

FLORIDA



DEPARTMENT OF TRANSPORTATION  
DISTRICT VI

**Key West  
Travel Time and Delay Study**

---

---

**Technical Report**

---

---

October, 1993

State Project No. 99006-1513  
WPI No. 6590024



Walter H. Keller, Inc.  
Consulting Engineers & Planners  
10211 W. Sample Road, Suite 204  
Coral Springs, Florida 33065-9740  
(305) 755-3822

## I. Introduction

The Florida Department of Transportation (Department), the Florida Department of Community Affairs (DCA) and the City of Key West jointly agreed to identify the existing peak season Level of Service for US 1 within the City limits of Key West. As a result of this agreement, the FDOT contracted to Walter H. Keller, Inc. to undertake a Travel Time and Delay Study for US 1.

Data collection efforts for the Key West Travel Time and Delay Survey were performed during the months of February, March, and April. The US 1 study limits were from Mile Marker 0 (Fleming Avenue) to approximately Mile Marker 4 (SR A1A) in the City of Key West.

Because of the extensive data collection and analysis portions of the Study, documentation of the Study has been separated into two reports. The *Technical Report* provides an overview of the entire Study and summarizes the major findings. The *Technical Support Document* provides the comprehensive presentation of data collection efforts, computation of Level of Service analysis characteristics, the results of the travel time and delay surveys and calculation of the roadway Level of Service using ART\_PLAN. This report provides the Technical Report of the Study.

Section II of the Technical Report provides the methodology of the Study effort. This section describes the approach for collecting peak season travel characteristics, developing localized characteristics, the data analysis phase of the Study and the Level of Service analysis.

The results of the data collection efforts are summarized in Section III of this report. This section details the travel characteristics, the monthly changes, the data analysis and identification of key LOS factors and their variance during the peak season, results of the travel time survey and observations of the roadway characteristics.

The Level of Service analysis effort is presented in Section IV. This section reviews the ART\_PLAN analysis procedures, ART\_PLAN using different roadway segments classifications and a comparison with the Travel Time and Delay survey results.

Section V of this report provides the major findings of the Study. This Section includes the US 1 LOS finding, potential improvements to improve the operation of US 1 and recommendations for further study.

## II. Study Methodology

The Florida Department of Transportation adopted an updated Level of Service Manual in 1992. This LOS Manual provides the techniques and standards for measuring Level of Service in conjunction with the Department of Community Affairs Rule 9J-5 relative to review of Comprehensive Plans and Compliance determinations. While the LOS Manual includes generalized LOS Tables for easy use that do not require data collection efforts, the Manual also includes computer software and procedures for developing localized characteristics for more detailed applications.

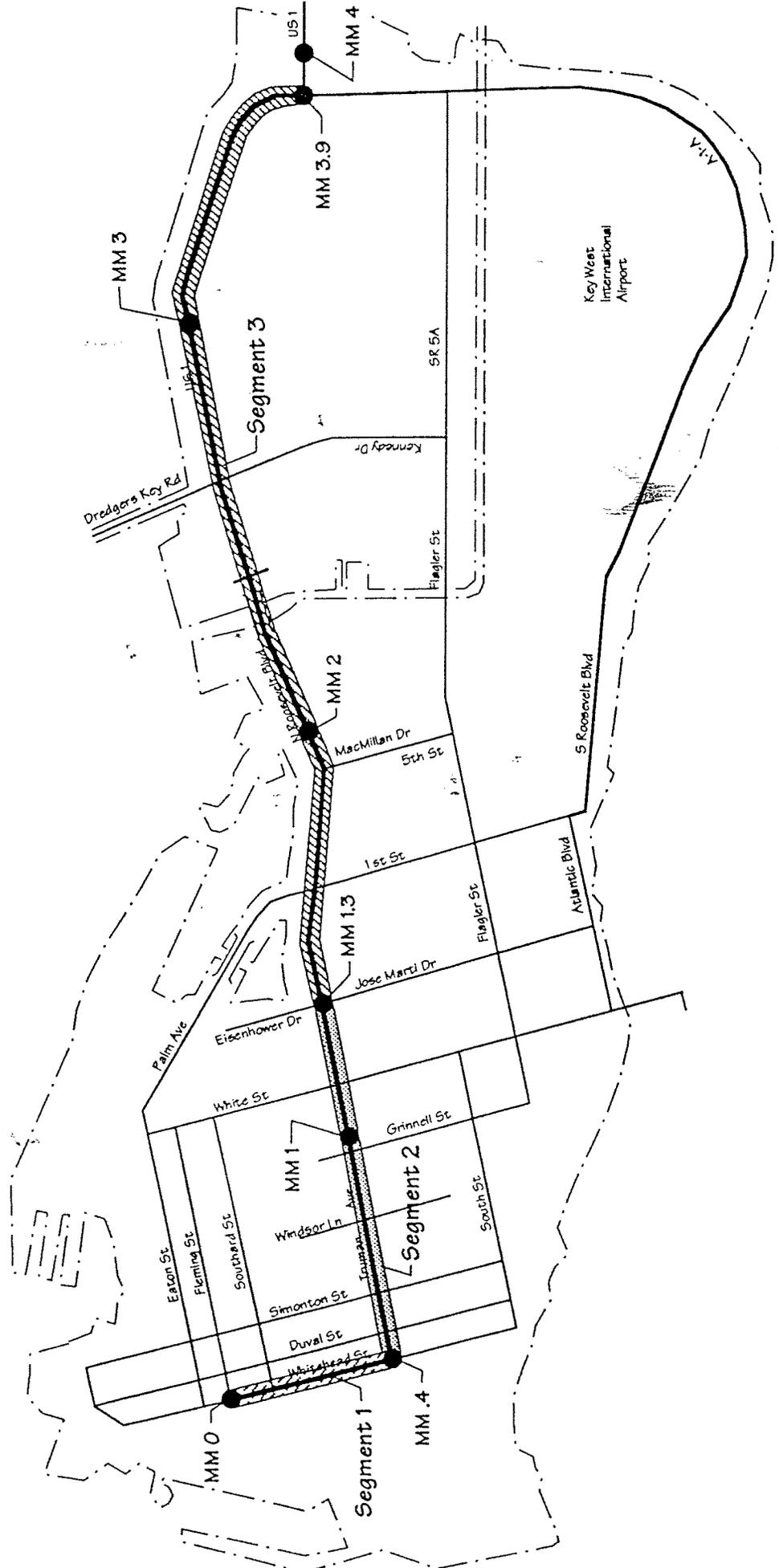
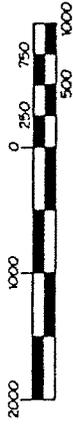
The Department of Community Affairs and the City of Key West entered into a joint settlement agreement relative to the Comprehensive Plan which included further study on the Level of Service for US1. The Florida Department of Transportation contracted to Walter H. Keller, Inc., to undertake a comprehensive analysis of US 1 during the peak season months of February, March and April, 1993. A cooperative effort was initiated with support from the Department of Community Affairs Key West office, the Engineering and Planning Departments of the City of Key West, the Consultant and the Florida Department of Transportation's District VI Planning Office.

The US 1 segment studied went from Mile Marker 0 (MM 0) to the US 1 "T" intersection with SR A1A (South Roosevelt Boulevard) located just south of MM 4. Because US 1 varies in its directional orientation, a convention was adopted for use throughout the Study. Unless specifically noted, northbound means from MM 0 towards MM 4 regardless of the actual orientation of the roadway segment. In some instances, however, compass orientation was used to describe turning movements.

US 1 was separated into three segments for analysis purposes as noted below:

- Segment 1: Whitehead Street from Fleming Street to Truman Avenue  
(MM 0.0 to MM 0.4)
- Segment 2: Truman Avenue from Whitehead Street to Eisenhower Drive  
(MM 0.4 to MM 1.337)
- Segment 3: N. Roosevelt Boulevard from Eisenhower Drive to SR A1A  
(MM 1.337 to MM 3.91)

Figure 1 depicts the general Key West area with major roadways and illustrates the US 1 location and the three study segments.



# Key West Travel & Delay Study

Figure 1 - US 1 Study Locations

The data collection effort included collecting existing roadway design characteristics and intersection geometrics, machine traffic counts, manual intersection turning movements, truck and classification counts, intersection saturation counts, signalized intersection characteristics and PM peak hour travel time and delay runs.

Weekly directional machine traffic counts and travel time and delay runs were performed for each month's data collection effort. Roadway design characteristics and intersection geometrics, PM peak hour turning movement counts, truck and classification counts, saturation counts and traffic signal characteristics were collected once during the three month period. In some instances, a re-count was also performed for selected data items during the next month's effort.

Travel time runs were performed using the "floating car" technique during the PM peak hour. Runs were initiated from each end of the roadway study segment using one driver and one data recorder. A minimum of four runs were obtained in each direction. Travel time runs were performed on Tuesday, Wednesday and Thursday. The Level of Service results of the travel time runs were calculated using the techniques noted in the Department's Manual of Uniformed Traffic Studies.

The Department's ART-PLAN Version 1.2 LOS software was used to ascertain the LOS condition of the roadway study segment. Prior data collection items were used to develop the input requirements of the ART-PLAN software. The ART-PLAN procedures and use requirements as detailed in the current LOS Manual were followed. Various ART-PLAN assessments were performed using either one, two or three segments to define the US 1 study section.

Comparisons were then made of the results using different roadway segments and Level of Service analysis methods.

### III. Data Collection Summary

#### *Roadway Design Characteristics*

Key West is a major tourist destination and has historical significance. As such, the design characteristics of US 1 vary considerably. The southern portion of the study section (segment 1) is a two lane roadway with parking on the northbound side. Except for a northbound right turn lane at Southard Street, there are no exclusive turn lanes on this segment. This section (Whitehead Street) is generally congested with two historical landmarks: the Ernest Hemingway House and the Key West Lighthouse located near Truman Avenue. Heavy pedestrian, bicycle and motor scoter movements occur in Segment 1. This roadway segment fits an Arterial Class designation of 3.

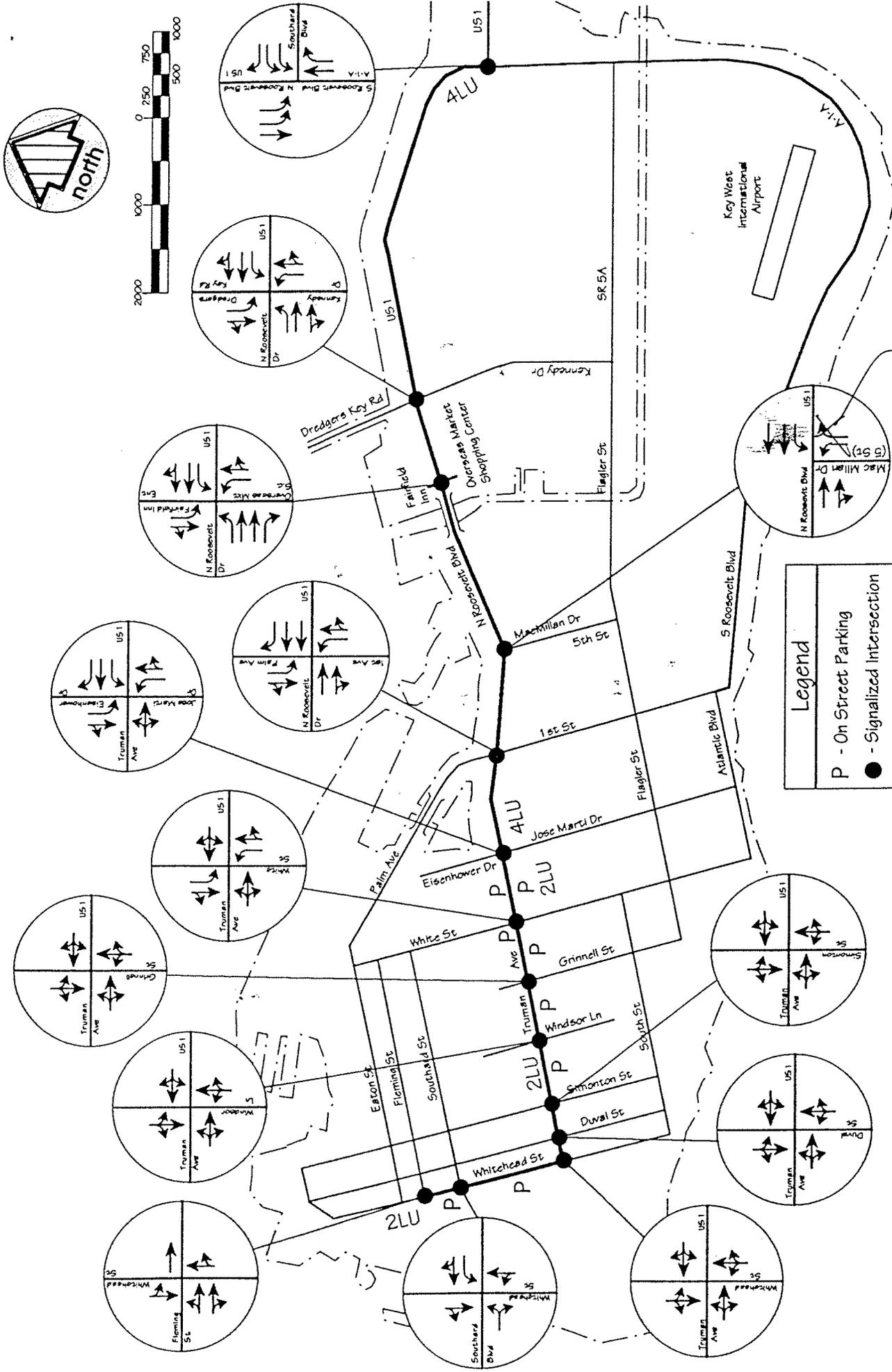
Segment 2, known as Truman Avenue, is also a two lane roadway with on street parking on one or both sides of the roadway. Except for the southbound approach at Eisenhower Drive (Jose Marti Drive), there are no exclusive turn lanes on US 1. Duval Street is located in the southern portion of this segment just north of Whitehead Street. Duval Street is the major commercial -tourist oriented destination. Pedestrian, bicycle and motor scoter movements are heaviest in the southern portion of this segment. This segment is also a Class 3 designation.

North Roosevelt Boulevard from Eisenhower Drive to SR A1A is Segment 3 and it is a four lane undivided roadway. This section of roadway has higher speeds, turn lanes and less pedestrian traffic. There is no on-street parking in this segment. The intersection with SR A1A has a southbound right turn lane that except for signal stops for pedestrians is free flow. The Arterial Class for this roadway segment would be Class 2.

Figure 2 summarizes the existing design characteristics of US 1 including signalized intersections, intersection geometrics, roadway design type and on-street parking locations.

#### *Traffic Volume Characteristics*

Automated traffic count machines were utilized to obtain directional fifteen minute traffic counts for an entire week during each monthly data collection effort. One traffic count machine was located on each roadway segment of US 1 to coincide with Department count locations. The North Roosevelt Boulevard location was just south of Kennedy Drive, the Truman Avenue location was just south of White Street and the Whitehead Street location was south of Oliva Street.



<b>Legend</b>	
P	- On Street Parking
●	- Signalized Intersection

**Key West Travel & Delay Study**  
 Figure 2 - Design Type & Intersection Geometrics

Traffic characteristics on North Roosevelt differed from the counts taken on segments 1 and 2. North Roosevelt traffic counts ranged from a weekday average of 34,537 in February to a peak of 39,255 in April. The weekday counts were the highest in this location.

Traffic characteristics on Truman Avenue ranged from a weekday average of 17,012 in February to a peak of 19,870 in March. These volumes decreased to 17,491 in April. Generally, the Friday or Saturday count was highest in this location.

Weekday traffic volumes on Whitehead Street ranged from a February low of 8,784 to an March peak of 11,324 decreasing to 10,450 in April. The Wednesday count was always the highest count day in this location.

Table 1 provides a summary of edited traffic axle count results for the three month peak season period.

#### *K, D and PHF Characteristics*

The Department's procedures were used to calculate the K, D and PHF factors based on the results of the machine traffic counts. The K100 factor is the ratio of the 100 highest volume hour of the year to the annual average daily traffic. The K100 factor varied from a low of 0.080 for Truman Avenue and North Roosevelt to a high of 0.119 on Whitehead Street. These results vary below and above the statewide average K100 of 0.091.

The D or Directional Distribution Factor is the proportion of traffic traveling in the predominant direction during the peak hour. The D factor varied from a low of 53% on Truman Avenue and North Roosevelt to a high of 63.2% on Whitehead Street. These numbers vary below and above the statewide average D of 56.8%.

The PHF or Peak Hour Factor is the hourly volume in the peak hour divided by the peak 15 minute volume within the peak hour. This factor relates the distribution of traffic during the peak with higher factors indicating a more evenly spaced peak condition rather than a squeezed smaller peak time. The statewide average PHF is 0.91. Whitehead Street was closest to this number averaging 0.897 with higher PHF's occurring on the other segments ranging from an average of 0.923 on Truman Avenue and 0.967 on North Roosevelt Boulevard.

Table 1 - Peak Season Machine Traffic Counts

US 1	Daily Traffic Volumes									Average Three Periods	Standard Deviation and Percent
	February			March			April				
	NB	SB	Total	NB	SB	Total	NB	SB	Total		
<b>S. of Kennedy Dr</b>											
Monday	16,471	17,927	34,398	17,778	20,097	37,875	21,332	18,328	39,660		
Tuesday	16,566	18,435	35,001	18,067	19,593	37,660	21,426	18,718	40,144		
Wednesday	15,312	19,524	34,836	17,764	19,584	37,348	21,525	18,818	40,343		
Thursday	15,425	18,186	33,611	17,469	19,749	37,218	20,005	18,708	38,713		
Friday	15,635	19,205	34,840	17,669	21,192	38,861	18,693	18,720	37,413		
Saturday	15,630	17,691	33,321	14,346	19,582	33,928	17,886	17,707	35,593		
Sunday	14,211	15,348	29,559	14,460	15,375	29,835	14,435	13,446	27,881		
Avg Weekday	15,882	18,655	34,537	17,749	20,043	37,792	20,596	18,658	39,255	37,195	2,415
WKDay Dir Spl	46%	54%		47%	53%		52%	48%			6.5%
Avg Week	15,607	18,045	33,652	16,793	19,310	36,104	19,329	17,778	37,107	35,621	1,777
WK Dir Split	46%	54%		47%	53%		52%	48%			5.0%
<b>S. of White St</b>											
Monday	8,042	8,446	16,488	9,958	9,625	19,583	8,236	8,653	16,889		
Tuesday	8,402	8,803	17,205	10,421	9,590	20,011	8,364	8,779	17,143		
Wednesday	8,277	8,737	17,014	10,834	9,576	20,410	8,631	8,950	17,581		
Thursday	8,343	8,483	16,826	10,116	8,760	18,876	8,710	8,889	17,599		
Friday	8,566	8,959	17,525	10,758	9,713	20,471	8,987	9,256	18,243		
Saturday	8,927	9,524	18,451	10,129	9,626	19,755	8,687	9,353	18,040		
Sunday	8,615	8,388	17,003	8,984	8,334	17,318	7,190	7,338	14,528		
Avg Weekday	8,326	8,686	17,012	10,417	9,453	19,870	8,586	8,905	17,491	18,124	1,531
WKDay Dir Spl	49%	51%		52%	48%		49%	51%			8.4%
Avg Week	8,453	8,763	17,216	10,171	9,318	19,489	8,401	8,745	17,146	17,950	1,333
WK Dir Split	49%	51%		52%	48%		49%	51%			7.4%
<b>S. of Olivia St</b>											
Monday	4,672	4,120	8,792	6,564	4,733	11,297	5,536	4,130	9,666		
Tuesday	4,146	4,274	8,420	7,087	5,013	12,100	6,305	4,295	10,600		
Wednesday	4,907	4,159	9,066	6,709	4,535	11,244	6,475	4,524	10,999		
Thursday	4,644	4,222	8,866	6,190	4,360	10,550	5,846	4,478	10,324		
Friday	4,490	4,285	8,775	6,680	4,750	11,430	6,154	4,508	10,662		
Saturday	3,521	4,176	7,697	5,536	3,912	9,448	5,570	3,997	9,567		
Sunday	3,115	3,510	6,625	5,189	3,517	8,706	4,466	3,337	7,803		
Avg Weekday	4,572	4,212	8,784	6,646	4,678	11,324	6,063	4,387	10,450	10,186	1,291
WKDay Dir Spl	52%	48%		59%	41%		58%	42%			12.7%
Avg Week	4,214	4,107	8,320	6,279	4,403	10,682	5,765	4,181	9,946	9,649	1,209
WK Dir Split	51%	49%		59%	41%		58%	42%			12.5%

Source: Walter H. Keller, Inc.

Note: Northbound direction is considered mile marker 0 to 4.  
Southbound direction is considered mile marker 4 to 0.

Table 2, below, summarizes the K, D and PHF characteristics for each month's data collection efforts. Detailed information on the individual calculation of these factors can be found in the Data Supplement.

Table 2 - K, D and PHF Characteristics

	February	March	April	Average	Statewide Average	
K factor	- Roosevelt at Kennedy	0.082	0.080	0.084	0.082	0.091
	- Truman at White	0.082	0.086	0.080	0.083	
	- Whitehead at Southard	0.101	0.119	0.110	0.110	
	- Average	0.088	0.095	0.091	0.091	
D factor	- Roosevelt at Kennedy	53.7%	56.8%	53.0%	54.5%	56.8%
	- Truman at White	53.0%	53.7%	53.0%	53.2%	
	- Whitehead at Southard	57.8%	63.2%	58.6%	59.9%	
	- Average	54.8%	57.9%	54.9%	55.9%	
PHF	- Roosevelt at Kennedy	0.96	0.97	0.97	0.967	0.91
	- Truman at White	0.94	0.86	0.97	0.923	
	- Whitehead at Southard	0.89	0.89	0.91	0.897	
	- Average	0.93	0.91	0.95	0.93	

Source: Walter H. Keller, Inc.

### Manual Traffic Counts

Several types of manual counts were collected to identify peak hour turning movement, the percentage of trucks and to estimate the impact of bicycles and motor scooters. Intersection turning movement counts were obtained for a one hour time frame between 2:00 PM to 4:30 PM. The results of truck counts were averaged for each analysis segment based on the turning movement counts. Truck percentages were 3.40% on Whitehead Street, 2.20% on Truman Avenue and 2.55% on North Roosevelt Boulevard.

The data supplement can be reviewed for specific turning movement information.

### Saturation Flow Counts

Manual saturation flow counts were performed during the March data collection period. Department techniques were used and two data technicians were used at each location. Difficulties were experienced however, when loadings did not reach saturation conditions for some locations. Initial review of the results of the March effort indicated some variance in the saturation flow results and additional saturation counts were performed in the April data collection effort.

While the Department has utilized a statewide average of 1,750 vehicles per hour (vph) of green time for transistioning areas, the saturation flow results varied from a low of 979 vph to a high of 1,759 vpd. The results suggest the northern portion of US-1 most closely represents the statewide condition where a rounded average of 1,650 vpd was developed. The southern portion average was 1,080 vpd. Table 3, below summarizes the saturation flow results.

Table 3 - Saturation Flow Count Results

US 1	March				April				Adj. Average
	NB	SB	Avg	No. Obsv	NB	SB	Avg	No. Obsv	
N. Roosevelt at Kennedy									
• Through & right	1,759	1,474		31	1,619	1,585		24	
• Through	1,695	1,724		36	1,733	1,744		24	
• Average both lanes	1,727	1,599	1,663	67	1,676	1,665	1,670	48	1,650 †
Truman at Eisenhower	1,545	1,584	1,565	72	1,755	1,680	1,717	24	
Truman at Duval	998	1,038	1,018	23	937	1,021	979	14	1,080 ‡
Whitehead at Southard	1,158	1,242	1,200	8	951	1,298	1,124	18	

Source: Walter H. Keller, Inc.

Note: Northbound direction is considered mile marker 0 to 4.

Southbound direction is considered mile marker 4 to 0.

Excluding of left turn lanes.

† - Adjusted average of March & April for N. Roosevelt at Kennedy & Truman at Eisenhower, rounded to 1650.

‡ - Average of March & April for Truman at Duval & Whitehead at Southard.

### Traffic Signal Characteristics

There are fourteen (14) traffic signal locations on the three roadway segments of US 1. Figure 2, on the prior page, illustrates traffic signal locations. Traffic signals on Whitehead Street and Truman Avenue are timed signals without side street activators. Traffic signals on North Roosevelt (Segment 3) are all actuated. Field surveys were performed to verify timing patterns at each signal location. Table 4 indicates the cycle length, green and yellow times, average G/C ratio and weighted g/c. The table also indicates whether the signal is activated.

Table 4 - Arterial Signal Timing Characteristics

Roadway	at	Act.	Cycle Length C	NB		SB		Avg. G/C		Wght'd g/C	
				Green g	Yellow y	Green g	Yellow y	NB	SB	NB	SB
Whitehead St	Fleming St	N	70	35	4	35	4	0.56	0.56		
	Southard St	N	80	35	4	35	4	0.49	0.49		
	Truman Ave	N	43	18	4	15	4	0.51	0.44		
Truman Ave	Duval St	N	63	25	4	33	4	0.46	0.59		
	Simonton St	N	82	30	4	39	4	0.41	0.52		
	Winsor St	N	67	35	4	20	4	0.58	0.36		
	Grinnell St	N	57	36	4	36	4	0.70	0.70		
	White St	N	73	38	4	38	4	0.58	0.58		
	Jose Marti	N	80	35	4	47	4	0.49	0.64		
	Average			68					0.53	0.54	0.47
Roosevelt Blvd	Palm Ave	Y	124	40	4	40	4	0.35	0.35		
	Mac Millan St	Y	100	60	4	70	4	0.64	0.74		
	Oversea Mrkt	Y	94	45	4	60	4	0.52	0.68		
	Kennedy Dr	Y	112	45	4	44	4	0.44	0.43		
	SR A1A	Y	101	40	4	23	4	0.44	0.27		
Average			106					0.48	0.49	0.42	0.38

Source: Walter H. Keller Inc.

Note: Northbound direction is considered mile marker 0 to 4.  
Southbound direction is considered mile marker 4 to 0.

The statewide average weighted g/c ration is 0.42. The results of the signal timing analysis indicates the northern portion of US 1 is similar to the statewide average while the southern portion has a higher g/c ratio.

Arrival type is an approximation of the quality of vehicle progression or platooning along the roadway. These values range from 1 (worst case) to 5 (best case) with 3 being the most appropriate designation for US 1.

### *Field Observations of Traffic Conditions*

Field observations were made during the data collection phase of the study to ascertain operational problems and to identify potential improvements. On Whitehead Street congestion is influenced by the two lane design, on-street parking, lack of exclusive turning lanes at signalized intersection and tourist traffic. The tourist traffic component would include automobiles, bicycles, motor scooters and pedestrians. Potential improvements to circulation and congestion on this segment include reduction of on-street parking at signalized intersections and development of exclusive turning lanes. Development of off-street parking lots would also minimize circuitous travel since a portion of the traffic is looking for parking spaces.

Truman Avenue is also a two lane roadway without exclusive turning lanes at signalized intersections. In the PM peak hour, significant queing occurred in the northbound direction at Eisenhower Drive when occasional northbound left turning vehicles waited for gaps in the traffic stream to make the left turn. The northbound queing could be minimized if a northbound left turn lane was implemented. This improvement may be possible by restriping the existing roadway with removal of on-street parking.

Additional observations at Simonton Street, Windsor Lane and Grinnell Street intersections with Truman Avenue also revealed congestion due to left turning vehicles. These signals have delayed or extended green times for left turning vehicles. Unfortunately, these vehicles are not always spaced properly in the traffic stream. Operations could be improved by prohibiting left turns at these locations in the PM peak hours. Turning movement counts revealed generally low left turn movements at these locations. However, even a small number of movements cause significant delays.

Traffic operations on North Roosevelt Boulevard operate reasonably well except for significant northbound queing which occurs at the intersection with SR A1A. This intersection was under construction during the data collection phases and may operate differently than observed. Further study is required at this location.

#### IV. Level of Service Analysis

The Level of Service analysis for US 1 was developed in two ways. The first method involved performing travel time and delay runs through the study section in each direction for 3 weekday PM peak hours. This process was performed in each monthly data collection effort. The second method uses the ART\_PLAN computer software developed by the Department. The Department developed the computer software so Level of Service determinations could be made without extensive data collection efforts required in performing travel time and delay surveys and to allow for Level of Service determinations using future traffic projections.

##### *Travel Time and Delay Survey Results*

The travel time and delay runs were performed on Tuesday, Wednesday and Thursday during the PM peak hour. Except for the first two day's effort in the northbound direction, a minimum of four runs were made in each direction each day beginning at 4:00 PM. Separate vehicles would begin at each end of the US 1 study segment.

The driver of the vehicle would call out control point locations and indicate delay locations. The data technician would time the entire run, note the time at each control point location and note the lengths of individual delays. By knowing the total trip length, total run time, the total travel speed and the average total running speed can be calculated.

The Level of Service Criteria on the lookup table from the Department's LOS Manual (page F-4) lists the Level of Service for different Arterial Class by average travel speed. Because the US 1 study limits included different class of roadways, LOS analysis has been performed considering only one segment and considering two segments. Generally, the character of US 1 is similar between Eisenhower Drive and Fleming Street and between Eisenhower Drive and SR A1A. US 1 has higher speeds, exclusive turn lanes and less pedestrian traffic on the segment between Eisenhower Drive and SR A1A. The US 1 segments south of Eisenhower Drive are two lane without exclusive turn lanes.

Table 5, on the following page, summarizes the Level of Service results based on the travel time and delay runs for each month considering one segment, two segments and direction of travel.

Table 5 - Travel Time and Delay Runs LOS Results

US 1	February			March			April		
	Avg Travel Speed	LOS	Avg Run Speed	Avg Travel Speed	LOS	Avg Run Speed	Avg Travel Speed	LOS	Avg Run Speed
SB - SR A1A to Fleming	16.0	D	24.2	15.0	D	24.0	16.3	D	24.1
SR A1A to Eisenhower	23.1	C	32.0	23.1	C	29.5	22.8	C	30.0
Eisenhower to Fleming	10.0	E	16.5	8.9	F	17.6	10.6	E	17.5
NB - Fleming to SR A1A	13.5	E	24.2	13.4	E	22.4	14.2	D	22.6
Fleming to Eisenhower	10.5	E	19.6	9.4	F	17.8	9.7	F	17.5
Eisenhower to SR A1A	15.9	D	27.6	17.2	D	25.8	18.7	C	26.7

Source: Walter H.Keller, Inc.

Note: Travel time and delay in Class II only.

An additional analysis was also performed to evaluate the impacts of using the Transitioning Class II and the Urban Class III designations. Table 6 indicates the Level of Service changes for different class designations. Note, only the segment between Eisenhower Drive and Fleming Street are under consideration as Class III. All other segments would be Transitioning Class II.

Table 6 - LOS Impacts with Class II Vs. Class III

	Average Speed			Transition Class II			Urban Class III		
	Feb	Mar	Apr	Feb	Mar	Apr	Feb	Mar	Apr
	SB - Eisenhower to Fleming	10.0	8.9	10.6	E	F	E	D	E
NB - Fleming to Eisenhower	10.5	9.4	9.7	E	F	F	D	D	D

Source: Walter H.Keller, Inc.

Note: All other segments are Class II Transitional.

### *ART\_PLAN Level of Service Results*

The Department's ART\_PLAN computer software was utilized to identify the Level Service on US 1 using localized data inputs. The spreadsheet software was run for the peak direction using the following localized input data

- K Factor
- D Factor
- PHF Factor
- Adjusted Saturation Flow Rate
- Peak Hour Volume
- % Turns from Exclusive Turn Lanes
- Cycle Length and Effective  $g/C$
- Spacing in feet between Signalized Intersections
- Arrival Type

An analysis was performed based on only one segment (SR A1A to Fleming Street), two segments (SR A1A to Eisenhower Drive and Eisenhower Drive to Fleming Street) and as three segments ((SR A1A to Eisenhower Drive, Eisenhower Drive to Whitehead Street and Whitehead Street to Fleming Street).

Table 7, on the following page, summarizes the results of the ART\_PLAN Level of Service findings.

Table 7 - ART\_PLAN Level of Service Results

US 1	February		March		April		Average	
	MPH	LOS	MPH	LOS	MPH	LOS	MPH	LOS
<u>As One Segment Only :</u>								
SB - SR A1A to Fleming	*	F	*	F	*	F	*	F
NB - Fleming to SR A1A	18.9	C	*	F	16.8	D		
<u>As Two Segments:</u>								
SB - SR A1A to Eisenhower	23.0	C	21.7	C	23.2	C	22.2	C
Eisenhower to Fleming	*	F	*	F	*	F	*	F
NB - Fleming to Eisenhower	*	F	*	F	*	F	*	F
Eisenhower to SR A1A	21.8	C	21.3	C	18.9	C	20.5	C
<u>As Three Segments:</u>								
SB - SR A1A to Eisenhower	23.0	C	21.7	C	23.2	C	22.2	C
Eisenhower to Whitehead			*	F	*	F	*	F
Whitehead to Fleming			11.1	D	14.7	C	12.9	D
NB - Fleming to Whitehead			*	F	*	F	*	F
Whitehead to Eisenhower			*	F	*	F	*	F
Eisenhower to SR A1A	21.8	C	21.3	C	18.9	C	20.5	C

Source: Walter H. Keller, Inc.

\* Intersection capacity exceeded.

An separate analysis was also performed to evaluate the impacts of using the Transitioning Class II and the Urban Class III designations. Table 8 indicates the Level of Service changes for different class designations. Note, only the segment between Truman Avenue and Fleming Street are under consideration as Class III. All other segments would be Transitioning Class II.