	26	0	951	0	0	0	9	0	33	763	0	0	796	0	0	0	1	0	1747
PHF		0.95	0.93		0.95						0.75	0.94			0.93						
HV %		2	4								0	4									

☑ Cars ☑ Trucks ☑ Pedestrians ☑ Bikes

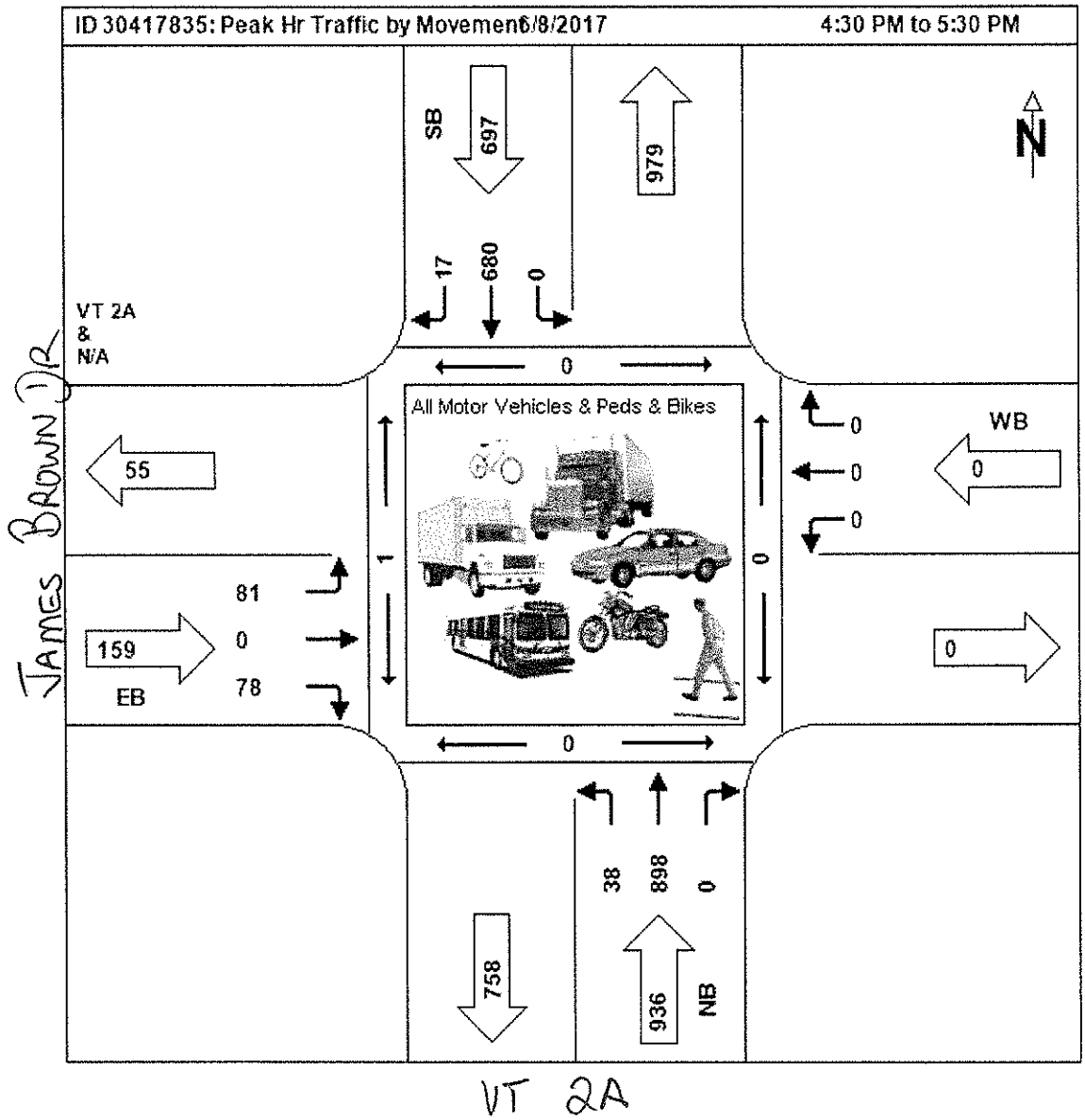


ADD TO SOUTH ST / RIVER S

PM Peak Hour
06/08/2017

Start Time	NB Left	NB Thru	NB Right	NB Ped	NB App Total	EB Left	EB Thru	EB Right	EB Ped	EB App Total	SB Left	SB Thru	SB Right	SB Ped	SB App Total	Int Total
4:30 PM	12	216	0	0	228	14	0	17	0	31	0	154	7	0	161	420
4:45 PM	10	222	0	0	232	23	0	21	0	44	0	164	5	0	169	445
5:00 PM	8	226	0	0	234	31	0	24	0	55	0	172	2	0	174	463
5:15 PM	8	234	0	0	242	13	0	16	0	29	0	190	3	1	193	464
Total	38	898	0	0	936	81	0	78	0	159	0	680	17	1	697	1792
PHF	0.79	0.96			0.97	0.65		0.81		0.72		0.89	0.61		0.90	
HV %	3	1				0		0				3	6			

☑ Cars ☑ Trucks ☑ Pedestrians ☑ Bikes



JAMES BROWN DR

TO/FROM VT 2A SOUTH

ENTER = 898/979 = 0.917

EXIT = 680/697 = 0.976