Roadway Sufficiency Report
Upper Saucon Township, Lehigh County

Final Report

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TABLE OF CONTENTS

LIST OF APPENDICES*

*Included in the Technical Basis Report

LIST OF FIGURES

LIST OF TABLES

I. Introduction

This report documents the roadway sufficiency analysis for the roadways and intersections studied as part of the Upper Saucon Township, Lehigh County Traffic Impact Fee Ordinance Study. This study includes analysis of the existing conditions, the 2003 future conditions without development, and the 2003 future conditions with development at the selected intersections within the Township.

The enabling legislation for transportation impact fees (PA Act 209, 1990) specifies that fees can only be charged to developers for transportation capital improvements necessitated by development generated traffic within the designated service area. For this reason, only those improvements necessitated by the 2003 development traffic can be assessed to the transportation impact fee. The improvements required to provide the desirable operational level for the existing or 2003 without development traffic must be funded by sources other than transportation impact fees.

The Legislation also specifies that transportation impact fees must be collected and used within a service area no larger than seven square miles. Since the size of Upper Saucon Township ("Township") is greater than seven square miles, four service areas, which together encompass the entire Township, were used (see **Figure 1**, enclosed within).

The intersections which were chosen for the analysis are identified in **Figure 2**. Each of these intersections were selected for at least one of the following reasons:

1. The intersection has existing operational or capacity deficiencies.
2. The intersection is especially important to mobility within the Township.
3. The intersection is anticipated to be affected by future development within the Township.

The design year of 2003 was chosen for the future condition because the Township predicted that development will have significant impact on traffic flows by this time.

This report is organized so that it documents the methodologies and assumptions utilized in the analysis and then discusses the results. Each of the intersections is discussed separately. Recommendations are made for the desirable operational level (Level of Service, LOS) and for the required future improvements to provide that level.

Several abbreviations are used throughout this report. They are defined here for your convenience.

LOS - Level of Service, a measure of a roadway or intersection capacity to convey traffic volumes. See section II.F. for a more complete description.

HCM - The 1985 Highway Capacity Manual, Transportation Research Board (TRB) Special Report 209, which provides the methodology for determining level of service.

Interim Method - An additional method to that presented in the HCM Method for determining the level of service at all-way stop sign controlled intersections. See section II.E. for further information.

ITE Manual - The Institute of Transportation Engineers manual entitled, "Trip Generation", 5th edition. See Section II.C.1.

PHF - The peak hour factor is used to adjust the peak hour traffic volume to reflect the highest 15 minute period during that hour. This provides a more conservative analysis of an intersection's operation.

II. Method of Study

A. Existing Conditions Data Collection

The existing conditions at each of the study intersections was collected during the months between June and July, 1993. The following data was collected or calculated for each intersection.

1. The P.M. peak hour traffic turning movements.
2. The peak hour factor (PHF) for each intersection approach and for the overall intersection (see introduction for description of PHF).
3. The grade of each intersection approach.
4. The percentage of trucks on each approach.
5. The number of lanes and their widths for each approach.
6. The corner radii at the intersection.
7. The centerline alignment of each intersection approach.

All of this data is included in **Appendix A** (in the Technical Basis Report). This information was utilized for the analysis of the existing operational conditions.

B. Future Conditions Without Development

As discussed in the introduction of this report, transportation impact fees can only be used to pay for improvements required as a result of development within the service area. Other sources of funds must be used to make the improvements necessary to handle the 2003 traffic without development. Therefore, it is necessary to determine what the future conditions will be without development. That is, if no development occurs within the study area, how much traffic will be on the roads and what traffic problems will exist. These future conditions without development are composed of existing traffic plus the new traffic which is produced as a result of development outside the service area (pass-through traffic). The process used to do this is described below.

1. Pass-through traffic growth - Pass-through traffic is traffic which does not have either an origin or

a destination within the service area. The growth in pass-through traffic on this project was determined by using a combination of two approaches. They are as follows:

a. Statistical information available from the Pennsylvania Department of Transportation (Control Count Annual Report) and the Joint Planning Commission indicates the volumes of traffic on the highways within Lehigh County. This information forecasts a 3.2% annual growth. This growth is appropriate to apply to primary roadways which serve an inter-municipal function. Using this growth rate for pass-through traffic presents a conservative estimate of the pass-through traffic.

b. We also considered significant developments which occur in the "Township's" other transportation service area. Trips from these developments were assigned through the study intersections.

2. The traffic volumes were then analyzed to ensure that they represented a reasonable flow along the major corridors within the Township. The traffic volumes were adjusted slightly to accommodate any variations in the existing counts. These variations occur due to the fact that the traffic counts were taken on different days during a period of several weeks. The distribution was also analyzed to determine if any trips would be diverted to other routes because specific areas were too heavily congested. The results indicated that some diversion would occur in 2003.

C. Future Conditions With Development

We then estimated what the effects of the proposed development in the intersection's service area (per the Land Use Assumption Report) would be. This Land Use Assumption Report was prepared by the Transportation Impact Fee Advisory Committee and approved by the Board of Supervisors. It identifies the specific types, sizes and locations of developments which are expected to be constructed by the design year of 2003. Below is a summary of the items considered:

1. Trip Generation - Trip generation is the method of determining what volume of future traffic will enter or leave a particular site. The information used in this study was compiled utilizing the methodology included in the Institute of Transportation Engineer's manual entitled, "Trip Generation." The trip generation manual bases its equations on studies conducted throughout North America and is considered the best source for trip generation information. **Table 1** entitled "Land Use Trip Generation" shows the projected volume of traffic to be entering and leaving those developments included in the Land Use Assumption Report.

2. Trip Distribution - Trip distribution is the process of determining where trips enter or exit the study area. The population distribution within the Lehigh, Northampton and Bucks Counties, the distribution of place of work of Upper Saucon Township workers, the distribution of place of residence of Upper Saucon Township workers as well as the existing traffic data collected as part of this study was utilized to determine where the traffic enters and exits the Township. This data was utilized to determine the paths which will be utilized by the future traffic.

3. Trip Assignment - Trip Assignment is the method of assigning trips generated by a development to the highway network. This assignment is based on the following criteria:

   a. Existing traffic patterns.
   b. Trip assignments from other studies in the area.
   c. Location of employment and residential centers.
   d. Capacity of the roadway systems.
   e. Travel times.

   This process was undertaken for each of the proposed developments and the effect of each development was determined on the study intersections.

Projected traffic volumes with development were then determined by summing the effects of each development on the study intersections.

TABLE 1
LAND USE TRIP GENERATION

RESIDENTIAL

SERVICE AREA	ID	NAME OF DEVELOPMENT	TYPE OF DEVELOPMENT	TOTAL UNITS OR S.F.	ZONE 1 PM PEAK HOUR TRIPS			ZONE 2 PM PEAK HOUR TRIPS			ZONE 3 PM PEAK HOUR TRIPS			ZONE 4 PM PEAK HOUR TRIPS		
					ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
3	A	KOZY KORNER ESTATES	SFR	1							1	1	2			
2	B	HIGHFIELD FARMS	SFR	5				5	2	7						
3	C	DAVID MILLER	SFR	2							2	1	3			
2	D	EDWARD RING	SFR	0				0	0	0						
2	E	JOHANNA HUNDERLER	SFR	2				2	1	3						
1	F	COUNTRYSIDE	MFR	340	197	92	289									
1	G	SAUCON MEADOW	SFR	13	11	6	17									
1	H	BLUE RIDGE ESTATES	SFR	122	84	45	129									
1	I	ORCHARD TERRACE	MFR	16	10	4	14									
1	J	CARDINAL HILL	SFR	5	5	2	7									
2	K	SAUCON CREEK ESTATES	SFR	50				38	20	58						
2	L	BLUE CHURCH FARMS	SFR	24				20	10	30						
1	M	ROBIN ESTATES	SFR	6	6	3	9									
2	N	HILLVIEW ESTATES	SFR	4				4	2	6						
2	O	PAUL TETTEMER	SFR	1				1	1	2						
2	P	WILLIAM SNYDER	SFR	1				1	1	2						
2	Q	TARA LEE	SFR	7				7	3	10						
2	R	DEER HOOD III	SFR	16				14	7	21						
2	S	THE LAURELS	SFR	35				27	15	42						
2	T	GUN CLUB ESTATES	SFR	20				16	9	25						
2	U	COLONIAL CREST	SFR	25				20	11	31						
2	V	OAKWOOD ESTATES	SFR	2				2	1	3						
2	W	HILLSIDE MANOR	MFR	100				58	27	85						
1	X	LAURISA MANOR	SFR	5	5	2	7									
1	Y	WOODCREST	MFR	12	7	3	10									
1	Z	SPRING VALLEY FARMS	SFR	6	6	3	9									
1	AA	WEYHILL	SFR	80	44	24	68									
1	BB	WEYHILL WOODS I	SFR	4	4	2	6									
4	CC	FAWN MEADOWS	SFR	0										0	0	0
4	DD	WOODBRIDGE	SFR	8										7	4	11
1	EE	WOODFIELD	SFR	9	8	4	12									
4	FF	PREFFERED ESTATES	SFR	4										4	2	6
4	GG	TOMAS T. TE	SFR	2										2	1	3
4	HH	GUBITOSI ACRES	SFR	12										10	6	16
2	II	FOREST GROVE	SFR	2				2	1	3						
2	JJ	WINTERCREEK	SFR	8				7	4	11						
1	(1)	SCATTERED DEVELOPMENT	SFR	100	99	54	153									
2	(1)	SCATTERED DEVELOPMENT	SFR	20				20	11	31						
3	(1)	SCATTERED DEVELOPMENT	SFR	20							20	11	31			
4	(1)	SCATTERED DEVELOPMENT	SFR	10										10	5	15
1	FRA	LICHTENWALNER	SFR	100	70	38	108									
1	FRB	LIBERTY ROAD	SFR	100	70	38	108									
			MFR	150	87	41	128									
1	FRC	STABLER RESIDENTIAL	SFR	300	189	102	291									
			MFR	100	58	27	85									
TOTAL RESIDENTIAL				1,829	980	490	1,450	244	126	370	23	13	36	33	18	51

TABLE 1 (CONT.)
LAND USE TRIP GENERATION

INDUSTRIAL & COMMERCIAL

SERVICE AREA	ID	NAME OF DEVELOPMENT	TYPE OF DEVELOPMENT	TOTAL UNITS OR S.F.	ZONE 1 PM PEAK HOUR TRIPS		
					ENTER	EXIT	TOTAL
1	IA	CHERNAY FLEX	LI	26,000	9	65	74
1	IB	ALDI DISTRIBUTION	IP	375,000	62	234	296
1	FIA	STABLER WEST	IP	295,000	51	192	243
1	FIB	LUTRON	LI	30,000	9	68	77
1	FCA	STABLER BUSINESS SUP.	C	130,000	365	276	641
1	FCB	GENERAL COMMERCIAL	C	10,000	28	21	49
1	FCC	GENERAL COMMERCIAL	C	15,000	42	32	74
1	FORTA	STABLER EXEC. CENTER	ORT	1,900,000	226	1,279	1,505
1	FCCA	STABLER CONF. CENTER	HOTEL	180	65	56	121
TOTAL INDUSTRIAL & COMMERCIAL				**2,781,180**	**857**	**2,223**	**3,080**

NOTES: (1) THE SCATTERED DEVELOPMENT WAS ASSUMED TO BE DISTRIBUTED AS FOLLOWS:

SIZE OF DEVELOPMENT	NUMBER OF DEVELOPMENTS WITHIN SERVICE AREAS			
	1	2	3	4
2 LOTS	21	3	3	1
3 LOTS	11	3	3	1
5 LOTS	3	1	1	1
10 LOTS	1	0	0	0
TOTAL LOTS	**100**	**20**	**20**	**10**

TABLE 1 (CONT.)
LAND USE TRIP GENERATION

EQUATIONS

	TRIP GENERATION RATE	UNITS	RATE	% ENTER/ % EXIT
	Residential - Single Family (210)	Unit	Ln(T) = 0.902Ln(X) + 0.528	65/35
(1)	Residential - Multi-Family	Unit	T = 0.85(X)	68/32
(2)	General Light Industrial (110)	Employee	T = 0.826(X) + 52.028	12/88
	Industrial Park (130)	1,000 SF	T = [(1.027/X) + 0.00064] ^-1	21/79
	Commercial (814)	1,000 SF	T = 4.93(X)	57/43
	Research & Development Center (760)	1,000 SF	Ln(T) = 0.821Ln(X) + 1.118	15/85
(3)	Hotel (310)	Occupied Rooms	Ln(T) = 0.957Ln(X) - 0.070	54/46

T = # of Trips
X = # of Units, 1,000 SF or Employees

Notes: (1) The trip generation rate is based on local conditions found within the Lehigh Valley and noted in a report dated January, 1993 Revised April, 1993 titled Northampton County, Forks Township Transportation Impact Fee Ordinance, Trip Generation Calculations prepared by The Newton Engineering Group. Trip distribution is based on ITE 5th Edition, Trip Generation for Apartment (220) Land Use.

(2) Average of 2.16 employee per 1,000 s.f. was assumed.

(3) A 90% occupancy rate was assumed.

TABLE 1 (CONT.)
LAND USE TRIP GENERATION

FUTURE TOTAL PROPOSED TRIP GENERATION SUMMARY

RESIDENTIAL TRIPS	ENTER	EXIT	TOTAL
SERVICE AREA 1	960	490	1,450
SERVICE AREA 2	244	126	370
SERVICE AREA 3	23	13	36
SERVICE AREA 4	33	18	51
TOTAL	**1,260**	**647**	**1,907**

IND. & COMM. TRIPS	ENTER	EXIT	TOTAL
SERVICE AREA 1	857	2,223	3,080
SERVICE AREA 2	0	0	0
SERVICE AREA 3	0	0	0
SERVICE AREA 4	0	0	0
TOTAL	**857**	**2,223**	**3,080**

TOTAL TRIPS	ENTER	EXIT	TOTAL
SERVICE AREA 1	1,817	2,713	4,530
SERVICE AREA 2	244	126	370
SERVICE AREA 3	23	13	36
SERVICE AREA 4	33	18	51
TOTAL	***2,117***	***2,870***	***4,987***

D. 2003 Roadway Conditions

The roadway system in 2003 will consist of the existing roadways as well as any programmed improvements by the State, Township or private developers, which will be completed by 2003. A review of PennDot's and the Township's future plans indicated the following programmed improvements and approximate scheduled date:

1. Construction of Saucon Creek Road, 1993
2. Redesign of New Street, Flint Hill Road and Passer Road, 1994
3. Elimination of Route 378 and Old Bethlehem Pike intersection, 1996
4. Construction of Preston Lane extension east to intersect with Landis Mill Road, 1998

E. Level of Service Analysis Method

Each of the selected intersections were analyzed using the 1985 Highway Capacity Manual (HCM), Transportation Research Board (TRB), Special Report 209. The HCM methodologies quantify the intersection or roadway's level of service with a measure of effectiveness. The manual presents analysis methods for nearly every type of intersection or type of roadway section. Intersections are generally the most critical operation elements of a roadway system. For this study the following types of intersections were analyzed.

1. Intersections with traffic signals.
2. Intersections with stop signs on one or two approaches.
3. Intersections with stop signs on all approaches (All-Way Stop Control, AWSC)

This third type of intersection, AWSC, has been the subject of much research recently. This research was conducted because the HCM analysis provides only limited results. An interim analysis method has been developed but has not yet been accepted by the TRB for inclusion in the HCM. This report includes analysis conducted utilizing both methodologies.

The results of this capacity analysis are reported as the level of service (LOS). LOS is designated in range of A to F with A being very light traffic with little delay and F being congested operation with long delays. The analysis results are reported somewhat differently for each of the three intersection types included in this study. **Table 2** and **Table 3** briefly describe the level of service designations for the different intersection types. A more detailed description follows.

TABLE 2
LEVEL OF SERVICE CHARACTERISTICS

Level of Service (LOS)	Unsignalized Intersection		Signalized Intersection	
	Reserved Capacity (PCPII)	Expected Delay to Minor Street Traffic	Stopped Delay Per Vehicle (SEC)	Expected Problems to Intersection
A	≥ 400	little or no delay	≤ 5.0	very low delay
B	300 - 399	short traffic delays	5.1 to 15.0	
C	200 - 299	average traffic delays	15.1 to 25.0	number of vehicles stopping is significant
D	100 - 199	long traffic delays		influence of congestion becomes more noticeable
E	0 - 99	very long traffic delays	40.1 to 60.0	limit of acceptable delay
F	*	extreme delays - usually warrants improvements to the intersection	> 60	oversaturated and unacceptable

Reference by: Highway Capacity Manual - Special Report 209, Transportation Research Board, National Research Council, Washington, D.C. 1985.

LOS = Level of Service

PCPH = Passenger Cars per Hour

TABLE 3
LEVEL OF SERVICE CHARACTERISTICS
INTERIM METHOD

Average vehicle delay less than five seconds per vehicle is defined as level of service A. Saturation headways less than five seconds per vehicle have been measured when traffic is present only on the subject approach so this range is appropriate. This method forecasts a maximum delay of 45 seconds per vehicle when the volume/capacity ratio is equal to one. This is proposed as the break point between level of service E and F.

	ALL WAY STOP CONTROL (AWSC) INTERSECTION	
LEVEL OF SERVICE (LOS)	AVERAGE STOPPED DELAY, SEC/VEH	EXPECTED PROBLEMS TO INTERSECTION
A	< 5	VERY LOW DELAY
B	5 - 10	SLIGHT DELAY
C	10 - 20	INFLUENCE OF CONGESTION BECOMES NOTICEABLE
D	20 - 30	INFLUENCE OF CONGESTION BECOMES NOTICEABLE
E	30 - 45	CAPACITY FLOW
F	> 45	OVERSATURATED OPERATION

The proposed level of service criteria for AWSC intersections are somewhat different than the criteria used in Chapter 9 of the HCM for signalized intersections. The primary reason for this difference is that drivers expect different levels of performance from different kinds of transportation facilities. The expectation is that a signalized intersection is designed to carry higher traffic volumes than an all way stop control intersection. Thus a higher level of delay is acceptable at a signalized intersection for the same level of service.

Reference: All way stop controlled intersections, Draft Procedure for Capacity and Level of Service Analysis by Michael Kyte, University of Idaho, September 9, 1990.

1. Intersections with traffic signals

The HCM method assigns LOS according to average delay per vehicle (sec/veh). A LOS = C correlates to a delay between 15 and 25 seconds. This is a very typical operation with only short queues of vehicles building up and with all stopped vehicles clearing the intersection on the next green phase. A LOS = E would correspond to a 40 to 60 second average delay with very long queues building up and some cars having to wait more than one signal cycle to pass through the intersection.

2. Intersections with stop signs on one or two approaches

The HCM method assigns LOS according to the intersections reserve capacity. The reserve capacity is a measure of the potential number of acceptable gaps available for conflicting movements compared to the number of gaps used by turning vehicles within an hour. Conflicting movements include left turns from the major street, and all movement from the minor street. The through and right turning movements from the major street have the right-of-way and therefore are not conflicting. The level of service is reported for the conflicting movements only.

3. Intersections with stop signs on all approaches (AWSC)

The HCM method assigns LOS according to the split of traffic on the two intersecting streets and the total intersection volume. The method provides only values for LOS = C and LOS = E. This allows only for a LOS < C (better than), LOS between C and E, and LOS > E (worse than). The interim method of analysis utilizes a delay per vehicle similar to the signalized analysis. Its amount of delay with respect to LOS are shorter however since driver expectations are somewhat different at stop

controlled intersections as compared to signal controlled intersections (see **Table 3**). Both of these methods are severely restricted in their application. The interpretation of the results required professional judgement.

III. Analysis Results by Intersection

This section reports the analysis findings. The existing conditions and findings are reported followed by a table providing information regarding the number of lanes, lane width, P.M. peak hour traffic volumes and level of service for the analyzed conditions. The analyzed conditions included Existing (1993); Future without development (2003); Future with development (2003). Where required, various alternatives are presented for improvements to obtain the desired level of service.

An intersection's overall level of service may be different than that found for any of the intersections' movements. However, design based on the worse operating movement provides better operational conditions than one based on an overall level of service. The following designs consider the worse operating movements.

1. VERA CRUZ ROAD AT LANARK ROAD

Existing Conditions

This intersection consists of three approaches, with the northbound approach of Vera Cruz Road being controlled by a stop sign. Vehicles traveling the Lanark Road-Vera Cruz Road north to east or west to south at a 90 degree movement have the right-of-way. Each approach provides one lane with paved shoulders. The northbound approach operates at a LOS = A for left turn movements while the eastbound approach operates at a LOS = A.

Future Conditions Without Development

The additional traffic found under this condition causes the level of service to drop to LOS = C. This is still considered an acceptable operation.

Future Conditions With Development

Operation drops to LOS = D in this condition with the existing geometry. The widening, reconstruction of all approaches to meet grade and changing the stop control to northbound left turns with the east-west road having the right of way and northbound right turns controlled by a yield will provide an acceptable LOS = C.

The recommended level of service for this intersection is LOS = C for all approaches. This intersection will require funding from impact fees.

TABLE 4

1. VERA CRUZ ROAD AT LANARK ROAD

STREET:	LANARK ROAD								VERA CRUZ ROAD							
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND			
	L	S	R	TOT	L	S	R	TOT	L	S	R	TOT	L	S	R	TOT
	1	2	3		4	5	6		7	8	9		10	11	12	
EXISTING																
No. of Lanes	1 LR								1 TR				1 LT			
Lane Width	12'								10'				10'			
PM Peak Hour	12	--	138	150					--	49	13	62	197	74	--	271
LOS	A									B	A	A				
FUTURE W/O DEVELOPMENT																
PM Peak Hour	24	--	193	217					--	66	20	86	281	101	--	382
LOS	A									C	A	C				
IMPROVEMENT																
FUTURE W/O DEVELOPMENT																
Notes	No improvements required															
No. of Lanes																
Lane Width																
LOS																
FUTURE W/ DEVELOPMENT																
PM Peak Hour	29	--	256	285					--	66	21	87	338	101	--	439
LOS	A									D	A	D				
IMPROVEMENT																
FUTURE W/ DEVELOPMENT																
Notes	Make the major street direction east/west, with northbound left turns controlled by a stop sign and right turns controlled by a yield.															
No. of Lanes	1 LR								1 TR				1 LT			
Lane Width	12'								10'				10'			
LOS	C		A	A									A			
DESIRABLE LOS	C	--	C						--	C	C		C	C	--	

2. LIMEPORT PIKE AT SAUCON VALLEY ROAD

Existing Conditions

This skewed T-intersection, located in a rural area, is controlled by a stop sign on the westbound approach of Saucon Valley Road. Saucon Valley Road operates at a LOS = C and provides one 11.5 ft. lane, which intersects Limeport Pike at approximately a 60° angle. The northbound approach of Limeport Pike consists of a 50 ft. long bridge providing one 10 ft. lane. The southbound approach provides one 10 ft. lane and 1 ft. paved shoulder and provides a LOS = A for southbound left turn movements. Sight distance is limited for southbound movements due to heavy vegetation.

Future Conditions Without Development

In this condition, this intersection will operate at an unacceptable LOS = E, if there are no improvements. With the installation of a traffic signal at this intersection, a LOS = B will be achieved.

Future conditions With Development

This intersection will continue to operate at a LOS = B under this condition.

The recommended level of service for this intersection is LOS = C for all approaches. Improvements to this intersection can be funded by the Township and other sources.

TABLE 5
2. LIMEPORT PIKE AT SAUCON VALLEY ROAD

STREET:	LIMEPORT PIKE								SAUCON VALLEY ROAD							
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND			
	L	S	R	TOT	L	S	R	TOT	L	S	R	TOT	L	S	R	TOT
	1	2	3		4	5	6		7	8	9		10	11	12	
EXISTING																
No. of Lanes	1 TR				1 LT								1 LR			
Lane Width	10'				10'								11.5'			
PM Peak Hour	--	88	104	192	4	132	--	136					177	--	4	181
LOS					A								C		A	C
FUTURE W/O DEVELOPMENT																
PM Peak Hour	--	118	153	271	5	181	--	186					257	--	5	262
LOS					A								E		A	E
IMPROVEMENT																
FUTURE W/O DEVELOPMENT																
Notes	Install signal															
No. of Lanes	1 TR				1 LT								1 LR			
Lane Width	10'				10'								11.5'			
LOS		B	B	B	B	B		B					B		B	B
FUTURE W/ DEVELOPMENT																
PM Peak Hour	--	118	200	318	5	181	--	186					365	--	5	370
LOS		B	B	B	B	B		B					B		B	B
IMPROVEMENT																
FUTURE W/ DEVELOPMENT																
Notes	No improvements required															
No. of Lanes																
Lane Width																
LOS																
DESIRABLE LOS	--	C	C		C	C	--						C	--	C	

3. LANARK ROAD AT SAUCON VALLEY ROAD

Existing Conditions

This intersection is presently controlled by stop signs on the eastbound and westbound Saucon Valley Road approaches. A LOS = B is experienced on these approaches, while traffic maintaining the right-of-way on Lanark Road operates at a LOS = A. Lanark Road provides one lane (13 ft. northbound and 10.5 ft. southbound) and a 4.5 ft. to 5 ft. paved shoulder on each approach.Saucon Valley Road's eastbound approach consists of a 12.5 ft. lane, while the westbound approach provides an 11.5 ft. lane.

Future Conditions Without Development

Operations levels are at LOS = C or better for all movements in the future without development condition.

Future Conditions With Development

In this condition, the level of service drops to a LOS = F for the intersection's westbound approach. With the installation of a traffic signal, a LOS = C or better will be maintained on all approaches.

The recommended level of service at this intersection is LOS = C for Lanark Road and Saucon Valley Road. Improvements at this intersection can be funded from impact fees.

TABLE 6

3. LANARK ROAD AT SAUCON VALLEY ROAD

STREET:	LANARK ROAD								SAUCON VALLEY ROAD							
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND			
	L	S	R	TOT	L	S	R	TOT	L	S	R	TOT	L	S	R	TOT
	1	2	3		4	5	6		7	8	9		10	11	12	
EXISTING																
No. of Lanes	1 LTR				1 LTR				1 LTR				1 LTR			
Lane Width	13'				10.5'				12.5'				11.5'			
PM Peak Hour	25	89	38	152	8	98	5	111	1	69	26	96	51	117	6	174
LOS	A				A				B	A	A	A	B	A	A	B
FUTURE W/O DEVELOPMENT																
PM Peak Hour	33	128	54	215	14	144	7	165	1	106	34	141	77	176	13	266
LOS	A				A				C	A	A	A	C	B	A	D
IMPROVEMENT																
FUTURE W/O DEVELOPMENT																
Notes	No improvements required															
No. of Lanes																
Lane Width																
LOS																
FUTURE W/ DEVELOPMENT																
PM Peak Hour	41	148	160	349	36	180	7	223	1	138	44	183	228	276	68	572
LOS	A				A				E	C	A	C	F	E	A	F
IMPROVEMENT																
FUTURE W/ DEVELOPMENT																
Notes	Install signal															
No. of Lanes	1 LTR				1 LTR				1 LTR				1 LTR			
Lane Width	13'				10.5'				12.5'				11.5'			
LOS	C	C	C		B	B	B		B	B	B		C	C	C	
DESIRABLE LOS	C	C	C		C	C	C		C	C	C		C	C	C	

4. LANARK ROAD AT WEST HOPEWELL ROAD

Existing Conditions

This unsignalized T-intersection operates at a LOS = A. West Hopewell Road provides an 11.5 ft. lane, which is controlled by a stop sign. Lanark Road's northbound approach provides a 10 ft. lane with a 3 ft. paved shoulder, while its southbound approach provides a 10.5 ft. lane and a 2.5 ft. paved shoulder. This intersection's low eastbound traffic volumes allow it to maintain a high level of service. Adequate sight distance is available on all approaches.

Future Conditions With Development

This intersection operates at LOS = B under this condition.

Future Conditions With Development

An acceptable LOS = C is provided when trips due to development are added at this intersection.

The recommended level of service for this intersection is LOS = C for all approaches. This intersection does not require any improvements.

TABLE 7

4. LANARK ROAD AT WEST HOPEWELL ROAD

STREET:	LANARK ROAD								WEST HOPEWELL ROAD							
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND			
	L	S	R	TOT	L	S	R	TOT	L	S	R	TOT	L	S	R	TOT
	1	2	3		4	5	6		7	8	9		10	11	12	
EXISTING																
No. of Lanes	1 LT				1 TR				1 LR							
Lane Width	10'				10.5'				11.5'							
PM Peak Hour	21	128	--	149	--	125	44	169	15	--	6	21				
LOS	A								A		A	A				
FUTURE W/O DEVELOPMENT																
PM Peak Hour	28	182	--	210	--	189	58	247	20	--	8	28				
LOS	A								B		A	A				
IMPROVEMENT																
FUTURE W/O DEVELOPMENT																
Notes	No improvements required															
No. of Lanes																
Lane Width																
LOS																
FUTURE W/ DEVELOPMENT																
PM Peak Hour	38	258	--	296	--	246	80	326	40	--	12	52				
LOS	A								C		A	C				
IMPROVEMENT																
FUTURE W/ DEVELOPMENT																
Notes	No improvements required															
No. of Lanes																
Lane Width																
LOS																
DESIRABLE LOS	C	C	--		--	C	C		C	--	C					

5. BLUE CHURCH ROAD AT LANARK ROAD

Existing Conditions

This three legged intersection operates at a LOS = A for all movements in the existing P.M. peak hour. Low traffic volumes on Blue Church Road and adequate gaps provided on Lanark Road allow traffic to efficiently enter and exit the intersection. Northbound Blue Church Road intersects Lanark Road with one 10.5 ft. lane at approximately a 50° angle and is controlled by a stop sign. Lanark Road provides an 11.5 ft. lane and paved shoulder on each approach.

Future Conditions Without Development

This intersection's existing geometry is sufficient to accommodate the additional traffic generated under this condition. The intersection operates at a LOS = B.

Future Conditions With Development

The level of service deteriorates to a LOS = D in this condition. Increased volumes on Lanark Road reduces the available gaps in traffic. The installation of a traffic signal will allow this intersection to maintain a LOS = B.

The recommended level of service for this intersection is LOS = C for all approaches. The improvements required for this intersection should be funded by impact fees.

TABLE 8
5. BLUE CHURCH ROAD AT LANARK ROAD

STREET:	BLUE CHURCH ROAD								LANARK ROAD							
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND			
	L	S	R	TOT	L	S	R	TOT	L	S	R	TOT	L	S	R	TOT
	1	2	3		4	5	6		7	8	9		10	11	12	
EXISTING																
No. of Lanes	1 LR								1 TR				1 LT			
Lane Width	10.5'								11.5'				11.5'			
PM Peak Hour	63	--	16	79					--	109	84	193	14	63	--	77
LOS	A		A	A									A			
FUTURE W/O DEVELOPMENT																
PM Peak Hour	144	--	30	144					--	146	179	325	34	94	--	128
LOS	B		A	B									A			
IMPROVEMENT																
FUTURE W/O DEVELOPMENT																
Notes	No improvements required															
No. of Lanes																
Lane Width																
LOS																
FUTURE W/ DEVELOPMENT																
PM Peak Hour	154	--	47	201					--	173	256	429	67	161	--	228
LOS	D		A	D									A			
IMPROVEMENT																
FUTURE W/ DEVELOPMENT																
Notes	Install signal															
No. of Lanes	1LR								1TR				1LT			
Lane Width	10.5'								11.5'				11.5'			
LOS	B		B	B						B	B	B	B	B		B
DESIRABLE LOS	C	--	C						--	C	C		C	C	--	

6A. ROUTE 309 AT SAUCON VALLEY ROAD

Existing Conditions

This four-legged intersection is controlled by a traffic signal, which maintains an intersection LOS = B. The existing geometry consists of 3 lanes (2 through and one right turn lane) on the northbound approach and 2 through lanes on the southbound approach of Route 309. Saucon Valley Road provides one left and one through lane on both its approaches in addition to a shared through right turn lane on its eastbound approach. Route 309 currently operate at a LOS = B, while a LOS = C and LOS = D are maintained for the eastbound and westbound approaches respectively.

Future Conditions Without Development

Under this condition, analysis with the 10-6-93 revised condition diagram indicates the level of service drops to LOS = F. With modification of the signal timing and an increased cycle length, the level of service can be improved to LOS = C.

Future Conditions With Development

With the above improvements, the future development traffic drops the level of service to a LOS = F. With widening of Saucon Valley Road to provide five lanes eastbound and four lanes westbound, modification of the signal timing and increasing the cycle length, a LOS = C can be expected at this intersection.

The recommended level of service for this intersection is LOS = C on Route 309 and LOS = D on Saucon Valley Road. The improvements recommended for this intersection will be paid for by impact fees and other sources.

TABLE 9
6A. ROUTE 309 AT SAUCON VALLEY ROAD

STREET:	ROUTE 309								SAUCON VALLEY ROAD							
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND			
	L	S	R	TOT	L	S	R	TOT	L	S	R	TOT	L	S	R	TOT
	1	2	3		4	5	6		7	8	9		10	11	12	
EXISTING																
No. of Lanes	2 T, 1 R				2 T				1 L, 1 T, 1 TR				1 L, 1 T			
Lane Width	12.5', 12', 13'				12.5', 13'				12', 12', 12.5'				11.5', 12.5'			
PM Peak Hour	--	1123	16	1139	--	1305	--	1305	129	174	7	310	28	62	--	90
LOS		B	A	B		B		B	B	C	A	C	C	D		D

FUTURE W/O DEVELOPMENT Note: Includes 10-6-93 revised condition diagram

PM Peak Hour	--	1536	30	1566	--	1809	--	1809	183	238	10	431	52	104	--	156
LOS		D	A	D		*		*	B	C	A	C	C	D		D

*(g/c) x (v/c) is greater than one

IMPROVEMENT
FUTURE W/O DEVELOPMENT

Notes	Modify timing, increase cycle length															
No. of Lanes	2T, 1R				2T				1L, 1T, 1TR				1L, 1T			
Lane Width	12.5', 12', 13'				12.5', 13'				12', 12', 12.5'				11.5', 12.5'			
LOS		B	A	B		C		C	D	D	D	D	C	D		D

FUTURE W/ DEVELOPMENT

PM Peak Hour	--	1683	76	1759	--	2049	--	2049	234	662	63	959	271	341	--	612
LOS		C	A	B		E		E	*	*	D	*	*	D		*

IMPROVEMENT
FUTURE W/ DEVELOPMENT

Notes	Modify timing, increase cycle length, Widen Saucon Valley Road															
No. of Lanes	2T, 1R				2T				2L, 2T, 1R				2L, 2T			
Lane Width	12.5', 12', 13'				12.5', 13'				12',12',12',12',12'				12', 12', 12', 12'			
LOS		B	A	B		C		C	C	D	D	D	D	D		D
DESIRABLE LOS	--	C	C		--	C	--		D	D	D		D	D	--	

6B. ROUTE 309 OFF RAMP AT SAUCON VALLEY ROAD

Existing Conditions

This signalized T-intersection allows through movements only on the eastbound and westbound approaches of Saucon Valley Road. The Route 309 off ramp intersects Saucon Valley Road at a 90° angle and provides one 12 ft. left and one 13.5 ft. right turn lane with paved shoulders and maintains a LOS = A. Saucon Valley Road provides one lane on each approach and currently maintain a LOS = B.

Future Conditions Without Development

Under this condition, analysis with the 10-6-93 revised condition diagram indicates that a LOS = B is provided for the Route 309 off-ramp while the Saucon Valley Road approaches maintain a LOS = A.

Future Conditions With Development

Operation under this condition drops to a LOS = F. The signal timing required additional modification for an acceptable level of service, LOS = B, to be realized. Widening of Saucon Valley Road to accommodate widening improvements required at the Route 309 and Saucon Valley Road intersection is also required.

The recommended level of service for this intersection is LOS = C for all approaches. Funding for these improvements will be required from both impact fees and other sources.

TABLE 10
6B. ROUTE 309 OFF-RAMP AT SAUCON VALLEY ROAD

STREET:	ROUTE 309 RAMP								SAUCON VALLEY ROAD							
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND			
	L	S	R	TOT	L	S	R	TOT	L	S	R	TOT	L	S	R	TOT
	1	2	3		4	5	6		7	8	9		10	11	12	
EXISTING																
No. of Lanes					1 L, 1 R				1 T				1 T			
Lane Width					12', 13.5'				17.5'				12'			
PM Peak Hour					158	--	167	325	--	62	--	62	--	310	--	310
LOS					A		A	A		B		B		B		B
FUTURE W/O DEVELOPMENT Note: Includes 10-6-93 revised condition diagram																
PM Peak Hour					209	--	237	446	--	104	--	104	--	431	--	431
LOS					B		B	B		A		A		A		A

IMPROVEMENT
FUTURE W/O DEVELOPMENT

Notes	No improvements required															
No. of Lanes																
Lane Width																
LOS																
FUTURE W/ DEVELOPMENT																
PM Peak Hour					557	--	302	859	--	268	--		--	672	--	
LOS					*		D	*		A		A		A		A

*(g/c) x (v/c) is greater than one

IMPROVEMENT
FUTURE W/ DEVELOPMENT

Notes	Modify timing, widen Saucon Valley Road as required by intersection 6A improvements															
No. of Lanes					1L, 1 R				3T				2T			
Lane Width					12', 13.5'				12', 12', 12'				12', 12'			
LOS					B		B	B		B		B		B		B
DESIRABLE LOS					C	--	C		--	C	--		--	C	--	

7. ROUTE 309 AT WEST HOPEWELL ROAD

Existing Conditions

This intersection exists as a T-intersection with the eastbound approach of West Hopewell Road controlled by a stop sign. Movement from West Hopewell Road is restricted to right turns due to a Jersey barrier median located along the centerline of Route 309. Due to low traffic volumes on West Hopewell Road, this approach operates at a LOS = B. Route 309 southbound traffic utilizes two 12 ft. lanes, with a 9 ft. paved shoulder, while the eastbound approach provides one 13 ft. lane.

Future Conditions Without Development

In this future condition, a LOS = C is experienced for eastbound right turn movements. This is still considered an acceptable operational level.

Future Conditions With Development

The level of service for eastbound right turn movements further deteriorates to a LOS = D in this condition. Heavy through traffic on southbound Route 309 allows very few gaps even for the low eastbound right turn volumes. Vehicles having difficulty utilizing this movement will most likely divert to the Route 309 and Chestnut Drive intersection which will be signalized in this condition.

The recommended level of service for this intersection is LOS = C for Route 309 and LOS = D for West Hopewell Road. No improvements are recommended, therefore, no funding is required for this intersection.

TABLE 11

7. ROUTE 309 AT WEST HOPEWELL ROAD

STREET:	ROUTE 309 NORTHBOUND				ROUTE 309 SOUTHBOUND				WEST HOPEWELL ROAD EASTBOUND				WEST HOPEWELL ROAD WESTBOUND			
	L	S	R	TOT	L	S	R	TOT	L	S	R	TOT	L	S	R	TOT
	1	2	3		4	5	6		7	8	9		10	11	12	
EXISTING																
No. of Lanes					1 T, 1 TR				1 R							
Lane Width					12', 12'				13'							
PM Peak Hour					--	1370	14	1384	--	--	6	6				
LOS											B					
FUTURE W/O DEVELOPMENT																
PM Peak Hour					--	1912	18	1930	--	--	8	8				
LOS											C					
IMPROVEMENT																
FUTURE W/O DEVELOPMENT																
Notes	No improvements required															
No. of Lanes																
Lane Width																
LOS																
FUTURE W/ DEVELOPMENT																
PM Peak Hour					--	2301	25	2326	--	--	13	13				
LOS											D					
IMPROVEMENT																
FUTURE W/ DEVELOPMENT																
Notes	No improvements required, divert EB rights to Chestnut Drive intersection, when required															
No. of Lanes																
Lane Width																
LOS																
DESIRABLE LOS					--	C	C		--	--	D					

8. ROUTE 309 AT CHESTNUT DRIVE

Existing Conditions

This three-legged intersection operates at a LOS = F for stop controlled eastbound Chestnut Drive traffic. Heavy traffic volumes on Route 309 does not provide adequate gaps to allow traffic to efficiently enter and exit the intersection. An 11.5 ft. northbound left turn lane also maintains a low level of service, LOS = E, due to the high volumes on Route 309. Route 309 provides one through and one through-right turn lane, with an 8 ft. paved shoulder on both its northbound and southbound approaches with a concrete median. Adequate sight distance is provided on all approaches.

Future Conditions Without Development

In the future condition, this intersection continues to operate at an unacceptable LOS = F. The widening of Chestnut Drive to provide a left and right turn lane and the erection of a traffic signal will allow this intersection to operate at a LOS = C.

Future Conditions With Development

The level of service drops to a LOS = F in this condition. The following improvements will allow this intersection to operate at a LOS = C; widen Route 309 to provide a southbound right turn lane and two through lanes, lengthen the cycle length and modify the signal timing.

The recommended level of service for this intersection is LOS = C for Route 309 and LOS = D for Chestnut Drive. Improvements at this intersection will be funded from both impact fees and other sources.

TABLE 12
8. ROUTE 309 AT CHESTNUT DRIVE

STREET:	ROUTE 309								CHESTNUT DRIVE							
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND			
	L	S	R	TOT	L	S	R	TOT	L	S	R	TOT	L	S	R	TOT
	1	2	3		4	5	6		7	8	9		10	11	12	
EXISTING																
No. of Lanes	1 L, 2 T				1 T, 1 TR				1 LR							
Lane Width	11.5', 11.5', 12.5'				12', 12.5'				14'							
PM Peak Hour	82	982	--	1064	--	1347	46	1393	16	--	18	34				
LOS	E								F		B	F				
FUTURE W/O DEVELOPMENT																
PM Peak Hour	108	1333	--	1441	--	1836	108	1944	50	--	24	74				
LOS	E								F		D	F				
IMPROVEMENT																
FUTURE W/O DEVELOPMENT																
Notes	Install signal, widen Chestnut Drive															
No. of Lanes	1L, 2T				1T, 1TR				1L, 1R							
Lane Width	11.5', 11.5', 12.5'				12', 12.5"				11', 12'							
LOS	B	A		A		C	C	C	C		C	C				
FUTURE W/ DEVELOPMENT																
PM Peak Hour	151	1492	--	1643	--	2125	177	2302	87	--	32	119				
LOS	B	A		A		F	F	F	D		C	C				
IMPROVEMENT																
FUTURE W/ DEVELOPMENT																
Notes	Modify timing, increase cycle length, widen Route 309															
No. of Lanes	1L, 2T				2T, 1R				1L, 1R							
Lane Width	11.5', 11.5', 12.5'				12', 12.5', 12'				11', 12'							
LOS	B	A		A		C	A	C	D		C	D				
DESIRABLE LOS	C	C	--		--	C	C		D	--	D					

9. ROUTE 309 AT LANARK ROAD AND CAMP MEETING ROAD

Existing Conditions

This intersection's four approaches are controlled by a traffic signal. The intersection currently operates at a LOS = B. Route 309 provides one 12 ft. through and one 12 ft. through-right turn lane and a 10 ft. paved shoulder on both its northbound and southbound approaches, in addition to a southbound 12 ft. left turn lane and 26.5 ft. right turn lane. Camp Meeting Road's westbound approach maintains a LOS = C for all movements utilizing its 13 ft. lane. Lanark Road's eastbound approach provides a LOS = C for both left turn and through movements utilizing a 14 ft. lane. Right turns on this approach are controlled by a yield and utilize a 25 ft. wide lane for its movement.

Future Conditions Without Development

The level of service under this condition, with the existing geometry and control, is LOS = F for the northbound approach of Route 309. An intersection LOS = C can be obtained by widening Camp Meeting Road to provide a shared left turn-through lane and a right turn lane, modifying the signal timing and increasing the cycle length.

Future Conditions With Development

With the above improvements and future development traffic, this intersection operates at a LOS = D. Due to future development in the western section of the Township, the construction of a northbound left turn lane is recommended at this intersection. Widening of Route 309 to add a southbound right turn lane, modification of the signal timing and increasing the cycle length will provide a LOS = C.

The recommended level of service for this intersection is LOS = C for Route 309 and Lanark Road and a LOS = D for Camp Meeting Road. Both impact fees and funds from other sources are required to construct the recommended improvements.

TABLE 13

9. ROUTE 309 AT LANARK ROAD AND CAMP MEETING ROAD

STREET:	ROUTE 309 NORTHBOUND				ROUTE 309 SOUTHBOUND				LANARK ROAD EASTBOUND				CAMP MEETING ROAD WESTBOUND			
	L	S	R	TOT	L	S	R	TOT	L	S	R	TOT	L	S	R	TOT
	1	2	3		4	5	6		7	8	9		10	11	12	
EXISTING																
No. of Lanes	2T				1 L, 2 T, 1 R				1 LT, 1 R				1 LTR			
Lane Width	12',12'				12', 12', 12',26.5'				14', 25'				13'			
PM Peak Hour	--	1252	--	1252	8	1207	55	1270	10	29	96	135	20	94	22	136
LOS		B			C	B			C	C			C	C	C	
FUTURE W/O DEVELOPMENT																
PM Peak Hour	--	1688	--	1688	11	1649	73	1733	14	48	131	193	27	142	29	198
LOS		F			C	B			C	C			C	C	C	
IMPROVEMENT																
FUTURE W/O DEVELOPMENT																
Notes	Modify timing, increase cycle length, widen Camp Meeting Road															
No. of Lanes	2T				1L, 2T, 1R				1 LT, 1R				1 LT, 1R			
Lane Width	12', 12'				12',12',12',26.5'				14', 25'				13', 12'			
LOS		C		C	C	B		B	C	C		C	C	C	C	C
FUTURE W/ DEVELOPMENT																
PM Peak Hour	79	1847	--	1926	60	1887	78	2025	23	66	163	252	74	174	60	308
LOS	NA	E			C	B		B	D	D		D	D	D	C	D
IMPROVEMENT																
FUTURE W/ DEVELOPMENT																
Notes	Modify timing, increase cycle length, widen Route 309															
No. of Lanes	1L, 2T				1L, 2T, 1R				1 LT, 1R				1 LT, 1R			
Lane Width	12', 12', 12'				12',12',12',16.5'				14', 25'				13, 12'			
LOS	A	C		C	A	C		C	C	C		C	D	D	C	D
DESIRABLE LOS	--	C	--		C	C	C		C	C	C		D	D	D	

10. MAIN STREET AT MILL ROAD

Existing Conditions

This T-intersection operates at a LOS = A for all movements, with the exception of the eastbound left turn. This movement maintains a LOS = D due to the relatively high volumes of traffic on Main Street. Mill Road's 12 ft. eastbound approach is controlled by a stop sign.The right-of-way is given to Main Street, which provides one lane and a paved shoulder on both approaches. Adequate sight distance is provided at this intersection.

Future Conditions Without Development

Under this condition, the level of service deteriorates to LOS = F for eastbound left turn movements. With signalization of the intersection, the level of service can be improved to a LOS = B.

Future Conditions With Development

The additional traffic generated by future development drops the level of service for southbound movements to an unacceptable LOS = F. With widening of Main Street to provide two southbound lanes (through and right turn lane) and modification of the signal timing, a LOS = C can be expected at this intersection.

The recommended level of service for this intersection is LOS = C. The improvements recommended for this intersection will be paid for by impact fees and funds from other sources.

TABLE 14
10. MAIN STREET AT MILL ROAD

STREET:	MAIN STREET NORTHBOUND				MAIN STREET SOUTHBOUND				MILL ROAD EASTBOUND				MILL ROAD WESTBOUND			
	L	S	R	TOT	L	S	R	TOT	L	S	R	TOT	L	S	R	TOT
	1	2	3		4	5	6		7	8	9		10	11	12	
EXISTING																
No. of Lanes	1 LT				1 TR				1 LR							
Lane Width	10'				9'				12'							
PM Peak Hour	93	370	--	463	--	376	43	419	30	--	61	91				
LOS	A								D		A	D				
FUTURE W/O DEVELOPMENT																
PM Peak Hour	126	527	--	653	--	570	77	647	51	--	85	136				
LOS	B								F		B	F				
IMPROVEMENT																
FUTURE W/O DEVELOPMENT																
Notes	Install signal															
No. of Lanes	1 LT				1 TR				1 LR							
Lane Width	10'				9'				12'							
LOS	A	A		A		C	C	C	C		C	C				
FUTURE W/ DEVELOPMENT																
PM Peak Hour	134	566	--	700	--	634	123	757	74	--	91	165				
LOS	B	B		B		F	F	F	D		D	D				
IMPROVEMENT																
FUTURE W/ DEVELOPMENT																
Notes	Modify timing, widen Main Street															
No. of Lanes	1LT				1T, 1R				1LR							
Lane Width	10'				9', 12'				12'							
LOS	B	B				C	B	C	C		C	C				
DESIRABLE LOS	C	C	--		--	C	C		C	--	C					

11. ROUTE 309 AT PASSER ROAD

Existing Conditions

This four-legged intersection consists of one left turn, one through, one through-right turn lane and paved shoulders on the northbound and southbound approaches of Route 309. Passer Road provides a curbed 16 ft. eastbound approach and one 10 ft. westbound approach with a 5 ft. paved shoulder. This intersection operates at a level of service below F. Inadequate green time for eastbound movements and the heavy traffic volumes of southbound left turns do not allow for an adequate level of service to be maintained. The westbound approach of Passer Road intersects Short Drive approximately 75 ft. west of the Passer Road and Route 309 intersection and is stop controlled. This will reduce the efficiency of this approach.

Future Conditions Without Development

Under this condition with the intersection's existing geometry and 10-93 revised condition diagram, an unacceptable LOS below F is experienced. Widening of Passer Road is required to provide two left turn lanes and a through-right turn lane on its eastbound approach and one left turn lane and a through-right turn lane on its westbound approach. With this widening, the modification of the signal timing and increasing the cycle length, a LOS = C can be achieved at this intersection.

Future Conditions With Development

With the additional traffic under this condition, the level of service drops to below F. The following improvements are required to obtain an acceptable level of service; widening of the westbound approach to provide a left, through and right turn lane and modification of the signal timing. In addition to these physical improvements, diversion of approximately half the eastbound left turn trips to the Route 309 and Main Street or other intersections is required to maintain a LOS C under this condition.

The recommended level of service for this intersection is LOS = C for Route 309 and LOS = D for Passer Road. This intersection will require funding from both impact fees and from other sources.

TABLE 15
11. ROUTE 309 AT PASSER ROAD

STREET:	ROUTE 309								PASSER ROAD							
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND			
	L	S	R	TOT	L	S	R	TOT	L	S	R	TOT	L	S	R	TOT
	1	2	3		4	5	6		7	8	9		10	11	12	
EXISTING																
No. of Lanes	1 L, 1 T, 1 TR				1 L, 1 T, 1 TR				1 LTR				1 LTR			
Lane Width	10.5', 12', 12.5'				10', 12', 12'				16'				23'			
PM Peak Hour	3	1334	144	1481	158	988	8	1154	161	93	2	256	82	36	115	233
LOS	A	B	B	B	*	A	A	*	F	F	F	F	D	D	D	D

FUTURE W/O DEVELOPMENT Note: Includes 10-6-93 revised condition diagram

PM Peak Hour	8	1774	193	1975	221	1319	11	1551	233	123	3	359	110	50	159	319
LOS	B	*	*	*	A	B	B	B	*	*	*	*	E	E	E	E

*(g/c) x (v/c) is greater than one

IMPROVEMENT
FUTURE W/O DEVELOPMENT

Notes	Modify timing, increase cycle length, widen Passer Road															
No. of Lanes	1L, 1T, 1TR				1L, 1T, 1TR				2L, 1TR				1L, 1TR			
Lane Width	10.5', 12', 12.5'				10', 12', 12'				12', 12', 12'				12', 12'			
LOS	A	C	C	C	A	A	A	A	D	D	D	D	D	D	D	D

FUTURE W/ DEVELOPMENT

PM Peak Hour	28	1910	196	2134	291	1449	12	1752	254	126	10	390	120	68	269	457
LOS	B	D	D		A	B	B	A	*	D	D	*	D	F	F	E

IMPROVEMENT
FUTURE W/ DEVELOPMENT

Notes	Modify timing, widen Passer Road, divert 164 EB left turn trips															
No. of Lanes	1L, 1T, 1TR				1L, 1T, 1TR				2L,1TR				1L, 1T, 1R			
Lane Width	10.5',12',12.5'				10', 12', 12'				12', 12', 12'				12', 12', 12'			
LOS	B	C	C	C	A	A	A	A	E	D	D	E	D	D	D	D
DESIRABLE LOS	C	C	C		C	C	C		D	D	D		D	D	D	

12. NEW STREET AT FLINT HILL ROAD

Existing Conditions

This intersection exists as a T-intersection with the westbound approach of Flint Hill Road controlled by a stop sign. All movements operate at a LOS = A because of the low volumes of conflicting traffic. A horizontal curve north of the intersection limits sight distance to the right from Flint Hill Road. This intersection is also located approximately 50 ft. from Passer Road. Therefore, traffic from Passer Road and Route 309 onto New Street hinder westbound traffic movements. One lane is provided on all approaches.

Future Conditions Without Development

This intersection will be relocated and is scheduled to be constructed in 1994. New Street will no longer intersect Passer Road, it has been realigned to travel eastbound starting approximately 500 ft. north of its old intersection with Passer Road. Flint Hill has also been realigned to travel south starting approximately 300 ft. east of its old intersection with New Street. Flint Hill Road will now intersect Passer Road approximately 325 ft. east of the Route 309 and Passer Road intersection. This relocated intersection will improve the existing circulation problems at the old New Street intersection. Operation at this relocated intersection will provide a LOS = B.

Future Conditions With Development

A LOS = B is also experienced at this intersection with the future development traffic volumes.

The recommended level of service for this intersection is LOS = C. No improvements will need to be funded through the impact fees.

TABLE 16
12. NEW STREET AT FLINT HILL ROAD

STREET: NEW STREET / FLINT HILL ROAD

EXISTING

	NEW STREET NORTHBOUND L	S	R	TOT	NEW STREET SOUTHBOUND L	S	R	TOT	NEW STREET EASTBOUND L	S	R	TOT	FLINT HILL ROAD WESTBOUND L	S	R	TOT
	1	2	3		4	5	6		7	8	9		10	11	12	
No. of Lanes	1 TR				1 LT								1 LR			
Lane Width	11.5'				11'								13.5'			
PM Peak Hour	--	111	196	307	1	62	--	63					110	--	1	111
LOS					A								A		A	A

STREET: FLINT HILL ROAD / NEW STREET

FUTURE W/O DEVELOPMENT

	FLINT HILL ROAD NORTHBOUND L	S	R	TOT	FLINT HILL ROAD SOUTHBOUND L	S	R	TOT	NEW STREET EASTBOUND L	S	R	TOT	NEW STREET WESTBOUND L	S	R	TOT
	1	2	3		4	5	6		7	8	9		10	11	12	
No. of Lanes	1 LT				1 TR				1 LR				1 LR			
Lane Width	12'				12'				12'				13.5'			
Peak Hour	147	269	--	416	--	150	1	151	1	--	82	83				
LOS	A								B		A	A				

IMPROVEMENT
FUTURE W/O DEVELOPMENT

Notes	No improvements required															
No. of Lanes																
Lane Width																
LOS																

FUTURE W/ DEVELOPMENT

PM Peak Hour	147	284	--	431	--	160	1	161	1	--	82	83				
LOS	A								B		A					

IMPROVEMENT
FUTURE W/ DEVELOPMENT

Notes	No improvements required															
No. of Lanes																
Lane Width																
LOS																
DESIRABLE LOS	C	C	--		--	C	C		C	--	C					

13. ROUTE 378 AT PRESTON LANE

Existing Conditions

This four-legged intersection is currently operating at a LOS = B for vehicles traveling north and south on Route 378. The stop controlled approaches maintain LOS = F and LOS = E for eastbound and westbound traffic respectively. Lower operational levels are experienced for these conflicting movements as a result of high volumes of traffic existing on Route 378. Route 378 provides a three lane cross section with one through-right lane on each approach and a two way left turn lane. Preston Lane provides one 15 ft. curbed eastbound lane and one 14.5 ft. lane on its westbound approach. This intersection provides access to the Southern Lehigh Middle and High Schools.

Future Conditions Without Development

Operation drops to LOS = F for eastbound and westbound left turn movements, with the existing geometry and stop control. Signalization and widening of northbound Route 378 to add a right turn lane provides an acceptable LOS = C under this condition.

Future Conditions With Development

In the future condition with development, the level of service drops to be LOS = E for northbound through movements. Construction of Preston Lane east to intersect Landis Mill Road will impact this intersection, as Allentown College will utilize this intersection as its main access. This will most likely be constructed as part of a joint effort between PennDot and the Township as part of the Constitution Bridge project. Modification of the signal timing and widening of the eastbound and westbound approach to provide a left turn lane and shared through-right turn lane will maintain a LOS = C under this condition.

The recommended level of service for this intersection is LOS = C for Route 378 and LOS = D for Preston Lane. Both funding from impact fees and other sources will be required to construct the recommended improvements.

TABLE 17
13. ROUTE 378 AT PRESTON LANE

STREET:	ROUTE 378								PRESTON LANE							
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND			
	L	S	R	TOT	L	S	R	TOT	L	S	R	TOT	L	S	R	TOT
	1	2	3		4	5	6		7	8	9		10	11	12	
EXISTING																
No. of Lanes	1 L, 1 TR				1 L, 1 TR				1 LTR				1 LTR			
Lane Width	10.5', 10'				10', 11'				15'				14.5'			
PM Peak Hour	20	761	8	789	2	642	55	699	30	8	21	59	10	6	5	21
LOS	B				B				E	E	A	F	E	E	A	E
FUTURE W/O DEVELOPMENT																
PM Peak Hour	26	1033	123	1182	68	901	75	1044	51	11	28	90	53	8	38	99
LOS	C				D				F	E	A	F	F	E	B	F
IMPROVEMENT																
FUTURE W/O DEVELOPMENT																
Notes	Install signal, widen Route 378															
No. of Lanes	1L, 1T, 1R				1L, 1TR				1 LTR				1 LTR			
Lane Width	10.5', 10', 12'				10', 11'				15'				14.5'			
LOS	A	C	A	C	A	B	B	B	C	C	C	C	C	C	C	C
FUTURE W/ DEVELOPMENT																
PM Peak Hour	27	1140	138	1305	92	989	78	1159	53	35	29	117	62	24	49	135
LOS	A	E	A	E	A	C	C	C	C	C	C	C	C	C	C	C
IMPROVEMENT																
FUTURE W/ DEVELOPMENT																
Notes	Modify timing, widen Preston Lane															
No. of Lanes	1L, 1T, 1R				1L, 1TR				1L, 1TR				1L, 1TR			
Lane Width	10.5', 10', 12'				10', 11'				12', 12'				12', 12'			
LOS	A	C	A	C	A	B	B	B	C	D	D	C	D	D	D	D
DESIRABLE LOS	C	C	C		C	C	C		D	D	D		D	D	D	

14. ROUTE 378 AT OLD BETHLEHEM PIKE

Existing Conditions

Old Bethlehem Pike's eastbound and westbound stop controlled approaches intersect Route 378 at approximately 20°. They maintain a LOS = E with the exception of the right turn movements, which operate at a LOS = A. Old Bethlehem Pike presently has low traffic volumes, and provides one lane on each approach. Route 378 provides a left turn lane, one through-right turn lane and paved shoulder on both its northbound and southbound legs, which maintain a LOS = B.

Future Conditions Without Development

Not applicable. Elimination of this intersection has an approximate schedule date of 1996.

Future Conditions With Development

Not applicable. Elimination of this intersection has an approximate schedule date of 1996.

TABLE 18
14. ROUTE 378 AT OLD BETHLEHEM PIKE

STREET:	ROUTE 378								OLD BETHLEHEM PIKE							
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND			
	L	S	R	TOT	L	S	R	TOT	L	S	R	TOT	L	S	R	TOT
	1	2	3		4	5	6		7	8	9		10	11	12	
EXISTING																
No. of Lanes	1 L, 1 TR				1 L, 1 TR				1 LTR				1 LTR			
Lane Width	10', 12.5'				9.5', 11'				23'				10.5'			
PM Peak Hour	34	665	0	699	2	607	1	610	0	0	34	34	0	0	0	0
LOS	B				B				E	E	A	A	E	E	A	A
FUTURE W/O DEVELOPMENT Note: This intersection to be eliminated.																
PM Peak Hour																
LOS																
IMPROVEMENT																
FUTURE W/O DEVELOPMENT																
Notes	NA															
No. of Lanes																
Lane Width																
LOS																
FUTURE W/ DEVELOPMENT																
PM Peak Hour																
LOS																
IMPROVEMENT																
FUTURE W/ DEVELOPMENT																
Notes	NA															
No. of Lanes																
Lane Width																
LOS																
DESIRABLE LOS																

15. ROUTE 378 AT SAUCON CREEK ROAD

Existing Conditions

This intersection did not exist at the time of the roadway inventory. However, this intersection will provide one 12 ft. lane on its eastbound approach with 8 ft. paved shoulders, and is expected to be completed prior to 1994.

Future Conditions Without Development

A LOS = E is provided for eastbound left turn movements due to the heavy traffic on Route 378, which does not allow adequate gaps in its traffic flow. However, due to the low traffic volumes on this approach, it will not meet PennDot traffic warrants at this time.

Future Conditions With Development

Operation drops to a LOS = F with the development traffic and 1994 geometric conditions. The signalization and widening of the eastbound approach to provide a 12 ft. left turn lane and a 12 ft. right turn lane will provide a LOS = C for this intersection including the 213 eastbound left turn diverted trips from the Route 378 and Saucon Valley Road intersection.

The recommended level of service at this intersection is LOS = C for Route 378 and LOS = D for Saucon Creek Road. Funding for the recommended improvements at this intersection could be obtained through impact fees.

TABLE 19

15. ROUTE 378 AT SAUCON CREEK ROAD

STREET:	ROUTE 378								SAUCON CREEK ROAD							
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND			
	L	S	R	TOT	L	S	R	TOT	L	S	R	TOT	L	S	R	TOT
	1	2	3		4	5	6		7	8	9		10	11	12	
EXISTING	NOTE: THIS INTERSECTION DOES NOT PRESENTLY EXIST, BUT WILL BE CONSTRUCTED PRIOR TO 1994.															
No. of Lanes	1L, 1T				1T				1LR							
Lane Width	10', 12'				11'				12'							
PM Peak Hour	--	665	--	665	--	607	--	607								
LOS				NA				NA				NA				

FUTURE W/O DEVELOPMENT

PM Peak Hour	6	904	--	910	--	851	0	851	0	--	13	13				
LOS	C								E		A					

IMPROVEMENT
FUTURE W/O DEVELOPMENT

Notes	No improvements required															
No. of Lanes																
Lane Width																
LOS																

FUTURE W/ DEVELOPMENT

PM Peak Hour	74	1007	--	1081	--	954	10	965	37	--	148	185				
LOS	D								F		C	F				

IMPROVEMENT
FUTURE W/ DEVELOPMENT

Notes	Install signal, widen Saucon Creek Road, add 213 EB left turn trips diverted from Rt. 378/Saucon Valley Road intersection															
No. of Lanes	1L, 1T				1T				1L, 1R							
Lane Width	10',12'				11'				12', 12'							
LOS	A	B		B		C	C	C	D		C	C				
DESIRABLE LOS	C	C				C	C		D		D					

16. ROUTE 378 AT SAUCON VALLEY ROAD

Existing Conditions

This four-legged intersection operates at a LOS = F for eastbound and westbound movements, with the exception of right turn movements. These stop controlled approaches of Saucon Valley Road provide a shared left-through lane and a right turn lane. They operate at an unacceptable level of service, due to the high volumes of traffic on Route 378. Route 378 consists of one through lane and one left turn lane on both its northbound and southbound approaches, which maintain a LOS = B. Adequate sight distance is provided at this intersection.

Future Conditions Without Development

This intersection with future growth and additional traffic utilizing this intersection, due to the elimination of the Route 378 and Old Bethlehem Pike intersection, continues to operate at a LOS = F on Saucon Valley Road. Installation of a traffic signal will provide a LOS = B at this intersection.

Future Conditions With Development

The level of service drops below a LOS = F with the additional traffic associated with this condition. The following improvements are required in order to provide an acceptable level of service; widening of Route 378 to add a southbound right turn lane, widening of the eastbound approach of Saucon Valley Road to provide a left, through and right turn lane, modification of the signal timing. In addition, diversion of approximately 213 eastbound left turn trips to the Route 378 and Saucon Creek Road intersection is required for this intersection to maintain a LOS = C.

The recommended level of service at this intersection is LOS = C for Route 378 and LOS = D for Saucon Valley Road. Funding from both impact fees and other sources will be required to construct the recommended improvements.

TABLE 20
16. ROUTE 378 AT SAUCON VALLEY ROAD

STREET:	ROUTE 378								SAUCON VALLEY ROAD							
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND			
	L	S	R	TOT	L	S	R	TOT	L	S	R	TOT	L	S	R	TOT
	1	2	3		4	5	6		7	8	9		10	11	12	
EXISTING																
No. of Lanes	1 L, 1 TR				1 L, 1 TR				1 LT, 1 R				1 LT, 1 R			
Lane Width	10.5', 11'				10.5', 11.5'				16', 15'				15', 14.5'			
PM Peak Hour	0	628	46	674	42	658	87	787	55	60	2	117	20	46	14	80
LOS	B				B				F	F	A	F	F	F	A	F

FUTURE W/O DEVELOPMENT Note: Additional traffic from elimination of the Route 378 and Old Bethlehem Pike intersection.

PM Peak Hour	45	855	61	961	55	919	120	1094	75	79	48	202	26	61	19	106
LOS	D				C				F	F	A	F	F	F	A	F

IMPROVEMENT
FUTURE W/O DEVELOPMENT

Notes	Install signal															
No. of Lanes	1L, 1TR				1L, 1TR				1LT, 1R				1 LT, 1R			
Lane Width	10.5', 11'				10.5', 11.5'				16', 15'				15', 14.5'			
LOS	A	B	B	B	A	B	B	B	C	C		C	C	C		C

FUTURE W/ DEVELOPMENT

PM Peak Hour	58	977	61	1096	55	1030	307	1392	426	89	54	569	28	66	20	114
LOS	B	D	D	D	A	*	*	*	*	*		*	C	C		C

*(g/c)x(v/c) is greater than one.

IMPROVEMENT
FUTURE W/ DEVELOPMENT

Notes	Modify timing, widen Route 378 and Saucon Valley Road, divert 213 EB left turn trips to 378/Saucon Creek Road intersecton															
No. of Lanes	1L, 1TR				1L, 1T, 1R				1L, 1T, 1R				1 LT, 1R			
Lane Width	10.5', 11'				10.5', 11.5', 12'				12', 12', 15'				15', 14.5'			
LOS	B	C	C	C	A	B	A	B	D	C		D	C	C		C
DESIRABLE LOS	C	C	C		C	C	C		D	D	D		D	D	D	

17. CAMP MEETING ROAD AT PRESTON LANE

Existing Conditions

This T-intersection operates at a LOS = A as a result of the low volume of traffic for conflicting movements. Camp Meeting Road maintains the right-of-way and provides one lane on both the northbound and southbound legs. The 12.5 ft. westbound approach of Preston Lane is controlled by a stop sign. The sight distance from this approach is limited to the south due to a horizontal curve on Camp Meeting Road.

Future Conditions Without Development

The additional traffic associated with this condition causes the level of service to drop to a LOS = B for Preston Lane turning movements. This is considered acceptable operation.

Future Conditions With Development

The level of service drops to LOS = D for Preston Lane turning movements in this condition. PennDot's signalization warrants may be met. Installation of a traffic signal will provide a LOS = B for this intersection.

The recommended level of service for this intersection is LOS = C. Impact fees may be used to complete the recommended improvements at this intersection.

TABLE 21

17. CAMP MEETING ROAD AT PRESTON LANE

STREET:	CAMP MEETING ROAD												PRESTON LANE			
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND			
	L	S	R	TOT	L	S	R	TOT	L	S	R	TOT	L	S	R	TOT
	1	2	3		4	5	6		7	8	9		10	11	12	
EXISTING																
No. of Lanes	1 TR				1 LT								1 LR			
Lane Width	10.5'				11'								12.5'			
PM Peak Hour	--	58	147	205	18	37	--	55					80	--	13	93
LOS					A								A		A	A
FUTURE W/O DEVELOPMENT																
PM Peak Hour	--	84	195	279	24	68	--	92					108	--	23	131
LOS					A								B		A	B
IMPROVEMENT																
FUTURE W/O DEVELOPMENT																
Notes	No improvements required															
No. of Lanes																
Lane Width																
LOS																
FUTURE W/ DEVELOPMENT																
PM Peak Hour	--	163	214	377	44	168	--	212					121	--	29	150
LOS					A								D		A	D
IMPROVEMENT																
FUTURE W/ DEVELOPMENT																
Notes	Install signal															
No. of Lanes	1 TR				1 LT								1 LR			
Lane Width	10.5'				11'								12.5'			
LOS		B	B	B	B	B		B					B		B	B
DESIRABLE LOS	--	C	C		C	C	--						C	--	C	

18. WALNUT LANE AT FLINT HILL ROAD

Existing Conditions

This intersection is presently controlled by stop signs on the northbound and southbound Walnut Lane approaches. The northbound approach of Walnut Lane was being constructed at the time of the roadway inventory. A LOS = A is experienced on all approaches of this intersection. The one lane approaches of Walnut Lane are offset approximately 15 feet. A horizontal curve, existing on the eastbound approach of Flint Hill Road, limits the ability of these oncoming vehicles to be seen. Flint Hill Road provides an 11 ft. westbound approach with paved shoulder and an 11.5 ft. eastbound approach.

Future Conditions Without Development

This intersection will continue to operate at a LOS = A, with the additional traffic associated with this condition.

Future Conditions With Development

LOS = A is also found under this condition.

The recommended level of service at this intersection is LOS = C. This will allow for some additional traffic at this intersection before improvements are necessary. This intersection will not require any funding from either impact fees or other sources.

TABLE 22

18. WALNUT LANE AT FLINT HILL ROAD

STREET:	WALNUT LANE								FLINT HILL ROAD							
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND			
	L	S	R	TOT	L	S	R	TOT	L	S	R	TOT	L	S	R	TOT
	1	2	3		4	5	6		7	8	9		10	11	12	
EXISTING																
No. of Lanes	1 LTR				1 LTR				1 LTR				1 LTR			
Lane Width	15'				11'				11.5'				11'			
PM Peak Hour	0	0	1	1	2	0	23	25	36	147	0	183	1	89	4	94
LOS	A	A	A	A	A	A	A	A	A				A			
FUTURE W/O DEVELOPMENT																
PM Peak Hour	0	0	1	1	3	0	30	33	48	204	0	252	1	122	5	128
LOS	A	A	A	A	A	A	A	A	A				A			
IMPROVEMENT																
FUTURE W/O DEVELOPMENT																
Notes	No improvements required															
No. of Lanes																
Lane Width																
LOS																
FUTURE W/ DEVELOPMENT																
PM Peak Hour	4	0	1	5	3	0	30	33	48	212	7	267	2	128	5	135
LOS	A	A	A	A	A	A	A	A	A				A			
IMPROVEMENT																
FUTURE W/ DEVELOPMENT																
Notes	No improvements required															
No. of Lanes																
Lane Width																
LOS																
DESIRABLE LOS	C	C	C		C	C	C		C	C	C		C	C	C	

19. CAMP MEETING ROAD AT EAST VALLEY ROAD

Existing Conditions

This T-intersection operates at a LOS = A, due to the very light traffic conditions on both roadways. East Valley Road approaches Camp Meeting Road from the west and is controlled by a stop sign. A bridge, located approximately 350 ft. south of the intersection on Camp Meeting Road, restricts this roadway's weight limit to 20 tons, except for combinations with a 40 ton weight limit. All approaches provide one lane, in addition the eastbound 14 ft. lane approach also provides a 6.5 ft. paved shoulder.

Future Conditions Without Development

This intersection continues to operate at a LOS = A under this condition.

Future Conditions With Development

This intersection will also operate at a LOS = A under this condition.

The recommended level of service for this intersection is LOS = C. This will allow some additional growth before improvements are required. No funding will be needed for this intersection from either impact fees or other sources.

TABLE 23
19. CAMP MEETING ROAD AT EAST VALLEY ROAD

STREET:	CAMP MEETING ROAD								EAST VALLEY ROAD							
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND			
	L	S	R	TOT	L	S	R	TOT	L	S	R	TOT	L	S	R	TOT
	1	2	3		4	5	6		7	8	9		10	11	12	
EXISTING																
No. of Lanes	1 LT				1 TR				1 LR							
Lane Width	10.5'				11'				14'							
PM Peak Hour	1	16	--	17	--	12	9	21	4	--	4	8				
LOS	A								A		A	A				
FUTURE W/O DEVELOPMENT																
PM Peak Hour	1	28	--	28	--	28	12	40	5	--	12	17				
LOS	A								A		A	A				
IMPROVEMENT																
FUTURE W/O DEVELOPMENT																
Notes	No improvements required															
No. of Lanes																
Lane Width																
LOS																
FUTURE W/ DEVELOPMENT																
PM Peak Hour	5	82	--	87	--	155	26	181	53	--	56	109				
LOS	A								A		A	A				
IMPROVEMENT																
FUTURE W/ DEVELOPMENT																
Notes	No improvements required															
No. of Lanes																
Lane Width																
LOS																
DESIRABLE LOS	C	C	--		--	C	C		C	--	C					

20. OLD BETHLEHEM PIKE AT SAUCON VALLEY ROAD

Existing Conditions

This intersection is stop controlled on three of its four approaches. Southbound Old Bethlehem Pike traffic maintains the right-of-way. This intersection was analyzed as a multi-way stop controlled intersection and was found to operate at a LOS = A during the existing P.M. peak hour. A 10 ft. lane is provided on both approaches of Saucon Valley Road in addition to a 2 ft. paved shoulder on its eastbound approach. Old Bethlehem Pike provides a 12 ft. northbound and a 14 ft. southbound approach. Sight distance is limited on all approaches due to approach grades and vegetation.

Future Conditions Without Development

This intersection will operate more efficiently as a two way stop. Presently there is some confusion by motorists concerning who has the right-of-way. Therefore, it is recommended that Saucon Valley Road have the right-of-way and Old Bethlehem Pike be stop controlled on its northbound and southbound approaches. This intersection will operate at a LOS = B with this configuration.

Future Conditions With Development

With the above improvements and additional traffic associated with development, the level of service drops to a LOS = E for the Old Bethlehem Pike approaches. Operation can be improved to LOS = B by signalizing the intersection.

The recommended level of service for this intersection is LOS = C. This intersection will require funding from both impact fees and from other sources.

TABLE 24

20. OLD BETHLEHEM PIKE AT SAUCON VALLEY ROAD

STREET:

	OLD BETHLEHEM PIKE								SAUCON VALLEY ROAD							
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND			
	L	S	R	TOT	L	S	R	TOT	L	S	R	TOT	L	S	R	TOT
	1	2	3		4	5	6		7	8	9		10	11	12	

EXISTING

Note: Currently exists as a 3-way stop (NB, EB and WB)

No. of Lanes	1 LTR				1 LTR				1 LTR				1 LTR			
Lane Width	12'				14'				10'				10'			
PM Peak Hour	22	12	3	37	4	14	7	25	11	113	27	151	3	109	1	113
LOS				A				A				A				A

FUTURE W/O DEVELOPMENT

Note: Change to 2-way stop control on Old Bethlehem Pike, also additional traffic due to elimination of Rt. 378 and Old Bethlehem Pike intersection

PM Peak Hour	29	16	49	94	10	18	9	37	15	151	36	202	49	149	1	199
LOS	B	A	A	A	B	A	A	A	A				A			

IMPROVEMENT
FUTURE W/O DEVELOPMENT

Notes	No improvements required															
No. of Lanes																
Lane Width																
LOS																

FUTURE W/ DEVELOPMENT

PM Peak Hour	29	16	49	94	16	18	34	68	67	514	36	617	49	344	11	404
LOS	E	D	A	E	E	D	A	E	A				A			

IMPROVEMENT
FUTURE W/ DEVELOPMENT

Notes	Install signal															
No. of Lanes	1 LTR				1 LTR				1 LTR				1 LTR			
Lane Width	12'				14'				10'				10'			
LOS	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
DESIRABLE LOS	C	C	C		C	C	C		C	C	C		C	C	C	

IV. Basic Goals of Capital Improvement Plan

This section describes the Township's future roadway deficiencies on a macroscopic scale. The specific improvements outlined in the previous section each contribute to mobility within the Township.

ACCESS TO THE NORTHWEST AND SOUTH

Route 309 is presently and will continue to be the major northwest-south roadway within the Township. Route 309 provides access south to Quakertown and provides access to the north to the Route 78 interchange and Route 145. Route 378 provides access to the north to Bethlehem. This three lane arterial (one lane in each direction and a dual left turn lane) intersects Route 309 in the southern area of the Township. These two major roadways provide effective travel to routes outside the Township.

ACCESS TO THE EAST AND WEST

Township roads such as Saucon Valley Road and Limeport Pike provide east-west corridors. The Township needs to identify which routes they favor for east-west traffic and begin to plan improvements which will enhance the utility of these roads.

See
Original Book
for
Maps

Too large to Photocopy