### 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 031Q3 1-603-623-5544

in association with:

FREDETTE ASSOCIATES INC. PROFESSIONAL ENGINEERS AND LAND SURVEYORS

P.O. Box 644, Salem, New Hampshire 03079 Tel. (603) 893-7497

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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 <u>Technical Memorandum No. 2 - Central Avenue Corridor Study</u> 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. <u>Central Avenue Widening</u> to provide at least two northbound and two southbound travel lanes along the corridor.
- 2. <u>One Way Circulation Pattern</u> 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. <u>New Bypass Roadway</u> 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

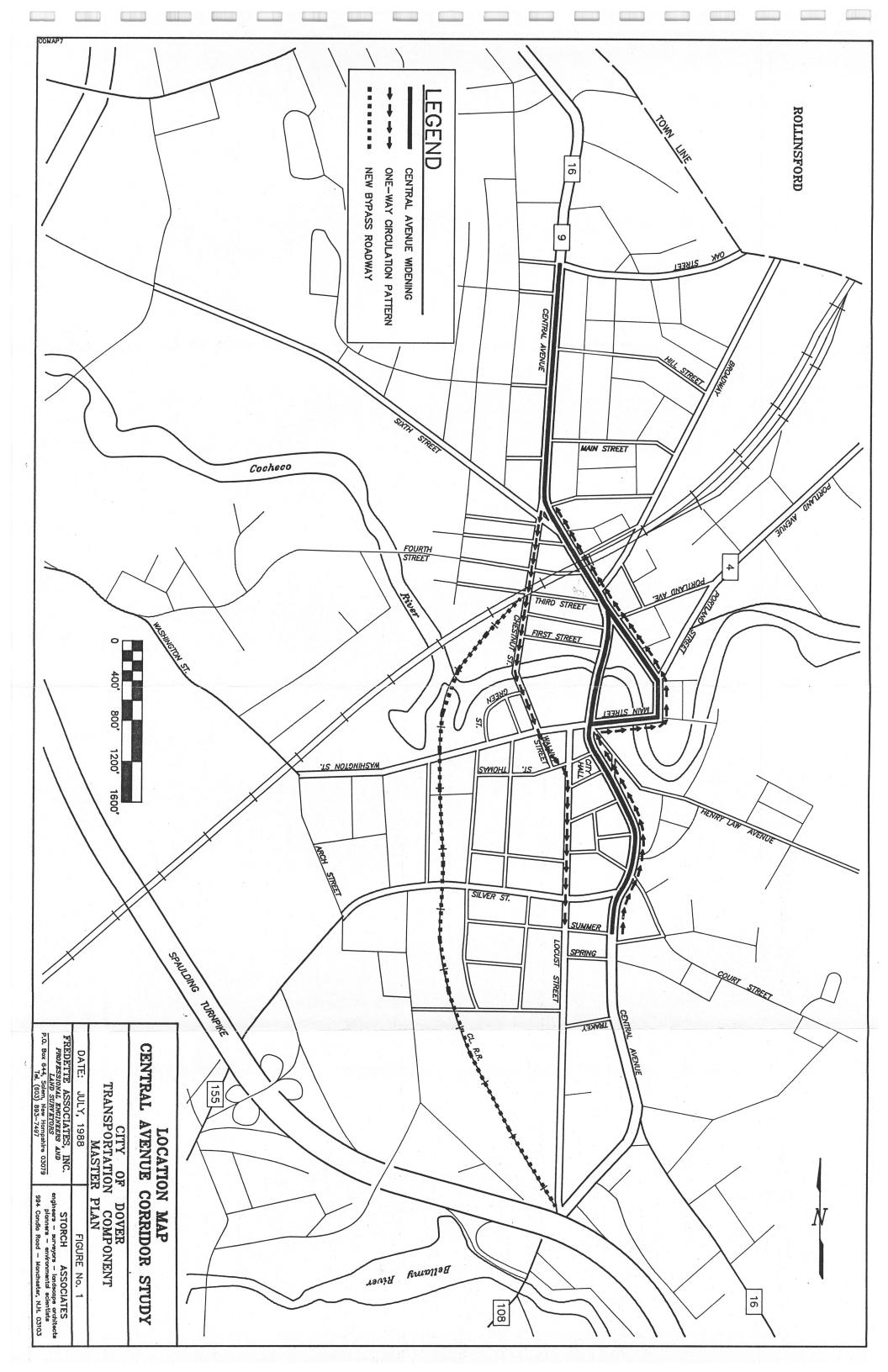
An inventory of physical roadway features and traffic control on selected corridor segments and key intersections is depicted in Figure 2. Indicated are the following:

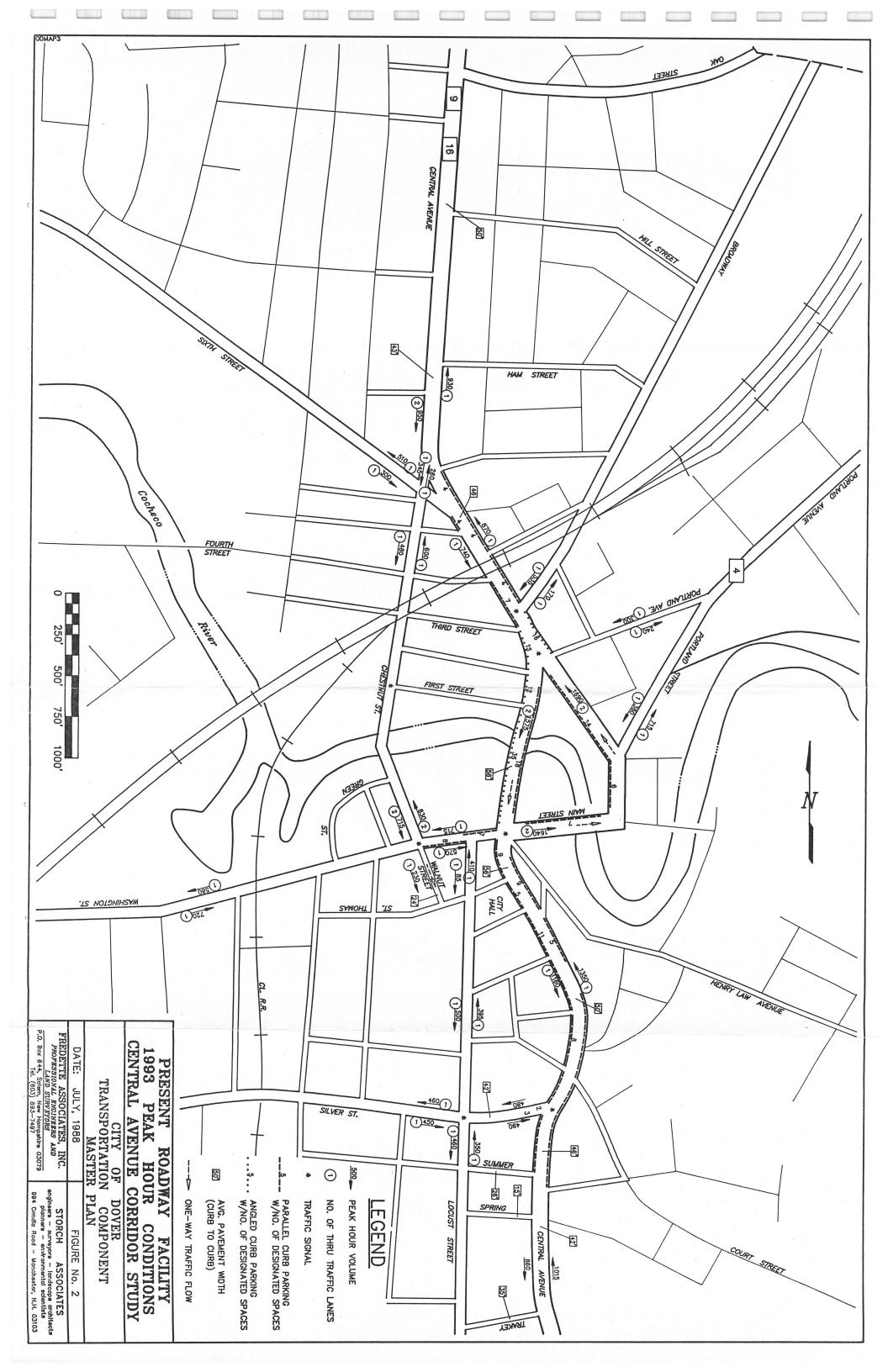
- Paved roadway width (curb-to-curb)

- 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.





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

\* <u>Reference</u> (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).

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## 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.

N	0	d	e
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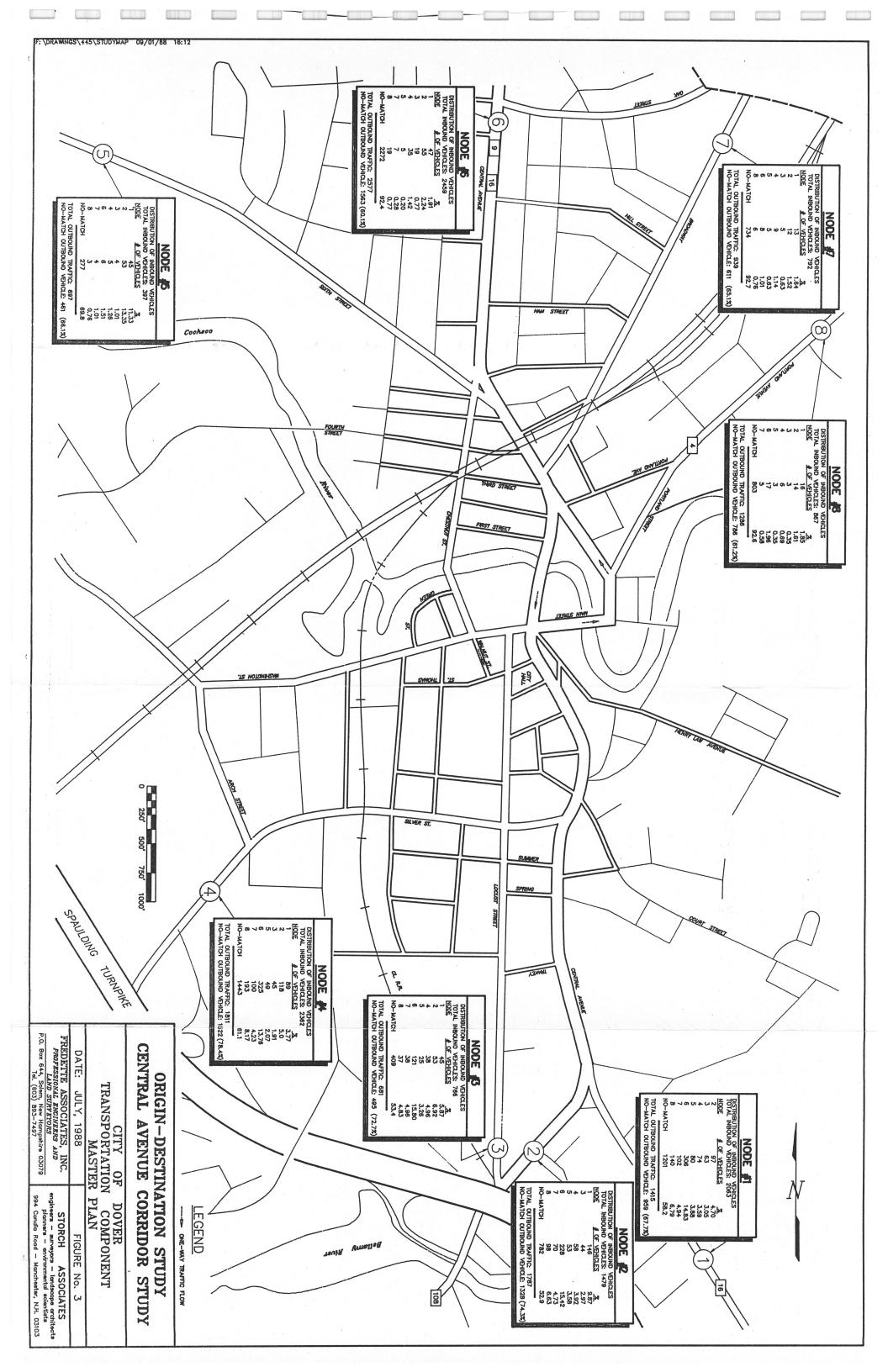
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7

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#### Description

Stark Avenue south of Woodland Road Central Avenue north of Locust Street Locust Street north of Central Avenue Knox Marsh Road (Silver Street) west of Arch Street Sixth Street west of Whittier Street Central Avenue south of Oak Street Broadway south of Oak Street Portland Street just south of City Limits



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:

- 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						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

	lahau			
	Inbou Number	Percent	Outbo 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
1	7921	70.8%	7725	69.0%

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0

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TABLE 6

Dup. Matched 1825 No. of 532 294 184 40 18 757 I I 1 0 of outbound by Node Out Bound 20.5 6.8 0.9 0.4 0.1 0.0 2.4 I I I % No of Plates Summary of Multiple Matched Plate Numbers 2290 266 98 46 757 I ω c I I **ORIGIN DESTINATION STUDY** No. of Dup. Matches 55 16 822 574 375 156 24 2029 I 5 0 of inbound by Node 0.0 0.0 7.4 2.6 1.1 0.3 0.1 0.0 In Bound 17.7 1 % of Plates 1973 822 287 125 39 11 I 4 2 Ч No No. of Matches TOTALS 10 11 12 ß 9 ω σ Ч N c 4

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Technical Memorandum No. 2

## IV. Corridor Improvement Alternatives

#### A. Central Avenue Widening

This alternative is based on the "widening" of Central Avenue to provide an overall fourlane 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.

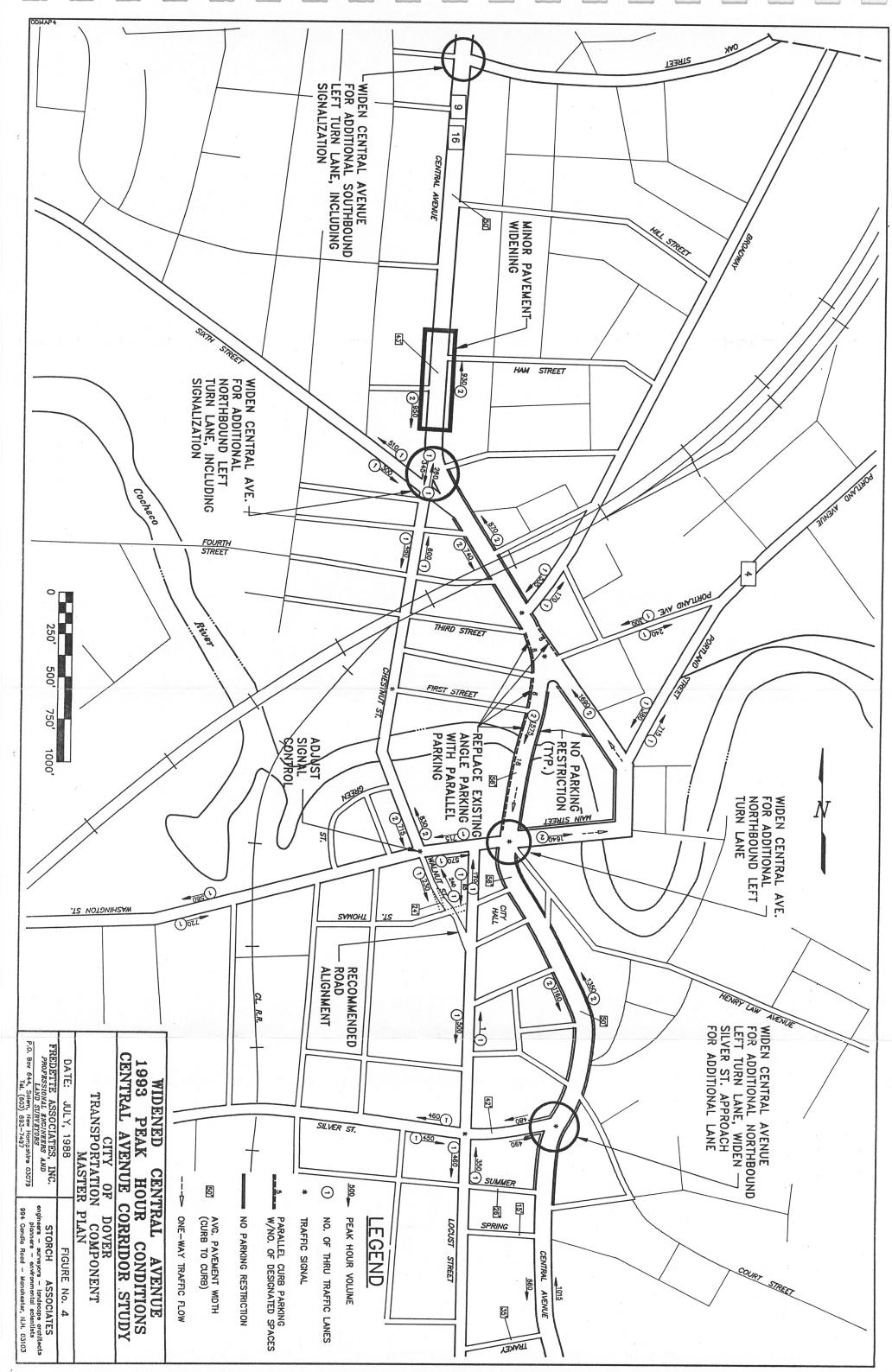
1993 design hour volumes at key roadway segments along the corridor are indicated, and are generally the same as those volumes depicted in Figure 2.

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.



#### 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.

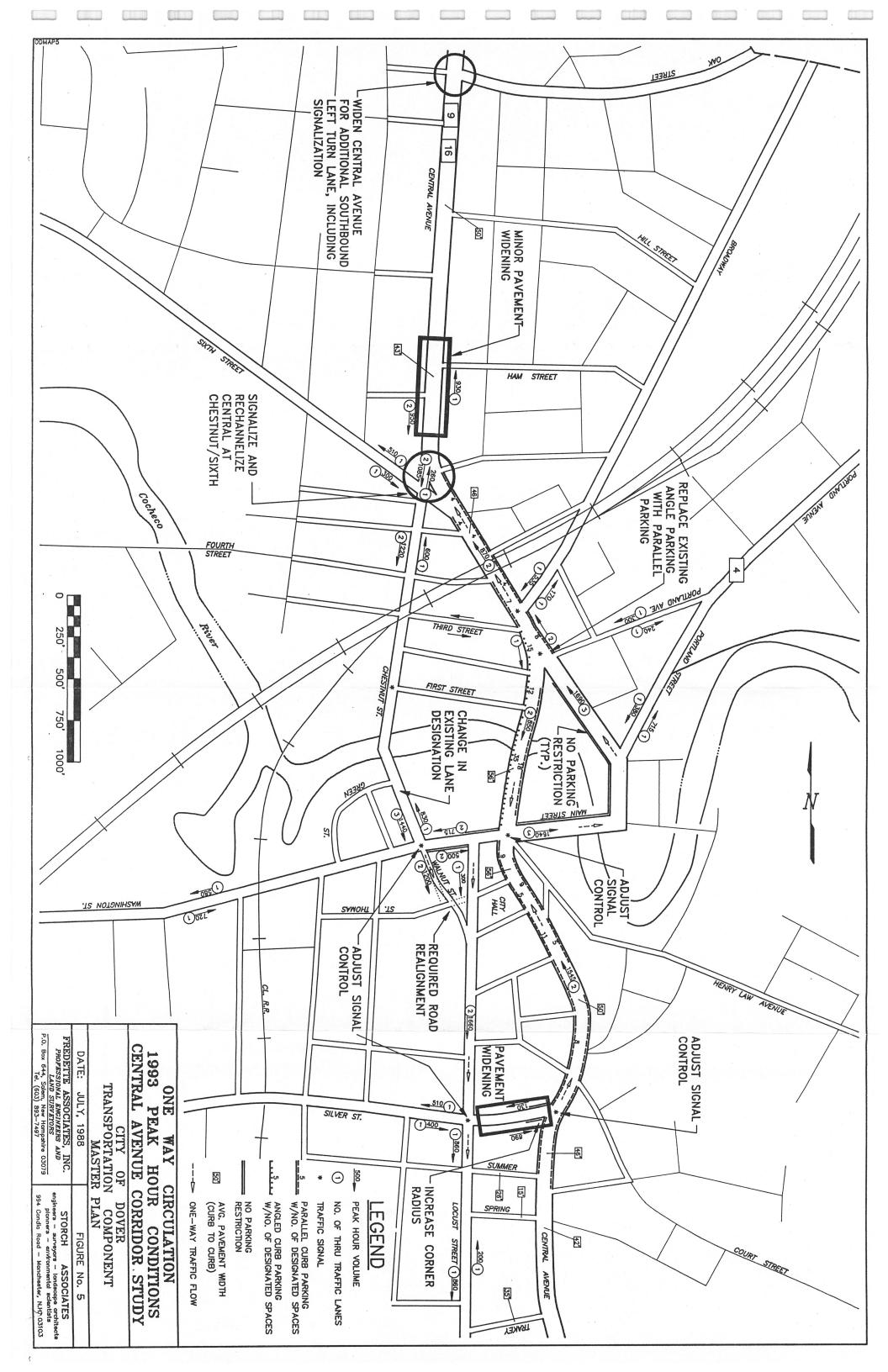
The estimated cost of implementing his alternative is \$0.75 to 1.0 million dollars, exclusive of right-of-way and parking space relocation.

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.



### 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 <u>1985 Highway Capacity Manual</u> 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 B C D E F	5.0 5.1 to 15.0 15.1 to 25.0 25.1 to 40.0 40.1 to 60.0 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 <u>Change</u>	No <u>Change</u>	Negative Impact	<u>Comments</u>
Local Street Traffic through Downtown Neighborhoods			Χ	Traffic increases to avoid congestion along Central Ave.
Downtown on-street parking along Central Avenue		X		
Traffic Circulation - through trips			Х	Increased travel time and delay
- local trips			Х	Increased travel time and delay
Key Intersection Level of Servic - Central/Silver - Central/Washington - Central/Broadway	e		X X X	Over capacity (LOS F) Over capacity (LOS F) Under capacity *(LOS C-D)
Public Transportation			X	Increased travel time and delay
Major Capital Improvements		Х		NA

\* Assumes Optimized Signal Timing.

### TABLE 9

#### ALTERNATIVE COMPARISON SUMMARY WIDENED CENTRAL AVENUE

Area of Concern	Positive <u>Change</u>	No <u>Change</u>	Negative Impact	<u>Comments</u>
Local Street Traffic through Downtown Neighborhoods	Х			Traffic attracted to Central Avenue
Downtown on-street parking along Central Avenue		•	х	Loss of 175 designated spaces (includes 5 spaces along Silver)
Traffic Circulation - through trips	х			Less travel time and delay
- local trips	X			Less travel time and delay
Key Intersection Level of Servic - Central/Silver - Central/Washington - Central/Broadway	e X X X			Under capacity (LOS C) Under capacity (LOS C) Under capacity (LOS C)
Public Transportation	Х			Less travel time and delay
Major Capital Improvements			Х	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 <u>Change</u>	No <u>Change</u>	Negative Impact	<u>Comments</u>
Local Street Traffic through Downtown Neighborhoods			X	Locust Street corridor and west (85% increase on Locust Street)
Downtown on-street parking along Central Avenue			х	Loss of 55 designated spaces (includes 20 spaces along Washington and Silver)
Traffic Circulation - through trips	Х	•		Less travel time and delay
- local trips			Х	Indirect routing due to one-way restrictions
Key Intersection Level of Se - Central/Silver - Central/Washington - Central/Broadway	rvice X X X			Under capacity (LOS C) Under capacity (LOS D) Under capacity (LOS C)
Public Transportation	Х			Less travel time and delay
Major Capital Improvements	5		х	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.
- 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.
- 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.

- 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 twoway 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:



in association with:



FREDETTE ASSOCIATES INC. PROFESSIONAL ENGINEERS AND LAND SURVEYORS

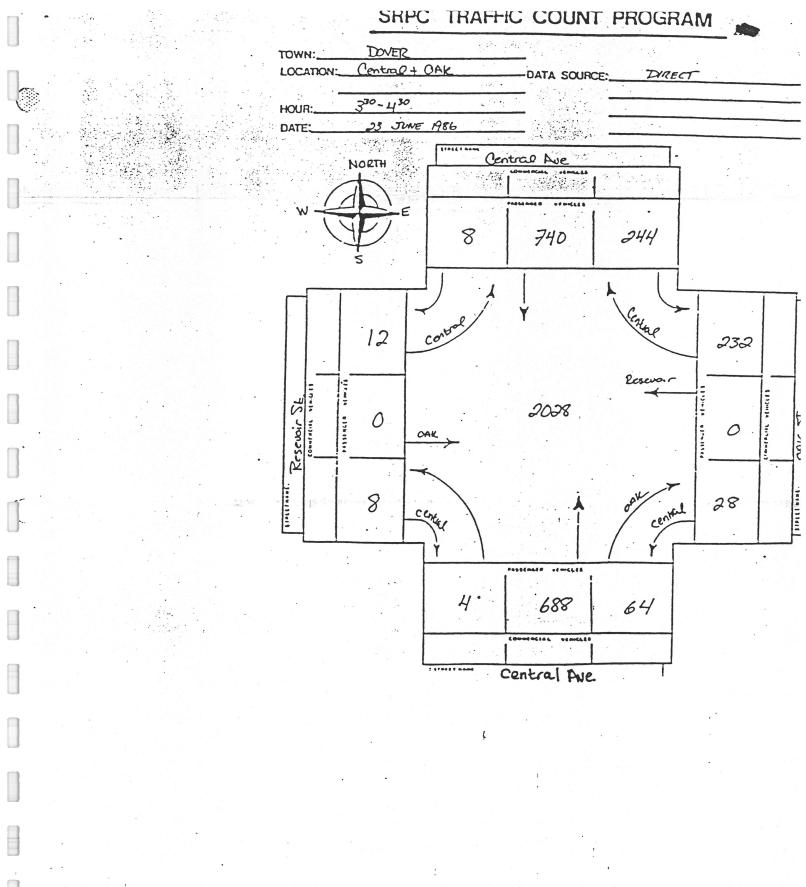
P.O. Box 644, Salem, New Hampshire 03079 Tel. (603) 893-7497

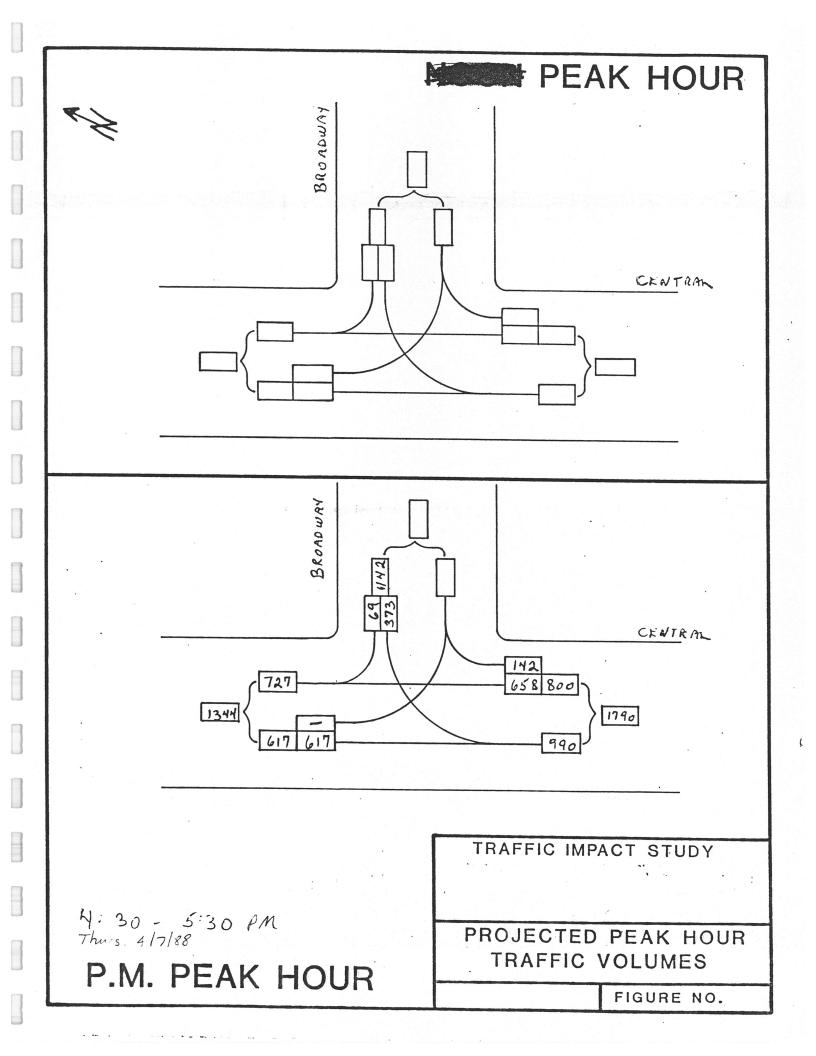
### TECHNICAL MEMORANDUM NO. 2 CENTRAL AVENUE CORRIDOR STUDY

#### APPENDIX A

### TRAFFIC COUNT DATA SUMMARIES

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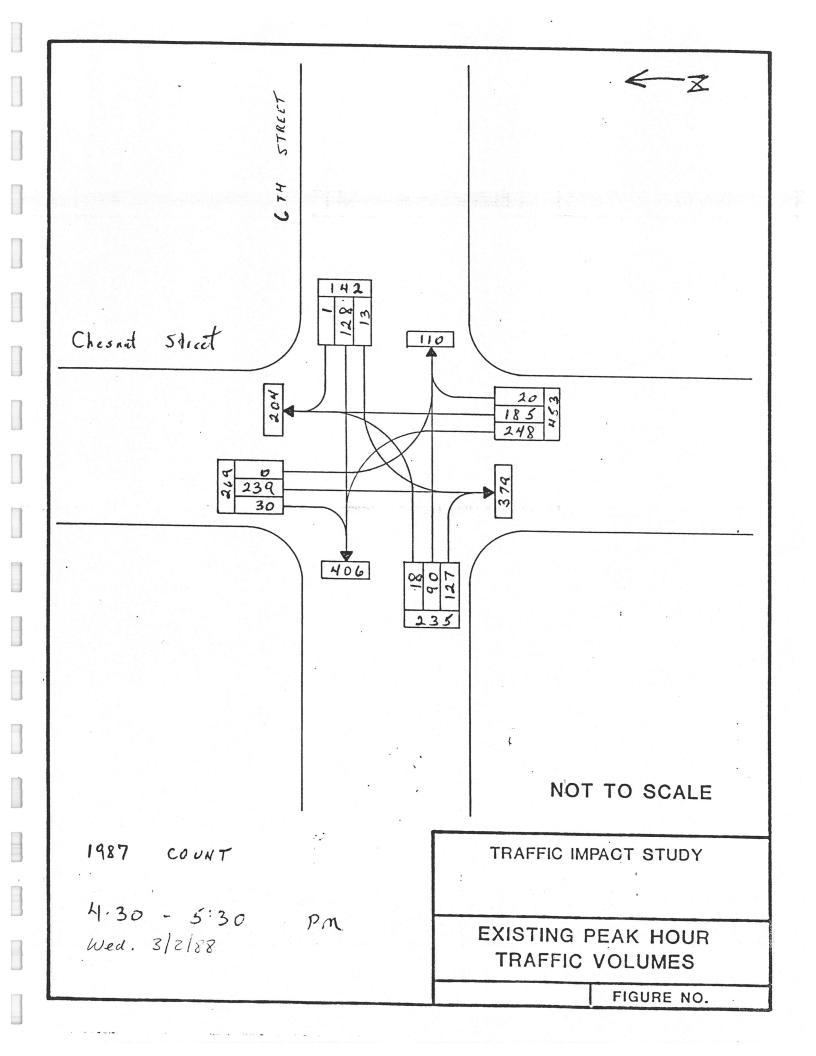


# TRAFFIC MOVEMENT SUMMARY TABLE

TOWN DAY OF WEEK COMPLETED B	THURSD	AY	LOCA WEAT	TION HER	CENTR	AL/BRO				.4/7/88 ACE	
TIME PERIODS	NORTH- Centra S	L AV		SOUTH- CENTRA L	L AVE		WEST- BROAD L		ON Tot.	TOTAL 15 MIN. TALLY	HOURLY Totals
3:30-3:45 3:45-4:00 4:00-4:15 4:15-4:30 4:30-4:45	193 195 164 148 156	24 37 31 36 27	217 232 195 184 183	0 1 0 0 0	134 137 148 126 162	134 138 148 126 162	85 83 110 72 102	13 14 17 15 13	98 97 127 87 115	449 467 470 397 460	1783 1794
4:45-5:00 5:00-5:15 5:15-5:30 TOTAL TOTAL OF L,9	183 151 168 1358 6,R	32 44 39 270	215 195 207 1628 1628	0 0 1	152 142 161 1162	152 142 161 1163 1163	87 96 88 723	15	107 111 109 851 851	474 448 477 3642	1801 1779 1859

FILE NAME: DOVER-CB

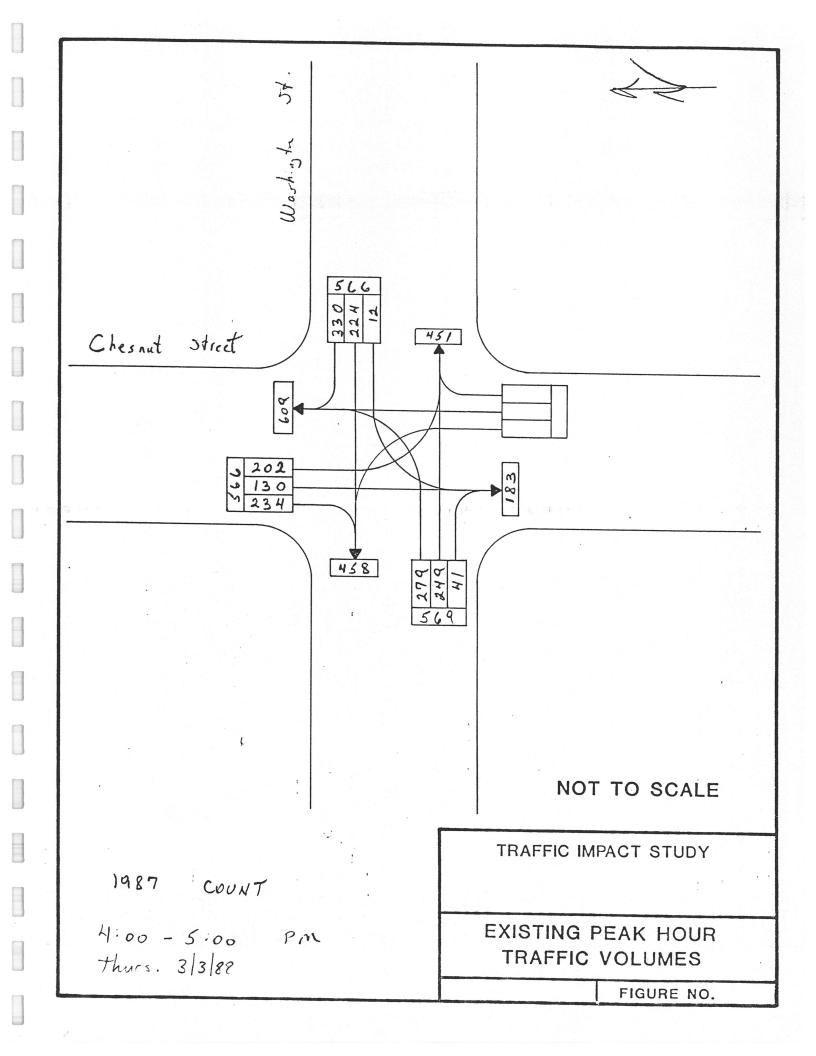
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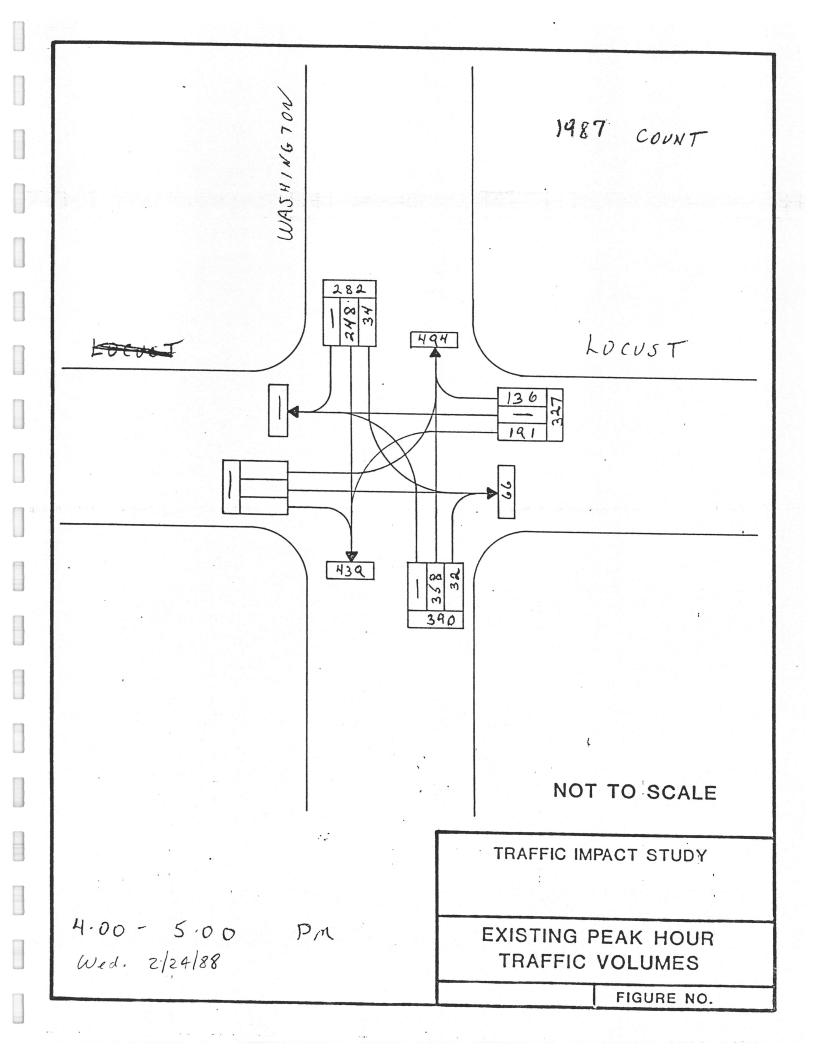


# TRAFFIC MOVEMENT SUMMARY TABLE

PERIODS       WHSHINGTON       CHESTNUT       MASHINGTON       CHESTNUT       MIN.       TOT         L       S       R       TOT.       TAL       S       R	DAY OF WEEK		 ^				 p													
PERIDDS         WASHINGTON         CHESTNUT         WASHINGTON         CHESTNUT         WASHINGTON         CHESTNUT         MASHINGTON         MASHINGTON         MASHINGTON         MASHINGTON         MASHINGTON         MASHINGTON         CHESTNUT         MASHINGTON         MASHINGTON	TIME	WEST		IND (	<b>N</b>	enu			0.11	-										
L         S         R         TOT.         L         S         R         TOT.         L         S         R         TOT.         L         S         R         TOT.         TAL           1:30-3:45         5         44         76         125         34         28         53         115         51         76         9         138         0         378           1:45-4:00         2         44         67         113         42         23         54         149         52         8         16         45         0         377           1:00-4:15         2         73         81         156         56         33         54         143         49         69         12         130         0         427           1:30-4:45         3         55         132         43         46         145         50         136         0         413         162           1:00-51:5         1         52         91         143         43         70         0         0         368         156           0TAL         21         427         623         1071         1382         240         471         1		WASH	ITNG		714	CUC	CTNU	LOND	UN	EAS		UND	NU				ON	· · · · · · · · · · · · · · · · · · ·		HOU
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100-5:15       1       52       91       144       49       26       73       146       45       50       8       103       0       3137       158         1:15-5:130       1       63       59       123       55       33       57       145       46       47       7       100       0       368       156         0TAL       21       427       623       1071       382       240       471       1093       397       50       73       975       0       0       0       3139         0TAL       OF       L,S,R       1071       1093       975       0       3139       0       3139         FILE       NAME:DOVERWCP       ICC       DATE:3/2/88       COMPLETED       BYMEGAN/STEV         A       B       C       D       DATE:3/2/88       COMPLETED       BYMEGAN/STEV	1130-4143	3	33	74													0	393		158
115-5:30       1       63       59       123       55       33       57       145       46       47       7       100       0       348       156         0TAL       21       427       623       1071       382       240       471       1093       397       505       73       975       0       0       348       156         0TAL       0F       L,S,R       1071       1093       397       505       73       975       0       0       0       3139         0TAL       0F       L,S,R       1071       1093       975       0       3139       0       3139         0TAL       0F       L,S,R       1071       1093       975       0       3139       0       3139         0F       ME       DOVERWCP       ILCATIONCHESTNUT/SIXTH       DATE13/2/88       0       3139       0       3139         PERIODS       SIXTH       CATHER       ROAD       SURFACE       COMPLETED       BYKEGAN/STEV         130-3145       7       13       42       62       45       53       102       3       55       0       56       1       52	5.00-5.15	4	43														0	413		162
OTAL       21       427       623       1071       382       240       471       1093       397       505       73       975       0       0       0       3139       139         OTAL OF L,S,R       1071       1093       975       0       0       0       3139       0       3139         FILE NAME:DOVERWCP       TRAFFIC MOVEMENT SUMMARY TABLE       DATE:3/2/88       0       0       0       0       0       0       1093       975       0       0       0       3139         FILE NAME:DOVERWCP       TRAFFIC MOVEMENT SUMMARY TABLE       DATE:3/2/88       0       0       0       1093       975       0       0       0       1093       1093       975       0       0       0       1093       1093       1093       1093       1093       1093       1093       1093       1093       1093       1093       1093       1093       1000       1000       1000       1000       1000       1000       1000       1000       1000       1000       1000       1000       1000       1000       1000       1000       1000       1000       1000       1000       1000       1000       10000       1000	5100-5115	1	32	91							1000						0	395		158
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PERIODS       SIXTH       CHESTNUT       SIXTH       CHESTNUT       MIN.       TOTAL         L       S       R       TOT. TOTAL       TALLY         : 45-4:00       0       18       40       58       54       53       6       113       2       40       0       42       0       62       6       68       281         : 45-4:00       0       18       40       58       54       53       6       113       2       40       0       42       0       62       6       68       281       200-41:15       4       17       41       62       59       42       5       106       2       27       0       29       0       53       7       60       257       1063       131       1       33       1       59       4       64       241       1063       1063       130 <td< th=""><th>OWN Ay of week</th><th>.DOVE :WEDN</th><th>R N.</th><th>н.</th><th>LOCA</th><th>TION.</th><th> 0</th><th>HES.</th><th>TNUT/9</th><th>SIXTH</th><th>1</th><th>CE</th><th>•••</th><th>DA<sup>-</sup> CO1</th><th>E:. IPLE</th><th>3. TED</th><th>/2/8 BY.</th><th>B ME</th><th>GAN/S</th><th>STEV</th></td<>	OWN Ay of week	.DOVE :WEDN	R N.	н.	LOCA	TION.	0	HES.	TNUT/9	SIXTH	1	CE	•••	DA <sup>-</sup> CO1	E:. IPLE	3. TED	/2/8 BY.	B ME	GAN/S	STEV
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:30-4:45       4       22       33       59       53       43       7       103       5       35       1       41       0       55       6       61       264       1043         :45-5:00       3       25       29       57       62       40       2       104       1       31       0       32       0       61       7       68       261       1023         :00-5:15       7       21       38       66       75       56       9       140       4       33       0       37       0       59       13       72       315       1081	TIME PERIODS :30-3:45 :45-4:00	EAST SIXT L 7 0	R N. ESDA -BOU H S 13 18	H. IND 0 R 42 40	LOCAT WEATH DN N TOT. 62 58	TION. HER NORTH CHEST L 45 54	B H-BOU TNUT S 54 53	UND ( R 3 1 6 1	TNUT/9 RC ON 4 TOT. L 102 113	SIXTH DAD S C VEST- SIXTH 3 5 2 4	BOUN BOUN BOUN	CE D ON TO 0 5 0 4	1 SO CH )T. L ;8	COM D UTH-I ESTNU S 1 5: 0 6:		TED D 01 T( 7 (	BY. 11 M 0T.T 52	ME 5 IN. 3TAL 284 281	 H(	OURL
:45-5:00       3       25       29       57       62       40       2       104       1       31       0       32       0       61       7       68       261       1023         :00-5:15       7       21       38       66       75       56       9       140       4       33       0       37       0       59       13       72       315       1081	AY OF WEEK TIME PERIODS :30-3:45 :45-4:00 :00-4:15	EAST SIXT L 7 0 4	R N. ESDA -BOU H S 13 18 17	H. IND 0 R 42 40 41	LOCA WEATH DN N TOT. 62 58 62	TION. HER NORTH CHEST L 45 54 59	B H-BOU TNUT S 54 53 42	CHES IND ( R 3 1 6 1 5 1	TNUT/9 RC ON W TOT. L 102 113 106	SIXTH DAD S C VEST- SIXTH 3 5 2 4 2 2	BOUN BOUN BOUN	CE D ON T O 0 5 0 4 0 2	SO CH DT. L 38 2 29	COM D UTH-I ESTNU S 1 52 0 62 0 53	IPLE IOUNI IT R	TED D 01 T( 	BY. 1 1 1 1 1 1 1 1 1 1 1 1 1	ME 5 IN. DTAL 284 281 257	 H(	OURL DTAL
:00-5:15 7 21 38 66 75 56 9 140 4 33 0 37 0 59 13 72 315 1081	AY OF WEEK TIME PERIODS :30-3:45 :45-4:00 :00-4:15 :15-4:30	EAST SIXT L 7 0 4 5	R N. ESDA 	H. IND 0 R 42 40 41 24	LOCA WEATH JN N TOT. 62 58 62 49	TION. HER NORTH CHEST L 54 54 59 47	B H-BOU TNUT S 54 53 42 45	CHES IND ( R 3 1 5 1 3 1	TNUT/9 RC ON 9 TOT. L 102 113 106 95	SIXTH DAD S VEST- SIXTH 3 5 2 4 2 2 1 3	BOUN BOUN BOUN B B B B B B B B B B B B B B B B B B B	CE D ON T O 0 5 0 4 0 2 1 3	50 CH DT. L 38 2 29 33	CON D UTH-H ESTNU S 1 52 0 62 0 53 1 59	IPLE IOUN IT R	TED D 01 T( 7 4 4 6	BY. 11 M DT.T 52 58 50 54	ME 5 IN. JTAL 284 281 257 241		DURL DTAL ALLY
15-5:30 4 22 27 57 50 4/ 0 40/ 7 57 50 7/ 0 57 13 72 313 1061	TIME PERIODS :30-3:45 :45-4:00 :00-4:15 :15-4:30 :30-4:45	:WEDN EAST SIXT L 7 0 4 5 4	R N. ESDA 	H. Y IND 0 R 42 40 41 24 33	LOCA WEATH IN N TOT. 62 58 62 49 59	TION. HER NORTH CHEST L 45 54 54 59 47 53	B H-BOU TNUT S 54 53 42 45 43	UND ( R 3 1 5 1 3 7	TNUT/9 RC ON W TOT. L 102 113 106 95 103	SIXTH DAD S C VEST- SIXTH 3 5 2 4 2 2 1 3 5 3	BOUN BOUN BOUN B B C C C C C C C C C C C C C C C C C	CE D ON TO 0 5 0 4 0 2 1 3 1 4	SO CH DT. L 38 2 29 33 1	CON D UTH-I ESTNU S 1 52 0 62 0 53 1 59 0 55		TED D 01 T( 	BY. 11 12 13 14 15 15 15 15 15 15 15 15 15 15	ME 5 IN. JTAL 284 281 257 241 264	 H( T( T/	DURL DTAL ALLY
1 A G G G G G G G G G G G G G G G G G G	AY OF WEEK TIME PERIODS :30-3:45 :45-4:00 :00-4:15 :15-4:30 :30-4:45 :45-5:00	:WEDN EAST SIXT L 7 0 4 5 4 3	R N. ESDA - BOU H S 13 18 17 20 22 25	H. Y IND 0 R 42 40 41 24 33 29	LOCA WEATH IN N TOT. 62 58 62 49 59 57	TION. HER NORTH CHEST L 45 54 59 47 53 62	B H-BOU INUT S 54 53 42 45 43 40	UND ( R 3 5 3 7 2	TNUT/9 RC DN W TOT. L 102 113 106 95 103 104	SIXTH DAD S CONEST- SIXTH 3 5 2 4 2 2 1 3 5 3 1 3	BOUN BOUN BOUN B B C C C C C C C C C C C C C C C C C	CE D ON T O 0 5 0 4 0 2 1 3 1 4 0 3	SO CH DT. L B B 2 2 9 3 3 1 2 2 9 3 3 1 2 2	CON D UTH-I ESTNU S 1 52 0 62 0 53 1 59 0 53 0 55 0 61		TED D 01 T( 5 & 6 6 & 6 7 & 6 7 & 6	BY. 1 M 0T.T 52 58 50 54 54 54 54	ME 5 IN. JTAL 284 281 257 241 264 264	H( T( T/ 	DURL DTAL ALLY 063 043 023
	TIME PERIODS 5:30-3:45 5:45-4:00 5:00-4:15 5:15-4:30 5:15-4:45 5:45-5:00 5:00-5:15	:WEDN EAST SIXT L 7 0 4 5 4 3 7	R N. ESDA -BOU H S 13 18 17 20 22 25 21	H. IND 0 R 42 40 41 24 33 29 38	LOCA WEATH JN N TOT. 62 58 62 49 59 57 66	TION. HER NORTH CHEST L 45 54 59 47 53 62 75	B H-BOU TNUT S 54 53 42 45 43 40 56	CHES IND ( R 3 5 5 7 2 2 9	TNUT/9 RC ON % TOT. L 102 113 106 95 103 104 140	SIXTH DAD S VEST- SIXTH 3 5 2 4 2 2 1 3 5 3 1 3 4 3	BOUN BOUN BOUN B B C C C C C C C C C C C C C C C C C	CE D DN TO 0 5 0 4 0 2 1 3 1 4 0 3 0 3 0 3	50 CH 0T. L 158 29 33 11 22 57	CON D UTH-I ESTNU S 1 52 0 52 1 59 0 51 0 51 0 51 0 51 0 51		TED D 01 T( 55 & 8 5 & 9 5 & 1	BY. 1 M 1 1 1 1 1 1 1 1 1 1 1 1 1	ME 5 IN. JTAL 284 281 257 241 264 261 315	H( T( T/	DURL DTAL ALLY 063 043 023 081
OTAL 34 158 274 466 453 379 37 869 21 281 2 304 2 465 56 523 2162 OTAL DF L,S,R 466 869 304 523 2162	AY OF WEEK  Time	:WEDN EAST SIXT L 7 0 4 5 4 3 7 4	R N. ESDA -BOU H S 13 18 17 20 22 25 21 22	H. Y IND 0 R 42 40 41 24 33 29 38 27	LOCA WEATH DN N TOT. 62 58 62 49 59 57 66 53	TION. HER NORTH CHEST L 45 54 59 47 53 62 75 58	B H-BOU TNUT S 54 53 42 45 43 40 56 46	UND ( R 3 1 5 1 7 1 2 1 9 1 2 1	TNUT/9 RC ON 9 TOT. L 102 113 106 95 103 104 140 106	SIXTH DAD S UEST- SIXTH 3 5 2 4 2 2 1 3 5 3 1 3 3 2 3 2	BOUN BOUN BOUN B B B B B B B B B B B B B B B B B B B	CE D ON TO 0 5 0 4 0 2 1 3 1 4 0 3 0 3 0 3 0 3	SO CH DT. L B8 2 9 3 3 1 5 2 7 5 7 5 2	CON D UTH-I ESTNU S 1 52 0 62 0 53 1 59 0 54 0 59 0 64		TED  D 01 T(      	BY. 1 M 1 1 1 1 1 1 1 1 1 1 1 1 1	ME 5 IN. 3TAL 284 281 257 241 264 264 315 259	H( T( T/	DURL DTAL ALLY 063 043 023 081

FILE NAME: DOVERWSP



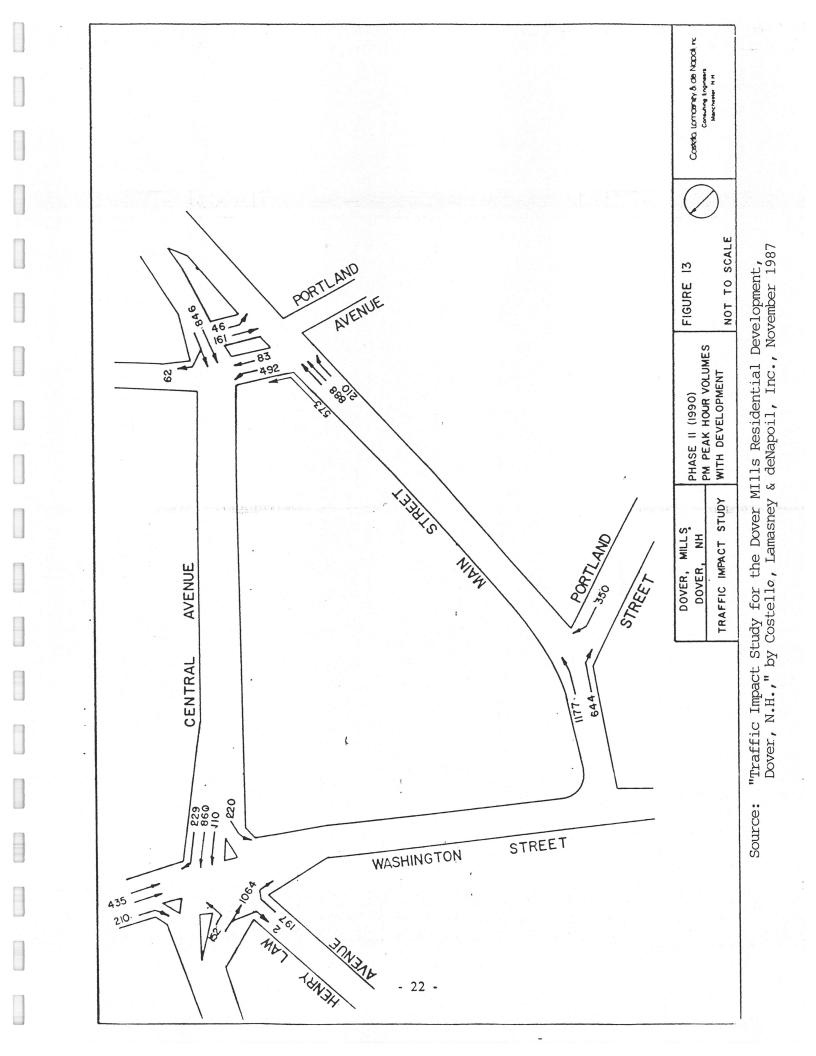


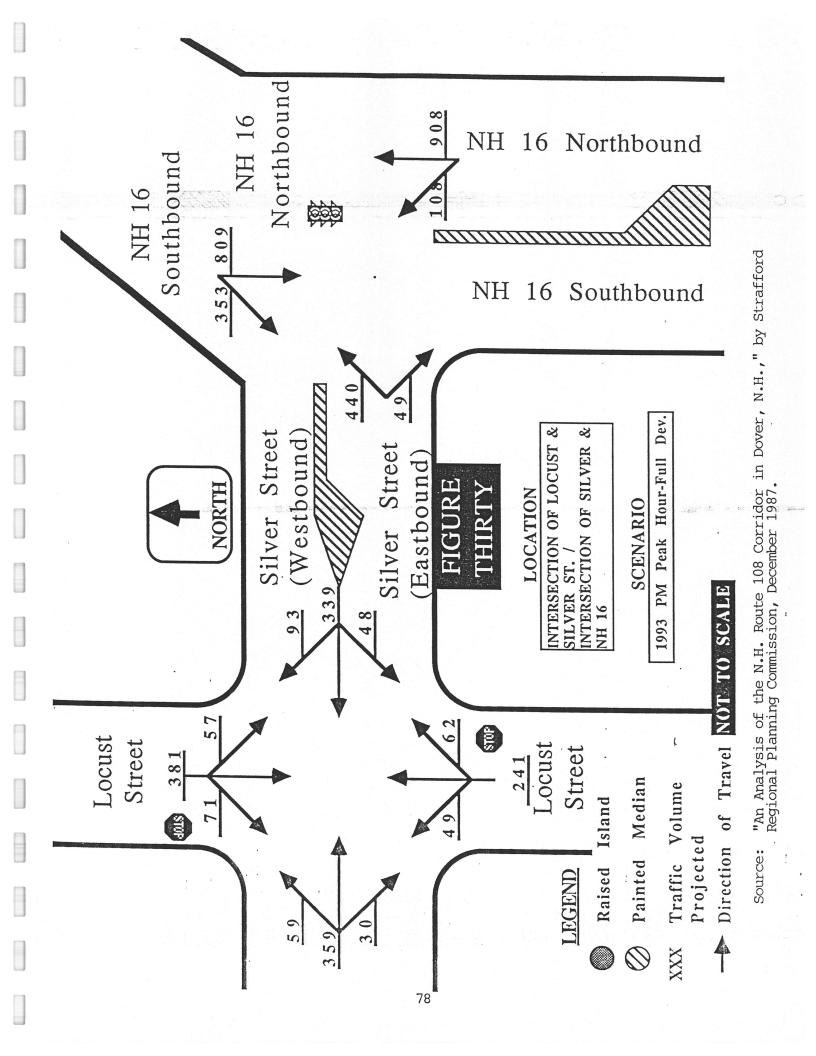
# TRAFFIC MOVEMENT SUMMARY TABLE

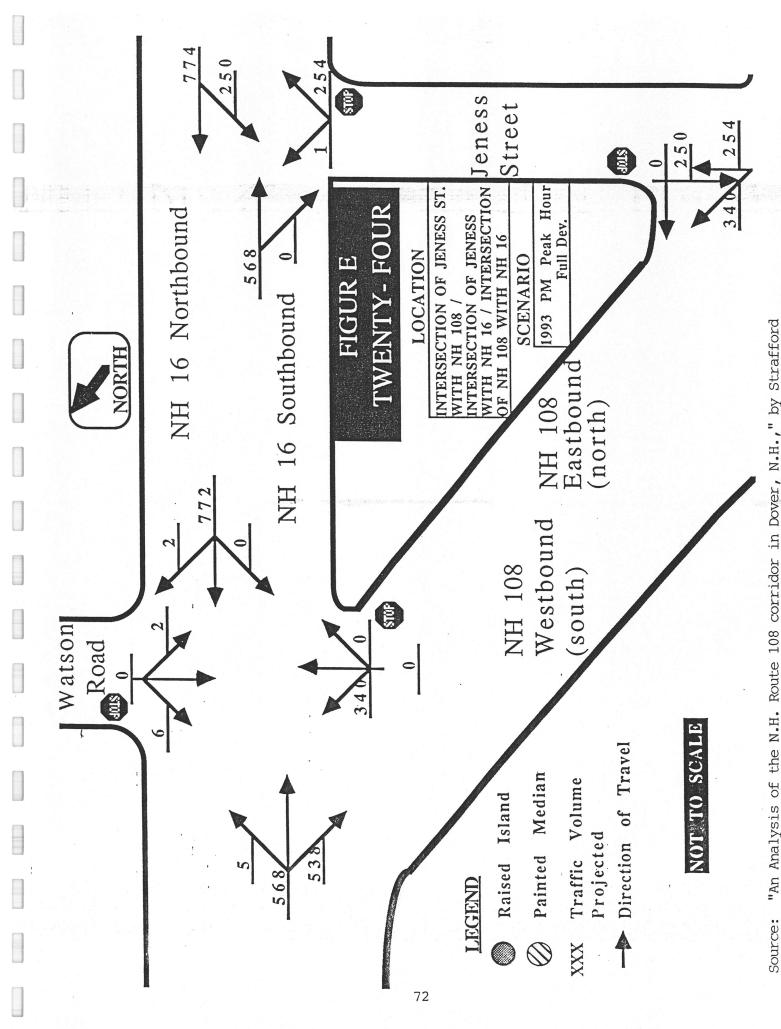
TOWN DAY OF WEEK COMPLETED B	WEDNES	DAY	N	LOCATI WEATHE	ON R	.WASH	INGTON	/LOCU	ST	DATE:2/ ROAD SURFAC	
TIME PERIODS	EAST-BI WASHINI S			NORTH- Locust	Land Carlos		WEST-I WASHII L	NGTON		TOTAL 15 MIN. TALLY	HOURLY Totals
3:30-3:45	81	7	88	56		 89	12			238	
3:45-4:00	85	2		56	29	85	6	53	59	238	
4:00-4:15	95	10	105	49	32	81	12	68	80		
4:15-4:30	81	10	91	43	27	70	10	63	73	266 234	0/0
4:30-4:45	89	3	92	38	35	73	5	53	73 58		969
4:45-5:00	93	9	102	61	42		7	64	71	223 276	954
5:00-5:15	86	9	95	47	37	84	2	51	53	232	999
5:15-5:30	83	10	93	45	29	74	8	55	63		965
TOTAL	693	60	753	395			62	456	518	230	961
TOTAL OF L,	S,R		753	070	~ 07	659	02	7 70	518	1930	

FILE NAME: DOVERWLP

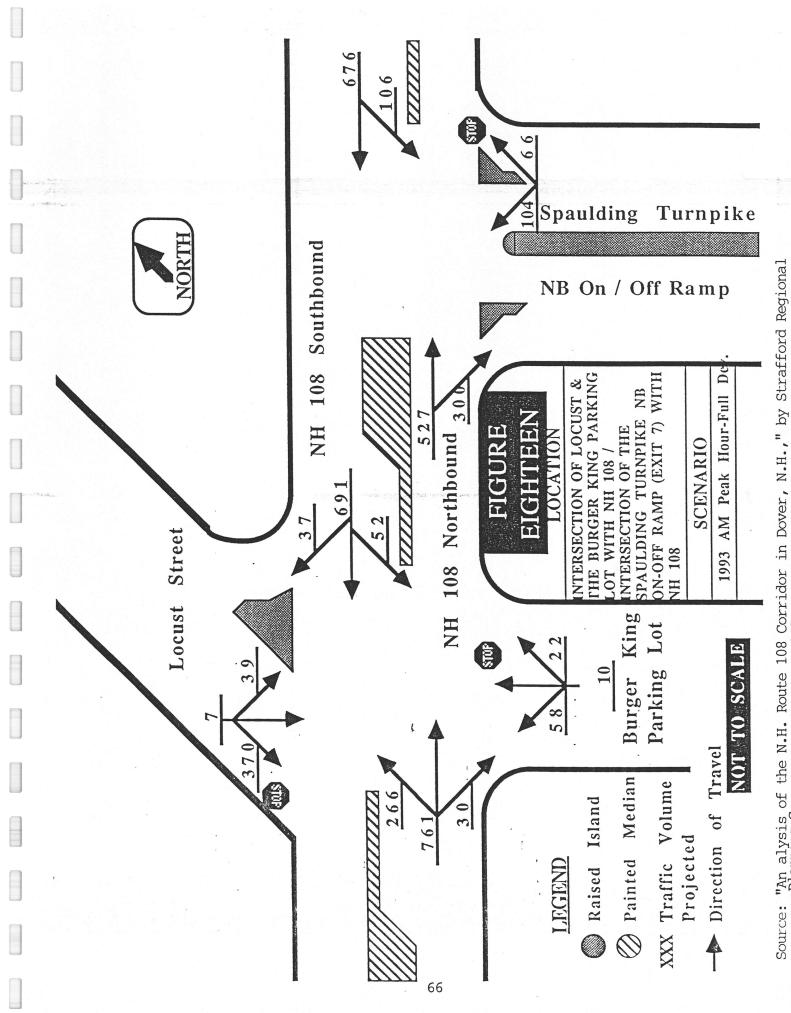
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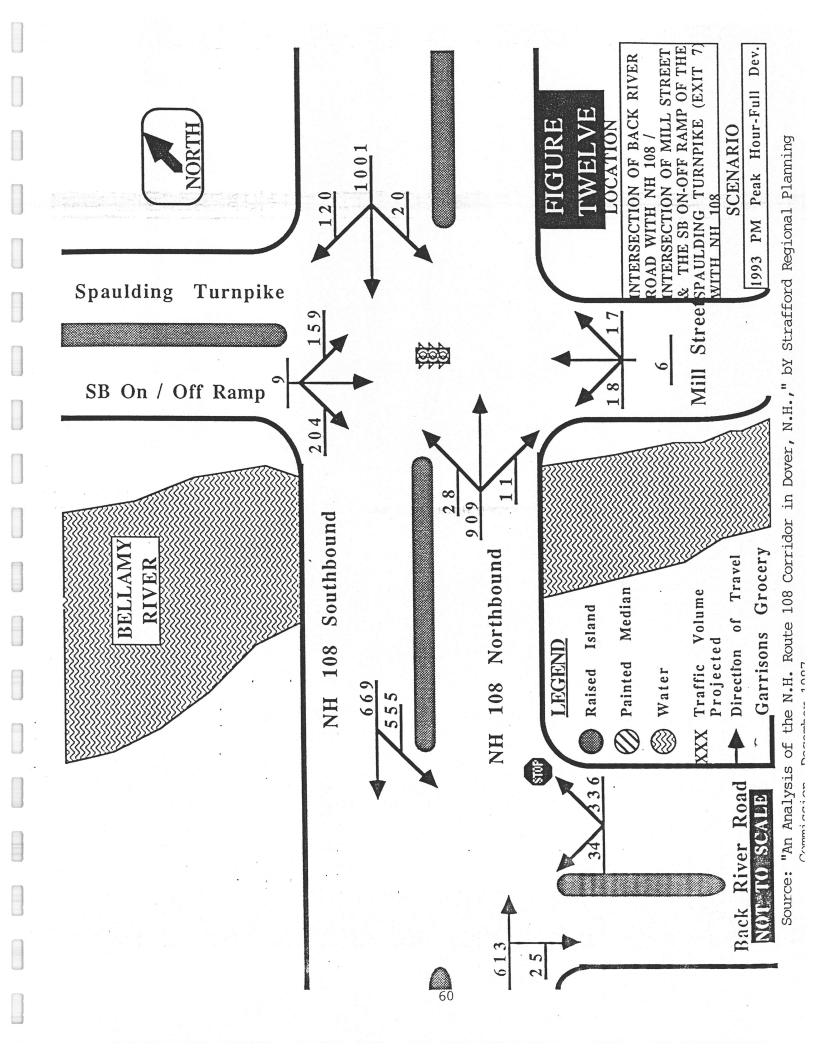


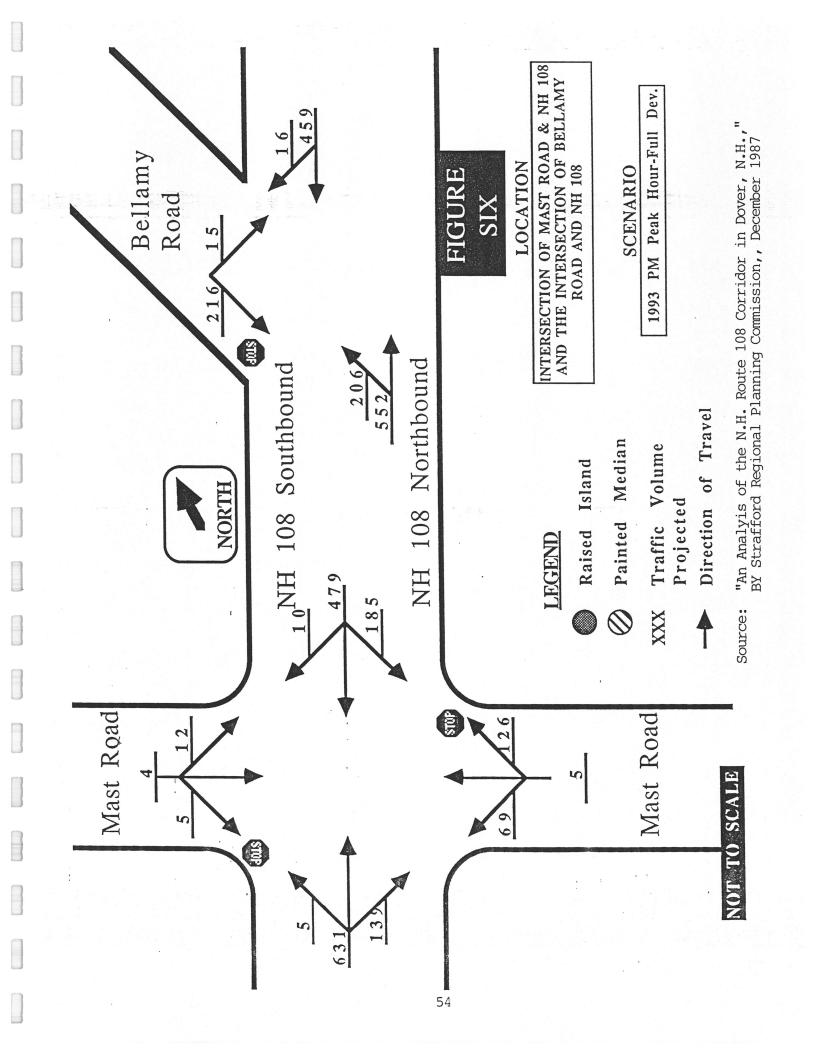


"An Analysis of the N.H. Route 108 corridor in Dover, N.H.," by Strafford Regional Planning Commission, December 1987.



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





# 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.....OTHER AREA TYPE.....OTHER PEDESTRIAN WALKING SPEED.....OTHER NAME OF THE ANALYST.....DRI DATE OF THE ANALYSIS.....DRI DATE OF THE ANALYSIS.....WKDY PM PK HR OTHER INFORMATION: PROJECTED 1993 CONDITION - NO CHANGE

TRAFFIC VOLUMES

	10 124 122 223 201 214 129 214 129 214 129 129 129 129 12	3 MI		nen stad men erar anne bom june eran ann mer ann
	EB	ŴЭ	NB	SB
LEFT	Ŏ	0	143	276
THRU	, 368	0	974	771
RIGHT	198	0	Ó	205
RTOR	0	0	Ō	0

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

# INTERSECTION GEOMETRY

### Page-2

NUMBER Eastboi			(RECTIO BOUND =	,	ING TUR RTHBOUN	N BAYS: $ID = 2$	SOUTHE	OUND = 4
LANE	E TYPE	B WIDTH	W TYPE	В WIDTH	۸ TYPE	IB WIDTH	S TYPE	B WIDTH
1	Т	12.0	LT	10.0	I	10.0	I	10.0
2	Т	12.0		12.0	Т	11.0	<u> </u>	10.0
3	R	12.0		12.0		11.0	т	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 - {	EXCLUSI	VE LEFT L	LANE		т –	EXCLUSION	- T4800	

LT - LEFT/THROUGH LANE LR - LEFT/RIGHT ONLY LANE

EXCLUSIVE THROUGH LANE TR - THROUGH/RIGHT LANE

R - EXCLUSIVE RIGHT LANE

LTR - LEFT/THROUGH/RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT Y/N	PKG (Nm)	BUSES (Nb)	FHF
EASTBOUND	0.00	3.00	Y	10	0	0,90
WESTBOUND	0.00	3.00	γ	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)	PEDESTR (Y/N)	IAN BUTTON (min T)	ARRIVAL TYPE
	**** **** **** **** **** **** ****		
50	Μ	17.0	3
50	Ν	17.0	3
50	N	9.6	3
50	М	9.6	3
	(peds/hour) 50 50 50	(peds/hour) (Y/N) 50 N 50 N 50 N 50 N	(peds/hour)         (Y/N)         (min T)           50         N         17.0           50         N         17.0           50         N         17.0           50         N         9.6

min T = minimum green time for pedestrians

PRETIMED	LOST TIN	EZPHASE =	3.0 (	YOLE LENGTH =	70.0
PHASE-1         PHASE-2         PHASE-3         PHASE-4           STBOUND         X         X         X           IGHT         X         X         X					
EASTBOUND _EFT	Х	PHASE-2	PHASE-3	PHASE-4	
THRU RIGHT PEDS					
VESTBOUND _EFT FHRU RIGHT PEDS	Х				
VORTHBOUND RT SOUTHBOUND RT					
VORTH/SOUTH PHAS	ING				
NORTHBOUND LEFT THRU RIGHT PEDS		X	PHASE-3	PHASE-4	NA 1977, <b>1</b> 978 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 197
SOUTHBOUND _EFT THRU RIGHT PEDS	X	X X			
EASTBOUND RT VESTBOUND RT					
GREEN YELLOW + ALL RED	5.0 5.0	40.0 5.0	0.0 0.0	0.0	

VOLUME ADJUSTMENT WORKSHEET

	MVT. VOL.	PHE	ADJ. Vol.	LANE GRP.	LANE GRP. Vol.	NÓ. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROF RT
EB					*** **** ****		adite treat and along the	Trang are be at the fart's set to place			
LT	Ó	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
WВ											
L.T	O	0.90						1,000			
TH	$\langle \rangle$	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	Т	1082	ť	1.000	1.000	1082	0.00	0.00
RT	0	0.90						1.000	16 14 14 14 14 14 14 14 14 14 14 14 14 14	V = VV	N 8 10 10
SB											
LT	276	0.90	307	L	307	2	1.050	1.000	322	1.00	0.00
TH	771	0.90	857	Т	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

#### LEVEL-OF-SERVICE WORKSHEET

#### . . DELAY LANE DELAY LANE LANE DELAY LOS V/C G/C CYCLE d GROUP d PROG. GRP. GRP. BY BY RATIO RATIO LEN. 1 CAP. 2 FACT. DELAY LOS APP. APP. EB 0.736 0.243 70.0 18.6 792 2.5 1.00 21.1 C T 21.1 . 0 WB. NB 0.550 0.171 70.0 20.2 L 289 1.7 1.00 21.9 C 23.1 C 0.945 0.457 70.0 13.8 T 1443 9.5 1.00 23.3 0 SB 70.0 22.2 1\_\_\_\_ 1.039 0.171 289 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 8 0.907 0.457 70.0 13.4 R 551 13.4 1.00 26.8 D

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

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1985 HCM: SIGNALIZED INTERSECTIONS 

Page.

IDENTIFYING INFORMATION

NAME OF THE NORTH/SOUTH STREET ..... CENTRAL AVE AREA TYPE.....OTHER 1 NAME OF THE ANALYST ..... DRI TIME PERIOD ANALYZED ..... WKDY PM PK HR OTHER INFORMATION: PROJECTED 1993 CONDITION - NO IMPROVEMENTS

TRAFFIC VOLUMES

	EB	WB	NB	SB		
LEFT	440	()	108	0		
THRU	0	0	908	809		
RIGHT	49	( <u>`</u> )	0	,353		
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 =  $2 \cdot \quad \text{WESTBOUND} = 0$ NORTHBOUND = 2 SOUTHBOUND = 2

				1				
		B	W	B	N	В	S	В
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	L_	12.0	L.T	10.0	L_	11.0	7	12.0
2	R	10.0		12.0	TR'	12.0	R	11.0
3		12.0	1	12.0		12.0		12.0
<i>q</i> .		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		GHT ONLY			TR -	EXCLUSIVE THROUGH/R EXCLUSIVE	IGHT L	ANE

LTR - LEFT/THROUGH/RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT Y/N	PKG (Nm)	BUSES	PHF
EASTBOUND	O. QO	3.00	Y	10	O	0.90
WESTBOUND	0.00	3.00	Y	10	Ō	0.90
NORTHBOUND	0,00	3.OO	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)	PEDESTR) (Y/N)	(MIN BUTTON (min T)	ARRIVAL TYP
			and and a same spin was able of a stage spin (same	·
EASTBOUND	Ŏ	N	17.0	3
WESTBOUND	0	Ν	17.0	Ĵ
NORTHBOUND	0	М	9.6	3
SOUTHBOUND	0	Ν	9.6	3

min T = minimum green time for pedestrians

Page-

### SIGNAL SETTINGS - OPERATIONAL ANALYSIS

#### Page-

#### PRETIMED

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#### LOST TIME/PHASE = 3.0 CYCLE LENGTH = 75.0

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EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4	
EASTBOUND					
LEFT	X				
THRU	Х				
RIGHT	Х				
PEDS .					
WESTBOUND					
LEFT	Х				
THRU	X				
RIGHT	Х				
PEDS					
NORTHBOUND RT					
SOUTHBOUND RT					
,					
GREEN	25.0	0,0	0.0	0.0	
YELLOW + ALL REI	0 5.0	0.0	0.0	0.0	

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4	
NORTHBOLIND					
LEFT	Х				
THRU	Х				
RIGHT	X				
PEDS					
SOUTHBOUND					
_EFT	Х				
THRU	X				
RIGHT	X				
PEDS	N.				
New Sec. Sur					
EASTBOUND RT					
VESTBOUND RT					
* and the state of					
BREEN	40.0	0.0	0.0	0.0	
YELLOW + ALL REI				0.0	
HELLING THELL FLEL	/	0.O	0.0	0 <b>.</b> 0	

VOLUMÉ · ADJUSTMENT WORKSHEET

LANE LANE ADJ. MVT. GRP. NO. UTIL. ADJ. LANE GROWTH GRP. PROP PRG VOL. PHF GRP. VOL. VOL. VOL. LN FACT. FACT. LT : RT -----..... ..... ..... ..... ---------..... EB 440 LT 0.90 489 1 489 1 i.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 1 WB LT O 0.90 1.000 1 TH Ô 0.90 1.000 RT 0.90 Ö 1.000 MB LT 108 0.90 120 1201 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 1 SB LT Ó 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

Page 

# SATURATION FLOW ADJUSTMENT WORKSHEET

Page

		IDEAL										A 13 Y
		SAT. FLOW	NO. LNS	۰F L-J	₹ HV	÷ E:	f p	f BB	f A	₹ RT	n and a second s	ADJ SAT FLO
ΕB			1	····· ··· ··· ··· ····						****		
	<u>I</u>	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
₩В				•								
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	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

# CAPACITY ANALYSIS WORKSHEET

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)		GREEN RATIO ・ (g/C)	LANE GROUP CAPACITY (c)	∨/c RATIO
EB						
<b>.</b>	489	1773	0.276	0.360	638	0.766
R	54	1191	0.046	0.360	429	0.127
ΜB						
NB ·						
I	120	164	0.733	0.560	92	1.308
TR	1009	1507	0.669	0.560	844	1.195
SB						
	899	1773	0.507	0.560	993	0,905
7						

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

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Page

LEVÉ -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								1	*;		···· ··· ···
L.	0.766	0.720	75.O	16.1	638	3.9	1.00	20.0	С	-14:	·*·
R	0.127	0.360	75.0	12.2	429	0.0	1.00	12.2	В		
MB MB								i			
<b>i</b>	1.308	1.120	75.0	-¥:	92	*	1.00	*	* 1	**	*
TR	1.195	0,560	75.0	16.7	844	109.3	1.00	126.0	F		
SB											
т	0.905	0.560	75.0	11.2	993	8.3	1.00	19.5	С	16.3	С
R	0.564	0.560	75.0	8.1	696	0.8	1.00	8.9	8		

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

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

Page-

PROJECTED 1993 CONDITION - WIDEN CENTRAL AVENUE

TRAFFIC VOLUMES

	EB	WВ	NB	SB
			***** ***** ***** Fint *****	
LEFT	440	O	108	0
THRU	0	0	908	809
			7 2.7 6.3	007
RIGHT	49	0	0	
b b ole bard T T	47	V		353
RTOR	0	О	0	Ö
	, v	U U		0

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

### INTERSECTION GEOMETRY

#### Page-2

	E	B	W	В	N	IB:	S	B
ANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	HTGIW	TYPE	HTCIW
1	. [_	12.0	L.T	10.0	{	10.0	Т	12.0
2	LR	10.0		12.0	Т	11.0	TR	<b>i1.</b> 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

LTR - LEFT/THROUGH/RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH.	ADJACENT Y/N	(Mm)	BUSES (Nb)	FrHF
EASTBOUND	0,00	3,00	Y	10	 ()	0.90
WESTBOUND	0.00	3.00	Y	10	Ō	0,90
NORTHBOUND	O,OO	3.00	Y	10	0	0.90
SOUTHBOUND	0.00	3.00	Y	10	Q	0.90

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

	CONFLICTING PEDS	PEDESTR	IAN BUTTON	
	(peds/hour)	(Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	0	Ν	17,0	3
WESTBOUND	0	N	17.0	3
NORTHBOUND	0	N	9.6	3
SOUTHBOUND	Q	Ν	9.6	3

min T = minimum green time for pedestrians

		T 75.00 A.I					and an and another of the ballion of the	· · · · · · · · · · · · · · · · · · ·				
		IDEAL SAT. FLOW	NO. LNS	f bj	f HV	f G	÷	f B <b>B</b>	f A	FRT	f LT	ADJ. SAT. Flow
EВ									1			
	L	1800	1 .	1.000	0.985	1.000	1.000	1.000	1.000	1.000	1.000	177:
	LR	1800	1.	0.930				1.000	1.000		1.000	129
WВ												
NB												
	L	1800	1	0.930	0.985	1.000	1.000	1.000	1.000	1.000	0.950	1566
	Т	1800	2	0.970		1.000	0.920		1.000		1,000	316
SB												
	TR	1800	2	0.985	0,985	1.000	0.920	1.000	1.000	0.954	1.000	306

0.

•

CAPACITY ANALYSIS WORKSHEET 

#### ADJ. SAT. FLOW ADJ. LANE GROUP FLOW RATE FLOW RATE RATIO GREEN RATIO CAPACITY, V/C (v) (s) (v/s) (g/C) ( <u>c</u>\_ ) RATIO ...... ----EB 1773 1\_\_\_\_ 440 0.248 0.293 520 0.846 \* LR 103 1291 0.080 0.273 379 0.273 WB NB 1\_\_\_ 1566 120 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 ( $\vee$ /s) critical = 0.767Lost Time Per Cycle, L = 9.0 sec.X critical = 0.871

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LEVEL-OF-SERVICE WORKSHEET

DELAY LANE DELAY LANE LANE DELAY LOS LANE LANE DELAY LOS RATIO RATIO LEN. 1 CAP. 2 FACT. DELAY LOS APP. APP. and the construction when were made took that that that that will be and will be and will be been took when were the same took the construction of the same took took EΒ 0.846 0.587 75.0 18.9, 520 8.5 1.00 27.5 D 1\_\_\_ 25.2 D LR 0.273-0.293 75.0 15.5 379 0.1 1.00 15.6 C 1 WB NB 0.821 0.093 75.0 25.4 146 19.8 1.00 45.2 E 1 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

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TRAFFIC VOLUMES

	EΒ	₩В	NB	SB
LEFT	440	0	108	Ō
THRU	0	0	908	o
RIGHT	450	0	0	353
RTOR	0	0	0	О

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

## INTERSECTION GEOMETRY

#### Page-2

0.1.10	EB			WB		NB		в
ANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	I	12.0	. 1	10.0	L.	10.0.	Т	12.0
2	R	12.0		12.0	Т	11.0	TR	11.0
3		12.0		12.0	Т	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

- R EXCLUSIVE RIGHT LANE
- LR LEFT/RIGHT ONLY LANE LTR - LEFT/THROUGH/RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT YZN	PKG (Nm)	BUSES (Nb)	FHF	
	··· ····· ···· ··· ···						
EASTBOUND	0.00	3.00	Y	10	O	0.90	
WESTBOUND	0,00	3.00	Y	10	0	0,90	
NORTHBOUND	0.00	3.00	Y	3.0	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	PEDESTR	AN BUTTON	
	(peds/hour)	(Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	Ο	M	17.0	3
WESTBOUND	0	Ν	17.0	3
NORTHBOUND	O	Ν	9.6	3
SONLHBORIND	0	Ν	9.6	3

min T = minimum green time for pedestrians

SIGNAL SETTINGS - OPERATIONAL ANALYSIS Page-3

PRETIMED LOST TIME/PHASE = 3.0 CYCLE LENGTH = 70.0

EAST/WEST PHASING

EASTBOUND .	PHASE-1	PHASE-2	PHASE-3	PHASE-4
LEFT	Х			신 날에 걸렸다. 것은 것은 것은 것이 없다.
THRU	Х		)	
RIGHT	X			
PEDS				
WESTBOUND				
LEFT	Х			
THRU	Х			
RIGHT	Х			
PEDS		1		
				그는 그는 것 그는 말 못한 것을 가 없을까?
NORTHBOUND RT				
SOUTHBOUND RT				
GREEN	25.0	Ο.Ο	Ο.Ο	0.0
YELLOW + ALL RED	5.0	0.O	0.0	0.0

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT	X			
THRU	Х			
RIGHT	X			
PEDS				
SOUTHBOUND				
LEFT				
THRU				
RIGHT				
PEDS				
EASTBOUND RT				ſ
WESTBOUND RT				
GREEN	35.0	<b>0.</b> 0	0.0	0.0
YELLOW + ALL RE	ED 5.0	0.0	0.0	0.0

VOLUME ADJUSTMENT WORKSHEET

		A 13 3		LANE		LANE					
PROF RT	PROP LT	ADJ. GRP. VOL.	GROWTH' FACT.	UTIL. FACT.	NO, LN	GRP. VOL.	LANE GRP.	ADJ. VOL.	PHE	MVT. Vol.	
.,					1-1-1-1						E)
0.00	1.00	489	1.000	1.000	1	489	• L_	489	0.90 0.90	440 0	Ļт Тн
1.00	0.00	500	1.000	1.000	1	500	R	500	0.90	450 1	RT
											B
		,	1,000						0.90	O	LT
			1.000						0.90	O	TH
			1,000						0.90	0	RT
											в
0.00	1.00	120	1.000	1.000	1	120	L	120	0.90	108	LT
0.00	0.00	1059	1.000	1.050	2	1009	Т	1009	0.90	908	TH
V = VY	60 B 62 62	44 - 147 - 148 - 14	1.000						0.90	0	RT
											B
			1.000						0.90	0	LT
			1,000						0.90	0	TH
		친구 성격	1.000						0.90	353	RT

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\* Denotes a Defacto Left Turn Lane Group

	KATION FLOW ADJUSTMENT WOFKSHEET									Page 5		
	IDEAL										, ADJ.	
	SAT. Flow	NO. LNS	f ស	4 HV	f	ľ) 4	f BB	F A	۶ RT	ъ Г	SAT. FLOW	
EB					aitin alima ikan kang sira	····			**************************************	ari's mite free beau feat		
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		0.850	1.000	t000	0.850	1.000	1281	
ЧВ												
									·			
48	1800	4	A 074									
F	10000	1	0. 4.40	0.980	1.000	1.000	1.000	1.000	1,000	0.850	1402	

### CAPACITY ANALYSIS WORKSHEET

#### ADJ. SAT. LANE GROUP ADJ. FL OW FLOW RATE FLOW RATE RATIO GREEN RATIO CAPACITY V/c $(\vee)$ (3) (v/s) (g/C) (c) PATIO -----EΒ 1\_\_\_\_ 489 i773 0.276 0.386 684 0.715 R 500 1281 0.390 0.386 494 1.012 \* 1 WΒ NB , L 0.529 0.529 120 1402 0.086 741 0.162 Т 10593164 0.335 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

LEVEL-OF-SERVICE WORKSHEET

### Page-7

									-	'aqe−7
¦ ∀/c RATIO	g/C RATIO	CYCLE LEN.		LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. Los	DELAY BY APP.	LOS BY APP.
							49.94. August party of 49.94.94			
		70.0	13.9	684	2.5	1.00	16.3	С	33.7	D ·
1.012	0.386	70.0	16.5		34.3	1.00	50,7	E		
		1								
0.162	0.529	70.0	ć.5	741	Ο"Ο	1.00	6.5	в	9.2	в
0.633	0.529	70.0	8.9	1673	0.6	1.00	9.5	В		
	, v/c RATIO 0.715 1.012	V/C g/C RATIO RATIO	v/c g/C CYCLE RATIO RATIO LEN. 0.715 0.771 70.0 1.012 0.386 70.0 1	DELAY C G/C CYCLE d RATIO RATIO LEN. 1 0.715 0.771 70.0 13.9 1.012 0.386 70.0 14.3 ) 0.162 0.529 70.0 6.5	DELAY LANE V/C g/C CYCLE d GROUP RATIO RATIO LEN. 1 CAP. 0.715 0.771 70.0 13.9 684 1.012 0.386 70.0 16.5 494 1 0.162 0.529 70.0 6.5 741	DELAY LANE DELAY v/c g/C CYCLE d GROUP d RATIO RATIO LEN. 1 CAP. 2 0.715 0.771 70.0 13.9 684 2.5 1.012 0.386 70.0 16.5 494 34.3 1 0.162 0.529 70.0 6.5 741 0.0	DELAY LANE DELAY v/c g/C CYCLE d GROUP d PROG. RATIO RATIO LEN. 1 CAP. 2 FACT. 0.715 0.771 70.0 13.9 684 2.5 1.00 1.012 0.386 70.0 16.5 494 34.3 1.00 1 0.162 0.529 70.0 6.5 741 0.0 1.00	DELAY       LANE       DELAY       LANE         v/c       g/C       CYCLE       d       GROUP       d       PROG.       GRP.         RATIO       RATIO       LEN.       1       CAP.       2       FACT.       DELAY         0.715       0.771       70.0       13.9       684       2.5       1.00       16.3         1.012       0.386       70.0       16.5       494       34.3       1.00       50.7         1       0.162       0.529       70.0       6.5       741       0.0       1.00       6.5	V/c       g/C       CYCLE       DELAY       LANE       DELAY       LANE       LANE       LANE       LANE         RATIO       RATIO       LEN.       d       GROUP       d       PROG.       GRP.       GRP.       GRP.       GRP.       GRP.       GRP.       GRP.       GRP.       GRP.       DELAY       LOS         0.715       0.771       70.0       13.9       684       2.5       1.00       16.3       C         1.012       0.386       70.0       13.9       684       2.5       1.00       16.3       C         1       0.12       0.386       70.0       16.5       494       34.3       1.00       50.7       E         1       0.162       0.529       70.0       6.5       741       0.0       1.00       6.5       B	V/c       g/C       CYCLE       DELAY       LANE       DELAY       LANE       DELAY         RATIO       G/C       CYCLE       d       GROUP       d       PROG.       GRP.       GRP.       BY         0.715       0.771       70.0       13.9       684       2.5       1.00       16.3       C       33.7         0.715       0.771       70.0       13.9       684       2.5       1.00       16.3       C       33.7         1.012       0.386       70.0       16.5       494       34.3       1.00       50.7       E       3         1       0.162       0.529       70.0       6.5       741       0.0       1.00       6.5       8       9.2

SB

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

Lover

### IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....BROADWAY NAME OF THE NORTH/SOUTH STREET.....OTHER AREA TYPE.....OTHER PEDESTRIAN WALKING SPEED.....Other NAME OF THE ANALYST.....DRI DATE OF THE ANALYSIS......DRI DATE OF THE ANALYSIS......WKDY PM PK HR OTHER INFORMATION: PROJECTED 1993 CONDITION - NO IMPROVEMENTS

### TRAFFIC VOLUMES

		200 See laad Mai Mar See laad laad gee laat gee gee g	ang	
	E8	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 SEGMETRY 

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

LANE	EB TYPE WIDTH	WE TYPE	з ылртн	, NI TYPE	3 WIDTH	S) TYPE	8 WIDTH	
1	LR 11.0	L.T	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	1	12.0	
4	12.0		12.0		12.0		12.0	
Ş	12.0		12.0		12.0		12.0	
6	12.0		12.0		12.0		12.0	
LT -   LR -	EXCLUSIVE LEFT I LEFT/THROUGH LAI LEFT/RIGHT ONLY	VE		tr	EXCLUSIV THROUGH/ EXCLUSIV	RIGHT L	GH LANE ANE LANE	

LTR - LEFT/THROUGH/RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT Y/N	PKG (Nm)	BUSES (Nb)	PHF
EASTBOUND	0,00	3.00	N	0	Ō	0.90
WESTBOUND	0.00	3.00	Ν	ò	O	0.90
NORTHBOUND	0.00	3.00	Y	20	O	0.90
SOUTHBOUND	O.O	3.00	Y	20	Q	0.90

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

	CONFLICTING PEDS	PEDESTR	IAN BUTTON '	
	(peds/hour)	(YZN)	(min T)	ARRIVAL TYF
	alle the set of the set of the set of the transformer that the transformer the set of the set		allik bilang ikang menan pikan anali kapa apan panan anala	
EASTBOUND	0	N	17.0	3
WESTBOUND	0	М	17.0	3
NORTHBOUND	O	Ν	9.6	3
SOUTHBOUND	0	N	9.6	3

min T = minimum green time for pedestrians

### SIGNAL SETTINGS - OPERATIONAL ANALYSIS

#### PRETIMED LOST TIME/PHASE = 3.0 CYCLE LENGTH = 65.0

EAST/WEST PHASING

.

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

NORTH/SOUTH PHASING

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

éage-

VOLUME ADJUSTMENT WORKSHEET 

LANE LANE ADJ. MVT. ADJ. LANE GRP. NO. UTIL. GROWTH GRP. PROP PRO VOL. FHF VOL. GRP. VOL. LN FACT. FACT VOL. LT RT \*\*\*\* -------------------EB LT ()0.90 1.000 TH 0 0.90 1.000 RT ()0,90 1.000 WB . LT 494 0.90 1.000 TH 0 0.90 0 LT 549 1.000 1 1.000 549 1.00 0.0 RT 82 0.90 1.000 NB LT Ó 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 Ó 0.90 1.000 TH 734 0,90 816 TR 816 2 1.050 1.000 856 0.00 0.0 RT  $\odot$ 0,90 1.000

\* Denotes a Defacto Left Turn Lane Group

Paqer

		IDEAL SAT, FLOW	NG. LNS	ቶ [5]	f HV	f G	f p	ғ. BB	f A	f RT	f Li T	ADJ SAT FLO
EB.					- To all calling all reg times any a							
₽B												
	<u> </u> T	1800	i	0.930	0.985	1.000	1.000	1.000	1.000	1.000	0.765	i26
Bh						•			1			
	TR	1800	2	0.930	0.985	1.000	0.890	1.000	1.000	0.973	1.000	285
68												
	TR	1800	2	0,930	0.985	1.000	0.890	1.000	1.000	1.000	1 000	003

## CAPACITY ANALYSIS WORKSHEET

;

	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. X critical = 0.824

Pager

### LEVEL-OF-SERVICE WORKSHEET

1

### DELAY LANE DELAY LANE LANE DELAY LOS V/C G/C CYCLE d GROUP d PROG. GRP. GRF. BV BY RATIO RATIO LEN. 1 CAP. . 2 FACT. DELAY LOS APP. APP. EΒ WΒ LT 1.048 0.415 65.0 14.9 524 44.2 1.00 59.1 E 59.1 E NE TR 0.790 0.492 65.0 10.4 1406 2.2 1.00 12.6 B 12.6 B SB TR 0.573 0.472 65.0 9.0 1445 0.5 1.00 9.5 B 9.5 B

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

Face-

IDENTIFYING INFORMATION I UREALEU NAME OF THE EAST/WEST STREET.....BROADWAY NAME OF THE NORTH/SOUTH STREET.....BROADWAY NAME OF THE NORTH/SOUTH STREET....OTHER PEDESTRIAN WALKING SPEED.....OTHER PEDESTRIAN WALKING SPEED.....DRI NAME OF THE ANALYST.....DRI DATE OF THE ANALYSIS.....DRI IME PERIOD ANALYZED.....WKDY PM PK HR OTHER INFORMATION: PROJECTED 1993 CONDITION - CENTRAL AVE WIDENING

TRAFFIC VOLUMES

	tine mer soll alle sin det her sin sen han ten t		nan 1200 Men han oral had ber orde Abs and one orde p		ann ann aite and ann ann ann bar ann luc ang mu
	EB	₩В	NB	SB	
LEFT	0	494	0	Ŏ	
THRU	0	0	783	734	
RIGHT	0	82	169	Q	
RTOR	0	0	0	Ō	

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

SIGNAL SETTINGS - OFERATIONAL ANALYSIS 

Page-

.

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	Х			· · · · · · · · · · · · · · · · · · ·
PEDS				
신경 가슴 이 집 승규가 같아요.		7		
WESTBOUND				
LEFT	Х			
THRU	Х			
RIGHT	Х			
PEDS				
NORTHBOUND RT				
SOUTHBOUND RT				
GREEN	25.0	0.0	O . O	Ο.Ο
YELLOW + ALL REI	> 5.0	Ο.Ο	Ο,Ο	0.O

NORTH/SOUTH PHASING

NORTHBOUND	PHASE-1	PHASE-2	PHASE-3	PHASE-4	
LEFT	Х				
THRU	Х				
RIGHT PEDS	Х				
SOUTHBOUND					
LEFT	Х				
THRU	Х				
RIGHT PEDS	X	•			
EASTBOUND RT WESTBOUND RT					
GREEN	30.0	Ο.Ο	0.0	0.0	
YELLOW + ALL REI	) 5.0	Ο.Ο	0.0	0.0	

### VOLUME ADJUSTMENT WORKSHEET

1

Page-

		MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE . GRP. VOL.		LANE UTIL, FACT,	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PR0 R1
EB					***** <b>14***</b> *****	*****	····· •···		land -the offer them was tree.			
1	LT	Ö	0.90						4 000			
	77-1	ŏ	0,90						1.000			
	RT	Ō	0.90						1.000 1.000			
		•							1 . (7070)			
ŴВ												
	1.7	494	0.90						1.000			
	TI-ł	0	0.90	0	LT	549	1	1.000	1.000	549	1.00	0.0
	RT	82	0.90						1.000		3 4 5 5	
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		tar et san san	.7. a. T.
SB												
	LT	О	0.90						1 000			
	TH	734	0.90	816	TR	816	2	1 050	1.000	05	0.00	
	RT	0	0.90	~ L ( )		010	∠.	1.050	1.000	856	0.00	0.0
			ar 19 - 7 - 12"						1.000			

\* Denotes a Defacto Left Turn Lane Group

SATURATION	FLOW	ADJUSTMENT	WORKSHEET	

											· · · · · · · · · · · · · · · · · · ·	arge
		IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	F F	f BB	• ; • ;	f RT	f 1_7	ADJ SAT
EB	,						a diffe i fanne fa ann an an an an an		····• [·····			· too any or
WB												
	L.T	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	4.000	345
SB							•					
	TR	1800	2	1.000	0.985	1,000	1.000	1,000	1.000	1.000	1.000	354

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Page

CAPACITY ANALYSIS WORKSHEET 

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	ADJ. FLOW RATE (V)	ADJ. SAT. Flow Rate (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	√/α RATIO
EB						
WB LT	549	1261	0.435	0.415	524	1.048 *
NB TR	1111	3452,	0.322	0.472	1699	0.654 *
SB · TR	856	3546	0.241	0.492	1746	0.491

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

### LEVEL-OF-SERVICE WORKSHEET

1

DELAY LANE DELAY LANE LANE DELAY LOS V/C g/C CYCLE d GROUP d PROG, GRP, GRP, BY BY RATIO RATIO LEN. 1 CAP. 2. FACT. DELAY LOS APP. APP. ----------------EB WB 1.048 0.415 65.0 14.9 524 44.2 1.00 59.1 E 59.1 E LT 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

1985 HCM: SIGNALIZED INTERSECTIONS Page-

1

### IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET.....BROADWAY NAME OF THE NORTH/SOUTH STREET ..... CENTRAL AVE PEDESTRIAN WALKING SPEED...... O (feet/sec) NAME OF THE ANALYST.....DRI TIME PERIOD ANALYZED ..... WKDY PM PK HR OTHER INFORMATION: PROJECTED 1993 CONDITION - ONE WAY CIRCULATION

#### TRAFFIC VOLUMES

<b>13 :-7 23 ::7 31 10: 41: 25 11:</b>	- 1847 ALLE ALLE ALLE ALLE ALLE ALLE ALLE ALL			19 km 194 km km km ng km na ang km
	EB	WВ	NB	SB
LEFT	Ŏ	494	0	Ö
THRU	0	0	783	O
RIGHT	0	82	169	Ο,
RTOR	0	0	O	Ó

(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	MB :	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
LT -   LR -	EXCLUSIVE LEFT L LEFT/THROUGH LAN LEFT/RIGHT ONLY LEFT/THROUGH/RIG	IE LANE		E THROUGH LANE RIGHT LANE E RIGHT LANE

### ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACEN Y/N	T PKG (Nm)	EUSES (Nb)	PHF
EASTBOUND	0.00	3.00	N	О	O	0.90
WESTBOUND	0.00	3.00	Ν	0	Ō	0.90
NORTHBOUND	0.00	3.00	N	0	О	0.90
SOUTHBOUND	0.00	3.00	N	Ō	O	0,90

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

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

min T = minimum green time for pedestrians

Pace-

PRETIMED	LOST TH	ME/PHASE =	<b>3.</b> 0 C	CLE LENGTH = 60.0	
; EAST/WEST PHASI					
		PHASE-2		PHASE-4	
EASTBOUND	X				
LEFT THRU	X				
RIGHT	X X				
PEDS	~				
i ban ha sa					
WESTBOUND					
LEFT	х				
THRU	Х				
RIGHT	Х				
PEDS					
NORTHBOUND RT SOUTHBOUND RT					
BREEN	25.0	0.0	0.0	0,0	
YELLOW + ALL REI	) 5.0	0.0	0.0	0.0	
NORTH/SOUTH PHAS	BING				
	PHASE-1	PHASE-2	PHASE-3	PHASE-4	
VORTHBOUND					
EFT	X				
THRU	Х				
RIGHT PEDS	X				
L_1/C)					
SOUTHBOUND					
EFT	x				
THRU	X				
RIGHT	X				

EASTBOUND RT WESTBOUND RT

1

GREEN			25.0	0.0	0.0	0.0
YELLOW +	ALL	RED	5.0	0.0	0.0	0.0

VOLUME ADJUSTMENT WORKSHEET 

LANE LANE ADJ. MVT. GRP. NO. UTIL, ADJ. LANE GROWTH GRP. PROP PRC , VOL. VOL. PHF GRP. VOL. LN FACT. VOL. FACT. LT R1 ..... ..... ----..... ----..... --------------EB LT  $\mathbf{O}$ 0.90 1.000 TH 0 0,90 1,.000 RT 0 0.90 1.000 WB LT 494 0.90 1,000 549 1.00 0.C TH Ō 0.90 549 Ô L.T 1 1.000 1.000 RT 82 0,90 1.000 NB LT 0 0.90 1.000 TH 0.90 783 870 TR 1058 2 1.050 1.000 1111 0,00 0.1 RT 169 0,90 1.000 : SB LT (0.90 1.000 TH 0.90 Ō 1.000 RT 0.90 (1.000

\* Denotes a Defacto Left Turn Lane Group

Pace-

## SATURATION FLOW ADJUSTMENT WORKSHEET

Page

	IDEAL SAT.• FLOW,	NO. LNS	f W	f HV	<del>к</del> : (3	f	f BB	f	f RT	f · LT	ADJ SAT FLO
EB		1						****			<b></b>
ΨE											
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

# CAPACITY ANALYSIS WORKSHEET

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO	LANE GROUP CAPACITY (c)	V/C RATIO
EB					Park Park Land and Barris and Barris and Barris and	
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. Sum (v/s) critical = 0.757Lost Time Per Cycle, L = 6.0 sec. X critical = 0.841

# LEVEL-OF-SERVICE WORKSHEET

		g/C RATIO	CYCLE LEN.	DELAY d	LANE GROUP CAP.	DELAY d	PROG. FACT.		LANE GRP.	DELAY BY APP.	LOS BY APP.	
EB WB						4	· · · · · · · · · · · · · · · · · · ·	12 G. L. F 1 1	L_ (J (2)	F1F F .	rif (* ,	
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	В	11.3	В	
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

		IDEAL SAT.	NO.	f	÷	Ē	f	f	f	f	f í	ADJ. SAT.
		FLOW	LNS	W	ΗV	6	р	BB	A	RT	LT	FLOW
EB					····							
	T	1800	2	1.000	0.985	1.000	1,000	1.000	1.000	1.000	1.000	3544
	R	1800	1	1.000	0.985	1.000	0.850	1.000	1.000	0.850	1.000	1281
WВ				i								
NB												
	L	1800	1	0.930	0.985	1.000	1.000	1.000	1.000	1.000	0 950	1566
	Т	1800	1	0.970	0.985	t.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
	Т	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	1208

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CAPACITY ANALYSIS WORKSHEET

	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						10 <sup>-1</sup> 1011	
Т	464	3546	0.131	0.171	608	0.764	
R	220	1281	0.172	O.171		1.002	÷Ř·
ΜВ							
NB							
L	159	1566	0.101	A 4.00			
T	1082	1376	0.787	0,100	157	1.014	
	and it pane date		W#707	0,000	826	1.311	-77-
SB							
L	322	3034	0.106	0.100	303	1,061	.×
Т	857	1773	0.483	0.600	1064	0.805	7.
R	228	1206	0.189	0,600	723	0.315	

LEVEL-OF-SERVICE WORKSHEET

DELAY LANE DELAY LANE LANE DELAY LOS v/c g/C CYCLE d GROUP d . PROG. GRP. GRP. BY BY RATIO RATIO LEN, 1 CAP. 2 FACT. DELAY LOS AFP. APP. ----EB T 0.764 0.171 70.0 21.0 608 4 . O 1.00 25.0 С 39.2 D R 1.002 0.171 70.0 22.0 220 47.2 1.00 69.3 F ΨB 1 NB . 1.014 0.100 70.0 24.0 I... 157 59.9 1,00 83.9 -× ..... Т 1.311 0.400 70.0 × 826 . 1.00 × × SB 70.0 24.1 1 i.061 0.100 303 59.6 1.00 83.7 27.0 D F T 0.805 0.600 70.0 8.2 1064 3.2 1.00 11.5 E R 0.315 0.600 70.0 5.2 723 O.1 1.do 5.3 R

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

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

TRAFFIC VOLUMES

		5 100 <b>101 20 101 105</b> 100 105 100 105 100 100 100 100 100			*=====
	EB	WB	NB	SB	
EFT	0	0	143	276	
HRU	398	Ō	974	771	
EGHT	198	0	Q	205	
TOR	0	0	0	0	

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

### INTERSECTION GEOMETRY

Page-2

	E.	В	Į, į	В	N	E	S	B
ANE	ТҮРЕ	WIDTH	TYPE	WIDTH	TYPE	HTCIW	TYPE	WIDTH
1.	1	12.0	LT	10.0		1.0.0	<u> </u>	10.0
2	n gen g	12.0		12.0	т	11.0	L	10.0
3	R	12.0		12.0	T	11.0	Т	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

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH.	ADJACEN Y/N	T PKG (Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	3.00	γ	10	Ö	0.90
WESTBOUND	0.00	3.00	γ	10	ò	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	PEDESTR	AN BUTTON	
	(peds/hour)	(Y/N)	(min T)	ARRIVAL TYPE
		***************************************		hand as in other mag of a case ford on the date bout of the test.
EASTBOUND	50	N	17.0	3
WESTBOUND	50	N	17.0	Z
NORTHBOUND	50	N	9.6	3
SOUTHBOUND	50	N	9.6	Z

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 WESTEDUND LEFT X RIGHT X PEDS NORTHBOUND RT GREEN 12.0 0.0 0.0 0.0 NORTH/SOUTH PHASING PHASE-1 PHASE-2 PHASE-3 PHASE-4 NORTHBOUND RT GREEN 12.0 0.0 0.0 0.0 NORTH/SOUTH PHASING PHASE-1 PHASE-2 PHASE-3 PHASE-4 NORTHBOUND RT SOUTHBOUND LEFT X THRU X RIGHT X RIGHT X RIGHT X RIGHT X RIGHT X PEDS SOUTHBOUND LEFT X THRU X RIGHT X RIGHT X PEDS SOUTHBOUND LEFT X THRU X RIGHT X PEDS SOUTHBOUND RT GREEN 8.0 35.0 0.0 0.0	SIGNAL SETTINGS					Page-3
EAST/WEST PHASING PHASE-1 PHASE-2 PHASE-3 PHASE-4 EASTBOUND LEFT X TIRU X RIGHT X PEDS WESTEDUND LEFT X THRU X RIGHT X PEDS NORTHROUND RT GREEN 12.0 0.0 0.0 0.0 NORTH/SOUTH PHASING PHASE-1 PHASE-2 PHASE-3 PHASE-4 NORTHBOUND LEFT X THRU X RIGHT X FEDS SOUTHBOUND LEFT X THRU X RIGHT X THRU X THRU X THRU X RIGHT X THRU X THRU X RIGHT X THRU X						
PHASE-1         PHASE-2         PHASE-3         PHASE-4           EASTBOUND LEFT         X         ,         ,           IGHT         X         ,         ,           YESTEDUND LEFT         X         ,         ,           YEBTEDUND LEFT         X         ,         ,           YEBTEDUND LEFT         X         ,         ,           YEBTEDUND LEFT         X         ,         ,           YEBTEDUND RTHROUND RT         X         ,         ,           YEBTEDUND REFT         X         ,         ,           YELLOW + ALL RED         5.0         0.0         0.0         0.0           YORTHBOUND RT         YELLOW + ALL RED         5.0         0.0         0.0         0.0           YORTH/SOUTH PHASING         YELLOW + ALL RED         YEL         YELLOW + ALL RED         YEL         YEL         YEL         YEL           YORTHBOUND LEFT         X         X         YEL         <			There is a state of the second	india india dia dia dia dia dia dia dia dia dia	Cartala Calatity 111	7 V • V
EFT X THRU X 1 TIRU X 1 TIRU X 1 TIRU X 1 EFT X 1 HRU X 1 TIRU X 1 TIRU X 1 TIRU X 1 TIRU X 1 TIRU X 1 SREEN 12.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	EAST/WEST PHASIN	IG				
LEFT X THRU X YEGHT X YESTEOUND LEFT X YETHRU X YEGHT X YEDS NORTHBOUND RT SREEN 12.0 0.0 0.0 0.0 YELLOW + ALL RED 5.0 0.0 0.0 0.0 YELLOW + ALL RED 5.0 0.0 0.0 0.0 YELLOW + ALL RED 5.0 0.0 0.0 NORTH/SOUTH PHASING PHASE-1 PHASE-2 PHASE-3 PHASE-4 NORTHBOUND LEFT X THRU X RIGHT X RIG		PHASE-1	PHASE-2	PHASE-3	PHASE-4	
THRU X X Y TIGHT X PEDS WESTEDUND LEFT X THRU X TIGHT X PEDS NORTHBOUND RT SREEN 12.0 0.0 0.0 0.0 VORTHBOUND RT SREEN 12.0 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 SOUTHBOUND LEFT X THRU X RIGHT X SOUTHBOUND LEFT X THRU X RIGHT X SOUTHBOUND LEFT S SOUTHBOUND SOUTHBOUND LEFT S SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOUTHBOUND SOU						
RIGHT       X         PEDS       X         WESTEDUND       LEFT         LEFT       X         THRU       X         RIGHT       X         PEDS       X         NORTHBOUND RT       SOUTHBOUND RT         SGREEN       12.0       0.0       0.0       0.0         NORTHBOUND RT       SOUTHBOUND RT       SOUTHBOUND       NORTHBOUND         VELLOW + ALL RED       5.0       0.0       0.0       0.0         NORTH/SOUTH PHASING       PHASE-1       PHASE-2       PHASE-3       PHASE-4         NORTHBOUND       X       X       RIGHT       X         RIGHT       X       X       RIGHT       X         SOUTHBOUND       X       X       RIGHT       X         RIGHT       X       X       X       X         RI						
PEDS WESTEQUND LEFT X THRU X RIGHT X PEDS NORTHBOUND RT SOUTHBOUND RT SOUTHBOUND RT SOUTHBOUND RT PHASE-1 PHASE-2 PHASE-3 PHASE-4 NORTHBOLND LEFT X THRU X RIGHT X PEDS SOUTHBOUND LEFT X THRU X RIGHT X PEDS SOUTBOUND RT GREEN 8.0 35.0 0.0 0.0	THRU	Х			1	
WESTEDUND         LEFT         X           LEFT         X           RIGHT         X           PEDS           NORTHBOUND RT           SOUTHBOUND RT           SGREEN         12.0         0.0         0.0         0.0           YELLOW + ALL RED         5.0         0.0         0.0         0.0           NORTHBOUND RT         PHASE-1         PHASE-2         PHASE-3         PHASE-4           NORTHBOUND         X         X         X         X           NORTHBOUND         X         X         X         X           NORTHBOUND         X         X         X         X           SOUTHBOUND         X         X         X         X           PEDS         X         X         X         X           SOUTHBOUND         X         X         X         X           PEDS         X         X         X         X           SOUTHBOUND         X         X         X         X           PEDS         X         X         X         X           SOUTHOUND         X         X         X         X           RIGHT         X         X	RIGHT	Х				
LEFT X THRU X RIGHT X PEDS NORTHBOUND RT SREEN 12.0 0.0 0.0 0.0 SREEN 12.0 0.0 0.0 0.0 SREEN 12.0 0.0 0.0 0.0 NORTHBOUND RT 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 SOUTHBOUND RT MESTBOUND RT MESTBOUND RT MESTBOUND RT MESTBOUND RT	PEDS					
LEFT X THRU X RIGHT X PEDS NORTHBOUND RT GREEN 12.0 0.0 0.0 0.0 SOUTHBOUND RT GREEN 12.0 0.0 0.0 0.0 NORTHBOUND RT 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 SOUTHBOUND LEFT X THRU X RIGHT X RIGHT X FEDS SOUTHBOUND RT GREEN 8.0 35.0 0.0 0.0	WESTBOUND					
THRU X RIGHT X PEDS NORTHEOUND 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 RIGHT X PEDS SOUTHBOUND LEFT X THRU X RIGHT X RIGHT X RIGHT X RIGHT X RIGHT X RIGHT X RIGHT X RIGHT 8.0 35.0 0.0 0.0		X				
RIGHT     X       PEDS     X       NORTHBOUND RT       SOUTHBOUND RT       GREEN     12.0       O.O     0.0       YELLOW + ALL RED     5.0       NORTH/SOUTH PHASING       PHASE-1     PHASE-2       PHASE-1     PHASE-3       PHASE-1     PHASE-2       PHASE-1     PHASE-3       PHASE-1     PHASE-3       PHASE-1     PHASE-3       PHASE-1     PHASE-3       PHASE-1     PHASE-3       PHASE-1     PHASE-3       PHASE-1     PHASE-4       NORTHBOUND     X       LEFT     X       THRU     X       RIGHT     X       PEDS     X       SOUTHBOUND     X       LEFT     X       THRU     X       RIGHT     X       PEDS     X       EASTBOUND RT     X       GREEN     8.0     35.0       O.O     0.0						
PEDS ' NORTHBOUND RT SOUTHBOUND RT GREEN 12.0 0.0 0.0 0.0 0.0 YELLOW + ALL RED 3.0 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 GREEN 8.0 35.0 0.0 0.0						
NORTHEOUND RT           SQUTHBOUND 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         X         X           RIGHT         X         X         X           PEDS         X         X         X           EASTBOUND RT         X         X         X           GREEN         8.0         35.0         0.0         0.0		Α				
SOUTHBOUND RT         GREEN       12.0       0.0       0.0       0.0         YELLQW + ALL RED       5.0       0.0       0.0       0.0         NORTH/SOUTH PHASING       PHASE-1       PHASE-2       PHASE-3       PHASE-4         NORTHBOUND       X       THRU       X         LEFT       X       X       PEDS         SOUTHBOUND       X       X         LEFT       X       X         PEDS       X       X         SOUTHBOUND       X       X         LEFT       X       X         PEDS       X       X         SOUTHBOUND       X       X         LEFT       X       X         RIGHT       X       X         PEDS       X       X         EASTBOUND RT       X       X         GREEN       8.0       35.0       0.0	F E 1753					
SREEN         12.0         0.0         0.0         0.0         0.0           YELLOW + ALL RED         5.0         0.0         0.0         0.0         0.0           NORTH/SOUTH PHASING         PHASE-1         PHASE-2         PHASE-3         PHASE-4           NORTHBOUND         X         THRU         X           RIGHT         X         THRU         X           PEDS         X         THRU         X           SOUTHBOUND         X         THRU         X           LEFT         X         X         Y           PEDS         X         X         Y           SOUTHBOUND         X         X         Y           LEFT         X         X         Y           PEDS         X         Y         Y           SOUTHBOUND         X         X         Y           LEFT         X         Y         Y         Y           RIGHT         X         Y         Y         Y           EASTBOUND RT         X         Y         Y         Y           GREEN         8.0         35.0         0.0         Y         Y						
YELLOW + ALL RED 5.0 0.0 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 GREEN 8.0 35.0 0.0 0.0	SOUTHBOUND RT					
YELLOW + ALL RED 5.0 0.0 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	GREEN	12.0	0.0	0.0	0.0	
NORTH/SOUTH PHASING PHASE-1 PHASE-2 PHASE-3 PHASE-4 NORTHBOUND LEFT X THRU X PEDS SOUTHBOUND LEFT X THRU X RIGHT X RIGHT X PEDS EASTBOUND RT GREEN 8.0 35.0 0.0 0.0	YELLOW + ALL RED	5.0				
LEFT X THRU X AIGHT X PEDS SOUTHBOUND LEFT X THRU X AIGHT X PEDS EASTBOUND RT #ESTBOUND RT 3REEN 8.0 35.0 0.0 0.0			PHASE-2	PHASE-3	PHASE-4	
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						
RIGHT X PEDS SOUTHBOUND LEFT X THRU X RIGHT X PEDS EASTBOUND RT WESTBOUND RT GREEN 8.0 35.0 0.0 0.0		X				
PEDS SOUTHBOUND LEFT X THRU X RIGHT X PEDS EASTBOUND RT WESTBOUND RT GREEN 8.0 35.0 0.0 0.0						
SOUTHBOUND LEFT X THRU X RIGHT X PEDS EASTBOUND RT WESTBOUND RT GREEN 8.0 35.0 0.0 0.0			X			
LEFT X THRU X RIGHT X PEDS EASTBOUND RT WESTBOUND RT GREEN 8.0 35.0 0.0 0.0	PEDS					
THRU X RIGHT X PEDS EASTBOUND RT WESTBOUND RT GREEN 8.0 35.0 0.0 0.0	SOUTHBOUND				1	
RIGHT X PEDS EASTBOUND RT WESTBOUND RT GREEN 8.0 35.0 0.0 0.0	LEFT	Х				
RIGHT X PEDS EASTBOUND RT WESTBOUND RT GREEN 8.0 35.0 0.0 0.0	THRU		X			
PEDS EASTBOUND RT WESTBOUND RT GREEN 8.0 35.0 0.0 0.0	RIGHT					
WESTBOUND RT GREEN 8.0 35.0 0.0 0.0						
	EASTBOUND RT					
	WESTBOUND RT	8.0	35.0	0.0	0.0	
	WESTBOUND RT GREEN		35.0 5.0	0.0	0.0 0.0	

VOLUME	ADJUSTME	NT WORKS	HEET
--------	----------	----------	------

÷ . . LANE LANE ADJ. MVT. ADJ. LANE GRP. NO. UTIL. GROWTH GRP. PROP PROP VOL. PHE VOL. GRP. VOL. LN FACT. FACT. VOL. 1\_T RT ----------..... -------------------------EΒ L-T ()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 Ż WΒ LT Ö 0.90 1.000 TH 0.90 Ö 1.000 RT 0 0.90 1.000 NB LT 143 0.90 159 L. 159 3. 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 SB1.7 276 0.90 307 I... 2 307 1.050 i.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

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\* Denotes a Defacto Left Turn Lane Group

		IDEAL SAT. FLOW	NO. LNS	f VJ	f HV	f	4 p	+ BB	f	₽ F	f LT	ADJ. SAT. Flow
EB					****	tered with true , and art a						
	τ·	1800	2	1.000	0.985	1,000	1.000	1.000	1.000	1.000	1.000	3544
	R	1800	1	1.000	0.985	1.000	0.850	1.000	1.000	0.850	1.000	1281
ΜB	÷											
NB												•
	L	1800	1	0.930	0.985	1.000	1.000	1.000	1 000	1 000	0.950	1522
	T	1800	2			1.000			1.000	1.000	1.000	1566 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		1.000	1.000	0.968	1.000	3051

)

CAPACITY ANALYSIS WORKSHEET

÷ + . ADJ. ADJ. SAT. FLOW LANE GROUP FLOW RATE FLOW RATE RATIO GREEN BATIO CAPACITY V/c (v/s) (g/C) (\/) (s) (c) RATIO ------..... ---------EB T 0.131 0.200 0.172 0.200 464 3546 709 0.655 R 220 1281 256 0.859 \* WB 1 NB 0.101 0.143 0.371 0.529 L 159 1566 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 = 0.650Lost Time Per Cycle, L = 9.0 sec.X critical = 0.746

LEVEL-OF-SERVICE WORKSHEET

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		∨/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. Fact,		LANE GRP.	DELAY BY APP.	LOS BY APP.
EB										at book for all dere ; agente	tara, task time part ayar	
T R	} -	0.455 0.859	0,200 0,200	70.0 70.0	19.6 20.6	709 256	1.5 16.6	· 1.00 1.00		C D	26.3	D
MB MB	•				1							
		0.710	0.143	70.0	21.7	224	6.7	1.00	28.5	D	12.6	в
Т		0.702	0.529	70.0	9.4	1618	1.0	1.00	10.4	В		
SB												
1		0.743	0.143	70.0	21.9	433	4.7	1.00	26.5	D	14.0	В
Т	R	0.705	0.529 '	70.0	9.4	1616	1.0	1.00	10.4	B		

Intersection Delay = 15.9 (sec/veb) Intersection LOS = C 1985 HCM: SIGNALIZED INTERSECTIONS Page-1

IDENTIFYING INFORMATION

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

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

AREA TYPE.....OTHER

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

NAME OF THE ANALYST ..... DRI

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

OTHER INFORMATION:

PROJECTED 1993 CONDITION - ONE WAY CIRCULATION

TRAFFIC VOLUMES.

1

151 HT III III III III EN 171 HK			<b>; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; </b>	2 60 90 90 60 60 60 90 at 20 90 95 <u>85 55 55 55</u>	
	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.)

### INTERSECTION GEOMETRY

#### Page-2

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

	[]	B	Ŀ.J	В	N	B	S	в
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1.	Т	12.0	LT	10.0	• L_	12.0		12.0
2	Т	12.0		12.0	Ť	12.0	LT	12.0
3		12.0		12.0	Т	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 -	EXCLUSIV	VE LEFT	LANE		т —	EYALICIU	- TUONU	CU LANC

1	ENVERIOUS A A CULLECULA CULLARA	1	-1	EXCLUSIVE THRUUGH LANE
LT	 LEFT/THROUGH LANE	TR		THROUGH/RIGHT LANE
LR	 LEFT/RIGHT ONLY LANE	R		EXCLUSIVE RIGHT LANE

LTR - LEFT/THROUGH/RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT YZN	PKG (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	γ	20	0	0.90
SOUTHBOUND	0.00	3.QQ	γ	20	0	0,90

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

	CONFLICTING PEDS	PEDESTRI	AN BUTTON	
	(peds/hour)	(Y7N)	(min T)	ARRIVAL TYPE
	rine pair afte brig more apri terd only plan and due pair and and the sec		** -**** **** **** **** **** **** ****	
EASTBOUND	50	Ν	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

SIGNAL SETTINGS - OPERATIONAL ANALYSIS 

Page-3

PRETIMED LOST TIME/PHASE = 3.0 CYCLE LENGTH = 70.0

EAST/WEST PHASING 

EASTBOUND LEFT THRU	PHASE-it X X	PHASE-2	PHASE-3	PHASE-4
RIGHT PEDS	x			
WESTBOUND LEFT THRU RIGHT PEDS	X X X			
NORTHBOUND RT Southbound Rt				
GREEN YELLOW + ALL RE	15.0 D 5.0	0.0	0.0	· 0.0 0.0

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT	X			
THRU		Х		
RIGHT		X		
PEDS				
SOUTHBOUND		r		
LEFT	Х			
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

VOLUME ADJUSTMENT WORKSHEET

Page-4

11:12:12	2 721 221 5											age-4
						LANE	• •	LANE		ADJ.		
		MVT. VOL.	PHE	ADJ. VOL.	LANE GRP.	GRP. Vol.	NO. LN	UTIL. FACT.	GROWTH FACT.	GRP. VOL.	PROP	PROP RT
EΒ					***** ***** ***** ****	*****			and a shire i wak a sign agas as as	****		a 1844
	1	· O	0.90						1.000			
	ΤН	500	0.90	556	Т	556	2	1.050	1.000	583	0.00	0.00
	RT	0	0.90						1,000	and had had		14 B 1414
₩В												,
	LT	0	0.90						1.000			
	TH	0	0.90						1.000			
	RT	0	0.90						1.000			
NB												
	LT	143	0,90	159	<u>I</u>	159	1	1.000	1.000	159	1.00	0.00
	TH	1169	0.90	1299	т	1299	2	1.050	1.000	1364	0.00	0.00
	.RT	0	0.90						1.000	di faritar y	tat in the tat	ылы жалы -
SB												
	LT	300	0.90	333	L	300	1	1.000	1,000	300	1.00	0.00
	TH	100	0.90	111	L.T	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

	IDEAL Sat. Flow	NO. LNS	ę M	+ HV	f B	ج ب	f BB	ŕ	f RT	÷ LТ	ADJ. SAT. FLOW
в											
Т	1800	2	1.000	0.985	1.000	0.920	1.000	1.000	1,000	1,000	3262
в											
									1		
B											
I	1800	1	1,000	0.985	1.000	1,000	1.000	1.000	1.000	0.950	1684
Т	,1800	2	1.000	0.985		0.890	1.000	1.000	1.000	1.000	3156
в											
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	0.989	1753
R	1800	1	1.000	0,985		0.800	1.000	1,000	0.850	1.000	1206

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# CAPACITY ANALYSIS WORKSHEET

	ADJ. Flow Rate (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	√/c RATIO	
EB		and first sort day. But, why days have been		····· ···· ···· ···· ····			
Т	583	3262	0.179	0:243	792	0.736	×
WB .							
		1					
NB ·							
L	159	1684	0.094	0,171	289	0.550	
Т	1364	3156	0.432	0,457	1443	0.945	-34
SB							
<u>l_</u>	300	1684	0.178	0.171	289	1.039	ж
LT	144	1753	0.082	<b>0.457</b>	801	0.180	~
R	500'	1206	0.415	0.457	551	0.907	

Lost Time Per Cycle, L =9.0 sec. X critical = 0.905