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16. Abstract

This report documents the results of the October 1993 and March 1994 traffic data collection efforts during the fourth year of the US-75 North Central Expressway reconstruction project south of the I-635 LBJ Freeway. Traffic conditions and patterns have been monitored during October 1989 and May 1990 (before construction) and each October and May since October 1990 (during the first four years of the project). An additional study was conducted in March 1994 to evaluate the potential traffic impacts of US-75 North Central Expressway median lane closures between McCommas and Woodall Rodgers Freeway. The traffic conditions prior to construction and during the first three years of construction were documented in previous reports. 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. The automobile users' survey results for October 1993 are documented in a separate report. Overall, the October 1993 and March 1994 results indicate that the US-75 North Central Expressway reconstruction project may have begun to impact peak period and daily travel in the corridor. The increased construction activity in the S-1 and S-2 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 reversible lane system, however, appears to provide some relief to congestion in the corridor.

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US-75 NORTH CENTRAL EXPRESSWAY RECONSTRUCTION: OCTOBER 1993 AND MARCH 1994 TRAFFIC CONDITIONS

by

Kevin D. Tyer Assistant Research Scientist Texas Transportation Institute

Research Report 1994-2 Research Study No. 7-1994 Research Study Title: Highway Planning and Operations for District 18, Phase III

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IMPLEMENTATION STATEMENT

This report documents the results of the October 1993 and March 1994 traffic data collection efforts during the fourth year of the US-75 North Central Expressway reconstruction project south of the I-635 LBJ Freeway. Traffic conditions and patterns were monitored before construction in October 1989 and May 1990 and during construction each October and May since October 1990. An additional study was conducted in March 1994 to evaluate the potential traffic impacts of US-75 North Central Expressway median lane closures between McCommas and Woodall Rodgers Freeway. The traffic conditions prior to construction and during the first three years of construction were documented in previous reports. The traffic data collection included screen line traffic volume counts, vehicle occupancy and classification counts, and travel time runs. The automobile users' survey results for October 1993 are documented in a separate report.

The results indicate that the US-75 North Central Expressway reconstruction project may have begun to impact peak period travel in the corridor. The increased construction activity in the S-1 and S-2 sections of the project where lane closures and/or diversions were required resulted in diversion from US-75 to alternative routes in the corridor. The Ross reversible lane system appears to provide some relief to congestion in the corridor. The data collected during these studies, combined with data to be collected in subsequent 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.
- 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.

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SUMMARY

The results indicate that the US-75 North Central Expressway construction project during October 1993 had a noticeable effect on southbound peak period and daily traffic conditions and travel patterns in the corridor, based upon comparisons of October 1993 versus October 1989 and October 1990 data. The traffic impacts likely resulted from the MKT Railroad bridge removal construction in the S-2 section of the construction project which required the southbound lanes to be reduced from three to two lanes between Mockingbird and McCommas. Further, the US-75 and Woodall Rodgers interchange construction may have contributed to the traffic impacts. The findings are listed as follows:

- Daily volumes on US-75 North Central Expressway were an estimated 11 to 16 percent lower in October 1993 than would have been expected in the absence of the construction project. Southbound traffic volumes decreased on US-75 and increased on the alternative routes: Dallas North Tollway (DNT), Lemmon, Preston, Cole, Hillcrest, Ross, Greenville, Skillman, and Abrams. Substantial volume increases on Ross and Greenville suggest that the reversible lane system on Ross attracted motorists to these alternative routes.
- The A.M. peak hour, peak direction (southbound) average travel times were four minutes longer on US-75 and six minutes longer on Greenville. The average travel speeds dropped on US-75 from 45 km/h (28 mph) to 36 km/h (22 mph) and on Greenville from 41 km/h (26 mph) to 31 km/h (19 mph). The P.M. peak hour, peak direction (northbound) travel times and speeds improved on most routes.

In March 1994, the median lane closures on US-75 North Central Expressway between McCommas and Woodall Rodgers Freeway (i.e., three lanes reduced to two lanes in each direction) in the S-1 section of the construction project resulted in significant changes in traffic patterns, based upon comparisons of March 1994 versus May 1990 data. The results indicate that motorists diverted from US-75 to alternative routes, but continued to travel in the corridor. The daily traffic volume on US-75 North Central Expressway at Mockingbird was an estimated 25 percent lower in March 1994. Volumes were substantially lower on US-75 (i.e., 28 to 29 percent reduction in peak period, peak direction volumes) and considerably higher on DNT, Preston, Hillcrest, Greenville, Matilda, Skillman, and Abrams (i.e., 7 to 196 percent rise in peak period, peak direction volumes). The A.M. and P.M. peak hour, peak direction average travel times on US-75 were one and seven minutes longer, respectively. Average travel speeds were as low as 31 km/h (19 mph).

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1. INTRODUCTION

The Texas Transportation Institute (TTI) continues to monitor the changes in corridorwide traffic conditions and travel patterns resulting from the reconstruction of the US-75 North Central Expressway south of the I-635 LBJ Freeway. The long-term construction project began during the Summer of 1990 and will be completed in the late 1990s. This report documents the traffic conditions in October 1993 during the project's fourth year. In addition, traffic conditions monitored in March 1994 during lane closures on US-75 North Central Expressway from McCommas to Woodall Rodgers Freeway are presented.

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.
- 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.
- Survey of automobile users.

Traffic conditions in the corridor in October 1989 and May 1990 before construction began were documented in a previous report (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), and during the third year of construction in October 1992 and May 1993 (5). The results of the May 1990 through October 1993 automobile user surveys were summarized in separate reports (6-13).



FIGURE 1.1. US-75 North Central Expressway Corridor in Dallas

PROJECT STATUS

Evaluation of traffic conditions and travel patterns observed during the October 1993 and March 1994 studies requires knowledge regarding the construction phasing on US-75 North Central Expressway and traffic improvements in the corridor. The status of the construction project and recent street improvements are documented in this section.

The N-1 and N-2 phases of the US-75 North Central Expressway construction project were near completion in October 1993. Lane closures occurred on these sections during the midday off-peak period. In addition, the construction project at US-75 North Central Expressway and Woodall Rodgers interchange continued during the study.

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. Figure 1.2 illustrates the lane closure sequence during the October 1993 traffic monitoring study.

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 leftturn 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



FIGURE 1.2. US-75 North Central Expressway Lane Closures for MKT Railroad Bridge Removal During October 1993

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 Rodgers Freeway and McCommas in late January 1994 to remove the median and guardrail and install 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. A comprehensive traffic study had been planned 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.

ORGANIZATION OF THE REPORT

The body of this report is divided into five chapters. Chapter 2 reviews the traffic monitoring plan used to collect and evaluate traffic conditions and travel patterns in the corridor. The following chapter, Chapter 3, documents the observed traffic conditions during October 1993. An evaluation of the traffic impacts resulting from lane closures on US-75 North Central Expressway during March 1994 is given in Chapter 4. Chapter 5 summarizes the results of the October 1993 and March 1994 traffic studies.

2. TRAFFIC MONITORING PLAN

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 is described in this chapter. The monitoring plan encompasses two components: (1) traffic data collection and (2) 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.
- 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 principal comparisons are among data collected during the same month of the year (e.g., October 1990 compared to October 1993). 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.

Trues	of Data	Route	Before (Construction	During Construction								
Туре	or Data	Koule	October 1989	May 1990	October 1990	May 1991	October 1991	May 1992	October 1992	May 1993	October 1993	March 1994	
	1	Harry Hines		•			•	•	•	•	•		
		DNT		•	•	•	•	•	•	•	. •		
		Maple		•			•	•	•	•	•		
		Cedar Springs		•	•	•	•	•	•	•	•		
	Oak Lawn /	Lemmon		•	•	٠	•	•	•	•	•		
	Lemmon /	Oak Lawn		•	•	•	•	•	•	•	•		
	Peak	Turtle Creek		•	•	•	•	•	•	•	•		
Screen Line	Cole/McKinney		•	•	٠	•	•		•	•			
	Sciecci Line	US-75		•	•	•	•	•	•	•	•		
		Ross		•	•	•	•	•	•	•	•	_	
		Live Oak		•	•	•	•	•	•	•	•		
		Gaston		•	•	•	•	•	•	•	•		
		Columbia		•			•	•	•	•	•		
		Harry Hines	•				•	•	•	•	•		
		Denton	•				•	•	•	•	•	_	
		Lemmon	•	•		-	•	٠	•	•	•		
Traffic		Inwood	•	•			•	•	•	•	•		
I rame Volumes		DNT	•	• .	•	.•	•	•	•	•	•	٠	
volumes	Mockingbird /	Preston	•	•	•	•	•	٠	•	•	. •	•	
	Buckner	Hillcrest	. •	•	•	•	• .	٠	•	•	•	•	
	Screen Line	US-75	•	•	•	•	•	•	•	•	•	•	
		Greenville	•	•	•	•	•	•	•	•	•	•	
		Matilda	•	•	•	•	•	•	•	•	•	•	
		Skillman	• .	•	٠	• .	•	•	•	٠	•	•	
	1	Abrams	•	. •	• .	•	•	• .	•	•	•	•	
		Garland	•	•			•	•	•	•	•	•	
		Midway		•	•	•	•	•	•	•	•		
		Inwood		•	•	•	•	٠	•	•	•		
		DNT		•	•	٠	•	•	•	•	•		
	L	Preston		•	•	٠	•	•	•	•	•		
	Loop 12 Screen Line	Hillcrest		•	•	٠	•	•	•	•	•		
	Screen Line	US-75		•	•	•	•	•	•	. •	•		
		Greenville		•	•	•	•	•	•	•	•		
		Skillman		•	•	•	•	•	•	•	•		
	1.	Abrams		•	•	•	•	•	•	•	•		

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

 ∞

Туре о	f Data	Route	Before Construction During Construction									
Туре о	1 Data	Route	October 1989	May 1990	October 1990	May 1991	October 1991	May 1992	October 1992	May 1993	October 1993	March 1994
		Hall		•		•	•	•	•	٠	•	
· ·		Lemmon		•		•	•	•	•	•	•	
		Haskell		•		•	•	•	•	•	•	
		Fitzhugh		•		•	•	•	•	•	•	
-		Henderson		.•		•	•	•	•	•	•	
		Monticello		•		. •	•	•	•	•	· •	
		McCommas		•		•	•	•	•	•	•	
		Mockingbird		•	•	• .	•	•	•	•	•	
Traffic	US-75	Yale		•	•	٠	•	•	•	•	•	
Volumes	Screen Line	University		•	•	•	•	•	•	•	•	
		Lovers		•	•	•	•	•	•	•	•	
		Southwestern		•	•	•	•	•	•	· •	•	
		Caruth Haven		•	•	•	•	•	•	٠	•	
		Loop 12		•	•	٠	•	•	•	•	•	
		Park Lane		٠	•	•	•	•	•	•	•	
		Walnut		•	•	•	•	•	• •	•	•	
		Royal		•	•	•	•	•	•	• • •	•	
		Forest		• •	•	•	•	•	<u> </u>	•	•	
Vehicle Clas	rification &	US-75		•	•	•	•	•	•	•	•	
Venicie Cias Occup		Preston		. •								
		Skillmen		•			l		<u> </u>		ll	
		Midway	•	•								
		Inwood	• *	•								
		DNT	•	•	•	•	.•	•	•	•	•	•
		Preston	•	• .	•	•	•	•	•	•	•	
	North - South	Hillcrest	•	•	•		•	•	•	•	•	
	Routes	US-75	•	•	•	•	•	•	•	•	•	•
	Nouco	US-75 Frontage		•	•	•	•	•	•	•	•	•
Travel Times		Greenville	•	•	•	•	•	•	•.	•	- •	
		Skillman	•	•		•	•	•	•	•	•	
		Abrams	•	•		•	•	•.	•	•	•	
		Garland	•	•			. •	•	•	•	•	
ſ		Lemmon/Peak		•							ļļ	
		Mockingbird		•						•	•	
	Routes	Loop 12		•		•	•	•	•	•	•	
		Royal				•	•	•	•	•	•	

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

Traffic patterns are being observed at four screen lines, which are designated by the routes which the screen lines follow:

- Oak Lawn/Lemmon/Peak.
- Mockingbird/Buckner.
- Loop 12.
- 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, was established to measure changes in east-west traffic patterns. Figure 2.1 identifies the count locations for the October 1993 and March 1994 traffic studies.

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 time-lapse video tape recorder to record traffic on US-75.
- 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



FIGURE 2.1. US-75 North Central Expressway Corridor Traffic Volume and Vehicle Occupancy and Classification Count Locations



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

Vehicle occupancy and classification data are collected on the US-75 mainlanes north of the Mockingbird/Buckner screen line during each study. The count location is identified in Figure 2.1.

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 1993 and March 1994.

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

	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		
Dallas North Tollway/Harry Hines/Akard	1	1	1	1	1	1	1	1	1	1		
Preston/Cedar Springs/Field	1	3	1	1	1	1	1	. 1	1	-		
Hillcrest/McKinney/Akard	1	1	1	. –	. 1 .	1	1	1	1	-		
US-75 (North Central Expressway)	1	2	· 3	. 3	3	3	3	3	3	1 -		
US-75 Frontage Road	-	1	3	1	1	1	1	1	1	1		
Greenville/Ross	1	3	1	1	1	1	1	1	1	_		
Skillman/Live Oak	1	1	-	1	1	1	1	1	- 1 -	-		
Abrams/Gaston	. 1	1	-	1	1	1	1	1	1	.=		
Garland/Gaston	1	1	-	-	1	1	1	1	1	· _		
Oak Lawn/Lemmon/Peak/Haskell	-	1	-	-	-	- -	-	-	-	-		
Mockingbird	-	1	-	·- ·	-	-	-	1	1.			
Loop 12	-	1	-	1	1	1	1	1	1	-		
Royal	-	-	-	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

intervals from 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

Biannual surveys of automobile users in the US-75 North Central Expressway corridor are conducted as part of the traffic monitoring studies. The role of the surveys in the overall monitoring effort is to obtain information on the perceptions and travel behavior of individual automobile users in the corridor as well as current public opinion regarding the reconstruction project. Periodically surveying the panel members permits changes in perceptions and behavior to be monitored. Details of the surveying effort and results were documented in other reports (6-13).

Original panel members (i.e., automobile users who agreed to be surveyed biannually) were recruited from a license plate study conducted during May 1990 at the Loop 12 screen line. The most recent panel of automobile users originated from a license plate survey performed at the Oak Lawn/Lemmon/Peak screen line in October 1992. This new panel was recruited to increase the number of survey participants. The original panel and the new panel were surveyed in October 1993.

3. OCTOBER 1993 TRAFFIC CONDITIONS

The traffic conditions observed during October 1993, slightly more than three years after the US-75 North Central Expressway reconstruction project began, are documented in this chapter. Traffic conditions are reported as changes in traffic patterns, vehicle occupancy and classification, and travel times and average travel speeds. October 1993 traffic volume and travel time data are summarized in Appendices A through E.

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 1993 compared to October 1989 and October 1990. The total 24-hour north-south traffic volumes increased from one percent at the Oak Lawn/Lemmon/Park screen line to five percent at the Mockingbird/Buckner screen line in October 1993. However, east-west traffic volumes crossing the US-75 screen line decreased by five percent. These findings give some indication that the construction project during October 1993 had no effect on the total corridor north-south traffic volume, but the total cross-street traffic slightly decreased.

Screen Line	Period	Direction	Traffic Volumes (veh)				
			October 1989	October 1990	October 1993	Change	% Change
	A.M. Peak	Northbound	N/A	30,760	32,530	1,770	5.75
		Southbound	N/A	53,250	50,130	-3,120	-5.86
		Total	N/A	84,010	82,660	-1,350	-1.61
Oak Lawn/	P.M. Peak	Northbound	N/A	75,360	74,350	-1,010	-1.34
Lemmon/		Southbound	N/A	57,160	57,470	310	0.54
Peak		Total	N/A	132,520	131,820	-700	-0.53
	24 Hour	Northbound	N/A	219,680	225,420	5,740.	2.61
	· · · ·	Southbound	N/A	222,430	222,460	30	0.01
		Total	N/A	442,110	447,880	5,770	1.31
Mockingbird ^a	A.M. Peak	Northbound	25,270	23,890	27,930	2,660	10.53
		Southbound	39,460	40,310	40,350	890	2.26
		Total	64,730	64,200	68,280	3,550	5.48
	P.M. Peak	Northbound	55,640	54,850	61,070	5,430	9.76
		Southbound	49,200	46,270	48,930	-270	-0.55
		Total	104,840	101,130	110,000	5,160	4.92
	24 Hour	Northbound	175,960	174,320	190,210	14,250	8.10
		Southbound	185,250	182,630	189,860	4,610	2.49
		Total	361,200	356,950	380,070	18,870	5.22
Loop 12	A.M. Peak	Northbound	N/A	21,610	23,760	2,150	9.95
		Southbound	N/A	35,540	34,550	-990	-2.79
		Total	N/A	57,150	58,310	1,160	2.03
	P.M. Peak	Northbound	N/A	52,980	56,010	3,030	5.72
		Southbound	N/A	44,930	43,150	-1,780	-3.96
		Total	N/A	97,910	99,160	1,250	1.28
	24 Hour	Northbound	N/A	164,780	173,480	8,700	5.28
		Southbound	N/A	170,670	168,460	-2,210	-1.29
		Total	N/A	335,450	341,940	6,490	1.93
US-75	A.M. Peak	Eastbound	N/A	18,460	17,860	-600	-3.25
		Westbound	N/A	48,170	47,480	-690	-1.43
		Total	N/A	66,630	65,340	-1,290	-1.94
	P.M. Peak	Eastbound	N/A	65,690	65,920	.230	0.35
		Westbound	N/A	52,760	47,580	-5,180	-9.82
		Total	N/A	118,450	113,500	-4,950	-4.18
	24 Hour	Eastbound	N/A	188,240	183,050	-5,190	-2.76
	· · .	Westbound	N/A	210,980	197,030	-13,950	-6.61
		Total	N/A	399,220	380,080	-19,140	-4.79

 TABLE 3.1. US-75 North Central Expressway Corridor Traffic Volumes During October 1993

^a Change represents difference between October 1993 and October 1989 traffic volumes.
The corridor-wide traffic patterns and traffic volume changes are presented 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 October 1993 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 4 and 16 percent lower in October 1993 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, Cole, Hillcrest, Ross, Greenville, Skillman, and Abrams. These changes signify possible diversion from US-75 to other routes in the corridor.

The drop in southbound traffic volume on US-75 may have been partially due to the construction underway in 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 Rodgers interchange located downstream of the Oak Lawn/Lemmon/Peak screen line may have also contributed to the reduction in US-75 traffic volumes at Lemmon. The reversible lane system on Ross provided some relief to congestion in the corridor. A substantial increase in southbound traffic volumes on Ross (32 percent) and Greenville (40 percent at the Mockingbird/Buckner screen line and 24 percent at the Loop 12 screen line) suggest that the Ross reversible lane may have attracted motorists to use these alternative routes. The traffic volumes on Live Oak, the other reversible lane system, changed very little compared to those during earlier monitoring studies.

Oak Lawn/Lemmon/Peak Screen Line

The Oak Lawn/Lemmon/Peak screen line traffic distribution show that fluctuations in each route's percentage of total screen line traffic volume were as much as five percent between October 1990 and October 1993 (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 1993, US-75 no longer carried the majority of the peak period, peak direction traffic (see Figures B.1, b and B.2, a). Instead, DNT had the largest peak period, peak direction traffic volume in the corridor. Some deviations were observed in the October 1993 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 1993 changed more than northbound traffic volumes (see Figure C.1). The observed southbound volume on US-75 decreased by 3,310 vehicles, which results in a 21 percent decrease between October 1990 and October 1993 volumes (see Figure C.1, b). When evaluated on an hourly basis, the peak hour shows a reduction of 1,880 vehicles per hour or a 30 percent drop in volumes. This decrease represents the largest reduction in peak period, peak direction traffic volume observed on US-75 while monitoring the impacts of the construction project. Traffic increased on several routes along the screen line which could indicate diversion to alternative routes. The notable increases occurred on DNT (930 vehicles or 8 percent), Cole (483 vehicles or 32 percent), Ross (790 vehicles or 30 percent), and Live Oak (400 vehicles or 9 percent).

P.M. Peak Period. The P.M. peak period, northbound (peak direction) traffic volume on US-75 decreased by 2,410 vehicles (i.e., a 13 percent drop between October 1990 and October 1993 volumes) (see Figure C.2, a). Significant increases in northbound traffic volumes were observed on DNT (1,290 vehicles or 8 percent) and Oak Lawn (1,160 vehicles or 38 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). A reduction in southbound US-75 volume of 2,650 vehicles or a 14 percent decrease in volume was observed during the P.M. peak period. The more noticeable increases in southbound traffic volumes were observed on DNT (2,180 vehicles or 20 percent), Lemmon (1,500 vehicles or 32 percent), and Ross (770 vehicles or 40 percent).

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 decreased on US-75 by 3,720 vehicles per day (vpd) (i.e., a 5 percent reduction), whereas traffic significantly increased on

DNT (5,580 vpd or 14 percent) and Oak Lawn (3,640 vpd or 38 percent) (see Figure C.3, a). Daily southbound volumes on US-75 substantially decreased by 6,610 vpd which represents a 10 percent reduction between October 1990 and October 1993 volumes (see Figure C.3, b). Traffic increased on DNT (6,150 vpd or 15 percent), Lemmon (2,910 vpd or 17 percent), Cole (2,300 vpd or 39 percent), and Ross (2,910 vpd or 32 percent).

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 four percent between October 1989 and October 1993 (see Figures B.4 through B.6). Traffic patterns appear to have fluctuated more in the southbound direction than in the northbound 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 710 vehicles (i.e., a 5 percent decrease between October 1989 and October 1993) (see Figure C.4, b). Traffic volumes substantially increased on DNT (770 vehicles or 7 percent) and Greenville (770 vehicles or 60 percent). These changes indicate possible diversion to alternative routes. In October 1993, northbound (off-peak direction) traffic volumes generally increased along the screen line (see Figure C.4, a).

P.M. Peak Period. Northbound (peak direction) traffic volumes at the Mockingbird/ Buckner screen line increased across the corridor (see Figure C.5, a). The southbound (offpeak direction) volumes decreased on US-75 (2,100 vehicles or 11 percent) and increased on DNT (1,240 vehicles or 11 percent), Greenville (1,190 vehicles or 52 percent), Skillman (380 vehicles or 18 percent), and Abrams (560 vehicles or 17 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 14,260 vpd, which represents an 8 percent increase between October 1989 and October 1993 volume (see Table 3.1). Daily northbound volumes increased on most routes crossing the Mockingbird/Buckner screen line (see Figure C.6, a). Like the peak periods, southbound volumes dropped on US-75 (3,160 vpd or 4 percent) and notably increased on DNT (4,000 vpd or 10 percent),

Greenville (3,480 vpd or 40 percent), Skillman (1,690 vpd or 20 percent), and Abrams (1,640 vpd or 14 percent).

Loop 12 Screen Line

The traffic patterns at the Loop 12 screen line show fluctuations as large as 7 percent in each route's percentage of total screen line traffic volume between October 1990 and October 1993 (see Figures B.7 through B.9). These fluctuations were higher for southbound traffic patterns than for northbound traffic patterns. DNT carried 30 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 1,070 vehicles or an 11 percent reduction between October 1990 and October 1993 volumes (see Figure C.7, b). The highest increases in southbound volumes occurred on Preston (240 vehicles or 12 percent), Hillcrest (320 vehicles or 18 percent), and Greenville (390 vehicles or 10 percent).

P.M. Peak Period. The P.M. peak period, northbound (peak direction) traffic volumes increased on most routes along the Loop 12 screen line (see Figure C.8, a). The southbound (off-peak direction) traffic volumes indicate a large decrease on US-75 of 3,710 vehicles or a 24 percent reduction between October 1990 and October 1993 volumes (see Figure C.8, b). Southbound volumes increased on Hillcrest (360 vehicles or 12 percent), Greenville (1,400 vehicles or 29 percent), and Skillman (420 vehicles or 12 percent).

24-Hour Period. The daily volumes crossing the Loop 12 screen line during October 1993 have similar results as the peak periods. Northbound volumes for the 24-hour period increased across the screen line, except for a slight 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 (10,480 vpd or 16 percent). This change, though close to the reduction in October 1991, represents the largest reduction in daily traffic volumes observed during the monitoring studies (see Figure C.9, b). Of this total reduction, 46 percent took place during the peak periods, while the remaining 54 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 Preston (1,190 vpd or 11 percent), Hillcrest (1,850 vpd or 19 percent), Greenville (4,190 vpd or 24 percent), and Skillman (1,510 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 Rodgers 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 3 percent between October 1990 and October 1993 (see Figures B.10 through B.12). In October 1993, 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 15 percent of the total daily screen line volume in October 1993. 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 1993 substantially dropped on Mockingbird (1,300 vehicles or 26 percent), Yale (400 vehicles or 31 percent), and Forest (760 vehicles or 11 percent) (see Figure C.10, b). The largest increase in westbound traffic occurred on Royal (1,020 vehicles or 37 percent).

P.M. Peak Period. The eastbound volume in the P.M. peak period increased on Royal (1,510 vehicles or 30 percent) and decreased on Mockingbird (540 vehicles or 10 percent) and Walnut Hill (880 vehicles or 13 percent) (see Figure C.11, a). Westbound traffic notably decreased on Mockingbird (1,460 vehicles or 26 percent), Yale (590 vehicles or 35 percent), University (400 vehicles or 20 percent), Loop 12 (440 vehicles or 6 percent), Walnut Hill (620 vehicles or 11 percent), and Forest (890 vehicles or 15 percent) (see Figure C.11, b). An increase of 780 vehicles (36 percent) was observed on Royal.

24-Hour Period. The 24-hour eastbound traffic increased on Royal by 2,620 vpd (i.e., a 22 percent increase between October 1990 and October 1993 volume) (see Figure C.12, a). Eastbound traffic significantly decreased on Mockingbird (1,480 vpd or 10 percent), Park (1,700 vpd or 11 percent), and Walnut Hill (1,980 vpd or 9 percent). In the other direction, volumes increased on Lovers (1,390 vpd or 13 percent), Southwestern (790 vpd or 14

percent), and Royal (2,480 vpd or 25 percent) (see Figure C.12, b). The westbound traffic decreased on Mockingbird (4,400 vpd or 19 percent), Yale (1,750 vpd or 31 percent), University (1,260 vpd or 16 percent), Caruth Haven (360 vpd or 10 percent), Loop 12 (1,180 vpd or 4 percent), Park (910 vpd or 8 percent), Walnut Hill (820 vpd or 4 percent), and Forest (4,090 vpd or 15 percent).

Traffic Patterns on US-75 North Central Expressway

The daily traffic volume on US-75 North Central Expressway at the three screen line count locations from October 1989 to October 1993 and the corresponding average Automatic Traffic Recorder (ATR) traffic volumes for the Dallas area are shown in Figure 3.1. 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 continues to decrease. Daily volumes at Mockingbird slightly decreased, while traffic volumes at Loop 12 dropped considerably.

Table 3.2 summarizes US-75 daily traffic volumes at the three screen line count locations in October 1993 compared to seasonally adjusted before construction volumes. The changes in US-75 traffic volumes were an estimated reduction of 16 percent at Lemmon, 11 percent at Mockingbird, and 15 percent at Loop 12. Thus, the US-75 daily traffic volumes were lower in October 1993 than volumes that would have been expected in the absence of the construction project.

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 1993 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



in the Dallas Area from October 1989 to October 1993

		Daily Traffic Volumes							
Screen Line	Direction	Before	During Construction (October 1993)						
Count Location	Direction	(May 1990)							
		Observed	Estimated ^a	Observed	Change	% Change			
Lemmon	Northbound	76,060	77,430	65,600	-11,830	-15.28			
	Southbound	73,620	74,940	62,980	-11,960	-15.96			
	Total	149,680	152,370	128,580	-23,790	-15.61			
Mockingbird	Northbound	79,210	84,730	76,870	-7,860	-9.28			
	Southbound	75,730	81,000	70,790	-10,210	-12.60			
	Total	154,940	165,730	147,660	-18,070	-10.90			
Loop 12	Northbound	68,100	70,830	60,410	-10,420	-14.71			
	Southbound	60,680	63,110	53,260	-9,850	-15.61			
	Total	128,780	133,940	113,670	-20,270	-15.13			

TABLE 3.2. Changes in Daily Traffic Volumes on US-75 During October 1993

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

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

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

Note: Peak direction data are shown in boldface.

1.19 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 3.4. In October 1993, the peak period, peak direction vehicle mix on US-75 averaged 94-95 percent passenger vehicles, 4-5 percent commercial trucks, and 1 percent other (bus and motorcycle). The A.M. peak period, peak direction (southbound) traffic in October 1993 had fewer passenger vehicles and slightly more trucks than was observed in the earlier October studies. The vehicle mix for the P.M. peak period, peak direction (northbound) traffic was similar to October 1990 and 1992 classification data.

TRAVEL TIMES AND AVERAGE TRAVEL SPEEDS

Travel times and speeds collected during October 1993 are summarized in tabular form in Appendices D and E. 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 three 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 peak period and peak hour travel time and speed results are presented 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

-		Percent of Vehicles								
Period	Vehicle Type	October 1990		October 1991		October 1992		October 1993		
		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	
	Commercial Truck	5.70	2.38	4.20	2.36	8.27	3.56	6.85	5.07	
	Bus	0.93	0.99	0.95	0.77	0.80	1.07	0.75	0.65	
	Motorcycle	0.07	0.10	0.03	0.03	0.16	0.09	0.07	0.12	
P.M. Peak	Passenger Vehicle	94.40	94.10	97.53	96.29	94.38	93.80	94.81	91.93	
	Commercial Truck	4.36	4.83	1.59	2.92	4.60	5.26	4.14	7.31	
	Bus	0.97	0.88	0.87	0.77	0.94	0.79	0.91	0.61	
	Motorcycle	0.18	0.10	0.01	0.02	0.09	0.15	0.15	0.15	

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

Note: Peak direction data are shown in boldface.

	T	North	bound	South	bound
Period	Route	Average Travel Time (min)	Average Travel Speed (km/h)	Average Travel Time (min)	Average Travel Speed (km/h)
	DNT	13.15	74	15.54	<u>(KIII/II)</u>
	Preston	26.32	36	26.23	36
	Hillcrest	26.35	36	26.37	36
	US-75	12.06	77	19.04	57
A.M. Peak	US-75 Frontage	24.63	36	24.88	36
	Greenville	22.39	41	23.83	40
	Skillman	21.53	43	20.46	46
· ·	Abrams	24.48	40	22.09	46
	Garland	21.68	45	21.51	46
	DNT	12.98	75	12.84	75
	Preston	27.48	34	27.76	35
	Hillcrest	28.03	34	27.35	35
	US-75	14.86	65	16.87	56
P.M. Peak	US-75 Frontage	23.24	39	27.68	33
	Greenville	26.69	35	24.66	37
	Skillman	22.11	43	21.62	43
	Abrams	24.34	40	23.42	43
	Garland	22.80	43	23.09	43

TABLE 3.5. Average Peak Period Travel Time and Speedon North-South Routes During October 1993

Note: Peak direction data are shown in boldface.

lowest peak period, peak direction average travel time of 12.98 minutes, while Hillcrest had the highest average travel time of 28.03 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. The highest peak period, peak direction average travel speed, approximately 75 km/h (47 mph), was observed on DNT, while the lowest average travel speed, 34 km/h (21 mph), was on Preston and Hillcrest.

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 1993.

A.M. peak hour, peak direction (southbound) average travel times in October 1993 were substantially higher on US-75 (4.33 minute increase) and Greenville (5.67 minute increase) compared to October 1989 before construction began. Other increases occurred on DNT (1.31 minutes), Hillcrest (1.02 minutes), Skillman (2.97 minutes), and Garland (2.31 minutes). Average travel times during the A.M. peak hour were slightly lower on US-75 Frontage Road (1.41 minute decrease) and Abrams (1.46 minute decrease). The increase in southbound average travel times on US-75 and Greenville suggests that the construction project may have affected the conditions on US-75 and traffic diverted to Greenville as an alternative route.

In the P.M. peak hour, peak direction (northbound) average travel times increased on Hillcrest (1.14 minutes), and Garland (1.21 minutes). In general, travel times were lower in October 1993 than in October 1989 before construction. These reductions occurred on DNT (1.06 minute decrease), Preston (2.57 minute decrease), Skillman (6.49 minute decrease), and Abrams (0.73 minute decrease). 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 (7.32 minutes), US-75 Frontage Road (6.89 minutes), and Greenville (3.21 minutes).



(a) A.M. Peak





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



(a) A.M. Peak



⁽b) P.M. Peak



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 45 km/h (28 mph) in October 1989 to 36 km/h (22 mph) in October 1993. Likewise, the average travel speed on Greenville decreased from 41 km/h (26 mph) to 33 km/h (21 mph). P.M. peak hour average travel speeds improved on most north-south routes in the corridor.

East-West Routes

Table 3.6 summarizes the peak period average travel times and speeds for the east-west routes. Of the three east-west routes monitored, Mockingbird had the highest average travel time and lowest average travel speed in both directions. These October 1993 travel times and speeds appear to be similar to those collected in previous studies.

US-75 North Central Expressway

The travel times and average travel speeds on US-75 from 6:00 A.M. to 7:00 P.M. are illustrated in Figures 3.4 and 3.5. The October 1993 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 and speeds in October 1993 do not appear to have been adversely affected by the construction project. Whereas, the southbound values indicate that the travel times during the A.M. and P.M. peak periods were generally the highest observed in October since the beginning of the traffic monitoring study. Correspondingly, average travel speeds were lower than found in previous studies. The results suggest that the construction underway south of Mockingbird during October 1993 affected US-75 peak period travel in the southbound direction. Off-peak period travel times and speeds in October 1989.

		Eastl	oound	Westbound		
Period	Route	Average Travel Time (min)	Average Travel Speed (km/h)	Average Travel Time (min)	Average Travel Speed (km/h)	
A.M. Peak	Mockingbird	13.74	33	16.37	28	
	Loop 12	12.47	44	11.91	46	
	Royal	14.38	46	15.02	46,	
P.M. Peak	Mockingbird	17.60	26	15.43	29	
	Loop 12	13.33	40	10.58	50	
	Royal	16.55	41	14.43	46	

TABLE 3.6. Average Peak Period Travel Time and Speedon East-West Routes During October 1993







(a) Northbound



(b) Southbound



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4. MARCH 1994 TRAFFIC CONDITIONS

This chapter documents the traffic conditions observed during the March 1994 traffic study. The purpose of the study was to monitor the potential traffic impacts of US-75 North Central Expressway median lane closures in the S-1 section of the reconstruction project between Woodall Rodgers Freeway and McCommas (i.e., the median lanes were closed, thereby reducing traffic from three to two lanes in each direction). Only limited data were collected in March 1994 because the operation was completed earlier than had been planned or anticipated. The data, however, does provide some indication of the traffic impacts resulting from the lane closures. Summaries of the observed traffic volume and travel time data are given in Appendices F through J.

SCREEN LINE TRAFFIC VOLUMES

The March 1994 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 the Mockingbird/Buckner 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.

The March 1994 screen line traffic volumes were evaluated for three time periods (A.M. peak, P.M. peak, and 24 hours) and were compared to May studies. Comparisons primarily consist of changes between May 1990 (before construction) and March 1994 data. The evaluation of US-75 traffic volumes, however, compares both May and October data.

Table 4.1 summarizes the total corridor traffic volumes at the Mockingbird/Buckner screen line for March 1994. The northbound volumes do not include Skillman traffic volumes due to a counter malfunction. Estimating the northbound Skillman volume to be at least 10,000 vpd based on previous studies, the corridor volumes appear to have been higher in March 1994 than in May 1990. Evidently, the traffic impacts of the construction project's lane closures did not cause motorists to divert from the US-75 North Central Expressway corridor.

Screen Line	Period	Direction	Traffic Volumes (veh)					
	1 01100	Direction	May 1990	March 1994	Change	% Change		
	A.M. Peak	Northbound	26,740	27,700 ^ª	960	3.59		
		Southbound	40,440	39,360	-1,080	-2.67		
		Total	67,180	67,060	-120	-0.18		
	P.M. Peak	Northbound	59,500	54,440 ^a	-5,060	-8.50		
Mockingbird		Southbound	48,090	51,060	2,970	6.18		
		Total	107,590	105,500	-2,090	-1.94		
	24 Hour	Northbound	190,680	182,860 ^a	-7,820	-4.10		
		Southbound	187,820	191,090	3,270	1.74		
		Total	378,500	373,950	-4,550	-1.20		

TABLE 4.1. US-75 North Central Expressway CorridorTraffic Volumes During March 1994

^a Volume does not include Skillman data.

Traffic Patterns on North-South Routes

The fluctuations in each route's percentage of the total screen line traffic volume at the Mockingbird/Buckner screen line were as much as 12 percent between May 1990 and March 1994 (see Figures G.1 through G.3). It appears that traffic patterns fluctuated drastically in both directions. In March 1994, US-75 North Central Expressway no longer carried the most peak period, peak direction traffic in the corridor at the Mockingbird/Buckner screen line. The expressway, however, did continue to carry the most traffic for the 24-hour period.

A.M. Peak Period. The A.M. peak period southbound (peak direction) traffic volumes on US-75 substantially decreased by 4,180 vehicles which represents a 28 percent reduction in traffic between May 1990 and March 1994 (see Figure H.1, b). Conversely, volumes increased on Preston (420 vehicles or 29 percent), Hillcrest (200 vehicles or 20 percent), Greenville (1,460 vehicles or 105 percent), Matilda (320 vehicles or 196 percent), Skillman (620 vehicles or 20 percent), and Abrams (220 vehicles or 11 percent). US-75 volumes in the northbound (off-peak) direction also dropped, but by 2,220 vehicles or 18 percent (see Figure H.1, a). Northbound traffic volumes increased on DNT (1,590 vehicles or 26 percent), Hillcrest (220 vehicles or 37 percent), Greenville (690 vehicles or 183 percent), Matilda (1,150 vehicles or 189 percent), and Abrams (1,030 vehicles or 61 percent).

P.M. Peak Period. The northbound (peak direction) traffic volumes at the Mockingbird/Buckner screen line were substantially different in March 1994 than in May 1990 before construction (see Figure H.2, a). Northbound traffic dropped considerably on US-75 by 5,650 vehicles or 29 percent. Traffic increased on DNT (1,110 vehicles or 7 percent), Preston (270 vehicles or 8 percent), Hillcrest (460 vehicles or 23 percent), Greenville (970 vehicles or 128 percent), Matilda (2,210 vehicles or 131 percent), and Abrams (1,800 vehicles or 45 percent). The southbound (off-peak direction) volumes reflected similar traffic pattern changes, though smaller in magnitude (see Figure H.2, b).

24-Hour Period. The daily traffic volumes along the Mockingbird/Buckner screen line follow the same patterns as found in the peak periods (see Figure H.3). Northbound volume significantly decreased on US-75 by 15,830 vpd, equivalent to a 20 percent reduction in total daily traffic volume. These motorists apparently diverted to other routes in the corridor as evidenced by traffic increases on DNT (7,180 vpd or 18 percent), Preston (500 vpd or 5 percent), Hillcrest (1,640 vpd or 31 percent), Greenville (3,130 vpd or 81 percent), Matilda

(5,020 vpd or 98 percent), and Abrams (5,730 vpd or 45 percent). Similar results were found for southbound traffic volumes. The daily southbound volume on US-75 decreased by 10,650 vpd representing a 14 percent drop in volumes between May 1990 and March 1994. The screen line data reveals that traffic increased on DNT (1,920 vpd or 5 percent), Preston (2,010 vpd or 19 percent), Hillcrest (1,380 vpd or 27 percent), Greenville (3,000 vpd or 28 percent), Matilda (710 vpd or 42 percent), Skillman (1,940 vpd or 20 percent), and Abrams (2,880 vpd or 25 percent).

Traffic Patterns on US-75 North Central Expressway

Figure 4.1 illustrates the daily traffic volume on US-75 at the Mockingbird screen line count location from October 1989 to March 1994 and the corresponding average ATR traffic volumes for the Dallas area. The patterns on US-75 prior to October 1993 were discussed previously in the October 1993 traffic conditions section of the report. As shown in the figure, the total daily traffic volume at Mockingbird dropped substantially in March 1994 relative to the ATR station trend.

Table 4.2 summarizes US-75 daily traffic volumes in March 1994 at the Mockingbird screen line count location. The volumes are compared to estimated volumes that would have been expected in the absence of the construction project. Based upon this comparison, the results indicate that daily traffic volumes on US-75 at Mockingbird decreased an estimated 25 percent in March 1994. When comparing observed volumes, the reduction was found to be approximately 17 percent. The true impact of the US-75 construction project on traffic volumes is probably between the actual change in observed volumes (17 percent reduction) and the change in estimated and observed volumes (25 percent reduction).

TRAVEL TIMES AND AVERAGE TRAVEL SPEEDS

In March 1994, travel times were collected for only three routes: DNT, US-75, and US-75 Frontage Road. The total travel times on each route are given in Appendix I. The corresponding average travel speeds are summarized in Appendix J.



FIGURE 4.1. Daily Traffic Volumes on US-75 Compared to ATR Stations in the Dallas Area from October 1989 to March 1994

Screen Line Count Location		Daily Traffic Volumes						
		Before	During Construction					
	Direction	(May 1990)						
		Observed	Estimated a	Observed	Change	<u>% Change</u>		
Mockingbird	Northbound	79,210	87,200	63,390	-23,810	-27.31		
	Southbound	75,730	83,360	65,080	-18,280	-21.93		
	Total	154,940	170,560	128,470	-42,090	-24.68		

 TABLE 4.2. Changes in Daily Traffic Volumes on US-75 During March 1994

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

Figures 4.2 and 4.3 summarize the average peak hour, peak direction travel times and travel speeds collected during the March and May studies. The A.M. peak hour, peak direction (southbound) average travel times during March 1994 increased on DNT (2.77 minutes) and US-75 (1.34 minutes). The reduction in travel time on the US-75 Frontage Road is probably due to higher than normal May 1990 travel times that resulted from incidents. In the P.M. peak hour, US-75 average peak direction (northbound) travel time was 6.71 minutes longer than in May 1990. Motorists traveling DNT experienced a shorter travel time by 1.32 minutes. P.M. peak period, peak direction travel times also decreased on US-75 Frontage Road by 7.26 minutes.

The A.M. peak hour, peak direction average travel speed on US-75 decreased from 56 km/h (35 mph) in May 1990 to 49 km/h (31 mph) in March 1994. The average peak hour, peak direction travel speed in the P.M. peak decreased from 39 km/h (24 mph) to 31 km/h (19 mph).

The travel times and average travel speeds on US-75 North Central Expressway from 6:00 A.M. to 7:00 P.M. are shown in Figures 4.4 and 4.5. These data show that peak period travel times in March 1994 were longer than those observed in earlier studies. During the off-peak period, average travel speeds were lower in March 1994, most likely a result of off-peak lane closures on US-75. The results indicate that the construction underway in March 1994 on the S-1 section of the project, which required the mainlanes to be reduced from three to two lanes in each direction, increased travel times and reduced travel speeds on US-75 North Central Expressway.



(a) A.M. Peak





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



(a) A.M. Peak



⁽b) P.M. Peak





(a) Northbound



(b) Southbound





(a) Northbound







5. SUMMARY

This chapter summarizes the results of the October 1993 and March 1994 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 October 1993 versus October 1989 and 1990 data and March 1994 versus May 1990 data.

OCTOBER 1993 TRAFFIC CONDITIONS

The results indicate that the US-75 North Central Expressway construction project during October 1993 had a noticeable effect on southbound peak period and daily traffic conditions and travel patterns in the corridor. The traffic impacts likely resulted from the MKT Railroad bridge removal construction in the S-2 section of the construction project, which required the southbound lanes to be reduced from three to two lanes between Mockingbird and McCommas. Further, the US-75 and Woodall Rodgers interchange construction may have contributed to the traffic impacts. The major findings of the October 1993 traffic study are summarized as follows:

- Daily traffic volumes on US-75 North Central Expressway were an estimated 11 to 16 percent lower in October 1993 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 one to five percent at the screen lines. These increases indicate that the construction project during October 1993 had no adverse effect on total corridor volumes. However, the total daily east-west traffic volumes crossing US-75 North Central Expressway decreased five percent, suggesting that the construction project may have slightly 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 32

percent suggests that the reversible lane system, which provided additional peak period capacity in the congested corridor, was beneficial.

- Peak period, peak direction traffic on US-75 North Central Expressway consists of 94-95 percent passenger vehicles, 4-5 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 1.19. 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 four minutes longer on the US-75 North Central Expressway and six minutes longer on Greenville. Correspondingly, average travel speeds on US-75 dropped from 45 km/h (28 mph) to 36 km/h (22 mph) and on Greenville, the speeds decreased from 41 km/h (26 mph) to 31 km/h (19 mph). In addition, the A.M. peak hour average travel times increased on DNT, Hillcrest, Skillman, and Garland from one to three minutes. The P.M. peak hour, peak direction (northbound) travel times and speeds improved on most routes in the corridor.

MARCH 1994 TRAFFIC CONDITIONS

The median lane closures on US-75 North Central Expressway between McCommas and Woodall Rodgers Freeway in the S-1 section of the construction project resulted in significant changes in traffic patterns in the corridor. The results indicate that motorists diverted from US-75 to alternative routes, but continued to travel in the corridor. The major findings of the March 1994 traffic study are summarized as follows:

• The daily traffic volume on US-75 North Central Expressway at Mockingbird was an estimated 25 percent lower in March 1994 than would be expected in the absence of the construction project.

- The total daily corridor traffic volume at the Mockingbird screen line was not affected by the construction project, as evidenced by a higher total screen line traffic volume in March 1994 than in May 1990.
- The peak period and daily traffic patterns significantly changed at the Mockingbird screen line. Although both directions of traffic changed, the magnitude of the changes were greater for the northbound traffic. Traffic volumes were substantially lower on US-75 (28 to 29 percent reduction in peak period, peak direction volumes) and considerably higher on DNT, Preston, Hillcrest, Greenville, Matilda, Skillman, and Abrams (7 to 196 percent increase in peak period, peak direction volumes). Evidently, motorists diverted to these alternative routes in the corridor to avoid the traffic delays on US-75 North Central Expressway resulting from the median lane closures.
- Peak hour, peak direction average travel times on the US-75 North Central Expressway between the I-635 LBJ Freeway and the Dallas central business district were one minute longer in the A.M. peak (southbound direction) and seven minutes longer in the P.M. peak (northbound direction). Likewise, the A.M. peak hour, average travel speed lowered from 56 km/h (35 mph) to 49 km/h (31 mph) and the P.M. peak hour, average travel speed decreased from 39 km/h (24 mph) to 31 km/h (19 mph). Of the alternative routes, only DNT and US-75 Frontage Road were monitored during March 1994. The peak hour, peak direction average travel times on DNT increased three minutes in the A.M. peak and decreased one minute in the P.M. peak. The US-75 Frontage road average travel times and speeds actually improved in March 1994. The travel times on US-75 North Central Expressway during the off-peak period (midday) were longer due to temporary off-peak period lane closures.

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APPENDIX A

OCTOBER 1993 SCREEN LINE TRAFFIC VOLUMES

1. Jame							Route							
Hour Ending	Harry Hines	DNT	Maple	Cedar Springs	Lemmon	Oak Lawn	Turtle Creek	McKinney	US-75	Ross	Live Oak	Gaston	Columbia	Total
1	44	315	75	153	190	120	53	108	718	80	51	83	94	2084
2	28	179	45	82	114	74	28	60	451	54	34	47	48	1244
3	23	124	26	63	103	54	19	52	389	44	36	38	48	1018
4	15	99	17	40	56	29	8	20	267	23	11	21	19	625
5	19	126	17	27	122	24	2	14	351	• 15	21	16	35	789
6	117	382	50	. 50	234	38	7	14	1041	38	42	41	58	2112
7	670	1589	127	165	752	158	41	57	3043	130	119	107	109	7068
8	1285	3025	264	293	1280	456	126	245	4429	450	319	250	228	12650
9	1038	3105	286	284	1108	682	267	333	4220	637	319	254	280	12814
10	478	2073	295	284	838	685	276 .	312	3188	500	302	289	313	9835
11	403	1907	301	321	829	675	293	357	2851	466	422	392	355	9573
12	531	2165	476	476	1229	879	513	546	3336	660	רדר	559	465	12612
13	561	2368	501	537	1472	1056	620	684	3466	736	639	550	476	13667
14	545	2490	436	501	1224	942	568	624	3399	597	537	489	427	12780
15	498	2582	407	506	1136	952	507	559	3664	628	544	507	508	12999
16	525	3124	423	477	1078	870	502	583	4002	731	768	675	686	14444
17	616	4670	534	564	1289	1018	728	904	4382	1180	1557	1008	1104	19553
18	812	5677	530	733	1434	1266	1428	1604	4260	1537	1501	1286	1304	23373
19	362	4010	397	646	1191	1094	931	1028	4105	1069	640	773	734	16981
20	208	2108	258	490	997	717	426	585	3779	508	382	395	367	11220
21	165	1311	205	450	827	540	297	421	2952	366	284	327	250	8395
22	146	1157	193	469	735	. 441	281	360	2678	300	218	282	245	7505
23	155	1270	164	375	576	345	266	344	2434	280	181	197	220	6807
24	93	846	128	328	390	243	158	235	2199	201	71	179	196	5268
24 Hr. Total	9338	46700	6155	8314	19207	13358	8348	10048	65604	11230	9776	8766	8571	225414

 TABLE A.1. Oak Lawn/Lemmon/Peak Screen Line Average Traffic Volumes (October 1993): Northbound

	Ronte													
Hour	 						Route	-						
Ending	Harry Hines	DNT	Maple	Cedar Springs	Lemmon	Oak Lawn	Turtle Creek	Cole	US-75	Ross	Live Oak	Gaston	Columbia	Total
1	47	200	81	154	193	93	22	58	561	77	35	51	25	1598
2	30	110	51	132	114	51	10	41	402	55	25	33	12	1067
3	22	· 86	37	125	93	47	8	32	346	43	27	26	18	912
4	19	58	23	66	62	28	3.	16	260	26	19	25	17	621
· 5	21	80	22	27	55	22	6	17	. 366	23	30	28	33	730
6	47	318	42	66	129	49	25	59	1011	109	95	102	75	2128
7	189	1910	162	169	364	206	131	206	3138	552	705	506	213	8451
8	526	5294	413	461	1035	770	658	716	4405	1393	2132	1249	566	19618
9	676	5811	531	620	1454	947	1145	1063	4562	1532	1975	1272	475	22063
10	548	3812	396	494	995	695	648	543	3812	826	741	644	275	14430
11	475	2293	329	441	851	651	399	398	3164	601	443	472	223	10741
12	562	2399	389	483	1003	729	464	473	3325	589	523	469	225	11633
13	631	2376	511	645	1434	843	594	593	3519	733	715	610	316	13 <i>5</i> 20
14	657	2711	502	660	1405	837	676	591	3712	742	659	566	317	14035
15	614	2653	410	553	1200	810	471	490	3638	661	516	496	295	12806
16	. 883	2847	418	587	1429	708	422	398	3850	621	428	431	287	13309
17	1298	3377	458	620	1575	710	420	506	4076	792	435	426	230	14921
18	1711	3764	550	667	1800	698	437	459	4222	724	435	379	226	16071
19	742	3310	386	580	1432	738	417	424	3636	532	379 .	397	197	13172
20	318	2121	242	460	1024	653	303	353	33 <i>5</i> 0	452	297	293	-157	10024
21	187	1035	187	387	749	544	189	265	2330	301	182	204	116	6678
22	139	926	155	343	647	465	151	240	2196	277	130	163	100	5932
23	116	663	136	304	488	332	106	192	1742	219	122	152	79	4651
24	ui	376	108	231	367	199	52	130	1359	165	75	100	72	3346
24 Hr. Total	10571	48529	6539	9277	19895	11825	7757	8267	62982 -	12046	11125	9096	4547	222457

 TABLE A.2. Oak Lawn/Lemmon/Peak Screen Line Average Traffic Volumes (October 1993): Southbound

A-4

·····	Route													
Hour Ending	· · · · · · · · · · · · · · · · · · ·		· · · ·	T	r		I		1	Total				
	DNT	Preston	Hillcrest	US-75	Greenville	Matilda	Skillman	Abrams	Garland					
1	271	36	22	1176	147	39	63	84	155	1994				
2	140	18	9	721	91	25	32	48	75	1159				
3	108	13	6	586	73	23	31	31	66	936				
. 4	81	9	4	337	26	14	16	22	39	549				
5	111	11	4	453	22	11	20	30	61	723				
6	325	39	10	1241	43	36	41	88	181	2003				
7	1426	116	40	3643	134	119	186	320	496	6481				
8	2520	421	209	4305	291	521	524	776	816	10385				
9	2616	621	353	4330	314	515	612	863	838	11061				
10	1965	531	264	3577	237	283	423	680	740	8701				
11	1783	576	228	3388	280	236	430	622	856	8399				
12	2173	704	317	3859	305	275	487	696	1029	9846				
13	2264	714	362	4254	386	335	526	. 733	1189	10762				
14	2361	793	341	4224	398	315	555	715	1206	10909				
15	2533	750	347	4224	350	322	581	729	1300	11135				
16	2943	775	360	4780	362	405	649	864	1510	12647				
17	4233	873	443	5305	396	527	814	941	1799	15331				
18	5165	1245	653	5349	404	954	1042	1091	2158	18061				
19	4134	967	477	5039	436	644	877	946	1512	15032				
20	2105	527	276	4468	399	339	500	702	1092	10406				
21	1303	344	192	3589	368	204	361	498	723	7582				
22	1095	351	134	3257	382	196	244	403	612	6674				
23	1077	225	90	2776	291	121	188	281	457	5506				
24	812	103	54	1989	233	95	145	177	322	3931				
24 Hr. Total	43543	10762	5196	76870	6367	6555	9345	12341	19234	190213				

TABLE A.3. Mockingbird/Buckner Screen Line Average Traffic Volumes (October 1993): Northbound

A-5

	Route												
Hour Ending	DNT	Preston	Hillcrest	US-75	Greenville	Matilda	Skillman	Abrams	Garland	Total			
	1				1	1	1	<u> </u>	1	1			
1	170	37	12	812	134	23	69	91	141	1489			
2	79	17	5	559	80	10	32	45	61	887			
3	66	9	4	415	54	6	31	48	46	679			
4	55	10	4	310	29	2	16	. 31	48	506			
5	. 81	17	4	421	25	1	20	28	69	667			
6	327	32	7	1096	53	4	55	71	205	1849			
. 7	1873	153	65	3871	186	14	348	224	879	7613			
8	5033	716	366	4851	902	100	1320	874	1823	15984			
9	5291	1023	524	4689	. 990	161	1458	966	1651	16753			
10	3727	709	333	4369	623	67	583	667	1167	. 12245			
11	2348	610	283	3926	535	63	403	638	1049	9855			
12	2431	688	309	3906	631	82	423	667	1021	10157			
13	2360	791	320	4130	702	111	503	785	1177	10878			
14	2587	804 .	326	4201	646	83	466	725	1160	10998			
15	2456	729	335	4134	644	98	475	914	1167	10952			
16	2524	742	314	4171	735	113	551	891	1269	11310			
17	3327	746	401	4104	817	. 137	562	891	1199	12183			
18	3542	787	433	4157	9 87	168	694	1050	1276	13094			
19	3038	698	426	4027	939	-201	688	1058	1264	12340			
20	1651	495	252	3838	738	132	505	871	1052	9534			
21	983	323	170	2744	568	111	371	632	776	6677			
22	913	261	122	2589	522	100	347	559	622	6035			
23	652	157	71	2047	377	75	237	356	441	4413			
24	344	78	30	1427	270	41	136	188	250	2763			
24 Hr. Total	45860	10628	5116	70794	12187	1902	10293	13268	19812	189860			

TABLE A.4. Mockingbird/Buckner Screen Line Average Traffic Volumes (October 1993): Southbound

	<u></u>	<u> </u>		Route	•			1
Hour Ending	DNT	Preston	Hillcrest	US-75	Greenville	Skillman	Abrams	Total
				1				
1	309	35	29	714	242	185	134	1649
2	142	16	19	483	151	113	78	1003
3	110	10	12	.411	133	123	71	871
4	78	8	6	231	53	64	46	486
5	101	16	5	326	35	46	33	561
6	282	34	28	883	55	76	73	1432
7	1299	148	131	2485	269	230	257	4819
8	2499	386	435	3383	959	560	622	8843
9	2808	516	561	3509	1208	649	845	10096
10	2038	543	473	2919	696	478	650	7797
11	1684	596	467	2837	865	531	625	7605
12	2022	772	563	3380	1088	639	653	9117
13	2054	· 851	623	3550	1398	810	807	10092
14	2272	813	603	3550	1388	761	799	10186
15	2484	848	620	3629	1219	881	815	10496
16	2894	810	636	3862	1295	1075	890	11462
17	4231	772	755	3983	1412	1490	960	13604
18	5158	998	942	4047	1958	2221	1125	16450
19	4677	847	821	3833	1556	1757	1005	14496
20	2358	534	492	3354	1119	1079	817	9752
21	1530	386	356	2692	816	805	632	7218
22	1281	381	413	2520	752	732	517	6597
23	1135	197	191	2245	598	545	404	5316
24	691	80	96	1583	429	379	273	3532
24 Hr. Total	44139	10600	9277	60409	19693	16232	13131	173481

 TABLE A.5.
 Loop 12 (Northwest Highway)
 Screen Line Average Traffic Volumes (October 1993): Northbound

Route												
Hour	l		F	Route		·		Total				
Ending	DNT	Preston	Hillcrest	US-75	Greenville	Skillman	Abrams					
1	172	30	31	609	224	143	83	1292				
2	90	18	15	385	117	72	44	742				
3	72	9	10	294	75	62	39	560				
4	39	7	7	224	32	47	21	378				
5	66	14	8	340	34	63	15	540				
6	428	45	35	947	82	190	67	1794				
7	2023	240	190	2934	472	868	176	6903				
8	4321	879	832	2757	1851	2457	449	13547				
9	4275	1226	1093	2897	1854	2223	532	14099				
10	2917	907	870	2873	1058	1022	502	10150				
· 11	1852	750	620	2894	936	773	519	8343				
12	1963	880	714	3059	1175	754	646	9190				
13	1943	890	776	3161	1557	890	775	9992				
14	.2158	884	778	3317	1418	889	746	10190				
15	2153	877	740	3316	1216	852	824	9978				
16	2453	836	751	3670	1309	888	823	10730				
17	2730	776	882	3066	1484	950	963	10852				
18	3107	858	876	2036	1917	1093	1095	10980				
19	2310	777	914	2981	1506	1093	1002	10583				
20	1518	539	668	3189	1064	893	728	8599				
21	932	327	388	2565	858	693	546	6310				
. 22	919	272	305	2553	768	588	431	5836				
23	646	145	177	1909	596	435	303	4211				
24	375	62	73	1286	409	275	177	2657				
24 Hr. Total	39462	12250	11754	53262	22012	18212	11504	168456				

TABLE A.6. Loop 12 (Northwest Highway) Screen Line Average Traffic Volumes (October 1993): Southbound

	Route																		
Hour Ending	Hall	Lemmon	Heskell	Fitzhugh	Henderson	Monticello	McCommas	Mockingbird	Yale	University	Lovers	South western	Caruth Haven	Loop 12	Park Lane	Walnut	Royal	Forest	Total
1	28	69	79	238	125	16	7	139	51	49	99	18	31	260	109	95	87	70	1570
2	13	45	58	151	67	8	5	ସ	_ 24	37	58	8	18	137	51	52	47	39	883
3	11	41	49	121	52	6	2	45	15	19	36	5	15	141	38	45	29	27	697
4	8	19	24	60	26	1	4	37	6	5	16	4	10	90	27	41	26	24	428
5	9	22	29	43	21	3	1	30	8	7	15	5	5	71	22	26	25	17	360
6	17	31	70	77	35	6	6	65	13	8	31	8	25	102	50	77	39	49	710
7	39	148	302	197	106	18	15	159	38	53	84	36	83	321	139	421	174	174	2506
8	128	321	632	387	204	50	43	321	130	119	260	151	380	779	399	1038	681	528	6552
9	143	395	623	581	278	64	59	417	234	162	402	215	422	977	556	1548	1040	687	8802
10	137	384	457	513	350	74	79	618	184	190	. 378	214	257	919	506	1317	688	609	7874
11	168	406	434	540	392	94	74	629	201	199	479	207	241	972	596	1069	557	692	7951
12	203	488	572	735	511	132	148	786	236	279	583	262	286	1218	702	1094	640	969	9841
13	250	521	751	845	638	147	164	883	292	353	599	272	331	1424	1019	1202	711	1069	11470
14	236	556	700	868	587	131	135	893	283	336	574	261	378	1515	970	1351	741	940	11456
15	221	537	607	952	594	149	135	944	308	327	678	275	296	1767	915	1276	749	974	11704
16	<u>,</u> 247	562	642	1079	670	137	135	969	298	319	662	296	253	2114	931	1251	977	1193	12735
17	277	644	878	1465	782	213	274	1063	283	384	754	435	280	2572	935	1335	. 1464	1894	15933
18	333	728	1071	1630	1018	385	561	1340	385	513	758	782	417	3123	1284	1667	2376	2457	20828
19	259	540	710	1297	875	245	330	1282	257	376	687	548	408	2685	1103	1546	1665	1608	16420
20	163	353	428	957	812	144	149	949	192	238	580	261	341	1751	838	938	617	765	10475
21	129	267	340	670	598	93	89	777	154	212	467	156	251	1586	734	622	417	480	8044
22	106	243	293	602	566	85	83	777	210	261	429	137	222	1373	727	528	399	370	7412
23	86	204	273	573	452	60	59	547	159	158	303	78	134	775	366	384	249	225	5084
24	66	150	162	430	270	29	27	304	119	102	251	42 、	68	556	204	212	148	176	3318
24 Hr. Total	3278	7674	10184	15011	10028	2290	2584	14037	4083	4707	9179	4675	5153	27228	13223	19134	14547	16037	183052

TABLE A.7. US-75 Screen Line Average Traffic Volumes (October 1993): Eastbound

	Route																		
Hour Ending	Hall	Lemmon	Heskell	Fitzhugh	Henderson	Monticello	McCommas	Mockingbird	Yale	University	Lovers	South western	Caruth Haven	Loop 12	Park Lane	Walnut	Royal	Forest	Total
1	29	70	31	162	75	16	9	167	33	63	88	38	17	164	131	179	84	102	1460
2	20 ·	46	15	102	52	8	14	108	24	42	59	33	11	94	75	84	45	55	888
3	15	53	12	91	52	11	8	96	17	24	48	23	9	101	54	68	42	53	775
4	9	31	13	63	35	5	3	91	9	9	23	13	2	68	29	39	23	40	503
5	19	108	14	83	36	6	3	97	6	9	32	11	5	119	43	33	30	57	709
6	75	252	38	189	107	16	12	251	15	45	86	48	28	433	104	82	91	190	2062
7	237	857	189	619	396	126	62	708	93	166	397	216	105	1733	. 326	448	588	1079	8345
8	444	1352	589	1066	1007	595	402	1447	404	666	1211	758	192	3046	741	1266	1653	2635	19474
9	540	1204	663	1238	1204	729	485	1645	402	700	1323	740	214	2749	808	1027	1516	2472	19658
10	244	635	276	732	614	263	176	1272	259	527	786	413	154	1723	561	903	739	1442	11719
11	182	573	249	634	522	189	128	1043	198	371	592	287	137	1539	536	906	513	1162	9761
12	194	640	412	658	637	193	122	1113	201	339	650	326	205	1643	712	1177	586	1340	11149
13	199	705	404	734	705	268	186	1309	209	429	753	384	209	1796	784	1207	638	1525	12444
14	194	677	387	737	612	263	198	1284	225	410	813	408	239	1740	750	1127	578	1496	12138
15	208	712	338	751	536	200	156	1106	231	353	719	342	191	1624	724	1175	611	1397	11374
16	231	664	417	799	564	189	140	1070	265	417	656	313	221	1647	724	1198	645	1384	11544
17	229	746	627	817	542	185	136	930	287	399	697	318	270	1725	714	1331	711	1346	12008
18	234	745	668	887	570	188	135	1012	324	427	754	315	315	1832	816	1480	847	1311	12858
19	202	564	385	757	554	231	137	1034	213	396	743	366	193	1697	681	1089	783	1136	11160
20	140	395	221	566	475	182	114	955	137	263	574	317	137	1310	555	886	505	854	8586
21	109	303	164	433	326	102	58	709	85	219	403	221	120	913	386	654	355	586	6146
22	91	256	145	383	278	77	. 53	614	72	185	353	191	118	768	375	600	307	455	5319
23	82	245	95	340	. 235	61	- 38	433	62	137	279	142	106	553	321	518	232	325	4203
24	51	148	76	277	168	37	28	279	65	110	191	84	35	360	210	282	141	207	2748
24 Hr. Total	3978	11978	6426	13118	10303	4140	2803	18766	3837	6705	12230	6307	3234	29377	11160	17756	12262	22650	197030

 TABLE A.8. US-75 Screen Line Average Traffic Volume (October 1993): Westbound

APPENDIX B

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





FIGURE B.1. Percent of Total Screen Line Volume by Route: Oak Lawn/Lemmon/Peak - A.M. Peak Period



a) Northbound



FIGURE B.2. Percent of Total Screen Line Volume by Route: Oak Lawn/Lemmon/Peak - P.M. Peak Period





b) Southbound





a) Northbound



b) Southbound





a) Northbound







a) Northbound



FIGURE B.6. Percent of Total Screen Line Volume by Route: Mockingbird/Buckner - 24 Hour Period



FIGURE B.7. Percent of Total Screen Line Volume by Route: Loop 12 - A.M. Peak Period





FIGURE B.8. Percent of Total Screen Line Volume by Route: Loop 12 - P.M. Peak Period



FIGURE B.9. Percent of Total Screen Line Volume by Route: Loop 12 - 24 Hour Period



a) Eastbound







a) Eastbound



FIGURE B.11. Percent of Total Screen Line Volume by Route: US-75 - P.M. Peak Period





FIGURE B.12. Percent of Total Screen Line Volume by Route: US-75 - 24 Hour Period

APPENDIX C

TRAFFIC VOLUME CHANGES (OCTOBER STUDIES)

.





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















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











b) Southbound










a) Northbound



b) Southbound





6000 Oct 91 Oct 92 4000 Oct 93 Change in Volume (veh) 2000 0 -2000 -4000 -6000 Loop 12 Park Royal Forest University Lovers Mockingbird Yale Southwestern Caruth Haven Walnut Hill Route b) Westbound





a) Eastbound



FIGURE C.11. Change in Volume by Route as Compared to October 1990: US-75 Screen Line - P.M. Peak Period



a) Eastbound





APPENDIX D

OCTOBER 1993 TRAVEL TIMES

Burn Day				•	Ţ	'ravel Time (min	n)			
Run Beg	ginning	DNT	Preston	Hillcrest	US-75	US-75 Fr. Rd.	Greenville	Skillman	Abrams	Garland
	6:00	11.80	21.53	23.02	9.21	21.73	18.33	19.52	19.62	19.32
A.M. Peak	6:30	10.97	23.37	23.35	10.39	22.48	18.90	18.93	19.63	20.18
	7:00	11.27	25.18	24.23	21.41	23.32	21.67	18.22	22.92	22.52
Period	7:30	14.95	29.60	27.65	32.24	25.50	29.20	24.65	23.60	24.22
South-	8:00	19.53	30.97	33.08	25.74	28.02	33.16	22.20	24.20	22.52
bound	8:30	22.02	29:12	28.83	19.52	29.23	23.38	17.08	23.30	21.60
	9:00	18.27	23.83	24.42	14.78	23.88	22.18	22.60	21.37	20.22
	3:00	13.33	23.97	28.67	10.00	22.47	27.90	23.15	22.98	20.88
	3:30	12.60	29.07	28.10	11.04	20.53	29.38	21.67	25.33	22.13
P.M.	4:00	12.70	30.07	28.15	11.94	24.82	25.28	22.65	26.67	23.25
Peak Period	4:30	12.20	26.68	25.30	16.12	22.03	26.00	19.72	23.00	22.77
	5:00	12.50	31.55	33.22	20.18	26.13	25.13	21.52	24.93	23.32
North- bound	5:30	15.20	28.30	31.12	20.58	27.15	27.62	21.85	26.92	28.25
Jouna	6:00	14.68	28.30	26.58	17.84	24.10	26.50	22.52	24.88	23.65
	6:30	12.32	25.02	25.95	14.59	20.10	26.80	20.75	23.63	21.32
	7:00	11.32	24.40	25.18	11.47	21.85	25.58	25.15	20.73	19.63

 TABLE D.1. Peak Period, Peak Direction Total Travel Time on North-South Routes (October 1993)

, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				· · · · ·	Т	ravel Time (mi	n)		<u>,</u>	
Run Be	Run Beginning		Preston	Hillcrest	US-75	US-75 Fr. Rd.	Greenville	Skillman	Abrams	Garland
	6:00 .	12.43	21.90	22.67	9.50	20.97	18.97	19.17	21.40	18.20
A.M.	6:30	12.22	22.68	23.87	10.74	26.38	20.22	22.32	21.98	20.33
Peak	7:00	12.30	27.10	25.13	11.51	24.27	20.73	22.30	23.18	21.83
Period	7:30	14.17	27.95	30.02	15.04	25.85	26.72	23.80	26.83	22.80
North-	8:00	15.20	30.65	28.12	15.02	27.47	24.47	21.95	27.85	24.85
bound	8:30	13.35	29.62	29.28	12.48	23.90	25.37	22.47	28.15	22.42
	9:00	12.38	24.32	25.38	10.15	23.58	20.27	18.72	21.97	21.32
	3:00	11.60	24.07	27.02	11.21	33.95	24.48	19.13	23.83	20.62
•	3:30	12.47	29.55	29.92	13.19	25.33	20.78	20.60	23.47	20.73
P.M.	4:00	12.72	29.60	27.83	17.53	24.73	25.20	22.78	23.10	24.82
Peak	4:30	12.25	34.03	30.25	17.09	30.08	24.60	23.25	25.53	26.37
Period	5:00	12.53	29.78	28.33	20.09	32.92	28.10	24.13	23.48	26.77
South-	5:30	14.97	30.98	29.32	20.07	31.58	27.55	22.92	22.92	23.77
bound	6:00	14.67	27.17	26.20	20.67	25.23	24.73	21.95	23.02	22.12
-	6:30	11.98	23.78	24.07	16.79	24.88	24.12	21.52	22.08	21.68
	7:00	12.35	20.87	23.22	15.23	20.43	22.35	18.30	23.37	20.92

TABLE D.2. Peak Period, Off-Peak Direction Total Travel Time on North-South Routes (October 1993)

D-4

······				Travel T	ime (min)			
Run Be	Run Beginning		Eastbound		Westbound			
		Loop 12	Mockingbird	Royal	Loop 12	Mockingbird	Royal	
	6:00	8.82	11.72	14.13	9.08	12.27	12.27	
A.M.	6:30	8.43	11.17	14.70	8.83	12.68	12.55	
Peak	7:00	10.85	13.48	14.10	11.03	15.25	14.03	
Period	7:30	14.42	16.70	13.18	17.02	22.00	21.23	
	8:00	14.18	16.50	14.68	13.95	20.82	16.07	
	8:30	17.32	15.07	14.68	13.43	16.00	12.02	
	9:00	13.27	11.53	15.20	10.00	15.60	16.98	
· · · · ·	3:00	11.55	16.27	13.82	10.85	15.67	14.10	
	3:30	11.05	14.38	15.03	11.85	13.13	15.02	
P.M. Peak	4:00	15.70	18.63	17.33	11.60	20.45	14.48	
Period	4:30	13.07	17.13	14.75	10.47	16.00	13.63	
	5:00	14.77	17.57	16.47	11.40	14.63	13.52	
	5:30	16.30	23.28	23.18	12.13	14.92	18.17	
	6:00	15.65	19.22	20.12	8.45	15.90	13.67	
	6:30	11.97	17.63	14.03	10.48	13.65	13.72	
	7:00	9.93	14.33	14.23	8.00	14.50	13.55	

 TABLE D.3. Peak Period Total Travel Time on East-West Routes (October 1993)

Pup Paginning	Travel Time (min)					
Run Beginning	Northbound	Southbound				
10:00 A.M.	11.80	10.16				
10:30	13.62	11.03				
11:00	11.90	11.01				
11:30	11.87	10.62				
12:00 P.M.	11.46	11.25				
12:30	12.83	10.02				
1:00	12.59	10.20				
1:30	10.33	10.79				

TABLE D.4. Off-Peak Period Total Travel Time on US-75 (October 1993)

APPENDIX E

OCTOBER 1993 AVERAGE TRAVEL SPEEDS

• ·

Run Beginning			·		Tr	avel Speed (km/	/h)	······	· · · ·	
		DNT	Preston	Hillcrest	US-75	US-75 Fr. Rd.	Greenville	Skillman	Abrams	Garland
	6:00	80	43	42	97	40	50	48	51	51
A.M.	6:30	87	40	. 40	85	40	48	50	51	48
Peak Period	7:00	85	37	39	42	39	42	51	43	43
	7:30	64	32	34	29	35	31	37	42	40
South-	8:00	48	31	29	37	32	27	42	42	43
bound	8:30	43	32	32	45	31	39.	55	43	45
	9:00	53	39	39	61	37	40	42	47	48
	3:00	72	39	32	90	40	32	40	42	47
	3:30	76	32	34	82	43	31	43	39	43
P.M.	4:00	76	31	34	76	35	37	42	37	42
Peak	4:30	79	35	37	56	40	35	47	42	42
Period	5:00	77	29	29	45	34	37	43	39	42
North-	5:30	63	32	31	45	32	34	43	35	34
bound	6:00	66	32	35	51	37	35	42	39	40
[6:30	77	37	35	61	45	34	45	40	45
	7:00	85	39	37	80	40	35	37	47	48

 TABLE E.1. Peak Period, Peak Direction Average Travel Speed on North-South Routes (October 1993)

Due De					- Tı	ravel Speed (km	/h)	· · ·	······································	
	ginning	DNT	Preston	Hillcrest	US-75	US-75 Fr. Rd.	Greenville	Skillman	Abrams	Garland
	6:00	77	42	42	93	42	48	48	45	53
A.M. Peak Period	6:30	79	42	-39	84	34	45	42	43	47
	7:00	79	34	37	77	37	45	42	42	43
	7:30	68	34	31	60	34	34	39	35	42
North-	8:00	63	31	34	61	32	37	42	35	39
bound	8:30	72	32	32	72	37	35	42	34	43
	9:00	77	39	37	89	37	45	50	43	45
	3:00	82	39	35	80	26	37	48	42	48 .
	3:30	77	32	32	69	35	43	45	42	48
P.M.	4:00	76	32	34	53	35	35	40	43	40
Peak	4:30	79	27	31	53	29	37	40	39	37
Period	5:00	76	32	34	45	27	32	39	42	37
South-	5:30	64	31	32	45	27	32	40	43	42
bound	6:00	66	34	37	45	35	37	42	43	45
	6:30	- 80	39	40	55	35	37	43	45	45
	7:00	77	45	40	60	43	40	51	43	47

 TABLE E.2. Peak Period, Off-Peak Direction Average Travel Speed on North-South Routes (October 1993)

				Travel Sp	eed (km/h)			
Run Beginning		·	Eastbound		Westbound			
		Loop 12	Mockingbird	Royal	Loop 12	Mockingbird	Royal	
	6:00	58	37	47	56	35	55	
A.M.	6:30	61	40	45	58	35	53	
Peak	7:00	48	32	47	47	29	47	
Period	7:30	35	26	50	31	19	31	
	8;00	37	27	45	37	21	42	
	8:30	31	29	45	39	27	55	
	9:00	39	39	43	51	29	39	
	3:00	45	27	48	48	29	47	
	3:30	47	31	43	43	34	43	
P.M. Peak	4:00	32	24	39	45	21	45	
Period	4:30	40	26	45	50	27	48	
	5:00	35	26	40	45	31	48	
	5:30	32	19	29	43	29	37	
	6:00	32	23	32	61	27	48	
	6:30	43	26	47	50	32	48	
	7:00	51	31	47	64	31	48	

TABLE E.3. Peak Period Average Travel Speed on East-West Routes (October 1993)

Der Designing	Travel Spo	eed (km/h)
Run Beginning	Northbound	Southbound
10:00 A.M.	80	89
10:30	76	82
11:00	79	82
11:30	79	85
12:00 P.M.	80	80
12:30	74	90
1:00	76	89
1:30	87	84

TABLE E.4. Off-Peak Period Average Travel Speed on US-75 (October 1993)

APPENDIX F

MARCH 1994 SCREEN LINE TRAFFIC VOLUMES

Hour		······			Route					Total
Ending	DNT	Preston	Hillcrest	ÚS-75	Greenville	Matilda	Skillman ^a	Abrams	Garland	10(8)
I	309	55	26 .	1189	146	56	N/A	161	214	2156
2	191	36	15	708 ·	86	36	N/A	90	136	1297
3	145	27	14	613	63	31	N/A	84	110	1085
4	107	15	2	359	28	15	N/A	48	64	638
5	120	14	3	431	24	13	N/A	42	71	716
6	330	28	17	992	44	36	N/A	121	202	1768
7	1659	125	80	2833	172	161	N/A	389	581	5998
8 .	3087	428	280	3707	421	776	N/A	1042	982	10721
9	3052	597	453	3355	470	813	N/A	1290	954	10983
10	2241	589	382	3105	275	411	N/A	1147	937	9086
11	2036	627	366	3084	318	363	N/A	1113	966	8872
12	2614	741	482	3418	383	438	N/A	1073	1089	10237
13	2527	798	469	3479	427	534	N/A	1011	1193	10439
14	2545	820	457	3516	395	530	N/A	982	1133	10376
15	2633	841	426	3509	392	536	N/A	1085	1216	10637
16	3063	798	456	3415	304	754	N/A	1274	1434	11497
17	4351	868	595	3499	410	981	N/A	1297	1578	13576
18	5114	1086	771	3541	496	1237	N/A	1655	1735	15633
19	4053	837	601	3664	516	928	N/A	1581	1555	13734
20	2277	524	378	3475	380	513	N/A	1005	1079	9630
21	1433	360	252	3323	358	320	N/A	799	753	7597
22	1178	300	201	3089	335	293	N/A	551	627	6573
23	1047	226	136	3001	310	208	N/A	402	475	5803
24	573	113	73	2082	266	138	N/A	270	302	3816
24 Hr. Total	46679	10848	6929	63387	7013	10122	N/A	18506	19381	182864

 TABLE F.1. Mockingbird/Buckner Screen Line Average Traffic Volumes (March 1994): Northbound

^a Data not available due to counter malfunction.

F-3

	1				Route					1
Hour Ending	DNT	Preston	Hillcrest	US-75	Greenville	Matilda	Skillman	Abrams	Garland	Total
1	184	51	29	846	130	21	80	112	157	1607
2	87	22	16	609	62	10	46	62	68	981
3	74	22	15	526	56	6	37	39	69	843
4	57	14	3	306	23	4	21	33	55	515
5	65	13	4	384	29	5	21	35	63	617
6	302	37	9	1115	43	3	54	62	234	1858
7	1752	173	93	3281	279	21	433	244	936	7210
8	4998	732	463 •	4118	1273	215	1671	886	1830	16186
9	4804	1095	634	3568	1298	241	1604	1036	1680	.15959
10	3080	766	429	3702	666	84	605	846	1195	11372
11	2271	699	362	3199	517	108	469	811	1153	9588
12	2470	842	396	3455	652	143	521	827	1109	10414
13	2313	851	439	3615	771	121	547	889	1296	10842
14	2555	913	449	3871	729	119	534	870	1222	11263
15	2479	938	407	3070	744	113	582	935	1217	10484
16	2646	904	418	3959	845	148	642	1059	1341	11960
17	3004	857	503	4168	946	165	645	1020	1362	12669
18	3369	969	542	4214	1124	190	837	1206	1376	13825
19	2667	822	474	4204	946	201	784	1121	1380	12597.
20	1616	606	318	3505	767	148	516	817	1011	9302
21	1011	415	188	2787	576	111	369	615	828	6898
22	943	373	162	2784	498	123	370	536	651	6438
23	678	191	105	2205	372	72	230	354	445	4650
24	359	99	49	1584	264	43	153	197	268	3014
24 Hr. Total	43777	12401	6501	65075	13610	2415	11766	14607	20941	191092

 TABLE F.2. Mockingbird/Buckner Screen Line Average Traffic Volumes (March 1994): Southbound

APPENDIX G

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

.



a) Northbound



FIGURE G.1. Percent of Total Screen Line Volume by Route: Mockingbird/Buckner - A.M. Peak Period





FIGURE G.2. Percent of Total Screen Line Volume by Route: Mockingbird/Buckner - P.M. Peak Period







APPENDIX H

TRAFFIC VOLUME CHANGES (MARCH/MAY STUDIES)

•



a) Northbound













b) Southbound



APPENDIX I

MARCH 1994 TRAVEL TIMES

Dun Ba	ginning	Т	ravel Time	(min)
	giiiiiig	DNT	US-75	US-75 Fr. Rd.
	6:00	11.50	9.10	20.63
A.M.	6:30	10.98	10.20	21.75
Peak	7:00	13.20	15.08	20.92
Period	7:30	18.72	18.97	26.08
South-	8:00	23.32	20.97	26.18
bound	8:30	19.20	19.37	30.62
	9:00	12.15	16.38	26.45
	3:00	N/A	15.32	27.02
	3:30	13.25	17.70	24.62
P.M. Peak	4:00	12.50	20.60	24.00
Period	4:30	12.77	29.93	21.15
	5:00	12.28	33.40	23.48
North- bound	5:30	16.18	31.75	24.98
	6:00	14.15	25.22	22.68
	6:30	12.80	25.35	22.82
	7:00	12.67	12.93	20.72

TABLE I.1. Peak Period, Peak Direction Total Travel Timeon North-South Routes (March 1994)

I-3

Dun Doo		Tr	avel Time (m	in)
Run Beg	linning	DNT	US-75	US-75 Fr. Rd.
	6:00	12.67	9.47	20.47
A.M.	6:30	13.58	10.70	24.63
Peak	7:00	12.63	15.12	23.63
Period	7:30	12.78	16.17	29.35
North-	8:00	12.82	16.02	24.03
bound	8:30	12.72	15.03	28.07
	9:00	11.78	13.43	21.75
	3:00	N/A	18.78	24.80
	3:30	11.60	13.78	20.93
P.M.	4:00	12.67	17.30	21.20
Peak	4:30	13.75	16.92	21.82
Period	5:00	12.87	19.17	29.60
South-	5:30	16.30	22.35	23.90
bound	6:00	12.25	N/A	20.50
	6:30	12.27	12.50	22.50
	7:00	11.22	12.18	22.43

TABLE I.2. Peak Period, Off-Peak Direction Total Travel Time on North-South Routes (March 1994)

I-4

Bur Designing	Travel Time (min)		
Run Beginning	Northbound	Southbound	
10:00 A.M.	10.07	15.35	
10:30	9.97	15.33	
11:00	9.78	15.23	
11:30	10.08	17.28	
12:00 P.M.	10.40	16.88	
12:30	10.17	18.27	
1:00	10.10	17.38	
1:30	10.97	16.28	

 TABLE I.3. Off-Peak Period Total Travel Time on US-75 (March 1994)

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APPENDIX J

MARCH 1994 AVERAGE TRAVEL SPEEDS

•

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Run Beginning		Travel Speed (km/h)		
		DNT	US-75	US-75 Fr. Rd.
A.M. Peak Period South- bound	6:00	84	98	43
	6:30	87	.87	40
	7:00	72	60	42
	7:30	51	47	34
	8:00	42	42	34
	8:30	50	47	29
	9:00	79	55	34
P.M. Peak Period North- bound	3:00	N/A	. 58	32
	3:30	72	50	35
	4:00	77	43	37
	4:30	76	31	42
	5:00	79	27	39
	5:30	60	29	35
	6:00	68	35	39
	6:30	76	35	39
	7:00	76	69	43.

TABLE J.1. Peak Period, Peak Direction Average Travel Speedon North-South Routes (March 1994)

Run Beginning		Travel Speed (km/h)		
	mining	DNT US-75 US-75 Fr. R		US-75 Fr. Rd.
	6:00	76	95	43
A.M.	6:30	71	84	35
Peak Period North- bound	7:00	76	60	37
	7:30	76	55	31
	8:00	76	56	37
	8:30	76	60	32
	9:00	82	66	40
P.M. Peak Period South- bound	3:00	N/A	48	35
	3:30	82	64	42
	4:00	76	51	42
	4:30	69	53	40
	5:00	74	47	31
	5:30	58	40	37
	6:00	79	N/A	43
	6:30	- 77	71	40
	7:00	85	74	40

TABLE J.2. Peak Period, Off-Peak Direction Average Travel Speed on North-South Routes (March 1994)

J-4

Run Beginning	Travel Speed (km/h)		
	Northbound	Southbound	
10:00 A.M.	89	58	
10:30	90	58	
11:00	92	58	
11:30	89	51	
12:00 P.M.	85	53	
12:30	89	48	
1:00	89	51	
1:30	82	55	

TABLE J.3.	Off-Peak Period Average	Travel Speed on	US-75 (March 1994)
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