45282

LOVE FIELD CITIZENS ACTION COMMITTEE
P.O. Box 36383
Dallas, TX 75235

DEPT. OF TRANSPORTATION DOCKET SECTION

98 OCT 14 PM 7:13

October 9, 1998

Via Courier

Mr. Charles A. Hunnicutt
Assistant Secretary for Aviation
and International Affairs
United States Department of Transportation
400 Seventh Street S.W.
Washington, D.C. 20590

Subject: Docket No. OST-98-4363 - 74

Love Field Service
Interpretation Proceeding

Dear Mr. Hunnicutt:

Enclosed herewith is a study entitled *Impact of Expanded Love Field Operations on Dallas-Area Roadways* dated April, 1998 prepared by Transportation Strategies, Inc. The study reflects that if aircraft operations are increased from the current 225,000 per year to 400,000 per year: (i) the accompanying vehicular traffic on Mockingbird Lane will cause unacceptable levels of delay at nearly all the five Mockingbird Lane intersections reviewed; (ii) the increased traffic will create hazardous situations on the Dallas North Tollway as rush hour traffic exits to, and enters from, Mockingbird Lane; and (iii) the motorists encountering unacceptable levels of delay on primary roadways would likely use the residential streets of Armstrong, Beverly, Bordeaux, Motor-Maple Springs, Lomo Alto, Lovers Lane, Greenway, Regal Row-Burbank, University, Westside, Roper-Manor Way and Empire Central. Although not addressed in the report, increased traffic congestion raises additional issues of traffic safety, traffic pollution and traffic noise.

By letter dated September 18, 1998, the Love Field Citizens Action Committee demanded that the Department of Transportation (the "Department") prepare and review a current Environmental Impact Statement before it acts in this Proceeding. We have respectfully submitted that for the Department to proceed with this Proceeding, it is necessary that a current Environmental Impact Statement be prepared according to the Policies and Procedures for Considering Environmental Impacts as published by the Department of Transportation Federal Aviation Administration (the "Environmental Policies") and the National Environmental Policy Act ("NEPA"). Chapter 3, Section 32 of the Environmental Policies, as well as NEPA, provides numerous grounds for the requirement of an Environmental Impact Statement. The purpose of this letter is to submit new information that will highlight that the Department's ruling on issues regarding Love Field is an action that is likely to cause a significant increase in surface traffic congestion and thus requires an Environmental Impact Statement in accordance with Chapter 3, Section 32(e)(2) of the Environmental Policies.

Based on the information in the enclosed study and the requirements of Chapter 3, Section 32(e)(2) of the Environmental Policies, the Department is obligated to prepare and review a current Environmental Impact Statement before it acts in this Proceeding.

Sincerely yours,

Russ Jewert, Co-Chair

Rudy Longoria, Co-Chair

cc: City of Dallas

Sam A. Lindsay
City Attorney
City of Dallas
1500 Marilla, Room 7BN
Dallas, TX 75201

John J. Corbett
Spiegel& McDiarmid
1350 New York Avenue, N.W.
Washington, D.C. 20005

City of Fort Worth

Wade Adkins
City Attorney
1000 Throckmorton
Fort Worth, TX 76102

Dallas-Fort Worth International Airport Board

Kevin B. Cox
Deputy Executive Director
DFW International Airport
P.O. Drawer DFW
Dallas/Fort Worth, TX 75261

Michael F. Goldman
Baglileo, Silverberg & Goldman
1101 30th Street, N.W., Suite 120
Washington, D.C. 20007

American Airlines

Anne H. McNamara
Senior Vice President and General Counsel
American Airlines
Box 619616
Dallas/Fort Worth, Texas 76155

Continental Airlines and Continental Express

Rebecca G. Cox
Vice President, Government Affairs
Continental Airlines
1350 I Street, N.W.
Washington, D.C. 20005

Legend Airlines

T. Allan McArtor
President and CEO
Legend Airlines
7701 Lemmon Avenue
Dallas, TX 75209

Edward P. Faberman
Ungaretti & Harris
1747 Pennsylvania Ave., N.W., Suite 900
Washington, D.C. 20006-4604

Southwest Airlines

James F. Parker
Vice President-General Counsel
Southwest Airlines
2702 Love Field Drive
Dallas, TX 73235

IMPACT OF EXPANDED LOVE FIELD OPERATIONS ON DALLAS-AREA ROADWAYS

Prepared by
Transportation Strategies, Inc.
April 1998

TABLE OF CONTENTS

DA980190354

EXECUTIVE SUMMARY

This study reviews the impact on Dallas-area roadways of a major increase in air carrier traffic at Love Field.

The focus is on five key intersections along Mockingbird Lane from Cedar Springs to the Dallas North Tollway during morning and afternoon peak periods.

Other intersections on major streets surrounding Love Field were also reviewed.

It was found that the existing levels of service along Mockingbird range from adequate to unacceptable, depending on the intersection and whether it is morning or afternoon rush hour.

If aircraft operations are increased from the current 225,000 per year to 400,000 per year, the accompanying vehicular traffic on Mockingbird Lane will cause unacceptable levels of delay at nearly all the five Mockingbird intersections reviewed.

The resulting increase in *daily* delay for all commuters at the five Mockingbird intersections is projected to be 526 hours.

When the other affected intersections are added, the total *daily* commuter delay increases to 1,016 hours with the *annual* costs associated with this delay estimated to be $4,752,930.

In addition, it was found that the increased traffic will create hazardous situations on the Dallas North Tollway as rush hour traffic exits to, and enters from, Mockingbird.

If motorists traveling to and from Love Field encounter unacceptable delays on primary roadways, they will normally look for alternate routes. The study found that the following alternate routes are likely to be used:

Armstrong	Lomo Alto	University
Beverly	Lovers Lane	Westside
Bordeaux	Greenway	Roper-Manor Way
Motor-Maple Springs	Regal Row-Burbank	Empire Central

BACKGROUND

With the changes to federal laws in 1997 regulating the activities and flights in and out of Dallas Love Field, the potential for change regarding surface transportation on the thoroughfare system gave rise to the investigation of congestion-related issues. Love Field is owned and operated by the City of Dallas which simultaneously has responsibility for the construction and maintenance of the thoroughfare system. Other cities in proximity to the airport include University Park and Highland Park to the east.

The 1997 federal legislation allows for changes to the Wright Amendment provision contained in the International Air Transportation Competition Act of 1979. The original restrictions placed on Love Field limited flights between Dallas Love Field and cities in states contiguous to Texas: New Mexico, Oklahoma, Arkansas, and Louisiana. Last year's legislation allows for limited-seat jet service to any destination and unrestricted flights a few locations beyond the contiguous states and potentially could open Love Field to all and any traffic, both national and international.

In July of 1992, the United States Department of Transportation (USDOT) produced the Interdepartmental Task Force on the Wright Amendment report: Analysis of the Impact of Changes to the Wright Amendment (the "USDOT July Report"). The report examined many factors based on a range of escalating scenarios, extending to complete removal of Wright Amendment regulations and subsequent expansion at Love Field by major air carriers.

According to the USDOT July Report projections, air traffic operations at Love Field could more than double existing levels should the Wright Amendment be appealed and a major hub is established. Operations are then projected to increase *an additional* 11 percent the following five years -- to 490,000 operations each year.

As a conservative measure, we utilized a baseline assumption of 400,000 annual air traffic operations throughout this study -- 10 percent less than the USDOT's July Report near-term forecast for major hub operations at Love Field. This assumption is also 18 percent less than the DOT's longer-term projections. Of course, actual traffic impacts on surrounding neighborhoods will be determined by the actual nature of any expansion on Love Field's operations.

The runways at Love Field vary in length, but one runway is 150 feet wide and 8,800 feet long (a sufficient length for any passenger aircraft, including a Boeing 747). Love Field is approximately 5 miles from the central business district of Dallas and occupies 1,300 acres.

PURPOSE OF STUDY

In using existing traffic data, FAA reports, City of Dallas statistics, new traffic counts, and Love Field operation statistics, this study reviews the impact of expanding Love Field operations (doubling of air traffic) on Dallas-area roadways.

LOVE FIELD STUDY AREA

The Love Field Study Area (see Figure 1) was limited to the Dallas North Tollway (DNT) on the east, Inwood on the south, Harry Hines on the west, and Park Lane on the north. Detailed impacts along Mockingbird Lane between Cedar Springs and the DNT were analyzed (see Figure 2). Also the impacts to Beverly Drive (east of the Study Area) were reviewed (see Figure 7). Detailed analysis involving Level-of-Service (LOS) was determined along Mockingbird as well as estimated peak hour delays and changes in LOS.

The concept of peak hour delay was extended to a group of intersections referred to as the first row intersections. These intersections extend along Lemmon/Marsh between Mockingbird and Northwest Highway; Northwest Highway between Marsh and Webb Chapel Extension; Webb Chapel Extension between Northwest Highway and Denton Road; Denton Road between Webb Chapel Extension and Mockingbird; and Mockingbird between Denton Road and west of Cedar Springs (see Figure 3).

Another set of intersections defining the second row intersections was reviewed and hours of delay for the peak periods were estimated (see Figure 4). The second row intersections are defined by the following: Inwood between Harry Hines and Lovers; Lovers between Inwood and Midway; Midway between Lovers and Park Lane; Park Lane between Midway and Webb Chapel; Webb Chapel between Park Lane and Lombardy; Lombardy between Webb Chapel and Denton Road; Denton Road between Lombardy and Northwest Highway; Northwest Highway between Denton Road and Harry Hines; and Harry Hines between Northwest Highway and Inwood.

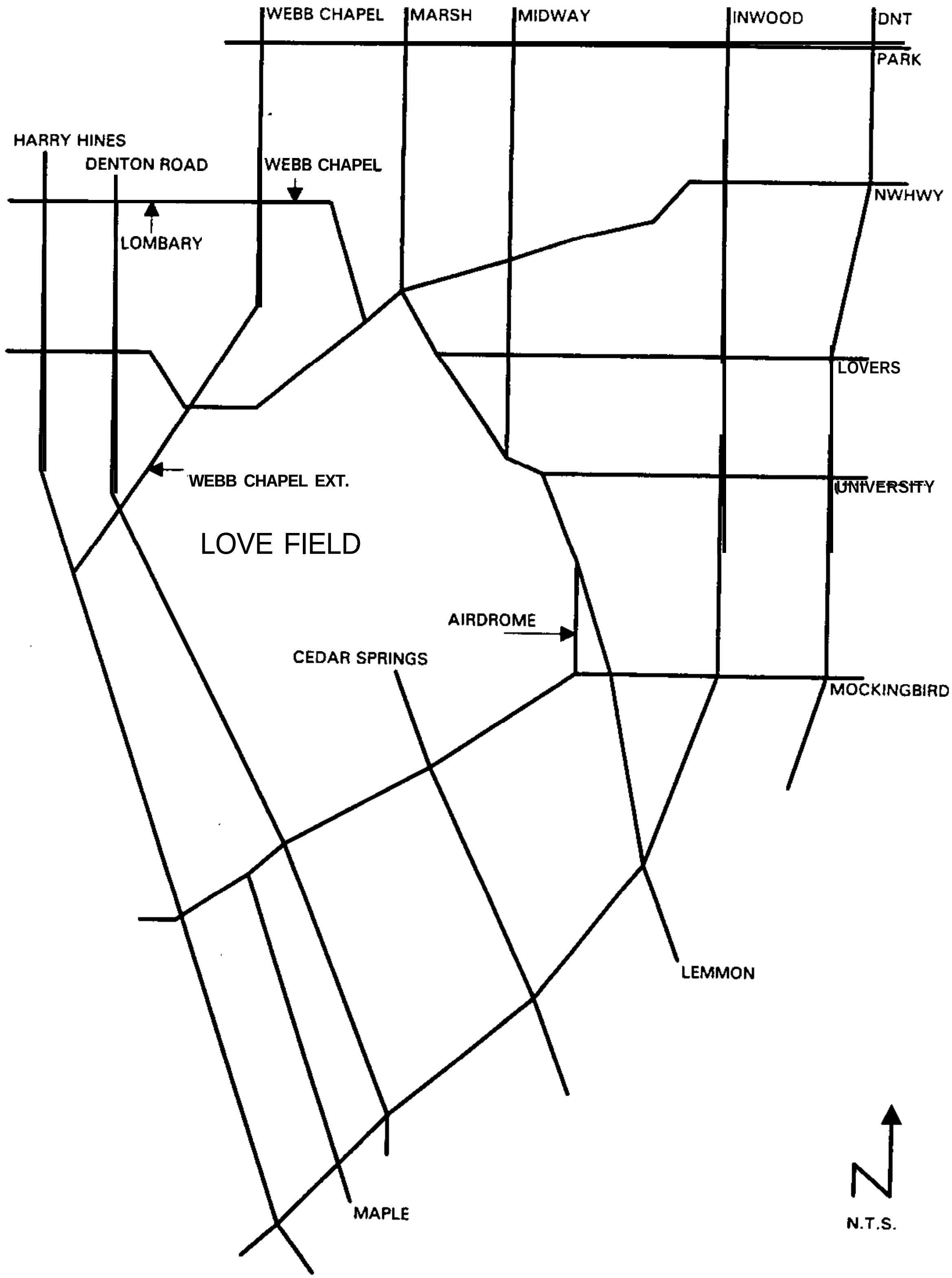


FIGURE 1 -- STUDY AREA

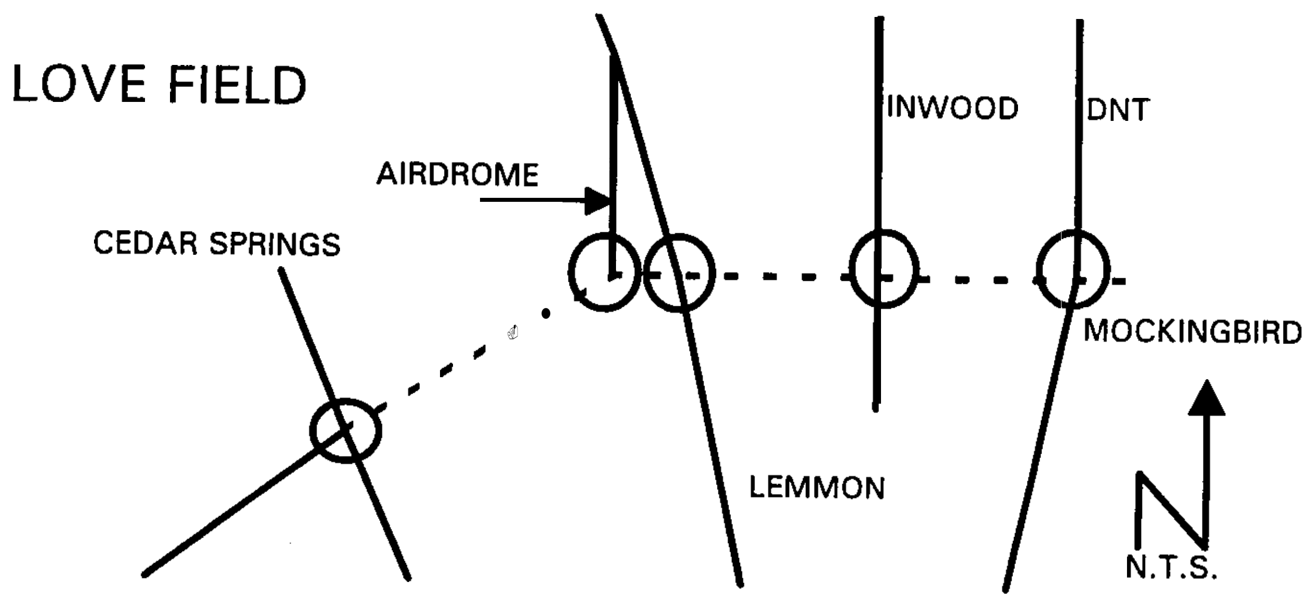


FIGURE 2 -- MOCKINGBIRD STUDY LIMITS

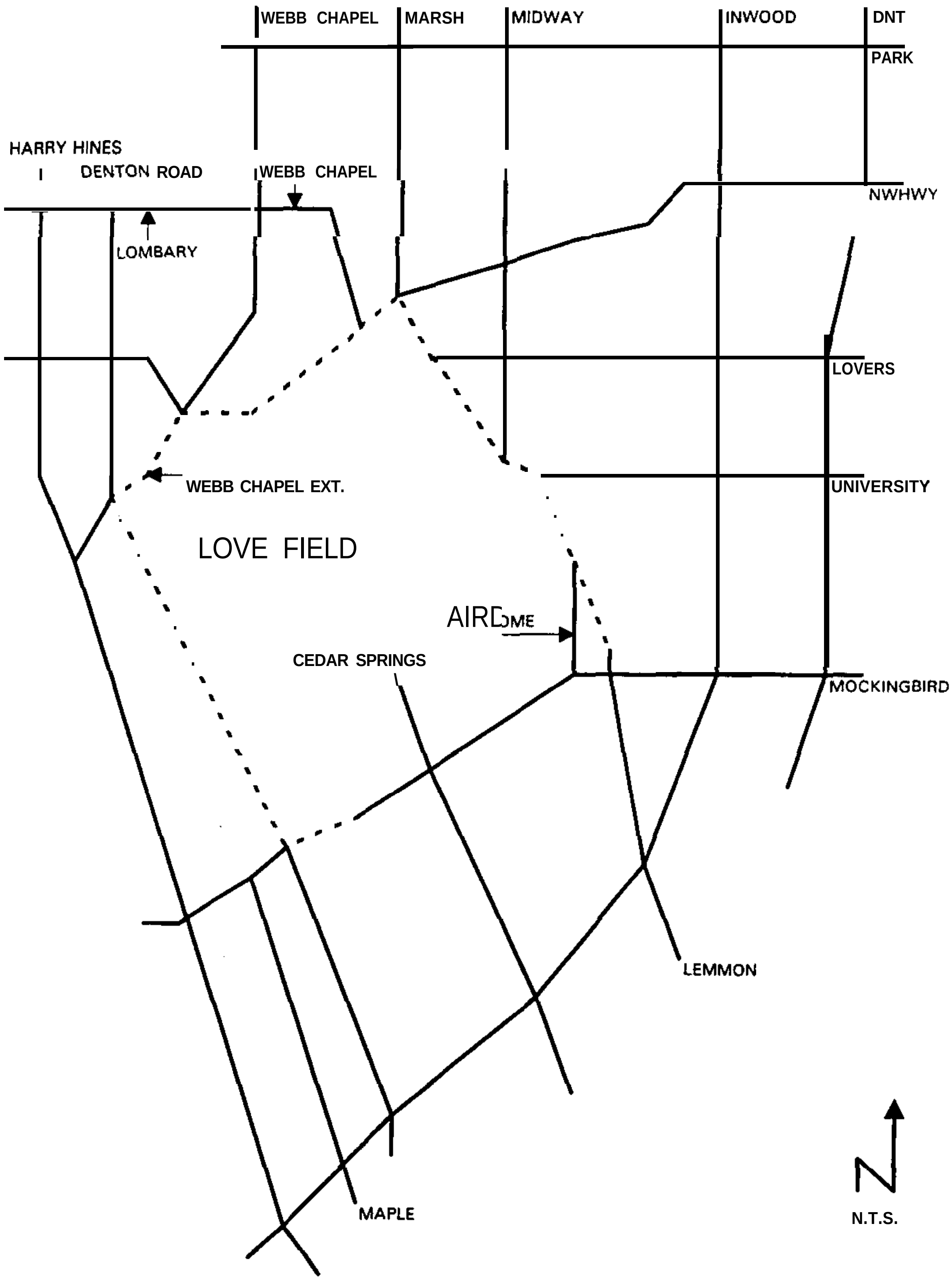


FIGURE 3 -- FIRST ROW INTERSECTIONS

DA960580 005**3/19/98**8:59 AM

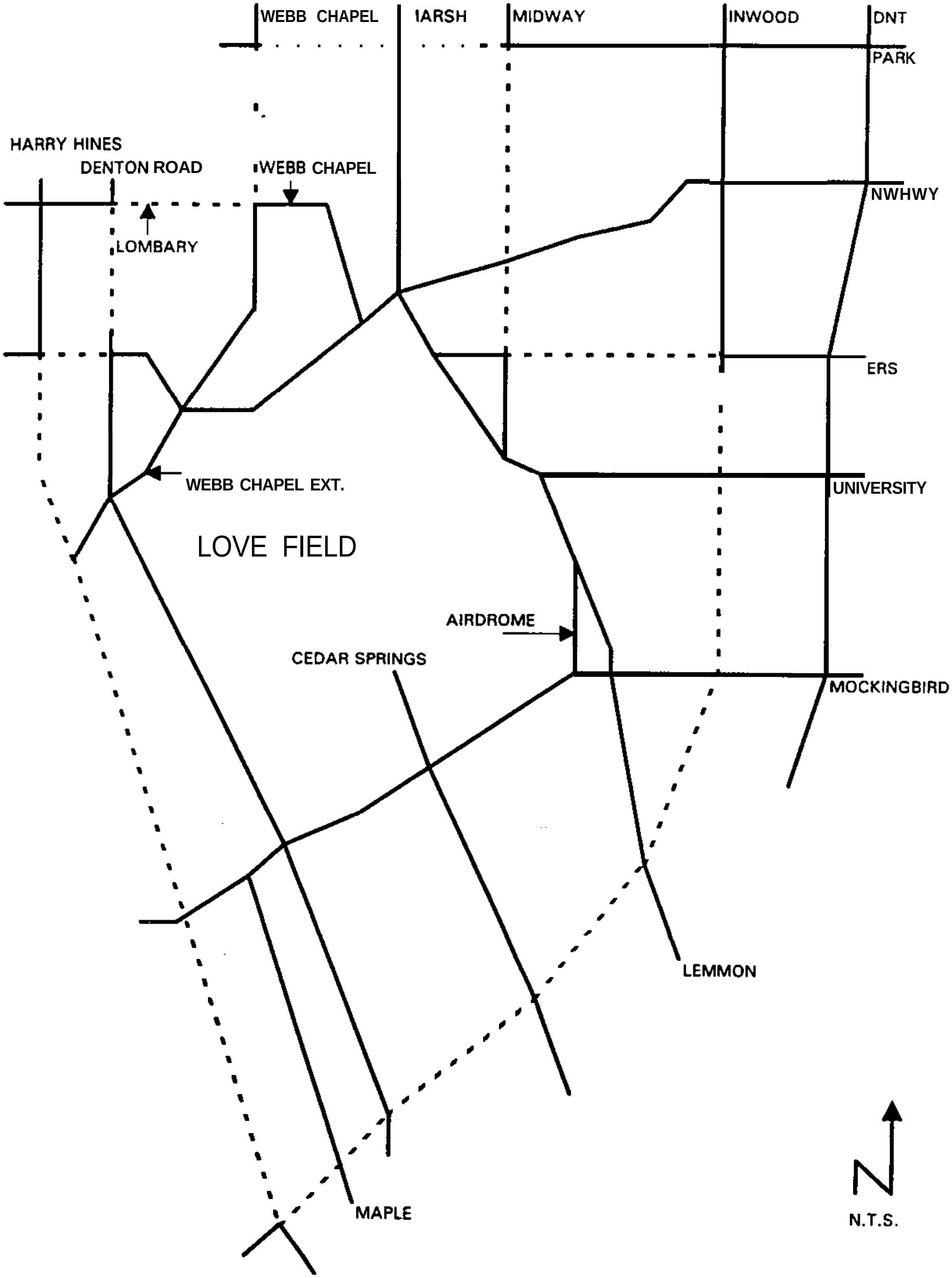


FIGURE 4 -- SECOND ROW INTERSECTIONS

EXISTING LEVEL-OF-SERVICE

Information and data studied as part of this report were done in accordance with the procedures outlined in the Highway Capacity Manual (HCM) -- Special Report 209, TRB; Policy on Geometric Design of Highways and Streets, AASHTO, 1990 Edition; and Trip Generation 5th Edition Manual, Institute of Transportation Engineer. In determining the impacts to the LOS, the Planning Application (calculations in Appendix A -- Mockingbird Lane) as described in the HCM was used.

Table 1 summarizes the existing LOS along Mockingbird between Cedar Springs and DNT.

TABLE 1

EXISTING LOS ALONG MOCKINGBIRD

MOCKINGBIRD INTERSECTION WITH:	AM	PM
CEDAR SPRINGS	C/D	A
AIRDROME	F	A
LEMMON	A/B	A/B
INWOOD	E	F
DNT	D/E	E

According to the HCM, capacity is defined as the maximum number of vehicles that can be expected to travel on a given section of roadway or a specific lane during a given time period under prevailing roadway and traffic conditions. In order to accurately assess the traffic flow characteristics within the study area, intersection capacity analyses was conducted for the peak hours utilizing the HCM.

LOS refers to the operational conditions within a traffic stream and their perception by motorists. LOS describes these conditions in terms of delay, frequency of maneuver, traffic interruptions, comfort and convenience, and safety. There are six LOS or capacity conditions for each type of roadway facility and are designated from "A" to "F" with "A" representing the best operational conditions and "F" the worst conditions.

Level-of-Service A describes operations with very low delay (i.e., less than 5.0 second per vehicle). This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.

Level-of-Service B describes operations with delay in the range of 5.1 to 15.0 second per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.

Level-of-Service C describes operations with delay in the range of 15.1 to 25.0 second per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear in this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.

Level-of-Service D describes operations with delay in the range of 25.1 to 40.0 second per vehicle. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high vehicle-to-capacity (*v/c*) ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

Level-of-Service E describes operations with delay in the range of 40.1 to 60.0 second per vehicle. This is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high *v/c* ratios. Individual cycle failures are frequent occurrences.

Level-of-Service F describes operations with delay in excess of 60.0 second per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with oversaturation (i.e., when arrival flow rates exceed the capacity of the intersection). It may also occur at high *v/c* ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

POTENTIAL LEVEL-OF-SERVICE AND DELAY

If the predictions outlined in the USDOT July Report are correct, the LOS of, and delay on, Mockingbird Lane and other streets in the Love Field Study Area will be altered.

Table 2 summarizes the AM and PM LOS, if the impacts noted in the USDOT July Report are substantiated, resulting from increase air traffic at Love Field are considered

TABLE 2

MOCKINGBIRD LOS WITH ADDITIONAL AIR TRAFFIC

MOCKINGBIRD INTERSECTION WITH:	AM	PM
CEDAR SPRINGS	F	D
AIRDROME	F	C
LEMMON	B/C	B/C
INWOOD	E	F
DNT	F	F

Table 3 summarizes the changes in LOS on Mockingbird caused by increased air traffic at Love Field

TABLE 3

CHANGE IN MOCKINGBIRD LOS

Mockingbird Intersection with:	AM	PM
Cedar Springs	C/D to F	A to D
Airdrome	F to F	A to C
Lemmon	A/B to B/C	A/B to B/C
Inwood	E to E	F to F
DNT	D/E to F	E to F

Additional trips generated were allocated by percent matching the existing turning movements along Mockingbird.

The delay impacts along Mockingbird were calculated in two ways: additional delay per vehicle per peak hour (seconds) and additional delay per intersection per peak hour (hours). In Table 4, findings have been summarized.

TABLE 4

ADDITIONAL PEAK HOUR DELAY BY VEHICLE AND INTERSECTION

	ADDITIONAL DELAY PER VEHICLE PER PEAK HOUR (Seconds)		ADDITIONAL DELAY PER INTERSECTION PER PEAK HOUR (Hours)	
	AM	PM	AM	PM
MOCKINGBIRD INTERSECTION WITH:				
CEDAR SPRINGS	45 sec	35 sec	82 hrs	64 hrs
AIRDROME	60 sec	20 sec	79 hrs	24 hrs
LEMMON	20 sec	20 sec	26 hrs	27 hrs
INWOOD	30 sec	60 sec	55 hrs	113 hrs
DNT	35 sec	20 sec	37 hrs	IS hrs

To understand the data of this report in more personal terms, delay has been converted into costs based on $18 per hour. The following table details daily and yearly time and cost impacts to motorists in three ways:

1. Delay per commuter using Mockingbird from DNT to Cedar Springs
2. Delay per commuter crossing Mockingbird.
3. Total delay per intersection.

TABLE 5						
ADDITIONAL MOCKINGBIRD DELAY IN TIME AND MONEY						
	DAILY				YEARLY (260 DAYS)	
	AM (MIN)	PM (MIN)	AM+PM (MIN)	DELAY COST $18/HR ($0.30/MIN)	DELAY HOURS (HRS)	DELAY COST $18/HR
DELAY PER COMMUTER USING MOCKINGBIRD FROM THE DNT TO CEDAR SPRINGS	3.17	2.58	5.75	$1.73	24.92	$448.50
DELAY PER COMMUTER CROSSING MOCKINGBIRD AT: AIRDROME	1.00	0.33	1.33	$0.40	5.78	$104.00
LEMMON	0.33	0.33	0.67	$0.20	2.89	$52.00
INWOOD	0.50	1.00	1.50	$0.45	6.50	$117.00
DNT	0.58	0.33	0.92	$0.28	3.97	$71.50
TOTAL DELAY PER MOCKINGBIRD INTERSECTION	(HRS)	(HRS)	(HRS)		(HRS)	
CEDAR SPRINGS AIRDROME	82	64	145	$2,616	37,784	$680,108
LEMMON	79	24	103	$1,859	26,849	$483.288
INWOOD	26	27	53	$960	13,868	$249.626
DNT	55	113	168	$3,029	43.749	$787,488
	37	18	55	$997	14.401	$259,220
TOTAL	279	247	526	$9,461	136.652	$2,459,730

Delay to the first and second row intersections was based on *v/c* ratios, traffic volumes, and as a derivative of the Mockingbird delays. A conservative approach to estimating the delay was used; the actual delay may be greater. LOS was not determined for study area streets except for Mockingbird. Figure 5 contains the AM and PM combined delay at each intersection. When the results of the additional delay calculations from Table 5 and Figure 5 are combined, the total daily AM and PM delay is 1,016 hours and the yearly delay is 264,052 hours. Table 6 details the delay information, and Table 7 details the cost information.

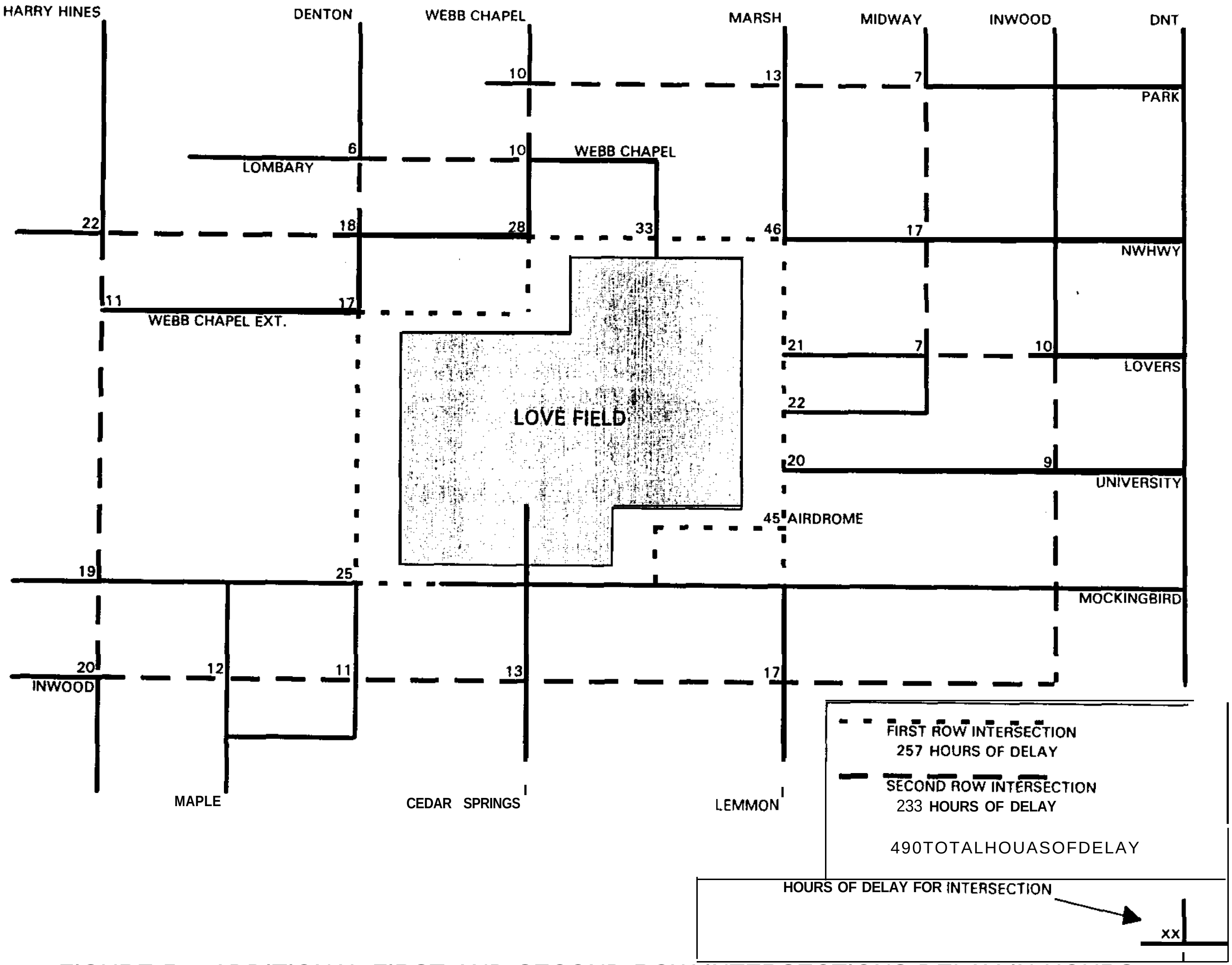


FIGURE 5 -- ADDITIONAL FIRST AND SECOND ROW INTERSECTIONS DELAY IN HOURS

DA980150.092**3/19/98**9:00 AM

TABLE 6		
ADDITIONAL DELAY IN HOURS		
	Daily	Yearly
Additional delay on Mockingbird	526	136,652
First Row	257	66,820
Second Row	233	60,580
Total	1,016	264,052

TABLE 7		
COSTS ASSOCIATED WITH ADDITIONAL DELAY		
	Daily	Yearly
Additional delay on Mockingbird	$9,461	$2,459,730
First Row	$4,626	$1,202,760
Second Row	$4,194	$1,090,440
Total	$18,281	$4,752,930

IMPACTS TO THE DALLAS NORTH TOLLWAY

Current demand between the DNT and Mockingbird is over shadowed by activities at the DNT/Northwest Highway interchange. During both AM and PM peak periods, traffic exiting the DNT to Northwest Highway causes the DNT mainlanes to operate at LOS F. The effect of this exiting traffic on Mockingbird is complicated, because two very different situations occur: southbound speed differential and northbound failure.

As southbound DNT traffic queues north from the Northwest Highway tollbooths, the DNT is restricted to two lanes available for through traffic. A lane imbalance occurs: three lanes restricted to two lanes and opened back to three lanes. The effect is similar to placing one's thumb over a slow flowing garden hose. The flow uses all available roadway capacity and speeds increase dramatically. In both peak periods, DNT southbound mainlane speeds are consistently above the posted speed limit between the Mockingbird exit and bridge.

The northbound impacts are the opposite. As mainlane traffic exits to Northwest Highway, the queue enters the mainlanes and extends south to Lemmon Avenue and frequently beyond. DNT mainlanes slow to a craw/stop during the peak periods. Mockingbird traffic trying to enter northbound DNT is effected. Entering traffic queues through the tollbooths and into the northbound frontage road/Mockingbird intersection. More green-time of the traffic signal phasing must be dedicated to the eastbound-to-northbound-Mockingbird-turning-traffic.

The existing situation is in a very unstable balance. With less green-time available for the southbound frontage road, queues back through the southbound tollbooths but stop short of entering the DNT southbound mainlanes on a regular basis. The mainlane per-lane-volumes under the Mockingbird bridge show signs that the southbound exit to Mockingbird is impacting mainlane flow. Because the outside lane is being used by motorist slowing to exit, the inside and middle lanes are carrying two to three times the traffic as the outside lane.

If the predictions outlined in the USDOT July Report are correct, an additional 410 vehicles (164 trips will exit to Mockingbird and 246 will enter from Mockingbird) will use the DNT/Mockingbird interchange during the peak periods. This additional traffic will require more green-time to be allocated for the critical eastbound-to-northbound-Mockingbird-turning-movement. The southbound frontage road will be delayed and queues will extend onto the DNT southbound mainlanes.

As southbound traffic queues and stops on the outside mainlane, the speed differential will become greater. This will increase the hazards to motorist using the DNT. Situations involving stopped/slow moving mainlane traffic adjacent to high speed mainlane traffic is dangerous. This type of situation occurs in a few locations in the Dallas-Fort Worth area, but it should not be considered acceptable or safe.

MITIGATION OF PARKING DEMAND

Love Field controls surface and multilevel parking facilities. These two types of facilities can accommodate 1,450 and 3,028 vehicles, respectively, for a total of 4,478 spaces. Prices range from $5 to $7 per day. The multilevel parking is closest to the airport terminal and frequently fills to capacity.

Within the Love Field campus, private companies lease land from Love Field and offer parking other vehicle related services: shuttles, cleaning, maintenance, etc. None of these companies use multilevel structures. Prices vary depending on the services provided. A total amount of least-out parking is 948 spaces.

With the doubling of air traffic per the USDOT July Report, substantial changes to parking at Love Field will need to take place. There is not enough open space to construct surface parking. The additional parking needed for the increase in flights would be multilevel parking.

The cost of doubling the amount of parking at Love Field to accommodate the doubling of air traffic is estimated to be $26.3 million. This figure does not include the leased-out parking. To double the leased-out parking would cost $3.3 million. If there is physically enough room available at Love Field, the total cost of construction additional parking approaches $30 million. To recover these costs, Love Field may need to double the current parking rates to $10 to $14 per day.

ALTERNATE ROUTES TO AVOID CONGESTION

There is a multitude of alternate routes available for motorists traveling to and from Love Field. Within the study area, there are approximately seven locations for motorists to cross the DNT. A motorist will select an alternate route based on a variety of criteria: number of stop signs and traffic signals, lane widths, available capacity, speed limits, school zones, enforcement, etc. When a motorist is unable to use a primary route such as Mockingbird, alternate routes are considered. See Figure 6 for the location of the following alternate routes:

Armstrong
Beverly
Bordeaux
Empire Central
Greenway
Lomo Alto
Lovers
Motor-Maple Springs
Regal Row-Burbank
Roper-Manor Way
University
Westside

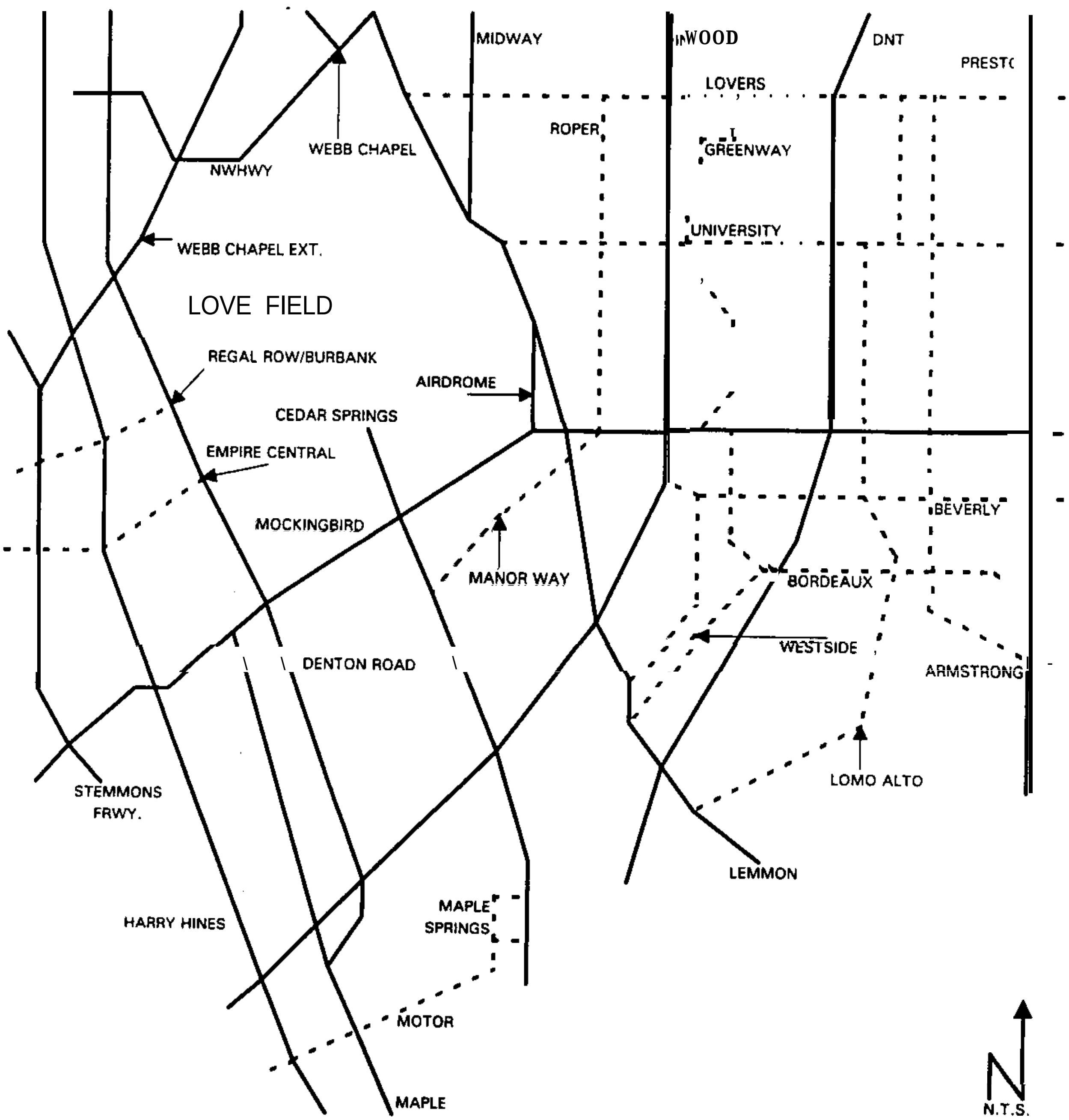


FIGURE 6 -- ALTERNATE ROUTES TO AVOID CONGESTION MAP

IMPACTS TO BEVERLY DRIVE IN HIGHLAND PARK

Any alternate route use by Love Field generated traffic could be analyzed. The purpose of this portion of the report is to evaluate the impacts to Beverly Drive from Hillcrest to Westside in the town of Highland Park.

Each city throughout the metroplex has distinct and unusual characteristics that impact its surface transportation system. When a broader view of north Dallas is taken with Highland Park in the middle, north/south elements create east/west traffic problems: White Rock Lake, North Central Expressway, MKT Railroad, Love Field, and Trinity River. Some unique elements in Highland Park are as follows: two creeks, a golf course, and the Dallas North Tollway (DNT). All of these elements are oriented north/south. There is an obvious impact on east/west traffic flow.

East/west traffic experiences difficulty and is shifted mainly to Northwest Highway, or further north, to complete a true east/west route through the Dallas-area. Traffic south of this must follow a circuitous path depending on its origin and destination. Lovers, University, and Mockingbird provide limited east/west access between Love Field and Greenville Avenue.

South of University the streets change from a true north/south to a more northwest/southeast orientation. This has an impact on all roadways. A true east/west path is not straight, and one must travel a variety of streets, and make several turns, to maintain an east/west orientation.

To understand the impacts to Beverly, the existing condition must be examined. Currently, motorists have shifted their route from Mockingbird to Beverly to avoid congestion. Beverly carries the functional classification of a collector street, but is used and perceived as a residential street. Beverly was originally designed to carry traffic from one side of Highland Park to the other. Beverly is a four lane street (currently striped as two lanes but could be re-striped to carry four lanes of traffic). Several intersections along Beverly have stop sign control and a traffic signal is used at the Beverly/Preston intersection. Parking is allowed on both sides of Beverly throughout the day.

Beverly was divided into seven sections (see Figure 7). Traffic counts and observations were conducted over a two-week period in February and March of 1998. Each section was analyzed and cut-through traffic was estimated. For the purposes of this report, cut-through traffic includes motorists with their origin or destination in Highland Park but have chosen Beverly because of a time savings. Also in the definition of cut-through traffic is non-Highland Park traffic using Beverly to bypass congestion. The following is a brief discussion on each section and its unique characteristics regarding existing traffic:

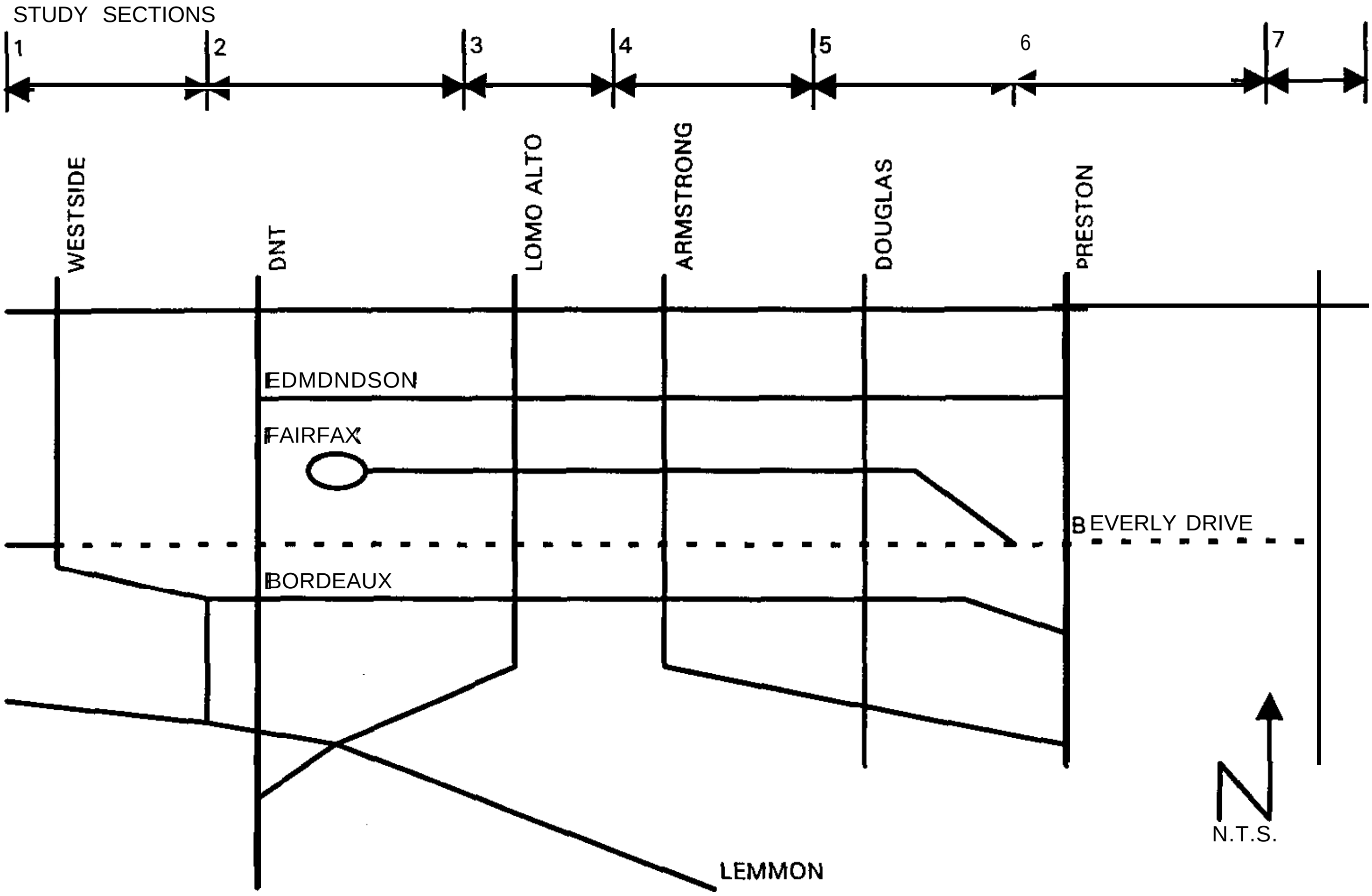


FIGURE 7 -- BEVERLY DRIVE STUDY LIMITS

Section Approximately 75 to 85% of the traffic on Beverly is cut-through traffic. There appear to be no operational problems with the stop sign control at the Beverly/DNT frontage road intersections. One possible explanation of why the existing traffic is not higher in Section 1 relates to the gutter on the east side of Westside. This gutter performs as a traffic calmer and prevents a greater use of Beverly from the west.

Section 2. Eastbound Mockingbird and southbound DNT traffic proceeds south on the frontage road and uses Beverly to avoid Mockingbird. The southbound frontage road north of Beverly is two lanes wide and has extra capacity. 40 to 60% of the eastbound traffic in this section is cut-through traffic. 55 to 65% of the westbound traffic is bound for the DNT. This particular section would benefit from the enforcement of truck restrictions currently signed on Beverly.

Section 3. The intersection of Beverly and Loma Alto appears to have no operational problems with the existing stop sign control. Little to no traffic is generated from this section. Almost all the traffic in this section is moving between Sections 2 and 6.

Section 4. No operational problems with the stop sign control at the Beverly/Armstrong intersection. Almost all the traffic in this section is traveling between Sections 2 and 6.

Section 5. Despite the occasional enforcement of the speed limit, traffic travels faster along this section.

Section 6. 92 to 97% of the traffic proceeding through the Beverly/Preston intersection and continuing westbound on Fairfax is cut-through traffic. Almost all the traffic on Fairfax is avoiding the use of Mockingbird. Traffic bound for the DNT follows one of two routes: (1) Beverly to the northbound frontage road and (2) Beverly to Fairfax to Douglas or Armstrong or Loma Alto to Edmondson to the northbound frontage road. The second route is used more in the morning than in the evening. In the evening Fairfax is used for traffic bound for the shopping center on the southwest quadrant of the Mockingbird/ Preston intersection. The intersection of Beverly and Preston is operated in a two-phase arrangement with approximately 1.5-minute cycles: 30 seconds for Beverly and one minute for Preston. Most motorists drive this intersection as a four lane. Left-hand-turning-traffic moves towards the center stripe to allow through traffic to pass on the right. With the absence of signage and striping, this may pose a problem for an unfamiliar driver. The Beverly/Preston signal is currently operating above capacity in the morning and at capacity in the evening. Most queues clear during the peak periods and delay is acceptable.

Section This section also experiences higher speeds. Approximately 30 to 40% of the northbound Hillcrest traffic wants to use Mockingbird but diverts to Beverly instead. The stop sign control at the Beverly/Hillcrest intersection is currently experiencing no operational problems. Most of the traffic in this section is making a connection between Hillcrest and Preston. 93 to 97% of the eastbound traffic at the Beverly/Hillcrest intersection is avoiding Mockingbird.

All Sections. Stop signs are overused along Beverly. Most, if not all, of the traffic does not stop at the stop signs along Beverly except at Hillcrest and Loma Alto. There is an obvious absence of speed limit signs and other signage along Beverly. Traffic speeds are estimated between 35 and 45 miles an hour along Beverly. Based on the existing situation approximately 60 to 80% of the traffic on Beverly should be considered cut-through traffic.

If the predictions outlined in the USDOT July Report are correct, approximately 100 to 200 additional trips (this is a conservative range) would begin to use Beverly during the peak periods. One phenomena in traffic deals with the *leveling* of traffic demand. Motorists move and reroute themselves based on their personal preferences. As traffic shifts from Mockingbird to Beverly some of the Beverly traffic will shift south to Bordeaux or other streets. Other traffic which occasionally uses streets (i.e., Douglas, Armstrong, Loma Alto, Edmondson, etc.) will begin to use these streets on a regular basis. The impacts of additional traffic on Beverly are as follows:

Section 1. Eastbound Mockingbird traffic will turn south on Westside and proceed east on Beverly to avoid the Mockingbird/DNT interchange. There will be an increase in traffic from the west on any street that crosses the DNT.

Section 2. The southbound frontage road will carry more traffic. This traffic may turn east or west on Mockingbird today, but as congestion grows, traffic will use Beverly as its primary route. Eastbound traffic in this section will continue to grow. Parking along Beverly and the northbound DNT frontage road will need to be eliminated. This will have a direct impact on the enjoyment and the safety of Fairfax Park.

Section 3. The installation of a traffic signal will most likely be warranted at the Beverly/Lomo Alto intersection and an eastbound-to-southbound right-turn lane will need to be added. Speeds along Beverly will continue to increase. For safety reasons and mobility of heavier traffic volumes, additional signage and pavement markings will need on Beverly.

Section 4. The intersection of Beverly and Armstrong will most likely warrant a traffic signal.

Section The Beverly/Douglas intersection will most likely warrant a traffic signal.

Section 6. The Beverly/Preston intersection will need to be changed. A minimum of three-lane approaches will be needed in each direction to accommodate the left-hand turn movements. A westbound-to-northbound right-turn lane will need to be added. The traffic signal will need to be upgraded to add left-turn signals and four-phase operation. The section of roadway between Preston and Hillcrest will be impacted in a variety of ways depending on the time of day and time of year. Because of the school zones, the PM peak hour will experience the greatest impact initially. Throughout the summer traffic is typically lighter, but traffic generated by the Love Field and diversion to Beverly may offset the summer time decrease. This will cause both AM and PM peak hour problems in Sections 6 and 7. Traffic and speeds along Fairfax and Edmondson will increase and will need to be calmed.

Section 7. The intersection of Beverly and Hillcrest will most likely need to be signalized.

All Sections. All of these items need to be done to accommodate the additional traffic. The latent demand for Beverly and for Mockingbird is currently higher than the existing configuration and traffic control devices along both streets will allow to flow. All parking along Beverly will need to be eliminated. Speed limits on Beverly will need to be raised.

The existing traffic situation on Beverly Drive is at an unusual balance. Currently, parking is allowed on both sides, and Beverly is perceived as a residential street. With the additional flights at Love Field as predicted in the USDOT July Report, the general configuration of Beverly Drive will change from a residential street to a heavier travelled collector street. Attention to Beverly Drive will increase, and almost all motorists passing through the area will know, and use, Beverly Drive in the same way that they perceive Mockingbird Lane today.

OPTIONS TO REDUCE CONGESTION AND DELAY

Depending on resources, funding, and political realities, a variety of options exist to reduce congestion and delay. The items listed below are in a random order and should not be considered recommendations. No attempt to priorities these options was made. The following list has been prepared to initiate the thought process to find creative ways to mitigate the impacts to traffic based on the projections outlined in the USDOT July Report:

1. Widen Mockingbird to six lanes between Preston and Inwood.
2. Add a southbound and a northbound auxiliary lane between Northwest Highway and Mockingbird on the Dallas North Tollway.
3. Widen Airdrome to five lanes (three southbound and two northbound).
4. Widen Mockingbird to eight lanes (five westbound and three eastbound) between Airdrome and Cedar Springs.

5. Upgrade signal controller equipment to include progression on Lemmon, Mockingbird, Northwest Highway, Lovers, University, Inwood, Ceder Springs, Denton Road, and noted alternate routes.
6. Stripe and widen Beverly-La Foy-Versailles to four lanes from Hillcrest to Inwood.
7. Add two more Mockingbird tollbooths to both the southbound exit plaza and the northbound entrance plaza.
8. Reconstruct Mockingbird/Lemmon/Roper intersections.
9. Widen Roper-Manor Way to four lanes between Lovers and Mockingbird and six lane divided between Mockingbird and Denton Drive.
10. Construct tunnel between Lovers and Burbank-Regal Row.
11. Construct tunnel between University and Empire Central.
12. Convert Mockingbird/Cedar Springs intersection into a two level interchange using a tunnel or cut-and-cover section for Mockingbird through traffic.
13. Construct southbound entrance from, and northbound exit to, Beverly Drive on the Dallas North Tollway.
14. Widen Cedar Springs to six lanes between Inwood and Mockingbird.
15. Convert Mockingbird (eastbound) and Beverly (westbound) into a one-way pair from Hillcrest and Dallas North Tollway.

SUMMARY

This report does not seek to address whether air traffic operations at Love Field should or should not be expanded. Rather, it seeks only to determine the impact of expanded air traffic operations at Love Field on area roadways. Clearly, expansion of air traffic operations at Dallas Love Field will have an impact on area vehicular traffic. The extent of the impact, however, will be dependent upon the degree of future expansion.

There are many intersections surrounding Love Field where existing Levels of Service (LOS) are already poor and create problems for area commuters. Additional traffic loads to congested intersections will create even longer delays for area motorists, as well as encourage alternative routing through nearby residential neighborhoods.

There are also intersections where Levels of Service are currently fine, yet where additional congestion from expanded operations at Love Field will create new problems. Motorists, area businesses and nearby residents would experience delays where none currently exist should the airport expand to projected levels.

These impacts not only affect travelers bound for Dallas Love Field, but also will have far-reaching effects on motorists who may never visit the airport. Because of the compounding effect of traffic delays on area roadways, impacts can be projected for streets as far north as Park Lane in North Dallas.

Additionally, commuters from North Dallas, Addison and Plano will experience additional delays in their daily commutes along the Dallas North Tollway as more and more motorists attempt to reach Love Field via Mockingbird Lane. A potentially dangerous situation could exist as greater numbers of motorists exiting the southbound Tollway overwhelm the design volume of the Mockingbird exit ramp, blocking mainlanes of traffic on the Tollway during rush hours. This report projects an additional 410 vehicles will attempt to use the Tollway/Mockingbird interchange during peak periods alone. (Peak periods are those one-hour windows in the morning and evening where traffic is at its worst.)

Delay is an incremental factor that may seem minuscule at the outset. But consider that the average trip along Mockingbird between the Tollway and the entrance of Love Field will take *every* vehicle an additional three minutes -- even for those who are not going to the airport. Three minutes may not seem long, but for motorists who travel this route twice a day -- once in the morning, once in the evening -- this delay accumulates to an additional lost day (24.92 hours) per year.

A primary result of increased traffic congestion is the well-documented increase in "slippage," that is, when motorists abandon congested major streets in search of quick alternatives through residential neighborhoods. If the airport expands to projected levels and area streets swell with the added vehicles, residential neighborhoods surrounding the airport -- as well as areas throughout Highland Park -- will see quite streets turned into busy streets as more and more traffic cuts through in search of quicker routes to the airport.

Currently, 75 percent to 97 percent of the traffic on one residential Highland Park street is cut-through traffic going to Love Field area and/or the Tollway. Not only will this figure rise as airport operations are expanded, but additional streets will begin to experience this traffic burden as well.

Traffic delay is not only lost time, but money, as well.

Using a conservative baseline of $18 per hour in lost wages and benefits, the added delays caused by an expansion at Love Field will cost each commuter passing by the airport $448.50 per year. With thousands of individuals now caught in additional congestion combined, the total impact to the Dallas economy could be at least $5 million in lost wages per year. The loss of a quarter-million hours -- 246,052 hours per year -- could have an impact on the Dallas economy that has yet to be considered or measured.

Additionally, new parking structures will need to be construed at Dallas Love Field to accommodate the added volume of passengers. The cost for additional multilevel parking garages at Love Field -- the existing garage is near capacity and there is not enough room for adequate open parking -- would approach $26.3 million. To recover these costs, current parking rates of $5 to $7 per day may need to be doubled.

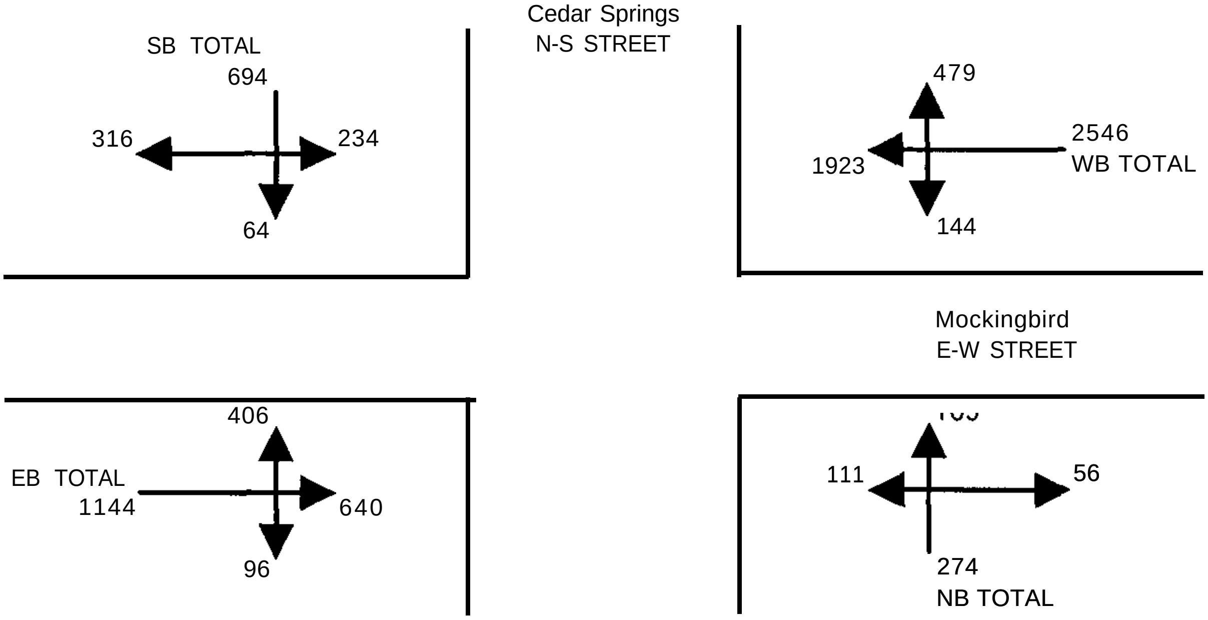
In conclusion, the impact of added vehicular traffic stemming from expanded operations at Dallas Love Field needs to be considered in future decisions. There are many measurable effects -- from individuals' lost time and wages, to a wide-spread economic impact, to personal lifestyle changes for area residents -- that will be created by such expansions.

APPENDIX A

MOCKINGBIRD LANE

PLANNING APPLICATION WORKSHEET

Intersection: Mockingbird/Cedar Springs
Analyst: swf
Time Period Analyzed: am
City/State: Dallas/TX
Project No. 16760.1
No. of Phases:



LANE DISTRIBUTION

	RT	TH	LT
NB	0	2	1
SB	1	2	2
EB	0	3	2
WB	0	3	2

VOLUME PER LANE

	RT	TH	LT
NB		62	111
SB	316	42	147
EB		245	204
WB		601	72

EB LT =	204		NB LT =	111
WB TH =	601		SB TH =	42
	1005			153
WB LT=	72	OR	SB LT=	147
EB TH =	245		NBTH=	82
	317			229

1005 + 229 = 1233
E-W CRT N-S CRT

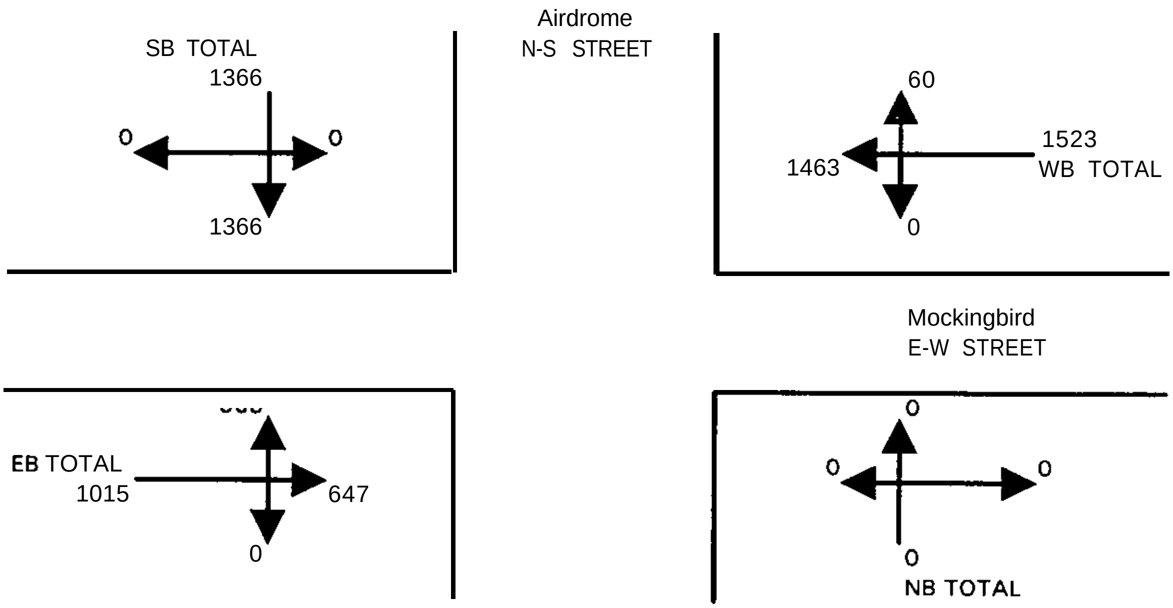
1125/1275 = >B
1275/1425 = >C
1425/1575 = >D
1575/1725 = >E

Westbound Mockingbird lanes exceed capacity (LOS C/D).

DA973350.422**1/21/98**3:49 PM

PLANNING APPLICATION WORKSHEET

Intersection: Mockingbird/Airdrome
Analyst: swf
Time Period Analyzed: am
City/State: Dallas/TX
Project No. 18780-1
No. of Phases:



LANE DISTRIBUTION

	RT	TH	LT
NB	0	0	0
SB	0	1	0
EB	0	2	2
WB	1	2	0

VOLUME PER LANE

	RT	TH	LT
NB			
SB		1366	
EB		324	184
WB	60	732	

EB LT=	164		NB LT=	0
WB TH =	732		SB TH =	1366
	916	OR		1366
WB LT=	0		SB LT=	0
EB TH =	324		NB TH =	0
	324			0

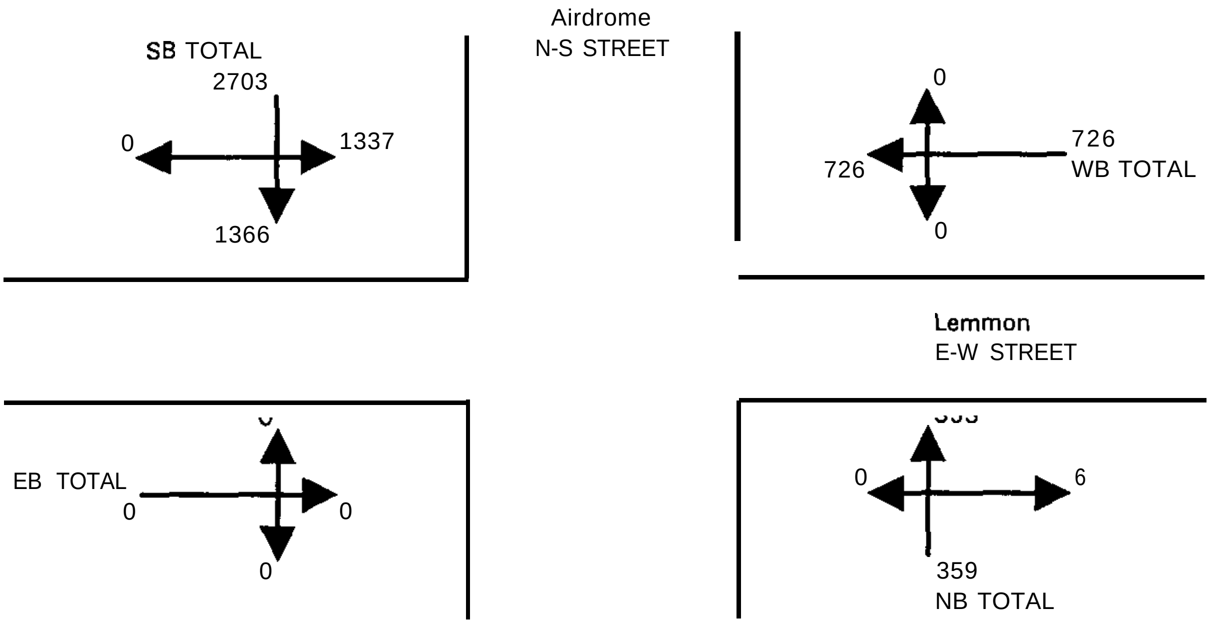
916 + 1366 = 2282
E-W CRT N-S CRT

1125/1275 = > B
1275/1425 = > C
1425/1575 = > D
1575/1725 = > E

Only two westbound lanes are functional because of southbound traffic demand. The southbound/westbound intersection is at LOS F.

PLANNING APPLICATION WORKSHEET

Intersection: Airdrome/Lemmon
Analyst: swf
Time Period Analyzed: am
City/State: Dallas/TX
Project No. 18760-l
No. of Phases:



LANE DISTRIBUTION

	RT	TH	LT
NB	0	1.5	0
SB	0	0	2
EB	0	0	0
WB	0	1.5	0

VOLUME PER LANE

	RT	TH	LT
NB		235	
SB			669
EB			
WB		464	

EB LT=	0		NB LT=	0
WB TH=	464		SB TH=	0
	484			0
WB LT=	0	OR	SB LT=	669
EBTH=	0		NBTH=	235
	0			904

484 + 904 = 1388
E-W CRT N-S CRT

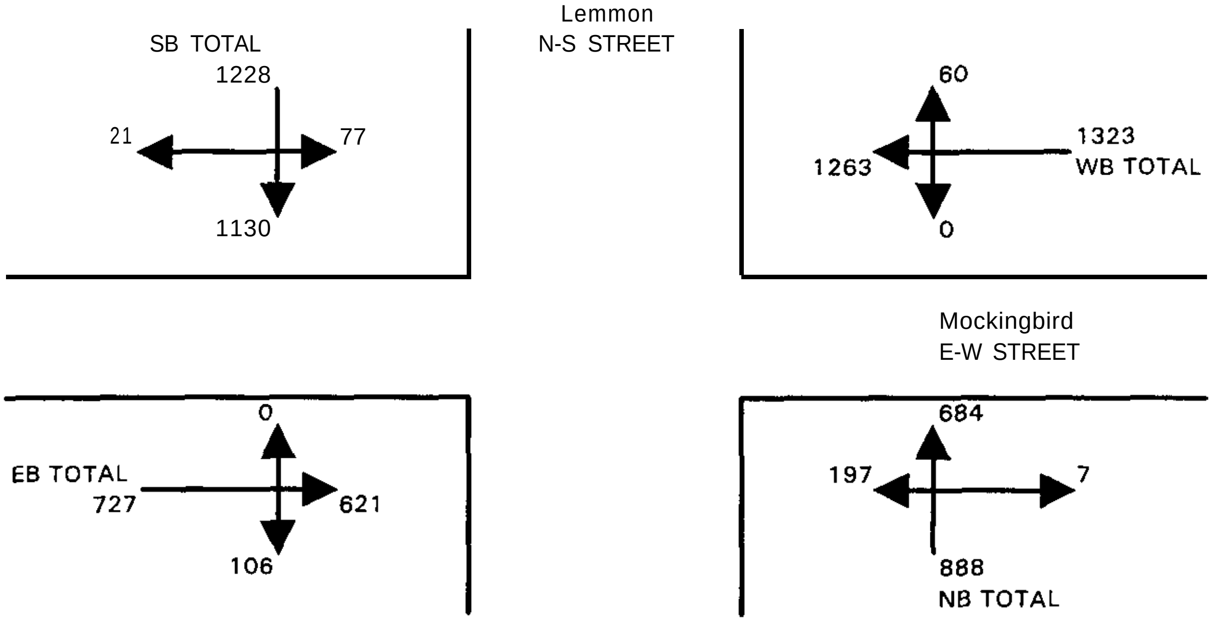
1125/1275 = >B
1275/1425 = >C
1425/1575 = >D
1575/1725 = >E

Southbound lane exceeds design capacity (LOS DIE).

DA973350.427**1/21/98**3:50 PM

PLANNING APPLICATION WORKSHEET

Intersection: **Mockingbird/Lemmon**
Analyst: swf
Time Period Analyzed: am
City/State: **Dallas/TX**
Project No. 18780-l
No. of Phases:



LANE DISTRIBUTION

	RT	TH	LT
NB	0	3	1
SB	0	3	1
EB	0	3	0
WB	0	3	0

VOLUME PER LANE

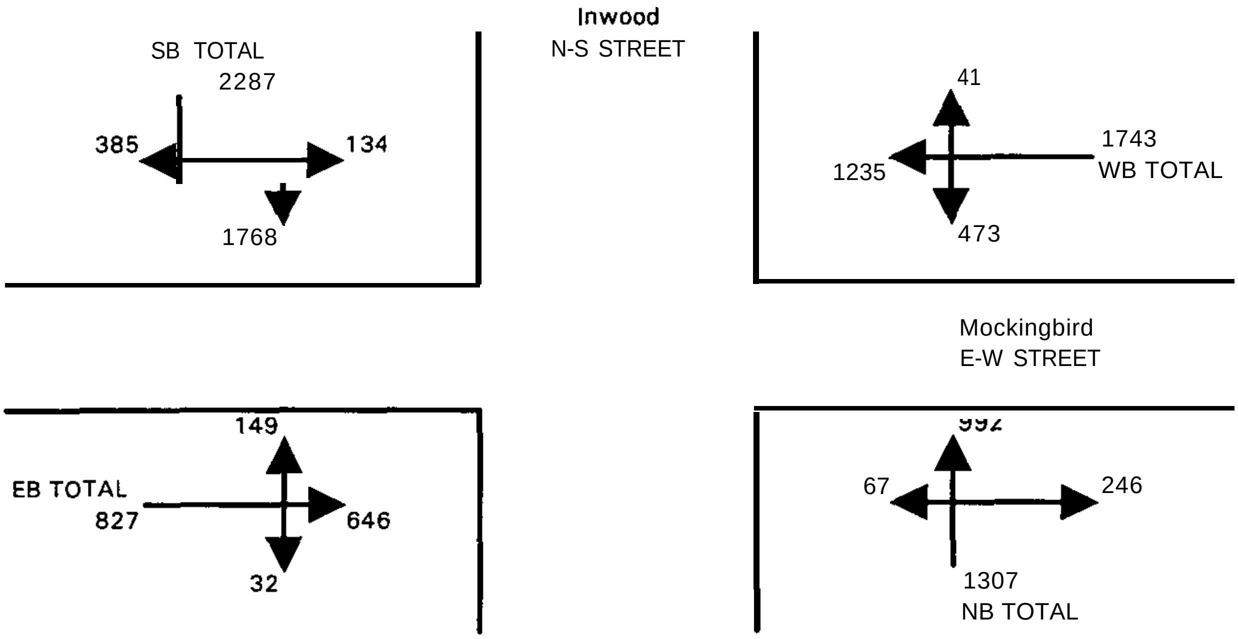
	RT	TH	LT
NB		230	197
SB		384	77
EB		242	
WB		441	

EB LT =	0		NBLT=	197		
WB TH =	441		SB TH =	384		
	441			581		
WB LT =	0	OR	SB LT =	77	OR	
EBTH=	242		NBTH=	230		
	242			307		1125/1275 = >B
						1275/1425 = >C
441 E-W CRT	+	581 N-S CRT	=	1022		1425/1575 = >D
						1575/1725 = >E

LOS may be lower because of LOS at adjacent intersections (LOS A/B).

PLANNING APPLICATION WORKSHEET

Intersection: Mockingbird/Inwood
Analyst: swf
Time Period Analyzed: am
City/State: Dallas/TX
Project No. 18780-l
No. of Phases:



LANE DISTRIBUTION

	RT	TH	LT
NB	0	3	1
SB	0	3	1
EB	1	2	1
WB	0	2	1

VOLUME PER LANE

	RT	TH	LT
NB		413	67
SB		716	134
EB	32	323	14s
WB		638	473

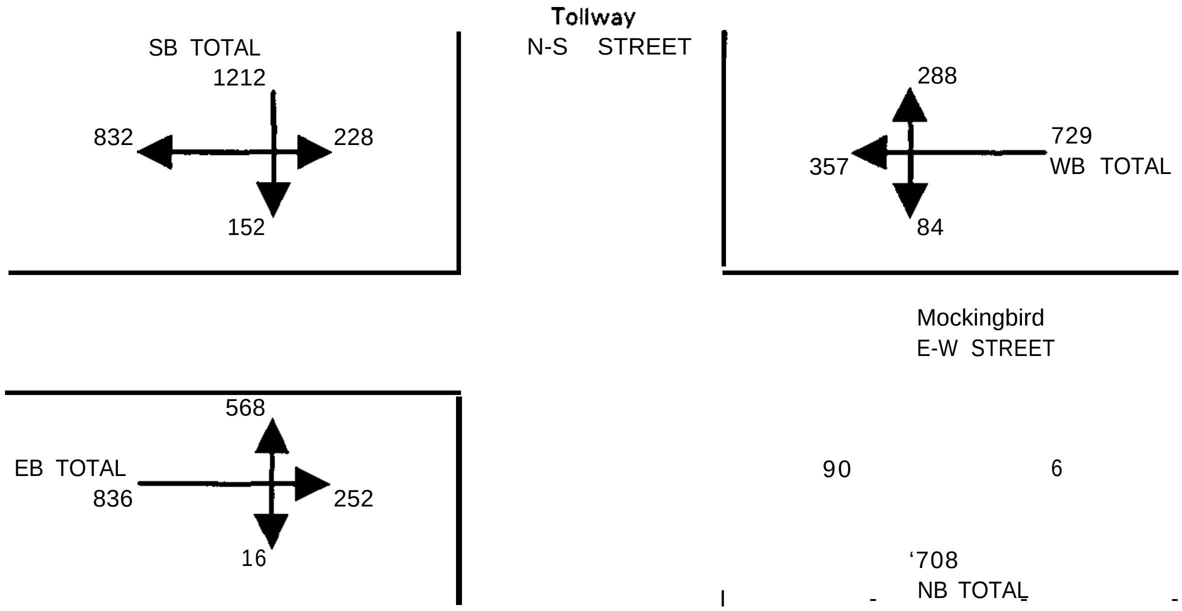
EB LT =	14s		NB LT =	67	
WB TH =	638		SB TH =	718	
	787			785	
WB LT=	473	OR	SB LT=	134	OR
EBTH=	323		NBTH=	413	
	796			547	1125/1275 = >B
					1275/1425 = >C

736 + 785 = 1581 — 1425/1575 = >D

E-W CRT, N-S CRT — 1575/1725 = >E

PLANNING APPLICATION WORKSHEET

Intersection: Mockingbird/Tollway
Analyst: swf
Time Period Analyzed: am
City/State: Dallas/TX
Project No. 18780-l
No. of Phases:



LANE DISTRIBUTION

	RT	TH	LT
NB	0	1	1
SB	1	1	1
EB	0	1	1
WB	0	2	0

VOLUME PER LANE

	RT	TH	LT
NB		612	so
SB	832	152	228
EB		252	568
WB		365	

EB LT= 568
ALL WB = 365
933
WB LT= 84
ALL EB= 418
502
OR

NB LT= 90
SB TH+LF= 380
470
SB LT= 228
ALL NB= 354
582
OR

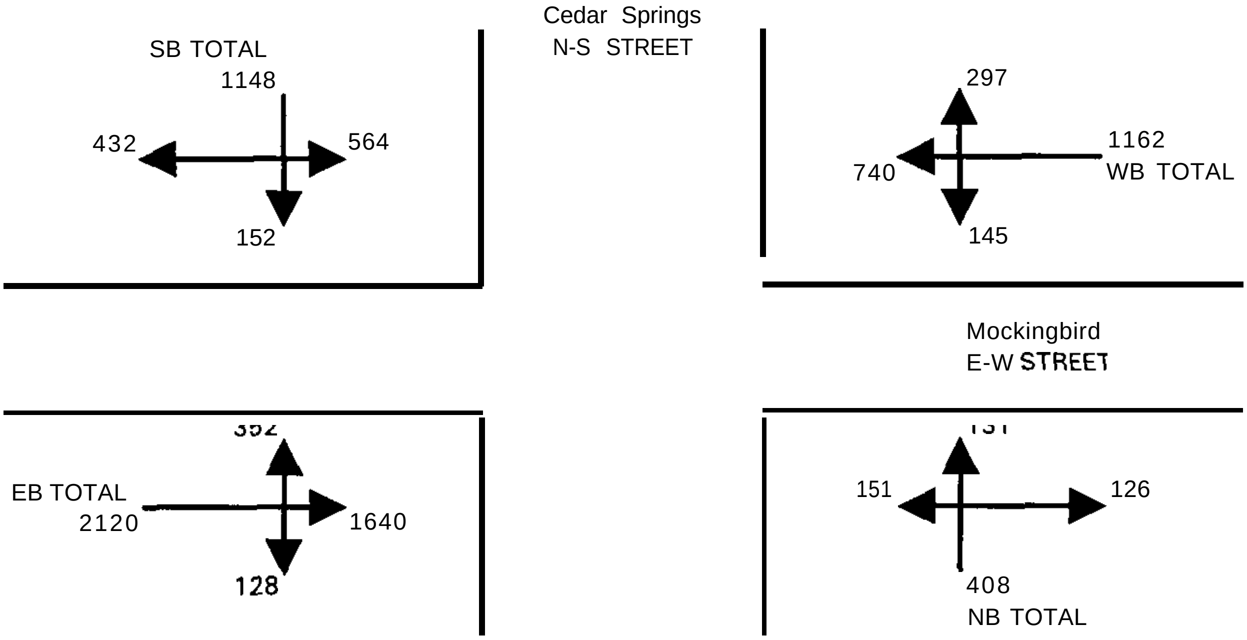
933 + 582 1515
E-W CRT N-S CRT

1125/1275 = >B
1275/1425 = >C
1425/1575 = >D
1575/1725 = >E

Southbound lane exceeds capacity (LOS D/El.

PLANNING APPLICATION WORKSHEET

Intersection: Mockingbird/Cedar Springs
Analyst: swf
Time Period Analyzed: pm
City/State: Dallas/TX
Project No. 18780-l
No. of Phases:



LANE DISTRIBUTION

	RT	TH	LT
NB	0	2	1
SB	1	2	2
EB	0	3	2
WB	0	3	2

VOLUME PER LANE

	RT	TH	LT
NB		129	151
SB	432	76	282
EB		589	176
WB		346	73

EB LT= 176
WB TH= 522
73
589
WB LT= 662 OR
EBTH= 589
662

NB LT= 151
SB TH= 76
227
SB LT= 282 OR
NB TH= 129
411

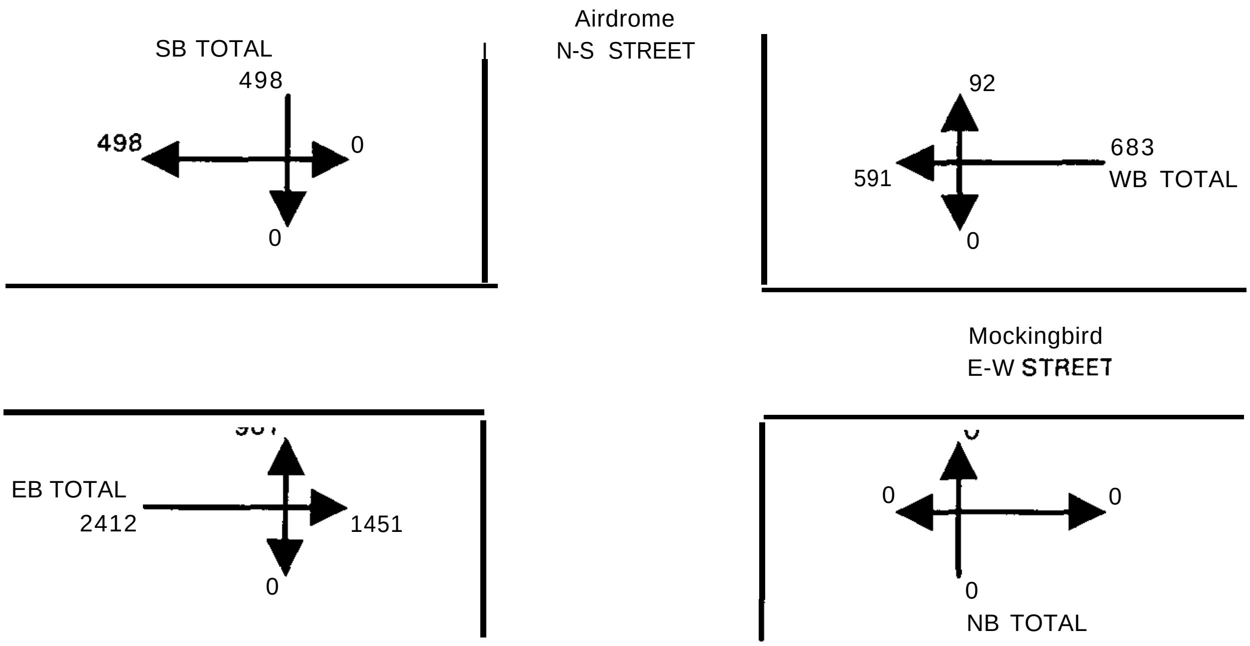
1125/1275 = >B
1275/1425 = >C
1425/1575 = >D
1575/1725 = >E

662 + 411 = 1072
E-W CRT N-S CRT

DA973370.235**1/21/98**3:53 PM

PLANNING APPLICATION WORKSHEET

Intersection: Mockingbird/Airdrome
Analyst: swf
Time Period Analyzed: pm
City/State: Dallas/TX
Project No. 18780-l
No. of Phases:



LANE DISTRIBUTION

	RT	TH	LI
NB	0	0	0
SB	1	0	0
EB	0	2	2
WB	0	3	0

VOLUME PER LANE

	RT	TH	LT
NB			
SB	498		
EB		726	481
WB		228	

EB LT= 481
WB TH= 228
708
WB LT= 0
EBTH= 726
726
OR

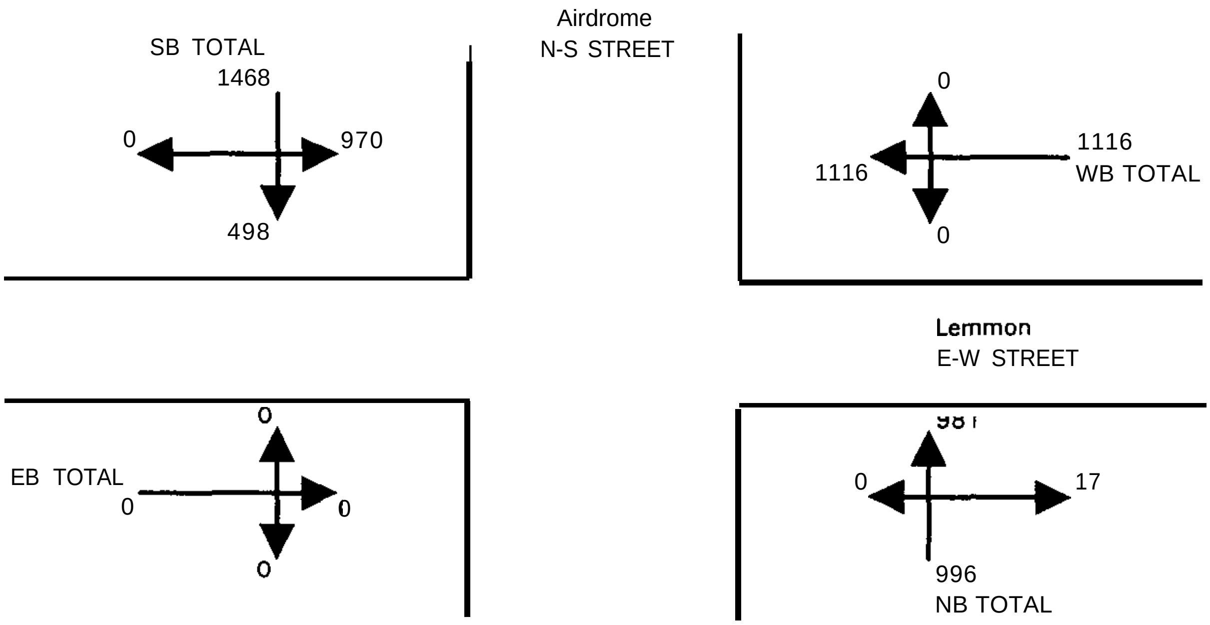
NB LT= 0
SB TH= 0
0
SB LT= 0
NB TH= 0
0

726 + 0 =
E-W CRT N-S CRT

01125/1275 = >B
1275/1425 = >C
1425/1575 = >D
157511725 = > E

PLANNING APPLICATION WORKSHEET

Intersection: Airdrome/Lemmon
Analyst: swf
Time Period Analyzed: pm
City/State: Dallas/TX
Project No. 16760-l
No. of Phases:



LANE DISTRIBUTION

	RT	TH	LT
NB	0	1.5	0
SB	0	0	2
EB	0	0	0
WB	0	1.5	0

VOLUME PER LANE

	RT	TH	LT
NB		654	
SB			485
EB			
WB		744	

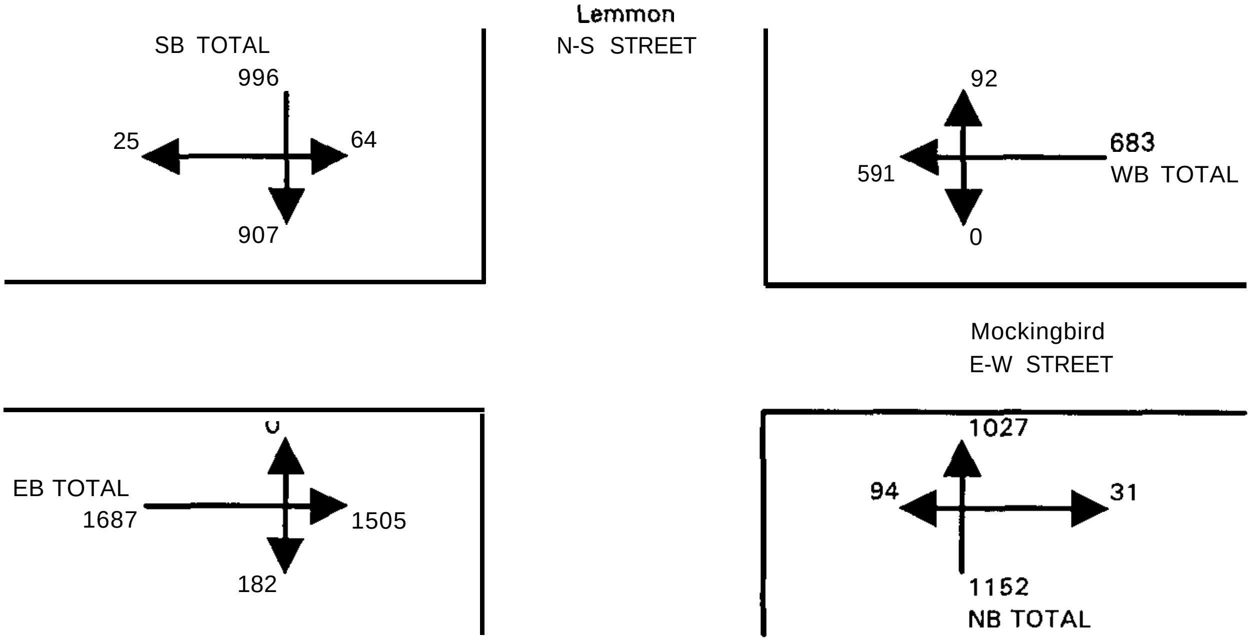
1125/1275 = >B
1275/1425 = >C
1425/1575 = >D
1575/1725 = >E

744	+	1139	=	1883
E-W CRT		N-S CRT		

Westbound and northbound intersection at LOS C.

PLANNING APPLICATION WORKSHEET

Intersection: Mockingbird/Lemmon
Analyst: swf
Time Period Analyzed: pm
City/State: Dallas/TX
Project No. 18780-I
No. of Phases:



LANE DISTRIBUTION

	RT	TH	LT
NB	0	3	1
SB	0	3	1
EB	0	3	0
WB	0	3	0

VOLUME PER LANE

	RT	TH	LT
NB		353	94
SB		311	64
EB		562	
WB		228	

EB LT= 0
WB TH= 228
0
562
WB LT= 562 OR
EBTH= 562 562
562

NB LT= 94
SB TH= 311
405
SB LT= 64 OR
NBTH= 353
417

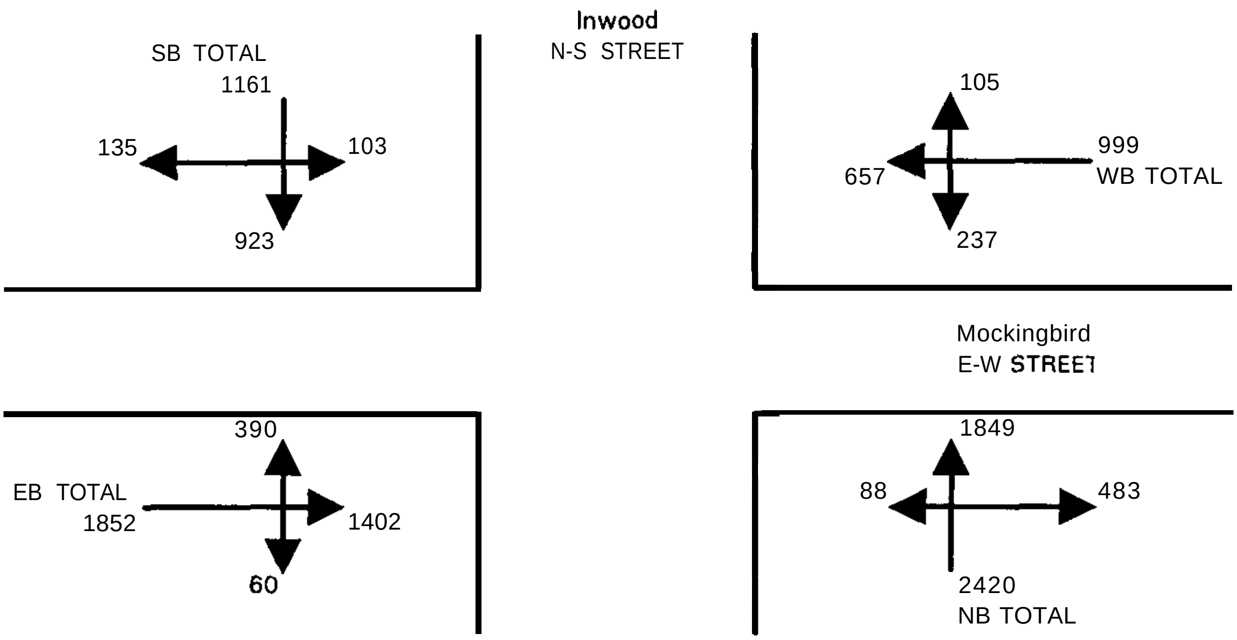
1125/1275 = > B
1275/1425 = > C
1425/1575 = > D
1575/1725 = > E

562 + 417 = 979
E-W CRT N-S CRT

DA973370.232**1/21/98**3:54 PM

PLANNING APPLICATION WORKSHEET

Intersection: **Mockingbird/Inwood**
Analyst: swf
Time Period Analyzed: pm
City/State: Dallas/TX
Project No. 18780-l
No. of Phases:



LANE DISTRIBUTION

	RT	TH	LT
NB	0	3	1
SB	0	3	1
EB	1	2	1
WB	0	2	1

VOLUME PER LANE

	RT	TH	LT
NB		777	88
SB		353	103
EB	60	701	390
WB		381	237

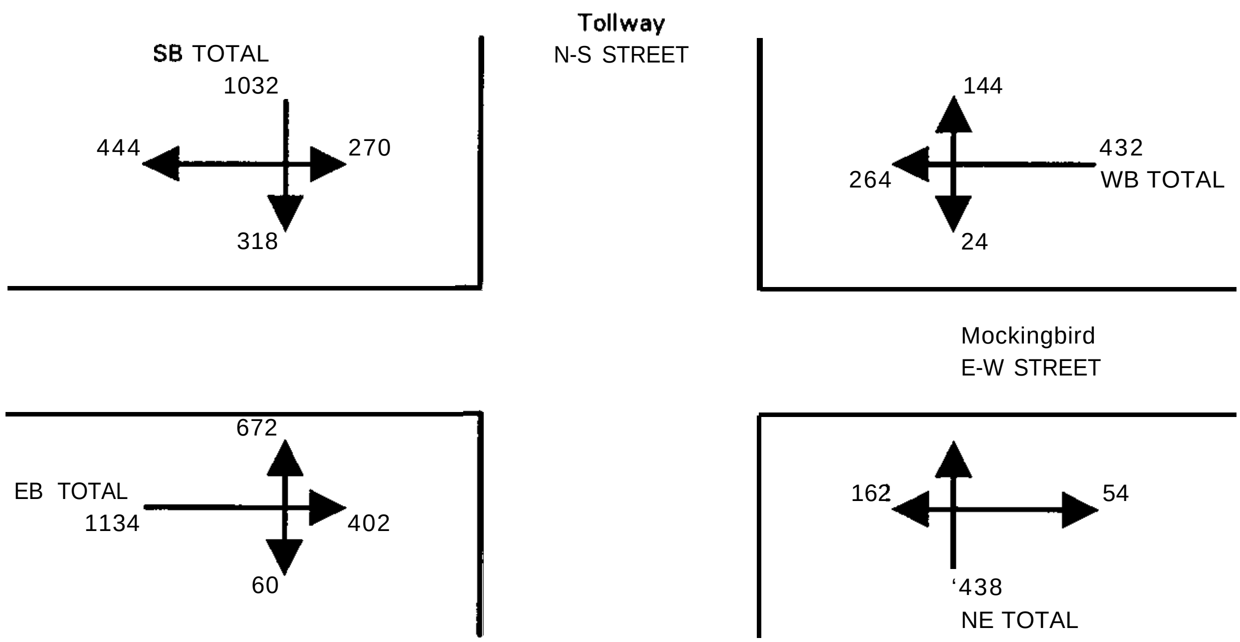
EB LT=	390		NB LT =	88	
WB TH =	381		SB TH =	353	
	771			**441**	
WB LT=	237	OR	SB LT=	103	OR
EBTH=	701		NBTH=	777	
	938			**880**	

938 + 880 = 1818
E-W CRT N-S CRT

1125/1275 = >B
1275/1425 = >C
1425/1575 = >D
1575/1725 = >E

PLANNING APPLICATION WORKSHEET

Intersection: Mockingbird/Tollway
Analyst: swf
Time Period Analyzed: pm
City/State: Dallas/TX
Project No. 18780-l
No. of Phases:



LANE DISTRIBUTION

	RT	TH	LT
NB	0	1	1
SB	1	1	1
EB	0	1	1
WB	0	2	0

VOLUME PER LANE

	RT	TH	LT
NB		222	162
SB	444	318	270
EB		402	672
WB		216	

EB LT=	672		NB LT =	162
ALL WB =	216		SBTH+LF=	588
	888			**750**
WB LT=	24	OR	SB LT =	270
ALL EB =	567		ALL NB=	219
	591	OR		**489**

888 + 750 1638

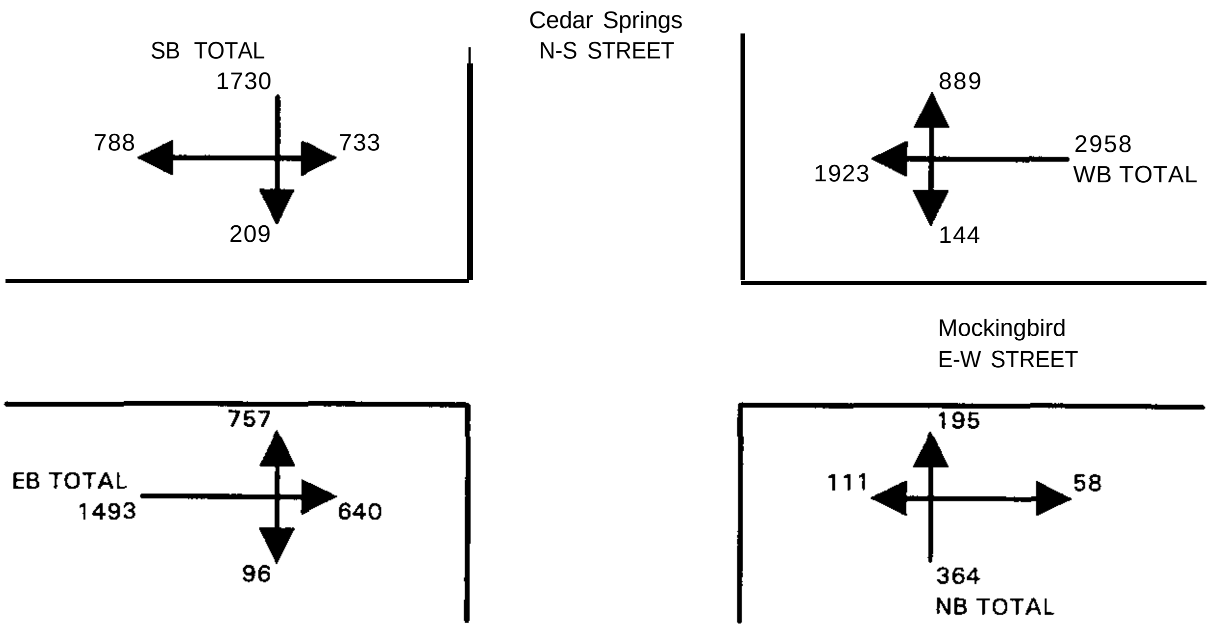
E-W CRT N-S CRT

1125/1275 = > B
1275/1425 = > C
142511575 = > D
1575/1725 = > E

DA973370.227**1/21/98**3:55 PM

PLANNING APPLICATION WORKSHEET

Intersection: Mockingbird/Cedar Springs
Analyst: swf
Time Period Analyzed: am (adjusted)
City/State: Dallas/TX
Project No. 18780-I
No. of Phases:



LANE DISTRIBUTION

	RT	TH	LT
NB	0	2	1
SB	1	2	2
EB	0	3	2
WB	0	3	2

VOLUME PER LANE

	RT	TH	LT
NB		127	111
SB	788	105	367
EB		245	379
WB		937	72

EB LT=	379		NB LT=	111
WB TH=	937		SB TH=	105
	1316			**216**
WB LT=	72	OR	SB LT=	367
EBTH=	245		NBTH=	127
	317			**493**

1316 (E-W CRT) + 493 (N-S CRT) = 1809

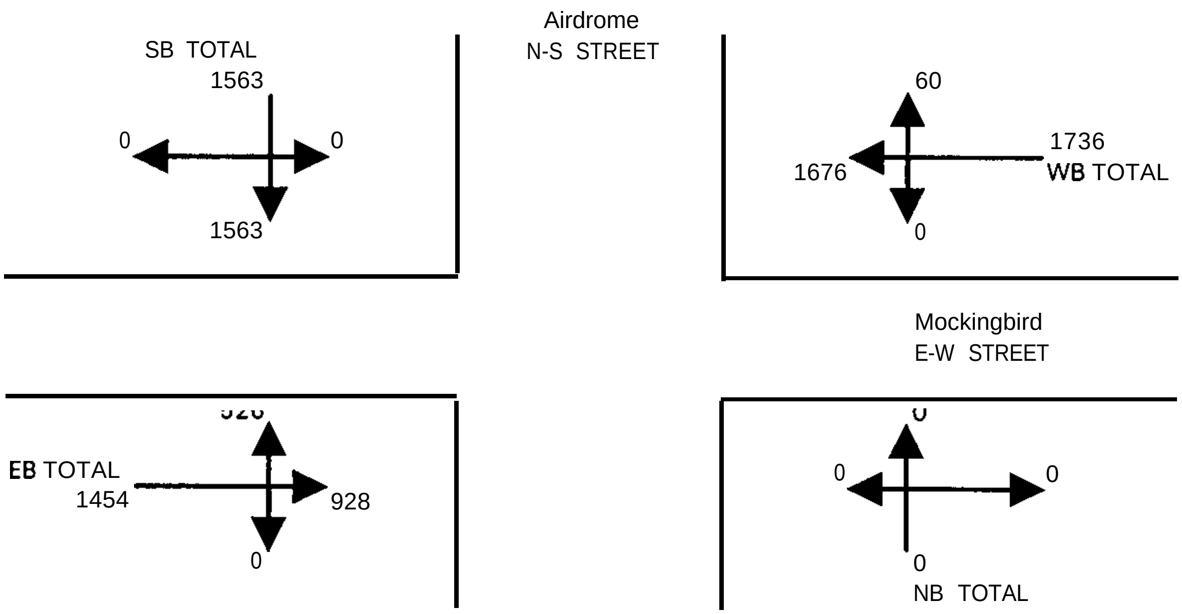
1125/1275 = >B
1275/1425 = >C
1425/1575 = >D
1575/1725 = >E

Westbound lanes exceed capacity.

DA973370.302**1/21/98**3:55 PM

PLANNING APPLICATION WORKSHEET

Intersection: Mockingbird/Airdrome
Analyst: swf
Time Period Analyzed: am (adjusted)
City/State: Dallas/TX
Project No. 18780-l
No. of Phases:



LANE DISTRIBUTION

	RT	TH	LI
NB	0	0	0
SB	0	1	0
EB	0	2	2
WB	1	2	0

VOLUME PER LANE

	RT	TH	LT
NB			
SB		1563	
EB		464	263
WB	60	838	

EB LT= 263
WB TH = 838
1101
WB LT = 0
EBTH= 464
464
OR

NB LT= 0
SB TH = 1563
1563
SB LT= 0
NBTH= 0
0
OR

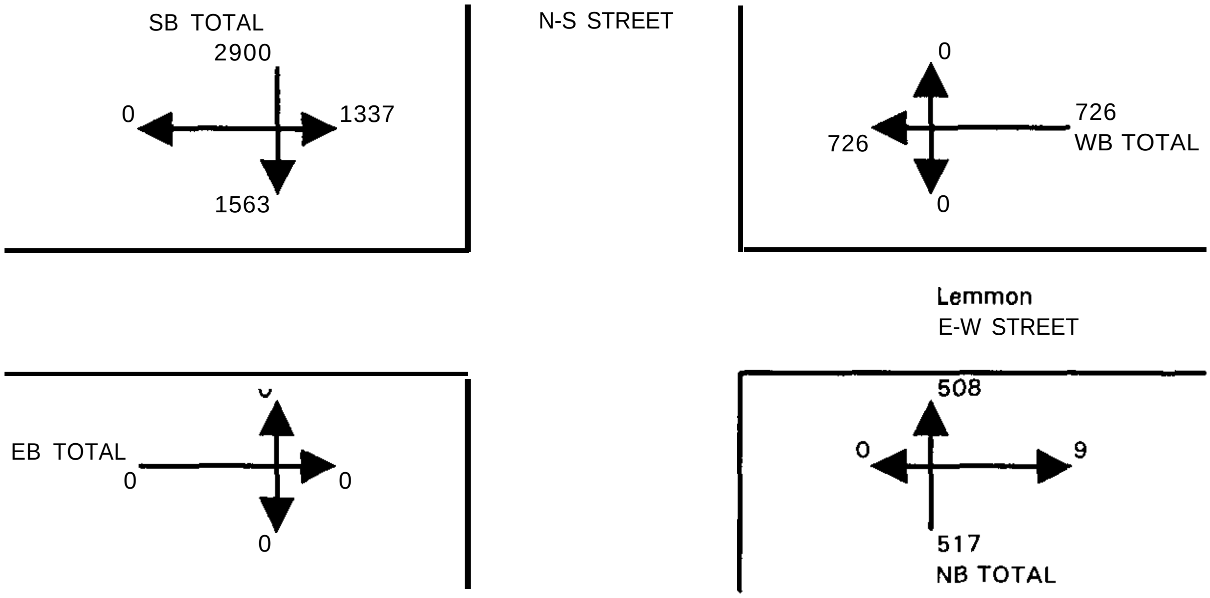
1125/1275 = >B
1275/1425 = > C
1425/1575 = >D
1575/1725 = >E

1101 E-W CRT + 1563 N-S CRT 2664

Only two westbound lanes are functional due to southbound traffic demand. Southbound and westbound lanes exceed design capacity (LOS F).

PLANNING APPLICATION WORKSHEET

Intersection: Airdrome/Lemmon
Analyst: swf
Time Period Analyzed: am iadjusted)
City/State: Dallas/TX
Project No. 18780-l
No. of Phases:



LANE DISTRIBUTION

	RT	TH	LT
NB	0	1.5	0
SB	0	0	2
EB	0	0	0
WB	0	1.5	0

VOLUME PER LANE

	RT	TH	LT
NB		339	
SB			669
EB			
WB		484	

EB LT= 0
WB TH = 484
484

WB LT= 0 OR
EBTH= 0
0

NB LT= 0
SB TH = 0
0

SB LT= 669 OR
NBTH= 339
1007

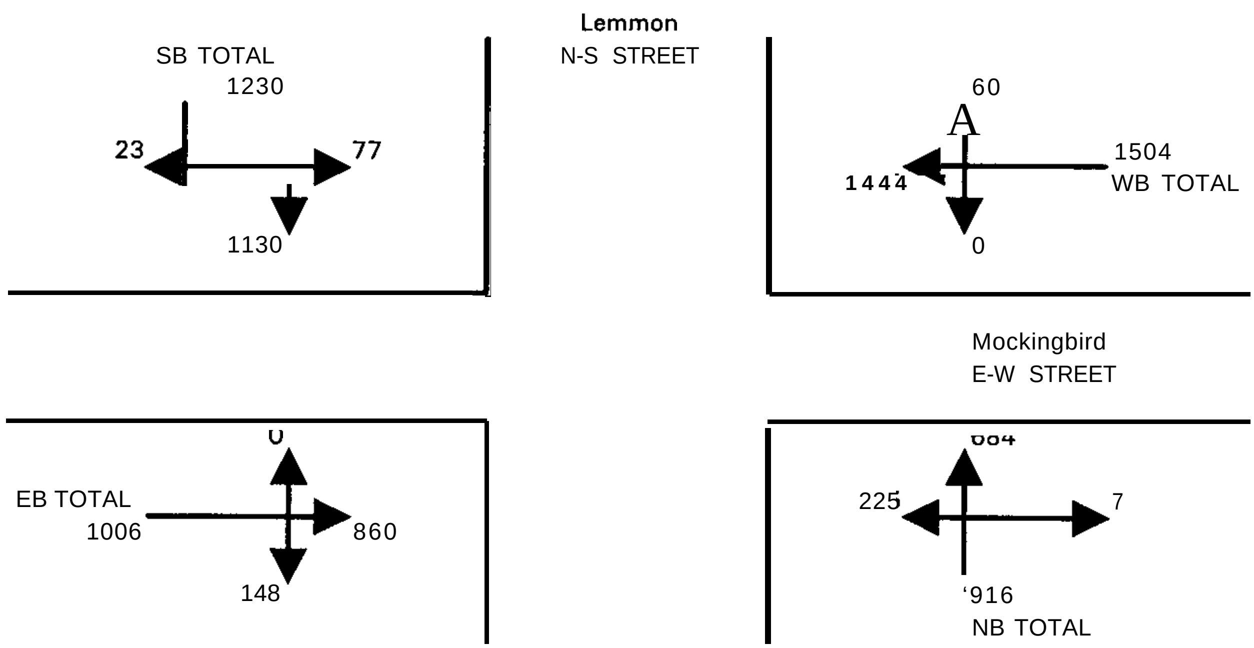
1125/1275 = >B
1275/1425 = >C
1425/1575 = >D
1575/1725 = >E

484 + 1007 = 1491
E-W CRT N-S CRT

Southbound lane exceeds capacity (LOS F)

PLANNING APPLICATION WORKSHEET

Intersection: **Mockingbird/Lemmon**
Analyst: swf
Time Period Analyzed: am **(adjusted)**
City/State: Dallas/TX
Project No. 16760-l
No. of Phases:



LANE DISTRIBUTION

	RT	TH	LT
NB	0	3	1
SB	0	3	1
EB	0	3	0
WB	0	3	0

VOLUME PER LANE

	RT	TH	LT
NB		230	225
SB		384	77
EB		336	
WB		501	

EB LT= 0
WB TH= 501
501
WB **LT =** 0
EBTH= 336
336
OR

NB LT= 225
SB TH = 609
77
230
SB LT= 307
NBTH= 230
307
OR

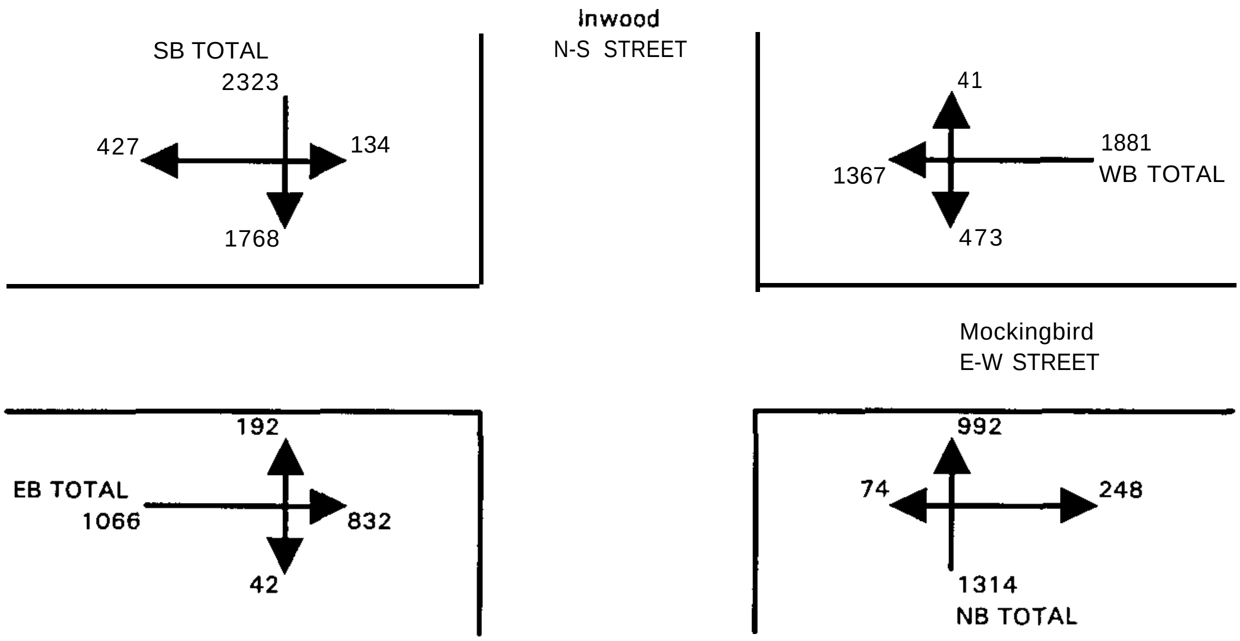
501 + 609 = 1111
E-W CRT N-S CRT

1125/1275 = >**B**
1275/1425 = >C
1425/1575 = > D
1575/1725 = > E

DA973370.314**1/21/98**3:56 PM

PLANNING APPLICATION WORKSHEET

Intersection: **Mockingbird/Inwood**
Analyst: **swf**
Time Period Analyzed: am (adjusted)
City/State: Dallas/TX
Project No. 18780-I
No. of Phases:



LANE DISTRIBUTION

	RT	TH	LT
NB	0	3	1
SB	0	3	1
EB	1	2	1
WB	0	2	1

VOLUME PER LANE

	RT	TH	LT
NB		413	74
SB		732	134
EB	42	416	192
WB		704	473

EB LT=	192		NB LT=	74	
WB TH =	704		**SB TH =**	732	
	896			**806**	
WB LT=	**473**	OR	**SB LT =**	**134**	OR
EBTH=	**416**		NBTH=	**413**	
	889			**547**	**1125/1275 = >B**

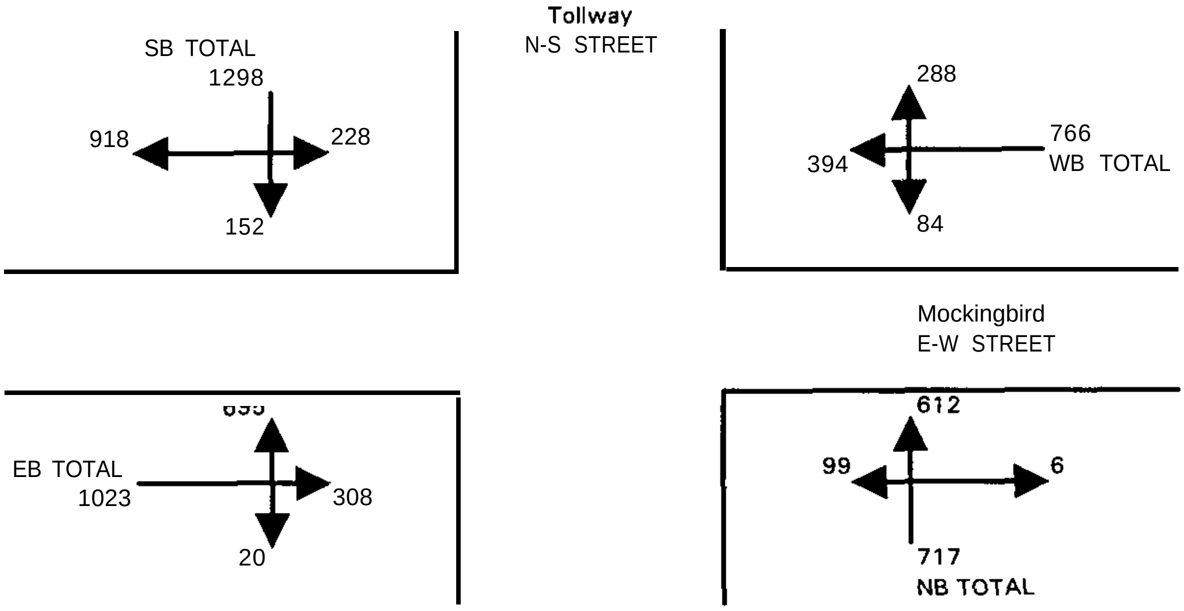
1275/1425 = >C
1425/1575 = >D
1575/1725 = > E

896 + 806 = 1702
E-W CRT + N-S CRT

DA973370.405**1/21/98**3:57PM

PLANNING APPLICATION WORKSHEET

Intersection: Mockingbird/Tollway
Analyst: swf
Time Period Analyzed: am (adjusted)
City/State: Dallas/TX
Project No. 18780-l
No. of Phases:



LANE DISTRIBUTION

	RT	TH	LT
NB	0	1	1
SB	1	1	1
EB	0	1	1
WB	0	2	0

VOLUME PER LANE

	RT	TH	LT
NB		612	99
SB	918	152	228
EB		308	695
WB		383	

EB LT =	695		NBLT=	99
ALL WB =	383		SB TH+LF=	380
	1078			**479**
WB LT=	84	OR	SB LT=	228
ALL EB =	512		ALL NB =	359
	596			**587**

OR

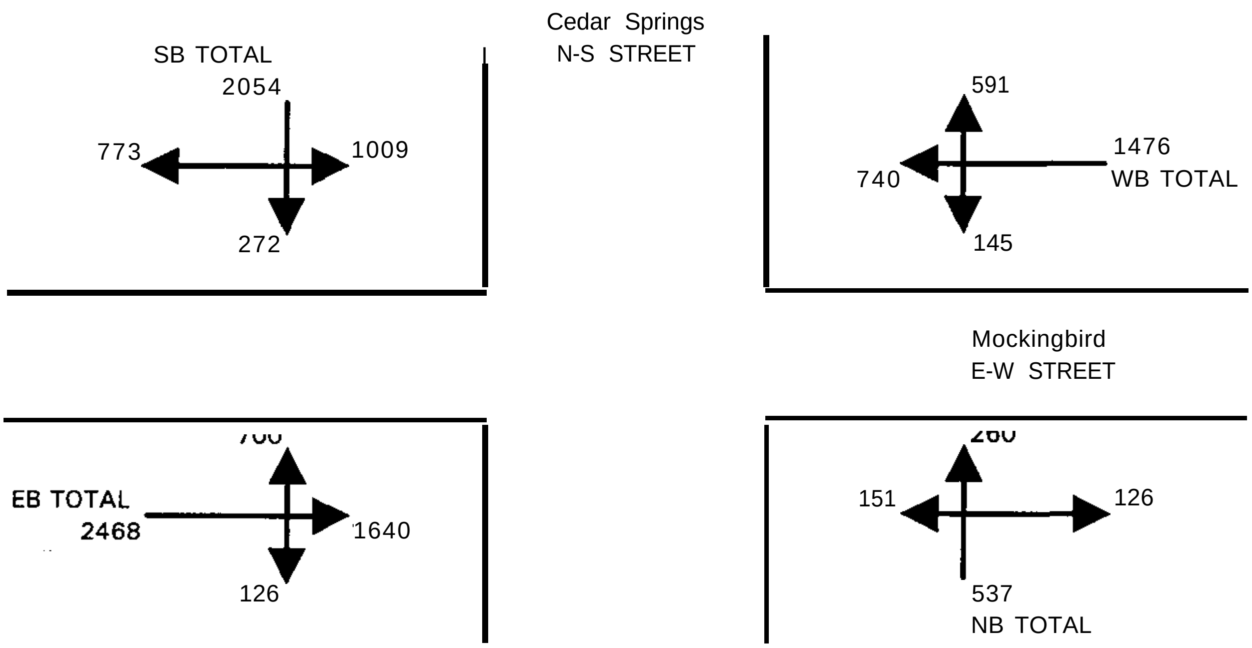
1125/1275 = > B
1275/1425 = > C
1425/1575 = > D
1575/1725 = > E

1078 + 587 = 1665
E-W CRT N-S CRT

Southbound lane exceeds capacity. Westbound and southbound intersection at LOS F.

PLANNING APPLICATION WORKSHEET

Intersection: Mockingbird/Cedar Springs
Analyst: **swf**
Time Period Analyzed: pm **(adjusted)**
City/State: Dallas/TX
Project No. 18780-I
No. of Phases:



LANE DISTRIBUTION

	RT	TH	LT
NB	0	2	1
SB	1	2	2
EB	0	3	2
WB	0	3	2

VOLUME PER LANE

	RT	TH	LT
NB		193	151
SB	773	136	505
EB		569	350
WB		444	73

EB LT=	350		NB LT=	151
WB TH=	444		**SB TH=**	136
	794			**287**
WB LT=	**73**	OR	SB LT=	**505**
EB TH=	**589**		NBTH=	**193**
	662			**698**

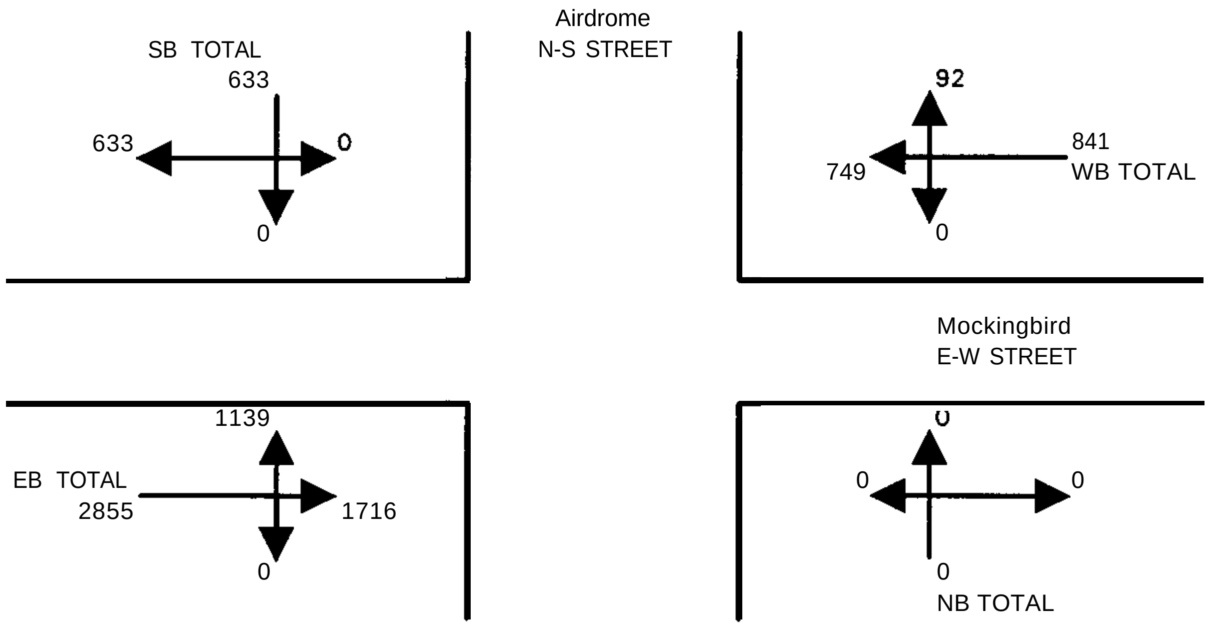
794 + 696 = 1491
E-W CRT N-S CRT

1125/1275 = >B
1275/1425 = >C
1425/1575 = >D
1575/1725 = > E

DA973370.2771/21/98**3:57 PM**

PLANNING APPLICATION WORKSHEET

Intersection: Mockingbird/Airdrome
Analyst: swf
Time Period Analyzed: pm (adjusted)
City/State: Dallas/TX
Project No. 18780-I
No. of Phases:



LANE DISTRIBUTION

	RT	TH	LI
NB	0	0	0
SB	1	0	0
EB	0	2	2
WB	0	3	0

VOLUME PER LANE

	RT	TH	LT
NB			
SB	633		
EB		858	570
WB		260	

EB LT= 570
WB TH = 850
0
WB LT= 858
EBTH= 858 — OR 858
858

NB LT= 0
SB TH = 0
0
SB LT= 0 — OR
NBTH= 0
0

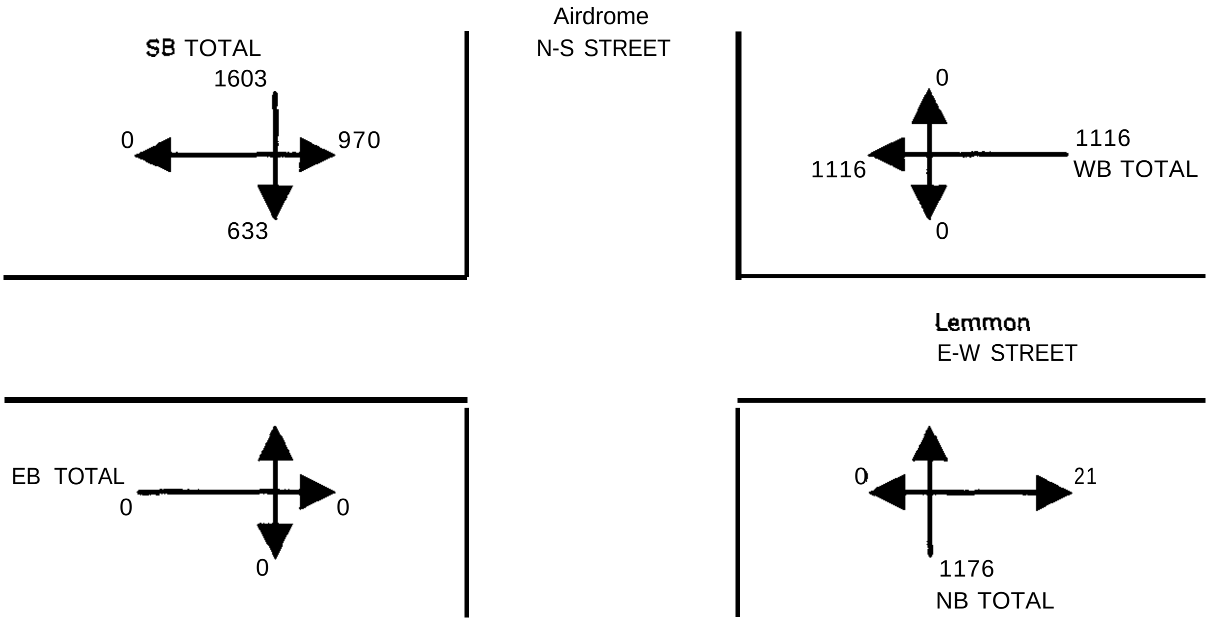
1125/1275 = >B
1275/1425 = >C
1425/1575 = >D
157511725 = > E

856	+	0
E-W CRT		N-S CRT

Eastbound lanes exceed design capacity (LOS C).

PLANNING APPLICATION WORKSHEET

Intersection: **Airdrome/Lemmon**
Analyst: swf
Time Period Analyzed: pm **(adjusted)**
City/State: Dallas/TX
Project No. **18780-1**
No. of Phases:



LANE DISTRIBUTION

	RT	TH	LT
NB	0	1.5	0
SB	0	0	2
EB	0	0	0
WB	0	1.5	0

VOLUME PER LANE

	RT	TH	LT
NB		770	
SB			
EB			
WB		744	

EB LT =	0		NB LT =	0
WB TH =	744		SB TH =	0
	744			0
WELT=	0	OR	SB LT=	485
EB TH =	0		NB TH =	770
	0			1255

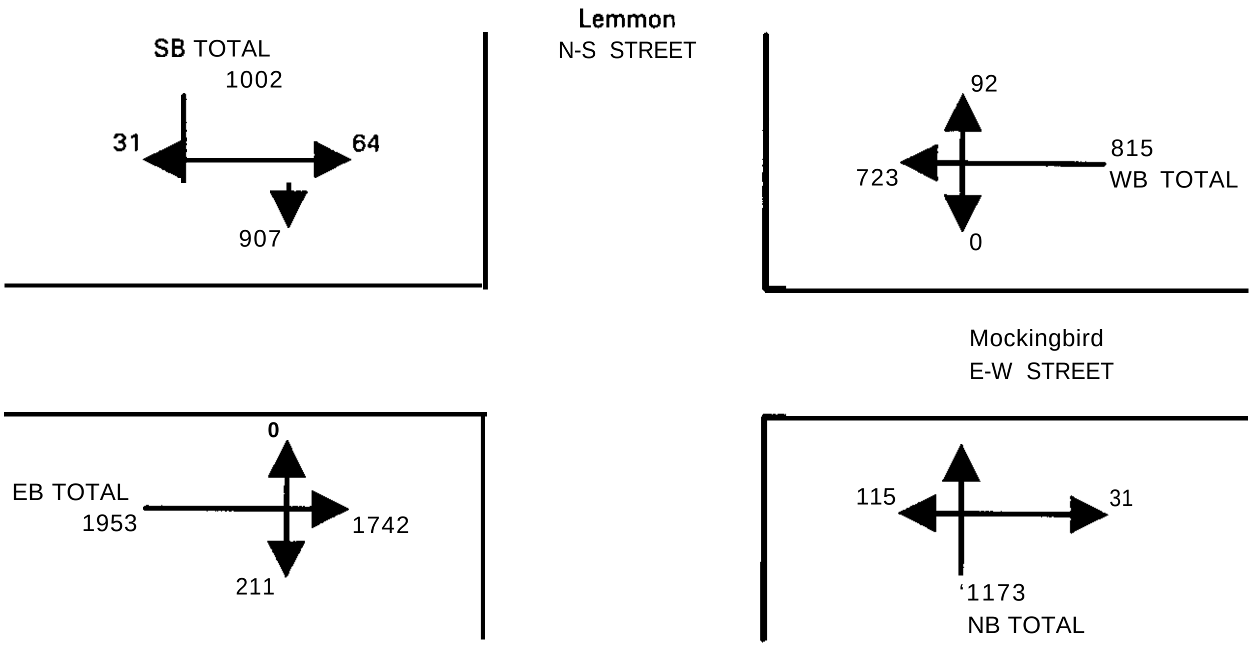
1125/1275 = >B
1275/1425 = >C
1425/1575 = >D
1575/1725 = >E

744	+	1255	=	1999
E-W CRT		N-S CRT		

Westbound and northbound intersection at LOS D.

PLANNING APPLICATION WORKSHEET

Intersection: **Mockingbird/Lemmon**
Analyst: swf
Time Period Analyzed: pm (adjusted)
City/State: Dallas/TX
Project No. **18780-1**
No. of Phases:



LANE DISTRIBUTION

	RT	TH	LT
NB	0	3	1
SB	0	3	1
EB	0	3	0
WB	0	3	0

VOLUME PER LANE

	RT	TH	LT
NB		353	115
SB		313	64
EB		651	
WB		272	

EB LT=	0		NB LT=	115
WB TH=	272		**SB TH =**	313
	272	OR		**428**
WB **LT** =	**0**		**SB LT =**	**64**
EB TH=	**651**		NB TH=	**353**
	651			**417**

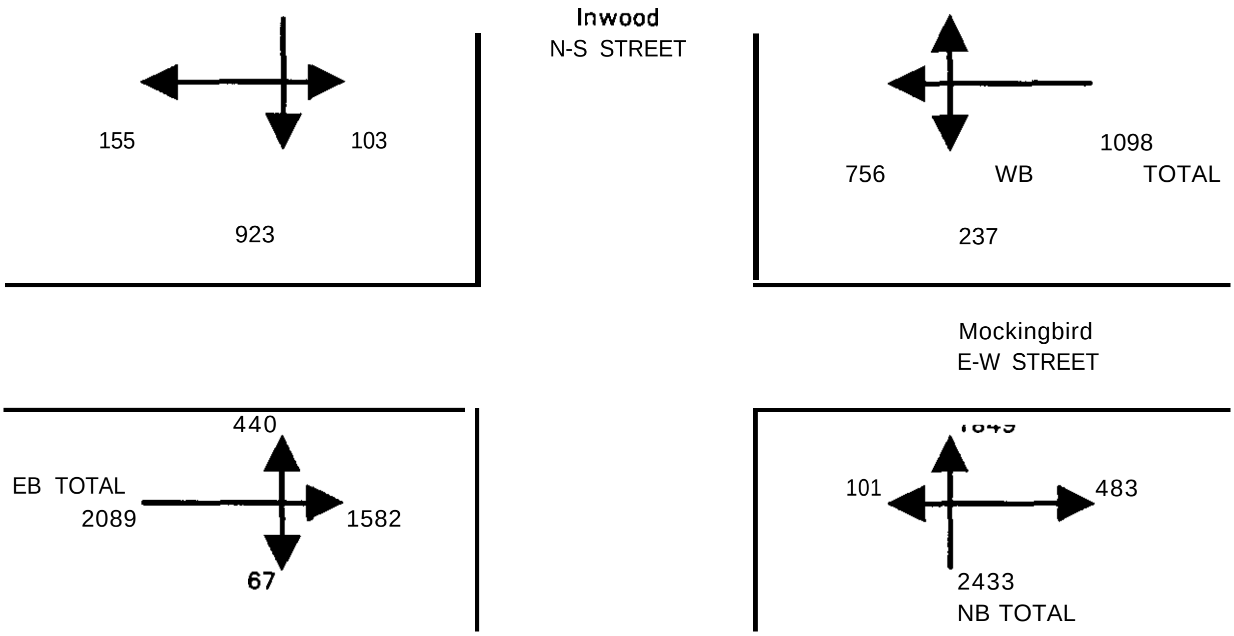
651 + 428 = 1079
E-W CRT N-S CRT

1125/1275 = >B
1275/1425 = >C
1425/1575 = >D
1575/1725 = >E

DA973370.288**1/21/98**3:58 PM

PLANNING APPLICATION WORKSHEET

Intersection: Mockingbird/Inwood
Analyst: swf
Time Period Analyzed: pm (adjusted1
City/State: Dallas/TX
Project No. 18780-l
No. of Phases:



LANE DISTRIBUTION

	RT	TH	LT
NB	0	3	1
SB	0	3	1
EB	1	2	1
WB	0	2	1

VOLUME PER LANE

	RT	TH	LT
NB		777	101
SB		359	103
EB	67	791	440
WB		431	237

EB LT= 440
WB TH= 871
237
WB LT= 791
EBTH= 1028 OR 791
1028

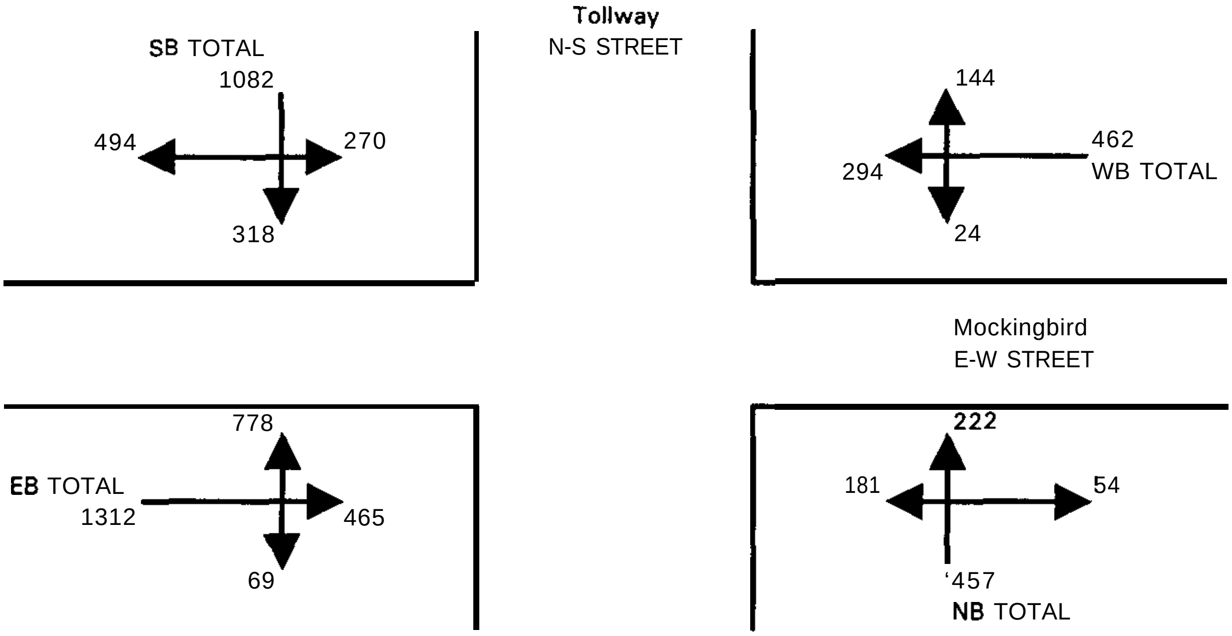
NB LT= 101
SB TH= 460
103
SB LT= 777
NBTH= 880 OR 777
880

1028 + 880 1908
E-W CRT N-S CRT

1125/1275 = >B
1275/1425 = >C
1425/1575 = >D
1575/1725 = >E

PLANNING APPLICATION WORKSHEET

Intersection: **Mockingbird/Tollway**
Analyst: swf
Time Period Analyzed: pm **(adjusted)**
City/State: Dallas/TX
Project No. 18780-l
No. of Phases:



LANE DISTRIBUTION

	RT	TH	LT
NB	0	1	1
SB	1	1	1
EB	0	1	1
WB	0	2	0

VOLUME PER LANE

	RT	TH	LT
NB		222	181
SB	494	318	270
EB		465	778
WB		231	

EB LT=	778		NB LT=	181
ALL **WB** =	231		**SB TH + LF** =	588
	1009			**769**
WB LT=	**24**	OR	**SB** LT=	270
ALL **EB** =	**656**		**ALL NB** =	**229**
	680			**499**

OR

1125/1275 = >B
1275/1425 = >C
1425/1575 = >D
1575/1725 = >E

1009 E-W CRT + 769 N-S CRT = 1778

APPENDIX B

BEVERLY DRIVE

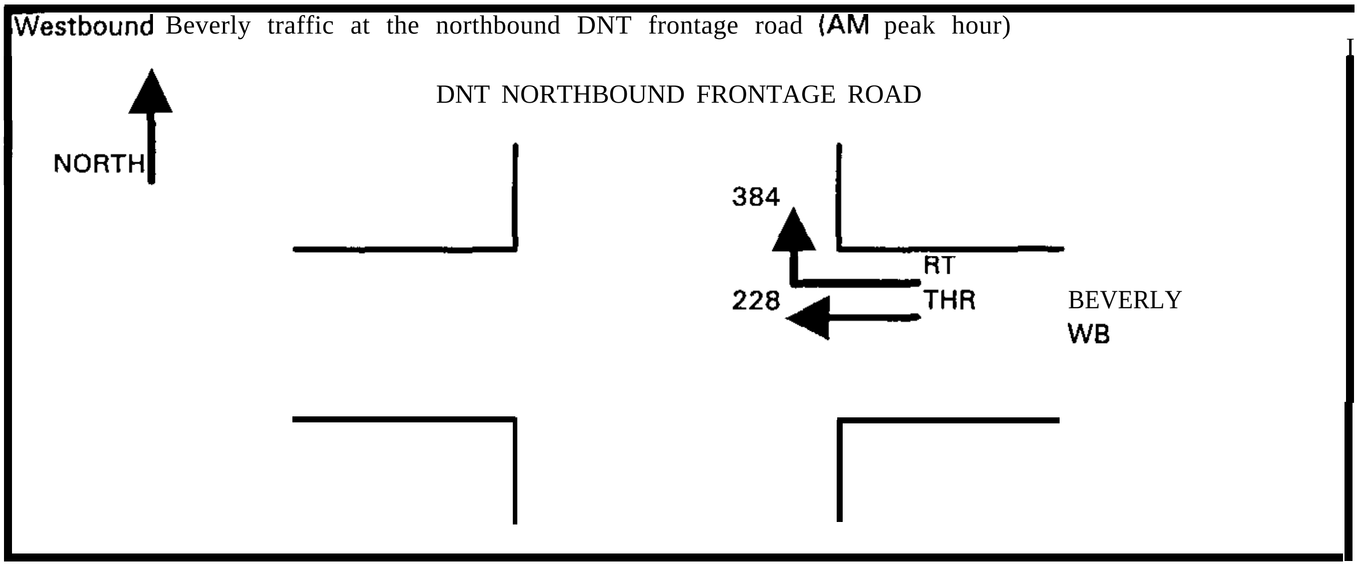


FIGURE B1 -- BEVERLY TRAFFIC AT DNT (AM)

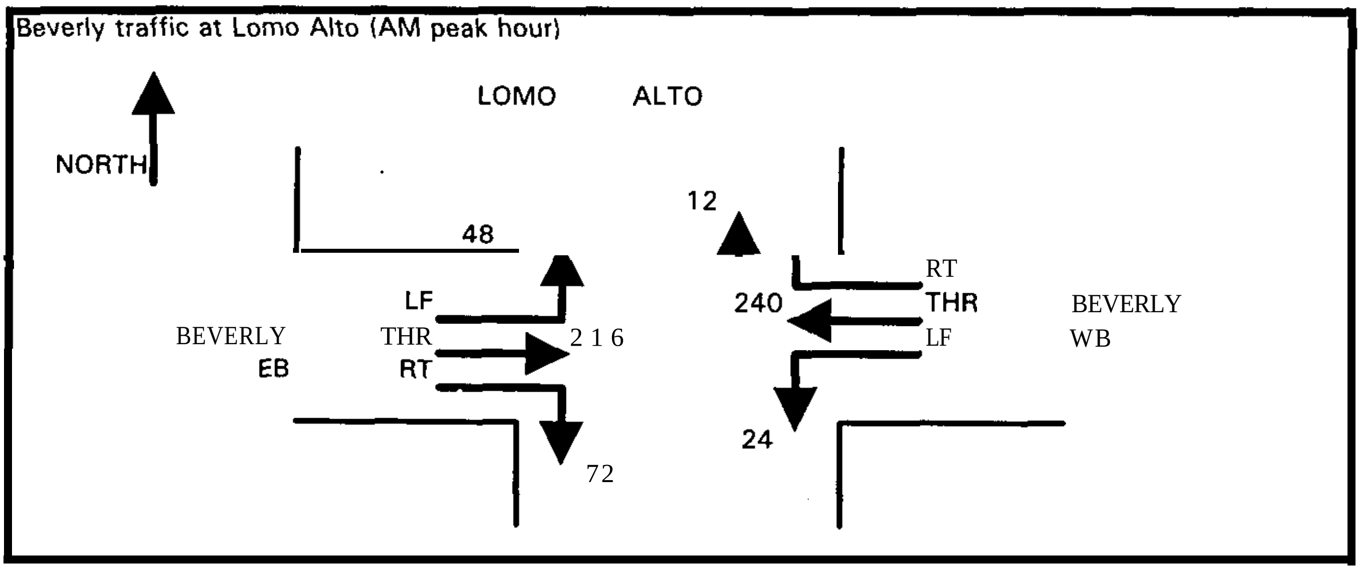


FIGURE B2 -- BEVERLY TRAFFIC AT LOMO ALTO (AM)

Westbound Fairfax traffic carried through Douglas and Edmondson (AM peak hour)

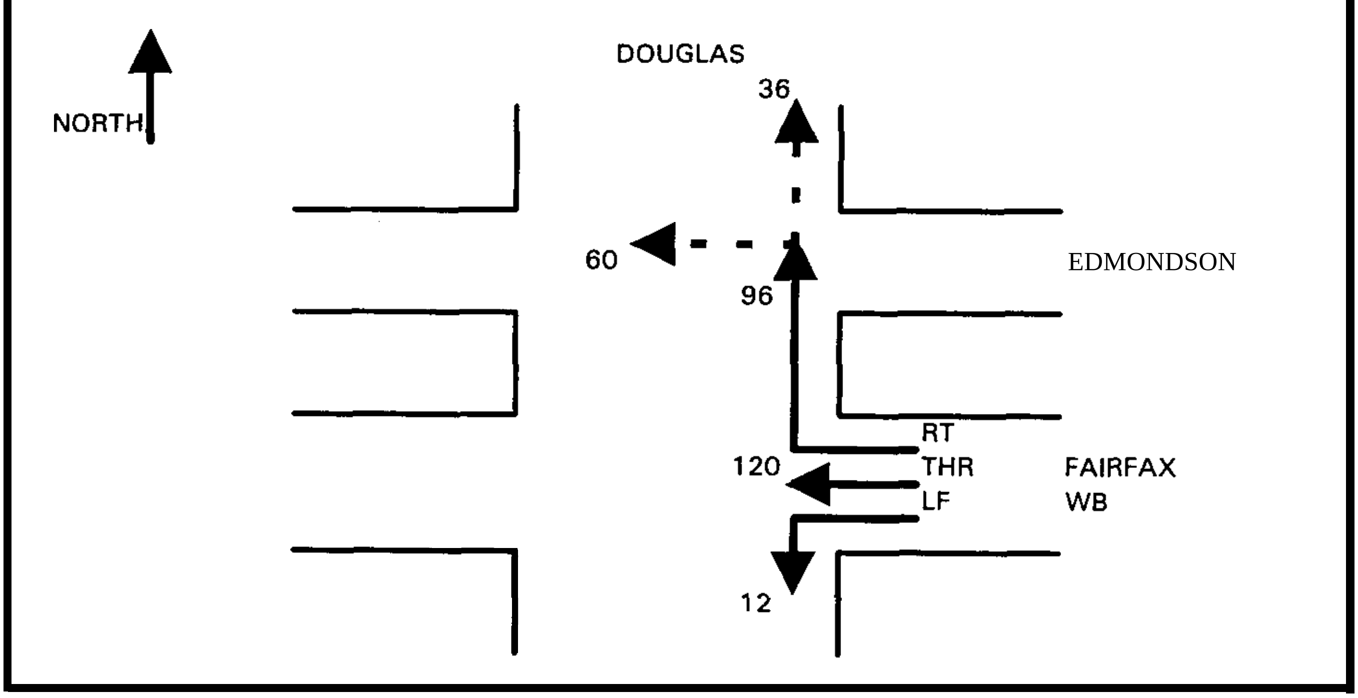


FIGURE B3 -- FAIRFAX TRAFFIC (AM)

Westbound Fairfax traffic carried through Douglas and Armstrong (PM peak hour)

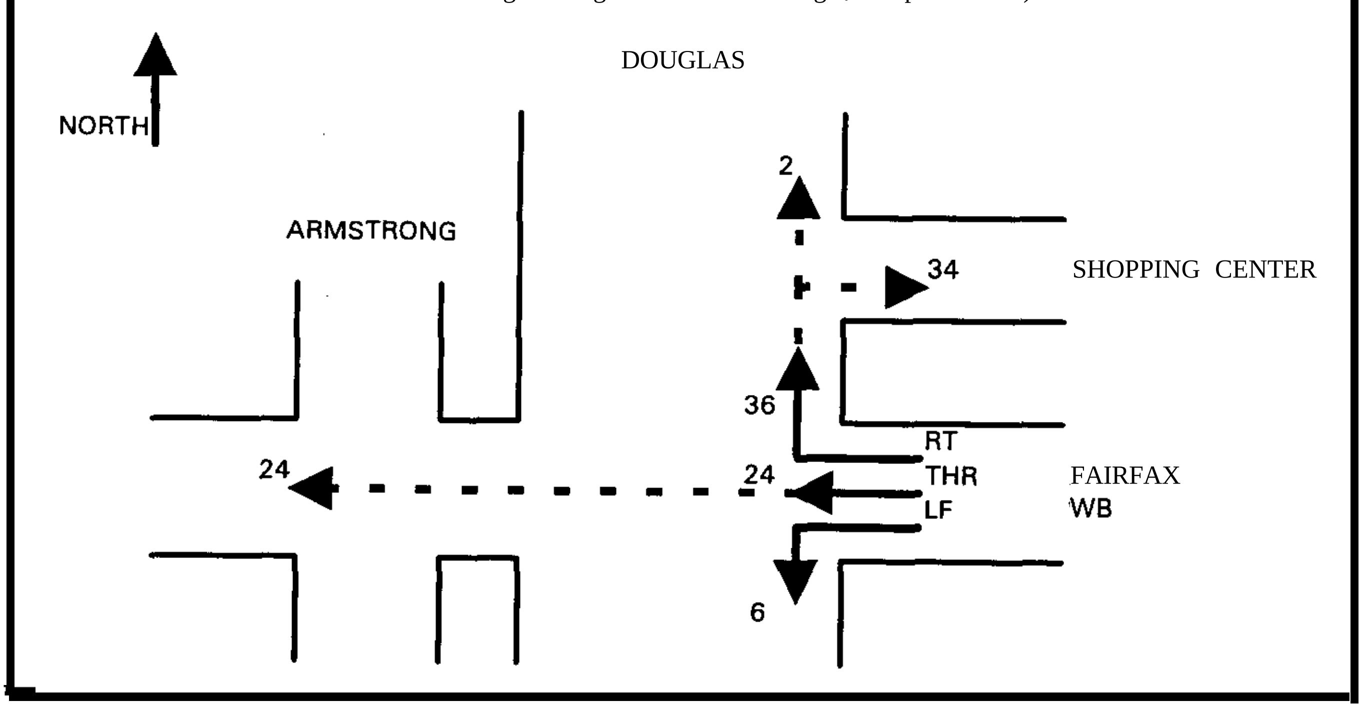


FIGURE B4 -- FAIRFAX TRAFFIC (PM)

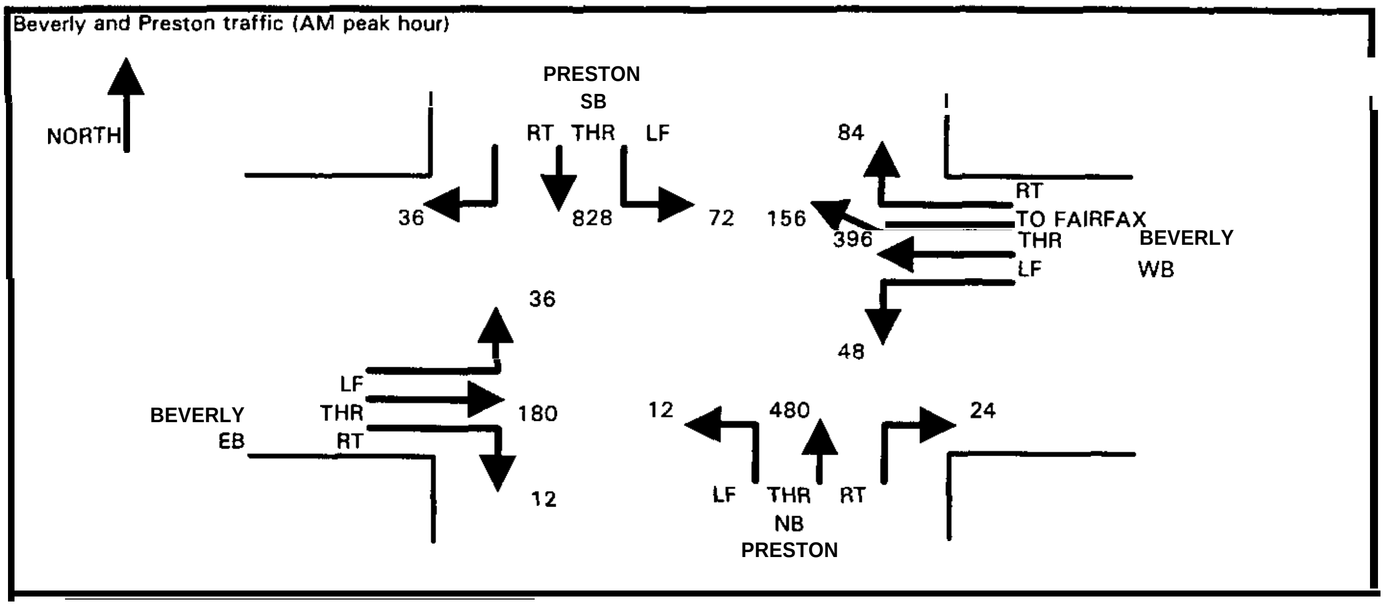


FIGURE B5 -- BEVERLY AND PRESTON (AM)

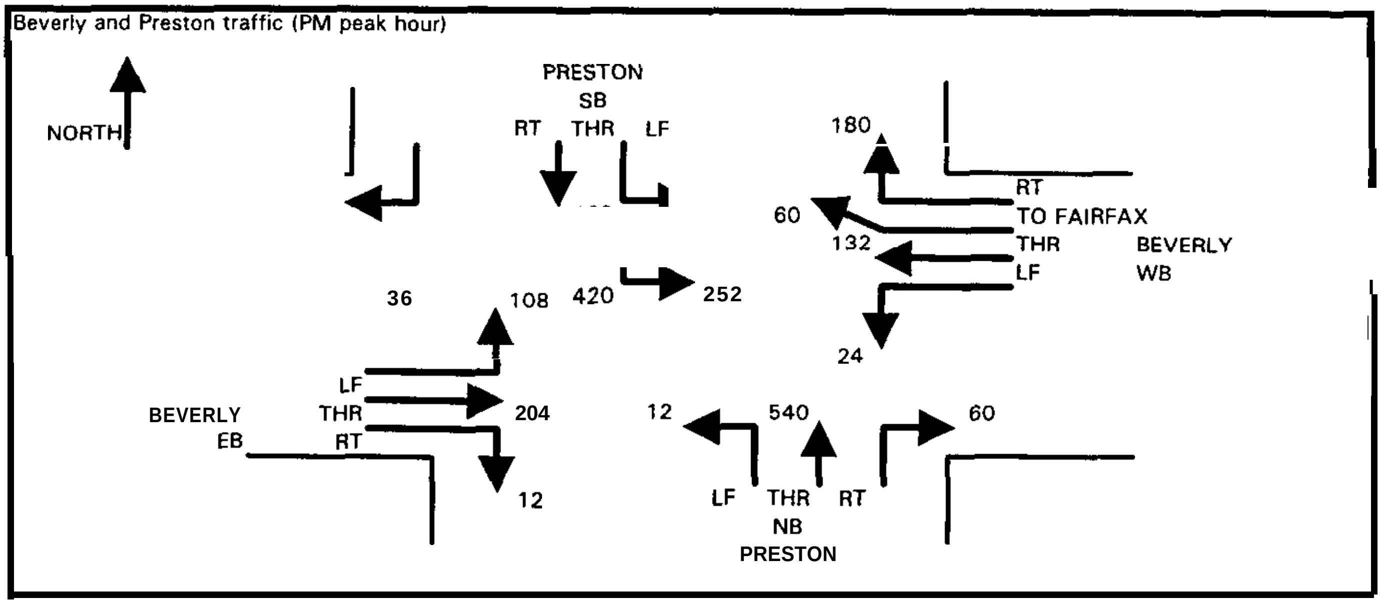


FIGURE B6 -- BEVERLY AND PRESTON (PM)

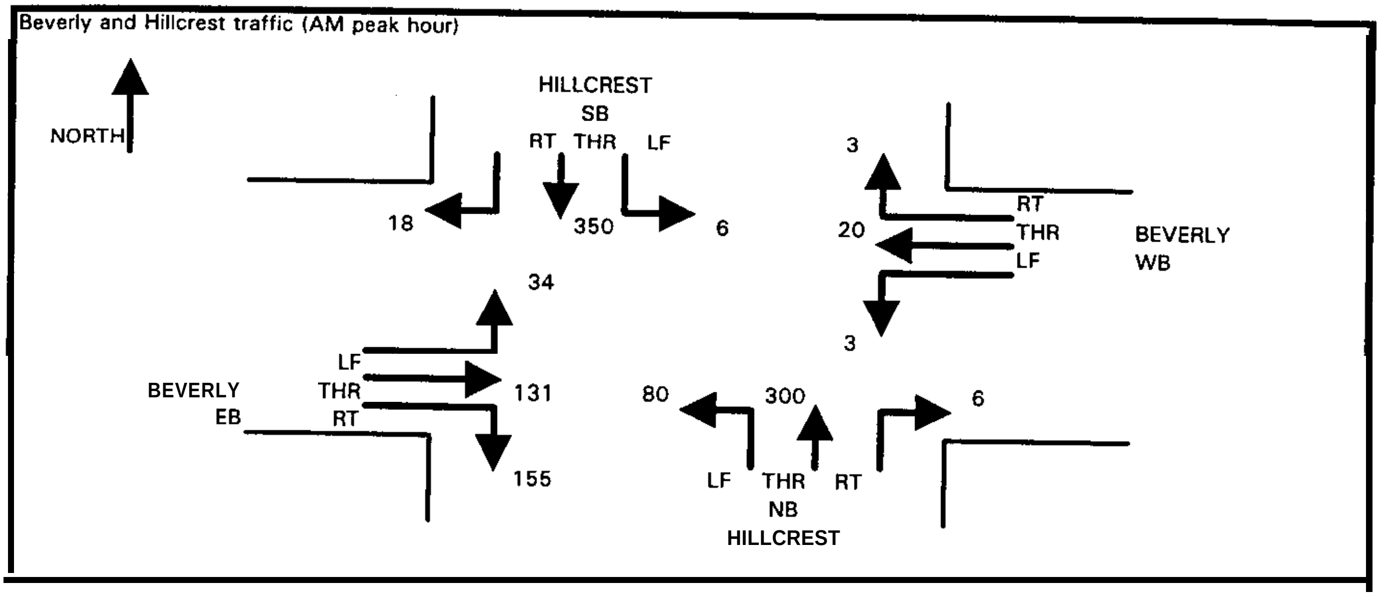


FIGURE B7 -- BEVERLY AND HILLCREST (AM)

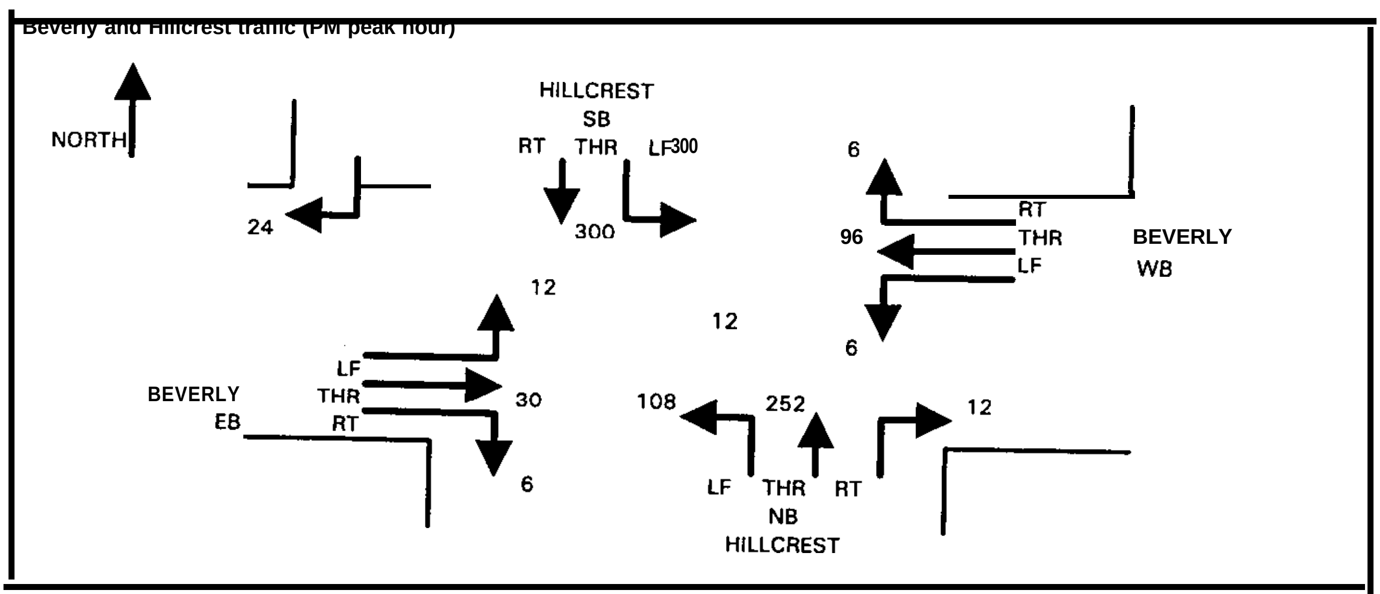


FIGURE B8 -- BEVERLY AND HILLCREST (PM)