DRAFT ENVIRONMENTAL IMPACT STATEMENT

HREN PROPERTY

Change of Zone Application

Hamlet of Huntington
Town of Huntington
Suffolk County, New York

Volume 2 of 2
Traffic Impact Study

NP&V Project No. 84016

November, 1999

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING

572 WALT WHITMAN ROAD, MELVILLE, NY 11747-2188 • (516) 427-5665 • FAX (516) 427-5620

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Change of Zone Application

Volume 2 of 2
Traffic Impact Study

Hamlet of Huntington, Town of Huntington
Suffolk County, New York

Prepared for: Breslin Realty Development Corporation
500 Old Country Road
Garden City, New York 11530

For Submission to: Town Board, Town of Huntington
Town Hall
100 Main Street
Huntington, New York 11743
Frank Petrone,Chairman

Prepared by: Nelson, Pope & Voorhis, LLC
572 Walt Whitman Road
Melville, New York 11747
(516) 427-5665
Contact: Charles J. Voorhis, CEP, AICP

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HREN SHOPPING CENTER

at

DIX HILLS

TRAFFIC IMPACT STUDY

OCTOBER 1999

N & P JOB NO. 84016

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PURPOSE OF REPORT

This firm, Nelson & Pope, LLP, has conducted an investigation regarding the potential traffic impacts associated with a proposed 69,000 s.f. retail/commercial facility and 9 Single Family Dwellings. The site is located on a 31.10 acre parcel situated on the southeast corner of Jericho Turnpike and Dix Hills Road in Dix Hills, Town of Huntington, Suffolk county (refer to Area Map, Figure 1). The site is zoned C-6 and R-40. The facility layout is depicted on the site plan prepared by this firm.

The exact nature of the retail/commercial occupants are not known at the present time. Therefore, in order to provide a conservative analysis, this Study will assume that the retail/commercial project is a supermarket. Analysis of the trip generation characteristics of these two types of users (see Table 3) indicates that a supermarket would generate more trips than the same amount of a group of retail users, thereby confirming that this assumption will yield a conservative analysis.

This report summarizes the results of a detailed investigation of the traffic impacts of the proposed development on the adjacent street system. The report reviews existing roadway characteristics and traffic conditions in the area, estimates the volume and pattern of traffic generated by the proposed facility, and analyzes the effect of the additional traffic on the surrounding roadway network.

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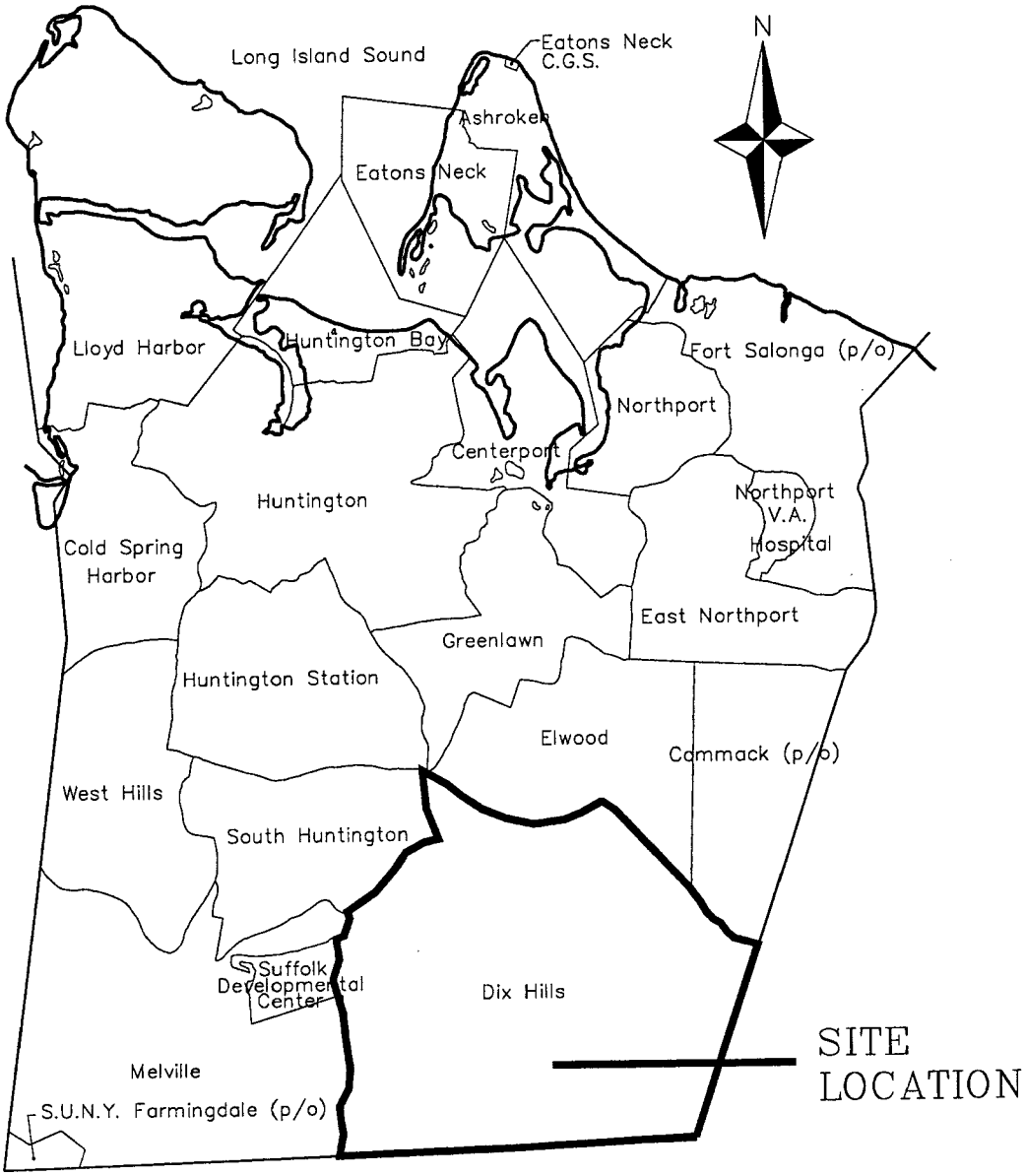

TOWN OF HUNTINGTON
AREA MAP

FIGURE 1

NOT TO SCALE

STUDY METHODOLOGY

The study methodology used for this investigation consisted of a detailed review of existing land-use, roadway, and traffic conditions in the vicinity of the proposed site. Existing traffic volumes at the intersections listed below were determined from field counts conducted in February 1999:

STUDY INTERSECTIONS

1. Jericho Turnpike and Dix Hills Road/Greenlawn Road
2. Jericho Turnpke and Franks Nursery/Site Access
3. Jericho Turnpike and Park Avenue/Deer Park Road

The data was used in conjunction with field observations to develop the existing levels of service for the subject intersections. The location of these intersections relative to the site is depicted in Figure 2, Location Map.

In addition to analyzing the existing conditions, this study analyzed the future conditions. The future conditions consist of two scenarios, the "No Build" and the "Build".

The "No Build" condition analysis determined the future levels of service assuming the project is not constructed. In order to determine the projected volumes an ambient growth rate factor of 1.5% per year, supplied by the New York State Department of Transportation, (NYSDOT) was applied to the existing intersection volumes for two years. The employment of the ambient growth factor takes into consideration any proposed developments outside the immediate vicinity of the site.

The Development of other planned projects were discussed with NYSDOT and the Town of Huntington. These projects included two car dealerships. The trips generated by both projects will be minimal, therefore they were not directly included in the "No Build' and "Build" analysis. The traffic generated by these projects would be included in the ambient growth factor.

The "Build" condition analysis considered the impact of the traffic generated by the proposed development. The trips generated by the project were added to the "No Build" volumes at the study intersections. These results were then used to determine the "Build" levels of service and to develop mitigation measures where necessary.

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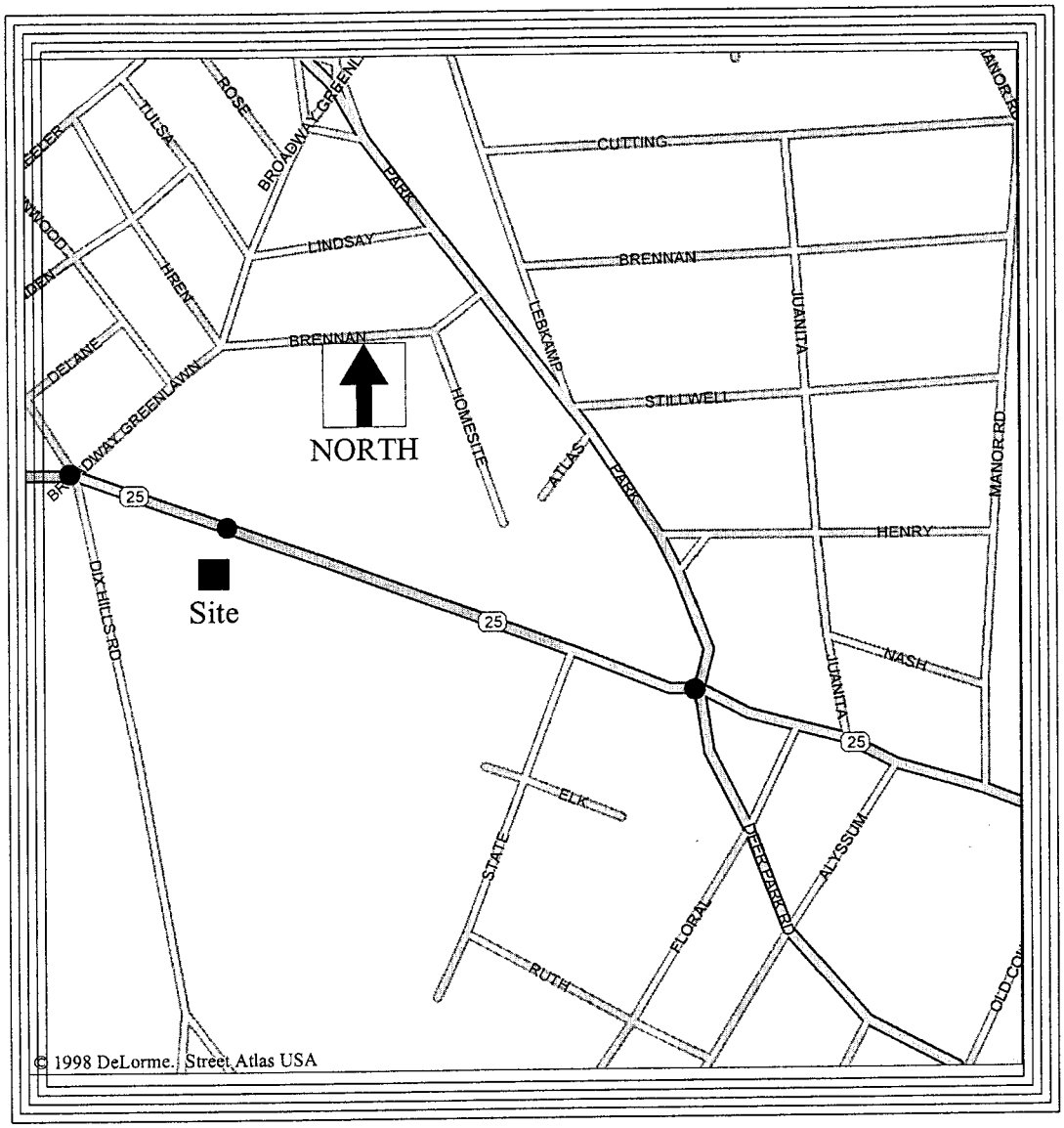

Mag 16.00
Tue Jul 27 14:26 1999
Scale 1:7,812 (at center)

500 Feet

200 Meters

● Study Intersections
■ Site Location

FIGURE 2

EXISTING CONDITIONS

Land Use

The site is located on the southeast corner of Jericho Turnpike and Dix Hills Road, Town of Huntington, Suffolk County. The parcel is currently a vacant lot.

The area surrounding the site consists primarily of retail land uses. The Northern State Parkway is located to the south. Residential land uses are also to the north as well as to the south.

Roadway Conditions

Jericho Turnpike (NYS RTE 25), an east-west arterial under the jurisdiction of the New York State Department of Transportation (NYSDOT) provides east-west access. The cross-section consists of two lanes in each direction with left turn lanes where necessary. Table 1 contains a summary of the lane configurations and traffic control experienced at the study intersections.

Traffic

Traffic volume turning movement counts were collected at the study intersections on Tuesday February 9, 1999 during the weekday P.M. peak (4:00-6:00 P.M.) period and on Saturday February 6, 1999 during the weekend Saturday peak (11:00-2:00 P.M.) period. These volumes are depicted in figures 3 and 4. This data is also presented in Appendix B.

These volumes were then used to determine the existing capacity and level of service (LOS) of the study intersections. The analyses were performed in accordance with guidelines set forth in the **1998 Highway Capacity Manual (Special Report 209)** published by the **Transportation Research Board.**

Nelson & Pope, LLP

Table 1

Job Title: HREN SHOPPING CENTER
Job No. 84016
Date: October-99

Location	Dir.	Mvmt.	No. of Lanes	Width	Control
Jericho Turnpike and Dix Hills Road	NB	Left			SEMI-ACTUATED CONTROL
		Through	1-LT	10 ft	
		Right	1	10 ft	
	SB	Left			
		Through	1-LTR	10 ft	
		Right			
	EB	Left	1	12 ft	
		Through	2-T/R	12 ft	
		Right			
	WB	Left	1	11 ft	
		Through	2-T/R	11 ft	
		Right			
Greenlawn Road	SB	Left			
		Through	1-L/T	10 ft	
		Right	1	10 ft	
Jericho Turnpike and Franks Nursery/Site Access	NB	Left			TWO-WAY STOP CONTROL
		Through			
		Right			
	SB	Left			
		Through	1-LTR	15 ft	
		Right			
	EB	Left	1	10 ft	
		Through	2	11 ft	
		Right			
	WB	Left			
		Through	2-T/R	10 ft	
		Right			
Jericho Turnpike and Park Avenue	NB	Left	1	10 ft	SEMI-ACTUATED CONTROL
		Through	1	10 ft	
		Right	1*	10 ft	
	SB	Left	1	11 ft	
		Through	1	11 ft	
		Right	1	9 ft	
	EB	Left	1	12 ft	
		Through	2	12 ft	
		Right	1*	13 ft	
	WB	Left	1	12 ft	
		Through	2	12 ft	
		Right	1*	10 ft	

* CHANNELIZED RIGHT TURN LANE
L=LEFT T=THROUGH R=RIGHT

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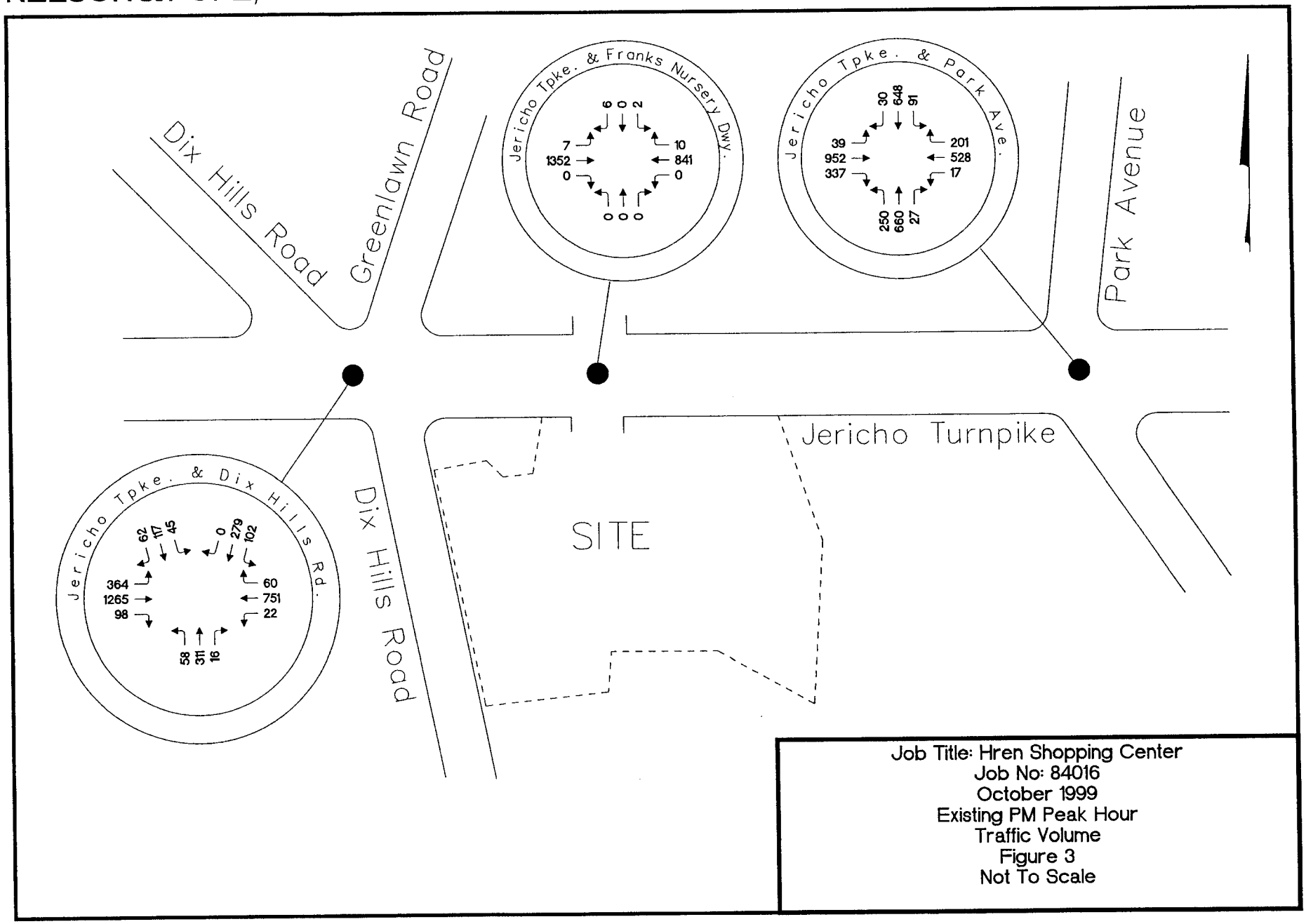
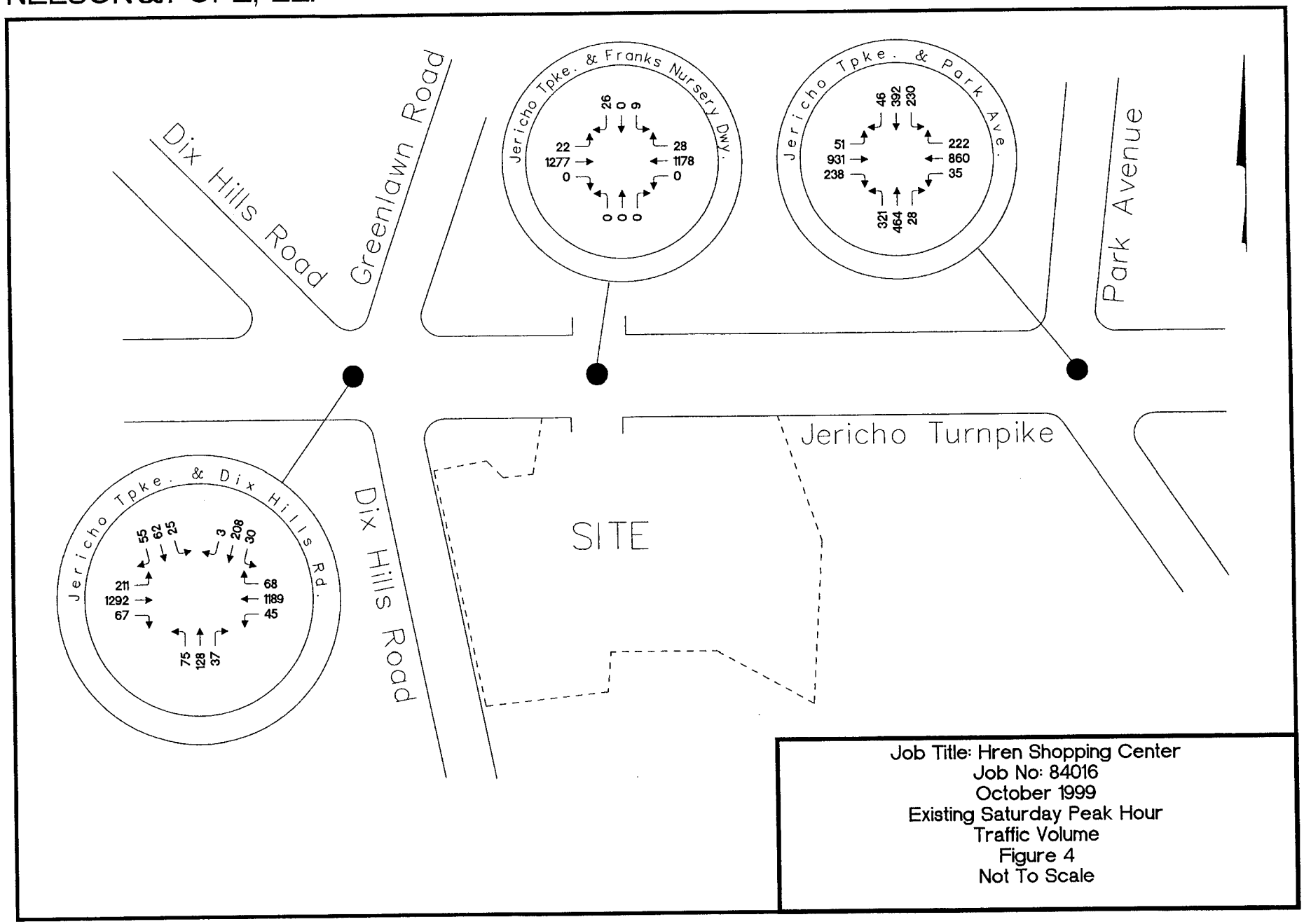


Job Title: Hren Shopping Center
Job No: 84016
October 1999
Existing PM Peak Hour
Traffic Volume
Figure 3
Not To Scale

NELSON & POPE, LLP



Job Title: Hren Shopping Center
Job No: 84016
October 1999
Existing Saturday Peak Hour
Traffic Volume
Figure 4
Not To Scale

Level of service for signalized intersection is defined in terms of delay, which is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, geometry, traffic, and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during ideal conditions: in the absence of traffic control, in the absence of geometric delay, in the absence of any incidents, and when there are no other vehicles on the road. The portion of the total delay attributed to the control facility is called the control delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Control delay may also be referred to as signal delay (for signalized intersections).

The level of service and capacity of a two way stop controlled (TWSC) intersection are the criteria by which the quality of traffic service is measured. The levels of service range between level of service A (relatively congestion-free) and level of service F (congested). The right of way at the TWSC intersection is controlled by stop signs on two opposing legs of an intersection (on one leg of a "T"-type intersection). The capacity of a controlled leg is based on the distribution of gaps in the major street traffic flow, driver judgement in selecting a gap through which to execute the desired maneuver and the follow up time required by each driver in a queue.

The level of service for a TWSC intersection is determined by the computed or measured control delay and is defined for each minor movement. Level of service is not defined for the intersection as a whole. The delay experienced by a motorist is made up of a number of factors that relate to control, geometry, traffic, and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during conditions with ideal geometry and in the absence of incidents, control, and traffic. This program only quantifies that portion of the total delay attributed to traffic control measures, either traffic signals or stop signs. This delay is called control delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration. Average control delay for any particular minor movement is a function of the approach and the degree of saturation.

The capacity analyses for the study intersections were performed using Highway Capacity Software (HCS) Release 3.1a prepared by the Federal Highway Administration. HCS is a series

of computer programs strictly adhering to the guidelines set forth in the **1998 Highway Capacity Manual.**

Table 2 contains a level of service summary for the existing conditions. The capacity analysis/level of service worksheets are contained in Appendix E.

Upon a review of this table, it can be seen that the five-way intersection at Jericho Turnpike and Dix Hills Road/Greenlawn Road fails during both peal periods. The intersection at Jericho Turnpike and Park Avenue operates at LOS "D" or better during both peak periods. The third intersection at Jericho Turnpike and the Site Access operates at LOS "C" during the PM peak hour and at LOS "E" during the Saturday peak hour.

Nelson & Pope, LLP
TABLE 2

Job Title: HREN SHOPPING CENTER
Job No. 84016
Date: October-99
Level of Service

		PM Peak Hour			Saturday Peak Hour		
Location	**Condition**	**Inter./Movm't Delay** (sec/veh)	**Critical V/C** Ratio	**Inter./Movm't LOS**	**Inter./Movm't Delay** (sec/veh)	**Critical V/C** Ratio	**Inter./Movm't LOS**
Jericho Turnpike and Dix Hills Road/Greenlawn Road	**Existing**	*	0.83	*	526.6	0.86	F
Jericho Turnpike and Franks Nursery/Site Access	**Existing**	19.7	0.04	C	36.9	0.27	E
Jericho Turnpike and Park Avenue	**Existing**	40.1	0.97	D	22.8	0.83	C

FUTURE CONDITIONS

OTHER PLANNED PROJECTS

The New York Department of Transportation currently has plans to change the alignment of the five-way intersection at Jericho Turnpike and Dix Hills Road/Greenlawn Road. Two alternatives are under review, both align Jericho Turnpike and Dix Hills Road to a four way intersection. However this project is not scheduled until 2006, after the proposed project will be completed. Therefore it was not included in the "No Build" or "Build" analysis.

Two car dealerships were also discussed with the Town of Huntington. The trips generated by both projects will be minimal, therefore they were not directly included in the "No Build' and "Build" analysis. The traffic generated by these projects would be included in the ambient growth factor.

Traffic Growth

A 1.5% annual growth factor, obtained from the NYSDOT, was applied to the existing traffic volumes at the study intersections to project the "No Build" volumes. These "No Build" volumes are contained in Figures 5 and 6.

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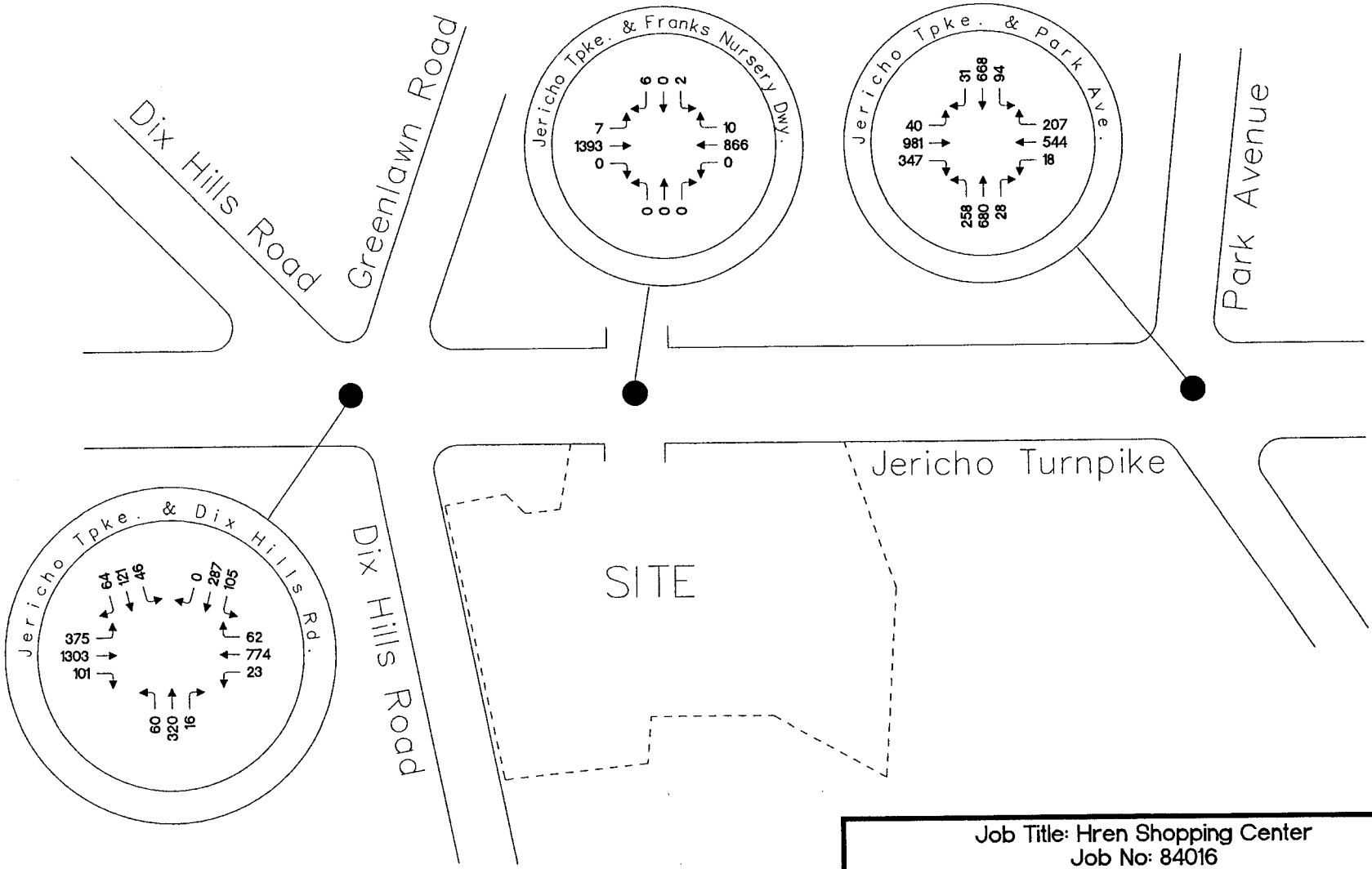
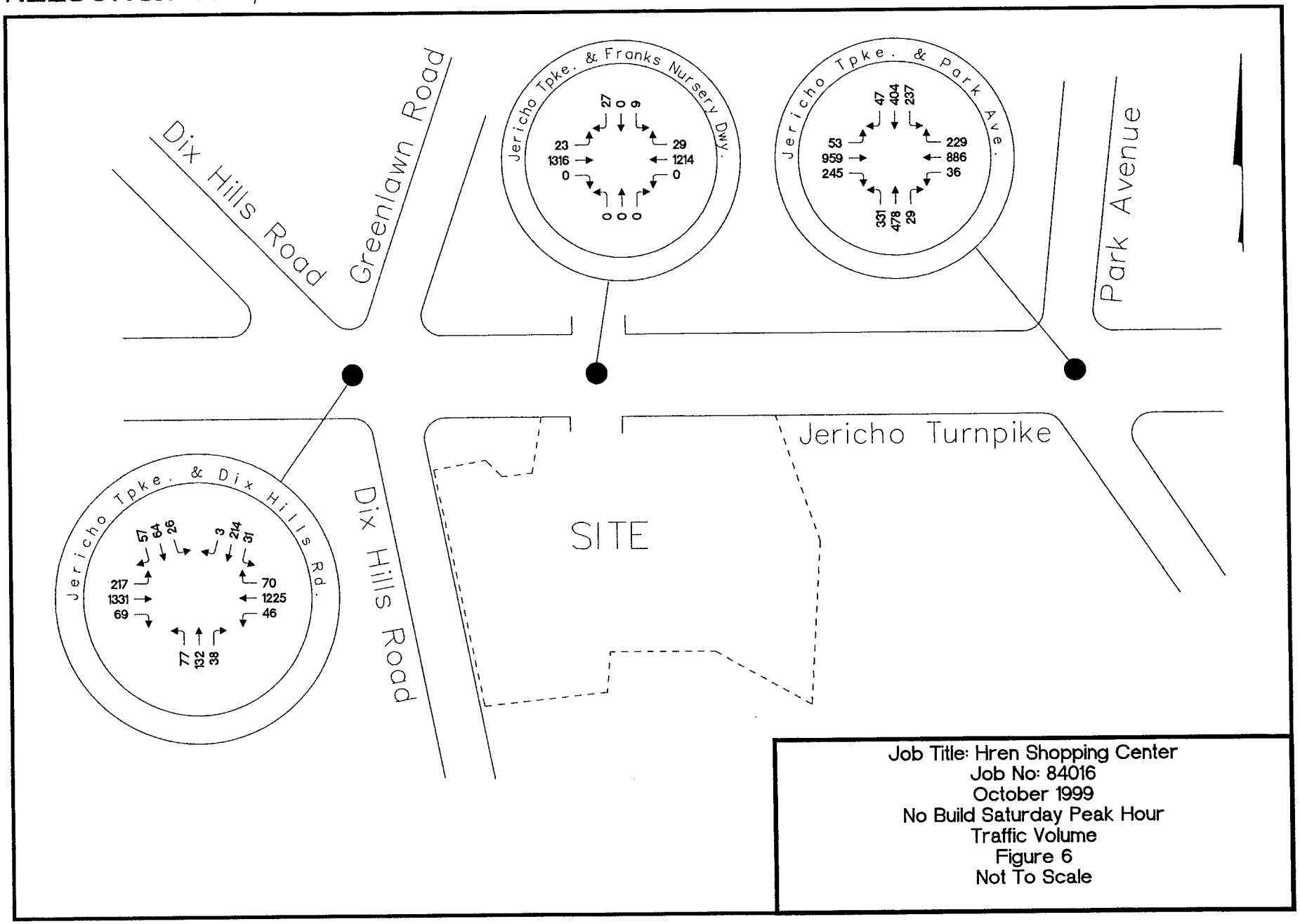


Job Title: Hren Shopping Center
Job No: 84016
October 1999
No Build PM Peak Hour
Traffic Volume
Figure 5
Not To Scale

NELSON & POPE, LLP



Job Title: Hren Shopping Center
Job No: 84016
October 1999
No Build Saturday Peak Hour
Traffic Volume
Figure 6
Not To Scale

PROPOSED DEVELOPMENT

Trip Generation

As previously mentioned, this Study assumes a 69,000 s.f. Supermarket and 9 Single Family Dwellings in Dix Hills, Town of Huntington.

As part of this investigation estimates were made of the volume of vehicular traffic that would be generated by this assumed development. Estimates were based on the average trip generation rates for a Supermarket (Land Use Code 850) and Single Family Dwellings (Land Use Code 210) as presented in the manual, **Trip Generation, 6th Edition**, prepared by the **Institute of Transportation Engineers (ITE) (1998)**. However, the ITE manual recommends that local or site specific data be used to augment or even replace the rates contained in the manual. The ITE rates are not realistic, they do not reflect the actual trip generation of a free standing supermarket. Trip generation rates calculated from data collected as part of a study of Stop & Shop supermarkets conducted in July 1994 were used to estimate the trips generated by the proposed supermarket. This study included seven local supermarkets in the area and is a more accurate source of data for trip generation of supermarkets. As per the supplied data, estimates were prepared for the weekday PM and Saturday midday periods. The computations are presented in Appendix C.

It is important to consider that a portion of the vehicles entering the supermarket from the adjacent street system will be "pass-by" trips. In other words, these trips originate directly from the traffic stream passing the facility on the adjacent street system and are not newly generated vehicles. The ITE manual allows for a 36% pass-by trip reduction during the weekday, a conservative approach was determined to account for these "pass-by" trips, a reduction of 25% was assumed for the weekday and 20% was assumed for the Saturday peak periods.

For the purposes of this investigation, it was estimated that peak site-generated traffic would coincide with peak traffic periods on the adjacent roadway system. Therefore, estimates were prepared for the weekday P.M. peak commuter period and weekend Saturday peak period. These trip generation estimates are contained in Table 3.

NELSON & POPE, LLP

Table 3

Job Title: HREN SHOPPING CENTER
Job No. 84016
Date: October, 1999
Trip Generation

Time Period	Proposed 69,000 s.f. Single Family Dwellings Land Use Code 210	Proposed Supermarket Stop and Shop Rates	Total Trip Generation:
PM Peak Hour	Enter: 8 tph Exit: 4 tph Total: 12 tph	Enter: 310 tph Exit: 318 tph Total: 628 tph	Enter: 318 tph Exit: 322 tph Total: 640 tph
Saturday Peak Hour	Enter: 10 tph Exit: 9 tph Total: 19 tph	Enter: 362 tph Exit: 354 tph Total: 716 tph	Enter: 372 tph Exit: 363 tph Total: 735 tph

tph = trips per hour

Time Period	Proposed Site	Alternative Site Development	Difference Between Site and Alternative Developments
PM Peak Hour	Enter: 318 tph Exit: 322 tph Total: 640 tph	Enter: 236 tph Exit: 256 tph Total: 492 tph	Enter: 82 tph Exit: 66 tph Total: 148 tph
Saturday Peak Hour	Enter: 372 tph Exit: 363 tph Total: 735 tph	Enter: 356 tph Exit: 329 tph Total: 685 tph	Enter: 16 tph Exit: 34 tph Total: 50 tph

tph = trips per hour

Site Access

As depicted on the site plan prepared by this firm, there is a driveway for the supermarket, and a new road on the east side of Dix Hills Road for the Single Family Houses. The driveway for the Supermarket is located on Jericho Turnpike and will be configured for all entering and exiting moves. Construction of a 3-phase traffic signal on Jericho Turnpike will be necessary to facilitate safe ingress and egress to the supermarket.

Trip Distribution and Assignment

The next step of the investigation consisted of an analysis of the geographical distribution of the trips to and from the site. A review of the existing roadway and travel patterns, the population distribution and the trip generators near the site was performed in order to determine the distribution of site-generated traffic. In addition to the existing conditions, the nature of the proposed land use and the associated travel patterns were considered.

In order to properly assess the traffic impact of the proposal, it was necessary to determine, by direction of travel, the volume of site generated traffic the surrounding roadway would receive, during the peak hours. The existing roadway network in the vicinity of the site was examined in conjunction with the surrounding land uses to determine the distribution of site-generated traffic at each intersection. (Refer to Appendix D for a summary of the trip distribution and assignment). Due to the Supermarket's location it was determined that there will be a 50/50 split between east and west for traffic entering/exiting. An 85/15 split, (favoring the south) was determined for traffic entering/exiting the Single Family Dwellings because all of the surrouding roadway network. A majority of the trips from the Single Family Dwellings will be work oriented and therefore utilizing major roadways such as the Long Island Expressway and the Northern State Parkway. The site-generated volumes were added to the "No Build" peak hour volumes to determine the "Build" volumes.

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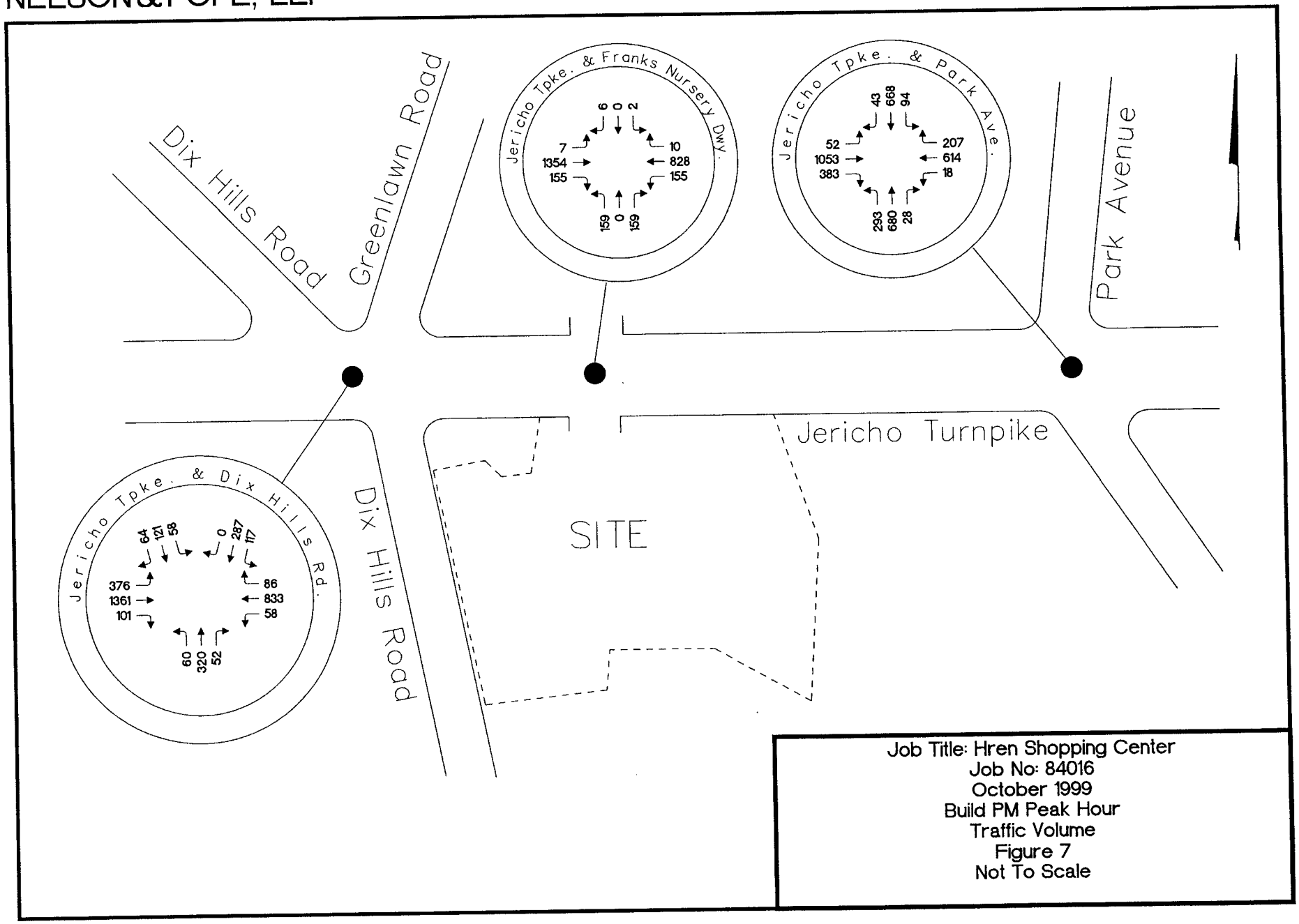
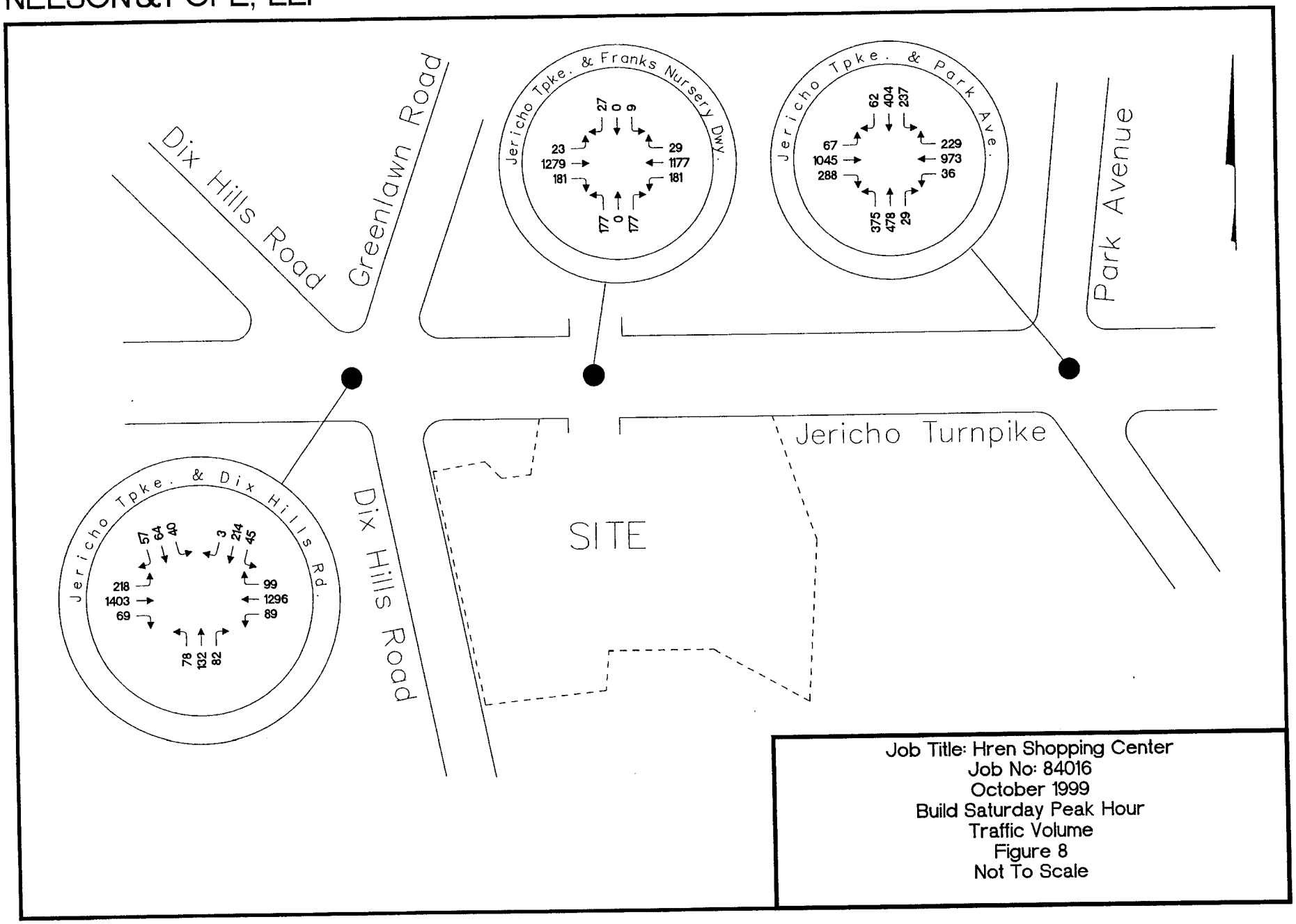


Job Title: Hren Shopping Center
Job No: 84016
October 1999
Build PM Peak Hour
Traffic Volume
Figure 7
Not To Scale

NELSON & POPE, LLP



Job Title: Hren Shopping Center
Job No: 84016
October 1999
Build Saturday Peak Hour
Traffic Volume
Figure 8
Not To Scale

TRAFFIC IMPACT ANALYSIS

As previously mentioned, future traffic volumes were estimated at the study intersections. These volumes were used to perform the capacity analyses for the "No Build" and "Build" conditions. These analyses were performed using the procedures outlined in the **1998 Highway Capacity Manual (Special Report 209)** published by the **Transportation Research Board.** The procedures listed in the **Highway Capacity Manual** permit the computation of intersection capacity and level of service (LOS). The capacity and LOS of an intersection has previously been defined in the existing conditions segment of this report.

The results of these analyses are summarized in Table 4. The capacity analysis/level of service worksheets are contained in Appendix E.

Upon a review of this Table, the following can be stated:

1. The traffic generated by the assumed Supermarket and 9 Single Family Dwellings will have an imperceptible impact at the intersections of Jericho Turnpike and Dix Hills Road/Greenlawn Road; and Jericho Turnpike and Park Avenue.

2. The traffic generated by the assumed Supermarket will have a major impact on the operation of the intersection at the site driveway on Jericho Turnpike during the P.M. and Saturday peak hours.

3. The site driveway on Jericho Turnpike for the Supermarket will experience operational difficulty, without construction of a new signal. This intersection meets traffic signal warrants one and two of the Manual for Uniform Traffic Control Devices (M.U.T.C.D.) (Refer to Appendix F). It will operate at a LOS "B" in the "Build" condition, if a three-phase signal control were constructed as well as a new eastbound and westbound left turn lane.

Nelson & Pope, LLP
TABLE 4

Job Title: HREN SHOPPING CENTER
Job No. 84016
Date: October-99
Level of Service for Signalized Intersection

Location	Condition	PM Peak Hour Inter./movm't Delay (sec/veh)	PM Peak Hour Critical V/C Ratio	PM Peak Hour Inter./movm't LOS	Saturday Peak Hour Inter./movm't Delay (sec/veh)	Saturday Peak Hour Critical V/C Ratio	Saturday Peak Hour Inter./movm't LOS
Jericho Turnpike and Dix Hills Road/Greenlawn Road	No Build	*	0.92	*	*	0.89	*
	Build	*	0.95	*	*	0.96	*
Jericho Turnpike and Franks Nursery/Site Access	No Build	20.6	0.04	C	40.1	0.29	E
	Build	21039.3	12.54	F	39883.4	22.92	F
	Build W/Signal	16.2	0.79	B	17.5	0.81	B
Jericho Turnpike and Park Avenue	No Build	48.4	0.96	D	23.9	0.85	C
	Build	50.1	0.99	D	27.8	0.92	C

SUMMARY

As previously mentioned, traffic volumes were obtained at the study intersections, these volumes were used to perform capacity analyses. The site is located on a 31.1 acre parcel situated on the southeast corner of Jericho Turnpike and Dix Hills Road in Dix Hills, Town of Huntington. The following is a summary of this investigation and the findings thereof:

1) During the "Build" condition all the study intersections operate at LOS "D" or better except for the signalized intersection at Jericho Turnpike and Dix Hills Road/Greenlawn Road which fails during both of the peak periods.

2) Future "No Build" and "Build" traffic volumes were projected by applying a 1.5% annual growth factor (for two years), obtained from the NYSDOT, to the existing volumes. Two car dealerships were also discussed with the Town of Huntington. The trips generated by both projects will be minimal, therefore they were not directly included in the "No Build' and "Build" analysis. The traffic generated by these projects will be included in the ambient growth factor.

3) The assumed Supermarket is projected to generate 628 vehicle trips (310 entering, 318 exiting) during the weekday PM commuter peak period and 716 vehicle trips (362 entering, 354 exiting) during the weekday Saturday peak period. The Single Family Dwellings are projected to generate 12 vehicle trips (8 entering, 4 exiting) during the weekday PM commuter peak period and 19 vehicle trips (10 entering, 9 exiting) during the weekend Saturday peak period. The total projected trip generation combined is 640 vehicle trips (318 entering, 322 exiting) during the weekday PM commuter peak period and 735 vehicle trips (372 entering, 363 exiting) during the weekend Saturday peak period.

4) The driveway for the Supermarket is located on Jericho Turnpike. It will be configured for all entering and exiting moves, however if left unsignalized, it will impact the level of service at this intersection. It is proposed to construct a 3-phase traffic signal to maintain acceptable levels of service.

5) A new road on the east side of Dix Hills Road will be constructed for the Single Family Dwellings. The new intersection will operated at good to excellent levels of service.

6) The New York State Department of Transportation (NYSDOT) currently has plans to change the alignment of the five-way intersection at Jericho Turnpike and Dix Hills Road/Greenlawn Road. Two alternatives are under review, both align Jericho Turnpike and Dix Hills Road to a four way intersection. However this project is not scheduled until 2006, after the proposed project will be completed. Therefore it was not included in the "No Build" or "Build" analysis. This project, when completed will improve the level of service at Jericho Turnpike and Dix Hills.

7) The traffic generated by the proposed development will have no impact to the overall level of service at any of the study intersections with the new lane configuration and the recommended signalization of the site driveway.

HREN SHOPPING CENTER
at
DIX HILLS

APPENDIX

OCTOBER, 1999

N & P JOB NO. 84016

APPENDICES

APPENDIX A LEVEL OF SERVICE DESCRIPTION

I. Signalized Intersection
II. Unsignalized Intersection

APPENDIX B TRAFFIC VOLUMES

APPENDIX C TRIP GENERATION

APPENDIX D TRIP DISTRIBUTION AND ASSIGNMENT

APPENDIX E CAPACITY ANALYSIS/LEVEL OF SERVICE WORKSHEETS

I. Existing Conditions

A. Signalized Intersections
1. Jericho Turnpike and Dix Hills Road/Greenlawn Road
2. Jericho Turnpike and Park Avenue

B. Unsignalized Intersections
1. Jericho Turnpike and Franks Nursery/Site Access

II. "No Build" Conditions

A. Signalized Intersections
1. Jericho Turnpike and Dix Hills Road/Greenlawn Road
2. Jericho Turnpike and Park Avenue

B. Unsignalized Intersections
1. Jericho Turnpike and Franks Nursery/Site Access

III. "Build Conditions"

A. Signalized Intersections
1. Jericho Turnpike and Dix Hills Road/Greenlawn Road
2. Jericho Turnpike and Park Avenue

B. Unsignalized Intersections
1. Jericho Turnpike and Franks Nursery/Site Access
2. Dix Hills and Site Access

IV. "Build Conditions" with signal at:

A. Jericho Turnpike and Franks Nursery/Site Access

APPENDIX F SIGNAL WARRANT ANALYSIS WORKSHEETS

A. NYS M.U.T.C.D. Standards

APPENDIX A: LEVEL OF SERVICE DESCRIPTION

I. Signalized Intersections

II. Unsignalized Intersections

I. Signalized Intersections

LEVEL OF SERVICE
SIGNALIZED INTERSECTION

Level of service for signalized intersections is defined in terms of delay, which is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, geometry, traffic, and incidents at an intersection. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during ideal conditions: in the absence of traffic control, in the absence of geometric delay, in the absence of any incidents, and when there are no other vehicles on the road. The portion of the total delay attributed to the control facility is called the control delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Control delay may also be referred to as signal delay (for signalized intersections.)

Level of service criteria for signalized intersections are determined in terms of the average control delay per vehicle. The following average control delays are used to determine approach levels of service:

Level of Service A	$\leq$ 10.0 sec./veh.
Level of Service B	> 10.0 and $\leq$ 20.0 sec./veh.
Level of Service C	> 20.0 and $\leq$ 35.0 sec./veh.
Level of Service D	> 35.0 and $\leq$ 55.0 sec./veh.
Level of Service E	> 55.0 and $\leq$ 80.0 sec./veh.
Level of Service F	> 80.0 sec./veh.

Level of Service-A describes operations with a very low control delay. This occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short traffic signal cycles may contribute to low delay.

Level of Service-B generally occurs with good progression and/or short traffic signal cycle lengths. More vehicles stop than for level of service A, causing higher average delays.

Level of Service-C has higher delays than level of service B. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures, where motorists are required to wait through an entire signal cycle, may begin to appear in this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.

Level of Service-D at this level the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths or high volume to capacity ratios. Many vehicles stop and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

Level of Service-E is considered the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths and high volume to capacity ratios. Individual cycle failures are frequent occurrences.

Level of Service-F is considered unacceptable to most drivers. This condition often occurs with over saturation, i.e., when arrival flow rates exceed the capacity of the intersection. It may occur at volume to capacity ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

II. Unsignalized Intersections

LEVEL OF SERVICE
TWO WAY STOP CONTROLLED INTERSECTIONS

The level of service and capacity of a two way stop controlled (TWSC) intersection are the criteria by which the quality of traffic service is measured. The levels of service range between level of service A (relatively congestion-free) and level of service F (congested).

The right of way at the TWSC intersection is controlled by stop signs on two opposing legs of an intersection (on one leg of a "T"-type intersection). The capacity of a controlled leg is based on the distribution of gaps in the major street traffic flow, driver judgement in selecting a gap through which to execute the desired maneuver and the follow up time required by each driver in a queue.

The level of service for a TWSC intersection is determined by the computed or measured control delay and is defined for each minor movement. Level of service is not defined for the intersection as a whole. The delay experienced by a motorist is made up of a number of factors that relate to control, geometry, traffic, and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during conditions with ideal geometry and in the absence of incidents, control, and traffic. This program only quantifies that portion of the total delay attributed to traffic control measures, either traffic signals or stop signs. This delay is called control delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration. Average control delay for any particular minor movement is a function of the approach and the degree of saturation.

The following average control delays are used to determine approach levels of service:

Level of Service A	$\leq$ 10 sec./veh.
Level of Service B	> 10 and $\leq$ 15 sec./veh.
Level of Service C	> 15 and $\leq$ 25 sec./veh.
Level of Service D	> 25 and $\leq$ 35 sec./veh.
Level of Service E	> 35 and $\leq$ 50 sec./veh.
Level of Service F	> 50 sec./veh.

APPENDIX B: TRAFFIC VOLUMES

PROJECT NAME: HREN SHOPPING CENTER

PROJECT No.: 84016

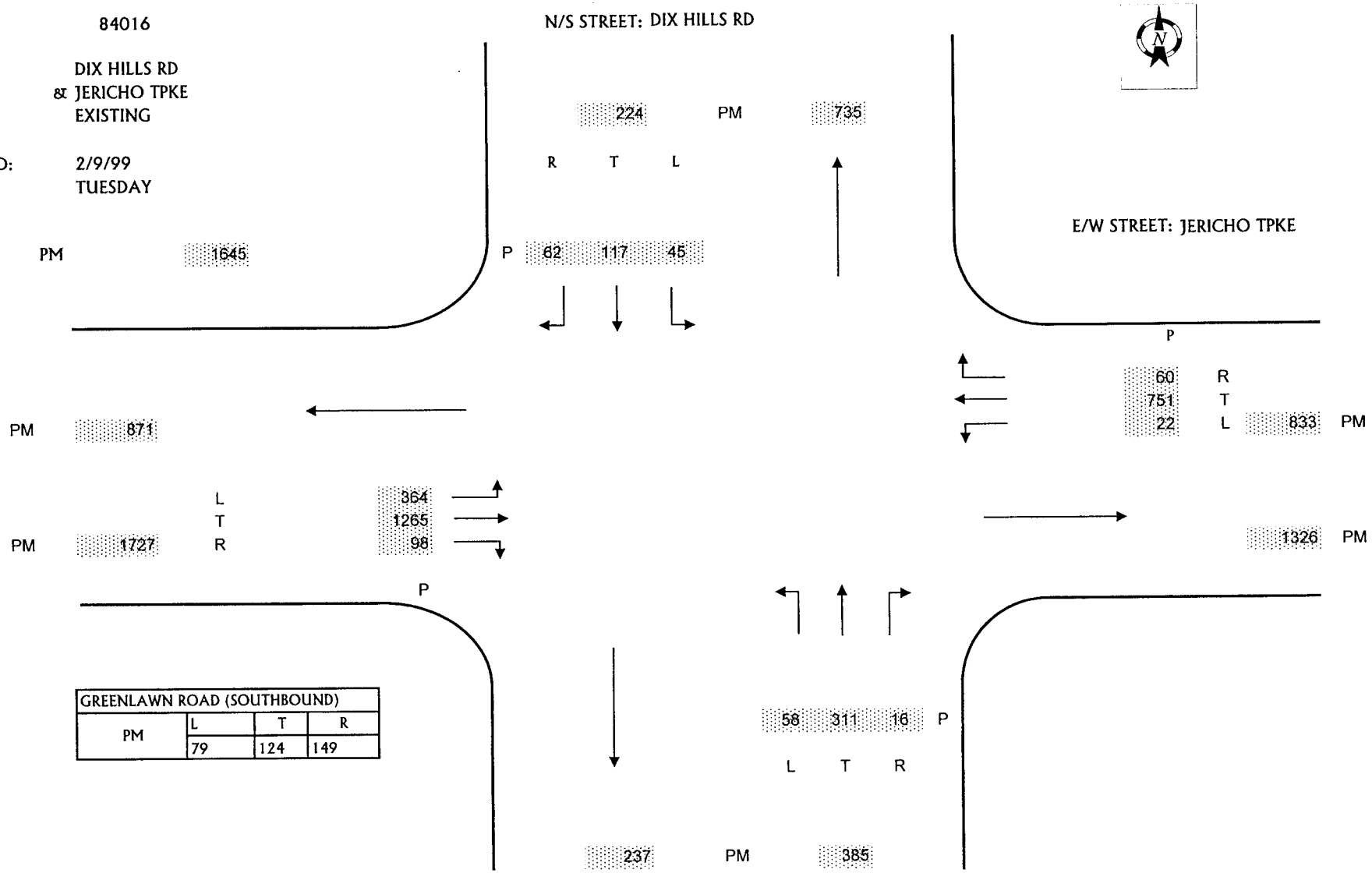
INTERSECTION: DIX HILLS RD & JERICHO TPKE

CONDITION: EXISTING

DATE COUNTED: 2/9/99

DAY OF WEEK: TUESDAY

PEAK HOURS: (START)



GREENLAWN ROAD (SOUTHBOUND)			
PM	L	T	R
	79	124	149

NELSON & POPE, LLP

PROJECT NAME: HREN SHOPPING CENTER

PROJECT No.: 84016

INTERSECTION: DIX HILLS RD & JERICHO TPKE

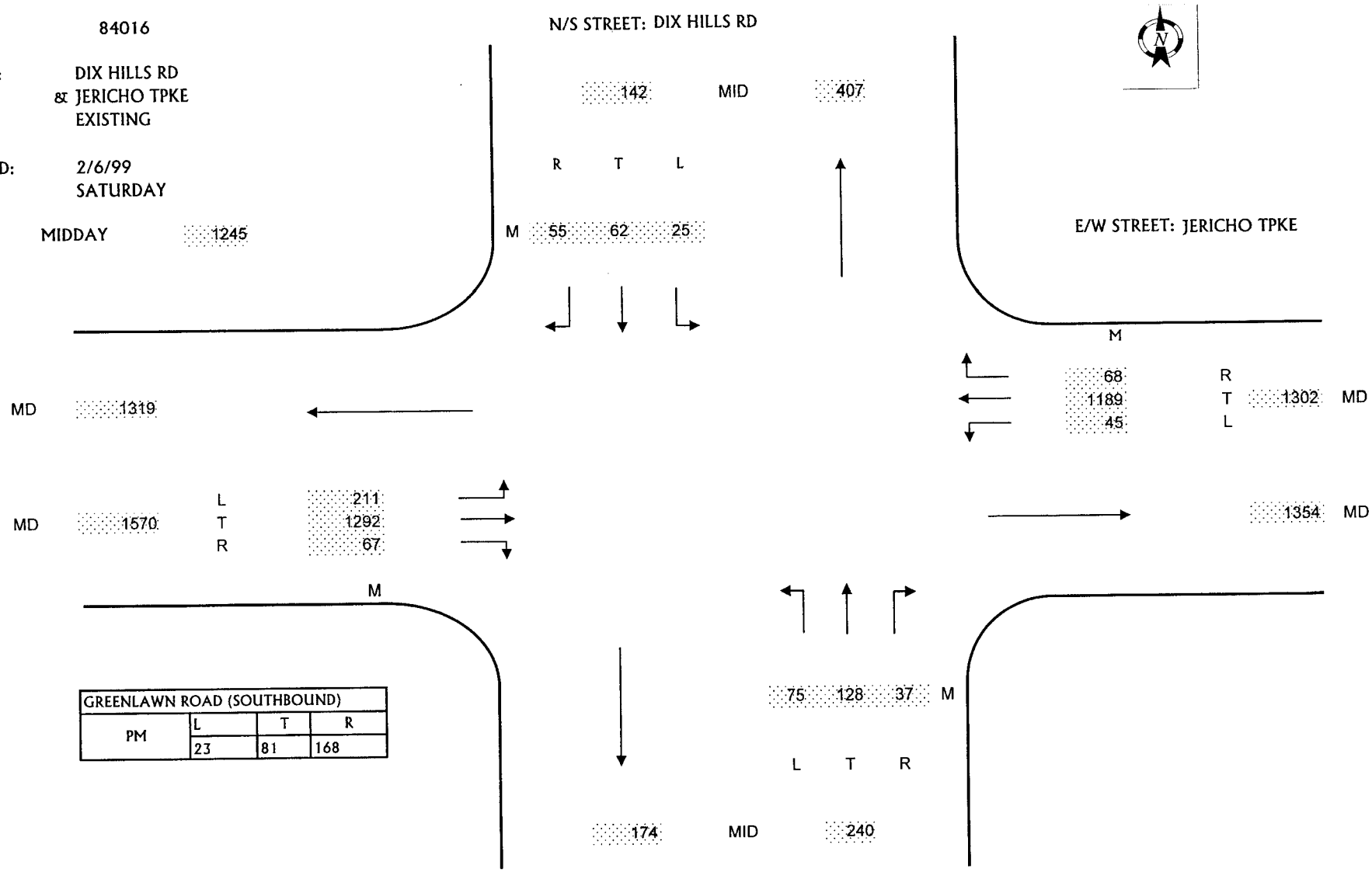
CONDITION: EXISTING

DATE COUNTED: 2/6/99

DAY OF WEEK: SATURDAY

PEAK HOURS:

(START) MIDDAY 1245



GREENLAWN ROAD (SOUTHBOUND)			
PM	L	T	R
	23	81	168

10/14/99

Jtdhr_1

NELSON & POPE, LLP

PROJECT NAME: HREN SHOPPING CENTER

PROJECT No.: 84016

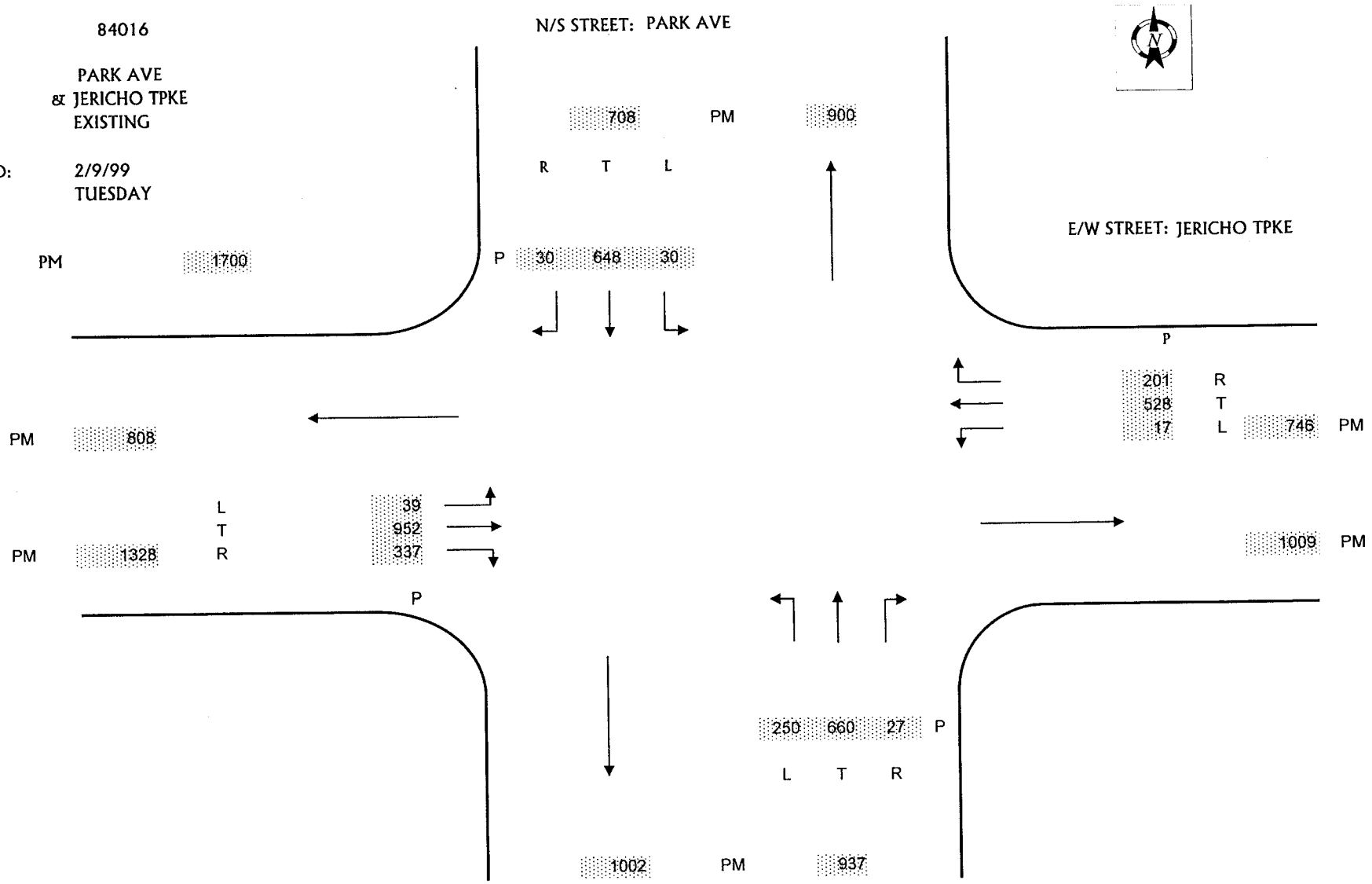
INTERSECTION: PARK AVE & JERICHO TPKE

CONDITION: EXISTING

DATE COUNTED: 2/9/99

DAY OF WEEK: TUESDAY

PEAK HOURS: (START)



NELSON & POPE, LLP

PROJECT NAME: HREN SHOPPING CENTER

PROJECT No.: 84016

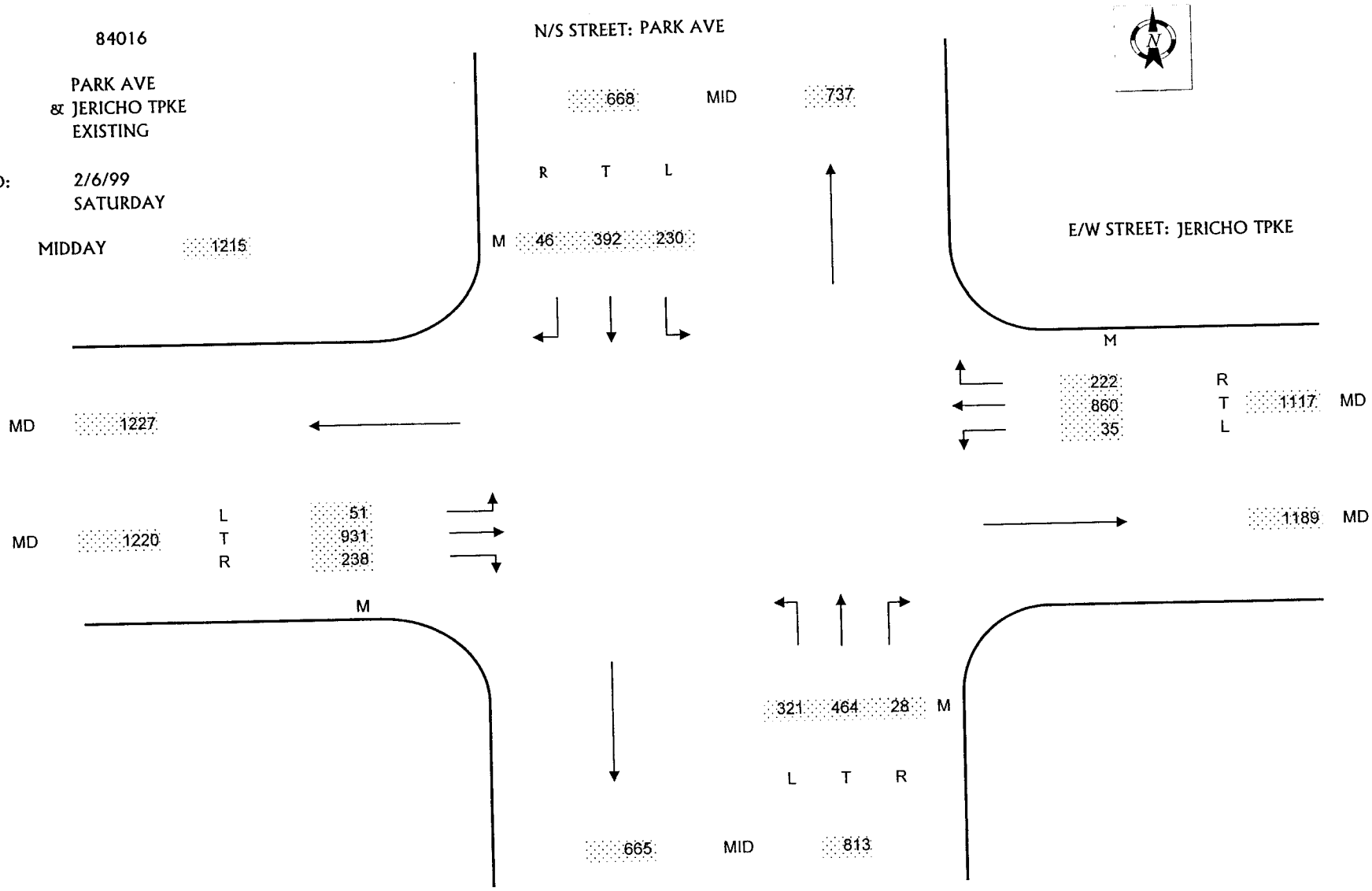
INTERSECTION: PARK AVE & JERICHO TPKE

CONDITION: EXISTING

DATE COUNTED: 2/6/99

DAY OF WEEK: SATURDAY

PEAK HOURS: (START) MIDDAY 1215



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10/14/99

Jtdpr_3

PROJECT NAME: HREN SHOPPING CENTER

PROJECT No.: 84016

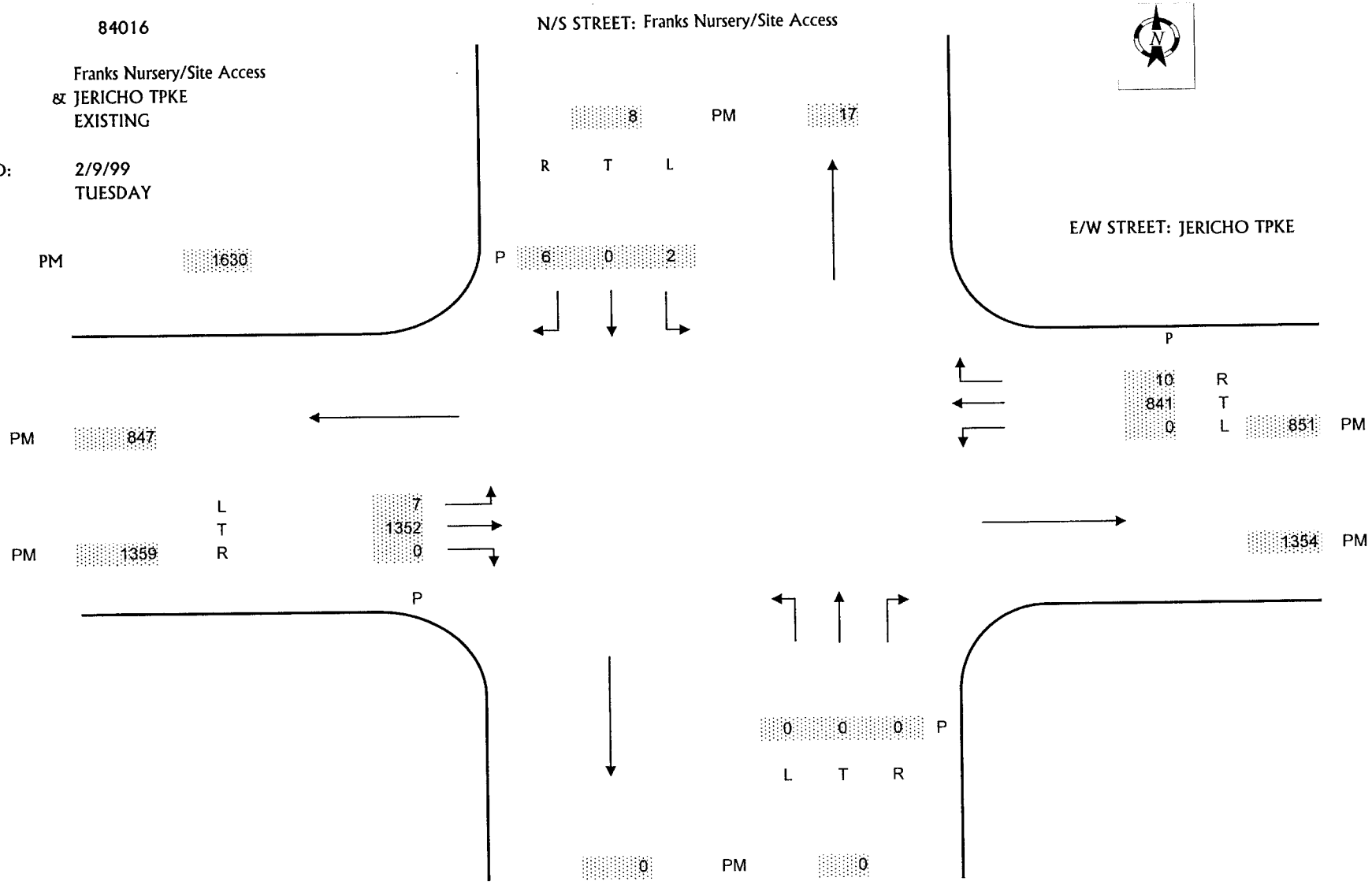
INTERSECTION: Franks Nursery/Site Access & JERICHO TPKE

CONDITION: EXISTING

DATE COUNTED: 2/9/99

DAY OF WEEK: TUESDAY

PEAK HOURS: (START)



NELSON & POPE, LLP

PROJECT NAME: HREN SHOPPING CENTER

PROJECT No.: 84016

INTERSECTION: FRANKS NURSERY/SITE ACCESS & JERICHO TPKE

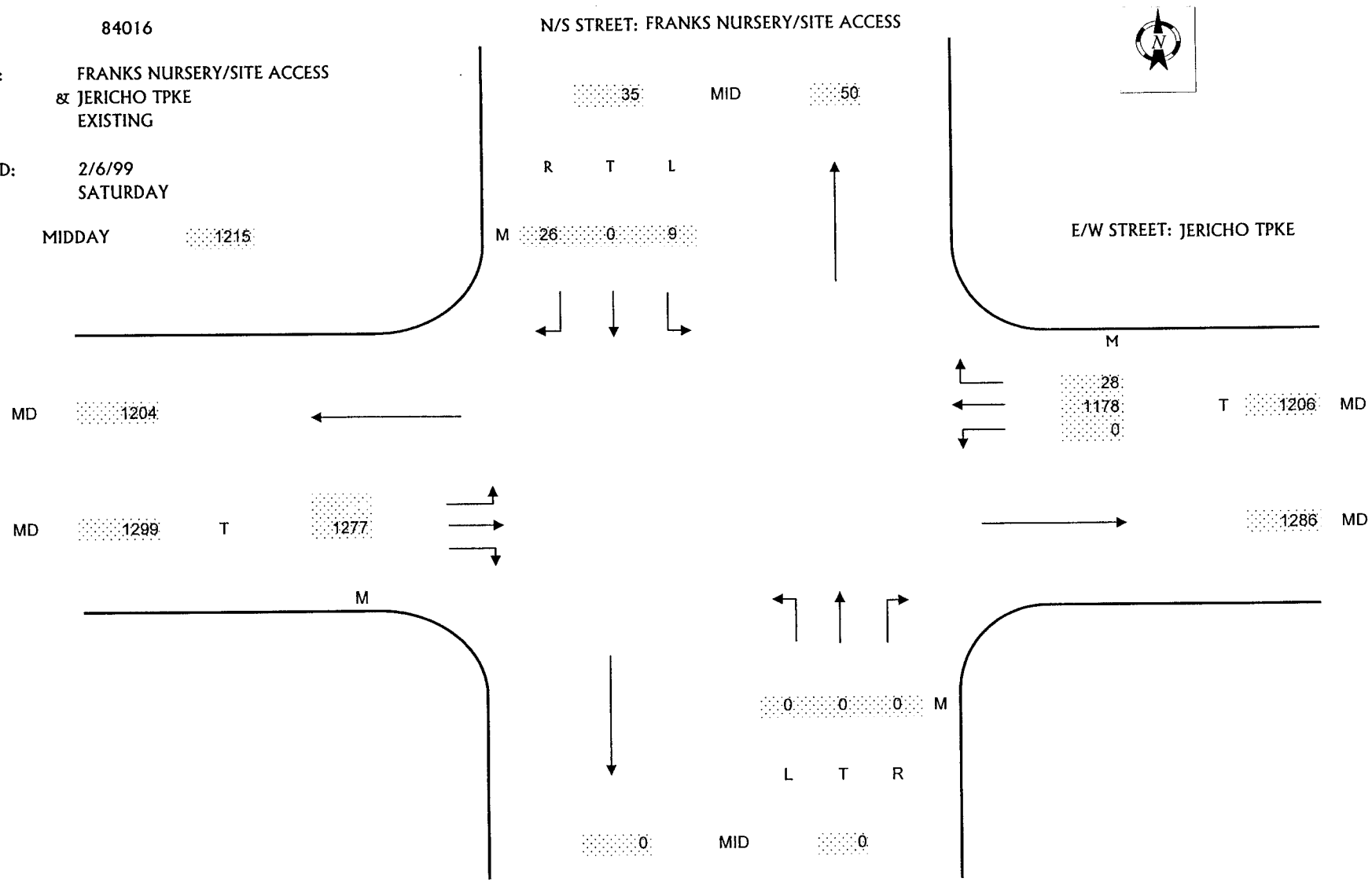
CONDITION: EXISTING

DATE COUNTED: 2/6/99

DAY OF WEEK: SATURDAY

PEAK HOURS:

(START) MIDDAY 1215



10/14/99

Jtsa_2

NELSON & POPE, LLP

APPENDIX C: TRIP GENERATION

84016 HREN SHOPPING CENTER
SUMMARY OF TRIP GENERATION CALCULATION
FOR 69 T.G.L.A. OF SHOPPING CENTER
OCTOBER 1999

	AVERAGE RATE	STANDARD DEVIATION	ADJUSTMENT FACTOR	DR-WAY VOLUME
AVG WKDY 2-WAY VOL	77.82	0.00	1.00	5370
7-9 AM PK HR ENTER	1.13	0.00	1.00	78
7-9 AM PK HR EXIT	0.72	0.00	1.00	50
7-9 AM PK HR TOTAL	1.86	0.00	1.00	128
4-6 PM PK HR ENTER	3.42	0.00	1.00	236
4-6 PM PK HR EXIT	3.70	0.00	1.00	256
4-6 PM PK HR TOTAL	7.12	0.00	1.00	492
SATURDAY 2-WAY VOL	105.00	0.00	1.00	7245
PK HR ENTER	5.16	0.00	1.00	356
PK HR EXIT	4.77	0.00	1.00	329
PK HR TOTAL	9.93	0.00	1.00	685
SUNDAY 2-WAY VOL	76.71	0.00	1.00	5293
PK HR ENTER	1.53	0.00	1.00	105
PK HR EXIT	1.59	0.00	1.00	110
PK HR TOTAL	3.12	0.00	1.00	215

Note: A zero rate indicates no rate data available
The above rates were calculated from these equations:

24-Hr. 2-Way Volume:	LN(T) = .643LN(X) + 5.866, R^2 = .78
7-9 AM Peak Hr. Total:	LN(T) = .596LN(X) + 2.329
	R^2 = .51 , .61 Enter, .39 Exit
4-6 PM Peak Hr. Total:	LN(T) = .66LN(X) + 3.403
	R^2 = .81 , .48 Enter, .52 Exit
AM Gen Pk Hr. Total:	0
	R^2 = 0 , 0 Enter, 0 Exit
PM Gen Pk Hr. Total:	0
	R^2 = 0 , 0 Enter, 0 Exit
Sat. 2-Way Volume:	LN(T) = .628LN(X) + 6.229, R^2 = .82
Sat. Pk Hr. Total:	LN(T) = .651LN(X) + 3.773
	R^2 = .84 , .52 Enter, .48 Exit
Sun. 2-Way Volume:	T = 15.632(X) + 4214.458, R^2 = .52
Sun. Pk Hr. Total:	T = 3.12(X) + 0
	R^2 = 0 , .49 Enter, .51 Exit

Source: Institute of Transportation Engineers
Trip Generation, 6th Edition, 1997.

TRIP GENERATION BY MICROTRANS

HREN SHOPPING CENTER
SUMMARY OF TRIP GENERATION CALCULATION
FOR 9 DWELLING UNITS OF SINGLE FAMILY DWELLINGS
8/99 84016

	AVERAGE RATE	STANDARD DEVIATION	ADJUSTMENT FACTOR	DRIVE WAY VOLUME
AVG WKDY 2-WAY VOL	12.57	0.00	1.00	113
7-9 AM PK HR ENTER	0.44	0.00	1.00	4
7-9 AM PK HR EXIT	1.31	0.00	1.00	12
7-9 AM PK HR TOTAL	1.75	0.00	1.00	16
4-6 PM PK HR ENTER	0.87	0.00	1.00	8
4-6 PM PK HR EXIT	0.49	0.00	1.00	4
4-6 PM PK HR TOTAL	1.36	0.00	1.00	12
SATURDAY 2-WAY VOL	11.51	0.00	1.00	104
PK HR ENTER	1.14	0.00	1.00	10
PK HR EXIT	0.97	0.00	1.00	9
PK HR TOTAL	2.12	0.00	1.00	19
SUNDAY 2-WAY VOL	7.54	0.00	1.00	68
PK HR ENTER	1.80	0.00	1.00	16
PK HR EXIT	1.60	0.00	1.00	14
PK HR TOTAL	3.40	0.00	1.00	31

Note: A zero rate indicates no rate data available
The above rates were calculated from these equations:

24-Hr. 2-Way Volume:	LN(T) = .92LN(X) + 2.707, R^2 = .96
7-9 AM Peak Hr. Total:	T = .7(X) + 9.477
	R^2 = .89 , .25 Enter, .75 Exit
4-6 PM Peak Hr. Total:	LN(T) = .901LN(X) + .527
	R^2 = .91 , .64 Enter, .36 Exit
AM Gen Pk Hr. Total:	T = .704(X) + 12.09
	R^2 = .89 , .25 Enter, .75 Exit
PM Gen Pk Hr. Total:	LN(T) = .887LN(X) + .605
	R^2 = .91 , .64 Enter, .36 Exit
Sat. 2-Way Volume:	LN(T) = .956LN(X) + 2.54, R^2 = .92
Sat. Pk Hr. Total:	T = .886(X) + 11.065
	R^2 = .9 , .54 Enter, .46 Exit
Sun. 2-Way Volume:	T = 8.832(X) + -11.604, R^2 = .94
Sun. Pk Hr. Total:	T = .756(X) + 23.815
	R^2 = .86 , .53 Enter, .47 Exit

Source: Institute of Transportation Engineers
Trip Generation, 6th Edition, 1997.

TRIP GENERATION BY MICROTRANS

NELSON & POPE, LLP

Supermarket Huntington
Trip Generation Summary
Project No.: 84016

PEAK HOUR		PROPOSED 69,000 SF EDWARDS	SUPERMARKET TRIP GENERATION RATES
PM PEAK HOUR	ENTER:	310 tph	4.49
	EXIT:	318 tph	4.61
	TOTAL:	628 tph	9.10
SATURDAY MIDDAY PEAK HOUR	ENTER:	362 tph	5.24
	EXIT:	354 tph	5.13
	TOTAL:	716 tph	10.37

tph - trips per hour

APPENDIX D: TRIP DISTRIBUTION AND ASSIGNMENT

Nelson & Pope, LLP

Job Title: HREN SHOPPING CENTER
Job No. 84016
Date: October-99
Trip Distribution & Assignment Spreadsheet

Growth Factor: 1.50%
No. of Years: 2
Growth Rate: 1.03

Passby Percentages
Weekday: 25%
Weekend: 20%

Proposed Supermarket Trip Generation

	PM	SAT. MIDDAY
Enter	310	362
Exit	318	354
Total	628	716

Location	Dir.	Mvmt.	Existing Traffic Volume PM	Existing Traffic Volume SAT. MIDDAY	Ambient Growth Traffic Volume PM	Ambient Growth Traffic Volume SAT. MIDDAY	Traffic Distribution %Enter	Traffic Distribution %Exit	Site Generated Traffic PM	Site Generated Traffic SAT. MIDDAY	Build Traffic Volume PM	Build Traffic Volume SAT. MIDDAY
Jericho Turnpike and Dix Hills	NB	Left	58	75	60	77			---	---	60	77
		Through	311	128	320	132			---	---	320	132
		Right	16	37	16	38	15%		35	43	51	82
	SB	Left	45	25	46	26	5%		12	14	58	40
		Through	117	62	121	64			---	---	121	64
		Right	62	55	64	57			---	---	64	57
	EB	Left	364	211	375	217			---	---	375	217
		Through	1265	1292	1303	1331	25%		58	72	1361	1403
		Right	98	67	101	69			---	---	101	69
	WB	Left	22	45	23	46		15%	36	42	58	89
		Through	751	1189	774	1225		25%	60	71	833	1296
		Right	60	68	62	70		10%	24	28	86	98
					0	0				---		
Greenlawn Road	SB	Left	79	23	81	24	5%		12	14	93	38
		Through	124	81	128	83			---	---	128	83
		Right	149	168	154	173			---	---	154	173
Jericho Turnpike and Franks Nursery/Site Access	NB	Left	0	0	0	0		50%	159	177	159	177
		Through	0	0	0	0			---	---	0	0
		Right	0	0	0	0		50%	159	177	159	177
	SB	Left	2	9	2	9			---	---	2	9
		Through	0	0	0	0			---	---	0	0
		Right	6	26	6	27			---	---	6	27
	EB	Left	7	22	7	23			---	---	7	23
		Through	1352	1277	1393	1316			-39	-36	1354	1279
		Right	0	0	0	0	50%		155	181	155	181
	WB	Left	0	0	0	0	50%		155	181	155	181
		Through	841	1178	866	1214			-39	-36	828	1177
		Right	10	28	10	29			---	---	10	29
Jericho Turnpike and Park Avenue	NB	Left	250	321	258	331	15%		35	43	292	374
		Through	660	464	680	478			---	---	680	478
		Right	27	28	28	29			---	---	28	29
	SB	Left	91	230	94	237			---	---	94	237
		Through	648	392	668	404			---	---	668	404
		Right	30	46	31	47	5%		12	14	43	62
	EB	Left	39	51	40	53		5%	12	14	52	67
		Through	952	931	981	959		30%	72	85	1052	1044
		Right	337	238	347	245		15%	36	42	383	288
	WB	Left	17	35	18	36			---	---	18	36
		Through	528	860	544	886	30%		70	87	614	973
		Right	201	222	207	229			---	---	207	229

Nelson & Pope, LLP

Job Title: HREN SHOPPING CENTER
Job No. 84016
Date: October-99
Trip Distribution & Assignment Spreadsheet

Growth Factor: 1.50%
No. of Years: 2
Growth Rate: 1.03

Passby Percentages
Weekday: 0%
Weekend: 0%

Proposed Housing Trip Generation

	PM	SAT. MIDDAY
Enter	8	10
Exit	4	9
Total	12	19

Location	Dir.	Mvmt.	Supermarket Build Traffic Volume		Traffic Distribution		Site Generated Traffic		Total Build Traffic Volume	
			PM	SAT. MIDDAY	%Enter	%Exit	PM	SAT. MIDDAY	PM	SAT. MIDDAY
Jericho Turnpike and Dix Hills	NB	Left	60	77		5%	0	0	60	78
		Through	320	132			---	---	320	132
		Right	51	82		10%	0	1	52	82
	SB	Left	58	40			---	---	58	40
		Through	121	64			---	---	121	64
		Right	64	57			---	---	64	57
	EB	Left	375	217	10%		1	1	376	218
		Through	1361	1403			---	---	1361	1403
		Right	101	69			---	---	101	69
	WB	Left	58	89			---	---	58	89
		Through	833	1296			---	---	833	1296
		Right	86	98	5%		0	1	86	99
			0	0				---		
Greenlawn Road	SB	Left	93	38			---	---	93	38
		Through	128	83			---	---	128	83
		Right	154	173			---	---	154	173
Jericho Turnpike and Franks Nursery/Site Access	NB	Left	159	177			---	---	159	177
		Through	0	0			---	---	0	0
		Right	159	177			---	---	159	177
	SB	Left	2	9			---	---	2	9
		Through	0	0			---	---	0	0
		Right	6	27			---	---	6	27
	EB	Left	7	23			---	---	7	23
		Through	1354	1279			---	---	1354	1279
		Right	155	181			---	---	155	181
	WB	Left	155	181			---	---	155	181
		Through	828	1177			---	---	828	1177
		Right	10	29			---	---	10	29
Jericho Turnpike and Park Avenue	NB	Left	292	374	5%		0	1	293	375
		Through	680	478			---	---	680	478
		Right	28	29			---	---	28	29
	SB	Left	94	237			---	---	94	237
		Through	668	404			---	---	668	404
		Right	43	62			---	---	43	62
	EB	Left	52	67			---	---	52	67
		Through	1052	1044		5%	0	0	1053	1045
		Right	383	288		5%	0	0	383	288
	WB	Left	18	36			---	---	18	36
		Through	614	973	5%		0	1	614	973
		Right	207	229			---	---	207	229

Nelson & Pope, LLP

Job Title: HREN SHOPPING CENTER
Job No. 84016
Date: October-99
Trip Distribution & Assignment Spreadsheet

Growth Factor: 1.50%
No. of Years: 2
Growth Rate: 1.03

Passby Percentages
Weekday: 0%
Weekend: 0%

Proposed Housing Trip Generation

	PM	SAT. MIDDAY
Enter	8	10
Exit	4	9
Total	12	19

Location	Dir.	Mvmt.	Supermarket Build Traffic Volume		Traffic Distribution		Site Generated Traffic		Total Build Traffic Volume	
			PM	SAT. MIDDAY	%Enter	%Exit	PM	SAT. MIDDAY	PM	SAT. MIDDAY
			0	0						
	NB	Left	0	0			---	---	0	0
		Through	432	291			---	---	432	291
		Right	0	0	85%		7	9	7	9
	SB	Left	0	0	15%		1	2	1	2
		Through	408	305			---	---	408	305
Site Access and Dix Hills Road		Right	0	0			---	---	0	0
	EB	Left	0	0			---	---	0	0
		Through	0	0			---	---	0	0
		Right	0	0			---	---	0	0
	WB	Left	0	0		85%	3	8	3	8
		Through	0	0			---	---	0	0
		Right	0	0		15%	1	1	1	1
			0	0						

APPENDIX E: CAPACITY ANALYSIS/LEVEL OF SERVICE WORKSHEETS

I. Existing Conditions

A. Signalized Intersections
   1. Jericho Turnpike and Dix Hills Road/Greenlawn Road
   2. Jericho Turnpike and Park Avenue

B. Unsignalized Intersections
   1. Jericho Turnpike and Franks Nursery/Site Access

II. "No Build" Conditions

A. Signalized Intersections
   1. Jericho Turnpike and Dix Hills Road/Greenlawn Road
   2. Jericho Turnpike and Park Avenue

B. Unsignalized Intersections
   1. Jericho Turnpike and Franks Nursery/Site Access

III. "Build Conditions"

A. Signalized Intersections
   1. Jericho Turnpike and Dix Hills Road/Greenlawn Road
   2. Jericho Turnpike and Park Avenue

B. Unsignalized Intersections
   1. Jericho Turnpike and Franks Nursery/Site Access
   2. Dix Hills Road and Site Access

IV. "Build Conditions" with signal at:

A. Jericho Turnpike and Franks Nursery/Site Access

I. Existing Conditions

A. Signalized Intersections
   1. Jericho Turnpike and Dix Hills Road/Greenlawn Road
   2. Jericho Turnpike and Park Avenue
B. Unsignalized Intersections
   1. Jericho Turnpike and Franks Nursery/Site Access

A. Signalized Intersections

1. Jericho Turnpike and Dix Hills Road/Greenlawn Road

Nelson & Pope, LLP

Job Title: Hren Shopping Center
Job No: 84016
Date: October-99

5 Way Intersection Level of Service Summary Sheet

Intersection: JERICHO TURNPIKE AND DIXHILLS ROAD/GREENLAWN ROAD
Time Period: PM Peak Hour
Condition: EXISTING

Approach	Movement	Adjusted Flow Rate (v)	v/s Critical	Delay sec/veh	Approach Delay sec/veh
JERICHO TPKE					
EASTBOUND	Left	404		158.2	
	Through	1515	0.16	31.3	58.0
	Right				
JERICHO TPKE					
WESTBOUND	Left	23		30.9	
	Through	836		49.4	48.9
	Right				
DIXHILLS RD					
NORTHBOUND	Left	393		*	
	Through	17	0.42	25.1	*
	Right				
DIXHILLS RD					
SOUTHBOUND	Left				
	Through	235		134.9	134.9
	Right				
GREENLAWN RD					
SOUTHBOUND	Left				
	Through	366	0.25	*	*
	Right				

Intersection Delay:	*	sec/veh
Level of Service:	*	
Cycle Length:	80.0	sec.
Lost Time:	4.0	sec.
Sum Critical v/s:	0.83	
Critical Xc:	0.87	

HCS: Signals Release 3.1a

Inter: Jericho Tpke and Dix Hills Rd. City/St: Dix Hills
Analyst: BL Proj #: 84016
Date: 7/21/99 Period: Existing PM Peak Hour
E/W St: Jericho Turnpike N/S St: Dix Hills Road/Greenlawn Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	2	0	1	1	0	0	1	0
LGConfig	L	TR		L	TR		L	TR			LTR	
Volume	364	1265	98	22	751	60	58	311	16	45	117	62
Lane Width	12.0	12.0		11.0	11.0		10.0	10.0			10.0	
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A	P			NB	Left	A			
Thru	P	P				Thru	A			
Right	P	P				Right	A			
Peds						Ped				
WB Left		P			SB	Left	A			
Thru		P				Thru	A			
Right		P				Right	A			
Peds						Ped				
NB Right					EB	Right				
SB Right					WB	Right				
Green	13.0	19.0					33.0			
Yellow	3.0	4.0					3.0			
All Red	0.0	3.0					2.0			

Cycle Length: 80.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capcity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	388		1.04	0.450	158.2	F		
TR	1652	3571	0.92	0.463	31.3	C	58.0	E
Westbound								
L	90	350	0.26	0.250	30.9	C		
TR	906	3451	0.92	0.262	49.4	D	48.9	D
Northbound								
L	359	845	0.18	0.425	14.6	B		
TR	748	1760	0.49	0.425	17.2	B	16.8	B
Southbound								
LTR	540	1271	0.49	0.425	17.4	B	17.4	B

Intersection Delay = 47.5 (sec/veh) Intersection LOS = D

Traffic Engineering
Nelson And Pope LLP
572 Walt Whitman Rd.
Melville, New York 11747

Phone: (516) 427-5665 Fax: (516) 427-5620
E-Mail: np@nelsonpope.com

OPERATIONAL ANALYSIS

Intersection:	Jericho Tpke and Dix Hills Rd.
City/State:	Dix Hills
Analyst:	BL
Project No:	84016
Time Period Analyzed:	Existing PM Peak Hour
Date:	7/21/99
East/West Street Name:	Jericho Turnpike
North/South Street Name:	Dix Hills Road/Greenlawn Road

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	364	1265	98	22	751	60	58	311	16	45	117	62
PHF	0.90	0.90	0.90	0.97	0.97	0.97	0.89	0.89	0.89	0.85	0.85	0.85
PK 15 Vol	101	351	27	6	194	15	16	87	4	13	34	18
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat	1900	1900		1900	1900		1900	1900			1900	
ParkExist												
NumPark												
% Heavy Veh	0	0	0	0	0	0	0	0	0	0	0	0
No. Lanes	1	2	0	1	2	0	1	1	0	0	1	0
LGConfig	L	TR		L	TR		L	TR			LTR	
Lane Width	12.0	12.0		11.0	11.0		10.0	10.0			10.0	
RTOR Vol			0			0			0			0
Adj Flow	404	1515		23	836		65	367			264	
%InSharedLn												
Prop Turns			0.07			0.07			0.05	0.20		0.28
NumPeds			0			0			0			0
NumBus	0	0		0	0		0	0			0	

Duration 1.00 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Arriv. Type	3	3		3	3		3	3			3	
Unit Ext.	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
I Factor		1.000			1.000			1.000			1.000	
Lost Time	2.0	2.0		2.0	2.0		2.0	2.0			2.0	
Ext of g	3.0	4.0		3.0	4.0		3.0	3.0			3.0	
Ped Min g		0.0			0.0			0.0			0.0	

PHASE DATA

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left	A			
	Thru	P	P				Thru	A			
	Right	P	P				Right	A			
	Peds						Ped				
WB	Left		P			SB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Ped				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		13.0	19.0					33.0			
Yellow		3.0	4.0					3.0			
All Red		0.0	3.0					2.0			

Cycle Length: 80.0 secs

VOLUME ADJUSTMENT WORKSHEET

Appr./ Movement	Mvt Volume	PHF	Flow Rate	No. Lanes	Lane Group	RTOR	Adjusted Flow Rate In Lane Grp	Prop. Left Turns	Prop. Right Turns
Eastbound									
Left	364	0.90	404	1	L		404		
Thru	1265	0.90	1406	2	TR		1515		0.07
Right	98	0.90	109	0		0			
Westbound									
Left	22	0.97	23	1	L		23		
Thru	751	0.97	774	2	TR		836		0.07
Right	60	0.97	62	0		0			
Northbound									
Left	58	0.89	65	1	L		65		
Thru	311	0.89	349	1	TR		367		0.05
Right	16	0.89	18	0		0			
Southbound									
Left	45	0.85	53	0					
Thru	117	0.85	138	1	LTR		264	0.20	0.28
Right	62	0.85	73	0		0			

* Value entered by user.

SATURATION FLOW ADJUSTMENT WORKSHEET

Appr/ Lane Group	Ideal Sat Flow	f W	f HV	f G	f P	f BB	f A	f LU	f RT	f LT	Adj Sat Flow
Eastbound							Sec LT Adj/LT Sat:			0.174	330
L	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	----	0.950	1805

TR	1900	1.000	1.000	1.000	1.000	1.000	1.00	0.95	0.989	1.000	3571

Westbound							Sec LT	Adj/LT	Sat:		
L	1900	0.967	1.000	1.000	1.000	1.000	1.00	1.00	----	0.190	350
TR	1900	0.967	1.000	1.000	1.000	1.000	1.00	0.95	0.989	1.000	3451

Northbound							Sec LT	Adj/LT	Sat:		
L	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	----	0.477	845
TR	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	0.993	1.000	1760

Southbound							Sec LT	Adj/LT	Sat:		

LTR	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	0.863	0.831	1271

CAPACITY ANALYSIS WORKSHEET

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Pri.		293	1805	# 0.16	0.162	293	1.00
Sec.		111	330	0.34	0.287	95	1.17
Left	L	404			0.450	388	1.04
Thru	TR	1515	3571	0.42	0.463	1652	0.92
Right							
Westbound							
Pri.							
Sec.							
Left	L	23	350	0.07	0.250	90	0.26
Thru	TR	836	3451	0.24	0.262	906	0.92
Right							
Northbound							
Pri.							
Sec.							
Left	L	65	845	0.08	0.425	359	0.18
Thru	TR	367	1760	# 0.21	0.425	748	0.49
Right							
Southbound							
Pri.							
Sec.							
Left							
Thru	LTR	264	1271	0.21	0.425	540	0.49
Right							

Sum (v/s) critical = 0.66

Lost Time/Cycle, L = 10.00 sec Critical v/c(X) = 0.75

LEVEL OF SERVICE WORKSHEET

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
L	1.04	0.450	20.7	1.000	388	0.50	137.5	0.0	158.2	F		
TR	0.92	0.463	20.1	1.000	1652	0.50	11.2	0.0	31.3	C	58.0	E

Westbound												
L	0.26	0.250	24.0	1.000	90	0.50	6.8	0.0	30.9	C		
TR	0.92	0.262	28.7	1.000	906	0.50	20.7	0.0	49.4	D	48.9	D
Northbound												
L	0.18	0.425	14.3	1.000	359	0.11	0.2	0.0	14.6	B		
TR	0.49	0.425	16.7	1.000	748	0.11	0.5	0.0	17.2	B	16.8	B
Southbound												
LTR	0.49	0.425	16.7	1.000	540	0.11	0.7	0.0	17.4	B	17.4	B

Intersection Delay = 47.5 (sec/veh) Intersection LOS = D

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 80.0 sec				
Actual Green Time for Lane Group, G	35.0	19.0	33.0	
Effective Green Time for Lane Group, g	23.00	21.00	34.00	
Opposing Effective Green Time, go	19.0	35.0	33.0	
Number of Lanes in Lane Group, N	1	1	1	
Number of Opposing Lanes, No	2	2	1	
Adjusted Left-Turn Flow Rate, Vlt	404	23	65	
Proportion of Left Turns in Opposing Flow, Plto	0.00	0.00	0.20	
Adjusted Opposing Flow Rate, Vo	836	1515	264	
Lost Time for Lane Group, tl	6.00	6.00	4.00	
Left Turns per Cycle: LTC=VltC/3600	8.98	0.51	1.44	
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo	9.78	17.72	5.87	
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)	1.00	1.00	1.00	
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g	0.0	0.0	0.0	
Opposing Queue Ratio: qro=1-Rpo(go/C)	0.76	0.56	0.59	
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g	19.74	14.79	6.82	
gu =g-gq if gq>=gf, =g-gf if gq<gf	3.26	6.21	27.18	
n=(gq-gf)/2, n>=0	9.87	7.39	3.41	
Ptho=1-Plto	1.00	1.00	0.80	
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)))	1.00	1.00	1.00	
El1 (Figure 9-7)	2.97	5.86	1.68	
El2=(1-Ptho**n)/Plto, El2>=1.0	1.00	1.00	2.66	
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g	0.17	0.19	0.12	
gdiff=max(gq-gf,0)	0.00	0.00	6.82	
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)	0.17	0.19	0.48	
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}]				
+[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N**				
flt	0.174	0.190	0.477	

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 80.0 sec				
Actual Green Time for Lane Group, G				33.0
Effective Green Time for Lane Group, g				34.00
Opposing Effective Green Time, go				33.0
Number of Lanes in Lane Group, N				1
Number of Opposing Lanes, No				1
Adjusted Left-Turn Flow Rate, Vlt				53
Proportion of Left Turns in Lane Group, Plt				0.20
Proportion of Left Turns in Opposing Flow, Plto				0.00
Adjusted Opposing Flow Rate, Vo				367
Lost Time for Lane Group, tl				4.00
Left Turns per Cycle: LTC=VltC/3600				1.18
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo				8.16
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)				1.00
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g				8.2
Opposing Queue Ratio: qro=1-Rpo(go/C)				0.59
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g				9.91
gu =g-gq if gq>=gf, =g-gf if gq<gf				24.09
n=(gq-gf)/2, n>=0				0.84
Ptho=1-Plto				1.00
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)})				0.20
El1 (Figure 9-7)				2.01
El2=(1-Ptho**n)/Plto, El2>=1.0				1.00
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g				0.07
gdiff=max(gq-gf,0)				0.00
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)				0.83
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N** flt Primary				0.831

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Adj. LT Vol from Vol Adjustment Worksheet, v	404			
v/c ratio from Capacity Worksheet, X	1.17			
Primary phase effective green, g	23.00			
Secondary phase effective green, gq	19.74			
(From Supplemental Permitted LT Worksheet), gu	3.26			
Cycle length, C 80.0 Red =(C-g-gq-gu), r	44.0			
Arrivals: v/(3600(max(X,1.0))), qa	0.11			
Primary ph. departures: s/3600, sp	0.501			
Secondary ph. departures: s(gq+gu)/(gu*3600), ss	0.65			
XPerm	1.18			
XProt	0.94			
XCase	3			

Queue at begining of green arrow, Qa	5.11
Queue at beginning of unsaturated green, Qu	2.13
Residual queue, Qr	0.37
Uniform Delay, d1	20.7

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
Westbound								
Northbound								
Southbound								

Intersection Delay 47.5 sec/veh Intersection LOS D

ERROR MESSAGES

No errors to report.

HCS: Signals Release 3.1a

Inter: Jericho Tpke and Dix Hills Rd. City/St: Dix Hills
Analyst: BL Proj #: 84016
Date: 7/21/99 Period: Existing PM Peak Hour
E/W St: Jericho Turnpike N/S St: Dix Hills Road/Greenlawn Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	2	0	0	1	1	0	1	0
LGConfig	L	TR		L	TR			LT	R		LTR	
Volume	364	1265	98	22	751	60	58	311	16	45	117	62
Lane Width	12.0	12.0		11.0	11.0			10.0	12.0		10.0	
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A	P			NB	Left	A			
Thru	P	P				Thru	A			
Right	P	P				Right	A			
Peds						Ped				
WB Left		P			SB	Left	A			
Thru		P				Thru	A			
Right		P				Right	A			
Peds						Ped				
NB Right					EB	Right				
SB Right					WB	Right				
Green	13.0	35.0					17.0			
Yellow	3.0	4.0					3.0			
All Red	0.0	3.0					2.0			

Cycle Length: 80.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capcity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	488		0.83	0.650	22.5	C		
TR	2366	3571	0.64	0.663	9.3	A	12.1	B
Westbound								
L	133	296	0.17	0.450	15.9	B		
TR	1596	3451	0.52	0.463	16.5	B	16.5	B
Northbound								
LT	211	937	1.86	0.225				
R	343	1615	0.05	0.213	25.1	C		
Southbound								
LTR	238	1056	0.99	0.225	134.9	F	134.9	F

Intersection Delay = (sec/veh) Intersection LOS =

Traffic Engineering
Nelson And Pope LLP
572 Walt Whitman Rd.
Melville, New York 11747

Phone: (516) 427-5665 Fax: (516) 427-5620
E-Mail: np@nelsonpope.com

OPERATIONAL ANALYSIS

Intersection:	Jericho Tpke and Dix Hills Rd.
City/State:	Dix Hills
Analyst:	BL
Project No:	84016
Time Period Analyzed:	Existing PM Peak Hour
Date:	7/21/99
East/West Street Name:	Jericho Turnpike
North/South Street Name:	Dix Hills Road/Greenlawn Road

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	364	1265	98	22	751	60	58	311	16	45	117	62
PHF	0.90	0.90	0.90	0.97	0.97	0.97	0.94	0.94	0.94	0.95	0.95	0.95
PK 15 Vol	101	351	27	6	194	15	15	83	4	12	31	16
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat	1900	1900		1900	1900			1900	1900		1900	
ParkExist												
NumPark												
% Heavy Veh	0	0	0	0	0	0	0	0	0	0	0	0
No. Lanes	1	2	0	1	2	0	0	1	1	0	1	0
LGConfig	L	TR		L	TR			LT	R		LTR	
Lane Width	12.0	12.0		11.0	11.0			10.0	12.0		10.0	
RTOR Vol			0			0			0			0
Adj Flow	404	1515		23	836			393	17		235	
%InSharedLn												
Prop Turns			0.07			0.07	0.16			0.20		0.28
NumPeds			0			0			0			0
NumBus	0	0		0	0			0	0		0	

Duration 1.00 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Arriv. Type	3	3		3	3			3	3		3	
Unit Ext.	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
I Factor		1.000			1.000			1.000			1.000	
Lost Time	2.0	2.0		2.0	2.0			2.0	2.0		2.0	
Ext of g	3.0	4.0		3.0	4.0			3.0	2.0		3.0	
Ped Min g		0.0			0.0			0.0			0.0	

PHASE DATA

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left	A			
	Thru	P	P				Thru	A			
	Right	P	P				Right	A			
	Peds						Ped				
WB	Left		P			SB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Ped				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		13.0	35.0					17.0			
Yellow		3.0	4.0					3.0			
All Red		0.0	3.0					2.0			

Cycle Length: 80.0 secs

VOLUME ADJUSTMENT WORKSHEET

Appr./ Movement	Mvt Volume	PHF	Flow Rate	No. Lanes	Lane Group	RTOR	Adjusted Flow Rate In Lane Grp	Prop. Left Turns	Prop. Right Turns
Eastbound									
Left	364	0.90	404	1	L		404		
Thru	1265	0.90	1406	2	TR		1515		0.07
Right	98	0.90	109	0		0			
Westbound									
Left	22	0.97	23	1	L		23		
Thru	751	0.97	774	2	TR		836		0.07
Right	60	0.97	62	0		0			
Northbound									
Left	58	0.94	62	0					
Thru	311	0.94	331	1	LT		393	0.16	
Right	16	0.94	17	1	R	0	17		
Southbound									
Left	45	0.95	47	0					
Thru	117	0.95	123	1	LTR		235	0.20	0.28
Right	62	0.95	65	0		0			

* Value entered by user.

SATURATION FLOW ADJUSTMENT WORKSHEET

Appr/ Lane Group	Ideal Sat Flow	f W	f HV	f G	f P	f BB	f A	f LU	f RT	f LT	Adj Sat Flow
Eastbound							Sec LT	Adj/LT	Sat:	0.211	401
L	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	----	0.950	1805

TR	1900	1.000	1.000	1.000	1.000	1.000	1.00	0.95	0.989	1.000	3571

Westbound — Sec LT Adj/LT Sat:

L	1900	0.967	1.000	1.000	1.000	1.000	1.00	1.00	----	0.161	296
TR	1900	0.967	1.000	1.000	1.000	1.000	1.00	0.95	0.989	1.000	3451

Northbound — Sec LT Adj/LT Sat:

LT	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	1.000	0.528	937
R	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	0.850	----	1615

Southbound — Sec LT Adj/LT Sat:

LTR	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	0.863	0.690	1056

CAPACITY ANALYSIS WORKSHEET

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Pri.		293	1805	# 0.16	0.162	293	1.00
Sec.		111	401	0.28	0.488	195	0.57
Left	L	404			0.650	488	0.83
Thru	TR	1515	3571	0.42	0.663	2366	0.64
Right							
Westbound							
Pri.							
Sec.							
Left	L	23	296	0.08	0.450	133	0.17
Thru	TR	836	3451	0.24	0.463	1596	0.52
Right							
Northbound							
Pri.							
Sec.							
Left							
Thru	LT	393	937	# 0.42	0.225	211	1.86
Right	R	17	1615	0.01	0.213	343	0.05
Southbound							
Pri.							
Sec.							
Left							
Thru	LTR	235	1056	0.22	0.225	238	0.99
Right							

Sum (v/s) critical = 1.07

Lost Time/Cycle, L = 10.00 sec Critical v/c(X) = 1.22

LEVEL OF SERVICE WORKSHEET

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
L	0.83	0.650	10.0	1.000	488	0.37	12.5	0.0	22.5	C		
TR	0.64	0.663	7.9	1.000	2366	0.50	1.4	0.0	9.3	A	12.1	B

Westbound												
L	0.17	0.450	13.1	1.000	133	0.50	2.8	0.0	15.9	B		
TR	0.52	0.463	15.3	1.000	1596	0.50	1.2	0.0	16.5	B	16.5	B
Northbound												
LT	1.86	0.225	31.0	1.000	211	0.50		0.0				
R	0.05	0.213	25.1	1.000	343	0.11	0.1	0.0	25.1	C		
Southbound												
LTR	0.99	0.225	30.9	1.000	238	0.49	104.0	0.0	134.9	F	134.9	F

Intersection Delay = (sec/veh) Intersection LOS =

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 80.0 sec				
Actual Green Time for Lane Group, G	51.0	35.0		
Effective Green Time for Lane Group, g	39.00	37.00		
Opposing Effective Green Time, go	35.0	51.0		
Number of Lanes in Lane Group, N	1	1		
Number of Opposing Lanes, No	2	2		
Adjusted Left-Turn Flow Rate, Vlt	404	23		
Proportion of Left Turns in Opposing Flow, Plto	0.00	0.00		
Adjusted Opposing Flow Rate, Vo	836	1515		
Lost Time for Lane Group, tl	6.00	6.00		
Left Turns per Cycle: LTC=VltC/3600	8.98	0.51		
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo	9.78	17.72		
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)	1.00	1.00		
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g	0.0	0.0		
Opposing Queue Ratio: qro=1-Rpo(go/C)	0.56	0.36		
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g	14.56	2.06		
gu =g-gq if gq>=gf, =g-gf if gq<gf	24.44	34.94		
n=(gq-gf)/2, n>=0	7.28	1.03		
Ptho=1-Plto	1.00	1.00		
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)})	1.00	1.00		
El1 (Figure 9-7)	2.97	5.86		
El2=(1-Ptho**n)/Plto, El2>=1.0	1.00	1.00		
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g	0.10	0.11		
gdiff=max(gq-gf,0)	0.00	0.00		
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)	0.21	0.16		
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N** flt	0.211	0.161		

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 80.0 sec				
Actual Green Time for Lane Group, G			17.0	17.0
Effective Green Time for Lane Group, g			18.00	18.00
Opposing Effective Green Time, go			17.0	17.0
Number of Lanes in Lane Group, N			1	1
Number of Opposing Lanes, No			1	1
Adjusted Left-Turn Flow Rate, Vlt			62	47
Proportion of Left Turns in Lane Group, Plt			0.16	0.20
Proportion of Left Turns in Opposing Flow, Plto			0.20	0.16
Adjusted Opposing Flow Rate, Vo			235	393
Lost Time for Lane Group, tl			4.00	4.00
Left Turns per Cycle: LTC=VltC/3600			1.38	1.04
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo			5.22	8.73
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)			1.00	1.00
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g			1.9	2.8
Opposing Queue Ratio: qro=1-Rpo(go/C)			0.79	0.79
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g			9.52	16.00
gu =g-gq if gq>=gf, =g-gf if gq<gf			8.48	2.00
n=(gq-gf)/2, n>=0			3.79	6.58
Ptho=1-Plto			0.80	0.84
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)}]			0.16	0.20
El1 (Figure 9-7)			1.76	2.07
El2=(1-Ptho**n)/Plto, El2>=1.0			2.85	4.29
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g			0.13	0.13
gdiff=max(gq-gf,0)			7.58	13.16
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)			0.53	0.69
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N** flt Primary			0.528	0.690

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Adj. LT Vol from Vol Adjustment Worksheet, v	404			
v/c ratio from Capacity Worksheet, X	0.57			
Primary phase effective green, g	39.00			
Secondary phase effective green, gq	14.56			
(From Supplemental Permitted LT Worksheet), gu	24.44			
Cycle length, C 80.0 Red =(C-g-gq-gu), r	28.0			
Arrivals: v/(3600(max(X,1.0))), qa	0.11			
Primary ph. departures: s/3600, sp	0.501			
Secondary ph. departures: s(gq+gu)/(gu*3600), ss	0.18			
XPerm	1.01			
XProt	0.71			
XCase	3			

Queue at begining of green arrow, Qa	3.17
Queue at beginning of unsaturated green, Qu	1.63
Residual queue, Qr	0.03
Uniform Delay, d1	10.0

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
Westbound								
Northbound								
Southbound								

Intersection Delay sec/veh Intersection LOS

ERROR MESSAGES

No errors to report.

HCS: Signals Release 3.1a

Inter: Jericho Tpke and Dix Hills Rd. City/St: Dix Hills
Analyst: BL Proj #: 84016
Date: 7/21/99 Period: Existing PM Peak Hour
E/W St: Jericho Turnpike N/S St: Dix Hills Road/Greenlawn Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	2	0	0	0	0	0	1	0
LGConfig	L	TR		L	TR						LTR	
Volume	364	1265	98	22	751	60				79	124	149
Lane Width	12.0	12.0		11.0	11.0						10.0	
RTOR Vol			0			0						0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A	P			NB	Left				
Thru	P	P				Thru				
Right	P	P				Right				
Peds						Ped				
WB Left		P			SB	Left	A			
Thru		P				Thru	A			
Right		P				Right	A			
Peds						Ped				
NB Right					EB	Right				
SB Right					WB	Right				
Green	13.0	42.0					9.5			
Yellow	3.0	4.0					3.5			
All Red	0.0	3.0					2.0			

Cycle Length: 80.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capcity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	563		0.72	0.737	10.6	B		
TR	2678	3571	0.57	0.750	5.2	A	6.4	A
Westbound								
L	169	314	0.14	0.538	10.9	B		
TR	1898	3451	0.44	0.550	11.4	B	11.4	B
Northbound								
Southbound								
LTR	194	1478	1.89	0.131				

Intersection Delay = (sec/veh) Intersection LOS =

Traffic Engineering
Nelson And Pope LLP
572 Walt Whitman Rd.
Melville, New York 11747

Phone: (516) 427-5665 Fax: (516) 427-5620
E-Mail: np@nelsonpope.com

OPERATIONAL ANALYSIS

Intersection:	Jericho Tpke and Dix Hills Rd.
City/State:	Dix Hills
Analyst:	BL
Project No:	84016
Time Period Analyzed:	Existing PM Peak Hour
Date:	7/21/99
East/West Street Name:	Jericho Turnpike
North/South Street Name:	Dix Hills Road/Greenlawn Road

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	364	1265	98	22	751	60				79	124	149
PHF	0.90	0.90	0.90	0.97	0.97	0.97				0.96	0.96	0.96
PK 15 Vol	101	351	27	6	194	15				21	32	39
Hi Ln Vol												
% Grade		0			0						0	
Ideal Sat	1900	1900		1900	1900						1900	
ParkExist												
NumPark												
% Heavy Veh	0	0	0	0	0	0				0	0	0
No. Lanes	1	2	0	1	2	0	0	0	0	0	1	0
LGConfig	L	TR		L	TR						LTR	
Lane Width	12.0	12.0		11.0	11.0						10.0	
RTOR Vol			0			0						0
Adj Flow	404	1515		23	836						366	
%InSharedLn												
Prop Turns			0.07			0.07				0.22		0.42
NumPeds			0			0			0			0
NumBus	0	0		0	0						0	

Duration 1.00 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet	0.0	0.0		0.0	0.0						0.0	
Arriv. Type	3	3		3	3						3	
Unit Ext.	3.0	3.0		3.0	3.0						3.0	
I Factor		1.000			1.000						1.000	
Lost Time	2.0	2.0		2.0	2.0						2.0	
Ext of g	3.0	4.0		3.0	4.0						3.0	
Ped Min g		0.0			0.0						0.0	

PHASE DATA

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left				
	Thru	P	P				Thru				
	Right	P	P				Right				
	Peds						Ped				
WB	Left		P			SB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Ped				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		13.0	42.0					9.5			
Yellow		3.0	4.0					3.5			
All Red		0.0	3.0					2.0			

Cycle Length: 80.0 secs

VOLUME ADJUSTMENT WORKSHEET

Appr./ Movement	Mvt Volume	PHF	Flow Rate	No. Lanes	Lane Group	RTOR	Adjusted Flow Rate In Lane Grp	Prop. Left Turns	Prop. Right Turns
Eastbound									
Left	364	0.90	404	1	L		404		
Thru	1265	0.90	1406	2	TR		1515		0.07
Right	98	0.90	109	0		0			
Westbound									
Left	22	0.97	23	1	L		23		
Thru	751	0.97	774	2	TR		836		0.07
Right	60	0.97	62	0		0			
Northbound									
Left				0					
Thru				0					
Right				0					
Southbound									
Left	79	0.96	82	0					
Thru	124	0.96	129	1	LTR		366	0.22	0.42
Right	149	0.96	155	0		0			

* Value entered by user.

SATURATION FLOW ADJUSTMENT WORKSHEET

Appr/ Lane Group	Ideal Sat Flow	f W	f HV	f G	f P	f BB	f A	f LU	f RT	f LT	Adj Sat Flow
Eastbound							Sec LT	Adj/LT	Sat:	0.247	469
L	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	----	0.950	1805

TR	1900	1.000	1.000	1.000	1.000	1.000	1.00	0.95	0.989	1.000	3571

Westbound — Sec LT Adj/LT Sat:

L	1900	0.967	1.000	1.000	1.000	1.000	1.00	1.00	----	0.171	314
TR	1900	0.967	1.000	1.000	1.000	1.000	1.00	0.95	0.989	1.000	3451

Northbound — Sec LT Adj/LT Sat:

Southbound — Sec LT Adj/LT Sat:

LTR	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	0.843	0.989	1478

CAPACITY ANALYSIS WORKSHEET

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Pri.		293	1805	0.16	0.162	293	1.00
Sec.		111	469	0.24	0.575	270	0.41
Left	L	404			0.737	563	0.72
Thru	TR	1515	3571	# 0.42	0.750	2678	0.57
Right							
Westbound							
Pri.							
Sec.							
Left	L	23	314	0.07	0.538	169	0.14
Thru	TR	836	3451	0.24	0.550	1898	0.44
Right							
Northbound							
Pri.							
Sec.							
Left							
Thru							
Right							
Southbound							
Pri.							
Sec.							
Left							
Thru	LTR	366	1478	# 0.25	0.131	194	1.89
Right							

Sum (v/s) critical = 0.67

Lost Time/Cycle, L = 9.50 sec Critical v/c(X) = 0.76

LEVEL OF SERVICE WORKSHEET

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
L	0.72	0.737	6.1	1.000	563	0.28	4.5	0.0	10.6	B		
TR	0.57	0.750	4.3	1.000	2678	0.50	0.9	0.0	5.2	A	6.4	A

Westbound

L	0.14	0.538	9.2	1.000	169	0.50	1.7	0.0	10.9	B		
TR	0.44	0.550	10.7	1.000	1898	0.50	0.7	0.0	11.4	B	11.4	B

Northbound

Southbound

LTR	1.89	0.131	34.8	1.000	194	0.50		0.0

Intersection Delay = (sec/veh) Intersection LOS =

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 80.0 sec				
Actual Green Time for Lane Group, G	58.0	42.0		
Effective Green Time for Lane Group, g	46.00	44.00		
Opposing Effective Green Time, go	42.0	58.0		
Number of Lanes in Lane Group, N	1	1		
Number of Opposing Lanes, No	2	2		
Adjusted Left-Turn Flow Rate, Vlt	404	23		
Proportion of Left Turns in Opposing Flow, Plto	0.00	0.00		
Adjusted Opposing Flow Rate, Vo	836	1515		
Lost Time for Lane Group, tl	6.00	6.00		
Left Turns per Cycle: LTC=VltC/3600	8.98	0.51		
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo	9.78	17.72		
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)	1.00	1.00		
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g	0.0	0.0		
Opposing Queue Ratio: qro=1-Rpo(go/C)	0.47	0.28		
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g	12.29	0.00		
gu =g-gq if gq>=gf, =g-gf if gq<gf	33.71	44.00		
n=(gq-gf)/2, n>=0	6.15	0.00		
Ptho=1-Plto	1.00	1.00		
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)))	1.00	1.00		
El1 (Figure 9-7)	2.97	5.86		
El2=(1-Ptho**n)/Plto, El2>=1.0	1.00	1.00		
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g	0.09	0.09		
gdiff=max(gq-gf,0)	0.00	0.00		
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)	0.25	0.17		
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N** flt	0.247	0.171		

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 80.0 sec				
Actual Green Time for Lane Group, G				
Effective Green Time for Lane Group, g				
Opposing Effective Green Time, go				
Number of Lanes in Lane Group, N				
Number of Opposing Lanes, No				
Adjusted Left-Turn Flow Rate, Vlt				
Proportion of Left Turns in Lane Group, Plt				
Proportion of Left Turns in Opposing Flow, Plto				
Adjusted Opposing Flow Rate, Vo				
Lost Time for Lane Group, tl				
Left Turns per Cycle: LTC=VltC/3600				
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo				
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)				
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g				
Opposing Queue Ratio: qro=1-Rpo(go/C)				
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g				
gu =g-gq if gq>=gf, =g-gf if gq<gf				
n=(gq-gf)/2, n>=0				
Ptho=1-Plto				
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)))				
El1 (Figure 9-7)				
El2=(1-Ptho**n)/Plto, El2>=1.0				
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g				
gdiff=max(gq-gf,0)				
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)				
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}]				
+[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N**				
flt Primary				

For special case of single-lane approach opposed by multilane approach, see text.

* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.

** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.

For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Adj. LT Vol from Vol Adjustment Worksheet, v	404			
v/c ratio from Capacity Worksheet, X	0.41			
Primary phase effective green, g	46.00			
Secondary phase effective green, gq	12.29			
(From Supplemental Permitted LT Worksheet), gu	33.71			
Cycle length, C 80.0 Red =(C-g-gq-gu), r	21.0			
Arrivals: v/(3600(max(X,1.0))), qa	0.11			
Primary ph. departures: s/3600, sp	0.501			
Secondary ph. departures: s(gq+gu)/(gu*3600), ss	0.18			
XPerm	0.86			
XProt	0.59			
XCase	1			

Queue at begining of green arrow, Qa	2.36
Queue at beginning of unsaturated green, Qu	1.38
Residual queue, Qr	0.00
Uniform Delay, d1	6.1

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
Westbound								
Northbound								
Southbound								

Intersection Delay sec/veh Intersection LOS

ERROR MESSAGES

No errors to report.

Nelson & Pope, LLP

Job Title: Hren Shopping Center
Job No: 84016
Date: October-99

5 Way Intersection Level of Service Summary Sheet

Intersection: JERICHO TURNPIKE AND DIXHILLS ROAD/GREENLAWN ROAD
Time Period: Saturday Peak Hour
Condition: EXISTING

Approach	Movement	Adjusted Flow Rate (v)	v/s Critical	Delay sec/veh	Approach Delay sec/veh
JERICHO TPKE					
EASTBOUND	Left	224		46.1	
	Through	1510		57.2	55.8
	Right				
JERICHO TPKE					
WESTBOUND	Left	53	0.43	46.1	
	Through	1479		979.7	947.4
	Right				
DIXHILLS RD					
NORTHBOUND	Left	225		45.7	
	Through	41		23.1	42.2
	Right				
DIXHILLS RD					
SOUTHBOUND	Left				
	Through	149	0.19	25.2	25.2
	Right				
GREENLAWN RD					
SOUTHBOUND	Left				
	Through	1442	0.20	786.9	786.9
	Right				

Intersection Delay:	526.6	sec/veh
Level of Service:	F	
Cycle Length:	80.0	sec.
Lost Time:	4.0	sec.
Sum Critical v/s:	0.82	
Critical Xc:	0.86	

HCS: Signals Release 3.1a

Inter: Jericho Tpke and Dix Hills Rd. City/St: Dix Hills
Analyst: BL Proj #: 84016
Date: 7/21/99 Period: Existing Sat. Peak Hour
E/W St: Jericho Turnpike N/S St: Dix Hills Road/Greenlawn Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	2	0	0	1	1	0	1	0
LGConfig	L	TR		L	TR			LT	R		LTR	
Volume	211	1292	67	45	1189	68	75	128	37	25	62	55
Lane Width	12.0	12.0		11.0	11.0			10.0	12.0		10.0	
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left	A			
	Thru	P	P				Thru	A			
	Right	P	P				Right	A			
	Peds						Ped				
WB	Left		P			SB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Ped				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		8.0	19.0					33.0			
Yellow		3.0	4.0					3.0			
All Red		0.0	3.0					2.0			

Cycle Length: 75.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capcity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	294		0.76	0.413	46.1	D		
TR	1529	3583	0.99	0.427	57.2	E	55.8	E
Westbound								
L	96	350	0.55	0.267	46.1	D		
TR	969	3461	1.53	0.280	979.7	F	947.4	F
Northbound								
LT	682	1505	0.32	0.453	13.4	B	13.2	B
R	711	1615	0.05	0.440	12.1	B		
Southbound								
LTR	638	1407	0.23	0.453	12.7	B	12.7	B

Intersection Delay = 423.3 (sec/veh) Intersection LOS = F

Traffic Engineering
Nelson And Pope LLP
572 Walt Whitman Rd.
Melville, New York 11747

Phone: (516) 427-5665 Fax: (516) 427-5620
E-Mail: np@nelsonpope.com

OPERATIONAL ANALYSIS

Intersection:	Jericho Tpke and Dix Hills Rd.
City/State:	Dix Hills
Analyst:	BL
Project No:	84016
Time Period Analyzed:	Existing Sat. Peak Hour
Date:	7/21/99
East/West Street Name:	Jericho Turnpike
North/South Street Name:	Dix Hills Road/Greenlawn Road

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	211	1292	67	45	1189	68	75	128	37	25	62	55
PHF	0.94	0.90	0.90	0.85	0.85	0.85	0.94	0.94	0.94	0.95	0.95	0.95
PK 15 Vol	56	359	19	13	350	20	20	34	10	7	16	14
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat	1900	1900		1900	1900			1900	1900		1900	
ParkExist												
NumPark												
% Heavy Veh	0	0	0	0	0	0	0	0	0	0	0	0
No. Lanes	1	2	0	1	2	0	0	1	1	0	1	0
LGConfig	L	TR		L	TR			LT	R		LTR	
Lane Width	12.0	12.0		11.0	11.0			10.0	12.0		10.0	
RTOR Vol			0			0			0			0
Adj Flow	224	1510		53	1479			216	39		149	
%InSharedLn												
Prop Turns			0.05			0.05	0.37			0.17		0.39
NumPeds			0			0			0			0
NumBus	0	0		0	0			0	0		0	

Duration 1.00 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Arriv. Type	3	3		3	3			3	3		3	
Unit Ext.	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
I Factor		1.000			1.000			1.000			1.000	
Lost Time	2.0	2.0		2.0	2.0			2.0	2.0		2.0	
Ext of g	3.0	4.0		3.0	4.0			3.0	2.0		3.0	
Ped Min g		0.0			0.0			0.0			0.0	

PHASE DATA

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A	P			NB Left	A		
Thru	P	P			Thru	A		
Right	P	P			Right	A		
Peds					Ped			
WB Left		P			SB Left	A		
Thru		P			Thru	A		
Right		P			Right	A		
Peds					Ped			
NB Right					EB Right			
SB Right					WB Right			
Green	8.0	19.0				33.0		
Yellow	3.0	4.0				3.0		
All Red	0.0	3.0				2.0		

Cycle Length: 75.0 secs

VOLUME ADJUSTMENT WORKSHEET

Appr./ Movement	Mvt Volume	PHF	Flow Rate	No. Lanes	Lane Group	RTOR	Adjusted Flow Rate In Lane Grp	Prop. Left Turns	Prop. Right Turns
Eastbound									
Left	211	0.94	224	1	L		224		
Thru	1292	0.90	1436	2	TR		1510		0.05
Right	67	0.90	74	0		0			
Westbound									
Left	45	0.85	53	1	L		53		
Thru	1189	0.85	1399	2	TR		1479		0.05
Right	68	0.85	80	0		0			
Northbound									
Left	75	0.94	80	0					
Thru	128	0.94	136	1	LT		216	0.37	
Right	37	0.94	39	1	R	0	39		
Southbound									
Left	25	0.95	26	0					
Thru	62	0.95	65	1	LTR		149	0.17	0.39
Right	55	0.95	58	0		0			

* Value entered by user.

SATURATION FLOW ADJUSTMENT WORKSHEET

Appr/ Lane Group	Ideal Sat Flow	f W	f HV	f G	f P	f BB	f A	f LU	f RT	f LT	Adj Sat Flow
Eastbound							Sec LT Adj/LT Sat:			0.174	330
L	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	----	0.950	1805

TR	1900	1.000	1.000	1.000	1.000	1.000	1.00	0.95	0.993	1.000	3583

Westbound							Sec LT Adj/LT Sat:				
L	1900	0.967	1.000	1.000	1.000	1.000	1.00	1.00	----	0.190	350
TR	1900	0.967	1.000	1.000	1.000	1.000	1.00	0.95	0.992	1.000	3461

Northbound							Sec LT Adj/LT Sat:				

LT	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	1.000	0.849	1505
R	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	0.850	----	1615
Southbound							Sec LT Adj/LT Sat:				

LTR	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	0.847	0.936	1407

CAPACITY ANALYSIS WORKSHEET

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Pri.		193	1805	# 0.11	0.107	193	1.00
Sec.		31	330	0.09	0.307	101	0.31
Left	L	224			0.413	294	0.76
Thru	TR	1510	3583	0.42	0.427	1529	0.99
Right							
Westbound							
Pri.							
Sec.							
Left	L	53	350	0.15	0.267	96	0.55
Thru	TR	1479	3461	# 0.43	0.280	969	1.53
Right							
Northbound							
Pri.							
Sec.							
Left							
Thru	LT	216	1505	# 0.14	0.453	682	0.32
Right	R	39	1615	0.02	0.440	711	0.05
Southbound							
Pri.							
Sec.							
Left							
Thru	LTR	149	1407	0.11	0.453	638	0.23
Right							

Sum (v/s) critical = 0.68
Lost Time/Cycle, L = 15.00 sec Critical v/c(X) = 0.85

LEVEL OF SERVICE WORKSHEET

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
L	0.76	0.413	34.2	1.000	294	0.31	12.0	0.0	46.1	D		
TR	0.99	0.427	21.3	1.000	1529	0.50	35.9	0.0	57.2	E	55.8	E

Westbound												
L	0.55	0.267	23.6	1.000	96	0.50	22.5	0.0	46.1	D		
TR	1.53	0.280	27.0	1.000	969	0.50	952.7	0.0	979.7	F	947.4	F
Northbound												
LT	0.32	0.453	13.1	1.000	682	0.11	0.3	0.0	13.4	B	13.2	B
R	0.05	0.440	12.1	1.000	711	0.11	0.0	0.0	12.1	B		
Southbound												
LTR	0.23	0.453	12.5	1.000	638	0.11	0.2	0.0	12.7	B	12.7	B

Intersection Delay = 423.3 (sec/veh) Intersection LOS = F

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 75.0 sec				
Actual Green Time for Lane Group, G	30.0	19.0		
Effective Green Time for Lane Group, g	23.00	21.00		
Opposing Effective Green Time, go	19.0	30.0		
Number of Lanes in Lane Group, N	1	1		
Number of Opposing Lanes, No	2	2		
Adjusted Left-Turn Flow Rate, Vlt	224	53		
Proportion of Left Turns in Opposing Flow, Plto	0.00	0.00		
Adjusted Opposing Flow Rate, Vo	1479	1510		
Lost Time for Lane Group, tl	6.00	6.00		
Left Turns per Cycle: LTC=VltC/3600	4.67	1.10		
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo	16.22	16.56		
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)	1.00	1.00		
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g	0.0	0.0		
Opposing Queue Ratio: qro=1-Rpo(go/C)	0.75	0.60		
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g	23.00	19.58		
gu =g-gq if gq>=gf, =g-gf if gq<gf	0.00	1.42		
n=(gq-gf)/2, n>=0	11.50	9.79		
Ptho=1-Plto	1.00	1.00		
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)))	1.00	1.00		
El1 (Figure 9-7)	5.65	5.83		
El2=(1-Ptho**n)/Plto, El2>=1.0	1.00	1.00		
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g	0.17	0.19		
gdiff=max(gq-gf,0)	0.00	0.00		
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)	0.17	0.19		
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N** flt	0.174	0.190		

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 75.0 sec				
Actual Green Time for Lane Group, G			33.0	33.0
Effective Green Time for Lane Group, g			34.00	34.00
Opposing Effective Green Time, go			33.0	33.0
Number of Lanes in Lane Group, N			1	1
Number of Opposing Lanes, No			1	1
Adjusted Left-Turn Flow Rate, Vlt			80	26
Proportion of Left Turns in Lane Group, Plt			0.37	0.17
Proportion of Left Turns in Opposing Flow, Plto			0.17	0.37
Adjusted Opposing Flow Rate, Vo			149	216
Lost Time for Lane Group, tl			4.00	4.00
Left Turns per Cycle: LTC=VltC/3600			1.67	0.54
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo			3.10	4.50
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)			1.00	1.00
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g			6.1	14.7
Opposing Queue Ratio: qro=1-Rpo(go/C)			0.56	0.56
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g			2.33	4.41
gu =g-gq if gq>=gf, =g-gf if gq<gf			27.92	19.31
n=(gq-gf)/2, n>=0			0.00	0.00
Ptho=1-Plto			0.83	0.63
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)))			0.37	0.17
El1 (Figure 9-7)			1.61	1.73
El2=(1-Ptho**n)/Plto, El2>=1.0			1.00	1.00
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g			0.08	0.07
gdiff=max(gq-gf,0)			0.00	0.00
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)			0.85	0.94
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N** flt Primary			0.849	0.936

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Adj. LT Vol from Vol Adjustment Worksheet, v	224			
v/c ratio from Capacity Worksheet, X	0.31			
Primary phase effective green, g	23.00			
Secondary phase effective green, gq	23.00			
(From Supplemental Permitted LT Worksheet), gu	0.00			
Cycle length, C 75.0 Red =(C-g-gq-gu), r	44.0			
Arrivals: v/(3600(max(X,1.0))), qa	0.06			
Primary ph. departures: s/3600, sp	0.501			
Secondary ph. departures: s(gq+gu)/(gu*3600), ss	23.00			
XPerm	9.99			
XProt	0.81			
XCase	3			

Queue at begining of green arrow, Qa	4.17
Queue at beginning of unsaturated green, Qu	1.43
Residual queue, Qr	1.43
Uniform Delay, d1	34.2

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
Westbound								
Northbound								
Southbound								

Intersection Delay 423.3 sec/veh Intersection LOS F

ERROR MESSAGES

No errors to report.

HCS: Signals Release 3.1a

Inter: Jericho Tpke and Dix Hills Rd. City/St: Dix Hills
Analyst: BL Proj #: 84016
Date: 7/21/99 Period: Existing Sat. Peak Hour
E/W St: Jericho Turnpike N/S St: Dix Hills Road/Greenlawn Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	2	0	0	1	1	0	1	0
LGConfig	L	TR		L	TR			LT	R		LTR	
Volume	211	1292	67	45	1189	68	75	128	37	25	62	55
Lane Width	12.0	12.0		11.0	11.0			10.0	12.0		10.0	
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A	P			NB	Left	A			
Thru	P	P				Thru	A			
Right	P	P				Right	A			
Peds						Ped				
WB Left		P			SB	Left	A			
Thru		P				Thru	A			
Right		P				Right	A			
Peds						Ped				
NB Right					EB	Right				
SB Right					WB	Right				
Green	8.0	35.0					17.0			
Yellow	3.0	4.0					3.0			
All Red	0.0	3.0					2.0			

Cycle Length: 75.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capcity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	294		0.76	0.627	27.2	C		
TR	2293	3583	0.63	0.640	9.5	A	11.9	B
Westbound								
L	139	289	0.34	0.480	18.7	B		
TR	1707	3461	0.78	0.493	19.2	B	19.2	B
Northbound								
LT	277	1155	0.81	0.240	45.7	D	42.3	D
R	366	1615	0.11	0.227	23.1	C		
Southbound								
LTR	336	1401	0.44	0.240	25.2	C	25.2	C

Intersection Delay = 17.7 (sec/veh) Intersection LOS = B

Traffic Engineering
Nelson And Pope LLP
572 Walt Whitman Rd.
Melville, New York 11747

Phone: (516) 427-5665 Fax: (516) 427-5620
E-Mail: np@nelsonpope.com

OPERATIONAL ANALYSIS

Intersection:	Jericho Tpke and Dix Hills Rd.
City/State:	Dix Hills
Analyst:	BL
Project No:	84016
Time Period Analyzed:	Existing Sat. Peak Hour
Date:	7/21/99
East/West Street Name:	Jericho Turnpike
North/South Street Name:	Dix Hills Road/Greenlawn Road

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	211	1292	67	45	1189	68	75	128	37	25	62	55
PHF	0.94	0.94	0.94	0.95	0.95	0.95	0.90	0.90	0.90	0.95	0.95	0.95
PK 15 Vol	56	344	18	12	313	18	21	36	10	7	16	14
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat	1900	1900		1900	1900			1900	1900		1900	
ParkExist												
NumPark												
% Heavy Veh	0	0	0	0	0	0	0	0	0	0	0	0
No. Lanes	1	2	0	1	2	0	0	1	1	0	1	0
LGConfig	L	TR		L	TR			LT	R		LTR	
Lane Width	12.0	12.0		11.0	11.0			10.0	12.0		10.0	
RTOR Vol			0			0			0			0
Adj Flow	224	1445		47	1324			225	41		149	
%InSharedLn												
Prop Turns			0.05			0.05	0.37			0.17		0.39
NumPeds			0			0			0			0
NumBus	0	0		0	0			0	0		0	

Duration 1.00 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Arriv. Type	3	3		3	3			3	3		3	
Unit Ext.	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
I Factor		1.000			1.000			1.000			1.000	
Lost Time	2.0	2.0		2.0	2.0			2.0	2.0		2.0	
Ext of g	3.0	4.0		3.0	4.0			3.0	2.0		3.0	
Ped Min g		0.0			0.0			0.0			0.0	

PHASE DATA

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left	A			
	Thru	P	P				Thru	A			
	Right	P	P				Right	A			
	Peds						Ped				
WB	Left		P			SB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Ped				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		8.0	35.0					17.0			
Yellow		3.0	4.0					3.0			
All Red		0.0	3.0					2.0			

Cycle Length: 75.0 secs

VOLUME ADJUSTMENT WORKSHEET

Appr./ Movement	Mvt Volume	PHF	Flow Rate	No. Lanes	Lane Group	RTOR	Adjusted Flow Rate In Lane Grp	Prop. Left Turns	Prop. Right Turns
Eastbound									
Left	211	0.94	224	1	L		224		
Thru	1292	0.94	1374	2	TR		1445		0.05
Right	67	0.94	71	0		0			
Westbound									
Left	45	0.95	47	1	L		47		
Thru	1189	0.95	1252	2	TR		1324		0.05
Right	68	0.95	72	0		0			
Northbound									
Left	75	0.90	83	0					
Thru	128	0.90	142	1	LT		225	0.37	
Right	37	0.90	41	1	R	0	41		
Southbound									
Left	25	0.95	26	0					
Thru	62	0.95	65	1	LTR		149	0.17	0.39
Right	55	0.95	58	0		0			

* Value entered by user.

SATURATION FLOW ADJUSTMENT WORKSHEET

Appr/ Lane Group	Ideal Sat Flow	f W	f HV	f G	f P	f BB	f A	f LU	f RT	f LT	Adj Sat Flow
Eastbound							Sec LT	Adj/LT	Sat:	0.103	195
L	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	----	0.950	1805

TR	1900	1.000	1.000	1.000	1.000	1.000	1.00	0.95	0.993	1.000	3583

Westbound							Sec LT Adj/LT Sat:				
L	1900	0.967	1.000	1.000	1.000	1.000	1.00	1.00	----	0.157	289
TR	1900	0.967	1.000	1.000	1.000	1.000	1.00	0.95	0.992	1.000	3461

Northbound							Sec LT Adj/LT Sat:				

LT	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	1.000	0.651	1155
R	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	0.850	----	1615
Southbound							Sec LT Adj/LT Sat:				

LTR	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	0.847	0.932	1401

CAPACITY ANALYSIS WORKSHEET

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Pri.		193	1805	# 0.11	0.107	193	1.00
Sec.		31	195	0.16	0.520	101	0.31
Left	L	224			0.627	294	0.76
Thru	TR	1445	3583	0.40	0.640	2293	0.63
Right							
Westbound							
Pri.							
Sec.							
Left	L	47	289	0.16	0.480	139	0.34
Thru	TR	1324	3461	# 0.38	0.493	1707	0.78
Right							
Northbound							
Pri.							
Sec.							
Left							
Thru	LT	225	1155	# 0.19	0.240	277	0.81
Right	R	41	1615	0.03	0.227	366	0.11
Southbound							
Pri.							
Sec.							
Left							
Thru	LTR	149	1401	0.11	0.240	336	0.44
Right							

Sum (v/s) critical = 0.68

Lost Time/Cycle, L = 15.00 sec Critical v/c(X) = 0.86

LEVEL OF SERVICE WORKSHEET

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
L	0.76	0.627	15.2	1.000	294	0.31	12.0	0.0	27.2	C		
TR	0.63	0.640	8.1	1.000	2293	0.50	1.3	0.0	9.5	A	11.9	B

Westbound												
L	0.34	0.480	12.1	1.000	139	0.50	6.6	0.0	18.7	B		
TR	0.78	0.493	15.6	1.000	1707	0.50	3.6	0.0	19.2	B	19.2	B
Northbound												
LT	0.81	0.240	26.9	1.000	277	0.35	18.8	0.0	45.7	D	42.3	D
R	0.11	0.227	23.0	1.000	366	0.11	0.1	0.0	23.1	C		
Southbound												
LTR	0.44	0.240	24.2	1.000	336	0.11	0.9	0.0	25.2	C	25.2	C

Intersection Delay = 17.7 (sec/veh) Intersection LOS = B

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 75.0 sec				
Actual Green Time for Lane Group, G	46.0	35.0		
Effective Green Time for Lane Group, g	39.00	37.00		
Opposing Effective Green Time, go	35.0	46.0		
Number of Lanes in Lane Group, N	1	1		
Number of Opposing Lanes, No	2	2		
Adjusted Left-Turn Flow Rate, Vlt	224	47		
Proportion of Left Turns in Opposing Flow, Plto	0.00	0.00		
Adjusted Opposing Flow Rate, Vo	1324	1445		
Lost Time for Lane Group, tl	6.00	6.00		
Left Turns per Cycle: LTC=VltC/3600	4.67	0.98		
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo	14.52	15.84		
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)	1.00	1.00		
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g	0.0	0.0		
Opposing Queue Ratio: qro=1-Rpo(go/C)	0.53	0.39		
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g	25.27	5.22		
gu =g-gq if gq>=gf, =g-gf if gq<gf	13.73	31.78		
n=(gq-gf)/2, n>=0	12.63	2.61		
Ptho=1-Plto	1.00	1.00		
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)}]	1.00	1.00		
El1 (Figure 9-7)	4.83	5.45		
El2=(1-Ptho**n)/Plto, El2>=1.0	1.00	1.00		
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g	0.10	0.11		
gdiff=max(gq-gf,0)	0.00	0.00		
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)	0.10	0.16		
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N** flt	0.103	0.157		

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 75.0 sec				
Actual Green Time for Lane Group, G			17.0	17.0
Effective Green Time for Lane Group, g			18.00	18.00
Opposing Effective Green Time, go			17.0	17.0
Number of Lanes in Lane Group, N			1	1
Number of Opposing Lanes, No			1	1
Adjusted Left-Turn Flow Rate, Vlt			83	26
Proportion of Left Turns in Lane Group, Plt			0.37	0.17
Proportion of Left Turns in Opposing Flow, Plto			0.17	0.37
Adjusted Opposing Flow Rate, Vo			149	225
Lost Time for Lane Group, tl			4.00	4.00
Left Turns per Cycle: LTC=VltC/3600			1.73	0.54
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo			3.10	4.69
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)			1.00	1.00
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g			1.1	5.6
Opposing Queue Ratio: qro=1-Rpo(go/C)			0.77	0.77
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g			4.92	8.21
gu =g-gq if gq>=gf, =g-gf if gq<gf			13.08	9.79
n=(gq-gf)/2, n>=0			1.94	1.29
Ptho=1-Plto			0.83	0.63
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24))			0.37	0.17
El1 (Figure 9-7)			1.61	1.74
El2=(1-Ptho**n)/Plto, El2>=1.0			1.78	1.21
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g			0.15	0.13
gdiff=max(gq-gf,0)			3.87	2.58
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)			0.65	0.93
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N**				
flt Primary			0.651	0.932

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Adj. LT Vol from Vol Adjustment Worksheet, v	224			
v/c ratio from Capacity Worksheet, X	0.31			
Primary phase effective green, g	39.00			
Secondary phase effective green, gq	25.27			
(From Supplemental Permitted LT Worksheet), gu	13.73			
Cycle length, C 75.0 Red =(C-g-gq-gu), r	28.0			
Arrivals: v/(3600(max(X,1.0))), qa	0.06			
Primary ph. departures: s/3600, sp	0.501			
Secondary ph. departures: s(gq+gu)/(gu*3600), ss	0.15			
XPerm	1.15			
XProt	0.56			
XCase	3			

Queue at begining of green arrow, Qa	2.06
Queue at beginning of unsaturated green, Qu	1.57
Residual queue, Qr	0.31
Uniform Delay, d1	15.2

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
Westbound								
Northbound								
Southbound								

Intersection Delay 17.7 sec/veh Intersection LOS B

ERROR MESSAGES

No errors to report.

HCS: Signals Release 3.1a

Inter: Jericho Tpke and Dix Hills Rd. City/St: Dix Hills
Analyst: BL Proj #: 84016
Date: 7/21/99 Period: Existing Sat. Peak Hour
E/W St: Jericho Turnpike N/S St: Dix Hills Road/Greenlawn Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	2	0	0	0	0	0	1	0
LGConfig	L	TR		L	TR						LTR	
Volume	211	1292	67	45	1189	68				23	81	168
Lane Width	12.0	12.0		11.0	11.0						10.0	
RTOR Vol			0			0						0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A	P			NB	Left				
Thru	P	P				Thru				
Right	P	P				Right				
Peds						Ped				
WB Left		P			SB	Left	A			
Thru		P				Thru	A			
Right		P				Right	A			
Peds						Ped				
NB Right					EB	Right				
SB Right					WB	Right				
Green	8.0	42.0					9.5			
Yellow	3.0	4.0					3.5			
All Red	0.0	3.0					2.0			

Cycle Length: 75.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capcity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	325		0.69	0.720	16.9	B		
TR	2628	3583	0.55	0.733	5.3	A	6.9	A
Westbound								
L	193	336	0.24	0.573	10.9	B		
TR	2030	3461	0.65	0.587	12.0	B	12.0	B
Northbound								
Southbound								
LTR	202	1442	1.40	0.140	783.9	F	783.9	F

Intersection Delay = 75.2 (sec/veh) Intersection LOS = E

Traffic Engineering
Nelson And Pope LLP
572 Walt Whitman Rd.
Melville, New York 11747

Phone: (516) 427-5665 Fax: (516) 427-5620
E-Mail: np@nelsonpope.com

OPERATIONAL ANALYSIS

Intersection:	Jericho Tpke and Dix Hills Rd.
City/State:	Dix Hills
Analyst:	BL
Project No:	84016
Time Period Analyzed:	Existing Sat. Peak Hour
Date:	7/21/99
East/West Street Name:	Jericho Turnpike
North/South Street Name:	Dix Hills Road/Greenlawn Road

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	211	1292	67	45	1189	68				23	81	168
PHF	0.94	0.94	0.94	0.95	0.95	0.95				0.96	0.96	0.96
PK 15 Vol	56	344	18	12	313	18				6	21	44
Hi Ln Vol												
% Grade		0			0						0	
Ideal Sat	1900	1900		1900	1900						1900	
ParkExist												
NumPark												
% Heavy Veh	0	0	0	0	0	0				0	0	0
No. Lanes	1	2	0	1	2	0	0	0	0	0	1	0
LGConfig	L	TR		L	TR						LTR	
Lane Width	12.0	12.0		11.0	11.0						10.0	
RTOR Vol			0			0						0
Adj Flow	224	1445		47	1324						283	
%InSharedLn												
Prop Turns			0.05			0.05				0.08		0.62
NumPeds			0			0			0			0
NumBus	0	0		0	0						0	

Duration 1.00 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet	0.0	0.0		0.0	0.0						0.0	
Arriv. Type	3	3		3	3						3	
Unit Ext.	3.0	3.0		3.0	3.0						3.0	
I Factor		1.000			1.000						1.000	
Lost Time	2.0	2.0		2.0	2.0						2.0	
Ext of g	3.0	4.0		3.0	4.0						3.0	
Ped Min g		0.0			0.0						0.0	

PHASE DATA

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left				
	Thru	P	P				Thru				
	Right	P	P				Right				
	Peds						Ped				
WB	Left		P			SB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Ped				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		8.0	42.0					9.5			
Yellow		3.0	4.0					3.5			
All Red		0.0	3.0					2.0			

Cycle Length: 75.0 secs

VOLUME ADJUSTMENT WORKSHEET

Appr./ Movement	Mvt Volume	PHF	Flow Rate	No. Lanes	Lane Group	RTOR	Adjusted Flow Rate In Lane Grp	Prop. Left Turns	Prop. Right Turns
Eastbound									
Left	211	0.94	224	1	L		224		
Thru	1292	0.94	1374	2	TR		1445		0.05
Right	67	0.94	71	0		0			
Westbound									
Left	45	0.95	47	1	L		47		
Thru	1189	0.95	1252	2	TR		1324		0.05
Right	68	0.95	72	0		0			
Northbound									
Left				0					
Thru				0					
Right				0					
Southbound									
Left	23	0.96	24	0					
Thru	81	0.96	84	1	LTR		283	0.08	0.62
Right	168	0.96	175	0		0			

* Value entered by user.

SATURATION FLOW ADJUSTMENT WORKSHEET

Appr/ Lane Group	Ideal Sat Flow	f W	f HV	f G	f P	f BB	f A	f LU	f RT	f LT	Adj Sat Flow
Eastbound							Sec LT	Adj/LT	Sat:	0.113	215
L	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	----	0.950	1805

TR	1900	1.000	1.000	1.000	1.000	1.000	1.00	0.95	0.993	1.000	3583

Westbound

							Sec LT	Adj/LT	Sat:		
L	1900	0.967	1.000	1.000	1.000	1.000	1.00	1.00	----	0.183	336
TR	1900	0.967	1.000	1.000	1.000	1.000	1.00	0.95	0.992	1.000	3461

Northbound

							Sec LT	Adj/LT	Sat:		

Southbound

							Sec LT	Adj/LT	Sat:		

LTR	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	0.817	0.996	1442

CAPACITY ANALYSIS WORKSHEET

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Pri.		193	1805	# 0.11	0.107	193	1.00
Sec.		31	215	0.14	0.613	132	0.23
Left	L	224			0.720	325	0.69
Thru	TR	1445	3583	0.40	0.733	2628	0.55
Right							
Westbound							
Pri.							
Sec.							
Left	L	47	336	0.14	0.573	193	0.24
Thru	TR	1324	3461	# 0.38	0.587	2030	0.65
Right							
Northbound							
Pri.							
Sec.							
Left							
Thru							
Right							
Southbound							
Pri.							
Sec.							
Left							
Thru	LTR	283	1442	# 0.20	0.140	202	1.40
Right							

Sum (v/s) critical = 0.69

Lost Time/Cycle, L = 15.50 sec Critical v/c(X) = 0.86

LEVEL OF SERVICE WORKSHEET

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
L	0.69	0.720	10.7	1.000	325	0.26	6.3	0.0	16.9	B		
TR	0.55	0.733	4.5	1.000	2628	0.50	0.8	0.0	5.3	A	6.9	A

Westbound

L	0.24	0.573	7.9	1.000	193	0.50	3.0	0.0	10.9	B		
TR	0.65	0.587	10.4	1.000	2030	0.50	1.7	0.0	12.0	B	12.0	B

Northbound

Southbound

LTR	1.40	0.140	32.3	1.000	202	0.50	751.7	0.0	783.9	F	783.9	F

Intersection Delay = 75.2 (sec/veh) Intersection LOS = E

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 75.0 sec				
Actual Green Time for Lane Group, G	53.0	42.0		
Effective Green Time for Lane Group, g	46.00	44.00		
Opposing Effective Green Time, go	42.0	53.0		
Number of Lanes in Lane Group, N	1	1		
Number of Opposing Lanes, No	2	2		
Adjusted Left-Turn Flow Rate, Vlt	224	47		
Proportion of Left Turns in Opposing Flow, Plto	0.00	0.00		
Adjusted Opposing Flow Rate, Vo	1324	1445		
Lost Time for Lane Group, tl	6.00	6.00		
Left Turns per Cycle: LTC=VltC/3600	4.67	0.98		
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo	14.52	15.84		
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)	1.00	1.00		
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g	0.0	0.0		
Opposing Queue Ratio: qro=1-Rpo(go/C)	0.44	0.29		
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g	20.85	0.10		
gu =g-gq if gq>=gf, =g-gf if gq<gf	25.15	43.90		
n=(gq-gf)/2, n>=0	10.42	0.05		
Ptho=1-Plto	1.00	1.00		
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)))	1.00	1.00		
El1 (Figure 9-7)	4.83	5.45		
El2=(1-Ptho**n)/Plto, El2>=1.0	1.00	1.00		
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g	0.09	0.09		
gdiff=max(gq-gf,0)	0.00	0.00		
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)	0.11	0.18		
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N** flt	0.113	0.183		

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 75.0 sec				
Actual Green Time for Lane Group, G				
Effective Green Time for Lane Group, g				
Opposing Effective Green Time, go				
Number of Lanes in Lane Group, N				
Number of Opposing Lanes, No				
Adjusted Left-Turn Flow Rate, Vlt				
Proportion of Left Turns in Lane Group, Plt				
Proportion of Left Turns in Opposing Flow, Plto				
Adjusted Opposing Flow Rate, Vo				
Lost Time for Lane Group, tl				
Left Turns per Cycle: LTC=VltC/3600				
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo				
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)				
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g				
Opposing Queue Ratio: qro=1-Rpo(go/C)				
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g				
gu =g-gq if gq>=gf, =g-gf if gq<gf				
n=(gq-gf)/2, n>=0				
Ptho=1-Plto				
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)))				
El1 (Figure 9-7)				
El2=(1-Ptho**n)/Plto, El2>=1.0				
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g				
gdiff=max(gq-gf,0)				
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)				
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}]				
+[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N**				
flt Primary				

For special case of single-lane approach opposed by multilane approach, see text.

* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.

** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.

For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Adj. LT Vol from Vol Adjustment Worksheet, v	224			
v/c ratio from Capacity Worksheet, X	0.23			
Primary phase effective green, g	46.00			
Secondary phase effective green, gq	20.85			
(From Supplemental Permitted LT Worksheet), gu	25.15			
Cycle length, C 75.0 Red =(C-g-gq-gu), r	21.0			
Arrivals: v/(3600(max(X,1.0))), qa	0.06			
Primary ph. departures: s/3600, sp	0.501			
Secondary ph. departures: s(gq+gu)/(gu*3600), ss	0.11			
XPerm	1.04			
XProt	0.45			
XCase	3			

Queue at begining of green arrow, Qa	1.42
Queue at beginning of unsaturated green, Qu	1.30
Residual queue, Qr	0.12
Uniform Delay, d1	10.7

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
Westbound								
Northbound								
Southbound								

Intersection Delay 75.2 sec/veh Intersection LOS E

ERROR MESSAGES

No errors to report.

2. Jericho Turnpike and Park Avenue

HCS: Signals Release 3.1a

Inter: Jericho Tpke and Park Ave
Analyst: BL
Date: 7/21/99
E/W St: Jericho Turnpike

City/St: Dix Hills
Proj #: 84016
Period: Existing PM Peak Hour
N/S St: Park Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	2	0	1	1	0	1	2	0
LGConfig	L	T		L	T		L	T		L	TR	
Volume	39	952		17	528		250	660		133	682	30
Lane Width	12.0	12.0		12.0	12.0		10.0	10.0		9.0	11.0	
RTOR Vol												0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	P				NB	Left	A	A	A	
	Thru	P					Thru		A	A	
	Right						Right				
	Peds						Ped				
WB	Left	P				SB	Left	A		A	
	Thru	P					Thru			A	
	Right						Right			A	
	Peds						Ped				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		27.0						8.0	5.0	25.0	
Yellow		4.0						3.0	0.0	4.0	
All Red		2.0						0.0	0.0	2.0	

Cycle Length: 80.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capcity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	223	614	0.19	0.363	19.4	B		
T	1309	3610	0.80	0.363	28.3	C	27.9	C
Westbound								
L	95	262	0.20	0.363	22.2	C		
T	1309	3610	0.45	0.363	20.6	C	20.6	C
Northbound								
L	364		0.75	0.525	22.6	C		
T	709	1773	1.01	0.400	102.9	F	80.8	F
Southbound								
L	252		0.62	0.438	22.6	C		
TR	1170	3468	0.72	0.338	25.3	C	24.9	C

Intersection Delay = 40.1 (sec/veh) Intersection LOS = D

Traffic Engineering
Nelson And Pope LLP
572 Walt Whitman Rd.
Melville, New York 11747

Phone: (516) 427-5665 Fax: (516) 427-5620
E-Mail: np@nelsonpope.com

OPERATIONAL ANALYSIS

Intersection:	Jericho Tpke and Park Ave
City/State:	Dix Hills
Analyst:	BL
Project No:	84016
Time Period Analyzed:	Existing PM Peak Hour
Date:	7/21/99
East/West Street Name:	Jericho Turnpike
North/South Street Name:	Park Avenue

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	39	952		17	528		250	660		133	682	30
PHF	0.91	0.91		0.89	0.89		0.92	0.92		0.85	0.85	0.85
PK 15 Vol	11	262		5	148		68	179		39	201	9
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat	1900	1900		1900	1900		1900	1900		1900	1900	
ParkExist												
NumPark												
% Heavy Veh	0	0		0	0		0	0		0	0	0
No. Lanes	1	2	0	1	2	0	1	1	0	1	2	0
LGConfig	L	T		L	T		L	T		L	TR	
Lane Width	12.0	12.0		12.0	12.0		10.0	10.0		9.0	11.0	
RTOR Vol												0
Adj Flow	43	1046		19	593		272	717		156	837	
%InSharedLn												
Prop Turns												0.04
NumPeds												0
NumBus	0	0		0	0		0	0		0	0	

Duration 1.00 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Arriv. Type	3	3		3	3		3	3		3	3	
Unit Ext.	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
I Factor		1.000			1.000			1.000			1.000	
Lost Time	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Ext of g	4.0	4.0		4.0	4.0		3.0	4.0		3.0	4.0	
Ped Min g		0.0			0.0			0.0			0.0	

PHASE DATA

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	P				NB	Left	A	A	A	
	Thru	P					Thru		A	A	
	Right						Right				
	Peds						Ped				
WB	Left	P				SB	Left	A		A	
	Thru	P					Thru			A	
	Right						Right			A	
	Peds						Ped				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		27.0						8.0	5.0	25.0	
Yellow		4.0						3.0	0.0	4.0	
All Red		2.0						0.0	0.0	2.0	

Cycle Length: 80.0 secs

VOLUME ADJUSTMENT WORKSHEET

Appr./ Movement	Mvt Volume	PHF	Flow Rate	No. Lanes	Lane Group	RTOR	Adjusted Flow Rate In Lane Grp	Prop. Left Turns	Prop. Right Turns
Eastbound									
Left	39	0.91	43	1	L		43		
Thru	952	0.91	1046	2	T		1046		
Right				0					
Westbound									
Left	17	0.89	19	1	L		19		
Thru	528	0.89	593	2	T		593		
Right				0					
Northbound									
Left	250	0.92	272	1	L		272		
Thru	660	0.92	717	1	T		717		
Right				0					
Southbound									
Left	133	0.85	156	1	L		156		
Thru	682	0.85	802	2	TR		837		0.04
Right	30	0.85	35	0		0			

* Value entered by user.

SATURATION FLOW ADJUSTMENT WORKSHEET

Appr/ Lane Group	Ideal Sat Flow	f W	f HV	f G	f P	f BB	f A	f LU	f RT	f LT	Adj Sat Flow
Eastbound							Sec LT	Adj/LT	Sat:		
L	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	----	0.323	614

T	1900	1.000	1.000	1.000	1.000	1.000	1.00	0.95	1.000	1.000	3610

Westbound							Sec LT	Adj/LT	Sat:		
L	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	----	0.138	262
T	1900	1.000	1.000	1.000	1.000	1.000	1.00	0.95	1.000	1.000	3610

Northbound							Sec LT	Adj/LT	Sat:	0.138	245
L	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	----	0.950	1685
T	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	1.000	1.000	1773

Southbound							Sec LT	Adj/LT	Sat:	0.148	253
L	1900	0.900	1.000	1.000	1.000	1.000	1.00	1.00	----	0.950	1624
TR	1900	0.967	1.000	1.000	1.000	1.000	1.00	0.95	0.994	1.000	3468

CAPACITY ANALYSIS WORKSHEET

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Pri.							
Sec.							
Left	L	43	614	0.07	0.363	223	0.19
Thru	T	1046	3610	# 0.29	0.363	1309	0.80
Right							
Westbound							
Pri.							
Sec.							
Left	L	19	262	0.07	0.363	95	0.20
Thru	T	593	3610	0.16	0.363	1309	0.45
Right							
Northbound							
Pri.		272	1685	0.16	0.162	274	0.99
Sec.		0	245	0.00	0.363	90	0.00
Left	L	272			0.525	364	0.75
Thru	T	717	1773	# 0.40	0.400	709	1.01
Right							
Southbound							
Pri.		156	1624	# 0.10	0.100	162	0.96
Sec.		0	253	0.00	0.338	90	0.00
Left	L	156			0.438	252	0.62
Thru	TR	837	3468	0.24	0.338	1170	0.72
Right							

Sum (v/s) critical = 0.79

Lost Time/Cycle, L = 15.00 sec Critical v/c(X) = 0.97

LEVEL OF SERVICE WORKSHEET

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
L	0.19	0.363	17.5	1.000	223	0.50	1.9	0.0	19.4	B		
T	0.80	0.363	22.9	1.000	1309	0.50	5.4	0.0	28.3	C	27.9	C

Westbound												
L	0.20	0.363	17.5	1.000	95	0.50	4.7	0.0	22.2	C		
T	0.45	0.363	19.5	1.000	1309	0.50	1.1	0.0	20.6	C	20.6	C
Northbound												
L	0.75	0.525	13.9	1.000	364	0.30	8.7	0.0	22.6	C		
T	1.01	0.400	24.0	1.000	709	0.50	78.9	0.0	102.9	F	80.8	F
Southbound												
L	0.62	0.438	17.9	1.000	252	0.20	4.7	0.0	22.6	C		
TR	0.72	0.338	23.1	1.000	1170	0.28	2.1	0.0	25.3	C	24.9	C

Intersection Delay = 40.1 (sec/veh) Intersection LOS = D

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 80.0 sec				
Actual Green Time for Lane Group, G	27.0	27.0	41.0	33.0
Effective Green Time for Lane Group, g	29.00	29.00	29.00	27.00
Opposing Effective Green Time, go	27.0	27.0	25.0	30.0
Number of Lanes in Lane Group, N	1	1	1	1
Number of Opposing Lanes, No	2	2	2	1
Adjusted Left-Turn Flow Rate, Vlt	43	19	272	156
Proportion of Left Turns in Opposing Flow, Plto	0.00	0.00	0.00	0.00
Adjusted Opposing Flow Rate, Vo	593	1046	837	717
Lost Time for Lane Group, tl	4.00	4.00	5.00	7.00
Left Turns per Cycle: LTC=VltC/3600	0.96	0.42	6.04	3.47
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo	6.94	12.23	9.79	15.93
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)	1.00	1.00	1.00	1.00
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g	0.0	0.0	0.0	0.0
Opposing Queue Ratio: qro=1-Rpo(go/C)	0.66	0.66	0.69	0.63
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g	7.12	19.35	17.82	24.10
gu =g-gq if gq>=gf, =g-gf if gq<gf	21.88	9.65	11.18	2.90
n=(gq-gf)/2, n>=0	3.56	9.68	8.91	12.05
Ptho=1-Plto	1.00	1.00	1.00	1.00
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)))	1.00	1.00	1.00	1.00
El1 (Figure 9-7)	2.34	3.65	2.97	2.55
El2=(1-Ptho**n)/Plto, El2>=1.0	1.00	1.00	1.00	1.00
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g	0.14	0.14	0.14	0.15
gdiff=max(gq-gf,0)	0.00	0.00	0.00	0.00
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)	0.32	0.14	0.14	0.15
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N** flt	0.323	0.138	0.138	0.148

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 80.0 sec				
Actual Green Time for Lane Group, G				
Effective Green Time for Lane Group, g				
Opposing Effective Green Time, go				
Number of Lanes in Lane Group, N				
Number of Opposing Lanes, No				
Adjusted Left-Turn Flow Rate, Vlt				
Proportion of Left Turns in Lane Group, Plt				
Proportion of Left Turns in Opposing Flow, Plto				
Adjusted Opposing Flow Rate, Vo				
Lost Time for Lane Group, tl				
Left Turns per Cycle: LTC=VltC/3600				
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo				
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)				
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g				
Opposing Queue Ratio: qro=1-Rpo(go/C)				
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g				
gu =g-gq if gq>=gf, =g-gf if gq<gf				
n=(gq-gf)/2, n>=0				
Ptho=1-Plto				
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)))				
El1 (Figure 9-7)				
El2=(1-Ptho**n)/Plto, El2>=1.0				
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g				
gdiff=max(gq-gf,0)				
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)				
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}]				
+[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N**				
flt Primary				

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Adj. LT Vol from Vol Adjustment Worksheet, v			272	156
v/c ratio from Capacity Worksheet, X			0.00	0.00
Primary phase effective green, g			29.00	27.00
Secondary phase effective green, gq			17.82	24.10
(From Supplemental Permitted LT Worksheet), gu			11.18	2.90
Cycle length, C 80.0 Red =(C-g-gq-gu), r			38.0	45.0
Arrivals: v/(3600(max(X,1.0))), qa			0.08	0.04
Primary ph. departures: s/3600, sp			0.468	0.451
Secondary ph. departures: s(gq+gu)/(gu*3600), ss			0.18	0.65
XPerm			1.11	0.62
XProt			0.63	0.64
XCase			3	1

Queue at begining of green arrow, Qa	3.09	1.95
Queue at beginning of unsaturated green, Qu	0.54	1.04
Residual queue, Qr	0.22	0.00
Uniform Delay, d1	13.9	17.9

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
Westbound								
Northbound								
Southbound								

Intersection Delay 40.1 sec/veh Intersection LOS D

ERROR MESSAGES

No errors to report.

HCS: Signals Release 3.1a

Inter: Jericho Tpke and Park Ave
Analyst: BL
Date: 7/21/99
E/W St: Jericho Turnpike

City/St: Dix Hills
Proj #: 84016
Period: Existing Saturday Peak Hour
N/S St: Park Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	2	0	1	1	0	1	2	0
LGConfig	L	T		L	T		L	T		L	TR	
Volume	51	931		35	860		321	464		230	392	46
Lane Width	12.0	12.0		12.0	12.0		10.0	10.0		9.0	11.0	
RTOR Vol												0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	P				NB	Left	A	A	A	
	Thru	P					Thru		A	A	
	Right						Right				
	Peds						Ped				
WB	Left	P				SB	Left	A		A	
	Thru	P					Thru			A	
	Right						Right			A	
	Peds						Ped				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		26.0						9.0	2.0	23.0	
Yellow		4.0						3.0	0.0	4.0	
All Red		2.0						0.0	0.0	2.0	

Cycle Length: 75.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capcity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	118	315	0.45	0.373	30.0	C		
T	1348	3610	0.72	0.373	23.5	C	23.9	C
Westbound								
L	101	271	0.36	0.373	26.8	C		
T	1348	3610	0.66	0.373	22.2	C	22.4	C
Northbound								
L	460		0.73	0.507	18.5	B		
T	638	1773	0.76	0.360	26.9	C	23.5	C
Southbound								
L	332		0.74	0.453	24.0	C		
TR	1145	3435	0.41	0.333	19.6	B	21.1	C

Intersection Delay = 22.8 (sec/veh) Intersection LOS = C

Traffic Engineering
Nelson And Pope LLP
572 Walt Whitman Rd.
Melville, New York 11747

Phone: (516) 427-5665 Fax: (516) 427-5620
E-Mail: np@nelsonpope.com

OPERATIONAL ANALYSIS

Intersection:	Jericho Tpke and Park Ave
City/State:	Dix Hills
Analyst:	BL
Project No:	84016
Time Period Analyzed:	Existing Saturday Peak Hour
Date:	7/21/99
East/West Street Name:	Jericho Turnpike
North/South Street Name:	Park Avenue

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	51	931		35	860		321	464		230	392	46
PHF	0.96	0.96		0.96	0.96		0.95	0.95		0.93	0.93	0.93
PK 15 Vol	13	242		9	224		84	122		62	105	12
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat	1900	1900		1900	1900		1900	1900		1900	1900	
ParkExist												
NumPark												
% Heavy Veh	0	0		0	0		0	0		0	0	0
No. Lanes	1	2	0	1	2	0	1	1	0	1	2	0
LGConfig	L	T		L	T		L	T		L	TR	
Lane Width	12.0	12.0		12.0	12.0		10.0	10.0		9.0	11.0	
RTOR Vol												0
Adj Flow	53	970		36	896		338	488		247	471	
%InSharedLn												
Prop Turns												0.10
NumPeds												0
NumBus	0	0		0	0		0	0		0	0	

Duration 1.00 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Arriv. Type	3	3		3	3		3	3		3	3	
Unit Ext.	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
I Factor		1.000			1.000			1.000			1.000	
Lost Time	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Ext of g	4.0	4.0		4.0	4.0		3.0	4.0		3.0	4.0	
Ped Min g		0.0			0.0			0.0			0.0	

PHASE DATA

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	P				NB	Left	A	A	A	
	Thru	P					Thru		A	A	
	Right						Right				
	Peds						Ped				
WB	Left	P				SB	Left	A		A	
	Thru	P					Thru			A	
	Right						Right			A	
	Peds						Ped				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		26.0						9.0	2.0	23.0	
Yellow		4.0						3.0	0.0	4.0	
All Red		2.0						0.0	0.0	2.0	

Cycle Length: 75.0 secs

VOLUME ADJUSTMENT WORKSHEET

Appr./ Movement	Mvt Volume	PHF	Flow Rate	No. Lanes	Lane Group	RTOR	Adjusted Flow Rate In Lane Grp	Prop. Left Turns	Prop. Right Turns
Eastbound									
Left	51	0.96	53	1	L		53		
Thru	931	0.96	970	2	T		970		
Right				0					
Westbound									
Left	35	0.96	36	1	L		36		
Thru	860	0.96	896	2	T		896		
Right				0					
Northbound									
Left	321	0.95	338	1	L		338		
Thru	464	0.95	488	1	T		488		
Right				0					
Southbound									
Left	230	0.93	247	1	L		247		
Thru	392	0.93	422	2	TR		471		0.10
Right	46	0.93	49	0		0			

* Value entered by user.

SATURATION FLOW ADJUSTMENT WORKSHEET

Appr/ Lane Group	Ideal Sat Flow	f W	f HV	f G	f P	f BB	f A	f LU	f RT	f LT	Adj Sat Flow
Eastbound							Sec LT	Adj/LT	Sat:		
L	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	----	0.166	315

T	1900	1.000	1.000	1.000	1.000	1.000	1.00	0.95	1.000	1.000	3610

Westbound							Sec LT	Adj/LT	Sat:		
L	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	----	0.143	271
T	1900	1.000	1.000	1.000	1.000	1.000	1.00	0.95	1.000	1.000	3610

Northbound							Sec LT	Adj/LT	Sat:	0.334	592
L	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	----	0.950	1685
T	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	1.000	1.000	1773

Southbound							Sec LT	Adj/LT	Sat:	0.241	412
L	1900	0.900	1.000	1.000	1.000	1.000	1.00	1.00	----	0.950	1624
TR	1900	0.967	1.000	1.000	1.000	1.000	1.00	0.95	0.984	1.000	3435

CAPACITY ANALYSIS WORKSHEET

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Pri.							
Sec.							
Left	L	53	315	0.17	0.373	118	0.45
Thru	T	970	3610	# 0.27	0.373	1348	0.72
Right							
Westbound							
Pri.							
Sec.							
Left	L	36	271	0.13	0.373	101	0.36
Thru	T	896	3610	0.25	0.373	1348	0.66
Right							
Northbound							
Pri.		247	1685	0.15	0.147	247	1.00
Sec.		91	592	0.15	0.360	213	0.43
Left	L	338			0.507	460	0.73
Thru	T	488	1773	# 0.28	0.360	638	0.76
Right							
Southbound							
Pri.		195	1624	# 0.12	0.120	195	1.00
Sec.		52	412	0.13	0.333	137	0.38
Left	L	247			0.453	332	0.74
Thru	TR	471	3435	0.14	0.333	1145	0.41
Right							

Sum (v/s) critical = 0.66

Lost Time/Cycle, L = 15.00 sec Critical v/c(X) = 0.83

LEVEL OF SERVICE WORKSHEET

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
L	0.45	0.373	17.7	1.000	118	0.50	12.3	0.0	30.0	C		
T	0.72	0.373	20.1	1.000	1348	0.50	3.4	0.0	23.5	C	23.9	C

Westbound												
L	0.36	0.373	17.0	1.000	101	0.50	9.8	0.0	26.8	C		
T	0.66	0.373	19.6	1.000	1348	0.50	2.6	0.0	22.2	C	22.4	C
Northbound												
L	0.73	0.507	12.2	1.000	460	0.29	6.3	0.0	18.5	B		
T	0.76	0.360	21.2	1.000	638	0.32	5.7	0.0	26.9	C	23.5	C
Southbound												
L	0.74	0.453	14.7	1.000	332	0.30	9.3	0.0	24.0	C		
TR	0.41	0.333	19.3	1.000	1145	0.11	0.2	0.0	19.6	B	21.1	C

Intersection Delay = 22.8 (sec/veh) Intersection LOS = C

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 75.0 sec				
Actual Green Time for Lane Group, G	26.0	26.0	37.0	32.0
Effective Green Time for Lane Group, g	28.00	28.00	27.00	25.00
Opposing Effective Green Time, go	26.0	26.0	23.0	25.0
Number of Lanes in Lane Group, N	1	1	1	1
Number of Opposing Lanes, No	2	2	2	1
Adjusted Left-Turn Flow Rate, Vlt	53	36	338	247
Proportion of Left Turns in Opposing Flow, Plto	0.00	0.00	0.00	0.00
Adjusted Opposing Flow Rate, Vo	896	970	471	488
Lost Time for Lane Group, tl	4.00	4.00	5.00	7.00
Left Turns per Cycle: LTC=VltC/3600	1.10	0.75	7.04	5.15
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo	9.82	10.64	5.16	10.17
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)	1.00	1.00	1.00	1.00
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g	0.0	0.0	0.0	0.0
Opposing Queue Ratio: qro=1-Rpo(go/C)	0.65	0.65	0.69	0.67
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g	13.39	15.40	8.31	12.60
gu =g-gq if gq>=gf, =g-gf if gq<gf	14.61	12.60	18.69	12.40
n=(gq-gf)/2, n>=0	6.70	7.70	4.15	6.30
Ptho=1-Plto	1.00	1.00	1.00	1.00
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)})	1.00	1.00	1.00	1.00
El1 (Figure 9-7)	3.15	3.39	2.07	2.06
El2=(1-Ptho**n)/Plto, El2>=1.0	1.00	1.00	1.00	1.00
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g	0.14	0.14	0.15	0.16
gdiff=max(gq-gf,0)	0.00	0.00	0.00	0.00
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)	0.17	0.14	0.33	0.24
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N** flt	0.166	0.143	0.334	0.241

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 75.0 sec				
Actual Green Time for Lane Group, G				
Effective Green Time for Lane Group, g				
Opposing Effective Green Time, go				
Number of Lanes in Lane Group, N				
Number of Opposing Lanes, No				
Adjusted Left-Turn Flow Rate, Vlt				
Proportion of Left Turns in Lane Group, Plt				
Proportion of Left Turns in Opposing Flow, Plto				
Adjusted Opposing Flow Rate, Vo				
Lost Time for Lane Group, tl				
Left Turns per Cycle: LTC=VltC/3600				
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo				
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)				
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g				
Opposing Queue Ratio: qro=1-Rpo(go/C)				
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g				
gu =g-gq if gq>=gf, =g-gf if gq<gf				
n=(gq-gf)/2, n>=0				
Ptho=1-Plto				
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)))				
El1 (Figure 9-7)				
El2=(1-Ptho**n)/Plto, El2>=1.0				
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g				
gdiff=max(gq-gf,0)				
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)				
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}]				
+[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N**				
flt Primary				

For special case of single-lane approach opposed by multilane approach, see text.

* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.

** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.

For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Adj. LT Vol from Vol Adjustment Worksheet, v			338	247
v/c ratio from Capacity Worksheet, X			0.43	0.38
Primary phase effective green, g			27.00	25.00
Secondary phase effective green, gq			8.31	12.60
(From Supplemental Permitted LT Worksheet), gu			18.69	12.40
Cycle length, C 75.0 Red =(C-g-gq-gu), r			37.0	41.0
Arrivals: v/(3600(max(X,1.0))), qa			0.09	0.07
Primary ph. departures: s/3600, sp			0.468	0.451
Secondary ph. departures: s(gq+gu)/(gu*3600), ss			0.24	0.23
XPerm			0.57	0.60
XProt			0.88	0.84
XCase			1	1

Queue at begining of green arrow, Qa	3.47	2.81
Queue at beginning of unsaturated green, Qu	0.78	0.86
Residual queue, Qr	0.00	0.00
Uniform Delay, d1	12.2	14.7

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
Westbound								
Northbound								
Southbound								

Intersection Delay 22.8 sec/veh Intersection LOS C

ERROR MESSAGES

No errors to report.

B. Unsignalized Intersections

1. Jericho Turnpike and Franks Nursery/Site Access

HCS: Unsignalized Intersections Release 3.1a

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Analyst: BL
Intersection: Franks Nursery Dwy. and Jericho Tpke.
Count Date: (Site Dwy. in Bld condition)
Time Period: PM1 Peak Hour

Intersection Orientation: East-West Major St.

Vehicle Volume Data:

Movements:	1	2	5	6	10	12
Volume:	7	1352	841	10	2	6
HFR:	7	1438	876	10	2	7
PHF:	0.94	0.94	0.96	0.96	0.85	0.85
PHV:	0.00	0.00	0.00	0.00	0.00	0.00

Pedestrian Volume Data:

Movements:
Flow:
Lane width:
Walk speed:
% Blockage:

Median Type: None
# of vehicles: 0

Flared approach Movements:

# of vehicles: Northbound 0
# of vehicles: Southbound 0

Lane usage for movements 1,2&3 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R
Y	Y	N	N	Y	N	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 4,5&6 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R

N	Y	N	N	Y	Y	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 7,8&9 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R
N	N	N	N	N	N	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 10,11&12 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R
Y	N	Y	N	N	N	N	N	N

Channelized: N
Grade: 0.00

Data for Computing Effect of Delay to Major Street Vehicles:

	Eastbound	Westbound
Shared ln volume, major th vehicles:	676	0
Shared ln volume, major rt vehicles:	0	0
Sat flow rate, major th vehicles:	1700	1700
Sat flow rate, major rt vehicles:	1700	1700
Number of major street through lanes:	2	2

Length of study period, hrs: 1.00

Worksheet 4 Critical Gap and Follow-up time calculation.

Critical Gap Calculations:

Movement	1	10	12
t c,base	4.1	7.5	6.9
t c,hv	2.0	2.0	2.0
P hv	0.00	0.00	0.00
t c,g		0.2	0.1
G	0.00	0.00	0.00
t 3,lt	0.0	0.7	0.0

t c,T:			
1 stage	0.00	0.00	0.00

t c			
1 stage	4.1	6.8	6.9

Follow Up Time Calculations:

Movement	1	10	12
t f,base	2.2	3.5	3.3
t f,HV	1.0	1.0	1.0
P hv	0.00	0.00	0.00
t f	2.2	3.5	3.3

Worksheet 6 Impedance and capacity equations

Step 1: RT from Minor St.	9	12
Conflicting Flows		443
Potential Capacity		568
Pedestrian Impedance Factor		1.00
Movement Capacity		568
Probability of Queue free St.		0.99

Step 2: LT from Major St.	4	1
Conflicting Flows		886
Potential Capacity		772
Pedestrian Impedance Factor		1.00
Movement Capacity		772
Probability of Queue free St.		0.99
Maj. L Shared ln. Prob. Queue Free St.		0.98

Step 4: LT from Minor St.	7	10
Conflicting Flows		1615
Potential Capacity		96
Pedestrian Impedance Factor		1.00
Maj. L, Min T Impedance factor		0.98
Maj. L, Min T Adj. Imp Factor.		0.99
Cap. Adj. factor due to Impeding mvmnt		0.99
Movement Capacity		95

Worksheet 8 Shared Lane Calculations

Shared Lane Calculations

Movement	7	8	9	10	11	12
v(vph)				2		7
Movement Capacity				95		568
Shared Lane Capacity				254		

Worksheet 10 delay,queue length, and LOS

Movement	1	4	7	8	9	10	11	12
v(vph)	7					9		
C m(vph)	772					254		
v/c	0.01					0.04		
95% queue length								
Control Delay	9.7					19.7		
LOS	A					C		
Approach Delay							19.7	
Approach LOS							C	

Worksheet 11 Shared Major LT Impedance and Delay

Rank 1 Delay Calculations

Movement	2	5
P oj	0.99	1.00
V i1	676	0
V i2	0	0
S i1	1700	1700
S i2	1700	1700
P* 0j	0.98	1.00
D maj left	9.7	0.0
N number major st lanes	2	2
Delay, rank 1 mvmts	0.1	-1.$

HCS: Unsignalized Intersections Release 3.1a

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Analyst: BL
Intersection: Franks Nursery Dwy. and Jericho Tpke.
Count Date: (Site Dwy. in Bld condition)
Time Period: SAT1 Peak Hour

Intersection Orientation: East-West Major St.

Vehicle Volume Data:

Movements:	1	2	5	6	10	12
Volume:	22	1277	1178	28	9	26
HFR:	23	1344	1227	29	11	31
PHF:	0.95	0.95	0.96	0.96	0.85	0.85
PHV:	0.00	0.00	0.00	0.00	0.00	0.00

Pedestrian Volume Data:

Movements:
Flow:
Lane width:
Walk speed:
% Blockage:

Median Type: None
# of vehicles: 0

Flared approach Movements:

# of vehicles: Northbound 0
# of vehicles: Southbound 0

Lane usage for movements 1,2&3 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R
Y	Y	N	N	Y	N	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 4,5&6 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R

N	Y	N	N	Y	Y	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 7,8&9 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R
N	N	N	N	N	N	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 10,11&12 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R
Y	N	Y	N	N	N	N	N	N

Channelized: N
Grade: 0.00

Data for Computing Effect of Delay to Major Street Vehicles:

	Eastbound	Westbound
Shared ln volume, major th vehicles:	638	0
Shared ln volume, major rt vehicles:	0	0
Sat flow rate, major th vehicles:	1700	1700
Sat flow rate, major rt vehicles:	1700	1700
Number of major street through lanes:	2	2

Length of study period, hrs: 1.00

Worksheet 4 Critical Gap and Follow-up time calculation.

Critical Gap Calculations:

Movement	1	10	12
t c,base	4.1	7.5	6.9
t c,hv	2.0	2.0	2.0
P hv	0.00	0.00	0.00
t c,g		0.2	0.1
G	0.00	0.00	0.00
t 3,lt	0.0	0.7	0.0

```
t  c,T:
 1 stage        0.00    0.00    0.00

t c
 1 stage         4.1     6.8     6.9

Follow Up Time Calculations:
Movement            1      10      12
-------------------------------------------------------------------------------
-----------
t  f,base         2.2     3.5     3.3
t  f,HV           1.0     1.0     1.0
P hv             0.00    0.00    0.00
t f               2.2     3.5     3.3
-------------------------------------------------------------------------------
-----------

Worksheet 6 Impedance and capacity equations

Step 1: RT from Minor St.                          9                12
-------------------------------------------------------------------------------
-----------
Conflicting Flows                                                  628
Potential Capacity                                                 431
Pedestrian Impedance Factor                                       1.00
Movement Capacity                                                  431
Probability of Queue free St.                                     0.93
-------------------------------------------------------------------------------
-----------

Step 2: LT from Major St.                          4                 1
-------------------------------------------------------------------------------
-----------
Conflicting Flows                                                 1256
Potential Capacity                                                 561
Pedestrian Impedance Factor                                       1.00
Movement Capacity                                                  561
Probability of Queue free St.                                     0.96
Maj. L Shared ln. Prob. Queue Free St.                            0.93
-------------------------------------------------------------------------------
-----------

Step 4: LT from Minor St.                          7                10
-------------------------------------------------------------------------------
-----------
Conflicting Flows                                                 1960
Potential Capacity                                                  57
Pedestrian Impedance Factor                                       1.00
Maj. L, Min T Impedance factor                                    0.93
Maj. L, Min T Adj. Imp Factor.                                    0.95
Cap. Adj. factor due to Impeding mvmnt                            0.95
Movement Capacity                                                   54
-------------------------------------------------------------------------------
-----------


Worksheet 8 Shared Lane Calculations

Shared Lane Calculations
```

Movement	7	8	9	10	11	12
v(vph)				11		31
Movement Capacity				54		431
Shared Lane Capacity				154		

Worksheet 10 delay,queue length, and LOS

Movement	1	4	7	8	9	10	11	12
v(vph)	23					41		
C m(vph)	561					154		
v/c	0.04					0.27		
95% queue length								
Control Delay	11.7					36.9		
LOS	B					E		
Approach Delay							36.9	
Approach LOS							E	

Worksheet 11 Shared Major LT Impedance and Delay

Rank 1 Delay Calculations

Movement	2	5
P oj	0.96	1.00
V i1	638	0
V i2	0	0
S i1	1700	1700
S i2	1700	1700
P* oj	0.93	1.00
D maj left	11.7	0.0
N number major st lanes	2	2
Delay, rank 1 mvmts	0.4	-1.$

II. "No Build" Conditions

A. Signalized Intersections
   1. Jericho Turnpike and Dix Hills Road/Greenlawn Road
   2. Jericho Turnpike and Park Avenue
B. Unsignalized Intersections
   1. Jericho Turnpike and Franks Nursery/Site Access

A. Signalized Intersections

1. Jericho Turnpike and Dix Hills Road/Greenlawn Road

Nelson & Pope, LLP

Job Title: Hren Shopping Center
Job No: 84016
Date: October-99

5 Way Intersection Level of Service Summary Sheet

Intersection: JERICHO TURNPIKE AND DIXHILLS ROAD/GREENLAWN ROAD
Time Period: PM Peak Hour
Condition: NO BUILD

Approach	Movement	Adjusted Flow Rate (v)	v/s Critical	Delay sec/veh	Approach Delay sec/veh
JERICHO TPKE EASTBOUND	Left	417		204.3	
	Through	1560	0.16	36.5	71.9
	Right				
JERICHO TPKE WESTBOUND	Left	24		31.3	
	Through	862		58.2	57.5
	Right				
DIXHILLS RD NORTHBOUND	Left	404		*	
	Through	17	0.45	25.1	*
	Right				
DIXHILLS RD SOUTHBOUND	Left				
	Through	242		185.3	185.3
	Right				
GREENLAWN RD SOUTHBOUND	Left				
	Through	377	0.26	*	*
	Right				

IntersectionDelay:	*	sec/veh
Level of Service:	*	
Cycle Length:	80.0	sec.
Lost Time:	4.0	sec.
Sum Critical v/s:	0.87	
Critical Xc:	0.92	

HCS: Signals Release 3.1a

Inter: Jericho Tpke and Dix Hills Rd. City/St: Dix Hills
Analyst: BL Proj #: 84016
Date: 7/21/99 Period: No Build PM Peak Hour
E/W St: Jericho Turnpike N/S St: Dix Hills Road/Greenlawn Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	2	0	0	1	1	0	1	0
LGConfig	L	TR		L	TR			LT	R		LTR	
Volume	375	1303	101	23	774	62	60	320	16	46	121	64
Lane Width	12.0	12.0		11.0	11.0			10.0	12.0		10.0	
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A	P			NB	Left	A			
Thru	P	P				Thru	A			
Right	P	P				Right	A			
Peds						Ped				
WB Left		P			SB	Left	A			
Thru		P				Thru	A			
Right		P				Right	A			
Peds						Ped				
NB Right					EB	Right				
SB Right					WB	Right				
Green	13.0	19.0					32.0			
Yellow	3.0	4.0					3.0			
All Red	0.0	3.0					3.0			

Cycle Length: 80.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capcity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	388		1.07	0.450	204.3	F		
TR	1652	3571	0.94	0.463	36.5	D	71.9	E
Westbound								
L	90	350	0.27	0.250	31.3	C		
TR	906	3451	0.95	0.262	58.2	E	57.5	E
Northbound								
LT	648	1571	0.66	0.412	21.5	C	21.2	C
R	646	1615	0.03	0.400	14.6	B		
Southbound								
LTR	540	1310	0.50	0.412	18.2	B	18.2	B

Intersection Delay = 57.9 (sec/veh) Intersection LOS = E

Traffic Engineering
Nelson And Pope LLP
572 Walt Whitman Rd.
Melville, New York 11747

Phone: (516) 427-5665 Fax: (516) 427-5620
E-Mail: np@nelsonpope.com

OPERATIONAL ANALYSIS

Intersection:	Jericho Tpke and Dix Hills Rd.
City/State:	Dix Hills
Analyst:	BL
Project No:	84016
Time Period Analyzed:	No Build PM Peak Hour
Date:	7/21/99
East/West Street Name:	Jericho Turnpike
North/South Street Name:	Dix Hills Road/Greenlawn Road

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	375	1303	101	23	774	62	60	320	16	46	121	64
PHF	0.90	0.90	0.90	0.97	0.97	0.97	0.89	0.89	0.89	0.85	0.85	0.85
PK 15 Vol	104	362	28	6	199	16	17	90	4	14	36	19
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat	1900	1900		1900	1900			1900	1900		1900	
ParkExist												
NumPark												
% Heavy Veh	0	0	0	0	0	0	0	0	0	0	0	0
No. Lanes	1	2	0	1	2	0	0	1	1	0	1	0
LGConfig	L	TR		L	TR			LT	R		LTR	
Lane Width	12.0	12.0		11.0	11.0			10.0	12.0		10.0	
RTOR Vol			0			0			0			0
Adj Flow	417	1560		24	862			427	18		271	
%InSharedLn												
Prop Turns			0.07			0.07	0.16			0.20		0.28
NumPeds			0			0			0			0
NumBus	0	0		0	0			0	0		0	

Duration 1.00 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Arriv. Type	3	3		3	3			3	3		3	
Unit Ext.	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
I Factor		1.000			1.000			1.000			1.000	
Lost Time	2.0	2.0		2.0	2.0			2.0	2.0		2.0	
Ext of g	3.0	4.0		3.0	4.0			3.0	2.0		3.0	
Ped Min g		0.0			0.0			0.0			0.0	

PHASE DATA

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left	A			
	Thru	P	P				Thru	A			
	Right	P	P				Right	A			
	Peds						Ped				
WB	Left		P			SB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Ped				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		13.0	19.0					32.0			
Yellow		3.0	4.0					3.0			
All Red		0.0	3.0					3.0			

Cycle Length: 80.0 secs

VOLUME ADJUSTMENT WORKSHEET

Appr./ Movement	Mvt Volume	PHF	Flow Rate	No. Lanes	Lane Group	RTOR	Adjusted Flow Rate In Lane Grp	Prop. Left Turns	Prop. Right Turns
Eastbound									
Left	375	0.90	417	1	L		417		
Thru	1303	0.90	1448	2	TR		1560		0.07
Right	101	0.90	112	0		0			
Westbound									
Left	23	0.97	24	1	L		24		
Thru	774	0.97	798	2	TR		862		0.07
Right	62	0.97	64	0		0			
Northbound									
Left	60	0.89	67	0					
Thru	320	0.89	360	1	LT		427	0.16	
Right	16	0.89	18	1	R	0	18		
Southbound									
Left	46	0.85	54	0					
Thru	121	0.85	142	1	LTR		271	0.20	0.28
Right	64	0.85	75	0		0			

* Value entered by user.

SATURATION FLOW ADJUSTMENT WORKSHEET

Appr/ Lane Group	Ideal Sat Flow	f W	f HV	f G	f P	f BB	f A	f LU	f RT	f LT	Adj Sat Flow
Eastbound							Sec LT	Adj/LT	Sat:	0.174	330
L	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	----	0.950	1805

TR	1900	1.000	1.000	1.000	1.000	1.000	1.00	0.95	0.989	1.000	3571

Westbound							Sec LT	Adj/LT	Sat:		
L	1900	0.967	1.000	1.000	1.000	1.000	1.00	1.00	----	0.190	350
TR	1900	0.967	1.000	1.000	1.000	1.000	1.00	0.95	0.989	1.000	3451

Northbound							Sec LT	Adj/LT	Sat:		

LT	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	1.000	0.886	1571
R	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	0.850	----	1615

Southbound							Sec LT	Adj/LT	Sat:		

LTR	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	0.863	0.856	1310

CAPACITY ANALYSIS WORKSHEET

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Pri.							
Sec.		293	1805	# 0.16	0.162	293	1.00
Left	L	124	330	0.38	0.287	95	1.31
Thru	TR	417			0.450	388	1.07
Right		1560	3571	0.44	0.463	1652	0.94
Westbound							
Pri.							
Sec.							
Left	L	24	350	0.07	0.250	90	0.27
Thru	TR	862	3451	0.25	0.262	906	0.95
Right							
Northbound							
Pri.							
Sec.							
Left							
Thru	LT	427	1571	# 0.27	0.412	648	0.66
Right	R	18	1615	0.01	0.400	646	0.03
Southbound							
Pri.							
Sec.							
Left							
Thru	LTR	271	1310	0.21	0.412	540	0.50
Right							

Sum (v/s) critical = 0.72

Lost Time/Cycle, L = 11.00 sec Critical v/c(X) = 0.84

LEVEL OF SERVICE WORKSHEET

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
L	1.07	0.450	20.8	1.000	388	0.50	183.5	0.0	204.3	F		
TR	0.94	0.463	20.5	1.000	1652	0.50	15.9	0.0	36.5	D	71.9	E

Westbound												
L	0.27	0.250	24.1	1.000	90	0.50	7.2	0.0	31.3	C		
TR	0.95	0.262	29.0	1.000	906	0.50	29.2	0.0	58.2	E	57.5	E
Northbound												
LT	0.66	0.412	19.0	1.000	648	0.23	2.5	0.0	21.5	C	21.2	C
R	0.03	0.400	14.6	1.000	646	0.11	0.0	0.0	14.6	B		
Southbound												
LTR	0.50	0.412	17.4	1.000	540	0.11	0.7	0.0	18.2	B	18.2	B

Intersection Delay = 57.9 (sec/veh) Intersection LOS = E

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 80.0 sec				
Actual Green Time for Lane Group, G	35.0	19.0		
Effective Green Time for Lane Group, g	23.00	21.00		
Opposing Effective Green Time, go	19.0	35.0		
Number of Lanes in Lane Group, N	1	1		
Number of Opposing Lanes, No	2	2		
Adjusted Left-Turn Flow Rate, Vlt	417	24		
Proportion of Left Turns in Opposing Flow, Plto	0.00	0.00		
Adjusted Opposing Flow Rate, Vo	862	1560		
Lost Time for Lane Group, tl	6.00	6.00		
Left Turns per Cycle: LTC=VltC/3600	9.27	0.53		
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo	10.08	18.25		
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)	1.00	1.00		
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g	0.0	0.0		
Opposing Queue Ratio: qro=1-Rpo(go/C)	0.76	0.56		
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g	20.56	16.74		
gu =g-gq if gq>=gf, =g-gf if gq<gf	2.44	4.26		
n=(gq-gf)/2, n>=0	10.28	8.37		
Ptho=1-Plto	1.00	1.00		
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)))	1.00	1.00		
El1 (Figure 9-7)	3.04	6.13		
El2=(1-Ptho**n)/Plto, El2>=1.0	1.00	1.00		
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g	0.17	0.19		
gdiff=max(gq-gf,0)	0.00	0.00		
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)	0.17	0.19		
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N**				
flt	0.174	0.190		

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 80.0 sec				
Actual Green Time for Lane Group, G			32.0	32.0
Effective Green Time for Lane Group, g			33.00	33.00
Opposing Effective Green Time, go			32.0	32.0
Number of Lanes in Lane Group, N			1	1
Number of Opposing Lanes, No			1	1
Adjusted Left-Turn Flow Rate, Vlt			67	54
Proportion of Left Turns in Lane Group, Plt			0.16	0.20
Proportion of Left Turns in Opposing Flow, Plto			0.20	0.16
Adjusted Opposing Flow Rate, Vo			271	427
Lost Time for Lane Group, tl			5.00	5.00
Left Turns per Cycle: LTC=VltC/3600			1.49	1.20
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo			6.02	9.49
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)			1.00	1.00
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g			5.6	6.7
Opposing Queue Ratio: qro=1-Rpo(go/C)			0.60	0.60
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g			6.29	10.97
gu =g-gq if gq>=gf, =g-gf if gq<gf			26.71	22.03
n=(gq-gf)/2, n>=0			0.34	2.13
Ptho=1-Plto			0.80	0.84
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)))			0.16	0.20
El1 (Figure 9-7)			1.83	2.14
El2=(1-Ptho**n)/Plto, El2>=1.0			1.00	1.94
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g			0.07	0.07
gdiff=max(gq-gf,0)			0.69	4.26
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)			0.89	0.86
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N** flt Primary			0.886	0.856

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Adj. LT Vol from Vol Adjustment Worksheet, v	417			
v/c ratio from Capacity Worksheet, X	1.31			
Primary phase effective green, g	23.00			
Secondary phase effective green, gq	20.56			
(From Supplemental Permitted LT Worksheet), gu	2.44			
Cycle length, C 80.0 Red =(C-g-gq-gu), r	44.0			
Arrivals: v/(3600(max(X,1.0))), qa	0.11			
Primary ph. departures: s/3600, sp	0.501			
Secondary ph. departures: s(gq+gu)/(gu*3600), ss	0.86			
XPerm	1.18			
XProt	0.94			
XCase	3			

Queue at begining of green arrow, Qa	5.11
Queue at beginning of unsaturated green, Qu	2.22
Residual queue, Qr	0.37
Uniform Delay, d1	20.8

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
Westbound								
Northbound								
Southbound								

Intersection Delay 57.9 sec/veh Intersection LOS E

ERROR MESSAGES

No errors to report.

HCS: Signals Release 3.1a

Inter: Jericho Tpke and Dix Hills Rd. City/St: Dix Hills
Analyst: BL Proj #: 84016
Date: 7/21/99 Period: No Build PM Peak Hour
E/W St: Jericho Turnpike N/S St: Dix Hills Road/Greenlawn Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	2	0	0	1	1	0	1	0
LGConfig	L	TR		L	TR			LT	R		LTR	
Volume	375	1303	101	23	774	62	60	320	16	46	121	64
Lane Width	12.0	12.0		11.0	11.0			10.0	12.0		10.0	
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left	A			
	Thru	P	P				Thru	A			
	Right	P	P				Right	A			
	Peds						Ped				
WB	Left		P			SB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Ped				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		13.0	35.0					17.0			
Yellow		3.0	4.0					3.0			
All Red		0.0	3.0					2.0			

Cycle Length: 80.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capcity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	479		0.87	0.650	30.7	C		
TR	2366	3571	0.66	0.663	9.6	A	14.0	B
Westbound								
L	123	273	0.20	0.450	16.8	B		
TR	1596	3451	0.54	0.463	16.7	B	16.7	B
Northbound								
LT	202	896	2.00	0.225				
R	343	1615	0.05	0.213	25.1	C		
Southbound								
LTR	234	1040	1.03	0.225	185.3	F	185.3	F

Intersection Delay = (sec/veh) Intersection LOS =

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OPERATIONAL ANALYSIS

Intersection:	Jericho Tpke and Dix Hills Rd.
City/State:	Dix Hills
Analyst:	BL
Project No:	84016
Time Period Analyzed:	No Build PM Peak Hour
Date:	7/21/99
East/West Street Name:	Jericho Turnpike
North/South Street Name:	Dix Hills Road/Greenlawn Road

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	375	1303	101	23	774	62	60	320	16	46	121	64
PHF	0.90	0.90	0.90	0.97	0.97	0.97	0.94	0.94	0.94	0.95	0.95	0.95
PK 15 Vol	104	362	28	6	199	16	16	85	4	12	32	17
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat	1900	1900		1900	1900			1900	1900		1900	
ParkExist												
NumPark												
% Heavy Veh	0	0	0	0	0	0	0	0	0	0	0	0
No. Lanes	1	2	0	1	2	0	0	1	1	0	1	0
LGConfig	L	TR		L	TR			LT	R		LTR	
Lane Width	12.0	12.0		11.0	11.0			10.0	12.0		10.0	
RTOR Vol			0			0			0			0
Adj Flow	417	1560		24	862			404	17		242	
%InSharedLn												
Prop Turns			0.07			0.07	0.16			0.20		0.28
NumPeds			0			0			0			0
NumBus	0	0		0	0			0	0		0	

Duration 1.00 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Arriv. Type	3	3		3	3			3	3		3	
Unit Ext.	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
I Factor		1.000			1.000			1.000			1.000	
Lost Time	2.0	2.0		2.0	2.0			2.0	2.0		2.0	
Ext of g	3.0	4.0		3.0	4.0			3.0	2.0		3.0	
Ped Min g		0.0			0.0			0.0			0.0	

PHASE DATA

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left	A			
	Thru	P	P				Thru	A			
	Right	P	P				Right	A			
	Peds						Ped				
WB	Left		P			SB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Ped				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		13.0	35.0					17.0			
Yellow		3.0	4.0					3.0			
All Red		0.0	3.0					2.0			

Cycle Length: 80.0 secs

VOLUME ADJUSTMENT WORKSHEET

Appr./ Movement	Mvt Volume	PHF	Flow Rate	No. Lanes	Lane Group	RTOR	Adjusted Flow Rate In Lane Grp	Prop. Left Turns	Prop. Right Turns
Eastbound									
Left	375	0.90	417	1	L		417		
Thru	1303	0.90	1448	2	TR		1560		0.07
Right	101	0.90	112	0		0			
Westbound									
Left	23	0.97	24	1	L		24		
Thru	774	0.97	798	2	TR		862		0.07
Right	62	0.97	64	0		0			
Northbound									
Left	60	0.94	64	0					
Thru	320	0.94	340	1	LT		404	0.16	
Right	16	0.94	17	1	R	0	17		
Southbound									
Left	46	0.95	48	0					
Thru	121	0.95	127	1	LTR		242	0.20	0.28
Right	64	0.95	67	0		0			

* Value entered by user.

SATURATION FLOW ADJUSTMENT WORKSHEET

Appr/ Lane Group	Ideal Sat Flow	f W	f HV	f G	f P	f BB	f A	f LU	f RT	f LT	Adj Sat Flow
Eastbound							Sec LT	Adj/LT	Sat:	0.201	382
L	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	----	0.950	1805

TR	1900	1.000	1.000	1.000	1.000	1.000	1.00	0.95	0.989	1.000	3571

Westbound							Sec LT Adj/LT Sat:				
L	1900	0.967	1.000	1.000	1.000	1.000	1.00	1.00	----	0.148	273
TR	1900	0.967	1.000	1.000	1.000	1.000	1.00	0.95	0.989	1.000	3451

Northbound							Sec LT Adj/LT Sat:				

LT	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	1.000	0.505	896
R	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	0.850	----	1615
Southbound							Sec LT Adj/LT Sat:				

LTR	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	0.863	0.680	1040

CAPACITY ANALYSIS WORKSHEET

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Pri.		293	1805	# 0.16	0.162	293	1.00
Sec.		124	382	0.32	0.488	186	0.67
Left	L	417			0.650	479	0.87
Thru	TR	1560	3571	0.44	0.663	2366	0.66
Right							
Westbound							
Pri.							
Sec.							
Left	L	24	273	0.09	0.450	123	0.20
Thru	TR	862	3451	0.25	0.463	1596	0.54
Right							
Northbound							
Pri.							
Sec.							
Left							
Thru	LT	404	896	# 0.45	0.225	202	2.00
Right	R	17	1615	0.01	0.213	343	0.05
Southbound							
Pri.							
Sec.							
Left							
Thru	LTR	242	1040	0.23	0.225	234	1.03
Right							

Sum (v/s) critical = 1.10
Lost Time/Cycle, L = 10.00 sec Critical v/c(X) = 1.26

LEVEL OF SERVICE WORKSHEET

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
L	0.87	0.650	12.1	1.000	479	0.40	18.7	0.0	30.7	C		
TR	0.66	0.663	8.1	1.000	2366	0.50	1.5	0.0	9.6	A	14.0	B

Westbound												
L	0.20	0.450	13.3	1.000	123	0.50	3.5	0.0	16.8	B		
TR	0.54	0.463	15.4	1.000	1596	0.50	1.3	0.0	16.7	B	16.7	B
Northbound												
LT	2.00	0.225	31.0	1.000	202	0.50		0.0				
R	0.05	0.213	25.1	1.000	343	0.11	0.1	0.0	25.1	C		
Southbound												
LTR	1.03	0.225	31.0	1.000	234	0.50	154.3	0.0	185.3	F	185.3	F

Intersection Delay = (sec/veh) Intersection LOS =

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 80.0 sec				
Actual Green Time for Lane Group, G	51.0	35.0		
Effective Green Time for Lane Group, g	39.00	37.00		
Opposing Effective Green Time, go	35.0	51.0		
Number of Lanes in Lane Group, N	1	1		
Number of Opposing Lanes, No	2	2		
Adjusted Left-Turn Flow Rate, Vlt	417	24		
Proportion of Left Turns in Opposing Flow, Plto	0.00	0.00		
Adjusted Opposing Flow Rate, Vo	862	1560		
Lost Time for Lane Group, tl	6.00	6.00		
Left Turns per Cycle: LTC=VltC/3600	9.27	0.53		
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo	10.08	18.25		
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)	1.00	1.00		
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g	0.0	0.0		
Opposing Queue Ratio: qro=1-Rpo(go/C)	0.56	0.36		
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g	15.16	3.32		
gu =g-gq if gq>=gf, =g-gf if gq<gf	23.84	33.68		
n=(gq-gf)/2, n>=0	7.58	1.66		
Ptho=1-Plto	1.00	1.00		
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)))	1.00	1.00		
El1 (Figure 9-7)	3.04	6.13		
El2=(1-Ptho**n)/Plto, El2>=1.0	1.00	1.00		
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g	0.10	0.11		
gdiff=max(gq-gf,0)	0.00	0.00		
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)	0.20	0.15		
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N** flt	0.201	0.148		

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 80.0 sec				
Actual Green Time for Lane Group, G			17.0	17.0
Effective Green Time for Lane Group, g			18.00	18.00
Opposing Effective Green Time, go			17.0	17.0
Number of Lanes in Lane Group, N			1	1
Number of Opposing Lanes, No			1	1
Adjusted Left-Turn Flow Rate, Vlt			64	48
Proportion of Left Turns in Lane Group, Plt			0.16	0.20
Proportion of Left Turns in Opposing Flow, Plto			0.20	0.16
Adjusted Opposing Flow Rate, Vo			242	404
Lost Time for Lane Group, tl			4.00	4.00
Left Turns per Cycle: LTC=VltC/3600			1.42	1.07
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo			5.38	8.98
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)			1.00	1.00
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g			1.8	2.7
Opposing Queue Ratio: qro=1-Rpo(go/C)			0.79	0.79
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g			9.82	16.43
gu =g-gq if gq>=gf, =g-gf if gq<gf			8.18	1.57
n=(gq-gf)/2, n>=0			4.01	6.84
Ptho=1-Plto			0.80	0.84
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)))			0.16	0.20
El1 (Figure 9-7)			1.77	2.09
El2=(1-Ptho**n)/Plto, El2>=1.0			2.96	4.37
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g			0.13	0.13
gdiff=max(gq-gf,0)			8.01	13.68
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)			0.51	0.68
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N**				
flt Primary			0.505	0.680

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Adj. LT Vol from Vol Adjustment Worksheet, v	417			
v/c ratio from Capacity Worksheet, X	0.67			
Primary phase effective green, g	39.00			
Secondary phase effective green, gq	15.16			
(From Supplemental Permitted LT Worksheet), gu	23.84			
Cycle length, C 80.0 Red =(C-g-gq-gu), r	28.0			
Arrivals: v/(3600(max(X,1.0))), qa	0.12			
Primary ph. departures: s/3600, sp	0.501			
Secondary ph. departures: s(gq+gu)/(gu*3600), ss	0.17			
XPerm	1.09			
XProt	0.73			
XCase	3			

Queue at begining of green arrow, Qa	3.62
Queue at beginning of unsaturated green, Qu	1.76
Residual queue, Qr	0.38
Uniform Delay, d1	12.1

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
Westbound								
Northbound								
Southbound								

Intersection Delay sec/veh Intersection LOS

ERROR MESSAGES

No errors to report.

HCS: Signals Release 3.1a

Inter: Jericho Tpke and Dix Hills Rd. City/St: Dix Hills
Analyst: BL Proj #: 84016
Date: 7/21/99 Period: No Build PM Peak Hour
E/W St: Jericho Turnpike N/S St: Dix Hills Road/Greenlawn Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	2	0	0	0	0	0	1	0
LGConfig	L	TR		L	TR						LTR	
Volume	375	1303	101	23	774	62				81	128	154
Lane Width	12.0	12.0		11.0	11.0						10.0	
RTOR Vol			0			0						0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left				
	Thru	P	P				Thru				
	Right	P	P				Right				
	Peds						Ped				
WB	Left		P			SB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Ped				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		13.0	41.0					9.5			
Yellow		3.0	4.0					3.5			
All Red		0.0	3.0					3.0			

Cycle Length: 80.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capcity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	542		0.77	0.725	14.2	B		
TR	2634	3571	0.59	0.738	5.9	A	7.6	A
Westbound								
L	157	300	0.15	0.525	11.9	B		
TR	1855	3451	0.46	0.538	12.2	B	12.2	B
Northbound								
Southbound								
LTR	194	1478	1.94	0.131				

Intersection Delay = (sec/veh) Intersection LOS =

Traffic Engineering
Nelson And Pope LLP
572 Walt Whitman Rd.
Melville, New York 11747

Phone: (516) 427-5665 Fax: (516) 427-5620
E-Mail: np@nelsonpope.com

OPERATIONAL ANALYSIS

Intersection:	Jericho Tpke and Dix Hills Rd.
City/State:	Dix Hills
Analyst:	BL
Project No:	84016
Time Period Analyzed:	No Build PM Peak Hour
Date:	7/21/99
East/West Street Name:	Jericho Turnpike
North/South Street Name:	Dix Hills Road/Greenlawn Road

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	375	1303	101	23	774	62				81	128	154
PHF	0.90	0.90	0.90	0.97	0.97	0.97				0.96	0.96	0.96
PK 15 Vol	104	362	28	6	199	16				21	33	40
Hi Ln Vol												
% Grade		0			0						0	
Ideal Sat	1900	1900		1900	1900						1900	
ParkExist												
NumPark												
% Heavy Veh	0	0	0	0	0	0				0	0	0
No. Lanes	1	2	0	1	2	0	0	0	0	0	1	0
LGConfig	L	TR		L	TR						LTR	
Lane Width	12.0	12.0		11.0	11.0						10.0	
RTOR Vol			0			0						0
Adj Flow	417	1560		24	862						377	
%InSharedLn												
Prop Turns			0.07			0.07				0.22		0.42
NumPeds			0			0			0			0
NumBus	0	0		0	0						0	

Duration 1.00 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet	0.0	0.0		0.0	0.0						0.0	
Arriv. Type	3	3		3	3						3	
Unit Ext.	3.0	3.0		3.0	3.0						3.0	
I Factor		1.000			1.000						1.000	
Lost Time	2.0	2.0		2.0	2.0						2.0	
Ext of g	3.0	4.0		3.0	4.0						3.0	
Ped Min g		0.0			0.0						0.0	

PHASE DATA

Phase Combination		1	2	3	4		5	6	7	8
EB	Left	A	P			NB	Left			
	Thru	P	P				Thru			
	Right	P	P				Right			
	Peds						Ped			
WB	Left		P			SB	Left	A		
	Thru		P				Thru	A		
	Right		P				Right	A		
	Peds						Ped			
NB	Right					EB	Right			
SB	Right					WB	Right			
Green		13.0	41.0				9.5			
Yellow		3.0	4.0				3.5			
All Red		0.0	3.0				3.0			

Cycle Length: 80.0 secs

VOLUME ADJUSTMENT WORKSHEET

Appr./ Movement	Mvt Volume	PHF	Flow Rate	No. Lanes	Lane Group	RTOR	Adjusted Flow Rate In Lane Grp	Prop. Left Turns	Prop. Right Turns
Eastbound									
Left	375	0.90	417	1	L		417		
Thru	1303	0.90	1448	2	TR		1560		0.07
Right	101	0.90	112	0		0			
Westbound									
Left	23	0.97	24	1	L		24		
Thru	774	0.97	798	2	TR		862		0.07
Right	62	0.97	64	0		0			
Northbound									
Left				0					
Thru				0					
Right				0					
Southbound									
Left	81	0.96	84	0					
Thru	128	0.96	133	1	LTR		377	0.22	0.42
Right	154	0.96	160	0		0			

* Value entered by user.

SATURATION FLOW ADJUSTMENT WORKSHEET

Appr/ Lane Group	Ideal Sat Flow	f W	f HV	f G	f P	f BB	f A	f LU	f RT	f LT	Adj Sat Flow
Eastbound							Sec LT	Adj/LT	Sat:	0.233	442
L	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	----	0.950	1805

TR	1900	1.000	1.000	1.000	1.000	1.000	1.00	0.95	0.989	1.000	3571

Westbound							Sec LT	Adj/LT	Sat:		
L	1900	0.967	1.000	1.000	1.000	1.000	1.00	1.00	----	0.163	300
TR	1900	0.967	1.000	1.000	1.000	1.000	1.00	0.95	0.989	1.000	3451

Northbound							Sec LT	Adj/LT	Sat:		

Southbound							Sec LT	Adj/LT	Sat:		

LTR	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	0.843	0.989	1478

CAPACITY ANALYSIS WORKSHEET

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Pri.		293	1805	# 0.16	0.162	293	1.00
Sec.		124	442	0.28	0.563	249	0.50
Left	L	417			0.725	542	0.77
Thru	TR	1560	3571	0.44	0.738	2634	0.59
Right							
Westbound							
Pri.							
Sec.							
Left	L	24	300	0.08	0.525	157	0.15
Thru	TR	862	3451	0.25	0.538	1855	0.46
Right							
Northbound							
Pri.							
Sec.							
Left							
Thru							
Right							
Southbound							
Pri.							
Sec.							
Left							
Thru	LTR	377	1478	# 0.26	0.131	194	1.94
Right							

Sum (v/s) critical = 0.98
Lost Time/Cycle, L = 11.50 sec Critical v/c(X) = 1.14

LEVEL OF SERVICE WORKSHEET

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
L	0.77	0.725	7.2	1.000	542	0.32	7.0	0.0	14.2	B		
TR	0.59	0.738	4.9	1.000	2634	0.50	1.0	0.0	5.9	A	7.6	A

Westbound

L	0.15	0.525	9.8	1.000	157	0.50	2.1	0.0	11.9	B		
TR	0.46	0.538	11.4	1.000	1855	0.50	0.8	0.0	12.2	B	12.2	B

Northbound

Southbound

LTR	1.94	0.131	34.8	1.000	194	0.50		0.0

Intersection Delay = (sec/veh) Intersection LOS =

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 80.0 sec				
Actual Green Time for Lane Group, G	57.0	41.0		
Effective Green Time for Lane Group, g	45.00	43.00		
Opposing Effective Green Time, go	41.0	57.0		
Number of Lanes in Lane Group, N	1	1		
Number of Opposing Lanes, No	2	2		
Adjusted Left-Turn Flow Rate, Vlt	417	24		
Proportion of Left Turns in Opposing Flow, Plto	0.00	0.00		
Adjusted Opposing Flow Rate, Vo	862	1560		
Lost Time for Lane Group, tl	6.00	6.00		
Left Turns per Cycle: LTC=VltC/3600	9.27	0.53		
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo	10.08	18.25		
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)	1.00	1.00		
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g	0.0	0.0		
Opposing Queue Ratio: qro=1-Rpo(go/C)	0.49	0.29		
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g	13.14	0.00		
gu =g-gq if gq>=gf, =g-gf if gq<gf	31.86	43.00		
n=(gq-gf)/2, n>=0	6.57	0.00		
Ptho=1-Plto	1.00	1.00		
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)))	1.00	1.00		
El1 (Figure 9-7)	3.04	6.13		
El2=(1-Ptho**n)/Plto, El2>=1.0	1.00	1.00		
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g	0.09	0.09		
gdiff=max(gq-gf,0)	0.00	0.00		
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)	0.23	0.16		
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N** flt	0.233	0.163		

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 80.0 sec				
Actual Green Time for Lane Group, G				
Effective Green Time for Lane Group, g				
Opposing Effective Green Time, go				
Number of Lanes in Lane Group, N				
Number of Opposing Lanes, No				
Adjusted Left-Turn Flow Rate, Vlt				
Proportion of Left Turns in Lane Group, Plt				
Proportion of Left Turns in Opposing Flow, Plto				
Adjusted Opposing Flow Rate, Vo				
Lost Time for Lane Group, tl				
Left Turns per Cycle: LTC=VltC/3600				
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo				
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)				
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g				
Opposing Queue Ratio: qro=1-Rpo(go/C)				
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g				
gu =g-gq if gq>=gf, =g-gf if gq<gf				
n=(gq-gf)/2, n>=0				
Ptho=1-Plto				
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)))				
El1 (Figure 9-7)				
El2=(1-Ptho**n)/Plto, El2>=1.0				
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g				
gdiff=max(gq-gf,0)				
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)				
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}]				
+[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N**				
flt Primary				

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Adj. LT Vol from Vol Adjustment Worksheet, v	417			
v/c ratio from Capacity Worksheet, X	0.50			
Primary phase effective green, g	45.00			
Secondary phase effective green, gq	13.14			
(From Supplemental Permitted LT Worksheet), gu	31.86			
Cycle length, C 80.0 Red =(C-g-gq-gu), r	22.0			
Arrivals: v/(3600(max(X,1.0))), qa	0.12			
Primary ph. departures: s/3600, sp	0.501			
Secondary ph. departures: s(gq+gu)/(gu*3600), ss	0.17			
XPerm	0.94			
XProt	0.62			
XCase	1			

Queue at begining of green arrow, Qa	2.55
Queue at beginning of unsaturated green, Qu	1.52
Residual queue, Qr	0.00
Uniform Delay, d1	7.2

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
Westbound								
Northbound								
Southbound								

Intersection Delay sec/veh Intersection LOS

ERROR MESSAGES

No errors to report.

Nelson & Pope, LLP

Job Title: Hren Shopping Center
Job No: 84016
Date: October-99

5 Way Intersection Level of Service Summary Sheet

Intersection: JERICHO TURNPIKE AND DIXHILLS ROAD/GREENLAWN ROAD
Time Period: Saturday Peak Hour
Condition: NO BUILD

Approach	Movement	Adjusted Flow Rate (v)	v/s Critical	Delay sec/veh	Approach Delay sec/veh
JERICHO TPKE EASTBOUND	Left	231		48.7	
	Through	1556		86.5	81.6
	Right				
JERICHO TPKE WESTBOUND	Left	54		47.1	
	Through	1523	0.44	*	*
	Right				
DIXHILLS RD NORTHBOUND	Left	233		57.8	
	Through	42	0.21	23.2	52.5
	Right				
DIXHILLS RD SOUTHBOUND	Left				
	Through	154		25.4	25.4
	Right				
GREENLAWN RD SOUTHBOUND	Left				
	Through	291	0.20	853.5	853.5
	Right				

IntersectionDelay:	*	sec/veh
Level of Service:	*	
Cycle Length:	80.0	sec.
Lost Time:	4.0	sec.
Sum Critical v/s:	0.85	
Critical Xc:	0.89	

HCS: Signals Release 3.1a

Inter: Jericho Tpke and Dix Hills Rd. City/St: Dix Hills
Analyst: BL Proj #: 84016
Date: 7/21/99 Period: No Build Sat. Peak Hour
E/W St: Jericho Turnpike N/S St: Dix Hills Road/Greenlawn Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	2	0	0	1	1	0	1	0
LGConfig	L	TR		L	TR			LT	R		LTR	
Volume	217	1331	69	46	1225	70	77	132	38	26	64	57
Lane Width	12.0	12.0		11.0	11.0			10.0	12.0		10.0	
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left	A			
	Thru	P	P				Thru	A			
	Right	P	P				Right	A			
	Peds						Ped				
WB	Left		P			SB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Ped				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		8.0	19.0					33.0			
Yellow		3.0	4.0					3.0			
All Red		0.0	3.0					2.0			

Cycle Length: 75.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capcity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	294		0.79	0.413	48.7	D		
TR	1529	3583	1.02	0.427	86.5	F	81.6	F
Westbound								
L	96	350	0.56	0.267	47.1	D		
TR	969	3461	1.57	0.280				
Northbound								
LT	680	1501	0.33	0.453	13.4	B	13.2	B
R	711	1615	0.06	0.440	12.1	B		
Southbound								
LTR	636	1404	0.24	0.453	12.8	B	12.8	B

Intersection Delay = (sec/veh) Intersection LOS =

Traffic Engineering
Nelson And Pope LLP
572 Walt Whitman Rd.
Melville, New York 11747

Phone: (516) 427-5665 Fax: (516) 427-5620
E-Mail: np@nelsonpope.com

OPERATIONAL ANALYSIS

Intersection:	Jericho Tpke and Dix Hills Rd.
City/State:	Dix Hills
Analyst:	BL
Project No:	84016
Time Period Analyzed:	No Build Sat. Peak Hour
Date:	7/21/99
East/West Street Name:	Jericho Turnpike
North/South Street Name:	Dix Hills Road/Greenlawn Road

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	217	1331	69	46	1225	70	77	132	38	26	64	57
PHF	0.94	0.90	0.90	0.85	0.85	0.85	0.94	0.94	0.94	0.95	0.95	0.95
PK 15 Vol	58	370	19	14	360	21	20	35	10	7	17	15
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat	1900	1900		1900	1900			1900	1900		1900	
ParkExist												
NumPark												
% Heavy Veh	0	0	0	0	0	0	0	0	0	0	0	0
No. Lanes	1	2	0	1	2	0	0	1	1	0	1	0
LGConfig	L	TR		L	TR			LT	R		LTR	
Lane Width	12.0	12.0		11.0	11.0			10.0	12.0		10.0	
RTOR Vol			0			0			0			0
Adj Flow	231	1556		54	1523			222	40		154	
%InSharedLn												
Prop Turns			0.05			0.05	0.37			0.18		0.39
NumPeds			0			0			0			0
NumBus	0	0		0	0			0	0		0	

Duration 1.00 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Arriv. Type	3	3		3	3			3	3		3	
Unit Ext.	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
I Factor		1.000			1.000			1.000			1.000	
Lost Time	2.0	2.0		2.0	2.0			2.0	2.0		2.0	
Ext of g	3.0	4.0		3.0	4.0			3.0	2.0		3.0	
Ped Min g		0.0			0.0			0.0			0.0	

PHASE DATA

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left	A			
	Thru	P	P				Thru	A			
	Right	P	P				Right	A			
	Peds						Ped				
WB	Left		P			SB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Ped				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		8.0	19.0					33.0			
Yellow		3.0	4.0					3.0			
All Red		0.0	3.0					2.0			

Cycle Length: 75.0 secs

VOLUME ADJUSTMENT WORKSHEET

Appr./ Movement	Mvt Volume	PHF	Flow Rate	No. Lanes	Lane Group	RTOR	Adjusted Flow Rate In Lane Grp	Prop. Left Turns	Prop. Right Turns
Eastbound									
Left	217	0.94	231	1	L		231		
Thru	1331	0.90	1479	2	TR		1556		0.05
Right	69	0.90	77	0		0			
Westbound									
Left	46	0.85	54	1	L		54		
Thru	1225	0.85	1441	2	TR		1523		0.05
Right	70	0.85	82	0		0			
Northbound									
Left	77	0.94	82	0					
Thru	132	0.94	140	1	LT		222	0.37	
Right	38	0.94	40	1	R	0	40		
Southbound									
Left	26	0.95	27	0					
Thru	64	0.95	67	1	LTR		154	0.18	0.39
Right	57	0.95	60	0		0			

* Value entered by user.

SATURATION FLOW ADJUSTMENT WORKSHEET

Appr/ Lane Group	Ideal Sat Flow	f W	f HV	f G	f P	f BB	f A	f LU	f RT	f LT	Adj Sat Flow
Eastbound							Sec LT	Adj/LT	Sat:	0.174	330
L	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	----	0.950	1805

TR	1900	1.000	1.000	1.000	1.000	1.000	1.00	0.95	0.993	1.000	3583

Westbound							Sec LT	Adj/LT	Sat:		
L	1900	0.967	1.000	1.000	1.000	1.000	1.00	1.00	----	0.190	350
TR	1900	0.967	1.000	1.000	1.000	1.000	1.00	0.95	0.992	1.000	3461

Northbound							Sec LT	Adj/LT	Sat:		

LT	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	1.000	0.846	1501
R	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	0.850	----	1615
Southbound							Sec LT	Adj/LT	Sat:		

LTR	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	0.847	0.934	1404

CAPACITY ANALYSIS WORKSHEET

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Pri.		193	1805	# 0.11	0.107	193	1.00
Sec.		38	330	0.12	0.307	101	0.38
Left	L	231			0.413	294	0.79
Thru	TR	1556	3583	0.43	0.427	1529	1.02
Right							
Westbound							
Pri.							
Sec.							
Left	L	54	350	0.15	0.267	96	0.56
Thru	TR	1523	3461	# 0.44	0.280	969	1.57
Right							
Northbound							
Pri.							
Sec.							
Left							
Thru	LT	222	1501	# 0.15	0.453	680	0.33
Right	R	40	1615	0.02	0.440	711	0.06
Southbound							
Pri.							
Sec.							
Left							
Thru	LTR	154	1404	0.11	0.453	636	0.24
Right							

Sum (v/s) critical = 0.69

Lost Time/Cycle, L = 15.00 sec Critical v/c(X) = 0.87

LEVEL OF SERVICE WORKSHEET

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
L	0.79	0.413	34.3	1.000	294	0.33	14.4	0.0	48.7	D		
TR	1.02	0.427	21.5	1.000	1529	0.50	65.0	0.0	86.5	F	81.6	F

Westbound												
L	0.56	0.267	23.7	1.000	96	0.50	23.4	0.0	47.1	D		
TR	1.57	0.280	27.0	1.000	969	0.50		0.0				
Northbound												
LT	0.33	0.453	13.2	1.000	680	0.11	0.3	0.0	13.4	B	13.2	B
R	0.06	0.440	12.1	1.000	711	0.11	0.0	0.0	12.1	B		
Southbound												
LTR	0.24	0.453	12.6	1.000	636	0.11	0.2	0.0	12.8	B	12.8	B

Intersection Delay = (sec/veh) Intersection LOS =

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 75.0 sec				
Actual Green Time for Lane Group, G	30.0	19.0		
Effective Green Time for Lane Group, g	23.00	21.00		
Opposing Effective Green Time, go	19.0	30.0		
Number of Lanes in Lane Group, N	1	1		
Number of Opposing Lanes, No	2	2		
Adjusted Left-Turn Flow Rate, Vlt	231	54		
Proportion of Left Turns in Opposing Flow, Plto	0.00	0.00		
Adjusted Opposing Flow Rate, Vo	1523	1556		
Lost Time for Lane Group, tl	6.00	6.00		
Left Turns per Cycle: LTC=VltC/3600	4.81	1.13		
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo	16.70	17.06		
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)	1.00	1.00		
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g	0.0	0.0		
Opposing Queue Ratio: qro=1-Rpo(go/C)	0.75	0.60		
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g	23.00	21.00		
gu =g-gq if gq>=gf, =g-gf if gq<gf	0.00	0.00		
n=(gq-gf)/2, n>=0	11.50	10.50		
Ptho=1-Plto	1.00	1.00		
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)))	1.00	1.00		
El1 (Figure 9-7)	5.90	6.11		
El2=(1-Ptho**n)/Plto, El2>=1.0	1.00	1.00		
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g	0.17	0.19		
gdiff=max(gq-gf,0)	0.00	0.00		
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)	0.17	0.19		
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N**				
flt	0.174	0.190		

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 75.0 sec				
Actual Green Time for Lane Group, G			33.0	33.0
Effective Green Time for Lane Group, g			34.00	34.00
Opposing Effective Green Time, go			33.0	33.0
Number of Lanes in Lane Group, N			1	1
Number of Opposing Lanes, No			1	1
Adjusted Left-Turn Flow Rate, Vlt			82	27
Proportion of Left Turns in Lane Group, Plt			0.37	0.18
Proportion of Left Turns in Opposing Flow, Plto			0.18	0.37
Adjusted Opposing Flow Rate, Vo			154	222
Lost Time for Lane Group, tl			4.00	4.00
Left Turns per Cycle: LTC=VltC/3600			1.71	0.56
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo			3.21	4.63
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)			1.00	1.00
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g			5.9	14.4
Opposing Queue Ratio: qro=1-Rpo(go/C)			0.56	0.56
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g			2.50	4.58
gu =g-gq if gq>=gf, =g-gf if gq<gf			28.10	19.59
n=(gq-gf)/2, n>=0			0.00	0.00
Ptho=1-Plto			0.82	0.63
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)})			0.37	0.18
El1 (Figure 9-7)			1.62	1.74
El2=(1-Ptho**n)/Plto, El2>=1.0			1.00	1.00
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g			0.08	0.07
gdiff=max(gq-gf,0)			0.00	0.00
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)			0.85	0.93
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N** flt Primary			0.846	0.934

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Adj. LT Vol from Vol Adjustment Worksheet, v	231			
v/c ratio from Capacity Worksheet, X	0.38			
Primary phase effective green, g	23.00			
Secondary phase effective green, gq	23.00			
(From Supplemental Permitted LT Worksheet), gu	0.00			
Cycle length, C 75.0 Red =(C-g-gq-gu), r	44.0			
Arrivals: v/(3600(max(X,1.0))), qa	0.06			
Primary ph. departures: s/3600, sp	0.501			
Secondary ph. departures: s(gq+gu)/(gu*3600), ss	23.00			
XPerm	9.99			
XProt	0.83			
XCase	3			

Queue at begining of green arrow, Qa	4.30
Queue at beginning of unsaturated green, Qu	1.48
Residual queue, Qr	1.48
Uniform Delay, d1	34.3

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
Westbound								
Northbound								
Southbound								

Intersection Delay sec/veh Intersection LOS

ERROR MESSAGES

No errors to report.

HCS: Signals Release 3.1a

Inter: Jericho Tpke and Dix Hills Rd. City/St: Dix Hills
Analyst: BL Proj #: 84016
Date: 7/21/99 Period: No Build Sat. Peak Hour
E/W St: Jericho Turnpike N/S St: Dix Hills Road/Greenlawn Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	2	0	0	1	1	0	1	0
LGConfig	L	TR		L	TR			LT	R		LTR	
Volume	217	1311	69	46	1225	70	77	132	38	26	64	57
Lane Width	12.0	12.0		11.0	11.0			10.0	12.0		10.0	
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A	P			NB	Left	A			
Thru	P	P				Thru	A			
Right	P	P				Right	A			
Peds						Ped				
WB Left		P			SB	Left	A			
Thru		P				Thru	A			
Right		P				Right	A			
Peds						Ped				
NB Right					EB	Right				
SB Right					WB	Right				
Green	8.0	35.0					17.0			
Yellow	3.0	4.0					3.0			
All Red	0.0	3.0					2.0			

Cycle Length: 75.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capcity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	294		0.79	0.627	30.4	C		
TR	2293	3583	0.64	0.640	9.6	A	12.5	B
Westbound								
L	133	277	0.36	0.480	19.9	B		
TR	1707	3461	0.80	0.493	20.0+	C	20.0+	C
Northbound								
LT	269	1121	0.87	0.240	57.8	E	52.5	D
R	366	1615	0.11	0.227	23.2	C		
Southbound								
LTR	335	1395	0.46	0.240	25.4	C	25.4	C

Intersection Delay = 19.1 (sec/veh) Intersection LOS = B

Traffic Engineering
Nelson And Pope LLP
572 Walt Whitman Rd.
Melville, New York 11747

Phone: (516) 427-5665 Fax: (516) 427-5620
E-Mail: np@nelsonpope.com

OPERATIONAL ANALYSIS

Intersection:	Jericho Tpke and Dix Hills Rd.
City/State:	Dix Hills
Analyst:	BL
Project No:	84016
Time Period Analyzed:	No Build Sat. Peak Hour
Date:	7/21/99
East/West Street Name:	Jericho Turnpike
North/South Street Name:	Dix Hills Road/Greenlawn Road

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	217	1311	69	46	1225	70	77	132	38	26	64	57
PHF	0.94	0.94	0.94	0.95	0.95	0.95	0.90	0.90	0.90	0.95	0.95	0.95
PK 15 Vol	58	349	18	12	322	18	21	37	11	7	17	15
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat	1900	1900		1900	1900			1900	1900		1900	
ParkExist												
NumPark												
% Heavy Veh	0	0	0	0	0	0	0	0	0	0	0	0
No. Lanes	1	2	0	1	2	0	0	1	1	0	1	0
LGConfig	L	TR		L	TR			LT	R		LTR	
Lane Width	12.0	12.0		11.0	11.0			10.0	12.0		10.0	
RTOR Vol			0			0			0			0
Adj Flow	231	1468		48	1363			233	42		154	
%InSharedLn												
Prop Turns			0.05			0.05	0.37			0.18		0.39
NumPeds			0			0			0			0
NumBus	0	0		0	0			0	0		0	

Duration 1.00 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Arriv. Type	3	3		3	3			3	3		3	
Unit Ext.	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
I Factor		1.000			1.000			1.000			1.000	
Lost Time	2.0	2.0		2.0	2.0			2.0	2.0		2.0	
Ext of g	3.0	4.0		3.0	4.0			3.0	2.0		3.0	
Ped Min g		0.0			0.0			0.0			0.0	

PHASE DATA

Phase Combination		1	2	3	4	5	6	7	8
EB	Left	A	P			NB Left A			
	Thru	P	P			Thru A			
	Right	P	P			Right A			
	Peds					Ped			
WB	Left		P			SB Left A			
	Thru		P			Thru A			
	Right		P			Right A			
	Peds					Ped			
NB	Right					EB Right			
SB	Right					WB Right			
Green		8.0	35.0			17.0			
Yellow		3.0	4.0			3.0			
All Red		0.0	3.0			2.0			

Cycle Length: 75.0 secs

VOLUME ADJUSTMENT WORKSHEET

Appr./ Movement	Mvt Volume	PHF	Flow Rate	No. Lanes	Lane Group	RTOR	Adjusted Flow Rate In Lane Grp	Prop. Left Turns	Prop. Right Turns
Eastbound									
Left	217	0.94	231	1	L		231		
Thru	1311	0.94	1395	2	TR		1468		0.05
Right	69	0.94	73	0		0			
Westbound									
Left	46	0.95	48	1	L		48		
Thru	1225	0.95	1289	2	TR		1363		0.05
Right	70	0.95	74	0		0			
Northbound									
Left	77	0.90	86	0					
Thru	132	0.90	147	1	LT		233	0.37	
Right	38	0.90	42	1	R	0	42		
Southbound									
Left	26	0.95	27	0					
Thru	64	0.95	67	1	LTR		154	0.18	0.39
Right	57	0.95	60	0		0			

* Value entered by user.

SATURATION FLOW ADJUSTMENT WORKSHEET

Appr/ Lane Group	Ideal Sat Flow	f W	f HV	f G	f P	f BB	f A	f LU	f RT	f LT	Adj Sat Flow
Eastbound							Sec LT	Adj/LT	Sat:	0.103	195
L	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	----	0.950	1805

TR	1900	1.000	1.000	1.000	1.000	1.000	1.00	0.95	0.993	1.000	3583

Westbound							Sec LT	Adj/LT	Sat:		
L	1900	0.967	1.000	1.000	1.000	1.000	1.00	1.00	----	0.151	277
TR	1900	0.967	1.000	1.000	1.000	1.000	1.00	0.95	0.992	1.000	3461

Northbound							Sec LT	Adj/LT	Sat:		

LT	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	1.000	0.632	1121
R	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	0.850	----	1615
Southbound							Sec LT	Adj/LT	Sat:		

LTR	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	0.847	0.928	1395

CAPACITY ANALYSIS WORKSHEET

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Pri.		193	1805	# 0.11	0.107	193	1.00
Sec.		38	195	0.19	0.520	101	0.38
Left	L	231			0.627	294	0.79
Thru	TR	1468	3583	0.41	0.640	2293	0.64
Right							
Westbound							
Pri.							
Sec.							
Left	L	48	277	0.17	0.480	133	0.36
Thru	TR	1363	3461	# 0.39	0.493	1707	0.80
Right							
Northbound							
Pri.							
Sec.							
Left							
Thru	LT	233	1121	# 0.21	0.240	269	0.87
Right	R	42	1615	0.03	0.227	366	0.11
Southbound							
Pri.							
Sec.							
Left							
Thru	LTR	154	1395	0.11	0.240	335	0.46
Right							

Sum (v/s) critical = 0.71
Lost Time/Cycle, L = 15.00 sec Critical v/c(X) = 0.89

LEVEL OF SERVICE WORKSHEET

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
L	0.79	0.627	16.0	1.000	294	0.33	14.4	0.0	30.4	C		
TR	0.64	0.640	8.2	1.000	2293	0.50	1.4	0.0	9.6	A	12.5	B

Westbound												
L	0.36	0.480	12.3	1.000	133	0.50	7.6	0.0	19.9	B		
TR	0.80	0.493	15.9	1.000	1707	0.50	4.1	0.0	20.0+	C	20.0+	C
Northbound												
LT	0.87	0.240	27.3	1.000	269	0.40	30.4	0.0	57.8	E	52.5	D
R	0.11	0.227	23.0	1.000	366	0.11	0.1	0.0	23.2	C		
Southbound												
LTR	0.46	0.240	24.3	1.000	335	0.11	1.0	0.0	25.4	C	25.4	C

Intersection Delay = 19.1 (sec/veh) Intersection LOS = B

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 75.0 sec				
Actual Green Time for Lane Group, G	46.0	35.0		
Effective Green Time for Lane Group, g	39.00	37.00		
Opposing Effective Green Time, go	35.0	46.0		
Number of Lanes in Lane Group, N	1	1		
Number of Opposing Lanes, No	2	2		
Adjusted Left-Turn Flow Rate, Vlt	231	48		
Proportion of Left Turns in Opposing Flow, Plto	0.00	0.00		
Adjusted Opposing Flow Rate, Vo	1363	1468		
Lost Time for Lane Group, tl	6.00	6.00		
Left Turns per Cycle: LTC=VltC/3600	4.81	1.00		
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo	14.95	16.10		
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)	1.00	1.00		
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g	0.0	0.0		
Opposing Queue Ratio: qro=1-Rpo(go/C)	0.53	0.39		
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g	26.50	5.81		
gu =g-gq if gq>=gf, =g-gf if gq<gf	12.50	31.19		
n=(gq-gf)/2, n>=0	13.25	2.90		
Ptho=1-Plto	1.00	1.00		
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)))	1.00	1.00		
El1 (Figure 9-7)	5.02	5.58		
El2=(1-Ptho**n)/Plto, El2>=1.0	1.00	1.00		
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g	0.10	0.11		
gdiff=max(gq-gf,0)	0.00	0.00		
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)	0.10	0.15		
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N**				
flt	0.103	0.151		

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 75.0 sec				
Actual Green Time for Lane Group, G			17.0	17.0
Effective Green Time for Lane Group, g			18.00	18.00
Opposing Effective Green Time, go			17.0	17.0
Number of Lanes in Lane Group, N			1	1
Number of Opposing Lanes, No			1	1
Adjusted Left-Turn Flow Rate, Vlt			86	27
Proportion of Left Turns in Lane Group, Plt			0.37	0.18
Proportion of Left Turns in Opposing Flow, Plto			0.18	0.37
Adjusted Opposing Flow Rate, Vo			154	233
Lost Time for Lane Group, tl			4.00	4.00
Left Turns per Cycle: LTC=VltC/3600			1.79	0.56
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo			3.21	4.85
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)			1.00	1.00
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g			0.9	5.5
Opposing Queue Ratio: qro=1-Rpo(go/C)			0.77	0.77
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g			5.15	8.54
gu =g-gq if gq>=gf, =g-gf if gq<gf			12.85	9.46
n=(gq-gf)/2, n>=0			2.12	1.53
Ptho=1-Plto			0.82	0.63
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)))			0.37	0.18
El1 (Figure 9-7)			1.62	1.76
El2=(1-Ptho**n)/Plto, El2>=1.0			1.91	1.37
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g			0.15	0.13
gdiff=max(gq-gf,0)			4.23	3.06
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)			0.63	0.93
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N**				
flt Primary			0.632	0.928

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Adj. LT Vol from Vol Adjustment Worksheet, v	231			
v/c ratio from Capacity Worksheet, X	0.38			
Primary phase effective green, g	39.00			
Secondary phase effective green, gq	26.50			
(From Supplemental Permitted LT Worksheet), gu	12.50			
Cycle length, C 75.0 Red =(C-g-gq-gu), r	28.0			
Arrivals: v/(3600(max(X,1.0))), qa	0.06			
Primary ph. departures: s/3600, sp	0.501			
Secondary ph. departures: s(gq+gu)/(gu*3600), ss	0.17			
XPerm	1.18			
XProt	0.58			
XCase	3			

Queue at begining of green arrow, Qa	2.19
Queue at beginning of unsaturated green, Qu	1.70
Residual queue, Qr	0.39
Uniform Delay, d1	16.0

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
Westbound								
Northbound								
Southbound								

Intersection Delay 19.1 sec/veh Intersection LOS B

ERROR MESSAGES

No errors to report.

HCS: Signals Release 3.1a

Inter: Jericho Tpke and Dix Hills Rd. City/St: Dix Hills
Analyst: BL Proj #: 84016
Date: 7/21/99 Period: No Build Sat. Peak Hour
E/W St: Jericho Turnpike N/S St: Dix Hills Road/Greenlawn Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	2	0	0	0	0	0	1	0
LGConfig	L	TR		L	TR						LTR	
Volume	217	0	69	46	1225	70				24	83	173
Lane Width	12.0	12.0		11.0	11.0						10.0	
RTOR Vol			0			0						0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A	P			NB	Left				
Thru	P	P				Thru				
Right	P	P				Right				
Peds						Ped				
WB Left		P			SB	Left	A			
Thru		P				Thru	A			
Right		P				Right	A			
Peds						Ped				
NB Right					EB	Right				
SB Right					WB	Right				
Green	8.0	42.0					9.5			
Yellow	3.0	4.0					3.5			
All Red	0.0	3.0					2.0			

Cycle Length: 75.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capcity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	315		0.73	0.720	22.2	C		
TR	2251	3069	0.03	0.733	2.8	A	17.5	B
Westbound								
L	745	1299	0.06	0.573	7.3	A		
TR	2030	3461	0.67	0.587	12.4	B	12.2	B
Northbound								
Southbound								
LTR	202	1442	1.44	0.140	853.5	F	853.5	F

Intersection Delay = 135.0 (sec/veh) Intersection LOS = F

Traffic Engineering
Nelson And Pope LLP
572 Walt Whitman Rd.
Melville, New York 11747

Phone: (516) 427-5665 Fax: (516) 427-5620
E-Mail: np@nelsonpope.com

OPERATIONAL ANALYSIS

Intersection:	Jericho Tpke and Dix Hills Rd.
City/State:	Dix Hills
Analyst:	BL
Project No:	84016
Time Period Analyzed:	No Build Sat. Peak Hour
Date:	7/21/99
East/West Street Name:	Jericho Turnpike
North/South Street Name:	Dix Hills Road/Greenlawn Road

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	217	0	69	46	1225	70				24	83	173
PHF	0.94	0.94	0.94	0.95	0.95	0.95				0.96	0.96	0.96
PK 15 Vol	58	3545	18	12	322	18				6	22	45
Hi Ln Vol												
% Grade		0			0						0	
Ideal Sat	1900	1900		1900	1900						1900	
ParkExist												
NumPark												
% Heavy Veh	0	0	0	0	0	0				0	0	0
No. Lanes	1	2	0	1	2	0	0	0	0	0	1	0
LGConfig	L	TR		L	TR						LTR	
Lane Width	12.0	12.0		11.0	11.0						10.0	
RTOR Vol			0			0						0
Adj Flow	231	73		48	1363						291	
%InSharedLn												
Prop Turns			1.00			0.05				0.09		0.62
NumPeds			0			0			0			0
NumBus	0	0		0	0						0	

Duration 1.00 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet	0.0	0.0		0.0	0.0						0.0	
Arriv. Type	3	3		3	3						3	
Unit Ext.	3.0	3.0		3.0	3.0						3.0	
I Factor		1.000			1.000						1.000	
Lost Time	2.0	2.0		2.0	2.0						2.0	
Ext of g	3.0	4.0		3.0	4.0						3.0	
Ped Min g		0.0			0.0						0.0	

PHASE DATA

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left				
	Thru	P	P				Thru				
	Right	P	P				Right				
	Peds						Ped				
WB	Left		P			SB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Ped				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		8.0	42.0					9.5			
Yellow		3.0	4.0					3.5			
All Red		0.0	3.0					2.0			

Cycle Length: 75.0 secs

VOLUME ADJUSTMENT WORKSHEET

Appr./ Movement	Mvt Volume	PHF	Flow Rate	No. Lanes	Lane Group	RTOR	Adjusted Flow Rate In Lane Grp	Prop. Left Turns	Prop. Right Turns
Eastbound									
Left	217	0.94	231	1	L		231		
Thru	0	0.94	0	2	TR		73		1.00
Right	69	0.94	73	0		0			
Westbound									
Left	46	0.95	48	1	L		48		
Thru	1225	0.95	1289	2	TR		1363		0.05
Right	70	0.95	74	0		0			
Northbound									
Left				0					
Thru				0					
Right				0					
Southbound									
Left	24	0.96	25	0					
Thru	83	0.96	86	1	LTR		291	0.09	0.62
Right	173	0.96	180	0		0			

* Value entered by user.

SATURATION FLOW ADJUSTMENT WORKSHEET

Appr/ Lane Group	Ideal Sat Flow	f W	f HV	f G	f P	f BB	f A	f LU	f RT	f LT	Adj Sat Flow
Eastbound							Sec LT	Adj/LT	Sat:	0.105	199
L	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	----	0.950	1805

TR	1900	1.000	1.000	1.000	1.000	1.000	1.00	0.95	0.850	1.000	3069

Westbound							Sec LT	Adj/LT	Sat:		
L	1900	0.967	1.000	1.000	1.000	1.000	1.00	1.00	----	0.707	1299
TR	1900	0.967	1.000	1.000	1.000	1.000	1.00	0.95	0.992	1.000	3461

Northbound							Sec LT	Adj/LT	Sat:		

Southbound							Sec LT	Adj/LT	Sat:		

LTR	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	0.816	0.996	1442

CAPACITY ANALYSIS WORKSHEET

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Pri.		193	1805	# 0.11	0.107	193	1.00
Sec.		38	199	0.19	0.613	122	0.31
Left	L	231			0.720	315	0.73
Thru	TR	73	3069	0.02	0.733	2251	0.03
Right							
Westbound							
Pri.							
Sec.							
Left	L	48	1299	0.04	0.573	745	0.06
Thru	TR	1363	3461	# 0.39	0.587	2030	0.67
Right							
Northbound							
Pri.							
Sec.							
Left							
Thru							
Right							
Southbound							
Pri.							
Sec.							
Left							
Thru	LTR	291	1442	# 0.20	0.140	202	1.44
Right							

Sum (v/s) critical = 0.70

Lost Time/Cycle, L = 15.50 sec Critical v/c(X) = 0.89

LEVEL OF SERVICE WORKSHEET

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
L	0.73	0.720	13.2	1.000	315	0.29	9.0	0.0	22.2	C		
TR	0.03	0.733	2.7	1.000	2251	0.50	0.0	0.0	2.8	A	17.5	B

Westbound

L	0.06	0.573	7.1	1.000	745	0.50	0.2	0.0	7.3	A		
TR	0.67	0.587	10.6	1.000	2030	0.50	1.8	0.0	12.4	B	12.2	B

Northbound

Southbound

LTR	1.44	0.140	32.3	1.000	202	0.50	821.2	0.0	853.5	F	853.5	F

Intersection Delay = 135.0 (sec/veh) Intersection LOS = F

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 75.0 sec				
Actual Green Time for Lane Group, G	53.0	42.0		
Effective Green Time for Lane Group, g	46.00	44.00		
Opposing Effective Green Time, go	42.0	53.0		
Number of Lanes in Lane Group, N	1	1		
Number of Opposing Lanes, No	2	2		
Adjusted Left-Turn Flow Rate, Vlt	231	48		
Proportion of Left Turns in Opposing Flow, Plto	0.00	0.00		
Adjusted Opposing Flow Rate, Vo	1363	73		
Lost Time for Lane Group, tl	6.00	6.00		
Left Turns per Cycle: LTC=VltC/3600	4.81	1.00		
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo	14.95	0.80		
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)	1.00	1.00		
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g	0.0	0.0		
Opposing Queue Ratio: qro=1-Rpo(go/C)	0.44	0.29		
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g	21.87	0.00		
gu =g-gq if gq>=gf, =g-gf if gq<gf	24.13	44.00		
n=(gq-gf)/2, n>=0	10.93	0.00		
Ptho=1-Plto	1.00	1.00		
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)})	1.00	1.00		
El1 (Figure 9-7)	5.02	1.41		
El2=(1-Ptho**n)/Plto, El2>=1.0	1.00	1.00		
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g	0.09	0.09		
gdiff=max(gq-gf,0)	0.00	0.00		
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)	0.10	0.71		
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N** flt	0.105	0.707		

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 75.0 sec				
Actual Green Time for Lane Group, G				
Effective Green Time for Lane Group, g				
Opposing Effective Green Time, go				
Number of Lanes in Lane Group, N				
Number of Opposing Lanes, No				
Adjusted Left-Turn Flow Rate, Vlt				
Proportion of Left Turns in Lane Group, Plt				
Proportion of Left Turns in Opposing Flow, Plto				
Adjusted Opposing Flow Rate, Vo				
Lost Time for Lane Group, tl				
Left Turns per Cycle: LTC=VltC/3600				
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo				
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)				
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g				
Opposing Queue Ratio: qro=1-Rpo(go/C)				
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g				
gu =g-gq if gq>=gf, =g-gf if gq<gf				
n=(gq-gf)/2, n>=0				
Ptho=1-Plto				
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)})				
El1 (Figure 9-7)				
El2=(1-Ptho**n)/Plto, El2>=1.0				
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g				
gdiff=max(gq-gf,0)				
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)				
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}]				
+[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N**				
flt Primary				

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Adj. LT Vol from Vol Adjustment Worksheet, v	231			
v/c ratio from Capacity Worksheet, X	0.31			
Primary phase effective green, g	46.00			
Secondary phase effective green, gq	21.87			
(From Supplemental Permitted LT Worksheet), gu	24.13			
Cycle length, C 75.0 Red =(C-g-gq-gu), r	21.0			
Arrivals: v/(3600(max(X,1.0))), qa	0.06			
Primary ph. departures: s/3600, sp	0.501			
Secondary ph. departures: s(gq+gu)/(gu*3600), ss	0.11			
XPerm	1.16			
XProt	0.46			
XCase	3			

Queue at begining of green arrow, Qa	1.76
Queue at beginning of unsaturated green, Qu	1.40
Residual queue, Qr	0.41
Uniform Delay, d1	13.2

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
Westbound								
Northbound								
Southbound								

Intersection Delay 135.0 sec/veh Intersection LOS F

ERROR MESSAGES

No errors to report.

2. Jericho Turnpike and Park Avenue

HCS: Signals Release 3.1a

Inter: Jericho Tpke and Park Ave
Analyst: BL
Date: 7/21/99
E/W St: Jericho Turnpike

City/St: Dix Hills
Proj #: 84016
Period: No Build PM Peak Hour
N/S St: Park Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	2	0	1	1	0	1	2	0
LGConfig	L	T		L	T		L	T		L	TR	
Volume	40	981		18	544		258	680		94	668	31
Lane Width	12.0	12.0		12.0	12.0		10.0	10.0		9.0	11.0	
RTOR Vol												0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	P				NB	Left	A	A	A	
	Thru	P					Thru		A	A	
	Right						Right				
	Peds						Ped				
WB	Left	P				SB	Left	A		A	
	Thru	P					Thru			A	
	Right						Right			A	
	Peds						Ped				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		27.0						8.0	5.0	25.0	
Yellow		4.0						3.0	0.0	4.0	
All Red		2.0						0.0	0.0	2.0	

Cycle Length: 80.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capcity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	215	592	0.20	0.363	19.7	B		
T	1309	3610	0.82	0.363	29.5	C	29.1	C
Westbound								
L	95	262	0.21	0.363	22.6	C		
T	1309	3610	0.47	0.363	20.8	C	20.8	C
Northbound								
L	364		0.77	0.525	24.8	C		
T	709	1773	1.04	0.400	140.9	F	109.0	F
Southbound								
L	252		0.44	0.438	19.1	B		
TR	1170	3467	0.70	0.338	25.0	C	24.3	C

Intersection Delay = 48.4 (sec/veh) Intersection LOS = D

Traffic Engineering
Nelson And Pope LLP
572 Walt Whitman Rd.
Melville, New York 11747

Phone: (516) 427-5665 Fax: (516) 427-5620
E-Mail: np@nelsonpope.com

OPERATIONAL ANALYSIS

Intersection:	Jericho Tpke and Park Ave
City/State:	Dix Hills
Analyst:	BL
Project No:	84016
Time Period Analyzed:	No Build PM Peak Hour
Date:	7/21/99
East/West Street Name:	Jericho Turnpike
North/South Street Name:	Park Avenue

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	40	981		18	544		258	680		94	668	31
PHF	0.91	0.91		0.89	0.89		0.92	0.92		0.85	0.85	0.85
PK 15 Vol	11	270		5	153		70	185		28	196	9
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat	1900	1900		1900	1900		1900	1900		1900	1900	
ParkExist												
NumPark												
% Heavy Veh	0	0		0	0		0	0		0	0	0
No. Lanes	1	2	0	1	2	0	1	1	0	1	2	0
LGConfig	L	T		L	T		L	T		L	TR	
Lane Width	12.0	12.0		12.0	12.0		10.0	10.0		9.0	11.0	
RTOR Vol												0
Adj Flow	44	1078		20	611		280	739		111	822	
%InSharedLn												
Prop Turns												0.04
NumPeds												0
NumBus	0	0		0	0		0	0		0	0	

Duration 1.00 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Arriv. Type	3	3		3	3		3	3		3	3	
Unit Ext.	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
I Factor		1.000			1.000			1.000			1.000	
Lost Time	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Ext of g	4.0	4.0		4.0	4.0		3.0	4.0		3.0	4.0	
Ped Min g		0.0			0.0			0.0			0.0	

PHASE DATA

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	P				NB	Left	A	A	A	
	Thru	P					Thru		A	A	
	Right						Right				
	Peds						Ped				
WB	Left	P				SB	Left	A		A	
	Thru	P					Thru			A	
	Right						Right			A	
	Peds						Ped				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		27.0						8.0	5.0	25.0	
Yellow		4.0						3.0	0.0	4.0	
All Red		2.0						0.0	0.0	2.0	

Cycle Length: 80.0 secs

VOLUME ADJUSTMENT WORKSHEET

Appr./ Movement	Mvt Volume	PHF	Flow Rate	No. Lanes	Lane Group	RTOR	Adjusted Flow Rate In Lane Grp	Prop. Left Turns	Prop. Right Turns
Eastbound									
Left	40	0.91	44	1	L		44		
Thru	981	0.91	1078	2	T		1078		
Right				0					
Westbound									
Left	18	0.89	20	1	L		20		
Thru	544	0.89	611	2	T		611		
Right				0					
Northbound									
Left	258	0.92	280	1	L		280		
Thru	680	0.92	739	1	T		739		
Right				0					
Southbound									
Left	94	0.85	111	1	L		111		
Thru	668	0.85	786	2	TR		822		0.04
Right	31	0.85	36	0		0			

* Value entered by user.

SATURATION FLOW ADJUSTMENT WORKSHEET

Appr/ Lane Group	Ideal Sat Flow	f W	f HV	f G	f P	f BB	f A	f LU	f RT	f LT	Adj Sat Flow
Eastbound							Sec LT	Adj/LT	Sat:		
L	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	----	0.311	592

T	1900	1.000	1.000	1.000	1.000	1.000	1.00	0.95	1.000	1.000	3610

Westbound							Sec LT	Adj/LT	Sat:		
L	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	----	0.138	262
T	1900	1.000	1.000	1.000	1.000	1.000	1.00	0.95	1.000	1.000	3610

Northbound							Sec LT	Adj/LT	Sat:	0.138	245
L	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	----	0.950	1685
T	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	1.000	1.000	1773

Southbound							Sec LT	Adj/LT	Sat:	0.148	253
L	1900	0.900	1.000	1.000	1.000	1.000	1.00	1.00	----	0.950	1624
TR	1900	0.967	1.000	1.000	1.000	1.000	1.00	0.95	0.993	1.000	3467

CAPACITY ANALYSIS WORKSHEET

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Pri.							
Sec.							
Left	L	44	592	0.07	0.363	215	0.20
Thru	T	1078	3610	# 0.30	0.363	1309	0.82
Right							
Westbound							
Pri.							
Sec.							
Left	L	20	262	0.08	0.363	95	0.21
Thru	T	611	3610	0.17	0.363	1309	0.47
Right							
Northbound							
Pri.		274	1685	0.16	0.162	274	1.00
Sec.		6	245	0.02	0.363	90	0.07
Left	L	280			0.525	364	0.77
Thru	T	739	1773	# 0.42	0.400	709	1.04
Right							
Southbound							
Pri.		111	1624	# 0.07	0.100	162	0.69
Sec.		0	253	0.00	0.338	90	0.00
Left	L	111			0.438	252	0.44
Thru	TR	822	3467	0.24	0.338	1170	0.70
Right							

Sum (v/s) critical = 0.78

Lost Time/Cycle, L = 15.00 sec Critical v/c(X) = 0.96

LEVEL OF SERVICE WORKSHEET

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
L	0.20	0.363	17.6	1.000	215	0.50	2.2	0.0	19.7	B		
T	0.82	0.363	23.2	1.000	1309	0.50	6.3	0.0	29.5	C	29.1	C

Westbound												
L	0.21	0.363	17.6	1.000	95	0.50	5.0	0.0	22.6	C		
T	0.47	0.363	19.6	1.000	1309	0.50	1.2	0.0	20.8	C	20.8	C
Northbound												
L	0.77	0.525	14.5	1.000	364	0.32	10.3	0.0	24.8	C		
T	1.04	0.400	24.0	1.000	709	0.50	116.9	0.0	140.9	F	109.0	F
Southbound												
L	0.44	0.438	17.8	1.000	252	0.11	1.2	0.0	19.1	B		
TR	0.70	0.338	23.0	1.000	1170	0.27	1.9	0.0	25.0	C	24.3	C

Intersection Delay = 48.4 (sec/veh) Intersection LOS = D

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 80.0 sec				
Actual Green Time for Lane Group, G	27.0	27.0	41.0	33.0
Effective Green Time for Lane Group, g	29.00	29.00	29.00	27.00
Opposing Effective Green Time, go	27.0	27.0	25.0	30.0
Number of Lanes in Lane Group, N	1	1	1	1
Number of Opposing Lanes, No	2	2	2	1
Adjusted Left-Turn Flow Rate, Vlt	44	20	280	111
Proportion of Left Turns in Opposing Flow, Plto	0.00	0.00	0.00	0.00
Adjusted Opposing Flow Rate, Vo	611	1078	822	739
Lost Time for Lane Group, tl	4.00	4.00	5.00	7.00
Left Turns per Cycle: LTC=VltC/3600	0.98	0.44	6.22	2.47
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo	7.15	12.61	9.61	16.42
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)	1.00	1.00	1.00	1.00
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g	0.0	0.0	0.0	0.0
Opposing Queue Ratio: qro=1-Rpo(go/C)	0.66	0.66	0.69	0.63
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g	7.53	20.40	17.40	25.83
gu =g-gq if gq>=gf, =g-gf if gq<gf	21.47	8.60	11.60	1.17
n=(gq-gf)/2, n>=0	3.76	10.20	8.70	12.91
Ptho=1-Plto	1.00	1.00	1.00	1.00
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)})	1.00	1.00	1.00	1.00
El1 (Figure 9-7)	2.38	3.77	2.93	2.60
El2=(1-Ptho**n)/Plto, El2>=1.0	1.00	1.00	1.00	1.00
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g	0.14	0.14	0.14	0.15
gdiff=max(gq-gf,0)	0.00	0.00	0.00	0.00
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)	0.31	0.14	0.14	0.15
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N** flt	0.311	0.138	0.138	0.148

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 80.0 sec				
Actual Green Time for Lane Group, G				
Effective Green Time for Lane Group, g				
Opposing Effective Green Time, go				
Number of Lanes in Lane Group, N				
Number of Opposing Lanes, No				
Adjusted Left-Turn Flow Rate, Vlt				
Proportion of Left Turns in Lane Group, Plt				
Proportion of Left Turns in Opposing Flow, Plto				
Adjusted Opposing Flow Rate, Vo				
Lost Time for Lane Group, tl				
Left Turns per Cycle: LTC=VltC/3600				
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo				
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)				
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g				
Opposing Queue Ratio: qro=1-Rpo(go/C)				
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g				
gu =g-gq if gq>=gf, =g-gf if gq<gf				
n=(gq-gf)/2, n>=0				
Ptho=1-Plto				
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)))				
El1 (Figure 9-7)				
El2=(1-Ptho**n)/Plto, El2>=1.0				
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g				
gdiff=max(gq-gf,0)				
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)				
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}]				
+[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N**				
flt Primary				

For special case of single-lane approach opposed by multilane approach, see text.

* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.

** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.

For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Adj. LT Vol from Vol Adjustment Worksheet, v			280	111
v/c ratio from Capacity Worksheet, X			0.07	0.00
Primary phase effective green, g			29.00	27.00
Secondary phase effective green, gq			17.40	25.83
(From Supplemental Permitted LT Worksheet), gu			11.60	1.17
Cycle length, C 80.0 Red =(C-g-gq-gu), r			38.0	45.0
Arrivals: v/(3600(max(X,1.0))), qa			0.08	0.03
Primary ph. departures: s/3600, sp			0.468	0.451
Secondary ph. departures: s(gq+gu)/(gu*3600), ss			0.17	1.62
XPerm			1.14	0.44
XProt			0.65	0.45
XCase			3	1

Queue at begining of green arrow, Qa	3.24	1.39
Queue at beginning of unsaturated green, Qu	0.59	0.80
Residual queue, Qr	0.28	0.00
Uniform Delay, d1	14.5	17.8

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
Westbound								
Northbound								
Southbound								

Intersection Delay 48.4 sec/veh Intersection LOS D

ERROR MESSAGES

No errors to report.

HCS: Signals Release 3.1a

Inter: Jericho Tpke and Park Ave
Analyst: BL
Date: 7/21/99
E/W St: Jericho Turnpike

City/St: Dix Hills
Proj #: 84016
Period: No Build Saturday Peak Hour
N/S St: Park Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	2	0	1	1	0	1	2	0
LGConfig	L	T		L	T		L	T		L	TR	
Volume	53	959		36	886		331	478		237	404	47
Lane Width	12.0	12.0		12.0	12.0		10.0	10.0		9.0	11.0	
RTOR Vol												0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	P				NB	Left	A	A	A	
Thru	P					Thru		A	A	
Right						Right				
Peds						Ped				
WB Left	P				SB	Left	A		A	
Thru	P					Thru			A	
Right						Right			A	
Peds						Ped				
NB Right					EB	Right				
SB Right					WB	Right				
Green	26.0						9.0	2.0	23.0	
Yellow	4.0						3.0	0.0	4.0	
All Red	2.0						0.0	0.0	2.0	

Cycle Length: 75.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capcity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	109	292	0.50	0.373	34.7	C		
T	1348	3610	0.74	0.373	24.2	C	24.7	C
Westbound								
L	101	271	0.38	0.373	27.8	C		
T	1348	3610	0.68	0.373	22.7	C	22.9	C
Northbound								
L	454		0.77	0.507	20.5	C		
T	638	1773	0.79	0.360	28.4	C	25.1	C
Southbound								
L	322		0.79	0.453	28.9	C		
TR	1145	3435	0.42	0.333	19.7	B	22.8	C

Intersection Delay = 23.9 (sec/veh) Intersection LOS = C

Traffic Engineering
Nelson And Pope LLP
572 Walt Whitman Rd.
Melville, New York 11747

Phone: (516) 427-5665 Fax: (516) 427-5620
E-Mail: np@nelsonpope.com

OPERATIONAL ANALYSIS

Intersection:	Jericho Tpke and Park Ave
City/State:	Dix Hills
Analyst:	BL
Project No:	84016
Time Period Analyzed:	No Build Saturday Peak Hour
Date:	7/21/99
East/West Street Name:	Jericho Turnpike
North/South Street Name:	Park Avenue

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	53	959		36	886		331	478		237	404	47
PHF	0.96	0.96		0.96	0.96		0.95	0.95		0.93	0.93	0.93
PK 15 Vol	14	250		9	231		87	126		64	109	13
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat	1900	1900		1900	1900		1900	1900		1900	1900	
ParkExist												
NumPark												
% Heavy Veh	0	0		0	0		0	0		0	0	0
No. Lanes	1	2	0	1	2	0	1	1	0	1	2	0
LGConfig	L	T		L	T		L	T		L	TR	
Lane Width	12.0	12.0		12.0	12.0		10.0	10.0		9.0	11.0	
RTOR Vol												0
Adj Flow	55	999		38	923		348	503		255	485	
%InSharedLn												
Prop Turns												0.11
NumPeds												0
NumBus	0	0		0	0		0	0		0	0	

Duration 1.00 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Arriv. Type	3	3		3	3		3	3		3	3	
Unit Ext.	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
I Factor		1.000			1.000			1.000			1.000	
Lost Time	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Ext of g	4.0	4.0		4.0	4.0		3.0	4.0		3.0	4.0	
Ped Min g		0.0			0.0			0.0			0.0	

PHASE DATA

Phase Combination	1	2	3	4			5	6	7	8
EB Left	P				NB	Left	A	A	A	
Thru	P					Thru		A	A	
Right						Right				
Peds						Ped				
WB Left	P				SB	Left	A		A	
Thru	P					Thru			A	
Right						Right			A	
Peds						Ped				
NB Right					EB	Right				
SB Right					WB	Right				
Green	26.0						9.0	2.0	23.0	
Yellow	4.0						3.0	0.0	4.0	
All Red	2.0						0.0	0.0	2.0	

Cycle Length: 75.0 secs

VOLUME ADJUSTMENT WORKSHEET

Appr./ Movement	Mvt Volume	PHF	Flow Rate	No. Lanes	Lane Group	RTOR	Adjusted Flow Rate In Lane Grp	Prop. Left Turns	Prop. Right Turns
Eastbound									
Left	53	0.96	55	1	L		55		
Thru	959	0.96	999	2	T		999		
Right				0					
Westbound									
Left	36	0.96	38	1	L		38		
Thru	886	0.96	923	2	T		923		
Right				0					
Northbound									
Left	331	0.95	348	1	L		348		
Thru	478	0.95	503	1	T		503		
Right				0					
Southbound									
Left	237	0.93	255	1	L		255		
Thru	404	0.93	434	2	TR		485		0.11
Right	47	0.93	51	0		0			

* Value entered by user.

SATURATION FLOW ADJUSTMENT WORKSHEET

Appr/ Lane Group	Ideal Sat Flow	f W	f HV	f G	f P	f BB	f A	f LU	f RT	f LT	Adj Sat Flow
Eastbound							Sec LT	Adj/LT	Sat:		
L	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	----	0.153	292

T	1900	1.000	1.000	1.000	1.000	1.000	1.00	0.95	1.000	1.000	3610

Westbound							Sec LT	Adj/LT	Sat:		
L	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	----	0.143	271
T	1900	1.000	1.000	1.000	1.000	1.000	1.00	0.95	1.000	1.000	3610

Northbound							Sec LT	Adj/LT	Sat:	0.324	575
L	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	----	0.950	1685
T	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	1.000	1.000	1773

Southbound							Sec LT	Adj/LT	Sat:	0.222	380
L	1900	0.900	1.000	1.000	1.000	1.000	1.00	1.00	----	0.950	1624
TR	1900	0.967	1.000	1.000	1.000	1.000	1.00	0.95	0.984	1.000	3435

CAPACITY ANALYSIS WORKSHEET

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Pri.							
Sec.							
Left	L	55	292	0.19	0.373	109	0.50
Thru	T	999	3610	# 0.28	0.373	1348	0.74
Right							
Westbound							
Pri.							
Sec.							
Left	L	38	271	0.14	0.373	101	0.38
Thru	T	923	3610	0.26	0.373	1348	0.68
Right							
Northbound							
Pri.		247	1685	0.15	0.147	247	1.00
Sec.		101	575	0.18	0.360	207	0.49
Left	L	348			0.507	454	0.77
Thru	T	503	1773	# 0.28	0.360	638	0.79
Right							
Southbound							
Pri.		195	1624	# 0.12	0.120	195	1.00
Sec.		60	380	0.16	0.333	127	0.47
Left	L	255			0.453	322	0.79
Thru	TR	485	3435	0.14	0.333	1145	0.42
Right							

Sum (v/s) critical = 0.68

Lost Time/Cycle, L = 15.00 sec Critical v/c(X) = 0.85

LEVEL OF SERVICE WORKSHEET

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
L	0.50	0.373	18.1	1.000	109	0.50	16.5	0.0	34.7	C		
T	0.74	0.373	20.4	1.000	1348	0.50	3.8	0.0	24.2	C	24.7	C

Westbound												
L	0.38	0.373	17.1	1.000	101	0.50	10.6	0.0	27.8	C		
T	0.68	0.373	19.8	1.000	1348	0.50	2.9	0.0	22.7	C	22.9	C
Northbound												
L	0.77	0.507	12.3	1.000	454	0.32	8.1	0.0	20.5	C		
T	0.79	0.360	21.4	1.000	638	0.33	6.9	0.0	28.4	C	25.1	C
Southbound												
L	0.79	0.453	15.0	1.000	322	0.34	13.9	0.0	28.9	C		
TR	0.42	0.333	19.4	1.000	1145	0.11	0.3	0.0	19.7	B	22.8	C

Intersection Delay = 23.9 (sec/veh) Intersection LOS = C

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 75.0 sec				
Actual Green Time for Lane Group, G	26.0	26.0	37.0	32.0
Effective Green Time for Lane Group, g	28.00	28.00	27.00	25.00
Opposing Effective Green Time, go	26.0	26.0	23.0	25.0
Number of Lanes in Lane Group, N	1	1	1	1
Number of Opposing Lanes, No	2	2	2	1
Adjusted Left-Turn Flow Rate, Vlt	55	38	348	255
Proportion of Left Turns in Opposing Flow, Plto	0.00	0.00	0.00	0.00
Adjusted Opposing Flow Rate, Vo	923	999	485	503
Lost Time for Lane Group, tl	4.00	4.00	5.00	7.00
Left Turns per Cycle: LTC=VltC/3600	1.15	0.79	7.25	5.31
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo	10.12	10.95	5.32	10.48
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)	1.00	1.00	1.00	1.00
gf=[Gexp(- a * (LTC ** b)]-tl, gf<=g	0.0	0.0	0.0	0.0
Opposing Queue Ratio: qro=1-Rpo(go/C)	0.65	0.65	0.69	0.67
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g	14.11	16.22	8.59	13.39
gu =g-gq if gq>=gf, =g-gf if gq<gf	13.89	11.78	18.41	11.61
n=(gq-gf)/2, n>=0	7.06	8.11	4.30	6.70
Ptho=1-Plto	1.00	1.00	1.00	1.00
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)))	1.00	1.00	1.00	1.00
El1 (Figure 9-7)	3.23	3.49	2.10	2.09
El2=(1-Ptho**n)/Plto, El2>=1.0	1.00	1.00	1.00	1.00
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g	0.14	0.14	0.15	0.16
gdiff=max(gq-gf,0)	0.00	0.00	0.00	0.00
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)	0.15	0.14	0.32	0.22
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N** flt	0.153	0.143	0.324	0.222

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 75.0 sec				
Actual Green Time for Lane Group, G				
Effective Green Time for Lane Group, g				
Opposing Effective Green Time, go				
Number of Lanes in Lane Group, N				
Number of Opposing Lanes, No				
Adjusted Left-Turn Flow Rate, Vlt				
Proportion of Left Turns in Lane Group, Plt				
Proportion of Left Turns in Opposing Flow, Plto				
Adjusted Opposing Flow Rate, Vo				
Lost Time for Lane Group, tl				
Left Turns per Cycle: LTC=VltC/3600				
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo				
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)				
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g				
Opposing Queue Ratio: qro=1-Rpo(go/C)				
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g				
gu =g-gq if gq>=gf, =g-gf if gq<gf				
n=(gq-gf)/2, n>=0				
Ptho=1-Plto				
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)))				
El1 (Figure 9-7)				
El2=(1-Ptho**n)/Plto, El2>=1.0				
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g				
gdiff=max(gq-gf,0)				
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)				
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N** flt Primary				

For special case of single-lane approach opposed by multilane approach, see text.

* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.

** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.

For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Adj. LT Vol from Vol Adjustment Worksheet, v			348	255
v/c ratio from Capacity Worksheet, X			0.49	0.47
Primary phase effective green, g			27.00	25.00
Secondary phase effective green, gq			8.59	13.39
(From Supplemental Permitted LT Worksheet), gu			18.41	11.61
Cycle length, C 75.0 Red =(C-g-gq-gu), r			37.0	41.0
Arrivals: v/(3600(max(X,1.0))), qa			0.10	0.07
Primary ph. departures: s/3600, sp			0.468	0.451
Secondary ph. departures: s(gq+gu)/(gu*3600), ss			0.23	0.23
XPerm			0.61	0.67
XProt			0.90	0.87
XCase			1	1

Queue at begining of green arrow, Qa	3.58	2.90
Queue at beginning of unsaturated green, Qu	0.83	0.95
Residual queue, Qr	0.00	0.00
Uniform Delay, d1	12.3	15.0

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
Westbound								
Northbound								
Southbound								

Intersection Delay 23.9 sec/veh Intersection LOS C

ERROR MESSAGES

No errors to report.

B. Unsignalized Intersections

1. Jericho Turnpike and Franks Nursery/Site Access

HCS: Unsignalized Intersections Release 3.1a

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Analyst: BL
Intersection: Franks Nursery Dwy. and Jericho Tpke.
Count Date: (Site Dwy. in Bld condition)
Time Period: PM2 Peak Hour

Intersection Orientation: East-West Major St.

Vehicle Volume Data:

Movements:	1	2	5	6	10	12
Volume:	7	1393	866	10	2	6
HFR:	7	1482	902	10	2	7
PHF:	0.94	0.94	0.96	0.96	0.85	0.85
PHV:	0.00	0.00	0.00	0.00	0.00	0.00

Pedestrian Volume Data:

Movements:
Flow:
Lane width:
Walk speed:
% Blockage:

Median Type: None
# of vehicles: 0

Flared approach Movements:

# of vehicles: Northbound 0
# of vehicles: Southbound 0

Lane usage for movements 1,2&3 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R
Y	Y	N	N	Y	N	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 4,5&6 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R

N	Y	N	N	Y	Y	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 7,8&9 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R
N	N	N	N	N	N	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 10,11&12 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R
Y	N	Y	N	N	N	N	N	N

Channelized: N
Grade: 0.00

Data for Computing Effect of Delay to Major Street Vehicles:

	Eastbound	Westbound
Shared ln volume, major th vehicles:	696	0
Shared ln volume, major rt vehicles:	0	0
Sat flow rate, major th vehicles:	1700	1700
Sat flow rate, major rt vehicles:	1700	1700
Number of major street through lanes:	2	2

Length of study period, hrs: 1.00

Worksheet 4 Critical Gap and Follow-up time calculation.

Critical Gap Calculations:

Movement	1	10	12
t c,base	4.1	7.5	6.9
t c,hv	2.0	2.0	2.0
P hv	0.00	0.00	0.00
t c,g		0.2	0.1
G	0.00	0.00	0.00
t 3,lt	0.0	0.7	0.0

```
t  c,T:
 1 stage        0.00   0.00   0.00

t c
 1 stage         4.1    6.8    6.9

Follow Up Time Calculations:
Movement            1     10     12
-------------------------------------------------------------------------------
-----------
t  f,base         2.2    3.5    3.3
t  f,HV           1.0    1.0    1.0
P hv             0.00   0.00   0.00
t f               2.2    3.5    3.3
-------------------------------------------------------------------------------
-----------

Worksheet 6 Impedance and capacity equations

Step 1: RT from Minor St.                          9                12
-------------------------------------------------------------------------------
-----------
Conflicting Flows                                                  456
Potential Capacity                                                 557
Pedestrian Impedance Factor                                       1.00
Movement Capacity                                                  557
Probability of Queue free St.                                     0.99
-------------------------------------------------------------------------------
-----------

Step 2: LT from Major St.                          4                 1
-------------------------------------------------------------------------------
-----------
Conflicting Flows                                                  912
Potential Capacity                                                 755
Pedestrian Impedance Factor                                       1.00
Movement Capacity                                                  755
Probability of Queue free St.                                     0.99
Maj. L Shared ln. Prob. Queue Free St.                            0.98
-------------------------------------------------------------------------------
-----------

Step 4: LT from Minor St.                          7                10
-------------------------------------------------------------------------------
-----------
Conflicting Flows                                                 1663
Potential Capacity                                                  90
Pedestrian Impedance Factor                                       1.00
Maj. L, Min T Impedance factor                                    0.98
Maj. L, Min T Adj. Imp Factor.                                    0.99
Cap. Adj. factor due to Impeding mvmnt                            0.99
Movement Capacity                                                   89
-------------------------------------------------------------------------------
-----------


Worksheet 8 Shared Lane Calculations

Shared Lane Calculations
```

Movement	7	8	9	10	11	12
v(vph)				2		7
Movement Capacity				89		557
Shared Lane Capacity				240		

Worksheet 10 delay,queue length, and LOS

Movement	1	4	7	8	9	10	11	12
v(vph)	7					9		
C m(vph)	755					240		
v/c	0.01					0.04		
95% queue length								
Control Delay	9.8					20.6		
LOS	A					C		
Approach Delay							20.6	
Approach LOS							C	

Worksheet 11 Shared Major LT Impedance and Delay

Rank 1 Delay Calculations

Movement	2	5
P oj	0.99	1.00
V i1	696	0
V i2	0	0
S i1	1700	1700
S i2	1700	1700
P* oj	0.98	1.00
D maj left	9.8	0.0
N number major st lanes	2	2
Delay, rank 1 mvmts	0.1	-1.$

HCS: Unsignalized Intersections Release 3.1a

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Analyst: BL
Intersection: Franks Nursery Dwy. and Jericho Tpke.
Count Date: (Site Dwy. in Bld condition)
Time Period: SAT2 Peak Hour

Intersection Orientation: East-West Major St.

Vehicle Volume Data:

Movements:	1	2	5	6	10	12
Volume:	23	1316	1214	29	9	27
HFR:	24	1385	1265	30	11	32
PHF:	0.95	0.95	0.96	0.96	0.85	0.85
PHV:	0.00	0.00	0.00	0.00	0.00	0.00

Pedestrian Volume Data:

Movements:
Flow:
Lane width:
Walk speed:
% Blockage:

Median Type: None
# of vehicles: 0

Flared approach Movements:

# of vehicles: Northbound 0
# of vehicles: Southbound 0

Lane usage for movements 1,2&3 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R
Y	Y	N	N	Y	N	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 4,5&6 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R

N	Y	N	N	Y	Y	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 7,8&9 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R
N	N	N	N	N	N	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 10,11&12 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R
Y	N	Y	N	N	N	N	N	N

Channelized: N
Grade: 0.00

Data for Computing Effect of Delay to Major Street Vehicles:

	Eastbound	Westbound
Shared ln volume, major th vehicles:	658	0
Shared ln volume, major rt vehicles:	0	0
Sat flow rate, major th vehicles:	1700	1700
Sat flow rate, major rt vehicles:	1700	1700
Number of major street through lanes:	2	2

Length of study period, hrs: 1.00

Worksheet 4 Critical Gap and Follow-up time calculation.

Critical Gap Calculations:

Movement	1	10	12
t c,base	4.1	7.5	6.9
t c,hv	2.0	2.0	2.0
P hv	0.00	0.00	0.00
t c,g		0.2	0.1
G	0.00	0.00	0.00
t 3,lt	0.0	0.7	0.0

```
t  c,T:
 1 stage        0.00    0.00    0.00

t c
 1 stage         4.1     6.8     6.9

Follow Up Time Calculations:
Movement            1      10      12
-----------------------------------------------------------------------------------
-----------
t  f,base         2.2     3.5     3.3
t  f,HV           1.0     1.0     1.0
P hv             0.00    0.00    0.00
t f               2.2     3.5     3.3
-----------------------------------------------------------------------------------
-----------

Worksheet 6 Impedance and capacity equations

Step 1: RT from Minor St.                          9                12
-----------------------------------------------------------------------------------
-----------
Conflicting Flows                                                  647
Potential Capacity                                                 418
Pedestrian Impedance Factor                                       1.00
Movement Capacity                                                  418
Probability of Queue free St.                                     0.92
-----------------------------------------------------------------------------------
-----------

Step 2: LT from Major St.                          4                 1
-----------------------------------------------------------------------------------
-----------
Conflicting Flows                                                 1295
Potential Capacity                                                 542
Pedestrian Impedance Factor                                       1.00
Movement Capacity                                                  542
Probability of Queue free St.                                     0.96
Maj. L Shared ln. Prob. Queue Free St.                            0.93
-----------------------------------------------------------------------------------
-----------

Step 4: LT from Minor St.                          7                10
-----------------------------------------------------------------------------------
-----------
Conflicting Flows                                                 2021
Potential Capacity                                                  52
Pedestrian Impedance Factor                                       1.00
Maj. L, Min T Impedance factor                                    0.93
Maj. L, Min T Adj. Imp Factor.                                    0.94
Cap. Adj. factor due to Impeding mvmnt                            0.94
Movement Capacity                                                   49
-----------------------------------------------------------------------------------
-----------


Worksheet 8 Shared Lane Calculations

Shared Lane Calculations
```

Movement	7	8	9	10	11	12
v(vph)				11		32
Movement Capacity				49		418
Shared Lane Capacity				145		

Worksheet 10 delay,queue length, and LOS

Movement	1	4	7	8	9	10	11	12
v(vph)	24					42		
C m(vph)	542					145		
v/c	0.04					0.29		
95% queue length								
Control Delay	12.0					40.1		
LOS	B					E		
Approach Delay							40.1	
Approach LOS							E	

Worksheet 11 Shared Major LT Impedance and Delay

Rank 1 Delay Calculations

Movement	2	5
P oj	0.96	1.00
V i1	658	0
V i2	0	0
S i1	1700	1700
S i2	1700	1700
P* 0j	0.93	1.00
D maj left	12.0	0.0
N number major st lanes	2	2
Delay, rank 1 mvmts	0.4	-1.$

III. "Build" Conditions

A. Signalized Intersections
   1. Jericho Turnpike and Dix Hills Road/Greenlawn Road
   2. Jericho Turnpike and Park Avenue

B. Unsignalized Intersections
   1. Jericho Turnpike and Franks Nursery/Site Access
   2. Dix Hills Road and Site Access

A. Signalized Intersections

1. Jericho Turnpike and Dix Hills Road/Greenlawn Road

Nelson & Pope, LLP

Job Title: Hren Shopping Center
Job No: 84016
Date: October-99
5 Way Intersection Level of Service Summary Sheet
Intersection: JERICHO TURNPIKE AND DIXHILLS ROAD/GREENLAWN ROAD
Time Period: PM Peak Hour
Condition: BUILD

Approach	Movement	Adjusted Flow Rate (v)	v/s Critical	Delay sec/veh	Approach Delay sec/veh
JERICHO TPKE EASTBOUND	Left	418		223.0	
	Through	1624	0.16	52.0	87.0
	Right				
JERICHO TPKE WESTBOUND	Left	60		64.6	
	Through	948		150.4	145.3
	Right				
DIXHILLS RD NORTHBOUND	Left	404		*	
	Through	55	0.48	25.9	*
	Right				
DIXHILLS RD SOUTHBOUND	Left				
	Through	255		470.2	470.2
	Right				
GREENLAWN RD SOUTHBOUND	Left				
	Through	160	0.26	*	*
	Right	390			

IntersectionDelay:	*	sec/veh
Level of Service:	*	
Cycle Length:	80.0	sec.
Lost Time:	4.0	sec.
Sum Critical v/s:	0.90	
Critical Xc:	0.95	

HCS: Signals Release 3.1a

Inter: Jericho Tpke and Dix Hills Rd. City/St: Dix Hills
Analyst: BL Proj #: 84016
Date: 7/21/99 Period: Build PM Peak Hour
E/W St: Jericho Turnpike N/S St: Dix Hills Road/Greenlawn Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	2	0	0	1	1	0	1	0
LGConfig	L	TR		L	TR			LT	R		LTR	
Volume	376	1361	101	58	833	86	60	320	52	58	121	64
Lane Width	12.0	12.0		11.0	11.0			10.0	12.0		10.0	
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left	A			
	Thru	P	P				Thru	A			
	Right	P	P				Right	A			
	Peds						Ped				
WB	Left		P			SB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Ped				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		13.0	19.0					32.0			
Yellow		3.0	4.0					3.0			
All Red		0.0	3.0					3.0			

Cycle Length: 80.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capcity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	388		1.08	0.450	223.0	F		
TR	1653	3573	0.98	0.463	52.0	D	87.0	F
Westbound								
L	90	350	0.67	0.250	64.6	E		
TR	903	3441	1.05	0.262	150.4	F	145.3	F
Northbound								
LT	638	1546	0.67	0.412	21.8	C	21.0	C
R	646	1615	0.09	0.400	15.0	B		
Southbound								
LTR	509	1234	0.56	0.412	19.4	B	19.4	B

Intersection Delay = 89.0 (sec/veh) Intersection LOS = F

Traffic Engineering
Nelson And Pope LLP
572 Walt Whitman Rd.
Melville, New York 11747

Phone: (516) 427-5665 Fax: (516) 427-5620
E-Mail: np@nelsonpope.com

OPERATIONAL ANALYSIS

Intersection:	Jericho Tpke and Dix Hills Rd.
City/State:	Dix Hills
Analyst:	BL
Project No:	84016
Time Period Analyzed:	Build PM Peak Hour
Date:	7/21/99
East/West Street Name:	Jericho Turnpike
North/South Street Name:	Dix Hills Road/Greenlawn Road

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	376	1361	101	58	833	86	60	320	52	58	121	64
PHF	0.90	0.90	0.90	0.97	0.97	0.97	0.89	0.89	0.89	0.85	0.85	0.85
PK 15 Vol	104	378	28	15	215	22	17	90	15	17	36	19
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat	1900	1900		1900	1900			1900	1900		1900	
ParkExist												
NumPark												
% Heavy Veh	0	0	0	0	0	0	0	0	0	0	0	0
No. Lanes	1	2	0	1	2	0	0	1	1	0	1	0
LGConfig	L	TR		L	TR			LT	R		LTR	
Lane Width	12.0	12.0		11.0	11.0			10.0	12.0		10.0	
RTOR Vol			0			0			0			0
Adj Flow	418	1624		60	948			427	58		285	
%InSharedLn												
Prop Turns			0.07			0.09	0.16			0.24		0.26
NumPeds			0			0			0			0
NumBus	0	0		0	0			0	0		0	

Duration 1.00 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Arriv. Type	3	3		3	3			3	3		3	
Unit Ext.	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
I Factor		1.000			1.000			1.000			1.000	
Lost Time	2.0	2.0		2.0	2.0			2.0	2.0		2.0	
Ext of g	3.0	4.0		3.0	4.0			3.0	2.0		3.0	
Ped Min g		0.0			0.0			0.0			0.0	

PHASE DATA

Phase Combination		1	2	3	4	5	6	7	8
EB	Left	A	P			NB Left	A		
	Thru	P	P			Thru	A		
	Right	P	P			Right	A		
	Peds					Ped			
WB	Left		P			SB Left	A		
	Thru		P			Thru	A		
	Right		P			Right	A		
	Peds					Ped			
NB	Right					EB Right			
SB	Right					WB Right			
Green		13.0	19.0			32.0			
Yellow		3.0	4.0			3.0			
All Red		0.0	3.0			3.0			

Cycle Length: 80.0 secs

VOLUME ADJUSTMENT WORKSHEET

Appr./ Movement	Mvt Volume	PHF	Flow Rate	No. Lanes	Lane Group	RTOR	Adjusted Flow Rate In Lane Grp	Prop. Left Turns	Prop. Right Turns
Eastbound									
Left	376	0.90	418	1	L		418		
Thru	1361	0.90	1512	2	TR		1624		0.07
Right	101	0.90	112	0		0			
Westbound									
Left	58	0.97	60	1	L		60		
Thru	833	0.97	859	2	TR		948		0.09
Right	86	0.97	89	0		0			
Northbound									
Left	60	0.89	67	0					
Thru	320	0.89	360	1	LT		427	0.16	
Right	52	0.89	58	1	R	0	58		
Southbound									
Left	58	0.85	68	0					
Thru	121	0.85	142	1	LTR		285	0.24	0.26
Right	64	0.85	75	0		0			

* Value entered by user.

SATURATION FLOW ADJUSTMENT WORKSHEET

Appr/ Lane Group	Ideal Sat Flow	f W	f HV	f G	f P	f BB	f A	f LU	f RT	f LT	Adj Sat Flow
Eastbound							Sec LT	Adj/LT	Sat:	0.174	330
L	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	----	0.950	1805

TR	1900	1.000	1.000	1.000	1.000	1.000	1.00	0.95	0.990	1.000	3573

									Sec LT Adj/LT Sat:		
Westbound											
L	1900	0.967	1.000	1.000	1.000	1.000	1.00	1.00	----	0.190	350
TR	1900	0.967	1.000	1.000	1.000	1.000	1.00	0.95	0.986	1.000	3441

									Sec LT Adj/LT Sat:		
Northbound											

LT	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	1.000	0.872	1546
R	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	0.850	----	1615

									Sec LT Adj/LT Sat:		
Southbound											

LTR	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	0.864	0.805	1234

CAPACITY ANALYSIS WORKSHEET

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Pri.		293	1805	# 0.16	0.162	293	1.00
Sec.		125	330	0.38	0.287	95	1.32
Left	L	418			0.450	388	1.08
Thru	TR	1624	3573	0.45	0.463	1653	0.98
Right							
Westbound							
Pri.							
Sec.							
Left	L	60	350	0.17	0.250	90	0.67
Thru	TR	948	3441	0.28	0.262	903	1.05
Right							
Northbound							
Pri.							
Sec.							
Left							
Thru	LT	427	1546	# 0.28	0.412	638	0.67
Right	R	58	1615	0.04	0.400	646	0.09
Southbound							
Pri.							
Sec.							
Left							
Thru	LTR	285	1234	0.23	0.412	509	0.56
Right							

Sum (v/s) critical = 0.73

Lost Time/Cycle, L = 11.00 sec Critical v/c(X) = 0.84

LEVEL OF SERVICE WORKSHEET

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
L	1.08	0.450	35.7	1.000	388	0.50	187.2	0.0	223.0	F		
TR	0.98	0.463	21.2	1.000	1653	0.50	30.8	0.0	52.0	D	87.0	F

Westbound												
L	0.67	0.250	27.0	1.000	90	0.50	37.6	0.0	64.6	E		
TR	1.05	0.262	29.5	1.000	903	0.50	120.9	0.0	150.4	F	145.3	F
Northbound												
LT	0.67	0.412	19.1	1.000	638	0.24	2.8	0.0	21.8	C	21.0	C
R	0.09	0.400	14.9	1.000	646	0.11	0.1	0.0	15.0	B		
Southbound												
LTR	0.56	0.412	18.0	1.000	509	0.16	1.4	0.0	19.4	B	19.4	B

Intersection Delay = 89.0 (sec/veh) Intersection LOS = F

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 80.0 sec				
Actual Green Time for Lane Group, G	35.0	19.0		
Effective Green Time for Lane Group, g	23.00	21.00		
Opposing Effective Green Time, go	19.0	35.0		
Number of Lanes in Lane Group, N	1	1		
Number of Opposing Lanes, No	2	2		
Adjusted Left-Turn Flow Rate, Vlt	418	60		
Proportion of Left Turns in Opposing Flow, Plto	0.00	0.00		
Adjusted Opposing Flow Rate, Vo	948	1624		
Lost Time for Lane Group, tl	6.00	6.00		
Left Turns per Cycle: LTC=VltC/3600	9.29	1.33		
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo	11.09	18.99		
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)	1.00	1.00		
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g	0.0	0.0		
Opposing Queue Ratio: qro=1-Rpo(go/C)	0.76	0.56		
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g	23.00	19.69		
gu =g-gq if gq>=gf, =g-gf if gq<gf	0.00	1.31		
n=(gq-gf)/2, n>=0	11.50	9.85		
Ptho=1-Plto	1.00	1.00		
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)}]	1.00	1.00		
El1 (Figure 9-7)	3.31	6.54		
El2=(1-Ptho**n)/Plto, El2>=1.0	1.00	1.00		
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g	0.17	0.19		
gdiff=max(gq-gf,0)	0.00	0.00		
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)	0.17	0.19		
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N** flt	0.174	0.190		

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 80.0 sec				
Actual Green Time for Lane Group, G			32.0	32.0
Effective Green Time for Lane Group, g			33.00	33.00
Opposing Effective Green Time, go			32.0	32.0
Number of Lanes in Lane Group, N			1	1
Number of Opposing Lanes, No			1	1
Adjusted Left-Turn Flow Rate, Vlt			67	68
Proportion of Left Turns in Lane Group, Plt			0.16	0.24
Proportion of Left Turns in Opposing Flow, Plto			0.24	0.16
Adjusted Opposing Flow Rate, Vo			285	427
Lost Time for Lane Group, tl			5.00	5.00
Left Turns per Cycle: LTC=VltC/3600			1.49	1.51
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo			6.33	9.49
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)			1.00	1.00
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g			5.6	4.8
Opposing Queue Ratio: qro=1-Rpo(go/C)			0.60	0.60
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g			6.73	10.97
gu =g-gq if gq>=gf, =g-gf if gq<gf			26.27	22.03
n=(gq-gf)/2, n>=0			0.57	3.10
Ptho=1-Plto			0.76	0.84
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)})			0.16	0.24
El1 (Figure 9-7)			1.85	2.14
El2=(1-Ptho**n)/Plto, El2>=1.0			1.00	2.62
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g			0.07	0.08
gdiff=max(gq-gf,0)			1.13	6.19
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)			0.87	0.81
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N**				
flt Primary			0.872	0.805

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Adj. LT Vol from Vol Adjustment Worksheet, v	418			
v/c ratio from Capacity Worksheet, X	1.32			
Primary phase effective green, g	23.00			
Secondary phase effective green, gq	23.00			
(From Supplemental Permitted LT Worksheet), gu	0.00			
Cycle length, C 80.0 Red =(C-g-gq-gu), r	44.0			
Arrivals: v/(3600(max(X,1.0))), qa	0.11			
Primary ph. departures: s/3600, sp	0.501			
Secondary ph. departures: s(gq+gu)/(gu*3600), ss	23.00			
XPerm	9.99			
XProt	0.94			
XCase	3			

Queue at begining of green arrow, Qa	7.22
Queue at beginning of unsaturated green, Qu	2.48
Residual queue, Qr	2.48
Uniform Delay, d1	35.7

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
Westbound								
Northbound								
Southbound								

Intersection Delay 89.0 sec/veh Intersection LOS F

ERROR MESSAGES

No errors to report.

HCS: Signals Release 3.1a

Inter: Jericho Tpke and Dix Hills Rd. City/St: Dix Hills
Analyst: BL Proj #: 84016
Date: 7/21/99 Period: Build PM Peak Hour
E/W St: Jericho Turnpike N/S St: Dix Hills Road/Greenlawn Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	2	0	0	1	1	0	1	0
LGConfig	L	TR		L	TR			LT	R		LTR	
Volume	376	1361	101	58	833	86	60	320	52	58	121	64
Lane Width	12.0	12.0		11.0	11.0			10.0	12.0		10.0	
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left	A			
	Thru	P	P				Thru	A			
	Right	P	P				Right	A			
	Peds						Ped				
WB	Left		P			SB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Ped				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		13.0	35.0					17.0			
Yellow		3.0	4.0					3.0			
All Red		0.0	3.0					2.0			

Cycle Length: 80.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capcity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	449		0.93	0.650	53.3	D		
TR	2367	3573	0.69	0.663	10.0+	B	18.9	B
Westbound								
L	108	241	0.56	0.450	36.5	D		
TR	1591	3441	0.60	0.463	17.6	B	18.7	B
Northbound								
LT	190	845	2.13	0.225				
R	343	1615	0.16	0.213	25.9	C		
Southbound								
LTR	209	929	1.22	0.225	470.2	F	470.2	F

Intersection Delay = (sec/veh) Intersection LOS =

Traffic Engineering
Nelson And Pope LLP
572 Walt Whitman Rd.
Melville, New York 11747

Phone: (516) 427-5665 Fax: (516) 427-5620
E-Mail: np@nelsonpope.com

OPERATIONAL ANALYSIS

Intersection:	Jericho Tpke and Dix Hills Rd.
City/State:	Dix Hills
Analyst:	BL
Project No:	84016
Time Period Analyzed:	Build PM Peak Hour
Date:	7/21/99
East/West Street Name:	Jericho Turnpike
North/South Street Name:	Dix Hills Road/Greenlawn Road

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	376	1361	101	58	833	86	60	320	52	58	121	64
PHF	0.90	0.90	0.90	0.97	0.97	0.97	0.94	0.94	0.94	0.95	0.95	0.95
PK 15 Vol	104	378	28	15	215	22	16	85	14	15	32	17
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat	1900	1900		1900	1900			1900	1900		1900	
ParkExist												
NumPark												
% Heavy Veh	0	0	0	0	0	0	0	0	0	0	0	0
No. Lanes	1	2	0	1	2	0	0	1	1	0	1	0
LGConfig	L	TR		L	TR			LT	R		LTR	
Lane Width	12.0	12.0		11.0	11.0			10.0	12.0		10.0	
RTOR Vol			0			0			0			0
Adj Flow	418	1624		60	948			404	55		255	
%InSharedLn												
Prop Turns			0.07			0.09	0.16			0.24		0.26
NumPeds			0			0			0			0
NumBus	0	0		0	0			0	0		0	

Duration 1.00 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Arriv. Type	3	3		3	3			3	3		3	
Unit Ext.	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
I Factor		1.000			1.000			1.000			1.000	
Lost Time	2.0	2.0		2.0	2.0			2.0	2.0		2.0	
Ext of g	3.0	4.0		3.0	4.0			3.0	2.0		3.0	
Ped Min g		0.0			0.0			0.0			0.0	

PHASE DATA

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left	A			
	Thru	P	P				Thru	A			
	Right	P	P				Right	A			
	Peds						Ped				
WB	Left		P			SB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Ped				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		13.0	35.0					17.0			
Yellow		3.0	4.0					3.0			
All Red		0.0	3.0					2.0			

Cycle Length: 80.0 secs

VOLUME ADJUSTMENT WORKSHEET

Appr./ Movement	Mvt Volume	PHF	Flow Rate	No. Lanes	Lane Group	RTOR	Adjusted Flow Rate In Lane Grp	Prop. Left Turns	Prop. Right Turns
Eastbound									
Left	376	0.90	418	1	L		418		
Thru	1361	0.90	1512	2	TR		1624		0.07
Right	101	0.90	112	0		0			
Westbound									
Left	58	0.97	60	1	L		60		
Thru	833	0.97	859	2	TR		948		0.09
Right	86	0.97	89	0		0			
Northbound									
Left	60	0.94	64	0					
Thru	320	0.94	340	1	LT		404	0.16	
Right	52	0.94	55	1	R	0	55		
Southbound									
Left	58	0.95	61	0					
Thru	121	0.95	127	1	LTR		255	0.24	0.26
Right	64	0.95	67	0		0			

* Value entered by user.

SATURATION FLOW ADJUSTMENT WORKSHEET

Appr/ Lane Group	Ideal Sat Flow	f W	f HV	f G	f P	f BB	f A	f LU	f RT	f LT	Adj Sat Flow
							Sec LT	Adj/LT	Sat:	0.168	320
Eastbound											
L	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	----	0.950	1805

TR	1900	1.000	1.000	1.000	1.000	1.000	1.00	0.95	0.990	1.000	3573

Westbound — Sec LT Adj/LT Sat:

L	1900	0.967	1.000	1.000	1.000	1.000	1.00	1.00	----	0.131	241
TR	1900	0.967	1.000	1.000	1.000	1.000	1.00	0.95	0.986	1.000	3441

Northbound — Sec LT Adj/LT Sat:

LT	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	1.000	0.476	845
R	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	0.850	----	1615

Southbound — Sec LT Adj/LT Sat:

LTR	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	0.865	0.606	929

CAPACITY ANALYSIS WORKSHEET

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Pri.		293	1805	# 0.16	0.162	293	1.00
Sec.		125	320	0.39	0.488	156	0.80
Left	L	418			0.650	449	0.93
Thru	TR	1624	3573	0.45	0.663	2367	0.69
Right							
Westbound							
Pri.							
Sec.							
Left	L	60	241	0.25	0.450	108	0.56
Thru	TR	948	3441	0.28	0.463	1591	0.60
Right							
Northbound							
Pri.							
Sec.							
Left							
Thru	LT	404	845	# 0.48	0.225	190	2.13
Right	R	55	1615	0.03	0.213	343	0.16
Southbound							
Pri.							
Sec.							
Left							
Thru	LTR	255	929	0.27	0.225	209	1.22
Right							

Sum (v/s) critical = 1.13
Lost Time/Cycle, L = 10.00 sec Critical v/c(X) = 1.29

LEVEL OF SERVICE WORKSHEET

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
L	0.93	0.650	16.1	1.000	449	0.45	37.1	0.0	53.3	D		
TR	0.69	0.663	8.4	1.000	2367	0.50	1.7	0.0	10.0+	B	18.9	B

Westbound												
L	0.56	0.450	16.1	1.000	108	0.50	20.3	0.0	36.5	D		
TR	0.60	0.463	16.0	1.000	1591	0.50	1.7	0.0	17.6	B	18.7	B
Northbound												
LT	2.13	0.225	31.0	1.000	190	0.50		0.0				
R	0.16	0.213	25.7	1.000	343	0.11	0.2	0.0	25.9	C		
Southbound												
LTR	1.22	0.225	31.0	1.000	209	0.50	439.2	0.0	470.2	F	470.2	F

Intersection Delay = (sec/veh) Intersection LOS =

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 80.0 sec				
Actual Green Time for Lane Group, G	51.0	35.0		
Effective Green Time for Lane Group, g	39.00	37.00		
Opposing Effective Green Time, go	35.0	51.0		
Number of Lanes in Lane Group, N	1	1		
Number of Opposing Lanes, No	2	2		
Adjusted Left-Turn Flow Rate, Vlt	418	60		
Proportion of Left Turns in Opposing Flow, Plto	0.00	0.00		
Adjusted Opposing Flow Rate, Vo	948	1624		
Lost Time for Lane Group, tl	6.00	6.00		
Left Turns per Cycle: LTC=VltC/3600	9.29	1.33		
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo	11.09	18.99		
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)	1.00	1.00		
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g	0.0	0.0		
Opposing Queue Ratio: qro=1-Rpo(go/C)	0.56	0.36		
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g	17.26	5.22		
gu =g-gq if gq>=gf, =g-gf if gq<gf	21.74	31.78		
n=(gq-gf)/2, n>=0	8.63	2.61		
Ptho=1-Plto	1.00	1.00		
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)))	1.00	1.00		
El1 (Figure 9-7)	3.31	6.54		
El2=(1-Ptho**n)/Plto, El2>=1.0	1.00	1.00		
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g	0.10	0.11		
gdiff=max(gq-gf,0)	0.00	0.00		
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)	0.17	0.13		
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N** flt	0.168	0.131		

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 80.0 sec				
Actual Green Time for Lane Group, G			17.0	17.0
Effective Green Time for Lane Group, g			18.00	18.00
Opposing Effective Green Time, go			17.0	17.0
Number of Lanes in Lane Group, N			1	1
Number of Opposing Lanes, No			1	1
Adjusted Left-Turn Flow Rate, Vlt			64	61
Proportion of Left Turns in Lane Group, Plt			0.16	0.24
Proportion of Left Turns in Opposing Flow, Plto			0.24	0.16
Adjusted Opposing Flow Rate, Vo			255	404
Lost Time for Lane Group, tl			4.00	4.00
Left Turns per Cycle: LTC=VltC/3600			1.42	1.36
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo			5.67	8.98
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)			1.00	1.00
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g			1.8	1.7
Opposing Queue Ratio: qro=1-Rpo(go/C)			0.79	0.79
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g			10.39	16.43
gu =g-gq if gq>=gf, =g-gf if gq<gf			7.61	1.57
n=(gq-gf)/2, n>=0			4.29	7.38
Ptho=1-Plto			0.76	0.84
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)})			0.16	0.24
El1 (Figure 9-7)			1.80	2.09
El2=(1-Ptho**n)/Plto, El2>=1.0			2.89	4.54
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g			0.13	0.14
gdiff=max(gq-gf,0)			8.57	14.75
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)			0.48	0.61
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N** flt Primary			0.476	0.606

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Adj. LT Vol from Vol Adjustment Worksheet, v	418			
v/c ratio from Capacity Worksheet, X	0.80			
Primary phase effective green, g	39.00			
Secondary phase effective green, gq	17.26			
(From Supplemental Permitted LT Worksheet), gu	21.74			
Cycle length, C 80.0 Red =(C-g-gq-gu), r	28.0			
Arrivals: v/(3600(max(X,1.0))), qa	0.12			
Primary ph. departures: s/3600, sp	0.501			
Secondary ph. departures: s(gq+gu)/(gu*3600), ss	0.16			
XPerm	1.31			
XProt	0.73			
XCase	3			

Queue at begining of green arrow, Qa	4.31
Queue at beginning of unsaturated green, Qu	2.00
Residual queue, Qr	1.06
Uniform Delay, d1	16.1

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
Westbound								
Northbound								
Southbound								

Intersection Delay sec/veh Intersection LOS

ERROR MESSAGES

No errors to report.

HCS: Signals Release 3.1a

Inter: Jericho Tpke and Dix Hills Rd. City/St: Dix Hills
Analyst: BL Proj #: 84016
Date: 7/21/99 Period: Build PM Peak Hour
E/W St: Jericho Turnpike N/S St: Dix Hills Road/Greenlawn Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	2	0	0	0	0	0	1	0
LGConfig	L	TR		L	TR						LTR	
Volume	376	1361	101	58	833	86				93	128	154
Lane Width	12.0	12.0		11.0	11.0						10.0	
RTOR Vol			0			0						0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left				
	Thru	P	P				Thru				
	Right	P	P				Right				
	Peds						Ped				
WB	Left		P			SB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Ped				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		13.0	41.0					9.5			
Yellow		3.0	4.0					3.5			
All Red		0.0	3.0					3.0			

Cycle Length: 80.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capcity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	508		0.82	0.725	21.7	C		
TR	2635	3573	0.62	0.738	6.1	A	9.3	A
Westbound								
L	148	281	0.41	0.525	19.7	B		
TR	1850	3441	0.51	0.538	12.8	B	13.2	B
Northbound								
Southbound								
LTR	194	1479	2.01	0.131				

Intersection Delay = (sec/veh) Intersection LOS =

Traffic Engineering
Nelson And Pope LLP
572 Walt Whitman Rd.
Melville, New York 11747

Phone: (516) 427-5665 Fax: (516) 427-5620
E-Mail: np@nelsonpope.com

OPERATIONAL ANALYSIS

Intersection:	Jericho Tpke and Dix Hills Rd.
City/State:	Dix Hills
Analyst:	BL
Project No:	84016
Time Period Analyzed:	Build PM Peak Hour
Date:	7/21/99
East/West Street Name:	Jericho Turnpike
North/South Street Name:	Dix Hills Road/Greenlawn Road

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	376	1361	101	58	833	86				93	128	154
PHF	0.90	0.90	0.90	0.97	0.97	0.97				0.96	0.96	0.96
PK 15 Vol	104	378	28	15	215	22				24	33	40
Hi Ln Vol												
% Grade		0			0						0	
Ideal Sat	1900	1900		1900	1900						1900	
ParkExist												
NumPark												
% Heavy Veh	0	0	0	0	0	0				0	0	0
No. Lanes	1	2	0	1	2	0	0	0	0	0	1	0
LGConfig	L	TR		L	TR						LTR	
Lane Width	12.0	12.0		11.0	11.0						10.0	
RTOR Vol			0			0						0
Adj Flow	418	1624		60	948						390	
%InSharedLn												
Prop Turns			0.07			0.09				0.25		0.41
NumPeds			0			0			0			0
NumBus	0	0		0	0						0	

Duration 1.00 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet	0.0	0.0		0.0	0.0						0.0	
Arriv. Type	3	3		3	3						3	
Unit Ext.	3.0	3.0		3.0	3.0						3.0	
I Factor		1.000			1.000						1.000	
Lost Time	2.0	2.0		2.0	2.0						2.0	
Ext of g	3.0	4.0		3.0	4.0						3.0	
Ped Min g		0.0			0.0						0.0	

PHASE DATA

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A	P			NB Left			
Thru	P	P			Thru			
Right	P	P			Right			
Peds					Ped			
WB Left		P			SB Left	A		
Thru		P			Thru	A		
Right		P			Right	A		
Peds					Ped			
NB Right					EB Right			
SB Right					WB Right			
Green	13.0	41.0			9.5			
Yellow	3.0	4.0			3.5			
All Red	0.0	3.0			3.0			

Cycle Length: 80.0 secs

VOLUME ADJUSTMENT WORKSHEET

Appr./ Movement	Mvt Volume	PHF	Flow Rate	No. Lanes	Lane Group	RTOR	Adjusted Flow Rate In Lane Grp	Prop. Left Turns	Prop. Right Turns
Eastbound									
Left	376	0.90	418	1	L		418		
Thru	1361	0.90	1512	2	TR		1624		0.07
Right	101	0.90	112	0		0			
Westbound									
Left	58	0.97	60	1	L		60		
Thru	833	0.97	859	2	TR		948		0.09
Right	86	0.97	89	0		0			
Northbound									
Left				0					
Thru				0					
Right				0					
Southbound									
Left	93	0.96	97	0					
Thru	128	0.96	133	1	LTR		390	0.25	0.41
Right	154	0.96	160	0		0			

* Value entered by user.

SATURATION FLOW ADJUSTMENT WORKSHEET

Appr/ Lane Group	Ideal Sat Flow	f W	f HV	f G	f P	f BB	f A	f LU	f RT	f LT	Adj Sat Flow
Eastbound							Sec LT	Adj/LT	Sat:	0.201	383
L	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	----	0.950	1805

TR	1900	1.000	1.000	1.000	1.000	1.000	1.00	0.95	0.990	1.000	3573

Westbound							Sec LT	Adj/LT	Sat:		
L	1900	0.967	1.000	1.000	1.000	1.000	1.00	1.00	----	0.153	281
TR	1900	0.967	1.000	1.000	1.000	1.000	1.00	0.95	0.986	1.000	3441

Northbound							Sec LT	Adj/LT	Sat:		

Southbound							Sec LT	Adj/LT	Sat:		

LTR	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	0.845	0.988	1479

CAPACITY ANALYSIS WORKSHEET

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Pri.		293	1805	# 0.16	0.162	293	1.00
Sec.		125	383	0.33	0.563	215	0.58
Left	L	418			0.725	508	0.82
Thru	TR	1624	3573	0.45	0.738	2635	0.62
Right							
Westbound							
Pri.							
Sec.							
Left	L	60	281	0.21	0.525	148	0.41
Thru	TR	948	3441	0.28	0.538	1850	0.51
Right							
Northbound							
Pri.							
Sec.							
Left							
Thru							
Right							
Southbound							
Pri.							
Sec.							
Left							
Thru	LTR	390	1479	# 0.26	0.131	194	2.01
Right							

Sum (v/s) critical = 0.99
Lost Time/Cycle, L = 11.50 sec Critical v/c(X) = 1.15

LEVEL OF SERVICE WORKSHEET

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
L	0.82	0.725	10.2	1.000	508	0.36	11.5	0.0	21.7	C		
TR	0.62	0.738	5.1	1.000	2635	0.50	1.1	0.0	6.1	A	9.3	A

Westbound

L	0.41	0.525	11.5	1.000	148	0.50	8.2	0.0	19.7	B		
TR	0.51	0.538	11.8	1.000	1850	0.50	1.0	0.0	12.8	B	13.2	B

Northbound

Southbound

LTR	2.01	0.131	34.8	1.000	194	0.50		0.0

Intersection Delay = (sec/veh) Intersection LOS =

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 80.0 sec				
Actual Green Time for Lane Group, G	57.0	41.0		
Effective Green Time for Lane Group, g	45.00	43.00		
Opposing Effective Green Time, go	41.0	57.0		
Number of Lanes in Lane Group, N	1	1		
Number of Opposing Lanes, No	2	2		
Adjusted Left-Turn Flow Rate, Vlt	418	60		
Proportion of Left Turns in Opposing Flow, Plto	0.00	0.00		
Adjusted Opposing Flow Rate, Vo	948	1624		
Lost Time for Lane Group, tl	6.00	6.00		
Left Turns per Cycle: LTC=VltC/3600	9.29	1.33		
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo	11.09	18.99		
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)	1.00	1.00		
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g	0.0	0.0		
Opposing Queue Ratio: qro=1-Rpo(go/C)	0.49	0.29		
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g	14.96	0.00		
gu =g-gq if gq>=gf, =g-gf if gq<gf	30.04	43.00		
n=(gq-gf)/2, n>=0	7.48	0.00		
Ptho=1-Plto	1.00	1.00		
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)))	1.00	1.00		
El1 (Figure 9-7)	3.31	6.54		
El2=(1-Ptho**n)/Plto, El2>=1.0	1.00	1.00		
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g	0.09	0.09		
gdiff=max(gq-gf,0)	0.00	0.00		
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)	0.20	0.15		
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}]				
+[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N**				
flt	0.201	0.153		

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 80.0 sec				
Actual Green Time for Lane Group, G				
Effective Green Time for Lane Group, g				
Opposing Effective Green Time, go				
Number of Lanes in Lane Group, N				
Number of Opposing Lanes, No				
Adjusted Left-Turn Flow Rate, Vlt				
Proportion of Left Turns in Lane Group, Plt				
Proportion of Left Turns in Opposing Flow, Plto				
Adjusted Opposing Flow Rate, Vo				
Lost Time for Lane Group, tl				
Left Turns per Cycle: LTC=VltC/3600				
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo				
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)				
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g				
Opposing Queue Ratio: qro=1-Rpo(go/C)				
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g				
gu =g-gq if gq>=gf, =g-gf if gq<gf				
n=(gq-gf)/2, n>=0				
Ptho=1-Plto				
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)))				
El1 (Figure 9-7)				
El2=(1-Ptho**n)/Plto, El2>=1.0				
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g				
gdiff=max(gq-gf,0)				
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)				
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}]				
+[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N**				
flt Primary				

For special case of single-lane approach opposed by multilane approach, see text.

* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.

** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.

For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Adj. LT Vol from Vol Adjustment Worksheet, v	418			
v/c ratio from Capacity Worksheet, X	0.58			
Primary phase effective green, g	45.00			
Secondary phase effective green, gq	14.96			
(From Supplemental Permitted LT Worksheet), gu	30.04			
Cycle length, C 80.0 Red =(C-g-gq-gu), r	22.0			
Arrivals: v/(3600(max(X,1.0))), qa	0.12			
Primary ph. departures: s/3600, sp	0.501			
Secondary ph. departures: s(gq+gu)/(gu*3600), ss	0.16			
XPerm	1.09			
XProt	0.62			
XCase	3			

Queue at begining of green arrow, Qa	2.99
Queue at beginning of unsaturated green, Qu	1.74
Residual queue, Qr	0.44
Uniform Delay, d1	10.2

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
Westbound								
Northbound								
Southbound								

Intersection Delay sec/veh Intersection LOS

ERROR MESSAGES

No errors to report.

Nelson & Pope, LLP

Job Title: Hren Shopping Center
Job No: 84016
Date: October-99

5 Way Intersection Level of Service Summary Sheet

Intersection: JERICHO TURNPIKE AND DIXHILLS ROAD/GREENLAWN ROAD
Time Period: Saturday Peak Hour
Condition: BUILD

Approach	Movement	Adjusted Flow Rate (v)	v/s Critical	Delay sec/veh	Approach Delay sec/veh
JERICHO TPKE EASTBOUND	Left	232		49.1	
	Through	1636		162.3	148.2
	Right				
JERICHO TPKE WESTBOUND	Left	105	0.48	321.7	
	Through	1641		*	*
	Right				
DIXHILLS RD NORTHBOUND	Left	234		82.8	
	Through	91	0.22	24.1	66.4
	Right				
DIXHILLS RD SOUTHBOUND	Left				
	Through	169		26.7	26.7
	Right				
GREENLAWN RD SOUTHBOUND	Left				
	Through	306	0.21	984.9	984.9
	Right				

IntersectionDelay:	*	sec/veh
Level of Service:	*	
Cycle Length:	80.0	sec.
Lost Time:	4.0	sec.
Sum Critical v/s:	0.91	
Critical Xc:	0.96	

HCS: Signals Release 3.1a

Inter: Jericho Tpke and Dix Hills Rd. City/St: Dix Hills
Analyst: BL Proj #: 84016
Date: 7/21/99 Period: Build Sat. Peak Hour
E/W St: Jericho Turnpike N/S St: Dix Hills Road/Greenlawn Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	2	0	0	1	1	0	1	0
LGConfig	L	TR		L	TR			LT	R		LTR	
Volume	218	1403	69	89	1296	99	78	132	82	40	64	57
Lane Width	12.0	12.0		11.0	11.0			10.0	12.0		10.0	
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A	P			NB	Left	A			
Thru	P	P				Thru	A			
Right	P	P				Right	A			
Peds						Ped				
WB Left		P			SB	Left	A			
Thru		P				Thru	A			
Right		P				Right	A			
Peds						Ped				
NB Right					EB	Right				
SB Right					WB	Right				
Green	8.0	19.0					33.0			
Yellow	3.0	4.0					3.0			
All Red	0.0	3.0					2.0			

Cycle Length: 75.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capcity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	294		0.79	0.413	49.1	D		
TR	1530	3585	1.07	0.427	162.3	F	148.2	F
Westbound								
L	96	350	1.09	0.267	321.7	F		
TR	967	3453	1.70	0.280				
Northbound								
LT	675	1489	0.33	0.453	13.5	B	13.2	B
R	711	1615	0.12	0.440	12.5	B		
Southbound								
LTR	612	1351	0.28	0.453	13.1	B	13.1	B

Intersection Delay = (sec/veh) Intersection LOS =

Traffic Engineering
Nelson And Pope LLP
572 Walt Whitman Rd.
Melville, New York 11747

Phone: (516) 427-5665 Fax: (516) 427-5620
E-Mail: np@nelsonpope.com

OPERATIONAL ANALYSIS

Intersection:	Jericho Tpke and Dix Hills Rd.
City/State:	Dix Hills
Analyst:	BL
Project No:	84016
Time Period Analyzed:	Build Sat. Peak Hour
Date:	7/21/99
East/West Street Name:	Jericho Turnpike
North/South Street Name:	Dix Hills Road/Greenlawn Road

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	218	1403	69	89	1296	99	78	132	82	40	64	57
PHF	0.94	0.90	0.90	0.85	0.85	0.85	0.94	0.94	0.94	0.95	0.95	0.95
PK 15 Vol	58	390	19	26	381	29	21	35	22	11	17	15
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat	1900	1900		1900	1900			1900	1900		1900	
ParkExist												
NumPark												
% Heavy Veh	0	0	0	0	0	0	0	0	0	0	0	0
No. Lanes	1	2	0	1	2	0	0	1	1	0	1	0
LGConfig	L	TR		L	TR			LT	R		LTR	
Lane Width	12.0	12.0		11.0	11.0			10.0	12.0		10.0	
RTOR Vol			0			0			0			0
Adj Flow	232	1636		105	1641			223	87		169	
%InSharedLn												
Prop Turns			0.05			0.07	0.37			0.25		0.36
NumPeds			0			0			0			0
NumBus	0	0		0	0			0	0		0	

Duration 1.00 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Arriv. Type	3	3		3	3			3	3		3	
Unit Ext.	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
I Factor		1.000			1.000			1.000			1.000	
Lost Time	2.0	2.0		2.0	2.0			2.0	2.0		2.0	
Ext of g	3.0	4.0		3.0	4.0			3.0	2.0		3.0	
Ped Min g		0.0			0.0			0.0			0.0	

PHASE DATA

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left	A			
	Thru	P	P				Thru	A			
	Right	P	P				Right	A			
	Peds						Ped				
WB	Left		P			SB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Ped				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		8.0	19.0					33.0			
Yellow		3.0	4.0					3.0			
All Red		0.0	3.0					2.0			

Cycle Length: 75.0 secs

VOLUME ADJUSTMENT WORKSHEET

Appr./ Movement	Mvt Volume	PHF	Flow Rate	No. Lanes	Lane Group	RTOR	Adjusted Flow Rate In Lane Grp	Prop. Left Turns	Prop. Right Turns
Eastbound									
Left	218	0.94	232	1	L		232		
Thru	1403	0.90	1559	2	TR		1636		0.05
Right	69	0.90	77	0		0			
Westbound									
Left	89	0.85	105	1	L		105		
Thru	1296	0.85	1525	2	TR		1641		0.07
Right	99	0.85	116	0		0			
Northbound									
Left	78	0.94	83	0					
Thru	132	0.94	140	1	LT		223	0.37	
Right	82	0.94	87	1	R	0	87		
Southbound									
Left	40	0.95	42	0					
Thru	64	0.95	67	1	LTR		169	0.25	0.36
Right	57	0.95	60	0		0			

* Value entered by user.

SATURATION FLOW ADJUSTMENT WORKSHEET

Appr/ Lane Group	Ideal Sat Flow	f W	f HV	f G	f P	f BB	f A	f LU	f RT	f LT	Adj Sat Flow
Eastbound							Sec LT Adj/LT Sat:			0.174	330
L	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	----	0.950	1805

TR	1900	1.000	1.000	1.000	1.000	1.000	1.00	0.95	0.993	1.000	3585

Westbound							Sec LT Adj/LT Sat:				
L	1900	0.967	1.000	1.000	1.000	1.000	1.00	1.00	----	0.190	350
TR	1900	0.967	1.000	1.000	1.000	1.000	1.00	0.95	0.989	1.000	3453

Northbound							Sec LT Adj/LT Sat:				

LT	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	1.000	0.840	1489
R	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	0.850	----	1615

Southbound							Sec LT Adj/LT Sat:				

LTR	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	0.852	0.894	1351

CAPACITY ANALYSIS WORKSHEET

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Pri.		193	1805	# 0.11	0.107	193	1.00
Sec.		39	330	0.12	0.307	101	0.39
Left	L	232			0.413	294	0.79
Thru	TR	1636	3585	0.46	0.427	1530	1.07
Right							
Westbound							
Pri.							
Sec.							
Left	L	105	350	0.30	0.267	96	1.09
Thru	TR	1641	3453	# 0.48	0.280	967	1.70
Right							
Northbound							
Pri.							
Sec.							
Left							
Thru	LT	223	1489	# 0.15	0.453	675	0.33
Right	R	87	1615	0.05	0.440	711	0.12
Southbound							
Pri.							
Sec.							
Left							
Thru	LTR	169	1351	0.13	0.453	612	0.28
Right							

Sum (v/s) critical = 0.73

Lost Time/Cycle, L = 15.00 sec Critical v/c(X) = 0.91

LEVEL OF SERVICE WORKSHEET

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
L	0.79	0.413	34.3	1.000	294	0.34	14.8	0.0	49.1	D		
TR	1.07	0.427	21.5	1.000	1530	0.50	140.8	0.0	162.3	F	148.2	F

Westbound												
L	1.09	0.267	27.5	1.000	96	0.50	294.2	0.0	321.7	F		
TR	1.70	0.280	27.0	1.000	967	0.50		0.0				
Northbound												
LT	0.33	0.453	13.2	1.000	675	0.11	0.3	0.0	13.5	B	13.2	B
R	0.12	0.440	12.4	1.000	711	0.11	0.1	0.0	12.5	B		
Southbound												
LTR	0.28	0.453	12.8	1.000	612	0.11	0.2	0.0	13.1	B	13.1	B

Intersection Delay = (sec/veh) Intersection LOS =

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 75.0 sec				
Actual Green Time for Lane Group, G	30.0	19.0		
Effective Green Time for Lane Group, g	23.00	21.00		
Opposing Effective Green Time, go	19.0	30.0		
Number of Lanes in Lane Group, N	1	1		
Number of Opposing Lanes, No	2	2		
Adjusted Left-Turn Flow Rate, Vlt	232	105		
Proportion of Left Turns in Opposing Flow, Plto	0.00	0.00		
Adjusted Opposing Flow Rate, Vo	1641	1636		
Lost Time for Lane Group, tl	6.00	6.00		
Left Turns per Cycle: LTC=VltC/3600	4.83	2.19		
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo	17.99	17.94		
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)	1.00	1.00		
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g	0.0	0.0		
Opposing Queue Ratio: qro=1-Rpo(go/C)	0.75	0.60		
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g	23.00	21.00		
gu =g-gq if gq>=gf, =g-gf if gq<gf	0.00	0.00		
n=(gq-gf)/2, n>=0	11.50	10.50		
Ptho=1-Plto	1.00	1.00		
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)})	1.00	1.00		
El1 (Figure 9-7)	6.66	6.62		
El2=(1-Ptho**n)/Plto, El2>=1.0	1.00	1.00		
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g	0.17	0.19		
gdiff=max(gq-gf,0)	0.00	0.00		
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)	0.17	0.19		
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N**				
flt	0.174	0.190		

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 75.0 sec				
Actual Green Time for Lane Group, G			33.0	33.0
Effective Green Time for Lane Group, g			34.00	34.00
Opposing Effective Green Time, go			33.0	33.0
Number of Lanes in Lane Group, N			1	1
Number of Opposing Lanes, No			1	1
Adjusted Left-Turn Flow Rate, Vlt			83	42
Proportion of Left Turns in Lane Group, Plt			0.37	0.25
Proportion of Left Turns in Opposing Flow, Plto			0.25	0.37
Adjusted Opposing Flow Rate, Vo			169	223
Lost Time for Lane Group, tl			4.00	4.00
Left Turns per Cycle: LTC=VltC/3600			1.73	0.88
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo			3.52	4.65
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)			1.00	1.00
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g			5.8	10.8
Opposing Queue Ratio: qro=1-Rpo(go/C)			0.56	0.56
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g			2.97	4.61
gu =g-gq if gq>=gf, =g-gf if gq<gf			28.20	23.19
n=(gq-gf)/2, n>=0			0.00	0.00
Ptho=1-Plto			0.75	0.63
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)))			0.37	0.25
El1 (Figure 9-7)			1.64	1.74
El2=(1-Ptho**n)/Plto, El2>=1.0			1.00	1.00
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g			0.08	0.07
gdiff=max(gq-gf,0)			0.00	0.00
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)			0.84	0.89
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}]				
+[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N**				
flt Primary			0.840	0.894

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Adj. LT Vol from Vol Adjustment Worksheet, v	232			
v/c ratio from Capacity Worksheet, X	0.39			
Primary phase effective green, g	23.00			
Secondary phase effective green, gq	23.00			
(From Supplemental Permitted LT Worksheet), gu	0.00			
Cycle length, C 75.0 Red =(C-g-gq-gu), r	44.0			
Arrivals: v/(3600(max(X,1.0))), qa	0.06			
Primary ph. departures: s/3600, sp	0.501			
Secondary ph. departures: s(gq+gu)/(gu*3600), ss	23.00			
XPerm	9.99			
XProt	0.84			
XCase	3			

Queue at begining of green arrow, Qa	4.32
Queue at beginning of unsaturated green, Qu	1.48
Residual queue, Qr	1.48
Uniform Delay, d1	34.3

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
Westbound								
Northbound								
Southbound								

Intersection Delay sec/veh Intersection LOS

ERROR MESSAGES

No errors to report.

HCS: Signals Release 3.1a

Inter: Jericho Tpke and Dix Hills Rd. City/St: Dix Hills
Analyst: BL Proj #: 84016
Date: 7/21/99 Period: Build Sat. Peak Hour
E/W St: Jericho Turnpike N/S St: Dix Hills Road/Greenlawn Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	2	0	0	1	1	0	1	0
LGConfig	L	TR		L	TR			LT	R		LTR	
Volume	218	1403	69	89	1296	99	78	132	82	40	64	57
Lane Width	12.0	12.0		11.0	11.0			10.0	12.0		10.0	
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left	A			
	Thru	P	P				Thru	A			
	Right	P	P				Right	A			
	Peds						Ped				
WB	Left		P			SB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Ped				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		8.0	35.0					17.0			
Yellow		3.0	4.0					3.0			
All Red		0.0	3.0					2.0			

Cycle Length: 75.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capcity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	294		0.79	0.627	31.7	C		
TR	2294	3585	0.68	0.640	10.3	B	13.1	B
Westbound								
L	110	229	0.85	0.480	92.0	F		
TR	1703	3453	0.86	0.493	23.2	C	27.3	C
Northbound								
LT	253	1054	0.92	0.240	82.8	F	66.4	E
R	366	1615	0.25	0.227	24.1	C		
Southbound								
LTR	315	1314	0.54	0.240	26.7	C	26.7	C

Intersection Delay = 23.9 (sec/veh) Intersection LOS = C

Traffic Engineering
Nelson And Pope LLP
572 Walt Whitman Rd.
Melville, New York 11747

Phone: (516) 427-5665 Fax: (516) 427-5620
E-Mail: np@nelsonpope.com

OPERATIONAL ANALYSIS

Intersection:	Jericho Tpke and Dix Hills Rd.
City/State:	Dix Hills
Analyst:	BL
Project No:	84016
Time Period Analyzed:	Build Sat. Peak Hour
Date:	7/21/99
East/West Street Name:	Jericho Turnpike
North/South Street Name:	Dix Hills Road/Greenlawn Road

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	218	1403	69	89	1296	99	78	132	82	40	64	57
PHF	0.94	0.94	0.94	0.95	0.95	0.95	0.90	0.90	0.90	0.95	0.95	0.95
PK 15 Vol	58	373	18	23	341	26	22	37	23	11	17	15
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat	1900	1900		1900	1900			1900	1900		1900	
ParkExist												
NumPark												
% Heavy Veh	0	0	0	0	0	0	0	0	0	0	0	0
No. Lanes	1	2	0	1	2	0	0	1	1	0	1	0
LGConfig	L	TR		L	TR			LT	R		LTR	
Lane Width	12.0	12.0		11.0	11.0			10.0	12.0		10.0	
RTOR Vol			0			0			0			0
Adj Flow	232	1566		94	1468			234	91		169	
%InSharedLn												
Prop Turns			0.05			0.07	0.37			0.25		0.36
NumPeds			0			0			0			0
NumBus	0	0		0	0			0	0		0	

Duration 1.00 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Arriv. Type	3	3		3	3			3	3		3	
Unit Ext.	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
I Factor		1.000			1.000			1.000			1.000	
Lost Time	2.0	2.0		2.0	2.0			2.0	2.0		2.0	
Ext of g	3.0	4.0		3.0	4.0			3.0	2.0		3.0	
Ped Min g		0.0			0.0			0.0			0.0	

PHASE DATA

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left	A			
	Thru	P	P				Thru	A			
	Right	P	P				Right	A			
	Peds						Ped				
WB	Left		P			SB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Ped				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		8.0	35.0					17.0			
Yellow		3.0	4.0					3.0			
All Red		0.0	3.0					2.0			

Cycle Length: 75.0 secs

VOLUME ADJUSTMENT WORKSHEET

Appr./ Movement	Mvt Volume	PHF	Flow Rate	No. Lanes	Lane Group	RTOR	Adjusted Flow Rate In Lane Grp	Prop. Left Turns	Prop. Right Turns
Eastbound									
Left	218	0.94	232	1	L		232		
Thru	1403	0.94	1493	2	TR		1566		0.05
Right	69	0.94	73	0		0			
Westbound									
Left	89	0.95	94	1	L		94		
Thru	1296	0.95	1364	2	TR		1468		0.07
Right	99	0.95	104	0		0			
Northbound									
Left	78	0.90	87	0					
Thru	132	0.90	147	1	LT		234	0.37	
Right	82	0.90	91	1	R	0	91		
Southbound									
Left	40	0.95	42	0					
Thru	64	0.95	67	1	LTR		169	0.25	0.36
Right	57	0.95	60	0		0			

* Value entered by user.

SATURATION FLOW ADJUSTMENT WORKSHEET

Appr/ Lane Group	Ideal Sat Flow	f W	f HV	f G	f P	f BB	f A	f LU	f RT	f LT	Adj Sat Flow
Eastbound							Sec LT	Adj/LT	Sat:	0.103	195
L	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	----	0.950	1805

TR	1900	1.000	1.000	1.000	1.000	1.000	1.00	0.95	0.993	1.000	3585

Westbound							Sec LT Adj/LT Sat:				
L	1900	0.967	1.000	1.000	1.000	1.000	1.00	1.00	----	0.125	229
TR	1900	0.967	1.000	1.000	1.000	1.000	1.00	0.95	0.989	1.000	3453

Northbound							Sec LT Adj/LT Sat:				

LT	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	1.000	0.594	1054
R	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	0.850	----	1615
Southbound							Sec LT Adj/LT Sat:				

LTR	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	0.852	0.869	1314

CAPACITY ANALYSIS WORKSHEET

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Pri.		193	1805	# 0.11	0.107	193	1.00
Sec.		39	195	0.20	0.520	101	0.39
Left	L	232			0.627	294	0.79
Thru	TR	1566	3585	0.44	0.640	2294	0.68
Right							
Westbound							
Pri.							
Sec.							
Left	L	94	229	0.41	0.480	110	0.85
Thru	TR	1468	3453	# 0.43	0.493	1703	0.86
Right							
Northbound							
Pri.							
Sec.							
Left							
Thru	LT	234	1054	# 0.22	0.240	253	0.92
Right	R	91	1615	0.06	0.227	366	0.25
Southbound							
Pri.							
Sec.							
Left							
Thru	LTR	169	1314	0.13	0.240	315	0.54
Right							

Sum (v/s) critical = 0.75
Lost Time/Cycle, L = 15.00 sec Critical v/c(X) = 0.94

LEVEL OF SERVICE WORKSHEET

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
L	0.79	0.627	16.9	1.000	294	0.34	14.8	0.0	31.7	C		
TR	0.68	0.640	8.6	1.000	2294	0.50	1.7	0.0	10.3	B	13.1	B

Westbound												
L	0.85	0.480	17.2	1.000	110	0.50	74.8	0.0	92.0	F		
TR	0.86	0.493	16.7	1.000	1703	0.50	6.4	0.0	23.2	C	27.3	C
Northbound												
LT	0.92	0.240	27.8	1.000	253	0.44	55.0	0.0	82.8	F	66.4	E
R	0.25	0.227	23.8	1.000	366	0.11	0.4	0.0	24.1	C		
Southbound												
LTR	0.54	0.240	24.9	1.000	315	0.14	1.8	0.0	26.7	C	26.7	C

Intersection Delay = 23.9 (sec/veh) Intersection LOS = C

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 75.0 sec				
Actual Green Time for Lane Group, G	46.0	35.0		
Effective Green Time for Lane Group, g	39.00	37.00		
Opposing Effective Green Time, go	35.0	46.0		
Number of Lanes in Lane Group, N	1	1		
Number of Opposing Lanes, No	2	2		
Adjusted Left-Turn Flow Rate, Vlt	232	94		
Proportion of Left Turns in Opposing Flow, Plto	0.00	0.00		
Adjusted Opposing Flow Rate, Vo	1468	1566		
Lost Time for Lane Group, tl	6.00	6.00		
Left Turns per Cycle: LTC=VltC/3600	4.83	1.96		
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo	16.10	17.17		
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)	1.00	1.00		
gf=[Gexp(- a * (LTC ** b)]-tl, gf<=g	0.0	0.0		
Opposing Queue Ratio: qro=1-Rpo(go/C)	0.53	0.39		
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g	30.08	8.50		
gu =g-gq if gq>=gf, =g-gf if gq<gf	8.92	28.50		
n=(gq-gf)/2, n>=0	15.04	4.25		
Ptho=1-Plto	1.00	1.00		
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)))	1.00	1.00		
El1 (Figure 9-7)	5.58	6.17		
El2=(1-Ptho**n)/Plto, El2>=1.0	1.00	1.00		
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g	0.10	0.11		
gdiff=max(gq-gf,0)	0.00	0.00		
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)	0.10	0.12		
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N** flt	0.103	0.125		

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 75.0 sec				
Actual Green Time for Lane Group, G			17.0	17.0
Effective Green Time for Lane Group, g			18.00	18.00
Opposing Effective Green Time, go			17.0	17.0
Number of Lanes in Lane Group, N			1	1
Number of Opposing Lanes, No			1	1
Adjusted Left-Turn Flow Rate, Vlt			87	42
Proportion of Left Turns in Lane Group, Plt			0.37	0.25
Proportion of Left Turns in Opposing Flow, Plto			0.25	0.37
Adjusted Opposing Flow Rate, Vo			169	234
Lost Time for Lane Group, tl			4.00	4.00
Left Turns per Cycle: LTC=VltC/3600			1.81	0.88
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo			3.52	4.88
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)			1.00	1.00
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g			0.9	3.6
Opposing Queue Ratio: qro=1-Rpo(go/C)			0.77	0.77
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g			5.82	8.58
gu =g-gq if gq>=gf, =g-gf if gq<gf			12.18	9.42
n=(gq-gf)/2, n>=0			2.47	2.48
Ptho=1-Plto			0.75	0.63
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)})			0.37	0.25
El1 (Figure 9-7)			1.64	1.76
El2=(1-Ptho**n)/Plto, El2>=1.0			2.04	1.84
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g			0.15	0.14
gdiff=max(gq-gf,0)			4.95	4.96
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)			0.59	0.87
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N**				
flt Primary			0.594	0.869

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Adj. LT Vol from Vol Adjustment Worksheet, v	232			
v/c ratio from Capacity Worksheet, X	0.39			
Primary phase effective green, g	39.00			
Secondary phase effective green, gq	30.08			
(From Supplemental Permitted LT Worksheet), gu	8.92			
Cycle length, C 75.0 Red =(C-g-gq-gu), r	28.0			
Arrivals: v/(3600(max(X,1.0))), qa	0.06			
Primary ph. departures: s/3600, sp	0.501			
Secondary ph. departures: s(gq+gu)/(gu*3600), ss	0.24			
XPerm	1.19			
XProt	0.58			
XCase	3			

Queue at begining of green arrow, Qa	2.21
Queue at beginning of unsaturated green, Qu	1.94
Residual queue, Qr	0.40
Uniform Delay, d1	16.9

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
Westbound								
Northbound								
Southbound								

Intersection Delay 23.9 sec/veh Intersection LOS C

ERROR MESSAGES

No errors to report.

HCS: Signals Release 3.1a

Inter: Jericho Tpke and Dix Hills Rd. City/St: Dix Hills
Analyst: BL Proj #: 84016
Date: 7/21/99 Period: Build Sat. Peak Hour
E/W St: Jericho Turnpike N/S St: Dix Hills Road/Greenlawn Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	2	0	0	0	0	0	1	0
LGConfig	L	TR		L	TR						LTR	
Volume	218	1403	69	89	1296	99				38	83	173
Lane Width	12.0	12.0		11.0	11.0						10.0	
RTOR Vol			0			0						0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left				
	Thru	P	P				Thru				
	Right	P	P				Right				
	Peds						Ped				
WB	Left		P			SB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Ped				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		8.0	42.0					9.5			
Yellow		3.0	4.0					3.5			
All Red		0.0	3.0					2.0			

Cycle Length: 75.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capcity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	294		0.79	0.720	32.1	C		
TR	2629	3585	0.60	0.733	5.7	A	9.1	A
Westbound								
L	161	280	0.58	0.573	25.6	C		
TR	2026	3453	0.72	0.587	13.5	B	14.2	B
Northbound								
Southbound								
LTR	202	1446	1.51	0.140	984.5	F	984.5	F

Intersection Delay = 92.7 (sec/veh) Intersection LOS = F

Traffic Engineering
Nelson And Pope LLP
572 Walt Whitman Rd.
Melville, New York 11747

Phone: (516) 427-5665 Fax: (516) 427-5620
E-Mail: np@nelsonpope.com

OPERATIONAL ANALYSIS

Intersection:	Jericho Tpke and Dix Hills Rd.
City/State:	Dix Hills
Analyst:	BL
Project No:	84016
Time Period Analyzed:	Build Sat. Peak Hour
Date:	7/21/99
East/West Street Name:	Jericho Turnpike
North/South Street Name:	Dix Hills Road/Greenlawn Road

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	218	1403	69	89	1296	99				38	83	173
PHF	0.94	0.94	0.94	0.95	0.95	0.95				0.96	0.96	0.96
PK 15 Vol	58	373	18	23	341	26				10	22	45
Hi Ln Vol												
% Grade		0			0						0	
Ideal Sat	1900	1900		1900	1900						1900	
ParkExist												
NumPark												
% Heavy Veh	0	0	0	0	0	0				0	0	0
No. Lanes	1	2	0	1	2	0	0	0	0	0	1	0
LGConfig	L	TR		L	TR						LTR	
Lane Width	12.0	12.0		11.0	11.0						10.0	
RTOR Vol			0			0						0
Adj Flow	232	1566		94	1468						306	
%InSharedLn												
Prop Turns			0.05			0.07				0.13		0.59
NumPeds			0			0			0			0
NumBus	0	0		0	0						0	

Duration 1.00 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet	0.0	0.0		0.0	0.0						0.0	
Arriv. Type	3	3		3	3						3	
Unit Ext.	3.0	3.0		3.0	3.0						3.0	
I Factor		1.000			1.000						1.000	
Lost Time	2.0	2.0		2.0	2.0						2.0	
Ext of g	3.0	4.0		3.0	4.0						3.0	
Ped Min g		0.0			0.0						0.0	

PHASE DATA

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left				
	Thru	P	P				Thru				
	Right	P	P				Right				
	Peds						Ped				
WB	Left		P			SB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Ped				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		8.0	42.0					9.5			
Yellow		3.0	4.0					3.5			
All Red		0.0	3.0					2.0			

Cycle Length: 75.0 secs

VOLUME ADJUSTMENT WORKSHEET

Appr./ Movement	Mvt Volume	PHF	Flow Rate	No. Lanes	Lane Group	RTOR	Adjusted Flow Rate In Lane Grp	Prop. Left Turns	Prop. Right Turns
Eastbound									
Left	218	0.94	232	1	L		232		
Thru	1403	0.94	1493	2	TR		1566		0.05
Right	69	0.94	73	0		0			
Westbound									
Left	89	0.95	94	1	L		94		
Thru	1296	0.95	1364	2	TR		1468		0.07
Right	99	0.95	104	0		0			
Northbound									
Left				0					
Thru				0					
Right				0					
Southbound									
Left	38	0.96	40	0					
Thru	83	0.96	86	1	LTR		306	0.13	0.59
Right	173	0.96	180	0		0			

* Value entered by user.

SATURATION FLOW ADJUSTMENT WORKSHEET

Appr/ Lane Group	Ideal Sat Flow	f W	f HV	f G	f P	f BB	f A	f LU	f RT	f LT	Adj Sat Flow
Eastbound							Sec LT	Adj/LT	Sat:	0.087	165
L	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	----	0.950	1805

TR	1900	1.000	1.000	1.000	1.000	1.000	1.00	0.95	0.993	1.000	3585

Westbound							Sec LT	Adj/LT	Sat:		
L	1900	0.967	1.000	1.000	1.000	1.000	1.00	1.00	----	0.153	280
TR	1900	0.967	1.000	1.000	1.000	1.000	1.00	0.95	0.989	1.000	3453

Northbound							Sec LT	Adj/LT	Sat:		

				---						----	

Southbound							Sec LT	Adj/LT	Sat:		

LTR	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	0.821	0.994	1446

CAPACITY ANALYSIS WORKSHEET

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Pri.		193	1805	# 0.11	0.107	193	1.00
Sec.		39	165	0.24	0.613	101	0.39
Left	L	232			0.720	294	0.79
Thru	TR	1566	3585	0.44	0.733	2629	0.60
Right							
Westbound							
Pri.							
Sec.							
Left	L	94	280	0.34	0.573	161	0.58
Thru	TR	1468	3453	# 0.43	0.587	2026	0.72
Right							
Northbound							
Pri.							
Sec.							
Left							
Thru							
Right							
Southbound							
Pri.							
Sec.							
Left							
Thru	LTR	306	1446	# 0.21	0.140	202	1.51
Right							

Sum (v/s) critical = 0.74

Lost Time/Cycle, L = 15.50 sec Critical v/c(X) = 0.94

LEVEL OF SERVICE WORKSHEET

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
L	0.79	0.720	17.3	1.000	294	0.34	14.8	0.0	32.1	C		
TR	0.60	0.733	4.7	1.000	2629	0.50	1.0	0.0	5.7	A	9.1	A

Westbound

L	0.58	0.573	10.3	1.000	161	0.50	15.4	0.0	25.6	C		
TR	0.72	0.587	11.1	1.000	2026	0.50	2.3	0.0	13.5	B	14.2	B

Northbound

Southbound

LTR	1.51	0.140	32.3	1.000	202	0.50	952.2	0.0	984.5	F	984.5	F

Intersection Delay = 92.7 (sec/veh) Intersection LOS = F

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 75.0 sec				
Actual Green Time for Lane Group, G	53.0	42.0		
Effective Green Time for Lane Group, g	46.00	44.00		
Opposing Effective Green Time, go	42.0	53.0		
Number of Lanes in Lane Group, N	1	1		
Number of Opposing Lanes, No	2	2		
Adjusted Left-Turn Flow Rate, Vlt	232	94		
Proportion of Left Turns in Opposing Flow, Plto	0.00	0.00		
Adjusted Opposing Flow Rate, Vo	1468	1566		
Lost Time for Lane Group, tl	6.00	6.00		
Left Turns per Cycle: LTC=VltC/3600	4.83	1.96		
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo	16.10	17.17		
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)	1.00	1.00		
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g	0.0	0.0		
Opposing Queue Ratio: qro=1-Rpo(go/C)	0.44	0.29		
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g	24.82	2.58		
gu =g-gq if gq>=gf, =g-gf if gq<gf	21.18	41.42		
n=(gq-gf)/2, n>=0	12.41	1.29		
Ptho=1-Plto	1.00	1.00		
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)))	1.00	1.00		
El1 (Figure 9-7)	5.58	6.17		
El2=(1-Ptho**n)/Plto, El2>=1.0	1.00	1.00		
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g	0.09	0.09		
gdiff=max(gq-gf,0)	0.00	0.00		
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)	0.09	0.15		
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N** flt	0.087	0.153		

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 75.0 sec				
Actual Green Time for Lane Group, G				
Effective Green Time for Lane Group, g				
Opposing Effective Green Time, go				
Number of Lanes in Lane Group, N				
Number of Opposing Lanes, No				
Adjusted Left-Turn Flow Rate, Vlt				
Proportion of Left Turns in Lane Group, Plt				
Proportion of Left Turns in Opposing Flow, Plto				
Adjusted Opposing Flow Rate, Vo				
Lost Time for Lane Group, tl				
Left Turns per Cycle: LTC=VltC/3600				
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo				
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)				
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g				
Opposing Queue Ratio: qro=1-Rpo(go/C)				
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g				
gu =g-gq if gq>=gf, =g-gf if gq<gf				
n=(gq-gf)/2, n>=0				
Ptho=1-Plto				
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)))				
El1 (Figure 9-7)				
El2=(1-Ptho**n)/Plto, El2>=1.0				
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g				
gdiff=max(gq-gf,0)				
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)				
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}]				
+[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N**				
flt Primary				

For special case of single-lane approach opposed by multilane approach, see text.

* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.

** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.

For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Adj. LT Vol from Vol Adjustment Worksheet, v	232			
v/c ratio from Capacity Worksheet, X	0.39			
Primary phase effective green, g	46.00			
Secondary phase effective green, gq	24.82			
(From Supplemental Permitted LT Worksheet), gu	21.18			
Cycle length, C 75.0 Red =(C-g-gq-gu), r	21.0			
Arrivals: v/(3600(max(X,1.0))), qa	0.06			
Primary ph. departures: s/3600, sp	0.501			
Secondary ph. departures: s(gq+gu)/(gu*3600), ss	0.10			
XPerm	1.41			
XProt	0.47			
XCase	3			

Queue at begining of green arrow, Qa	2.21
Queue at beginning of unsaturated green, Qu	1.60
Residual queue, Qr	0.86
Uniform Delay, d1	17.3

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
Westbound								
Northbound								
Southbound								

Intersection Delay 92.7 sec/veh Intersection LOS F

ERROR MESSAGES

No errors to report.

2. Jericho Turnpike and Park Avenue

HCS: Signals Release 3.1a

Inter: Jericho Tpke and Park Ave
Analyst: BL
Date: 7/21/99
E/W St: Jericho Turnpike

City/St: Dix Hills
Proj #: 84016
Period: Build PM Peak Hour
N/S St: Park Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	2	0	1	1	0	1	2	0
LGConfig	L	T		L	T		L	T		L	TR	
Volume	52	1053		18	614		293	680		94	668	31
Lane Width	12.0	12.0		12.0	12.0		10.0	10.0		9.0	11.0	
RTOR Vol												0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	P				NB	Left	A	A	A	
	Thru	P					Thru		A	A	
	Right						Right				
	Peds						Ped				
WB	Left	P				SB	Left	A		A	
	Thru	P					Thru			A	
	Right						Right			A	
	Peds						Ped				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		27.0						8.0	5.0	25.0	
Yellow		4.0						3.0	0.0	4.0	
All Red		2.0						0.0	0.0	2.0	

Cycle Length: 80.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capcity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	181	500	0.31	0.363	22.9	C		
T	1309	3610	0.88	0.363	33.9	C	33.4	C
Westbound								
L	95	262	0.21	0.363	22.6	C		
T	1309	3610	0.53	0.363	21.6	C	21.7	C
Northbound								
L	364		0.87	0.525	42.0	D		
T	709	1773	1.04	0.400	140.9	F	111.2	F
Southbound								
L	252		0.44	0.438	19.1	B		
TR	1170	3467	0.70	0.338	25.0	C	24.3	C

Intersection Delay = 50.1 (sec/veh) Intersection LOS = D

Traffic Engineering
Nelson And Pope LLP
572 Walt Whitman Rd.
Melville, New York 11747

Phone: (516) 427-5665 Fax: (516) 427-5620
E-Mail: np@nelsonpope.com

OPERATIONAL ANALYSIS

Intersection:	Jericho Tpke and Park Ave
City/State:	Dix Hills
Analyst:	BL
Project No:	84016
Time Period Analyzed:	Build PM Peak Hour
Date:	7/21/99
East/West Street Name:	Jericho Turnpike
North/South Street Name:	Park Avenue

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	52	1053		18	614		293	680		94	668	31
PHF	0.91	0.91		0.89	0.89		0.92	0.92		0.85	0.85	0.85
PK 15 Vol	14	289		5	172		80	185		28	196	9
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat	1900	1900		1900	1900		1900	1900		1900	1900	
ParkExist												
NumPark												
% Heavy Veh	0	0		0	0		0	0		0	0	0
No. Lanes	1	2	0	1	2	0	1	1	0	1	2	0
LGConfig	L	T		L	T		L	T		L	TR	
Lane Width	12.0	12.0		12.0	12.0		10.0	10.0		9.0	11.0	
RTOR Vol												0
Adj Flow	57	1157		20	690		318	739		111	822	
%InSharedLn												
Prop Turns												0.04
NumPeds												0
NumBus	0	0		0	0		0	0		0	0	

Duration 1.00 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Arriv. Type	3	3		3	3		3	3		3	3	
Unit Ext.	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
I Factor		1.000			1.000			1.000			1.000	
Lost Time	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Ext of g	4.0	4.0		4.0	4.0		3.0	4.0		3.0	4.0	
Ped Min g		0.0			0.0			0.0			0.0	

PHASE DATA

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	P				NB	Left	A	A	A	
	Thru	P					Thru		A	A	
	Right						Right				
	Peds						Ped				
WB	Left	P				SB	Left	A		A	
	Thru	P					Thru			A	
	Right						Right			A	
	Peds						Ped				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		27.0						8.0	5.0	25.0	
Yellow		4.0						3.0	0.0	4.0	
All Red		2.0						0.0	0.0	2.0	

Cycle Length: 80.0 secs

VOLUME ADJUSTMENT WORKSHEET

Appr./ Movement	Mvt Volume	PHF	Flow Rate	No. Lanes	Lane Group	RTOR	Adjusted Flow Rate In Lane Grp	Prop. Left Turns	Prop. Right Turns
Eastbound									
Left	52	0.91	57	1	L		57		
Thru	1053	0.91	1157	2	T		1157		
Right				0					
Westbound									
Left	18	0.89	20	1	L		20		
Thru	614	0.89	690	2	T		690		
Right				0					
Northbound									
Left	293	0.92	318	1	L		318		
Thru	680	0.92	739	1	T		739		
Right				0					
Southbound									
Left	94	0.85	111	1	L		111		
Thru	668	0.85	786	2	TR		822		0.04
Right	31	0.85	36	0		0			

* Value entered by user.

SATURATION FLOW ADJUSTMENT WORKSHEET

Appr/ Lane Group	Ideal Sat Flow	f W	f HV	f G	f P	f BB	f A	f LU	f RT	f LT	Adj Sat Flow
Eastbound							Sec LT	Adj/LT	Sat:		
L	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	----	0.263	500

T	1900	1.000	1.000	1.000	1.000	1.000	1.00	0.95	1.000	1.000	3610

Westbound							Sec LT	Adj/LT	Sat:		
L	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	----	0.138	262
T	1900	1.000	1.000	1.000	1.000	1.000	1.00	0.95	1.000	1.000	3610

Northbound							Sec LT	Adj/LT	Sat:	0.138	245
L	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	----	0.950	1685
T	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	1.000	1.000	1773

Southbound							Sec LT	Adj/LT	Sat:	0.148	253
L	1900	0.900	1.000	1.000	1.000	1.000	1.00	1.00	----	0.950	1624
TR	1900	0.967	1.000	1.000	1.000	1.000	1.00	0.95	0.993	1.000	3467

CAPACITY ANALYSIS WORKSHEET

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Pri.							
Sec.							
Left	L	57	500	0.11	0.363	181	0.31
Thru	T	1157	3610	# 0.32	0.363	1309	0.88
Right							
Westbound							
Pri.							
Sec.							
Left	L	20	262	0.08	0.363	95	0.21
Thru	T	690	3610	0.19	0.363	1309	0.53
Right							
Northbound							
Pri.		274	1685	0.16	0.162	274	1.00
Sec.		44	245	0.18	0.363	90	0.49
Left	L	318			0.525	364	0.87
Thru	T	739	1773	# 0.42	0.400	709	1.04
Right							
Southbound							
Pri.		111	1624	# 0.07	0.100	162	0.69
Sec.		0	253	0.00	0.338	90	0.00
Left	L	111			0.438	252	0.44
Thru	TR	822	3467	0.24	0.338	1170	0.70
Right							

Sum (v/s) critical = 0.81

Lost Time/Cycle, L = 15.00 sec Critical v/c(X) = 0.99

LEVEL OF SERVICE WORKSHEET

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
L	0.31	0.363	18.4	1.000	181	0.50	4.6	0.0	22.9	C		
T	0.88	0.363	23.9	1.000	1309	0.50	10.0	0.0	33.9	C	33.4	C

Westbound												
L	0.21	0.363	17.6	1.000	95	0.50	5.0	0.0	22.6	C		
T	0.53	0.363	20.1	1.000	1309	0.50	1.5	0.0	21.6	C	21.7	C
Northbound												
L	0.87	0.525	17.3	1.000	364	0.40	24.8	0.0	42.0	D		
T	1.04	0.400	24.0	1.000	709	0.50	116.9	0.0	140.9	F	111.2	F
Southbound												
L	0.44	0.438	17.8	1.000	252	0.11	1.2	0.0	19.1	B		
TR	0.70	0.338	23.0	1.000	1170	0.27	1.9	0.0	25.0	C	24.3	C

Intersection Delay = 50.1 (sec/veh) Intersection LOS = D

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 80.0 sec				
Actual Green Time for Lane Group, G	27.0	27.0	41.0	33.0
Effective Green Time for Lane Group, g	29.00	29.00	29.00	27.00
Opposing Effective Green Time, go	27.0	27.0	25.0	30.0
Number of Lanes in Lane Group, N	1	1	1	1
Number of Opposing Lanes, No	2	2	2	1
Adjusted Left-Turn Flow Rate, Vlt	57	20	318	111
Proportion of Left Turns in Opposing Flow, Plto	0.00	0.00	0.00	0.00
Adjusted Opposing Flow Rate, Vo	690	1157	822	739
Lost Time for Lane Group, tl	4.00	4.00	5.00	7.00
Left Turns per Cycle: LTC=VltC/3600	1.27	0.44	7.07	2.47
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo	8.07	13.53	9.61	16.42
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)	1.00	1.00	1.00	1.00
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g	0.0	0.0	0.0	0.0
Opposing Queue Ratio: qro=1-Rpo(go/C)	0.66	0.66	0.69	0.63
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g	9.40	23.10	17.40	25.83
gu =g-gq if gq>=gf, =g-gf if gq<gf	19.60	5.90	11.60	1.17
n=(gq-gf)/2, n>=0	4.70	11.55	8.70	12.91
Ptho=1-Plto	1.00	1.00	1.00	1.00
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)})	1.00	1.00	1.00	1.00
El1 (Figure 9-7)	2.57	4.08	2.93	2.60
El2=(1-Ptho**n)/Plto, El2>=1.0	1.00	1.00	1.00	1.00
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g	0.14	0.14	0.14	0.15
gdiff=max(gq-gf,0)	0.00	0.00	0.00	0.00
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)	0.26	0.14	0.14	0.15
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N** flt	0.263	0.138	0.138	0.148

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 80.0 sec				
Actual Green Time for Lane Group, G				
Effective Green Time for Lane Group, g				
Opposing Effective Green Time, go				
Number of Lanes in Lane Group, N				
Number of Opposing Lanes, No				
Adjusted Left-Turn Flow Rate, Vlt				
Proportion of Left Turns in Lane Group, Plt				
Proportion of Left Turns in Opposing Flow, Plto				
Adjusted Opposing Flow Rate, Vo				
Lost Time for Lane Group, tl				
Left Turns per Cycle: LTC=VltC/3600				
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo				
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)				
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g				
Opposing Queue Ratio: qro=1-Rpo(go/C)				
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g				
gu =g-gq if gq>=gf, =g-gf if gq<gf				
n=(gq-gf)/2, n>=0				
Ptho=1-Plto				
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)))				
El1 (Figure 9-7)				
El2=(1-Ptho**n)/Plto, El2>=1.0				
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g				
gdiff=max(gq-gf,0)				
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)				
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}]				
+[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N**				
flt Primary				

For special case of single-lane approach opposed by multilane approach, see text.

* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.

** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.

For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Adj. LT Vol from Vol Adjustment Worksheet, v			318	111
v/c ratio from Capacity Worksheet, X			0.49	0.00
Primary phase effective green, g			29.00	27.00
Secondary phase effective green, gq			17.40	25.83
(From Supplemental Permitted LT Worksheet), gu			11.60	1.17
Cycle length, C 80.0 Red =(C-g-gq-gu), r			38.0	45.0
Arrivals: v/(3600(max(X,1.0))), qa			0.09	0.03
Primary ph. departures: s/3600, sp			0.468	0.451
Secondary ph. departures: s(gq+gu)/(gu*3600), ss			0.17	1.62
XPerm			1.30	0.44
XProt			0.74	0.45
XCase			3	1

Queue at begining of green arrow, Qa	3.94	1.39
Queue at beginning of unsaturated green, Qu	0.83	0.80
Residual queue, Qr	0.59	0.00
Uniform Delay, d1	17.3	17.8

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
Westbound								
Northbound								
Southbound								

Intersection Delay 50.1 sec/veh Intersection LOS D

ERROR MESSAGES

No errors to report.

HCS: Signals Release 3.1a

Inter: Jericho Tpke and Park Ave
Analyst: BL
Date: 7/21/99
E/W St: Jericho Turnpike

City/St: Dix Hills
Proj #: 84016
Period: Build Saturday Peak Hour
N/S St: Park Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	2	0	1	1	0	1	2	0
LGConfig	L	T		L	T		L	T		L	TR	
Volume	67	1045		36	973		375	478		237	404	62
Lane Width	12.0	12.0		12.0	12.0		10.0	10.0		9.0	11.0	
RTOR Vol												0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	P				NB	Left	A	A	A	
Thru	P					Thru		A	A	
Right						Right				
Peds						Ped				
WB Left	P				SB	Left	A		A	
Thru	P					Thru			A	
Right						Right			A	
Peds						Ped				
NB Right					EB	Right				
SB Right					WB	Right				
Green	26.0						9.0	2.0	23.0	
Yellow	4.0						3.0	0.0	4.0	
All Red	2.0						0.0	0.0	2.0	

Cycle Length: 75.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capcity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	101	271	0.69	0.373	57.5	E		
T	1348	3610	0.81	0.373	26.6	C	28.5	C
Westbound								
L	101	271	0.38	0.373	27.8	C		
T	1348	3610	0.75	0.373	24.5	C	24.6	C
Northbound								
L	447		0.88	0.507	43.4	D		
T	638	1773	0.79	0.360	28.4	C	35.0-	C
Southbound								
L	322		0.79	0.453	28.9	C		
TR	1140	3420	0.44	0.333	19.8	B	22.9	C

Intersection Delay = 27.8 (sec/veh) Intersection LOS = C

Traffic Engineering
Nelson And Pope LLP
572 Walt Whitman Rd.
Melville, New York 11747

Phone: (516) 427-5665 Fax: (516) 427-5620
E-Mail: np@nelsonpope.com

OPERATIONAL ANALYSIS

Intersection:	Jericho Tpke and Park Ave
City/State:	Dix Hills
Analyst:	BL
Project No:	84016
Time Period Analyzed:	Build Saturday Peak Hour
Date:	7/21/99
East/West Street Name:	Jericho Turnpike
North/South Street Name:	Park Avenue

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	67	1045		36	973		375	478		237	404	62
PHF	0.96	0.96		0.96	0.96		0.95	0.95		0.93	0.93	0.93
PK 15 Vol	17	272		9	253		99	126		64	109	17
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat	1900	1900		1900	1900		1900	1900		1900	1900	
ParkExist												
NumPark												
% Heavy Veh	0	0		0	0		0	0		0	0	0
No. Lanes	1	2	0	1	2	0	1	1	0	1	2	0
LGConfig	L	T		L	T		L	T		L	TR	
Lane Width	12.0	12.0		12.0	12.0		10.0	10.0		9.0	11.0	
RTOR Vol												0
Adj Flow	70	1089		38	1014		395	503		255	501	
%InSharedLn												
Prop Turns												0.13
NumPeds												0
NumBus	0	0		0	0		0	0		0	0	

Duration 1.00 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Arriv. Type	3	3		3	3		3	3		3	3	
Unit Ext.	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
I Factor		1.000			1.000			1.000			1.000	
Lost Time	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Ext of g	4.0	4.0		4.0	4.0		3.0	4.0		3.0	4.0	
Ped Min g		0.0			0.0			0.0			0.0	

PHASE DATA

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	P				NB	Left	A	A	A	
	Thru	P					Thru		A	A	
	Right						Right				
	Peds						Ped				
WB	Left	P				SB	Left	A		A	
	Thru	P					Thru			A	
	Right						Right			A	
	Peds						Ped				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		26.0						9.0	2.0	23.0	
Yellow		4.0						3.0	0.0	4.0	
All Red		2.0						0.0	0.0	2.0	

Cycle Length: 75.0 secs

VOLUME ADJUSTMENT WORKSHEET

Appr./ Movement	Mvt Volume	PHF	Flow Rate	No. Lanes	Lane Group	RTOR	Adjusted Flow Rate In Lane Grp	Prop. Left Turns	Prop. Right Turns
Eastbound									
Left	67	0.96	70	1	L		70		
Thru	1045	0.96	1089	2	T		1089		
Right				0					
Westbound									
Left	36	0.96	38	1	L		38		
Thru	973	0.96	1014	2	T		1014		
Right				0					
Northbound									
Left	375	0.95	395	1	L		395		
Thru	478	0.95	503	1	T		503		
Right				0					
Southbound									
Left	237	0.93	255	1	L		255		
Thru	404	0.93	434	2	TR		501		0.13
Right	62	0.93	67	0		0			

* Value entered by user.

SATURATION FLOW ADJUSTMENT WORKSHEET

Appr/ Lane Group	Ideal Sat Flow	f W	f HV	f G	f P	f BB	f A	f LU	f RT	f LT	Adj Sat Flow
Eastbound							Sec LT Adj/LT Sat:				
L	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	----	0.143	271

T	1900	1.000	1.000	1.000	1.000	1.000	1.00	0.95	1.000	1.000	3610

Westbound							Sec LT Adj/LT Sat:				
L	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	----	0.143	271
T	1900	1.000	1.000	1.000	1.000	1.000	1.00	0.95	1.000	1.000	3610

Northbound							Sec LT Adj/LT Sat:			0.313	556
L	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	----	0.950	1685
T	1900	0.933	1.000	1.000	1.000	1.000	1.00	1.00	1.000	1.000	1773

Southbound							Sec LT Adj/LT Sat:			0.222	380
L	1900	0.900	1.000	1.000	1.000	1.000	1.00	1.00	----	0.950	1624
TR	1900	0.967	1.000	1.000	1.000	1.000	1.00	0.95	0.980	1.000	3420

CAPACITY ANALYSIS WORKSHEET

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Pri.							
Sec.							
Left	L	70	271	0.26	0.373	101	0.69
Thru	T	1089	3610	# 0.30	0.373	1348	0.81
Right							
Westbound							
Pri.							
Sec.							
Left	L	38	271	0.14	0.373	101	0.38
Thru	T	1014	3610	0.28	0.373	1348	0.75
Right							
Northbound							
Pri.		247	1685	# 0.15	0.147	247	1.00
Sec.		148	556	0.27	0.360	200	0.74
Left	L	395			0.507	447	0.88
Thru	T	503	1773	0.28	0.360	638	0.79
Right							
Southbound							
Pri.		195	1624	0.12	0.120	195	1.00
Sec.		60	380	0.16	0.333	127	0.47
Left	L	255			0.453	322	0.79
Thru	TR	501	3420	0.15	0.333	1140	0.44
Right							

Sum (v/s) critical = 0.81
Lost Time/Cycle, L = 9.00 sec Critical v/c(X) = 0.92

LEVEL OF SERVICE WORKSHEET

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
L	0.69	0.373	19.9	1.000	101	0.50	37.7	0.0	57.5	E		
T	0.81	0.373	21.1	1.000	1348	0.50	5.5	0.0	26.6	C	28.5	C

Westbound												
L	0.38	0.373	17.1	1.000	101	0.50	10.6	0.0	27.8	C		
T	0.75	0.373	20.5	1.000	1348	0.50	4.0	0.0	24.5	C	24.6	C
Northbound												
L	0.88	0.507	20.8	1.000	447	0.41	22.6	0.0	43.4	D		
T	0.79	0.360	21.4	1.000	638	0.33	6.9	0.0	28.4	C	35.0-	C
Southbound												
L	0.79	0.453	15.0	1.000	322	0.34	13.9	0.0	28.9	C		
TR	0.44	0.333	19.5	1.000	1140	0.11	0.3	0.0	19.8	B	22.9	C

Intersection Delay = 27.8 (sec/veh) Intersection LOS = C

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 75.0 sec				
Actual Green Time for Lane Group, G	26.0	26.0	37.0	32.0
Effective Green Time for Lane Group, g	28.00	28.00	27.00	25.00
Opposing Effective Green Time, go	26.0	26.0	23.0	25.0
Number of Lanes in Lane Group, N	1	1	1	1
Number of Opposing Lanes, No	2	2	2	1
Adjusted Left-Turn Flow Rate, Vlt	70	38	395	255
Proportion of Left Turns in Opposing Flow, Plto	0.00	0.00	0.00	0.00
Adjusted Opposing Flow Rate, Vo	1014	1089	501	503
Lost Time for Lane Group, tl	4.00	4.00	5.00	7.00
Left Turns per Cycle: LTC=VltC/3600	1.46	0.79	8.23	5.31
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo	11.12	11.94	5.49	10.48
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)	1.00	1.00	1.00	1.00
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g	0.0	0.0	0.0	0.0
Opposing Queue Ratio: qro=1-Rpo(go/C)	0.65	0.65	0.69	0.67
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g	16.65	18.89	8.92	13.39
gu =g-gq if gq>=gf, =g-gf if gq<gf	11.35	9.11	18.08	11.61
n=(gq-gf)/2, n>=0	8.33	9.45	4.46	6.70
Ptho=1-Plto	1.00	1.00	1.00	1.00
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)})	1.00	1.00	1.00	1.00
El1 (Figure 9-7)	3.54	3.81	2.14	2.09
El2=(1-Ptho**n)/Plto, El2>=1.0	1.00	1.00	1.00	1.00
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g	0.14	0.14	0.15	0.16
gdiff=max(gq-gf,0)	0.00	0.00	0.00	0.00
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)	0.14	0.14	0.31	0.22
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N** flt	0.143	0.143	0.313	0.222

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 75.0 sec				
Actual Green Time for Lane Group, G				
Effective Green Time for Lane Group, g				
Opposing Effective Green Time, go				
Number of Lanes in Lane Group, N				
Number of Opposing Lanes, No				
Adjusted Left-Turn Flow Rate, Vlt				
Proportion of Left Turns in Lane Group, Plt				
Proportion of Left Turns in Opposing Flow, Plto				
Adjusted Opposing Flow Rate, Vo				
Lost Time for Lane Group, tl				
Left Turns per Cycle: LTC=VltC/3600				
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo				
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)				
gf=[Gexp(- a * (LTC ** b)]-tl, gf<=g				
Opposing Queue Ratio: qro=1-Rpo(go/C)				
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g				
gu =g-gq if gq>=gf, =g-gf if gq<gf				
n=(gq-gf)/2, n>=0				
Ptho=1-Plto				
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)))				
El1 (Figure 9-7)				
El2=(1-Ptho**n)/Plto, El2>=1.0				
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g				
gdiff=max(gq-gf,0)				
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)				
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}]				
+[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N**				
flt Primary				

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Adj. LT Vol from Vol Adjustment Worksheet, v			395	255
v/c ratio from Capacity Worksheet, X			0.74	0.47
Primary phase effective green, g			27.00	25.00
Secondary phase effective green, gq			8.92	13.39
(From Supplemental Permitted LT Worksheet), gu			18.08	11.61
Cycle length, C 75.0 Red =(C-g-gq-gu), r			37.0	41.0
Arrivals: v/(3600(max(X,1.0))), qa			0.11	0.07
Primary ph. departures: s/3600, sp			0.468	0.451
Secondary ph. departures: s(gq+gu)/(gu*3600), ss			0.23	0.23
XPerm			0.71	0.67
XProt			1.02	0.87
XCase			2	1

Queue at begining of green arrow, Qa	4.06	2.90
Queue at beginning of unsaturated green, Qu	3.71	0.95
Residual queue, Qr	0.00	0.00
Uniform Delay, d1	20.8	15.0

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
Westbound								
Northbound								
Southbound								

Intersection Delay 27.8 sec/veh Intersection LOS C

ERROR MESSAGES

No errors to report.

B. Unsignalized Intersections

1. Jericho Turnpike and Franks Nursery/Site Access

HCS: Unsignalized Intersections Release 3.1a

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Analyst: BL
Intersection: Site Driveway and Jericho Tpke.
Count Date: Franks Nursery opposite site
Time Period: PM3 Peak Hour

Intersection Orientation: East-West Major St.

Vehicle Volume Data:

Movements:	1	2	3	4	5	6	7	9	10	12
Volume:	7	1354	155	155	828	10	159	159	2	6
HFR:	7	1440	165	161	862	10	177	177	2	7
PHF:	0.94	0.94	0.94	0.96	0.96	0.96	0.90	0.90	0.85	0.85
PHV:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Pedestrian Volume Data:

Movements:
Flow:
Lane width:
Walk speed:
% Blockage:

Median Type: None
# of vehicles: 0

Flared approach Movements:

# of vehicles: Northbound 0
# of vehicles: Southbound 0

Lane usage for movements 1,2&3 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R
Y	Y	N	N	Y	N	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 4,5&6 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R

N	Y	N	N	Y	Y	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 7,8&9 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R
Y	N	Y	N	N	N	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 10,11&12 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R
Y	N	Y	N	N	N	N	N	N

Channelized: N
Grade: 0.00

Data for Computing Effect of Delay to Major Street Vehicles:

	Eastbound	Westbound
Shared ln volume, major th vehicles:	677	0
Shared ln volume, major rt vehicles:	0	0
Sat flow rate, major th vehicles:	1700	1700
Sat flow rate, major rt vehicles:	1700	1700
Number of major street through lanes:	2	2

Length of study period, hrs: 1.00

Worksheet 4 Critical Gap and Follow-up time calculation.

Critical Gap Calculations:

Movement	1	4	7	9	10	12
t c,base	4.1	4.1	7.5	6.9	7.5	6.9
t c,hv	2.0	2.0	2.0	2.0	2.0	2.0
P hv	0.00	0.00	0.00	0.00	0.00	0.00
t c,g			0.2	0.1	0.2	0.1
G	0.00	0.00	0.00	0.00	0.00	0.00
t 3,lt	0.0	0.0	0.0	0.0	0.0	0.0

t c,T: 1 stage	0.00	0.00	0.00	0.00	0.00	0.00
t c 1 stage	4.1	4.1	7.5	6.9	7.5	6.9

Follow Up Time Calculations:

Movement	1	4	7	9	10	12
t f,base	2.2	2.2	3.5	3.3	3.5	3.3
t f,HV	1.0	1.0	1.0	1.0	1.0	1.0
P hv	0.00	0.00	0.00	0.00	0.00	0.00
t f	2.2	2.2	3.5	3.3	3.5	3.3

Worksheet 6 Impedance and capacity equations

Step 1: RT from Minor St.	9	12
Conflicting Flows	803	436
Potential Capacity	331	573
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	331	573
Probability of Queue free St.	0.47	0.99

Step 2: LT from Major St.	4	1
Conflicting Flows	1605	873
Potential Capacity	413	781
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	413	781
Probability of Queue free St.	0.61	0.99
Maj. L Shared ln. Prob. Queue Free St.	0.61	0.98

Step 4: LT from Minor St.	7	10
Conflicting Flows	2292	1926
Potential Capacity	22	41
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor	0.60	0.60
Maj. L, Min T Adj. Imp Factor.	0.69	0.69
Cap. Adj. factor due to Impeding mvmnt	0.68	0.32
Movement Capacity	15	13

Worksheet 8 Shared Lane Calculations

Shared Lane Calculations

Movement	7	8	9	10	11	12
v(vph)	177		177	2		7
Movement Capacity	15		331	13		573
Shared Lane Capacity	28			49		

Worksheet 10 delay,queue length, and LOS

Movement	1	4	7	8	9	10	11	12
v(vph)	7	161	353			9		
C m(vph)	781	413	28			49		
v/c	0.01	0.39	12.54			0.19		
95% queue length								
Control Delay	9.7	19.3	21039.3			94.9		
LOS	A	C	F			F		
Approach Delay				21039.3			94.9	
Approach LOS				F			F	

Worksheet 11 Shared Major LT Impedance and Delay

Rank 1 Delay Calculations

Movement	2	5
P oj	0.99	0.61
V i1	677	0
V i2	0	0
S i1	1700	1700
S i2	1700	1700
P* 0j	0.98	0.61
D maj left	9.7	19.3
N number major st lanes	2	2
Delay, rank 1 mvmts	0.1	-1.$

HCS: Unsignalized Intersections Release 3.1a

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Analyst: BL
Intersection: Site Driveway and Jericho Tpke.
Count Date: Franks Nursery opposite site
Time Period: SAT3 Peak Hour

Intersection Orientation: East-West Major St.

Vehicle Volume Data:

Movements:	1	2	3	4	5	6	7	9	10	12
Volume:	23	1279	181	181	1177	29	177	177	9	27
HFR:	24	1361	191	189	1226	30	197	197	11	32
PHF:	0.95	0.94	0.95	0.96	0.96	0.96	0.90	0.90	0.85	0.85
PHV:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Pedestrian Volume Data:

Movements:
Flow:
Lane width:
Walk speed:
% Blockage:

Median Type: None
# of vehicles: 0

Flared approach Movements:

# of vehicles: Northbound 0
# of vehicles: Southbound 0

Lane usage for movements 1,2&3 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R
Y	Y	N	N	Y	N	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 4,5&6 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R

N	Y	N	N	Y	Y	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 7,8&9 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R
Y	N	Y	N	N	N	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 10,11&12 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R
Y	N	Y	N	N	N	N	N	N

Channelized: N
Grade: 0.00

Data for Computing Effect of Delay to Major Street Vehicles:

	Eastbound	Westbound
Shared ln volume, major th vehicles:	639	0
Shared ln volume, major rt vehicles:	0	0
Sat flow rate, major th vehicles:	1700	1700
Sat flow rate, major rt vehicles:	1700	1700
Number of major street through lanes:	2	2

Length of study period, hrs: 1.00

Worksheet 4 Critical Gap and Follow-up time calculation.

Critical Gap Calculations:

Movement	1	4	7	9	10	12
t c,base	4.1	4.1	7.5	6.9	7.5	6.9
t c,hv	2.0	2.0	2.0	2.0	2.0	2.0
P hv	0.00	0.00	0.00	0.00	0.00	0.00
t c,g			0.2	0.1	0.2	0.1
G	0.00	0.00	0.00	0.00	0.00	0.00
t 3,lt	0.0	0.0	0.0	0.0	0.0	0.0

t c,T:						
1 stage	0.00	0.00	0.00	0.00	0.00	0.00
t c						
1 stage	4.1	4.1	7.5	6.9	7.5	6.9

Follow Up Time Calculations:

Movement	1	4	7	9	10	12
t f,base	2.2	2.2	3.5	3.3	3.5	3.3
t f,HV	1.0	1.0	1.0	1.0	1.0	1.0
P hv	0.00	0.00	0.00	0.00	0.00	0.00
t f	2.2	2.2	3.5	3.3	3.5	3.3

Worksheet 6 Impedance and capacity equations

Step 1: RT from Minor St.	9	12
Conflicting Flows	776	628
Potential Capacity	345	431
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	345	431
Probability of Queue free St.	0.43	0.93

Step 2: LT from Major St.	4	1
Conflicting Flows	1551	1256
Potential Capacity	433	561
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	433	561
Probability of Queue free St.	0.56	0.96
Maj. L Shared ln. Prob. Queue Free St.	0.56	0.93

Step 4: LT from Minor St.	7	10
Conflicting Flows	2494	2347
Potential Capacity	15	20
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor	0.53	0.53
Maj. L, Min T Adj. Imp Factor.	0.63	0.63
Cap. Adj. factor due to Impeding mvmnt	0.58	0.27
Movement Capacity	9	5

Worksheet 8 Shared Lane Calculations

Shared Lane Calculations

Movement	7	8	9	10	11	12
v(vph)	197		197	11		32
Movement Capacity	9		345	5		431
Shared Lane Capacity	17			20		

Worksheet 10 delay,queue length, and LOS

Movement	1	4	7	8	9	10	11	12
v(vph)	24	189	393			42		
C m(vph)	561	433	17			20		
v/c	0.04	0.44	22.92			2.07		
95% queue length								
Control Delay	11.7	19.7	39883.4			2405.2		
LOS	B	C	F			F		
Approach Delay			39883.4				2405.2	
Approach LOS				F				F

Worksheet 11 Shared Major LT Impedance and Delay

Rank 1 Delay Calculations

Movement	2	5
P oj	0.96	0.56
V i1	639	0
V i2	0	0
S i1	1700	1700
S i2	1700	1700
P* 0j	0.93	0.56
D maj left	11.7	19.7
N number major st lanes	2	2
Delay, rank 1 mvmts	0.4	-1.$

2. Dix Hills Road and Site Access

HCS: Unsignalized Intersections Release 3.1a

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Analyst: BL
Intersection: Dix Hills Road and Site Acess
Count Date: "9 Single Family Houses"
Time Period: Build PM P.H.

Intersection Orientation: North-South Major St.

Vehicle Volume Data:

Movements:	2	3	4	5	7	9
Volume:	432	7	1	408	3	1
HFR:	480	8	1	453	3	1
PHF:	0.90	0.90	0.90	0.90	0.90	0.90
PHV:	0.00	0.00	0.00	0.00	0.00	0.00

Pedestrian Volume Data:

Movements:
Flow:
Lane width:
Walk speed:
% Blockage:

Median Type: None
# of vehicles: 0

Flared approach Movements:

# of vehicles: Eastbound 0
# of vehicles: Westbound 0

Lane usage for movements 1,2&3 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R
N	Y	Y	N	N	N	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 4,5&6 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R

```
-----------
        Y       Y       N       N       N       N       N       N       N

Channelized:      N
Grade:         0.00


Lane usage for movements 7,8&9 approach:
                Lane 1                  Lane 2                  Lane 3
        L       T       R       L       T       R       L       T       R
-----------
        Y       N       Y       N       N       N       N       N       N

Channelized:      N
Grade:         0.00


Lane usage for movements 10,11&12 approach:
                Lane 1                  Lane 2                  Lane 3
        L       T       R       L       T       R       L       T       R
-----------
        N       N       N       N       N       N       N       N       N

Channelized:      N
Grade:         0.00


Data for Computing Effect of Delay to Major Street Vehicles:
-----------
                                                Northbound              Southbound
Shared ln volume, major th vehicles:                0                       408
Shared ln volume, major rt vehicles:                0                         0
Sat flow rate, major th vehicles:                1700                      1700
Sat flow rate, major rt vehicles:                1700                      1700
Number of major street through lanes:               1                         1


Length of study period, hrs:       1.00

-----------

Worksheet 4  Critical Gap and Follow-up time calculation.

Critical Gap Calculations:
Movement            4       7       9
-----------
t c,base          4.1     7.1     6.2
t  c,hv           1.0     1.0     1.0
P hv             0.00    0.00    0.00
t  c,g                    0.2     0.1
G                0.00    0.00    0.00
t  3,lt           0.0     0.7     0.0
```

```
t  c,T:
 1 stage        0.00   0.00   0.00

t c
 1 stage         4.1    6.4    6.2

Follow Up Time Calculations:
Movement           4      7      9
-------------------------------------------------------------------------------
-----------
t  f,base        2.2    3.5    3.3
t  f,HV          0.9    0.9    0.9
P hv            0.00   0.00   0.00
t f              2.2    3.5    3.3
-------------------------------------------------------------------------------
-----------

Worksheet 6 Impedance and capacity equations

Step 1: RT from Minor St.                          9                12
-------------------------------------------------------------------------------
-----------
Conflicting Flows                                484
Potential Capacity                               587
Pedestrian Impedance Factor                     1.00
Movement Capacity                                587
Probability of Queue free St.                   1.00
-------------------------------------------------------------------------------
-----------

Step 2: LT from Major St.                          4                 1
-------------------------------------------------------------------------------
-----------
Conflicting Flows                                488
Potential Capacity                              1086
Pedestrian Impedance Factor                     1.00
Movement Capacity                               1086
Probability of Queue free St.                   1.00
Maj. L Shared ln. Prob. Queue Free St.          1.00
-------------------------------------------------------------------------------
-----------

Step 4: LT from Minor St.                          7                10
-------------------------------------------------------------------------------
-----------
Conflicting Flows                                939
Potential Capacity                               295
Pedestrian Impedance Factor                     1.00
Maj. L, Min T Impedance factor                  1.00
Maj. L, Min T Adj. Imp Factor.                  1.00
Cap. Adj. factor due to Impeding mvmnt          1.00
Movement Capacity                                295
-------------------------------------------------------------------------------
-----------


Worksheet 8 Shared Lane Calculations

Shared Lane Calculations
```

Movement	7	8	9	10	11	12
v(vph)	3		1			
Movement Capacity	295		587			
Shared Lane Capacity	337					

Worksheet 10 delay,queue length, and LOS

Movement	1	4	7	8	9	10	11	12
v(vph)	1		4					
C m(vph)	1086		337					
v/c	0.00		0.01					
95% queue length								
Control Delay	8.3		15.8					
LOS	A		C					
Approach Delay				15.8				
Approach LOS				C				

Worksheet 11 Shared Major LT Impedance and Delay

Rank 1 Delay Calculations

Movement	2	5
P oj	1.00	1.00
V i1	0	408
V i2	0	0
S i1	1700	1700
S i2	1700	1700
P* oj	1.00	1.00
D maj left	0.0	8.3
N number major st lanes	1	1
Delay, rank 1 mvmts	0.0	0.0

HCS: Unsignalized Intersections Release 3.1a

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Analyst: BL
Intersection: Dix Hills Road and Site Acess
Count Date: "9 Single Family Houses"
Time Period: Build Sat. P.H.

Intersection Orientation: North-South Major St.

Vehicle Volume Data:

Movements:	2	3	4	5	7	9
Volume:	291	9	2	305	8	1
HFR:	323	10	2	339	9	1
PHF:	0.90	0.90	0.90	0.90	0.90	0.90
PHV:	0.00	0.00	0.00	0.00	0.00	0.00

Pedestrian Volume Data:

Movements:
Flow:
Lane width:
Walk speed:
% Blockage:

Median Type: None
# of vehicles: 0

Flared approach Movements:

# of vehicles: Eastbound 0
# of vehicles: Westbound 0

Lane usage for movements 1,2&3 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R
N	Y	Y	N	N	N	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 4,5&6 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R

Y	Y	N	N	N	N	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 7,8&9 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R
Y	N	Y	N	N	N	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 10,11&12 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R
N	N	N	N	N	N	N	N	N

Channelized: N
Grade: 0.00

Data for Computing Effect of Delay to Major Street Vehicles:

	Northbound	Southbound
Shared ln volume, major th vehicles:	0	305
Shared ln volume, major rt vehicles:	0	0
Sat flow rate, major th vehicles:	1700	1700
Sat flow rate, major rt vehicles:	1700	1700
Number of major street through lanes:	1	1

Length of study period, hrs: 1.00

Worksheet 4 Critical Gap and Follow-up time calculation.

Critical Gap Calculations:

Movement	4	7	9
t c,base	4.1	7.1	6.2
t c,hv	1.0	1.0	1.0
P hv	0.00	0.00	0.00
t c,g		0.2	0.1
G	0.00	0.00	0.00
t 3,lt	0.0	0.7	0.0

```
t  c,T:
 1 stage        0.00   0.00   0.00

t c
 1 stage         4.1    6.4    6.2

Follow Up Time Calculations:
Movement           4      7      9
-----------------------------------------------------------------------------------------
-----------
t  f,base        2.2    3.5    3.3
t  f,HV          0.9    0.9    0.9
P hv            0.00   0.00   0.00
t f              2.2    3.5    3.3
-----------------------------------------------------------------------------------------
-----------

Worksheet 6 Impedance and capacity equations

Step 1: RT from Minor St.                          9                12
-----------------------------------------------------------------------------------------
-----------
Conflicting Flows                                 328
Potential Capacity                                718
Pedestrian Impedance Factor                      1.00
Movement Capacity                                 718
Probability of Queue free St.                    1.00
-----------------------------------------------------------------------------------------
-----------

Step 2: LT from Major St.                          4                 1
-----------------------------------------------------------------------------------------
-----------
Conflicting Flows                                 333
Potential Capacity                               1237
Pedestrian Impedance Factor                      1.00
Movement Capacity                                1237
Probability of Queue free St.                    1.00
Maj. L Shared ln. Prob. Queue Free St.           1.00
-----------------------------------------------------------------------------------------
-----------

Step 4: LT from Minor St.                          7                10
-----------------------------------------------------------------------------------------
-----------
Conflicting Flows                                 672
Potential Capacity                                424
Pedestrian Impedance Factor                      1.00
Maj. L, Min T Impedance factor                   1.00
Maj. L, Min T Adj. Imp Factor.                   1.00
Cap. Adj. factor due to Impeding mvmnt           1.00
Movement Capacity                                 424
-----------------------------------------------------------------------------------------
-----------


Worksheet 8 Shared Lane Calculations

Shared Lane Calculations
```

Movement	7	8	9	10	11	12
v(vph)	9		1			
Movement Capacity	424		718			
Shared Lane Capacity	444					

Worksheet 10 delay,queue length, and LOS

Movement	1	4	7	8	9	10	11	12
v(vph)		2	10					
C m(vph)		1237	444					
v/c		0.00	0.02					
95% queue length								
Control Delay		7.9	13.3					
LOS		A	B					
Approach Delay				13.3				
Approach LOS				B				

Worksheet 11 Shared Major LT Impedance and Delay

Rank 1 Delay Calculations

Movement	2	5
P oj	1.00	1.00
V i1	0	305
V i2	0	0
S i1	1700	1700
S i2	1700	1700
P* oj	1.00	1.00
D maj left	0.0	7.9
N number major st lanes	1	1
Delay, rank 1 mvmts	0.0	0.0

IV "Build Conditions" with Signal at:

A. Jericho Turnpike and Franks Nursery/Site Access

A. Jericho Turnpike and Franks Nursery/Site Access

HCS: Signals Release 3.1a

Inter: Site Access and Jericho Tpke
Analyst: BL
Date: 7/22/99
E/W St: Jericho Turnpike

City/St: Dix Hills
Proj #: 84016
Period: Build PM ADD Signal Control
N/S St: Site Access

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	2	0	0	1	1	0	1	0
LGConfig	L	TR		L	TR			LT	R		LTR	
Volume	7	1354	155	155	828	10	159	0	159	2	0	6
Lane Width	12.0	12.0		12.0	12.0			12.0	12.0		12.0	
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A	P			NB	Left	A			
Thru		P				Thru	A			
Right		P				Right	A			
Peds						Ped				
WB Left	A	P			SB	Left	A			
Thru		P				Thru	A			
Right		P				Right	A			
Peds						Ped				
NB Right					EB	Right				
SB Right					WB	Right				
Green	8.0	47.0					12.0			
Yellow	3.0	3.0					3.0			
All Red	0.0	2.0					2.0			

Cycle Length: 80.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capcity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	502		0.01	0.738	3.6	A		
TR	2132	3554	0.75	0.600	14.2	B	14.2	B
Westbound								
L	298		0.54	0.738	9.7	A		
TR	2162	3604	0.40	0.600	9.0	A	9.1	A
Northbound								
LT	222	1368	0.80	0.162	52.9	D	45.7	D
R	262	1615	0.68	0.162	38.5	D		
Southbound								
LTR	233	1434	0.04	0.162	28.3	C	28.3	C

Intersection Delay = 16.2 (sec/veh) Intersection LOS = B

Traffic Engineering
Nelson And Pope LLP
572 Walt Whitman Rd.
Melville, New York 11747

Phone: (516) 427-5665 Fax: (516) 427-5620
E-Mail: np@nelsonpope.com

OPERATIONAL ANALYSIS

Intersection:	Site Access and Jericho Tpke
City/State:	Dix Hills
Analyst:	BL
Project No:	84016
Time Period Analyzed:	Build PM ADD Signal Control
Date:	7/22/99
East/West Street Name:	Jericho Turnpike
North/South Street Name:	Site Access

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	7	1354	155	155	828	10	159	0	159	2	0	6
PHF	0.94	0.94	0.94	0.96	0.96	0.96	0.90	0.90	0.90	0.85	0.85	0.85
PK 15 Vol	2	360	41	40	216	3	44	0	44	1	0	2
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat	1900	1900		1900	1900			1900	1900		1900	
ParkExist												
NumPark												
% Heavy Veh	0	0	0	0	0	0	0	0	0	0	0	0
No. Lanes	1	2	0	1	2	0	0	1	1	0	1	0
LGConfig	L	TR		L	TR			LT	R		LTR	
Lane Width	12.0	12.0		12.0	12.0			12.0	12.0		12.0	
RTOR Vol			0			0			0			0
Adj Flow	7	1605		161	873			177	177		9	
%InSharedLn												
Prop Turns			0.10			0.01	1.00			0.22		0.78
NumPeds			0			0			0			0
NumBus	0	0		0	0			0	0		0	

Duration 1.00 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Arriv. Type	3	3		3	3			3	3		3	
Unit Ext.	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
I Factor		1.000			1.000			1.000			1.000	
Lost Time	2.0	2.0		2.0	2.0			2.0	2.0		2.0	
Ext of g	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Ped Min g		0.0			0.0			0.0			0.0	

PHASE DATA

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Ped				
WB	Left	A	P			SB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Ped				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		8.0	47.0					12.0			
Yellow		3.0	3.0					3.0			
All Red		0.0	2.0					2.0			

Cycle Length: 80.0 secs

VOLUME ADJUSTMENT WORKSHEET

Appr./ Movement	Mvt Volume	PHF	Flow Rate	No. Lanes	Lane Group	RTOR	Adjusted Flow Rate In Lane Grp	Prop. Left Turns	Prop. Right Turns
Eastbound									
Left	7	0.94	7	1	L		7		
Thru	1354	0.94	1440	2	TR		1605		0.10
Right	155	0.94	165	0		0			
Westbound									
Left	155	0.96	161	1	L		161		
Thru	828	0.96	863	2	TR		873		0.01
Right	10	0.96	10	0		0			
Northbound									
Left	159	0.90	177	0					
Thru	0	0.90	0	1	LT		177	1.00	
Right	159	0.90	177	1	R	0	177		
Southbound									
Left	2	0.85	2	0					
Thru	0	0.85	0	1	LTR		9	0.22	0.78
Right	6	0.85	7	0		0			

* Value entered by user.

SATURATION FLOW ADJUSTMENT WORKSHEET

Appr/ Lane Group	Ideal Sat Flow	f W	f HV	f G	f P	f BB	f A	f LU	f RT	f LT	Adj Sat Flow
Eastbound							Sec LT	Adj/LT	Sat:	0.252	478
L	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	----	0.950	1805

TR	1900	1.000	1.000	1.000	1.000	1.000	1.00	0.95	0.985	1.000	3554

Westbound							Sec LT Adj/LT Sat:			0.080	152
L	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	----	0.950	1805
TR	1900	1.000	1.000	1.000	1.000	1.000	1.00	0.95	0.998	1.000	3604

Northbound							Sec LT Adj/LT Sat:				

LT	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	1.000	0.720	1368
R	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	0.850	----	1615
Southbound							Sec LT Adj/LT Sat:				

LTR	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	0.795	0.949	1434

CAPACITY ANALYSIS WORKSHEET

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Pri.		7	1805	0.00	0.112	203	0.03
Sec.		0	478	0.00	0.625	299	0.00
Left	L	7			0.738	502	0.01
Thru	TR	1605	3554	# 0.45	0.600	2132	0.75
Right							
Westbound							
Pri.		161	1805	# 0.09	0.112	203	0.79
Sec.		0	152	0.00	0.625	95	0.00
Left	L	161			0.738	298	0.54
Thru	TR	873	3604	0.24	0.600	2162	0.40
Right							
Northbound							
Pri.							
Sec.							
Left							
Thru	LT	177	1368	# 0.13	0.162	222	0.80
Right	R	177	1615	0.11	0.162	262	0.68
Southbound							
Pri.							
Sec.							
Left							
Thru	LTR	9	1434	0.01	0.162	233	0.04
Right							

Sum (v/s) critical = 0.67

Lost Time/Cycle, L = 12.00 sec Critical v/c(X) = 0.79

LEVEL OF SERVICE WORKSHEET

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
L	0.01	0.738	3.6	1.000	502	0.11	0.0	0.0	3.6	A		
TR	0.75	0.600	11.7	1.000	2132	0.50	2.6	0.0	14.2	B	14.2	B

Westbound												
L	0.54	0.738	7.7	1.000	298	0.14	2.0	0.0	9.7	A		
TR	0.40	0.600	8.4	1.000	2162	0.50	0.6	0.0	9.0	A	9.1	A
Northbound												
LT	0.80	0.162	32.2	1.000	222	0.34	20.6	0.0	52.9	D	45.7	D
R	0.68	0.162	31.5	1.000	262	0.25	7.0	0.0	38.5	D		
Southbound												
LTR	0.04	0.162	28.2	1.000	233	0.11	0.1	0.0	28.3	C	28.3	C

Intersection Delay = 16.2 (sec/veh) Intersection LOS = B

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 80.0 sec				
Actual Green Time for Lane Group, G	58.0	58.0		
Effective Green Time for Lane Group, g	50.00	50.00		
Opposing Effective Green Time, go	47.0	47.0		
Number of Lanes in Lane Group, N	1	1		
Number of Opposing Lanes, No	2	2		
Adjusted Left-Turn Flow Rate, Vlt	7	161		
Proportion of Left Turns in Opposing Flow, Plto	0.00	0.00		
Adjusted Opposing Flow Rate, Vo	873	1605		
Lost Time for Lane Group, tl	4.00	4.00		
Left Turns per Cycle: LTC=VltC/3600	0.16	3.58		
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo	10.21	18.77		
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)	1.00	1.00		
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g	0.0	0.0		
Opposing Queue Ratio: qro=1-Rpo(go/C)	0.41	0.41		
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g	11.31	29.18		
gu =g-gq if gq>=gf, =g-gf if gq<gf	38.69	20.82		
n=(gq-gf)/2, n>=0	5.66	14.59		
Ptho=1-Plto	1.00	1.00		
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)))	1.00	1.00		
El1 (Figure 9-7)	3.08	6.42		
El2=(1-Ptho**n)/Plto, El2>=1.0	1.00	1.00		
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g	0.08	0.08		
gdiff=max(gq-gf,0)	0.00	0.00		
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)	0.25	0.08		
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N**				
flt	0.252	0.080		

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 80.0 sec				
Actual Green Time for Lane Group, G			12.0	12.0
Effective Green Time for Lane Group, g			13.00	13.00
Opposing Effective Green Time, go			12.0	12.0
Number of Lanes in Lane Group, N			1	1
Number of Opposing Lanes, No			1	1
Adjusted Left-Turn Flow Rate, Vlt			177	2
Proportion of Left Turns in Lane Group, Plt			1.00	0.22
Proportion of Left Turns in Opposing Flow, Plto			0.22	1.00
Adjusted Opposing Flow Rate, Vo			9	177
Lost Time for Lane Group, tl			4.00	4.00
Left Turns per Cycle: LTC=VltC/3600			3.93	0.04
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo			0.20	3.93
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)			1.00	1.00
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g			0.0	6.9
Opposing Queue Ratio: qro=1-Rpo(go/C)			0.85	0.85
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g			0.00	7.81
gu =g-gq if gq>=gf, =g-gf if gq<gf			13.00	5.19
n=(gq-gf)/2, n>=0			0.00	0.45
Ptho=1-Plto			0.78	0.00
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)))			1.00	0.22
El1 (Figure 9-7)			1.39	1.66
El2=(1-Ptho**n)/Plto, El2>=1.0			1.00	1.00
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g			0.31	0.19
gdiff=max(gq-gf,0)			0.00	0.89
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)			0.72	0.95
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N**				
flt Primary			0.720	0.949

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Adj. LT Vol from Vol Adjustment Worksheet, v	7	161		
v/c ratio from Capacity Worksheet, X	0.00	0.00		
Primary phase effective green, g	50.00	50.00		
Secondary phase effective green, gq	11.31	29.18		
(From Supplemental Permitted LT Worksheet), gu	38.69	20.82		
Cycle length, C 80.0 Red =(C-g-gq-gu), r	21.0	21.0		
Arrivals: v/(3600(max(X,1.0))), qa	0.00	0.04		
Primary ph. departures: s/3600, sp	0.501	0.501		
Secondary ph. departures: s(gq+gu)/(gu*3600), ss	0.17	0.10		
XPerm	0.01	1.06		
XProt	0.01	0.30		
XCase	1	3		

Queue at begining of green arrow, Qa	0.04	1.06
Queue at beginning of unsaturated green, Qu	0.02	0.51
Residual queue, Qr	0.00	0.12
Uniform Delay, d1	3.6	7.7

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
Westbound								
Northbound								
Southbound								

Intersection Delay 16.2 sec/veh Intersection LOS B

ERROR MESSAGES

No errors to report.

HCS: Signals Release 3.1a

Inter: Site Access and Jericho Tpke
Analyst: BL
Date: 7/22/99
E/W St: Jericho Turnpike

City/St: Dix Hills
Proj #: 84016
Period: Build Sat. ADD Signal Control
N/S St: Site Access

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	2	0	0	1	1	0	1	0
LGConfig	L	TR		L	TR			LT	R		LTR	
Volume	23	1279	181	181	1177	29	177	0	177	9	0	0
Lane Width	12.0	12.0		12.0	12.0			12.0	12.0		12.0	
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Ped				
WB	Left	A	P			SB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Ped				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		8.0	40.0					14.0			
Yellow		3.0	3.0					3.0			
All Red		0.0	2.0					2.0			

Cycle Length: 75.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capcity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	344		0.07	0.693	6.6	A		
TR	1937	3543	0.79	0.547	17.1	B	17.0	B
Westbound								
L	318		0.59	0.693	14.0	B		
TR	1966	3597	0.64	0.547	13.5	B	13.5	B
Northbound								
LT	273	1366	0.72	0.200	37.5	D	34.1	C
R	323	1615	0.61	0.200	30.7	C		
Southbound								
LTR	304	1519	0.04	0.200	24.2	C	24.2	C

Intersection Delay = 17.5 (sec/veh) Intersection LOS = B

Traffic Engineering
Nelson And Pope LLP
572 Walt Whitman Rd.
Melville, New York 11747

Phone: (516) 427-5665 Fax: (516) 427-5620
E-Mail: np@nelsonpope.com

OPERATIONAL ANALYSIS

Intersection:	Site Access and Jericho Tpke
City/State:	Dix Hills
Analyst:	BL
Project No:	84016
Time Period Analyzed:	Build Sat. ADD Signal Control
Date:	7/22/99
East/West Street Name:	Jericho Turnpike
North/South Street Name:	Site Access

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	23	1279	181	181	1177	29	177	0	177	9	0	0
PHF	0.95	0.95	0.95	0.96	0.96	0.96	0.90	0.90	0.90	0.85	0.85	0.85
PK 15 Vol	6	337	48	47	307	8	49	0	49	3	0	0
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat	1900	1900		1900	1900			1900	1900		1900	
ParkExist												
NumPark												
% Heavy Veh	0	0	0	0	0	0	0	0	0	0	0	0
No. Lanes	1	2	0	1	2	0	0	1	1	0	1	0
LGConfig	L	TR		L	TR			LT	R		LTR	
Lane Width	12.0	12.0		12.0	12.0			12.0	12.0		12.0	
RTOR Vol			0			0			0			0
Adj Flow	24	1537		189	1256			197	197		11	
%InSharedLn												
Prop Turns			0.12			0.02	1.00			1.00		0.00
NumPeds			0			0			0			0
NumBus	0	0		0	0			0	0		0	

Duration 1.00 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Arriv. Type	3	3		3	3			3	3		3	
Unit Ext.	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
I Factor		1.000			1.000			1.000			1.000	
Lost Time	2.0	2.0		2.0	2.0			2.0	2.0		2.0	
Ext of g	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Ped Min g		0.0			0.0			0.0			0.0	

PHASE DATA

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A	P			NB Left	A		
Thru		P			Thru	A		
Right		P			Right	A		
Peds					Ped			
WB Left	A	P			SB Left	A		
Thru		P			Thru	A		
Right		P			Right	A		
Peds					Ped			
NB Right					EB Right			
SB Right					WB Right			
Green	8.0	40.0			14.0			
Yellow	3.0	3.0			3.0			
All Red	0.0	2.0			2.0			

Cycle Length: 75.0 secs

VOLUME ADJUSTMENT WORKSHEET

Appr./ Movement	Mvt Volume	PHF	Flow Rate	No. Lanes	Lane Group	RTOR	Adjusted Flow Rate In Lane Grp	Prop. Left Turns	Prop. Right Turns
Eastbound									
Left	23	0.95	24	1	L		24		
Thru	1279	0.95	1346	2	TR		1537		0.12
Right	181	0.95	191	0		0			
Westbound									
Left	181	0.96	189	1	L		189		
Thru	1177	0.96	1226	2	TR		1256		0.02
Right	29	0.96	30	0		0			
Northbound									
Left	177	0.90	197	0					
Thru	0	0.90	0	1	LT		197	1.00	
Right	177	0.90	197	1	R	0	197		
Southbound									
Left	9	0.85	11	0					
Thru	0	0.85	0	1	LTR		11	1.00	0.00
Right	0	0.85	0	0		0			

* Value entered by user.

SATURATION FLOW ADJUSTMENT WORKSHEET

Appr/ Lane Group	Ideal Sat Flow	f W	f HV	f G	f P	f BB	f A	f LU	f RT	f LT	Adj Sat Flow
Eastbound							Sec LT Adj/LT Sat:			0.117	222
L	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	----	0.950	1805

TR	1900	1.000	1.000	1.000	1.000	1.000	1.00	0.95	0.981	1.000	3543

Westbound							Sec LT	Adj/LT	Sat:	0.093	177
L	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	----	0.950	1805
TR	1900	1.000	1.000	1.000	1.000	1.000	1.00	0.95	0.996	1.000	3597

Northbound							Sec LT	Adj/LT	Sat:		

LT	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	1.000	0.719	1366
R	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	0.850	----	1615
Southbound							Sec LT	Adj/LT	Sat:		

LTR	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	1.000	0.799	1519

CAPACITY ANALYSIS WORKSHEET

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Pri.		24	1805	0.01	0.120	217	0.11
Sec.		0	222	0.00	0.573	127	0.00
Left	L	24			0.693	344	0.07
Thru	TR	1537	3543	# 0.43	0.547	1937	0.79
Right							
Westbound							
Pri.		189	1805	# 0.10	0.120	217	0.87
Sec.		0	177	0.00	0.573	101	0.00
Left	L	189			0.693	318	0.59
Thru	TR	1256	3597	0.35	0.547	1966	0.64
Right							
Northbound							
Pri.							
Sec.							
Left							
Thru	LT	197	1366	# 0.14	0.200	273	0.72
Right	R	197	1615	0.12	0.200	323	0.61
Southbound							
Pri.							
Sec.							
Left							
Thru	LTR	11	1519	0.01	0.200	304	0.04
Right							

Sum (v/s) critical = 0.68
Lost Time/Cycle, L = 12.00 sec Critical v/c(X) = 0.81

LEVEL OF SERVICE WORKSHEET

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
L	0.07	0.693	6.5	1.000	344	0.11	0.1	0.0	6.6	A		
TR	0.79	0.547	13.6	1.000	1937	0.50	3.5	0.0	17.1	B	17.0	B

Westbound												
L	0.59	0.693	11.0	1.000	318	0.18	3.0	0.0	14.0	B		
TR	0.64	0.547	11.8	1.000	1966	0.50	1.6	0.0	13.5	B	13.5	B
Northbound												
LT	0.72	0.200	28.0	1.000	273	0.28	9.5	0.0	37.5	D	34.1	C
R	0.61	0.200	27.3	1.000	323	0.20	3.4	0.0	30.7	C		
Southbound												
LTR	0.04	0.200	24.2	1.000	304	0.11	0.0	0.0	24.2	C	24.2	C

Intersection Delay = 17.5 (sec/veh) Intersection LOS = B

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 75.0 sec				
Actual Green Time for Lane Group, G	51.0	51.0		
Effective Green Time for Lane Group, g	43.00	43.00		
Opposing Effective Green Time, go	40.0	40.0		
Number of Lanes in Lane Group, N	1	1		
Number of Opposing Lanes, No	2	2		
Adjusted Left-Turn Flow Rate, Vlt	24	189		
Proportion of Left Turns in Opposing Flow, Plto	0.00	0.00		
Adjusted Opposing Flow Rate, Vo	1256	1537		
Lost Time for Lane Group, tl	4.00	4.00		
Left Turns per Cycle: LTC=VltC/3600	0.50	3.94		
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo	13.77	16.85		
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)	1.00	1.00		
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g	0.0	0.0		
Opposing Queue Ratio: qro=1-Rpo(go/C)	0.47	0.47		
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g	20.31	28.57		
gu =g-gq if gq>=gf, =g-gf if gq<gf	22.69	14.43		
n=(gq-gf)/2, n>=0	10.16	14.28		
Ptho=1-Plto	1.00	1.00		
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)})	1.00	1.00		
El1 (Figure 9-7)	4.51	5.99		
El2=(1-Ptho**n)/Plto, El2>=1.0	1.00	1.00		
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g	0.09	0.09		
gdiff=max(gq-gf,0)	0.00	0.00		
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)	0.12	0.09		
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}]				
+[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N**				
flt	0.117	0.093		

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 75.0 sec				
Actual Green Time for Lane Group, G			14.0	14.0
Effective Green Time for Lane Group, g			15.00	15.00
Opposing Effective Green Time, go			14.0	14.0
Number of Lanes in Lane Group, N			1	1
Number of Opposing Lanes, No			1	1
Adjusted Left-Turn Flow Rate, Vlt			197	11
Proportion of Left Turns in Lane Group, Plt			1.00	1.00
Proportion of Left Turns in Opposing Flow, Plto			1.00	1.00
Adjusted Opposing Flow Rate, Vo			11	197
Lost Time for Lane Group, tl			4.00	4.00
Left Turns per Cycle: LTC=VltC/3600			4.10	0.23
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo			0.23	4.10
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)			1.00	1.00
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g			0.0	6.3
Opposing Queue Ratio: qro=1-Rpo(go/C)			0.81	0.81
gq=(4.943Volc**0.762)[(qro**1.061)-tl], gq<=g			0.00	7.64
gu =g-gq if gq>=gf, =g-gf if gq<gf			15.00	7.36
n=(gq-gf)/2, n>=0			0.00	0.67
Ptho=1-Plto			0.00	0.00
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)))			1.00	1.00
El1 (Figure 9-7)			1.39	1.69
El2=(1-Ptho**n)/Plto, El2>=1.0			1.00	1.00
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g			0.27	0.27
gdiff=max(gq-gf,0)			0.00	1.34
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)			0.72	0.80
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}]				
+[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N**				
flt Primary			0.719	0.799

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Adj. LT Vol from Vol Adjustment Worksheet, v	24	189		
v/c ratio from Capacity Worksheet, X	0.00	0.00		
Primary phase effective green, g	43.00	43.00		
Secondary phase effective green, gq	20.31	28.57		
(From Supplemental Permitted LT Worksheet), gu	22.69	14.43		
Cycle length, C 75.0 Red =(C-g-gq-gu), r	23.0	23.0		
Arrivals: v/(3600(max(X,1.0))), qa	0.01	0.05		
Primary ph. departures: s/3600, sp	0.501	0.501		
Secondary ph. departures: s(gq+gu)/(gu*3600), ss	0.12	0.15		
XPerm	0.11	1.07		
XProt	0.05	0.37		
XCase	1	3		

Queue at begining of green arrow, Qa	0.15	1.35
Queue at beginning of unsaturated green, Qu	0.14	1.07
Residual queue, Qr	0.00	0.14
Uniform Delay, d1	6.5	11.0

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
Westbound								
Northbound								
Southbound								

Intersection Delay 17.5 sec/veh Intersection LOS B

ERROR MESSAGES

No errors to report.

APPENDIX F SIGNAL WARRANT ANALYSIS WORKSHEETS

A. NYS M.U.T.C.D. Standards

A. NYS M.U.T.C.D. Standards

TRAFFIC SIGNAL WARRANT ANALYSIS

JERICHO TURNPIKE AND SITE ACCESS/FRANKS NURSERY

Warrant 1 - Minimum Vehicular Volume

Major street volume (both directions) -500 veh/hr
Minor street volume (single approach) - 150 veh/hr

Warrant 2 - Interruption of Continuous Flow

Major street volume (both directions) - 750 veh/hr
Minor street volume (single approach) - 75 veh/hr

Warrant 3 - Minimum Pedestrian Volume

Major street volume (both directions) - 600 veh/hr
Pedestrian volume crossing major street - 150 ped/hr

Warrant 4 - School Crossing

One acceptable gap per minute of school crossing

Warrant 5 - Progressive Movement

Distance between signals is greater than
1/2 the cycle length (sec) X average speed (ft/sec)

Warrant 6 - Accident Experience

A 20% reduction in the volume requirements for Warrants 1 or 2 or 3, if 5 or more accidents occurred within the past twelve months that could be corrected by a traffic signal

Warrant 7 - Combination of Warrants

At least two of Warrants 1, 2, or 3 have satisfied a minimum of 80% of the volume requirements

	Eight Highest Hourly Volumes	
	JERICHO TPKE Road (2-way)	SITE ACCESS Road (1-way)
7:00 - 8:00AM	1498	153
8:00 - 9:00AM	1695	238
9:00-10:00AM	1653	199
11:00 - 12:00PM	1612	257
12:00 - 1:00PM	1820	251
1:00 - 2:00PM	1802	230
4:00 - 5:00PM	2210	318
5:00 - 6:00PM	2122	337

Accidents Correctable by a Traffic Signal	
1998	1999
*	*

** Not applicable*

WARRANTS SATISFIED - WARRANTS ONE AND TWO

Conclusion: A traffic signal is warranted for this intersection under build conditions based upon existing traffic volumes during the peak hours studied.

NELSON & POPE

RECEIVED
AUG 08 2000
TOWN OF HUNTINGTON
DEPARTMENT OF PLANNING
AND ENVIRONMENT