Shropshire Associates LLC

SBE Certified

Traffic Engineering, Transportation Planning & Design

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July 12, 2021

Mr. Frank Meli *(via email: FJMeli@optonline.net)*
312 Valley Brook, LLC
312 Valley Brook Avenue
Lyndhurst, NJ 07071

Re: **Traffic Engineering Assessment**
Apartment Building
312-318 & 324 Valley Brook Avenue; Block 68, Lots 4-6
Lyndhurst, Bergen County, NJ
SA Project No. 19201-A

Dear Mr. Meli:

In response to your request, Shropshire Associates LLC has prepared a traffic engineering assessment to evaluate the impact of the traffic to be generated by the proposed residential development in Lyndhurst Township, Bergen County (Figure 1). The site is located at the intersection of Valley Brook Avenue and Livingston Avenue and is in the Business Zone (B Zone). The site currently contains four (4) existing structures, a restaurant building and associated storage area/garage and a single-family house and associated detached garage. The existing structures will be removed. The proposal is for a three-story 25-unit apartment building. The site has frontage along both the west side of Valley Brook Avenue and the north side of Livingston Avenue. Access to the proposed development will be via one (1) full-movement driveway along westbound Livingston Avenue.

Existing Conditions

A field reconnaissance was conducted in the vicinity of the site to determine the features of the adjacent roadway network within the study area. A description of the roadways and intersections are provided below.

In the vicinity of the site, **Valley Brook Avenue** is a two-lane roadway that is under the jurisdiction of Lyndhurst and is classified[1] as an Urban Major Collector. Valley Brook Avenue consists of one lane and limited on-street parking in each direction with an approximate cartway width of 35 feet (ft). The posted speed limit along Valley Brook Avenue is 25 MPH. For the purpose of this study, Valley Brook Avenue is assumed to extend in a general north-south direction.

In the vicinity of the site, **Stuyvesant Avenue** is a two-lane roadway that is under the jurisdiction of Lyndhurst and is classified as an Urban Major Collector. Stuyvesant Avenue consists of one lane and on-street parking in each direction with an approximate cartway width of 40 ft. The posted speed limit along Stuyvesant Avenue is 25 MPH. For the purpose of this study, Stuyvesant Avenue is assumed to extend in a general east-west direction.

[1] NJDOT Straight Line Diagrams

In the vicinity of the site, **Livingston Avenue** is a two-lane local roadway west of Valley Brook Avenue and a one-lane local roadway east of Valley Brook Avenue. The west approach of Livingston Avenue consists of one lane and on-street parking in each direction with an approximate cartway width of 42 ft. The east approach of Livingston Avenue consists of one lane for one-way westbound travel only and on-street parking on both sides with an approximate cartway width of 30 ft. The posted speed limit along Livingston Avenue is 25 MPH. For the purpose of this study, Livingston Avenue is assumed to extend in a general east-west direction.

The **Valley Brook Avenue and Stuyvesant Avenue** signalized intersection is controlled by a two-phase traffic signal. The eastbound and westbound Stuyvesant Avenue approaches consist of a single lane for shared left-turn, through, and right-turn movements. The northbound and southbound Valley Brook Avenue approaches consist of a single lane for shared left-turn, through, and right-turn movements.

The **Valley Brook Avenue and Livingston Avenue** (north) intersection is a T-type intersection that is stop-controlled along the one-way westbound Livingston Avenue approach. Both the northbound and southbound Valley Brook Avenue approaches consist of a single lane for through movements. The westbound Livingston Avenue approach consists of a single lane for left and right-turn movements.

The **Valley Brook Avenue and Livingston Avenue** (south) intersection is a T-type intersection that is stop-controlled along the eastbound Livingston Avenue approach. Both the northbound and southbound Valley Brook Avenue approaches consist of a single lane for all permitted movements. The eastbound Livingston Avenue approach consists of a single lane for left and right-turn movements.

Traffic Counts

To determine the amount of traffic on the adjacent roadway network, manual turning movement counts (MTMC) were conducted at the study intersections on Wednesday, October 30, 2019, during the weekday morning (7:00 AM - 10:00 AM) and afternoon (2:00 PM - 6:00 PM) peak periods. A summary of the traffic counts can be found in the appendix to this assessment and the existing volumes are illustrated on Figure 2.

It should be noted, the recorded traffic counts were done in 2019. This data was increased using a 1.00% annual background growth factor as recommended by the NJDOT to determine the anticipated 2021 existing traffic volumes in the vicinity of the site.

Future Conditions

As indicated above, the proposal is to construct a three-story 25-unit apartment building on the site. The traffic resulting from the proposed development will not affect the adjacent roadway network until 2023, when the apartment development is expected to be fully built-out and occupied. It can be expected that the traffic volumes along the adjacent roadway network will increase as a result of other development in the vicinity of the site and general traffic growth or reoccupation of empty space in the area. Based on the *Annual Background Growth Table* prepared by the New Jersey Department of Transportation (NJDOT), a 1.00% annual traffic growth is projected along Valley Brook Avenue, Stuyvesant Avenue, and Livingston Avenue. By applying a 1.00% annual growth rate to the respective 2019 roadway volumes as collected, the 2023 No-Build volumes were calculated and are shown on Figure 3.

Trip Generation

The amount of traffic to be generated by the proposed residential development can best be estimated based on data published by the Institute of Transportation Engineers (ITE). ITE has compiled data from thousands of studies for various land uses, independent variables and study periods, and published the results in *Trip Generation, 10th Edition*. The proposed development is most similar to ITE Land Use 220: Multifamily Housing. Table 1 below indicates the total peak hour traffic to be generated by the proposed 25-unit apartment development based on the ITE trip generation data. Trip generation worksheets are attached for reference.

Table 1
ITE Trip Generation
Apartment Building

Land Use	Weekday AM Peak			Weekday PM Peak		
	In	Out	Total	In	Out	Total
Apartments (25 Units)	3	9	12	9	5	14

The traffic to be generated by the proposed 25-unit apartment development during the peak hours must then be distributed to the adjacent street network in a manner which the residents can reasonably be expected to travel. The site traffic was assigned to the street network based on the existing peak hour distribution of traffic along the adjacent street network, as illustrated on Figure 4. The resulting site traffic assignment is illustrated on Figure 5. The site traffic was then added to the 2023 No-Build traffic volumes (Figure 3) to project the 2023 Build traffic volumes illustrated on Figure 6.

Trip Generation Comparison

Based on the Lyndhurst Township zoning map, the site is located in the Business "B" Zone. Permitted uses within the Business zone include retail and office developments. As noted above the site contains a building formerly occupied as a restaurant and a single-family house. The 4,050 square foot (sf) restaurant is an existing non-conforming use. The restaurant, although non-conforming could be reoccupied as a restaurant if no improvements were made.

In order to provide a comparison of the proposed 25-unit apartment development with permitted uses or reoccupation of the existing restaurant, the amount of traffic to be generated by the existing 4,050 sf restaurant building or permitted 5,000 sf retail or office space was calculated based on the Institute of Transportation Engineers' (ITE) publication, *Trip Generation, 10th Edition*. The restaurant is most similar to ITE Land Code 932 (High-Turnover Restaurant). A retail development is most similar to ITE Land Code 814 (Variety Store). An office development is most similar to ITE Land Code 710 (General Office Building). The trips generated by the previously approved land use and permitted land uses are summarized in Table 2, based on the data provided by ITE. The trip generation is shown for the weekday AM and weekday PM peak hours.

The comparison of ITE trip generation between the previously approved restaurant use and permitted retail and office uses and the proposed apartment building use can be seen in Table 2. Based on comparison of the peak hour trip generation comparisons in Table 2, the proposed 25-unit apartment building generates 28 less AM trips and 26 less PM trips than the existing 4,050 sf restaurant and 4 less AM trips and 20 less PM trips than a 5,000-sf retail

facility. The comparison indicates that a residential development of 25 apartment units will be less intense than other uses that could occupy the site.

Table 2 ITE Trip Generation Comparison - Apartment Building		
Land Use	AM Peak Hour	PM Peak Hour
Restaurant (4,050 SF)	40	40
Retail (5,000 SF)	16	34
Apartments (25 Units)	12	14

Operational Analysis

In order to measure the quality of the traffic flow for the adjacent roadway, capacity analysis for the study locations were performed based upon the methods outlined in the *Highway Capacity Manual*. Capacity analysis is a procedure used to estimate the ability of the roadway network to carry traffic. Capacity analyses are performed based on a Level of Service methodology. Level of Service (LOS) is a qualitative measure that characterizes the operational conditions of a roadway or intersection based on the perceptions by motorists and passengers. Levels of Service are defined for each type of facility (i.e. freeways, highways, signalized intersections, unsignalized intersections). These Levels of Service range from LOS A to LOS F, with a LOS A representing the best operating conditions and a LOS F representing the worst operating conditions.

The Level of Service for an unsignalized intersection is determined based on the average control delay associated with each minor movement (i.e. yielding left-turn movements from the major roads and stop-controlled movements from the minor approaches). The Levels of Service for signalized intersections are classified in terms of delay, which is based on the extent of driver discomfort and frustration, fuel consumption and lost travel time. The delay experienced by a motorist consists of many factors that relate to control, geometrics, and traffic. Some of these factors include the quality of progression, traffic signal cycle length, the green ratio, and the volume-to-capacity ratio. The Level of Service criteria for unsignalized and signalized intersections is summarized in Table 3.

Table 3 Level of Service Criteria		
Level of Service	Unsignalized Delay (sec)	Signalized Delay (sec)
A	≤ 10	≤ 10
B	> 10 and ≤ 15	> 10 and ≤ 20
C	> 15 and ≤ 25	> 20 and ≤ 35
D	> 25 and ≤ 35	> 35 and ≤ 55
E	> 35 and ≤ 50	> 55 and ≤ 80
F	> 50	> 80

The operating conditions at the study intersections and the proposed site access were evaluated using the above-described methodology and Synchro traffic analysis software. The Existing, No-Build, and Build Levels of Service are illustrated on Figures 7, 8 and 9; respectively. The detailed capacity analyses worksheets for the intersection analyses are attached to this assessment with a description of the operating conditions summarized below.

Valley Brook Avenue and Stuyvesant Avenue Intersection

Under the Existing conditions, the Valley Brook Avenue and Stuyvesant Avenue signalized intersection operates at an overall LOS B and LOS D during the weekday AM and PM peak hours, respectively. The northbound Valley Brook Avenue shared left-turn/through/right-turn movements operate at LOS C and LOS E during the weekday AM and PM peak hours, respectively. The southbound Valley Brook Avenue shared left-turn/through/right-turn movements operate at LOS B during both the weekday AM and PM peak hours. The eastbound Stuyvesant Avenue shared left-turn/through/right-turn movements operate at LOS B during both the weekday AM and PM peak hours. The westbound Stuyvesant Avenue shared left-turn/through/right-turn movements operate at a LOS B and LOS D during the weekday AM and PM peak hours, respectively.

Under 2023 No-Build conditions, the overall LOS of the intersection continues to operate at existing overall LOS B and LOS D during the weekday AM and PM peak hours, respectively. All individual movements continue to operate at existing levels of service with the exception of the westbound Stuyvesant Avenue shared left-turn/through/right-turn movements that operate at LOS E during the weekday PM peak hour.

Under 2023 Build conditions, the overall and individual movements at the intersection continue to operate at 2023 No-Build levels of service with the exception of the westbound Stuyvesant Avenue movements which will operate at a LOS C during the AM peak hour.

Valley Brook Avenue and Livingston Avenue (North) Intersection

Under the Existing conditions, the westbound only Livingston Avenue stop controlled shared left-turn/right-turn movements operate at LOS B during both the weekday AM and PM peak hours.

Under both the 2023 No-Build and 2023 Build conditions, all individual movements at the intersection will continue to operate with existing levels of service.

Valley Brook Avenue and Livingston Avenue (South) Intersection

Under the Existing conditions, the northbound Valley Brook Avenue conflicted left-turn movements operate at LOS A during both the weekday AM and PM peak hours. The eastbound Livingston Avenue stop controlled shared left-turn/right-turn movements operate at LOS C and LOS B during the weekday AM and PM peak hours, respectively.

Under 2023 No-Build conditions, the eastbound Livingston Avenue shared left-turn/right-turn movements will operate with a LOS C during both the weekday AM and PM peak hours. All other individual movements at the intersection will continue to operate with existing levels of service.

Under 2023 Build conditions, all individual movements at the intersection continue to operate at 2023 No-Build levels of service.

Livingston Avenue and Site Driveway Intersection

Under 2023 Build conditions, a new full-movement site driveway will be constructed along westbound Livingston Avenue. The eastbound Livingston Avenue conflicted left-turn movements operate at LOS A during both the weekday AM and PM peak hours. The southbound Site Driveway Exit stop controlled shared left-turn/right-turn movements operate at LOS A during both the weekday AM and PM peak hours, respectively.

Site Layout

The proposal is for 25 apartment units to be constructed in a three-story building on the site. The site will be cleared of existing structures and existing driveways along Valley Brook Avenue and Livingston Avenue frontages will be eliminated. The site will be reconfigured with the apartment building constructed along the Valley Brook Avenue frontage and at the corner of Valley Brook Avenue and Livingston Avenue. A single driveway along the Livingston Avenue frontage will provide access to on-site parking to the west of the building. On site circulation aisles are 24 ft wide for two-way travel on-site.

The 25 apartment units will include 17 single bedroom units and 8 two-bedroom units. Based on the bedroom counts and applying Residential Site Improvement Standards (RSIS) parking requirements, the proposed development requires a total of 47 parking spaces. A total of 48 on-site parking spaces are provided including two (2) ADA compliant handicap parking spaces, one of which is van accessible. The parking requirement is satisfied by providing 48 total parking spaces.

Site improvements will be provided to accommodate pedestrians on the site frontages. Sidewalk and street trees will enhance the street scape while providing useable space for pedestrian circulation. Building entrances will be located at the corner of Valley Brook Avenue and Livingston Avenue and along Valley Brook Avenue. Additional entry will be provided from the parking area to the west of the apartment building.

Conclusion

Based on data and traffic analysis presented in this traffic engineering assessment, the traffic resulting from the proposed 25-unit apartment building will not have a significant impact on the adjacent street network based upon the following conclusions:

- The proposed 25-unit apartment building will generate a total of 12 and 14 trips during the AM and PM critical peak hours, respectively.

- The proposed apartment building will generate significantly less peak hour trips than reoccupation if the existing restaurant on site or a Business Zone permitted retail facility. In the PM peak hour, the proposed apartments will generate 20 to 26 less trips than retail and restaurant, respectively.

- Under the 2023 Build conditions, the overall operation and all individual movements at the Valley Brook Avenue and Stuyvesant Avenue signalized intersection continues to operate with 2023 No-Build levels of service, with the exception of the westbound Stuyvesant Avenue movements which will operate at a LOS C during the AM peak hour.

- Under the 2023 Build conditions, all individual movements at the Valley Brook Avenue and Livingston Avenue (North) intersection continue to operate at Existing levels of service of LOS B.

- Under 2023 Build conditions, all individual movements at the Valley Brook Avenue and Livingston Avenue (South) intersection continue to operate at No-Build Levels of service of LOS C or better.

- Under 2023 Build conditions, all individual movements at the Livingston Avenue and Site Driveway intersection will operate at LOS A during the weekday AM and PM peak hours.

- The site layout was prepared in accordance with generally accepted engineering design standards for access, circulation and parking.

Should you have any questions, please do not hesitate to contact us.

Sincerely,
Shropshire Associates LLC

A Andrew Feranda

A Andrew Feranda, PE, PTOE, CME
Professional Engineer
N.J. License No. 42893
AAF/jab

Attachments

cc: Danielle Federico (via e-mail: DFederico@NorthJerseyAttorneys.com)
Daniel Reeves, PE (via e-mail: DReeves@DresdnerRobin.com)

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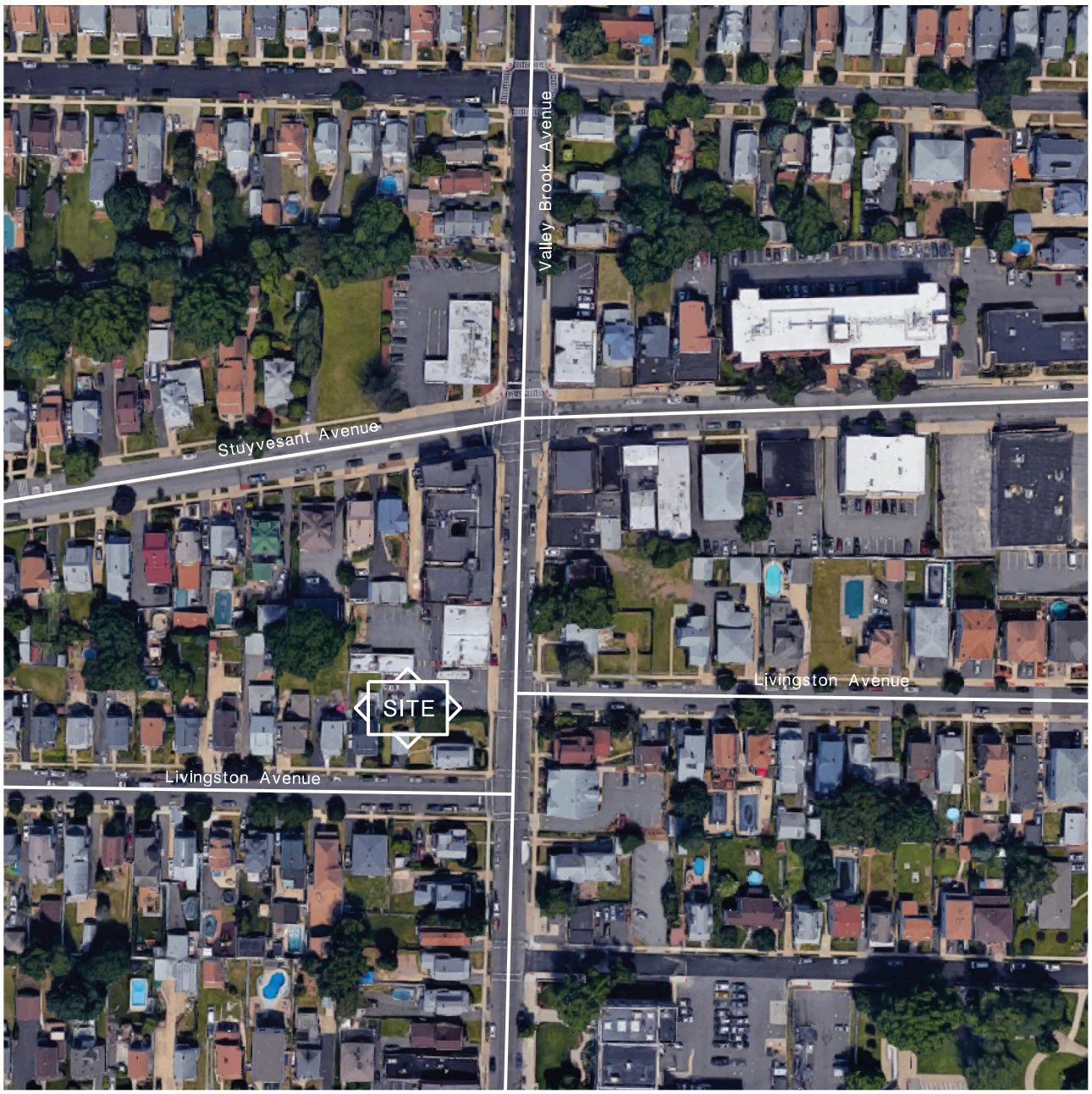
FIGURE 1
SITE LOCATION MAP

N



Apartment Building – Lyndhurst

Lyndhurst, Bergen County, New Jersey
July 2021

SA Project No. 19201

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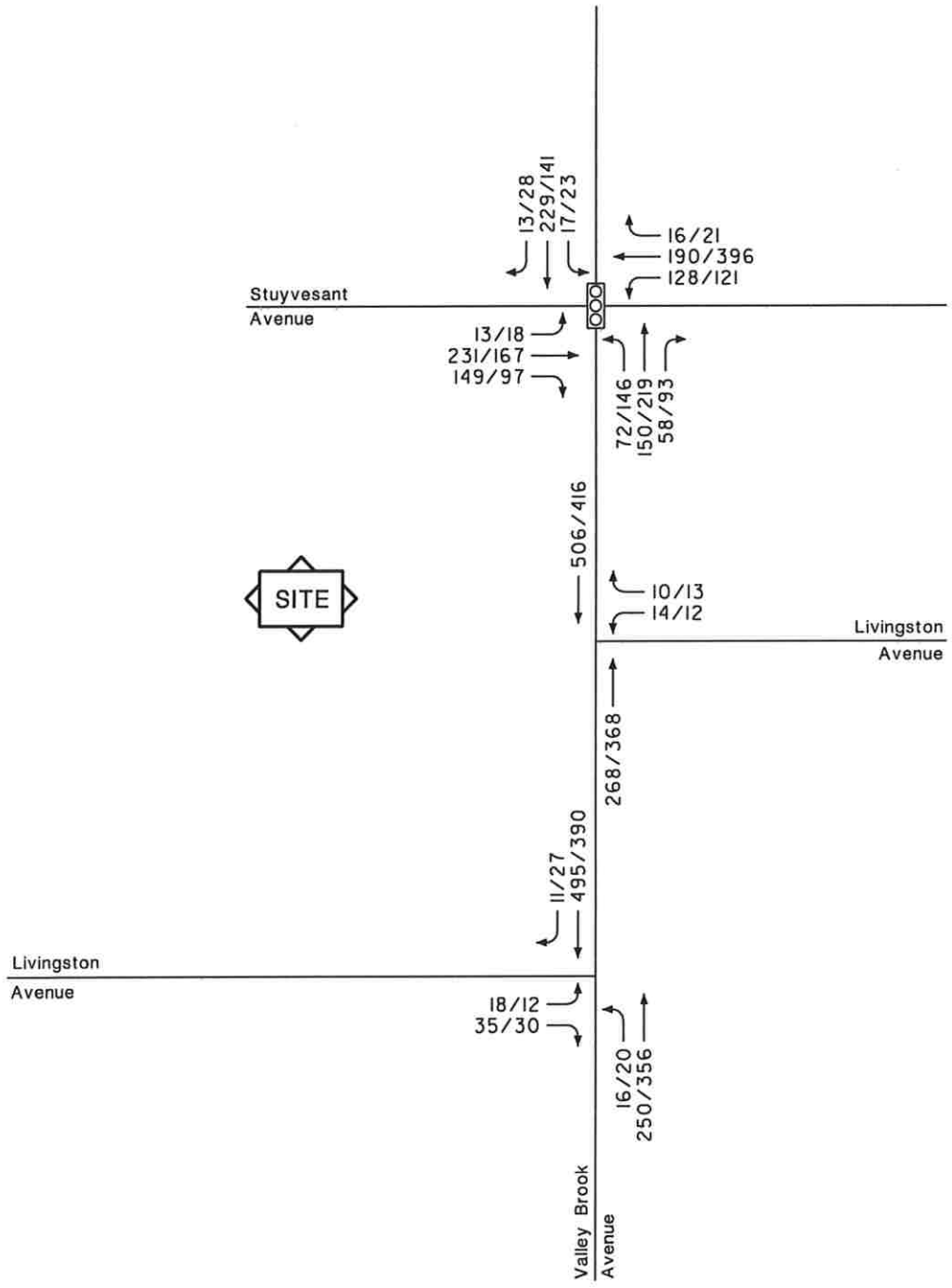
FIGURE 2
EXISTING VOLUMES



Apartment Building – Lyndhurst

Lyndhurst, Bergen County, New Jersey
July 2021

TRAFFIC SIGNAL
AM/PM PEAK HOUR

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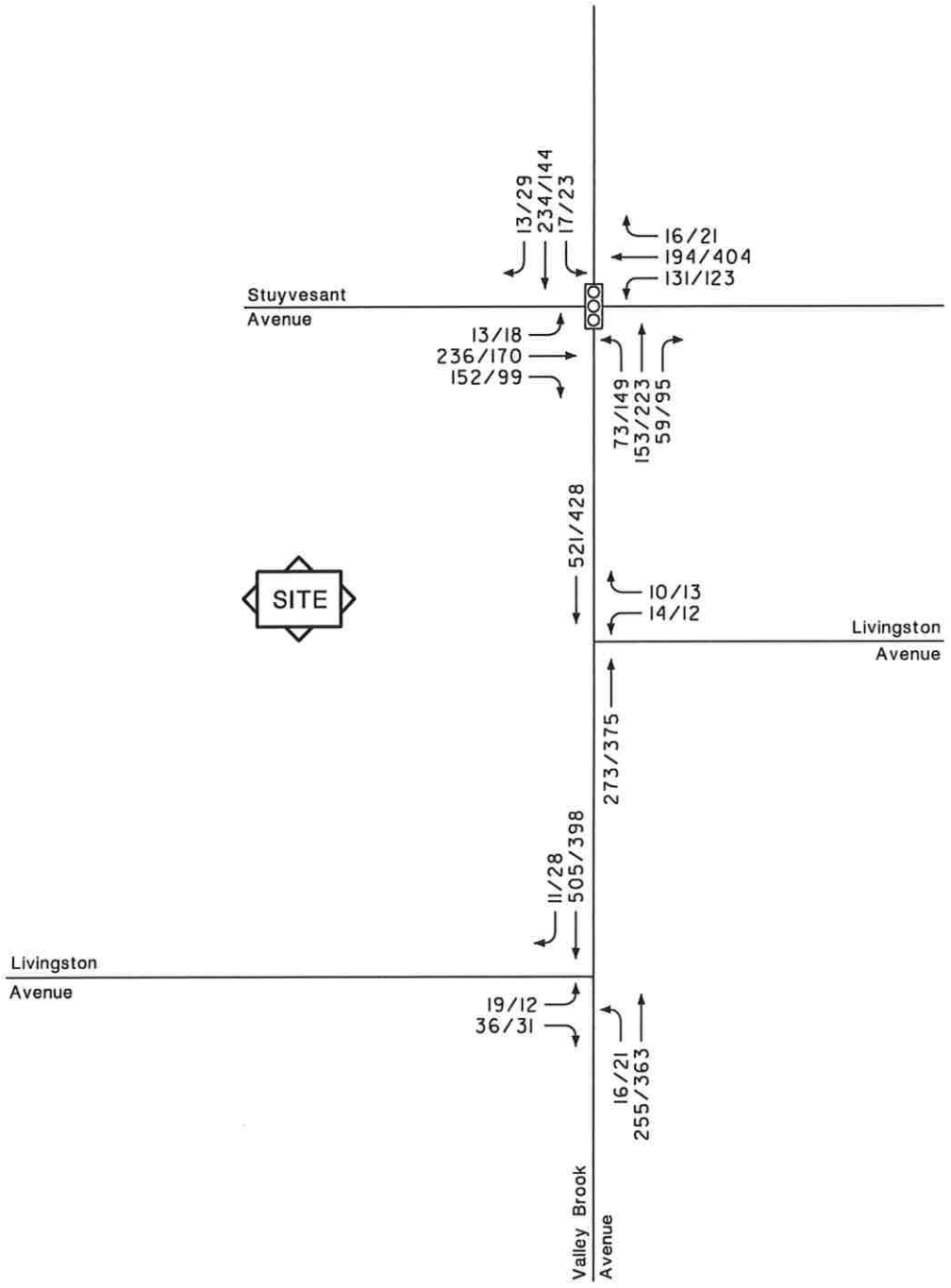
FIGURE 3
NO-BUILD VOLUMES



Apartment Building – Lyndhurst

Lyndhurst, Bergen County, New Jersey

July 2021

TRAFFIC SIGNAL

AM/PM PEAK HOUR

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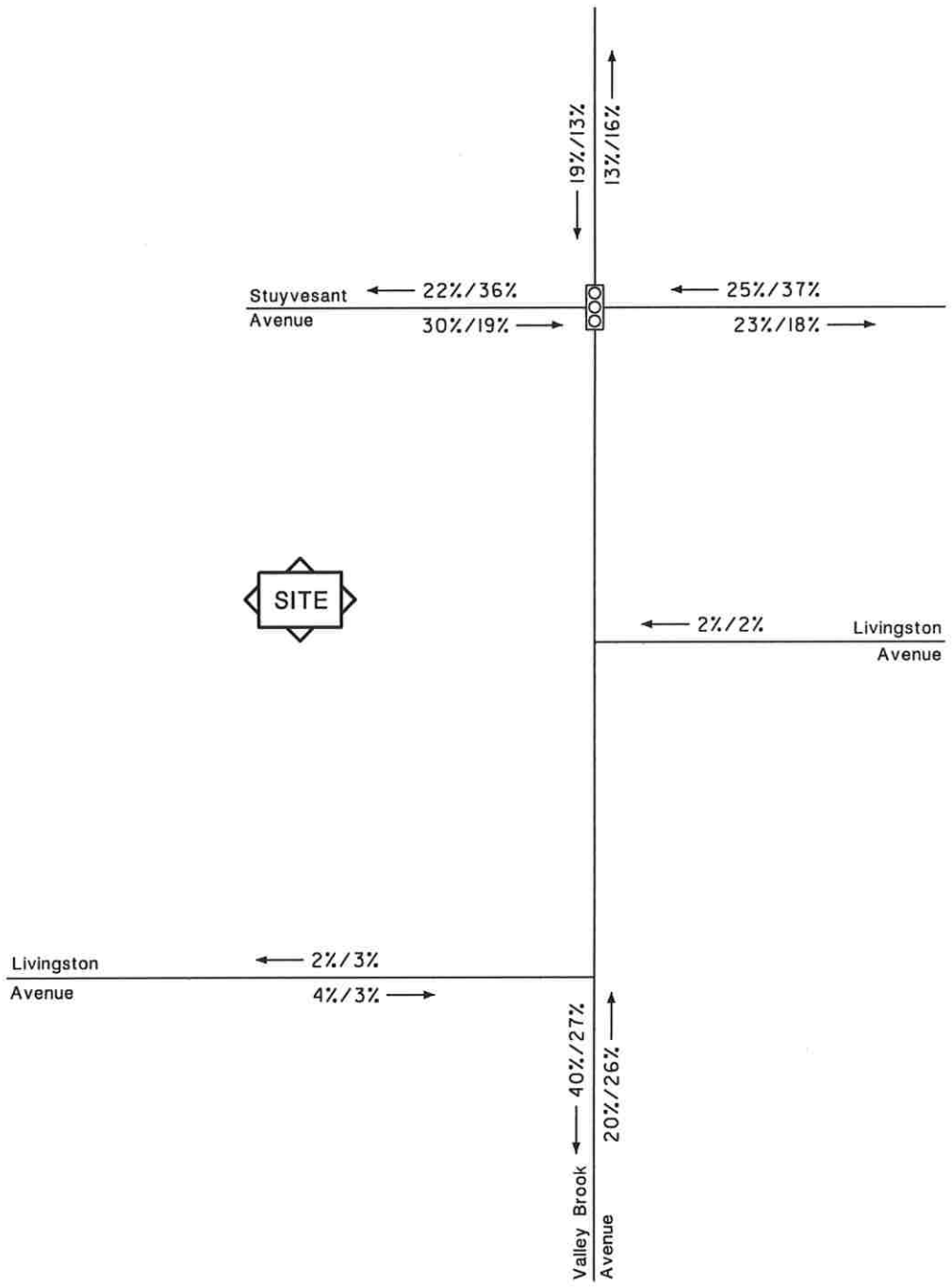
FIGURE 4
TRIP DISTRIBUTION



Apartment Building – Lyndhurst

Lyndhurst, Bergen County, New Jersey
July 2021

TRAFFIC SIGNAL
AM/PM PEAK HOUR

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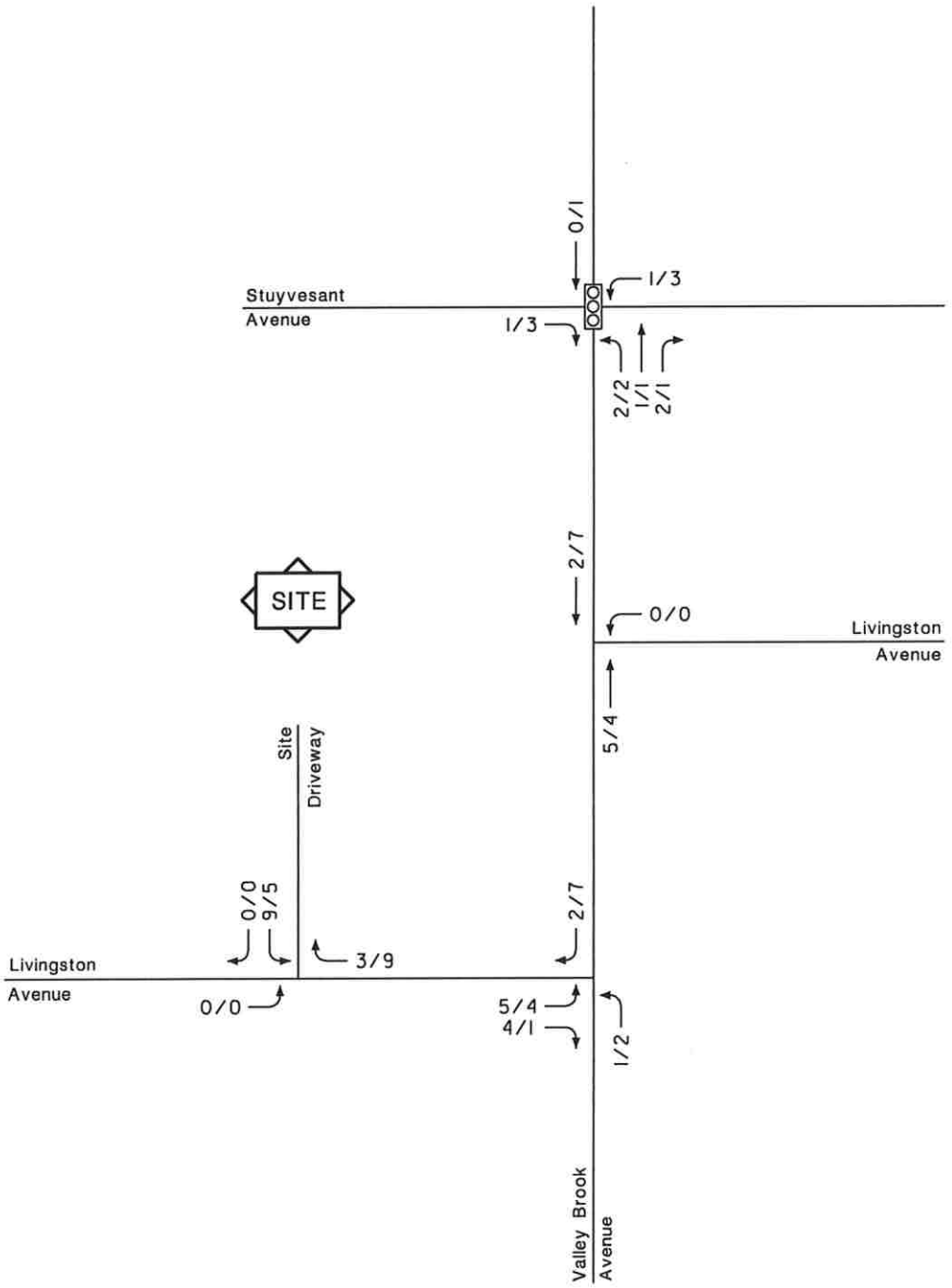
FIGURE 5
SITE TRAFFIC



Apartment Building – Lyndhurst

Lyndhurst, Bergen County, New Jersey

July 2021

TRAFFIC SIGNAL

AM/PM PEAK HOUR

SA Project No. 19201

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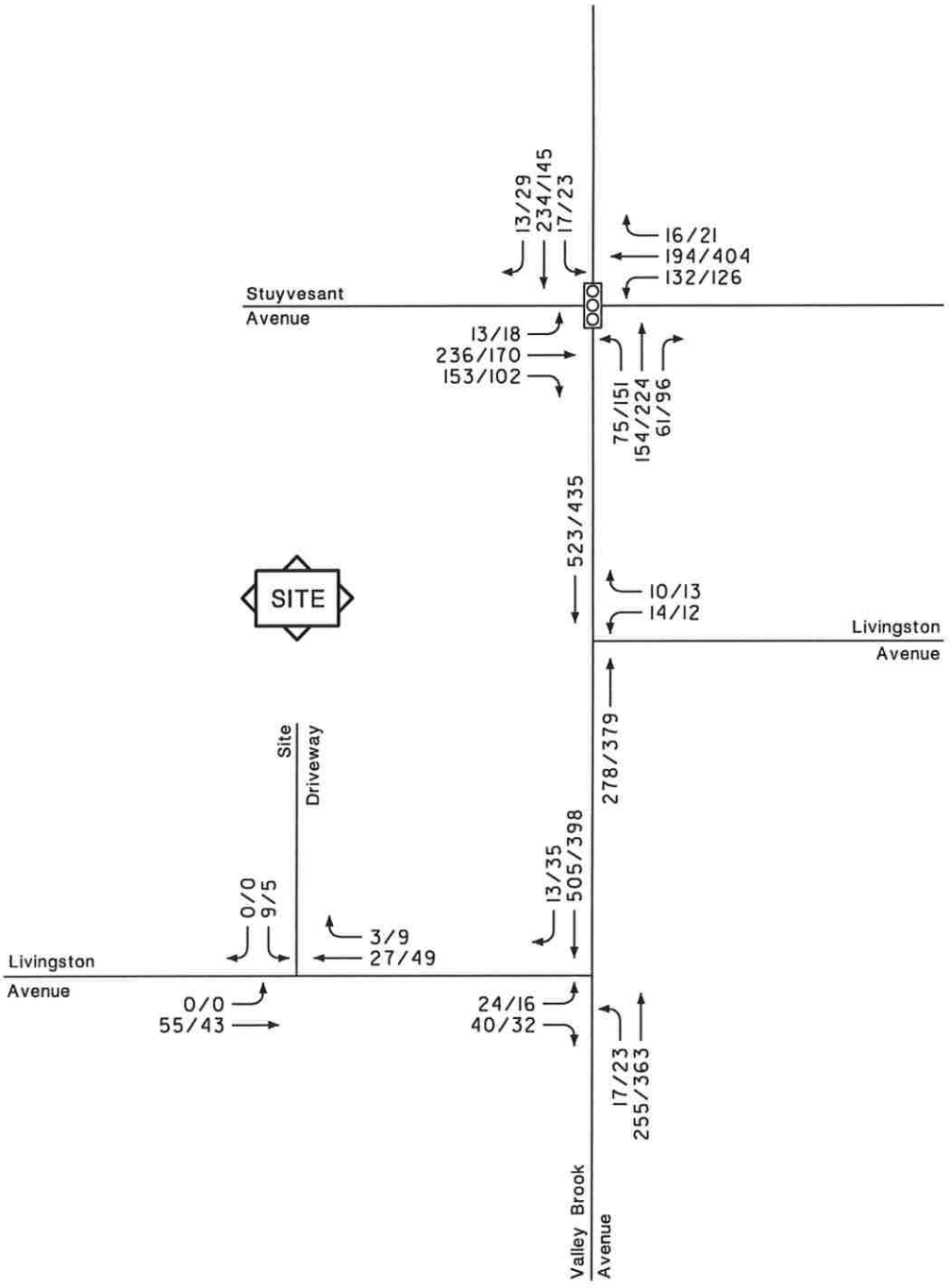
FIGURE 6
BUILD VOLUMES



Apartment Building – Lyndhurst

Lyndhurst, Bergen County, New Jersey

July 2021

TRAFFIC SIGNAL

AM/PM PEAK HOUR

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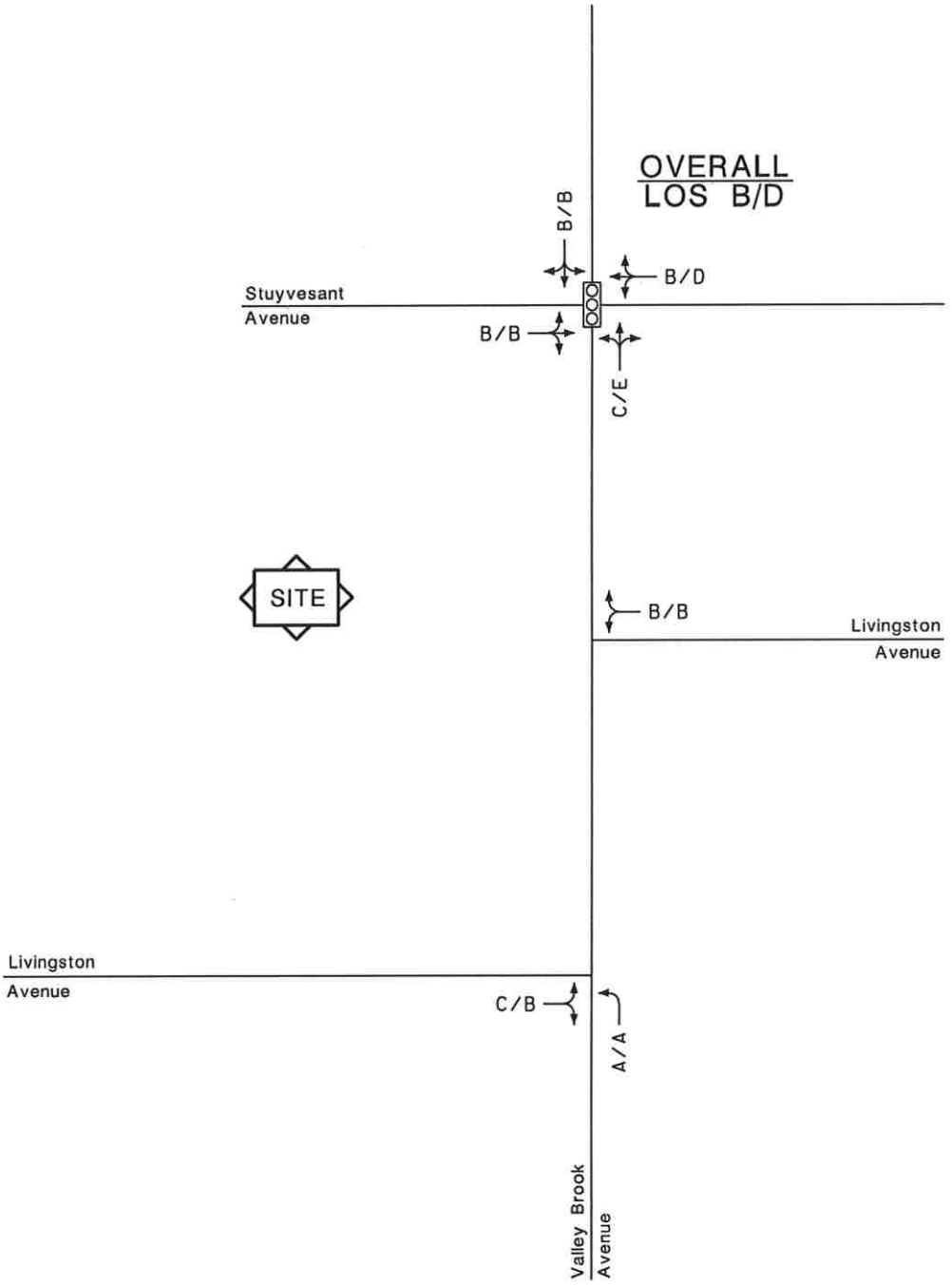
FIGURE 7
EXISTING LEVELS OF SERVICE



Apartment Building – Lyndhurst

Lyndhurst, Bergen County, New Jersey
July 2021

TRAFFIC SIGNAL
AM/PM PEAK HOUR

SA Project No. 19201

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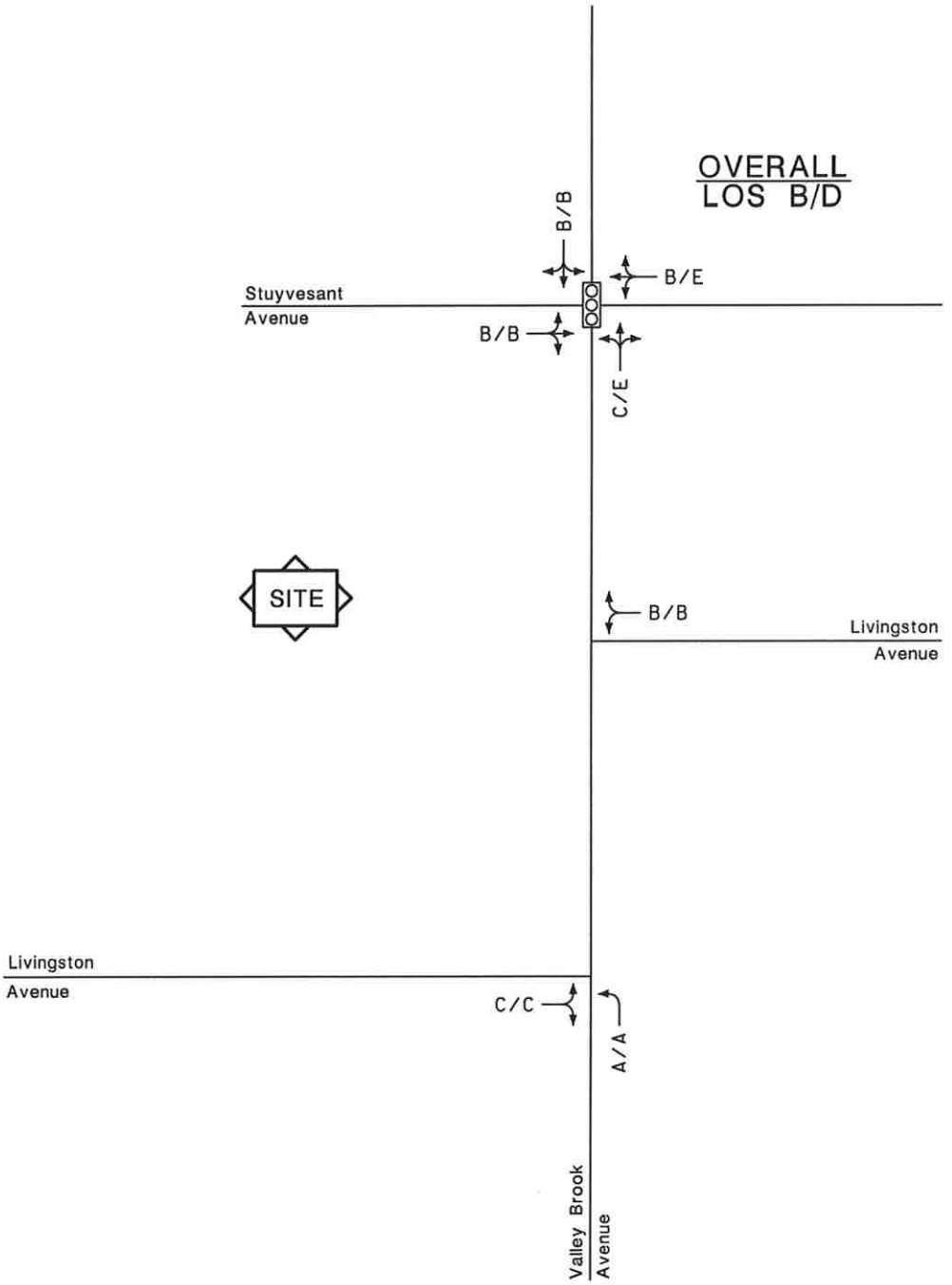
FIGURE 8
NO-BUILD LEVELS OF SERVICE



Apartment Building – Lyndhurst

Lyndhurst, Bergen County, New Jersey
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TRAFFIC SIGNAL
AM/PM PEAK HOUR

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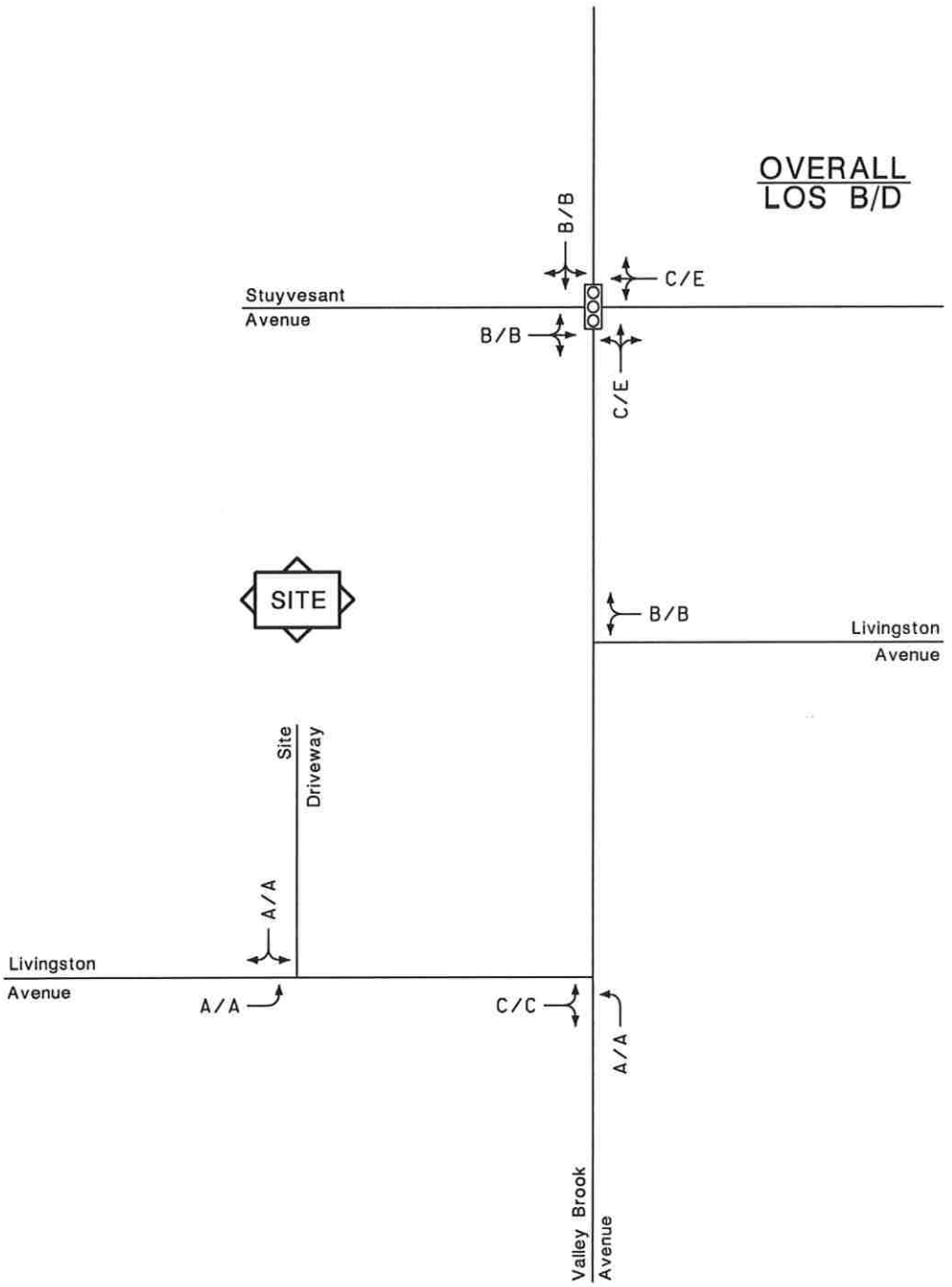
FIGURE 9
BUILD LEVELS OF SERVICE



Apartment Building – Lyndhurst

Lyndhurst, Bergen County, New Jersey
July 2021

TRAFFIC SIGNAL
AM/PM PEAK HOUR

SA Project No. 19201

Shropshire Associates LLC

277 Whitehorse Pike, Suite 203
Atco, NJ 08004

N/S Route: Stuyvesant Avenue
E/W Route: Valley Brook Drive
Lyndhurst Twp/Bergen County/NJ
Wednesday/cloudy/ECM/2585

File Name : 19201001
Site Code : 19201001
Start Date : 10/30/2019
Page No : 1

Groups Printed- Unshifted

	Stuyvesant Ave Southbound					Valley Brook Drive Westbound					Stuyvesant Ave Northbound					Valley Brook Drive Eastbound					
Start Time	Right	Thru	Left	ROR	App Total	Right	Thru	Left	ROR	App Total	Right	Thru	Left	ROR	App Total	Right	Thru	Left	ROR	App Total	Int. Total
07:00 AM	3	23	10	0	36	7	16	7	0	30	25	76	1	0	102	1	25	6	0	32	200
07:15 AM	2	24	13	0	39	16	22	15	0	53	35	73	8	0	116	2	36	6	0	44	252
07:30 AM	5	32	14	0	51	10	31	11	0	52	26	57	2	0	85	3	41	1	0	45	233
07:45 AM	4	47	25	0	76	17	38	18	0	73	45	70	5	0	120	3	53	4	0	60	329
Total	14	126	62	0	202	50	107	51	0	208	131	276	16	0	423	9	155	17	0	181	1014
08:00 AM	1	63	31	0	95	11	36	23	0	70	40	59	5	0	104	6	54	5	0	65	334
08:15 AM	5	36	41	0	82	12	43	19	0	74	36	46	2	0	84	3	70	7	0	80	320
08:30 AM	6	40	28	0	74	16	30	11	1	58	24	51	1	1	77	1	47	1	0	49	258
08:45 AM	4	17	19	0	40	15	29	16	0	60	31	50	9	0	90	4	56	3	0	63	253
Total	16	156	119	0	291	54	138	69	1	262	131	206	17	1	355	14	227	16	0	257	1165
09:00 AM	2	27	15	0	44	14	26	10	0	50	30	43	2	0	75	1	37	2	0	40	209
09:15 AM	7	27	17	0	51	11	29	12	0	52	18	35	1	0	54	2	38	3	0	43	200
09:30 AM	3	27	23	0	53	6	23	12	0	41	18	40	2	2	62	3	35	4	0	42	198
09:45 AM	2	25	14	0	41	13	32	9	0	54	23	33	4	0	60	2	29	2	0	33	188
Total	14	106	69	0	189	44	110	43	0	197	89	151	9	2	251	8	139	11	0	158	795
*** BREAK ***																					
02:00 PM	6	27	17	0	50	13	53	28	0	94	17	39	2	0	58	2	33	5	0	40	242
02:15 PM	5	48	36	0	89	20	43	22	0	85	25	29	1	0	55	2	35	5	0	42	271
02:30 PM	4	41	24	0	69	16	44	28	0	88	25	33	3	0	61	2	26	5	0	33	251
02:45 PM	6	45	44	0	95	18	39	25	0	82	25	37	3	1	66	7	32	5	0	44	287
Total	21	161	121	0	303	67	179	103	0	349	92	138	9	1	240	13	126	20	0	159	1051
03:00 PM	3	52	36	0	91	17	48	28	0	93	42	39	6	0	87	3	38	7	0	48	319
03:15 PM	2	46	25	0	73	30	55	22	0	107	19	34	5	0	58	4	46	11	0	61	299
03:30 PM	4	53	24	0	81	10	39	25	0	74	15	30	5	0	50	1	41	6	0	48	253
03:45 PM	1	73	23	0	97	13	65	26	0	104	28	42	4	0	74	2	39	2	0	43	318
Total	10	224	108	0	342	70	207	101	0	378	104	145	20	0	269	10	164	26	0	200	1189
04:00 PM	0	75	23	0	98	16	47	30	0	93	25	46	1	0	72	6	33	6	0	45	308
04:15 PM	14	57	23	0	94	16	41	28	0	85	31	39	4	0	74	0	48	3	0	51	304
04:30 PM	4	107	33	0	144	15	53	21	0	89	27	23	4	0	54	3	27	4	0	34	321
04:45 PM	4	82	28	0	114	14	55	22	0	91	34	39	10	0	83	4	32	7	0	43	331
Total	22	321	107	0	450	61	196	101	0	358	117	147	19	0	283	13	140	20	0	173	1264
05:00 PM	4	94	39	0	137	36	67	26	0	129	16	51	6	0	73	11	41	6	0	58	397
05:15 PM	4	98	33	0	135	27	58	34	0	119	31	44	4	0	79	4	26	10	0	40	373
05:30 PM	6	113	25	0	144	11	41	34	0	86	17	31	3	0	51	6	34	1	0	41	322
05:45 PM	7	83	22	0	112	17	49	49	0	115	31	38	5	0	74	6	37	6	0	49	350
Total	21	388	119	0	528	91	215	143	0	449	95	164	18	0	277	27	138	23	0	188	1442
Grand Total	118	1482	705	0	2305	437	1152	611	1	2201	759	1227	108	4	2098	94	1089	133	0	1316	7920
Apprch %	5.1	64.3	30.6	0		19.9	52.3	27.8	0		36.2	58.5	5.1	0.2		7.1	82.8	10.1	0		
Total %	1.5	18.7	8.9	0	29.1	5.5	14.5	7.7	0	27.8	9.6	15.5	1.4	0.1	26.5	1.2	13.8	1.7	0	16.6	

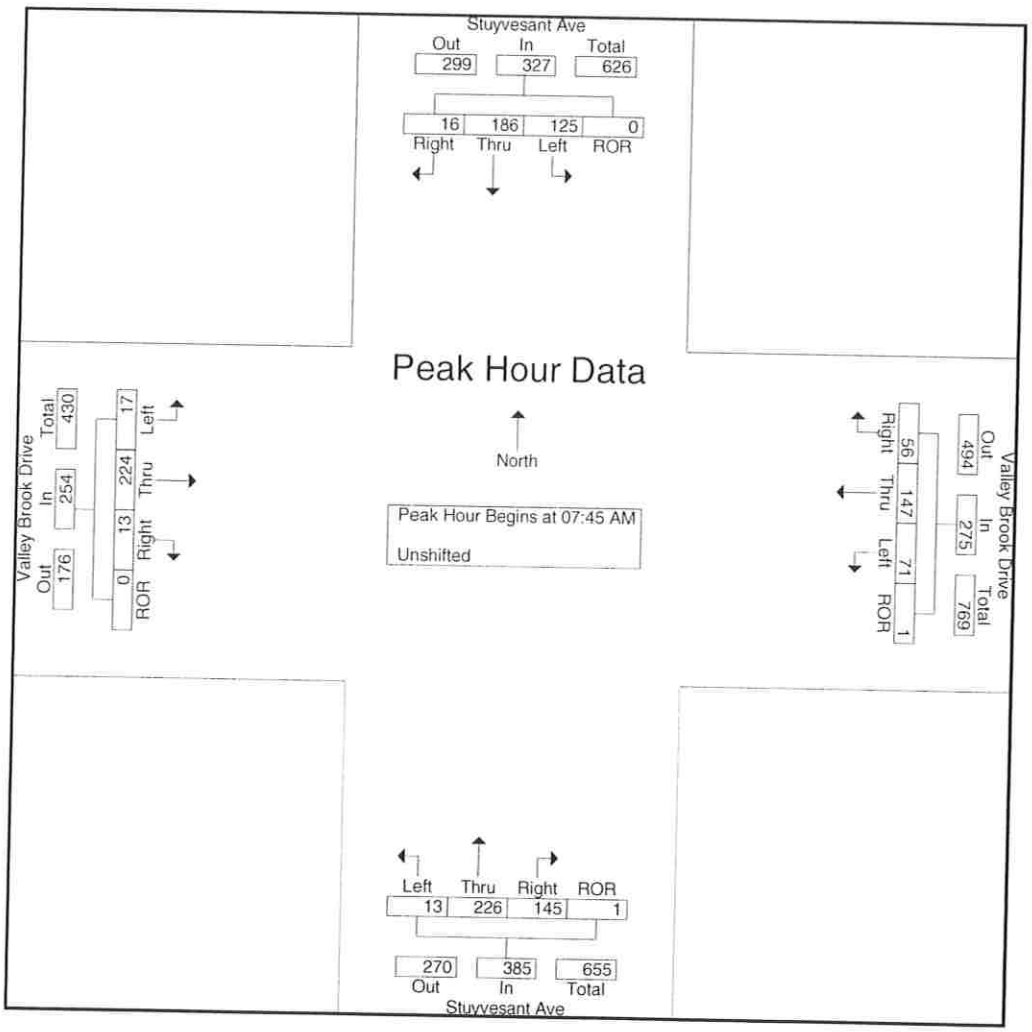
Shropshire Associates LLC

277 Whitehorse Pike, Suite 203
Atco, NJ 08004

N/S Route: Stuyvesant Avenue
E/W Route: Valley Brook Drive
Lyndhurst Twp/Bergen County/NJ
Wednesday/cloudy/ECM/2585

File Name : 19201001
Site Code : 19201001
Start Date : 10/30/2019
Page No : 2

	Stuyvesant Ave Southbound					Valley Brook Drive Westbound					Stuyvesant Ave Northbound					Valley Brook Drive Eastbound					
Start Time	Right	Thru	Left	ROR	App Total	Right	Thru	Left	ROR	App Total	Right	Thru	Left	ROR	App Total	Right	Thru	Left	ROR	App Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	4	47	25	0	76	**17**	38	18	0	73	**45**	**70**	**5**	0	**120**	3	53	4	0	60	329
08:00 AM	1	**63**	31	0	**95**	11	36	**23**	0	70	40	59	5	0	104	**6**	54	5	0	65	**334**
08:15 AM	5	36	**41**	0	82	12	**43**	19	0	**74**	36	46	2	0	84	3	**70**	**7**	0	**80**	320
08:30 AM	**6**	40	28	0	74	16	30	11	**1**	58	24	51	1	**1**	77	1	47	1	0	49	258
Total Volume	16	186	125	0	327	56	147	71	1	275	145	226	13	1	385	13	224	17	0	254	1241
% App. Total	4.9	56.9	38.2	0		20.4	53.5	25.8	0.4		37.7	58.7	3.4	0.3		5.1	88.2	6.7	0		
PHF	.667	.738	.762	.000	.861	.824	.855	.772	.250	.929	.806	.807	.650	.250	.802	.542	.800	.607	.000	.794	.929



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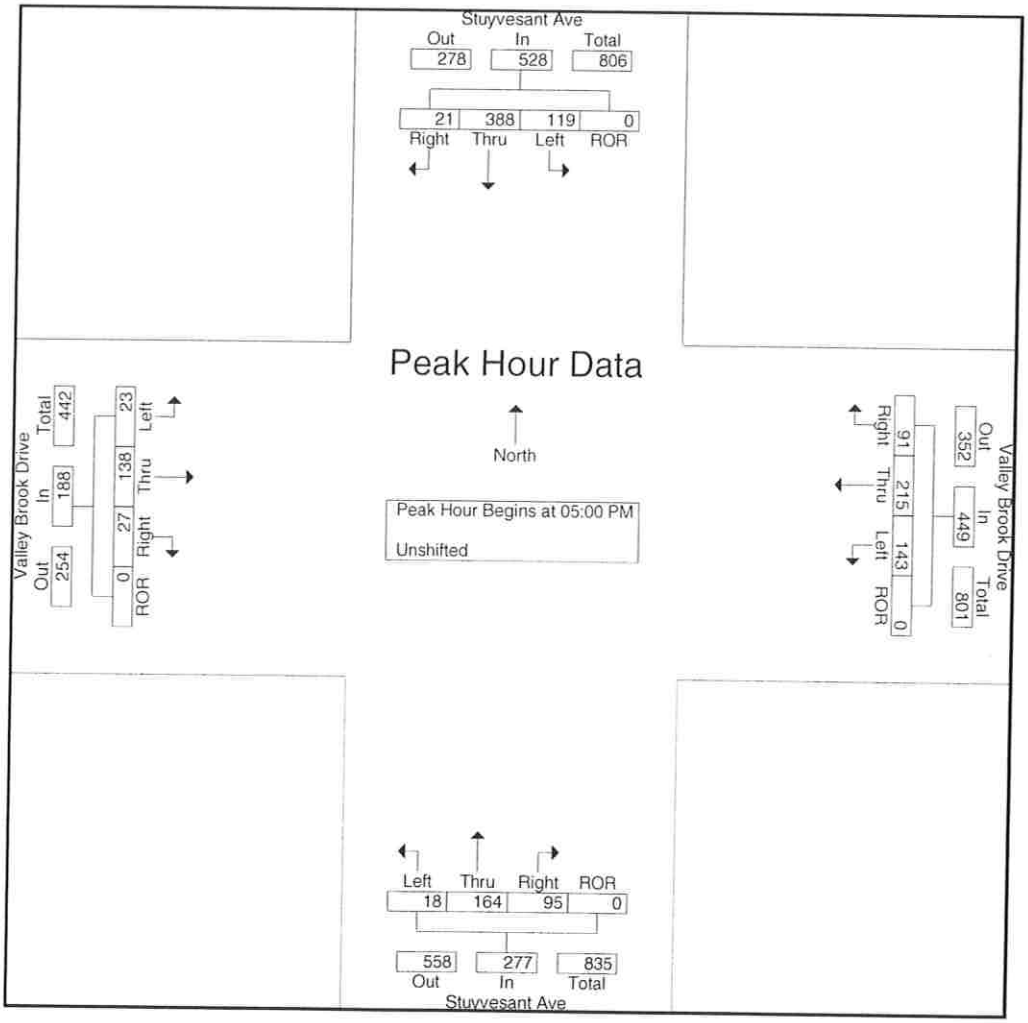
277 Whitehorse Pike, Suite 203
Atco, NJ 08004

N/S Route: Stuyvesant Avenue
E/W Route: Valley Brook Drive
Lyndhurst Twp/Bergen County/NJ
Wednesday/cloudy/ECM/2585

File Name : 19201001
Site Code : 19201001
Start Date : 10/30/2019
Page No : 3

	Stuyvesant Ave Southbound					Valley Brook Drive Westbound					Stuyvesant Ave Northbound					Valley Brook Drive Eastbound					
Start Time	Right	Thru	Left	ROR	App. Total	Right	Thru	Left	ROR	App. Total	Right	Thru	Left	ROR	App. Total	Right	Thru	Left	ROR	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	4	94	**39**	0	137	**36**	**67**	26	0	**129**	16	**51**	**6**	0	73	**11**	**41**	6	0	**58**	**397**
05:15 PM	4	98	33	0	135	27	58	34	0	119	**31**	44	4	0	**79**	4	26	**10**	0	40	373
05:30 PM	6	**113**	25	0	**144**	11	41	34	0	86	17	31	3	0	51	6	34	1	0	41	322
05:45 PM	**7**	83	22	0	112	17	49	**49**	0	115	31	38	5	0	74	6	37	6	0	49	350
Total Volume	21	388	119	0	528	91	215	143	0	449	95	164	18	0	277	27	138	23	0	188	1442
% App. Total	4	73.5	22.5	0		20.3	47.9	31.8	0		34.3	59.2	6.5	0		14.4	73.4	12.2	0		
PHF	.750	.858	.763	.000	.917	.632	.802	.730	.000	.870	.766	.804	.750	.000	.877	.614	.841	.575	.000	.810	.908



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277 Whitehorse Pike, Suite 203
Atco, NJ 08004

N/S Route: Livingston Avenue
E/W Route: Valley Brook Drive
Lyndhurst Twp/Bergen County/NJ
Wednesday/cloudy/CM/5142

File Name : 19201002
Site Code : 19201002
Start Date : 10/30/2019
Page No : 1

Groups Printed- Unshifted

	Valley Brook Drive Westbound			Livingston Avenue Northbound			Valley Brook Drive Eastbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
07:15 AM	45	3	48	1	2	3	0	70	70	121
07:30 AM	56	1	57	6	6	12	0	102	102	171
07:45 AM	63	2	65	3	3	6	2	127	129	200
Total	164	6	170	10	11	21	2	299	301	492
08:00 AM	66	4	70	7	4	11	7	139	146	227
08:15 AM	60	9	69	18	6	24	2	111	113	206
08:30 AM	56	1	57	6	5	11	0	108	108	176
08:45 AM	55	2	57	2	2	4	0	111	111	172
Total	237	16	253	33	17	50	9	469	478	781
09:00 AM	57	3	60	1	1	2	1	86	87	149
09:15 AM	49	1	50	4	2	6	1	75	76	132
09:30 AM	50	1	51	2	1	3	1	78	79	133
09:45 AM	49	3	52	2	0	2	1	76	77	131
Total	205	8	213	9	4	13	4	315	319	545
10:00 AM	72	2	74	4	2	6	6	75	81	161
*** BREAK ***										
Total	72	2	74	4	2	6	6	75	81	161
*** BREAK ***										
02:00 PM	88	6	94	3	2	5	2	70	72	171
02:15 PM	86	5	91	2	0	2	2	95	97	190
02:30 PM	78	6	84	1	2	3	1	78	79	166
02:45 PM	76	5	81	5	2	7	6	97	103	191
Total	328	22	350	11	6	17	11	340	351	718
03:00 PM	91	8	99	16	5	21	14	112	126	246
03:15 PM	93	5	98	9	6	15	5	76	81	194
03:30 PM	76	5	81	2	1	3	4	89	93	177
03:45 PM	89	2	91	2	0	2	3	105	108	201
Total	349	20	369	29	12	41	26	382	408	818
04:00 PM	86	5	91	2	2	4	0	90	90	185
04:15 PM	91	2	93	4	3	7	2	87	89	189
04:30 PM	97	6	103	2	0	2	4	88	92	197
04:45 PM	91	7	98	3	1	4	2	93	95	197
Total	365	20	385	11	6	17	8	358	366	768
05:00 PM	97	4	101	0	0	0	2	102	104	205
05:15 PM	94	5	99	2	3	5	2	91	93	197
05:30 PM	93	3	96	2	1	3	3	85	88	187
05:45 PM	109	9	118	7	3	10	6	92	98	226
Total	393	21	414	11	7	18	13	370	383	815
Grand Total	2113	115	2228	118	65	183	79	2608	2687	5098
Apprch %	94.8	5.2		64.5	35.5		2.9	97.1		
Total %	41.4	2.3	43.7	2.3	1.3	3.6	1.5	51.2	52.7	

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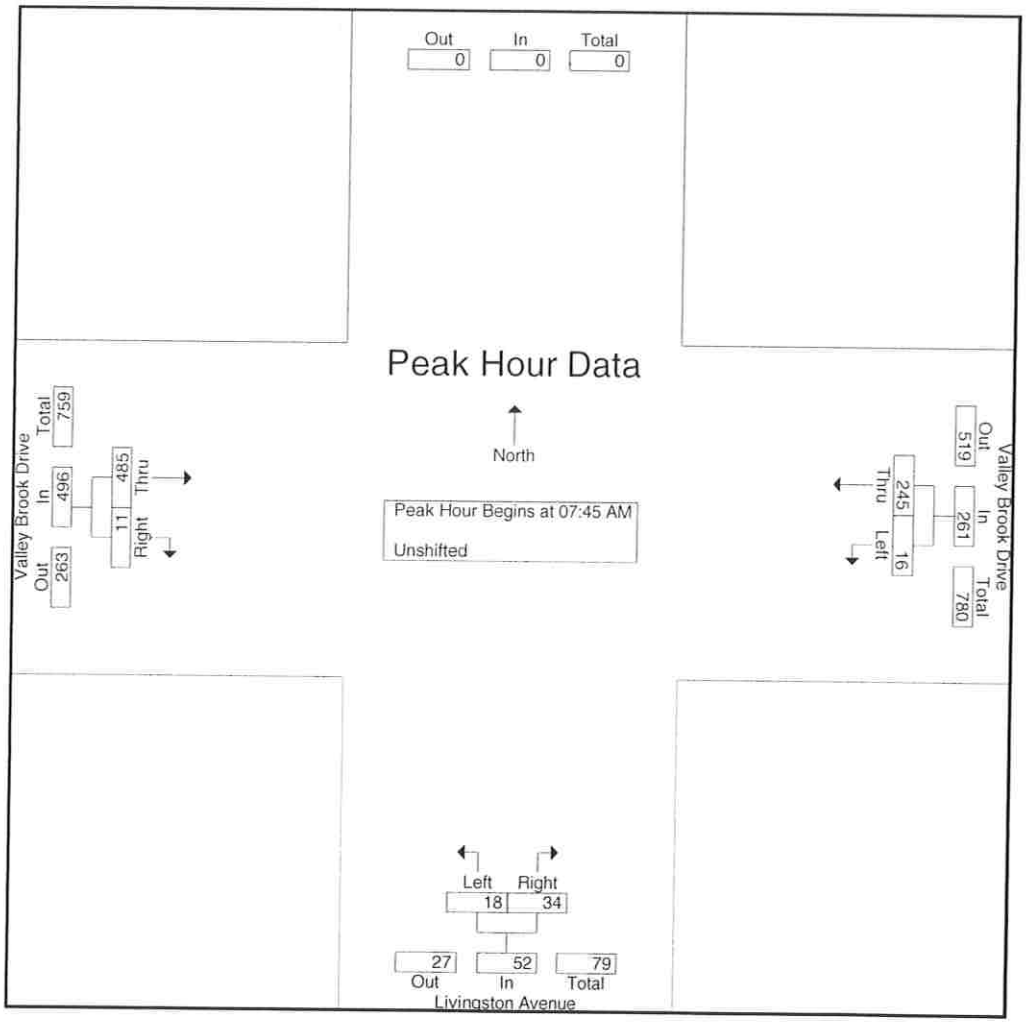
277 Whitehorse Pike, Suite 203
Atco, NJ 08004

N/S Route: Livingston Avenue
E/W Route: Valley Brook Drive
Lyndhurst Twp/Bergen County/NJ
Wednesday/cloudy/CM/5142

File Name : 19201002
Site Code : 19201002
Start Date : 10/30/2019
Page No : 2

	Valley Brook Drive Westbound			Livingston Avenue Northbound			Valley Brook Drive Eastbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 11:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:45 AM										
07:45 AM	63	2	65	3	3	6	2	127	129	200
08:00 AM	**66**	4	**70**	7	4	11	**7**	**139**	**146**	**227**
08:15 AM	60	**9**	69	**18**	**6**	**24**	2	111	113	206
08:30 AM	56	1	57	6	5	11	0	108	108	176
Total Volume	245	16	261	34	18	52	11	485	496	809
% App. Total	93.9	6.1		65.4	34.6		2.2	97.8		
PHF	.928	.444	.932	.472	.750	.542	.393	.872	.849	.891



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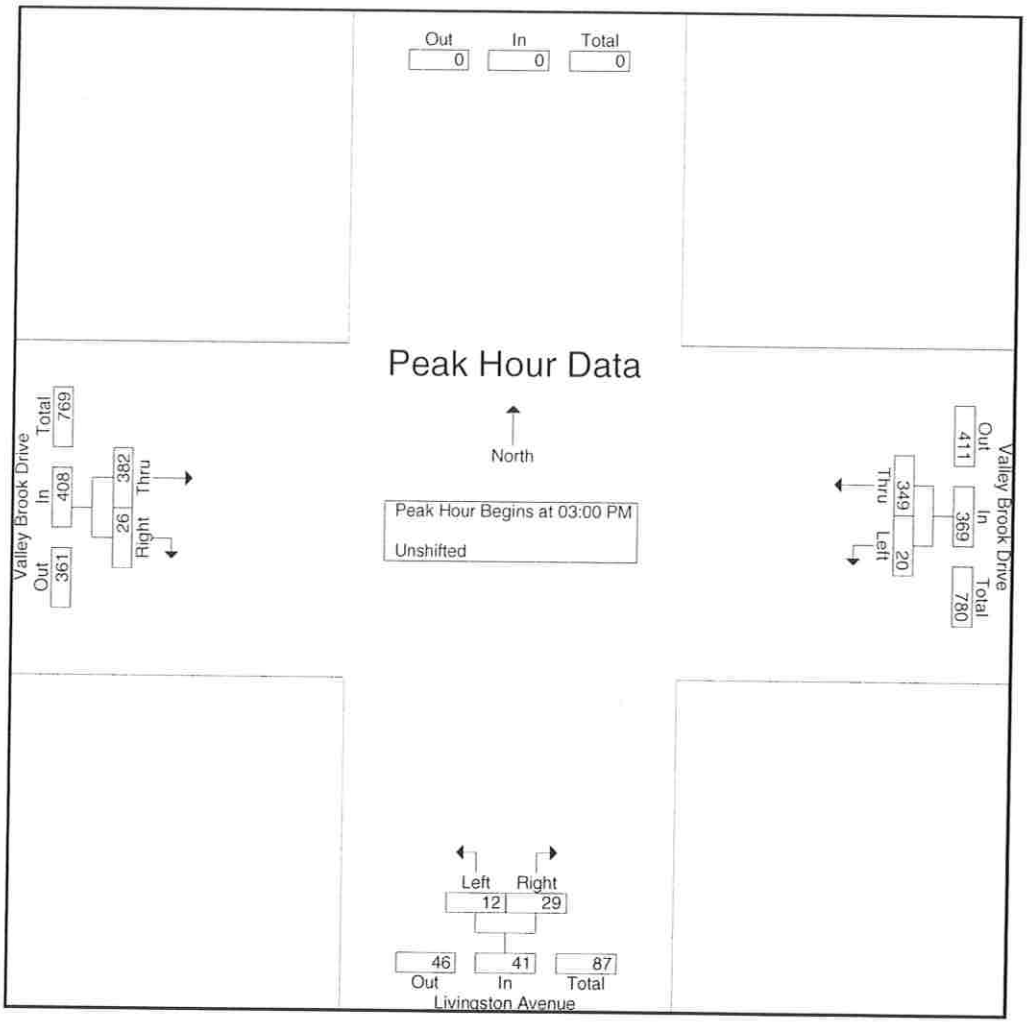
277 Whitehorse Pike, Suite 203
Atco, NJ 08004

N/S Route: Livingston Avenue
E/W Route: Valley Brook Drive
Lyndhurst Twp/Bergen County/NJ
Wednesday/cloudy/CM/5142

File Name : 19201002
Site Code : 19201002
Start Date : 10/30/2019
Page No : 3

	Valley Brook Drive Westbound			Livingston Avenue Northbound			Valley Brook Drive Eastbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 03:00 PM										
03:00 PM	91	**8**	**99**	**16**	5	**21**	**14**	**112**	**126**	**246**
03:15 PM	**93**	5	98	9	**6**	15	5	76	81	194
03:30 PM	76	5	81	2	1	3	4	89	93	177
03:45 PM	89	2	91	2	0	2	3	105	108	201
Total Volume	349	20	369	29	12	41	26	382	408	818
% App. Total	94.6	5.4		70.7	29.3		6.4	93.6		
PHF	.938	.625	.932	.453	.500	.488	.464	.853	.810	.831



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277 Whitehorse Pike, Suite 203
Atco, NJ 08004

N/S Route: Livingston Avenue
E/W Route: Valley Brook Drive
Lyndhurst Twp/Bergen County/NJ
Wednesday/cloudy/CM/5142

File Name : 19201002B1
Site Code : 19201002
Start Date : 10/30/2019
Page No : 1

Groups Printed- Bank 1

	Livingston Avenue Southbound			
Start Time	Right	Left	App. Total	Int. Total
07:15 AM	2	1	3	3
07:30 AM	2	0	2	2
07:45 AM	3	4	7	7
Total	7	5	12	12
08:00 AM	6	3	9	9
08:15 AM	0	4	4	4
08:30 AM	1	3	4	4
08:45 AM	3	2	5	5
Total	10	12	22	22
*** BREAK ***				
09:15 AM	0	5	5	5
09:30 AM	3	4	7	7
09:45 AM	0	7	7	7
Total	3	16	19	19
10:00 AM	1	0	1	1
*** BREAK ***				
Total	1	0	1	1
*** BREAK ***				
02:00 PM	3	2	5	5
02:15 PM	6	1	7	7
02:30 PM	2	1	3	3
02:45 PM	4	2	6	6
Total	15	6	21	21
03:00 PM	3	4	7	7
03:15 PM	1	1	2	2
03:30 PM	3	0	3	3
03:45 PM	1	5	6	6
Total	8	10	18	18
04:00 PM	2	1	3	3
04:15 PM	6	0	6	6
04:30 PM	2	6	8	8
04:45 PM	1	4	5	5
Total	11	11	22	22
05:00 PM	4	2	6	6
*** BREAK ***				
05:30 PM	1	4	5	5
05:45 PM	0	1	1	1
Total	5	7	12	12
Grand Total	60	67	127	127
Apprch %	47.2	52.8		
Total %	47.2	52.8	100	

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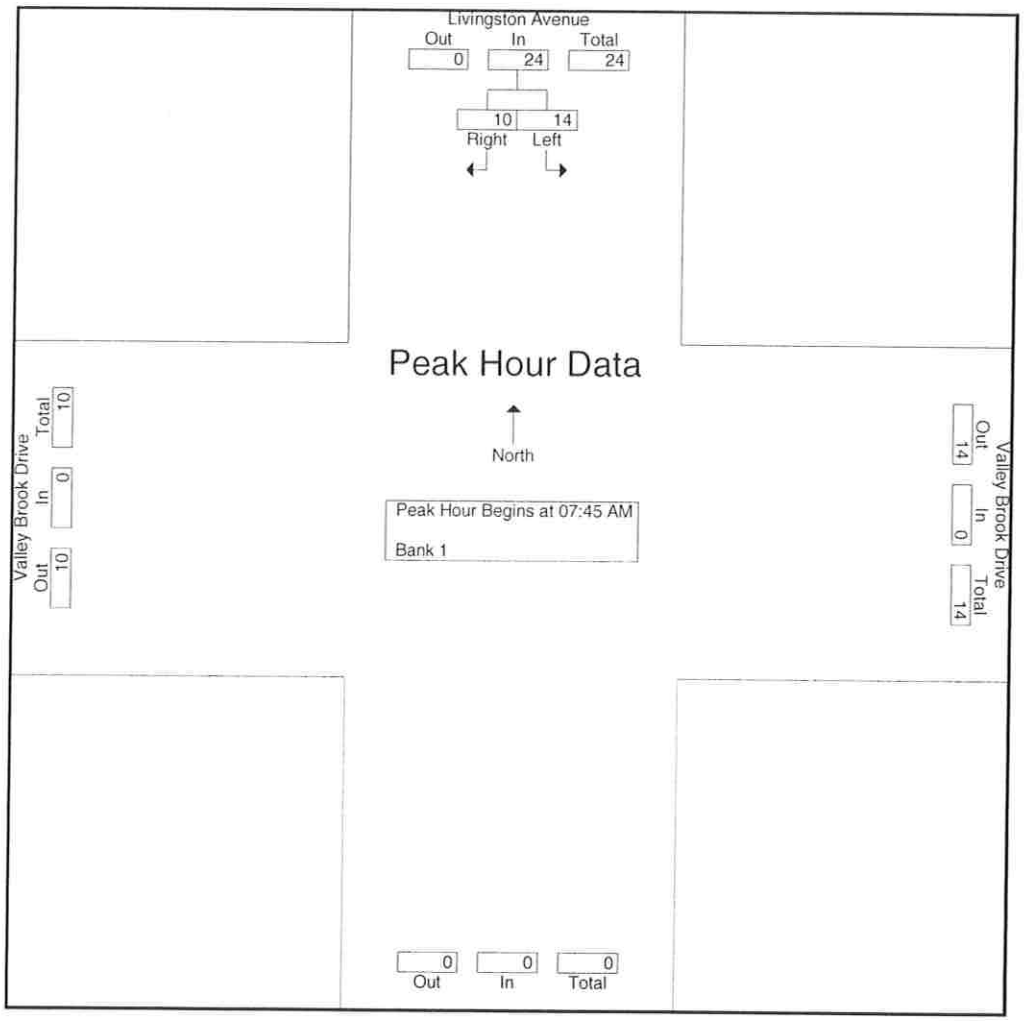
277 Whitehorse Pike, Suite 203
Atco, NJ 08004

N/S Route: Livingston Avenue
E/W Route: Valley Brook Drive
Lyndhurst Twp/Bergen County/NJ
Wednesday/cloudy/CM/5142

File Name : 19201002B1
Site Code : 19201002
Start Date : 10/30/2019
Page No : 2

	Livingston Avenue Southbound			
Start Time	Right	Left	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 11:45 AM - Peak 1 of 1				
Peak Hour for Entire Intersection Begins at 07:45 AM				
07:45 AM	3	**4**	7	7
08:00 AM	**6**	3	**9**	**9**
08:15 AM	0	4	4	4
08:30 AM	1	3	4	4
Total Volume	10	14	24	24
% App. Total	41.7	58.3		
PHF	.417	.875	.667	.667



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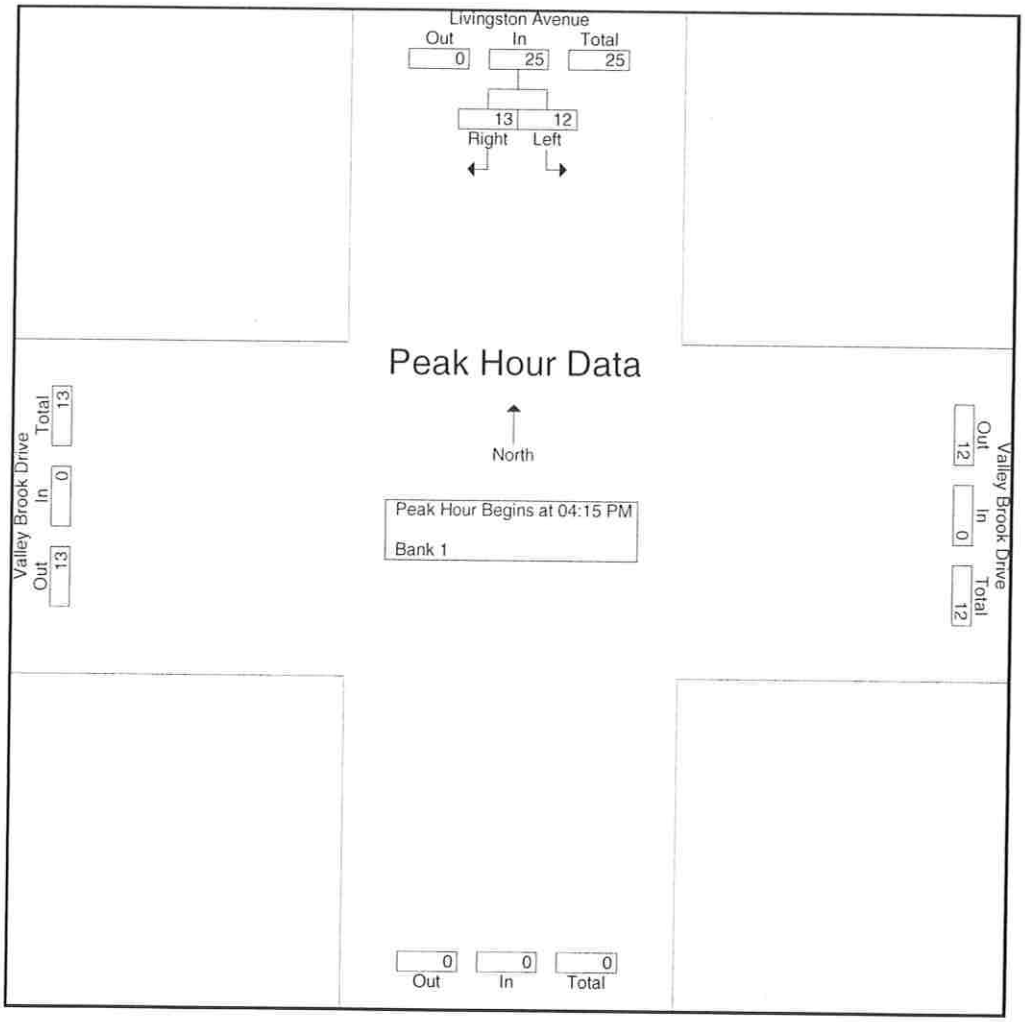
277 Whitehorse Pike, Suite 203
Atco, NJ 08004

N/S Route: Livingston Avenue
E/W Route: Valley Brook Drive
Lyndhurst Twp/Bergen County/NJ
Wednesday/cloudy/CM/5142

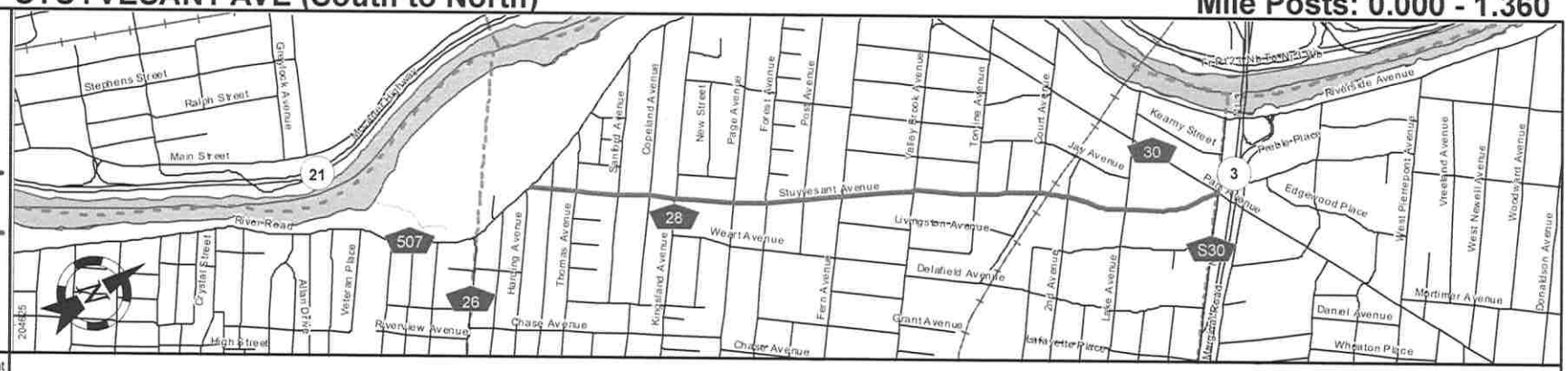
File Name : 19201002B1
Site Code : 19201002
Start Date : 10/30/2019
Page No : 3

	Livingston Avenue Southbound			
Start Time	Right	Left	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1				
Peak Hour for Entire Intersection Begins at 04:15 PM				
04:15 PM	**6**	0	6	6
04:30 PM	2	**6**	**8**	**8**
04:45 PM	1	4	5	5
05:00 PM	4	2	6	6
Total Volume	13	12	25	25
% App. Total	52	48		
PHF	.542	.500	.781	.781



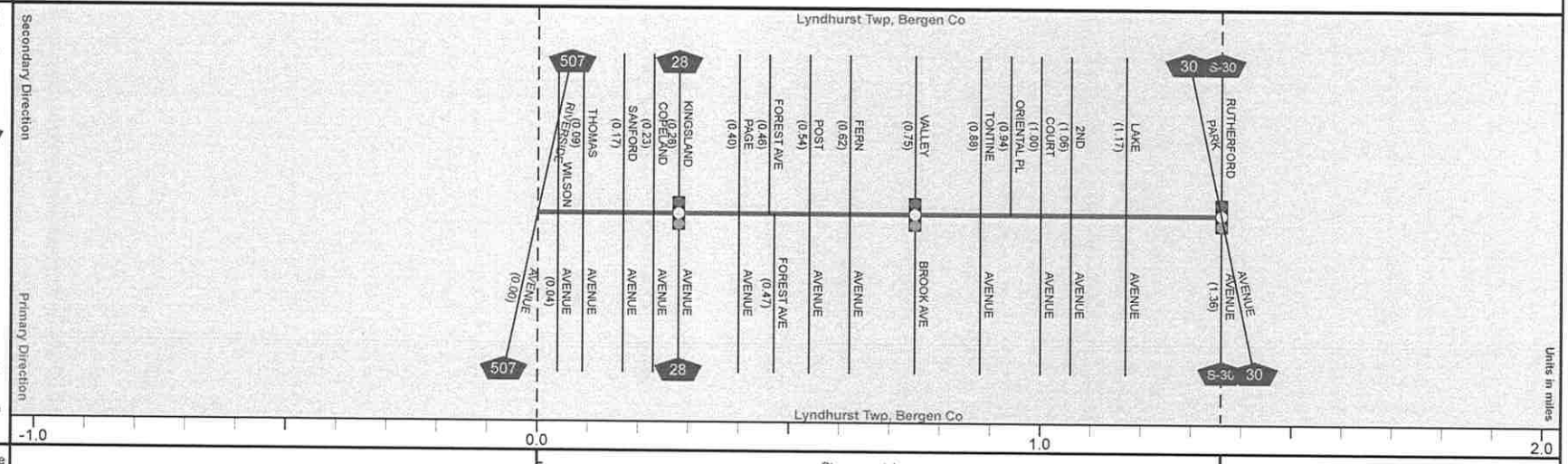
STUYVESANT AVE (South to North)

Mile Posts: 0.000 - 1.360



Pavement	
Shoulder	
Number of Lanes	
Speed Limit	
Street Name	

Interstate Route 287 | US Route 22 | NJ Route 33 | County Road 689 | Interchange Number 2 | Grade Separated Interchange | Traffic Signal | Traffic Monitoring Sites WIM AVC VOL | Road Underpass | Road Overpass



Street Name	Stuyvesant Avenue
Jurisdiction	Municipal
Functional Class	Urban Major Collector
Federal Aid - NHS Sy	STP
Control Section	
Speed Limit	NOT POSTED / 25
Number of Lanes	2
Med. Type	None
Med. Width	0
Pavement	30
Shoulder	0
Traffic Volume	
Traffic Sta. ID	
Structure No.	
Enlarged Views	

Begin Stuyvesant Ave MP=0.00

End Stuyvesant Ave MP=1.36

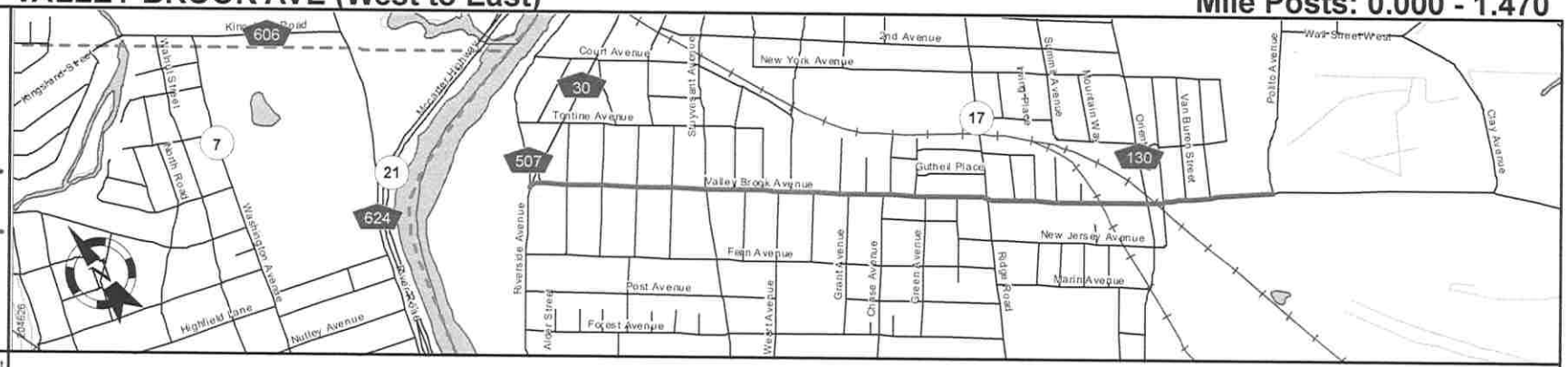
Page Created: June 2015

SRI = 02321143__

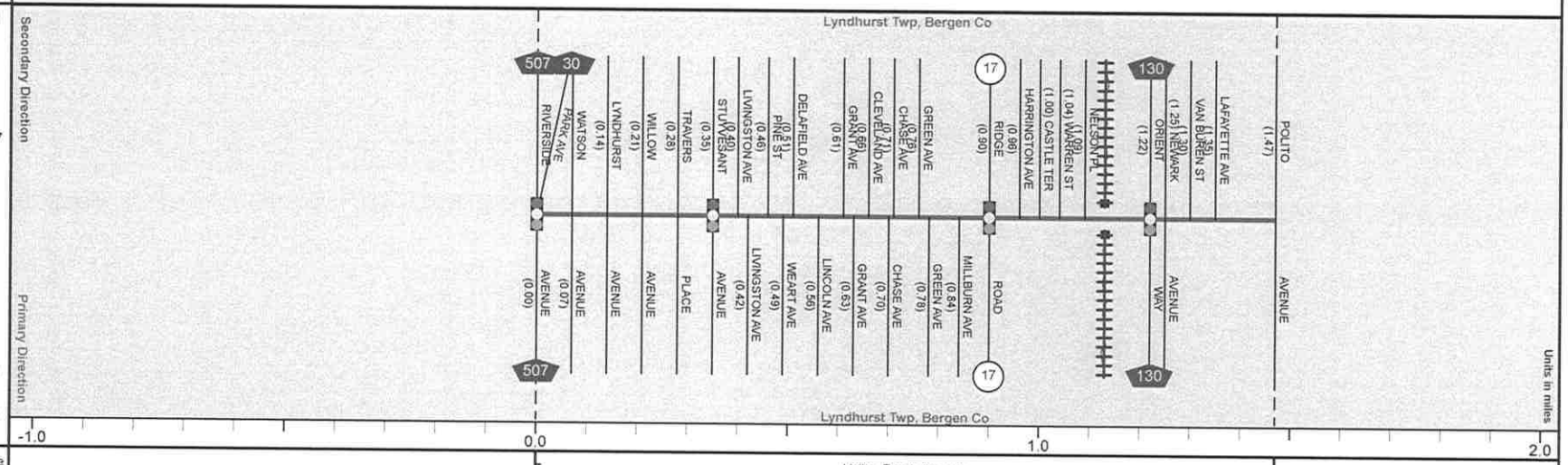
Date last inventoried: August 2011

VALLEY BROOK AVE (West to East)

Mile Posts: 0.000 - 1.470



Pavement	
Shoulder	
Number of Lanes	
Speed Limit	
Street Name	



Street Name	Valley Brook Avenue	
Jurisdiction	Municipal	
Functional Class	Urban Major Collector	
Federal Aid - NHS Sy	STP	
Control Section		
Speed Limit	NOT POSTED	15
Number of Lanes	2	
Med. Type	None	
Med. Width	0	
Pavement	30	24
Shoulder	0	
Traffic Volume		
Traffic Sta. ID		
Structure No.		
Enlarged Views		

Begin Valley Brook Ave MP=0.00

End Valley Brook Ave MP=1.47

Page Created: June, 2015

SRI = 02321144__

Date last inventoried: August 2011

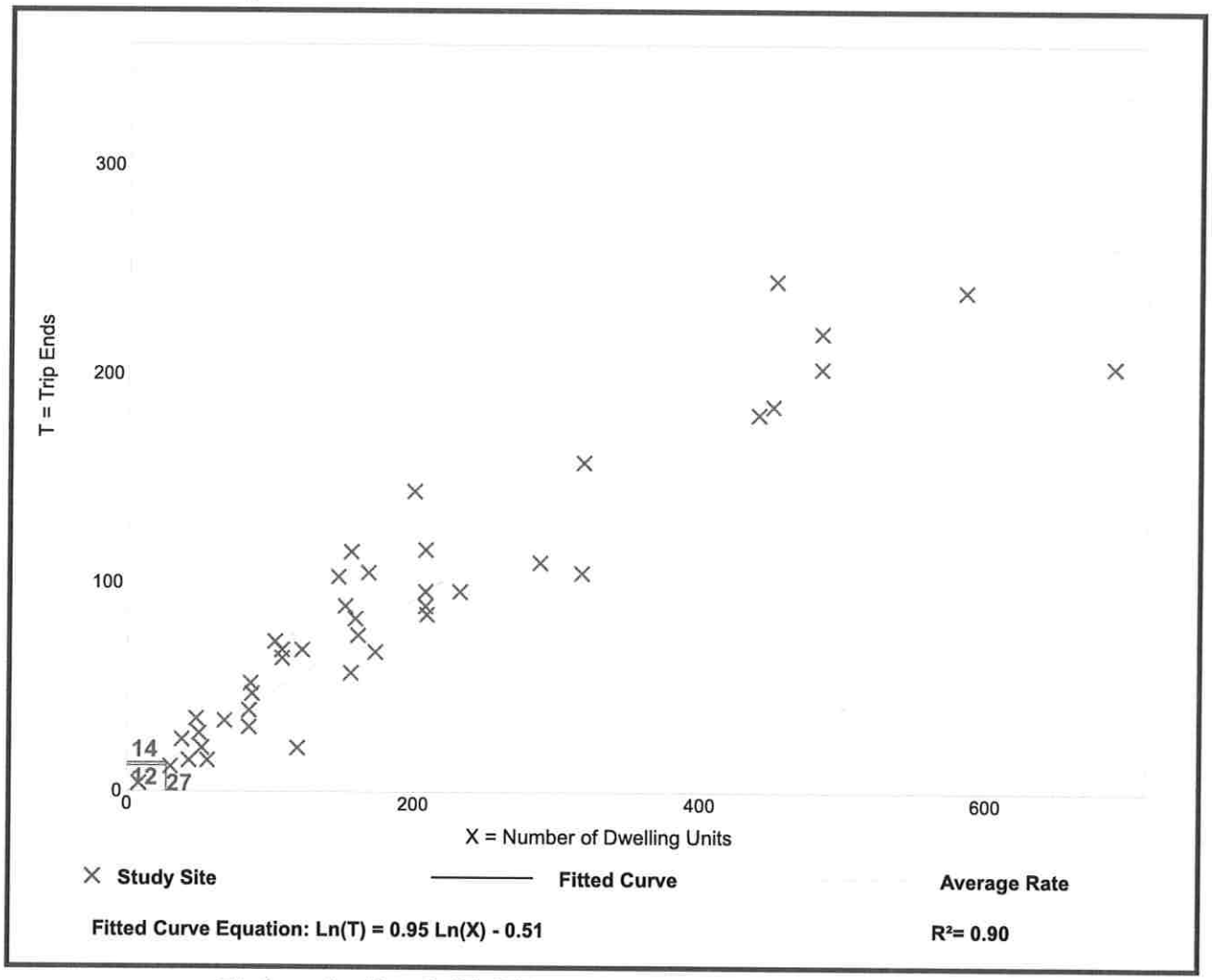
Multifamily Housing (Low-Rise)
(220)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 42
Avg. Num. of Dwelling Units: 199
Directional Distribution: 23% entering, 77% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.46	0.18 - 0.74	0.12

Data Plot and Equation



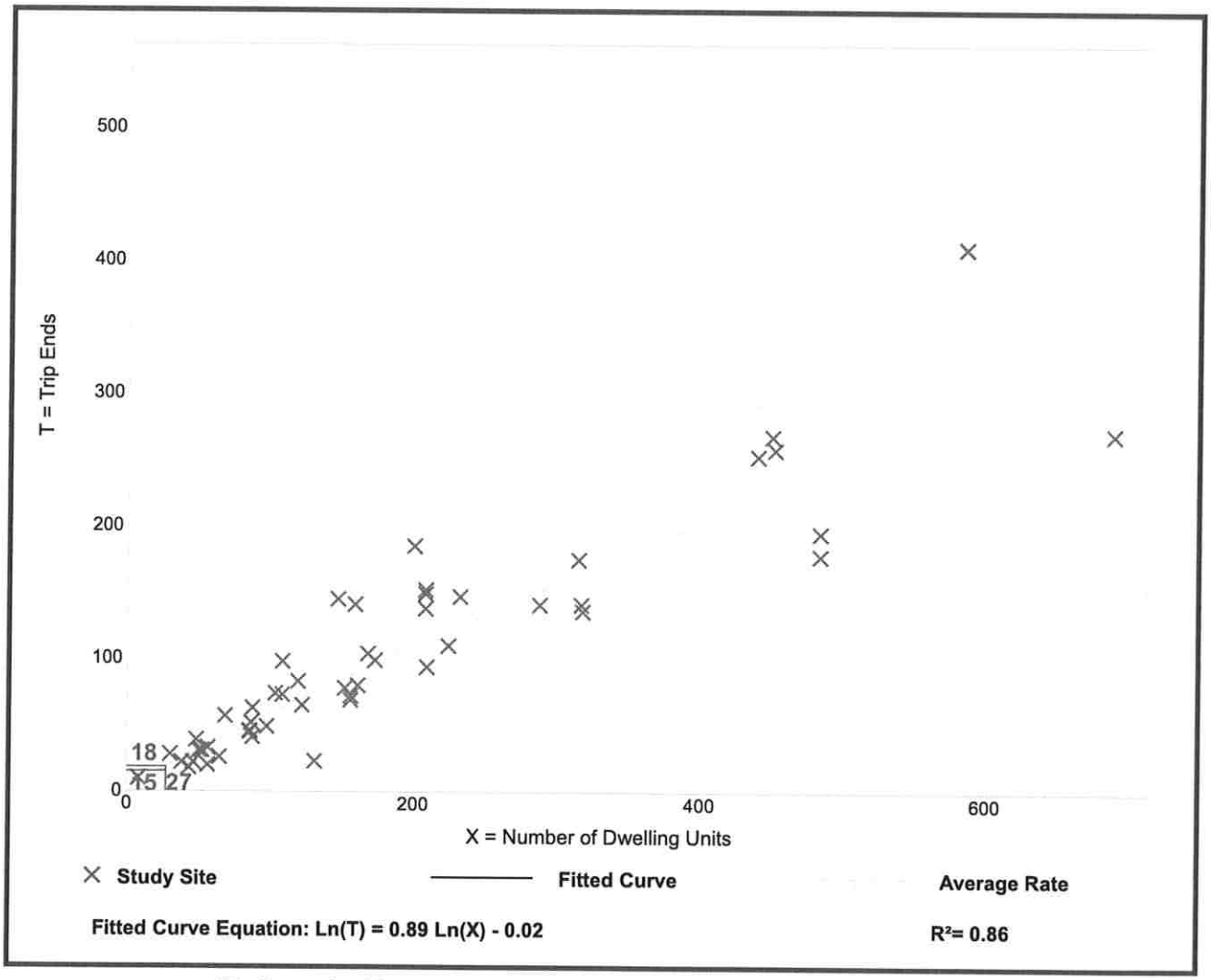
Multifamily Housing (Low-Rise)
(220)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 50
Avg. Num. of Dwelling Units: 187
Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.56	0.18 - 1.25	0.16

Data Plot and Equation



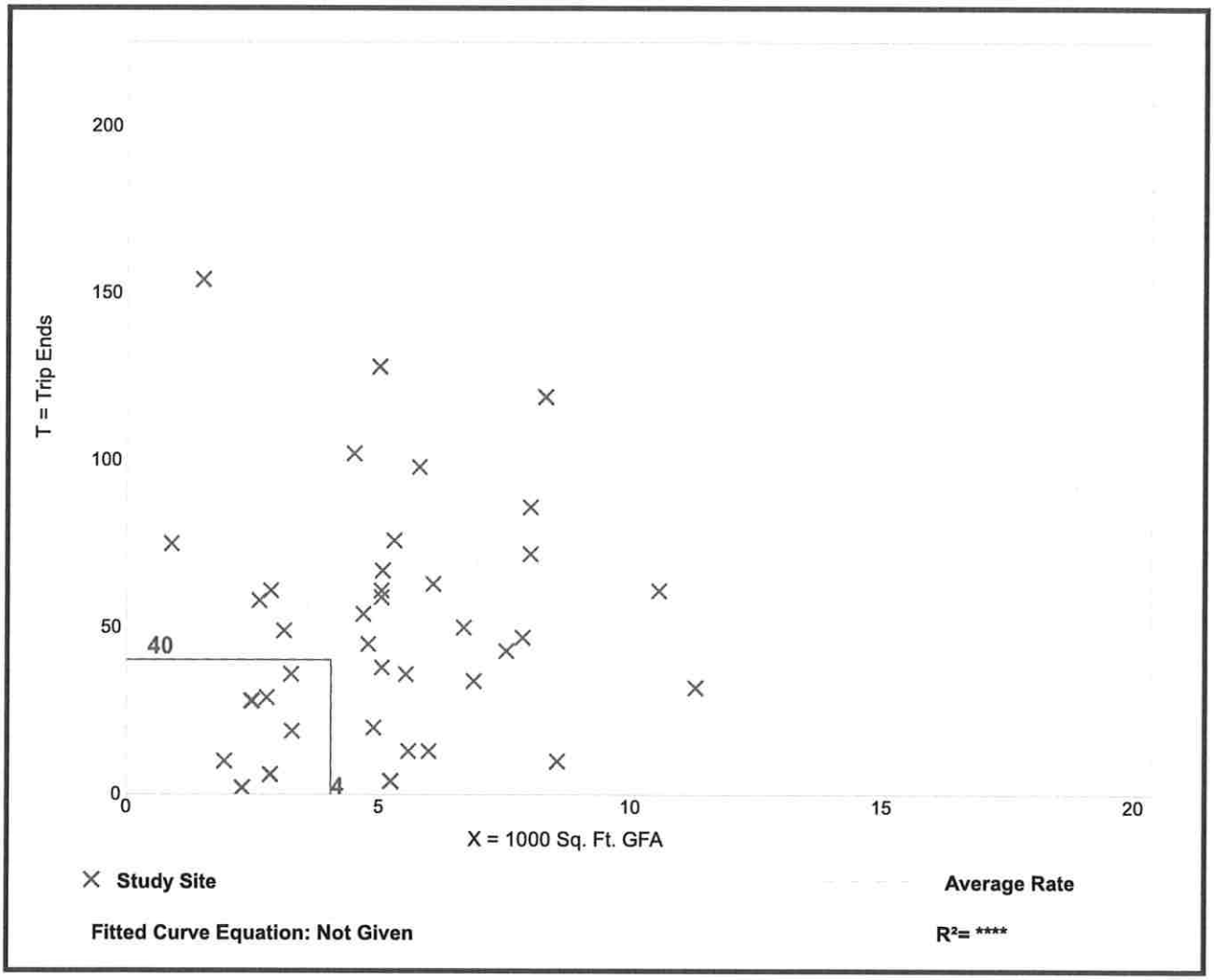
High-Turnover (Sit-Down) Restaurant
(932)

Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 39
Avg. 1000 Sq. Ft. GFA: 5
Directional Distribution: 55% entering, 45% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
9.94	0.76 - 102.39	11.33

Data Plot and Equation



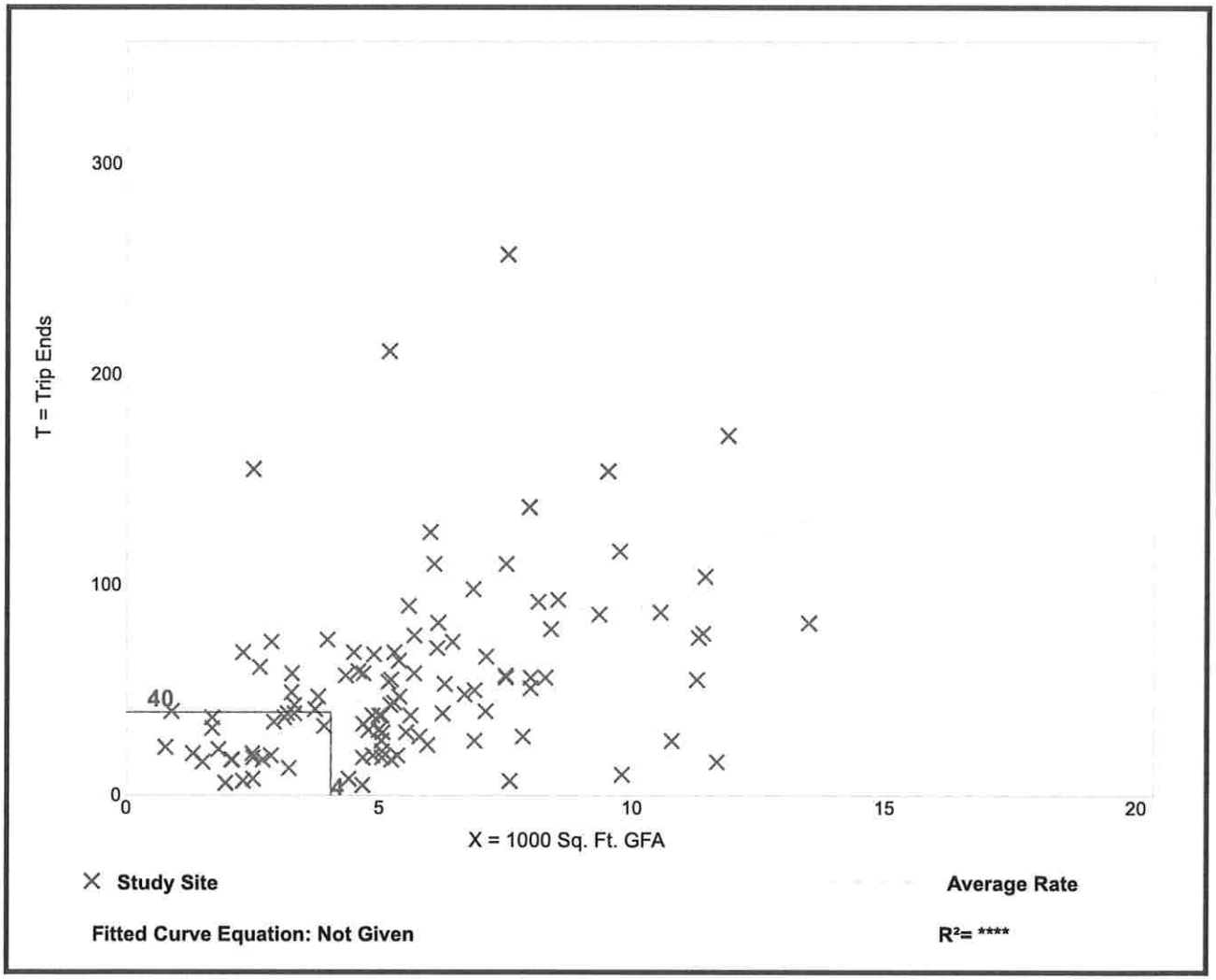
High-Turnover (Sit-Down) Restaurant
(932)

Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 107
Avg. 1000 Sq. Ft. GFA: 6
Directional Distribution: 62% entering, 38% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
9.77	0.92 - 62.00	7.37

Data Plot and Equation



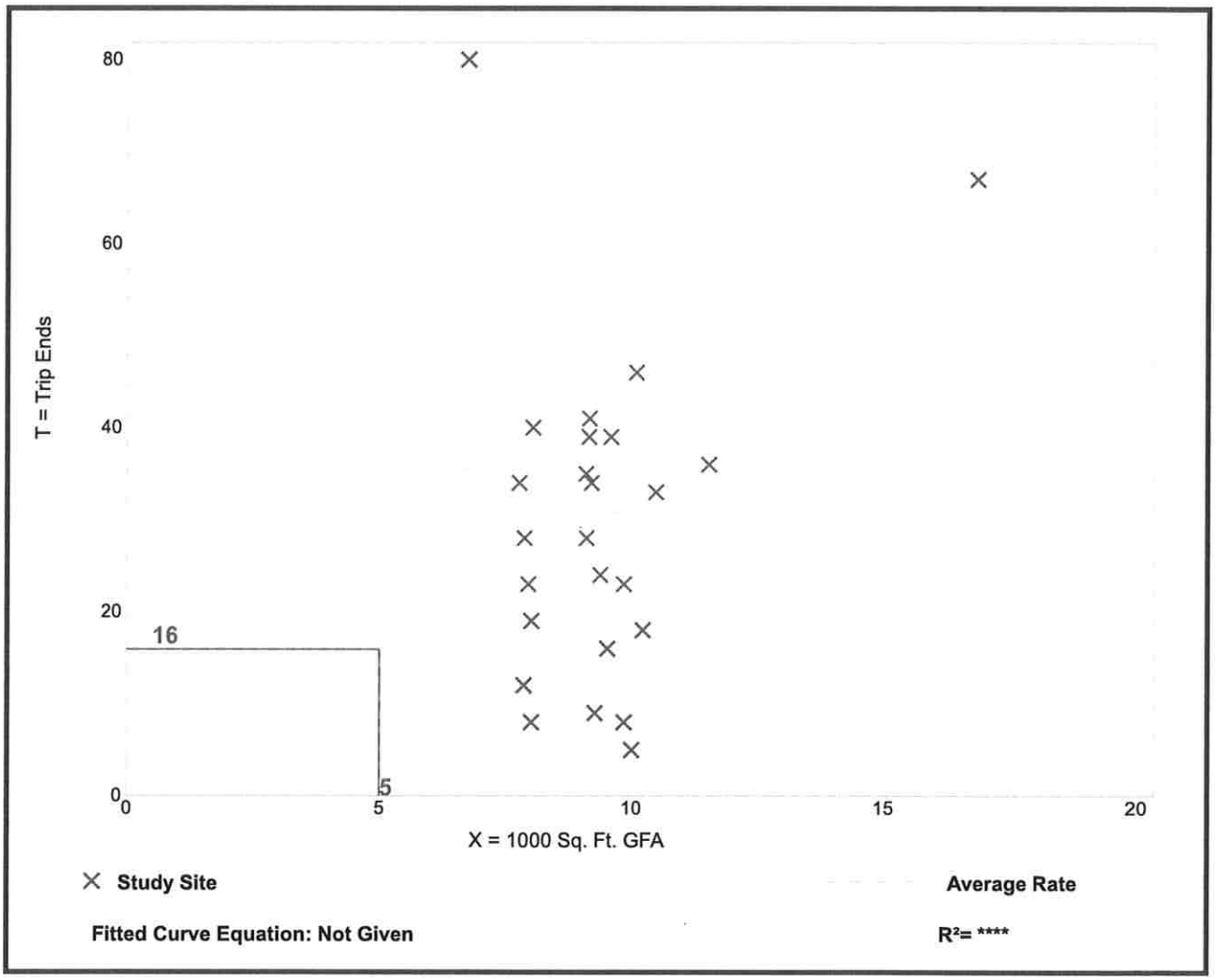
Variety Store
(814)

Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 25
Avg. 1000 Sq. Ft. GFA: 9
Directional Distribution: 57% entering, 43% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
3.18	0.50 - 11.87	2.01

Data Plot and Equation



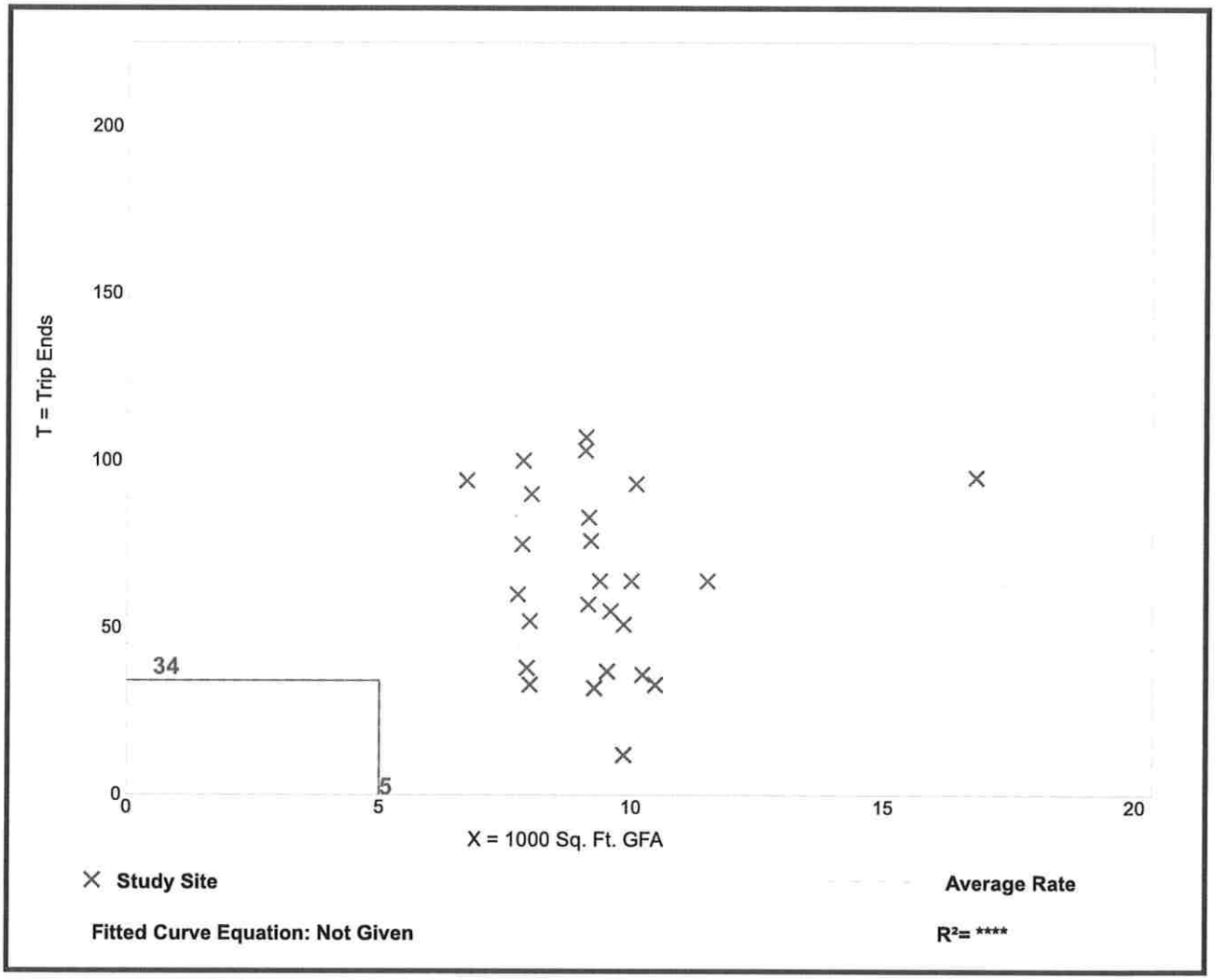
Variety Store
(814)

Vehicle Trip Ends vs:	**1000 Sq. Ft. GFA**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 4 and 6 p.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	25
Avg. 1000 Sq. Ft. GFA:	9
Directional Distribution:	52% entering, 48% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
6.84	1.22 - 13.95	3.19

Data Plot and Equation

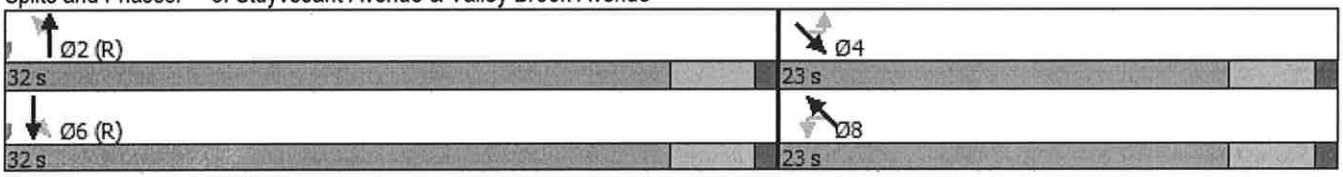


Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	13	231	149	128	190	16	17	229	13	72	150	58
Future Volume (vph)	13	231	149	128	190	16	17	229	13	72	150	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.949			0.993			0.990			0.972	
Flt Protected		0.998			0.982			0.996			0.986	
Satd. Flow (prot)	0	1764	0	0	1816	0	0	1837	0	0	1785	0
Flt Permitted		0.977			0.686			0.953			0.796	
Satd. Flow (perm)	0	1727	0	0	1269	0	0	1757	0	0	1441	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		79			7			8			26	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		383			380			374			280	
Travel Time (s)		10.4			10.4			10.2			7.6	
Peak Hour Factor	0.65	0.81	0.81	0.76	0.74	0.67	0.61	0.80	0.54	0.77	0.86	0.82
Adj. Flow (vph)	20	285	184	168	257	24	28	286	24	94	174	71
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	489	0	0	449	0	0	338	0	0	339	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	32.0	32.0		32.0	32.0		23.0	23.0		23.0	23.0	
Total Split (%)	58.2%	58.2%		58.2%	58.2%		41.8%	41.8%		41.8%	41.8%	
Maximum Green (s)	27.5	27.5		27.5	27.5		18.5	18.5		18.5	18.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		27.5			27.5			18.5			18.5	
Actuated g/C Ratio		0.50			0.50			0.34			0.34	
v/c Ratio		0.54			0.70			0.57			0.68	
Control Delay		10.5			18.3			19.1			23.0	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		10.5			18.3			19.1			23.0	

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
LOS		B			B			B			C	
Approach Delay		10.5			18.3			19.1			23.0	
Approach LOS		B			B			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 55			
Actuated Cycle Length: 55			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 55			
Control Type: Pretimed			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 17.1		Intersection LOS: B	
Intersection Capacity Utilization 84.2%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 3: Stuyvesant Avenue & Valley Brook Avenue



Intersection	
Int Delay, s/veh	0.6

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↑	↑		Y	
Traffic Vol, veh/h	0	506	268	0	14	10
Future Vol, veh/h	0	506	268	0	14	10
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	92	87	93	92	88	42
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	582	288	0	16	24

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	870	288
Stage 1	-	-	-	-	288	-
Stage 2	-	-	-	-	582	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	0	-	-	0	322	751
Stage 1	0	-	-	0	761	-
Stage 2	0	-	-	0	559	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	322	751
Mov Cap-2 Maneuver	-	-	-	-	322	-
Stage 1	-	-	-	-	761	-
Stage 2	-	-	-	-	559	-

Approach	SE	NW	SW
HCM Control Delay, s	0	0	13
HCM LOS			B

Minor Lane/Major Mvmt	NWT	SETSWLn1
Capacity (veh/h)	-	- 490
HCM Lane V/C Ratio	-	- 0.081
HCM Control Delay (s)	-	- 13
HCM Lane LOS	-	- B
HCM 95th %tile Q(veh)	-	- 0.3

Intersection	
Int Delay, s/veh	1.9

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Traffic Vol, veh/h	495	11	16	250	18	35
Future Vol, veh/h	495	11	16	250	18	35
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	87	39	44	93	75	47
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	569	28	36	269	24	74

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	597	0	924	583
Stage 1	-	-	-	-	583	-
Stage 2	-	-	-	-	341	-
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	-	-	980	-	299	512
Stage 1	-	-	-	-	558	-
Stage 2	-	-	-	-	720	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	980	-	286	512
Mov Cap-2 Maneuver	-	-	-	-	286	-
Stage 1	-	-	-	-	558	-
Stage 2	-	-	-	-	689	-

Approach	SE	NW	NE
HCM Control Delay, s	0	1.1	15.9
HCM LOS			C

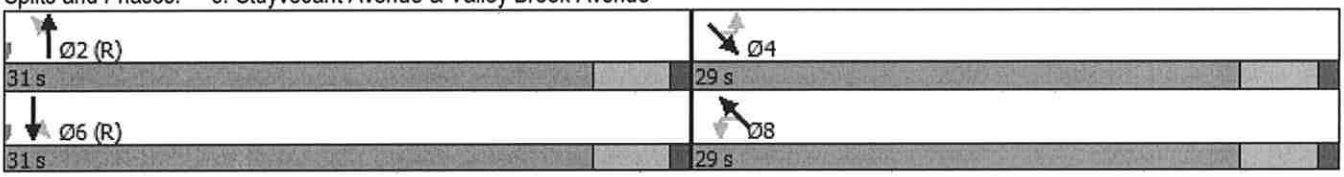
Minor Lane/Major Mvmt	NELn1	NWL	NWT	SET	SER
Capacity (veh/h)	429	980	-	-	-
HCM Lane V/C Ratio	0.23	0.037	-	-	-
HCM Control Delay (s)	15.9	8.8	0	-	-
HCM Lane LOS	C	A	A	-	-
HCM 95th %tile Q(veh)	0.9	0.1	-	-	-

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	18	167	97	121	396	21	23	141	28	146	219	93
Future Volume (vph)	18	167	97	121	396	21	23	141	28	146	219	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.953			0.994			0.976			0.968	
Flt Protected		0.997			0.988			0.992			0.984	
Satd. Flow (prot)	0	1770	0	0	1829	0	0	1803	0	0	1774	0
Flt Permitted		0.945			0.800			0.882			0.795	
Satd. Flow (perm)	0	1678	0	0	1481	0	0	1604	0	0	1433	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		58			5			22			32	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		383			380			374			280	
Travel Time (s)		10.4			10.4			10.2			7.6	
Peak Hour Factor	0.75	0.80	0.77	0.76	0.86	0.75	0.58	0.84	0.61	0.73	0.80	0.63
Adj. Flow (vph)	24	209	126	159	460	28	40	168	46	200	274	148
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	359	0	0	647	0	0	254	0	0	622	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	31.0	31.0		31.0	31.0		29.0	29.0		29.0	29.0	
Total Split (%)	51.7%	51.7%		51.7%	51.7%		48.3%	48.3%		48.3%	48.3%	
Maximum Green (s)	26.5	26.5		26.5	26.5		24.5	24.5		24.5	24.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		26.5			26.5			24.5			24.5	
Actuated g/C Ratio		0.44			0.44			0.41			0.41	
v/c Ratio		0.46			0.99			0.38			1.03	
Control Delay		12.1			52.2			13.4			65.5	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		12.1			52.2			13.4			65.5	

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
LOS		B			D			B			E	
Approach Delay		12.1			52.2			13.4			65.5	
Approach LOS		B			D			B			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Pretimed			
Maximum v/c Ratio: 1.03			
Intersection Signal Delay: 43.7		Intersection LOS: D	
Intersection Capacity Utilization 95.2%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 3: Stuyvesant Avenue & Valley Brook Avenue



Intersection	
Int Delay, s/veh	0.7

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↑	↑		⅄	
Traffic Vol, veh/h	0	416	368	0	12	13
Future Vol, veh/h	0	416	368	0	12	13
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	92	85	94	92	50	54
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	489	391	0	24	24

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	880	391
Stage 1	-	-	-	-	391	-
Stage 2	-	-	-	-	489	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	0	-	-	0	318	658
Stage 1	0	-	-	0	683	-
Stage 2	0	-	-	0	616	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	318	658
Mov Cap-2 Maneuver	-	-	-	-	318	-
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	616	-

Approach	SE	NW	SW
HCM Control Delay, s	0	0	14.4
HCM LOS			B

Minor Lane/Major Mvmt	NWT	SETSWLn1
Capacity (veh/h)	-	- 429
HCM Lane V/C Ratio	-	- 0.112
HCM Control Delay (s)	-	- 14.4
HCM Lane LOS	-	- B
HCM 95th %tile Q(veh)	-	- 0.4

Intersection	
Int Delay, s/veh	1.6

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Traffic Vol, veh/h	390	27	20	356	12	30
Future Vol, veh/h	390	27	20	356	12	30
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	85	46	63	94	50	45
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	459	59	32	379	24	67

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	518	0	932	489
Stage 1	-	-	-	-	489	-
Stage 2	-	-	-	-	443	-
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	-	-	1048	-	296	579
Stage 1	-	-	-	-	616	-
Stage 2	-	-	-	-	647	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1048	-	284	579
Mov Cap-2 Maneuver	-	-	-	-	284	-
Stage 1	-	-	-	-	616	-
Stage 2	-	-	-	-	622	-

Approach	SE	NW	NE
HCM Control Delay, s	0	0.7	14.9
HCM LOS			B

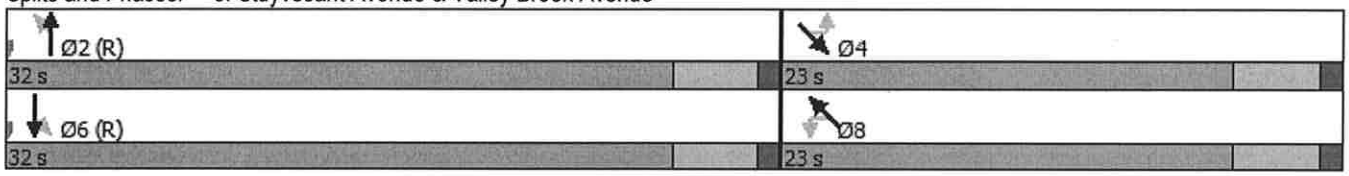
Minor Lane/Major Mvmt	NELn1	NWL	NWT	SET	SER
Capacity (veh/h)	454	1048	-	-	-
HCM Lane V/C Ratio	0.2	0.03	-	-	-
HCM Control Delay (s)	14.9	8.5	0	-	-
HCM Lane LOS	B	A	A	-	-
HCM 95th %tile Q(veh)	0.7	0.1	-	-	-

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	13	236	152	131	194	16	17	234	13	73	153	59
Future Volume (vph)	13	236	152	131	194	16	17	234	13	73	153	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.949			0.993			0.991			0.972	
Flt Protected		0.998			0.982			0.996			0.986	
Satd. Flow (prot)	0	1764	0	0	1816	0	0	1839	0	0	1785	0
Flt Permitted		0.977			0.676			0.955			0.790	
Satd. Flow (perm)	0	1727	0	0	1250	0	0	1763	0	0	1430	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		79			7			7			26	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		383			380			374			280	
Travel Time (s)		10.4			10.4			10.2			7.6	
Peak Hour Factor	0.65	0.81	0.81	0.76	0.74	0.67	0.61	0.80	0.54	0.77	0.86	0.82
Adj. Flow (vph)	20	291	188	172	262	24	28	293	24	95	178	72
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	499	0	0	458	0	0	345	0	0	345	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	32.0	32.0		32.0	32.0		23.0	23.0		23.0	23.0	
Total Split (%)	58.2%	58.2%		58.2%	58.2%		41.8%	41.8%		41.8%	41.8%	
Maximum Green (s)	27.5	27.5		27.5	27.5		18.5	18.5		18.5	18.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		27.5			27.5			18.5			18.5	
Actuated g/C Ratio		0.50			0.50			0.34			0.34	
v/c Ratio		0.55			0.73			0.58			0.69	
Control Delay		10.7			19.7			19.4			23.9	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		10.7			19.7			19.4			23.9	

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
LOS		B			B			B			C	
Approach Delay		10.7			19.7			19.4			23.9	
Approach LOS		B			B			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 55			
Actuated Cycle Length: 55			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 55			
Control Type: Pretimed			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 17.8		Intersection LOS: B	
Intersection Capacity Utilization 85.6%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 3: Stuyvesant Avenue & Valley Brook Avenue



Intersection	
Int Delay, s/veh	0.6

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↑	↑		↾	
Traffic Vol, veh/h	0	521	273	0	14	10
Future Vol, veh/h	0	521	273	0	14	10
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	92	87	93	92	88	42
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	599	294	0	16	24

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	893	294
Stage 1	-	-	-	-	294	-
Stage 2	-	-	-	-	599	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	0	-	-	0	312	745
Stage 1	0	-	-	0	756	-
Stage 2	0	-	-	0	549	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	312	745
Mov Cap-2 Maneuver	-	-	-	-	312	-
Stage 1	-	-	-	-	756	-
Stage 2	-	-	-	-	549	-

Approach	SE	NW	SW
HCM Control Delay, s	0	0	13.2
HCM LOS			B

Minor Lane/Major Mvmt	NWT	SETSWLn1
Capacity (veh/h)	-	- 479
HCM Lane V/C Ratio	-	- 0.083
HCM Control Delay (s)	-	- 13.2
HCM Lane LOS	-	- B
HCM 95th %tile Q(veh)	-	- 0.3

Intersection	
Int Delay, s/veh	1.9

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Traffic Vol, veh/h	505	11	16	255	19	36
Future Vol, veh/h	505	11	16	255	19	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	87	39	44	93	75	47
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	580	28	36	274	25	77

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	608	0	940	594
Stage 1	-	-	-	-	594	-
Stage 2	-	-	-	-	346	-
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	-	-	970	-	293	505
Stage 1	-	-	-	-	552	-
Stage 2	-	-	-	-	716	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	970	-	280	505
Mov Cap-2 Maneuver	-	-	-	-	280	-
Stage 1	-	-	-	-	552	-
Stage 2	-	-	-	-	684	-

Approach	SE	NW	NE
HCM Control Delay, s	0	1	16.3
HCM LOS			C

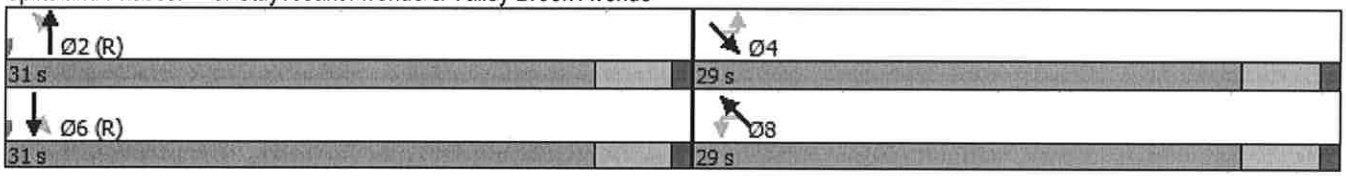
Minor Lane/Major Mvmt	NELn1	NWL	NWT	SET	SER
Capacity (veh/h)	421	970	-	-	-
HCM Lane V/C Ratio	0.242	0.037	-	-	-
HCM Control Delay (s)	16.3	8.9	0	-	-
HCM Lane LOS	C	A	A	-	-
HCM 95th %tile Q(veh)	0.9	0.1	-	-	-

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	18	170	99	123	404	21	23	144	29	149	223	95
Future Volume (vph)	18	170	99	123	404	21	23	144	29	149	223	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.952			0.994			0.975			0.968	
Flt Protected		0.997			0.988			0.992			0.984	
Satd. Flow (prot)	0	1768	0	0	1829	0	0	1802	0	0	1774	0
Flt Permitted		0.946			0.794			0.882			0.791	
Satd. Flow (perm)	0	1678	0	0	1470	0	0	1602	0	0	1426	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		58			5			23			32	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		383			380			374			280	
Travel Time (s)		10.4			10.4			10.2			7.6	
Peak Hour Factor	0.75	0.80	0.77	0.76	0.86	0.75	0.58	0.84	0.61	0.73	0.80	0.63
Adj. Flow (vph)	24	213	129	162	470	28	40	171	48	204	279	151
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	366	0	0	660	0	0	259	0	0	634	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	31.0	31.0		31.0	31.0		29.0	29.0		29.0	29.0	
Total Split (%)	51.7%	51.7%		51.7%	51.7%		48.3%	48.3%		48.3%	48.3%	
Maximum Green (s)	26.5	26.5		26.5	26.5		24.5	24.5		24.5	24.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		26.5			26.5			24.5			24.5	
Actuated g/C Ratio		0.44			0.44			0.41			0.41	
v/c Ratio		0.47			1.01			0.39			1.05	
Control Delay		12.3			58.9			13.4			73.1	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		12.3			58.9			13.4			73.1	

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
LOS		B			E			B			E	
Approach Delay		12.3			58.9			13.4			73.1	
Approach LOS		B			E			B			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 60			
Control Type: Pretimed			
Maximum v/c Ratio: 1.05			
Intersection Signal Delay: 48.6		Intersection LOS: D	
Intersection Capacity Utilization 96.7%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 3: Stuyvesant Avenue & Valley Brook Avenue



Intersection	
Int Delay, s/veh	0.7

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↑	↑		↾	
Traffic Vol, veh/h	0	428	375	0	12	13
Future Vol, veh/h	0	428	375	0	12	13
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	92	85	94	92	50	54
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	504	399	0	24	24

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	903	399
Stage 1	-	-	-	-	399	-
Stage 2	-	-	-	-	504	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	0	-	-	0	308	651
Stage 1	0	-	-	0	678	-
Stage 2	0	-	-	0	607	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	308	651
Mov Cap-2 Maneuver	-	-	-	-	308	-
Stage 1	-	-	-	-	678	-
Stage 2	-	-	-	-	607	-

Approach	SE	NW	SW
HCM Control Delay, s	0	0	14.7
HCM LOS			B

Minor Lane/Major Mvmt	NWT	SET	SWLn1
Capacity (veh/h)	-	-	418
HCM Lane V/C Ratio	-	-	0.115
HCM Control Delay (s)	-	-	14.7
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.4

Intersection	
Int Delay, s/veh	1.6

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Traffic Vol, veh/h	398	28	21	363	12	31
Future Vol, veh/h	398	28	21	363	12	31
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	85	46	63	94	50	45
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	468	61	33	386	24	69

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	529	0	951	499
Stage 1	-	-	-	-	499	-
Stage 2	-	-	-	-	452	-
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	-	-	1038	-	288	572
Stage 1	-	-	-	-	610	-
Stage 2	-	-	-	-	641	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1038	-	276	572
Mov Cap-2 Maneuver	-	-	-	-	276	-
Stage 1	-	-	-	-	610	-
Stage 2	-	-	-	-	615	-

Approach	SE	NW	NE
HCM Control Delay, s	0	0.7	15.1
HCM LOS			C

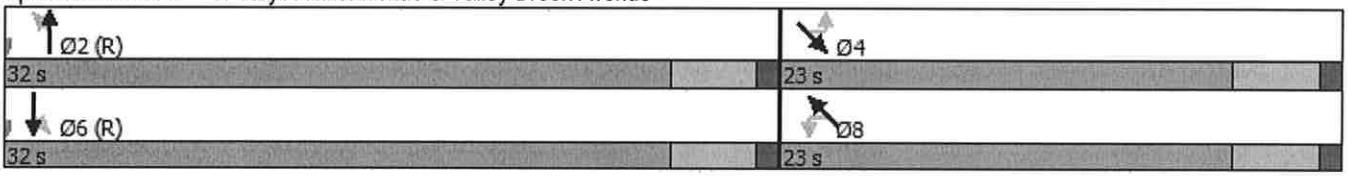
Minor Lane/Major Mvmt	NELn1	NWL	NWT	SET	SER
Capacity (veh/h)	448	1038	-	-	-
HCM Lane V/C Ratio	0.207	0.032	-	-	-
HCM Control Delay (s)	15.1	8.6	0	-	-
HCM Lane LOS	C	A	A	-	-
HCM 95th %tile Q(veh)	0.8	0.1	-	-	-

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	13	236	153	132	194	16	17	234	13	75	154	61
Future Volume (vph)	13	236	153	132	194	16	17	234	13	75	154	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.949			0.993			0.991			0.971	
Flt Protected		0.998			0.981			0.996			0.986	
Satd. Flow (prot)	0	1764	0	0	1815	0	0	1839	0	0	1783	0
Flt Permitted		0.977			0.672			0.955			0.787	
Satd. Flow (perm)	0	1727	0	0	1243	0	0	1763	0	0	1423	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		80			7			7			26	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		383			380			374			280	
Travel Time (s)		10.4			10.4			10.2			7.6	
Peak Hour Factor	0.65	0.81	0.81	0.76	0.74	0.67	0.61	0.80	0.54	0.77	0.86	0.82
Adj. Flow (vph)	20	291	189	174	262	24	28	293	24	97	179	74
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	500	0	0	460	0	0	345	0	0	350	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	32.0	32.0		32.0	32.0		23.0	23.0		23.0	23.0	
Total Split (%)	58.2%	58.2%		58.2%	58.2%		41.8%	41.8%		41.8%	41.8%	
Maximum Green (s)	27.5	27.5		27.5	27.5		18.5	18.5		18.5	18.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		27.5			27.5			18.5			18.5	
Actuated g/C Ratio		0.50			0.50			0.34			0.34	
v/c Ratio		0.55			0.74			0.58			0.71	
Control Delay		10.7			20.1			19.4			24.7	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		10.7			20.1			19.4			24.7	

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
LOS		B			C			B			C	
Approach Delay		10.7			20.1			19.4			24.7	
Approach LOS		B			C			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 55			
Actuated Cycle Length: 55			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 55			
Control Type: Pretimed			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 18.1		Intersection LOS: B	
Intersection Capacity Utilization 86.0%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 3: Stuyvesant Avenue & Valley Brook Avenue



Intersection	
Int Delay, s/veh	0.6

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↑	↑		↾	
Traffic Vol, veh/h	0	523	278	0	14	10
Future Vol, veh/h	0	523	278	0	14	10
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	92	87	93	92	88	42
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	601	299	0	16	24

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	900	299
Stage 1	-	-	-	-	299	-
Stage 2	-	-	-	-	601	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	0	-	-	0	309	741
Stage 1	0	-	-	0	752	-
Stage 2	0	-	-	0	547	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	309	741
Mov Cap-2 Maneuver	-	-	-	-	309	-
Stage 1	-	-	-	-	752	-
Stage 2	-	-	-	-	547	-

Approach	SE	NW	SW
HCM Control Delay, s	0	0	13.3
HCM LOS			B

Minor Lane/Major Mvmt	NWT	SET	SWLn1
Capacity (veh/h)	-	-	475
HCM Lane V/C Ratio	-	-	0.084
HCM Control Delay (s)	-	-	13.3
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.3

Intersection	
Int Delay, s/veh	2.3

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Traffic Vol, veh/h	505	13	17	255	24	40
Future Vol, veh/h	505	13	17	255	24	40
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	87	39	44	93	75	47
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	580	33	39	274	32	85

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	613	0	949	597
Stage 1	-	-	-	-	597	-
Stage 2	-	-	-	-	352	-
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	-	-	966	-	289	503
Stage 1	-	-	-	-	550	-
Stage 2	-	-	-	-	712	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	966	-	275	503
Mov Cap-2 Maneuver	-	-	-	-	275	-
Stage 1	-	-	-	-	550	-
Stage 2	-	-	-	-	678	-

Approach	SE	NW	NE
HCM Control Delay, s	0	1.1	17.3
HCM LOS			C

Minor Lane/Major Mvmt	NELn1	NWL	NWT	SET	SER
Capacity (veh/h)	410	966	-	-	-
HCM Lane V/C Ratio	0.286	0.04	-	-	-
HCM Control Delay (s)	17.3	8.9	0	-	-
HCM Lane LOS	C	A	A	-	-
HCM 95th %tile Q(veh)	1.2	0.1	-	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	9	0	0	55	27	3
Future Vol, veh/h	9	0	0	55	27	3
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	0	0	60	29	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	91	31	32	0	-	0
Stage 1	31	-	-	-	-	-
Stage 2	60	-	-	-	-	-
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	909	1043	1580	-	-	-
Stage 1	992	-	-	-	-	-
Stage 2	963	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	909	1043	1580	-	-	-
Mov Cap-2 Maneuver	909	-	-	-	-	-
Stage 1	992	-	-	-	-	-
Stage 2	963	-	-	-	-	-

Approach	SE	NE	SW
HCM Control Delay, s	9	0	0
HCM LOS	A		

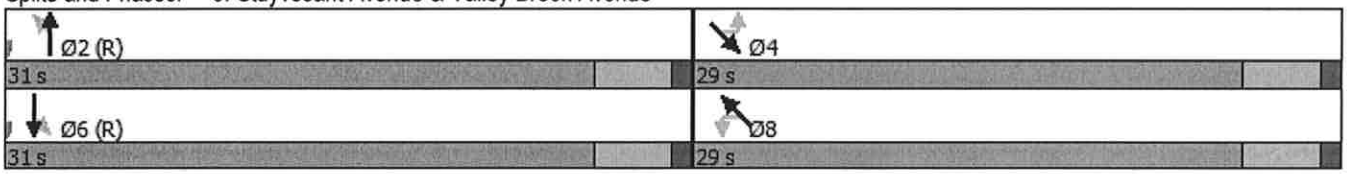
Minor Lane/Major Mvmt	NEL	NET	SELn1	SWT	SWR
Capacity (veh/h)	1580	-	909	-	-
HCM Lane V/C Ratio	-	-	0.011	-	-
HCM Control Delay (s)	0	-	9	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	18	170	102	126	404	21	23	145	29	151	224	96
Future Volume (vph)	18	170	102	126	404	21	23	145	29	151	224	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.952			0.994			0.975			0.968	
Flt Protected		0.997			0.988			0.992			0.984	
Satd. Flow (prot)	0	1768	0	0	1829	0	0	1802	0	0	1774	0
Flt Permitted		0.947			0.786			0.882			0.789	
Satd. Flow (perm)	0	1679	0	0	1455	0	0	1602	0	0	1423	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		60			5			23			32	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		383			380			374			280	
Travel Time (s)		10.4			10.4			10.2			7.6	
Peak Hour Factor	0.75	0.80	0.77	0.76	0.86	0.75	0.58	0.84	0.61	0.73	0.80	0.63
Adj. Flow (vph)	24	213	132	166	470	28	40	173	48	207	280	152
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	369	0	0	664	0	0	261	0	0	639	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	31.0	31.0		31.0	31.0		29.0	29.0		29.0	29.0	
Total Split (%)	51.7%	51.7%		51.7%	51.7%		48.3%	48.3%		48.3%	48.3%	
Maximum Green (s)	26.5	26.5		26.5	26.5		24.5	24.5		24.5	24.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		26.5			26.5			24.5			24.5	
Actuated g/C Ratio		0.44			0.44			0.41			0.41	
v/c Ratio		0.48			1.03			0.39			1.07	
Control Delay		12.3			63.9			13.5			77.0	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		12.3			63.9			13.5			77.0	

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
LOS		B			E			B			E	
Approach Delay		12.3			63.9			13.5			77.0	
Approach LOS		B			E			B			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Pretimed			
Maximum v/c Ratio: 1.07			
Intersection Signal Delay: 51.6		Intersection LOS: D	
Intersection Capacity Utilization 97.3%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 3: Stuyvesant Avenue & Valley Brook Avenue



Intersection	
Int Delay, s/veh	0.7

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↑	↑		↱	
Traffic Vol, veh/h	0	435	379	0	12	13
Future Vol, veh/h	0	435	379	0	12	13
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	92	85	94	92	50	54
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	512	403	0	24	24

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	915	403
Stage 1	-	-	-	-	403	-
Stage 2	-	-	-	-	512	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	0	-	-	0	303	647
Stage 1	0	-	-	0	675	-
Stage 2	0	-	-	0	602	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	303	647
Mov Cap-2 Maneuver	-	-	-	-	303	-
Stage 1	-	-	-	-	675	-
Stage 2	-	-	-	-	602	-

Approach	SE	NW	SW
HCM Control Delay, s	0	0	14.9
HCM LOS			B

Minor Lane/Major Mvmt	NWT	SETSWLn1
Capacity (veh/h)	-	- 413
HCM Lane V/C Ratio	-	- 0.116
HCM Control Delay (s)	-	- 14.9
HCM Lane LOS	-	- B
HCM 95th %tile Q(veh)	-	- 0.4

Intersection	
Int Delay, s/veh	1.8

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Traffic Vol, veh/h	398	35	23	363	16	32
Future Vol, veh/h	398	35	23	363	16	32
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	85	46	63	94	50	45
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	468	76	37	386	32	71

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	544	0	966	506
Stage 1	-	-	-	-	506	-
Stage 2	-	-	-	-	460	-
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	-	-	1025	-	282	566
Stage 1	-	-	-	-	606	-
Stage 2	-	-	-	-	636	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1025	-	269	566
Mov Cap-2 Maneuver	-	-	-	-	269	-
Stage 1	-	-	-	-	606	-
Stage 2	-	-	-	-	607	-

Approach	SE	NW	NE
HCM Control Delay, s	0	0.7	16.3
HCM LOS			C

Minor Lane/Major Mvmt	NELn1	NWL	NWT	SET	SER
Capacity (veh/h)	422	1025	-	-	-
HCM Lane V/C Ratio	0.244	0.036	-	-	-
HCM Control Delay (s)	16.3	8.6	0	-	-
HCM Lane LOS	C	A	A	-	-
HCM 95th %tile Q(veh)	0.9	0.1	-	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	5	0	0	43	49	9
Future Vol, veh/h	5	0	0	43	49	9
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	0	0	47	53	10

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	105	58	63	0	-	0
Stage 1	58	-	-	-	-	-
Stage 2	47	-	-	-	-	-
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	893	1008	1540	-	-	-
Stage 1	965	-	-	-	-	-
Stage 2	975	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	893	1008	1540	-	-	-
Mov Cap-2 Maneuver	893	-	-	-	-	-
Stage 1	965	-	-	-	-	-
Stage 2	975	-	-	-	-	-

Approach	SE	NE	SW
HCM Control Delay, s	9.1	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NEL	NET	SELn1	SWT	SWR
Capacity (veh/h)	1540	-	893	-	-
HCM Lane V/C Ratio	-	-	0.006	-	-
HCM Control Delay (s)	0	-	9.1	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-