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16. Abstract

This report documents the results of the October 1994 and May 1995 traffic data collection and automobile user panel survey efforts during the fifth year of the US-75 North Central Expressway reconstruction project south of the I-635 LBJ Freeway in Dallas, Texas. Traffic conditions and patterns have been monitored each October and May since 1990. The traffic monitoring efforts involved traffic data collection and an automobile users' survey. The traffic data collection included screen line traffic volume counts, vehicle occupancy and classification counts, and travel time runs.

Overall, the October 1994 and May 1995 results indicate that the US-75 North Central Expressway reconstruction project may have had a small impact on peak period and daily travel in the corridor. The increased construction activity in the middle sections of the project where lane closures and/or detours were required resulted in diversion from US-75 to alternative routes in the corridor. The Ross and Live Oak reversible lane systems appear to provide some relief to congestion in the corridor.

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US-75 NORTH CENTRAL EXPRESSWAY RECONSTRUCTION: OCTOBER 1994 AND MAY 1995 TRAFFIC CONDITIONS AND SURVEY RESULTS

by

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IMPLEMENTATION STATEMENT

This report documents the results of the October 1994 and May 1995 traffic data collection efforts and automobile user panel surveys conducted during the fifth year of the US-75 North Central Expressway reconstruction project south of the I-635 LBJ Freeway.

The results indicate that the US-75 North Central Expressway reconstruction project may have begun to impact peak period and off-peak period travel route decisions in the corridor. The increased construction activity in the middle sections of the project appeared to result in diversion from US-75 to alternative routes in the corridor. The Ross and Live Oak reversible lane systems appear to provide some relief to congestion in the corridor. The data collected during these studies may be used for several potential applications:

- Traffic management planning for future phases of the North Central project and for future projects in the Dallas area;
- The development of optimal signal timing plans for the arterial streets in the corridor;
- Public affairs programs to inform the public about traffic conditions and travel alternatives;
- Dallas Area Rapid Transit (DART) bus route and schedule planning;
- Validation of portions of the North Central Texas Council of Governments (NCTCOG) peak hour traffic model; and
- Validation of a traffic simulation model of the US-75 North Central Expressway corridor for evaluating proposed traffic management actions.

DISCLAIMER

The contents of this report reflect the views of the authors who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the Texas Department of Transportation. This report does not constitute a standard, specification, or regulation. It is not intended for construction, bidding, or permit purposes. The engineer in charge of the project was Gerald L. Ullman, P.E. #66876.

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SUMMARY

This report summarizes the results of the October 1994 and May 1995 traffic monitoring efforts of the US-75 North Central Expressway (NCE) reconstruction project. The results indicate that the construction project had a noticeable effect on southbound and northbound peak period and daily travel patterns in the corridor in both October 1994 and May 1995. Daily traffic volumes on US-75 North Central Expressway were an estimated 11 to 26 percent lower in October 1994 than would be expected in the absence of the construction project. In comparison, daily traffic volumes on US-75 North Central Expressway were an estimated 29 to 39 percent lower in May 1995 than would be expected in the absence of the construction project.

The total north-south daily traffic volumes in the US-75 North Central Expressway corridor increased two to eight percent at the screen lines. These increases indicate that the construction project during October 1994 and May 1995 had no adverse effect on total corridor volumes. However, the total daily east-west traffic volumes crossing US-75 North Central Expressway decreased eight to ten percent, suggesting that the construction project may have affected cross-street traffic. Also, southbound traffic volumes decreased on US-75 North Central Expressway in October 1994, and increased on alternative routes such as DNT, Lemmon, Preston, Cole, Hillcrest, Ross, Greenville, Skillman, and Abrams. In May 1995, northbound traffic volumes decreased on US-75 North Central Expressway and increased on alternative routes such as DNT, Lemmon, Preston, Cole, Hillcrest, Ross, Greenville, Skillman, and Abrams. In May 1995, northbound traffic volumes decreased on US-75 North Central Expressway and increased on alternative routes such as DNT, Lemmon, Preston, Cole, Hillcrest, Ross, Greenville, Skillman, and Abrams. In May 1995, northbound traffic volumes decreased on US-75 North Central Expressway and increased on alternative routes such as DNT, Lemmon, Preston, Cole, Hillcrest, Ross, Greenville, Skillman, and Abrams.

In October 1994, the A.M. peak hour, peak direction (southbound) average travel times between the I-635 LBJ Freeway and the Dallas central business district were five minutes shorter on the US-75 North Central Expressway and three minutes longer on Skillman. Conversely, the A.M. peak hour, peak direction (southbound) average travel times between the I-635 LBJ Freeway and the Dallas central business district in May 1995 were three minutes longer on the US-75 North Central Expressway and one to two minutes shorter on Skillman and Abrams, respectively. In addition, the A.M. peak hour average travel times increased on Preston, Hillcrest, Abrams, and Garland from one to two minutes depending on the date of study.

The results of the October 1994 and May 1995 surveys of automobile panelists support the traffic data indications that NCE construction has had a small but detectable impact upon motorist travel patterns and driving conditions. The surveys showed either no significant changes or small increases in total trip-making activity, but decreases in the average weekly trip frequency on NCE. This is consistent with the slight increase in total north/south corridor volumes and decrease in US-75 volumes that were documented in the traffic monitoring study. In both surveys, the home-to-work median departure times were identical to that reported in October 1992 for both panel groups. Also, the work-to-home median departure times for the 1994 survey were also fairly consistent to those reported in October 1992 for both panel groups. Overall, average travel times to and from work indicate no significant increase relative to October 1992. However, a significant proportion of the panel did believe that their travel times to and from work had increased since October 1992. Interestingly, some panelists appeared to underestimate the amount by which their travel times had increased. Conversely, the original panel members from the October 1994 survey appeared to overestimate the amount by which travel times had increased. These comparisons should be interpreted cautiously, however, as they represent a rather small sample of motorists.

1. INTRODUCTION

Over the past five years, the Texas Transportation Institute (TTI) has monitored the changes in corridor-wide traffic conditions and travel patterns resulting from the reconstruction of the US-75 North Central Expressway south of the I-635 LBJ Freeway in Dallas, Texas. The long-term construction project began during the summer of 1990, and the estimated completion date at this time should be late 2000. This report documents the traffic conditions in October 1994 and May 1995 during the project's fifth year. This report also presents the results of the tenth and eleventh (final) biannual surveys of an automobile panel established in 1990 to assist in monitoring the traffic impacts of the North Central Expressway reconstruction.

MONITORING EFFORT

The monitoring effort closely follows the boundaries of the US-75 North Central Expressway corridor (see Figure 1.1) that were defined by the North Central Mobility Task Force:

- I-635 LBJ Freeway on the north,
- The Dallas central business district on the south,
- Audelia, Buckner, and East Grand on the east, and
- The Dallas North Tollway (DNT) on the west.

TTI began monitoring the US-75 North Central Expressway corridor during October 1989 and, since that date, has been collecting data twice per year (in October and May). The monitoring effort has two major components:

- Collection of traffic data and
- Survey of automobile users.

In a previous report, TTI researchers documented traffic conditions in the corridor in October 1989 and May 1990 before construction began (1). Other reports documented the traffic conditions during the first year of construction in October 1990 and May 1991 (2), during the second year of construction in October 1991 (3) and May 1992 (4), during the third year of construction in October 1992 and May 1993 (5), and during the fourth year of construction in October 1993 and March 1994 (6).



Figure 1.1 US-75 North Central Expressway Corridor in Dallas

PROJECT STATUS

Evaluation of traffic conditions and travel patterns observed during the October 1994 and May 1995 studies requires knowledge regarding the construction phasing on US-75 North Central Expressway and traffic improvements in the corridor. This section documents the status of the construction project and recent street improvements.

The N-1 and N-2 phases of the US-75 North Central Expressway construction project were completed in late spring 1994. In addition, the construction project at US-75 North Central Expressway and Woodall Rogers interchange was near completion with the eastbound Woodall Rogers ramp to northbound US-75 North Central Expressway completed and the Hall exit ramp from eastbound Woodall Rogers completed.

The removal of the MKT Railroad bridge south of Mockingbird in the S-2 section of the project began during October 1993. The majority of the construction activity in October 1993 occurred over the southbound mainlanes and frontage road. This construction required changes in the lane configuration on the freeway, ramp closures, and diversion of mainlane traffic to the frontage road. The southbound mainlanes were reduced from three to two lanes between Mockingbird and McCommas.

A number of intersection and arterial street improvements have been implemented in the US-75 North Central Expressway corridor to relieve expected congestion. Intersection improvements include left-turn channelization, additional left-turn storage capacity, dual left-turn lanes, free right-turn lanes, and approach realignments. Skillman was widened from a four-lane divided facility to a six-lane divided roadway between Abrams and Audelia. The project was completed in June 1993. The October 1993 traffic monitoring study was the first study conducted after the completion of the Skillman project.

Reversible lanes were implemented in June 1993 on Ross from Greenville to US-75 North Central Expressway, and Live Oak from Skillman to Good Latimer Expressway. Prior to the reversible lane system implementation, Ross operated as a five-lane undivided facility (two lanes inbound and two lanes outbound with a two-way continuous left-turn lane) and Live Oak operated as a six-lane undivided roadway. The streets were restriped for five lanes, and overhead lane-use indicators were installed. During the weekday morning peak hours (7:00 to 9:00 A.M.), the lane-use indicators designate three lanes inbound, one lane as a two-way continuous left-turn lane, and one lane for outbound traffic. The afternoon peak hours (4:00 to 6:00 P.M.) are the reverse of the morning to give three lanes outbound. During off-peak weekday hours and weekends/holidays, the lane designations are two lane inbound, one continuous two-way left turn lane, and two outbound lanes.

Construction began in the S-1 section of the US-75 North Central Expressway project between Woodall Rogers Freeway and McCommas in late January 1994 to remove the median and guardrail and install a concrete traffic barrier. This construction required that the median lanes on US-75 North Central Expressway be closed thereby reducing traffic from three to two lanes in both directions. The operation was expected to last three months; however, the contractor was able to finish in half the estimated time. Researchers planned a comprehensive traffic study in late March 1994 to monitor the impacts of these lane closures on corridor traffic conditions. Due to the early completion, only limited data were collected in March 1994.

The notable construction just prior to the October 1994 study included the beginning of reconstruction of the Loop 12 interchange and the Mockingbird overpass of US-75. Additionally, the frontage roads between Loop 12 south to Monticello were under construction. This construction included temporary lane reductions and temporary lane closures throughout. New diamond type approaches at the service roads replaced the clover leaf ramps at Loop 12. The southbound US-75 mainlanes south of Mockingbird entrance recovered a third lane. However, the northbound US-75 mainlanes were still reduced from three to two lanes north of the Monticello overpass.

Construction just prior to the May 1995 study included the closing of several bridge structure ovepasses for reconstruction purposes. The McCommas and University bridge structures were closed completely to east-west traffic over US-75. Traffic from these two closures were rerouted to Monticello and Mockingbird, and Lovers, respectively. Additionally, the Southwestern and Caruth Haven overpasses were converted to one-way facilities in the eastbound and westbound directions, respectively. Yale overpass was reduced in the number of through lanes available to traffic while reconstruction of this overpass is underway. Reconstruction began on the Hall overpass to both sides of the outside bridge structure without reducing the number of available lanes to traffic. Reconstruction of the US-75 frontage road near Monticello included the temporary closing of the Monticello northbound exit ramp. Additional construction was begun on the mainlanes south of Loop 12 to Mockingbird. This construction included temporary lane reductions and temporary lane closures throughout.

AUTOMOBILE USER PANEL SURVEYS

A panel of automobile drivers using North Central Expressway (NCE) corridor in Dallas, Texas was created in June 1990, immediately prior to the start of NCE reconstruction on the section between Woodall Rogers Freeway to the south and the Lyndon B. Johnson (I-635) Freeway to the north. The purpose of the periodic survey of the panel is to obtain information on the actual and perceived traffic impacts of the reconstruction project by the motoring public, as well as current public opinion regarding the Texas Department of Transportation's (TxDOT's) efforts to maintain as high a standard of traffic mobility during reconstruction as possible.

A license plate study conducted along a screen line at Northwest Highway (Loop 12) identified potential panel members. A mail-out survey to those motorists who use the NCE corridor resulted in the creation of the initial panel. The license plate study yielded an initial panel of more than 1,800 members. Unfortunately, panel attrition was extremely high during its approximate two-and-a-half year lifespan, such that fewer than 400 members were participating by October 1992. A second license plate study was performed in October 1992 along a screen line roughly following the cross streets of Lemmon, Oak Lawn, Peak, and Haskell near the Dallas central business district (see Figure 1.1). From this second study, another 1,253 motorists agreed to serve as panel members. Initial data were collected from these panel members in October 1992 regarding their basic travel patterns. The biannual surveys were scheduled in October and again in May.

ORGANIZATION OF THE REPORT

Six chapters comprise the body of this report. Chapter 2 reviews the traffic monitoring plan used to collect and evaluate traffic conditions and travel patterns in the corridor. Chapter 3 documents the observed traffic conditions during October 1994. Chapter 4 documents the observed traffic conditions during May 1995. Chapter 5 presents the results of the October 1994 and May 1995 surveys. Chapter 6 summarizes the results of the traffic conditions during October 1994 and May 1995, and the October and May biannual surveys.

2. TRAFFIC MONITORING PLAN

This chapter describes the plan used to study the corridor traffic conditions and travel patterns during the reconstruction of the US-75 North Central Expressway south of the I-635 LBJ Freeway. The monitoring plan encompasses two components: (1) traffic data collection and (2) an automobile user survey.

TRAFFIC DATA COLLECTION

Table 2.1 summarizes the traffic data collection in the US-75 North Central Expressway corridor. The traffic data collection consists of three elements:

- Screen line traffic volume counts,
- Vehicle occupancy and classification counts, and
- Travel time runs.

Data are collected two times during the year and at the same time of the year (October and May). For comparison purposes, this report documents only data for routes that are located within the US-75 North Central Expressway corridor as defined by the Task Force. To control for seasonal variations in traffic conditions and patterns, the principle comparisons are among data collected during the same month of the year (e.g., October 1990 compared to October 1994). However, traffic volumes on US-75 North Central Expressway are seasonally adjusted so that more detailed comparisons can be made.

Screen Line Traffic Volume Counts

Screen line traffic volume counts are used to monitor traffic patterns throughout the corridor. By definition, a screen line is a line drawn through the corridor or may be defined by a river, railroad, or other geographical barrier. Traffic volume counts are taken on each route crossing the screen line to study the trips moving through the corridor. The sum of the traffic volume counts along the screen line is the total screen line traffic volume. Changes in traffic patterns are measured as changes in individual routes' percentage of the total screen line traffic volume and differences in actual traffic volumes.

Type of Data		1	Before Co	Before Construction During Construction											
		Route	October	May	October	May	October	May	October	May	October	March	May	October	May
			1989	1990	1990	1991	1991	1992	1992	1993	1993	1994	1994	1994	1995
[Harry Hines		٠			•	٠	•	•	•		•	•	•
		DNT		٠	٠	•	•	٠	•	•	٠		•	•	•
		Maple		٠			٠	•	•	•	•		٠	•	•
		Cedar Springs		٠	٠	٠	٠	•	•	•	•		•	•	•
		Lemmon		٠	•	•	•	٠	•	٠	•		٠	•	•
	Oak Lawn /	Oak Lawn		•	٠	•	٠	•	•	•	•		•	•	•
	Lemmon / Peak	Turtle Creek		•	٠	•	•	•	•	•	•		•	•	•
	Screen Line	Cole/McKinney		•	•	•	•	•	•	•	•		•	•	•
		US-75		٠	•	٠	•	•	٠	•	•		•	•	•
		Ross		•	٠	٠	٠	٠	٠	•	•		٠	•	•
	ĺ	Live Oak		٠	٠	٠	•	٠	•	•	•		•	•	•
		Gaston		•	•	٠	•	•	٠	•	•		•	•	•
		Columbia		•			•	•	•	•	•		•	•	•
	1	Harry Hines	•				•	•	•	•	•		•	•	•
		Denton	•				•	•	•	•	•		•	•	•
		Lemmon	•	•			•	•	•	•	•		•	•	•
		Inwood	•	•			•	•	•	•	•		•	•	•
Traffic Volumes		DNT	•	•	•	•	•	•	•	•	•	•	•	•	•
		Preston	•	•	•	•	•	•	•	•	•	•	•	•	•
			•	•	•	•	•	•	•	•	•	•	•	•	•
		US-75	•	•	•	٠	•	٠	٠	•	•	•	•	•	•
		Greenville	•	•	•	•	•	•	•	•	•	•	•	•	•
		Matilda	•	•	•	•	•	•	•	•	•	•	•	•	•
		Skillmen	•	•	•	•	•	•	٠	•	•	•	•	•	•
		Abrams	•	•	•	٠	•	٠	•	•	•	•	•	•	•
		Garland	٠	•			•	•	•	•	٠	٠	•	•	•
		Midway		•	•	•	•	•	•	•	•		•	•	•
		Inwood		•	٠	•	•	•	٠	•	•		•	•	•
		DNT		•	•	•	•	٠	•	•	•		•	•	•
	Loop 12 Screen Line	Preston		•	•	•	•	•	٠	•	٠		•	•	•
		Hillcrest		•	•	•	•	٠	•	•	•		•	•	•
		US-75		•	•	٠	•	•	•	•	٠		٠	•	•
		Greenville		•	•	٠	•	•	•	٠	٠		٠	•	•
		Skillman		•	•	•	•	•	٠	•	•		٠	•	•
		Abrams		•	•	•	•	•	•	٠	•		٠	•	•

Table 2.1. US-75 North Central Expressway Corridor Data Inventory

Type of Data		T	Before Co	onstruction					During Construction						
		Route	October	May	October	May	October	May	October	May	October	March	May	October	May
			1989	1990	1990	1991	1991	1992	1992	1993	1993	1994	1994	1994	1995
		Hall		•		•	•	•	•	٠	•		•	•	•
		Lemmon		•		•	•	•	•	٠	•		•	•	•
		Haskell		•		•	•	•	•	•	•		•	•	•
		Fitzhugh		•		•	•	•	•	٠	•		•	•	•
		Henderson		•		٠	•	•	•	•	•		•	•	•
		Monticello		•		•	•	•	•	•	•		•	•	•
		McCommas		•		•	•	•	•	•	•		•	•	
		Mockingbird		•	٠	•	•	•	•	•	•		•	•	•
Traffic Volumes	US-75	Yale		•	•	•	•	•	•	•	•		•	•	•
Traine volumes	Screen Line	University		•	٠	•	•	•	•	٠	•		•	1994 • • • • • •	
		Lovers		•	•	•	•	•	•	•	•		•	•	•
		Southwestern		•	٠	•	•	٠	•	٠	•		•	•	•
		Caruth Haven		•	•	•	•	•	•	٠	•		•	•	•
		Loop 12		•	•	•	•	•	•	•	•		•	•	•
		Park Lane		٠	•	•	•	•	•	•	•		•	•	•
		Walnut		•	•	•	•	•	•	•	•		•	•	•
		Royal		•	•	•	•	•	•	•	•		•	•	•
		Forest US-75	l	•	•	٠	•	•	•	•	•		•	•	•
Vehicle Cla	Vehicle Classification &			•	•	•	•	•	•	٠	•		•	•	•
	ipancy	Preston Skillman		•											
	·····		1	•											Ann
	1	Midway	•	•											
		Inwood	•	•											
		DNT	•	•	•	•	•	•	•	٠	•	•	•	•	•
		Preston	•	•	•	•	•	•	•	٠	٠		•	•	•
	North - South Routes	Hillcrest	•	•	•		•	•	•	•	•		•	•	•
		US-75	•	•	•	•	•	•	•	•	•	•	•	•	•
		US-75 Frontage		٠	•	•	•	•	•	•	•	•	•	•	•
Travel Times		Greenville	٠	•	•	•	•	•	•	•	•		•	•	•
		Skillman	•	•		•	•	•	•	•	•		•	•	•
		Abrams	•	٠		•	•	•	•	•	•		•	•	•
		Garland	•	•			•	•	•	•	•		•	•	•
		Lemmon/Peak		•									•	•	•
	East - West	Mockingbird		•						•	•		•		•
	Routes	Loop 12		•		٠	•	•	•	٠	•		•	•	•
		Royal				•	•	•	<u> </u>	•	•		•	•	•

Table 2.1. US-75 North Central Expressway Corridor Data Inventory (Continued)

Researchers observe traffic patterns at four screen lines designated by the routes which the screen lines follow:

- Oak Lawn/Lemmon/Peak,
- Mockingbird/Buckner,
- Loop 12, and
- US-75 North Central Expressway.

Three screen lines (Oak Lawn/Lemmon/Peak, Mockingbird/Buckner, and Loop 12) identify changes in traffic patterns on north-south routes. The US-75 screen line, which bisects the Expressway, measures changes in east-west traffic patterns. Figure 2.1 identifies the count locations for October 1994 and May 1995.

In October 1989 traffic patterns were monitored only at the screen line south of Mockingbird/Buckner. The May 1990 study, the principal data collection effort before construction, included all four screen lines. The October 1990 study, the first data collection effort during construction, focused on the northern half of the corridor, which would be most affected by the construction activities that were underway at the time on the N-1 and N-2 phases of the US-75 North Central Expressway project. Studies since May 1991 closely resemble the May 1990 (before construction) data collection effort.

Directional 24-hour traffic volumes are collected for at least one mid-week day (i.e., Tuesday, Wednesday, and Thursday) at the screen line count locations during the study period. Volumes are averaged to represent mid-week traffic conditions. The traffic volume data collection uses several methods:

- Pneumatic tube counters to collect traffic volumes on arterial streets,
- Video camera and video tape recorder to record traffic on US-75, and
- Toll booth data to estimate traffic volumes on Dallas North Tollway.

Automatic Traffic Recorder (ATR) stations in the Dallas metropolitan area that are not affected by the project were selected as control locations to better estimate the volume changes on the US-75 North Central Expressway that are attributable to the construction project. The ATR locations are shown in Figure 2.2. The seasonal patterns on US-75 before construction



Volume Occupancy / Classification





Figure 2.2 Automatic Traffic Recorder (ATR) Stations Selected for Control Locations in Dallas

have been shown in past studies to be comparable to those patterns on other freeways in the Dallas area. Daily traffic volumes are obtained from the ATR stations to investigate the traffic volume trends in the Dallas area as compared to those on US-75 during construction. The ATR volume data are used to estimate the traffic volume on US-75 that normally would have been observed in the absence of the construction project. This method allows the impacts of the construction project to be isolated from normal daily and seasonal variations in traffic volumes.

Vehicle Occupancy and Classification Counts

Researchers collect vehicle occupancy and classification data on the US-75 mainlanes north of the Mockingbird/Buckner screen line during each study. Figure 2.1 identifies the count location.

Vehicles are grouped into four categories: passenger vehicles, commercial vehicles, buses, and motorcycles. Passenger vehicles include all cars as well as all pickup trucks and vans that have no commercial identification.

Travel Time Runs

Travel times and speeds are monitored on major north-south routes in the corridor and several east-west routes that traverse across the corridor. All north-south routes extend between I-635 LBJ Freeway and the Dallas central business district. East-west routes coincide with the east-west screen lines.

Table 2.2 provides a summary of the travel time routes and the number of travel time run repetitions on each route during the monitoring studies. The street name appearing in bold-face type represents the major street on each route and is used to designate the route. Figure 2.3 identifies the routes monitored during October 1994 and May 1995.

Travel time data are collected using the floating car technique in which the driver of the test vehicle approximates the median speed of the traffic stream by passing as many vehicles as pass the driver. Data collection vehicles start at each end of the route at half-hour intervals from

	Number of Travel Time Run Repetitions												
Route	October 1989	May 1990	October 1990	May 1991	October 1991	May 1992	October 1992	May 1993	October 1993	March 1994	May 1994	October 1994	May 1995
Dallas North Tollway/Harry Hines/Akard	1	1	1	1	1	1	1	1	1	1	1	1	1
Preston/Cedar Springs/Field	1	3	1	1	1	1	1	1	1	-	1	1	1
Hillcrest/McKinney/Akard	1	1	1	-	1	1	1	1	1	-	1	1	1
US-75 (North Central Expressway)	1	2	3	3	3	3	3	3	3	1	3	3	3
US-75 Frontage Road	•	1	3	1	1	1	1	1	1	1	1	1	1
Greenville/Ross	1	3	1	1	1	1	1	1	1	-	1	1	1
Skillman/Live Oak	1	1	-	1	1	1	1	1	1	-	1	1	1
Abrams/Gaston	1	1	-	1	1	1	1	1	1	-	1	1	1
Gariand/Gaston	1	1	-	•	1	1	1	1	1	-	1	1	1
Oak Lawn/Lemmon/Peak/Haskell	-	1	-	-	•	-	-	-	-	-	1	1	1
Mockingbird	•	1	-	-	-	-	-	1	1	-	1	1	1
Loop 12	· ·	1	-	1	1	1	1	1	1	-	1	1	1
Royal	-	-	-	1	1	1	1	1	1	-	1	1	1

Table 2.2. Travel Time Routes in the US-75 North Central Expressway Corridor



Figure 2.3 Travel Time Routes in October 1994 and May 1995

6:00 to 9:00 A.M. and 3:00 to 7:00 P.M. Travel times on US-75 are also collected between 9:00 A.M. and 2:00 P.M. Travel times are measured between each pair of signalized cross streets and for the entire route. Stopped delays are also recorded at the signalized intersections. In order to compute average travel speeds, the distance between each signalized intersection was measured using a vehicle-installed distance measuring instrument. Peak hour average travel times and average travel speeds are computed for the A.M. peak using the 7:00, 7:30, and 8:00 A.M. travel time runs and for the P.M. peak using the 5:00, 5:30, and 6:00 P.M. runs.

AUTOMOBILE USER SURVEY

Researchers sent a two-part survey instrument to both new (those recruited in October 1992) and original (those recruited in June 1990) panelists. The first part requested information on the panelists' overall trip-making activity (i.e., the number of trips being made per week for various reasons), the number of trips per week made on the North Central Expressway, and perceptions as to whether they had changed the frequency of these trips. In this way it is possible to observe how actual changes in motorists' behavior and their perceptions of these changes correlate.

The same survey instrument was used in the second part of the survey for both the October 1994 and the May 1995 surveys. This part of the survey was devoted to home-to-work and work-to-home commuting perceptions and behaviors. In this part of the survey, panelists were queried as to the following:

- Departure times,
- Travel times,
- Number and types of intermediate stops on the way to and from work,
- Mode of travel (driving alone, car pooling, etc.), and
- Use of other roadways in the corridor.

Panelists were also asked explicitly whether they believed their departure times and travel times had changed since October 1992. In this way, the correlation between their perceptions and actual changes in behavior (comparing their responses between surveys) could be examined.
3. OCTOBER 1994 TRAFFIC CONDITIONS

This chapter documents the traffic conditions observed during October 1994, slightly more than four years after the US-75 North Central Expressway reconstruction project began. Traffic conditions are reported as changes in traffic patterns, vehicle occupancy and classification, and travel times and average travel speeds. Appendices A through E summarize October 1994 traffic volume and travel time data.

SCREEN LINE TRAFFIC VOLUMES

Summaries of the screen line traffic volume counts are presented in Appendices A, B, and C. Appendix A contains tables summarizing the hourly volume counts on each route at each screen line. Appendix B contains figures that summarize each route's percentage of the total screen line volume; individual figures are presented for each of four screen lines and each of three time periods: A.M. peak (6:00-9:00 A.M.), P.M. peak (3:00-7:00 P.M.), and 24 hours. Appendix C contains similar figures summarizing the actual change in volumes on each route between the October studies.

Screen line traffic volumes were evaluated for three time periods (A.M. peak, P.M. peak, and 24 hours) and were compared only for the October studies. Because October 1989 (before construction) traffic volume data were collected only at the Mockingbird/Buckner screen line, comparisons to October 1989 data can only be made at that screen line. At the Oak Lawn/Lemmon/Peak, Loop 12, and US-75 screen lines, comparisons were made with the October 1990 data. The evaluation of US-75 traffic volumes, however, compares both October and May data to better estimate the traffic impacts of the project.

Table 3.1 summarizes the total corridor traffic volumes at each screen line for October 1994 compared to October 1989 and October 1990. The total 24-hour north-south traffic volumes during the period of construction have increased from three percent at the Mockingbird/Buckner screen line to eight percent at the Oak Lawn/Lemmon/Peak screen line in October 1994. However, east-west traffic volumes crossing the US-75 screen line decreased by ten percent.

Screen Line	Period	Direction		Traf	fic Volumes (veh)		
-			October 1989	October 1990	October 1994	Change	% Change
	A.M. Peak	Northbound	WA	30,760	35,910	5,150	16.74
		Southbound	N/A	53,250	55,560	2,310	4.34
		Total	N/A	84,010	91,470	7,460	8.88
Oak Lawn/	P.M. Peak	Northbound	NA	75,360	77,940	2,580	3.42
Lemmon/		Southbound	N/A	57,160	62,730	5,570	9.74
Peak		Total	NA	132,520	140,670	8,150	6.15
	24 Hour	Northbound	N/A	219,680	238,450	18,770	8.54
		Southbound	NA	222,430	241,110	18,680	8.40
_		Total	N/A	442,110	479,560	37,450	8.47
	A.M. Peak	Northbound	25,270	23,890	28,600	3,330	13.18
		Southbound	39,460	40,310	40,150	690	1.75
		Total	64,730	64,200	68,750	4,020	6.21
	P.M. Peak	Northbound	55,640	54,850	57,600	1,960	3.52
Mockingbird		Southbound	49,200	46,270	49,520	320	0.65
		Total	104,840	101,130	107,120	2,280	2.17
	24 Hour	Northbound	175,960	174,320	187,980	12,020	6.83
	1	Southbound	_185,250	182,630	185,050	-200	-0.11
		Total	361,200	356,950	373,030	11,830	3.28
	A.M. Peak	Northbound	N/A	21,610	26,060	4,450	20.59
		Southbound	N/A	35,540	36,330	790	2.22
		Total	N/A	57,150	62,390	5,240	9.17
	P.M. Peak	Northbound	N/A	52,980	55,450	2,470	4.66
Loop 12		Southbound	N/A	44,930	46,710	1,780	3.96
		Total	N/A	97,910	102,160	4,250	4.34
	24 Hour	Northbound	N/A	164,780	174,070	9,290	5.64
		Southbound	N/A	170,670	174,830	4,160	2.44
		Total	N/A	335,450	348,900	13,450	4.01
	A.M. Peak	Eastbound	N/A	18,460	18,320	-140	-0.76
		Westbound	N/A	48,170	44,990	-3,180	-6.60
		Total	N/A	66,630	63,310	-3,320	-4.98
	P.M. Peak	Eastbound	N/A	65,690	62,380	-3,310	-5.04
US-75		Westbound	N/A	52,760	43,750	-9,010	-17.08
		Total	N/A	118,450	106,130	-12,320	-10.40
	24 Hour	Eastbound	N/A	188,240	175,380	-12,860	-6.83
		Westbound	N/A	210,980	183,370	-27,610	-13.09
		Total	N/A	399,220	358,750	-40,470	-10.14

 Table 3.1. US-75 North Central Expressway Corridor Traffic Volumes During October 1994

 Compared to October 1989 and October 1990

a Change represents difference between October 1994 and October 1989 traffic volumes. The following section presents the corridor-wide traffic patterns and traffic volume changes for the north-south and east-west routes separately. It also provides an analysis of US-75 traffic volumes including comparisons to control locations in the Dallas area.

Traffic Patterns on North-South Routes

The north-south traffic patterns observed during October 1994 at the Oak Lawn/Lemmon/Peak, Mockingbird/Buckner, and Loop 12 screen lines fluctuated more in the southbound direction than in the northbound direction. The observed southbound daily traffic volumes on US-75 at the three screen lines were between 11 and 24 percent lower in October 1994 than in October 1989 or October 1990. The primary changes in peak period, peak direction traffic volumes occurred in the southbound direction during the A.M. peak period. Depending on the screen line, traffic increases occurred on alternative routes including DNT, Lemmon, Preston, Turtle Creek, Hillcrest, Ross, Matilda, Skillman, Abrams, and Garland. These changes signify possible diversion from US-75 to alternative routes in the corridor.

The drop in southbound traffic volume on US-75 may have been partially due to the construction under way since October 1993, which required the southbound mainlanes to be reduced from three to two lanes between Mockingbird and McCommas. The construction project at the US-75 and Woodall Rogers interchange located downstream of the Oak Lawn/Lemmon/Peak screen line was partially completed prior to the October 1994 data collection and may have contributed to the increase in US-75 traffic volumes at Lemmon. The reversible lane system on Ross did provide some relief to congestion in the corridor. A substantial increase in southbound traffic volumes on Ross (26 percent) and Skillman (25 percent at the Mockingbird/Buckner screen line and 10 percent at the Loop 12 screen line) suggests that the Ross reversible lane and the completed widening construction on Skillman may have attracted motorists to use these alternative routes. In addition, the traffic volumes on Live Oak, the other reversible lane system, increased slightly compared to those during earlier monitoring studies.

Oak Lawn/Lemmon/Peak Screen Line

The Oak Lawn/Lemmon/Peak screen line traffic distributions show that fluctuations in each route's percentage of total screen line traffic volume were as high as five percent between October 1990 and October 1994 (see Figures B.1 through B.3). The data indicate that traffic

patterns fluctuated more in the southbound direction than in the northbound direction. In October 1994, US-75 and DNT carried about the same amount of the peak period, peak direction traffic, approximately 25 percent in the A.M. and 23 percent in the P.M. (see Figures B.1, b and B.2, a). Researchers observed some deviations in the October 1994 peak period, off-peak direction traffic patterns, but US-75 continued to have the largest volume along the screen line (see Figures B.1, a and B.2, b). Despite the changes in peak period traffic patterns, US-75 carried most (i.e., 29 percent) of the daily traffic volumes across the corridor (see Figure B.3).

A.M. Peak Period. During the A.M. peak period, southbound (peak direction) traffic volumes in October 1994 changed more than northbound traffic volumes (see Figure C.1). The observed southbound volume on US-75 decreased by 2,740 vehicles, which results in a 18 percent decrease between October 1990 and October 1994 volumes (see Figure C.1, b). When evaluated on an hourly basis, the peak hour shows a reduction of 1,930 vehicles per hour or a 31 percent drop in volumes. Traffic increased on several routes along the screen line which could indicate diversion to alternative routes. The notable increases occurred on DNT (1200 vehicles or 10 percent), Cole (800 vehicles or 53 percent), Gaston (670 vehicles or 21 percent), and Live Oak (580 vehicles or 13 percent).

P.M. Peak Period. The P.M. peak period, northbound (peak direction) traffic volume on US-75 decreased by 2,550 vehicles (i.e., a 13 percent drop between October 1990 and October 1994 volumes) (see Figure C.2, a). Significant increases in northbound traffic volumes were observed on DNT (1,501 vehicles or 9 percent), Oak Lawn (1,390 vehicles or 45 percent), Turtle Creek (1,070 vehicles or 34 percent), and Ross (930 vehicles or 22 percent). The changes in P.M. peak period traffic volumes were greater for the southbound (off-peak) direction than for the northbound direction (see Figure C.2, b). Only a slight reduction in southbound US-75 volume, 290 vehicles or a 2 percent decrease, was observed during the P.M. peak period. DNT (2,110 vehicles or 19 percent), Lemmon (2,040 vehicles or 43 percent), and Ross (1,210 vehicles or 64 percent) demonstrated more noticeable increases in southbound traffic volumes.

24-Hour Period. The daily traffic volumes at the Oak Lawn/Lemmon/Peak screen line show similar results (see Figure C.3). The northbound volumes slightly decreased on US-75 by 805 vehicles per day (vpd) (i.e., a 1 percent reduction), whereas traffic significantly increased on DNT (6,880 vpd or 17 percent), Oak Lawn (4,660 vpd or 48 percent), and Turtle Creek (2,710 vpd or 37 percent) (see Figure C.3, a). Daily southbound volumes on US-75 slightly decreased by 640 vpd which represents a 1 percent reduction between October 1990 and October 1994

volumes (see Figure C.3, b). Traffic increased on DNT (7,040 vpd or 17 percent), Lemmon (4,320 vpd or 25 percent), Cole (3,840 vpd or 64 percent), Ross (2,400 vpd or 26 percent), and Gaston (2,990 vpd or 34 percent). The 24-hour period volumes may suggest more motorists are using alternate routes during the non-peak periods since the beginning of construction.

Mockingbird/Buckner Screen Line

The fluctuations in each route's percentage of the total screen line traffic at the Mockingbird/Buckner screen line were as much as 9 percent between October 1989 and October 1994 (see Figures B.4 through B.6). Traffic patterns appear to have fluctuated more in the northbound direction than in the southbound direction. Although the percentage of total screen line traffic on US-75 decreased, US-75 continued to carry most of the peak period and daily volumes along the screen line, except during the P.M. peak period northbound where the DNT carried a higher percentage.

A.M. Peak Period. The A.M. peak period southbound (peak direction) traffic volumes on US-75 decreased by 430 vehicles (i.e., a 3 percent decrease between October 1989 and October 1994) (see Figure C.4, b). Traffic volumes substantially increased on Skillman (780 vehicles or 27 percent). These changes indicate possible diversion to this alternative route. In October 1994, northbound (off-peak direction) traffic volumes generally increased along the screen line (see Figure C.4, a). Traffic volumes increased on DNT (1790 vehicles or 30 percent) and Skillman (800 vehicles or 78 percent).

P.M. Peak Period. Northbound (peak direction) traffic volumes at the Mockingbird/ Buckner screen line significantly decreased on US-75 by 4240 vehicles (a 23 percent decrease) (see Figure C.5, a). Traffic volumes on alternate routes substantially increased on DNT (4470 vehicles or 35 percent), Preston (1770 vehicles or 86 percent), Matilda (1300 vehicles or 64 percent), Skillman (1050 vehicles or 33 percent), and Abrams (860 vehicles or 22 percent). The southbound (off-peak direction) volumes decreased on US-75 (2,430 vehicles or 13 percent) and increased on DNT (1,570 vehicles or 14 percent), Skillman (840 vehicles or 40 percent), and Garland (1,060 vehicles or 21 percent).

24-Hour Period. Similar results were found for the 24-hour period. The total daily corridor volume traveling in the northbound direction increased by 12,020 vpd, which represents

a 7 percent increase between October 1989 and October 1994 volume (see Table 3.1). Daily northbound volumes significantly increased on most routes crossing the Mockingbird/Buckner screen line except on US-75 which substantially decreased by 10,450 vehicles or 14 percent (see Figure C.6, a). Southbound volumes also substantially decreased on US-75 (11,450 vpd or 15 percent) and notably increased on DNT (4,570 vpd or 11 percent), Skillman (3,690 vpd or 43 percent), and Garland (3,870 vpd or 20 percent). It appears the US-75 mainlane traffic crossing the Mockingbird/Buckner screen line diverted to alternative routes, especially in the P.M. peak period and in the off-peak period.

Loop 12 Screen Line

The traffic patterns at the Loop 12 screen line show fluctuations as large as 6 percent in each route's percentage of total screen line traffic volume between October 1990 and October 1994 (see Figures B.7 through B.9). These fluctuations were higher for southbound traffic patterns than for northbound traffic patterns. DNT carried approximately 32 percent of the total screen line peak period, peak direction traffic volume, which was the highest volume along the screen line. However, the traffic distribution indicates that US-75 had the highest percentage of total screen line traffic volume for the 24-hour period.

A.M. Peak Period. At the Loop 12 screen line, southbound (peak direction) traffic volumes during the A.M. peak period decreased on US-75 by 1,600 vehicles or a 17 percent reduction between October 1990 and October 1994 volumes (see Figure C.7, b). The highest increases in southbound volumes occurred on DNT (840 vehicles or 8 percent), Preston (920 vehicles or 44 percent), and Hillcrest (440 vehicles or 24 percent).

P.M. Peak Period. The P.M. peak period, northbound (peak direction) traffic volumes increased on several routes along the Loop 12 screen line (see Figure C.8, a). The southbound (off-peak direction) traffic volumes indicate a decrease on US-75 of 1,641 vehicles or a 11 percent reduction between October 1990 and October 1994 volumes (see Figure C.8, b). Southbound volumes increased on DNT (1,540 vehicles or 14 percent), Preston (720 vehicles or 24 percent), Hillcrest (360 vehicles or 12 percent), and Skillman (500 vehicles or 14 percent).

24-Hour Period. The daily volumes crossing the Loop 12 screen line during October 1994 have similar results as the peak periods. Northbound volumes for the 24-hour period

increased across the screen line, except for a moderate reduction in daily volumes on US-75 (see Figure C.9, a). The daily volumes in the southbound direction, however, substantially decreased on US-75 (10,540 vpd or 17 percent). This change, though close to the reduction in October 1991, represents the largest consecutive percent reduction in daily US-75 mainlane traffic volumes observed during the monitoring studies (see Figure C.9, b). Of this total reduction, 31 percent took place during the peak periods, while the remaining 69 percent occurred during off-peak periods of the day. It appears that there was diversion to alternative routes in the corridor. Southbound volumes increased on DNT (6,820 vpd or 18 percent), Preston (2,700 vpd or 24 percent), Hillcrest (1,880 vpd or 19 percent), and Skillman (1,580 vpd or 9 percent).

Traffic Patterns on East-West Routes

Traffic crosses US-75 North Central Expressway on eighteen routes between the I-635 LBJ Freeway and the Woodall Rogers Freeway. The traffic distribution along the US-75 screen line shows that the cross-street route's percentage of total screen line volume fluctuated by less than 4 percent between October 1990 and October 1994 (see Figures B.10 through B.12). In October 1994, nine of the eighteen routes carried at least 5 percent of the total 24-hour east-west traffic (see Figure B.12). Loop 12 continues to be the major east-west route, carrying approximately 14 percent of the total daily screen line volume in October 1994. Traffic crossing US-75 during the A.M. peak period was higher in the westbound direction than in the eastbound direction. Conversely, eastbound traffic was the peak direction during the P.M. peak period.

A.M. Peak Period. The A.M. peak period westbound volumes in October 1994 substantially dropped on Mockingbird (1,090 vehicles or 21 percent), Yale (660 vehicles or 51 percent), Lovers (980 vehicles or 38 percent), and Loop 12 (850 vehicles or 11 percent) (see Figure C.10, b). The largest increase in westbound traffic occurred on Royal (1,760 vehicles or 64 percent).

P.M. Peak Period. The eastbound volume in the P.M. peak period increased on Royal (1,360 vehicles or 27 percent) and decreased on Mockingbird (800 vehicles or 15 percent), Loop 12(690 vehicles or 7 percent), and Walnut Hill (1,110 vehicles or 16 percent) (see Figure C.11, a). Westbound traffic notably decreased on Mockingbird (2,000 vehicles or 36 percent), University (950 vehicles or 46 percent), Lovers (520 vehicles or 25 percent), Loop 12 (1,370 vehicles or 19 percent), Walnut Hill (830 vehicles or 14 percent), and Forest (1,680 vehicles or

28 percent) (see Figure C.11, b). An increase of 830 vehicles (38 percent) was observed on Royal.

24-Hour Period. The 24-hour eastbound traffic increased on Royal by 2,850 vpd (i.e., a 24 percent increase between October 1990 and October 1994 volume) (see Figure C.12, a). Eastbound traffic decreased on Mockingbird (1,450 vpd or 9 percent), Loop 12 (2,660 vpd or 10 percent), Park (2,330 vpd or 16 percent), and Walnut Hill (1,660 vpd or 8 percent). Westbound volumes increased on Southwestern (2,050 vpd or 37 percent), and Royal (3,240 vpd or 33 percent) (see Figure C.12, b). The westbound traffic decreased on Mockingbird (5,990 vpd or 26 percent), Yale (640 vpd or 11 percent), University (2,750 vpd or 34 percent), Lovers (4,870 vpd or 45 percent), Caruth Haven (1,020 vpd or 28 percent), Loop 12 (5,290 vpd or 17 percent), Park (920 vpd or 8 percent), Walnut Hill (1,060 vpd or 6 percent), and Forest (6,250 vpd or 23 percent).

Traffic Patterns on US-75 North Central Expressway

Figure 3.1 shows the daily traffic volume on US-75 North Central Expressway at the three screen line count locations from October 1989 to October 1994 and the corresponding average Automatic Traffic Recorder (ATR) traffic volumes for the Dallas area. The US-75 traffic patterns generally follow the trends at control locations in the Dallas area before construction. Prior to October 1991, other than the normal variation in traffic volumes due to seasonal patterns, the total traffic on US-75 during construction had not changed significantly. Since October 1991, the volume trend lines have deviated from ATR trends. The daily traffic volume on US-75 at Lemmon increased to near pre-October 1991 ADT volumes for October 1994. Daily volumes at Mockingbird significantly decreased in May 1994 and then started a slight increase in October 1994. Traffic volumes at Loop 12 dropped considerably in October 1993 and have fluctuated very little through October 1994.

Table 3.2 summarizes US-75 daily traffic volumes at the three screen line count locations in October 1994 compared to seasonally adjusted before construction volumes. The changes in US-75 traffic volumes were estimated reductions of 13 percent at Lemmon, 25 percent at Mockingbird, and 19 percent at Loop 12. Thus, the US-75 daily traffic volumes were significantly lower in October 1994 than volumes that would have been expected in the absence of the construction project.



Figure 3.1. Daily Traffic Volumes on US-75 Compared to ATR Stations in the Dallas Area from October 1989 to October 1994

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			D	aily Traffic Volume	:S				
Screen Line Count Location	Direction	Before (May 1990)		During Construction (October 1994)					
		Observed	Estimated ^a	Observed	Change	% Change			
Lemmon	Northbound	76,060	80,090	68,522	-11,568	-14.44			
	Southbound	73,620	77,520	68,954	-8,566	-11.05			
	Total	149,680	157,610	137,476	-20,134	-12.77			
Mockingbird	Northbound	79,210	86,440	63,720	-22,720	-26.28			
	Southbound	75,730	82,640	62,502	-20,138	-24.37			
	Total	154,940	169,080	126,222	-42,858	-25.35			
Loop 12	Northbound	68,100	73,060	58,968	-14,092	-19.29			
	Southbound	60,680	65,100	53,196	-11,904	-18.29			
	Total	128,780	138,160	112,164	-25,996	-18.82			

Table 3.2. Changes in Daily Traffic Volumes on US-75 During October 1994

^a Volumes were estimated by seasonally adjusting May 1990 before volumes.

VEHICLE OCCUPANCY AND CLASSIFICATION

Table 3.3 summarizes the average occupancy of passenger vehicles on the US-75 North Central Expressway for the October studies. The occupancy data indicate that the average passenger vehicle occupancy is lower in the A.M. peak period than in the P.M. peak period, and also that the peak period, peak direction traffic has a lower vehicle occupancy than the off-peak direction traffic. The October 1994 A.M. peak period, peak direction data show an average occupancy of 1.09 persons per passenger vehicle with 93 percent of the passenger vehicles carrying one person; 6 percent, two persons; and 1 percent, more than two persons. During the P.M. peak period, the peak direction average passenger vehicle occupancy was 1.16 persons per vehicle with 89 percent of the passenger vehicles being single-occupant vehicles; 9 percent carrying two persons; and 2 percent having more than two persons. The average number of occupants per passenger vehicle has not changed significantly during construction. The majority of the automobile users on US-75 North Central Expressway continue to drive alone.

Table 3.4 summarizes the vehicle classification data. In October 1994, the peak period, peak direction vehicle mix on US-75 averaged 93-94 percent passenger vehicles, 5-6 percent commercial trucks, and 1 percent other (bus and motorcycle). The A.M. peak period, peak direction (southbound) traffic in October 1994 had fewer passenger vehicles and slightly fewer trucks than was observed in the October 1993 study. The vehicle mix for the P.M. peak period, peak direction (northbound) traffic had fewer passenger vehicles and more trucks than was observed in the october 1993 study.

Period	Direction	Average Occupancy (persons/vehicle)								
		October 1990	October 1991	October 1992	October 1993	October 1994				
A.M. Peak	Northbound	1.18	1.19	1.19	1.14	1.19				
	Southbound	1.08	1.09	1.10	1.08	1.09				
	Both	1.12	1.14	1.15	1.11	1.13				
P.M. Peak	Northbound	1.17	1.18	1.22	1.19	1.16				
	Southbound	1.26	1.25	1.26	1.29	1.23				
	Both	1.21	1.21	1.25	1.24	1.19				

 Table 3.3. Average Passenger Vehicle Occupancy on US-75 (October Studies)

Note: Peak direction data are shown in boldface.

			Percent of Vehicles								
Period	Vehicle Type	Octobe	er 1990	Octob	er 1991	Octob	er 1992	Octob	er 1993	Octob	er 1994
		NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
A.M. Peak	Passenger Vehicle	93,30	96.50	94.82	96.84	90.78	95.28	92.33	94.16	90.40	94.12
	Commercial Truck	5.70	2.38	4.20	2.36	8.27	3.56	6.85	5.07	8.66	4.95
	Bus	0.93	0.99	0.95	0.77	0.80	1.07	0.75	0.65	0.90	0.86
	Motorcycle	0.07	0.10	0.03	0.03	0.16	0.09	0.07	0.12	0.03	0.07
P.M. Peak	Passenger Vehicle	94.40	94.10	97.53	96. 2 9	94.38	93.80	94.81	91.93	93.12	91.28
	Commercial Truck	4.36	4.83	1.59	2.92	4.60	5.26	4.14	7.31	5.86	7.96
	Bus	0.97	0.88	0.87	0.77	0.94	0.79	0.91	0.61	0.90	0.66
	Motorcycle	0.18	0.10	0.01	0.02	0.09	0.15	0.15	0.15	0.12	0.10

Table 3.4. Vehicle Classification on US-75 (October Studies)

Note: Peak direction data are shown in boldface.

TRAVEL TIMES AND AVERAGE TRAVEL SPEEDS

Appendices D and E summarize in tabular form travel times and speeds collected during October 1994. Appendix D contains tables summarizing the peak period, peak, and off-peak direction travel times for nine north-south routes in the corridor. In addition, peak period travel times for four east-west routes and off-peak period travel times on US-75 North Central Expressway are presented. Appendix E contains tables summarizing the corresponding average travel speeds.

The following section presents the peak period and peak hour travel time and speed results for the north-south and east-west routes separately. Then, US-75 North Central Expressway travel times and speeds are presented in more detail.

North-South Routes

Peak Period

The peak period average travel times and speeds on the north-south routes between I-635 and the central business district are given in Table 3.5. Of the nine routes, DNT had the lowest peak period, peak direction average travel time of 13.36 minutes, while US-75 northbound frontage road had the highest average travel time of 30.65 minutes. Because the travel distances vary between I-635 and the central business district, the average travel speed is considered a better measure to compare the different routes. Consequently, the highest peak period, peak direction average travel speed, approximately 74 km/h (46 mph), was observed on DNT, while the lowest average travel speed, 29 km/h (18 mph), was on US-75 northbound frontage road.

Peak Hour

The peak hour average travel times and travel speeds in the peak direction are shown in Figures 3.2 and 3.3. As the figures illustrate, peak hour travel times and speeds have fluctuated over the years to some degree. It appears that notable changes occurred during October 1994.

A.M. peak hour, peak direction (southbound) average travel times in October 1994 were substantially lower on US-75 (4.45 minute decrease) compared to October 1989 before construc-

		North	bound	South	bound
Period	Route	Average	Average	Average	Average
		Travel Time	Travel Speed	Travel Time	Travel Speed
		(min)	(km/h)	(min)	(km/h)
	DNT	12.82	75	13.36	74
	Preston	25.38	37	26.01	36
	Hillcrest	25.34	37	26.35	37
	US-75	16.90	60	15.43	65
A.M. Peak	US-75 Frontage	26.20	35	24.48	37
	Greenville	21.92	42	19,86	47
	Skillman	19.76	48	20.79	45
	Abrams	24.65	40	23.67	43
	Garland	20.87	46	20.50	49
	DNT	14.04	71	13.01	74
	Preston	29.24	32	27.59	34
	Hillcrest	30.11	32	27.67	35
	US-75	16.53	57	16.37	62
P.M. Peak	US-75 Frontage	30.65	29	27.57	33
	Greenville	23.63	39	24.19	38
	Skillman	25.21	38	19.69	47
	Abrams	25.76	38	23.97	42
	Garland	23.14	42	21.69	46

Table 3.5. Peak Period Average Travel Time and Speedon North-South Routes During October 1994

Note: Peak direction data are shown in **boldface**.



(a) A.M. Peak



⁽b) P.M. Peak

Figure 3.2. Peak Hour, Peak Direction Average Travel Times Between I-635 and Central Business District (October Studies)



(a) A.M. Peak



⁽D) F.M. Feak

Figure 3.3. Peak Hour, Peak Direction Average Travel Speeds Between I-635 and Central Business District (October Studies)

tion began. Other slight decreases occurred on Preston (1.46 minutes), US-75 Frontage Road (1.17 minutes, compared to October 1990), and Greenville (1.04 minutes). Average travel times during the A.M. peak hour were slightly higher on Hillcrest (1.60 minute increase), Skillman (3.63 minute increase), Abrams (1.32 minute increase), and Garland (1.84 minute increase). The DNT showed very little change in average travel time compared to October 1989 data. The decrease in southbound average travel times on US-75 and increase on Skillman suggest that commuters may have been avoiding the construction project on US-75 and diverted to Skillman and other alternative routes.

In the P.M. peak hour, peak direction (northbound) average travel times were generally higher in October 1994 than in October 1989 before construction. Travel times increased on DNT (2.40 minutes), Hillcrest (3.33 minutes), Abrams (1.16 minutes), and Garland (2.10 minutes). Travel times were similar on Preston and Skillman respectively, in October 1994 compared to October 1989 before construction. Incidents occurred on US-75 and Greenville during the October 1989 P.M. peak travel time runs which probably made the average travel times higher than normal. In addition, travel time data were not collected during October 1989 on US-75 Frontage Road. Thus, excluding the October 1989 data and comparing the travel times to October 1990 data, average travel time decreased on US-75 (5.03 minutes) and Greenville (5.10 minutes), and increased on US-75 Frontage Road (2.58 minutes).

Researchers found similar results in the peak hour, peak direction average travel speeds. In the A.M. peak hour, the US-75 average travel speed increased from 45 km/h (28 mph) in October 1989 to 54 km/h (34 mph) in October 1994. However, the average travel speed on Skillman decreased from 51 km/h (32 mph) to 42 km/h (26 mph). P.M. peak hour average travel speeds either remained the same or improved on most north-south routes in the corridor with the exception of DNT which slightly decreased.

East-West Routes

Table 3.6 summarizes the peak period average travel times and speeds for the east-west routes. Of the four east-west routes monitored, Lemmon had the highest average travel time and lowest average travel speed in the A.M. peak period for both directions. Mockingbird had the

		Eastt	pound	Westbound		
Period	Route	Average	Average	Average	Average	
		Travel Time (min)	Travel Speed (km/h)	Travel Time (min)	Travel Speed (km/h)	
	Lemmon	13.35	28	17.29	23	
A.M. Peak	Mockingbird	12.57	36	16.11	29	
A.M. I Cak	Loop 12	11.60	46	10.96	48	
	Royal	15.69	42	17.01	41	
	Lemmon	13.15	29	13.02	29	
P.M. Peak	Mockingbird	18.86	24	17.17	26	
r.ivi. Peak	Loop 12	13.05	41	10.92	48	
	Royal	18.02	38	15.16	44	

Table 3.6. Peak Period Average Travel Time and Speedon East-West Routes During October 1994

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highest average travel time and lowest average travel speed in the P.M. peak period for both directions. These October 1994 travel times and speeds appear to be similar to those collected in previous studies.

US-75 North Central Expressway

Figures 3.4 and 3.5 illustrate the travel times and average travel speeds on US-75 from 6:00 A.M. to 7:00 P.M. The October 1994 data are shown relative to other October studies. In addition to peak period, peak direction conditions, these plots provide insight into the off-peak direction and off-peak period travel times and speeds. The northbound travel times in October 1994 for the A.M. peak period were the highest observed and the average travel speeds were the lowest observed since the beginning of the traffic monitoring study. The off-peak and P.M. peak travel times and travel speeds do not appear to have been adversely affected by the construction project. The southbound values indicate that the travel times during the P.M. peak period remained high and, correspondingly, the average travel speeds remained low since October 1993. The southbound A.M. peak and off-peak travel times and travel speeds do not appear to have been influenced by the construction project. The results suggest that the construction under way south of Mockingbird since October 1993 has still affected US-75 off-peak period travel in the southbound direction for the P.M. peak and northbound direction for the A.M. peak. Elsewhere, the travel times and speeds in October 1994 were similar to before construction values in October 1989.



Figure 3.4. Total Travel Time on US-75 Between I-635 and Central Business District (October Studies)



Figure 3.5. Average Travel Speed on US-75 Between I-635 and Central Business District (October Studies)

4. MAY 1995 TRAFFIC CONDITIONS

This chapter documents the traffic conditions observed during May 1995, more than four years after the US-75 North Central Expressway reconstruction project began. Traffic conditions are reported as changes in traffic patterns, vehicle occupancy and classification, and travel times and average travel speeds. Appendices F through J summarize May 1995 traffic volume and travel time data.

SCREEN LINE TRAFFIC VOLUMES

The May 1995 screen line traffic volume counts are summarized in Appendices F, G, and H. Appendix F contains tables summarizing the hourly volume counts on each route at each screen line. Appendix G contains figures that summarize each route's percentage of the total screen line volume; individual figures are presented for each of three time periods: A.M. peak (6:00-9:00 A.M.), P.M. peak (3:00-7:00 P.M.), and 24 hours. Appendix H contains similar figures summarizing the actual change in volumes on each route between the May studies.

The May 1995 screen line traffic volumes were evaluated for three time periods (A.M. peak, P.M. peak, and 24 hours) and were compared to previous May studies. Comparisons primarily consist of changes between May 1990 (before construction) and May 1995 data. The evaluation of US-75 traffic volumes, however, compares both May and October data to better estimate the traffic impacts of the project.

Table 4.1 summarizes the total corridor traffic volumes at each screen line for May 1995 compared to May 1990. The total 24-hour north-south traffic volumes during the period of construction have increased only slightly from 2.34 percent at Mockingbird/Buckner screen line to 3.18 percent at Loop 12 screen line in May 1995. The east-west traffic volumes crossing the US-75 screen line decreased by almost eight percent. Evidently, the traffic impacts of the construction project's bridge closures and lane reductions did cause motorists to divert from the US-75 North Central Expressway corridor.

Screen Line	Period	Direction	ed to May 1	Traffic Volum	es (vch)	
			May 1990	May 1995	Change	% Change
	A.M. Peak	Northbound	33,010	39,829	6,819	20.66
		Southbound	48,710	54,542	5,832	11.97
		Total	81,720	94,372	12,652	15.48
Oak Lawn/	P.M. Peak	Northbound	74,760	68,300	-6,460	-8.64
Lemmon/		Southbound	57,370	60,217	2,847	4.96
Peak		Total	132,130	128,517	-3,613	-2.73
	24 Hour	Northbound	231,110	230,188	-922	-0.40
		Southbound	222,210	236,361	14,151	6.37
		Total	453,320	466,548	13,228	2.92
	A.M. Peak	Northbound	26,740	31,791	5,051	18.89
		Southbound	40,440	44,224	3,784	9.36
		Total	67,180	76,014	8,834	13.15
	P.M. Peak	Northbound	59,500	56,591	-2,909	-4.89
Mockingbird		Southbound	48,090	48,166	76	0.16
		Total	107,590	104,756	-2,834	-2.63
	24 Hour	Northbound	190,680	193,725	3,045	1.60
		Southbound	187,820	193,633	5,813	3.10
		Total	378,500	387,359	8,859	2.34
	A.M. Peak	Northbound	25,060	29,110	4,050	16.16
		Southbound	35,790	40,237	4,447	12.43
		Total	60,850	69,347	8,497	13.96
	P.M. Peak	Northbound	54,170	53,118	-1,052	-1.94
Loop 12		Southbound	46,150	47,836	1,686	3.65
		Total	100,320	100,955	635	0.63
	24 Hour	Northbound	174,280	181,416	7,136	4.09
		Southbound	175,740	179,731	3,991	2.27
	_	Total	350,020	361,147	11,127	3.18
	A.M. Peak	Eastbound	18,400	26,852	8,452	45.93
		Westbound	52,150	47,847	-4,304	-8.25
		Total	70,550	74,698	4,148	5.88
	P.M. Peak	Eastbound	66,680	65,929	-751	-1.13
US-75		Westbound	53,890	42,600	-11,290	-20.95
		Total	120,570	108,529	-12,041	-9.99
	24 Hour	Eastbound	195,080	198,384	3,304	1.69
		Westbound	225,300	189,150	-36,150	-16.05
		Total	420,380	387,534	-32,846	-7.81

Table 4.1. US-75 North Central Expressway Corridor Traffic Volumes During May 1995Compared to May 1990

The following section presents the corridor-wide traffic patterns and traffic volume changes for the north-south and east-west routes separately. An analysis of US-75 traffic volumes including comparisons to control locations in the Dallas area is also provided.

Traffic Patterns on North-South Routes

The north-south traffic patterns observed during May 1995 at the Oak Lawn/Lemmon/Peak, Mockingbird/Buckner, and Loop 12 screen lines fluctuated more in the northbound direction than in the southbound direction. The observed northbound daily traffic volumes on US-75 at the three screen lines were between 13 and 23 percent lower in May 1995 than in May 1990. The primary changes in peak period, peak direction traffic volumes occurred in the northbound direction during the P.M. peak period. Significant changes also occurred at the Oaklawn/Lemmon/Peak screen line southbound and northbound during the A.M. peak period. Additionally, significant traffic increases occurred on alternative routes including DNT, Cedar Springs, Lemmon, Greenville, Ross, Live Oak, Matilda, and Abrams. These changes signify possible diversion from US-75 to alternative routes in the corridor.

The drop in southbound traffic volume on US-75 may have been partially due to the construction under way since October 1993, which required the southbound mainlanes to be reduced from three to two lanes between Mockingbird and McCommas. The construction project at the US-75 and Hall overpass located downstream of the Oak Lawn/Lemmon/Peak screen line may have also contributed to the decrease in US-75 traffic volumes. The reversible lane system on Ross did provide some relief to congestion in the corridor. A substantial increase in northbound P.M. peak period traffic volumes on Ross (31 percent), Greenville (187 percent at the Mockingbird/Buckner screen line and 6 percent at the Loop 12 screen line), and Abrams (16 percent at the Loop 12 screen line) suggests that the Ross reversible lane and the Abrams route may have attracted motorist use. In addition, the traffic volumes increased slightly on some routes in the off-peak direction compared to those during earlier monitoring studies, suggesting that motorists are seeking alternate routes in the off-peak directions to avoid construction.

Oak Lawn/Lemmon/Peak Screen Line

The Oak Lawn/Lemmon/Peak screen line traffic distributions show that fluctuations in each route's percentage of total screen line traffic volume were as high as fifteen percent between May 1990 and May 1995 (see Figures G.1 through G.3). The data indicate that traffic patterns fluctuated more in the northbound direction than in the southbound direction. In May 1995, DNT carried more traffic (25 percent in the A.M. and 24 percent in the P.M.) than US-75 (23 percent in the A.M. and 20 percent in the P.M.) during the peak period, peak direction of travel (see Figures G.1, b and G.2, a). Some deviations were observed in the May 1995 peak period, off-peak direction traffic patterns, but US-75 continued to have the largest volume along the screen line (see Figures G.1, a and G.2, b). Despite the changes in peak period traffic patterns, US-75 carried most (i.e., 25 percent) of the daily traffic volumes across the corridor (see Figure G.3). However, the U.S. 75 traffic volumes have steadily decreased since the beginning of construction while the DNT traffic volumes have increased.

A.M. Peak Period. During the A.M. peak period, southbound (peak direction) traffic volumes and northbound (off-peak direction) traffic volumes in May 1995 changed about the same (see Figure H.1). The observed southbound volume on US-75 decreased by 3,720 vehicles, which results in a 25 percent decrease, and the northbound volume decreased by 3,730 vehicles, which results in a 26 percent decrease, between May 1990 and May 1995 volumes (see Figure H.1). When evaluated on an hourly basis, the peak hour shows a similar reduction in vehicles per hour and percent drop in volumes for both directions. Traffic increased on several routes along the screen line which could indicate diversion to alternative routes. The notable peak period increases occurred on DNT (3,000 vehicles or 32 percent southbound), Cedar Springs (410 vehicles or 34 percent northbound), Ross (1,230 vehicles or 144 percent northbound), Live Oak (880 vehicles or 173 percent northbound), and Gaston (2,040 vehicles or 252 percent northbound).

P.M. Peak Period. The P.M. peak period, northbound (peak direction) traffic volume on US-75 decreased by 4,600 vehicles (i.e., a 24 percent drop between May 1990 and May 1995 volumes) (see Figure H.2, a). Significant increases in northbound traffic volumes were observed on DNT (2,890 vehicles or 19 percent), Oak Lawn (928 vehicles or 28 percent), Mckinney (960 or 32 percent), and Ross (1,300 vehicles or 31 percent). The changes in P.M. peak period traffic volumes for the southbound (off-peak) direction were noticeable (see Figure H.2, b). A reduction in southbound US-75 volume of 2,350 vehicles or a 13 percent decrease in volume was observed

during the P.M. peak period. The more noticeable increases in southbound traffic volumes were observed on DNT (1,371 vehicles or 11 percent), Cedar Springs (1,110 vehicles or 45 percent), Lemmon (2,160 vehicles or 43 percent), and Live Oak (1,835 vehicles or 104 percent).

24-Hour Period. The daily traffic volumes at the Oak Lawn/Lemmon/Peak screen line show significant changes (see Figure H.3). The northbound volumes significantly decreased on US-75 by 17,200 vehicles per day (vpd) (i.e., a 23 percent reduction), whereas traffic substantially increased on DNT (10,000 vpd or 25 percent), Oak Lawn (2,990 vpd or 29 percent), and Ross (3,680 vpd or 36 percent) (see Figure H.3, a). Daily southbound volumes on US-75 also significantly decreased by 13,470 vpd which represents an 18 percent reduction between May 1990 and May 1995 volumes (see Figure H.3, b). Traffic increased on DNT (9,460 vpd or 23 percent), Cedar Springs (4,050 vpd or 44 percent), Lemmon (4,600 vpd or 26 percent), Cole (4,100 vpd or 77 percent), and Live Oak (3,680 vpd or 35 percent). The 24-hour period volumes may suggest more motorists are diverting from US-75 and are using alternate routes during the non-peak periods and the peak periods since the beginning of construction.

Mockingbird/Buckner Screen Line

The fluctuations in each route's percentage of the total screen line traffic at the Mockingbird/Buckner screen line were as much as 7 percent between May 1990 and May 1995 (see Figures G.4 through G.6). Traffic patterns appear to have fluctuated more in the northbound direction than in the southbound direction. Although the percentage of total screen line traffic on US-75 decreased, US-75 continued to carry most of the peak period and daily volumes along the screen line.

A.M. Peak Period. The A.M. peak period southbound (peak direction) traffic volumes on US-75 decreased by 1,930 vehicles (i.e., a 13 percent decrease between May 1990 and May 1995) (see Figure H.4, b). Traffic volumes increased on DNT (450 vehicles or 4 percent), Greenville (180 vehicles or 13 percent), and Skillman (450 vehicles or 15 percent). These changes indicate minor diversion to these alternative routes. In May 1995, northbound (off-peak direction) traffic volumes generally increased along the screen line (see Figure H.4, a). Traffic volumes increased on DNT (1,590 vehicles or 26 percent), Greenville (400 vehicles or 105 percent), Matilda (730 vehicles or 121 percent), Skillman (290 vehicles or 20 percent), and Abrams (510 vehicles or 30 percent).

P.M. Peak Period. Northbound (peak direction) traffic volumes at the Mockingbird/ Buckner screen line decreased on US-75 by 2,150 vehicles (an 11 percent decrease) (see Figure H.5, a). Traffic volumes on alternate routes substantially increased on DNT (963 vehicles or 6 percent), Greenville (1,410 vehicles or 187 percent), Matilda (1,340 vehicles or 79 percent), and Abrams (210 vehicles or 6 percent). The southbound (off-peak direction) volumes decreased on US-75 (2,120 vehicles or 12 percent) and increased on DNT (1,910 vehicles or 17 percent), Skillman (580 vehicles or 25 percent), Abrams (590 vehicles or 18 percent), and Garland (1,080 vehicles or 21 percent).

24-Hour Period. Similar results were found for the 24-hour period. The total daily corridor volume traveling in the northbound direction increased by only 3,050 vpd, which represents a 2 percent increase between May 1990 and May 1995 volume (see Table 4.1). Daily northbound volumes significantly increased on most routes crossing the Mockingbird/Buckner screen line including DNT (7,700 vpd or 19 percent), Greenville (4,730 vpd or 122 percent), and Matilda (3,500 vpd or 69 percent). US-75 northbound substantially decreased by 10,620 vehicles or 13 percent (see Figure H.6, a). Southbound volumes also decreased on US-75 (8,400 vpd or 11 percent) and notably increased on DNT (6,660 vpd or 16 percent), Preston (1,180 vpd or 11 percent), Skillman (2,260 vpd or 23 percent), Abrams (1,060 vpd or 9 percent), and Garland (2,490 vpd or 12 percent). It appears the US-75 mainlane traffic crossing the Mockingbird/Buckner screen line diverted to alternative routes, especially in the P.M. peak period and in the off-peak period.

Loop 12 Screen Line

The traffic patterns at the Loop 12 screen line show fluctuations as large as 10 percent in each route's percentage of total screen line traffic volume between May 1990 and May 1995 (see Figures G.7 through G.9). These fluctuations were higher for northbound traffic patterns than for southbound traffic patterns. DNT carried approximately 37 percent of the total screen line peak period, peak direction traffic volume, which was the highest volume along the screen line. Additionally, the traffic distribution indicates that DNT had the highest percentage of total screen line traffic volume for the 24-hour period indicating peak period and off-peak diversion to alternate routes at the Loop 12 screen line.

A.M. Peak Period. At the Loop 12 screen line, southbound (peak direction) traffic volumes during the A.M. peak period decreased on US-75 by 1,260 vehicles or a 14 percent

reduction between May 1990 and May 1995 volumes (see Figure H.7, b). The northbound (offpeak direction) traffic volumes during the A.M. peak period also decreased on US-75 by 1,490 vehicles or 14 percent during the same period. The highest increases in volumes occurred on DNT (2,200 vehicles or 19 percent southbound and 3,000 vehicles or 44 percent northbound), Preston (540 vehicles or 24 percent southbound), Hillcrest (418 vehicles or 23 percent southbound), Greenville (701 vehicles or 34 percent northbound), and Abrams (609 vehicles or 48 percent northbound).

P.M. Peak Period. The P.M. peak period, northbound (peak direction) traffic volumes increased on several routes along the Loop 12 screen line while decreasing to the lowest level ever on US-75 at Loop 12 (see Figure H.8, a). The northbound traffic volumes on US-75 were reduced 2,460 vehicles or 15 percent, while the DNT traffic volumes increased (2,150 vehicles or 14 percent). Other increases northbound occurred on Hillcrest (940 vehicles or 34 percent), Greenville (370 vehicles or 6 percent), and Abrams (540 vehicles or 16 percent). The southbound (off-peak direction) traffic volumes indicate a decrease on US-75 of 1,960 vehicles or a 14 percent reduction between May 1990 and May 1995 volumes (see Figure H.8, b). Southbound volumes increased on DNT (3,070 vehicles or 27 percent), Preston (270 vehicles or 8 percent), Hillcrest (370 vehicles or 10 percent), Greenville (820 vehicles or 15 percent), Skillman (500 vehicles or 14 percent), and Abrams (370 vehicles or 9 percent).

24-Hour Period. The daily volumes crossing the Loop 12 screen line during May 1995 have similar results as the peak periods. Northbound and southbound volumes for the 24-hour period increased across the screen line, except for a significant reduction in daily volumes on US-75 (see Figure H.9, a). The daily volumes on US-75 decreased in the northbound direction by 14,450 vpd (21 percent) and decreased in the southbound direction by 14,450 vpd (24 percent). Of this total reduction, 25 percent took place during the peak periods, while the remaining 75 percent occurred during off-peak periods of the day. It appears that there was diversion to alternative routes in the corridor possibly due to the reconstruction of the Loop 12 interchange. Southbound volumes increased on DNT (10,220 vehicles or 24 percent), Preston (1,370 vpd or 11 percent), Hillcrest (2,020 vpd or 19 percent), Greenville (2,440 vpd or 12 percent), Skillman (1,320 vpd or 8 percent), and Abrams (1,070 vpd or 8 percent). Northbound volumes increased on DNT (12,900 vpd or 32 percent), Hillcrest (2,110 vpd or 25 percent), Greenville (3,950 vpd or 21 percent), and Abrams (2,100 vpd or 18 percent).

Traffic Patterns on East-West Routes

Traffic crosses US-75 North Central Expressway on sixteen routes between the I-635 LBJ Freeway and the Woodall Rogers Freeway. Eighteen routes were previously available until bridge reconstruction began on the University and McCommas overpasses. Each bridge structure is closed until reconstruction is complete. Additionally, the Caruth Haven and Southwestern overpasses were converted to one-way routes with Caruth Haven utilized for westbound traffic and Southwestern utilized for eastbound traffic. Bridge reconstruction has also reduced the number of lanes available for traffic using the Yale overpass. The traffic distribution along the US-75 screen line shows that the cross-street route's percentage of total screen line volume fluctuated up to 8 percent between May 1990 and May 1995 (see Figures G.10 through G.12). In May 1995, nine of the sixteen routes carried at least 5 percent of the total 24-hour east-west traffic (see Figure G.12). Loop 12 continues to be the major east-west route, carrying approximately 14 percent of the total daily screen line volume in May 1995. Traffic crossing US-75 during the A.M. peak period was higher in the westbound direction than in the eastbound direction. Conversely, eastbound traffic was the peak direction during the P.M. peak period.

A.M. Peak Period. The A.M. peak period westbound volumes in May 1995 substantially increased on Lovers (1,540 vehicles or 53 percent), and Royal (1,070 vehicles or 39 percent) (see Figure H.10, b). The increase on Lovers westbound is consistent with the rerouting of traffic due to the closing of the University overpass and the conversion of Southwestern to an eastbound one-way facility. The largest percentage increase in westbound traffic occurred on Caruth Haven (1,120 vehicles or 166 percent). This would be consistent with the conversion of the Caruth Haven overpass to a westbound one-way route. Decreases to westbound traffic occurred on Lemmon (1,190 vehicles or 31 percent) and Fitzhugh (1,190 or 33 percent). The other east-west routes showed no change or only minor decreases in volume during the A.M. period for May 1995.

P.M. Peak Period. The eastbound volume in the P.M. peak period noticeably increased on Haskell (1,410 vehicles or 2 percent), Monticello (650 vehicles or 1 percent), Royal (2,460 vehicles or 4 percent), and Forest (1,620 vehicles or 2 percent), and decreased on Lemmon (2,474 vehicles or 4 percent) and Loop 12 (530 vehicles or 1 percent) (see Figure H.11, a). The decrease of traffic on McCommas, University, and Caruth Haven eastbound is due to bridge closing and the re-directing of traffic. Westbound traffic notably decreased on Mockingbird (900 vehicles or 2 percent), Loop 12 (790 vehicles or 2 percent), Walnut Hill (1,420 vehicles or 3

percent), and Forest (2,280 vehicles or 4 percent) (see Figure H.11, b). An increase of 2,300 vehicles (4 percent) was observed on Lovers. The increase of traffic on Lovers westbound is consistent with the rerouting of traffic due to the closing of the University overpass and the conversion of Southwestern to an eastbound one-way facility.

24-Hour Period. The 24-hour eastbound traffic noticeably increased on Haskell (3,280 vpd or 49 percent), Mockingbird (3,460 vpd or 24 percent), and Royal (5,290 vpd or 49 percent) between May 1990 and May 1995 (see Figure H.12, a). Additionally, eastbound traffic increased on Southwestern (4,710 vpd or 71 percent). However, this increase is consistent with the conversion of this bridge to a one-way eastbound facility. Eastbound traffic substantially decreased on Lemmon (7,970 vpd or 70 percent) and Loop 12 (855 vehicles or 3 percent). Westbound volumes increased on Monticello (954 vpd or 25 percent), Lovers (8,030 vpd or 58 percent), Caruth Haven (3,490 vpd or 107 percent), and Royal (1,530 vpd or 14 percent) (see Figure H.12, b). The westbound increases on Lovers and Caruth Haven are consistent with the closing of University and the re-directing of Caruth Haven to a one-way westbound facility, respectively. The westbound traffic decreased on Lemmon (3,310 vpd or 23 percent), Fitzhugh (5,380 vpd or 31 percent), Mockingbird (1,970 vpd or 9 percent), Loop 12 (3,540 vpd or 12 percent), Park (930 vpd or 7 percent), Walnut Hill (3,840 vpd or 21 percent), and Forest (9,570 vpd or 32 percent).

Traffic Patterns on US-75 North Central Expressway

Figure 4.1 shows the daily traffic volume on US-75 North Central Expressway at the three screen line count locations from October 1989 to May 1995 and the corresponding average Automatic Traffic Recorder (ATR) traffic volumes for the Dallas area. The US-75 traffic patterns generally follow the trends at control locations in the Dallas area before construction. Prior to October 1991, other than the normal variation in traffic volumes due to seasonal patterns, the total traffic on US-75 during construction had not changed significantly. Since October 1991, the volume trend lines have deviated from ATR trends. The daily traffic volume on US-75 at Mockingbird is on an increase since having dropped significantly in May 1994. The other two locations, Lemmon and Loop 12, decreased in volume in May 1995 to their lowest levels since construction commenced. The decrease in volume may be attributed to the reduction of mainlanes from three to two lanes between Mockingbird and Walnut Hill, in addition to frontage road construction along the same limits.



Figure 4.1. Daily Traffic Volumes on US-75 Compared to ATR Stations in the Dallas Area from October 1989 to May 1995

Table 4.2 summarizes US-75 daily traffic volumes at the three screen line count locations in May 1995 compared to seasonally adjusted before construction volumes. The changes in US-75 traffic volumes were estimated reductions of 31 percent at Lemmon, 30 percent at Mockingbird, and 37 percent at Loop 12. Thus, the US-75 daily traffic volumes were significantly lower in May 1995 than volumes that would have been expected in the absence of the construction project.

VEHICLE OCCUPANCY AND CLASSIFICATION

Table 4.3 summarizes the average occupancy of passenger vehicles on the US-75 North Central Expressway for the May studies. The occupancy data indicate that the average passenger vehicle occupancy is lower in the A.M. peak period than in the P.M. peak period, and also that the peak period, peak direction traffic has a lower vehicle occupancy than the off-peak direction traffic. The May 1995 A.M. peak period, peak direction data show an average occupancy of 1.08 persons per passenger vehicle with 93 percent of the passenger vehicles carrying one person; 6 percent, two persons; and 1 percent, more than two persons. During the P.M. peak period, the peak direction average passenger vehicle occupancy was 1.20 persons per vehicle with 85 percent of the passenger vehicles being single-occupant vehicles; 13 percent carrying two persons; and 2 percent having more than two persons. The average number of occupants per passenger vehicle has not changed significantly during construction. The majority of the automobile users on US-75 North Central Expressway continue to drive alone.

The vehicle classification data are summarized in Table 4.4. In May 1995, the peak period, peak direction vehicle mix on US-75 averaged 95-96 percent passenger vehicles, 3-4 percent commercial trucks, and 1 percent other (bus and motorcycle). The A.M. peak period, peak direction (southbound) traffic in May 1995 had slightly more passenger vehicles and slightly fewer trucks than was observed in the May 1994 study. The vehicle mix for the P.M. peak period, peak direction (northbound) traffic had slightly more passenger vehicles and fewer trucks than were observed in the earlier May studies.

	Screen Line		D	aily Traffic Volume	S				
Count Location	Direction	Before (May 1990)	During Construction (May 1995)						
		Observed	Estimated ^a	Observed	Change	% Change			
Lemmon	Northbound	76,060	87,640	58,855	-28,785	-32.84			
	Southbound	73,620	84,820	60,150	-24,670	-29.09			
	Total	149,680	172,460	119,005	-53,455	-31.00			
Mockingbird	Northbound	79,210	99,590	68,590	-31,000	-31.13			
	Southbound	75,730	95,200	67,325	-27,875	-29.28			
	Total	154,940	194,790	135,915	-58,875	-30.22			
Loop 12	Northbound	68,100	84,370	53,654	-30,716	-36.41			
	Southbound	60,680	75,180	46,231	-28,949	-38.51			
	Total	128,780	159,550	99,885	-59,665	-37.40			

Table 4.2. Changes in Daily Traffic Volumes on US-75 During May 1995

Compared to May 1990

^a Volumes were estimated by seasonally adjusting May 1990 before volumes.

Time Period	Direction	Average Occupancy (persons/vehicle)								
1 chou		May 1990	May 1991	May 1992	May 1993	May 1994	May 1995			
A.M. Peak	Northbound	1.23	1.14	1.23	1.22	1.21	1.17			
	Southbound	1.19	1.08	1.11	1.11	1.11	1.08			
	Both	1.20	1.11	1,16	1,16	1.16	1.12			
P.M. Peak	Northbound	1.19	1.16	1.22	1.21	1.23	1.20			
	Southbound	1.28	1.18	1.29	1.30	1.27	1.26			
	Both	1.22	1.17	1.25	1.26	1.25	1.23			

Table 4.3. Average Passenger Vehicle Occupancy on US-75 (May Studies)

Note: Peak period, peak direction data are shown in boldface.

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Time		Percent of Vehicles											
Period	Vehicle Type	May	1990	May	1991	May	1992	May	1993	May	1994	May	1995
		NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
A.M.	Passenger	89.56	95.00	92.80	96.03	92.93	97.12	92.58	95.91	90.89	95.37	91.86	96.30
Peak	Vehicle												
	Commercial	9.39	3.98	6.13	3.06	6.09	1.92	6.44	3.20	8.31	3.69	7.49	2.96
	Truck												
	Bus	0.98	0.83	0.89	0.83	0.9 2	0.90	0.90	0.71	0.73	0.88	0.60	0.71
	Motorcycle	0.07	0.17	0.10	0.08	0.06	0.06	0.08	0.18	0.07	0.05	0.05	0.03
P.M.	Passenger	94.40	94.30	95.60	95.40	96.47	96.02	94.47	96.41	93.64	91.16	95.51	90.94
Peak	Vehicle												
	Commercial	3.78	4.40	3.08	3.83	2.54	3.23	4.54	2.87	5.34	8.15	3.77	8.40
	Truck												
	Bus	1.04	1.10	1.03	0.67	0.84	0.62	0.90	0.61	0.89	0.57	0.69	0.59
	Motorcycle	0.28	0.10	0.24	0.10	0.15	0.13	0.10	0.12	0.13	0.12	0.03	0.07

Table 4.4.	Vehicle	Classification	on US-75	(May Studies)
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Note: Peak period, peak direction data are shown in boldface.
TRAVEL TIMES AND AVERAGE TRAVEL SPEEDS

Appendices I and J summarize in tabular form travel times and speeds collected during May 1995. Appendix I contains tables summarizing the peak period, peak, and off-peak direction travel times for nine north-south routes in the corridor. In addition, peak period travel times for four east-west routes and off-peak period travel times on US-75 North Central Expressway are presented. Appendix J contains tables summarizing the corresponding average travel speeds.

The following section presents the peak period and peak hour travel time and speed results for the north-south and east-west routes separately. Then, US-75 North Central Expressway travel times and speeds are presented in more detail.

North-South Routes

Peak Period

The peak period average travel times and speeds on the north-south routes between I-635 and the central business district are given in Table 4.5. Of the nine routes, DNT northbound had the lowest peak period, peak direction average travel time of 12.87 minutes during the P.M. peak period, while Hillcrest northbound had the highest average travel time of 28.75 minutes during the P.M. peak period. Because the travel distances vary between I-635 and the central business district, the average travel speed is considered a better measure to compare the different routes. Consequently, the highest peak period, peak direction average travel speed, approximately 76 km/h (47 mph), was observed on DNT northbound during the P.M. peak period, while the lowest average travel speed, 33 km/h (21 mph), was on Hillcrest northbound during the P.M. peak period.

Peak Hour

The peak hour average travel times and travel speeds in the peak direction are shown in Figures 4.2 and 4.3. As the figures illustrate, peak hour travel times and speeds have fluctuated over the years to some degree. It appears that notable changes occurred during May 1995.

		North	bound	South	bound
Period	Route	Average	Average	Average	Average
		Travel Time	Travel Speed	Travel Time	Travel Speed
		(min)	(km/h)	(min)	(km/h)
	DNT	13.79	71	14.78	70
	Preston	_24.24	39	26.37	36
	Hillcrest	26.64	36	25.83	38
	US-75	12.49	77	16.85	61
A.M. Peak	US-75 Frontage	23.14	39	27.27	34
	Greenville	22.25	42	22.10	41
	Skillman	19.27	49	18.63	51
	Abrams	21.62	45	21.61	47
	Garland	19.76	49	19.89	50
	DNT	12.87	76	12.31	78
	Preston	27.75	34	26,65	35
	Hillcrest	28.75	33	27.59	35
	US-75	14.28	68	13.74	70
P.M. Peak	US-75 Frontage	25.33	35	24.12	37
	Greenville	22.96	40	24.67	37
	Skillman	22.66	42	20.91	45
	Abrams	23.67	41	22.74	44
	Garland	20.95	46	21.51	46

Table 4.5. Peak Period Average Travel Time and Speedon North-South Routes During May 1995

Note: Peak direction data are shown in boldface.



(a) A.M. Peak



⁽b) P.M. Peak

Figure 4.2. Peak Hour, Peak Direction Average Travel Times Between I-635 and Central Business District (May Studies)



(a) A.M. Peak



Figure 4.3. Peak Hour, Peak Direction Average Travel Speeds Between I-635 and Central Business District (May Studies)

A.M. peak hour, peak direction (southbound) average travel times in May 1995 were higher on US-75 (2.71 minute increase) compared to May 1990. Other slight increases occurred on Preston (1.48 minutes), Hillcrest (0.25 minutes), and Garland (1.99 minutes). Average travel times during the A.M. peak hour were slightly lower on DNT (0.46 minutes), Greenville (0.77 minutes), Skillman (1.05 minutes), and Abrams (2.00 minutes). The US-75 frontage road showed a change in average travel time, 2.83 minute decrease, compared to May 1990 data. The slight decrease in southbound average travel times on US-75 frontage road and some alternate routes in conjunction with a slight increase of travel time on US-75 suggests that some previous alternate route commuters may have attempted to travel on US-75 mainlanes during the A.M. peak period southbound.

In the P.M. peak hour, peak direction (northbound) average travel times were generally lower in May 1995 than in May 1990. Travel times decreased on DNT (0.45 minutes), US-75 (4.71 minutes), US-75 frontage road (2.61 minutes), Greenville (2.18 minutes), Abrams (1.56 minutes), and Garland (1.85 minutes). Travel times increased on Preston (0.43 minutes), Hillcrest (1.08 minutes), and Skillman (3.66 minutes). The decrease in northbound average travel times on US-75 and the frontage road, in conjunction with an increase on several parallel alternate routes, suggests commuters may have been avoiding the lane reduction on US-75 and the construction project on the frontage road and diverted to alternative routes.

Similar results were found in the peak hour, peak direction average travel speeds. In the A.M. peak hour, the US-75 average travel speed decreased from 56 km/h (35 mph) in May 1990 to 49 km/h (30 mph) in May 1995. Some alternate routes showed minor increases in speed. However, the P.M. peak hour average travel speed on US-75 increased from 39 km/h (24 mph) in May 1990 to 49 km/h (30 mph) in May 1995 and decreased on Skillman from 42 km/h (26 mph) to 35 km/h (22 mph). Both peak hour, peak direction average travel speeds suggest motorists may have been avoiding the construction in the US-75 corridor and diverted to alternative routes.

East-West Routes

Table 4.6 summarizes the peak period average travel times and speeds for the east-west routes. Of the four east-west routes monitored, Lemmon had the lowest average travel speed in the A.M. peak period for the eastbound direction. Mockingbird had the lowest average travel

		Easth	oound	West	bound
Period	Route	Average Travel Time (min)	Average Travel Speed (km/h)	Average Travel Time (min)	Average Travel Speed (km/h)
	Lemmon/Peak	11.7	31	11.31	34
A.M. Peak	Mockingbird	13.18	34	14.66	31
	Loop 12	12.02	45	12.59	44
	Royal	15.12	44	15.16	44
	Lemmon/Peak	12.35	30	12.46	31
P.M. Peak	Mockingbird	18.20	25	17.20	27
	Loop 12	13.40	41	10.49	51
	Royal	17.23	40	14.44	47

Table 4.6. Peak Period Average Travel Time and Speedon East-West Routes During May 1995

speed in the A.M. peak period for the westbound direction. Mockingbird had the lowest average travel speed in the P.M. peak period for both directions. These May 1995 travel times and speeds appear to be similar to those collected in previous studies.

US-75 North Central Expressway

Figures 4.4 and 4.5 illustrate the travel times and average travel speeds on US-75 from 6:00 A.M. to 7:00 P.M. The May 1995 data are shown relative to other May studies. In addition to peak period, peak direction conditions, these plots provide insight into the off-peak direction and off-peak period travel times and speeds. The southbound travel times in May 1995 were the highest observed, and the average travel speeds were the lowest observed since the beginning of the traffic monitoring study for most of the time periods. The northbound travel times and travel speeds remained similar to the previous years of study. The results suggest that the construction underway south of Mockingbird since October 1993 has still affected US-75 during the A.M. and P.M. peak period in the southbound direction. Additionally, construction reducing US-75 to one lane during the off-peak period southbound has increased the average travel times and decreased the average travel speeds on US-75 during May 1995.







a) Northbound



b) Southbound

Figure 4.5. Average Travel Speed on US-75 Between I-635 and Central Business District (May Studies)

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5. AUTOMOBILE USER PANEL SURVEY RESULTS: OCTOBER 1994 AND MAY 1995

This chapter documents the tenth and eleventh (final) biannual surveys of a "panel" of automobile drivers using the North Central Expressway (NCE) corridor in Dallas, Texas. In keeping with the biannual schedule, panelists were surveyed in October 1994 and again in May 1995. A copy of the survey instrument from October 1994 is provided in Appendix K. The survey instrument used in the May 1995 survey included an additional section that queried panel members about methods used to provide daily construction information. Appendix L contains a copy of the survey instrument from May 1995. This chapter presents the results of these surveys.

TOTAL TRIP-MAKING CHARACTERISTICS

In the October 1994 survey, panel members returned a total of 448 completed surveys (142 from the original panel, 306 from the new panel). In comparison, the total return rate for the May 1995 survey totaled 405 surveys (146 from the original panel, 259 from the new panel). Table 5.1 presents the average number of trips per week reported by the new and original panelists for the October 1992, October 1994, and the May 1995 surveys.

The October 1994 survey found no statistically significant changes occurred in total tripmaking activity per week for the original panel group, whereas, the total trip-making activity for the new panel group increased (by an average of 0.6 trips per week). No statistically significant change occurred in the average number of trips made per week on the NCE by either panel group. Presented in terms of the percentage of total trips being made by the new and original panel groups, utilization of the NCE by the new panel group decreased an average of 2 percent, and utilization of the NCE by the original panel group decreased an average of 3 percent.

The May 1995 survey, however, found that the total trip-making activity per week increased by an average of 0.5 trips per week for both the new and original panel groups. Although no statistically significant change occurred in the average number of trips made per week on the NCE by the new panel groups, the total average number of trips on the NCE for the original panel decreased by an average of 0.5 trips per week. Presented in terms of the percentage of total trips being made by the new and original panel groups, the May 1995

utilization of the NCE by the new panel group decreased by only 1 percent, and the original panel utilization decreased an average of 3 percent.

	To	tal Trips	/Wk	NC	E Trips	:/Wk		Percent of Total Trips on NCE		
Type of Trip	Oct. 92	Oct. 94	May 95	Oct. 92	Oct. 94	May 95	Oct. 92	Oct. 94	May 95	
New Panel:		5.0	~ ~	1.0	. 1	• •	25	24	24	
To/from work	5.5	5.8	5.5	1.9	2.1	2.0	35	36	36	
Other work-related	1.8	1.7	1.6	0.7	0.5	0.5	39	29	31	
To/from school or day care	0.9	0.7	0.9	0.2	0.2	0.1	22	29	11	
To/from social activity	2.6	2.8	2.7	0.7	0.7	0. 8	27	25	30	
To/from shopping	1.3	1.6	1.8	0.3	0.3	0.4	23	19	22	
To/from personal business	<u>1.2</u>	<u>1.3</u>	<u>1.3</u>	<u>0.3</u>	0.3	<u>0.4</u>	<u>25</u>	<u>23</u>	<u>31</u>	
TOTAL	13.3	13.9*	13.8*	4.1	4.1	4.2	31	29	30	
Original Panel: To/from work	5.5	5.1	5.1	2.7	2.6	2.3	49	51	45	
Other work-related	1.5	1.8	1.4	0.6	0.5	0.4	40	28	29	
To/from school or day care	0.5	0.7	0.7	0.1	0.2	0.2	20	29	29	
To/from social activity	2.1	2.1	2.8	0.7	0.6	0.8	33	29	29	
To/from shopping	1.5	1.5	1.7	0.4	0.3	0.4	27	20	24	
To/from personal business	1.1	<u>1.2</u>	<u>1.0</u>	<u>0.3</u>	0.3	<u>0.2</u>	<u>27</u>	<u>25</u>	<u>20</u>	
TOTAL	12.2	12.4	12.7*	4.8	4.5	4.3*	39	36	36	

Table 5.1 Comparison of Total Trip-Making Activity

* Rate is significantly higher than in October 1992 (based on test of means @ $\alpha = 0.05$)

Table 5.2 presents panelists' perceptions of the changes they have made in their weekly trip-making activity compared to actual trip-making frequencies. Relative to October 1992, survey panelists from the October 1994 survey showed 66 percent of the new panelists and 75 percent of the original panelists felt that they were making the same number of trips per week in October 1994. In May 1995, 65 percent of both panel groups felt that they were making the same number of trips per week as they were in October 1992.

Table 5.2 also summarizes panelists' perceptions concerning changes in their trip-making frequency on NCE. Less than 50 percent of both panel groups in October 1994 and May 1995 felt that they were making fewer trips on the Expressway than they had made in October 1992.

	Percent of Responses					
	New	Panel	Original Panel			
Perceived Change	Oct. 94	May 95	Oct. 94	May 95		
Total Trips Per Week:						
Making more trips	20	19	11	19		
Making same trips	66	65	75	65		
Making fewer trips	14	16	14	16		
Trips Per Week on NCE:						
Making more trips	21	15	12	18		
Making same trips	33	39	47	35		
Making fewer trips	46	46	41	47		

Table 5.2 Perceived Changes in Weekly Trip-Making Frequency:October 1994 and May 1995 Versus October 1992 Conditions

In order to evaluate the correlation between panelists' perceptions and actual changes in their travel behavior, Table 5.3 presents the average NCE utilization rates for members of both panel groups in the October 1994 and the May 1995 surveys who felt they were using the NCE less than in October 1992. As shown in Table 5.3, new panel members from both surveys who felt they were making fewer trips on NCE actually did report significantly fewer trips (19 percent less in the October 1994 survey, and 34 percent less in the May 1995 survey). The original panelists who felt they were making fewer trips on NCE in May 1995 also did in fact report fewer trips (16 percent less) on NCE as compared to October 1992. Note that the average rates for these subgroups are much lower than the 4.1 to 4.5 trips per week reported by the overall panel in October 1994, and the 4.2 to 4.3 trips per week reported in May 1995 (See Table 5.1). This indicates that those subjects who tended to use NCE less frequently originally were those more likely to perceive that they had reduced their trip-making frequency on NCE.

Table 5.3 Average Weekly Trip-Making Rates on NCE for Subjects Who Believed They Were Making Fewer NCE Trips

New Panelists					Ori	ginal Pane	lists		
Oct. 1992	Oct. 1994	Diff- erence	May 1995	Diff- erence	Oct. 1992	Oct. 1994	Diff- erence	May 1995	Diff- erence
3.1	2.5*	-0.6	2.0*	-1.1	2.6	2.7	+0.1	2.0*	-0.6

*Rate is significantly lower ($\alpha = 0.05$) than reported in October 1992

WORK TRIP CHARACTERISTICS

Departure Times

Table 5.4 presents the median departure times to and from work reported by the new and original panelists in the October 1992, October 1994, and May 1995 surveys. Generally speaking, the median departure times from home to work and work to home changed very little in October 1994 and May 1995. A few isolated changes occurred in the October 1994 departure times relative to October 1992, but these changes were not repeated in the May 1995 survey.

	Ho	me-to-Work 7	Trips	Work-to-Home Trips			
Panel Group	October 1992	October 1994	May 1995	October 1992	October 1994	Ma y 1995	
New Panelists	7:30 am	7:30 am	7:30 am	5:20 pm	5:15 pm	5:20 pm	
Original Panelists	7:20 am	7:20 am	7:20 am	5:00 pm	5:15 pm	5:00 pm	

Table 5.4 Median Departure Times To and From Work

Panelists in both surveys were asked whether they felt they were making work trips earlier, at the same time, or later than they had in October 1992. The results, shown in Table 5.5, indicate that most panelists (54 to 79 percent in the October 1994 survey, 59 to 75 percent in the May 1995 survey) perceived no change in their departure time patterns. However, the October 1994 and May 1995 surveys showed that the percentages of both panel member groups who indicated no change in their departure time patterns was somewhat lower than the percentage who felt this way in May 1994 (8).

Travel Times

Table 5.6 presents average travel times reported by panelists in October 1992, October 1994, and May 1995. The average travel time values for home-to-work trips for both panel groups in October 1994 were not significantly different than in October 1992, whereas the May 1995 panel members indicated an increase in average home-to-work travel times of slightly more than one minute (1.2 to 1.4 minutes per trip). The average travel time values for work-to-home trips for both panel groups in October 1994 were also not significantly different than October 1992. Conversely, this same trip in May 1995 increased 1.1 minutes for the new panel members.

	Percent of Responses						
Perceived Change in Departure Time	New	Panel	Original Panel				
I I I I I I I I I I I I I I I I I I I	Oct. 94	May 95	Oct. 94	May 95			
Home-to-Work Trip: Leaving Earlier	31	26	22	25			
Leaving at the Same Time	54	62	64	59			
Leaving Later	15	12	14	16			
Work-to-Home Trip: Leaving Earlier	9	9	8	10			
Leaving at the Same Time	75	75	79	74			
Leaving Later	16	16	13	16			

Table 5.5 Perceived Changes in Departure Times

 Table 5.6 Average Travel Times To and From Work

Denal	Hon	ne-to-Work 7	Trips	Work-to-Home Trips			
Panel Group	Oct. 1992	Oct. 1994	May 1995	Oct. 1992	Oct. 1994	May 1995	
New Panelists	27.5 min	27.6 min	28.7 min	29.1 min	28.8 min	30.2 min	
Original Panelists	29.1 min	29.2 min	30.5 min	32.2 min	31.6 min	32.5 min	

Table 5.7 summarizes panelists' perceptions as to how their travel times to and from work changed since October 1992. Table 5.7 suggests that 51 to 57 percent of panelists in the October 1994 survey and 55 to 63 percent of panelists in the May 1995 survey felt that their travel times to and from work had not changed since October 1992. Relative to October 1992, 29 to 38 percent of the panelists in October 1994 believed travel times had increased. In May 1995, 30 to 36 percent of the panelists believed that their travel times increased relative to October 1992.

	Percent of Responses						
Perceived Changes in Travel Times To and From Work	New P	anel	Original Panel				
	October 1994	May 1995	October 1994	May 1995			
Home-to-Work Trip:							
Shorter Travel Time	11	8	14	10			
Same Travel Time	51	56	52	57			
Longer Travel Time	38	36	34	33			
Work-to-Home Trip: Shorter Travel Time	11	6	14	15			
Same Travel Time	55	63	57	55			
Longer Travel Time	34	31	29	30			

Table 5.7 Perceived Changes in Travel Times

Table 5.8 illustrates how the perceptions of motorists who believed they were traveling to and from work for a longer period of time compare to the actual changes in travel times they experienced relative to October 1992. The amount by which new panel members believed their travel times had increased since October 1992 was somewhat less than their actual travel time increases during that time period. In October 1994, the new panel group perceived travel time increases to and from work that were only one-half of the actual travel time increases that occurred during that time period. A similar result occurred in May 1995 as well. In other words, new panel members tended to underestimate the amount by which their travel times had increased.

The original panelists in May 1995 also perceived smaller travel time increases than the travel time increases that actually occurred during that period. The other original panel comparisons, however, showed a perception that the travel time increases were greater than the actual travel times reported.

Table 5.8 Perceived Versus Actual Travel Time Increases To and From Work: October 1992 to October 1994 and May 1995

		Home-to-V	Work Trips	3	Work-to-Home Trips				
Panel Group	Perc	erage eived se (min)	Average Actual Increase (min)		Average Perceived Increase (min)		Average Actual Increase (min)		
	Oct. 94	May 95	Oct. 94	May 95	Oct. 94	May 95	Oct. 94	May 95	
New Panelists	3.9	6.4	8.7	11.3	4.1	3.7	9.4	13.4	
Original Panelists	6.2	3.3	2.9	5.7	4.3	4.3	2.6	2.2	

Intermediate Stops to and from Work

Table 5.9 presents the average number of stops each panel group made on the way to and from work. In both surveys, neither the new nor the original panel members reported making stops with significantly more or less frequency during either the home-to-work or work-to-home trips. As expected, Table 5.9 also shows that panelists made more stops on their trips from work than to work.

		New Panel		(Driginal Pane	ł
	Oct. 92	Oct. 94	May 95	Oct. 92	Oct. 94	May 95
Home-to-Work: School or day care	0.53	0.41	0.49	0.43	0.60	0.48
Shopping	0.23	0.30	0.36	0.20	0.13	0.36
Social	0.35	0.28	0.22	0.20	0.09	0.27
Personal Business	<u>0.50</u>	<u>0.41</u>	<u>0.50</u>	<u>0.35</u>	<u>0.26</u>	<u>0.29</u>
TOTAL	1.61	1.40	1.57	1.18	1.08	1.40
Work-to-Home Trip: School or day care	0.37	0.32	0.47	0.22	0.36	0.32
Shopping	0.88	1.03	0.94	0.81	0.77	0.88
Social	0.83	0.97	0.89	0.41	0.52	0.74
Personal Business	<u>0.72</u>	<u>0.93</u>	<u>0.87</u>	<u>0.57</u>	<u>0.76</u>	<u>0.82</u>
TOTAL	2.80	3.25	3.17	2.01	2.41	2.76

Table 5.9 Intermediate Stops Made To and From Work

Choice of Travel Mode

Table 5.10 compares panelists' choices regarding travel modes used for work trips in October 1992 with the October 1994 and May 1995 survey results. Because the panelists were originally identified through a license plate survey of automobiles traveling in the corridor, these values do not necessarily reflect the corridor-wide mode choice distributions. However, this statistic does provide a means of monitoring changes in mode choice by these groups of drivers.

	New Panel			Original Panel			
	Oct. 92	Oct. 94	May 95	Oct. 92	Oct. 94	May 95	
Drive Alone	93%	92%	91%	91%	90%	86%	
Car pool	6%	6%	7%	5%	8%	10%	
Other	1%	1%	2%	5%	2%	4%	

Table 5.10 Work Trip Mode Choice Distributions

The data in Table 5.10 shows a slight shift away from single-occupant vehicles into car pools or other alternative travel modes. Relative to October 1992, there is a slight increase in car pool usage for the original panel members in May 1995.

Roadway Utilization

Tables 5.11 and 5.12 illustrate panel utilization of the various north/south roadways in the NCE corridor for trips to and from work. Results indicate that NCE usage was generally unaffected for both the new and original groups for both the home-to-work trips and work-to-home trips.

Traffic Information Sources

The May 1995 survey included an additional section designed to examine motorists' perceptions of the various traffic information sources available in the corridor. The response rate for this series of questions was somewhat small (47 responses). Without respect to information sources, the construction hotline was used by only four (8.5 percent) panelists out of the 47 that responded. In terms of information preference, 41 percent of those responding stated that radio was their preferred source of roadway and construction information.

	Ave	erage Trips/V	Veek	%	6 of Total Tr	ips
	Oct. 92	Oct. 94	May 95	Oct. 92	Oct. 94	May 95
New Panelists:						
NCE	1.8	1.5	1.9	35	32	35
Dallas N. Tollway	1.0	0.9	1.2	20	19	22
Skillman/Live Oak	0.6	0.5	0.6	12 11		11
Greenville/Ross	0.5	0.5	0.7	9	11	13
Abrams/Gaston	0.4	0.4	0.2	8	8	4
Hillcrest/Cole	0.4	0.5	0.4	8	11	8
Preston	<u>0.4</u>	<u>0.4</u>	<u>0.4</u>	<u>_8</u>	<u>_8</u>	<u>_7</u>
TOTAL	5.1	4.7	5.4	100 100		100
Original Panelists:						
NCE	2.3	2.0	2.1	45	43	44
Dallas N. Tollway	0.6	0.4	0.5	12	9	11
Skillman/Live Oak	0.4	0.3	0.5	7	6	11
Greenville/Ross	0.4	0.5	0.5	8 11		11
Abrams/Gaston	0.4	0.5	0.3	7	11	6
Hillcrest/Cole	0.5	0.4	0.5	11	9	11
Preston	<u>0.5</u>	<u>0.5</u>	<u>0.3</u>	<u>10</u>	<u>11</u>	<u>_6</u>
TOTAL	5.1	4.6	4.7	100	100	100

Table 5.11 Roadway Utilization: Home-to-Work Trips

	Ave	rage Trips/W	Veek	%	% of Total Trips				
	Oct. 92	Oct. 94	May 95	Oct. 92	Oct. 94	May 95			
New Panelists:									
NCE	1.7	1.5	1.5	36	33	32			
Dallas N. Tollway	0.9	0.9	1.1	19	20	22			
Skillman/Live Oak	0.5	0.3	0.4	10 7		8			
Greenville/Ross	0.4	0.5	0.5	9	11	10			
Abrams/Gaston	0.5	0.4	0.3	9	9	6			
Hillcrest/Cole	0.4	0.5	0.6	8	11	12			
Preston	<u>0.4</u>	<u>0.4</u>	<u>0.5</u>	<u>9</u> .	<u>9</u>	<u>10</u>			
TOTAL	4.8	4.5	4.9	100	100	100			
Original Panelists:									
NCE	2.2	2.2	2.2	45	40	49			
Dallas N. Tollway	0.8	0.5	0.6	17	11	13			
Skillman/Live Oak	0.4	0.2	0.5	8	8	11			
Greenville/Ross	0.3	0.4	0.5	6	11	11			
Abrams/Gaston	0.3	0.4	0.2	6	8	4			
Hillcrest/Cole	0.5	0.4	0.3	10	11	7			
Preston	<u>0.4</u>	<u>0.5</u>	<u>0.2</u>	_8	11	<u>5</u>			
TOTAL	4.9	4.6	4.5	100	100	100			

Table 5.12 Roadway Utilization: Work-to-Home Trips

Panelists were also asked to provide any comments or suggestions they might have on the methods used to provide daily NCE construction traffic information. In general the comments were distributed among the following categories: changeable message signs and other signing (57%), hotline (6%), newspaper (7%), radio (12%), television (3%), newsletter "Expressions" (1%), and other comments (14%).

OTHER COMMENTS AND SUGGESTIONS

Panel members were asked to provide any other comments, complaints, and suggestions they had concerning the ongoing construction activity on the NCE. Table 5.13 shows the general categories of the comments and suggestions received. The most frequent complaint made by panelists from both surveys was the congestion on NCE, followed by timing of traffic lights, and entrance/exit ramp accessibility.

	October	1994	May 1995		
Category	Total Received	Percent	Total Received	Percent	
Complaints about traffic conditions	45	38	18	17	
Compliments about construction in progress, traffic conditions, etc.	25	22	14	13	
Suggestions for improving travel conditions	4	3	8	7	
Other changes in travel behavior not captured by the survey	4	3	13	12	
Questions	5	4	7	6	
Miscellaneous Comments	36	30	49	45	
TOTAL	119	100	109	100	

Table 5.13 Panelists' General Comments and Suggestions

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6. SUMMARY

This chapter summarizes the results of the October 1994 and May 1995 traffic monitoring efforts. The study evaluated the traffic impacts of the construction project on traffic conditions and travel patterns throughout the corridor, based upon comparisons of May 1995 versus May 1990 data. This chapter also summarizes the results of the October 1994 and May 1995 automobile user panel surveys.

OCTOBER 1994 TRAFFIC CONDITIONS

The results indicate that the US-75 North Central Expressway construction project during October 1994 had a noticeable effect on southbound and northbound peak period and daily traffic conditions and travel patterns in the corridor near Mockingbird. The traffic impacts likely resulted from the Mockingbird overpass and frontage road reconstruction in the S-2 section of the construction project, which required the southbound lanes to be reduced from three to two lanes near Mockingbird. Further, the US-75 frontage road reconstruction between Loop 12 and Monticello may have contributed to the traffic impacts. A summary of the major findings of the October 1994 traffic study follows:

- Daily traffic volumes on US-75 North Central Expressway were an estimated 11 to 26 percent lower in October 1994 than would be expected in the absence of the construction project.
- The total north-south daily traffic volumes in the US-75 North Central Expressway corridor increased three to eight percent at the screen lines. These increases indicate that the construction project during October 1994 had no adverse effect on total corridor volumes. However, the total daily east-west traffic volumes crossing US-75 North Central Expressway decreased ten percent, suggesting that the construction project may have affected cross-street traffic.
- The southbound peak period and daily traffic patterns at the screen lines significantly changed in the corridor. In general, southbound traffic volumes decreased on US-75 North Central Expressway and increased on alternative routes such as DNT, Lemmon, Preston, Cole, Hillcrest, Ross, Greenville, Skillman, and Abrams. A substantial rise in southbound daily traffic volumes on Ross of 26 percent suggests

that the reversible lane system, which provided additional peak period capacity in the congested corridor, is still beneficial. Additionally, the 10 percent rise in southbound A.M. peak period traffic volumes on Live Oak suggests this reversible lane system is also beneficial.

- The 24-hour period northbound and southbound screen lines showed significant increases in volumes on selective alternative routes while correspondingly showing significant decreases in volumes on the US-75 mainlanes.
- Peak period, peak direction traffic on US-75 North Central Expressway consists of 93-94 percent passenger vehicles, 5-6 percent commercial trucks, and 1 percent other (bus and motorcycle). Of the passenger vehicles, 86 to 93 percent carried one person; 6 to 12 percent, two persons; and 1 to 2 percent, more than two persons. The peak direction average passenger vehicle occupancy ranged from 1.09 to 1.16. The majority of the automobile users on US-75 North Central Expressway continue to travel alone.
- The A.M. peak hour, peak direction (southbound) average travel times between the I-635 LBJ Freeway and the Dallas central business district were five minutes shorter on the US-75 North Central Expressway and three minutes longer on Skillman. Correspondingly, average travel speeds on US-75 increased from 45 km/h (28 mph) to 55 km/h (34 mph), and on Skillman, the speeds decreased from 51 km/h (32 mph) to 42 km/h (26 mph). In addition, the A.M. peak hour average travel times increased on Hillcrest, Abrams, and Garland from one to two minutes. The P.M. peak hour, peak direction (northbound) travel times on DNT increased three minutes and speeds decreased from 64 km/h (40 mph) to 56 km/h (35 mph). The P.M. peak hour, peak direction (northbound) travel times and speeds improved or remained constant on most other routes in the corridor.

MAY 1995 TRAFFIC CONDITIONS

The results indicate that the US-75 North Central Expressway construction project during May 1995 also had a noticeable effect on southbound and northbound peak period and daily traffic conditions and travel patterns throughout the US-75 corridor. The traffic impacts likely resulted from the Loop 12 interchange reconstruction and the Mockingbird overpass

reconstruction, which required the southbound lanes to be reduced from three to two lanes near Mockingbird. The US-75 frontage road reconstruction between Loop 12 and Monticello may have contributed to the traffic impacts as well. Further, the bridge closures of University and McCommas, in conjunction with the re-configuring of the Southwestern and Caruth Haven overpasses to one-way facilities, seemed to have diverted traffic to alternative routes within the US-75 corridor. A summary of the major findings of the May 1995 traffic study follows:

- Daily traffic volumes on US-75 North Central Expressway were an estimated 29 to 39 percent lower in May 1995 than would be expected in the absence of the construction project. This is a significantly greater reduction than was observed in October 1994.
- The total north-south daily traffic volumes in the US-75 North Central Expressway corridor increased two to three percent at the screen lines. These increases indicate that the construction project during May 1995 had no adverse effect on total corridor volumes. However, the total daily east-west traffic volumes crossing US-75 North Central Expressway decreased eight percent, suggesting that the construction project may have affected cross-street traffic.
- The northbound peak period and daily traffic patterns at the screen lines significantly changed in the corridor. In general, northbound traffic volumes decreased on US-75 North Central Expressway and increased on alternative routes such as DNT, Lemmon, Preston, Cole, Hillcrest, Ross, Greenville, Skillman, and Abrams. A substantial rise in northbound daily traffic volumes on Ross of 35 percent suggests that the reversible lane system, which provided additional peak period capacity in the congested corridor, is still beneficial. Additionally, the 35 percent rise in southbound daily traffic volumes on Live Oak suggests this reversible lane system is also beneficial. These increases are substantially greater than observed in October 1994 as well.
- The 24-hour period northbound and southbound screen lines showed significant increases in volumes on selective alternative routes while correspondingly showing significant decreases in volumes on the US-75 mainlanes.

- The total east-west daily traffic volumes in the US-75 corridor decreased by eight percent at the screen line. However, the closing of the University bridge, in conjunction with the re-directing of Southwestern and Caruth Haven to one-way facilities, caused westbound traffic to divert to Lovers which increased the total daily westbound traffic on that facility by approximately 60 percent.
- Peak period, peak direction traffic on US-75 North Central Expressway consists of 95-96 percent passenger vehicles, 3-4 percent commercial trucks, and 1 percent other (bus and motorcycle). Of the passenger vehicles, 85 to 93 percent carried one person; 6 to 13 percent, two persons; and 1 to 2 percent, more than two persons. The peak direction average passenger vehicle occupancy ranged from 1.08 to 1.20. The majority of the automobile users on US-75 North Central Expressway continue to travel alone.
- The A.M. peak hour, peak direction (southbound) average travel times between the I-635 LBJ Freeway and the Dallas central business district were three minutes longer on the US-75 North Central Expressway and one to two minutes shorter on Skillman and Abrams, respectively. Correspondingly, average travel speeds on US-75 decreased from 56 km/h (35 mph) to 49 km/h (30 mph) and on Skillman, the speeds increased from 46 km/h (28 mph) to 49 km/h (30 mph). In addition, the A.M. peak hour average travel times increased on Preston, Hillcrest, and Garland from one to two minutes. The P.M. peak hour, peak direction (northbound) travel times on US-75 North Central Expressway decreased five minutes and speeds increased from 39 km/h (24 mph) to 49 km/h (30 mph). Additionally, the P.M. peak hour average travel times on Skillman increased by four minutes. Correspondingly, the average travel speeds decreased from 42 km/h (26 mph) to 35 km/h (22 mph) on Skillman. The P.M. peak hour, peak direction (northbound) travel times and speeds improved or remained constant on most other routes in the corridor.

AUTOMOBILE USER PANEL SURVEYS

The results of the October 1994 and May 1995 surveys of automobile panelists indicate that NCE construction has had a small but detectable impact upon motorist travel patterns and driving conditions. The following is a list of the specific findings from the survey:

- The October 1994 survey showed no significant changes in total trip-making activity per week for the original panel group, whereas the total trip-making activity for the new panel group increased significantly by an average of 0.6 trips per week. However, the average weekly trip frequency on NCE decreased only slightly by both panel groups. This is consistent with the slight increase in total north/south corridor volumes and decrease in US-75 volumes that were documented in the traffic monitoring study.
- The May 1995 survey indicated that the total trip-making activity per week increased significantly for both panel groups by an average of 0.5 trips per week. Although no statistically significant change occurred in the average number of trips made per week on the NCE by the new panel group, the average weekly trip frequency on the NCE decreased by 0.5 trips per week for the original panel.
- Less than 50 percent of both panel groups in October 1994 and May 1995 felt that they were making fewer trips on the NCE than they had made in October 1992. The panelists from both surveys who felt they were making fewer trips on NCE actually did report significantly fewer trips on the NCE than in October 1992.
- In both surveys, the home-to-work median departure times were identical to that reported in October 1992 for both panel groups. Also, the work-to-home median departure times for the October 1994 survey were also fairly consistent to those reported in October 1992 for both panel groups.
- Overall, average travel times to and from work indicate no significant increase relative to October 1992. However, a significant proportion of the panel did believe that their travel times to and from work had increased since October 1992. However, many of these panelists appeared to underestimate the amount by which their travel times had increased. Conversely, the original panel members from the October 1994 survey appeared to overestimate the amount by which travel times had increased. These comparisons should be interpreted cautiously, as they represent a rather small sample of comments.
- No statistically significant changes occurred in the number of stops made to and from work between October 1992 and the October 1994 and May 1995 surveys. The

distribution of travel modes used for trips to and from work indicated a slight shift away from single-occupant vehicles into car pools or other alternative travel modes.

• The relative roadway utilization for work trips in the NCE corridor changed very little between the October 1992 survey and the two biannual surveys for both panel groups.

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OCTOBER 1994 SCREEN LINE TRAFFIC VOLUMES

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	1						Route							
Hour Ending	Harry Hines	DNT	Maple	Cedar Springs	Lemmon	Oak Lawn	Turtle Creek	McKinney	US-75	Ross	Live Oak	Gaston	Columbia	Total
1	43	240	54	167	188	126	67	109	958	100	58	68	99	2277
2	26	135	42	91	122	74	31	61	657	66	33	52	50	1440
3	28	108	26	85	107	62	19	47	541	52	24	37	52	1188
4	13	75	12	51	72	25	8	22	376	20	21	17	27	740
5	25	136	18	39	118	26	10	16	459	15	13	17	37	929
6	114	423	51	63	280	48	23	20	1294	46	27	40	99	2528
7	767	1881	158	177	786	161	61	100	4304	184	88	150	165	8979
8	1438	3430	259	364	1384	514	191	334	4357	469	241	341	255	13575
9	1123	3279	272	335	1237	743	333	412	4008	627	317	354	318	13357
10	489	2200	248	340	816	674	322	333	3529	538	301	261	354	10406
11	455	1965	281	348	840	737	379	371	2972	475	387	321	379	9909
. 12	568	2521	460	522	1329	1015	651	605	3292	687	688	491	526	13333
13	664	2444	422	597	1554	1174	847	738	3438	766	708	497	571	14421
14	657	2567	353	552	1297	1079	761	644	3045	658	540	461	510	13123
15	579	2705	347	520	1247	983	650	588	3343	635	546	506	639	13287
16	538	3295	378	565	1173	9 35	803	650	3946	772	688	637	934	15112
17	762	4834	490	821	1336	1053	981	932	4321	1371	1246	937	1316	20200
18	892	5514	438	823	1634	1371	1630	1646	4064	1938	1914	1230	1620	24715
19	385	4048	319	683	1340	1122	1013	1075	4274	1145	1015	674	825	17917
20	227	2207	211	578	1060	766	504	649	3812	599	430	397	429	11868
21	173	1335	181	512	848	584	331	484	3257	423	260	257	279	8944
22	179	1102	174	514	765	488	309	414	3069	350	232	247	251	8094
23	161	1005	147	447	624	387	259	372	2833	274	136	156	209	6990
24	82	557	93	364	408	245	145	254	2373	183	95	124	193	5116
24 Hr. Total	10383	48006	5428	9355	20586	14374	10129	10875	68522	12391	10010	8270	10137	238448

Table A.1. Oak Lawn/Lemmon/Peak Screen Line Average Traffic Volumes (October 1994): Northbound

	1						Route							1
Hour Ending	Harry Hines	DNT	Maple	Cedar Springs	Lemmon	Oak Lawn	Turtle Creek	Cole	US-75	Ross	Live Oak	Gaston	Columbia	Total
1	45	188	57	169	182	114	28	74	764	78	33	85	58	1871
2	28	104	49	125	111	58	15	47	625	43	22	60	27	1315
3	25	64	29	131	96	55	12	41	521	45	18	43	33	1113
4	11	81	12	81	57	29	7	19	332	22	17	32	32	712
5	22	101	27	41	58	28	7	26	419	21	35	49	51	880
6	47	384	53	78	127	52	34	68	1119	94	97	153	115	2421
7	185	2014	201	199	394	206	142	248	3483	380	588	652	485	9178
8	464	5344	434	580	1170	703	666	802	5220	1231	2154	1579	1292	21640
9	685	5930	437	707	1495	931	1328	1250	5331	1478	2254	1662	1253	24739
10	505	3535	282	522	987	719	616	607	4166	665	711	891	570	14778
11	479	2573	295	483	844	700	410	462	2748	556	451	613	436	11048
12	591	2661	384	528	1044	792	540	547	2765	539	526	561	476	11956
13	686	2625	495	699	1672	939	765	659	3494	747	748	704	622	14853
14	651	2890	426	707	1624	947	872	697	3166	707	703	691	586	14667
15	622	2823	347	595	1311	846	528	505	3070	601	533	658	517	12956
18	948	3053	386	643	1592	798	447	591	4330	569	428	556	515	14856
17	1451	3407	436	679	1684	735	426	522	4810	904	428	524	490	16497
18	1543	3733	404	708	1977	738	461	558	5041	1150	464	561	447	17802
19	849	3035	281	652	1525	778	411	531	3962	490	397	507	360	13576
20	314	1781	177	500	1060	661	310	449	3530	358	258	408	288	10092
21	183	1080	156	422	761	542	209	354	2678	282	181	318	223	7388
22	148	988	131	385	642	480	162	319	2616	245	145	227	180	6668
23	118	683	108	347	490	348	116	262	3007	202	106	203	160	6150
24	68	371	94	293	404	222	54	171	1759	134	66	162	140	3958
24 Hr. Totai	10487	49427	5699	10272	21305	12420	8582	9810	68954	11539	11361	11899	9355	241110

 Table A.2. Oak Lawn/Lemmon/Peak Screen Line Average Traffic Volumes (October 1994): Southbound
Hour														
Ending	DNT	Preston	Hillcrest	US-75	Greenville	Matilda	Skiliman	Abrams	Garland	Total				
1	224	37	17	1200	120	64	80 81		140	1963				
2	135	21	7	649	83	36	36	41	88	1095				
3	108	12	4	512	66	42	38	41	59	882				
4	79	10	2	306	14	12	20	24	52	519				
5	138	12	3	443	15	11	18	27	72	737				
6	347	24	9	1149	22	54	57	86	207	1954				
7	1602	89	78	3355	68	185	237	337	603	6573				
8	3076	442	316	3714	202	513	759	863	1013	10899				
9	3173	790	458	3122	253	579	828	1001	920	11128				
10	2326	666	320	3132	189	381	551	772	931	9268				
11	1974	664	319	3018	226	378	509	711	992	8790				
12	2368	741	344	3425	227	418	560	796	1167	10047				
13	2369	824	422	3598	270	499	643	860	1283	10769				
14	2487	744	406	3585	279	504	625	842	1186	10657				
15	2622	829	383	3395	252	481	635	921	1271	10789				
16	3071	834	422	3421	174	644	806	1044	1456	11873				
17	4287	915	512	3448	262	784	1053	1134	1657	14052				
18	5561	1134	667	3523	382	1087	1297	1456	1931	17038				
19	4496	981	570	3593	373	623	1080	1176	1572	14643				
20	2222	612	405	3552	279	587	677	807	1093	10234				
21	1386	327	207	3559	263	345	402	533	765	7788				
22	1183	318	178	3304	268	308	325	429	672	6984				
23	957	231	107	2738	245	203	240	296	522	5536				
24	591	99	49	1981	215	155	145	197	330	3781				
24 Hr. Total	46780	11335	8206	63720	4768	9093	11619	14474	19982	187977				

Table A.3. Mockingbird/Buckner Screen Line Average Traffic Volumes (October 1994): Northbound

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Hour					Route		- <u>50000</u>		<u></u>	I	
Ending	DNT	Preston	Hillcrest	US-75	Greenville	Matilda	Skiliman	Abrams	Garland	Totai	
1	162	38	15	864	134	21	75	87	162	1558	
2	82	26	5	472	67	13	40	42	77	824	
3	62	16	3	374	50	7	34	35	45	625	
4	44	14	2	286	18	3	16	17	47	447	
5	81	14	3	407	24	4	22	23	75	653	
6	334	40	10	1028	36	4	55	63	247	1817	
7	1771	148	63	3644	154	29	373	232	966	7380	
8	4746	636	276	5123	568	114	1570	802	1991	15825	
9	5250	1038	470	4915	609	169	1708	925	1855	16940	
10	3542	827	340	3215	381	138	714	683	1460	11299	
11	2419	691	300	2786	414	112	510	614	1311	9158	
12	2535	680	356	2831	534	143	533	677	1285	9573	
13	2482	762	371	2902	617	184	638	785	1399	10140	
14	2664	773	408	3071	595	191	590	731	1419	10443	
15	2634	716	394	2906	536	165	620	782	1410	10165	
16	2910	690	415	3121	589	192	661	864	1472	10914	
17	3263	726	432	4175	588	196	691	835	1475	12384	
18	3529	920	458	4582	609	235	787	1023	1554	13676	
19	2913	738	409	4274	617	260	815	1030	1488	12544	
20	1713	529	281	3244	582	208	602	747	1192	9076	
21	1011	407	173	2469	428	133	423	609	869	6522	
22	893	323	163	2410	388	129	366	493	668	5874	
23	647	188	90	1927	305	89	274	330	467	4318	
24	358	104	32	1496	247	42	153	185	302	2899	
24 Hr. Total	46045	11047	5468	62502	9069	2783	12290	12592	23258	185054	

Table A.4.	Mockingbird/Buckner	Screen Line A	verage Traffic	Volumes (October 1994):	Southbound

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Hour						T-4-1		
Ending	DNT	Preston	Hillcrest	US-75	Greenville	Skillman	Abrams	Total
1	264	27	40	936	245	238	128	1878
2	141	14	19	597	155	122	67	1115
3	104	11	18	515	143	124	80	975
4	77	8	6	280	41	68	45	525
5	125	13	9	312	36	47	35	576
6	302	44	28	922	58	78	76	1508
7	1532	137	122	2698	236	264	287	5276
8	3229	477	461	3132	878	694	688	9558
9	3291	589	684	3804	1202	753	903	11226
10	2296	591	554	2897	892	574	679	8283
11	1735	622	471	2671	838	553	570	7460
12	2101	799	522	3023	1036	678	648	8807
13	2005	867	590	3138	1321	831	720	9473
14	2272	840	588	3273	1087	774	733	9567
15	2483	825	610	3215	985	870	789	9777
16	3029	831	841	3510	1104	1092	879	11086
17	4419	801	809	4116	1382	1560	885	13972
18	5218	1027	1057	3937	1853	2255	1095	16439
19	4346	875	864	3853	1423	1784	1027	13951
20	2442	548	523	3109	1025	1083	776	9506
21	1462	379	381	2771	76 5	804	611	7172
22	1280	321	392	2591	887	795	524	6789
23	1075	192	179	2421	823	596	376	5484
24	755	80	90	1847	448	405	262	3686
24 Hr. Total	45979	10919	9656	58968	18663	17020	12886	174071

Table A.5. Loop 12 (Northwest Highway) Screen Line Average Traffic Volumes (October 1994): Northbound

Hour			77 000 - 72000 - 22000 - 22000 - 22	Route			n f ^{orde} en se andre en se de la companye de la compa	
Ending	DNT	Preston	Hillcrest	US-75	Greenville	Skillman	Abrams	Total
1	178	28	43	699	203 165		108	1421
2	84	12	13	405	115	82	58	769
3	67	10	13	334	92	69	42	627
4	4 52 5		5	220	31	59	23	395
5	100	17	12	272	33	60	31	524
6	481	54	36	830	72	195	88	1755
7	2385	233	208	2746	315	860	281	7007
8	5125	1145	627	2784	1654	2264	684	14462
9	4434	1642	1194	2530	1981	2303	795	14860
10	3737	958	955	2953	1106	1053	634	11395
11	2233	784	641	2853	798	801	587	8897
12	2324 938		733	3060	1044	804	720	9623
13	2335	989	792	3083	1321	881	819	10221
14	2338	1060	727	3101	1128	851	763	9966
15	2399	935	666	2937	967	849	877	9630
16	2654	1033	773	3330	1042	859	942	10633
17	3111	929	791	3680	1134	971	988	11602
18	3678	931	968	3452	1499	1135	1335	12998
19	2948	870	887	3382	1167	1139	1106	11479
20	1757	494	581	3029	963	873	787	8484
21	1107	294	348	2442	736	677	573	6174
22	991	222	334	2289	687	612	476	5611
23	718	118	164	1665	539	437	322	3964
24	381	62	61	1140	397	278	191	2530
24 Hr. Total	45613	13760	11791	53196	19003	18277	13187	174826

Table A.6. Loop 12 (Northwest Highway) Screen Line Average Traffic Volumes (October 1994): Southbound

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Γ		Route														1				
	Hour Ending	Hall	Lemmon	Haskell	Fitzhugh	Henderson	Monticello	McCommas	Mockingbird	Yale	University	Lovers	South western	Caruth Haven	Loop 12	Park Lane	Walnut	Royal	Forest	Total
ſ	1	30	68	26	263	131	17	2	162	63	65	113	23	38	272	132	97	88	82	1673
	2	23	42	23	173	66	5	1	79	26	26	55	10	16	129	63	56	34	35	863
	3	18	34	16	158	50	4	0	58	21	19	39	10	15	124	44	43	21	26	699
	4	7	16	17	85	22	2	0	40	7	11	22	5	12	60	39	34	20	22	419
	5	10	25	11	60	20	1	2	33	4	7	13	3	6	72	31	38	17	27	378
	6	13	41	45	82	33	5	1	83	19	12	25	10	24	88	64	91	51	65	750
	7	44	156	175	207	118	24	8	193	52	60	103	47	109	312	144	511	156	188	2607
	8	109	311	577	441	199	67	19	339	173	125	213	201	298	762	358	1071	795	484	6541
	9	126	378	703	570	298	95	26	434	252	180	303	319	358	980	548	1512	1350	740	9171
	10	118	342	319	545	330	78	24	534	217	171	337	274	270	901	570	1264	772	711	7778
	11	150	342	259	556	377	92	39	599	211	153	358	198	157	920	514	1160	516	734	7330
A	12	195	413	420	716	497	148	35	760	238	208	479	274	181	1149	667	1204	606	980	9170
1	13	202	470	413	818	600	178	39	819	336	302	544	295	233	1338	867	1242	690	1101	10488
	14	217	500	403	795	653	151	39	901	353	283	557	264	254	1399	792	1381	745	1 049	10737
	15	216	491	359	849	651	165	38	913	317	274	619	294	206	1505	773	1258	699	1049	10673
	16	208	552	511	957	711	209	51	933	361	326	639	338	217	1888	909	1256	921	1202	12187
	17	208	631	645	1106	851	330	66	1023	332	342	712	478	254	2732	932	1319	1541	1829	15332
L	18	339	701	787	1268	1129	551	137	1170	410	473	779	701	350	2731	1211	1492	2296	2571	19094
	19	257	563	472	1217	1018	485	57	1261	351	400	719	531	344	2308	1071	1497	1573	1646	15769
	20	153	370	240	922	822	194	21	1080	213	249	628	294	313	1578	849	1082	708	782	10498
	21	130	237	209	649	627	138	9	840	181	232	524	188	275	1069	874	645	423	482	7532
	22	107	242	159	618	601	117	10	867	220	317	582	179	241	1115	697	547	365	384	7368
	23	82	177	104	583	473	96	10	574	166	179	385	75	173	729	384	415	240	244	5069
	24	62	126	70	402	305	48	5	371	129	117	247	40	93	437	254	235	157	160	3258
	24 Hr. Total	3027	7224	6963	14041	10582	3202	639	14067	4650	4531	8973	5049	4430	24598	12587	19450	14778	16592	175383

Table A.7. US-75 Screen Line Average Traffic Volumes (October 1994): Eastbound

			an dia an						Ro	ute									
Hour Ending	Hall	Lemmon	Haskeli	Fitzhugh	Henderson	Monticello	McCommas	Mockingbird	Yale	University	Lovers	South western	Caruth Haven	Loop 12	Park Lane	Walnut	Royal	Forest	Total
1	37	82	50	158	77	17	2	112	57	52	38	44	9	173	141	135	65	83	1332
2	19	53	32	103	49	16	0	81	67	33	28	26	4	79	88	84	38	49	846
3	17	52	20	84	46	7	0	69	41	31	24	25	2	78	54	70	27	43	691
4	10	34	22	65	28	3	0	56	9	16	8	7	3	63	38	27	23	31	440
5	21	111	21	78	23	6	0	85	8	13	14	9	1	139	37	30	27	48	667
6	79	288	54	213	77	30	0	216	15	29	62	51	7	418	113	78	102	183	2014
7	281	797	212	649	272	169	7	844	60	105	229	274	21	1539	390	475	711	1270	8303
8	529	1140	495	1149	716	620	13	1540	242	484	683	880	72	2503	851	1277	2073	2754	18021
9	653	1138	468	1323	1054	850	19	1623	340	639	698	968	79	2636	822	1032	1713	2608	18662
10	350	682	345	787	599	405	10	1259	295	424	447	498	89	1587	575	912	773	1323	11359
11	262	583	292	838	445	212	10	970	288	320	327	298	81	1325	509	917	519	1015	9005
12	281	663	401	683	550	212	9	1002	307	275	345	350	171	1390	648	1090	601	1183	10160
13	268	718	412	723	576	323	13	1061	347	335	362	703	223	1388	748	1210	628	1298	11336
14	279	747	407	725	578	356	9	1061	383	355	342	586	240	1506	700	11 8 5	597	1240	11276
15	281	757	354	784	545	305	22	970	334	274	317	349	189	1364	663	1218	616	1109	10447
16	276	768	411	847	599	255	9	937	342	232	321	325	220	1318	689	1268	646	1102	10562
17	285	855	485	884	593	250	7	866	411	264	289	341	307	1609	703	1203	728	1114	11174
18	292	886	657	879	497	223	9	852	360	294	311	406	341	1843	797	1344	944	1256	11990
19	243	667	412	777	511	254	4	853	331	301	314	396	169	1402	672	1075	721	920	10021
20	189	478	225	602	485	219	7	851	204	236	253	311	104	1003	548	882	504	651	7749
21	152	435	181	483	359	141	0	630	148	159	199	228	92	708	399	682	350	460	5804
22	122	368	148	400	289	111	1	571	139	145	159	258	78	629	412	638	283	343	5089
23	104	284	125	388	229	93	1	414	117	117	123	161	50	484	333	428	208	255	3913
24	72	189	72	272	1 51	52	0	255	106	83	77	86	31	281	219	277	126	160	2507
24 Hr. Total	5103	12775	6276	13688	9350	5127	152	17177	4948	5216	5968	7574	2578	25263	11147	17515	13016	20495	183387

Table A.8. US-75 Screen Line Average Traffic Volumes (October 1994): Westbound

APPENDIX B

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SCREEN LINE TRAFFIC VOLUMES (OCTOBER STUDIES): PERCENTAGE OF TOTAL SCREEN LINE VOLUME BY ROUTE





b) Southbound

Figure B.1. Percent of Total Screen Line Volume by Route: Oak Lawn/Lemmon/Peak - A.M. Peak Period (October Studies)





b) Southbound

Figure B.2. Percent of Total Screen Line Volume by Route: Oak Lawn/Lemmon/Peak - P.M. Peak Period (October Studies)



Figure B.3. Percent of Total Screen Line Volume by Route: Oak Lawn/Lemmon/Peak - 24 Hour Period (October Studies)



a) Northbound



b) Southbound

Figure B.4. Percent of Total Screen Line Volume by Route: Mockingbird/Buckner - A.M. Peak Period (October Studies)



a) Northbound



Figure B.5. Percent of Total Screen Line Volume by Route: Mockingbird/Buckner - P.M. Peak Period (October Studies)



b) Southbound

Figure B.6. Percent of Total Screen Line Volume by Route: Mockingbird/Buckner - 24 Hour Period (October Studies)



a) Northbound



b) Southbound

Figure B.7. Percent of Total Screen Line Volume by Route: Loop 12 - A.M. Peak Period (October Studies)



a) Northbound



b) Southbound

Figure B.8. Percent of Total Screen Line Volume by Route: Loop 12 - P.M. Peak Period (October Studies)





b) Southbound

Figure B.9. Percent of Total Screen Line Volume by Route: Loop 12 - 24 Hour Period (October Studies)



b) Westbound

Figure B.10. Percent of Total Screen Line Volume by Route: US-75 - A.M. Peak Period (October Studies)



b) Westbound

Route

Figure B.11. Percent of Total Screen Line Volume by Route: US-75 - P.M. Peak Period (October Studies)



b) Westbound

Figure B.12. Percent of Total Screen Line Volume by Route: US-75 - 24 Hour Period (October Studies)

APPENDIX C

TRAFFIC VOLUME CHANGES (OCTOBER STUDIES)



a) Northbound



b) Southbound

Figure C.1. Change in Volume by Route as Compared to October 1990: Oak Lawn/Lemmon/Peak Screen Line - A.M. Peak Period



a) Northbound



b) Southbound

Figure C.2. Change in Volume by Route as Compared to October 1990: Oak Lawn/Lemmon/Peak Screen Line - P.M. Peak Period



a) Northbound



b) Southbound

Figure C.3. Change in Volume by Route as Compared to October 1990: Oak Lawn/Lemmon/Peak Screen Line - 24 Hour Period





b) Southbound

Figure C.4. Change in Volume by Route as Compared to October 1989: Mockingbird/Buckner Screen Line - A.M. Peak Period



a) Northbound



b) Southbound

Figure C.5. Change in Volume by Route as Compared to October 1989: Mockingbird/Buckner Screen Line - P.M. Peak Period



a) Northbound



b) Southbound

Figure C.6. Change in Volume by Route as Compared to October 1989: Mockingbird/Buckner Screen Line - 24 Hour Period



a) Northbound



b) Southbound

Figure C.7. Change in Volume by Route as Compared to October 1990: Loop 12 Screen Line - A.M. Peak Period



a) Northbound



b) Southbound

Figure C.8. Change in Volume by Route as Compared to October 1990: Loop 12 Screen Line - P.M. Peak Period



a) Northbound



b) Southbound

Figure C.9. Change in Volume by Route as Compared to October 1990: Loop 12 Screen Line - 24 Hour Period



b) Westbound

Figure C.10. Change in Volume by Route as Compared to October 1990: US-75 Screen Line - A.M. Peak Period



a) Eastbound



b) Westbound





a) Eastbound



b) Westbound



APPENDIX D

OCTOBER 1994 TRAVEL TIMES
Run Beg	zinning					Fravel Time (mii	1)			
		DNT	Preston	Hillcrest	US-75	US-75 Fr. Rd.	Greenville	Skillman	Abrams	Garland
	6:00	11.9 2	22.65	22.30	9.44	23.07	15.63	18,52	18.83	17.35
A.M.	6:30	11.82	24.03	23.23	9.98	24.05	17.98	17.90	21.68	18.65
Peak Period	7:00	12.07	24.47	23.67	12.04	22.75	16.65	20.20	25.85	19.48
renou	7:30	12.18	27.87	31.57	19.79	25.53	22.88	22.62	27.73	25.63
South- bound	8:00	17.52	29.42	31.47	21.22	29.27	24.38	24.22	25.48	22.73
Jouna	8:30	17.18	27.93	28.43	19.42	27.17	21.72	19.40	27.22	22.57
	9:00	10.83	25.68	23.75	16.12	19.52	19.75	22.65	18.88	17.08
	3:00	12.37	29.08	28.25	11.91	32.87	23.52	21.27	22.98	21.23
	3:30	12.92	33.27	31.18	12.88	27.60	22.05	27.02	30.47	23.25
P.M.	4:00	12.42	26.37	31.82	13.02	24.30	23.58	22.07	27.22	21.93
Peak Period	4:30	12.23	32.63	26.13	14.99	31.67	24.57	24.68	25.82	20.33
North	5:00	13.07	31.75	36.65	22.16	35.45	28,20	30.15	27.18	22.70
North- bound	5:30	19.63	NA	35.07	23.77	34.12	25.87	30.23	29.77	27.80
Ĩ	6:00	20.08	31.82	25.78	19.52	31.20	19.52	25.05	25.45	27.37
	6:30	12.08	25.77	26.00	15.99	31.07	21.80	24.30	22.70	25,87
	7:00	11.60	23.23	NA	14.53	27.57	23.60	22.15	20.30	17.82

Table D-1. Peak Period, Peak Direction Total Travel Time on North-South Routes (October 1994)

Run Be	ginning				······································	Travel Time (mi	n)			
		DNT	Preston	Hillcrest	US-75	US-75 Fr. Rd.	Greenville	Skillman	Abranis	Garland
	6:00	12.40	22.38	22.18	9.53	20.52	20.58	18.25	23.12	19.52
A.M.	6:30	13.35	23.85	23.95	13.03	21.07	17.13	17.70	19.72	19.20
Peak	7:00	12.13	25.93	26.15	16.67	23.80	24.03	21.92	25.52	21.35
Period	7:30	13.25	26.75	26.57	24.87	27.78	24.55	23.68	25.97	22.05
North-	8:00	13.57	26.07	28.30	21.83	30.10	23.95	21.08	29.05	23.82
bound	8:30	13.15	27.17	27.65	19.99	33.10	21.83	19.57	25.32	21.53
	9:00	11.92	25.53	22.55	12.36	27.03	21.37	16.13	23.88	18.62
	3:00	13.48	29.17	27.48	15.87	31.02	21.93	17.70	24.63	24.03
	3:30	12.83	32.78	29.67	16.74	29.30	21.93	18.58	24.03	21.35
P.M.	4:00	12.50	27.38	29.20	17.66	29.35	27.32	21.62	26.37	22.15
Peak	4:30	12.63	24.92	30.23	20.55	28.75	25.68	20.50	24.57	20.98
Period	5:00	12.07	31.82	28.05	17.44	27.72	25.33	20.30	23.40	20.97
South-	5:30	14.22	NA	28.80	16.06	28.40	25,43	20.30	26.53	22.07
bound	6:00	15.08	25.08	27.55	15.38	27.07	24.27	20.43	23.47	22,38
ľ	6:30	12.30	25.47	25.33	15.05	26.42	24.93	18.23	21.30	20.23
Ī	7:00	12.13	24.12	22.70	12.55	20.08	20.90	19.52	21.45	21.05

Table D-2. Peak Period, Off-Peak Direction Total Travel Time on North-South Routes (October 1994)

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					Travel T	ime (min)			
Run Beg	inning		East	bound			West	tbound	
		Lemmon	Loop 12	Mockingbird	Royal	Lemmon	Loop 12	Mockingbird	Royal
	6:00	10.12	10.03	9.82	16.07	13.53	8.30	11.70	12.47
A.M.	6:30	9.95	8.50	9.93	12.65	12.87	9.87	11.70	14.03
Peak Period	7:00	15.63	12.02	12.87	15.58	17.55	12.02	13.33	13.90
-	7:30	14,45	13.17	14.87	17.00	16.38	11.32	17.53	24.75
	8:00	14.25	11.57	12.50	16.32	22.40	12.52	20.58	20.98
	8:30	14.87	13.32	16.70	16.50	22.53	11.48	23.78	18.80
	9:00	14.17	12.60	11.33	15.72	15.78	11.22	14.13	14.13
	3:00	12.88	10.48	16.32	14.73	12.05	9.88	15.58	15.27
	3:30	16.07	12.30	16.05	15.28	13.13	12.35	18.88	15.53
P.M. Peak	4:00	10.83	9.65	23.43	17.23	13.58	10.02	16.62	15.20
Period	4:30	10.63	12.35	15.15	15.25	12.98	9.97	16.25	14.38
	5:00	16.83	13.88	14.90	18.08	14.30	11.02	19.73	16.15
	5:30	17.98	15.70	23.80	23.03	13.72	13.05	22.52	15.93
	6:00	9.63	15.20	23.08	22.35	13.50	10.42	15.17	15.25
	6:30	12.90	15.65	20.95	20.65	12.03	10.98	13.75	15.93
	7:00	10.58	12.25	16.03	15.55	11.85	10.60	16.00	12.75

Table D-3. Peak Period Total Travel Time on East-West Routes (October 1994)

Run Beginning	Travel Ti	ime (min)
	Northbound	Southbound
10:00 A.M.	11.72	14.39
10:30	9.54	14.16
11:00	9.49	14.57
11:30	9.73	14.82
12:00 P.M.	10.02	14.13
12:30	9.86	14.60
1:00	9.79	14.93
1:30	10.11	14.11

Table D-4. Off-Peak Period Total Travel Time on US-75 (October 1994)

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APPENDIX E

OCTOBER 1994 AVERAGE TRAVEL SPEEDS

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Run Be	zinning				T	ravel Speed (km	/h)			
		DNT	Preston	Hillcrest	<u>US-75</u>	US-75 Fr. Rd.	Greenville	Skillman	Abrams	Garland
	6:00	80	41	43	95	39	58	50	53	57
A.M.	6:30	81	39	41	90	37	50	52	46	53
Peak	7:00	79	38	40	74	39	54	46	39	51
Period	7:30	79	34	30	46	35	39	41	36	38
South-	8:00	55	32	30	43	30	37	38	39	43
bound	8:30	56	33	33	47	33	42	48	37	44
	9:00	88	36	40	62	46	46	41	53	58
	3:00	78	32	33	75	27	39	44	42	45
ſ	3:30	74	28	30	70	32	42	35	32	41
P.M.	4:00	77	35	30	69	37	39	42	36	44
Peak	4:30	79	29	36	61	28	37	38	37	47
Period	5:00	74	29	26	40	25	33	31	36	42
North-	5:30	49	NA	27	38	26	35	31	32	34
bound	6:00	48	29	36	46	29	47	37	38	35
ľ	6:30	79	36	36	56	29	42	38	43	37
	7:00	83	40	NA	62	32	39	42	48	54

Table E.1. Peak Period, Peak Direction Average Travel Speed on North-South Routes (October 1994)

Run Be	einning				Т	ravel Speed (km	/h)			
		DNT	Preston	Hillcrest	US-75	US-75 Fr. Rd.	Greenville	Skillman	Abrams	Garland
	6:00	77	42	42	94	43	45	51	42	49
A.M.	6:30	72	39	39	72	42	54	53	49	50
Peak	7:00	79	36	36	55	37	38	43	38	45
Period	7:30	72	35	35	36	32	37	39	37	43
North-	8:00	71	36	33	42	30	38	44	33	40
bound	8:30	73	34	34	45	27	42	48	38	44
	9:00	81	36	42	73	33	43	58	41	51
	3:00	71	32	35	72	29	41	53	41	41
	3:30	75	29	32	68	30	41	50	42	46
P.M.	4:00	77	34	32	59	30	33	43	38	45
Peak	4:30	76	38	31	53	31	35	45	41	47
Period	5:00	79	29	34	58	32	36	46	43	47
South-	5:30	67	NA	33	57	31	35	46	38	45
bound	6:00	63	37	34	59	33	37	46	43	44
	6:30	78	37	37	61	34	36	51	47	49
ĺ	7:00	79	39	42	73	44	43	48	47	47

Table E.2. Peak Period, Off-Peak Direction Average Travel Speed on North-South Routes (October 1994)

					Travel Sp	peed (km/h)			
Run Be	ginning		East	bound			Wes	tbound	·····
		Lemmon	Loop 12	Mockingbird	Royal	Lemmon	Loop 12	Mockingbird	Royal
	6:00	36	51	45	41	28	62	38	53
A.M.	6:30	37	61	44	52	29	52	38	47
Peak Period	7:00	23	43	34	42	21	43	33	48
	7:30	25	39	30	39	23	46	25	27
	8:00	26	45	35	40	17	41	21	32
	8:30	24	39	26	40	17	45	19	35
	9:00	26	41	39	42	24	46	31	47
	3:00	28	49	27	45	31	52	28	43
	3:30	23	42	28	43	29	42	23	43
P.M. Peak	4:00	34	53	19	38	28	52	27	44
Period	4:30	34	42	29	43	29	52	27	46
	5:00	22	37	30	36	26	47	22	41
	5:30	20	33	19	29	27	40	20	42
	6:00	38	34	19	30	28	50	29	43
	6:30	28	33	21	32	31	47	32	42
	7:00	34	42	28	42	32	49	28	52

Table E.3. Peak Period Average Travel Speed on East-West Routes (October 1994)

Run Beginning	Travel Sp	eed (km/h)
Kun beginning	Northbound	Southbound
10:00 A.M.	81	75
10:30	94	76
11:00	94	75
11:30	92	73
12:00 P.M.	89	76
12:30	91	75
1:00	91	73
1:30	89	76

Table E.4. Off-Peak Period Average Travel Speed on US-75 (October 1994)

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APPENDIX F

MAY 1995 SCREEN LINE TRAFFIC VOLUMES

Hour	Ţ						Route							
Ending	Harry Hines	DNT	Maple	Cedar Springs	Lemmon	Oak Lawn	Turtle Creek	McKinney	US-75	Ross	Live Oak	Gaston	Columbia	Total
1	39	248	75	185	192	123	52	95	949	101	45	87	91	2280
2	28	153	41	99	121	82	25	56	489	64	21	46	50	1275
3	15	126	33	88	98	59	21	44	446	40	17	45	39	1072
4	13	71	18	44	62	32	9	15	279	21	14	24	20	623
5	27	136	19	36	130	23	11	12	376	17	9	29	42	866
6	110	399	41	71	287	36	13	21	1113	36	29	43	84	2284
7	712	1786	125	177	836	148	43	90	2901	153	97	123	147	7338
8	1329	3412	231	356	1458	449	156	311	3428	785	574	269	243	13001
9	1135	3401	277	353	1295	706	276	373	4108	1144	720	270	304	14361
10	506	2459	284	335	904	684	324	310	2999	512	369	323	321	10329
11	440	2152	308	361	909	700	364	383	2617	511	358	395	345	9842
12	581	2769	458	534	1342	917	584	650	2731	784	590	579	511	13029
13	663	2720	513	615	1588	1084	724	815	2839	904	779	572	538	14354
14	647	2804	458	562	1344	1005	635	726	2772	788	574	519	457	13292
15	615	2985	399	561	1267	939	549	649	3117	798	487	594	538	13497
16	546	3382	431	565	1206	913	537	628	3438	833	570	743	747	14540
17	603	4865	525	632	1354	1016	740	851	3759	1410	870	964	1092	18482
18	788	5661	544	853	1591	1239	1408	1435	3876	2004	1271	1294	1475	23438
19	383	4066	381	709	1333	1030	985	1043	3750	1229	668	775	750	17081
20	220	2235	226	582	1028	674	516	632	3334	599	368	438	357	11209
21	150	1453	203	522	886	515	368	497	2877	433	261	349	270	8783
22	163	1235	203	557	802	457	305	404	2553	351	203	294	219	7747
23	134	1216	178	493	632	362	271	385	2380	291	123	200	208	68 73
24	76	655	122	372	402	240	129	226	1724	185	83	167	168	4547
24 Hr. Total	9922	50386	6070	9663	21067	13433	9045	10653	58855	13994	8901	9141	9013	230145

Table F.1. Oak Lawn/Lemmon/Peak Screen Line Average Traffic Volumes (May 1995): Northbound

	1				<u></u>		Route							T
Hour Ending	Harry Hines	DNT	Maple	Cedar Springs	Lemmon	Oak Lawn	Turtle Creek	Cole	US-75	Ross	Live Oak	Gaston	Columbia	Total
1	45	215	55	225	199	124	27	77	766	72	79	55	38	1977
2	27	124	59	167	124	60	18	52	467	44	44	26	25	1237
3	21	83	54	182	98	67	13	39	437	36	38	26	18	1110
4	15	53	17	110	58	30	9	14	292	23	28	27	20	896
5	19	93	19	53	68	27	10	17	399	25	37	29	42	838
6	43	357	46	84	135	65	31	65	1051	112	114	122	79	2304
7	218	2073	160	231	439	216	137	253	2856	398	547	497	381	8403
8	490	4690	359	629	1219	741	735	728	3966	1068	1920	1101	965	18611
9	705	5510	426	770	1516	996	1376	1118	4298	1507	2066	1252	969	22510
10	602	4287	366	693	1085	744	757	614	3655	865	836	646	410	15559
11	528	2588	317	546	984	677	510	428	2887	621	600	528	300	11495
12	614	2591	366	692	1144	793	611	564	2962	838	676	466	326	12442
13	734	2584	491	890	1635	841	867	669	3085	819	889	603	453	14540
14	721	2967	484	905	1610	947	929	689	3322	811	612	581	418	15196
15	687	2851	442	786	1417	898	533	505	3618	850	693	515	355	13951
16	935	3023	396	819	1695	830	485	523	3784	625	638	453	363	14570
17	1376	3425	438	902	1884	825	469	545	3895	684	1088	430	358	16312
18	1492	3933	473	1001	2073	786	569	539	4486	660	1119	428	311	17850
19	660	3372	337	884	1586	845	509	504	3541	538	752	413	263	14183
20	316	1915	213	676	1047	708	373	397	2995	388	431	290	217	9962
21	174	1137	148	574	856	539	259	361	2213	293	309	243	168	7272
22	140	1054	148	554	897	518	179	302	2049	248	212	191	152	8444
23	121	769	145	494	532	352	129	250	1810	199	200	151	107	5258
24	95	434	93	360	448	223	79	171	1336	130	120	109	85	3683
24 Hr. Total	10778	50105	6048	13206	22526	12850	9615	9422	60150	11454	14246	9184	6820	236403

Table F.2. Oak Lawn/Lemmon/Peak Screen Line Average Traffic Volumes (May 1995): Southbound

Hour					Route		11114			+
Ending	DNT	Preston	Hillcrest	US-75	Greenville	Matilda	Skillman	Abrams	Garland	Total
1	288	42	22	1277	200	101	64	93	152	2259
2	165	25	12	799	142	54	55	56	97	1405
3	130	19	6	678	107	42	46	48	80	1155
4	76	13	3	398	23	17	19	24	52	625
5	132	15	3	437	26	14	16	32	79	758
ð	347	32	12	1198	32	51	59	106	219	2055
7	1667	116	67	3629	140	186	258	341	609	7011
8	3042	345	260	4128	290	563	715	698	1116	11357
9	3090	520	382	3795	342	591	779	953	961	11412
10	2302	493	315	3087	302	383	535	703	902	9022
11	2050	478	338	2783	340	318	379	688	1007	6381
12	2614	606	404	2960	484	414	584	757	1194	9998
13	2585	636	401	3052	562	476	682	789	1385	10547
14	2639	682	430	3045	598	451	620	775	1295	10533
15	2815	696	407	3351	510	434	654	795	1389	11051
16	3185	715	386	4297	495	476	754	960	1488	12756
17	4297	701	460	4871	549	687	933	1018	1828	14940
18	4980	687	616	4198	572	1109	1335	1210	1916	16624
19	3971	590	483	4455	554	755	971	1032	1550	14362
20	2202	471	346	4029	583	498	623	737	1174	10665
21	1394	370	248	3553	522	337	484	606	900	6394
22	1312	311	194	3616	467	295	346	441	788	7773
23	1309	206	131	3100	430	212	265	365	576	6597
24	612	113	74	2054	361	141	142	204	349	4049
24 Hr. Total	47203	8876	6001	68590	8612	8604	11319	13631	20889	193725

Table F.3. Mockingbird/Buckner Screen Line Average Traffic Volumes (May 1995): Northbound

Hour					Route					Tetal
Ending	DNT	Preston	Hillcrest	US-75	Greenville	Matilda	Skillman	Abrams	Garland	Total
1	216	44	14	941	169	33	85	102	158	1762
2	95	18	5	549	103	16	45	49	87	968
3	66	12	4	455	84	15	33	34	60	762
4	43	10	3	322	24	5	22	29	58	516
5	97	11	2	425	26	4	21	27	73	687
6	342	32	11	1149	40	8	68	65	248	1963
7	1945	142	71	3684	171	35	381	233	916	7578
8	4897	593	333	4919	649	118	1554	788	1870	15719
9	5033	1003	509	4617	753	143	1596	862	1686	16202
10	4067	791	375	3864	532	103	653	671	1248	12303
11	2501	720	356	3223	498	97	490	600	1158	9642
12	2598	837	389	3276	578	127	540	665	1273	10283
13	2576	870	449	3459	646	174	607	769	1345	10896
14	2880	922	449	3746	580	134	579	747	1342	11379
15	2533	816	387	3724	508	129	604	774	1420	10895
16	2865	793	426	3716	490	151	614	670	1507	11431
17	3298	755	415	4124	461	165	661	869	1522	12290
18	3705	859	446	4210	514	212	609	1062	1616	13433
19	3235	759	429	3988	605	224	806	1083	1658	12787
20	1967	547	301	3444	575	172	592	797	1281	9676
21	1166	423	217	2904	460	158	443	633	1103	7525
22	1145	345	179	2702	390	160	399	551	893	6762
23	800	187	98	2311	386	105	306	330	531	5054
24	451	88	35	1573	277	60	160	196	304	3144
24 Hr. Total	48519	11576	5902	67325	9540	2544	- 12085	12767	23355	193633

Table F.4. Mockingbird/Buckner Screen Line Average Traffic Volumes (May 1995): Southbound

Hour	Hour Route											
Ending	DNT	Preston	Hillcrest	US-75	Greenville	Skillman	Abrams	Total				
1	286	35	33	1076	344	247	128	2149				
2	158	20	20	686	233	136	76	1309				
3	104	14	15	651	209	149	65	1208				
4	227	8	7	295	78	76	41	733				
5	788	15	6	354	52	48	31	1293				
6	798	35	24	995	74	86	76	2087				
7	2582	150	132	3059	297	270	320	6810				
8 ·	3700	442	442	3381	1108	712	719	10502				
9	3581	610	578	3214	1338	719	847	10887				
10	2413	649	582	1905	982	551	637	7720				
11	2099	691	564	1876	1091	574	638	7535				
12	2431	815	634	1992	1406	687	712	8677				
13	2526	877	693	2558	1762	802	784	10001				
14	2776	903	693	2845	1620	852	818	10507				
15	2871	682	675	2840	1468	628	819	10383				
16	3431	837	762	3234	1448	1088	889	11686				
17	4574	820	876	3452	1596	1454	984	13757				
18	5060	980	1144	3557	2004	2114	1087	15925				
19	4221	830	939	3242	1690	1672	1048	13842				
20	2646	557	528	3018	1133	1082	633	9794				
21	1605	436	379	2823	932	859	705	7539				
22	1515	360	363	2653	912	780	628	7209				
23	1506	224	242	2495	701	563	437	8167				
24	653	89	89	1871	547	391	252	3893				
24 Hr. Total	52749	11279	10418	53654	23025	16740	13552	181416				

Table F.5. Loop 12 (Northwest Highway) Screen Line Average Traffic Volumes (May 1995): Northbound

Hour	Hour Route										
Ending	DNT	Preston	Hillcrest	US-75	Greenville	Skillman	Abrams	Totał			
1	223	32	39	762	257	154	117	1583			
2	121	17	14	403	140	88	57	839			
3	76	7	16	356	101	81	48	686			
4	58	14	11	252	39	57	28	458			
5	111	8	16	338	25	59	29	584			
6	514	48	36	933	76	187	83	1875			
7	2582	247	225	2930	412	879	315	7591			
8	5791	1031	901	2725	1828	2308	731	15316			
9	5612	1487	1099	2354	1661	2141	776	15129			
10	3380	977	787	1981	1032	992	863	9792			
11	2589	893	688	1711	976	803	684	8344			
12	2670	943	790	1476	1257	831	769	8738			
13	2630	984	828	1540	1609	915	850	9356			
14	2795	1028	821	1762	1465	917	824	9612			
15	2620	953	794	1848	1317	866	899	9496			
16	3222	984	908	2371	1385	878	904	10852			
17	3691	939	931	3245	1448	967	1034	12255			
18	4274	921	1117	3530	1882	1221	1282	14226			
19	3289	894	1007	3406	1510	1161	1167	12434			
20	1830	518	648	3006	1111	947	861	8921			
21	1295	354	409	2766	919	745	632	7119			
22	1124	310	327	2802	839	692	531	6625			
23	876	172	191	2278	664	467	359	5007			
24	448	85	84	1478	486	311	201	3092			
24 Hr. Total	52017	13845	12688	46231	22441	18868	13842	179731			

Table F.6. Loop 12	(Northwest Highway	A) Screen Line Average	ze Traffic Volumes	(May 1995): Southbound

Hour									Rou	te .									Γ
Ending	Hall	Lemmon	Haskel	Filzhugh	Henderson .	Monticello	McCommas	Mockingbird	Yale	University	Lovers	South western	Caruth Haven	Loop 12	Park Lane	Wainut	Royal	Forest	Totai
1	32	23	99	258	132	17		224	38		142	76		261	206	126	93	79	1806
2	27	6	66	186	64	10		141	13		77	28		181	100	66	58	54	1080
3	14	10	57	167	49	4		168	10		48	30		137	59	53	37	27	870
4	7	6	32	82	21	3		179	4		26	17		70	46	44	19	30	584
5	9	7	26	56	24	1		174	8		23	13		52	38	42	19	35	524
6	17	15	80	78	34	3		210	14		45	39		111	68	115	63	72	963
7	64	77	323	236	106	16		329	65		182	149		363	283	586	250	234	3264
8	95	170	684	412	233	74		522	186		399	587		835	788	1503	1007	631	8123
9	116	221	621	485	319	93		592	329		532	706		1007	859	1841	1371	914	10005
10	123	178	460	577	366	112		726	205		521	570		1038	722	1465	837	824	8723
11	148	166	463	607	380	121		756	202		526	564		989	829	1308	706	913	8678
12	176	178	514	753	483	183		985	264		802	656		1259	984	1602	828	1238	10707
13	209	236	704	867	606	206		1037	306		687	797		1592	1256	1597	930	1407	12439
14	198	226	720	853	609	168		1085	293		739	801		1531	1260	1831	963	1270	12544
15	206	219	618	939	570	197		1083	293		702	735		1722	1131	1712	976	1280	12384
16	210	241	650	1075	637	233		1164	275		762	720		1931	1195	1715	1280	1592	13678
17	228	280	720	1323	825	353		1298	355		840	742		2375	1222	1713	1889	2298	16463
16	328	413	960	1594	1113	716		1525	376		960	1062		2794	1485	2027	2891	3137	21382
19	220	270	650	1213	877	414		1391	293		945	979		2511	1377	2052	2026	2088	17306
20	153	142	443	841	670	229		1088	198		764	645		1708	1031	1138	837	889	10779
21	135	105	342	697	588	148		1009	153		617	500		1438	875	756	615	625	8604
22	101	86	297	841	533	121		1018	156		625	445		1348	902	678	519	458	7928
23	74	53	237	556	462	79		760	145		484	313		843	509	487	354	321	5677
24	59	47	179	426	291	52		617	62		312	163		592	363	291	225	194	3874
24 Hr. Total	2949	3373	9947	14922	9993	3552	0	18081	4238	0	11562	11340	0	26688	17590	24748	18792	20610	198384

Table F.7.	US-75 Screen	Line Average	Traffic Volume	s (May	y 1995): Eastbound

									Rou		<u>ii — 11111 (i — 111</u>								1
Hour Ending	Hall	Lemmon	Haskel	Filzhugh	Henderson	Monticello	McCommas	Mockingbird	Yale	University	Lovers	South	Caruth Haven	Loop 12	Park Lane	Walnut	Royal	Forest	Total
1	39	92	33	157	89	26		170	54		200	western	31	181	102	132	68		1464
								170						107		75		67	894
2	29 17	45	23 18	91 91	60 68	11 12			36		140		28 18		61 43	- 75 - 68	36 26	52 40	741
4	13	39 33	10	82	32	5		60 60	31 11		46		14	81 75	31	28	20	36	484
5	21	98	4	69	25	8		79	16		52		14	118	34	32	27	96	692
6	80	225	42	184	96	26		237	30		147		48	400	90	86	101	179	1972
7	263	628	173	533	326	151		948	129		680		191	1634	397	451	628	1156	8289
8	480	1008	353	885	927	644		1851	549		1775		789	3013	890	1087	1807	2652	18710
9	547	969	422	993	1053	756		1633	687		1972		812	2710	859	911	1364	2361	18227
10	321	602	268	712	617	312		1287	500		1260		321	1612	565	759	654	1119	10909
11	277	544	260	639	477	242		1195	415		1052		282	1300	566	802	523	954	9528
12	280	628	394	682	566	245		1125	468		1226		366	1339	847	962	607	1109	10663
13	282	699	373	742	854	335		1204	541		1455		395	1497	777	995	638	1307	11893
14	295	690	341	743	599	323		1259	525		1433		347	1413	779	853	634	1271	11507
15	265	684	340	727	593	269		1149	468		1322		357	1322	754	841	646	1112	10851
16	272	672	354	757	811	253		1100	492		1356		387	1340	693	883	837	1140	10947
17	271	683	463	745	598	232		977	551		1335		451	1398	890	971	720	1138	11424
16	301	669	578	779	555	262		921	527		1563		553	1608	960	1101	873	1300	12550
19	244	501	358	666	534	219		1023	357		1438		387	1381	658	879	751	954	10350
20	176	408	204	509	498	179		1058	244		1030		272	1127	572	707	526	767	8276
21	165	363	174	421	397	127		719	182		747		226	922	402	551	397	578	6370
22	126	319	123	367	336	89		623	158		704		221	659	366	509	337	505	5444
23	117	281	112	321	258	69		457	123		563		148	567	284	377	250	330	4259
24	73	174	73	237	175	42		311	80		352		87	349	179	237	118	220	2708
24 Hr. Tolai	4957	11055	5492	12110	10142	4836	o	19768	7176	0	21964	0	8743	26151	11598	14297	12397	20465	189150

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Table F.8. US-75 Screen Line Average Traffic Volume (May 1995): Westbound

APPENDIX G

SCREEN LINE TRAFFIC VOLUMES (MAY STUDIES): PERCENTAGE OF TOTAL SCREEN LINE VOLUME BY ROUTE



a) Northbound



Figure G.1. Percent of Total Screen Line Volume by Route: Oak Lawn/Lemmon/Peak - A.M. Peak Period (May Studies)



a) Northbound



b) Southbound

Figure G.2. Percent of Total Screen Line Volume by Route: Oak Lawn/Lemmon/Peak - P.M. Peak Period (May Studies)



a) Northbound



Figure G.3. Percent of Total Screen Line Volume by Route: Oak Lawn/Lemmon/Peak - 24 Hour Period (May Studies)



a) Northbound



b) Southbound





a) Northbound



b) Southbound

Figure G.5. Percent of Total Screen Line Volume by Route: Mockingbird/Buckner - P.M. Peak Period (May Studies)



a) Northbound



b) Southbound

Figure G.6. Percent of Total Screen Line Volume by Route: Mockingbird/Buckner - 24 Hour Period (May Studies)



a) Northbound



b) Southbound

Figure G.7. Percent of Total Screen Line Volume by Route: Loop 12 - A.M. Peak Period (May Studies)



a) Northbound



b) Southbound





a) Northbound



b) Southbound

Figure G.9. Percent of Total Screen Line Volume by Route: Loop 12 - 24 Hour Period (May Studies)



a) Eastbound



Figure G.10. Percent of Total Screen Line Volume by Route: US-75 - A.M. Peak Period (May Studies)



a) Eastbound



Figure G.11. Percent of Total Screen Line Volume by Route: US-75 - P.M. Peak Period (May Studies)



a) Eastbound



Figure G.12. Percent of Total Screen Line Volume by Route: US-75 - 24 Hour Period (May Studies)

APPENDIX H

TRAFFIC VOLUME CHANGES (MAY STUDIES)


a) Northbound



b) Southbound

Figure H.1. Change in Volume by Route as Compared to May 1990: Oak Lawn/Lemmon/Peak Screen Line - A.M. Peak Period



a) Northbound



b) Southbound

Figure H.2. Change in Volume by Route as Compared to May 1990: Oak Lawn/Lemmon/Peak Screen Line - P.M. Peak Period



a) Northbound



b) Southbound

Figure H.3. Change in Volume by Route as Compared to May 1990: Oak Lawn/Lemmon/Peak Screen Line - 24 Hour Period



a) Northbound



b) Southbound





a) Northbound



b) Southbound

Figure H.5. Change in Volume by Route as Compared to May 1990: Mockingbird/Buckner Screen Line - P.M. Peak Period



a) Northbound



b) Southbound

Figure H.6. Change in Volume by Route as Compared to May 1990: Mockingbird/Buckner Screen Line - 24 Hour Period



a) Northbound



b) Southbound

Figure H.7. Change in Volume by Route as Compared to May 1990: Loop 12 Screen Line - A.M. Peak Period



a) Northbound



b) Southbound

Figure H.8. Change in Volume by Route as Compared to May 1990: Loop 12 Screen Line - P.M. Peak Period



a) Northbound



b) Southbound

Figure H.9. Change in Volume by Route as Compared to May 1990: Loop 12 Screen Line - 24 Hour Period



a) Eastbound



b) Westbound

Figure H.10. Change in Volume by Route as Compared to May 1990: US-75 Screen Line - A.M. Peak Period



a) Eastbound



b) Westbound

Figure H.11. Change in Volume by Route as Compared to May 1990: US-75 Screen Line - P.M. Peak Period



a) Eastbound



b) Westbound

Figure H.12. Change in Volume by Route as Compared to May 1990: US-75 Screen Line - 24 Hour Period

APPENDIX I

MAY 1995 TRAVEL TIMES

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Run Beginning						Fravel Time (min	າ)			
	gunning -	DNT	Preston	Hillcrest	US-75	US-75 Fr. Rd.	Greenville	Skillman	Abrams	Garland
	6:00	10.80	21.47	22.27	9.28	20.97	19.78	17.58	20.20	17.58
A.M.	6:30	10.20	23.73	20.97	9.63	21.52	19.93	17.45	19.08	17.97
Peak	7:00	11.33	25.98	29.45	13.19	24.32	21.00	16.00	22.53	20.05
Period	7:30	14.30	26.78	24.13	22.57	29.92	23.70	21.68	22.80	22.63
South-	8:00	19.92	28.17	31.78	23.37	35.35	24.48	20.13	25.02	23.62
bound	8:30	21.75	32.88	28.93	21.82	33.30	24.92	16.95	22.27	19.07
	9:00	15.15	25.57	23.28	18.07	25.52	20.87	20.60	19.38	18.28
	3:00	11.93	28.25	27.17	10.14	22.72	22.28	18.97	23.75	20.75
P.M.	3:30	12.68	31.15	32.67	10.05	24.60	23.30	21.63	22.67	19.97
Peak	4:00	11.27	24.78	28.37	11.15	25.87	18.17	22.62	24.08	20.38
Period	4:30	12.37	26.38	27.25	15.43	24.03	23.20	20.07	23.42	22.37
	5:00	12.08	31.23	36.75	18.75	30.68	27.32	28.12	24.67	21.30
North-	5:30	17.73	33.82	29.55	20.26	28.40	24.15	27.53	27.37	22.92
bound	6:00	15.42	28.68	28.12	17.08	26.00	21.13	23.65	24.22	21.03
	6:30	12.07	22.17	24.52	12.80	22.57	23.30	18.97	22.33	21.63
	7:00	10.28	23.30	24.33	12.88	23.13	23.83	22.40	20.53	18.23

Table I-1. Peak Period, Peak Direction Total Travel Time on North-South Routes (May 1995)

Due De					-	Fravel Time (mir	າ)			
Kun Be	Run Beginning		Preston	Hillcrest	US-75	US-75 Fr. Rd.	Greenville	Skillman	Abrams	Garland
	6:00	12.20	20.23	24.13	9.33	18.40	19.00	17.53	19.38	18.65
A.M.	6:30	12.45	22.37	22.43	10.80	22.82	20.30	17.62	17.87	20.18
Peak	7:00	12.22	24.85	25.78	11.36	22.15	20.77	18.33	23.08	20.63
Period	7:30	15.70	25.90	30.03	15.44	26.83	23.22	23.92	24.05	19.67
North-	8:00	17.42	24.72	30.45	16.46	26.60	23.47	21.12	24.05	20.52
bound	8:30	13.98	26.63	31.53	14.05	25.77	25.52	17.83	22.87	20.23
	9:00	12.58	24.97	22.08	9.98	19.40	23.47	18.53	20.07	18.45
	3:00	11.50	29.58	26.17	10.31	22.08	21.55	18.80	21.65	17.90
	3:30	11.30	30.15	31.53	11.77	23.17	20.57	22.12	24.57	19.68
P.M.	4:00	12.08	25 .03	30.73	12.78	23.27	24.55	22.15	24.58	22.32
Peak	4:30	11.97	24.85	25.92	12.86	21.97	24.27	21.35	23.68	24.98
Period	5:00	12.95	30.43	28.68	15.66	25.98	31.33	19.48	22.22	21.40
South-	5:30	14.22	27.40	30.73	18.51	28.92	28.23	24.03	24.58	25.68
bound	6:00	12.93	24.90	27.72	16.33	25.05	24.92	20.48	22.80	20.50
	6:30	12.15	24.50	21.95	13.60	25.90	24.80	20.05	18.88	21.98
	7:00	11.70	22.98	24.85	11.82	20.77	21.78	19.68	21.67	19.15

 Table I-2. Peak Period, Off-Peak Direction Total Travel Time on North-South Routes (May 1995)

					Travel T	`ime (min)			
Run Be	ginning		East	bound			West	bound	
		Lemmon	Loop 12	Mockingbird	Royal	Lemmon	Loop 12	Mockingbird	Royal
	6:00	11.08	8.63	11.92	12.23	11.12	9.38	12.52	13.15
A.M.	6:30	11.80	9.18	11.45	15.32	10.07	8.82	11.05	13.87
Peak Period	7:00	11.02	14.08	11.10	15.23	9.65	14.23	11.87	14.95
	7:30	12.60	12.57	13.87	16.32	11.97	17.20	19.53	18.23
	8:00	12.48	14.10	17.72	15.48	12.27	17.27	17.98	16.75
	8:30	12.00	14.03	13.30	16.50	11.00	10.62	15.42	13.67
	9:00	10.95	11.57	12.93	14.78	13.12	10.62	14.28	15.53
	3:00	12.42	10.42	13.60	16.27	10.20	10.48	12.43	14.33
P.M.	3:30	11.67	11.85	15.80	18.65	12.28	9.90	15.42	12.43
Peak	4:00	12.58	9.97	14.92	16.63	10.72	8.53	19.00	16.20
Period	4:30	12.10	12.02	17.20	16.03	13.80	10.62	16.55	11.67
	5:00	12.47	12.80	17.18	19.12	13.73	13.25	17.70	17.57
	5:30	15.73	20.92	25.62	21.68	14.90	11.73	24.73	16.10
	6:00	10.93	19.33	17.10	18.95	13.63	10.73	22.20	14.25
	6:30	12.42	13.75	16.83	16.35	11.22	11.53	14.23	13.23
	7:00	10.83	9.55	23.92	11.42	11.62	7.62	12.50	14.15

Table I-3. Peak Period Total Travel Time on East-West Routes (May 1995)

Dup Paginning	Travel Time (min)					
Run Beginning	Northbound	Southbound				
10:00 A.M.	9.92	15.04				
10:30	9.31	15.11				
11:00	9.98	15.30				
11:30	10.24	17.04				
12:00 P.M.	10.14	17.98				
12:30	9.64	17.34				
1:00	9.91	18.10				
1:30	9.78	15.08				

Table I-4. Off-Peak Period Total Travel Time on US-75 (May 1995)

APPENDIX J

MAY 1995 AVERAGE TRAVEL SPEEDS

Run Beginning					T	ravel Speed (km/	/h)			
	ginning	DNT	Preston	Hillcrest	US-75	US-75 Fr. Rd.	Greenville	Skillman	Abrams	Garland
	6:00	89	44	43	97	42	46	53	49	56
A.M.	6:30	94	39	45	93	41	45	53	52	55
Peak	7:00	84	36	32	69	37	43	58	44	49
Period	7:30	67	35	39	40	30	38	43	44	44
South-	8:00	48	33	30	39	25	37	46	40	42
bound	8:30	44	28	33	41	27	36	55	45	52
	9:00	63	37	41	51	35	43	45	51	54
	3:00	80	33	35	88	39	41	49	41	46
	3:30	76	30	29	89	36	39	43	43	48
P.M.	4:00	85	38	33	81	34	51	41	40	47
Peak	4:30	78	35	34	64	37	40	46	41	43
Period	5:00	79	30	26	49	29	34	33	39	45
North-	5:30	54	28	32	45	31	38	34	35	42
bound	6:00	62	32	33	53	34	43	39	40	46
	6:30	80	42	38	70	39	39	49	43	44
	7:00	93	40	39	74	38	39	42	47	53

 Table J.1. Peak Period, Peak Direction Average Travel Speed on North-South Routes (May 1995)

Run Be	ainnina				T	ravel Speed (km	/h)			
	giinning	DNT	Preston	Hillcrest	US-75	US-75 Fr. Rd.	Greenville	Skillman	Abrams	Garland
	6:00	79	46	39	96	48	48	53	50	51
A.M.	6:30	77	42	42	83	39	45	53	54	47
Peak Period	7:00	79	38	36	80	40	44	51	42	46
	7:30	61	36	31	61	33	40	39	40	49
North-	8:00	55	38	31	60	33	39	44	40	47
bound	8:30	69	35	30	66	35	36	52	42	47
l _	9:00	76	37	43	90	46	39	50	48	52
	3:00	83	32	36	87	40	42	50	46	55
	3:30	85	31	30	80	38	44	42	41	50
P.M.	4:00	79	37	31	71	38	37	42	41	44
Peak Period	4:30	80	38	37	72	40	37	44	42	39
renou	5:00	74	31	33	59	34	29	48	45	46
South-	5:30	67	34	31	50	31	32	39	41	38
bound	6:00	74	38	34	59	35	36	45	44	48
	6:30	79	38	43	71	34	36	46	53	45
	7:00	82	41	38	79	43	41	47	46	52

 Table J.2. Peak Period, Off-Peak Direction Average Travel Speed on North-South Routes (May 1995)

					Travel Sp	eed (km/h)			
Run Beg	inning		East	oound			West	bound	
		Lemmon	Loop 12	Mockingbird	Royal	Lemmon	Loop 12	Mockingbird	Royal
	6:00	33	60	37	54	34	55	35	50
A.M.	6:30	31	56	39	43	37	59	40	48
Peak Period	7:00	33	37	40	43	39	36	37	44
	7:30	29	41	32	40	31	30	23	36
	8:00	29	37	25	43	31	30	25	39
	8:30	30	37	33	40	34	49	29	48
	9:00	33	<u>ب 45</u>	34	45	29	49	31	43
	3:00	29	50	33	41	37	49	36	46
P.M.	3:30	31	44	28	35	31	52	29	53
Peak	4:00	29	52	30	40	35	61	23	41
Period	4:30	30	43	26	41	27	49	27	57
	5:00	29	40	26	35	27	39	25	38
	5:30	23	25	17	30	25	44	18	41
	6:00	33	27	26	35	28	48	20	46
	6:30	29	38	26	40	33	45	31	50
	7:00	34	54	18	58	32	68	35	47

Table J.3. Peak Period Average Travel Speed on East-West Routes (May 1995)

Dun Desinning	Travel Sp	eed (km/h)
Run Beginning	Northbound	Southbound
10:00 A.M.	90	65
10:30	96	65
11:00	90	65
11:30	89	60
12:00 P.M.	88	57
12:30	94	59
1:00	90	53
1:30	92	68

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 Table J.4. Off-Peak Period Average Travel Speed on US-75 (May 1995)

APPENDIX K

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OCTOBER 1994 SURVEY INSTRUMENT



TEXAS TRANSPORTATION INSTITUTE

TRAFFIC MANAGEMENT AND INFORMATION SYSTEMS PROGRAM

Area Code 409 Telephone 845-1727 Fax 845-6254

October 24, 1994

Dear Motorist:

Thank you for continuing to participate on the user panel regarding travel conditions and patterns in the North Central Expressway corridor. Your input is very important, because you and the other members of the panel know best how travel conditions are being affected by the lengthy but necessary construction project. For example, your responses to the last survey were extremely useful about how you reacted to the lane closures on North Central Expressway during February and March. Nearly 65 percent of you indicated that you had to use a different roadway during that period of time, whereas 35 percent of you had to leave home earlier in an attempt to arrive at work on time. Meanwhile, travel times to and from work increased only an average of 4 to 8 minutes during this period of time. However, whereas over 50 percent of you indicated that travel times were unchanged, between 15 and 30 percent of you stated that travel times had increased 10 minutes or more. The Texas Department of Transportation and other transportation agencies in the region are reviewing this information as they continue to make plans to better accommodate motorists when lane closures on North Central Expressway are required again in the future.

We have prepared a follow-up survey to once more assess your travel patterns in the North Dallas area. Please take a few moments to fill out the survey and return it in the postage-paid envelope provided. Those of you who indicated that you do not work outside of your home need only complete part 1 of the survey. The information will remain confidential, only summaries of the data will be released. If you do not wish to participate in additional travel surveys in the future, please let us know on the back of the survey form. Thank you for your continued assistance in this important activity.

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OR1994 PART 1: NORTH CENTRAL EXPRESSWAY CORRIDOR TOTAL TRAVEL SURVEY

1. Has your place of residence changed since October 1992?

2. During your most recent work week (Monday - Friday), how many separate round trips by passenger vehicle (car, van, or pickup truck) did you make for the following purposes? Please indicate the total number of trips made, as well as the number of those trips made using the North Central Expressway.

____yes ____no

		Total Trips per week	on North Central Expressway
	rom work		
	r work-related rom school/child daycare		
	rom social/recreation/est a meal		Top can be a set of the set of th
	rom shopping	Service of the servic	
	rom personal business (bank, doctor, etc.	\	
	rom bus stop		
3.	Overall, do you believe that you are a in October 1992?	naking more trips, the s	same number of trips, or fewer trips per week now than you we
	more the	same	fewer
4.	Do you believe you are using the No more often the		y more often, the same, or less than you were in October 1992? less often
	***************	**************	••••••••••
	PART 2: NORT	H CENTRAL EXPI	RESSWAY WORK TRIP SURVEY
1.	Have you changed work locations si	nce October 1992?	yes no
2	When do you typically leave your he	me to go to work?	AM or PM (circle one)
	Has this time changed since October	19927	
	Yes, I leave minutes e	arlier now.	
	Yes, I leave minutes la	iter now.	
	No, I have not changed my dep	arture une.	
3.	How much time does your trip from	home to work typically	take you? minutes
	Has this time changed since October		take you unitation
	Yes, it is minutes long		
	Yes, it is minutes shor	ter now	
	No, it has not changed.		
4.	When do you typically leave your w	ork to go bome?	AM or PM (circle one)
	Has this time changed since October	1992?	
	Yes, I leave minutes e	arlier now.	
	Yes, I leave minutes la	tter now.	
	No, I have not changed my dep	arture tune.	
5.	How long does your trip from work	to home terrisally tale -	rou? minutes
ەت.	Has this time changed since October		
	Yes, it is minutes long Yes, it is minutes shore	ter now.	
	Yes, it is minutes shor	ter now.	
	Yes, it is minutes shor No, it has not changed.	LET NOW.	
6.	Yes, it is minutes shor No, it has not changed.	ter now.	g types of stops on the way to and from work?
6.	Yes, it is minutes shor No, it has not changed. How many times per week do you m From h	ter now. ake each of the followin	ig types of stops on the way to and from work? n work to home
6.	Yes, it is minutes shor No, it has not changed. How many times per week do you m From h school/child daycare	ter now. ake each of the followin	
6.	Yes, it is minutes shor No, it has not changed. How many times per week do you m From h school/child daycare shopping	ter now. ake each of the followin	
6.	Yes, it is minutes shor No, it has not changed. How many times per week do you m From h school/child daycare shopping personal business	ter now. ake each of the followin	
6.	Yes, it is minutes shor No, it has not changed. How many times per week do you m From h school/child daycare shopping	ter now. ake each of the followin	
	Yes, it is minutes shor No, it has not changed. How many times per week do you m From h school/child daycare shopping personal business social/recreation/eat a meal How do you typically make your tri	ake each of the followin ome to work From 	n work to home
	Yes, it is minutes shor No, it has not changed. How many times per week do you m From h school/child daycare shopping personal business social/recreation/eat a meal	ake each of the followin ome to work From 	n work to home
7.	Yes, it is minutes shor No, it has not changed. How many times per week do you m From h school/child daycare shopping personal business social/recreation/eat a meal How do you typically make your tri drove alone carpool/vanpool	ake each of the followin ome to work From 	n work to home
7.	Yes, it is minutes shor No, it has not changed. How many times per week do you m From h school/child daycare shopping personal business social/recreation/eat a meal How do you typically make your tri drove alone carpool/vanpool	ake each of the followin ome to work From	ork? (check oue) other roads on your way to and from work?
7.	Yes, it is minutes shor No, it has not changed. How many times per week do you m From h school/child daycare shopping personal business social/recreation/eat a meal How do you typically make your tri drove alonecarpool/vanpool How many times per week do you ty	ake each of the followin ome to work From 	ork? (check oue)
6 . 7 . 8 .	Yes, it is minutes shor No, it has not changed. How many times per week do you m From h school/child daycare shopping personal business social/recreation/eat a meal How do you typically make your tri drove alone carpool/vanpoo How many times per week do you ty North Central Expressway	ake each of the followin ome to work From	ork? (check oue) other roads on your way to and from work?
7.	Yes, it isminutes shor No, it has not changed. How many times per week do you m From h school/child daycare shopping personal business social/recreation/eat a meal How do you typically make your tri drove alonecarpool/vanpool How many times per week do you ty North Central Expressway Skillman/Live Oak St.	ake each of the followin ome to work From	ork? (check oue) other roads on your way to and from work?
7.	Yes, it is minutes shor No, it has not changed. How many times per week do you m From h school/child daycare shopping personal business social/recreation/eat a meal How do you typically make your tri drove alonecarpool/vanpoo How many times per week do you ty North Central Expressway Skillman/Live Oak St. Abrams Rd/Gaston Ave.	ake each of the followin ome to work From	ork? (check oue) other roads on your way to and from work?
7.	Yes, it is minutes shor No, it has not changed. How many times per week do you m From h school/child daycare shopping personal business social/recreation/eat a meal How do you typically make your tri drove alonecarpool/vanpod How many times per week do you ty North Central Expressway Skillman/Live Oak St. Abrams Rd./Gaston Ave. Greenville/Ross Ave.	ake each of the followin ome to work From	ork? (check oue) other roads on your way to and from work?
7.	Yes, it is minutes shor No, it has not changed. How many times per week do you m From h school/child daycare shopping personal business social/recreation/eat a meal How do you typically make your tri drove alone carpool/vanpoo How many times per week do you ty North Central Expressway Skillman/Live Oak St. Abrams Rd./Gaston Ave. Greenville/Ross Ave. Hillcrest/Cole/McKinney Ave.	ake each of the followin ome to work From	ork? (check oue) other roads on your way to and from work?
7.	Yes, it is minutes shor No, it has not changed. How many times per week do you m From h school/child daycare shopping personal business social/recreation/eat a meal How do you typically make your tri drove alonecarpool/vanpod How many times per week do you ty North Central Expressway Skillman/Live Oak St. Abrams Rd./Gaston Ave. Greenville/Ross Ave.	ake each of the followin ome to work From	ork? (check oue) other roads on your way to and from work?

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APPENDIX L

MAY 1994 SURVEY INSTRUMENT



TEXAS TRANSPORTATION INSTITUTE

TRAFFIC MANAGEMENT AND INFORMATION SYSTEMS PROGRAM

Area Code 409 Telephone 845-1727 Fax 845-6254

May 8, 1995

Dear Motorist:

As always we thank you for your continuous participation on the user panel regarding travel conditions and patterns in the North Central Expressway corridor. Your opinion is very valuable to us because you and the other members of the panel know best how travel conditions are being affected by this lengthy but necessary construction project. The Texas Department of Transportation and other transportation agencies in the region are reviewing this information so they can decide to how best accommodate motorist's travel needs throughout the construction.

We have once again prepared a survey to assess your travel patterns in the North Dallas area. It asks many of the same questions as before, so that we can see if your travel behavior has changed over time. The survey, as in previous ones, consists of two parts: the first requests general information about all of your trip making, while the second requests more specific information about your trips to and from work. Also, there are a few questions regarding the methods used to inform motorists about daily construction activities.

Please take a few moments to fill out the survey and return it in the postage-paid envelope provided. Those of you who indicated that you do not work outside of your home need only complete Part 1 of the survey. The information will remain confidential, only summaries of the data will be released. If you do not wish to participate in additional travel surveys in the future, please let us know on the back of the survey form. Thank you for your continued assistance in this important activity, your valuable opinion is greatly appreciated.

May 1995

PART I NORTH CENTRAL EXPRESSWAY CORRIDOR TOTAL TRAVEL SURVEY

- 1. Has your place of residence changed since October 1992? _____ yes _____ no
- 2. During your most recent work week (Monday Friday), how many separate round trips by passenger vehicle (car, van, or pickup truck) did you make for the following purposes? Please indicate the total number of trips made, as well as the number of those trips made using the North Central Expressway.

			Total	trips per week
		Total Trips per week	on North C	Central Expressway
	to/from work			
	other work-related			
	to/from school/child day care			
	to/from social/recreation/eat a meal			
	to/from shopping			
	to/from personal business (bank, docto	r. etc.)		•••••
	to/from bus stop			
3.	Overall, do you believe that you are week now than you were in October	1992?		f trips, or fewer trips per
	more th	e same	fewer	
4.	Do you believe you are using the Nort in October 1992? more often th	e same	less often	
5.	Have you tried to use the WIDEN-7 information on the North Central Ex	pressway?	xDOT hotline (37 s not aware of the 1	
	yesn) wa	s not aware of the	nounic
5.	If so, has the information on the hotl	ine been useful?	yes	no
7.	How did you hear about the hotline? brochure provided by the Texas De changeable message signs		tion other(specify	billboard
3.	How do you normally receive daily c	onstruction informatio	n?	
	hotlinenewspape		television	do not receive
).	Is the method that you indicated in (uestion 8 helpful?	yes	no
0.	Is there anything you would like to ad	d about methods used	to provide daily c	onstruction information?

On the back of this form, please provide any additional comments about how your travel has been affected by the ongoing North Central Expressway reconstruction project.

PART 2 NORTH CENTRAL EXPRESSWAY WORK TRIP SURVEY

May 1995

1.	1. Have you changed work locations since Octobe	r 1992?	yes	no	
2.	2. When do you typically leave your home to go to Has this time changed since October 1992?) work?	AM or P	M (circle one)	
	Yes, I leave minutes earlier now.				
	Yes, I leave minutes later now.				
	No, I have not changed my departure time.				
3.	3. How much time does your trip from home to w Has this time changed since October 1992?	ork typically t	ake you? _	minutes	5
	Yes, it is minutes longer now.				
	Yes, it is minutes shorter now.				
	No, it has not changed.			* •	
4.	4. When do you typically leave your work to go he Has this time changed since October 1992?	ome?	AM or PM	(circle one)	
	Yes, I leave minutes earlier now.				
	Yes, I leave minutes later now.				
	No, I have not changed my departure time.				
5.	5. How long does your trip from work to home typ Has this time changed since October 1992?	pically take yo	u?	minutes	
	Yes, it is minutes longer now.			•	
	Yes, it is minutes shorter now.				
	No, it has not changed.				·
6.	6. How many times per week do you make each of work?	the following t	ypes of stop	s on the way to	o and from
		ne to work	From	work to home	
	school/child day care			···	
	shopping				
	personal business				
	social/recreation/eat a meal				
		—			
7.	7. How do you typically make your trips between	home and wor	k? (check c	one)	
	drove alone carpool/vanpool (with	people)	bu	S	other
8.	8. How many times per week do you typically use a	ny of these ro	ade on vou	r way to and fi	rom work?
0.		ne to work	•	way to and n work to home	UIII WUIK:
	North Central Expressway	IC TO WOLK	<u>140111 (</u>	WOLK to notife	
	Skillman/Live Oak St.				
	Abrams Rd./Gaston Ave.				
	Greenville/Ross Ave.				
	Hillcrest/Cole/McKinney Ave.				
	Preston Rd.				
	Dallas North Tollway	·····			
	As always, thank you for	your time and	participati	ion	

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