CITY OF DOVER
TRANSPORTATION COMPONENT - MASTER PLAN

FINAL REPORT
TECHNICAL MEMORANDUM NO. 2
CENTRAL AVENUE CORRIDOR STUDY

Prepared for:

THE CITY OF DOVER, N.H.
DEPARTMENT OF PLANNING
AND COMMUNITY DEVELOPMENT

JULY, 1988

by:

STORCH ASSOCIATES

994 CANDIA ROAD
MANCHESTER, NEW HAMPSHIRE 03103
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in association with:

FREDETTE ASSOCIATES INC.
PROFESSIONAL ENGINEERS AND
LAND SURVEYORS

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I. Introduction

A. Background

In January, 1988, the City of Dover retained the consulting firms of Storch Associates of Manchester, New Hampshire and Fredette Associates, Inc. of Salem, New Hampshire to provide technical input into the Transportation Component of the 1988 Master Plan. This technical input may be expressed in the following task objectives:

Task 1. Identify existing conditions and recommend improvements for twelve problem intersection locations.

Task 2. Investigate options for improving traffic flow in the downtown Central Avenue Corridor, including land widening, one-way circulation pattern, or new bypass roadway.

Task 3. Identify long range highway improvement needs for the Route 9 Corridor in the City of Dover per major industrial rezoning proposed in the Master Plan.

This Technical Memorandum No. 2 - Central Avenue Corridor Study documents the results of Task 2 of the Transportation Component.

This study of the Downtown segment of the corridor completes a comprehensive, long term transportation plan for the entire Central Avenue corridor in conjunction with a 1987 study of the southern portion of the corridor (south of Silver Street) and a 1984 study of the northern portion of the corridor (Oak Street through Weeks Circle).

B. Methodology

Technical Memorandum No.2 - Central Avenue Corridor Study, evaluates alternative roadway network improvements to the Central Avenue corridor through the downtown area of the City of Dover. The objective of this study is to develop a recommendation for corridor improvements which will both mitigate existing deficiencies in downtown traffic flow, as well as provide for the transportation needs of future traffic growth in the City.

The study area includes the downtown segment of the Central Avenue corridor from Oak Street to just south of Silver Street. This area is illustrated in Figure 1 along with the three primary alternatives evaluated:

1. Central Avenue Widening to provide at least two northbound and two southbound travel lanes along the corridor.

2. One Way Circulation Pattern utilizing the present facilities of Central Avenue, Chestnut Street and Locust Street to form a one way circulation loop carrying at least two travel lanes per direction.

3. New Bypass Roadway constructed along a presently available railroad right-of-way around the western side of the downtown area.

An inventory was made of the present corridor roadway facilities including traffic lanes, roadway widths, curbside parking, and one-way restrictions. Traffic count data at key intersections was collected during the peak traffic period and supplemented by counts reported in recent traffic studies. A 1993 "No-Build" design condition was projected and used as a base condition by which the alternative corridor improvements were compared.

An Origin-Destination study was also conducted to define the use of this downtown corridor segment as both a through route and a radial corridor servicing local downtown trip making. This study was highlighted by a license plate survey whereby each vehicle entering or leaving the downtown area on any of eight major routes was "tracked" through the downtown corridor as either a "downtown-based" or a "non-stopping through" trip.

The corridor alternatives are compared in both quantitative terms (volumes, level of service, parking, delays and cost) and qualitative terms (neighborhood street traffic and access to public transportation).

The preliminary findings and recommendations of this study task were presented to the City of Dover Transportation Committee on April 28, 1988. This Final Report reflects the input provided by the Committee at that time.

C. Other Studies

This study has made use of traffic data from the following sources:

Reference 1. Peak hour traffic counts conducted by the City of Dover in 1988.

Reference 2. Peak hour traffic counts conducted by Strafford Regional Planning Commission in 1986.

Reference 3. "An Analysis of the N.H. Route 108 Corridor in Dover, New Hampshire", by Strafford Regional Planning Commission, December 1987.

Reference 4. "Traffic Impact Study for the Dover Mills Residential Development, Dover, New Hampshire", by Costello, Lomasney & deNapoli, Inc., November 1987.

Reference 5. "Central Avenue Corridor Traffic Study, Dover, New Hampshire", by Wilbur Smith and Associates, Inc., January 1984.

D. Acknowledgements

We would like to acknowledge the advice and assistance provided by the following departments and organizations:

- City of Dover Department of Planning and Community Development.

- City of Dover Department of Public Works.

- City of Dover Department of Public Safety.

- City of Dover Transportation Committee and involved citizens.

- Strafford Regional Planning Commission.

- New Hampshire Department of Transportation, Bureau of Transportation Planning.

Special acknowledgement is given to the Planning Department staff, participants from the Department of Public Safety, Planning Board, and Strafford Regional Planning Commission, and others, for their conscientious and dedicated efforts in recording the license plate number, time and direction of over 20,000 vehicles entering and leaving the downtown area on a chilly February afternoon.

II. Corridor Characteristics

A. Study Area Roadways

The study area is illustrated in Figure 1 and includes these three primary routes:

1. Central Avenue from Oak Street to just south of Silver Street, including the Main Street loop;
2. Chestnut Street from Central Avenue to Washington Street; and
3. Locust Street from Washington Street (and Walnut Street) to just south of Silver Street.

Additional key roadway segments included Sixth Street, Broadway, Portland Avenue, Portland Street, Washington Street, Silver Street, and N.H. Route 108.

B. Present Roadway Facility

An inventory of physical roadway features and traffic control on selected corridor segments and key intersections is depicted in Figure 2. Indicated are the following:

- Paved roadway width (curb-to-curb)
- Number of through traffic lanes in each direction (exclusive turn lanes not included)
- One-way streets
- Traffic signals
- Number, type and location of designated curbside parking spaces.

Central Avenue is the primary arterial route through the City of Dover. It services both the central core and outer business districts of the City. It generally provides one through travel lane in each direction with designated curbside parking on each side. In the central core area between Broadway and Washington Street, the corridor splits into a one-way street loop with two through travel lanes in each direction: Central Avenue for southbound flow; and Main Street for northbound flow. This area comprises the retail/commercial core of the downtown area and has been recently renovated with landscaped sidewalk and curbside parking facilities.

Chestnut Street functions both as a bypass of Central Avenue and as the primary service route for the outer business district just west of the downtown core area. It is a recently reconstructed four lane roadway between Washington Street and approximately First Street. North to Central Avenue it generally provides one through travel lane in each direction.

ROLLINSFORD

N

TOWN LINE

OAK STREET

BROADWAY

HILL STREET

MAIN STREET

PORTLAND AVENUE

PORTLAND AVE.

PORTLAND STREET

4

16

9

CENTRAL AVENUE

MAIN STREET

HENRY LAW AVENUE

COURT STREET

CENTRAL AVENUE

CITY HALL

SUMMER

SPRING

TRASKY

LOCUST STREET

THIRD STREET

FIRST STREET

WALNUT STREET

CHESTNUT ST.

GREEN ST.

ST. THOMAS

SILVER ST.

CL. R.R.

16

108

Bellamy River

SIXTH STREET

FOURTH STREET

River

Cocheco

WASHINGTON ST.

WASHINGTON ST.

ARCH STREET

SPAULDING TURNPIKE

155

LEGEND

- CENTRAL AVENUE WIDENING
- ONE-WAY CIRCULATION PATTERN
- NEW BYPASS ROADWAY

0 400' 800' 1200' 1600'

LOCATION MAP
CENTRAL AVENUE CORRIDOR STUDY

CITY OF DOVER
TRANSPORTATION COMPONENT
MASTER PLAN

DATE: JULY, 1988

FIGURE No. 1

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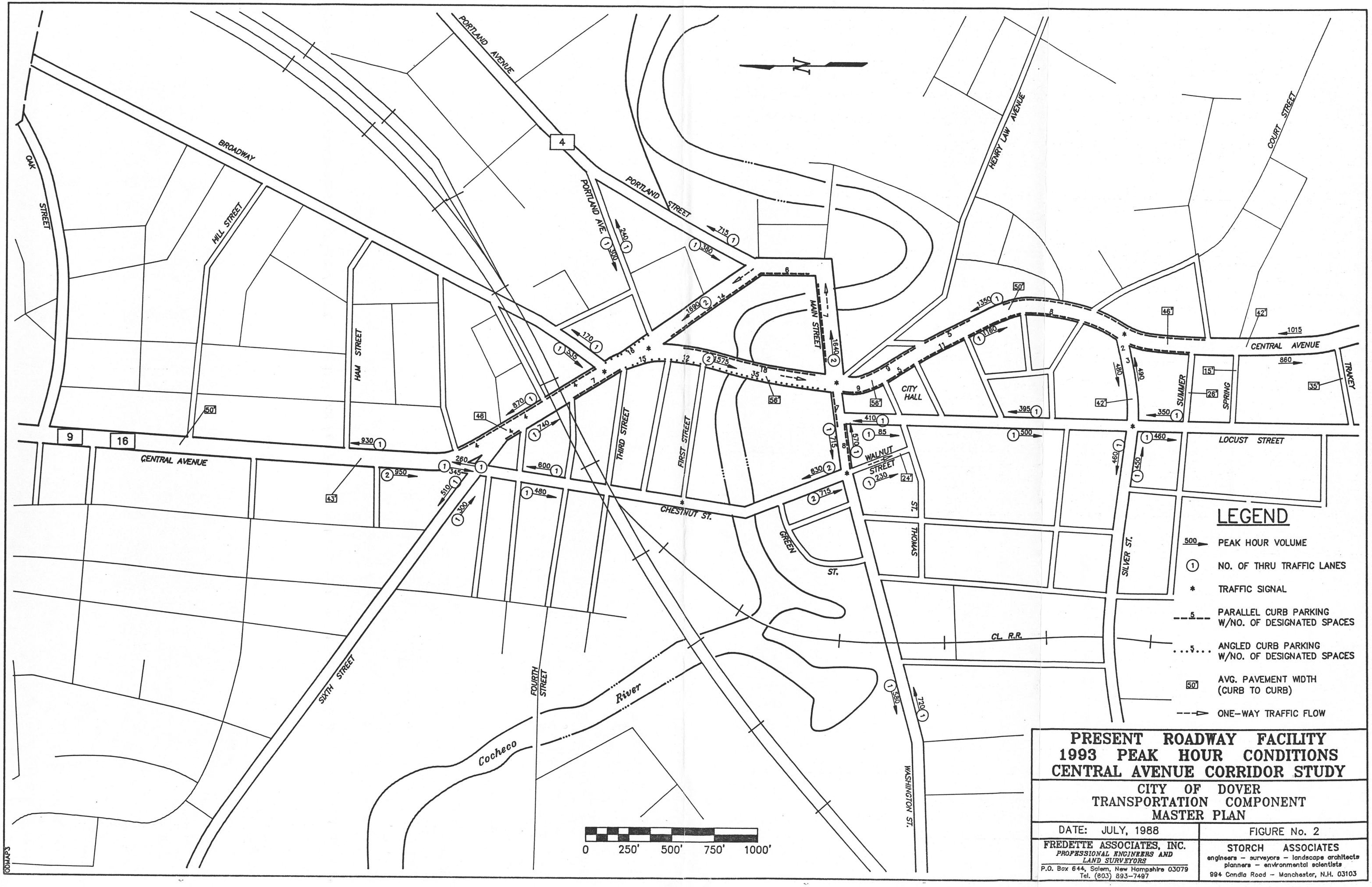

PRESENT ROADWAY FACILITY
1993 PEAK HOUR CONDITIONS
CENTRAL AVENUE CORRIDOR STUDY

CITY OF DOVER
TRANSPORTATION COMPONENT
MASTER PLAN

DATE: JULY, 1988

FIGURE No. 2

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COMAP3

Locust Street also functions as a bypass route of Central Avenue. It is a local collector route through a primarily residential area, with an increased density of institutional (City of Dover) land use near its northern terminus near Washington Street and an increased density of light industrial uses near its southern terminus with Central Avenue (Route 108).

The C.L. Railroad right-of-way is an abandoned one-track facility which begins as a spur from the Boston and Maine Railroad tracks near Chestnut and Third Streets, crosses Washington Street at grade, crosses under Silver Street, and terminates at the Central Avenue (NH Route 108) intersection at Cataract Street in the vicinity of the Spaulding Turnpike overpass.

C. Traffic Volumes

As was established in "Technical Memorandum No. 1, Problem Intersection Locations" the weekday PM peak hour was selected as the critical design hour condition for corridor evaluation. Present peak traffic conditions in the study area were defined by either new or previously conducted traffic counts at the intersections outlined in Table 1. Corresponding turning movement diagrams and count summaries are included in Appendix A.

TABLE 1

TRAFFIC COUNT DATA SOURCES

Intersection	Source*	Date/Time Period
Central at Oak	2	06/23/86, 3:30-4:30 PM
Central at Broadway	1	04/07/88, 3:30-5:30 PM
Chestnut at Sixth	1	03/02/88, 3:30-5:30 PM
Chestnut at Washington	1	03/03/88, 3:30-5:30 PM
Washington at Locust	1	02/24/88, 3:30-5:30 PM
Central at Main & Portland Avenue	4	1990 PM Peak Hour
Central at Washington	4	1990 PM Peak Hour
Main at Portland Street	4	1990 PM Peak Hour
Central at Silver	3	1993 PM Peak Hour
Locust at Silver	3	1993 PM Peak Hour
Central at NH 108/16	3	1993 PM Peak Hour
NH 108 at Locust/ Spaulding Ramp	3	1993 PM Peak Hour
NH 108 at Mill/ Spaulding Ramp	3	1993 PM Peak Hour

* Reference (per Section I-C.)

1. City of Dover count (See Appendix A)
2. Strafford Regional Planning Commission count (See Appendix A)
3. NH 108 Corridor Study (SRPC), 1987 (See Appendix A)
4. Traffic Impact Study for Dover Mills by Costello, Lomasney & deNapoli, 1987 (See Appendix A)

Design year traffic projects for the study area roadway network were projected from this data base utilizing the peak period traffic growth rate of 3.5 percent per year and seasonal adjustment factors documented in Technical Memorandum No. 1. The resulting 1993 design hour volumes along key segments of the corridor are illustrated on Figure 2.

D. System Deficiencies

The primary problem with the present Central Avenue corridor is a deficiency in the capacity of the overall two-lane facility to handle presently heavy corridor flows. Through traffic flow is additionally delayed by uncoordinated signalization and turning movements to and from side streets and driveways and parking traffic maneuvers. The limitations on Central Avenue capacity can also be evidenced, indirectly, by the heavy volume of traffic now utilizing the parallel Chestnut and Locust Streets as alternate routes. These routes now carry volumes ranging from 40 to 70 percent of the peak hour flows along Central Avenue.

Other localized problem areas which contribute to the present deficiencies in corridor traffic flow include:

- Delays for Broadway traffic approaching Central Avenue (presently signalized).
- Delays for Chestnut Street traffic approaching Central Avenue northbound (presently stop sign controlled).
- Delays for Locust Street traffic approaching Washington Street (presently stop sign controlled).
- Delays for Silver Street traffic approaching Central Avenue (presently signalized).
- Delays for Central Avenue traffic at the Main Street intersection (presently signalized).

III. Origin - Destination Study

A. Overview and Findings

An Origin - Destination (O-D) Study of the traffic into and through the downtown district of the City of Dover was completed as a part of this report. The O-D study was designed to provide additional information on the characteristics of Central Avenue Corridor traffic. Specifically, this study was to determine how the traffic funnelled through the downtown area of Dover. Also determined were presence of any commonly traveled routes through downtown for which a bypass or connector road might reduce the number of cars that now use the downtown streets only to get through the area to another destination.

The evaluation of the data that was collected in the O-D Study shows conclusively that the downtown district of Dover is more of a traffic generator than it is a funnel through which cars must travel to another destination. The analysis of the data collected shows that 70 percent of the traffic entering and leaving the downtown district were going to or coming from a destination within the downtown area.

The second highest frequency of occurrence were cars that had entered the downtown and were exiting the study area via Central Avenue northbound. This movement accounted for 15 percent of the cars. A presumptive conclusion is that many of these cars had a destination of the hospital district or the Central Avenue shopping district (the so called Miracle Mile) north of the hospital.

B. Study Design

The O-D Study was designed to analyze traffic to and through the downtown area of Dover. The area selected is generally characterized as the area east of the Spaulding Turnpike bounded on the south by the Exit 6/Central Avenue area and on the north by the Oak Street/Central Avenue intersection. The study was designed to capture all of the cars that entered and departed from this area via the main roads. The count locations that cordoned off the downtown area (or Nodes as they are referred to) are described below and graphically represented on Figure 3.

Node	Description
1	Stark Avenue south of Woodland Road
2	Central Avenue north of Locust Street
3	Locust Street north of Central Avenue
4	Knox Marsh Road (Silver Street) west of Arch Street
5	Sixth Street west of Whittier Street
6	Central Avenue south of Oak Street
7	Broadway south of Oak Street
8	Portland Street just south of City Limits

NODE #7

DISTRIBUTION OF INBOUND VEHICLES
TOTAL INBOUND VEHICLES: 792

NODE	# OF VEHICLES	%
1	13	1.64
2	12	1.52
3	5	0.63
4	9	1.14
5	5	0.63
6	8	1.01
8	6	0.76
NO-MATCH	734	92.7

TOTAL OUTBOUND TRAFFIC: 939
NO-MATCH OUTBOUND VEHICLE: 611 (65.1%)

NODE #8

DISTRIBUTION OF INBOUND VEHICLES
TOTAL INBOUND VEHICLES: 867

NODE	# OF VEHICLES	%
1	16	1.85
2	14	1.61
3	3	0.35
4	6	0.69
5	3	0.35
6	17	1.96
7	5	0.58
NO-MATCH	803	92.6

TOTAL OUTBOUND TRAFFIC: 1286
NO-MATCH OUTBOUND VEHICLE: 786 (61.2%)

NODE #1

DISTRIBUTION OF INBOUND VEHICLES
TOTAL INBOUND VEHICLES: 2063

NODE	# OF VEHICLES	%
2	97	4.70
3	63	3.05
4	74	3.59
5	80	3.88
6	306	14.83
7	102	4.94
8	140	6.79
NO-MATCH	1201	58.2

TOTAL OUTBOUND TRAFFIC: 1415
NO-MATCH OUTBOUND VEHICLE: 959 (67.7%)

NODE #2

DISTRIBUTION OF INBOUND VEHICLES
TOTAL INBOUND VEHICLES: 1479

NODE	# OF VEHICLES	%
1	146	9.87
3	44	2.97
4	58	3.92
5	53	3.58
6	228	15.42
7	70	4.73
8	98	6.63
NO-MATCH	782	52.9

TOTAL OUTBOUND TRAFFIC: 1787
NO-MATCH OUTBOUND VEHICLE: 1328 (74.3%)

NODE #6

DISTRIBUTION OF INBOUND VEHICLES
TOTAL INBOUND VEHICLES: 2459

NODE	# OF VEHICLES	%
1	47	1.91
2	55	2.24
3	19	0.77
4	35	1.42
5	5	0.20
7	7	0.28
8	19	0.77
NO-MATCH	2272	92.4

TOTAL OUTBOUND TRAFFIC: 2577
NO-MATCH OUTBOUND VEHICLE: 1563 (60.1%)

NODE #3

DISTRIBUTION OF INBOUND VEHICLES
TOTAL INBOUND VEHICLES: 766

NODE	# OF VEHICLES	%
1	45	5.87
2	53	6.92
4	38	4.96
5	25	3.26
6	121	15.80
7	38	4.96
8	37	4.83
NO-MATCH	409	53.4

TOTAL OUTBOUND TRAFFIC: 681
NO-MATCH OUTBOUND VEHICLE: 495 (72.7%)

NODE #4

DISTRIBUTION OF INBOUND VEHICLES
TOTAL INBOUND VEHICLES: 2362

NODE	# OF VEHICLES	%
1	89	3.77
2	118	5.0
3	45	1.91
5	49	2.07
6	325	13.76
7	100	4.23
8	193	8.17
NO-MATCH	1443	61.1

TOTAL OUTBOUND TRAFFIC: 1811
NO-MATCH OUTBOUND VEHICLE: 1522 (78.4%)

NODE #5

DISTRIBUTION OF INBOUND VEHICLES
TOTAL INBOUND VEHICLES: 397

NODE	# OF VEHICLES	%
1	45	11.33
2	53	13.35
3	4	1.01
4	5	1.26
6	6	1.51
7	4	1.01
8	3	0.76
NO-MATCH	277	69.8

TOTAL OUTBOUND TRAFFIC: 697
NO-MATCH OUTBOUND VEHICLE: 461 (66.1%)

LEGEND
ONE-WAY TRAFFIC FLOW

0 250' 500' 750' 1000'

ORIGIN-DESTINATION STUDY
CENTRAL AVENUE CORRIDOR STUDY

CITY OF DOVER
TRANSPORTATION COMPONENT
MASTER PLAN

DATE: JULY, 1988

FIGURE No. 3

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F:\DRAWINGS\145\STUDYMAP 06/01/88 16:12

On the afternoon of February 10, 1988 two to four people were assigned to each of the Nodes from approximately 2:00 PM to 5:30 PM. During this time they recorded the first three digits of each license plate that passed through their Node. The 3 digit license plate numbers were grouped into 15 minute blocks of time and the direction of travel, inbound or outbound was recorded.

After the license plate data was collected, all of the incoming plate numbers for each Node within a 15 minute period were compared with the outbound data from each Node. The matched plate numbers were to show the general pattern of traffic flow through the downtown district of Dover.

C. Data Analysis

All of the collected license plate data from the O-D Study was compiled as described above with the help of a computer. In the first review of this data, there appeared to be over a 120 percent match of outbound cars with the inbound cars. Based on the review of this data it was determined that because the study area was so large there were too many vehicles to be compared in 15 minute blocks as anticipated. In effect, there was a better statistical probability of a random match of a 3 digit number than there was of matching the actual car that was recorded.

This initial analysis of the data left no opportunity to draw a verifiable conclusion from the field work that had been done. To solve this problem a data base program was designed to do a much more complex evaluation of the data. The key elements of the data base program developed to evaluate the O-D Study data area are as follows:

1) An assumption was made that all of the plate numbers that were recorded in any given 15 minute interval were evenly distributed over that 15 minute interval (e.g. of 30 cars in a time interval from 2:00 PM to 2:15 PM it was assumed that the first car was recorded at 2:00:00 PM then subsequent cars at 2:00:30, 2:01:00, 2:01:30 and so on at even 30 second intervals).

2) The City Planning Staff collected data to determine the approximate travel time from Node to Node within the study area. The average travel times between Nodes is summarized in Table 2.

From the field data collected by the planning staff there was a variance of $\pm$ 30 percent in the travel time between Nodes. The variance of 30 percent is applied to the average travel times to create a time window at each outbound Node.

For an incoming plate number to be scored as a match it must match an outbound plate number within the time window created at each outbound Node.

TABLE 2

ORIGIN - DESTINATION STUDY

Travel Time Between Nodes

Inbound Node	Outbound Node 1	2	3	4	5	6	7	8
1	-	2.41	8.28	4.67	10.50	9.63	9.98	8.88
2	2.41	-	8.16	4.67	10.38	9.52	9.98	8.77
3	8.28	8.16	-	4.00	7.35	8.38	8.73	7.63
4	4.67	4.67	4.00	-	3.35	7.06	8.25	6.92
5	10.50	10.38	7.35	3.35	-	3.13	5.42	7.96
6	9.63	8.52	8.38	7.06	3.13	-	4.55	7.10
7	9.98	9.98	8.73	8.25	5.42	4.55	-	7.45
8	8.88	8.77	7.63	6.92	7.96	7.10	7.45	-

3) The data base program then analyzed each of the approxi1mately 11,200 plate numbers that were incoming to the study area. Based on the average travel time and variance to each of the other nodes a window of actual time was established for a potential outbound match of the inbound plat numbers. Within this window all the potential matches were recorded.

Using this data base program there are an unlimited number of variations in which the data can be organized, analyzed and recorded. For the purposes of verifying the findings as outlined in Section III-A of this report, data is presented in the following tables.

TABLE 3

ORIGIN - DESTINATION STUDY

TOTAL PLATE COUNT BY NODE

Node	Inbound	Outbound	Total
1	2063	1415	3478
2	1479	1787	3266
3	766	681	1447
4	2362	1811	4173
5	397	697	1094
6	2459	2577	5036
7	792	939	1731
8	867	1286	2153
TOTAL	11185	11193	22378

TABLE 4

ORIGIN DESTINATION STUDY

Summary of Non-Matched Plate Numbers by Node

	Inbound		Outbound	
	Number	Percent	Number	Percent
1	1201	58.2	959	67.7
2	782	52.8	1328	74.3
3	409	53.4	495	72.7
4	1443	61.1	1522	84.0
5	277	69.8	461	66.1
6	2272	92.4	1563	60.1
7	734	92.7	611	65.1
8	803	92.6	786	61.2
	7921	70.8%	7725	69.0%

TABLE 5

ORIGIN DESTINATION STUDY
Summary of Matching Plate Numbers

Number of Matched Inbound Plate Number / % of Total Inbound Plates
- by outbound node -

Inbound Node	Outbound Node 1	2	3	4	5	6	7	8
1	xxx /xx.x	97 /4.70	63 /3.05	74 /3.59	80 /3.88	306 /14.88	102 /4.94	140 /6.79
2	146 /9.87	xxx /xx.x	44 /2.97	58 /3.92	53 /3.58	228 /15.42	70 /4.73	98 /6.63
3	45 /5.87	53 /6.92	xxx /xx.x	38 /4.96	25 /3.26	121 /15.80	38 /4.96	37 /4.83
4	89 /3.77	118 /5.00	45 /1.91	xxx /xx.x	49 /2.07	325 /13.76	100 /4.23	193 /8.17
5	45 /11.33	53 /13.35	4 /1.01	5 /1.26	xxx /xx.x	6 /1.51	4 /1.01	3 /.076
6	47 /1.91	55 /2.24	19 /0.77	35 /1.42	5 /0.20	xxx /xx.x	7 /0.28	19 /0.77
7	13 /1.64	12 /1.52	5 /0.63	9 /1.14	5 /0.63	8 /1.01	xxx /xx.x	6 /0.76
8	16 /1.85	14 /1.61	3 /0.35	6 /0.69	3 /0.35	11 /1.96	5 /0.58	xxx /xx.x

TABLE 6

ORIGIN DESTINATION STUDY

Summary of Multiple Matched Plate Numbers

	In Bound			Out Bound		
No. of Matches	No of Plates	% of inbound by Node	No. of Dup. Matches	No of Plates	% of outbound by Node	No. of Dup. Matched
1	1973	17.7	0	2290	20.5	0
2	822	7.4	822	757	6.8	757
3	287	2.6	574	266	2.4	532
4	125	1.1	375	98	0.9	294
5	39	0.3	156	46	0.4	184
6	11	0.1	55	8	0.1	40
7	4	0.0	24	3	0.0	18
8	1	0.0	7	-	-	-
9	2	0.0	16	-	-	-
10	-	-	-	-	-	-
11						
12						
TOTALS			2029			1825

IV. Corridor Improvement Alternatives

A. Central Avenue Widening

This alternative is based on the "widening" of Central Avenue to provide an overall four-lane section with two through travel lanes in each direction. This "widening" can generally be accommodated within the present curb-to-curb roadway width through the elimination of on-street parking spaces. Actual construction of wider pavement would be limited to localized areas as necessary.

The proposed Central Avenue widening from Oak Street to south of Silver Street is depicted on Figure 4. The removal or reconfiguration of on-street parking generally allows for operation of four traffic lanes throughout the corridor segment. The existing one-way loop in the downtown area (Central Avenue/Main Street) is retained with the present two-lane one-way movement. Actual construction of pavement widening is required in the vicinity of Ham Street and for left turn lanes at the intersections of Oak Street, Chestnut/Sixth Street, Washington Street and Silver Street.

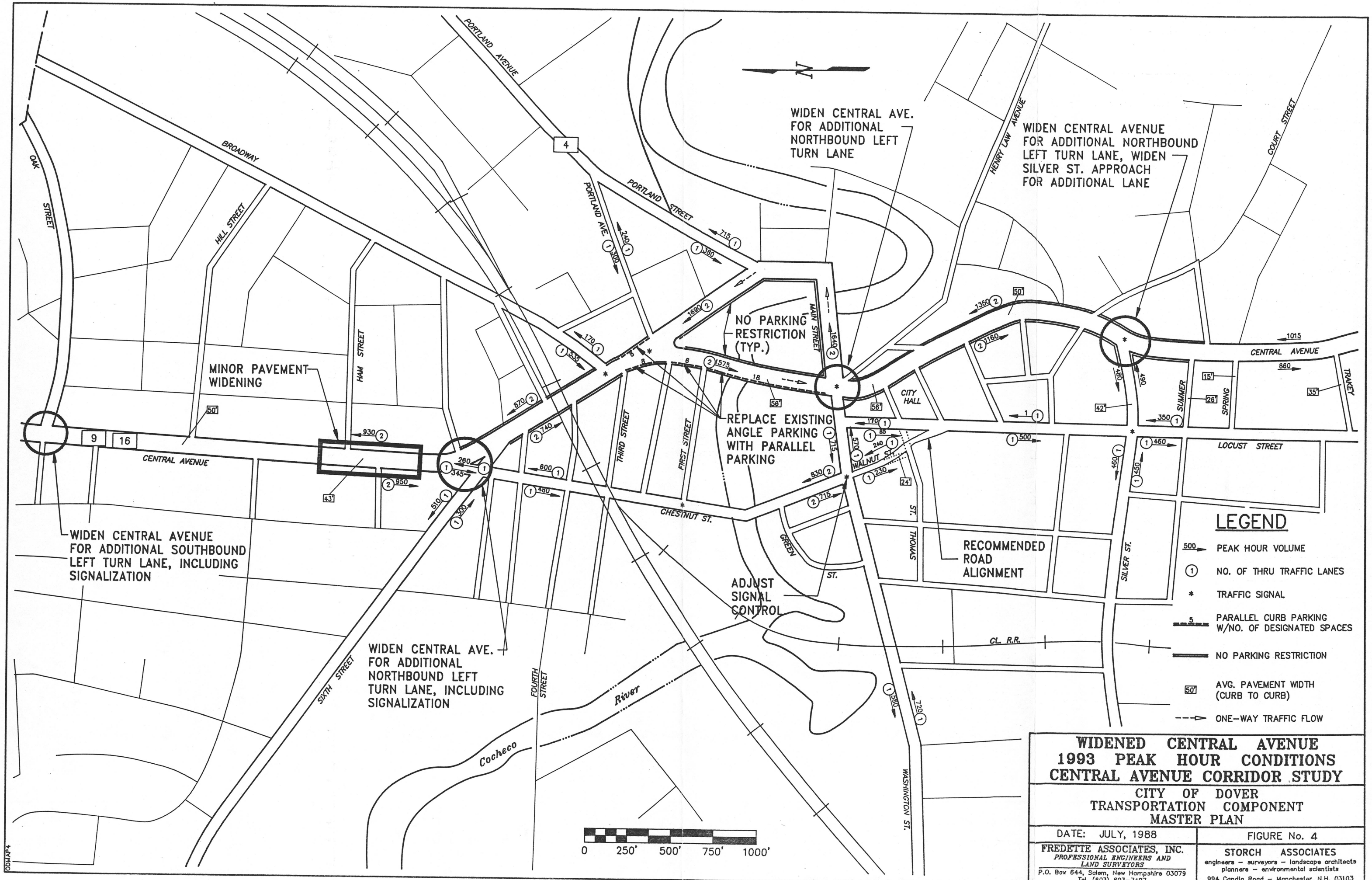
1993 design hour volumes at key roadway segments along the corridor are indicated, and are generally the same as those volumes depicted in Figure 2.

Figure 4 also illustrates the locations and numbers of designated on-street parking spaces as well as parking restrictions. Approximately 175 existing designated parking spaces are eliminated to accommodate the additional two traffic lanes. Present angle parking along Central Avenue between Third Street and Washington Street is replaced with parallel parking to minimize potential conflicts between parking vehicles and the two through traffic lanes.

Although not directly related to the widening of Central Avenue, this alternative also includes the realignment of Walnut Street to Locust Street and the establishment of two-way traffic flow along Walnut Street. Included at the recommendation of the Transportation Committee, this realignment would eliminate the presently difficult left turn movement from Locust Street to Washington Street.

This alternative also includes new or upgraded signalization at Silver Street, Washington Street, Chestnut/Sixth Street and Oak Street. Overall corridor signal coordination is also suggested.

The estimated cost of implementing this alternative is $0.9 to 1.2 million dollars, exclusive of right-of -way and parking space relocation.



WIDENED CENTRAL AVENUE 1993 PEAK HOUR CONDITIONS CENTRAL AVENUE CORRIDOR STUDY

CITY OF DOVER
TRANSPORTATION COMPONENT
MASTER PLAN

DATE: JULY, 1988

FIGURE No. 4

FREDETTE ASSOCIATES, INC.
PROFESSIONAL ENGINEERS AND LAND SURVEYORS
P.O. Box 644, Salem, New Hampshire 03079
Tel. (603) 893-7497

STORCH ASSOCIATES
engineers – surveyors – landscape architects
planners – environmental scientists
994 Candia Road – Manchester, N.H. 03103

ODMAP4

B. One Way Circulation Pattern

This alternative is based on the general concept of implementing an enlarged one-way roadway loop around the downtown area for a two-lane traffic movement in each direction: Central Avenue one-way northbound from Silver Street to Chestnut Street, and Chestnut and Locust Streets one-way southbound from Central Avenue to Silver Street. The intent of this alternative is to provide the needed corridor flow capacity of two through travel lanes in each direction, but without the need to remove on-street parking.

The proposed lane uses and 1993 design hour traffic flows are indicated in Figure 5. Traffic flow volumes reflect the proposed circulation pattern.

This revised circulation pattern generally accommodates corridor flows between Chestnut Street and Silver Street. The widening of Central Avenue to a four lane section north of Chestnut Street is still required as described in the previous alternative.

In order to accommodate design hour traffic movements circulating through the Downtown area, the following exceptions to a true "one-way" system are needed:

a. Maintain one northbound travel lane along Chestnut Street (in addition to marking two southbound travel lanes).

b. Maintain the present one-way southbound operation of Central Avenue between Third Street and Washington Street. This accommodates the present commercial zone along Central Avenue as well as maintains the Broadway approach to points south along the corridor.

This alternative requires the following major construction items:

a. Widen Silver Street to provide a two-lane east bound movement between Locust Street and Central Avenue. Also increase the corner radius on the southwest corner of the Silver/Central intersection.

b. Realign Walnut Street to connect to Locust Street in the vicinity of Hale Street. This realignment would carry the two-lane southbound movement of corridor traffic. Locust Street between Washington Street and Hale Street would also become one-way southbound.

c. New or upgraded signalization at Silver/Central, Silver/Locust,Washington/Chestnut, Washington/Central, and Central/Chestnut/Sixth. Overall corridor signal coordination is also recommended.

d. Widening of Chestnut Street near Central Avenue and rechannelization of the present Central/Chestnut/Sixth intersection(s).

Figure 5 also illustrates the locations and numbers of designated on-street parking spaces as well as parking restrictions. Approximately 55 existing designated parking spaces are eliminated to accommodate the localized lane widenings. Included in this parking reduction is conversion of angle to parallel parking along the easterly side of Central Avenue between Second and Washington Streets to minimize potential conflicts between parking vehicles and the through traffic lanes.

The estimated cost of implementing his alternative is $0.75 to 1.0 million dollars, exclusive of right-of-way and parking space relocation.

C. New Bypass Roadway

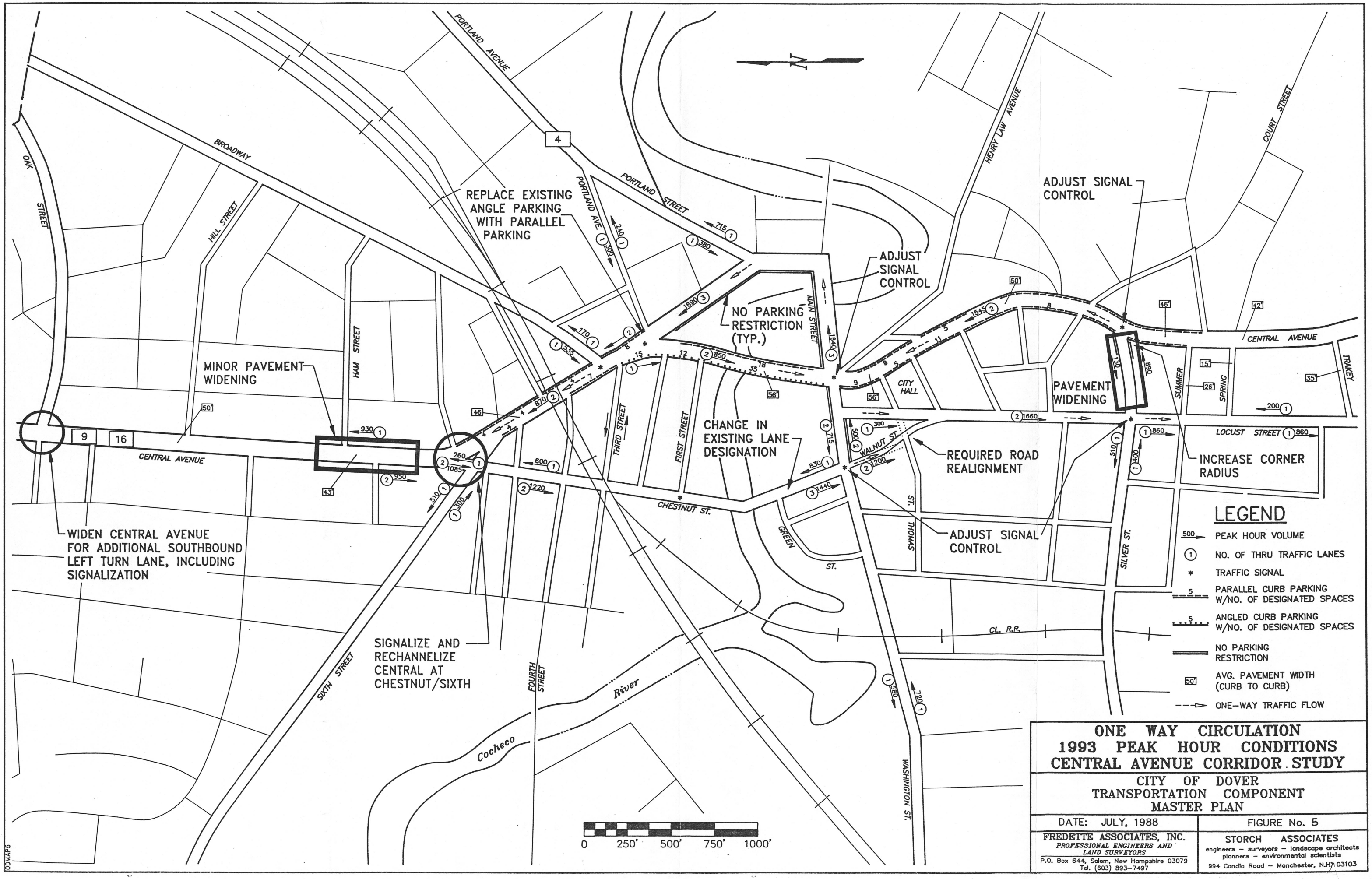
The alignment of this bypass roadway is illustrated in Figure 1 and follows the alignment of the existing C.L. Railroad tracks between the Chestnut/Third intersection and the Central/Locust intersection. A two-lane bypass roadway is envisioned.

Further elaboration of this alternative was discontinued early in this study because of the following major drawbacks.

a. Lack of a cost effective intersection with Silver Street due to the present grade separation at the junction of the two facilities.

b. The location of the southern terminus of the bypass in the vicinity of the Locust/Central intersection which would compound present problems at the intersection (See Technical Memorandum No. 1).

c. High capital improvement cost which would not lessen the need for capital improvements to alleviate present problems along Central Avenue.



LEGEND

- 500 → PEAK HOUR VOLUME
- (1) NO. OF THRU TRAFFIC LANES
- * TRAFFIC SIGNAL
- 5 PARALLEL CURB PARKING W/NO. OF DESIGNATED SPACES
- 5 ANGLED CURB PARKING W/NO. OF DESIGNATED SPACES
- NO PARKING RESTRICTION
- 50' AVG. PAVEMENT WIDTH (CURB TO CURB)
- ---→ ONE-WAY TRAFFIC FLOW

ONE WAY CIRCULATION
1993 PEAK HOUR CONDITIONS
CENTRAL AVENUE CORRIDOR STUDY

CITY OF DOVER
TRANSPORTATION COMPONENT
MASTER PLAN

DATE: JULY, 1988

FIGURE No. 5

FREDETTE ASSOCIATES, INC.
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Tel. (603) 893-7497

STORCH ASSOCIATES
engineers – surveyors – landscape architects
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ODMAP5

V. Comparison of Alternatives

A. Procedure

A further comparison was made among the following three alternatives for the 1993 Central Avenue Corridor: continued use of the Present Roadway Facility, the Widened Central Avenue option and the One Way Circulation pattern. This comparison was developed in terms of the following quantitative and qualitative factors:

- Impact on local street traffic through downtown neighborhoods (i.e. traffic increases on local streets due to circulation of corridor traffic).
- Downtown on-street parking along Central Avenue (measured in terms of number of existing spaces lost).
- Quality of through traffic flow (delay to corridor through travel).
- Quality of local traffic flow (delays to circulating local traffic).
- Key intersection Level of Service (Level of Service described in next section).
- Impacts to public transportation (i.e. delays and bus stop locations).
- Cost of major capital improvements.

Level of Service determinations are described in Section B of this chapter. Section C summarizes and compares the factors developed for each of the three alternatives.

B. Traffic Levels of Service

Level of Service (LOS) is a qualitative measure describing driver satisfaction with a number of factors influencing the degree of traffic congestion. These factors include speed and travel time, traffic interruption, freedom to maneuver, safety, driving comfort and convenience, and delays. There are six levels of service describing traffic flow. The highest is LOS A, describing a free-flow condition. The lowest, LOS F, is described as forced flow, and is characterized by traffic volumes at the roadway capacity and extreme congestion.

LOS C, which is normally utilized for design purposes, describes a stable condition of traffic operation. It has a somewhat restricted movement due to higher traffic volumes, but flow conditions are not objectionable for motorists.

LOS D, which is acceptable for traffic operations in urban environments and during peak hours of traffic flow, reflects a more restricted movement for motorists. Queues and delays may occur during short peaks, but lower demands occur often enough to permit clearance of developing queues, thus preventing excessive backups. LOS E is defined as the actual capacity of the roadway and involves delay to all motorists due to congestion. Levels of Service E and F are generally considered unacceptable.

Level of Service for signalized intersections is defined in terms of average delay per vehicle entering the intersection. Delay is considered a measure of driver discomfort, frustration, fuel consumption and travel time. Table 7 summarizes the criteria for signalized intersection level of service.

Level of Service analyses were performed for the following key intersections: Central/Silver, Central/Washington, and Central/Broadway. These analyses were conducted using the methodology of the 1985 Highway Capacity Manual and the resulting levels of service are summarized in the next section of this chapter. Copies of the capacity calculations are included in Appendix B.

TABLE 7

LEVEL OF SERVICE CRITERIA FOR
SIGNALIZED INTERSECTIONS

LEVEL OF SERVICE	STOPPED DELAY PER VEHICLE (SEC)
A	5.0
B	5.1 to 15.0
C	15.1 to 25.0
D	25.1 to 40.0
E	40.1 to 60.0
F	Greater than 60.0

SOURCE: 1985 Highway Capacity Manual

C. Findings

The comparative factors for each of the three alternatives are summarized on the following tables:

- Table 8, Maintain Present Roadway Facility
- Table 9, Widened Central Avenue
- Table 10, One Way Circulation

TABLE 8

ALTERNATIVE COMPARISON SUMMARY
MAINTAIN PRESENT ROADWAY FACILITY

Change From Present (1988) Conditions

Area of Concern	Positive Change	No Change	Negative Impact	Comments
Local Street Traffic through Downtown Neighborhoods			X	Traffic increases to avoid congestion along Central Ave.
Downtown on-street parking along Central Avenue		X		
Traffic Circulation				
- through trips			X	Increased travel time and delay
- local trips			X	Increased travel time and delay
Key Intersection Level of Service				
- Central/Silver			X	Over capacity (LOS F)
- Central/Washington			X	Over capacity (LOS F)
- Central/Broadway			X	Under capacity *(LOS C-D)
Public Transportation			X	Increased travel time and delay
Major Capital Improvements		X		NA

* Assumes Optimized Signal Timing.

TABLE 9

ALTERNATIVE COMPARISON SUMMARY
WIDENED CENTRAL AVENUE

Area of Concern	Positive Change	No Change	Negative Impact	Comments
Local Street Traffic through Downtown Neighborhoods	X			Traffic attracted to Central Avenue
Downtown on-street parking along Central Avenue			X	Loss of 175 designated spaces (includes 5 spaces along Silver)
Traffic Circulation				
- through trips	X			Less travel time and delay
- local trips	X			Less travel time and delay
Key Intersection Level of Service				
- Central/Silver	X			Under capacity (LOS C)
- Central/Washington	X			Under capacity (LOS C)
- Central/Broadway	X			Under capacity (LOS C)
Public Transportation	X			Less travel time and delay
Major Capital Improvements			X	Estimated Cost $900,000 to $1.2 million for: - Widening Central for a fifth lane and signalize/resignalize at: - Silver - Washington - Chestnut/Sixth - Oak - Widening Silver Street approach to Central Avenue. - Minor roadway/curb widening along Central at Ham. - Corridor signal coordination - Walnut Street realignment: (right-of-way required)

TABLE 10

ALTERNATIVE COMPARISON SUMMARY
ONE WAY CIRCULATION

Area of Concern	Positive Change	No Change	Negative Impact	Comments
Local Street Traffic through Downtown Neighborhoods			X	Locust Street corridor and west (85% increase on Locust Street)
Downtown on-street parking along Central Avenue			X	Loss of 55 designated spaces (includes 20 spaces along Washington and Silver)
Traffic Circulation				
- through trips	X			Less travel time and delay
- local trips			X	Indirect routing due to one-way restrictions
Key Intersection Level of Service				
- Central/Silver	X			Under capacity (LOS C)
- Central/Washington	X			Under capacity (LOS D)
- Central/Broadway	X			Under capacity (LOS C)
Public Transportation	X			Less travel time and delay
Major Capital Improvements			X	Estimated Cost $750,000 to $1 million for: - Walnut Street realignment: (right-of-way required) - Widening Silver from Locust to Central (right-of-way required) - Widen/Signalize Central at Oak - Signalize/channelize Central at Chestnut/Sixth - Minor roadway/curb widening along Central at Ham - Corridor signage and resignalization/coordination implementing one-way

The following major findings can be derived from inspection of the three comparative tables:

1. Without further improvements to the downtown segment of the Central Avenue corridor, traffic flow will continue to degrade through the year 1993 with increasing localized breakdowns in traffic operations.
2. Both the Widened Central Avenue and One Way Circulation alternatives, as proposed, provide acceptable traffic flow operations along the corridor under year 1993 conditions.
3. The capital cost (in 1988 dollars) of implementing either of the two proposed alternatives is comparable: $0.9 million to 1.2 million dollars for the Widened Central Avenue and $0.75 to 1.0 million dollars for the One-Way Circulation alternative.
4. Presently designated on-street parking spaces will be lost under either of the alternatives: 175 spaces lost under the Widened Central Avenue and 55 spaces lost under the One Way Circulation alternative.
5. Increased traffic flow on local neighborhood streets by corridor-related traffic will result under the no-build alternative (trips bypassing the otherwise congested Central Avenue) and the One-Way Circulation alternative (additional circulation on the local street system because of directional flow restrictions imposed by the one-way system).

VI. Recommendations

The following recommendations for the Downtown segment of the Central Avenue corridor are made for the City of Dover Master Plan. These recommendations were presented to, and concurred by, the City of Dover Transportation Committee.

1. Implement the widened Central Avenue alternative depicted in Figure 4. Stage the implementation of widening and improvements with the easiest-to-implement roadway sections done first. This will result in localized benefit of some improvements in the interim period before completion of the entire corridor improvement from the Miracle Mile to Route 108.
2. The incremental removal of on-street parking to accommodate the Central Avenue widening should be coordinated with a phased plan for replacement parking at nearby off-street locations.
3. On initial implementation of the Central Avenue widening between Broadway and Washington Street, retain the present angle parking along Central Avenue. Assess the impact of this parking on the operations and safety of travel along this roadway segment as traffic flows increase. If or when necessary, this parking can be converted to parallel parking.
4. Implement the Walnut Street realignment to Locust Street, and conversion to two-way flow.

CITY OF DOVER
TRANSPORTATION COMPONENT - MASTER PLAN

APPENDIX
TECHNICAL MEMORANDUM NO. 2
CENTRAL AVENUE CORRIDOR STUDY

Prepared for:

THE CITY OF DOVER, N.H.
DEPARTMENT OF PLANNING
AND COMMUNITY DEVELOPMENT

JULY, 1988

by:

STORCH ASSOCIATES

994 CANDIA ROAD
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TECHNICAL MEMORANDUM NO. 2
CENTRAL AVENUE CORRIDOR STUDY

APPENDIX A

TRAFFIC COUNT DATA SUMMARIES

SRPC TRAFFIC COUNT PROGRAM

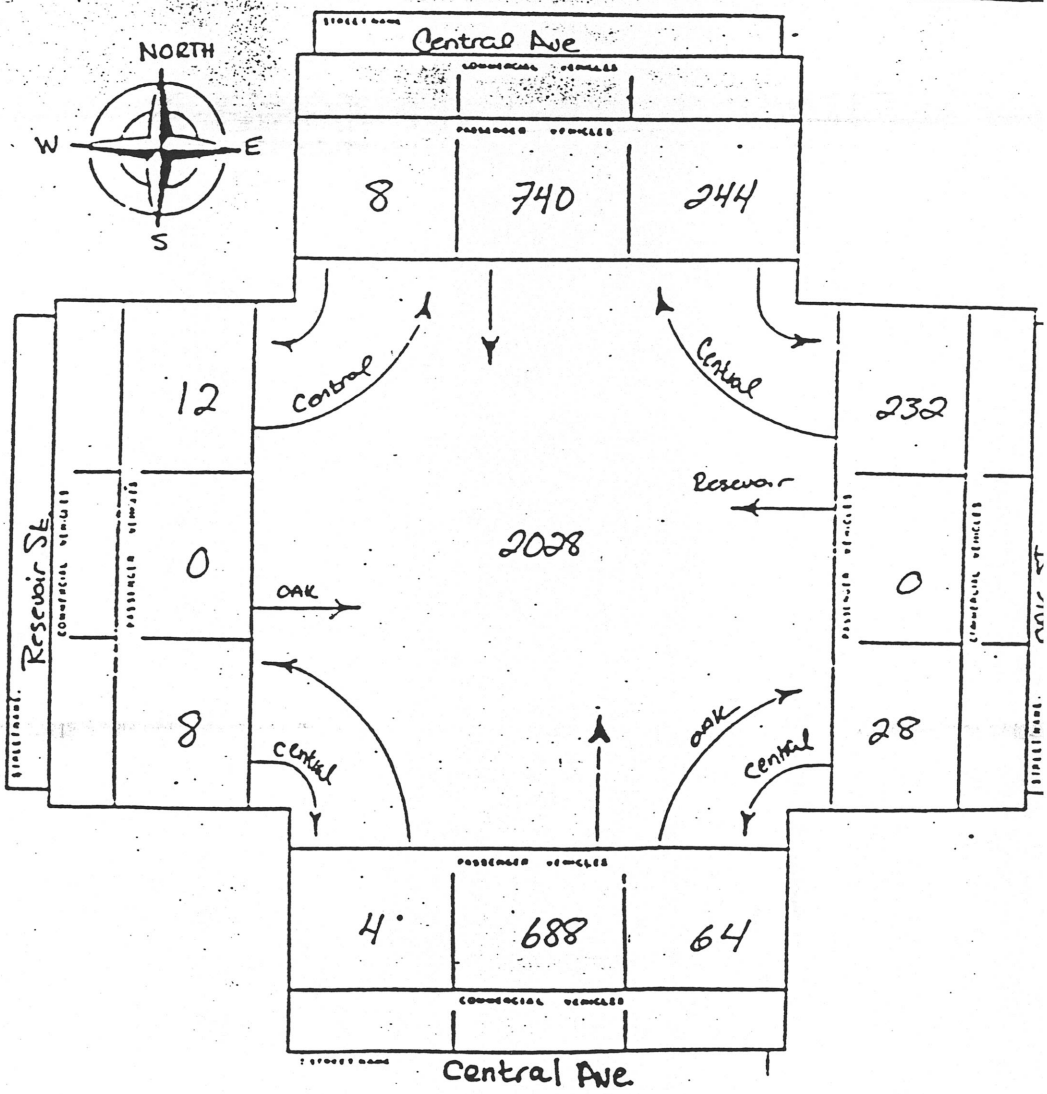
TOWN: DOVER

LOCATION: Central + OAK

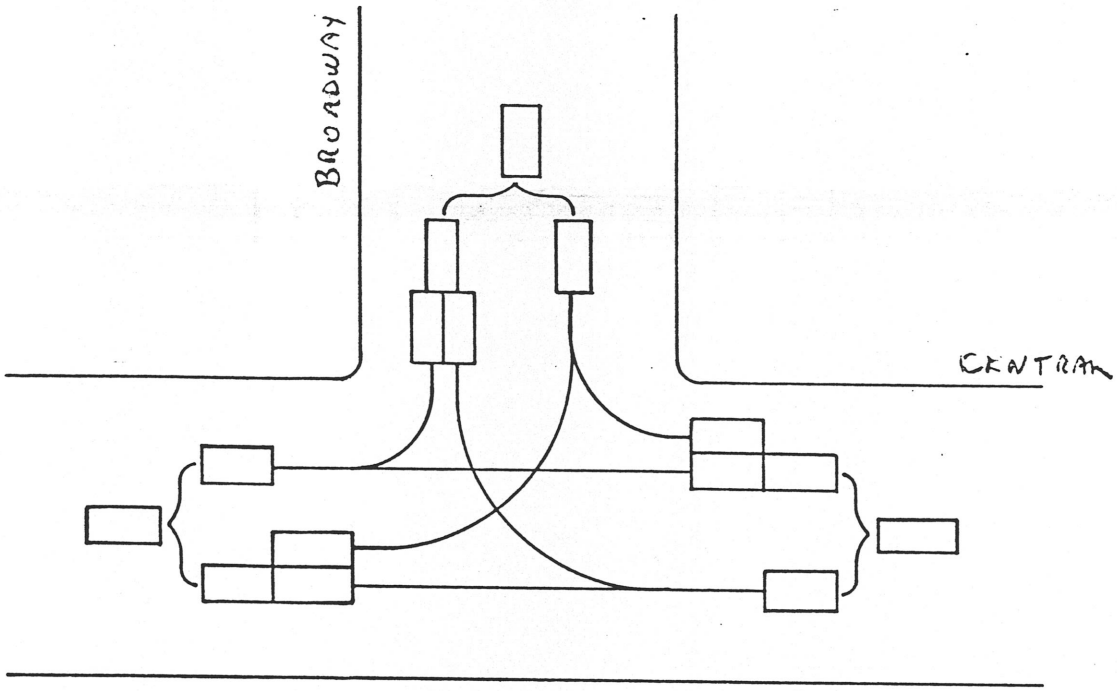
DATA SOURCE: DIRECT

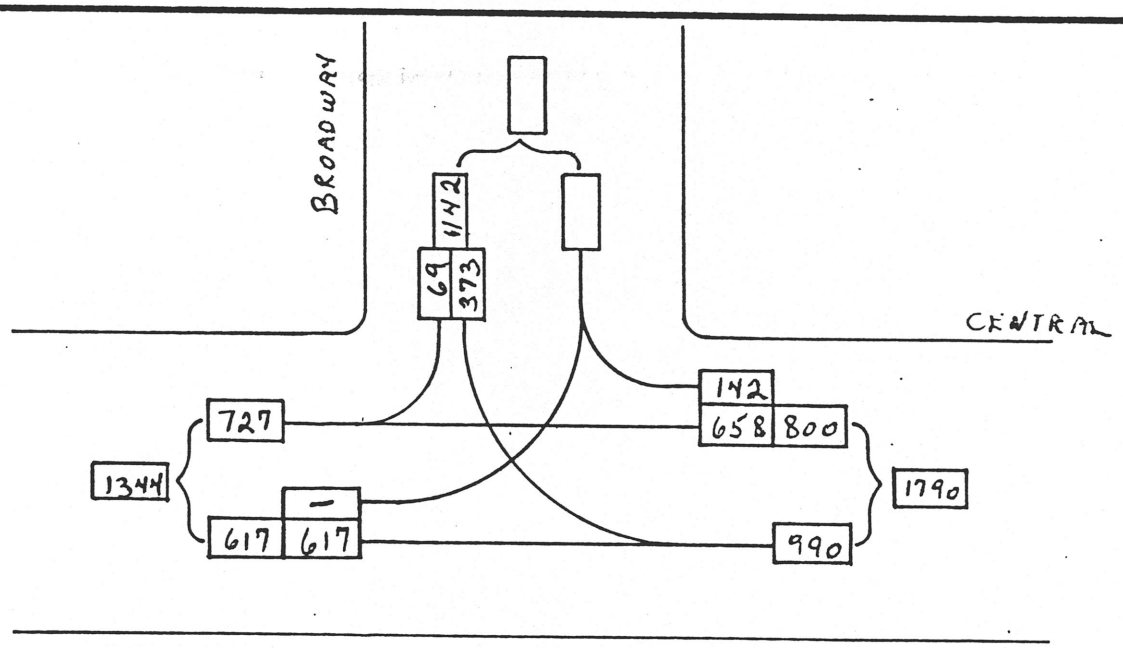
HOUR: 3:30 - 4:30

DATE: 23 JUNE 1986



[redacted] PEAK HOUR





4:30 - 5:30 PM
Thurs. 4/7/88

P.M. PEAK HOUR

TRAFFIC IMPACT STUDY

PROJECTED PEAK HOUR
TRAFFIC VOLUMES

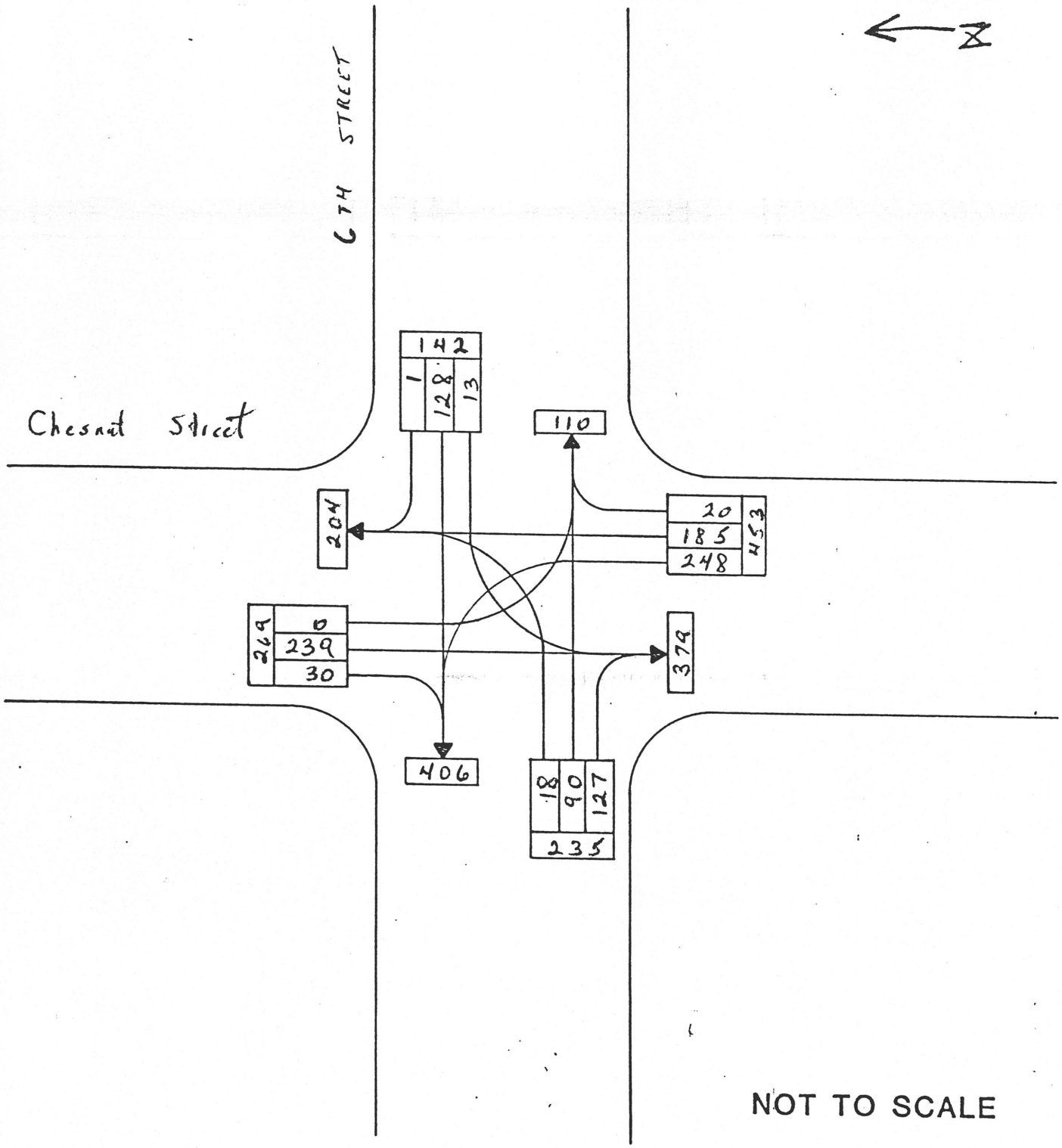
FIGURE NO.

TRAFFIC MOVEMENT SUMMARY TABLE

TOWN.....DOVER LOCATION...CENTRAL/BROADWAY DATE:.....4/7/88
DAY OF WEEK:THURSDAY WEATHER... ROAD SURFACE....
COMPLETED BY:MDP & JW

TIME PERIODS	A NORTH-BOUND ON CENTRAL AVE.			B SOUTH-BOUND ON CENTRAL AVE.			C WEST-BOUND ON BROADWAY			TOTAL 15 MIN. TALLY	HOURLY TOTALS
	S	R	TOT.	L	S	TOT.	L	R	TOT.		
3:30-3:45	193	24	217	0	134	134	85	13	98	449	
3:45-4:00	195	37	232	1	137	138	83	14	97	467	
4:00-4:15	164	31	195	0	148	148	110	17	127	470	
4:15-4:30	148	36	184	0	126	126	72	15	87	397	1783
4:30-4:45	156	27	183	0	162	162	102	13	115	460	1794
4:45-5:00	183	32	215	0	152	152	87	20	107	474	1801
5:00-5:15	151	44	195	0	142	142	96	15	111	448	1779
5:15-5:30	168	39	207	0	161	161	88	21	109	477	1859
TOTAL	1358	270	1628	1	1162	1163	723	128	851	3642	
TOTAL OF L,S,R			1628			1163			851		

FILE NAME:DOVER-CB



1987 COUNT

4:30 - 5:30 PM

Wed. 3/2/88

TRAFFIC IMPACT STUDY

EXISTING PEAK HOUR TRAFFIC VOLUMES

FIGURE NO.

TRAFFIC MOVEMENT SUMMARY TABLE

TOWN.....DOVER N.H. LOCATION.....WASHINGTON/CHESTNUT DATE:...3/3/88
DAY OF WEEK:THURSDAY WEATHER..... ROAD SURFACE.... COMPLETED BY.....MEGAN/STEV

TIME PERIODS	A WEST-BOUND ON WASHINGTON				B SOUTH-BOUND ON CHESTNUT				C EAST-BOUND ON WASHINGTON				D NORTH-BOUND ON CHESTNUT				15 MIN.	HOURL TOTAL
	L	S	R	TOT.	L	S	R	TOT.	L	S	R	TOT.	L	S	R	TOT.	TOTAL	TALLY
3:30-3:45	5	44	76	125	34	28	53	115	51	78	9	138				0	378	
3:45-4:00	2	44	67	113	42	23	54	119	56	81	8	145				0	377	
4:00-4:15	2	73	81	156	56	33	54	143	49	69	12	130				0	429	
4:15-4:30	5	53	88	146	52	31	49	132	48	52	8	108				0	386	1570
4:30-4:45	3	55	74	132	51	32	63	146	42	58	15	115				0	393	1585
4:45-5:00	2	43	87	132	43	34	68	145	60	70	6	136				0	413	1621
5:00-5:15	1	52	91	144	49	26	73	148	45	50	8	103				0	395	1587
5:15-5:30	1	63	59	123	55	33	57	145	46	47	7	100				0	368	1569
TOTAL	21	427	623	1071	382	240	471	1093	397	505	73	975	0	0	0	0	3139	
TOTAL OF L,S,R				1071				1093				975				0	3139	

FILE NAME:DOVERWCP

TRAFFIC MOVEMENT SUMMARY TABLE

TOWN.....DOVER N.H. LOCATION....CHESTNUT/SIXTH DATE:...3/2/88
DAY OF WEEK:WEDNESDAY WEATHER..... ROAD SURFACE.... COMPLETED BY.....MEGAN/STEVE

TIME PERIODS	A EAST-BOUND ON SIXTH				B NORTH-BOUND ON CHESTNUT				C WEST-BOUND ON SIXTH				D SOUTH-BOUND ON CHESTNUT				15 MIN.	HOURLY TOTAL
	L	S	R	TOT.	L	S	R	TOT.	L	S	R	TOT.	L	S	R	TOT.	TOTAL	TALLY
3:30-3:45	7	13	42	62	45	54	3	102	3	55	0	58	1	52	9	62	284	
3:45-4:00	0	18	40	58	54	53	6	113	2	40	0	42	0	62	6	68	281	
4:00-4:15	4	17	41	62	59	42	5	106	2	27	0	29	0	53	7	60	257	
4:15-4:30	5	20	24	49	47	45	3	95	1	31	1	33	1	59	4	64	241	1063
4:30-4:45	4	22	33	59	53	43	7	103	5	35	1	41	0	55	6	61	264	1043
4:45-5:00	3	25	29	57	62	40	2	104	1	31	0	32	0	61	7	68	261	1023
5:00-5:15	7	21	38	66	75	56	9	140	4	33	0	37	0	59	13	72	315	1081
5:15-5:30	4	22	27	53	58	46	2	106	3	29	0	32	0	64	4	68	259	1099
TOTAL	34	158	274	466	453	379	37	869	21	281	2	304	2	465	56	523	2162	
TOTAL OF L,S,R				466				869				304				523	2162	

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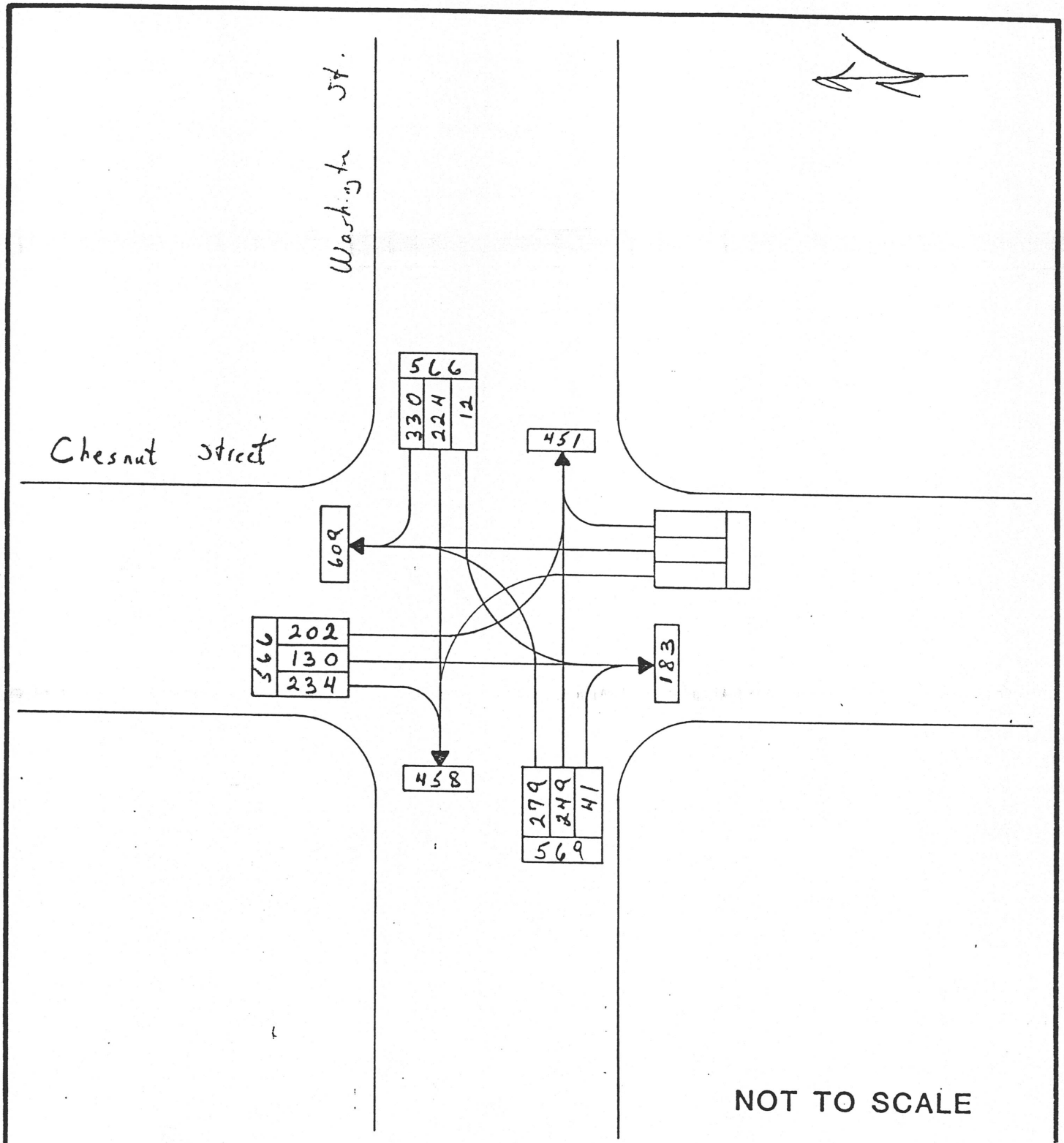


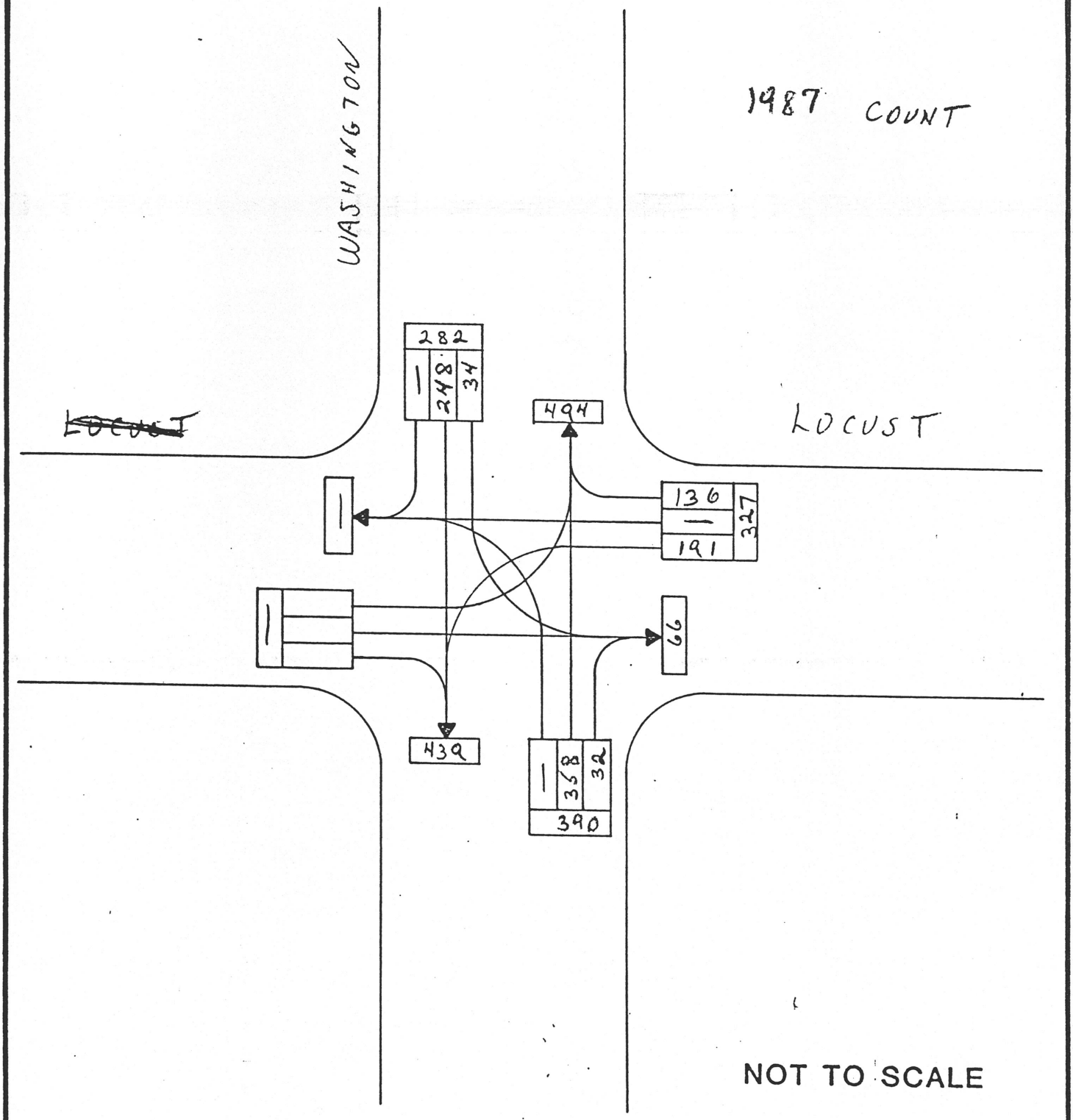
1987 COUNT

4:00 - 5:00 PM
Thurs. 3/3/88

TRAFFIC IMPACT STUDY

EXISTING PEAK HOUR
TRAFFIC VOLUMES

FIGURE NO.



TRAFFIC IMPACT STUDY

EXISTING PEAK HOUR TRAFFIC VOLUMES

FIGURE NO.

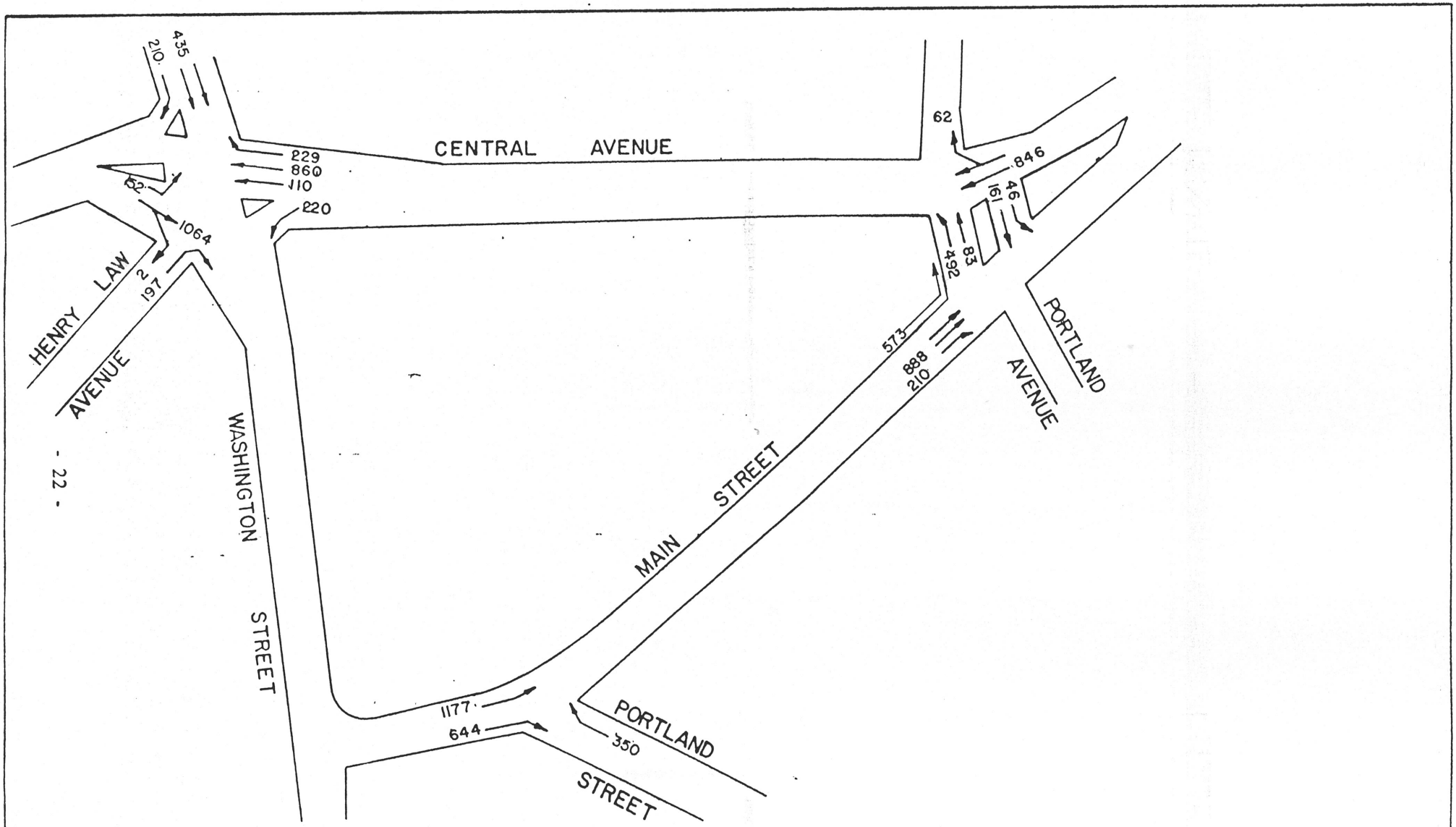
4:00 - 5:00 PM
Wed. 2/24/88

TRAFFIC MOVEMENT SUMMARY TABLE

TOWN.....DOVER N.H. LOCATION....WASHINGTON/LOCUST DATE:....2/24/88
DAY OF WEEK:WEDNESDAY WEATHER... ROAD SURFACE....
COMPLETED BY.....MEGAN

TIME PERIODS	A EAST-BOUND ON WASHINGTON			B NORTH-BOUND ON LOCUST			C WEST-BOUND ON WASHINGTON			TOTAL 15 MIN. TALLY	HOURLY TOTALS
	S	R	TOT.	L	R	TOT.	L	S	TOT.		
3:30-3:45	81	7	88	56	33	89	12	49	61	238	
3:45-4:00	85	2	87	56	29	85	6	53	59	231	
4:00-4:15	95	10	105	49	32	81	12	68	80	266	
4:15-4:30	81	10	91	43	27	70	10	63	73	234	969
4:30-4:45	89	3	92	38	35	73	5	53	58	223	954
4:45-5:00	93	9	102	61	42	103	7	64	71	276	999
5:00-5:15	86	9	95	47	37	84	2	51	53	232	965
5:15-5:30	83	10	93	45	29	74	8	55	63	230	961
TOTAL	693	60	753	395	264	659	62	456	518	1930	
TOTAL OF L,S,R			753			659			518		

FILE NAME:DOVERWLP



DOVER, MILLS DOVER, NH TRAFFIC IMPACT STUDY	PHASE II (1990) PM PEAK HOUR VOLUMES WITH DEVELOPMENT	FIGURE 13 NOT TO SCALE	Costello Lomasney & de Napoli Inc Consulting Engineers Manchester N H

Source: "Traffic Impact Study for the Dover MIlls Residential Development, Dover, N.H.," by Costello, Lamasney & deNapoil, Inc., November 1987

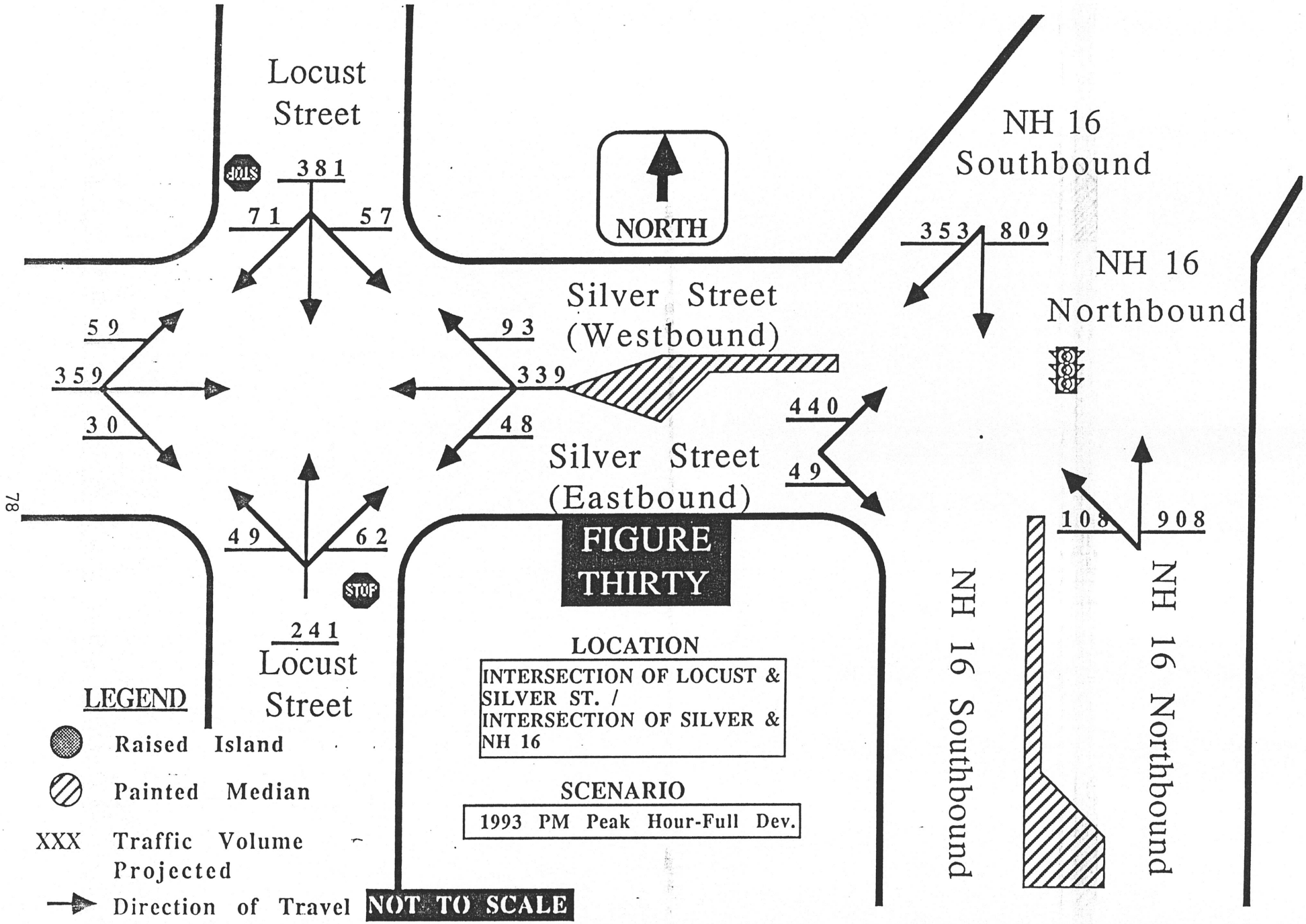


FIGURE THIRTY

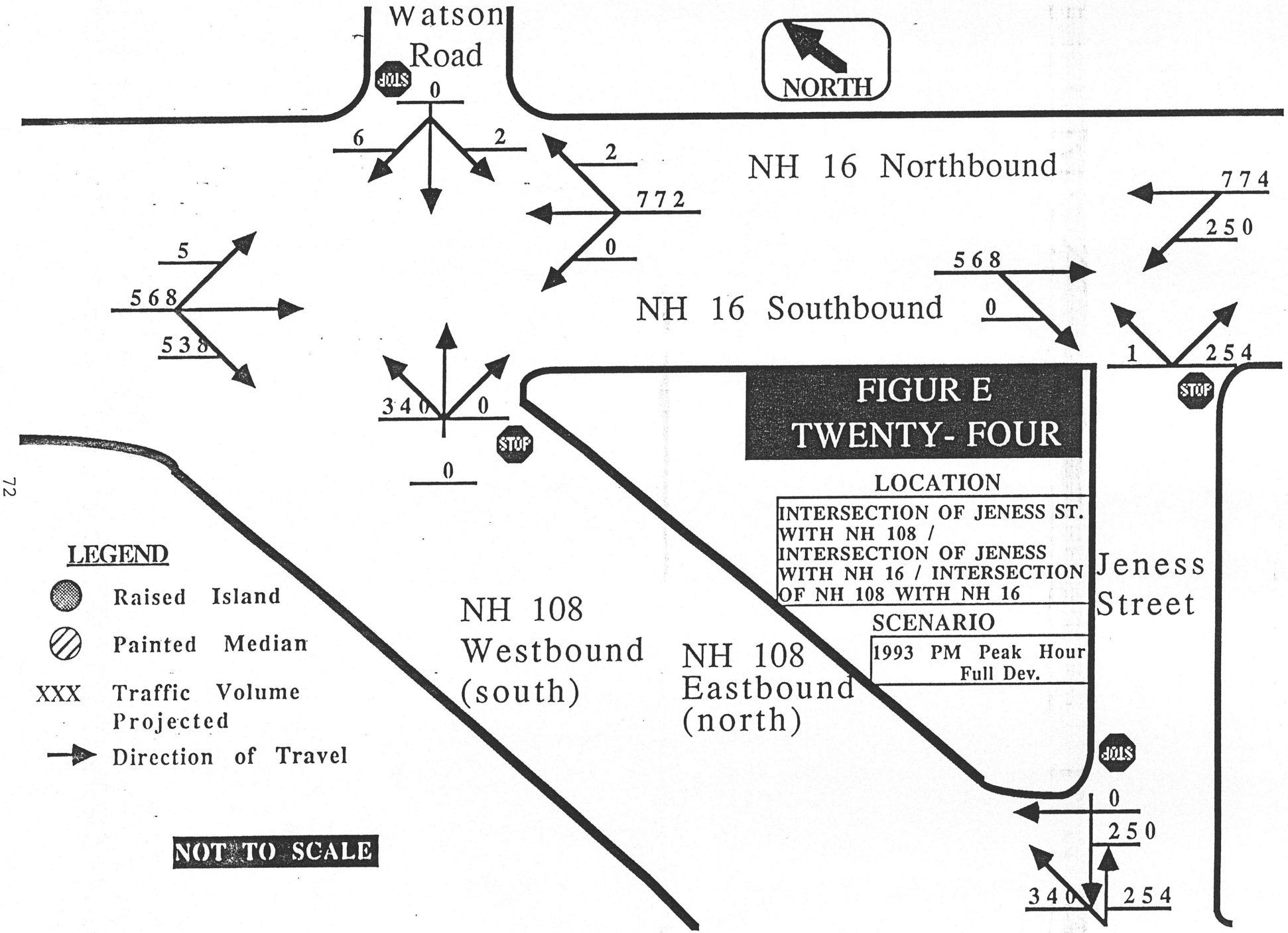
LOCATION

INTERSECTION OF LOCUST & SILVER ST. / INTERSECTION OF SILVER & NH 16

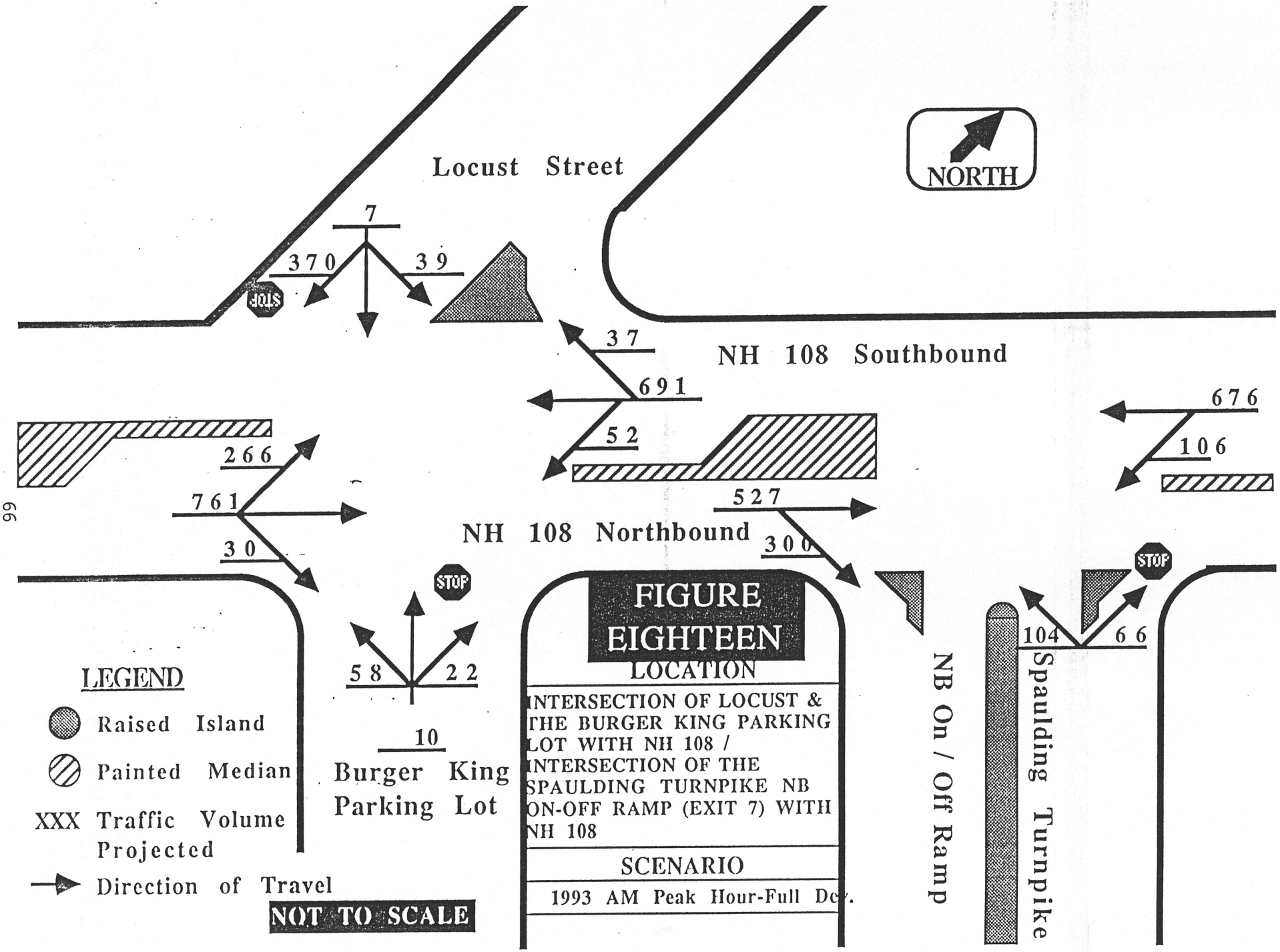
SCENARIO

1993 PM Peak Hour-Full Dev.

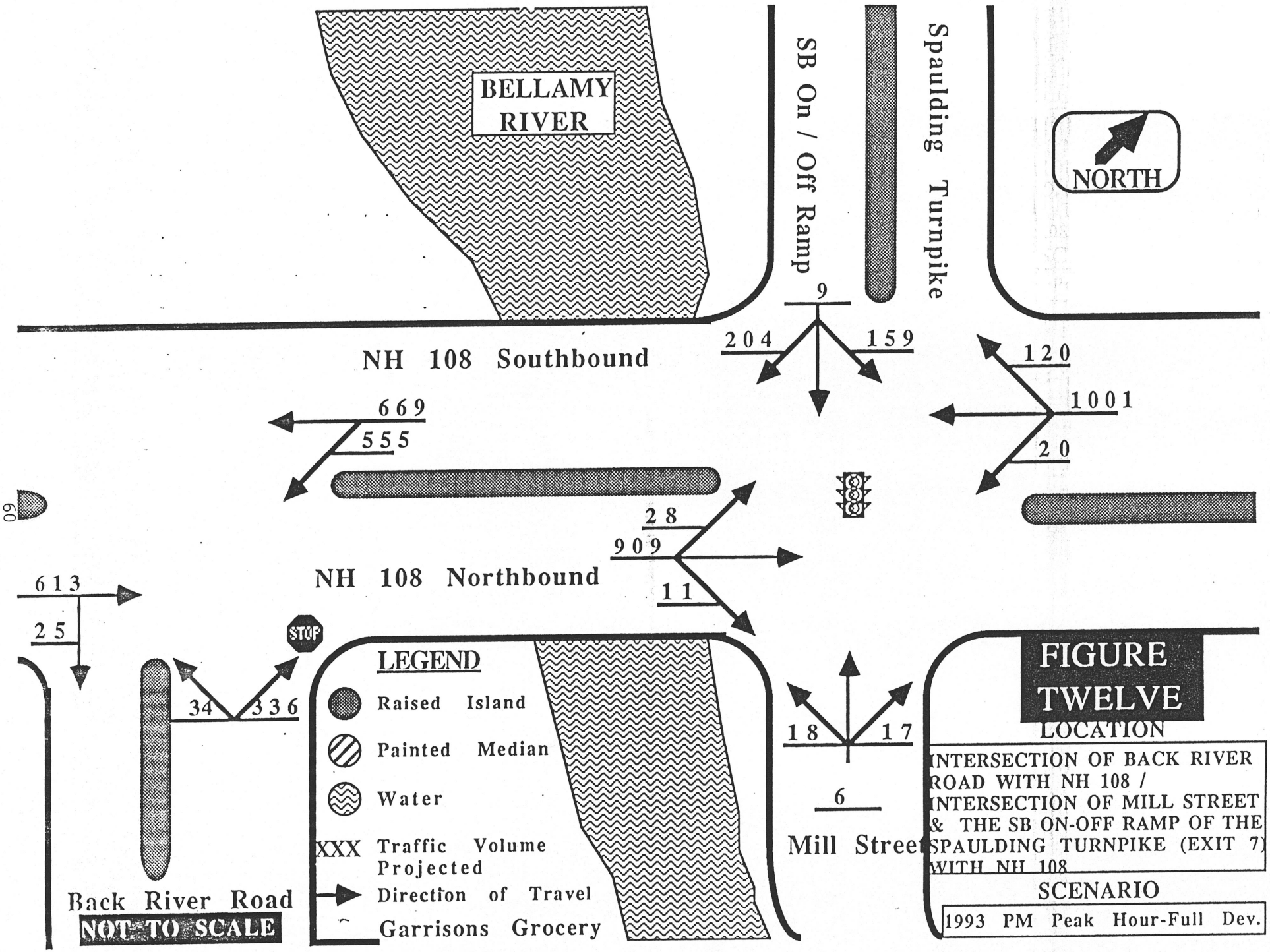
Source: "An Analysis of the N.H. Route 108 Corridor in Dover, N.H.," by Strafford Regional Planning Commission, December 1987.



Source: "An Analysis of the N.H. Route 108 corridor in Dover, N.H.," by Strafford Regional Planning Commission, December 1987.



Source: "An alysis of the N.H. Route 108 Corridor in Dover, N.H.," by Strafford Regional Planning Commission, December 1987.



Source: "An Analysis of the N.H. Route 108 Corridor in Dover, N.H.," bY Strafford Regional Planning Commission, December 1987

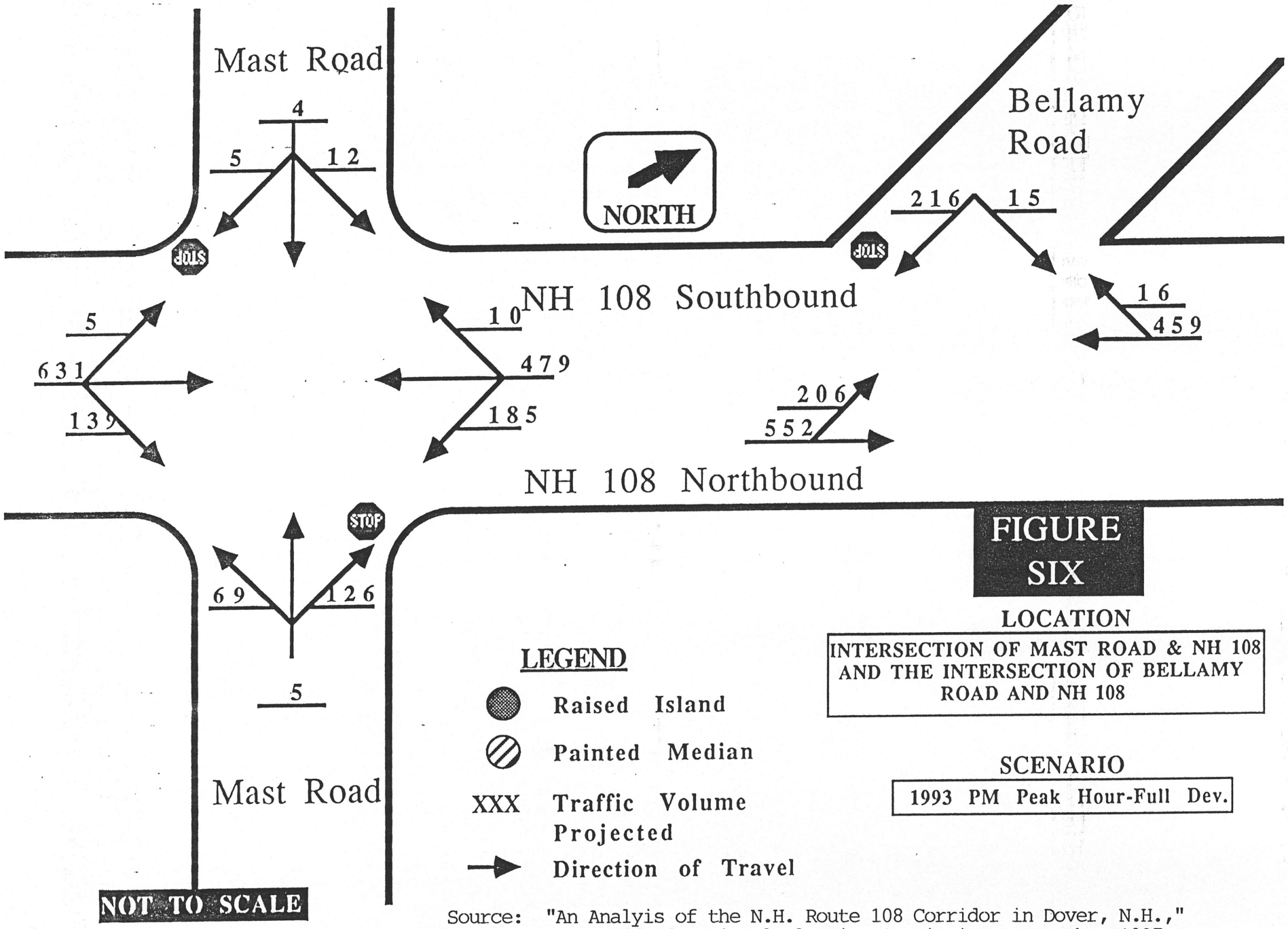


FIGURE SIX

LOCATION

INTERSECTION OF MAST ROAD & NH 108 AND THE INTERSECTION OF BELLAMY ROAD AND NH 108

SCENARIO

1993 PM Peak Hour-Full Dev.

LEGEND

- Raised Island
- Painted Median
- XXX Traffic Volume Projected
- Direction of Travel

Source: "An Analyis of the N.H. Route 108 Corridor in Dover, N.H.," BY Strafford Regional Planning Commission,, December 1987

TECHNICAL MEMORANDUM NO. 2
CENTRAL AVENUE CORRIDOR STUDY

APPENDIX B

TRAFFIC CAPACITY ANALYSES

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....WASHINGTON STREET

NAME OF THE NORTH/SOUTH STREET.....CENTRAL AVE

AREA TYPE.....OTHER

PEDESTRIAN WALKING SPEED..... 0 (feet/sec)

NAME OF THE ANALYST.....DRI

DATE OF THE ANALYSIS.....4/26/88

TIME PERIOD ANALYZED.....WKDY PM PK HR

OTHER INFORMATION:
PROJECTED 1993 CONDITION - NO CHANGE

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	0	0	143	276
THRU	398	0	974	771
RIGHT	198	0	0	205
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

INTERSECTION GEOMETRY

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 3 WESTBOUND = 0 NORTHBOUND = 2 SOUTHBOUND = 4

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	T	12.0	LT	10.0	L	10.0	L	10.0
2	T	12.0		12.0	T	11.0	L	10.0
3	R	12.0		12.0		11.0	T	12.0
4		12.0		12.0		12.0	R	12.0
5		12.0		12.0		12.0		12.0
6		12.0		12.0		12.0		12.0

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	(Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	3.00	Y	10	0	0.90
WESTBOUND	0.00	3.00	Y	10	0	0.90
NORTHBOUND	0.00	3.00	Y	20	0	0.90
SOUTHBOUND	0.00	3.00	Y	20	0	0.90

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	17.0	3
WESTBOUND	50	N	17.0	3
NORTHBOUND	50	N	9.6	3
SOUTHBOUND	50	N	9.6	3

min T = minimum green time for pedestrians

PRETIMED LOST TIME/PHASE = 3.0 CYCLE LENGTH = 70.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X			
THRU	X			
RIGHT	X			
PEDS				
WESTBOUND				
LEFT	X			
THRU	X			
RIGHT	X			
PEDS				
NORTHBOUND RT				
SOUTHBOUND RT				
GREEN	10.0	0.0	0.0	0.0
YELLOW + ALL RED	5.0	0.0	0.0	0.0

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT	X			
THRU		X		
RIGHT		X		
PEDS				
SOUTHBOUND				
LEFT	X			
THRU		X		
RIGHT		X		
PEDS				
EASTBOUND RT				
WESTBOUND RT				
GREEN	5.0	40.0	0.0	0.0
YELLOW + ALL RED	5.0	5.0	0.0	0.0

VOLUME ADJUSTMENT WORKSHEET

		MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB												
	LT	0	0.90						1.000			
	TH	398	0.90	442	T	442	2	1.050	1.000	464	0.00	0.00
	RT	198	0.90	220	R	220	1	1.000	1.000	220	0.00	1.00
WB												
	LT	0	0.90						1.000			
	TH	0	0.90						1.000			
	RT	0	0.90						1.000			
NB												
	LT	143	0.90	159	L	159	1	1.000	1.000	159	1.00	0.00
	TH	974	0.90	1082	T	1082	1	1.000	1.000	1082	0.00	0.00
	RT	0	0.90						1.000			
SB												
	LT	276	0.90	307	L	307	2	1.050	1.000	322	1.00	0.00
	TH	771	0.90	857	T	857	1	1.000	1.000	857	0.00	0.00
	RT	205	0.90	228	R	228	1	1.000	1.000	228	0.00	1.00

* Denotes a Defacto Left Turn Lane Group

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
T	0.736	0.243	70.0	18.6	792	2.5	1.00	21.1	C	21.1	C
WB											
NB											
L	0.550	0.171	70.0	20.2	289	1.7	1.00	21.9	C	23.1	C
T	0.945	0.457	70.0	13.8	1443	9.5	1.00	23.3	C		
SB											
L	1.039	0.171	70.0	22.2	289	52.7	1.00	74.9	F	39.3	D
LT	0.180	0.457	70.0	8.5	801	0.0	1.00	8.6	B		
R	0.907	0.457	70.0	13.4	551	13.4	1.00	26.8	D		

Intersection Delay = 27.7 (sec/veh) Intersection LOS = D

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....SILVER STREET

NAME OF THE NORTH/SOUTH STREET.....CENTRAL AVE

AREA TYPE.....OTHER

PEDESTRIAN WALKING SPEED.....: 0 (feet/sec)

NAME OF THE ANALYST.....DRI

DATE OF THE ANALYSIS.....4/26/88

TIME PERIOD ANALYZED.....WKDY PM PK HR

OTHER INFORMATION:
PROJECTED 1993 CONDITION - NO IMPROVEMENTS

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	440	0	108	0
THRU	0	0	908	809
RIGHT	49	0	0	353
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 2 WESTBOUND = 0 NORTHBOUND = 2 SOUTHBOUND = 2

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	L	12.0	LT	10.0	L	11.0	T	12.0
2	R	10.0		12.0	TR	12.0	R	11.0
3		12.0		12.0		12.0		12.0
4		12.0		12.0		12.0		12.0
5		12.0		12.0		12.0		12.0
6		12.0		12.0		12.0		12.0

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	(Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	3.00	Y	10	0	0.90
WESTBOUND	0.00	3.00	Y	10	0	0.90
NORTHBOUND	0.00	3.00	Y	10	0	0.90
SOUTHBOUND	0.00	3.00	Y	10	0	0.90

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/h

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYP
EASTBOUND	0	N	17.0	3
WESTBOUND	0	N	17.0	3
NORTHBOUND	0	N	9.6	3
SOUTHBOUND	0	N	9.6	3

min T = minimum green time for pedestrians

PRETIMED LOST TIME/PHASE = 3.0 CYCLE LENGTH = 75.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X			
THRU	X			
RIGHT	X			
PEDS				
WESTBOUND				
LEFT	X			
THRU	X			
RIGHT	X			
PEDS				
NORTHBOUND RT				
SOUTHBOUND RT				
GREEN	25.0	0.0	0.0	0.0
YELLOW + ALL RED	5.0	0.0	0.0	0.0

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT	X			
THRU	X			
RIGHT	X			
PEDS				
SOUTHBOUND				
LEFT	X			
THRU	X			
RIGHT	X			
PEDS				
EASTBOUND RT				
WESTBOUND RT				
GREEN	40.0	0.0	0.0	0.0
YELLOW + ALL RED	5.0	0.0	0.0	0.0

VOLUME ADJUSTMENT WORKSHEET

	MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PRO RT
EB											
LT	440	0.90	489	L	489	1	1.000	1.000	489	1.00	0.0
TH	0	0.90						1.000			
RT	49	0.90	54	R	54	1	1.000	1.000	54	0.00	1.0
WB											
LT	0	0.90						1.000			
TH	0	0.90						1.000			
RT	0	0.90						1.000			
NB											
LT	108	0.90	120	L	120	1	1.000	1.000	120	1.00	0.0
TH	908	0.90	1009	TR	1009	1	1.000	1.000	1009	0.00	0.0
RT	0	0.90						1.000			
SB											
LT	0	0.90						1.000			
TH	809	0.90	899	T	899	1	1.000	1.000	899	0.00	0.0
RT	353	0.90	392	R	392	1	1.000	1.000	392	0.00	1.0

* Denotes a Defacto Left Turn Lane Group

SATURATION FLOW ADJUSTMENT WORKSHEET

Page

	IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ SAT FLO
EB											
L	1800	1	1.000	0.985	1.000	1.000	1.000	1.000	1.000	1.000	177
R	1800	1	0.930	0.985	1.000	0.850	1.000	1.000	0.850	1.000	119
WB											
NB											
L	1800	1	0.970	0.985	1.000	1.000	1.000	1.000	1.000	0.095	16
TR	1800	1	1.000	0.985	1.000	0.850	1.000	1.000	1.000	1.000	150
SB											
T	1800	1	1.000	0.985	1.000	1.000	1.000	1.000	1.000	1.000	177
R	1800	1	0.970	0.985	1.000	0.850	1.000	1.000	0.850	1.000	124

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
L	489	1773	0.276	0.360	638	0.766	*
R	54	1191	0.046	0.360	429	0.127	
WB							
NB							
L	120	164	0.733	0.560	92	1.308	*
TR	1009	1507	0.669	0.560	844	1.195	
SB							
T	899	1773	0.507	0.560	993	0.905	
R	392	1243	0.316	0.560	696	0.564	

Cycle Length, C = 75.0 sec. Sum (v/s) critical = 1.008
Lost Time Per Cycle, L = 6.0 sec. X critical = 1.096

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
L	0.766	0.720	75.0	16.1	638	3.9	1.00	20.0	C	*	*
R	0.127	0.360	75.0	12.2	429	0.0	1.00	12.2	B		
WB											
NB											
L	1.308	1.120	75.0	*	92	*	1.00	*	*	*	*
TR	1.195	0.560	75.0	16.7	844	109.3	1.00	126.0	F		
SB											
T	0.905	0.560	75.0	11.2	993	8.3	1.00	19.5	C	16.3	C
R	0.564	0.560	75.0	8.1	696	0.8	1.00	8.9	B		

Intersection Delay = * (sec/veh) Intersection LOS = *

* Delay and LOS not meaningful when any v/c is greater than 1.2

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....SILVER STREET

NAME OF THE NORTH/SOUTH STREET.....CENTRAL AVE

AREA TYPE.....OTHER

PEDESTRIAN WALKING SPEED.....: 0 (feet/sec)

NAME OF THE ANALYST.....DRI

DATE OF THE ANALYSIS.....4/26/88

TIME PERIOD ANALYZED.....WKDY PM PK HR

OTHER INFORMATION:
PROJECTED 1993 CONDITION - WIDEN CENTRAL AVENUE

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	440	0	108	0
THRU	0	0	908	809
RIGHT	49	0	0	353
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 2 WESTBOUND = 0 NORTHBOUND = 3 SOUTHBOUND = 2

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	L	12.0	LT	10.0	L	10.0	T	12.0
2	LR	10.0		12.0	T	11.0	TR	11.0
3		12.0		12.0	T	11.0		12.0
4		12.0		12.0		12.0		12.0
5		12.0		12.0		12.0		12.0
6		12.0		12.0		12.0		12.0

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	(Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	3.00	Y	10	0	0.90
WESTBOUND	0.00	3.00	Y	10	0	0.90
NORTHBOUND	0.00	3.00	Y	10	0	0.90
SOUTHBOUND	0.00	3.00	Y	10	0	0.90

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	0	N	17.0	3
WESTBOUND	0	N	17.0	3
NORTHBOUND	0	N	9.6	3
SOUTHBOUND	0	N	9.6	3

min T = minimum green time for pedestrians

SATURATION FLOW ADJUSTMENT WORKSHEET

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
	L	1800	1	1.000	0.985	1.000	1.000	1.000	1.000	1.000	1.000	1773
	LR	1800	1	0.930	0.985	1.000	0.850	1.000	1.000	0.921	1.000	1291
WB												
NB												
	L	1800	1	0.930	0.985	1.000	1.000	1.000	1.000	1.000	0.950	1566
	T	1800	2	0.970	0.985	1.000	0.920	1.000	1.000	1.000	1.000	3164
SB												
	TR	1800	2	0.985	0.985	1.000	0.920	1.000	1.000	0.954	1.000	3067

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
L	440	1773	0.248	0.293	520	0.846	*
LR	103	1291	0.080	0.293	379	0.273	
WB							
NB							
L	120	1566	0.077	0.093	146	0.821	*
T	1059	3164	0.335	0.627	1983	0.534	
SB							
TR	1356	3067	0.442	0.493	1513	0.896	*

Cycle Length, C = 75.0 sec. Sum (v/s) critical = 0.767
Lost Time Per Cycle, L = 9.0 sec. X critical = 0.871

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
L	0.846	0.587	75.0	18.9	520	8.5	1.00	27.5	D	25.2	D
LR	0.273	0.293	75.0	15.5	379	0.1	1.00	15.6	C		
WB											
NB											
L	0.821	0.093	75.0	25.4	146	19.8	1.00	45.2	E	10.2	B
T	0.534	0.627	75.0	6.0	1983	0.2	1.00	6.2	B		
SB											
TR	0.896	0.493	75.0	13.1	1513	5.3	1.00	18.5	C	18.5	C

Intersection Delay = 16.5 (sec/veh) Intersection LOS = C

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....SILVER STREET

NAME OF THE NORTH/SOUTH STREET.....CENTRAL AVE

AREA TYPE.....OTHER

PEDESTRIAN WALKING SPEED..... 0 (feet/sec)

NAME OF THE ANALYST.....DRI

DATE OF THE ANALYSIS.....4/26/88

TIME PERIOD ANALYZED.....WKDY PM PK HR

OTHER INFORMATION:
PROJECTED 1993 CONDITION - ONE WAY CIRCULATION

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	440	0	108	0
THRU	0	0	908	0
RIGHT	450	0	0	353
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 2 WESTBOUND = 0 NORTHBOUND = 3 SOUTHBOUND = 0

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	L	12.0	LT	10.0	L	10.0	T	12.0
2	R	12.0		12.0	T	11.0	TR	11.0
3		12.0		12.0	T	11.0		12.0
4		12.0		12.0		12.0		12.0
5		12.0		12.0		12.0		12.0
6		12.0		12.0		12.0		12.0

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	(Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	3.00	Y	10	0	0.90
WESTBOUND	0.00	3.00	Y	10	0	0.90
NORTHBOUND	0.00	3.00	Y	10	0	0.90
SOUTHBOUND	0.00	3.00	Y	10	0	0.90

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	0	N	17.0	3
WESTBOUND	0	N	17.0	3
NORTHBOUND	0	N	9.6	3
SOUTHBOUND	0	N	9.6	3

min T = minimum green time for pedestrians

PRETIMED LOST TIME/PHASE = 3.0 CYCLE LENGTH = 70.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X			
THRU	X			
RIGHT	X			
PEDS				
WESTBOUND				
LEFT	X			
THRU	X			
RIGHT	X			
PEDS				
NORTHBOUND RT				
SOUTHBOUND RT				
GREEN	25.0	0.0	0.0	0.0
YELLOW + ALL RED	5.0	0.0	0.0	0.0

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT	X			
THRU	X			
RIGHT	X			
PEDS				
SOUTHBOUND				
LEFT				
THRU				
RIGHT				
PEDS				
EASTBOUND RT				
WESTBOUND RT				
GREEN	35.0	0.0	0.0	0.0
YELLOW + ALL RED	5.0	0.0	0.0	0.0

	MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB											
LT	440	0.90	489	L	489	1	1.000	1.000	489	1.00	0.00
TH	0	0.90						1.000			
RT	450	0.90	500	R	500	1	1.000	1.000	500	0.00	1.00
WB											
LT	0	0.90						1.000			
TH	0	0.90						1.000			
RT	0	0.90						1.000			
NB											
LT	108	0.90	120	L	120	1	1.000	1.000	120	1.00	0.00
TH	908	0.90	1009	T	1009	2	1.050	1.000	1059	0.00	0.00
RT	0	0.90						1.000			
SB											
LT	0	0.90						1.000			
TH	0	0.90						1.000			
RT	353	0.90						1.000			

* Denotes a Defacto Left Turn Lane Group

SATURATION FLOW ADJUSTMENT WORKSHEET

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
	L	1800	1	1.000	0.985	1.000	1.000	1.000	1.000	1.000	1.000	1773
	R	1800	1	1.000	0.985	1.000	0.850	1.000	1.000	0.850	1.000	1281
WB												
NB												
	L	1800	1	0.930	0.985	1.000	1.000	1.000	1.000	1.000	0.850	1402
	T	1800	2	0.970	0.985	1.000	0.920	1.000	1.000	1.000	1.000	3164
SB												

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
L	489	1773	0.276	0.386	684	0.715	
R	500	1281	0.390	0.386	494	1.012	*
WB							
NB							
L	120	1402	0.086	0.529	741	0.162	
T	1059	3164	0.335	0.529	1673	0.633	*
SB							

Cycle Length, C = 70.0 sec. Sum (v/s) critical = 0.725
Lost Time Per Cycle, L = 6.0 sec. X critical = 0.793

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
L	0.715	0.771	70.0	13.9	684	2.5	1.00	16.3	C	33.7	D
R	1.012	0.386	70.0	16.5	494	34.3	1.00	50.7	E		
WB											
NB											
L	0.162	0.529	70.0	6.5	741	0.0	1.00	6.5	B	9.2	B
T	0.633	0.529	70.0	8.9	1673	0.6	1.00	9.5	B		
SB											

Intersection Delay = 20.4 (sec/veh) Intersection LOS = C

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....BROADWAY

NAME OF THE NORTH/SOUTH STREET.....CENTRAL AVE

AREA TYPE.....OTHER

PEDESTRIAN WALKING SPEED..... 0 (feet/sec)

NAME OF THE ANALYST.....DRI

DATE OF THE ANALYSIS.....4/26/88

TIME PERIOD ANALYZED.....WKDY PM PK HR

OTHER INFORMATION:
PROJECTED 1993 CONDITION - NO IMPROVEMENTS

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	0	494	0	0
THRU	0	0	783	734
RIGHT	0	82	169	0
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

INTERSECTION GEOMETRY

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 0 WESTBOUND = 1 NORTHBOUND = 2 SOUTHBOUND = 2

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	LR	11.0	LT	10.0	T	10.0	T	10.0
2		12.0		12.0	TR	10.0	TR	10.0
3		12.0		12.0		12.0		12.0
4		12.0		12.0		12.0		12.0
5		12.0		12.0		12.0		12.0
6		12.0		12.0		12.0		12.0

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	(Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	3.00	N	0	0	0.90
WESTBOUND	0.00	3.00	N	0	0	0.90
NORTHBOUND	0.00	3.00	Y	20	0	0.90
SOUTHBOUND	0.00	3.00	Y	20	0	0.90

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/h

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYP
EASTBOUND	0	N	17.0	3
WESTBOUND	0	N	17.0	3
NORTHBOUND	0	N	9.6	3
SOUTHBOUND	0	N	9.6	3

min T = minimum green time for pedestrians

PRETIMED LOST TIME/PHASE = 3.0 CYCLE LENGTH = 65.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X			
THRU	X			
RIGHT	X			
PEDS				
WESTBOUND				
LEFT	X			
THRU	X			
RIGHT	X			
PEDS				
NORTHBOUND RT				
SOUTHBOUND RT				
GREEN	25.0	0.0	0.0	0.0
YELLOW + ALL RED	5.0	0.0	0.0	0.0

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT	X			
THRU	X			
RIGHT	X			
PEDS				
SOUTHBOUND				
LEFT	X			
THRU	X			
RIGHT	X			
PEDS				
EASTBOUND RT				
WESTBOUND RT				
GREEN	30.0	0.0	0.0	0.0
YELLOW + ALL RED	5.0	0.0	0.0	0.0

	MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PRO RT
EB											
LT	0	0.90						1.000			
TH	0	0.90						1.000			
RT	0	0.90						1.000			
WB											
LT	494	0.90						1.000			
TH	0	0.90	0	LT	549	1	1.000	1.000	549	1.00	0.0
RT	82	0.90						1.000			
NB											
LT	0	0.90						1.000			
TH	783	0.90	870	TR	1058	2	1.050	1.000	1111	0.00	0.1
RT	169	0.90						1.000			
SB											
LT	0	0.90						1.000			
TH	734	0.90	816	TR	816	2	1.050	1.000	856	0.00	0.0
RT	0	0.90						1.000			

* Denotes a Defacto Left Turn Lane Group

SATURATION FLOW ADJUSTMENT WORKSHEET

	IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT FLOW
EB											
WB											
LT	1800	1	0.930	0.985	1.000	1.000	1.000	1.000	1.000	0.765	126
NB											
TR	1800	2	0.930	0.985	1.000	0.890	1.000	1.000	0.973	1.000	285
SB											
TR	1800	2	0.930	0.985	1.000	0.890	1.000	1.000	1.000	1.000	293

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
WB							
LT	549	1261	0.435	0.415	524	1.048	*
NB							
TR	1111	2857	0.389	0.492	1406	0.790	*
SB							
TR	856	2935	0.292	0.492	1445	0.593	

Cycle Length, C = 65.0 sec.
Lost Time Per Cycle, L = 6.0 sec.

Sum (v/s) critical = 0.824
X critical = 0.908

LEVEL-OF-SERVICE WORKSHEET

Page-

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
WB											
LT	1.048	0.415	65.0	14.9	524	44.2	1.00	59.1	E	59.1	E
NB											
TR	0.790	0.492	65.0	10.4	1406	2.2	1.00	12.6	B	12.6	B
SB											
TR	0.593	0.492	65.0	9.0	1445	0.5	1.00	9.5	B	9.5	B

Intersection Delay = 21.7 (sec/veh) Intersection LOS = C

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....BROADWAY

NAME OF THE NORTH/SOUTH STREET.....CENTRAL AVE

AREA TYPE.....OTHER

PEDESTRIAN WALKING SPEED..... 0 (feet/sec)

NAME OF THE ANALYST.....DRI

DATE OF THE ANALYSIS.....4/26/88

TIME PERIOD ANALYZED.....WKDY PM PK HR

OTHER INFORMATION:
PROJECTED 1993 CONDITION - CENTRAL AVE WIDENING

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	0	494	0	0
THRU	0	0	783	734
RIGHT	0	82	169	0
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

PRETIMED LOST TIME/PHASE = 3.0 CYCLE LENGTH = 65.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X			
THRU	X			
RIGHT	X			
PEDS				
WESTBOUND				
LEFT	X			
THRU	X			
RIGHT	X			
PEDS				
NORTHBOUND RT				
SOUTHBOUND RT				
GREEN	25.0	0.0	0.0	0.0
YELLOW + ALL RED	5.0	0.0	0.0	0.0

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT	X			
THRU	X			
RIGHT	X			
PEDS				
SOUTHBOUND				
LEFT	X			
THRU	X			
RIGHT	X			
PEDS				
EASTBOUND RT				
WESTBOUND RT				
GREEN	30.0	0.0	0.0	0.0
YELLOW + ALL RED	5.0	0.0	0.0	0.0

VOLUME ADJUSTMENT WORKSHEET

	MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PRO RT
EB											
LT	0	0.90						1.000			
TH	0	0.90						1.000			
RT	0	0.90						1.000			
WB											
LT	494	0.90						1.000			
TH	0	0.90	0	LT	549	1	1.000	1.000	549	1.00	0.0
RT	82	0.90						1.000			
NB											
LT	0	0.90						1.000			
TH	783	0.90	870	TR	1058	2	1.050	1.000	1111	0.00	0.1
RT	169	0.90						1.000			
SB											
LT	0	0.90						1.000			
TH	734	0.90	816	TR	816	2	1.050	1.000	856	0.00	0.0
RT	0	0.90						1.000			

* Denotes a Defacto Left Turn Lane Group

SATURATION FLOW ADJUSTMENT WORKSHEET

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ SAT FLO
EB												
WB												
	LT	1800	1	0.930	0.985	1.000	1.000	1.000	1.000	1.000	0.765	126
NB												
	TR	1800	2	1.000	0.985	1.000	1.000	1.000	1.000	0.973	1.000	345
SB												
	TR	1800	2	1.000	0.985	1.000	1.000	1.000	1.000	1.000	1.000	354

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO
EB						
WB						
LT	549	1261	0.435	0.415	524	1.048 *
NB						
TR	1111	3452	0.322	0.492	1699	0.654 *
SB						
TR	856	3546	0.241	0.492	1746	0.491

Cycle Length, C = 65.0 sec. Sum (v/s) critical = 0.757
Lost Time Per Cycle, L = 6.0 sec. X critical = 0.834

LEVEL-OF-SERVICE WORKSHEET

:	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
WB											
LT	1.048	0.415	65.0	14.9	524	44.2	1.00	59.1	E	59.1	E
NB											
TR	0.654	0.492	65.0	9.4	1699	0.6	1.00	10.0	B	10.0	B
SB											
TR	0.491	0.492	65.0	8.4	1746	0.2	1.00	8.6	B	8.6	B

Intersection Delay = 20.2 (sec/veh) Intersection LOS = C

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....BROADWAY

NAME OF THE NORTH/SOUTH STREET.....CENTRAL AVE

AREA TYPE.....OTHER

PEDESTRIAN WALKING SPEED..... 0 (feet/sec)

NAME OF THE ANALYST.....DRI

DATE OF THE ANALYSIS.....4/26/88

TIME PERIOD ANALYZED.....WKDY PM PK HR

OTHER INFORMATION:
PROJECTED 1993 CONDITION - ONE WAY CIRCULATION

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	0	494	0	0
THRU	0	0	783	0
RIGHT	0	82	169	0
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

INTERSECTION GEOMETRY

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 0 , WESTBOUND = 1 NORTHBOUND = 2 SOUTHBOUND = 2

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	LR	11.0	LT	10.0	T	12.0	T	12.0
2		12.0		12.0	TR	12.0	TR	12.0
3		12.0		12.0		12.0		12.0
4		12.0		12.0		12.0		12.0
5		12.0		12.0		12.0		12.0
6		12.0		12.0		12.0		12.0

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	(Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	3.00	N	0	0	0.90
WESTBOUND	0.00	3.00	N	0	0	0.90
NORTHBOUND	0.00	3.00	N	0	0	0.90
SOUTHBOUND	0.00	3.00	N	0	0	0.90

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/h

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYP
EASTBOUND	0	N	17.0	3
WESTBOUND	0	N	17.0	3
NORTHBOUND	0	N	9.6	3
SOUTHBOUND	0	N	9.6	3

min T = minimum green time for pedestrians

PRETIMED LOST TIME/PHASE = 3.0 CYCLE LENGTH = 60.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X			
THRU	X			
RIGHT	X			
PEDS				
WESTBOUND				
LEFT	X			
THRU	X			
RIGHT	X			
PEDS				
NORTHBOUND RT				
SOUTHBOUND RT				
GREEN	25.0	0.0	0.0	0.0
YELLOW + ALL RED	5.0	0.0	0.0	0.0

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT	X			
THRU	X			
RIGHT	X			
PEDS				
SOUTHBOUND				
LEFT	X			
THRU	X			
RIGHT	X			
PEDS				
EASTBOUND RT				
WESTBOUND RT				
GREEN	25.0	0.0	0.0	0.0
YELLOW + ALL RED	5.0	0.0	0.0	0.0

VOLUME ADJUSTMENT WORKSHEET

	MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PRO RT
EB											
LT	0	0.90						1.000			
TH	0	0.90						1.000			
RT	0	0.90						1.000			
WB											
LT	494	0.90						1.000			
TH	0	0.90	0	LT	549	1	1.000	1.000	549	1.00	0.0
RT	82	0.90						1.000			
NB											
LT	0	0.90						1.000			
TH	783	0.90	870	TR	1058	2	1.050	1.000	1111	0.00	0.1
RT	169	0.90						1.000			
SB											
LT	0	0.90						1.000			
TH	0	0.90						1.000			
RT	0	0.90						1.000			

* Denotes a Defacto Left Turn Lane Group

SATURATION FLOW ADJUSTMENT WORKSHEET

Page

		IDEAL SAT. FLOW,	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ SAT FLO
EB												
WB												
	LT	1800	1	0.930	0.985	1.000	1.000	1.000	1.000	1.000	0.765	126
NB												
	TR	1800	2	1.000	0.985	1.000	1.000	1.000	1.000	0.973	1.000	345
SB												
	TR	1800	2	1.000	0.985	1.000	1.000	1.000	1.000	1.000	1.000	354

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	V/C RATIO
EB						
WB						
LT	549	1261	0.435	0.450	568	0.967 *
NB						
TR	1111	3452	0.322	0.450	1553	0.715 *
SB						
TR	0	3546	0.000	0.450	1596	0.000

Cycle Length, C = 60.0 sec.
Lost Time Per Cycle, L = 6.0 sec.

Sum (v/s) critical = 0.757
X critical = 0.841

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
WB											
LT	0.967	0.450	60.0	12.2	568	21.9	1.00	34.1	D	34.1	D
NB											
TR	0.715	0.450	60.0	10.2	1553	1.1	1.00	11.3	B	11.3	B
SB											
TR	0.000	0.450	60.0	8.4	1596	0.2	1.00	8.6	B	8.6	B

Intersection Delay = 18.8 (sec/veh) Intersection LOS = C

SATURATION FLOW ADJUSTMENT WORKSHEET

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
	T	1800	2	1.000	0.985	1.000	1.000	1.000	1.000	1.000	1.000	3546
	R	1800	1	1.000	0.985	1.000	0.850	1.000	1.000	0.850	1.000	1281
WB												
NB												
	L	1800	1	0.930	0.985	1.000	1.000	1.000	1.000	1.000	0.950	1566
	T	1800	1	0.970	0.985	1.000	0.800	1.000	1.000	1.000	1.000	1376
SB												
	L	1800	2	0.930	0.985	1.000	1.000	1.000	1.000	1.000	0.920	3034
	T	1800	1	1.000	0.985	1.000	1.000	1.000	1.000	1.000	1.000	1773
	R	1800	1	1.000	0.985	1.000	0.800	1.000	1.000	0.850	1.000	1206

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
T	464	3546	0.131	0.171	608	0.764	
R	220	1281	0.172	0.171	220	1.002	*
WB							
NB							
L	159	1566	0.101	0.100	157	1.014	
T	1082	1376	0.787	0.600	826	1.311	*
SB							
L	322	3034	0.106	0.100	303	1.061	*
T	857	1773	0.483	0.600	1064	0.805	
R	228	1206	0.189	0.600	723	0.315	

Cycle Length, C = 70.0 sec. Sum (v/s) critical = 1.064
Lost Time Per Cycle, L = 9.0 sec. X critical = 1.222

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
T	0.764	0.171	70.0	21.0	608	4.0	1.00	25.0	C	39.2	D
R	1.002	0.171	70.0	22.0	220	47.2	1.00	69.3	F		
WB											
NB											
L	1.014	0.100	70.0	24.0	157	59.9	1.00	83.9	F	*	*
T	1.311	0.600	70.0	*	826	*	1.00	*	*		
SB											
L	1.061	0.100	70.0	24.1	303	59.6	1.00	83.7	F	27.0	D
T	0.805	0.600	70.0	8.2	1064	3.2	1.00	11.5	B		
R	0.315	0.600	70.0	5.2	723	0.1	1.00	5.3	B		

Intersection Delay = * (sec/veh) Intersection LOS = *

* Delay and LOS not meaningful when any v/c is greater than 1.2

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....WASHINGTON STREET

NAME OF THE NORTH/SOUTH STREET.....CENTRAL AVE

AREA TYPE.....OTHER

PEDESTRIAN WALKING SPEED..... 0 (feet/sec)

NAME OF THE ANALYST.....DRI

DATE OF THE ANALYSIS.....4/26/88

TIME PERIOD ANALYZED.....WKDY PM PK HR

OTHER INFORMATION:
PROJECTED 1993 CONDITION - CENTRAL AVENUE WIDENING

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	0	0	143	276
THRU	398	0	974	771
RIGHT	198	0	0	205
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 3 WESTBOUND = 0 NORTHBOUND = 3 SOUTHBOUND = 4

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	T	12.0	LT	10.0	L	10.0	L	10.0
2	T	12.0		12.0	T	11.0	L	10.0
3	R	12.0		12.0	T	11.0	T	12.0
4		12.0		12.0		12.0	TR	12.0
5		12.0		12.0		12.0		12.0
6		12.0		12.0		12.0		12.0

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	(Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	3.00	Y	10	0	0.90
WESTBOUND	0.00	3.00	Y	10	0	0.90
NORTHBOUND	0.00	3.00	Y	20	0	0.90
SOUTHBOUND	0.00	3.00	Y	20	0	0.90

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	17.0	3
WESTBOUND	50	N	17.0	3
NORTHBOUND	50	N	9.6	3
SOUTHBOUND	50	N	9.6	3

min T = minimum green time for pedestrians

PRETIMED LOST TIME/PHASE = 3.0 CYCLE LENGTH = 70.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X			
THRU	X			
RIGHT	X			
PEDS				
WESTBOUND				
LEFT	X			
THRU	X			
RIGHT	X			
PEDS				
NORTHBOUND RT				
SOUTHBOUND RT				
GREEN	12.0	0.0	0.0	0.0
YELLOW + ALL RED	5.0	0.0	0.0	0.0

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT	X			
THRU		X		
RIGHT		X		
PEDS				
SOUTHBOUND				
LEFT	X			
THRU		X		
RIGHT		X		
PEDS				
EASTBOUND RT				
WESTBOUND RT				
GREEN	8.0	35.0	0.0	0.0
YELLOW + ALL RED	5.0	5.0	0.0	0.0

	MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB											
LT	0	0.90						1.000			
TH	398	0.90	442	T	442	2	1.050	1.000	464	0.00	0.00
RT	198	0.90	220	R	220	1	1.000	1.000	220	0.00	1.00
WB											
LT	0	0.90						1.000			
TH	0	0.90						1.000			
RT	0	0.90						1.000			
NB											
LT	143	0.90	159	L	159	1	1.000	1.000	159	1.00	0.00
TH	974	0.90	1082	T	1082	2	1.050	1.000	1136	0.00	0.00
RT	0	0.90						1.000			
SB											
LT	276	0.90	307	L	307	2	1.050	1.000	322	1.00	0.00
TH	771	0.90	857	TR	1084	2	1.050	1.000	1139	0.00	0.21
RT	205	0.90						1.000			

* Denotes a Defacto Left Turn Lane Group

SATURATION FLOW ADJUSTMENT WORKSHEET

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
	T	1800	2	1.000	0.985	1.000	1.000	1.000	1.000	1.000	1.000	3546
	R	1800	1	1.000	0.985	1.000	0.850	1.000	1.000	0.850	1.000	1281
WB												
NB												
	L	1800	1	0.930	0.985	1.000	1.000	1.000	1.000	1.000	0.950	1566
	T	1800	2	0.970	0.985	1.000	0.890	1.000	1.000	1.000	1.000	3061
SB												
	L	1800	2	0.930	0.985	1.000	1.000	1.000	1.000	1.000	0.920	3034
	TR	1800	2	1.000	0.985	1.000	0.890	1.000	1.000	0.968	1.000	3057

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
T	464	3546	0.131	0.200	709	0.655	
R	220	1281	0.172	0.200	256	0.859	*
WB							
NB							
L	159	1566	0.101	0.143	224	0.710	
T	1136	3061	0.371	0.529	1618	0.702	
SB							
L	322	3034	0.106	0.143	433	0.743	*
TR	1139	3057	0.373	0.529	1616	0.705	*

Cycle Length, C = 70.0 sec. Sum (v/s) critical = 0.650
Lost Time Per Cycle, L = 9.0 sec. X critical = 0.746

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
T	0.655	0.200	70.0	19.6	709	1.5	1.00	21.1	C	26.3	D
R	0.859	0.200	70.0	20.6	256	16.6	1.00	37.1	D		
WB											
NB											
L	0.710	0.143	70.0	21.7	224	6.7	1.00	28.5	D	12.6	B
T	0.702	0.529	70.0	9.4	1618	1.0	1.00	10.4	B		
SB											
L	0.743	0.143	70.0	21.9	433	4.7	1.00	26.5	D	14.0	B
TR	0.705	0.529	70.0	9.4	1616	1.0	1.00	10.4	B		

Intersection Delay = 15.9 (sec/veh) Intersection LOS = C

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....WASHINGTON STREET

NAME OF THE NORTH/SOUTH STREET.....CENTRAL AVE

AREA TYPE.....OTHER

PEDESTRIAN WALKING SPEED..... 0 (feet/sec)

NAME OF THE ANALYST.....DRI

DATE OF THE ANALYSIS.....4/26/88

TIME PERIOD ANALYZED.....WKDY PM PK HR

OTHER INFORMATION:
PROJECTED 1993 CONDITION - ONE WAY CIRCULATION

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	0	0	143	300
THRU	500	0	1169	100
RIGHT	0	0	0	450
RTOR	0	0	0	0

(RTOR volume must be less than or equal to RIGHT turn volumes.)

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 2 WESTBOUND = 0 NORTHBOUND = 3 SOUTHBOUND = 3

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	T	12.0	LT	10.0	L	12.0	L	12.0
2	T	12.0		12.0	T	12.0	LT	12.0
3		12.0		12.0	T	12.0	R	12.0
4		12.0		12.0		12.0		12.0
5		12.0		12.0		12.0		12.0
6		12.0		12.0		12.0		12.0

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	(Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	3.00	Y	10	0	0.90
WESTBOUND	0.00	3.00	Y	10	0	0.90
NORTHBOUND	0.00	3.00	Y	20	0	0.90
SOUTHBOUND	0.00	3.00	Y	20	0	0.90

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	50	N	17.0	3
WESTBOUND	50	N	17.0	3
NORTHBOUND	50	N	9.6	3
SOUTHBOUND	50	N	9.6	3

min T = minimum green time for pedestrians

PRETIMED LOST TIME/PHASE = 3.0 CYCLE LENGTH = 70.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X			
THRU	X			
RIGHT	X			
PEDS				
WESTBOUND				
LEFT	X			
THRU	X			
RIGHT	X			
PEDS				
NORTHBOUND RT				
SOUTHBOUND RT				
GREEN	15.0	0.0	0.0	0.0
YELLOW + ALL RED	5.0	0.0	0.0	0.0

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT	X			
THRU		X		
RIGHT		X		
PEDS				
SOUTHBOUND				
LEFT	X			
THRU		X		
RIGHT		X		
PEDS				
EASTBOUND RT				
WESTBOUND RT				
GREEN	10.0	30.0	0.0	0.0
YELLOW + ALL RED	5.0	5.0	0.0	0.0

	MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB											
LT	0	0.90						1.000			
TH	500	0.90	556	T	556	2	1.050	1.000	583	0.00	0.00
RT	0	0.90						1.000			
WB											
LT	0	0.90						1.000			
TH	0	0.90						1.000			
RT	0	0.90						1.000			
NB											
LT	143	0.90	159	L	159	1	1.000	1.000	159	1.00	0.00
TH	1169	0.90	1299	T	1299	2	1.050	1.000	1364	0.00	0.00
RT	0	0.90						1.000			
SB											
LT	300	0.90	333	L	300	1	1.000	1.000	300	1.00	0.00
TH	100	0.90	111	LT	144	1	1.000	1.000	144	0.23	0.00
RT	450	0.90	500	R	500	1	1.000	1.000	500	0.00	1.00

* Denotes a Defacto Left Turn Lane Group

SATURATION FLOW ADJUSTMENT WORKSHEET

		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB												
	T	1800	2	1.000	0.985	1.000	0.920	1.000	1.000	1.000	1.000	3262
WB												
NB												
	L	1800	1	1.000	0.985	1.000	1.000	1.000	1.000	1.000	0.950	1684
	T	1800	2	1.000	0.985	1.000	0.890	1.000	1.000	1.000	1.000	3156
SB												
	L	1800	1	1.000	0.985	1.000	1.000	1.000	1.000	1.000	0.950	1684
	LT	1800	1	1.000	0.985	1.000	1.000	1.000	1.000	1.000	0.989	1753
	R	1800	1	1.000	0.985	1.000	0.800	1.000	1.000	0.850	1.000	1206

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
T	583	3262	0.179	0.243	792	0.736	*
WB							
NB							
L	159	1684	0.094	0.171	289	0.550	
T	1364	3156	0.432	0.457	1443	0.945	*
SB							
L	300	1684	0.178	0.171	289	1.039	*
LT	144	1753	0.082	0.457	801	0.180	
R	500	1206	0.415	0.457	551	0.907	

Cycle Length, C = 70.0 sec. Sum (v/s) critical = 0.789
Lost Time Per Cycle, L = 9.0 sec. X critical = 0.905