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2 **MONROE COUNTY, FLORIDA**

3 **MONROE COUNTY BOARD OF COUNTY COMMISSIONERS**

4 **RESOLUTION NO. 355 -2020**

5  
6 **A RESOLUTION OF THE MONROE COUNTY BOARD OF COUNTY**  
7 **COMMISSIONERS RECONVENING THE U.S.1 LOS TASK FORCE, INCLUDING 2**  
8 **REPRESENTATIVES FROM THE DEPARTMENT OF ECONOMIC OPPORTUNITY**  
9 **(DEO) (BARBARA POWELL, REGIONAL PROGRAM ADMINISTRATOR, AND**  
10 **JUSTIN STIELL, PLANNING ANALYST); 2 REPRESENTATIVES FROM THE**  
11 **FLORIDA DEPARTMENT OF TRANSPORTATION (FDOT) (NEIL LYN, DISTRICT**  
12 **STATISTICS ADMINISTRATOR, AND GINA BONYANI, SYSTEMS**  
13 **IMPLEMENTATION OFFICE); 1 REPRESENTATIVE FROM THE COUNTY'S**  
14 **TRAFFIC CONSULTANT (VIVEK REDDY, TRAFFIC ENGINEERING DEPARTMENT**  
15 **MANAGER); AND 3 COUNTY STAFF REPRESENTATIVES (EMILY SCHEMPER,**  
16 **SENIOR DIRECTOR OF PLANNING AND ENVIRONMENTAL RESOURCES, JANENE**  
17 **SCLAFANI, TRANSPORTATION PLANNER, AND JUDITH CLARKE, DIRECTOR OF**  
18 **ENGINEERING SERVICES); ALLOWING APPOINTED MEMBERS TO DESIGNATE**  
19 **ALTERNATES IN THE EVENT OF THEIR ABSENCE; AND TASKING THE U.S. 1 LOS**  
20 **TASK FORCE WITH EVALUATING THE LOS METHODOLOGY AND POTENTIAL**  
21 **UPDATES TO IT BASED ON THE CONSIDERATIONS IDENTIFIED IN THE DRAFT**  
22 **2019 ATTDs.**

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23 **WHEREAS**, in August, 1991, the BOCC adopted the U.S.1 Level of Service (LOS) C as  
24 measured by the U.S.1 Level of Service (LOS) Methodology established by the U.S.1 LOS Task  
25 Force; and

26 **WHEREAS**, on December 10, 1997, the BOCC approved an amendment to the U.S.1 LOS  
27 Methodology based on recommendations of the U.S.1 LOS Task Force; and

28 **WHEREAS**, on July 15, 2020, the BOCC considered the Draft 2019 Arterial Travel Time  
29 & Delay Study (ATTDs), prepared by the County's traffic consultant, AECOM, which identified  
30 several considerations regarding methodology; and

31 **WHEREAS**, at the July 15, 2020 meeting, the BOCC directed staff to re-engage the U.S.  
32 1 LOS Task Force to evaluate the LOS methodology and consider updates to it based on the  
33 considerations identified in the Draft 2019 ATTDs; and

1           **WHEREAS**, on September 10, 2020, letters were sent to DEO Executive Director Dane  
2 Eagle and FDOT Secretary Kevin J. Thibault asking for their participation in reconvening the  
3 U.S.1 LOS Task Force;

4           **NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF COUNTY**  
5 **COMMISSIONERS OF MONROE COUNTY, FLORIDA, THAT:**

6           **Section 1.**     The U.S. 1 Task Force is hereby reconvened and shall be comprised of the  
7 following members:

8  
9                           DEO:

10                          Barbara Powell, Regional Program Administrator

11                          Justin Stiel, Planning Analyst

12  
13                          FDOT:

14                          Neil Lyn, District Statistics Administrator

15                          Gina Bonyani, Systems Implementation Office

16  
17                          Monroe County Traffic Consultant (AECOM):

18                          Vivek Reddy, Traffic Engineering Department Manager

19  
20                          Monroe County Staff:

21                          Emily Schemper, Senior Director Planning and Environmental Resources

22                          Janene Sclafani, Transportation Planner

23                          Judith Clarke, Director of Engineering Services

24  
25           **Section 2.**     Said members may designate alternate representatives in the event of their  
26 absence.

27           **Section 3.**     The U.S.1 LOS Task Force is tasked with evaluating the LOS methodology  
28 and potential updates to it based on the considerations identified in the Draft  
29 2019 ATTDS, attached hereto as Exhibit A.

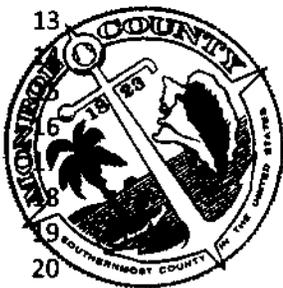
30           **Section 4.**     The U.S.1 LOS Task Force is asked to recommend methodology updates to  
31 the BOCC for approval by February, 2021, in order to be approved prior to

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commencement of data collection for the regularly scheduled 2021 biennial  
ATTDS.

**PASSED AND ADOPTED** by the Board of County Commissioners of Monroe County,  
Florida, at a regular meeting of the Board held on the 21<sup>st</sup> day of October, 2020.

Mayor Heather Carruthers	<u>Yes</u>
Mayor Pro Tem Michelle Coldiron	<u>Yes</u>
Commissioner Craig Cates	<u>Yes</u>
Commissioner David Rice	<u>Yes</u>
Commissioner Sylvia J. Murphy	<u>Yes</u>



BOARD OF COUNTY COMMISSIONERS  
OF MONROE COUNTY, FLORIDA

BY *Heather Carruthers*  
MAYOR HEATHER CARRUTHERS

ATTEST: KEVIN MADOK, CLERK

By *Kevin Madok*  
AS DEPUTY CLERK

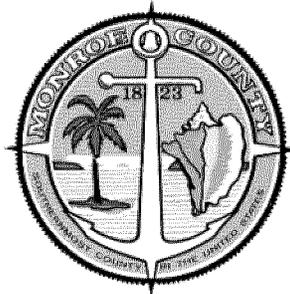
FILED FOR RECORD  
2020 NOV -4 AM 10:44  
CLERK  
MONROE COUNTY, FLA

MONROE COUNTY ATTORNEY  
APPROVED AS TO FORM:  
*Paunce Scull*  
PAUNCE SCULL  
ASSISTANT COUNTY ATTORNEY  
10/06/2020

**2019**  
**US 1 ARTERIAL TRAVEL TIME**  
**AND DELAY STUDY**  
**MONROE COUNTY, FLORIDA**

**Prepared for:**

**Monroe County Planning Department**



**Prepared by:**

**AECOM**

3201 West Commercial Boulevard - Suite 134, Fort Lauderdale, Florida 33309

April 2019  
Updated August 2019  
Updated November 2019  
Updated December 2019

FINAL DRAFT REPORT - NOT ADOPTED BY BOCC  
(SEE 7/15/2020 BOCC AGENDA/MINUTES)

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# 1. EXECUTIVE SUMMARY

This report contains the results and findings of the 2019 Travel Time and Delay Study. The primary objective of this study is to determine the Level of Service (LOS) for US 1 for concurrency management purposes pursuant to Chapter 163, Florida Statutes and Monroe County Land Development Regulations. The study methodology was developed by the US 1 Level of Service Task Force in 1993 and amended in 1997. The methodology established a procedure for using travel speed as a means of assessing the level of service (LOS) and reserve capacity for US 1.

Both Monroe County and the Florida Department of Transportation (FDOT) have adopted a LOS C Standard for US 1. Further, 45 miles per hour (mph) has been adopted as the LOS C Standard for the entire length of US 1 regardless of the posted speed limits. Under the adopted growth management process, if the overall LOS for US 1 falls below the LOS C Standard, then no additional land development will be allowed in the Florida Keys, unless mitigation measures are proposed to address the LOS deficiencies.

The 2019 study results are presented in the following table:

**TABLE 1  
AVERAGE TRAVEL SPEEDS AND LEVELS OF SERVICE**

Segment	Name of Segment	Beginning Control Point	Ending Control Point	Beginning Mile Marker	Ending Mile Marker	LOS 2017	LOS 2019	Median Speed 2017	Median Speed 2019
1	Stock Island	Cow Key Bridge (N)	Key Haven Boulevard	4.0	5.0	B	B	29.4	33.0
2	Boca Chica	Key Haven Boulevard	Rockland Drive	5.0	9.0	A	B	59.6	55.8
3	Big Coppitt	Rockland Drive	Boca Chica Road	9.0	10.5	B	B	46.6	46.1
4	Saddlebunch	Boca Chica Road	Harris Channel Bridge (N)	10.5	16.5	B	C	53.3	52.0
5	Sugarloaf	Harris Channel Bridge (N)	Bow Channel Bridge (N)	16.5	20.5	A	A	48.3	48.1
6	Cudjoe	Bow Channel Bridge (N)	Spanish Main Drive	20.5	23.0	A	A	48.2	47.2
7	Summerland	Spanish Main Drive	East Shore Drive	23.0	25.0	B	B	45.0	45.2
8	Ramrod	East Shore Drive	Torch-Ramrod Bridge (S)	25.0	27.5	B	A	46.1	46.7
9	Torch	Torch-Ramrod Bridge (S)	N. Pine Channel Bridge (N)	27.5	29.5	A	A	47.7	48.1
10	Big Pine	N. Pine Channel Bridge (N)	Long Beach Drive	29.5	33.0	C	B	39.4	42.4
11	Bahia Honda	Long Beach Drive	7-Mile Bridge (S)	33.0	40.0	B	A	53.7	54.2
12	7-Mile Bridge	7-Mile Bridge (S)	7-Mile Bridge (N)	40.0	47.0	B	B	53.3	53.4
13	Marathon	7-Mile Bridge (N)	Coco Plum Drive	47.0	54.0	A	A	37.9	37.9
14	Grassy	Coco Plum Drive	Toms Harbor Ch Bridge (S)	54.0	60.5	C	C	51.6	50.7
15	Duck	Toms Harbor Ch Bridge (S)	Long Key Bridge (S)	60.5	63.0	C	C	53.3	53.3
16	Long	Long Key Bridge (S)	Channel #2 Bridge (N)	63.0	73.0	C	B	50.5	52.0
17	Lower Matecumbe	Channel #2 Bridge (N)	Lignumvitae Bridge (S)	73.0	77.5	C	C	49.8	49.6
18 <sup>(1)</sup>	Tea Table	Lignumvitae Bridge (S)	Tea Table Relief Bridge (N)	77.5	79.5	D	D	47.6	46.9
19 <sup>(1)</sup>	Upper Matecumbe	Tea Table Relief Bridge (N)	Whale Harbor Bridge (S)	79.5	84.0	D	E	39.2	36.4
20 <sup>(1)</sup>	Windley	Whale Harbor Bridge (S)	Snake Creek Bridge (N)	84.0	86.0	C	E	41.0	37.0
21 <sup>(1)</sup>	Plantation	Snake Creek Bridge (N)	Ocean Boulevard	86.0	91.5	B	D	40.5	35.3
22	Tavernier	Ocean Boulevard	Atlantic Boulevard	91.5	99.5	A	A	47.4	46.9
23	Key Largo	Atlantic Boulevard	C-905	99.5	106.0	A	A	44.4	44.2
24	Cross	C-905	County Line Sign	106.0	112.6	B	B	52.7	50.2
<b>Overall</b>				4.0	112.6	C	D	46.0	44.6

Segments with NO Reserve Capacity

(1) - Village of Islamorada

- The overall travel speed on US 1 based on the 2019 Study is 44.6 mph;
- As compared to the 2017 study, the median speeds in 15 of the 24 segments decreased, ranging from 0.2 mph to 5.2 mph;
- As compared to the 2017 study, the median speeds in 8 of the 24 segments increased, ranging from 0.1 mph to 3.6 mph;
- The median speed for segment #15 (Duck Key - MM 60.5 to MM 63.0) remained the same;
- The largest difference in speed (-5.2 mph) was recorded in Segment #21 (Plantation – MM 86.0 to MM 91.5); the LOS changed from 'B' to 'D';
- The largest increase in speed (3.6 mph) was recorded in Segment #1 (Stock Island – MM 4.0 to MM 5.0). However, the LOS remained the same at 'B'.

Segments with reserve speeds of less than or equal to 3 mph should be given particular attention when approving development applications. Saddlebunch (MM 10.5 to MM 16.5), Grassy and Duck Keys (MM 54 to MM 63), Lower Matecumbe Key (MM 73 to MM 77.5) and the 14.5-mile segment in the upper keys (four segments) starting from Tea Table Key (MM 77.5) to Plantation Key (MM 91.5) are within the 'area of concern'; four segments have no reserve capacity.

The following is a list of considerations for review:

- 1) The US 1 Level of Service Task Force was formulated in 1992 to develop a methodology for US 1 that utilizes an empirical relationship between the volume-based capacities and the speed-based Level of Service (LOS). The Task Force was a multi-agency team with members from Monroe County, the Florida Department of Transportation, and the Department of Economic Opportunity (formerly known as Florida Department of Community Affairs - DCA). The methodology established by the task force includes a procedure for using travel speed as a means of assessing the level of service and reserve capacity for US 1. The members of the Task Force met again in 1997 to re-evaluate the LOS methodology and made some minor changes. The signal delay for LOS C was increased to 25 seconds from 15 seconds to account for changes in the Highway Capacity Manual (HCM). Considering that the last meeting of the Task Force was held more than 22 years ago, it is suggested that the members of the Task Force meet again to review the LOS methodology and identify any potential changes to ensure that the methodology is consistent with current practices and to identify opportunities for improvement, if any. Since the last Task Force review, there have been updates to the Highway Capacity Manual (HCM), which may need to be incorporated. Some specific items that can be reviewed, include:
  - Review the signal delay threshold for LOS C based on the current Highway Capacity Manual (delay threshold increased from 25 seconds to 35 seconds) and adjust the methodology accordingly.
  - The methodology to determine the LOS for the 24 individual roadway segments and the overall US 1 are slightly different. Individual segment LOS is determined by comparing the median travel speed with the weighted posted speed limit for the segment. For example, Segment LOS is A if the median travel speed is 1.5 mph above the posted speed limit. Alternatively, the overall LOS for US 1 is determined by comparing the median travel speed with pre-established speed thresholds for different levels of service. For example, the LOS for US 1 is A if the overall travel speed is equal to or above 51 mph, irrespective of the overall weighted posted speed limit. In other words, the overall LOS criteria does not consider the posted speed limit.
  - According to the current methodology, delays due to drawbridge openings should be excluded from the segment travel times, but included in the overall travel times. Considering that delays associated with drawbridge openings are non-recurring and impact the overall US 1 level of service, this part of the methodology should be reviewed and adjusted accordingly.

- Review the travel time schedule (i.e. departure times and staggered schedule) and adjust as needed to reflect current traffic conditions.
- 2) Under the adopted growth management process, if the overall LOS for US 1 falls below the LOS C Standard, then no additional land development will be allowed unless mitigation measures are implemented. Roadway widening is a typical mitigation measure (or capacity improvement) used by most agencies. However, in Monroe County, road widening (specifically along US 1) is restricted by the adopted comprehensive plan policies to preserve and protect the fragile ecological conditions. There are other remedies that could be explored and evaluated to improve the traffic flow and capacity along US 1. Some examples include:
- Upgrade the traffic signal infrastructure and/or signal timing at signalized intersections along US 1 to enhance traffic flow.
  - Evaluate the feasibility of implementing adaptive signal control systems to improve traffic flow.
  - Provide or improve transit service or other multi-modal transportation alternatives.
  - Implement active traffic management and Transportation System Management & Operation type improvements, which include real-time monitoring of traffic flow and implementing measures to address traffic congestion.
  - Add turn lanes at strategic locations to improve roadway capacity.
  - Implement access management improvements (consolidate driveways/access points, modify median openings, etc.) to reduce interruptions to US 1 traffic.
  - Provide and/or improve frontage roads to reduce the impact on US 1. Improve local roads to minimize US 1 being used as a local street for short-trips.
  - Do not allow new traffic signals along US 1, if a safe and/or less restrictive alternative (such as indirect left-turns, a roundabout, etc.) can be provided to accommodate traffic movements.
  - Conduct speed studies on selected segments of US 1 to confirm if the current posted speed limits are correct and modify, if necessary.
- 3) This is the first Travel Time and Delay Study conducted after Hurricane Irma made landfall in 2017 as a Category 4 storm in the Florida Keys. The hurricane restoration activities and associated construction vehicles using US 1 may have impacted travel times. This is a natural disaster that is out of the norm and this irregularity needs to be considered and possibly discounted or re-evaluated with an additional interim travel time study.

## 2. INTRODUCTION

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Monroe County conducted travel time and delay studies along US 1 on an annual basis from 1991 to 2013; and on a biennial basis since 2013. The data collection for years 1991 through 1996 was conducted by the Monroe County Planning Department, with assistance from the Monroe County Engineering Department, and the Florida Department of Transportation (FDOT). URS and later AECOM have collected the data for years 1997 through 2019, on behalf of the Monroe County Planning Department with assistance from the agencies identified above. This report contains the travel time / delay data and findings for the year 2019.

The US 1 Arterial Travel Time and Delay Study's primary objective is to monitor the level of service on US 1 for concurrency management purposes pursuant to Chapter 163, Florida Statutes and Section 114 of the Monroe County Land Development Regulations. Although US 1 is predominantly an uninterrupted two-lane roadway, the US 1 Level of Service Task Force felt that due to US 1's uniqueness, it warrants an alternative LOS evaluation process to that found in the Highway Capacity Manual (HCM).

The US 1 Level of Service Task Force was formulated in 1992 to develop a methodology for US 1 that utilizes an empirical relationship between the volume-based capacities and the speed-based level of service (LOS). The US 1 Level of Service Task Force was a multi-agency group with members from Monroe County, the Florida Department of Transportation, and the Department of Economic Opportunity (formerly known as Florida Department of Community Affairs - DCA). The methodology established by the task force is a procedure for using travel speed as a means of assessing the level of service and reserve capacity for US 1. Each member organization of the Task Force has endorsed the methodology. A partial copy of this methodology titled "A Methodology to Assess Level of Service on US 1 in the Florida Keys"- January 1993, is included in Appendix A.

The US 1 Level of Service Task Force last met in 1997 to re-evaluate the LOS procedure. After several meetings, the Task Force concluded that the speed-based LOS methodology should be used to assess the LOS along US 1 in Monroe County, with a minor change. The signal delay for LOS C was increased to 25 seconds from 15 seconds to account for recent changes in the HCM.

Pursuant to Section 114-2(a)(1)(a) of the Land Development Code (LDC), US 1 shall have sufficient available capacity to operate at LOS C for the overall arterial length and the 24 roadway segments of US 1, as measured by the US 1 Level of Service Task Force Methodology. In addition, all segments of US 1, as identified in the US 1 Level of Service Task Force Methodology, which would be impacted by a proposed development's access to US 1, shall have sufficient available capacity to operate at LOS C. Section 114-2(a)(1)(b) of the LDC states, development may be approved, provided that the development in combination with all other permitted developments will not decrease travel speed by more than five percent (5%) below LOS C, as measured by the US 1 Level of Service Task Force Methodology. While development may be approved within 5% of LOS C, the proposed development shall be considered to have an impact that needs mitigation. Development mitigation may be in the form of specific improvements or proportioned shared contribution towards improvements and strategies identified by the County, and/or FDOT to address any level of service degradation beyond LOS C and/or other potential deficiencies.

Although there has never been a countywide development restriction, Big Pine Key experienced a localized development restriction between 1994 and 2002. Following the 2012 LOS evaluation, the Monroe County Board of County Commissioners (BOCC) directed the planning staff to re-write the LDC to remove the segment-based development restriction, but after further consideration between the BOCC and County staff, it was not implemented.

### 3. MONROE COUNTY LEVEL OF SERVICE (LOS) AND RESERVE CAPACITY ASSESSMENT OVERVIEW

US 1 (Overseas Highway) is the only principal arterial serving residents and visitors in the Keys. The unique geography, land use patterns and trip making characteristics of the Florida Keys present a challenge in developing and applying a reasonable and acceptable method to assess LOS.

Although US 1 in the Florida Keys is predominantly an uninterrupted, two-lane roadway, its uniqueness warrants an alternative LOS evaluation process to the methodology provided in the Highway Capacity Manual.

A uniform method was developed in 1992 by the US 1 Level of Service Task Force to assess the level of service on US 1, and has not changed since the 1997 amendment. The adopted method considers both the overall level of service from Key West to the mainland, and the level of service for 24 segments (See Table 2). The methodology was developed from basic criteria and principles contained in Chapter 7 (Rural Multilane Highways), Chapter 8 (Rural Two-Lane Highways) and Chapter 11 (Urban and Suburban Arterials) of the Highway Capacity Manual. The methodology establishes a procedure for using travel speed as a means of assessing the level of service and reserve capacity for US 1 in the Florida Keys.

TABLE 2  
US 1 ROADWAY SEGMENTS

SEG NO.	APPROXIMATE MILE - MARKER		CONTROL POINTS		KEY(S)
	Beginning	Ending	Beginning	Ending	
1	4.0	5.0	Cow Key Bridge (N)	Key Haven Boulevard	Stock Island, Key Haven
2	5.0	9.0	Key Haven Boulevard	Rockland Drive	Boca Chica, Rockland
3	9.0	10.5	Rockland Drive	Boca Chica Road	Big Coppitt
4	10.5	16.5	Boca Chica Road	Harris Channel Bridge (N)	Shark, Saddlebunch
5	16.5	20.5	Harris Channel Bridge (N)	Bow Channel Bridge (N)	Lower Sugarloaf, Upper Sugarloaf
6	20.5	23.0	Bow Channel Bridge (N)	Spanish Main Drive	Cudjoe
7	23.0	25.0	Spanish Main Drive	East Shore Drive	Summerland
8	25.0	27.5	East Shore Drive	Torch-Ramrod Bridge (S)	Ramrod
9	27.5	29.5	Torch-Ramrod Bridge (S)	N. Pine Channel Bridge (N)	Torch
10	29.5	33.0	N. Pine Channel Bridge (N)	Long Beach Drive	Big Pine
11	33.0	40.0	Long Beach Drive	7- Mile Bridge (S)	W. Summerland, Bahia Honda, Ohio
12	40.0	47.0	7- Mile Bridge (S)	7- Mile Bridge (N)	7-Mile Bridge
13	47.0	54.0	7- Mile Bridge (N)	Cocoa Plum Drive	Marathon, Key Colony Beach
14	54.0	60.5	Cocoa Plum Drive	Toms Harbor Ch Bridge (S)	Fat Deer Crawl, Grassy
15	60.5	63.0	Toms Harbor Ch Bridge (S)	Long Key Bridge (S)	Duck, Conch
16	63.0	73.0	Long Key Bridge (S)	Channel # 2 Bridge (N)	Long, Fiesta, Craig
17	73.0	77.5	Channel #2 Bridge (N)	Lignum Vitae Bridge (S)	Lower Matecumbe
18	77.5	79.5	Lignum Vitae Bridge (S)	Tea Table Relief Bridge (N)	Fill
19	79.5	84.0	Tea Table Relief Bridge (N)	Whale Harbor Bridge (S)	Upper Matecumbe
20	84.0	86.0	Whale Harbor Bridge (S)	Snake Creek Bridge (N)	Windley
21	86.0	91.5	Snake Creek Bridge (N)	Ocean Boulevard	Plantation
22	91.5	99.5	Ocean Boulevard	Atlantic Boulevard	Key Largo
23	99.5	106.0	Atlantic Boulevard	C-905	Key Largo
24	106.0	112.5	C-905	County Line Sign	Key Largo, Cross Key

NOTE: (N) and (S) refer to the north and south side of the bridges respectively

The travel speeds for the entire 108-mile stretch of US 1 and the 24 individual segments are established by conducting travel time runs during the peak season. The peak season, for the purpose of this study, has been established by the Task Force as the six-week window beginning the second week of February and ending the fourth week of March.

Overall speeds are those speeds recorded over the 108-mile length of the Keys between Key West and the Monroe/Miami-Dade County Line. Overall speeds reflect the traffic conditions experienced by motorists making long distance trips or traffic traveling the entire length of the Keys. Given that US 1 is the only principal arterial in an unincorporated Monroe County, the movement of long distance traffic is an important consideration.

Both Monroe County and the FDOT have adopted a LOS C Standard for US 1. Regardless of the posted speed limit, 45 mph has been adopted as the LOS C Standard for the entire length of US 1. Under the adopted growth management process, if the overall LOS for US 1 falls below the LOS C Standard, then no additional land development will be allowed in the Florida Keys unless mitigation measures are implemented.

Segment speeds are the speeds recorded within the individual segments of US 1. The segments were defined by the Task Force to reflect roadway cross-sections, speed limits, and geographical boundaries. Segment speeds reflect the conditions experienced during local trips. Given that US 1 serves as the principal arterial in the Keys, the movement of local traffic is also an important consideration.

LOS is determined for individual segments by comparing the average posted speed limits with the median travel speeds. The difference between the segment travel speed and the LOS C Standard is called reserve speed. The reserve speed is converted to an estimated reserve capacity of additional traffic volume. If the travel speed falls below the LOS C Standard, additional trips equivalent to 5% of LOS C capacity can be allowed, to accommodate a limited amount of development to continue until traffic speeds are measured again the following year or until remedial actions are implemented. While development may be approved within 5% of LOS C, the proposed development shall be considered to have an impact that needs mitigation.

## 4. DATA COLLECTION

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The travel time and delay data were collected by AECOM staff. A summary of the data collection methodology and the data collected is presented in Appendices A and B, respectively.

The data were recorded by date, day of the week, time of the day, and direction of travel. The field data collection took place between March 3, 2019 and March 16, 2019. The results are included in Appendix B. Fourteen (14) round trips were made to complete the 28 travel time runs. These runs represent a sample of two runs for each day of the week. The seven-day, 24-hour traffic data were collected in Islamorada, Marathon, and Big Pine Key from March 5, 2019 to March 11, 2019, concurrently with the travel time runs. The volume data is provided in Appendix C.

The field studies employed a staggered schedule of departure times previously approved by the Task Force so as to capture peak hour conditions in as many different locations as possible during the approximately 2.5-hour one-way trip between Key West and the mainland. The staggered schedule of departure time also helps to capture the varied trip purposes and time frames within the Keys.

## 5. FIELD OBSERVATIONS

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### Traffic Signals

There are 16 traffic signals, two flashing signals, five emergency signals, one Pedestrian Hybrid Beacon (PHB) and two pedestrian signals along the study corridor:

<u>LOCATION</u>	<u>APPROX. MILE MARKER</u>	<u>SEGMENT</u>
College Road	4.4	1
Cross Street	4.6	1
McDonald Avenue	4.8	1
3 <sup>rd</sup> Street (Flashing Signal)	4.9	1
Emerald Drive (Emergency Signal)	10.5	3
Sugarloaf Boulevard (Flashing Signal)	10.5	5
Crane Boulevard	19.5	5
Key Deer Boulevard	30.3	10
33 <sup>rd</sup> Street	48.5	13
Sombrero Beach Road	50.0	13
89 <sup>th</sup> Street (Emergency Signal)	51.7	13
107 <sup>th</sup> Street	52.4	13
109 <sup>th</sup> Street	52.5	13
Pedestrian Crossing – 120 <sup>th</sup> Street	53.0	13
Sadowski Causeway	53.5	13
Coco Plum Drive	54.0	13/14
Layton Drive (Emergency Signal)	68.4	16
Snake Creek Bridge (Drawbridge Signal)	85.7	20
Woods Avenue	90.0	21
Sunshine Road	90.5	21
Ocean Boulevard	91.5	21/22
Jo-Jean Way (Emergency Signal)	92.0	22
Fishermans Trail (Emergency Signal)	99.2	22
Atlantic Boulevard	99.5	22/23
Pedestrian Crossing (PHB) – Buttonwood Drive	99.8	23
Tarpon Basin Drive	101.0	23
Pedestrian Crossing – Bowen Drive	105.0	23

As it was done in the past, only a partial impact of the signal was considered for the pedestrian signals at MM 53, MM 99.8, and MM 105. The signal delays for the segments with traffic signals at the end or beginning, such as Coco Plum Drive, Ocean Boulevard and Atlantic Boulevard intersections, are shared between the two adjacent segments.

The three closely-spaced traffic signals in Stock Island (Segment 1) were observed to experience fewer delay events (19 in 2019 vs. 45 in 2017), but an increase in total delay time (26 minutes and 49 seconds vs. 22 minutes and 31 seconds) compared to 2017.

The six traffic signals in Marathon (Segment 13) were observed to experience fewer events, but more delay compared to 2017. The number of delay events decreased to 42 this year vs. 57 in 2017. The total delay time caused by these signals was 22 minutes and 59 seconds this year vs. 22 minutes and 6 seconds in 2017.

The traffic signal at the Crane Boulevard intersection (Segment 5) experienced 5 delay events this year compared to 3 in 2017, with a total delay time of 1 minute and 51 seconds in 2019 vs. 49 seconds in 2017. Three of the delay events recorded at this signal occurred in the southbound direction and two occurred in the northbound direction. In 2017, the two events occurred in the northbound direction and one in the southbound direction.

Segment 1 and Segment 13 are defined as interrupted segments, meaning that interruptions such as signalized intersections are expected. The changes in delay due to these signals may not significantly influence the individual segment operating conditions because they are designated as having interrupted flow conditions. However, any changes in delay in these two segments will affect on the overall travel speeds.

#### Traffic Counts

Mechanical traffic counters and hoses were installed on March 5, 2019 along US 1 at the following locations:

- Big Pine Key, on the south side of the North Pine Channel Bridge (MM 29);
- Marathon, in front of McDonalds (MM 50);
- Upper Matecumbe, on the south side of the Whale Harbor Bridge (MM 84).

The traffic volumes during the 2019 study period were found to be higher than the 2017 traffic volumes in Big Pine, Marathon and Upper Matecumbe (see Table 3 on page 11). Additional traffic data was collected to identify localized differences in traffic volumes in Big Pine Key.

## 6. RESULTS AND DISCUSSIONS

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### Traffic Volumes

US 1 is predominately a four-lane facility in Marathon and a two-lane facility in Upper Matecumbe and Big Pine Key. Seven-day continuous traffic counts recorded between March 5 and March 11, 2019 at these three locations along US 1 yielded the following average daily traffic (ADT) and annual average daily traffic (AADT) volumes. The volume data for the 5-day and 7-day is the average of the raw volumes collected. The 7-day average volumes have been adjusted using the 2017 seasonal and axle factors to estimate the 2019 AADTs. Traffic data summaries are included in Appendix C.

<u>Location</u>	<u>5-Day ADT</u>	<u>7-Day ADT</u>	<u>AADT</u>
Big Pine Key (MM 29)	22,408	21,722	20,438
Marathon (MM 50)	43,041	42,530	40,016
Upper Matecumbe (MM 84)	25,856	25,837	24,310

The AADT has increased in Big Pine Key, Marathon and Upper Matecumbe. A detailed historical comparison of the US 1 traffic counts for the period from 1995 to 2019 is presented in Appendix D. A comparison of the most recent seven year data is presented in Table 3 and represented graphically in Figure 1.

US 1 historical traffic growth is depicted in a regression analysis graph in Figure 2. A linear regression analysis of the AADT at each of the three locations over the last twenty-four years indicates that statistically there is a slight increase in overall traffic growth at the Marathon and Upper Matecumbe count locations, and an overall decreasing trend in traffic volumes for Big Pine Key (but the last nine-year data shows an increasing trend).

### Overall Speeds

For the purpose of this study, overall speeds are those speeds recorded over the 108-mile length of US 1 in the Keys between Key West and the Monroe/Miami-Dade County Line. Overall speeds reflect the conditions experienced by motorists during long distance trips. Given that US 1 is the only principal arterial in Monroe County, the movement of through traffic is an important consideration.

The Level of Service (LOS) criteria for overall speeds on US 1 in Monroe County, as adopted by the Task Force, is as follows:

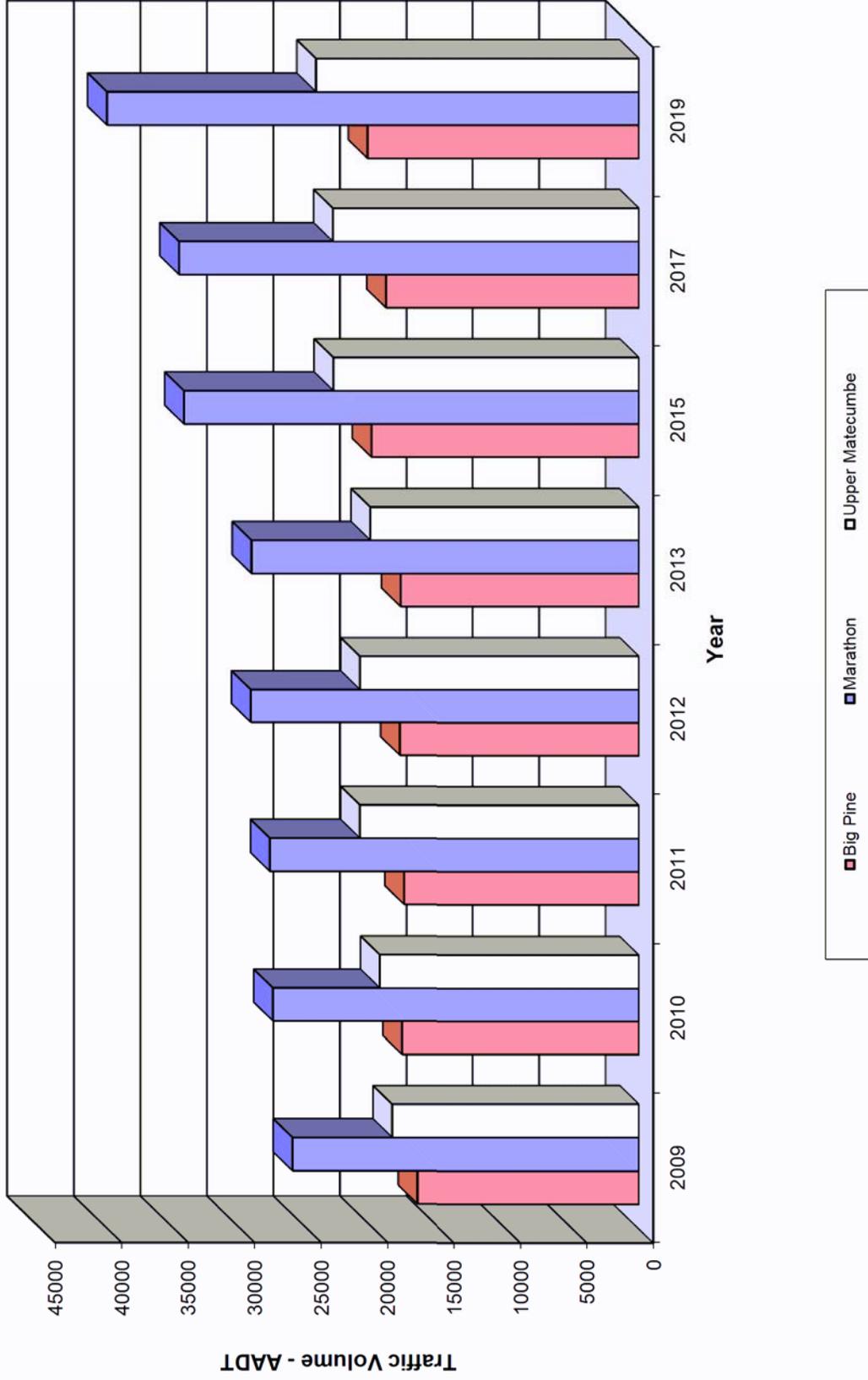
LOS A	51.0 mph or above
LOS B	50.9 mph to 48 mph
LOS C	47.9 mph to 45 mph
LOS D	44.9 mph to 42 mph
LOS E	41.9 mph to 36 mph
LOS F	below 36 mph

Both Monroe County and the FDOT have adopted a LOS C standard for US 1.

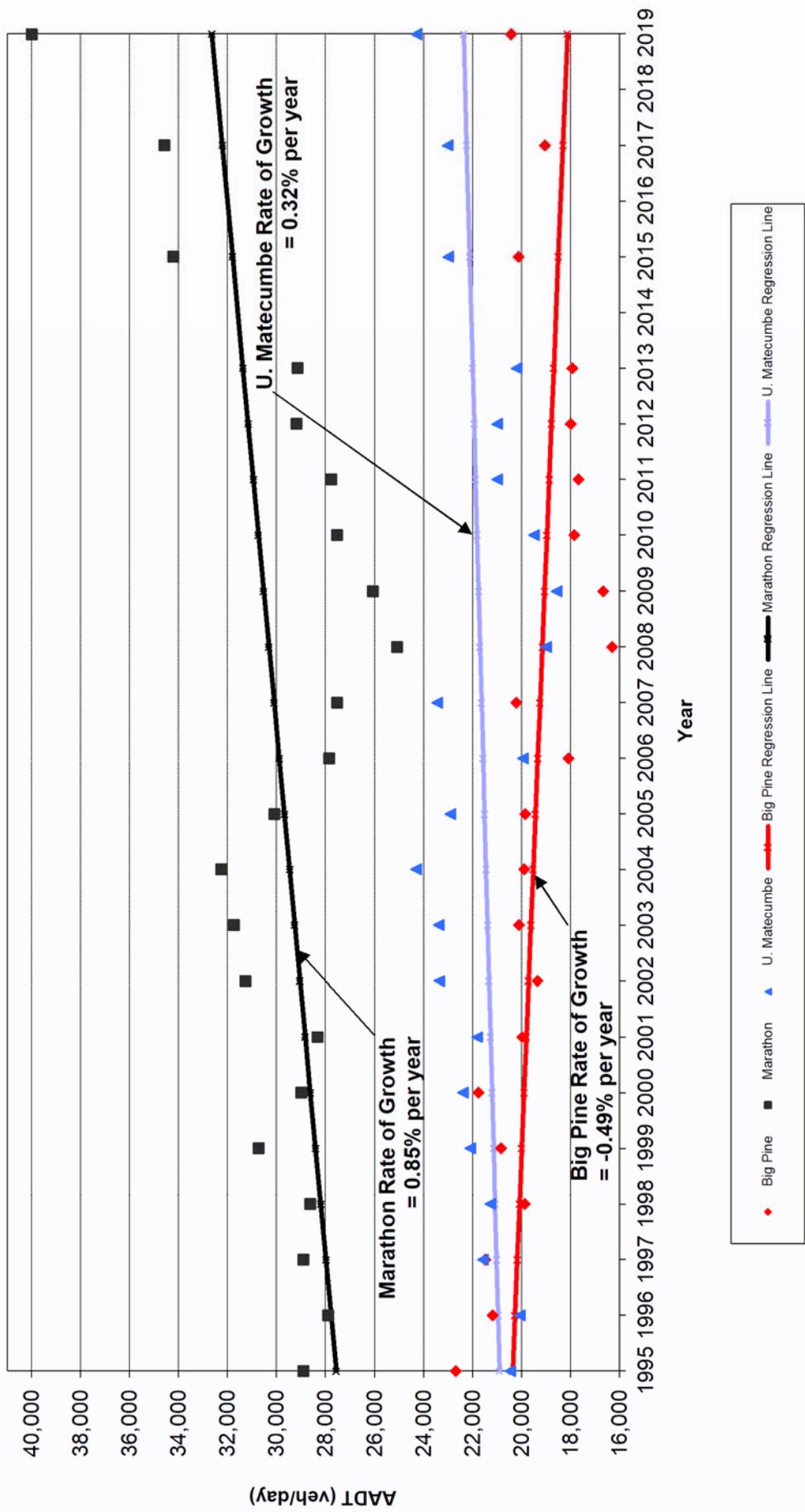
**TABLE 3  
US 1 TRAFFIC COUNTS – HISTORICAL COMPARISON**

	2010		2011		2012		2013		2015		2017		2019	
	Count	% Change												
<b>Big Pine</b>														
5 – Day Average	20,651	-2.78%	20,468	-0.88%	21,056	2.87%	20,986	-0.33%	22,833	8.80%	21,915	-4.02%	22,408	2.25%
7 – Day Average	20,115	-2.62%	20,070	-0.22%	20,579	2.53%	20,066	-2.49%	22,106	10.17%	21,595	-2.31%	21,722	0.59%
AADT	17,842	6.97%	17,684	-0.88%	18,011	1.85%	17,943	-0.38%	20,139	12.24%	19,047	-5.42%	20,438	0.59%
<b>Marathon</b>														
5 – Day Average	31,883	-6.76%	32,156	0.85%	34,145	6.19%	34,097	-0.14%	38,824	13.86%	39,382	1.44%	43,041	9.29%
7 – Day Average	30,548	-5.42%	31,097	1.79%	32,985	6.07%	32,783	-0.61%	38,144	16.35%	39,239	2.87%	42,530	8.39%
AADT	27,547	5.62%	27,782	0.85%	29,208	5.13%	29,153	-0.19%	34,243	17.46%	34,609	1.07%	40,016	8.39%
<b>Upper Matecumbe</b>														
5 – Day Average	22,588	-2.09%	24,326	7.69%	24,561	0.97%	23,656	-3.68%	26,079	10.24%	25,598	-1.85%	25,856	1.01%
7 – Day Average	22,634	-1.66%	24,508	8.27%	24,936	1.75%	23,164	-7.11%	25,817	11.45%	26,126	1.20%	25,837	-1.11%
AADT	19,516	5.01%	21,017	7.69%	21,009	-0.04%	20,226	-3.73%	23,002	13.72%	23,043	0.18%	24,310	5.50%

**Figure 1: U.S. 1 AADT - HISTORICAL COMPARISON**



**Figure 2: U.S. 1 Historical Traffic Growth  
AADT**



The median overall speed during the 2019 study was 44.6 mph, which is 1.4 mph lower than the 2017 median speed of 46.0 mph. The median speed corresponds to LOS D conditions. The highest overall speed recorded in the study was 50.5 mph (1.1 mph higher than the 2017 highest overall speed of 49.4 mph), which occurred on Monday, March 11, 2019 between 3:45 p.m. and 6:08 p.m., in the southbound direction. The lowest overall speed recorded was 37.8 mph (3.0 mph higher than the 2017 lowest overall speed of 34.8 mph), which occurred on Wednesday, March 6, 2019 between 1:30 p.m. and 4:39 p.m. in the northbound direction. The 2019 travel speed data is summarized in Appendix E. See Appendix F for comparisons of speed data from the 2019 study to previous year's data.

### Segment Speeds

Segment speeds are the speeds recorded within individual segments of US 1. The segments were defined by the Task Force to reflect roadway cross-sections, speed limits, and geographical boundaries. Segment speeds reflect the conditions experienced during local trips. Given that US 1 serves as the main arterial in the Keys, the movement of local traffic along US 1 is also an important consideration on this multi-purpose roadway.

The level of service criteria for segment speeds on US 1 in Monroe County depends on the flow characteristics and the posted speed limits within the given segment. The criteria, listed by type of flow characteristic, are explained in Appendix A, and summarized below.

#### Interrupted Flow

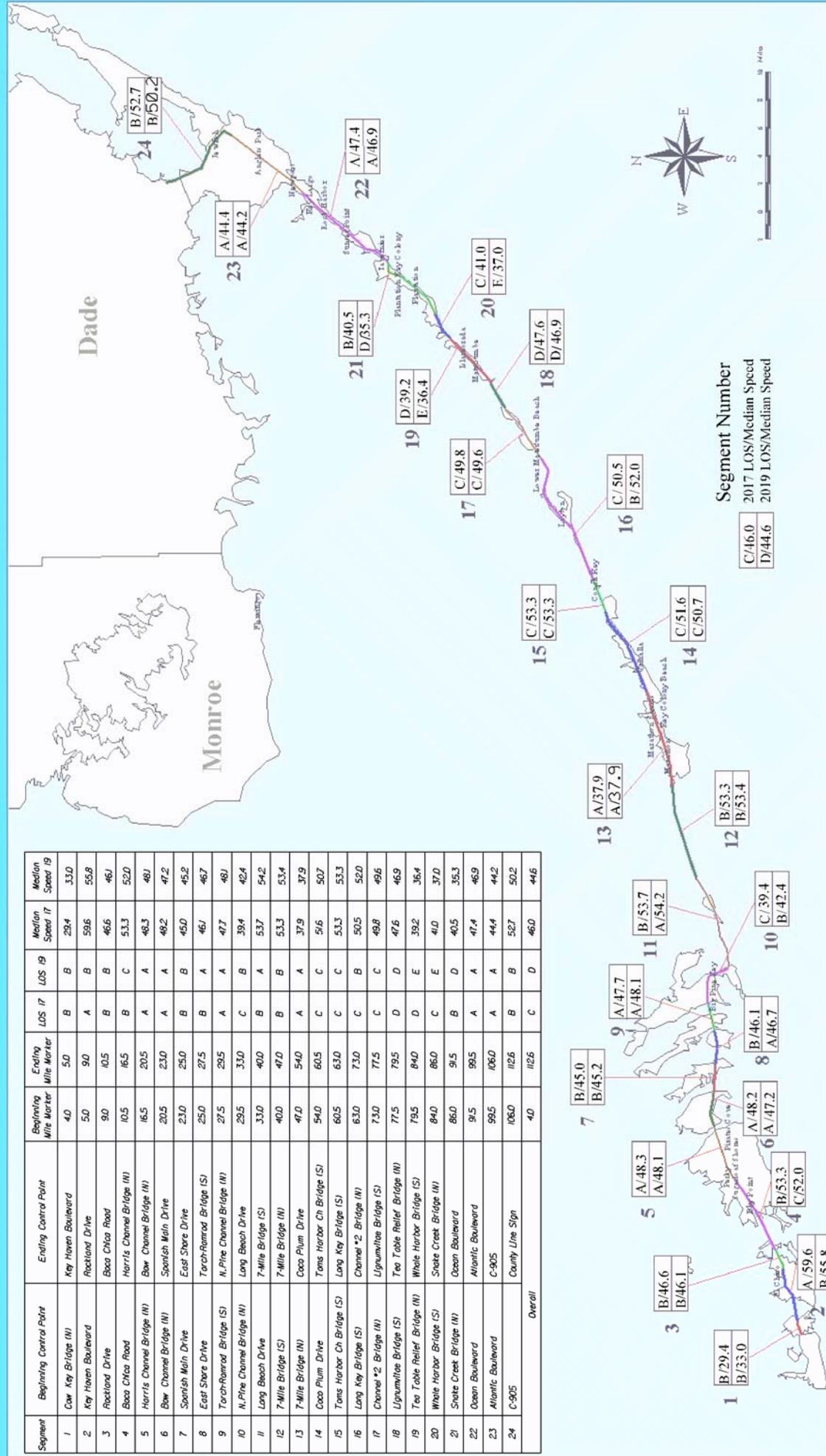
LOS A  $\geq$  35 mph  
LOS B  $\geq$  28 mph  
LOS C  $\geq$  22 mph  
LOS D  $\geq$  17 mph  
LOS E  $\geq$  13 mph  
LOS F < 13 mph

#### Uninterrupted Flow

LOS A 1.5 mph above the speed limit  
LOS B 1.5 mph below the speed limit  
LOS C 4.5 mph below the speed limit  
LOS D 7.5 mph below the speed limit  
LOS E 13.5 mph below the speed limit  
LOS F more than 13.5 mph below the speed limit

For all "uninterrupted" segments containing isolated traffic signals, the travel times were reduced by 25 seconds per signalized intersection and 3 seconds per pedestrian signal to account for lost time due to signals. The Marathon and the Stock Island segments are considered "interrupted" flow facilities. Therefore, no adjustments (to account for delay at signals) were made to travel times in these segments.

The segment limits, median travel speeds, and Level of Service (for 2017 and 2019) for each segment are presented in Figure 3. The median segment speed ranged from 55.8 mph in the Boca Chica segment to 33.0 mph in the Stock Island segment. The following is a summary of LOS changes, as compared to 2017:



Segment	Beginning Control Point	Ending Control Point	Beginning Mile Marker	Ending Mile Marker	LOS 17	LOS 19	Median Speed 17	Median Speed 19
1	Cow Key Bridge (N)	Key Haven Boulevard	4.0	5.0	B	B	29.4	33.0
2	Key Haven Boulevard	Rockland Drive	5.0	9.0	A	B	59.6	55.8
3	Rockland Drive	Boca Chica Road	9.0	10.5	B	B	46.6	46.1
4	Boca Chica Road	Harris Channel Bridge (N)	10.5	16.5	B	C	53.3	52.0
5	Harris Channel Bridge (N)	Bow Channel Bridge (N)	16.5	20.5	A	A	48.3	48.1
6	Bow Channel Bridge (N)	Spanish Main Drive	20.5	23.0	A	A	48.2	47.2
7	Spanish Main Drive	East Shore Drive	23.0	25.0	B	B	45.0	45.2
8	East Shore Drive	Torchramrod Bridge (S)	25.0	27.5	B	A	46.1	46.7
9	Torchramrod Bridge (S)	N. Pine Channel Bridge (N)	27.5	29.5	A	A	47.7	48.1
10	N. Pine Channel Bridge (N)	Long Beach Drive	29.5	33.0	C	B	39.4	42.4
11	Long Beach Drive	7-Mile Bridge (S)	33.0	40.0	B	A	53.7	54.2
12	7-Mile Bridge (S)	7-Mile Bridge (N)	40.0	47.0	B	B	53.3	53.4
13	7-Mile Bridge (N)	Coco Plum Drive	47.0	54.0	A	A	37.9	37.9
14	Coco Plum Drive	Tons Harbor Ch Bridge (S)	54.0	60.5	C	C	51.6	50.7
15	Tons Harbor Ch Bridge (S)	Long Key Bridge (S)	60.5	63.0	C	C	53.3	53.3
16	Long Key Bridge (S)	Channel *2 Bridge (N)	63.0	73.0	C	B	50.5	52.0
17	Channel *2 Bridge (N)	Lignumvitae Bridge (S)	73.0	77.5	C	C	49.8	49.6
18	Lignumvitae Bridge (S)	Tea Table Relief Bridge (N)	77.5	79.5	D	D	47.6	46.9
19	Tea Table Relief Bridge (N)	Whole Harbor Bridge (S)	79.5	84.0	D	E	39.2	36.4
20	Whole Harbor Bridge (S)	Shute Creek Bridge (N)	84.0	86.0	C	E	41.0	37.0
21	Shute Creek Bridge (N)	Ocean Boulevard	86.0	91.5	B	D	40.5	35.3
22	Ocean Boulevard	Atlantic Boulevard	91.5	99.5	A	A	47.4	46.9
23	Atlantic Boulevard	C-905	99.5	106.0	A	A	44.4	44.2
24	C-905	County Line Sign	106.0	112.6	B	B	52.7	50.2
	Overall		4.0	112.6	C	D	46.0	44.6

**Average Travel Speeds And Levels Of Service  
2019 Travel Time Delay Study**

**Figure 3**

SOURCE(S): Florida Department of Transportation - Statistics Office; URS Consultants, Inc.

<u>LOS A</u>	<u>LOS B</u>	<u>LOS C</u>	<u>LOS D</u>	<u>LOS E</u>
(+) Ramrod (8)	(-) Boca Chica (2)	(-) Saddlebunch (4)	(-) Plantation (21)	(-) U. Matecumbe (19)
(+) Bahia Honda (11)	(+) Long (16)			(-) Windley (20)
	(+) Big Pine (10)			

There are LOS changes in 9 segments – the LOS for 4 segments has improved, and the LOS for the remaining 5 segments has degraded.

- Ramrod segment (8) changed from LOS ‘B’ to LOS ‘A’
- Bahia Honda segment (11) changed from LOS ‘B’ to LOS ‘A’
- Boca Chica segment (2) changed from LOS ‘A’ to LOS ‘B’
- Long segment (16) changed from LOS ‘C’ to LOS ‘B’
- Big Pine segment (10) changed from LOS ‘C’ to LOS ‘B’
- Saddlebunch segment (4) changed from LOS ‘B’ to LOS ‘C’
- Plantation segment (21) changed from LOS ‘B’ to LOS ‘D’ - Village of Islamorada
- Upper Matecumbe segment (19) changed from LOS ‘D’ to LOS ‘E’ - Village of Islamorada
- Windley segment (20) changed from LOS ‘C’ to LOS ‘E’ - Village of Islamorada

Compared to 2017, the median segment speeds decreased in 15 of the 24 segments, ranging between -0.2 mph and -5.2 mph. Eight segments experienced an increase in median speeds, ranging from +0.1 mph to +3.6 mph. Segment # 15 (Duck – MM 60.5 to MM 63.0) was the only segment where the median speed remained the same.

The largest increase in speed (+3.6 mph) was recorded in Segment # 1 (Stock Island – MM 4.0 to MM 5.0); however, the LOS remained the same at ‘B’. The largest reduction in speed (-5.2 mph) was recorded in Segment # 21 (Plantation – MM 86.0 to MM 91.5), resulting LOS change from ‘B’ to ‘D’.

Detailed summary tables of these measured travel speeds by day, segment, and fourteen-day average are contained in Appendix E.

### Delay

A delay event starts whenever the speed of the test vehicle falls below 5 mph. The delay event continues until the test vehicle's speed increases to 15 mph. During the study, the observers encountered a total of 259 separate delay events. Seventeen (17) of these delay events, resulting in 58 minutes and 3 seconds, were excluded from the overall and the segment travel time calculations. The excluded delays were caused by non-recurring events, such as accidents and roadside construction.

A detailed listing of the specific sources of delay is included in Appendix H of this report. A summary of the delay data (as compared to 2017 data), is provided in Table 4. The mean delay per trip is the total delay recorded for a given delay event divided by the study's 28 one-way trips. The mean delay per trip is found to be 11 minutes and 28 seconds.

**TABLE 4  
DELAY DATA SUMMARY AND COMPARISON**

Delay Source	Number of Events		Total Delay		Excluded Time		Mean Delay Per Event		Mean Delay Per Trip	
	2019	(2017)	2019	(2017)	2019	(2017)	2019	(2017)	2019	(2017)
Traffic Signals	157	213	01:51:49	02:10:29	00:00:00	00:00:00	00:43	00:36	4:00	4:30
Drawbridges	2	0	00:06:54	00:00:00	00:00:00	00:00:00	03:27	0:00	0:15	0:00
Congestion	78	64	02:22:59	03:16:44	00:00:00	00:00:00	1:50	3:04	5:06	7:02
Left Turns	4	18	00:01:29	00:04:44	00:00:00	00:00:00	0:22	0:16	0:03	0:10
Right Turns	1	3	00:00:23	00:00:35	00:00:00	00:00:00	0:23	0:12	0:01	0:01
School Bus	3	12	00:01:25	00:05:09	00:01:25	00:05:09	0:28	0:26	0:03	0:11
Construction	1	0	00:09:55	00:00:00	00:09:55	00:00:00	9:55	0:00	0:21	0:00
Accidents	7	1	00:38:47	00:02:56	00:38:47	00:02:56	5:32	2:56	1:23	0:06
Emergency Vehicles	0	9	00:00:00	00:08:24	00:00:00	00:08:24	0:00	0:56	0:00	0:18
Special Event	6	11	00:07:21	00:33:51	00:07:21	00:33:51	1:14	3:05	0:16	1:13
<b>Total</b>	<b>259</b>	<b>331</b>	<b>05:21:02</b>	<b>06:22:52</b>	<b>00:58:03</b>	<b>00:50:20</b>	<b>01:14</b>	<b>18:34</b>	<b>11:28</b>	<b>13:36</b>

**Signal Delays**

The largest single recurring delay was caused by traffic signals. During the 2019 study, 157 observable signal delay events were noted in the vicinity of the signalized intersections. Traffic signals resulted in a total delay of 1 hour 51 minutes and 49 seconds, which accounts for 35% of the total delay.

The mean delay per event for signals in Segments # 1, 10, 13, 22 and 23 was higher than the LOS C threshold value of 25 seconds (discounted as per the methodology).

The average signal delay per trip was also higher (47 seconds) than the 25 second threshold. The signal at Atlantic Boulevard in Tavernier (Segment # 22) caused the most delay, 21 minutes and 59 seconds, (from a total of 14 delay events), which accounted for 20% of the total signal delay. The mean delay per event at the Atlantic Boulevard signal (1 minute and 34 seconds) was higher than the 25 second threshold. The signal in Marathon (Segment # 13) at Sombrero Beach Road experienced the highest number of signal delay events (18), resulting in 13 minutes and 17 seconds delay (12% of the total signal delays). The signal at Key Deer Boulevard in the Big Pine segment (Segment # 10) was the most significant in 2017 with 14 signal delay events, resulting in 20 minutes and 14 seconds (16% of the total signal delay).

**Accident Delay**

The accident-related delays, although non-recurring, were observed to be the third highest delay event category during the 2019 study. A total of seven accident delay events were recorded during the 2019 study, accounting for 38 minutes and 47 seconds delay. The accident delay accounted for 12% of the total delays. The accident delays were excluded from the overall and segment travel times.

**Turning Vehicles Delay**

There were four left-turn and one right-turn delay events during the 2019 study. Left-turn delays accounted for 1 minute and 29 seconds, with a mean delay of 22 seconds. Similarly, right-turn delays accounted for 23 seconds with a mean delay of

23 seconds. In accordance with the Floating Car Method and Passing Score procedure, the test car did not pass on the right side of a left turning vehicle within two-lane segments during this year's study.

#### Draw Bridge Delay

The bridge across the Snake Creek was the only drawbridge observed along the entire length of the study segment. There were two drawbridge events during the 2019 study, as compared to zero drawbridge related events during the 2017 travel time study. Drawbridge delays accounted for 6 minutes and 54 seconds, with an average delay of 3 minutes and 27 seconds.

#### Congestion Delay

Congestion related delay represents the largest recurring delay observed during the 2019 study. There were 78 congestion related delay events, resulting in 2 hours 22 minutes and 59 seconds delay. It is possible that some of this delay was caused by drawbridge openings, stop and go conditions in the vicinity of signalized intersections, and vehicles turning from through lane. Specific sources of congestion were not always visible to the observers in the test vehicle, especially if the test vehicle was in a long queue; or the delay event has ended (such as red signal indication may have changed to green or the open drawbridge may have been lowered) by the time the test vehicle approached the event location.

#### Construction Delay

Construction delays accounted for 9 minutes and 55 seconds during the 2019 study. There were no construction delays during the 2017 study. The construction delays were excluded from the overall and segment travel times.

#### Speed Limit

The posted speed limits affect both the segment and the overall LOS. For instance, a lower speed limit could benefit a segment's LOS by reducing the difference between the travel speed and the posted speed limit. The reduction in the speed limit, however, negatively impacts the overall LOS because motorists are expected to travel at reduced speeds to comply with the speed limits, whereas the overall LOS C threshold is set at 45 mph regardless of the speed limit changes. For these reasons, the posted speed limit is an important component in this study.

A large part of the traffic in Monroe County consists of tourists, who generally tend to have a leisurely driving style. The traffic also tends to include a large number of recreational vehicles. Combined with some slow moving heavy vehicles, the travel speeds tend to go below the speed limits when there are no opportunities for faster moving vehicles to pass. Such impacts are evident in 16 of the 24 segments that operate at median travel speeds below the weighted average posted speed limits as presented in Appendix G. This is similar to the 2017 data, which had 15 segments operating at median travel speeds below the speed limit.

#### Reserve Capacities

The difference between the median speed and the LOS C Standard speed gives the reserve speed, which in turn can be converted to an estimated reserve capacity. The median overall speed of 44.6 mph compared to the LOS C standard of 45 mph leaves a negative overall reserve speed of -0.4 mph. This reserve speed is converted into an estimated number of reserve trips using the formula below:

$$\text{Reserve Volume} = \frac{\text{Reserve Speed} \times k \times \text{Overall Length}}{\text{Trip Length}}$$

$$\text{Reserve Volume} = \frac{\text{Reserve speed} \times 1656 \text{ daily trips/mph} \times 112 \text{ miles}}{10 \text{ miles}}$$

Applying the formula for reserve volume to each of the 24 segments of US 1 individually gives maximum reserve volumes for all segments totaling 89,398 trips. These individual reserve volumes may be unobtainable, due to the constraint imposed by the overall reserve volume.

County regulations and FDOT policy allow segments that fail to meet the LOS C standards to receive an allocation not to exceed five percent below the LOS C standard. The so-called five percent allocations were calculated for such segments as follows:

$$5\% \text{ Allocation} = \frac{(\text{median speed} - 95\% \text{ of LOS C}) \times 1656 \times \text{Length}}{\text{Trip Length}}$$

The following four segments were identified to be functioning below the LOS C threshold: Segment #18 (Tea Table), Segment #19 (Upper Matecumbe), Segment #20 (Windley) and Segment #21 (Plantation). These four segments have depleted their reserve capacities. All of these segments are in the Village of Islamorada.

A summary table displaying level of service and reserve capacity values for each segment is contained in Appendix G.

## 7. SUMMARY

Following is a summary of the 2019 Travel Time and Delay Study results:

- a) The traffic volumes have increased by approximately 5% as compared to 2017.
- b) The overall travel speed on US 1 based on the 2019 study is 44.6 mph, which is 1.4 mph lower than the 2017 overall travel speed.
- c) As compared to the 2017 data, the median travel speeds in 15 of the 24 segments have decreased. They are:

- Boca Chica (-3.8 mph)	- Grassy (-0.9 mph)
- Sugarloaf (-0.2 mph)	- L Matecumbe (-0.2 mph) - Village of Islamorada
- Cudjoe (-1.0 mph)	- Tea Table (-0.7 mph) - Village of Islamorada
- Big Coppitt (-0.5 mph)	- U Matecumbe (-2.8 mph) - Village of Islamorada
- Tavernier (-0.5 mph)	- Windley (-4.0 mph)- Village of Islamorada
- Key Largo (-0.2 mph)	- Plantation (-5.2 mph)- Village of Islamorada
- Cross (-2.5 mph)	

Median travel speeds in 8 segments have increased. They are:

- Stock Island (+3.6 mph)	- Big Pine (+3.0 mph)
- Summerland (+0.2 mph)	- Torch (+0.4 mph)
- Ramrod (+0.6 mph)	- Bahia Honda (+0.5 mph)
- Long (+1.5 mph)	- 7-Mile Bridge (+0.1 mph)

The median segment speed for Segments #13 (Marathon) and #15 (Duck), remained the same as 2017 speed.

- d) As compared to the 2017 study, there are LOS changes in 9 of the 24 segments – the LOS for 4 segments has improved, and the LOS for the remaining 5 segments has degraded.
- e) Segment # 20 (Windley – MM 84.0 – MM 86.0) LOS changed from LOS ‘C’ to ‘E’. Segment # 21 (Plantation – MM 86.0 – MM 91.5) LOS changed from LOS ‘B’ to ‘D’. The LOS for Segment # 18 (Tea Table – MM 77.5 – MM 79.5) remained at LOS ‘D’. Segment #19 (Upper Matecumbe – MM 79.5 – MM 84.0) LOS changed from LOS ‘D’ to ‘E’. Thus, these 4 segments have no reserve capacity and should be given special attention.
- f) There were a total of 259 delay events, 17 of which were excluded due to their non-recurring nature. Stop and go conditions at traffic signals were observed to be the largest recurring delay-causing events this year. The traffic signals caused 157 delay events, resulting in 1 hour 51 minutes and 49 seconds delay. The signals caused an average of 4 minute delay per trip, which is 30 seconds less as compared to 2017 data.
- g) There were two drawbridge delay events during the 2019 study, as compared to no drawbridge related delay events in 2017. Drawbridge delays accounted for 6 minutes and 54 seconds, with an average delay of 3 minutes and 27 seconds.
- h) There was one construction delay event in 2019 (accounted for 9 minutes and 55 seconds), as compared to no construction delay events in 2017.
- i) There were 78 congestion related delay events in 2019, resulting in 2 hours 22 minutes and 59 seconds of delay, as compared to 3 hours 16 minutes and 44 seconds in 2017.

The congestion delay events contributed to 5 minutes and 6 seconds of delay per trip on an average, which is lower when compared to the 2017 average congestion delay per trip of 7 minutes and 2 seconds.

- j) Segments with reserve speeds of less than or equal to 3 mph should be given particular attention when approving development applications. Based on the 2019 study, there are eight segments in this category (one segment more than the 2017 study).

- Saddlebunch (MM 10.5 – MM 16.5)	- Tea Table (MM 77.5 – MM 79.5)
- Duck (MM 60.5 – MM 63.0)	- U. Matecumbe (MM 79.5 – MM 84.0)
- Grassy (MM 54.0 – MM 60.5)	- Windley (84.0 – 86.0)
- L. Matecumbe (MM 73.0 – MM 77.5)	- Plantation (86.0 – 91.5)

The following is a list of considerations for review:

- 1) The US 1 Level of Service Task Force was formulated in 1992 to develop a methodology for US 1 that utilizes an empirical relationship between the volume-based capacities and the speed-based Level of Service (LOS). The Task Force was a multi-agency team with members from Monroe County, the Florida Department of Transportation, and the Department of Economic Opportunity (formerly known as Florida Department of Community Affairs - DCA). The methodology established by the task force includes a procedure for using travel speed as a means of assessing the level of service and reserve capacity for US 1. The members of the Task Force met again in 1997 to re-evaluate the LOS methodology and made some minor changes. The signal delay for LOS C was increased to 25 seconds from 15 seconds to account for changes in the Highway Capacity Manual (HCM). Considering that the last meeting of the Task Force was held more than 22 years ago, it is suggested that the members of the Task Force meet again to review the LOS methodology and identify any potential changes to ensure that the methodology is consistent with current practices and to identify opportunities for improvement, if any. Since the last Task Force review, there have been updates to the Highway Capacity Manual (HCM), which may need to be incorporated. Some specific items that can be reviewed, include:

- Review the signal delay threshold for LOS C based on the current Highway Capacity Manual (delay threshold increased from 25 seconds to 35 seconds) and adjust the methodology accordingly.
- The methodology to determine the LOS for the 24 individual roadway segments and the overall US 1 are slightly different. Individual segment LOS is determined by comparing the median travel speed with the weighted posted speed limit for the segment. For example, Segment LOS is A if the median travel speed is 1.5 mph above the posted speed limit. Alternatively, the overall LOS for US 1 is determined by comparing the median travel speed with pre-established speed thresholds for different levels of service. For example, the LOS for US 1 is A if the overall travel speed is equal to or above 51 mph, irrespective of the overall weighted posted speed limit. In other words, the overall LOS criteria does not consider the posted speed limit.
- According to the current methodology, delays due to drawbridge openings should be excluded from the segment travel times, but included in the overall travel times. Considering that delays associated with drawbridge openings are non-recurring and impact the overall US 1 level of service, this part of the methodology should be reviewed and adjusted accordingly.
- Review the travel time schedule (i.e. departure times and staggered schedule) and adjust as needed to reflect current traffic conditions.

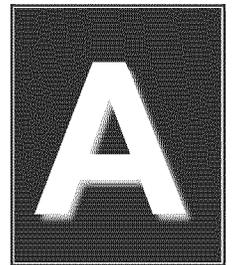
- 2) Under the adopted growth management process, if the overall LOS for US 1 falls below the LOS C Standard, then no additional land development will be allowed unless mitigation measures are implemented. Roadway widening is a typical mitigation measure (or capacity improvement) used by most agencies. However, in Monroe County, road widening (specifically along US 1) is restricted by the adopted comprehensive plan policies to preserve and protect the fragile ecological conditions. There are other remedies that could be explored and evaluated to improve the traffic flow and capacity along US 1. Some examples include:
- Upgrade the traffic signal infrastructure and/or signal timing at signalized intersections along US 1 to enhance traffic flow.
  - Evaluate the feasibility of implementing adaptive signal control systems to improve traffic flow.
  - Provide or improve transit service or other multi-modal transportation alternatives.
  - Implement active traffic management and Transportation System Management & Operation type improvements, which include real-time monitoring of traffic flow and implementing measures to address traffic congestion.
  - Add turn lanes at strategic locations to improve roadway capacity.
  - Implement access management improvements (consolidate driveways/access points, modify median openings, etc.) to reduce interruptions to US 1 traffic.
  - Provide and/or improve frontage roads to reduce the impact on US 1. Improve local roads to minimize US 1 being used as a local street for short-trips.
  - Do not allow new traffic signals along US 1, if a safe and/or less restrictive alternative (such as indirect left-turns, a roundabout, etc.) can be provided to accommodate traffic movements.
  - Conduct speed studies on selected segments of US 1 to confirm if the current posted speed limits are correct and modify, if necessary.
- 3) This is the first Travel Time and Delay Study conducted after Hurricane Irma made landfall in 2017 as a Category 4 storm in the Florida Keys. The hurricane restoration activities and associated construction vehicles using US 1 may have impacted travel times. This is a natural disaster that is out of the norm and this irregularity needs to be considered and possibly discounted or re-evaluated with an additional interim travel time study.

# APPENDIX A

## Data Collection Methodology



# A P P E N D I X



**AECOM**

# DATA COLLECTION METHODOLOGY

## (Previously Approved by Task Force)

---

### Calibration of the DMI

Prior to beginning the study, the DMI was calibrated over a half-mile course. The calibration procedure set-up by the DMI manufacturer established a calibration factor of 0.682 for the test vehicle, which resulted in measurements within 3 feet of the 5,280-foot distance (0.057%). At this level of accuracy, the DMI would measure the 108 mile distance of US 1 between Stock Island and the Dade County line to within 325 feet, or to within 0.03 mile per hour (mph) of the 45 mph standard for LOS C.

### Floating Car Method and Passing Score

The study employed the floating car method, whereby under ideal conditions the test vehicle passes and is passed by an equal number of vehicles (i.e. "goes with the flow"). A passing score was recorded for each segment to document the extent to which this objective was accomplished. Positive scores indicate the number of excess vehicles the test car passed; negative scores indicate the number of excess vehicles that passed the test car; and zero indicates an even balance. The overall passing score consists of the sum of the segment scores.

The passing score provided an objective measure of the traffic flow, allowing the driver to adjust the test car speed accordingly. In the event that the traffic flow was higher than the posted speed limit, as was frequently the case in the Dade County and Boca Chica segments, the test car also traveled above the speed limit. Vehicles turning on or off US 1 were omitted from the passing score.

Employing the floating car method in two-lane segments was fairly straightforward, where the observers frequently encountered platoons of sufficient size to discourage or prohibit passing. When positioned at the rear or in the middle of a platoon, the observers simply traveled with the pack. When positioned as the lead car, the observers avoided delaying the platoon yet kept the platoon within sight.

On two-lane segments the observers occasionally encountered stopped vehicles waiting to turn left, raising the question of whether the test vehicle should leave the lane or paved road surface and pass to the right of the stopped vehicle. When the vehicles ahead of the observers passed to the right of the stopped vehicle, then the observers did also. However, when the test car was the lead car in the platoon, the observers only passed on the right if they could do so without leaving the paved roadway.

Within four-lane segments with light congestion, the observers often encountered traffic traveling in the right lane at or below the posted speed limit, while there was little or no traffic in the left lane. Rather than "floating" below the speed limit in the right lane or traveling at the maximum possible speed in the left lane, the observers traveled at the posted speed limit, which resulted in passing score as high as +10. Thus, in these cases, a passing score of zero is undesirable, since the corresponding speed would fail to reflect the availability of the vacant passing lane.

Within four-lane segments with moderate or heavy congestion, the observers often encountered separate platoons in the right and left lanes, with the left lane typically moving at a faster speed. Rather than continuously changing lanes to achieve a passing score of zero, the test car "floated" in the faster of the two platoons, which also yielded high passing scores.

### Platoon Size

To provide a measure of roadway congestion within each segment, the average number of vehicles traveling in the test car's platoon was recorded, including the test car itself. Within four-lane segments, this number represents the average number of vehicles that traveled in the test car's platoon within the test car's lane.

### Treatment of Delay

In accordance with the FDOT Manual on Uniform Traffic Studies, the observers began recording delay when the test car's speed fell to 5 mph and terminated the delay event when the test car's speed rose to 15 mph. Each delay entry was identified, in the DMI memory by a sequential code number. The observers recorded the type and location of the delay on a field data sheet.

When computing both segments and overall travel times, delays due to typical events such as turning movements, traffic signals, and certain types of congestion were included. Unusual or non-recurring delays, such as construction, accidents, school bus, and emergency vehicles were excluded. Delays due to drawbridge opening were excluded from the segment travel times, but included in the overall travel times. However, regardless of how a particular type of delay was treated in the analysis, all delays of all types were identified and recorded on the field data sheets.

Occasionally an external event slowed traffic speeds, but not enough to meet the 5 mph criteria for a formal delay. Highway construction and maintenance activities were the most common example of this borderline situation. The decision of whether to record these events was made on a case-by-case basis in the field. As long as the observers were traveling at speeds within 5 to 10 mph of the posted speed limit and the event occurred over a distance of about a mile or less, the event was not recorded. However, if the activity caused speeds slower than this or when the observers witnessed active interference, such as bulldozers or flagman blocking the traffic, the event was recorded and later excluded from the analysis.

**A METHODOLOGY TO ASSESS LEVEL-OF-SERVICE  
ON US-1 IN THE FLORIDA KEYS**

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## **ABSTRACT**

**This paper presents the methodology developed to assess level-of-service (LOS) on US-1 in the Florida Keys. Although predominantly an uninterrupted flow two-lane roadway in the Keys, US-1's uniqueness warrants all alternative LOS evaluation process to that found in the 1985 Highway Capacity Manual.**

**U.S.-1 extends from the Key West to the Florida mainland with no major roads intersecting it. Furthermore, no other principal arterial serves the Keys or the Keys' resident and tourist population, over 100,000. Its unique geography, land use patterns, trip making characteristics presented a challenge in developing and applying a reasonable and acceptable method to assess its LOS.**

**A uniform method was developed to assess LOS on U.S.-1 to cover both its overall arterial length from Key West to the Florida mainland, and 24 roadway segments delineated. The methodology employs average travel speed as the main measure of effectiveness. It was developed from basic criteria and principles contained in Chapters 7 (Rural Multilane Highways), 8 (Rural Two-Lane Highways) and 11 (Urban and Suburban Arterials) of the 1985 Highway Capacity Manual.**

**The results of the study correlate well with perceived operating conditions on US-1 and over a two-year period the methodology appears to have a good level of reliability. The authors recommend that for uninterrupted flow conditions in developed areas, Chapters 7 and 8 of the Highway Capacity Manual incorporates average travel speed as the main measure of effectiveness to determine LOS.**

## **A METHOD TO ASSESS LEVEL-OF-SERVICE ON US-1 IN THE FLORIDA KEYS**

### **INTRODUCTION**

The purpose of this paper is to present the methodology developed by the Monroe County US-1 level-of-service (LOS) Task Force to assess LOS on US-1 (the Overseas Highway) in the Florida Keys (1). The authors are members of the referenced task force.

US-1 which is mostly two-lanes, has unique geographic and trip characteristics. It extends through the Florida Keys covering approximately 180 kilometers (112 miles) from the City of Key West to the Florida mainland (Figure 1). There are 48 bridges crossing water for a total length of 35 km (22 mi), with the longest bridge approximately 11 km (7 mi) long. There is no other road, to provide vehicular access to the Florida Keys from the rest of Florida or anywhere else. Few local roads are 5 km (3 mi) in length. Consequently, US-1 serves not only as a regional principal arterial which serves intra as well as interstate travel, but also serves as the local road for most of the trips within the Keys. US-1 Annual average daily traffic (AADT) volumes range from a low of 4700 to a high of 34200. The road serves a large tourist demand and is one of the most scenic in the United States. The linear geography with the narrow land width of most of the Florida Keys are further characteristics.

Most of the surrounding land use is rural developed and suburban in nature; however, some areas are totally rural and others are urban, such as the Key West and its suburbs. With the exception of the few completely rural segments and the bridges, strip commercial stores, motels and restaurants are very common throughout the Keys along US-1. Numerous driveways and intersecting local roads provide access to the surrounding residential areas.

The US-1 LOS study encompassed approximately 174 km (108 mi) of US-1 from Key West/Stock Island to the Monroe/Dade County Line, broken down as follows:

- 129 km (80 mi) (74%) two-lane uninterrupted flow;
- 32 km (20 mi) (19 %) four-lane uninterrupted flow; and
- 13 km (8 mi) (7%) four-lane urban/suburban interrupted flow.

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**Part of the growth management process in Florida is to assess roadway LOS to determine if roadway facilities meet standards established by state regulations. The Transportation Research Board Special Report 209 Highway Capacity Manual (HCM) (2) is extensively used throughout Florida as the source document to determine highway capacities and LOS.**

**HCM Chapter 7 (Rural Multilane Highways), 8 (Rural Two-Lane Highways) and 11 (Urban and Suburban Arterials) were consulted to determine applicability to the unique conditions and vehicular traffic operations and characteristics of the Florida Keys. Only the 13 km (8 mi) of urban/suburban interrupted flow and the small percentage of the two-lane truly rural portions correlate directly to the HCM Chapters 11 and 8.**

**Thus, the challenge was to develop a methodology to assess arterial LOS along US-1 without deviating from the principles of the HCM. Towards that end a task force was created consisting of representatives from State and local agencies and an engineering consulting firm.**

## **THE NEED TO DEVELOP A LOS MEASUREMENT METHOD**

**From a state transportation perspective, the overall operating condition of US-1 is important, not the condition of any smaller segment. With Key West as a major tourist destination at the southern end of the Keys and no alternative routes, the logical analysis section of highway extends from Key West to the mainland. From local transportation and development approval perspectives, shorter segments for analysis are desirable.**

**Chapter 8 of the HCM presents a methodology which applies to typical rural two-lane highways with basically long stretches of roads, and few side intersecting streets and driveways directly connecting to the roads. Chapter 8 methodology relies mainly on "percent time delay" to assess LOS. The HCM further states that "Percent time delay...is defined as the average percent of time that all vehicles are delayed while traveling in platoons due to inability to pass. Percent time delay is difficult to measure directly in the field. The percent of vehicles traveling at headways less than 5 seconds can be used as a surrogate measure in field studies."**

**Chapter 8 of the HCM also uses average travel speed and capacity utilization as additional measures of effectiveness to assess LOS. However, the HCM states clearly that percent time delay is the primary measure of service quality. Further inspection of the average speeds for level terrain depicted by Table 8-1 of the HCM do not correspond well with the typical operating speeds of US-1 in the Florida Keys. For instance, Table 8-1 shows average speeds ranging from 58 mph (93 kmh) (LOS A) to 45 mph (72 kmh) (LOS D).**

**The overall weighted posted speed limit for US-1 in the Florida Keys is 79.7 kmh (49.5 mph). The overall median operating speeds along US-1 according to the 1991 and 1992 field studies (3, 4 ) were 76.8 and 75.5 kmh (47.7 and 46.9 mph), respectively. The field studies showed, for the most part, the survey vehicle(s) was traveling close to the posted speed limit.**

**It is believed the average motorist in the Florida Keys is mostly concerned with operating at an acceptable average travel speed rather than being concerned about the ability to pass. This is supported by the physical and traffic characteristics of the Keys (e.g., adjacent land development, sight seeing tourists), local knowledge, and discussions with motorists.**

**From the above statements, it was clear to the task team that HCM Chapter 8 methodology could not be applied to US-1 for analysis of its two-lane sections.**

**With regards to the four-lane uninterrupted flow portions of US-1, a similar dilemma occurred. HCM Chapter 7 methodology applies to multi-lane highways with operating characteristics generally unlike those of US-1 through the Florida Keys. For instance, average travel speeds depicted by Table 7-1 of the HCM are also higher than those encountered in the Keys. Further, the methodology inherent in equations (7-1), (7-2) and (7-3) are closely related to those of freeways with their higher service flow rates, which again neither simulate nor resemble those of US-1 in the Keys. The Four-lane portion is found mostly in Key Largo (the northeastern end of the Keys) which has a weighted posted speed limit of 72.5 kmh (45 mph). Key largo is developed with strip commercial and residential development. It has numerous driveway connections and side streets directly accessing US-1.**

**The remaining 7% of the total US-1 mileage is four-lane interrupted flow. These are the portions encompassing Marathon (in the middle of the Keys) and Stock Island (near Key West). The operating characteristics here are truly urban/suburban and interrupted flow in nature resembling those of HCM Chapter 11. Thus, the methodology of Chapter 11 was employed in assessing LOS on these segments.**

**From the preceding discussion, it was evident that a distinct method to assess LOS on US-1 had to be developed. The task team's efforts concentrated on keeping consistency with the basic philosophy of the HCM, and yet be sensitive to the Keys uniqueness. Thus, the proposed methodology correlates measured travel speeds along US-1 with LOS speed thresholds developed as part of this study. This is in line with the concept behind the HCM of average travel speed being the main parameter to measure arterial LOS.**

## **METHODOLOGY**

Considering the types of trips served by US-1, it was decided to conduct travel time and delay runs to cover both the entire length of US-1 from Key West to the Monroe/Dade County Line (mainland) and for each segment of the highway along the way. Twenty-four segments were selected as depicted by Table 1. Each segment is fairly homogeneous in nature having a uniform roadway cross section and traffic flow.

Travel speeds for the overall length (from Key West to the mainland) provide an indication of the LOS for the regional trips. Travel speeds for each segment also provides an opportunity to assess the impact of local trips. Establishing speed criteria for both the overall length and for each roadway segment satisfies the requirements of the Florida growth management process.

The next step in the process was to determine the number of travel time runs and how, when and to/from where. Runs were started at both ends of US-1. For example, one run started on Stock Island (Key West City limits) and proceeded to the mainland (Dade County). After reaching this point, the vehicle turned back and proceeded to end the run where it started, on Stock Island. On another day the reverse was true (i.e., the run started in Dade County instead of Stock Island). It was decided to perform a total of fourteen two-way runs or twenty-eight in each direction covering the 174 km (108 mi) study portion of US-1. Twenty-eight runs provide enough data for statistical significance. Control points were established at each of the 24 segments to record travel time and speed data specific to each one of those segments. Seven runs were started at Stock Island and seven in Dade County. Each began at staggered hours to cover the varied trip purposes and time frames within the Keys. The surveys were conducted during March, reflecting the area's peak traffic season.

For each run the process provided data, such as running speed and travel speed, in each direction of US-1. Vehicular traffic counts were also collected at three locations covering seven days.

The travel time runs yielded a total of 28 one-way travel speed values for the overall length of US-1 and for each of the 24 segments. The value selected for analysis was the median speed which would reflect a "typical peak period during the peak season." In other developed parts of Florida the typical peak hour of the peak season approximates the 100th highest hour of the year (5).

The median value was also selected, instead of the average, to avoid the influence of extremely high or low speed value at either end of the survey population.

The process up to this point provided median travel speeds. The question then became, what LOS do these speeds represent.

The next step was to develop a set of LOS/Speed threshold values for both the overall length of US-1 and the pertinent segments of the highway. Towards this end, the speed ratios between LOS thresholds from Tables 7-1, 8-1 and 11-1 of the HCM were used in the analysis. These ratios were weighted against actual mileage of US-1 in the Florida Keys to represent the prevailing type of flow; two-lane uninterrupted flow, four-lane uninterrupted flow and four-lane interrupted flow. For example, from the level terrain portion of HCM Table 8-1, the ratio between LOS B speed and LOS A speed is  $55/58 = 0.948$ . The ratio between LOS C/LOS A =  $52/58 = 0.897$ ; the ratio between LOS D/LOS A =  $50/58 = 0.862$  and so on. The same process was applied to Tables 7-1 (96.6 kmh) (60 mph) and 11-1. Then each ratio was weighted to take into account the length of the section of US-1 to which that type of traffic flow applied. Once all the ratios were developed, the weight criteria was applied as in the following example:

---

<u>TYPE OF FLOW</u>	<u>LOS C/LOS A RATIO</u>	<u>WEIGHT</u>
Two-lane uninterrupted	$52/58 = 0.897$	74
Four-lane uninterrupted	$44/50 = 0.880$	19
Four-lane interrupted	$22/35 = 0.629$	07

---

Therefore, the overall speed ratio between LOS C and LOS A is:

$$[74(0.897)+19(0.880)+7(0.629)]+100=0.875$$

The above process was applied to develop all the required ratios.

Further observations with reference to Tables 8-1, 7-1 and 11-1 yielded the following. From Table 8-1 the difference between LOS A and LOS B speeds is 4.8 kmh (3 mph), or 4.8 kmh (3 mph) above an assumed posted speed limit of 88 kmh (55 mph). From Tables 7-1 and 11-1 the differences are 3.2 kmh and 11.3 kmh (2 mph and 7 mph), respectively, with LOS lower than assumed speed limits. Therefore, from these observations plus local knowledge, it was determined that the overall US-1 posted speed limit is 79.7 kmh (49.5 mph) reasonably fell between the LOS A and B thresholds. This

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**assumption is not far away from the premise that if a vehicle is able to sustain a travel speed equal to the posted speed limit, then it will correspond typically with the upper ranges of LOS (i.e., LOS A or B).**

With the above speed differentials and LOS range premise in mind, the US-1 overall speed thresholds for LOS A and B became 82.1 kmh (51 mph) (2.4 kmh (1.5 mph) above 79.7 kmh (49.5) and 77.3 kmh (48 mph), respectively. Applying the developed ratio between LOS C/LOS A to the LOS A speed resulted in 72.5 kmh (45 mph), rounded off (i.e.,  $0.875 \times 82.1 \text{ kmh (51 mph)} = 71.8 \text{ kmh (44.6 mph)}$ ), which then became the threshold for LOS C. After applying all the ratios the overall LOS criteria for US-1 became:

---

<u>LOS</u>	<u>Speed</u>
A	≥ 82 kmh (51 mph)
B	≥ 77 kmh (48 mph)
C	≥ 72 kmh (45 mph)
D	≥ 68 kmh (42 mph)
E	≥ 58 kmh (36 mph)
F	< 58 kmh (36 mph)

---

Inspection of the criteria above indicates a close relationship with the speed differentials of both Tables 8-1 and 7-1 of the HCM. Comparing the median speed data for US-1 from the 1991 and 1992 field studies to the above criteria resulted in an overall LOS of C for both years, i.e., 76.8 kmh (47.7 mph) for 1991 and 75.5 kmh (46.9 mph) for 1992. These speeds are 2.9 kmh (1.8 mph) and 4.2 kmh (2.6 mph) below the overall weighted 79.7 kmh (49.5 mph) speed limit, which would correspond to the upper range of LOS C. The authors also believe that LOS C is the appropriate LOS designation for the whole of US-1 from Key West to the mainland.

A final step was still needed to complete the task of developing LOS/Speed threshold values for the segments of US-1. No further work was needed to cover the 7% mileage of the interrupted portions of US-1 found on Marathon and Stock Island, adjacent to Key West. As discussed earlier, these segments correlate with Chapter 11 of the HCM. Therefore, direct application of Table 11-1 LOS/speed criteria for a Class I arterial was made.

The remaining segments fell within the two-lane and four lane uninterrupted flow criteria. It was decided to make LOS A speed criterion 2.4 kmh (1.5 mph) above the weighted posted speed limit in order to keep consistency with the overall criteria. LOS C speed was set 9.7 kmh (6 mph) below LOS A speed consistent with Tables 7-1 and 8-1 of the HCM. LOS B and D speed criteria were set to provide equal increments between LOS A and LOS D (i.e., LOS B 4.8 kmh (3 mph) below LOS A speed and LOS D 4.8 kmh (3 mph) below LOS C speed). LOS E was set 9.7 kmh (6 mph) below the LOS D Speed. This makes the segmental speed differential between LOS thresholds consistent with the differentials in the overall criteria, except for one consideration. On any segment, intersection delay would be deducted from the segment's travel time to account for the influence of that signal on the segment (i.e., signal delay = 1.0 x 15 seconds average stopped delay). This corresponds to an LOS C delay due to isolated signals. LOS C delay was chosen because LOS C is the state LOS standard for US-1 in the Florida Keys. The rationale behind deducting signal delay from the segment analysis was to recognize for the impact of signals in reducing travel time. This provides the required sensitivity in the segment which is not only to assess the impact of regional vehicular trips, but also those that are local in nature. The following illustrates the concept plus one example for the US-1 Segmental LOS/speed relationship.

- The uninterrupted flow segment criteria are:

---

**LOS   SPEED**

A	≥ 2.4 kmh (1.5 mph) above the posted speed limit
B	≥ 4.8 kmh (3.0 mph) below LOS A
C	≥ 9.7 kmh (6.0 mph) below LOS A
D	≥ 14.5 kmh (9.0 mph) below LOS A
E	≥ 24 kmh (15.0 mph) below LOS A
F	< 24 kmh (15.0 mph) below LOS A

- A segment having a weighted posted speed limit of 72 kmh (45 mph) would then have this criteria:

---

**LOS   SPEED**

A	≥ 74.9 kmh (46.5 mph)
B	≥ 70.0 kmh (43.5 mph)
C	≥ 65.2 kmh (40.5 mph)
D	≥ 60.4 kmh (37.5 mph)
E	≥ 50.7 kmh (31.5 mph)
F	< 50.7 kmh (31.5 mph)

---

- **The LOS/Speed criteria for interrupted flow segments (marathon and Stock Island) are based directly on a Class I arterial from Table 11-1 of the HCM.**

---

<b>LOS</b>	<b>SPEED</b>
<b>A</b>	<b>≥ 56.4 kmh (35 mph)</b>
<b>B</b>	<b>≥ 45.1 kmh (28 mph)</b>
<b>C</b>	<b>≥ 35.4 kmh (22 mph)</b>
<b>D</b>	<b>≥ 27.4 kmh (17 mph)</b>
<b>E</b>	<b>≥ 20.9 kmh (13 mph)</b>
<b>F</b>	<b>&lt; 20.9 kmh (13 mph)</b>

---

Speed data from both the overall length of US-1 and the individual segments were compared against the applicable LOS/speed thresholds. This provided for an assessment of the facility LOS plus an indication of reserve speed, if any.

Under Florida's and Monroe County's growth management process if the overall LOS for US-1 fell below the LOS C standard, then no additional land development would be allowed to proceed in the Florida Keys. Unless the proposed new development traffic impact were mitigated. If the overall LOS for US-1 was C or better, then additional development could take place in those segments where there was reserve speed available (i.e., segment's speed was higher than the standard threshold).

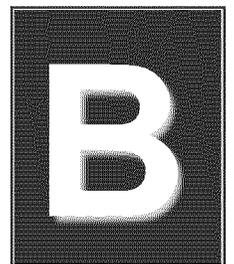
Besides meeting highway LOS standards there are numerous other considerations in Florida's growth management process pertaining to the Florida Keys that are beyond the scope of this paper. As mentioned in the introduction, the purpose of this study was to present the methodology to assess LOS on US-1.

# APPENDIX B

## Travel Time Delay Data



# A P P E N D I X



**AECOM**

ROAD/DIRECTION: US-1, Northbound  
 OBSERVERS: SR  
 WEATHER/CONDITIONS: Clear/Sunny  
 DAY/DATE: Sunday, March 3, 2019

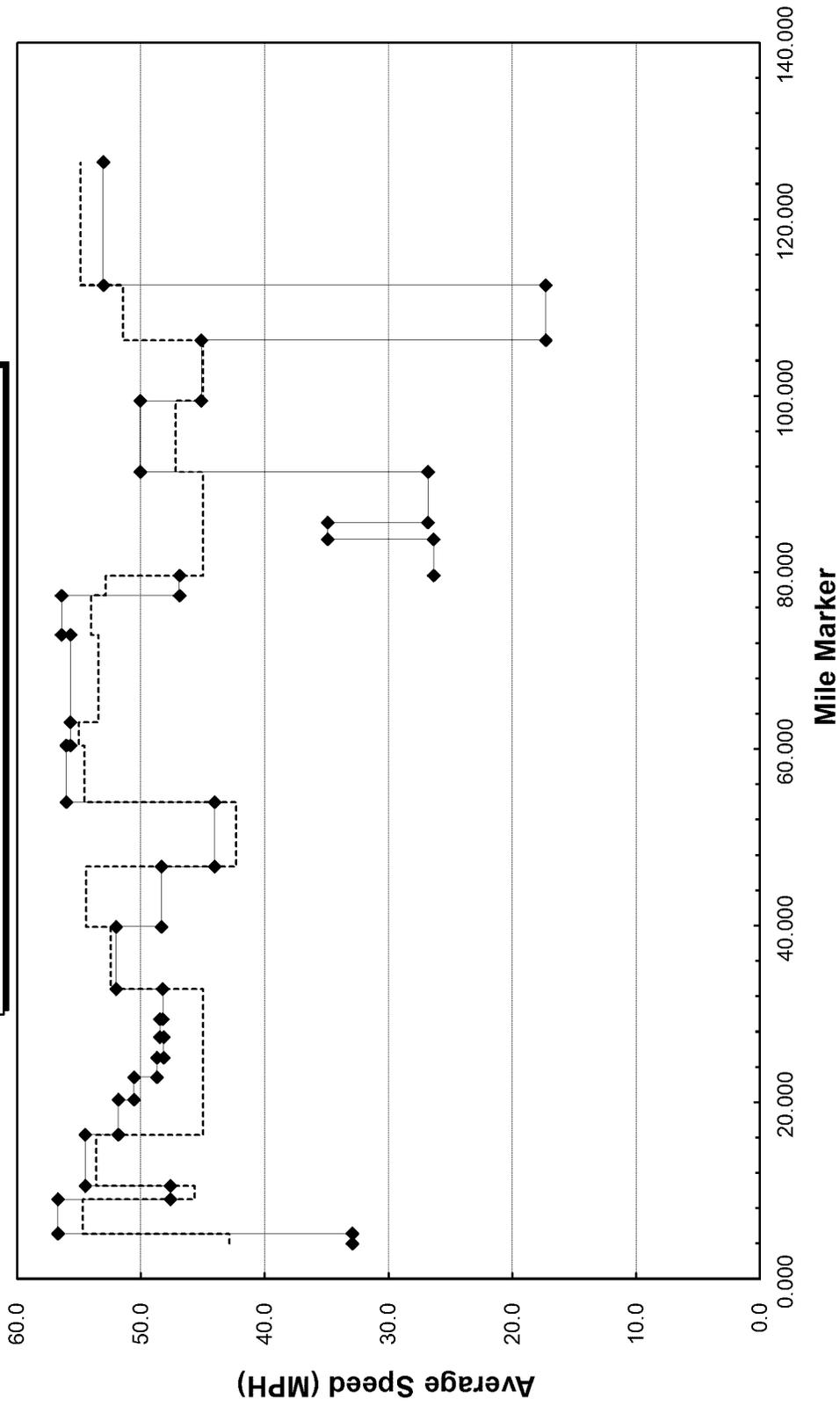
DEFINITION OF DELAY  
 Delay begins @ 5 mph  
 Delay ends @ 15 mph

TYPES OF DELAY  
 LT = Left Turn  
 RT = Right Turn  
 TS = Traffic Signal  
 DB = Drawbridge  
 CG = Congestion  
 CS = Construction  
 SB = School Bus  
 EV = Emergency Vehicle  
 AC = Accident  
 \* = Special Event

Control Point	Segment #	Begin	End	Cumulative Time	Segment Time	Excluded Time	Cumulative Distance	Segment Distance	Excluded Distance	Segment Travel Speed	Platoon Size	Delay Type	Segment Delay	Passing Score
Cow Key Bridge (N)				00:00:00	00:00:00		0.000	0.000						
Key Haven Blvd	1	00:02:03	00:02:03	00:02:03	00:02:03		1.125	1.125		32.9	4	TS	0:00:12	
Rockland Dr	2	00:06:10	00:04:07	00:08:05	00:01:55		5.016	3.891		56.7				-3
Boca Chica Rd	3	00:14:27	00:06:22	00:19:03	00:04:36		6.537	1.521		47.6				
Harris Ch Br (N)	4	00:22:04	00:03:01	00:24:49	00:02:45		12.320	5.783		54.5				
Bow Channel Br (N)	5	00:27:41	00:02:52	00:30:14	00:02:33		16.293	3.973		51.8				
Spanish Main Dr	6	00:34:29	00:04:15	00:42:37	00:08:08		18.834	2.541		50.5				
E Shore Dr	7	00:51:04	00:08:27	00:59:59	00:09:55		21.067	2.233		48.7				
Torch-Ramrod Br (S)	8	01:07:52	00:06:53	01:14:45	00:06:53		23.368	2.301		48.2				
N Pine Ch Br (N)	9	01:21:22	00:10:39	01:31:61	00:10:39		25.427	2.059		48.4				
Long Beach Dr	10	01:38:22	00:09:22	01:47:44	00:09:22		28.842	3.415		48.2				
7-Mile Br (S)	11	01:54:27	00:12:52	02:07:19	00:12:52		35.891	7.049		52.0				
7-Mile Br (N)	12	02:04:06	00:09:39	02:13:58	00:09:07		42.698	6.807		48.3				
Coco Plum Dr	13	02:13:13	00:21:38	02:34:51	00:21:38		49.976	7.278		44.0	5	TS	00:00:10	8
Toms Harbor Ch Br (S)	14	02:50:35	00:15:44	03:06:35	00:15:44		56.405	6.429		56.0				
Long Key Br (S)	15	03:21:59	00:02:51	03:24:50	00:02:51		59.050	2.645		55.7				
Channel #2 Br (N)	16	03:51:01	00:10:39	04:01:40	00:10:39		68.934	9.884		55.7				-1
Lignum V Br (S)	17	04:11:00	00:04:46	04:15:46	00:04:46		73.415	4.481		56.4				
Teatable Reif Br (N)	18	04:26:08	00:02:52	04:28:59	00:02:52		75.655	2.240		46.9				
Whale Harbor Br (S)	19	04:38:22	00:09:22	04:47:44	00:09:22		79.770	4.115		26.4	10+	CG(2)	00:02:14	
Snake Creek Br (N)	20	04:54:27	00:12:52	05:07:19	00:12:52		81.643	1.873		34.9				
Ocean Blvd	21	05:04:06	00:09:39	05:13:45	00:09:39		87.392	5.749		26.8	10+	CG	00:01:05	6
Atlantic Blvd	22	05:13:58	00:21:38	05:35:36	00:21:38		95.443	8.051		50.1				-1
C-905	23	05:56:35	00:15:44	06:12:19	00:15:44		102.297	6.854		45.1	10+	TS	00:00:35	5
County Line sign	24	06:27:63	00:21:38	06:48:41	00:21:38		108.537	6.240		17.3	10+	CG(2)	00:12:54	-1
Card Sound Rd	25	07:10:01	00:15:44	07:25:45	00:15:44		122.445	13.908		53.0				
OVERALL				02:34:51	00:00:00		108.537	0.000		42.1				

Note: Segment 25 (Dade County) is excluded from the "OVERALL" measurements.

**US - 1 NORTHBOUND TRAVEL SPEEDS  
SUNDAY, 03-03-19, EVENING**



◆ SEG. SPEED      - - - - - AVG. POSTED SPEED

ROAD/DIRECTION: US-1, Southbound  
OBSERVERS: KK  
WEATHER/CONDITIONS: Cloudy/Sunny/Rainy  
DAY/DATE: Sunday, March 3, 2019

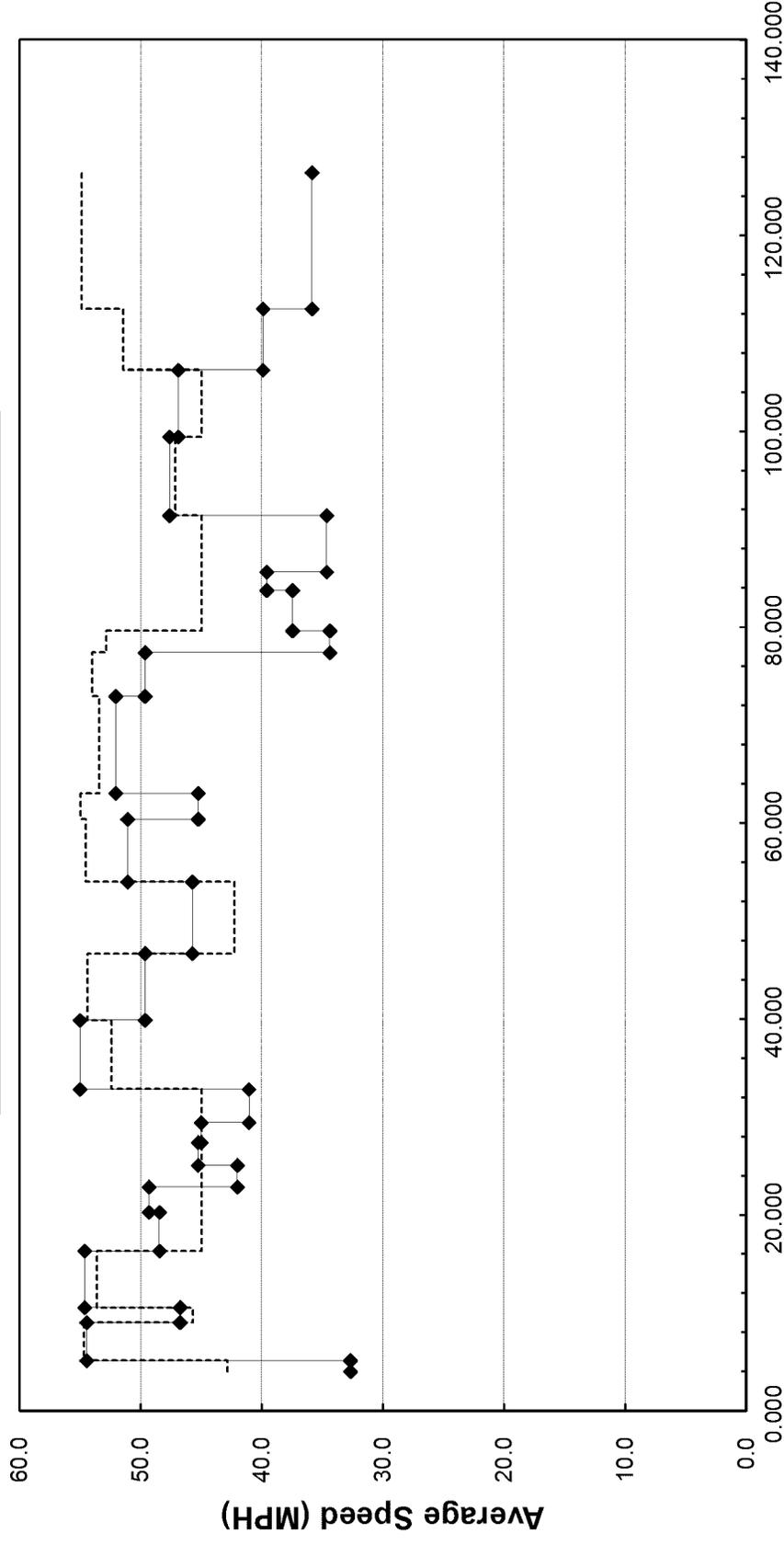
DEFINITION OF DELAY  
Delay begins @ 5 mph  
Delay ends @ 15 mph

TYPES OF DELAY  
LT = Left Turn  
RT = Right Turn  
TS = Traffic Signal  
DB = Drawbridge  
CG = Congestion  
CS = Construction  
SB = School Bus  
EV = Emergency Vehicle  
AC = Accident  
\* = Special Event

Control Point	Segment #	End Begin	Cumulative Time	Segment Time	Excluded Time	Cumulative Distance	Segment Distance	Excluded Distance	Segment Travel Speed	Platoon Size	Delay Type	Segment Delay	Passing Score
Card Sound Rd			00:00:00	00:00:00		0.000	0.000						
County Line sign	25 1	00:23:16	00:23:16	00:23:16		13.906	13.906		35.9				
C-905	24 2	00:32:38	00:09:22	00:09:22		20.134	6.228		39.9	7	CG	00:00:21	-5
Atlantic Blvd	23 3	00:41:23	00:08:45	00:08:45		26.974	6.840		46.9				1
Ocean Blvd	22 4	00:51:31	00:10:08	00:10:08		35.015	8.041		47.6				1
Snake Creek Br (N)	21 5	01:01:31	00:10:00	00:10:00		40.788	5.773		34.6	10+	CG	00:00:26	4
Whale Harbor Br (S)	20 6	01:04:21	00:02:50	00:02:50		42.658	1.870		39.6				
Teatable Relf Br (N)	19 7	01:10:58	00:06:37	00:06:37		46.787	4.129		37.4				
Lignum V Br (S)	18 8	01:14:51	00:03:53	00:03:53		49.013	2.226		34.4				
Channel #2 Br (N)	17 9	01:20:16	00:05:25	00:05:25		53.493	4.480		49.6				
Long Key Br (S)	16 10	01:31:40	00:11:24	00:11:24		63.384	9.891		52.1				
Toms Harbor Ch Br (S)	15 11	01:35:10	00:03:30	00:03:30		66.023	2.639		45.2				
Coco Plum Dr	14 12	01:42:42	00:07:32	00:07:32		72.435	6.412		51.1				
7-Mile Br (N)	13 13	01:52:16	00:09:34	00:09:34		79.726	7.291		45.7				15
7-Mile Br (S)	12 14	02:01:51	00:09:35	00:09:35	00:01:22	86.539	6.813	0.016	49.6	10+	AC	00:01:22	-1
Long Beach Dr	11 15	02:09:31	00:07:40	00:07:40		93.569	7.030		55.0				-1
N Pine Ch Br (N)	10 16	02:14:32	00:05:01	00:05:01		97.002	3.433		41.1				
Torch-Ramrod Br (S)	9 17	02:17:16	00:02:44	00:02:44		99.053	2.051		45.0				
E Shore Dr	8 18	02:20:19	00:03:03	00:03:03		101.354	2.301		45.3				
Spanish Main Dr	7 19	02:23:30	00:03:11	00:03:11		103.584	2.230		42.0				
Bow Channel Br (N)	6 20	02:26:37	00:03:07	00:03:07		106.146	2.562		49.3				
Harris Ch Br (N)	5 21	02:31:32	00:04:55	00:04:55		110.117	3.971		48.5				
Boca Chica Rd	4 22	02:37:53	00:06:21	00:06:21		115.899	5.782		54.6				
Rockland Dr	3 23	02:39:49	00:01:56	00:01:56		117.405	1.506		46.7				
Key Haven Blvd	2 24	02:44:07	00:04:18	00:04:18		121.308	3.903		54.5				-1
Cow Key Bridge (N)	1 25	02:46:11	00:02:04	00:02:04		122.434	1.126		32.7				
OVERALL			02:22:55	00:01:22		108.528	0.016		46.0			00:02:09	13

Note: Segment 25 (Dade County) is excluded from the "OVERALL" measurements.

**US - 1 SOUTHBOUND TRAVEL SPEEDS  
SUNDAY, 03-03-19, MORNING**



**Mile Marker**

—◆— SEG. SPEED      - - - - - AVG. SPEED

ROAD/DIRECTION: US-1, Northbound  
 OBSERVERS: KK  
 WEATHER/CONDITIONS: Clear/Sunny  
 DAY/DATE: Monday, March 4, 2019

DEFINITION OF DELAY  
 Delay begins @ 5 mph  
 Delay ends @ 15 mph

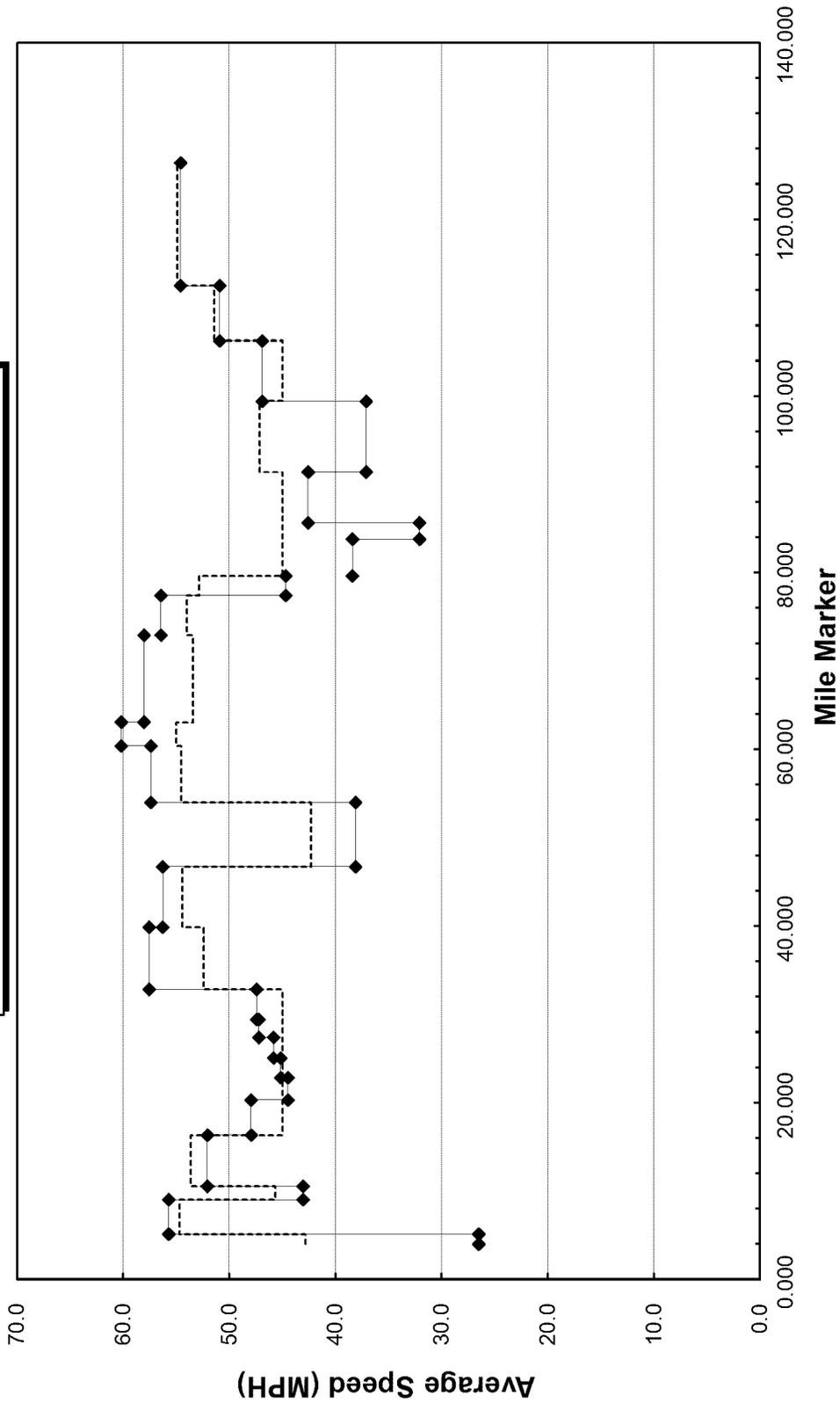
TYPES OF DELAY  
 LT = Left Turn  
 RT = Right Turn  
 TS = Traffic Signal  
 DB = Drawbridge  
 CG = Congestion

CS = Construction  
 SB = School Bus  
 EV = Emergency Vehicle  
 AC = Accident  
 \* = Special Event

Control Point	End Segment #	Cumulative Time	Segment Time	Excluded Time	Cumulative Distance	Segment Distance	Excluded Distance	Segment Travel Speed	Platoon Size	Delay Type	Segment Delay	Passing Score
Cow Key Bridge (N)	Begin	00:00:00	00:00:00		0.000	0.000						
Key Haven Blvd	1	00:02:33	00:02:33		1.127	1.127		26.5	10+	TS	00:00:19	-1
Rockland Dr	2	00:06:45	00:04:12		5.027	3.900		55.7				-5
Boca Chica Rd	3	00:08:51	00:02:06		6.533	1.506		43.0				
Harris Ch Br (N)	4	00:15:31	00:06:40		12.321	5.788		52.1				
Bow Channel Br (N)	5	00:20:30	00:04:59		16.304	3.983		48.0				
Spanish Main Dr	6	00:23:56	00:03:26		18.849	2.545		44.5				
E Shore Dr	7	00:26:53	00:02:57		21.070	2.221		45.2				
Torch-Ramrod Br (S)	8	00:29:54	00:03:01		23.374	2.304		45.8				
N Pine Ch Br (N)	9	00:32:31	00:02:37		25.434	2.060		47.2				
Long Beach Dr	10	00:36:50	00:04:19		28.845	3.411		47.4				
7-Mile Br (S)	11	00:44:11	00:07:21		35.897	7.052		57.6				-2
7-Mile Br (N)	12	00:51:27	00:07:16		42.712	6.815		56.3				
Coco Plum Dr	13	01:03:07	00:11:40	00:00:15	49.979	7.267	0.016	38.1	10+	TS(3),SB	00:01:23	6
Toms Harbor Ch Br (S)	14	01:09:50	00:06:43		56.402	6.423		57.4				
Long Key Br (S)	15	01:12:29	00:02:39		59.061	2.659		60.2				
Channel #2 Br (N)	16	01:22:42	00:10:13		68.945	9.884		58.0				
Lignum V Br (S)	17	01:27:28	00:04:46		73.430	4.485		56.5				
Teatable Relf Br (N)	18	01:30:28	00:03:00		75.664	2.234		44.7				
Whale Harbor Br (S)	19	01:36:54	00:06:26		79.781	4.117		38.4				
Snake Creek Br (N)	20	01:40:23	00:03:29		81.645	1.864		32.1				
Ocean Blvd	21	01:48:29	00:08:06		87.392	5.747		42.6				
Atlantic Blvd	22	02:16:48	00:28:19	00:17:55	95.440	8.048	1.614	37.1	10+	AC,TS	00:18:47	0
C-905	23	02:25:33	00:08:45		102.279	6.839		46.9	5	TS(2)	00:00:19	0
County Line sign	24	02:32:55	00:07:22		108.531	6.252		50.9				
Card Sound Rd	25	02:48:11	00:15:16		122.425	13.894		54.6				
OVERALL			02:32:55	00:18:10	108.531	1.630		47.6			00:20:48	-2

Note: Segment 25 (Dade County) is excluded from the "OVERALL" measurements.

**US - 1 NORTHBOUND TRAVEL SPEEDS  
MONDAY, 03-04-19, EVENING**



◆ SEG. SPEED      - - - - - AVG. POSTED SPEED

ROAD/DIRECTION: US-1, Southbound  
 OBSERVERS: SR  
 WEATHER/CONDITIONS: Clear/Sunny  
 DAY/DATE: Monday, March 4, 2019

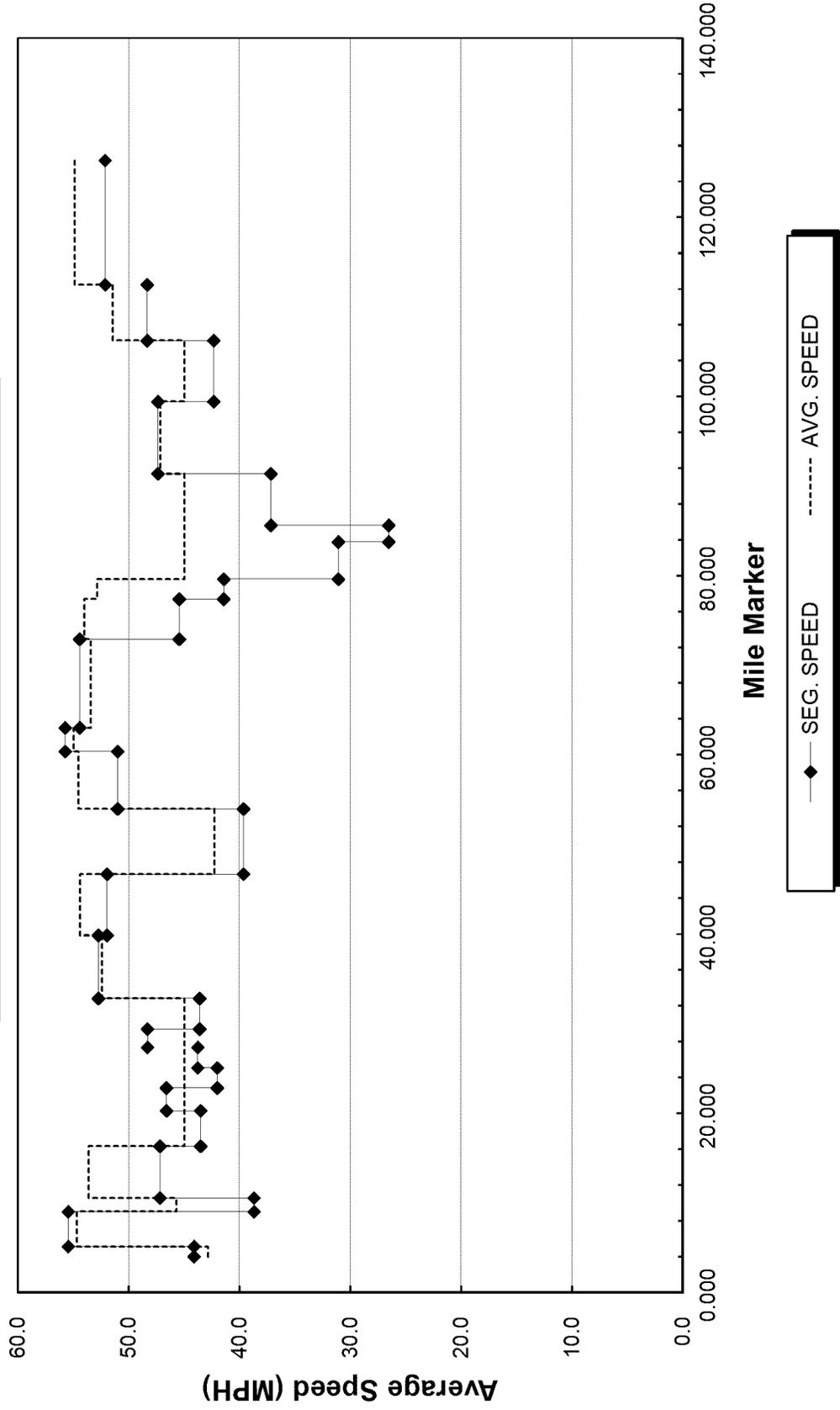
DEFINITION OF DELAY  
 Delay begins @ 5 mph  
 Delay ends @ 15 mph

TYPES OF DELAY  
 LT = Left Turn  
 RT = Right Turn  
 TS = Traffic Signal  
 DB = Drawbridge  
 CG = Congestion  
 CS = Construction  
 SB = School Bus  
 EV = Emergency Vehicle  
 AC = Accident  
 \* = Special Event

Control Point	Segment #	End Segment #	Cumulative Time	Segment Time	Excluded Time	Cumulative Distance	Segment Distance	Excluded Distance	Segment Travel Speed	Platoon Size	Delay Type	Segment Delay	Passing Score
Card Sound Rd	Begin		00:00:00	00:00:00		0.000	0.000						
County Line sign	25	1	00:16:00	00:16:00		13.900	13.900		52.1				
C-905	24	2	00:23:44	00:07:44		20.132	6.232		48.4				0
Atlantic Blvd	23	3	00:33:25	00:09:41		26.964	6.832		42.3	7	TS	00:00:41	-2
Ocean Blvd	22	4	00:43:37	00:10:12		35.014	8.050		47.4	3	TS	00:00:17	0
Snake Creek Br (N)	21	5	00:52:55	00:09:18		40.777	5.763		37.2	10+	TS(2)	00:00:40	1
Whale Harbor Br (S)	20	6	00:57:08	00:04:13		42.642	1.865		26.5	10+	CG	00:00:32	
Teatable Relif Br (N)	19	7	01:05:06	00:07:58		46.769	4.127		31.1				
Lignum V Br (S)	18	8	01:08:20	00:03:14		49.001	2.232		41.4				
Channel #2 Br (N)	17	9	01:14:15	00:05:55		53.480	4.479		45.4				1
Long Key Br (S)	16	10	01:25:09	00:10:54		63.368	9.888		54.4				1
Toms Harbor Ch Br (S)	15	11	01:28:00	00:02:51		66.016	2.648		55.7				
Coco Plum Dr	14	12	01:35:32	00:07:32		72.419	6.403		51.0				
7-Mile Br (N)	13	13	01:46:34	00:11:02		79.711	7.292		39.7	7	TS	00:00:18	5
7-Mile Br (S)	12	14	01:54:26	00:07:52		86.524	6.813		52.0				-1
Long Beach Dr	11	15	02:02:26	00:08:00		93.554	7.030		52.7				
N Pine Ch Br (N)	10	16	02:07:09	00:04:43		96.982	3.428		43.6				
Torch-Ramrod Br (S)	9	17	02:09:42	00:02:33		99.035	2.053		48.3				
E Shore Dr	8	18	02:12:50	00:03:08		101.321	2.286		43.8				
Spanish Main Dr	7	19	02:16:01	00:03:11		103.550	2.229		42.0				
Bow Channel Br (N)	6	20	02:19:19	00:03:18		106.113	2.563		46.6				
Harris Ch Br (N)	5	21	02:24:47	00:05:28		110.077	3.964		43.5				
Boca Chica Rd	4	22	02:32:08	00:07:21		115.856	5.779		47.2				
Rockland Dr	3	23	02:34:29	00:02:21		117.371	1.515		38.7				
Key Haven Blvd	2	24	02:38:42	00:04:13		121.269	3.898		55.5				
Cow Key Bridge (N)	1	25	02:40:14	00:01:32		122.396	1.127		44.1				
OVERALL				02:24:14	00:00:00		108.496	0.000	45.1			00:02:28	5

Note: Segment 25 (Dade County) is excluded from the "OVERALL" measurements.

**US - 1 SOUTHBOUND TRAVEL SPEEDS  
MONDAY, 03-04-19, MORNING**



ROAD/DIRECTION: US-1, Northbound  
 OBSERVERS: SR  
 WEATHER/CONDITIONS: Cloudy  
 DAY/DATE: Tuesday, March 5, 2019

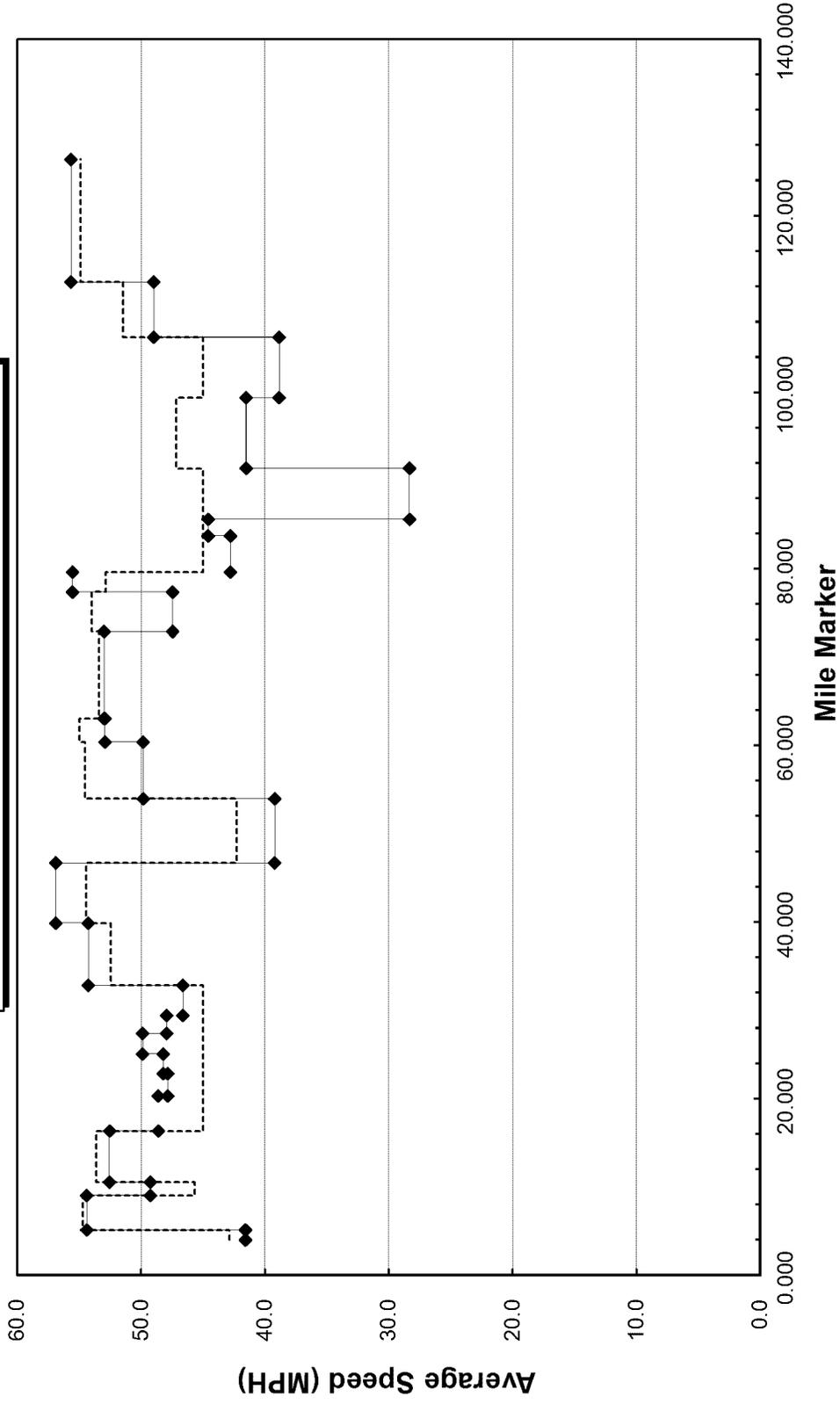
DEFINITION OF DELAY  
 Delay begins @ 5 mph  
 Delay ends @ 15 mph

TYPES OF DELAY  
 LT = Left Turn  
 RT = Right Turn  
 TS = Traffic Signal  
 DB = Drawbridge  
 CG = Congestion  
 CS = Construction  
 SB = School Bus  
 EV = Emergency Vehicle  
 AC = Accident  
 \* = Special Event

Control Point	End Segment #	Cumulative Time	Segment Time	Excluded Time	Cumulative Distance	Segment Distance	Excluded Distance	Segment Travel Speed	Platoon Size	Delay Type	Segment Delay	Passing Score
Cow Key Bridge (N)	Begin	00:00:00	00:00:00		0.000	0.000						
Key Haven Blvd	1	00:01:37	00:01:37		1.120	1.120		41.6				0
Rockland Dr	2	00:05:56	00:04:19		5.033	3.913		54.4				-1
Boca Chica Rd	3	00:07:46	00:01:50		6.537	1.504		49.2				
Harris Ch Br (N)	4	00:14:23	00:06:37		12.332	5.795		52.5				
Bow Channel Br (N)	5	00:19:17	00:04:54		16.302	3.970		48.6				
Spanish Main Dr	6	00:22:28	00:03:11		18.840	2.538		47.8				
E Shore Dr	7	00:25:14	00:02:46		21.062	2.222		48.2				
Torch-Ramrod Br (S)	8	00:28:01	00:02:47		23.375	2.313		49.9				
N Pine Ch Br (N)	9	00:30:35	00:02:34		25.425	2.050		47.9				
Long Beach Dr	10	00:34:59	00:04:24		28.843	3.418		46.6				
7-Mile Br (S)	11	00:42:47	00:07:48		35.893	7.050		54.2				
7-Mile Br (N)	12	00:49:58	00:07:11		42.704	6.811		56.9				
Coco Plum Dr	13	01:01:05	00:11:07		49.967	7.263		39.2	10+	TS	00:00:32	9
Toms Harbor Ch Br (S)	14	01:08:50	00:07:45		56.402	6.435		49.8				
Long Key Br (S)	15	01:11:50	00:03:00		59.048	2.646		52.9				
Channel #2 Br (N)	16	01:23:01	00:11:11		68.925	9.877		53.0				
Lignum V Br (S)	17	01:28:41	00:05:40		73.407	4.482		47.5				
Teatable Reif Br (N)	18	01:31:06	00:02:25		75.644	2.237		55.5				
Whale Harbor Br (S)	19	01:36:52	00:05:46		79.756	4.112		42.8				
Snake Creek Br (N)	20	01:39:23	00:02:31		81.626	1.870		44.6				
Ocean Blvd	21	01:51:33	00:12:10		87.372	5.746		28.3	10+	TS	00:00:46	3
Atlantic Blvd	22	02:11:41	00:20:08	00:09:55	95.428	8.056	0.988	41.5	10+	CS,TS	00:10:49	3
C-905	23	02:22:45	00:11:04	00:00:38	102.263	6.835	0.081	38.8	10+	TS(2),SZ	00:01:08	5
County Line sign	24	02:30:24	00:07:39		108.506	6.243		49.0				
Card Sound Rd	25	02:45:23	00:14:59		122.406	13.900		55.7				
OVERALL			02:30:24	00:10:33		108.506	1.069	46.1			00:13:15	19

Note: Segment 25 (Dade County) is excluded from the "OVERALL" measurements.

**US - 1 NORTHBOUND TRAVEL SPEEDS  
TUESDAY, 03-05-19, EVENING**



◆ SEG. SPEED      - - - - - AVG. POSTED SPEED

ROAD/DIRECTION: US-1, Southbound  
 OBSERVERS: KK  
 WEATHER/CONDITIONS: Cloudy/Foggy  
 DAY/DATE: Tuesday, March 5, 2019

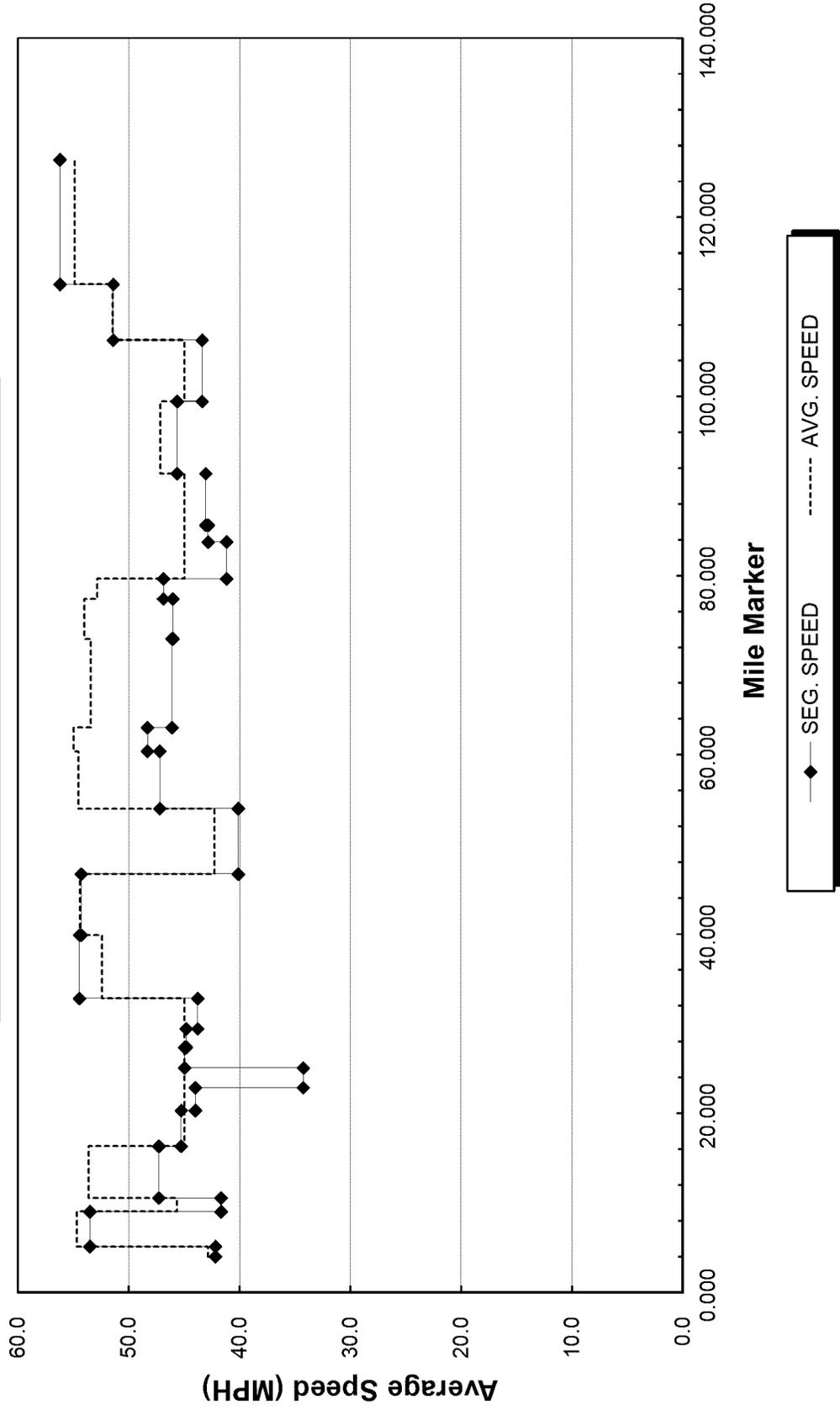
DEFINITION OF DELAY  
 Delay begins @ 5 mph  
 Delay ends @ 15 mph

TYPES OF DELAY  
 LT = Left Turn  
 RT = Right Turn  
 TS = Traffic Signal  
 DB = Drawbridge  
 CG = Congestion  
 CS = Construction  
 SB = School Bus  
 EV = Emergency Vehicle  
 AC = Accident  
 \* = Special Event

Control Point	Segment #	End Segment	Cumulative Time	Segment Time	Excluded Time	Cumulative Distance	Segment Distance	Excluded Distance	Segment Travel Speed	Platoon Size	Delay Type	Segment Delay	Passing Score													
														Begin	25 1	24 2	23 3	22 4	21 5	20 6	19 7	18 8	17 9	16 10	15 11	14 12
Card Sound Rd		Begin	00:00:00	00:00:00		0.000	0.000																			
County Line sign		25 1	00:14:49	00:14:49		13.881	13.881		56.2																	
C-905		24 2	00:22:06	00:07:17		20.123	6.242		51.4																	
Atlantic Blvd		23 3	00:31:34	00:09:28		26.968	6.845		43.4	10+	TS	00:00:33	8													
Ocean Blvd		22 4	00:42:09	00:10:35		35.019	8.051		45.6				-3													
Snake Creek Br (N)		21 5	00:50:11	00:08:02		40.785	5.766		43.1				1													
Whale Harbor Br (S)		20 6	00:52:48	00:02:37		42.654	1.869		42.9																	
Teatable Reif Br (N)		19 7	00:58:48	00:06:00		46.772	4.118		41.2																	
Lignum V Br (S)		18 8	01:01:40	00:02:52		49.011	2.239		46.9																	
Channel #2 Br (N)		17 9	01:07:30	00:05:50		53.485	4.474		46.0																	
Long Key Br (S)		16 10	01:20:22	00:12:52		63.369	9.884		46.1																	
Toms Harbor Ch Br (S)		15 11	01:23:40	00:03:18		66.026	2.657		48.3																	
Coco Plum Dr		14 12	01:31:49	00:08:09		72.437	6.411		47.2																	
7-Mile Br (N)		13 13	01:42:44	00:10:55		79.734	7.297		40.1	7	LT	00:00:17	17													
7-Mile Br (S)		12 14	01:50:15	00:07:31		86.536	6.802		54.3																	
Long Beach Dr		11 15	01:58:00	00:07:45		93.572	7.036		54.5				1													
N Pine Ch Br (N)		10 16	02:02:42	00:04:42		97.001	3.429		43.8																	
Torch-Ramrod Br (S)		9 17	02:05:27	00:02:45		99.055	2.054		44.8																	
E Shore Dr		8 18	02:08:31	00:03:04		101.353	2.298		45.0																	
Spanish Main Dr		7 19	02:12:52	00:04:21	00:00:35	103.577	2.224	0.074	34.2	10+	CS	00:00:35	0													
Bow Channel Br (N)		6 20	02:16:21	00:03:29		106.131	2.554		44.0																	
Harris Ch Br (N)		5 21	02:21:38	00:05:17		110.118	3.987		45.3	4	TS	00:00:19	0													
Boca Chica Rd		4 22	02:28:58	00:07:20		115.896	5.778		47.3																	
Rockland Dr		3 23	02:31:08	00:02:10		117.400	1.504		41.6																	
Key Haven Blvd		2 24	02:35:31	00:04:23		121.308	3.908		53.5				-1													
Cow Key Bridge (N)		1 25	02:37:07	00:01:36		122.433	1.125		42.2				4													
OVERALL				02:22:18	00:00:35	108.552	0.074		45.9			00:01:44	27													

Note: Segment 25 (Dade County) is excluded from the "OVERALL" measurements.

**US - 1 SOUTHBOUND TRAVEL SPEEDS  
TUESDAY, 03-05-19, MORNING**



ROAD/DIRECTION: US-1, Northbound  
 OBSERVERS: KK  
 WEATHER/CONDITIONS: Clear/Sunny  
 DAY/DATE: Wednesday, March 6, 2019

DEFINITION OF DELAY  
 Delay begins @ 5 mph  
 Delay ends @ 15 mph

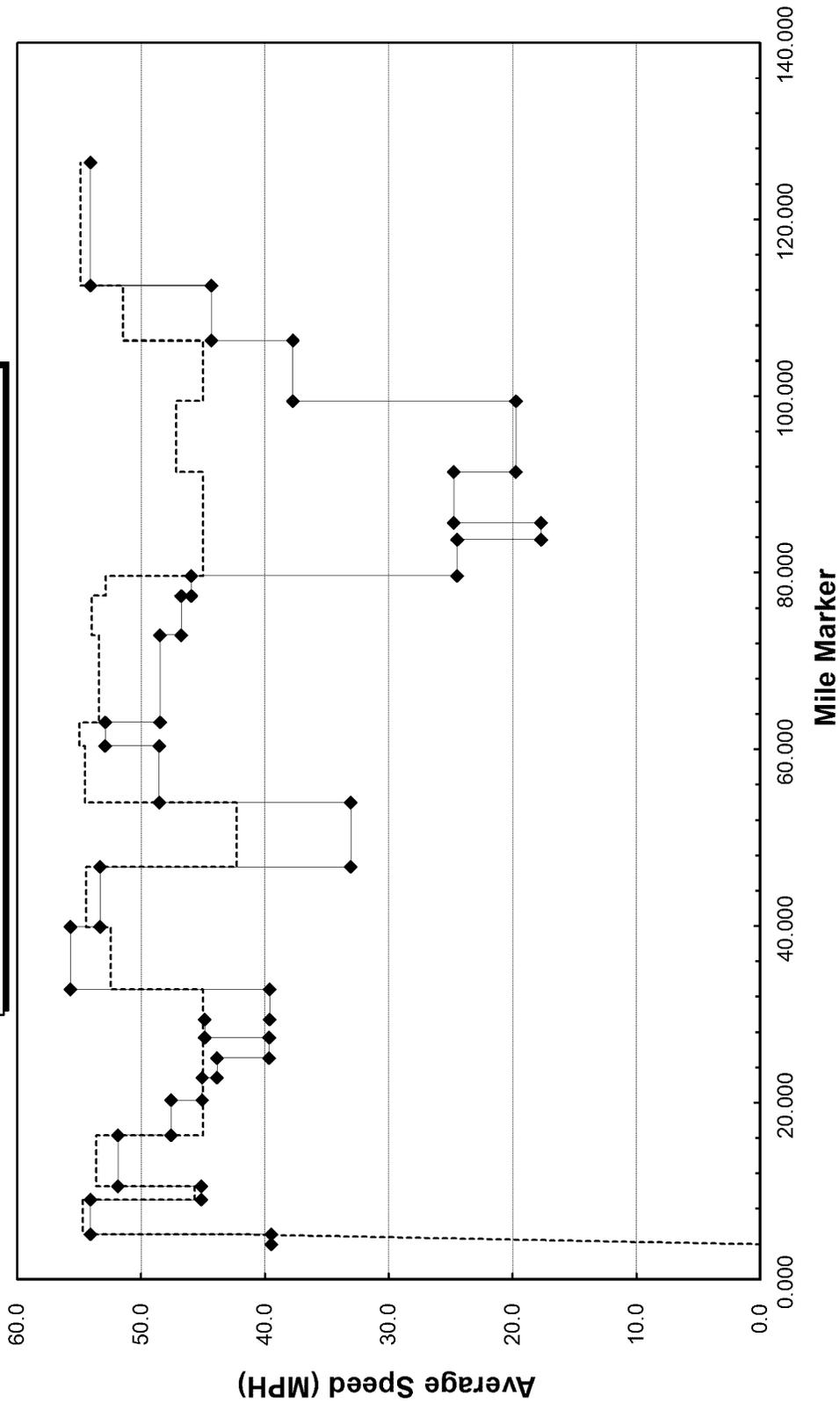
TYPES OF DELAY  
 LT = Left Turn  
 RT = Right Turn  
 TS = Traffic Signal  
 DB = Drawbridge  
 CG = Congestion

CS = Construction  
 SB = School Bus  
 EV = Emergency Vehicle  
 AC = Accident  
 \* = Special Event

Control Point	End Segment #	Cumulative Time	Segment Time	Excluded Time	Cumulative Distance	Segment Distance	Excluded Distance	Segment Travel Speed	Platoon Size	Delay Type	Segment Delay	Passing Score
Cow Key Bridge (N)	Begin	00:00:00	00:00:00	-----	0.000	0.000	-----	-----	-	--	-----	-
Key Haven Blvd	1	00:01:43	00:01:43		1.129	1.129		39.5				
Rockland Dr	2	00:06:03	00:04:20		5.035	3.906		54.1				-9
Boca Chica Rd	3	00:08:03	00:02:00		6.539	1.504		45.1				-1
Harris Ch Br (N)	4	00:14:45	00:06:42		12.329	5.790		51.9				
Bow Channel Br (N)	5	00:19:46	00:05:01		16.304	3.975		47.5				
Spanish Main Dr	6	00:23:09	00:03:23		18.845	2.541		45.1				
E Shore Dr	7	00:26:12	00:03:03		21.075	2.230		43.9				
Torch-Ramrod Br (S)	8	00:29:41	00:03:29		23.376	2.301		39.6				
N Pine Ch Br (N)	9	00:32:26	00:02:45		25.432	2.056		44.9				
Long Beach Dr	10	00:37:36	00:05:10		28.842	3.410		39.6	5	TS	00:00:31	4
7-Mile Br (S)	11	00:45:12	00:07:36		35.898	7.056		55.7				
7-Mile Br (N)	12	00:52:52	00:07:40		42.710	6.812		53.3				
Coco Plum Dr	13	01:06:04	00:13:12		49.984	7.274		33.1	10+	TS	00:00:32	2
Toms Harbor Ch Br (S)	14	01:14:01	00:07:57		56.414	6.430		48.5				4
Long Key Br (S)	15	01:17:01	00:03:00		59.059	2.645		52.9				
Channel #2 Br (N)	16	01:29:15	00:12:14		68.940	9.881		48.5				
Lignum V Br (S)	17	01:35:00	00:05:45		73.419	4.479		46.7				
Teatable Relf Br (N)	18	01:37:55	00:02:55		75.652	2.233		45.9				
Whale Harbor Br (S)	19	01:48:01	00:10:06		79.771	4.119		24.5	10+	CG	00:03:46	
Snake Creek Br (N)	20	01:54:21	00:06:20		81.637	1.866		17.7	10+	CG(2)	00:01:59	
Ocean Blvd	21	02:08:19	00:13:58		87.399	5.762		24.8	10+	CG,TS	00:01:19	9
Atlantic Blvd	22	02:32:48	00:24:29		95.450	8.051		19.7	10+	CG(3)	00:14:30	0
C-905	23	02:43:40	00:10:52		102.287	6.837		37.8	10+	CG	00:01:19	3
County Line sign	24	02:52:08	00:08:28		108.536	6.249		44.3				
Card Sound Rd	25	03:07:34	00:15:26		122.448	13.912		54.1				-7
OVERALL		-----	02:52:08	00:00:00	-----	108.536	0.000	37.8			00:23:56	5

Note: Segment 25 (Dade County) is excluded from the "OVERALL" measurements.

**US - 1 NORTHBOUND TRAVEL SPEEDS  
WEDNESDAY, 03-06-19, EVENING**



◆ SEG. SPEED      - - - - - AVG. POSTED SPEED

ROAD/DIRECTION: US-1, Southbound  
OBSERVERS: SR  
WEATHER/CONDITIONS: Clear/Sunny  
DAY/DATE: Wednesday, March 6, 2019

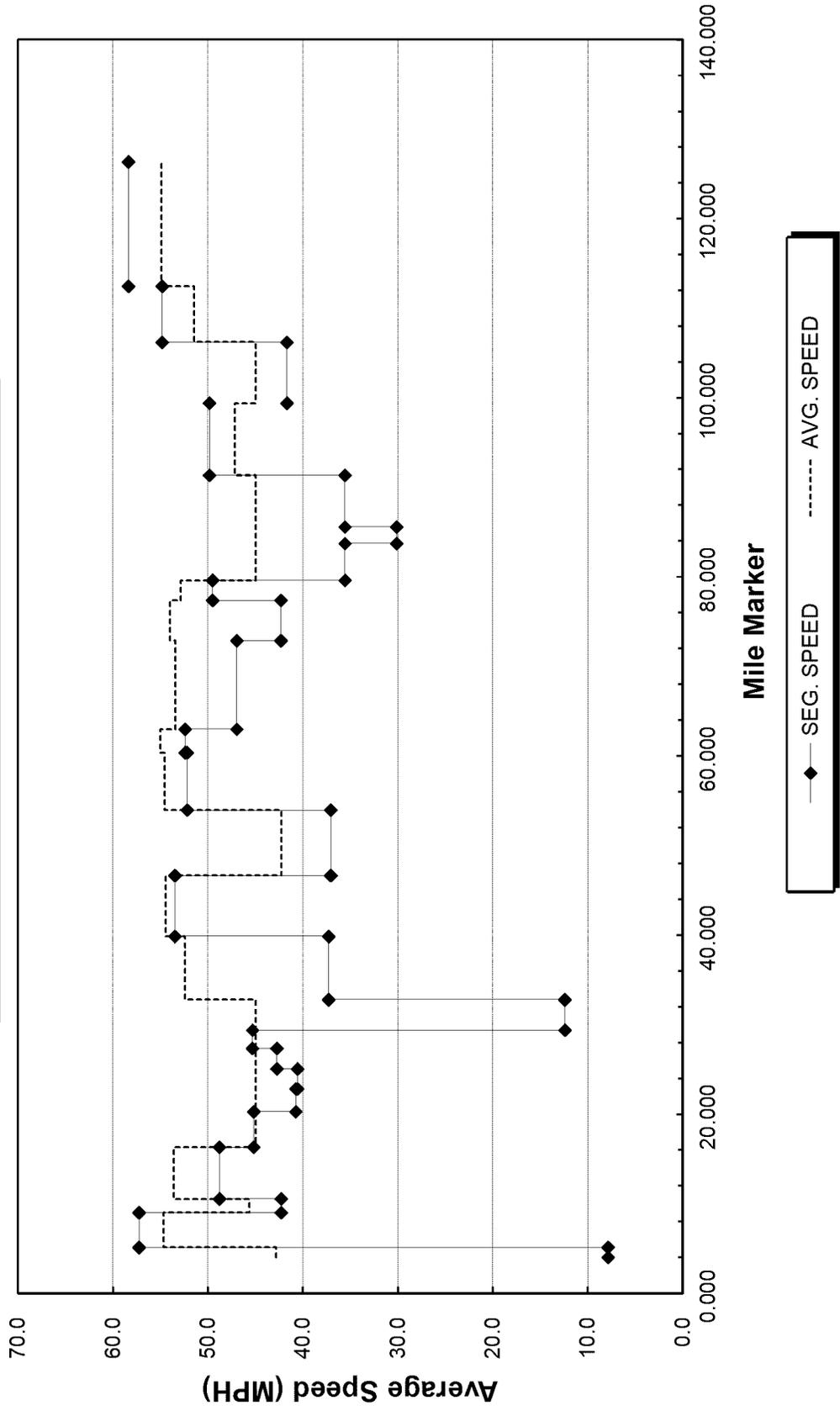
DEFINITION OF DELAY  
Delay begins @ 5 mph  
Delay ends @ 15 mph

TYPES OF DELAY  
LT = Left Turn  
RT = Right Turn  
TS = Traffic Signal  
DB = Drawbridge  
CG = Congestion  
CS = Construction  
SB = School Bus  
EV = Emergency Vehicle  
AC = Accident  
\* = Special Event

Control Point	Segment #	End Segment #	Begin	Cumulative Time	Segment Time	Excluded Time	Cumulative Distance	Segment Distance	Excluded Distance	Segment Travel Speed	Platoon Size	Delay Type	Segment Delay	Passing Score
Card Sound Rd			Begin	00:00:00	00:00:00		0.000	0.000		58.3				
County Line sign	25	1	00:14:18	00:14:18	00:14:18		13.906	13.906		54.8				
C-905	24	2	00:21:08	00:06:50	00:06:50		20.146	6.240		41.7	6	TS	00:01:03	7
Atlantic Blvd	23	3	00:30:58	00:09:50	00:09:50		26.978	6.832		49.8	6	TS	00:00:03	0
Ocean Blvd	22	4	00:40:39	00:09:41	00:09:41		35.019	8.041		35.6	10+	TS	00:00:34	1
Snake Creek Br (N)	21	5	00:50:23	00:09:44	00:09:44		40.791	5.772		30.1				
Whale Harbor Br (S)	20	6	00:54:05	00:03:42	00:03:42		42.649	1.858		35.6	7	RT	00:00:23	
Teatable Relf Br (N)	19	7	01:01:02	00:06:57	00:06:57		46.769	4.120		49.5				
Lignum V Br (S)	18	8	01:03:45	00:02:43	00:02:43		49.011	2.242		42.3				
Channel #2 Br (N)	17	9	01:10:06	00:06:21	00:06:21		53.488	4.477		47.0				1
Long Key Br (S)	16	10	01:22:44	00:12:38	00:12:38		63.376	9.888		52.4				
Toms Harbor Ch Br (S)	15	11	01:25:45	00:03:01	00:03:01		66.010	2.634		52.2				
Coco Plum Dr	14	12	01:33:08	00:07:23	00:07:23		72.430	6.420		37.0	10+	TS,CG	00:00:43	12
7-Mile Br (N)	13	13	01:44:56	00:11:48	00:11:48		79.713	7.283		53.5				
7-Mile Br (S)	12	14	01:52:34	00:07:38	00:07:38		86.515	6.802		37.3	10+	CG	00:03:31	
Long Beach Dr	11	15	02:03:54	00:11:20	00:11:20		93.555	7.040		12.4	10+	CG(3)	00:11:28	
N Pine Ch Br (N)	10	16	02:20:24	00:16:30	00:16:30		96.973	3.418		45.3				
Torch-Ramrod Br (S)	9	17	02:23:06	00:02:42	00:02:42		99.013	2.040		42.7				
E Shore Dr	8	18	02:26:20	00:03:14	00:03:14		101.316	2.303		40.6				
Spanish Main Dr	7	19	02:29:37	00:03:17	00:03:17		103.536	2.220		40.7				
Bow Channel Br (N)	6	20	02:33:23	00:03:46	00:03:46		106.094	2.558		45.2				
Harris Ch Br (N)	5	21	02:38:40	00:05:17	00:05:17		110.071	3.977		48.8				
Boca Chica Rd	4	22	02:45:46	00:07:06	00:07:06		115.845	5.774		42.3				1
Rockland Dr	3	23	02:47:54	00:02:08	00:02:08		117.348	1.503		57.2				-2
Key Haven Blvd	2	24	02:52:00	00:04:06	00:04:06		121.260	3.912		7.9	10+	TS(2)	00:07:27	-1
Cow Key Bridge (N)	1	25	03:00:34	00:08:34	00:08:34		122.383	1.123		39.1	10+	TS(2)	00:25:12	19
OVERALL					02:46:16	00:00:00	108.477	0.000						

Note: Segment 25 (Dade County) is excluded from the "OVERALL" measurements.

**US - 1 SOUTHBOUND TRAVEL SPEEDS  
WEDNESDAY, 03-06-19, MORNING**



ROAD/DIRECTION: US-1, Northbound  
 OBSERVERS: KK  
 WEATHER/CONDITIONS: Clear/Sunny  
 DAY/DATE: Thursday, March 7, 2019

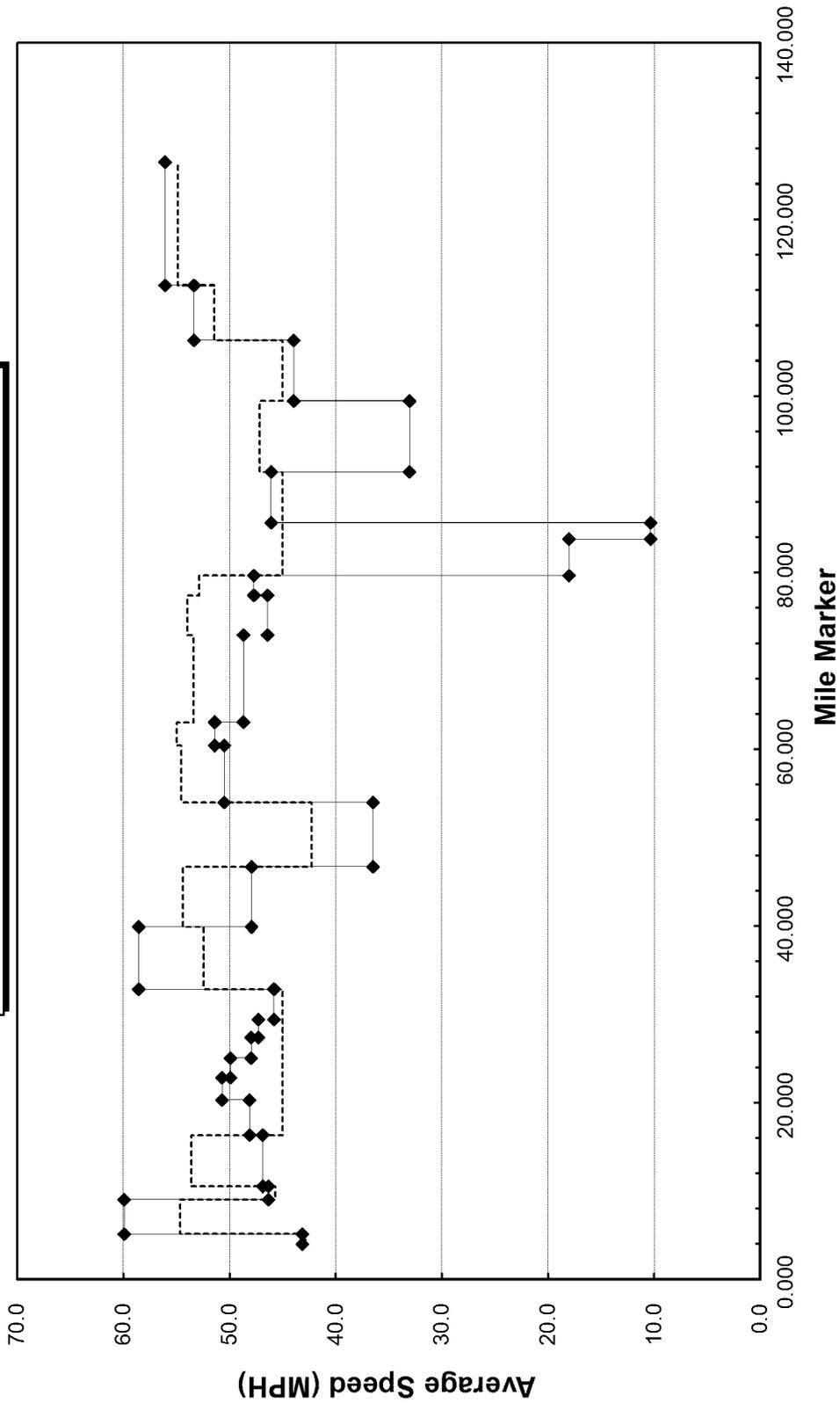
DEFINITION OF DELAY  
 Delay begins @ 5 mph  
 Delay ends @ 15 mph

TYPES OF DELAY  
 LT = Left Turn  
 RT = Right Turn  
 TS = Traffic Signal  
 DB = Drawbridge  
 CG = Congestion  
 CS = Construction  
 SB = School Bus  
 EV = Emergency Vehicle  
 AC = Accident  
 \* = Special Event

Control Point	Segment #	End Segment #	Cumulative Time	Segment Time	Excluded Time	Cumulative Distance	Segment Distance	Excluded Distance	Segment Travel Speed	Platoon Size	Delay Type	Segment Delay	Passing Score
Cow Key Bridge (N)	Begin		00:00:00	00:00:00		0.000	0.000						
Key Haven Blvd	1		00:01:35	00:01:35		1.138	1.138		43.1				4
Rockland Dr	2		00:05:29	00:03:54		5.033	3.895		59.9				4
Boca Chica Rd	3		00:07:26	00:01:57		6.539	1.506		46.3				
Harris Ch Br (N)	4		00:14:50	00:07:24		12.322	5.783		46.9				
Bow Channel Br (N)	5		00:19:48	00:04:58		16.304	3.982		48.1				
Spanish Main Dr	6		00:22:49	00:03:01		18.853	2.549		50.7				
E Shore Dr	7		00:25:29	00:02:40		21.071	2.218		49.9				
Torch-Ramrod Br (S)	8		00:28:23	00:02:54		23.389	2.318		48.0				
N Pine Ch Br (N)	9		00:30:59	00:02:36		25.438	2.049		47.3				
Long Beach Dr	10		00:35:28	00:04:29		28.862	3.424		45.8				2
7-Mile Br (S)	11		00:42:41	00:07:13		35.906	7.044		58.6				2
7-Mile Br (N)	12		00:51:13	00:08:32		42.723	6.817		47.9				
Coco Plum Dr	13		01:03:10	00:11:57		49.990	7.267		36.5	10+	TS(2)	00:01:06	12
Toms Harbor Ch Br (S)	14		01:10:49	00:07:39		56.425	6.435		50.5	10+	TS	00:00:02	
Long Key Br (S)	15		01:13:54	00:03:05		59.066	2.641		51.4				
Channel #2 Br (N)	16		01:26:05	00:12:11		68.955	9.889		48.7				
Lignum V Br (S)	17		01:31:53	00:05:48		73.443	4.488		46.4				
Teatable Reif Br (N)	18		01:34:41	00:02:48		75.670	2.227		47.7				
Whale Harbor Br (S)	19		01:48:26	00:13:45		79.793	4.123		18.0	10+	CG(4)	00:09:22	
Snake Creek Br (N)	20		01:59:14	00:10:48		81.653	1.860		10.3	10+	CG(2),DB	00:07:42	
Ocean Blvd	21		02:06:43	00:07:29		87.400	5.747		46.1	10+	TS	00:00:16	3
Atlantic Blvd	22		02:21:22	00:14:39		95.470	8.070		33.1	10+	TS	00:05:32	8
C-905	23		02:30:42	00:09:20		102.308	6.838		44.0	10+	TS	00:00:45	8
County Line sign	24		02:37:44	00:07:02		108.563	6.255		53.4				
Card Sound Rd	25		02:52:37	00:14:53		122.472	13.909		56.1				1
OVERALL				02:37:44	00:00:00		108.563	0.000	41.3			00:24:45	44

Note: Segment 25 (Dade County) is excluded from the "OVERALL" measurements.

**US - 1 NORTHBOUND TRAVEL SPEEDS  
THURSDAY, 03-07-19, EVENING**



◆ SEG. SPEED      - - - - - AVG. POSTED SPEED

ROAD/DIRECTION: US-1, Southbound  
 OBSERVERS: SR  
 WEATHER/CONDITIONS: Clear/Sunny  
 DAY/DATE: Thursday, March 7, 2019

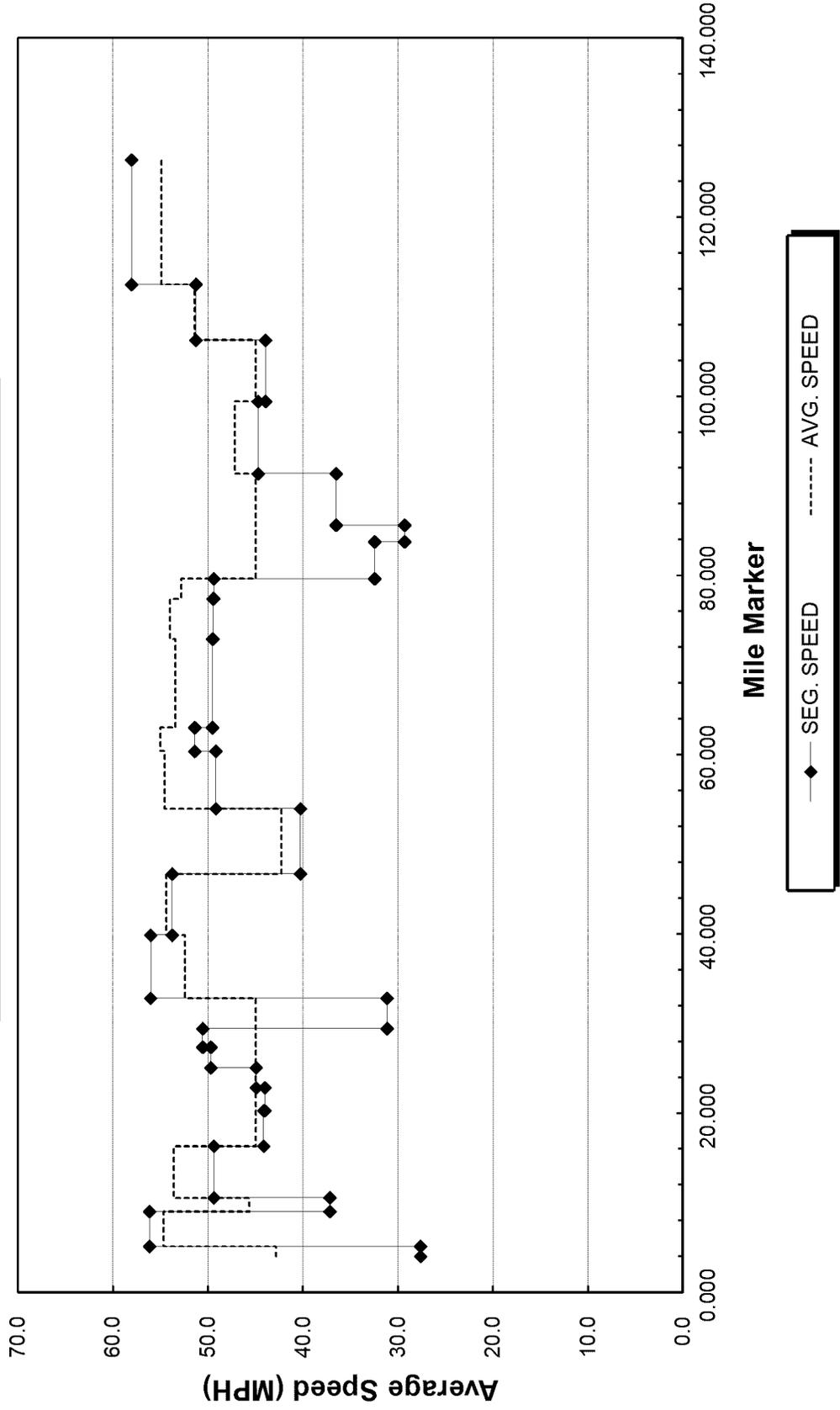
DEFINITION OF DELAY  
 Delay begins @ 5 mph  
 Delay ends @ 15 mph

TYPES OF DELAY  
 LT = Left Turn  
 RT = Right Turn  
 TS = Traffic Signal  
 DB = Drawbridge  
 CG = Congestion  
 CS = Construction  
 SB = School Bus  
 EV = Emergency Vehicle  
 AC = Accident  
 \* = Special Event

Control Point	Segment #	End Segment #	Cumulative Time	Segment Time	Excluded Time	Cumulative Distance	Segment Distance	Excluded Distance	Segment Travel Speed	Platoon Size	Delay Type	Segment Delay	Passing Score
Card Sound Rd	Begin		00:00:00	00:00:00		0.000	0.000						
County Line sign	25	1	00:14:22	00:14:22		13.899	13.899		58.0				
C-905	24	2	00:21:40	00:07:18		20.139	6.240		51.3				
Atlantic Blvd	23	3	00:31:00	00:09:20		26.975	6.836		43.9	6	TS	00:00:30	1
Ocean Blvd	22	4	00:41:48	00:10:48		35.024	8.049		44.7	10+	TS	00:00:24	8
Snake Creek Br (N)	21	5	00:51:17	00:09:29		40.793	5.769		36.5	10+	TS(2)	00:00:18	
Whale Harbor Br (S)	20	6	00:55:06	00:03:49		42.657	1.864		29.3	10+	DB	00:00:18	
Teatable Reif Br (N)	19	7	01:02:44	00:07:38		46.787	4.130		32.5				
Lignum V Br (S)	18	8	01:05:26	00:02:42		49.009	2.222		49.4				
Channel #2 Br (N)	17	9	01:10:53	00:05:27		53.503	4.494		49.5				
Long Key Br (S)	16	10	01:22:51	00:11:58		63.383	9.880		49.5				
Toms Harbor Ch Br (S)	15	11	01:25:56	00:03:05		66.024	2.641		51.4				
Coco Plum Dr	14	12	01:33:46	00:07:50		72.445	6.421		49.2				
7-Mile Br (N)	13	13	01:44:37	00:10:51		79.728	7.283		40.3	10+	TS	00:00:22	7
7-Mile Br (S)	12	14	01:52:13	00:07:36		86.541	6.813		53.8				
Long Beach Dr	11	15	01:59:44	00:07:31		93.560	7.019		56.0				-1
N Pine Ch Br (N)	10	16	02:06:21	00:06:37		96.993	3.433		31.1	10+	CG,TS	00:01:14	
Torch-Ramrod Br (S)	9	17	02:08:47	00:02:26		99.044	2.051		50.6				
E Shore Dr	8	18	02:11:34	00:02:47		101.350	2.306		49.7				
Spanish Main Dr	7	19	02:14:32	00:02:58		103.572	2.222		44.9				
Bow Channel Br (N)	6	20	02:18:01	00:03:29		106.128	2.556		44.0				
Harris Ch Br (N)	5	21	02:23:25	00:05:24		110.102	3.974		44.2	3	TS	00:00:27	
Boca Chica Rd	4	22	02:30:26	00:07:01		115.877	5.775		49.4				
Rockland Dr	3	23	02:32:52	00:02:26		117.384	1.507		37.2				
Key Haven Blvd	2	24	02:37:02	00:04:10		121.283	3.899		56.1				-2
Cow Key Bridge (N)	1	25	02:39:30	00:02:28		122.419	1.136		27.6	10+	TS	00:00:55	-2
OVERALL				02:25:08	00:00:00		108.520	0.000	44.9			00:04:28	11

Note: Segment 25 (Dade County) is excluded from the "OVERALL" measurements.

**US - 1 SOUTHBOUND TRAVEL SPEEDS  
THURSDAY, 03-07-19, MORNING**



ROAD/DIRECTION: US-1, Northbound  
 OBSERVERS: KK  
 WEATHER/CONDITIONS: Clear/Sunny  
 DAY/DATE: Friday, March 8, 2019

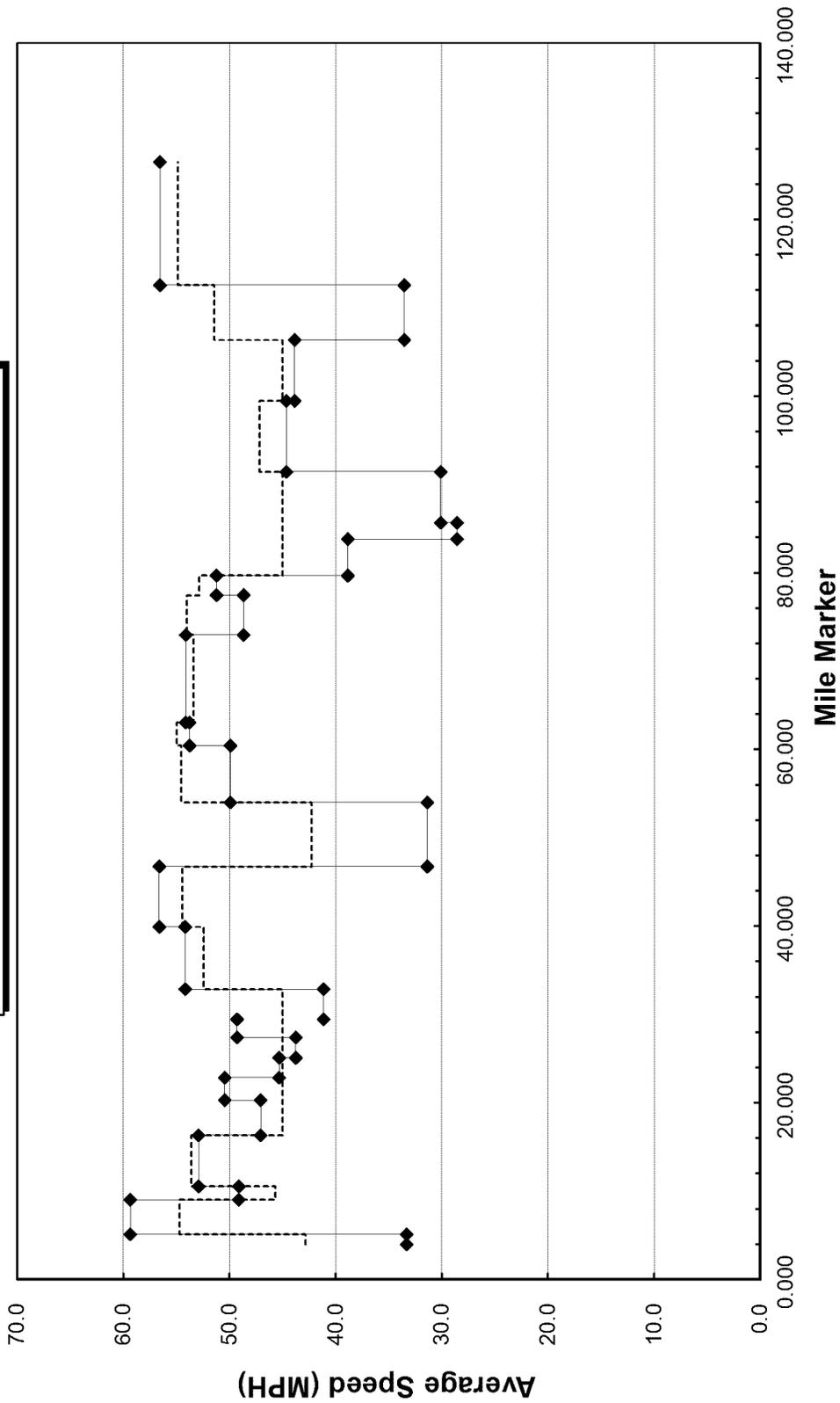
DEFINITION OF DELAY  
 Delay begins @ 5 mph  
 Delay ends @ 15 mph

TYPES OF DELAY  
 LT = Left Turn  
 RT = Right Turn  
 TS = Traffic Signal  
 DB = Drawbridge  
 CG = Congestion  
 CS = Construction  
 SB = School Bus  
 EV = Emergency Vehicle  
 AC = Accident  
 \* = Special Event

Control Point	Segment #	End Segment	Cumulative Time	Segment Time	Excluded Time	Cumulative Distance	Segment Distance	Excluded Distance	Segment Travel Speed	Platoon Size	Delay Type	Segment Delay	Passing Score
Cow Key Bridge (N)	Begin		00:00:00	00:00:00		0.000	0.000						
Key Haven Blvd	1	00:02:02	00:02:02	00:02:02		1.129	1.129		33.3	4	TS	00:00:09	-2
Rockland Dr	2	00:05:59	00:03:57	00:03:57		5.034	3.905		59.3				1
Boca Chica Rd	3	00:07:50	00:01:51	00:01:51		6.548	1.514		49.1				-1
Harris Ch Br (N)	4	00:14:24	00:06:34	00:06:34		12.337	5.789		52.9				
Bow Channel Br (N)	5	00:19:28	00:05:04	00:05:04		16.311	3.974		47.1	5	TS	00:00:17	
Spanish Main Dr	6	00:22:30	00:03:02	00:03:02		18.862	2.551		50.5				
E Shore Dr	7	00:25:27	00:02:57	00:02:57		21.090	2.228		45.3				
Torch-Ramrod Br (S)	8	00:28:37	00:03:10	00:03:10		23.400	2.310		43.8				
N Pine Ch Br (N)	9	00:31:07	00:02:30	00:02:30		25.454	2.054		49.3				
Long Beach Dr	10	00:36:06	00:04:59	00:04:59		28.870	3.416		41.1				2
7-Mile Br (S)	11	00:43:55	00:07:49	00:07:49		35.929	7.059		54.2				1
7-Mile Br (N)	12	00:51:08	00:07:13	00:07:13		42.739	6.810		56.6				
Coco Plum Dr	13	01:06:06	00:14:58	00:14:58	00:01:28	50.008	7.269	0.209	31.4	10+	SZ,TS(2),SB	00:03:56	25
Toms Harbor Ch Br (S)	14	01:13:50	00:07:44	00:07:44		56.440	6.432		49.9				
Long Key Br (S)	15	01:16:47	00:02:57	00:02:57		59.084	2.644		53.8				
Channel #2 Br (N)	16	01:27:45	00:10:58	00:10:58		68.974	9.890		54.1				
Lignum V Br (S)	17	01:33:17	00:05:32	00:05:32		73.463	4.489		48.7				
Teatable Reif Br (N)	18	01:35:54	00:02:37	00:02:37		75.696	2.233		51.2				
Whale Harbor Br (S)	19	01:42:16	00:06:22	00:06:22		79.819	4.123		38.9				
Snake Creek Br (N)	20	01:46:12	00:03:56	00:03:56		81.690	1.871		28.5	10+	CG	00:02:00	
Ocean Blvd	21	01:57:40	00:11:28	00:11:28		87.443	5.753		30.1	10+	CG(2),TS(2)	00:03:13	4
Atlantic Blvd	22	02:08:30	00:10:50	00:10:50		95.502	8.059		44.6	10+	TS,CG	00:01:22	-7
C-905	23	02:17:53	00:09:23	00:09:23		102.361	6.859		43.9	10+	CG	00:00:27	-7
County Line sign	24	02:29:03	00:11:10	00:11:10		108.600	6.239		33.5	10+	CG(2)	00:01:24	5
Card Sound Rd	25	02:43:49	00:14:46	00:14:46		122.510	13.910		56.5				-2
OVERALL			02:29:03	00:01:28		108.600	0.209		44.1			00:12:48	19

Note: Segment 25 (Dade County) is excluded from the "OVERALL" measurements.

**US - 1 NORTHBOUND TRAVEL SPEEDS  
FRIDAY, 03-08-19, EVENING**



◆ SEG. SPEED      - - - - - AVG. POSTED SPEED

ROAD/DIRECTION: US-1, Southbound  
 OBSERVERS: SR  
 WEATHER/CONDITIONS: Cloudy  
 DAY/DATE: Friday, March 8, 2019

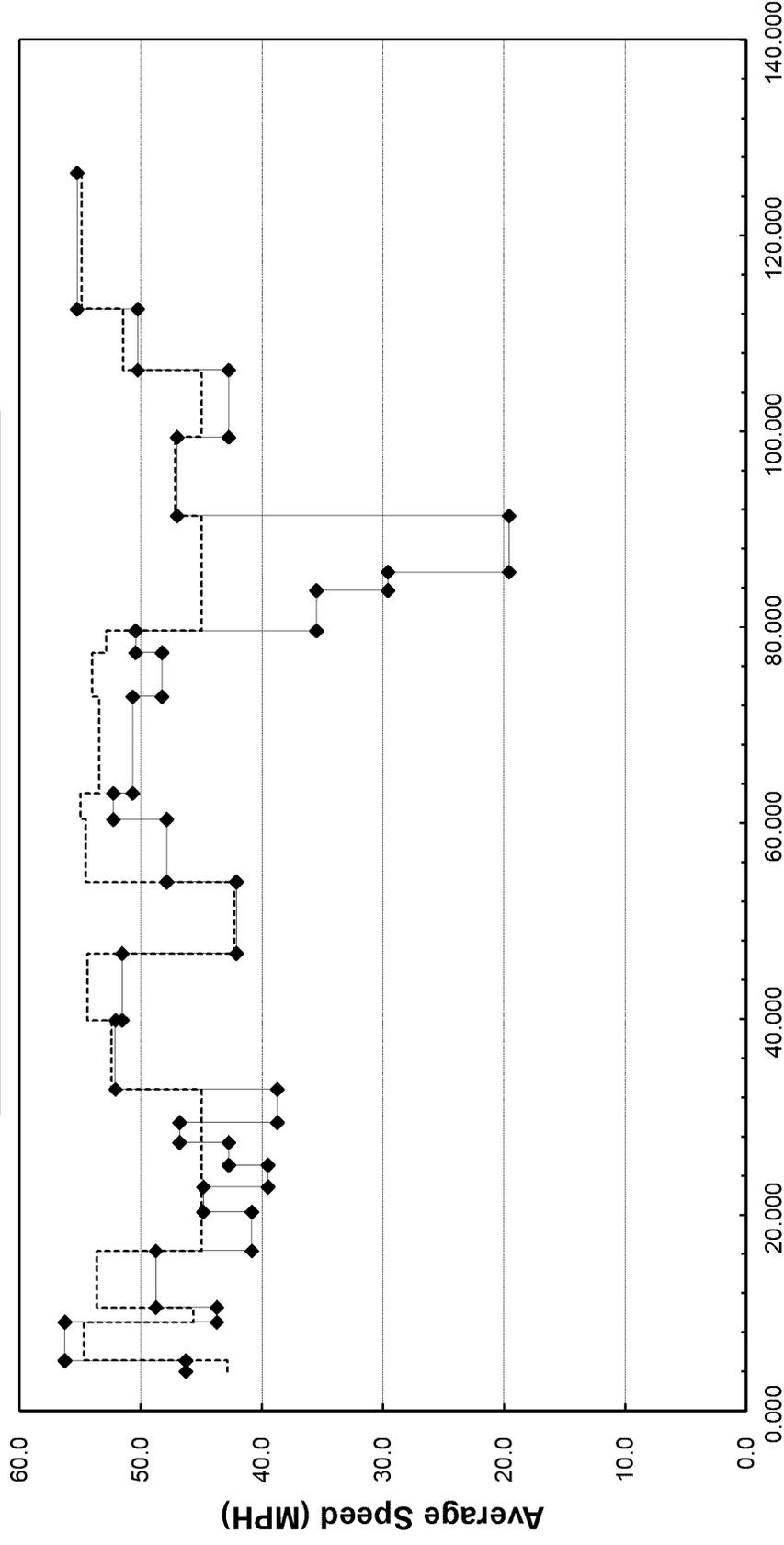
DEFINITION OF DELAY  
 Delay begins @ 5 mph  
 Delay ends @ 15 mph

TYPES OF DELAY  
 LT = Left Turn  
 RT = Right Turn  
 TS = Traffic Signal  
 DB = Drawbridge  
 CG = Congestion  
 CS = Construction  
 SB = School Bus  
 EV = Emergency Vehicle  
 AC = Accident  
 \* = Special Event

Control Point	Segment #	End Segment	Cumulative Time	Segment Time	Excluded Time	Cumulative Distance	Segment Distance	Excluded Distance	Segment Travel Speed	Platoon Size	Delay Type	Segment Delay	Passing Score
Card Sound Rd	Begin		00:00:00	00:00:00		0.000	0.000						
County Line sign	25	1	00:15:05	00:15:05		13.893	13.893		55.3				
C-905	24	2	00:22:32	00:07:27		20.132	6.239		50.2				
Atlantic Blvd	23	3	00:32:08	00:09:36		26.969	6.837		42.7	10+	TS	00:00:40	4
Ocean Blvd	22	4	00:42:24	00:10:16		35.010	8.041		47.0				1
Snake Creek Br (N)	21	5	01:00:03	00:17:39		40.775	5.765		19.6	10+	TS,CG	00:08:12	0
Whale Harbor Br (S)	20	6	01:03:50	00:03:47		42.641	1.866		29.6				
Teatable Relif Br (N)	19	7	01:10:48	00:06:58		46.763	4.122		35.5	10+	CG	00:00:20	
Lignum V Br (S)	18	8	01:13:27	00:02:39		48.990	2.227		50.4				
Channel #2 Br (N)	17	9	01:19:02	00:05:35		53.478	4.488		48.2				
Long Key Br (S)	16	10	01:30:44	00:11:42		63.356	9.878		50.7				
Toms Harbor Ch Br (S)	15	11	01:33:47	00:03:03		66.013	2.657		52.3				
Coco Plum Dr	14	12	01:41:49	00:08:02		72.419	6.406		47.8				
7-Mile Br (N)	13	13	01:52:13	00:10:24		79.716	7.297		42.1	4	TS	00:00:16	12
7-Mile Br (S)	12	14	02:00:08	00:07:55		86.517	6.801		51.5				
Long Beach Dr	11	15	02:08:15	00:08:07		93.563	7.046		52.1				-1
N Pine Ch Br (N)	10	16	02:13:32	00:05:17		96.972	3.409		38.7	6	TS	00:00:28	
Torch-Ramrod Br (S)	9	17	02:16:10	00:02:38		99.026	2.054		46.8				
E Shore Dr	8	18	02:19:23	00:03:13		101.317	2.291		42.7				
Spanish Main Dr	7	19	02:22:46	00:03:23		103.544	2.227		39.5	5	TS-Ped	00:00:18	
Bow Channel Br (N)	6	20	02:26:12	00:03:26		106.109	2.565		44.8				
Harris Ch Br (N)	5	21	02:32:02	00:05:50		110.080	3.971		40.8	6	TS	00:00:31	
Boca Chica Rd	4	22	02:39:09	00:07:07		115.862	5.782		48.7				
Rockland Dr	3	23	02:41:13	00:02:04		117.368	1.506		43.7				
Key Haven Blvd	2	24	02:45:23	00:04:10		121.276	3.908		56.3				-5
Cow Key Bridge (N)	1	25	02:46:51	00:01:28		122.407	1.131		46.3				
OVERALL				02:31:46	00:00:00	108.514	0.000		42.9			00:10:45	11

Note: Segment 25 (Dade County) is excluded from the "OVERALL" measurements.

**US - 1 SOUTHBOUND TRAVEL SPEEDS  
FRIDAY, 03-08-19, MORNING**



**Mile Marker**

—◆— SEG. SPEED      - - - - - AVG. SPEED

ROAD/DIRECTION: US-1, Northbound  
 OBSERVERS: KK  
 WEATHER/CONDITIONS: Clear/Sunny  
 DAY/DATE: Saturday, March 9, 2019

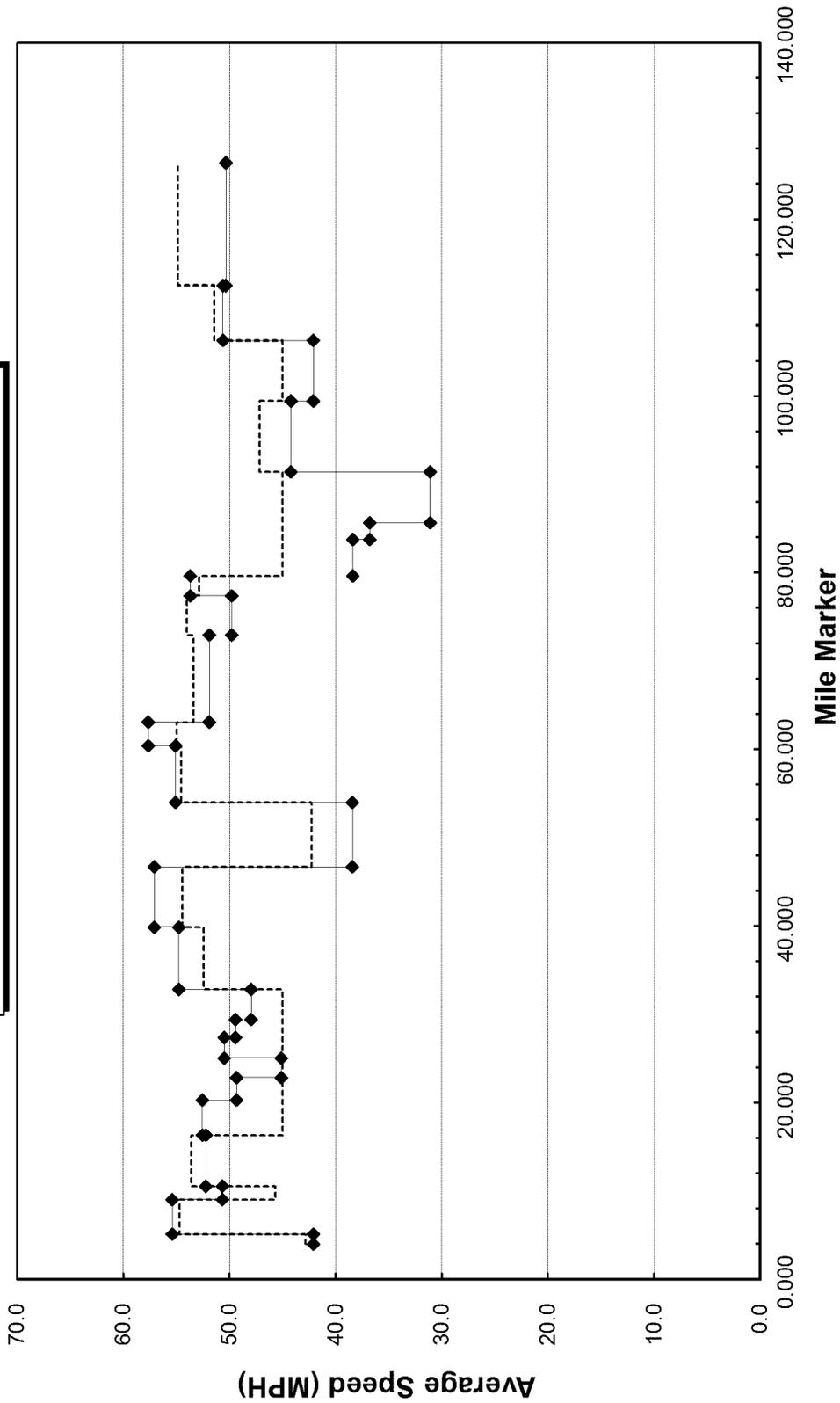
DEFINITION OF DELAY  
 Delay begins @ 5 mph  
 Delay ends @ 15 mph

TYPES OF DELAY  
 LT = Left Turn  
 RT = Right Turn  
 TS = Traffic Signal  
 DB = Drawbridge  
 CG = Congestion  
 CS = Construction  
 SB = School Bus  
 EV = Emergency Vehicle  
 AC = Accident  
 \* = Special Event

Control Point	End Segment #	Cumulative Time	Segment Time	Excluded Time	Cumulative Distance	Segment Distance	Excluded Distance	Segment Travel Speed	Platoon Size	Delay Type	Segment Delay	Passing Score
Cow Key Bridge (N)	Begin	00:00:00	00:00:00		0.000	0.000						
Key Haven Blvd	1	00:01:36	00:01:36		1.123	1.123		42.1				
Rockland Dr	2	00:05:50	00:04:14		5.031	3.908		55.4				
Boca Chica Rd	3	00:07:37	00:01:47		6.537	1.506		50.7				2
Harris Ch Br (N)	4	00:14:16	00:06:39		12.326	5.789		52.2				
Bow Channel Br (N)	5	00:18:48	00:04:32		16.297	3.971		52.6				
Spanish Main Dr	6	00:21:54	00:03:06		18.846	2.549		49.3				
E Shore Dr	7	00:24:51	00:02:57		21.063	2.217		45.1				
Torch-Ramrod Br (S)	8	00:27:36	00:02:45		23.377	2.314		50.5				
N Pine Ch Br (N)	9	00:30:05	00:02:29		25.423	2.046		49.4				
Long Beach Dr	10	00:34:22	00:04:17		28.845	3.422		47.9				
7-Mile Br (S)	11	00:42:05	00:07:43		35.890	7.045		54.8				2
7-Mile Br (N)	12	00:49:15	00:07:10		42.707	6.817		57.1				
Coco Plum Dr	13	01:00:59	00:11:44	00:00:25	49.980	7.273	0.026	38.4	10+	TS(2),*	00:01:07	8
Toms Harbor Ch Br (S)	14	01:07:59	00:07:00		56.407	6.427		55.1				
Long Key Br (S)	15	01:10:45	00:02:46		59.065	2.658		57.6				
Channel #2 Br (N)	16	01:22:10	00:11:25		68.939	9.874		51.9				1
Lignum V Br (S)	17	01:27:34	00:05:24		73.420	4.481		49.8				
Teatable Reif Br (N)	18	01:30:04	00:02:30		75.657	2.237		53.7				
Whale Harbor Br (S)	19	01:36:30	00:06:26		79.772	4.115		38.4				
Snake Creek Br (N)	20	01:39:33	00:03:03		81.641	1.869		36.8				
Ocean Blvd	21	01:50:39	00:11:06		87.396	5.755		31.1	10+	CG(2),TS	00:02:22	-5
Atlantic Blvd	22	02:01:35	00:10:56		95.449	8.053		44.2	10+	TS	00:01:08	-2
C-905	23	02:11:20	00:09:45		102.292	6.843		42.1	10+	TS,CG	00:00:53	-3
County Line sign	24	02:18:44	00:07:24		108.534	6.242		50.6				
Card Sound Rd	25	02:35:18	00:16:34		122.432	13.898		50.3				
OVERALL			02:18:44	00:00:25		108.534	0.026	47.1			00:05:30	3

Note: Segment 25 (Dade County) is excluded from the "OVERALL" measurements.

**US - 1 NORTHBOUND TRAVEL SPEEDS  
SATURDAY, 03-09-19, EVENING**



◆ SEG. SPEED      - - - - - AVG. POSTED SPEED

ROAD/DIRECTION: US-1, Southbound  
 OBSERVERS: SR  
 WEATHER/CONDITIONS: Clear/Sunny  
 DAY/DATE: Saturday, March 9, 2019

DEFINITION OF DELAY  
 Delay begins @ 5 mph  
 Delay ends @ 15 mph

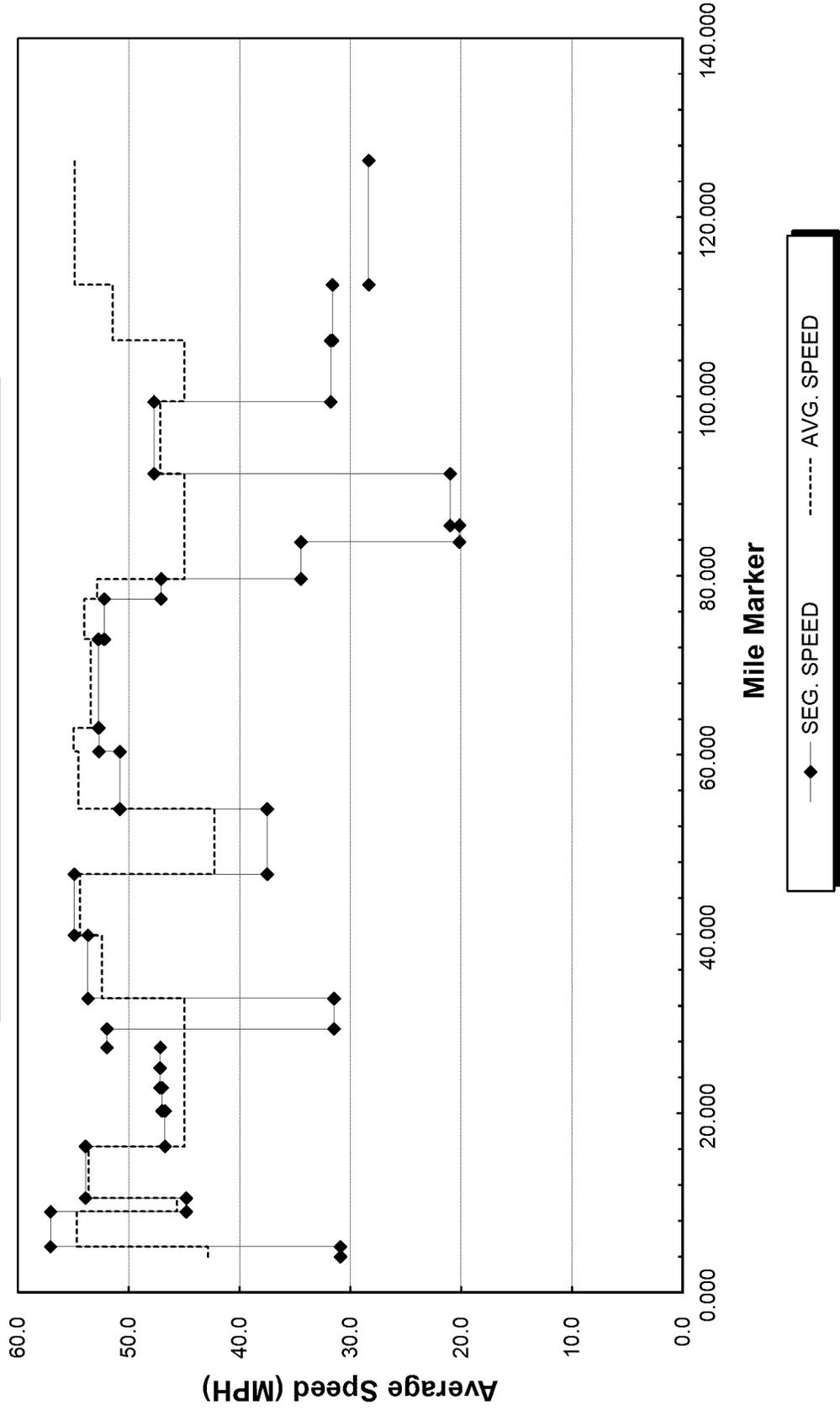
TYPES OF DELAY  
 LT = Left Turn  
 RT = Right Turn  
 TS = Traffic Signal  
 DB = Drawbridge  
 CG = Congestion

CS = Construction  
 SB = School Bus  
 EV = Emergency Vehicle  
 AC = Accident  
 \* = Special Event

Control Point	Segment #	End Segment	Cumulative Time	Segment Time	Excluded Time	Cumulative Distance	Segment Distance	Excluded Distance	Segment Travel Speed	Platoon Size	Delay Type	Segment Delay	Passing Score
Card Sound Rd	Begin		00:00:00	00:00:00		0.000	0.000						
County Line sign	25 1	00:29:24	00:29:24	00:29:24		13.895	13.895		28.4				
C-905	24 2	00:41:12	00:11:48	00:11:48		20.116	6.221		31.6	10+	CG(3)	00:01:30	
Atlantic Blvd	23 3	00:54:07	00:12:55	00:12:55		26.954	6.838		31.8	10+	TS(3)	00:04:27	2
Ocean Blvd	22 4	01:04:14	00:10:07	00:10:07		35.000	8.046		47.7	10+	TS	00:00:30	3
Snake Creek Br (N)	21 5	01:20:44	00:16:30	00:16:30		40.769	5.769		21.0	10+	TS,CG(3)	00:04:45	-4
Whale Harbor Br (S)	20 6	01:26:17	00:05:33	00:05:33		42.634	1.865		20.2	10+	CG	00:01:33	0
Teatable Relif Br (N)	19 7	01:33:27	00:07:10	00:07:10		46.750	4.116		34.5				
Lignum V Br (S)	18 8	01:36:18	00:02:51	00:02:51		48.986	2.236		47.1				
Channel #2 Br (N)	17 9	01:41:27	00:05:09	00:05:09		53.468	4.482		52.2				
Long Key Br (S)	16 10	01:52:42	00:11:15	00:11:15		63.353	9.885		52.7				
Toms Harbor Ch Br (S)	15 11	01:55:43	00:03:01	00:03:01		66.003	2.650		52.7				
Coco Plum Dr	14 12	02:03:17	00:07:34	00:07:34		72.410	6.407		50.8				
7-Mile Br (N)	13 13	02:17:18	00:14:01	00:14:01	00:02:55	79.702	7.292	0.353	37.5	10+	TS,*	00:03:31	4
7-Mile Br (S)	12 14	02:24:44	00:07:26	00:07:26		86.506	6.804		54.9				
Long Beach Dr	11 15	02:32:36	00:07:52	00:07:52		93.546	7.040		53.7				
N Pine Ch Br (N)	10 16	02:39:08	00:06:32	00:06:32		96.973	3.427		31.5	10+	TS	00:01:01	
Torch-Ramrod Br (S)	9 17	02:41:30	00:02:22	00:02:22		99.023	2.050		52.0				
E Shore Dr	8 18	02:44:26	00:02:56	00:02:56		101.329	2.306		47.2				
Spanish Main Dr	7 19	02:47:15	00:02:49	00:02:49		103.544	2.215		47.2				
Bow Channel Br (N)	6 20	02:50:31	00:03:16	00:03:16		106.102	2.558		47.0				
Harris Ch Br (N)	5 21	02:55:37	00:05:06	00:05:06		110.074	3.972		46.7				
Boca Chica Rd	4 22	03:02:03	00:06:26	00:06:26		115.855	5.781		53.9				
Rockland Dr	3 23	03:04:04	00:02:01	00:02:01		117.361	1.506		44.8				
Key Haven Blvd	2 24	03:08:10	00:04:06	00:04:06		121.260	3.899		57.1				
Cow Key Bridge (N)	1 25	03:10:22	00:02:12	00:02:12		122.393	1.133		30.9	10+	TS(2)	00:00:21	-1
OVERALL				02:40:58	00:02:55		108.498	0.353	41.1			00:17:38	-1

Note: Segment 25 (Dade County) is excluded from the "OVERALL" measurements.

**US - 1 SOUTHBOUND TRAVEL SPEEDS  
SATURDAY, 03-09-19, MORNING**



ROAD/DIRECTION: US-1, Northbound  
 OBSERVERS: SR  
 WEATHER/CONDITIONS: Sunny/Clear  
 DAY/DATE: Sunday, March 10, 2019

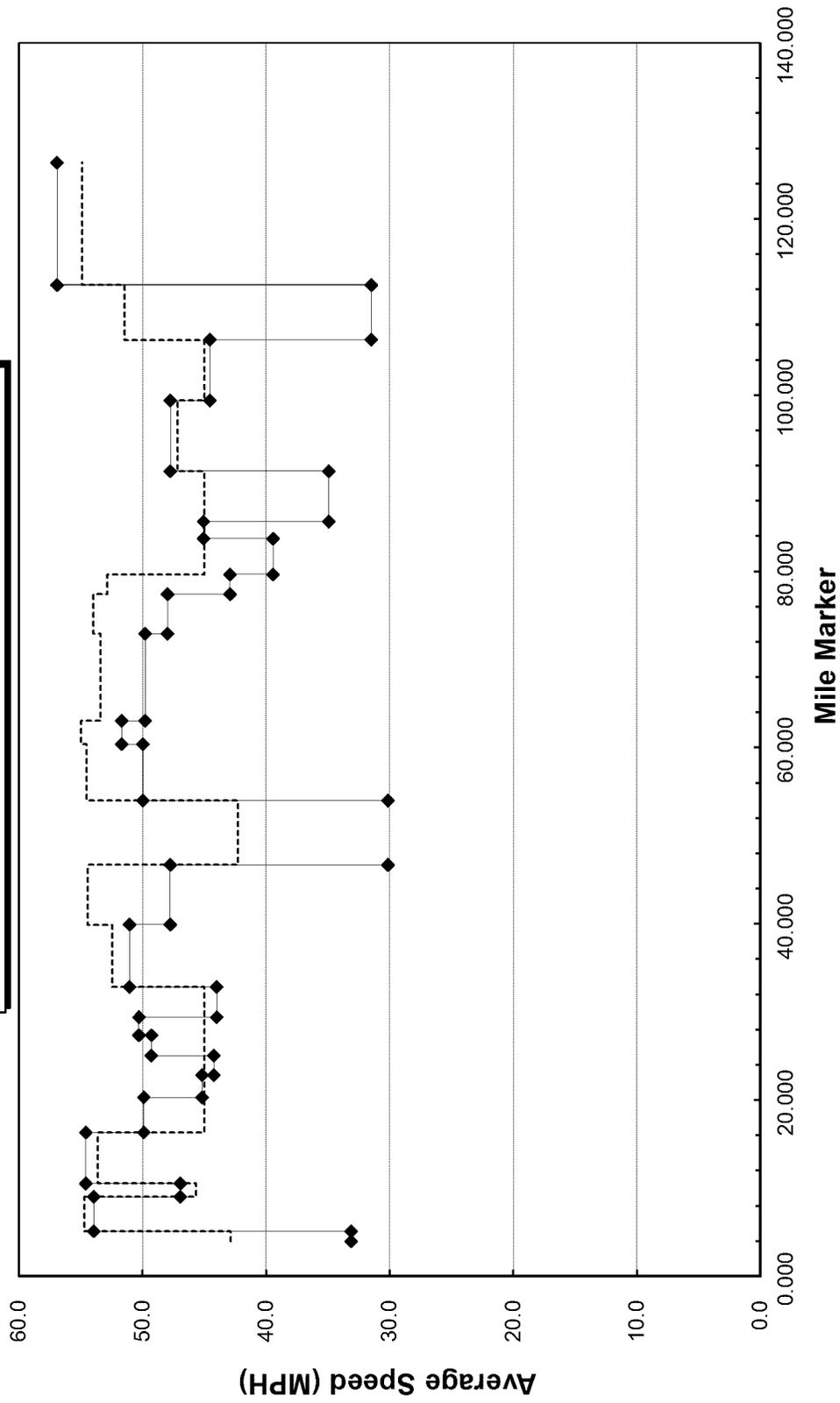
DEFINITION OF DELAY  
 Delay begins @ 5 mph  
 Delay ends @ 15 mph

TYPES OF DELAY  
 LT = Left Turn  
 RT = Right Turn  
 TS = Traffic Signal  
 DB = Drawbridge  
 CG = Congestion  
 CS = Construction  
 SB = School Bus  
 EV = Emergency Vehicle  
 AC = Accident  
 \* = Special Event

Control Point	End Segment #	Cumulative Time	Segment Time	Excluded Time	Cumulative Distance	Segment Distance	Excluded Distance	Segment Travel Speed	Platoon Size	Delay Type	Segment Delay	Passing Score
Cow Key Bridge (N)	Begin	00:00:00	00:00:00		0.000	0.000						
Key Haven Blvd	1	00:02:02	00:02:02		1.122	1.122		33.1	7	TS	00:00:26	3
Rockland Dr	2	00:06:23	00:04:21		5.033	3.911		53.9				4
Boca Chica Rd	3	00:08:19	00:01:56		6.545	1.512		46.9				
Harris Ch Br (N)	4	00:14:40	00:06:21		12.323	5.778		54.6				
Bow Channel Br (N)	5	00:19:27	00:04:47		16.300	3.977		49.9				
Spanish Main Dr	6	00:22:50	00:03:23		18.846	2.546		45.2				
E Shore Dr	7	00:25:51	00:03:01		21.069	2.223		44.2				
Torch-Ramrod Br (S)	8	00:28:40	00:02:49		23.382	2.313		49.3				
N Pine Ch Br (N)	9	00:31:07	00:02:27		25.436	2.054		50.3				
Long Beach Dr	10	00:35:46	00:04:39		28.846	3.410		44.0				
7-Mile Br (S)	11	00:44:04	00:08:18		35.908	7.062		51.1				
7-Mile Br (N)	12	00:52:36	00:08:32		42.701	6.793		47.8				
Coco Plum Dr	13	01:07:47	00:15:11	00:00:54	49.979	7.278	0.105	30.1	10+	CG*,TS(2)	00:02:27	7
Toms Harbor Ch Br (S)	14	01:15:30	00:07:43		56.401	6.422		49.9				-1
Long Key Br (S)	15	01:18:35	00:03:05		59.056	2.655		51.7				
Channel #2 Br (N)	16	01:30:30	00:11:55		68.941	9.885		49.8				
Lignum V Br (S)	17	01:36:06	00:05:36		73.417	4.476		48.0				
Teatable Reif Br (N)	18	01:39:14	00:03:08		75.659	2.242		42.9				
Whale Harbor Br (S)	19	01:45:29	00:06:15		79.767	4.108		39.4				
Snake Creek Br (N)	20	01:47:58	00:02:29		81.632	1.865		45.1				
Ocean Blvd	21	01:57:50	00:09:52		87.377	5.745		34.9	5	CG,TS	00:00:35	-2
Atlantic Blvd	22	02:07:58	00:10:08		95.439	8.062		47.7	10+	TS	00:00:14	3
C-905	23	02:17:11	00:09:13		102.281	6.842		44.5	10+	TS(2)	00:00:47	-10
County Line sign	24	02:29:05	00:11:54		108.525	6.244		31.5	10+	CG(2)	00:03:36	
Card Sound Rd	25	02:43:45	00:14:40		122.436	13.911		56.9				
OVERALL			02:29:05	00:00:54		108.525	0.105	43.9			00:08:05	4

Note: Segment 25 (Dade County) is excluded from the "OVERALL" measurements.

**US - 1 NORTHBOUND TRAVEL SPEEDS  
SUNDAY, 03-10-19, MORNING**



◆— SEG. SPEED    - - - - - AVG. POSTED SPEED

ROAD/DIRECTION: US-1, Southbound  
 OBSERVERS: KK  
 WEATHER/CONDITIONS: Sunny/Clear  
 DAY/DATE: Sunday, March 10, 2019

DEFINITION OF DELAY  
 Delay begins @ 5 mph  
 Delay ends @ 15 mph

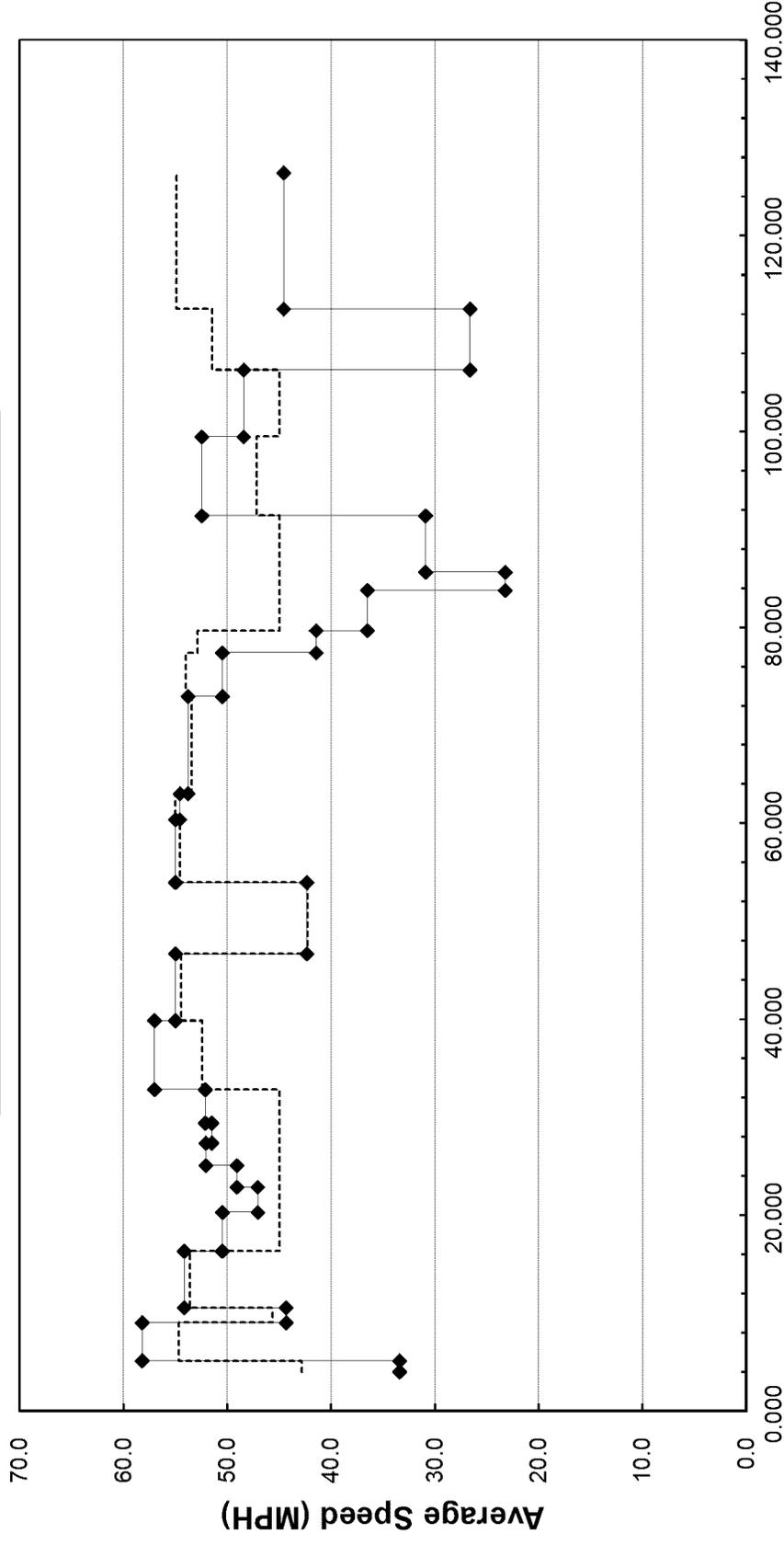
TYPES OF DELAY  
 LT = Left Turn  
 RT = Right Turn  
 TS = Traffic Signal  
 DB = Drawbridge  
 CG = Congestion

CS = Construction  
 SB = School Bus  
 EV = Emergency Vehicle  
 AC = Accident  
 \* = Special Event

Control Point	Segment #	End Segment	Cumulative Time	Segment Time	Excluded Time	Cumulative Distance	Segment Distance	Excluded Distance	Segment Travel Speed	Platoon Size	Delay Type	Segment Delay	Passing Score													
														Begin	25 1	24 2	23 3	22 4	21 5	20 6	19 7	18 8	17 9	16 10	15 11	14 12
Card Sound Rd		Begin	00:00:00	00:00:00		0.000	0.000																			
County Line sign		25 1	00:18:43	00:18:43		13.904	13.904		44.6																	
C-905		24 2	00:32:45	00:14:02		20.131	6.227		26.6	10+	CG(2)	00:04:08	1													
Atlantic Blvd		23 3	00:41:13	00:08:28		26.962	6.831		48.4	7	TS	00:00:13	13													
Ocean Blvd		22 4	00:50:26	00:09:13		35.021	8.059		52.5	8	TS	00:00:02	5													
Snake Creek Br (N)		21 5	01:01:39	00:11:13		40.797	5.776		30.9	10+	TS,CG	00:01:38	1													
Whale Harbor Br (S)		20 6	01:06:29	00:04:50		42.668	1.871		23.2	10+	CG	00:01:53														
Teatable Relif Br (N)		19 7	01:13:15	00:06:46		46.784	4.116		36.5																	
Lignum V Br (S)		18 8	01:16:30	00:03:15		49.028	2.244		41.4																	
Channel #2 Br (N)		17 9	01:21:50	00:05:20		53.513	4.485		50.5																	
Long Key Br (S)		16 10	01:32:53	00:11:03		63.416	9.903		53.8																	
Toms Harbor Ch Br (S)		15 11	01:35:48	00:02:55		66.069	2.653		54.6																	
Coco Plum Dr		14 12	01:42:48	00:07:00		72.485	6.416		55.0																	
7-Mile Br (N)		13 13	01:53:07	00:10:19		79.764	7.279		42.3	2	TS	00:00:23	4													
7-Mile Br (S)		12 14	02:00:33	00:07:26		86.576	6.812		55.0																	
Long Beach Dr		11 15	02:07:57	00:07:24		93.608	7.032		57.0				-2													
N Pine Ch Br (N)		10 16	02:11:54	00:03:57		97.040	3.432		52.1																	
Torch-Ramrod Br (S)		9 17	02:14:17	00:02:23		99.085	2.045		51.5																	
E Shore Dr		8 18	02:16:56	00:02:39		101.384	2.299		52.1																	
Spanish Main Dr		7 19	02:19:39	00:02:43		103.606	2.222		49.1																	
Bow Channel Br (N)		6 20	02:22:55	00:03:16		106.168	2.562		47.1																	
Harris Ch Br (N)		5 21	02:27:38	00:04:43		110.136	3.968		50.5																	
Boca Chica Rd		4 22	02:34:02	00:06:24		115.912	5.776		54.2																	
Rockland Dr		3 23	02:36:05	00:02:03		117.427	1.515		44.3																	
Key Haven Blvd		2 24	02:40:06	00:04:01		121.324	3.897		58.2				-4													
Cow Key Bridge (N)		1 25	02:42:08	00:02:02		122.456	1.132		33.4	10+	TS	00:00:21	4													
OVERALL				02:23:25	00:00:00		108.552	0.000	45.4			00:08:38	22													

Note: Segment 25 (Dade County) is excluded from the "OVERALL" measurements.

**US - 1 SOUTHBOUND TRAVEL SPEEDS  
SUNDAY, 03-10-19, EVENING**



**Mile Marker**



ROAD/DIRECTION: US-1, Northbound  
 OBSERVERS: KK  
 WEATHER/CONDITIONS: Clear/Sunny  
 DAY/DATE: Monday, March 11, 2019

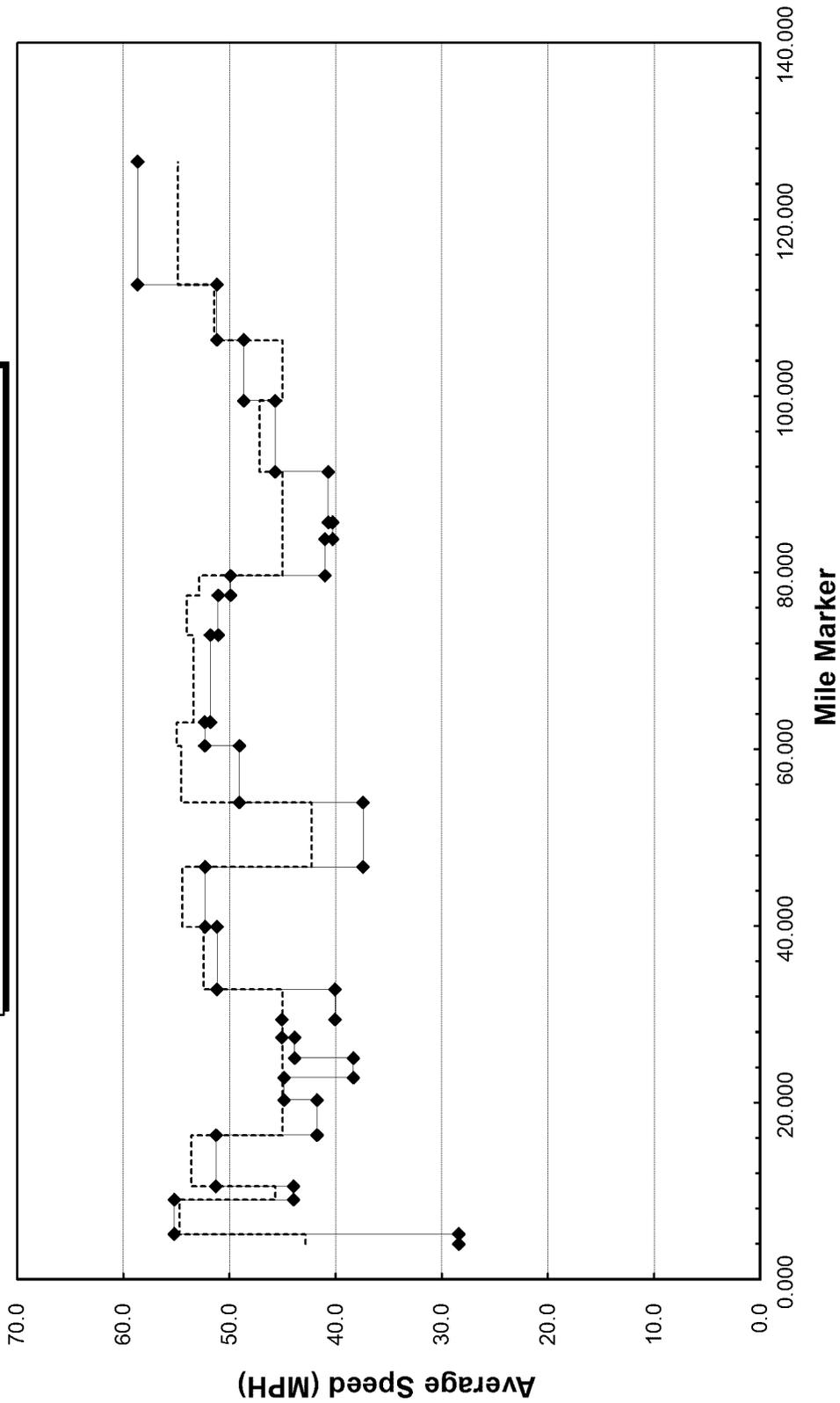
DEFINITION OF DELAY  
 Delay begins @ 5 mph  
 Delay ends @ 15 mph

TYPES OF DELAY  
 LT = Left Turn  
 RT = Right Turn  
 TS = Traffic Signal  
 DB = Drawbridge  
 CG = Congestion  
 CS = Construction  
 SB = School Bus  
 EV = Emergency Vehicle  
 AC = Accident  
 \* = Special Event

Control Point	Segment #	End Begin	Cumulative Time	Segment Time	Excluded Time	Cumulative Distance	Segment Distance	Excluded Distance	Segment Travel Speed	Platoon Size	Delay Type	Segment Delay	Passing Score
Cow Key Bridge (N)			00:00:00	00:00:00		0.000	0.000						
Key Haven Blvd	1		00:02:23	00:02:23		1.128	1.128		28.4	10+	TS	00:00:38	0
Rockland Dr	2		00:06:37	00:04:14		5.023	3.895		55.2				-2
Boca Chica Rd	3		00:08:41	00:02:04		6.538	1.515		44.0				
Harris Ch Br (N)	4		00:15:27	00:06:46		12.321	5.783		51.3				
Bow Channel Br (N)	5		00:21:10	00:05:43		16.299	3.978		41.8	5	TS	00:00:17	
Spanish Main Dr	6		00:24:34	00:03:24		18.841	2.542		44.9				
E Shore Dr	7		00:28:03	00:03:29		21.067	2.226		38.3				
Torch-Ramrod Br (S)	8		00:31:13	00:03:10		23.382	2.315		43.9				
N Pine Ch Br (N)	9		00:33:57	00:02:44		25.435	2.053		45.1				
Long Beach Dr	10		00:39:04	00:05:07		28.851	3.416		40.1	7	TS	00:00:16	1
7-Mile Br (S)	11		00:47:20	00:08:16		35.901	7.050		51.2	10+	LT	00:00:11	-4
7-Mile Br (N)	12		00:55:08	00:07:48		42.701	6.800		52.3				
Coco Plum Dr	13		01:06:49	00:11:41		49.985	7.284		37.4	10+	TS(3)	00:01:09	7
Toms Harbor Ch Br (S)	14		01:14:40	00:07:51		56.407	6.422		49.1				
Long Key Br (S)	15		01:17:43	00:03:03		59.067	2.660		52.3				
Channel #2 Br (N)	16		01:29:10	00:11:27		68.949	9.882		51.8				
Lignum V Br (S)	17		01:34:27	00:05:17		73.447	4.498		51.1				
Teatable Relf Br (N)	18		01:37:08	00:02:41		75.679	2.232		49.9				
Whale Harbor Br (S)	19		01:43:10	00:06:02		79.801	4.122		41.0				
Snake Creek Br (N)	20		01:45:57	00:02:47		81.670	1.869		40.3				
Ocean Blvd	21		01:54:26	00:08:29		87.424	5.754		40.7	10+	TS	00:00:16	3
Atlantic Blvd	22		02:05:02	00:10:36		95.493	8.069		45.7	10+	TS	00:00:40	-5
C-905	23		02:13:29	00:08:27		102.348	6.855		48.7	10+	TS	00:00:15	1
County Line sign	24		02:20:49	00:07:20		108.605	6.257		51.2				
Card Sound Rd	25		02:35:03	00:14:14		122.517	13.912		58.6				2
OVERALL				02:20:49	00:00:00		108.605	0.000	46.3			00:03:42	3

Note: Segment 25 (Dade County) is excluded from the "OVERALL" measurements.

**US - 1 NORTHBOUND TRAVEL SPEEDS  
MONDAY, 03-11-19, MORNING**



◆ SEG. SPEED      - - - - - AVG. POSTED SPEED

ROAD/DIRECTION: US-1, Southbound  
OBSERVERS: SR  
WEATHER/CONDITIONS: Clear/Sunny  
DAY/DATE: Monday, March 11, 2019

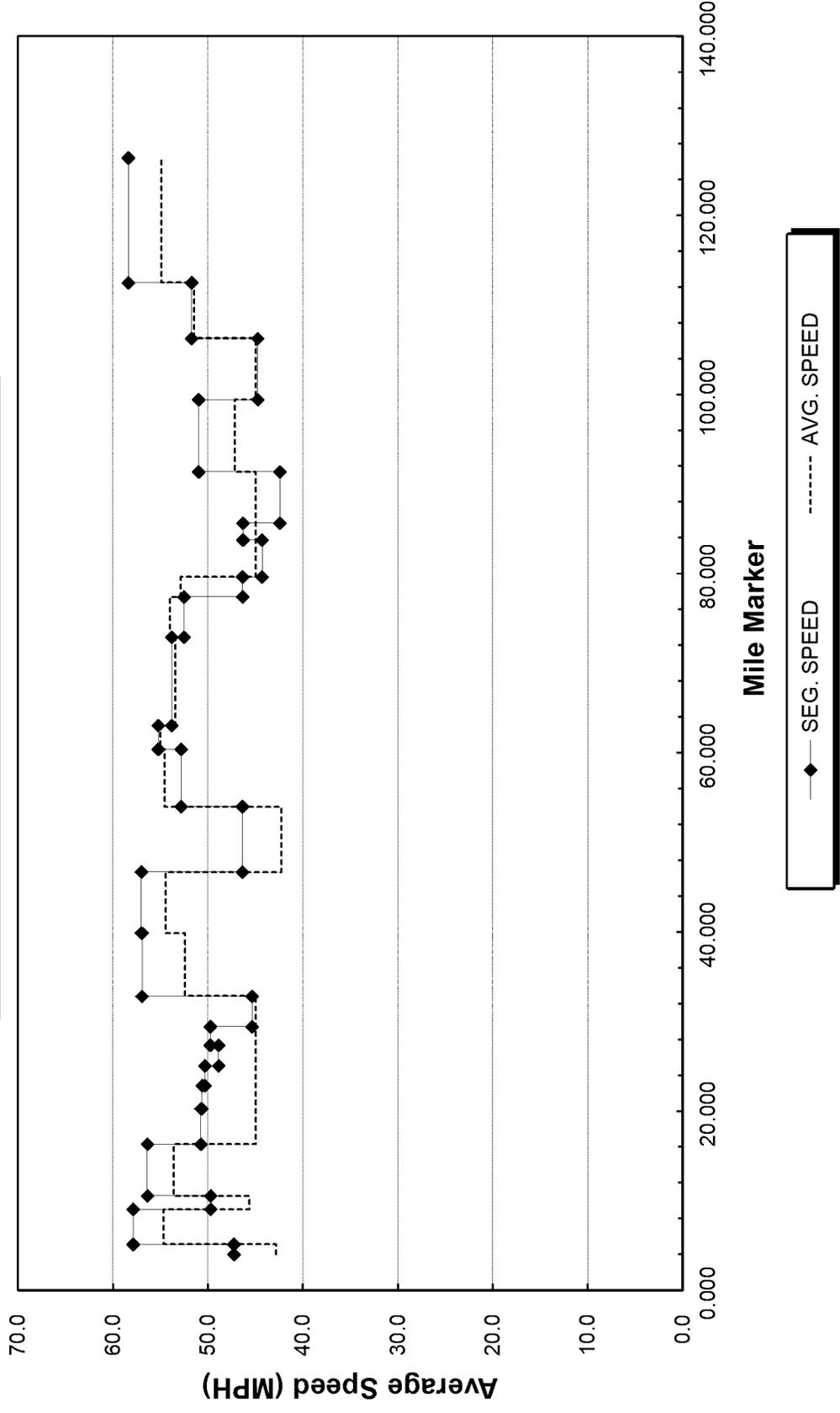
DEFINITION OF DELAY  
Delay begins @ 5 mph  
Delay ends @ 15 mph

TYPES OF DELAY  
LT = Left Turn  
RT = Right Turn  
TS = Traffic Signal  
DB = Drawbridge  
CG = Congestion  
CS = Construction  
SB = School Bus  
EV = Emergency Vehicle  
AC = Accident  
\* = Special Event

Control Point	Segment #	End Begin	Cumulative Time	Segment Time	Excluded Time	Cumulative Distance	Segment Distance	Excluded Distance	Segment Travel Speed	Platoon Size	Delay Type	Segment Delay	Passing Score
Card Sound Rd			00:00:00	00:00:00		0.000	0.000						
County Line sign	25	1	00:14:18	00:14:18		13.913	13.913		58.4				
C-905	24	2	00:21:32	00:07:14		20.148	6.235		51.7				
Atlantic Blvd	23	3	00:30:42	00:09:10		26.986	6.838		44.8	10+	TS	00:00:52	0
Ocean Blvd	22	4	00:40:10	00:09:28		35.031	8.045		51.0	10+	TS(2)	00:09:26	0
Snake Creek Br (N)	21	5	00:48:19	00:08:09		40.795	5.764		42.4	10+	TS	00:00:25	3
Whale Harbor Br (S)	20	6	00:50:44	00:02:25		42.661	1.866		46.3				
Teatable Relf Br (N)	19	7	00:56:19	00:05:35		46.782	4.121		44.3				
Lignum V Br (S)	18	8	00:59:13	00:02:54		49.022	2.240		46.3				
Channel #2 Br (N)	17	9	01:04:20	00:05:07		53.500	4.478		52.5				
Long Key Br (S)	16	10	01:15:21	00:11:01		63.378	9.878		53.8				
Toms Harbor Ch Br (S)	15	11	01:18:14	00:02:53		66.032	2.654		55.2				
Coco Plum Dr	14	12	01:25:31	00:07:17		72.442	6.410		52.8				
7-Mile Br (N)	13	13	01:34:57	00:09:26		79.732	7.290		46.4				8
7-Mile Br (S)	12	14	01:42:07	00:07:10		86.539	6.807		57.0				
Long Beach Dr	11	15	01:49:32	00:07:25		93.576	7.037		56.9				-1
N Pine Ch Br (N)	10	16	01:54:04	00:04:32		97.003	3.427		45.4				
Torch-Ramrod Br (S)	9	17	01:56:33	00:02:29		99.062	2.059		49.7				
E Shore Dr	8	18	01:59:22	00:02:49		101.357	2.295		48.9				
Spanish Main Dr	7	19	02:02:01	00:02:39		103.580	2.223		50.3				
Bow Channel Br (N)	6	20	02:05:03	00:03:02		106.139	2.559		50.6				
Harris Ch Br (N)	5	21	02:09:45	00:04:42		110.113	3.974		50.7				
Boca Chica Rd	4	22	02:15:54	00:06:09		115.891	5.778		56.4				
Rockland Dr	3	23	02:17:43	00:01:49		117.396	1.505		49.7				
Key Haven Blvd	2	24	02:21:46	00:04:03		121.303	3.907		57.9				-3
Cow Key Bridge (N)	1	25	02:23:12	00:01:26		122.432	1.129		47.3				-1
OVERALL				02:08:54	00:00:00		108.519	0.000	50.5			00:10:43	6

Note: Segment 25 (Dade County) is excluded from the "OVERALL" measurements.

**US - 1 SOUTHBOUND TRAVEL SPEEDS  
MONDAY, 03-11-19, EVENING**



ROAD/DIRECTION: US-1, Northbound  
 OBSERVERS: KK  
 WEATHER/CONDITIONS: Clear/Sunny  
 DAY/DATE: Tuesday, March 12, 2019

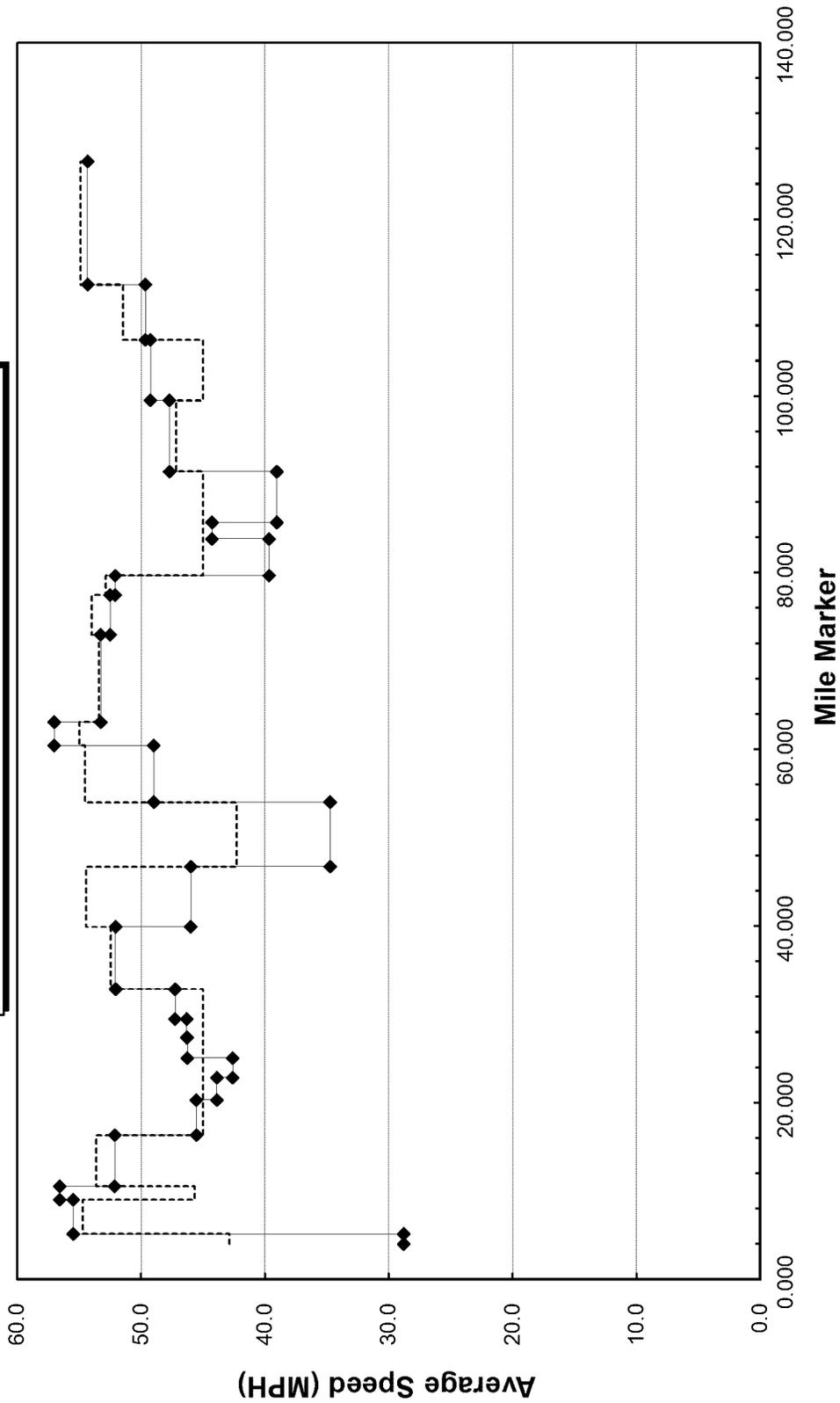
DEFINITION OF DELAY  
 Delay begins @ 5 mph  
 Delay ends @ 15 mph

TYPES OF DELAY  
 LT = Left Turn  
 RT = Right Turn  
 TS = Traffic Signal  
 DB = Drawbridge  
 CC = Congestion  
 CS = Construction  
 SB = School Bus  
 EV = Emergency Vehicle  
 AC = Accident  
 \* = Special Event

Control Point	Segment #	Begin	End	Cumulative Time	Segment Time	Excluded Time	Cumulative Distance	Segment Distance	Excluded Distance	Segment Travel Speed	Platoon Size	Delay Type	Segment Delay	Passing Score
Cow Key Bridge (N)				00:00:00	00:00:00		0.000	0.000						
Key Haven Blvd	1	00:02:22	00:02:22	00:02:22	00:02:22		1.136	1.136		28.8	3	TS	00:00:36	1
Rockland Dr	2	00:06:35	00:04:13	00:06:35	00:04:13		5.035	3.899		55.5				-2
Boca Chica Rd	3	00:08:11	00:01:36	00:08:11	00:01:36		6.543	1.508		56.6				
Harris Ch Br (N)	4	00:14:50	00:06:39	00:14:50	00:06:39		12.321	5.778		52.1				
Bow Channel Br (N)	5	00:20:05	00:05:15	00:20:05	00:05:15		16.305	3.984		45.5				
Spanish Main Dr	6	00:23:34	00:03:29	00:23:34	00:03:29		18.852	2.547		43.9				
E Shore Dr	7	00:26:42	00:03:08	00:26:42	00:03:08		21.076	2.224		42.6				
Torch-Ramrod Br (S)	8	00:29:42	00:03:00	00:29:42	00:03:00		23.389	2.313		46.3				
N Pine Ch Br (N)	9	00:32:22	00:02:40	00:32:22	00:02:40		25.448	2.059		46.3				
Long Beach Dr	10	00:36:43	00:04:21	00:36:43	00:04:21		28.873	3.425		47.2				1
7-Mile Br (S)	11	00:44:50	00:08:07	00:44:50	00:08:07		35.916	7.043		52.1				0
7-Mile Br (N)	12	00:53:44	00:08:54	00:53:44	00:08:54		42.733	6.817		46.0				
Coco Plum Dr	13	01:06:19	00:12:35	01:06:19	00:12:35		50.012	7.279		34.7	10+	TS(2)	00:01:30	17
Toms Harbor Ch Br (S)	14	01:14:11	00:07:52	01:14:11	00:07:52		56.432	6.420		49.0				-1
Long Key Br (S)	15	01:16:58	00:02:47	01:16:58	00:02:47		59.077	2.645		57.0				
Channel #2 Br (N)	16	01:28:07	00:11:09	01:28:07	00:11:09		68.971	9.894		53.2				
Lignum V Br (S)	17	01:33:15	00:05:08	01:33:15	00:05:08		73.461	4.490		52.5				
Teatable Relf Br (N)	18	01:35:49	00:02:34	01:35:49	00:02:34		75.689	2.228		52.1				
Whale Harbor Br (S)	19	01:42:04	00:06:15	01:42:04	00:06:15		79.818	4.129		39.6				
Snake Creek Br (N)	20	01:44:36	00:02:32	01:44:36	00:02:32		81.687	1.869		44.3				
Ocean Blvd	21	01:53:27	00:08:51	01:53:27	00:08:51		87.446	5.759		39.0	10+	TS	00:00:36	1
Atlantic Blvd	22	02:03:36	00:10:09	02:03:36	00:10:09		95.512	8.066		47.7	10+	TS	00:00:29	0
C-905	23	02:11:57	00:08:21	02:11:57	00:08:21		102.365	6.853		49.2	10+	TS(2)	00:00:12	6
County Line sign	24	02:19:31	00:07:34	02:19:31	00:07:34		108.624	6.259		49.6				-1
Card Sound Rd	25	02:34:55	00:15:24	02:34:55	00:15:24		122.564	13.940		54.3				-3
OVERALL				02:19:31	00:00:00		108.624	0.000		46.7			00:03:23	19

Note: Segment 25 (Dade County) is excluded from the "OVERALL" measurements.

**US - 1 NORTHBOUND TRAVEL SPEEDS  
TUESDAY, 03-12-19, MORNING**



◆ SEG. SPEED      - - - - - AVG. POSTED SPEED

ROAD/DIRECTION: US-1, Southbound  
 OBSERVERS: SR  
 WEATHER/CONDITIONS: Clear/Sunny  
 DAY/DATE: Tuesday, March 12, 2019

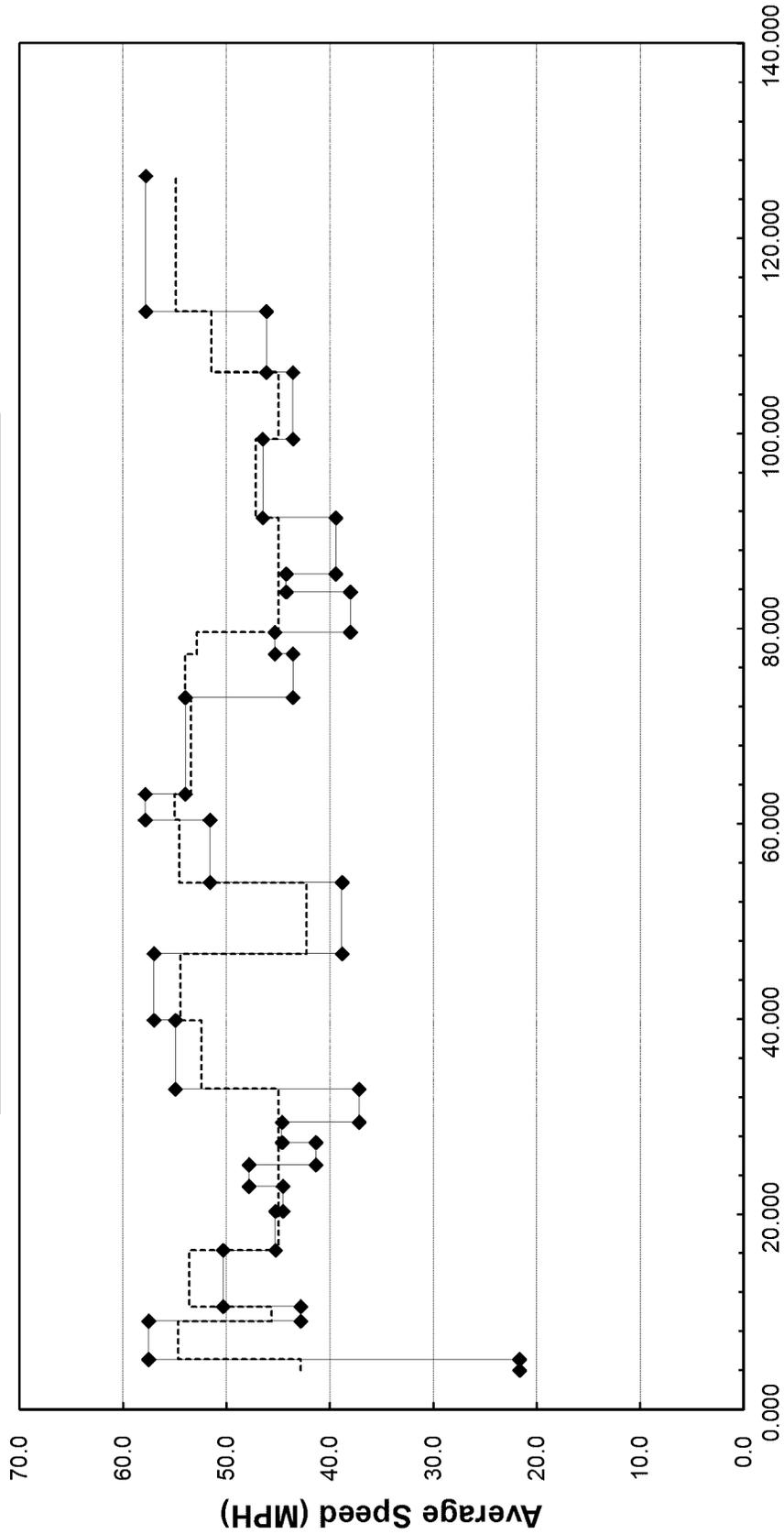
DEFINITION OF DELAY  
 Delay begins @ 5 mph  
 Delay ends @ 15 mph

TYPES OF DELAY  
 LT = Left Turn  
 RT = Right Turn  
 TS = Traffic Signal  
 DB = Drawbridge  
 CC = Congestion  
 CS = Construction  
 SB = School Bus  
 EV = Emergency Vehicle  
 AC = Accident  
 \* = Special Event

Control Point	Segment #	Begin	End	Cumulative Time	Segment Time	Excluded Time	Cumulative Distance	Segment Distance	Excluded Distance	Segment Travel Speed	Platoon Size	Delay Type	Segment Delay	Passing Score
Card Sound Rd				00:00:00	00:00:00		0.000	0.000						
County Line sign	25	1		00:14:26	00:14:26		13.900	13.900		57.8				
C-905	24	2		00:22:33	00:08:07		20.142	6.242		46.1				
Atlantic Blvd	23	3		00:31:57	00:09:24		26.970	6.828		43.6	10+	TS	00:00:29	0
Ocean Blvd	22	4		00:42:21	00:10:24		35.028	8.058		46.5	10+	TS	00:00:30	3
Snake Creek Br (N)	21	5		00:51:08	00:08:47		40.797	5.769		39.4	10+	TS	00:00:03	4
Whale Harbor Br (S)	20	6		00:53:39	00:02:31		42.653	1.856		44.2				
Teatable Reef Br (N)	19	7		01:00:10	00:06:31		46.782	4.129		38.0				
Lignum V Br (S)	18	8		01:03:07	00:02:57		49.011	2.229		45.3				
Channel #2 Br (N)	17	9		01:09:38	00:06:31	00:00:22	53.493	4.482	0.017	43.6	10+	CG,SB	00:00:47	
Long Key Br (S)	16	10		01:20:37	00:10:59		63.370	9.877		54.0				1
Toms Harbor Ch Br (S)	15	11		01:23:22	00:02:45		66.021	2.651		57.8				
Coco Plum Dr	14	12		01:30:50	00:07:28		72.442	6.421		51.6	7	TS	00:00:07	
7-Mile Br (N)	13	13		01:42:05	00:11:15		79.723	7.281		38.8	7	TS(3)	00:01:16	7
7-Mile Br (S)	12	14		01:49:15	00:07:10		86.531	6.808		57.0				
Long Beach Dr	11	15		01:56:57	00:07:42		93.578	7.047		54.9				1
N Pine Ch Br (N)	10	16		02:02:29	00:05:32		97.005	3.427		37.2	10+	TS	00:00:50	
Torch-Ramrod Br (S)	9	17		02:05:14	00:02:45		99.051	2.046		44.6				
E Shore Dr	8	18		02:08:34	00:03:20		101.348	2.297		41.3				
Spanish Main Dr	7	19		02:11:21	00:02:47		103.567	2.219		47.8				
Bow Channel Br (N)	6	20		02:14:48	00:03:27		106.128	2.561		44.5				
Harris Ch Br (N)	5	21		02:20:04	00:05:16		110.101	3.973		45.3				
Boca Chica Rd	4	22		02:26:58	00:06:54		115.887	5.786		50.3				
Rockland Dr	3	23		02:29:04	00:02:06		117.386	1.499		42.8				-1
Key Haven Blvd	2	24		02:33:09	00:04:05		121.301	3.915		57.5				-1
Cow Key Bridge (N)	1	25		02:36:16	00:03:07		122.426	1.125		21.7	10+	TS	00:00:48	3
OVERALL					02:21:50	00:00:22		108.526	0.017	46.0				17

Note: Segment 25 (Dade County) is excluded from the "OVERALL" measurements.

**US - 1 SOUTHBOUND TRAVEL SPEEDS  
TUESDAY, 03-12-19, EVENING**



**Mile Marker**



ROAD/DIRECTION: US-1, Northbound  
 OBSERVERS: KK  
 WEATHER/CONDITIONS: Cloudy  
 DAY/DATE: Wednesday, March 13, 2019

DEFINITION OF DELAY  
 Delay begins @ 5 mph  
 Delay ends @ 15 mph

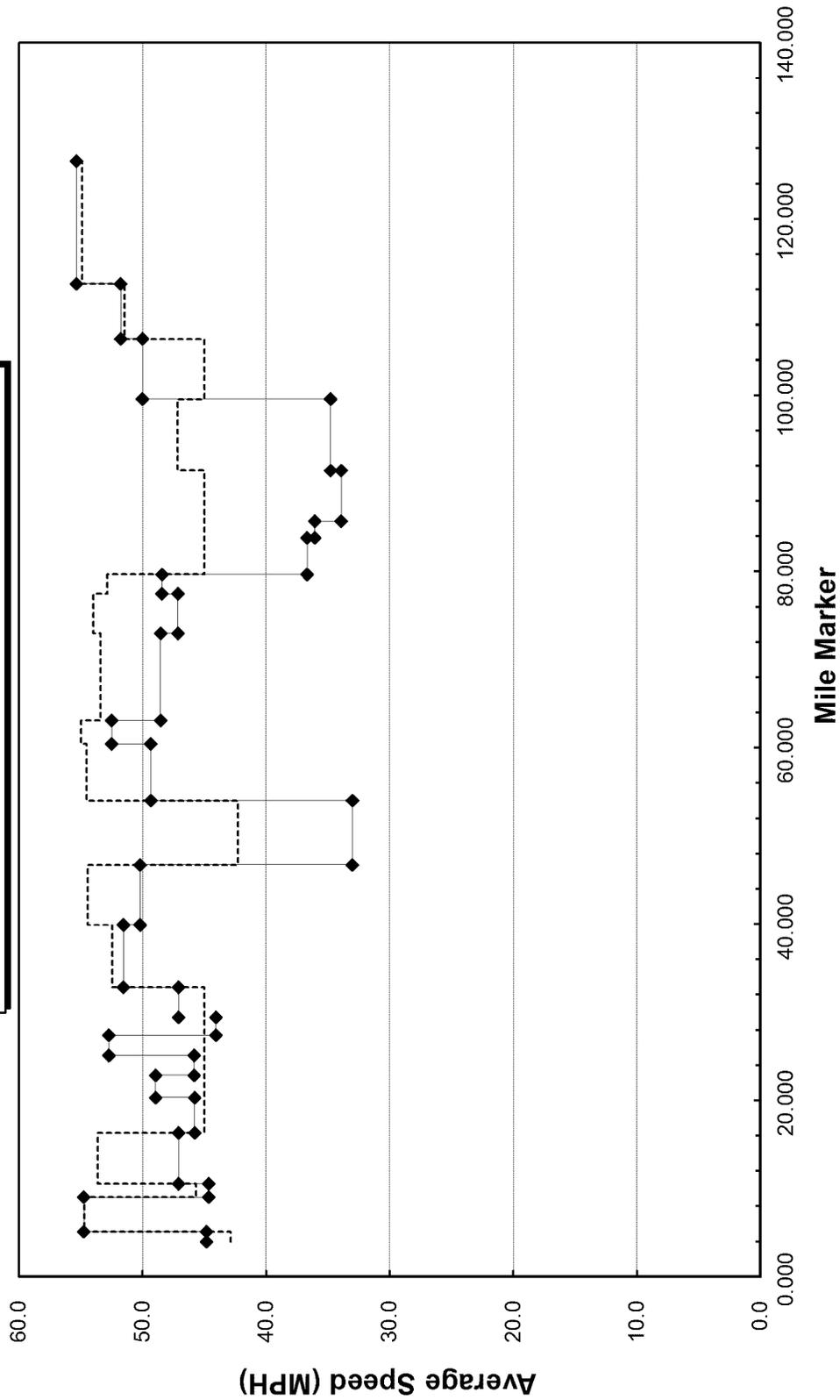
TYPES OF DELAY  
 LT = Left Turn  
 RT = Right Turn  
 TS = Traffic Signal  
 DB = Drawbridge  
 CG = Congestion

CS = Construction  
 SB = School Bus  
 EV = Emergency Vehicle  
 AC = Accident  
 \* = Special Event

Control Point	End Segment #	Cumulative Time	Segment Time	Excluded Time	Cumulative Distance	Segment Distance	Excluded Distance	Segment Travel Speed	Platoon Size	Delay Type	Segment Delay	Passing Score
Cow Key Bridge (N)	Begin	00:00:00	00:00:00		0.000	0.000						
Key Haven Blvd	1	00:01:31	00:01:31		1.133	1.133		44.8				5
Rockland Dr	2	00:05:47	00:04:16		5.026	3.893		54.7				
Boca Chica Rd	3	00:07:49	00:02:02		6.539	1.513		44.6				-3
Harris Ch Br (N)	4	00:15:12	00:07:23		12.332	5.793		47.1				
Bow Channel Br (N)	5	00:20:25	00:05:13		16.313	3.981		45.8				
Spanish Main Dr	6	00:23:32	00:03:07		18.855	2.542		48.9				
E Shore Dr	7	00:26:27	00:02:55		21.083	2.228		45.8				
Torch-Ramrod Br (S)	8	00:29:05	00:02:38		23.397	2.314		52.7				
N Pine Ch Br (N)	9	00:31:52	00:02:47		25.441	2.044		44.1				
Long Beach Dr	10	00:36:13	00:04:21		28.854	3.413		47.1				
7-Mile Br (S)	11	00:44:26	00:08:13		35.913	7.059		51.5				-2
7-Mile Br (N)	12	00:52:34	00:08:08		42.717	6.804		50.2				
Coco Plum Dr	13	01:05:49	00:13:15		50.004	7.287		33.0	10+	TS(2)	00:01:20	0
Toms Harbor Ch Br (S)	14	01:13:39	00:07:50		56.441	6.437		49.3				-1
Long Key Br (S)	15	01:16:41	00:03:02		59.094	2.653		52.5				
Channel #2 Br (N)	16	01:28:54	00:12:13		68.975	9.881		48.5				
Lignum V Br (S)	17	01:34:37	00:05:43		73.465	4.490		47.1				
Teatable Relf Br (N)	18	01:37:23	00:02:46		75.698	2.233		48.4				
Whale Harbor Br (S)	19	01:44:09	00:06:46		79.835	4.137		36.7				1
Snake Creek Br (N)	20	01:47:15	00:03:06		81.698	1.863		36.1				
Ocean Blvd	21	01:57:27	00:10:12		87.462	5.764		33.9	10+	CG	00:00:46	-1
Atlantic Blvd	22	02:11:23	00:13:56		95.543	8.081		34.8	10+	TS	00:04:43	0
C-905	23	02:19:36	00:08:13		102.392	6.849		50.0	10+	TS	00:00:03	7
County Line sign	24	02:26:51	00:07:15		108.645	6.253		51.7				
Card Sound Rd	25	02:41:56	00:15:05		122.556	13.911		55.3				-2
OVERALL			02:26:51	00:00:00	108.645	0.000		44.4			00:06:52	4

Note: Segment 25 (Dade County) is excluded from the "OVERALL" measurements.

**US - 1 NORTHBOUND TRAVEL SPEEDS  
WEDNESDAY, 03-13-19, MORNING**



◆ SEG. SPEED      - - - - - AVG. POSTED SPEED

ROAD/DIRECTION: US-1, Southbound  
 OBSERVERS: SR  
 WEATHER/CONDITIONS: Cloudy  
 DAY/DATE: Wednesday, March 13, 2019

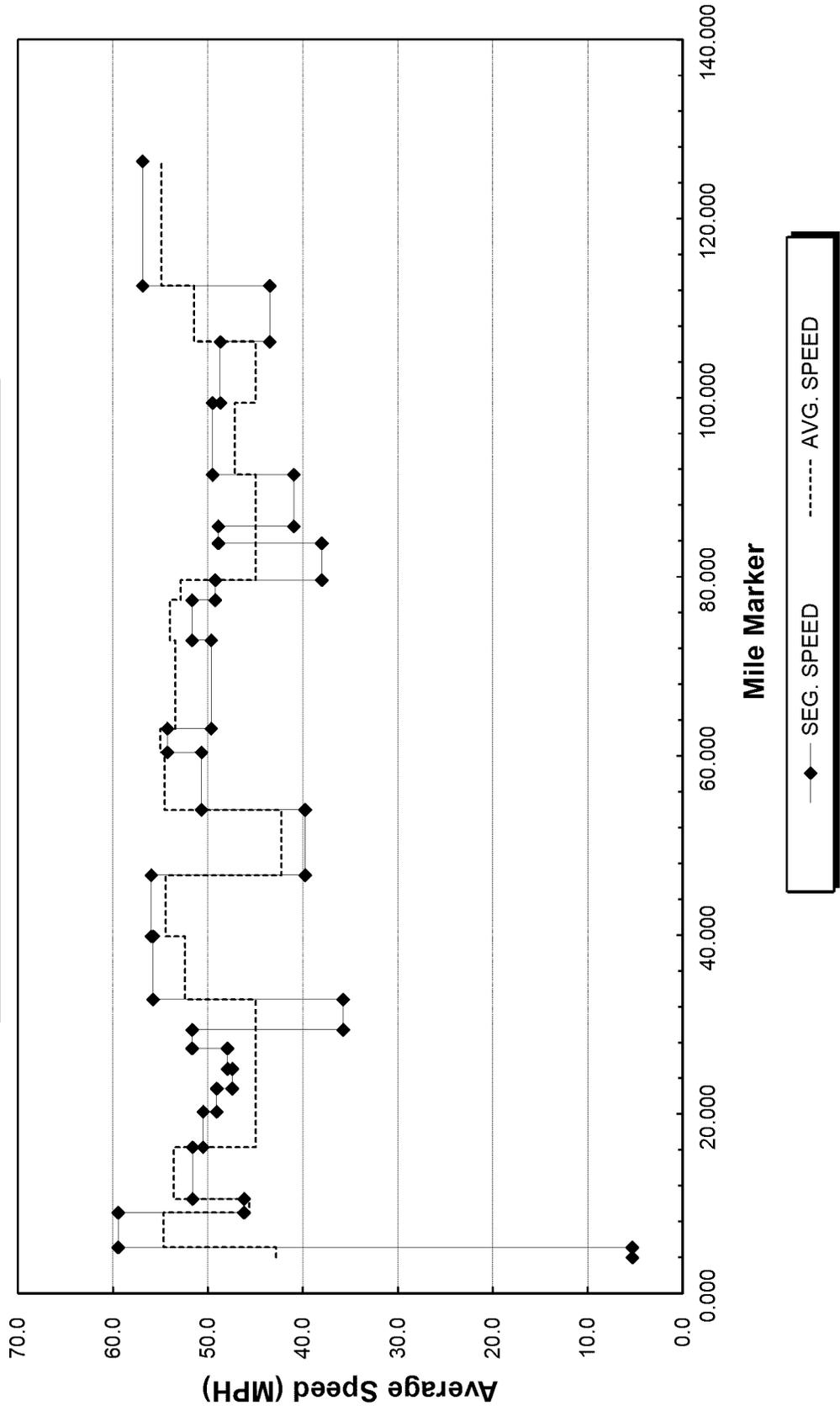
DEFINITION OF DELAY  
 Delay begins @ 5 mph  
 Delay ends @ 15 mph

TYPES OF DELAY  
 LT = Left Turn  
 RT = Right Turn  
 TS = Traffic Signal  
 DB = Drawbridge  
 CG = Congestion  
 CS = Construction  
 SB = School Bus  
 EV = Emergency Vehicle  
 AC = Accident  
 \* = Special Event

Control Point	End Segment #	Cumulative Time	Segment Time	Excluded Time	Cumulative Distance	Segment Distance	Excluded Distance	Segment Travel Speed	Platoon Size	Delay Type	Segment Delay	Passing Score
Card Sound Rd	Begin	00:00:00	00:00:00		0.000	0.000						
County Line sign	25	00:14:40	00:14:40		13.902	13.902		56.9				
C-905	24	00:23:16	00:08:36		20.137	6.235		43.5				
Atlantic Blvd	23	00:31:42	00:08:26		26.983	6.846		48.7				6
Ocean Blvd	22	00:41:27	00:09:45		35.028	8.045		49.5				2
Snake Creek Br (N)	21	00:49:54	00:08:27		40.794	5.766		40.9	8	TS	00:00:45	2
Whale Harbor Br (S)	20	00:52:11	00:02:17		42.655	1.861		48.9				
Teatable Relf Br (N)	19	00:58:42	00:06:31		46.784	4.129		38.0	10+	CG	00:00:17	
Lignum V Br (S)	18	01:01:25	00:02:43		49.013	2.229		49.2				
Channel #2 Br (N)	17	01:06:38	00:05:13		53.506	4.493		51.7				
Long Key Br (S)	16	01:18:34	00:11:56		63.381	9.875		49.7				
Toms Harbor Ch Br (S)	15	01:21:30	00:02:56		66.034	2.653		54.3				
Coco Plum Dr	14	01:29:05	00:07:35		72.440	6.406		50.7				
7-Mile Br (N)	13	01:40:05	00:11:00		79.728	7.288		39.8	10+	TS	00:00:30	4
7-Mile Br (S)	12	01:47:23	00:07:18		86.540	6.812		56.0				
Long Beach Dr	11	01:54:58	00:07:35		93.590	7.050		55.8				
N Pine Ch Br (N)	10	02:00:42	00:05:44		97.007	3.417		35.8	10+	TS	00:00:46	
Torch-Ramrod Br (S)	9	02:03:05	00:02:23		99.060	2.053		51.7				
E Shore Dr	8	02:06:57	00:02:52		101.351	2.291		48.0				
Spanish Main Dr	7	02:08:46	00:02:49		103.577	2.226		47.4				
Bow Channel Br (N)	6	02:11:54	00:03:08		106.141	2.564		49.1				
Harris Ch Br (N)	5	02:16:37	00:04:43		110.112	3.971		50.5				
Boca Chica Rd	4	02:23:20	00:06:43		115.890	5.778		51.6				
Rockland Dr	3	02:25:18	00:01:58		117.404	1.514		46.2				
Key Haven Blvd	2	02:29:14	00:03:56		121.300	3.896		59.4				-7
Cow Key Bridge (N)	1	02:42:02	00:12:48		122.432	1.132		5.3	10+	TS	00:12:14	5
OVERALL			02:27:22	00:00:00		108.530	0.000	44.2			00:14:32	12

Note: Segment 25 (Dade County) is excluded from the "OVERALL" measurements.

**US - 1 SOUTHBOUND TRAVEL SPEEDS  
WEDNESDAY, 03-13-19, EVENING**



ROAD/DIRECTION: US-1, Northbound  
 OBSERVERS: KK  
 WEATHER/CONDITIONS: Clear/Sunny  
 DAY/DATE: Thursday, March 14, 2019

DEFINITION OF DELAY  
 Delay begins @ 5 mph  
 Delay ends @ 15 mph

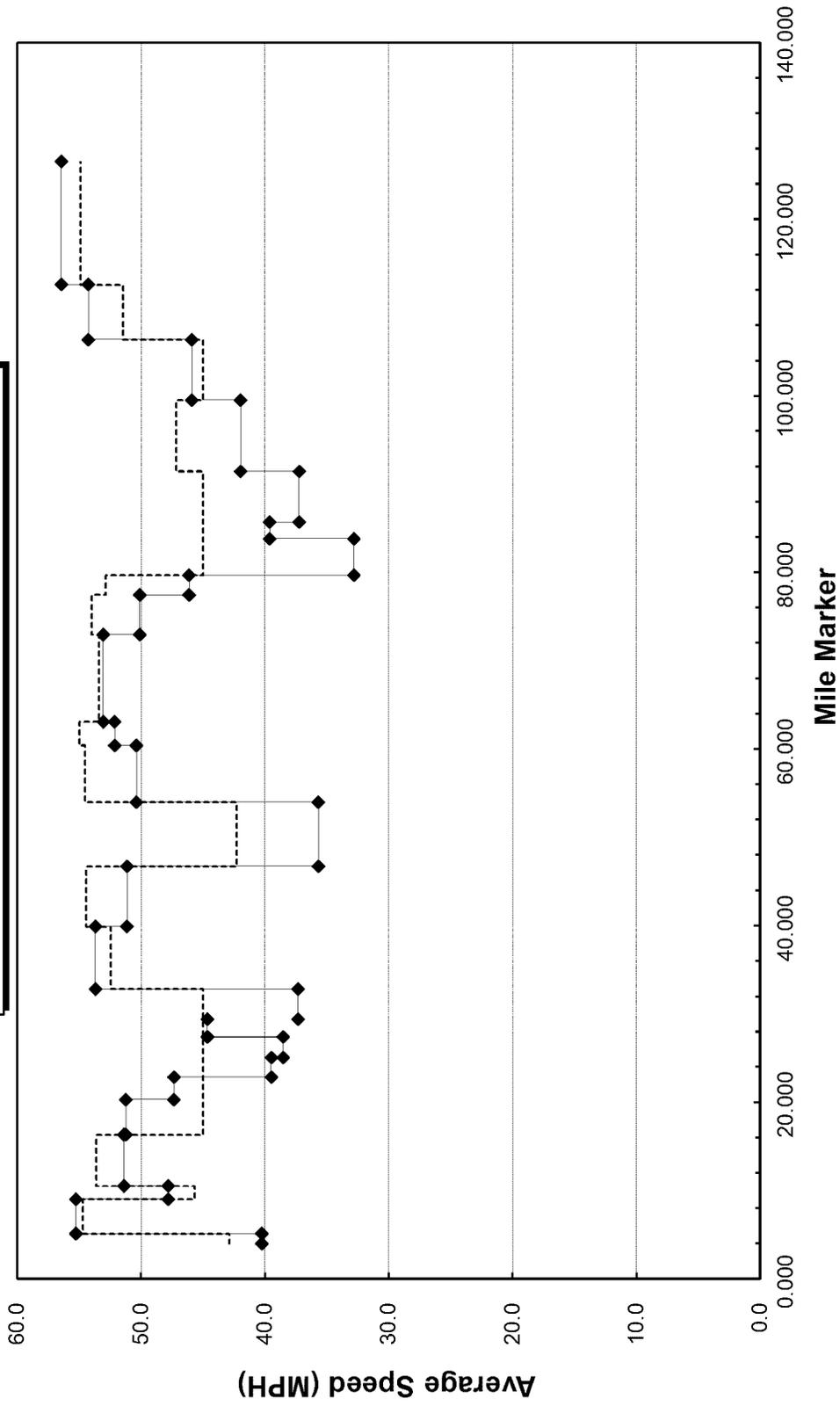
TYPES OF DELAY  
 LT = Left Turn  
 RT = Right Turn  
 TS = Traffic Signal  
 DB = Drawbridge  
 CG = Congestion

CS = Construction  
 SB = School Bus  
 EV = Emergency Vehicle  
 AC = Accident  
 \* = Special Event

Control Point	Segment #	End Segment	Cumulative Time	Segment Time	Excluded Time	Cumulative Distance	Segment Distance	Excluded Distance	Segment Travel Speed	Platoon Size	Delay Type	Segment Delay	Passing Score
Cow Key Bridge (N)	Begin	00:00:00	00:00:00	00:00:00	0.000	0.000	0.000						
Key Haven Blvd	1	00:01:41	00:01:41	00:01:41		1.129	1.129		40.2				0
Rockland Dr	2	00:05:55	00:04:14	00:04:14		5.028	3.899		55.3				-2
Boca Chica Rd	3	00:07:49	00:01:54	00:01:54		6.541	1.513		47.8				
Harris Ch Br (N)	4	00:14:34	00:06:45	00:06:45		12.322	5.781		51.4				
Bow Channel Br (N)	5	00:19:14	00:04:40	00:04:40		16.305	3.983		51.2				
Spanish Main Dr	6	00:22:27	00:03:13	00:03:13		18.843	2.538		47.3				
E Shore Dr	7	00:25:50	00:03:23	00:03:23		21.070	2.227		39.5				
Torch-Ramrod Br (S)	8	00:29:27	00:03:37	00:03:37		23.392	2.322		38.5				
N Pine Ch Br (N)	9	00:32:12	00:02:45	00:02:45		25.438	2.046		44.6				
Long Beach Dr	10	00:37:42	00:05:30	00:05:30		28.859	3.421		37.3	5	TS	00:00:25	1
7-Mile Br (S)	11	00:45:35	00:07:53	00:07:53		35.914	7.055		53.7				3
7-Mile Br (N)	12	00:53:34	00:07:59	00:07:59		42.717	6.803		51.1				
Coco Plum Dr	13	01:05:48	00:12:14	00:12:14		49.990	7.273		35.7	10+	TS(3)	00:01:25	10
Toms Harbor Ch Br (S)	14	01:13:27	00:07:39	00:07:39		56.413	6.423		50.4	10+	TS	00:00:03	-1
Long Key Br (S)	15	01:16:31	00:03:04	00:03:04		59.077	2.664		52.1				
Channel #2 Br (N)	16	01:27:41	00:11:10	00:11:10		68.952	9.875		53.1				
Lignum V Br (S)	17	01:33:04	00:05:23	00:05:23		73.448	4.496		50.1				
Teatable Reif Br (N)	18	01:35:58	00:02:54	00:02:54		75.677	2.229		46.1				
Whale Harbor Br (S)	19	01:43:32	00:07:34	00:07:34		79.816	4.139		32.8	10+	CG	00:02:25	
Snake Creek Br (N)	20	01:46:23	00:02:51	00:02:51		81.697	1.881		39.6	10+	CG	00:00:12	
Ocean Blvd	21	01:55:40	00:09:17	00:09:17		87.457	5.760		37.2				-8
Atlantic Blvd	22	02:07:12	00:11:32	00:11:32		95.519	8.062		41.9	10+	TS	00:00:57	-5
C-905	23	02:16:09	00:08:57	00:08:57		102.365	6.846		45.9	10+	TS-Ped	00:00:21	-4
County Line sign	24	02:23:04	00:06:55	00:06:55		108.617	6.252		54.2				
Card Sound Rd	25	02:37:52	00:14:48	00:14:48		122.537	13.920		56.4				-2
OVERALL			02:23:04	00:00:00		0.000	108.617		45.6			00:05:48	-8

Note: Segment 25 (Dade County) is excluded from the "OVERALL" measurements.

**US - 1 NORTHBOUND TRAVEL SPEEDS  
THURSDAY, 03-14-19, MORNING**



◆ SEG. SPEED      - - - - - AVG. POSTED SPEED

ROAD/DIRECTION: US-1, Southbound  
 OBSERVERS: SR  
 WEATHER/CONDITIONS: Cloudy  
 DAY/DATE: Thursday, March 14, 2019

DEFINITION OF DELAY  
 Delay begins @ 5 mph  
 Delay ends @ 15 mph

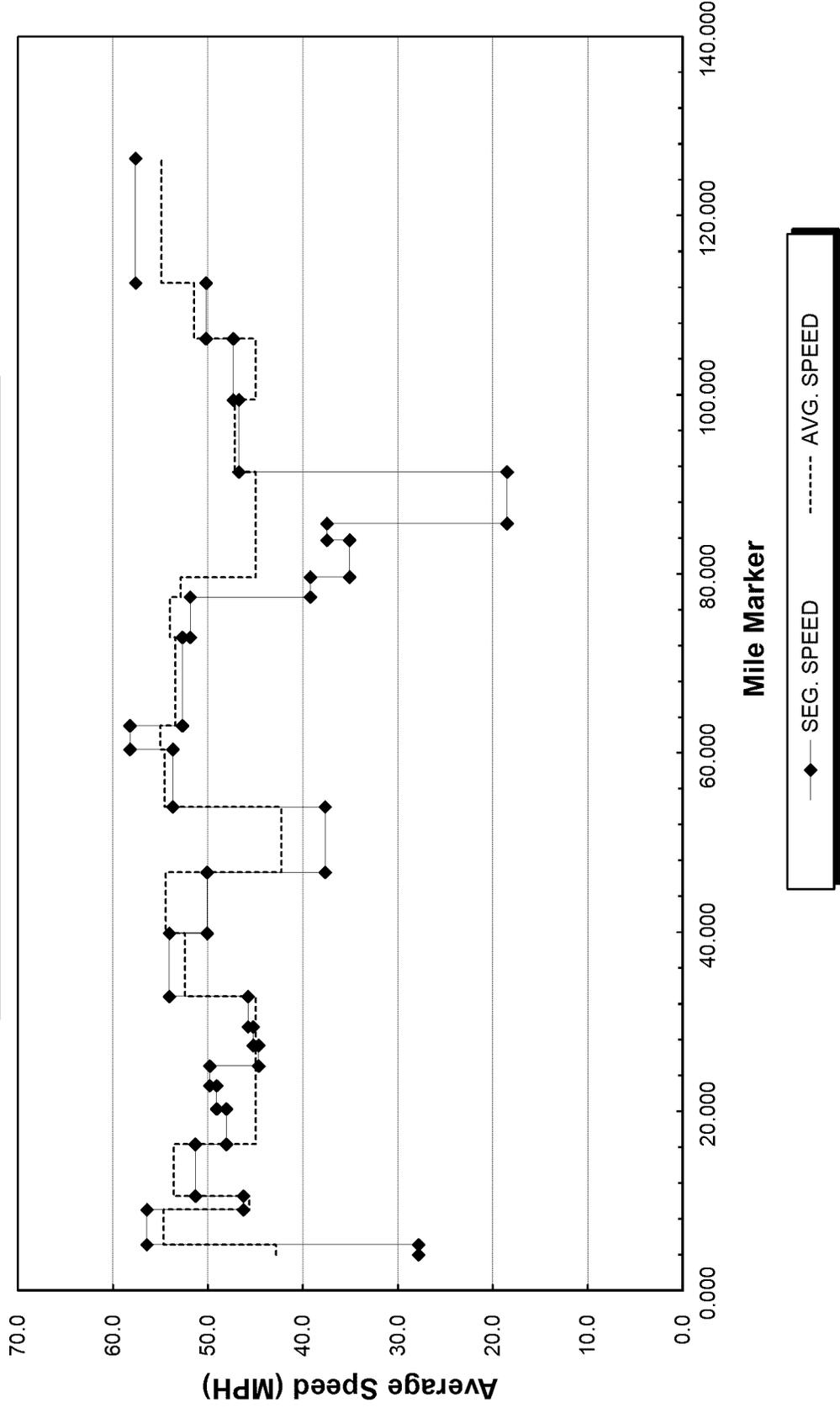
TYPES OF DELAY  
 LT = Left Turn  
 RT = Right Turn  
 TS = Traffic Signal  
 DB = Drawbridge  
 CG = Congestion

CS = Construction  
 SB = School Bus  
 EV = Emergency Vehicle  
 AC = Accident  
 \* = Special Event

Control Point	Segment #	End Segment	Cumulative Time	Segment Time	Excluded Time	Cumulative Distance	Segment Distance	Excluded Distance	Segment Travel Speed	Platoon Size	Delay Type	Segment Delay	Passing Score													
														Begin	25 1	24 2	23 3	22 4	21 5	20 6	19 7	18 8	17 9	16 10	15 11	14 12
Card Sound Rd		Begin	00:00:00	00:00:00		0.000	0.000																			
County Line sign	25 1	00:14:29	00:14:29	00:14:29		13.908	13.908		57.6																	
C-905	24 2	00:21:56	00:07:27	00:07:27		20.141	6.233		50.2																	
Atlantic Blvd	23 3	00:30:36	00:08:40	00:08:40		26.978	6.837		47.3																	
Ocean Blvd	22 4	00:40:56	00:10:20	00:10:20		35.029	8.051		46.7	8	TS	00:00:06														
Snake Creek Br (N)	21 5	01:00:14	00:19:18	00:19:18	00:01:49	40.794	5.765	0.374	18.5	10+	TS,SZ,CG(2)	00:09:55														
Whale Harbor Br (S)	20 6	01:03:13	00:02:59	00:02:59		42.657	1.863		37.5																	
Teatable Relif Br (N)	19 7	01:10:15	00:07:02	00:07:02		46.770	4.113		35.1	10+	CG	00:00:07														
Lignum V Br (S)	18 8	01:13:40	00:03:25	00:03:25		49.003	2.233		39.2																	
Channel #2 Br (N)	17 9	01:18:51	00:05:11	00:05:11		53.482	4.479		51.8																	
Long Key Br (S)	16 10	01:30:06	00:11:15	00:11:15		63.361	9.879		52.7																	
Toms Harbor Ch Br (S)	15 11	01:32:50	00:02:44	00:02:44		66.012	2.651		58.2																	
Coco Plum Dr	14 12	01:40:00	00:07:10	00:07:10		72.426	6.414		53.7																	
7-Mile Br (N)	13 13	01:51:37	00:11:37	00:11:37		79.713	7.287		37.6	10+	TS(2)	00:01:13														
7-Mile Br (S)	12 14	01:59:46	00:08:09	00:08:09		86.515	6.802		50.1																	
Long Beach Dr	11 15	02:07:35	00:07:49	00:07:49		93.558	7.043		54.1																	
N Pine Ch Br (N)	10 16	02:12:05	00:04:30	00:04:30		96.990	3.432		45.8																	
Torch-Ramrod Br (S)	9 17	02:14:48	00:02:43	00:02:43		99.038	2.048		45.2																	
E Shore Dr	8 18	02:17:53	00:03:05	00:03:05		101.333	2.295		44.7																	
Spanish Main Dr	7 19	02:20:34	00:02:41	00:02:41		103.560	2.227		49.8																	
Bow Channel Br (N)	6 20	02:23:42	00:03:08	00:03:08		106.124	2.564		49.1																	
Harris Ch Br (N)	5 21	02:28:39	00:04:57	00:04:57		110.089	3.965		48.1																	
Boca Chica Rd	4 22	02:35:25	00:06:46	00:06:46		115.876	5.787		51.3																	
Rockland Dr	3 23	02:37:22	00:01:57	00:01:57		117.379	1.503		46.2																	
Key Haven Blvd	2 24	02:41:31	00:04:09	00:04:09		121.282	3.903		56.4																	
Cow Key Bridge (N)	1 25	02:43:57	00:02:26	00:02:26	00:01:49	122.411	1.129	0.374	27.8	10+	TS	00:00:31														
OVERALL						108.503			43.9			00:11:52														

Note: Segment 25 (Dade County) is excluded from the "OVERALL" measurements.

**US - 1 SOUTHBOUND TRAVEL SPEEDS  
THURSDAY, 03-14-19, EVENING**



ROAD/DIRECTION: US-1, Northbound  
 OBSERVERS: KK  
 WEATHER/CONDITIONS: Cloudy/Rainy  
 DAY/DATE: Friday, March 15, 2019

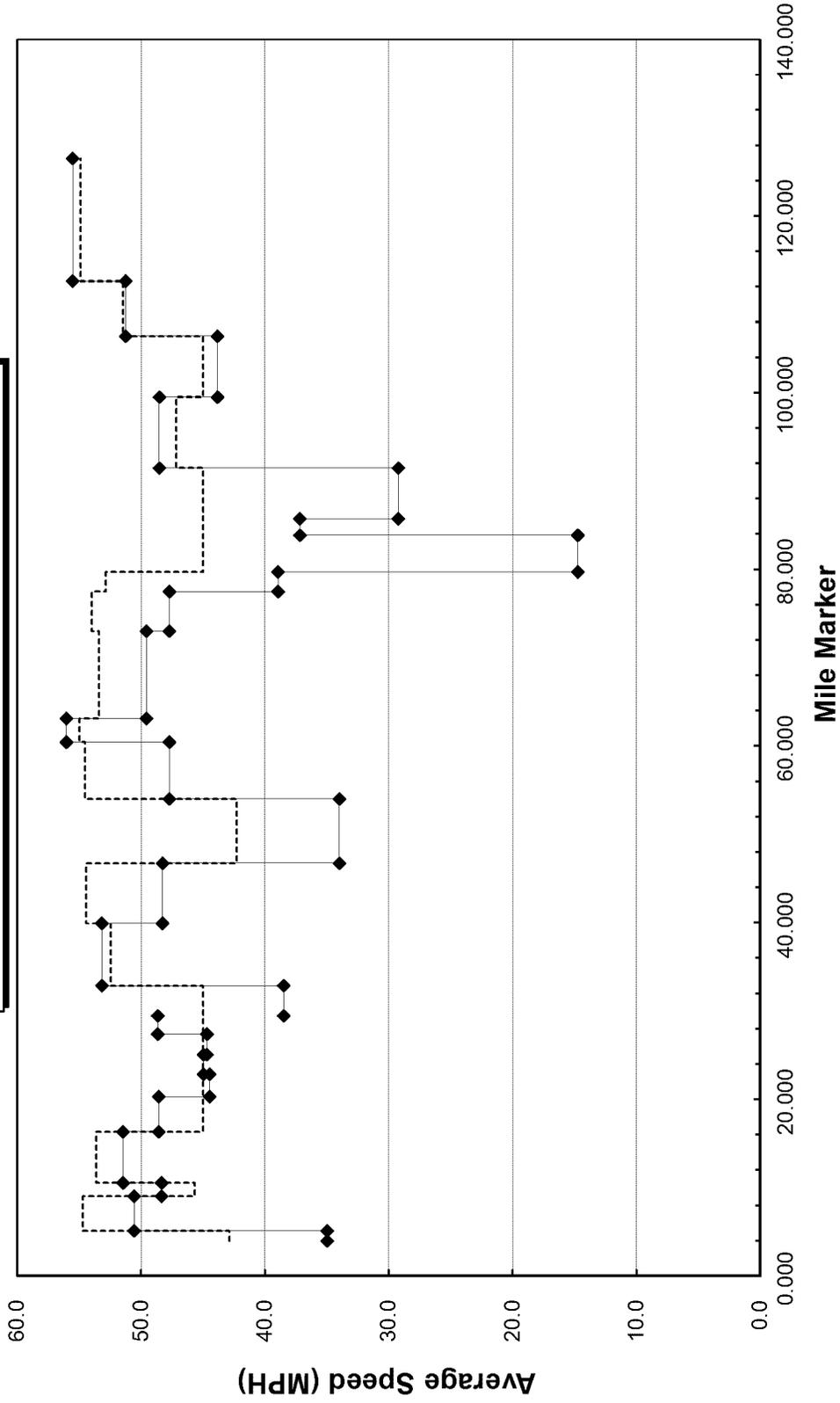
DEFINITION OF DELAY  
 Delay begins @ 5 mph  
 Delay ends @ 15 mph

TYPES OF DELAY  
 LT = Left Turn  
 RT = Right Turn  
 TS = Traffic Signal  
 DB = Drawbridge  
 CG = Congestion  
 CS = Construction  
 SB = School Bus  
 EV = Emergency Vehicle  
 AC = Accident  
 \* = Special Event

Control Point	End Segment #	Cumulative Time	Segment Time	Excluded Time	Cumulative Distance	Segment Distance	Excluded Distance	Segment Travel Speed	Platoon Size	Delay Type	Segment Delay	Passing Score
Cow Key Bridge (N)	Begin	00:00:00	00:00:00		0.000	0.000						
Key Haven Blvd	1	00:01:56	00:01:56		1.126	1.126		34.9	1	TS	00:00:10	
Rockland Dr	2	00:06:34	00:04:38		5.030	3.904		50.6				1
Boca Chica Rd	3	00:08:27	00:01:53		6.547	1.517		48.3				
Harris Ch Br (N)	4	00:15:12	00:06:45		12.335	5.788		51.4				
Bow Channel Br (N)	5	00:20:06	00:04:54		16.301	3.966		48.6				
Spanish Main Dr	6	00:23:32	00:03:26		18.845	2.544		44.5				
E Shore Dr	7	00:26:30	00:02:58		21.069	2.224		45.0				
Torch-Ramrod Br (S)	8	00:29:37	00:03:07		23.389	2.320		44.7				
N Pine Ch Br (N)	9	00:32:09	00:02:32		25.443	2.054		48.6				
Long Beach Dr	10	00:37:29	00:05:20		28.864	3.421		38.5				3
7-Mile Br (S)	11	00:45:27	00:07:58		35.920	7.056		53.1				1
7-Mile Br (N)	12	00:53:55	00:08:28		42.730	6.810		48.3				
Coco Plum Dr	13	01:06:46	00:12:51		50.007	7.277		34.0	10+	TS	00:01:59	4
Toms Harbor Ch Br (S)	14	01:14:51	00:08:05		56.434	6.427		47.7				
Long Key Br (S)	15	01:17:42	00:02:51		59.096	2.662		56.0				
Channel #2 Br (N)	16	01:29:41	00:11:59		68.992	9.896		49.5				
Lignum V Br (S)	17	01:35:20	00:05:39		73.485	4.493		47.7				
Teatable Reif Br (N)	18	01:38:46	00:03:26		75.713	2.228		38.9	10+	CG	00:00:37	
Whale Harbor Br (S)	19	01:55:38	00:16:52		79.855	4.142		14.7	10+	CG(3)	00:12:24	
Snake Creek Br (N)	20	01:58:38	00:03:00		81.713	1.858		37.2				
Ocean Blvd	21	02:10:28	00:11:50		87.475	5.762		29.2	10+	LT,CG,TS(2)	00:03:46	4
Atlantic Blvd	22	02:20:26	00:09:58		95.536	8.061		48.5	10+	TS(2)	00:00:20	0
C-905	23	02:29:48	00:09:22		102.380	6.844		43.8				0
County Line sign	24	02:37:07	00:07:19		108.628	6.248		51.2				
Card Sound Rd	25	02:52:08	00:15:01		122.525	13.897		55.5				2
OVERALL			02:37:07	00:00:00		108.628	0.000	41.5			00:19:16	15

Note: Segment 25 (Dade County) is excluded from the "OVERALL" measurements.

**US - 1 NORTHBOUND TRAVEL SPEEDS  
FRIDAY, 03-15-19, MORNING**



◆— SEG. SPEED    - - - - - AVG. POSTED SPEED

ROAD/DIRECTION: US-1, Southbound  
 OBSERVERS: SR  
 WEATHER/CONDITIONS: Cloudy  
 DAY/DATE: Friday, March 15, 2019

DEFINITION OF DELAY  
 Delay begins @ 5 mph  
 Delay ends @ 15 mph

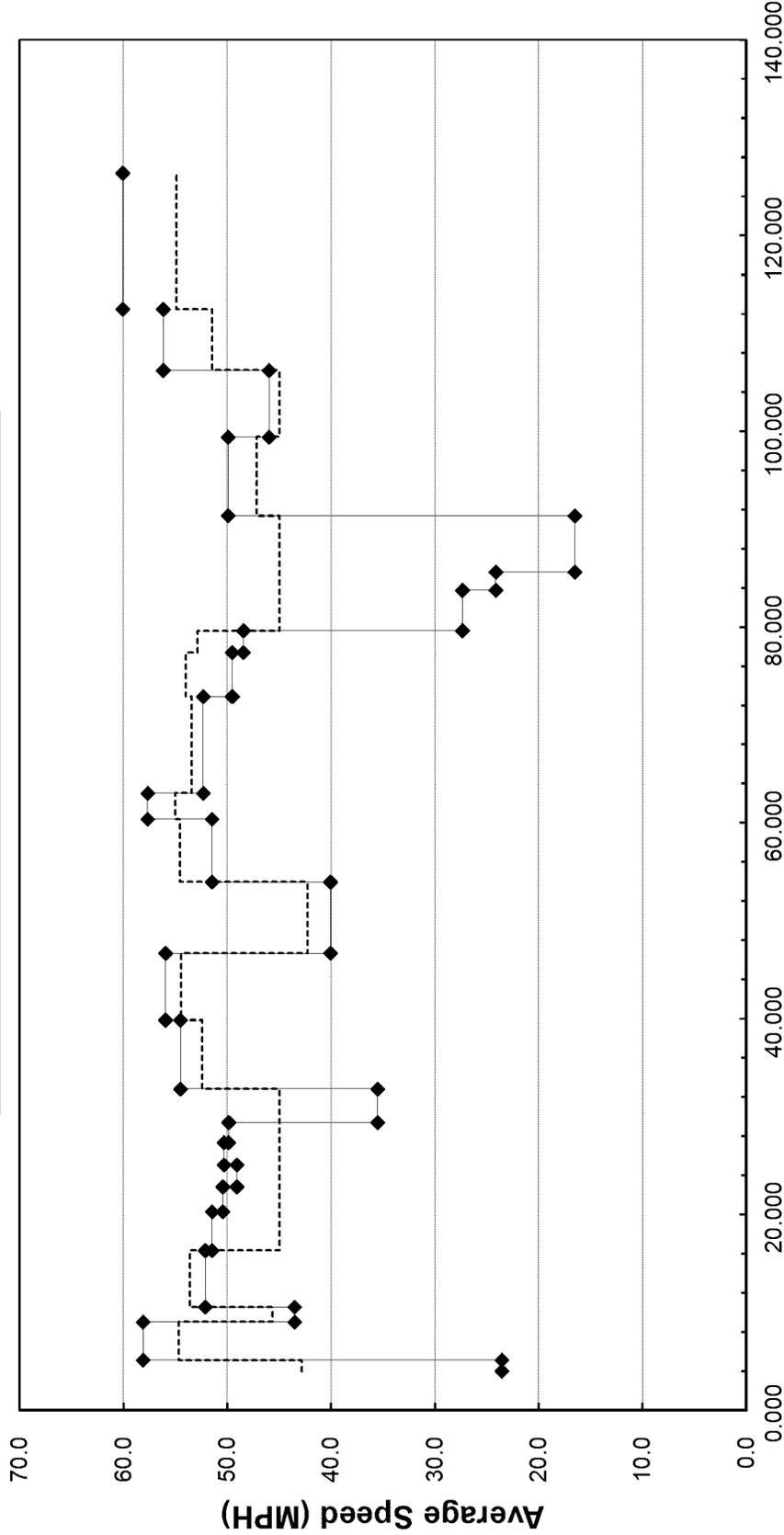
TYPES OF DELAY  
 LT = Left Turn  
 RT = Right Turn  
 TS = Traffic Signal  
 DB = Drawbridge  
 CG = Congestion

CS = Construction  
 SB = School Bus  
 EV = Emergency Vehicle  
 AC = Accident  
 \* = Special Event

Control Point	Segment #	End Segment	Cumulative Time	Segment Time	Excluded Time	Cumulative Distance	Segment Distance	Excluded Distance	Segment Travel Speed	Platoon Size	Delay Type	Segment Delay	Passing Score													
														Begin	25 1	24 2	23 3	22 4	21 5	20 6	19 7	18 8	17 9	16 10	15 11	14 12
Card Sound Rd		Begin	00:00:00	00:00:00		0.000	0.000																			
County Line sign		25 1	00:13:53	00:13:53		13.899	13.899		60.1																	
C-905		24 2	00:20:33	00:06:40		20.139	6.240		56.2																	
Atlantic Blvd		23 3	00:29:28	00:08:55		26.973	6.834		46.0	10+	TS	00:00:10	1													
Ocean Blvd		22 4	00:39:08	00:09:40		35.018	8.045		49.9				0													
Snake Creek Br (N)		21 5	01:00:04	00:20:56		40.782	5.764		16.5	10+	TS,CG(5)	00:09:17	-2													
Whale Harbor Br (S)		20 6	01:04:42	00:04:38		42.645	1.863		24.1	10+	CG	00:01:46														
Teatable Relif Br (N)		19 7	01:13:44	00:09:02		46.762	4.117		27.3	10+	CG(2)	00:01:10														
Lignum V Br (S)		18 8	01:16:30	00:02:46		48.996	2.234		48.4																	
Channel #2 Br (N)		17 9	01:21:56	00:05:26		53.479	4.483		49.5	5	LT	00:00:07														
Long Key Br (S)		16 10	01:33:16	00:11:20		63.360	9.881		52.3																	
Toms Harbor Ch Br (S)		15 11	01:36:02	00:02:46		66.019	2.659		57.7																	
Coco Plum Dr		14 12	01:43:30	00:07:28		72.424	6.405		51.5	7	TS	00:00:20	3													
7-Mile Br (N)		13 13	01:54:25	00:10:55		79.712	7.288		40.1	7	TS(2)	00:00:37	4													
7-Mile Br (S)		12 14	02:01:43	00:07:18		86.520	6.808		56.0																	
Long Beach Dr		11 15	02:09:28	00:07:45		93.559	7.039		54.5																	
N Pine Ch Br (N)		10 16	02:15:15	00:05:47		96.982	3.423		35.5	10+	TS	00:00:27	-6													
Torch-Ramrod Br (S)		9 17	02:17:43	00:02:28		99.032	2.050		49.9																	
E Shore Dr		8 18	02:20:28	00:02:45		101.338	2.306		50.3																	
Spanish Main Dr		7 19	02:23:11	00:02:43		103.560	2.222		49.1																	
Bow Channel Br (N)		6 20	02:26:13	00:03:02		106.110	2.550		50.4																	
Harris Ch Br (N)		5 21	02:30:51	00:04:38		110.084	3.974		51.5																	
Boca Chica Rd		4 22	02:37:30	00:06:39		115.861	5.777		52.1																	
Rockland Dr		3 23	02:39:35	00:02:05		117.372	1.511		43.5																	
Key Haven Blvd		2 24	02:43:36	00:04:01		121.262	3.890		58.1																	
Cow Key Bridge (N)		1 25	02:46:30	00:02:54		122.400	1.138		23.5	10+	TS	00:00:43	-2													
OVERALL				02:32:37	00:00:00	108.501	0.000		42.7			00:14:37	-2													

Note: Segment 25 (Dade County) is excluded from the "OVERALL" measurements.

**US - 1 SOUTHBOUND TRAVEL SPEEDS  
FRIDAY, 03-15-19, EVENING**



**Mile Marker**



ROAD/DIRECTION: US-1, Northbound  
 OBSERVERS: SR  
 WEATHER/CONDITIONS: Clear/Sunny  
 DAY/DATE: Saturday, March 16, 2019

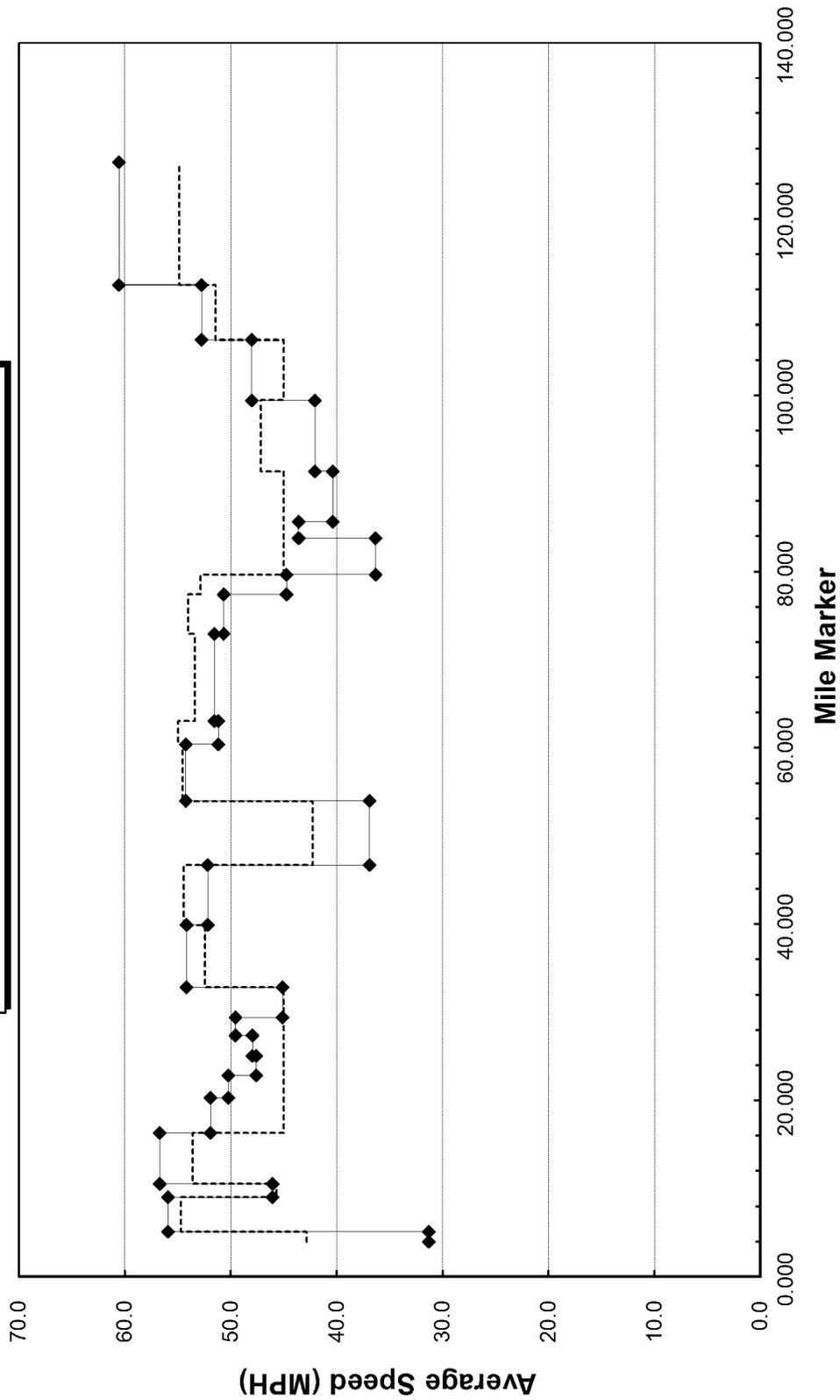
DEFINITION OF DELAY  
 Delay begins @ 5 mph  
 Delay ends @ 15 mph

TYPES OF DELAY  
 LT = Left Turn  
 RT = Right Turn  
 TS = Traffic Signal  
 DB = Drawbridge  
 CG = Congestion  
 CS = Construction  
 SB = School Bus  
 EV = Emergency Vehicle  
 AC = Accident  
 \* = Special Event

Control Point	End Segment #	Cumulative Time	Segment Time	Excluded Time	Cumulative Distance	Segment Distance	Excluded Distance	Segment Travel Speed	Platoon Size	Delay Type	Segment Delay	Passing Score
Cow Key Bridge (N)	Begin	00:00:00	00:00:00		0.000	0.000						
Key Haven Blvd	1	00:02:10	00:02:10		1.130	1.130		31.3	2	TS	00:00:35	0
Rockland Dr	2	00:06:21	00:04:11		5.028	3.898		55.9				
Boca Chica Rd	3	00:08:19	00:01:58		6.537	1.509		46.0				
Harris Ch Br (N)	4	00:14:26	00:06:07		12.319	5.782		56.7				
Bow Channel Br (N)	5	00:19:02	00:04:36		16.297	3.978		51.9				
Spanish Main Dr	6	00:22:04	00:03:02		18.836	2.539		50.2				
E Shore Dr	7	00:24:53	00:02:49		21.071	2.235		47.6				
Torch-Ramrod Br (S)	8	00:27:46	00:02:53		23.376	2.305		48.0				
N Pine Ch Br (N)	9	00:30:15	00:02:29		25.427	2.051		49.6				
Long Beach Dr	10	00:34:48	00:04:33		28.847	3.420		45.1				1
7-Mile Br (S)	11	00:42:37	00:07:49		35.906	7.059		54.2				-4
7-Mile Br (N)	12	00:50:27	00:07:50		42.715	6.809		52.2				
Coco Plum Dr	13	01:02:15	00:11:48		49.973	7.258		36.9	10+	TS(2)	00:01:27	5
Toms Harbor Ch Br (S)	14	01:09:22	00:07:07		56.409	6.436		54.3				
Long Key Br (S)	15	01:12:28	00:03:06		59.053	2.644		51.2				
Channel #2 Br (N)	16	01:23:58	00:11:30		68.932	9.879		51.5				
Lignum V Br (S)	17	01:29:17	00:05:19		73.423	4.491		50.7				
Teatable Reif Br (N)	18	01:32:17	00:03:00		75.660	2.237		44.7				
Whale Harbor Br (S)	19	01:39:06	00:06:49		79.786	4.126		36.3				
Snake Creek Br (N)	20	01:41:39	00:02:33		81.639	1.853		43.6				
Ocean Blvd	21	01:50:12	00:08:33		87.391	5.752		40.4				1
Atlantic Blvd	22	02:01:42	00:11:30		95.449	8.058		42.0	10+	TS	00:01:28	4
C-905	23	02:10:15	00:08:33		102.293	6.844		48.0	10+	TS	00:00:03	2
County Line sign	24	02:17:21	00:07:06		108.536	6.243		52.8				
Card Sound Rd	25	02:31:08	00:13:47		122.447	13.911		60.6				
OVERALL			02:17:21	00:00:00		108.536	0.000	47.4			00:03:33	9

Note: Segment 25 (Dade County) is excluded from the "OVERALL" measurements.

**US - 1 NORTHBOUND TRAVEL SPEEDS  
SATURDAY, 03-16-19, MORNING**



◆ SEG. SPEED      - - - - - AVG. POSTED SPEED

ROAD/DIRECTION: US-1, Southbound  
 OBSERVERS: KK  
 WEATHER/CONDITIONS: Cloudy  
 DAY/DATE: Saturday, March 16, 2019

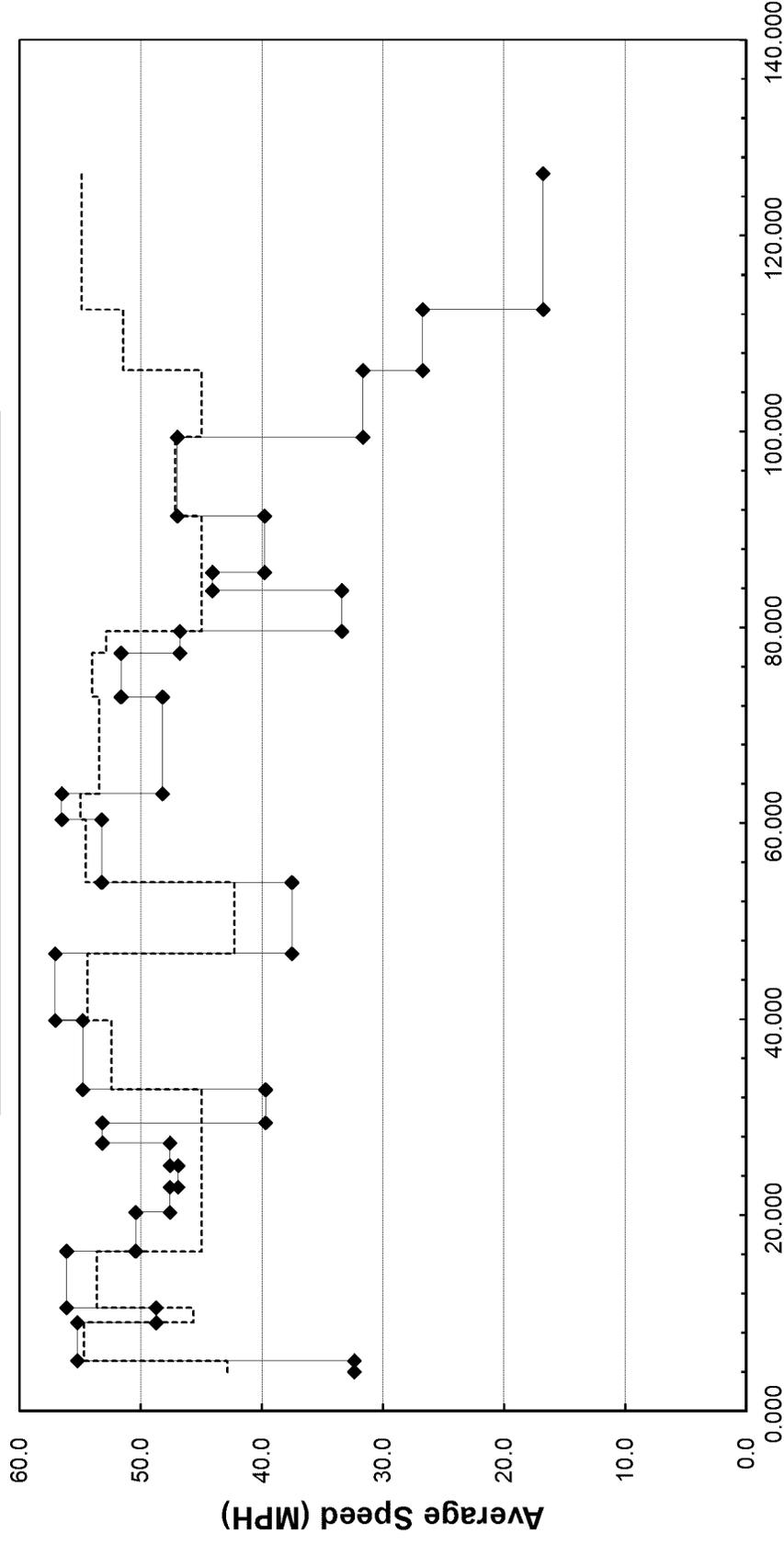
DEFINITION OF DELAY  
 Delay begins @ 5 mph  
 Delay ends @ 15 mph

TYPES OF DELAY  
 LT = Left Turn  
 RT = Right Turn  
 TS = Traffic Signal  
 DB = Drawbridge  
 CG = Congestion  
 CS = Construction  
 SB = School Bus  
 EV = Emergency Vehicle  
 AC = Accident  
 \* = Special Event

Control Point	Segment #	End Segment	Cumulative Time	Segment Time	Excluded Time	Cumulative Distance	Segment Distance	Excluded Distance	Segment			Passing Score
									Travel Speed	Platoon Size	Delay Type	
Card Sound Rd	Begin		00:00:00	00:00:00		0.000	0.000					
County Line sign	25 1		00:49:37	00:49:37		13.888	13.888		16.8			
C-905	24 2		01:07:23	00:17:46	00:05:22	20.103	6.215	0.695	26.7	10+	AC(3)	00:05:22
Atlantic Blvd	23 3		01:30:40	00:23:17	00:14:08	26.931	6.828	2.001	31.7	10+	AC(2),TS(2)	00:15:34 4
Ocean Blvd	22 4		01:40:57	00:10:17		34.980	8.049		47.0	10+	TS	00:00:15 4
Snake Creek Br (N)	21 5		01:49:40	00:08:43		40.758	5.778		39.8	10+	CG	00:00:15 4
Whale Harbor Br (S)	20 6		01:52:12	00:02:32		42.619	1.861		44.1			
Teatable Relif Br (N)	19 7		01:59:36	00:07:24		46.740	4.121		33.4	10+	CG	00:00:35
Lignum V Br (S)	18 8		02:02:28	00:02:52		48.974	2.234		46.8			
Channel #2 Br (N)	17 9		02:07:40	00:05:12		53.447	4.473		51.6			
Long Key Br (S)	16 10		02:19:58	00:12:18		63.331	9.884		48.2			
Toms Harbor Ch Br (S)	15 11		02:22:47	00:02:49		65.985	2.654		56.5			
Coco Plum Dr	14 12		02:30:00	00:07:13		72.387	6.402		53.2			
7-Mile Br (N)	13 13		02:41:38	00:11:38		79.662	7.275		37.5	10+	TS	00:00:16 4
7-Mile Br (S)	12 14		02:48:48	00:07:10		86.479	6.817		57.1			
Long Beach Dr	11 15		02:56:31	00:07:43		93.525	7.046		54.8			
N Pine Ch Br (N)	10 16		03:01:41	00:05:10		96.944	3.419		39.7	10+	TS	00:00:29 -2
Torch-Ramrod Br (S)	9 17		03:04:00	00:02:19		98.997	2.053		53.2			
E Shore Dr	8 18		03:06:54	00:02:54		101.298	2.301		47.6			
Spanish Main Dr	7 19		03:09:44	00:02:50		103.514	2.216		46.9			
Bow Channel Br (N)	6 20		03:12:58	00:03:14		106.079	2.565		47.6			
Harris Ch Br (N)	5 21		03:17:42	00:04:44		110.056	3.977		50.4			
Boca Chica Rd	4 22		03:23:52	00:06:10		115.822	5.766		56.1			
Rockland Dr	3 23		03:25:44	00:01:52		117.338	1.516		48.7			
Key Haven Blvd	2 24		03:29:58	00:04:14		121.235	3.897		55.2			1
Cow Key Bridge (N)	1 25		03:32:04	00:02:06		122.368	1.133		32.4	10+	TS	00:00:24 -2
OVERALL				02:42:27	00:14:08		108.480	2.696	42.8			13

Note: Segment 25 (Dade County) is excluded from the "OVERALL" measurements.

**US - 1 SOUTHBOUND TRAVEL SPEEDS  
SATURDAY, 03-16-19, EVENING**



**Mile Marker**

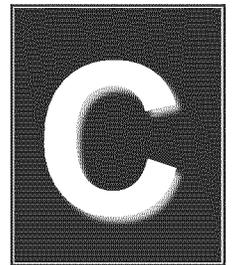
—◆— SEG. SPEED      - - - - - AVG. SPEED

# APPENDIX C

## 2019 Traffic Volume Summary



# A P P E N D I X



**AECOM**

**2019 TRAFFIC VOLUME SUMMARY  
BIG PINE KEY (MM 29): NORTH PINE CHANNEL BRIDGE**

Hour Ending	Tuesday 03/05/2019			Wednesday 03/06/2019			Thursday 03/07/2019			Friday 03/08/2019			Saturday 03/09/2019			Sunday 03/10/2019			Monday 03/11/2019		
	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total
1 AM	63	31	94	43	32	75	44	53	97	48	68	116	73	58	131	81	46	127	51	50	101
2 AM	34	40	74	29	38	67	36	38	74	40	45	85	36	61	97	38	42	80	31	42	73
3 AM	18	33	51	23	27	50	35	33	68	36	41	77	41	35	76	0	0	0	16	16	32
4 AM	29	25	54	26	19	45	36	39	75	47	36	83	43	12	55	35	31	66	27	28	55
5 AM	51	39	90	53	56	109	60	69	129	52	63	115	56	36	92	32	31	63	49	60	109
6 AM	82	151	233	80	143	223	112	157	269	129	160	289	75	71	146	53	51	104	99	128	227
7 AM	221	370	591	237	395	632	279	443	722	318	400	718	189	177	366	91	109	200	220	383	603
8 AM	523	597	1,120	554	573	1,127	548	615	1,163	527	555	1,082	387	310	697	255	142	397	433	541	974
9 AM	698	619	1,317	732	581	1,313	706	646	1,352	739	616	1,355	640	474	1,114	409	242	651	600	566	1,166
10 AM	743	739	1,482	785	721	1,506	825	710	1,535	858	649	1,507	894	604	1,498	618	420	1,038	640	644	1,284
11 AM	900	876	1,776	941	914	1,855	908	832	1,740	926	771	1,697	1,000	856	1,856	834	621	1,455	833	792	1,625
12 NOON	792	867	1,659	893	948	1,841	931	917	1,848	933	841	1,774	872	883	1,755	822	798	1,620	829	897	1,726
1 PM	878	878	1,662	857	995	1,852	847	944	1,791	775	909	1,684	700	878	1,578	776	799	1,575	761	922	1,683
2 PM	699	788	1,487	780	925	1,705	743	930	1,673	717	823	1,540	632	851	1,483	655	757	1,412	658	876	1,534
3 PM	741	928	1,669	787	917	1,704	811	877	1,688	769	840	1,609	572	861	1,433	612	756	1,368	690	902	1,592
4 PM	847	928	1,775	934	943	1,877	897	952	1,849	878	996	1,874	605	855	1,460	612	802	1,414	835	1013	1,848
5 PM	860	851	1,711	928	911	1,839	937	868	1,805	904	937	1,841	595	816	1,411	633	790	1,423	824	945	1,769
6 PM	756	702	1,458	973	723	1,696	829	725	1,554	761	785	1,546	568	716	1,284	561	722	1,283	816	826	1,642
7 PM	703	443	1,146	764	540	1,304	759	514	1,273	634	569	1,203	560	639	1,199	552	592	1,144	687	512	1,199
8 PM	499	291	790	551	353	904	563	376	939	479	412	891	518	486	1,004	414	415	829	511	384	895
9 PM	366	238	604	494	270	764	424	287	711	379	293	672	413	310	723	422	312	734	472	270	742
10 PM	226	141	367	293	209	502	306	218	524	301	213	514	300	219	519	292	188	480	392	172	564
11 PM	140	105	245	180	131	311	189	126	315	211	219	430	206	124	330	227	127	354	224	126	350
12 MID-NIGHT	105	62	167	111	77	188	108	91	199	148	130	278	152	99	251	114	104	218	115	71	186
Daily Total	10,880	10,742	21,622	12,048	11,441	23,489	11,933	11,460	23,393	11,609	11,371	22,980	10,127	10,431	20,558	9,138	8,897	18,035	10,813	11,166	21,979
AA DT*	10,237	10,107	20,344	11,336	10,765	22,101	11,228	10,783	22,010	10,923	10,699	21,622	9,528	9,815	19,343	8,598	8,371	16,969	10,174	10,506	20,680

\* AADT = Raw Count\*Seasonal Factor\*Axle Factor

5-Day ADT 22,408

7-Day ADT 21,722

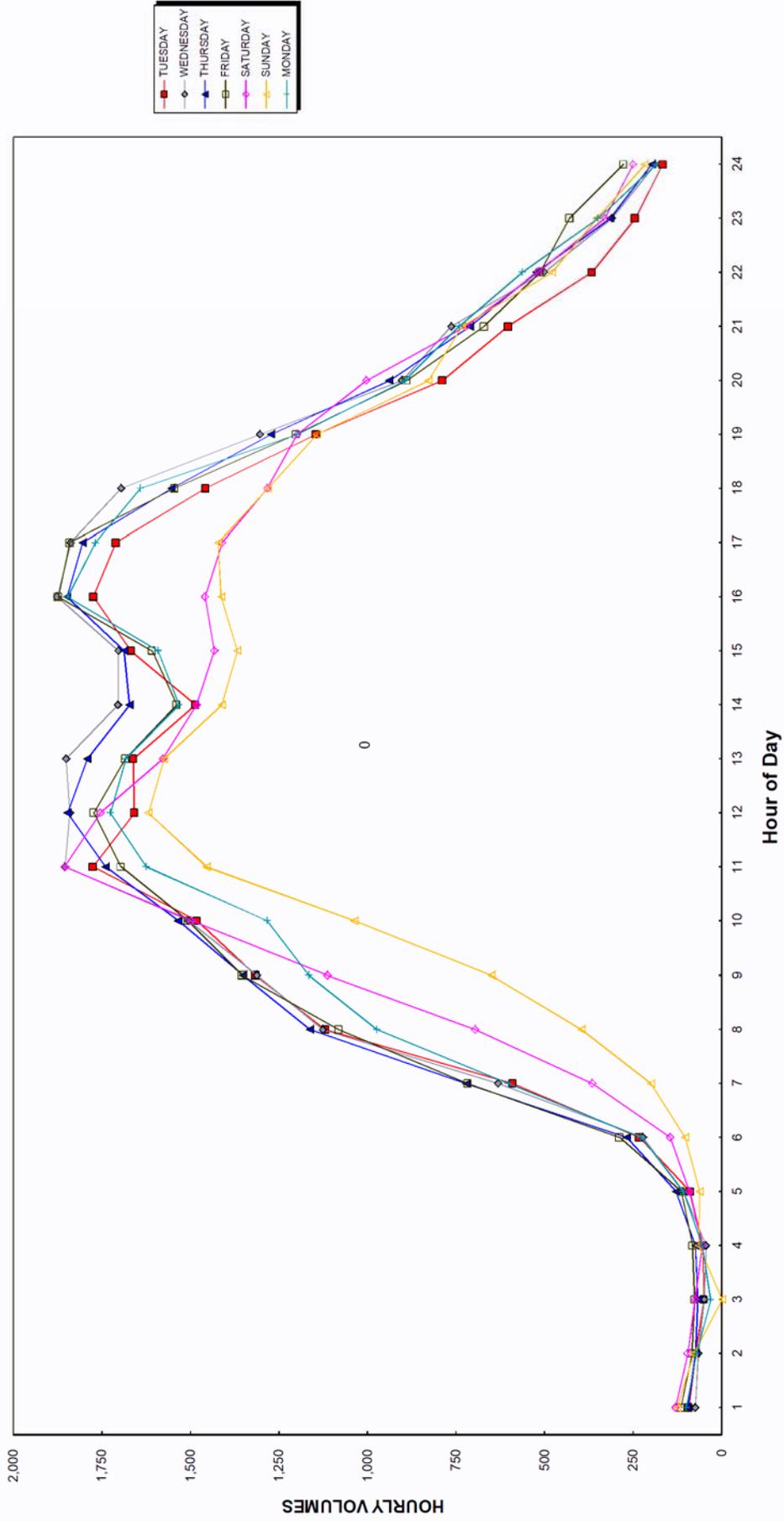
2017 Seasonal Factor 0.97

2017 Axle Factor 0.97

5-Day AADT 21,084

7-Day AADT 20,438

**US-1 NON-DIRECTIONAL HOURLY VOLUMES  
BIG PINE KEY (MM 29) 03-05-2019 TO 03-11-2019**



**2019 TRAFFIC VOLUME SUMMARY  
MARATHON (MM 50): NORTH OF SOMBRERO BEACH ROAD**

Hour Ending	Tuesday 03/05/2019			Wednesday 03/06/2019			Thursday 03/07/2019			Friday 03/08/2019			Saturday 03/09/2019			Sunday 03/10/2019			Monday 03/11/2019		
	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total
1 AM	100	92	192	88	91	179	88	86	174	104	135	239	159	174	333	157	158	315	106	127	233
2 AM	70	85	155	49	70	119	54	79	133	73	77	150	94	119	213	77	82	159	64	71	135
3 AM	46	69	115	48	52	100	48	61	109	53	62	115	59	77	136	0	0	0	49	54	103
4 AM	38	60	98	47	67	114	55	65	120	69	73	142	72	74	146	77	89	166	71	81	152
5 AM	79	120	199	65	105	170	94	134	228	82	120	202	83	98	181	82	72	154	80	125	205
6 AM	146	221	367	155	214	369	160	219	379	126	214	340	169	168	337	98	121	219	153	248	401
7 AM	367	601	968	364	626	990	372	636	1,008	424	641	1,065	296	413	709	153	212	365	368	579	947
8 AM	906	1,225	2,131	974	1,300	2,274	874	1,272	2,146	1,005	1,254	2,259	630	781	1,411	348	422	770	836	1,149	1,985
9 AM	1,193	1,353	2,546	1,202	1,372	2,574	1,239	1,410	2,649	1,288	1,367	2,655	963	1,227	2,210	584	689	1,273	1,151	1,348	2,499
10 AM	1,189	1,459	2,648	1,212	1,484	2,706	1,303	1,377	2,680	1,348	1,477	2,825	1,284	1,530	2,814	947	1,080	2,027	1,261	1,401	2,662
11 AM	1,419	1,659	3,078	1,442	1,668	3,110	1,365	1,617	3,002	1,543	1,644	3,187	1,303	1,785	3,088	1,253	1,530	2,783	1,414	1,679	3,093
12 NOON	1,513	1,785	3,298	1,551	1,736	3,287	1,477	1,665	3,142	1,542	1,789	3,331	1,412	1,713	3,125	1,412	1,757	3,169	1,553	1,847	3,400
1 PM	1,595	1,896	3,491	1,524	1,692	3,216	1,574	1,857	3,431	1,683	1,789	3,472	1,371	1,671	3,042	1,432	1,699	3,131	1,616	1,924	3,540
2 PM	1,522	1,784	3,306	1,477	1,679	3,156	1,501	1,692	3,193	1,632	1,783	3,415	1,426	1,629	3,055	1,509	1,595	3,104	1,511	1,848	3,359
3 PM	1,518	1,775	3,293	1,415	1,727	3,142	1,548	1,743	3,291	1,582	1,736	3,318	1,452	1,638	3,090	1,447	1,498	2,945	1,553	1,709	3,262
4 PM	1,553	1,825	3,378	1,525	1,728	3,253	1,595	1,661	3,256	1,702	1,818	3,520	1,438	1,566	2,994	1,395	1,411	2,806	1,556	1,793	3,349
5 PM	1,589	1,587	3,176	1,628	1,675	3,303	1,628	1,632	3,260	1,674	1,813	3,487	1,446	1,470	2,916	1,457	1,392	2,849	1,683	1,831	3,514
6 PM	1,432	1,519	2,951	1,559	1,620	3,179	1,501	1,569	3,070	1,567	1,713	3,280	1,288	1,511	2,799	1,533	1,409	2,942	1,657	1,679	3,336
7 PM	1,231	1,187	2,418	1,383	1,179	2,562	1,220	1,190	2,410	1,338	1,295	2,633	1,180	1,373	2,553	1,280	1,257	2,537	1,377	1,350	2,727
8 PM	933	777	1,710	921	728	1,649	988	840	1,828	1,009	971	1,980	1,093	918	2,011	1,026	980	2,006	1,124	1,028	2,152
9 PM	685	532	1,217	806	597	1,403	799	613	1,412	764	726	1,490	990	726	1,716	806	705	1,511	842	703	1,545
10 PM	449	410	859	575	454	1,029	548	431	979	541	565	1,106	790	570	1,360	631	520	1,151	689	506	1,195
11 PM	303	258	561	315	260	575	315	318	633	485	458	943	495	388	883	367	335	702	410	377	787
12 MID-NIGHT	170	146	316	175	128	303	214	187	401	238	252	490	256	218	474	227	215	442	220	173	393
Daily Total	20,046	22,225	42,271	20,500	22,262	42,762	20,580	22,354	42,934	21,872	23,772	45,644	19,769	21,627	41,596	18,298	19,228	37,526	21,344	23,630	44,974
AADT*	18,861	20,912	39,773	19,288	20,946	40,235	19,364	21,033	40,397	20,579	22,367	42,946	18,601	20,537	39,138	17,217	18,092	35,308	20,083	22,233	42,316

\* AADT = Raw Count\*Seasonal Factor\*Axle Factor

5-Day ADT 43,041

7-Day ADT 42,530

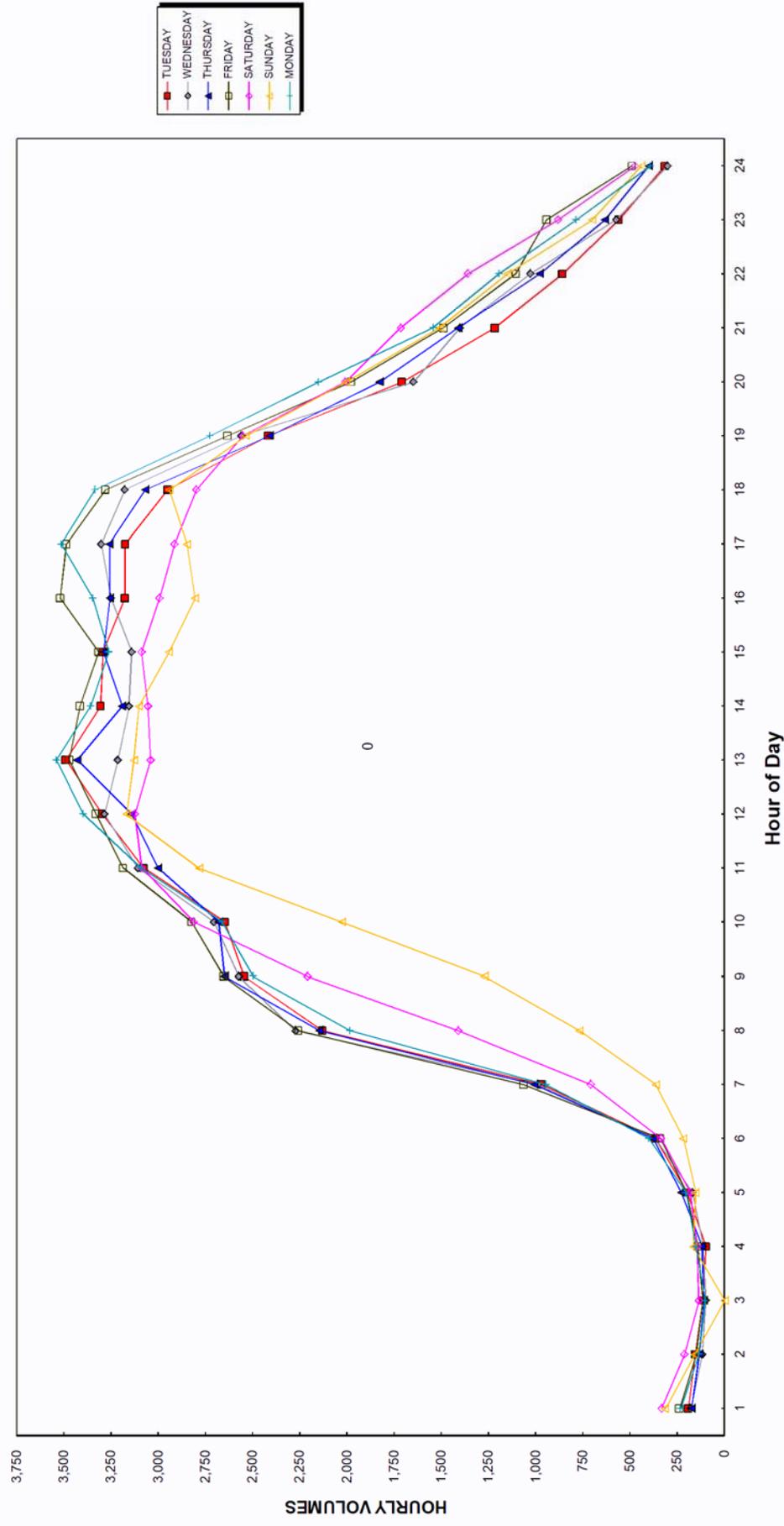
2017 Seasonal Factor 0.97

2017 Axle Factor 0.97

5-Day AADT 40,498

7-Day AADT 40,016

**US-1 NON-DIRECTIONAL HOURLY VOLUMES  
MARATHON (MM 50) 03-05-2019 TO 03-11-2019**

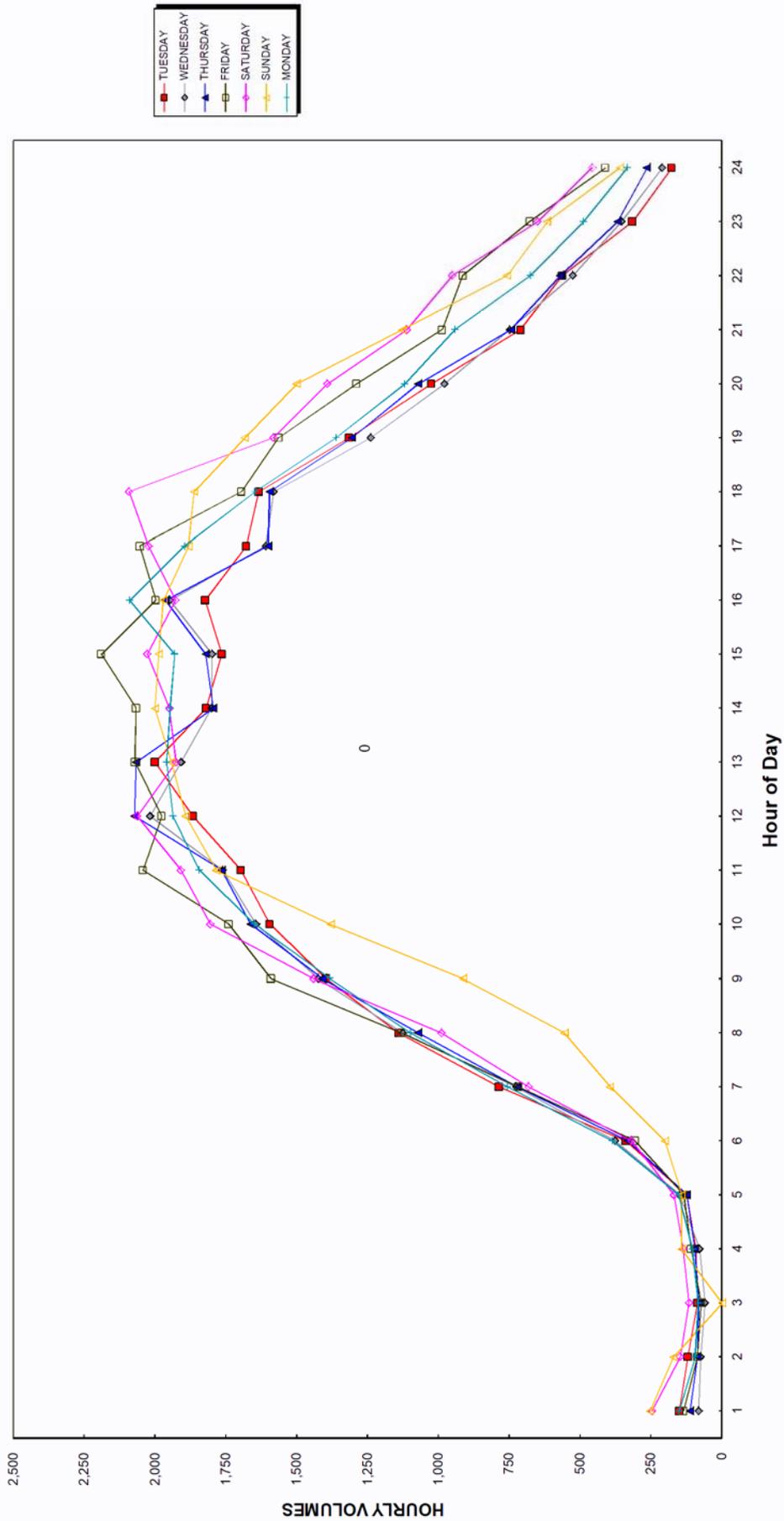


**2019 TRAFFIC VOLUME SUMMARY  
UPPER MATECUMBE (MM 84): WHALE HARBOR CHANNEL BRIDGE**

Hour Ending	Tuesday 03/05/2019			Wednesday 03/06/2019			Thursday 03/07/2019			Friday 03/08/2019			Saturday 03/09/2019			Sunday 03/10/2019			Monday 03/11/2019		
	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total
1 AM	84	66	150	57	25	82	56	57	113	62	74	136	118	129	247	135	119	254	86	64	150
2 AM	59	61	120	31	44	75	39	47	86	42	44	86	60	88	148	102	70	172	44	51	95
3 AM	49	37	86	33	27	60	35	46	81	31	42	73	68	48	116	0	0	0	34	49	83
4 AM	43	49	92	34	45	79	43	53	96	52	57	109	65	72	137	78	65	143	37	67	104
5 AM	44	80	124	57	92	149	49	78	124	56	78	134	90	80	170	72	70	142	54	98	152
6 AM	86	254	340	93	284	377	100	233	333	81	226	307	121	198	319	77	124	201	114	273	387
7 AM	201	586	787	181	546	727	183	540	723	236	483	719	226	456	682	121	274	395	201	556	757
8 AM	381	760	1,141	394	732	1,126	363	709	1,072	416	716	1,132	363	627	990	219	337	556	416	684	1,100
9 AM	475	922	1,397	504	920	1,424	537	872	1,409	637	954	1,591	575	866	1,441	393	521	914	513	871	1,384
10 AM	655	941	1,596	688	956	1,644	723	940	1,663	759	982	1,741	748	1058	1,806	566	815	1,381	713	937	1,650
11 AM	781	917	1,698	776	986	1,762	807	958	1,765	973	1,071	2,044	908	1002	1,910	732	1053	1,785	820	1024	1,844
12 NOON	833	1034	1,867	903	1115	2,018	958	1115	2,073	1051	927	1,978	941	1123	2,064	942	951	1,893	950	987	1,937
1 PM	902	1099	2,001	921	988	1,909	948	1119	2,067	963	1109	2,072	804	1123	1,927	932	1012	1,944	912	1048	1,960
2 PM	857	964	1,821	892	909	1,801	890	905	1,795	983	1084	2,067	827	1123	1,950	962	1039	2,001	862	1085	1,947
3 PM	935	830	1,765	935	864	1,799	845	977	1,822	1045	1146	2,191	908	1121	2,029	936	1052	1,988	856	1075	1,931
4 PM	975	849	1,824	1021	927	1,948	1034	929	1,963	1041	957	1,998	827	1123	1,950	1016	956	1,972	959	1132	2,091
5 PM	961	718	1,679	914	695	1,609	849	753	1,602	1133	921	2,054	1020	1004	2,024	953	930	1,883	1095	801	1,896
6 PM	983	652	1,635	983	599	1,582	967	629	1,596	987	709	1,696	938	1155	2,093	1084	779	1,863	967	680	1,647
7 PM	791	525	1,316	767	472	1,239	801	505	1,306	964	601	1,565	884	699	1,583	1087	598	1,685	799	563	1,362
8 PM	656	370	1,026	604	376	980	681	391	1,072	765	525	1,290	894	499	1,393	992	510	1,502	686	434	1,120
9 PM	447	264	711	465	284	749	462	283	745	536	452	988	732	380	1,112	792	337	1,129	608	335	943
10 PM	383	181	564	346	181	527	354	217	571	459	456	915	686	266	952	516	243	759	418	258	676
11 PM	205	111	316	236	119	355	219	149	368	367	312	679	449	202	651	414	204	618	366	123	489
12 MID-NIGHT	104	73	177	139	72	211	153	112	265	246	165	411	316	142	458	234	126	360	230	104	334
Daily Total	11,890	12,343	24,233	11,974	12,258	24,232	12,096	12,614	24,710	13,885	14,091	27,976	13,664	14,466	28,130	13,355	12,185	25,540	12,740	13,299	26,039
AADT*	11,187	11,614	22,801	11,266	11,534	22,800	11,381	11,869	23,250	13,064	13,258	26,323	12,856	13,611	26,468	12,566	11,465	24,031	11,987	12,513	24,500

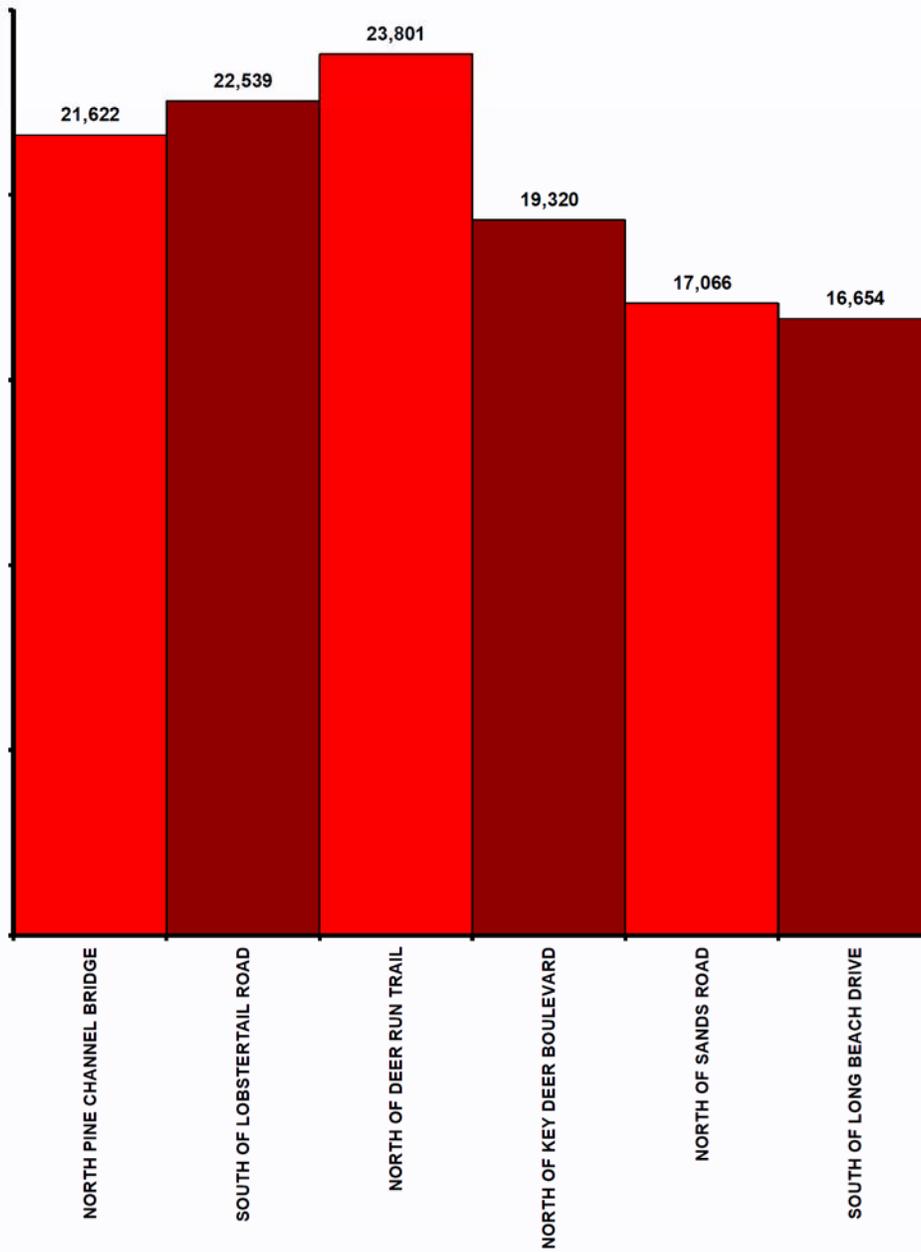
\* AADT = Raw Count\*Seasonal Factor\*Axle Factor  
5-Day ADT 25,856  
7-Day ADT 25,837  
2017 Seasonal Factor 0.97  
2017 Axle Factor 0.97  
5-Day AADT 24,328  
7-Day AADT 24,310

**US-1 NON-DIRECTIONAL HOURLY VOLUMES  
UPPER MATECUMBE (MM 84) 03-05-2019 TO 03-11-2019**



TO KEY WEST  
←

TO MARATHON  
→

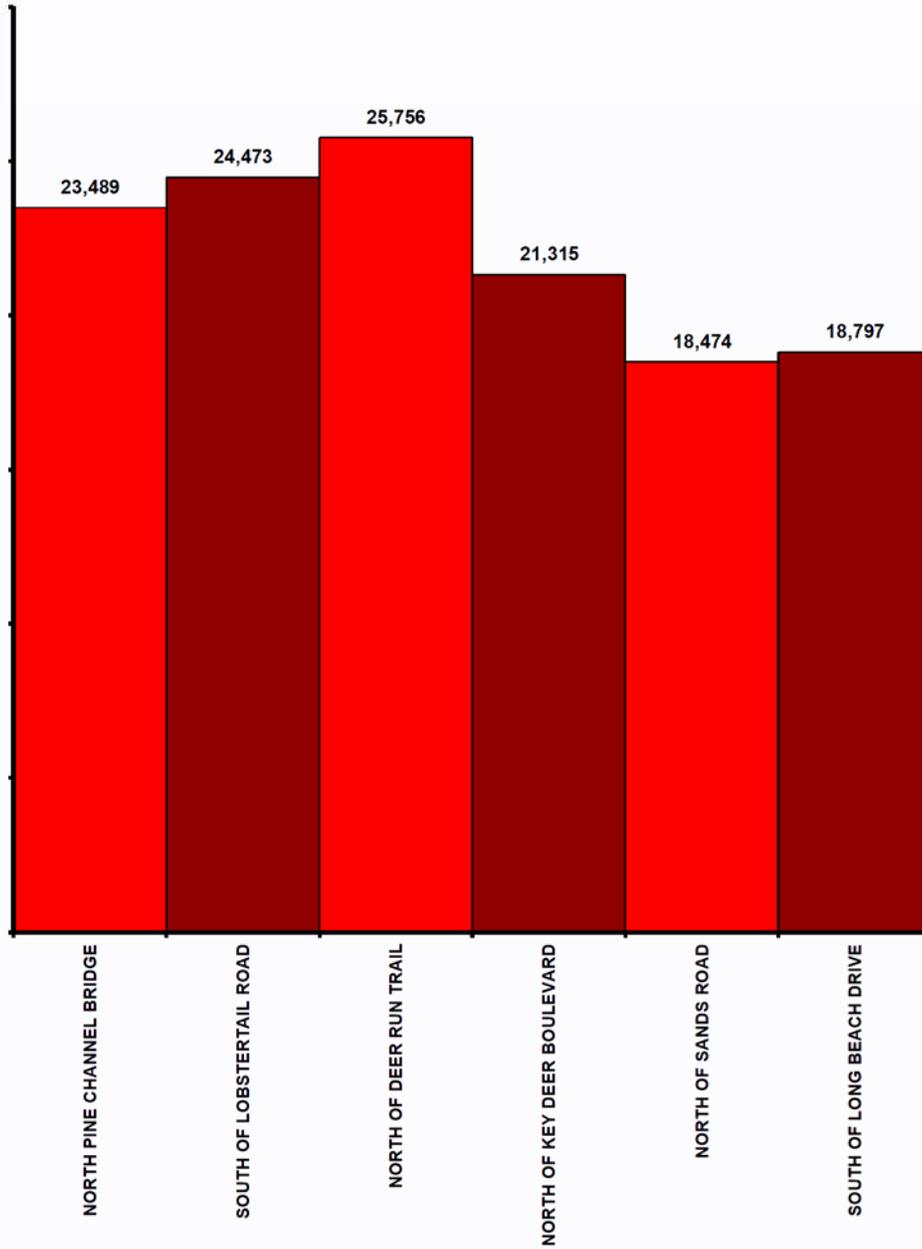


2019  
TRAVEL TIME DELAY STUDY  
MONROE COUNTY, FLORIDA

EXHIBIT C-1  
TWO-WAY DAILY VOLUMES  
US 1 - TUESDAY

TO KEY WEST  
←

TO MARATHON  
→

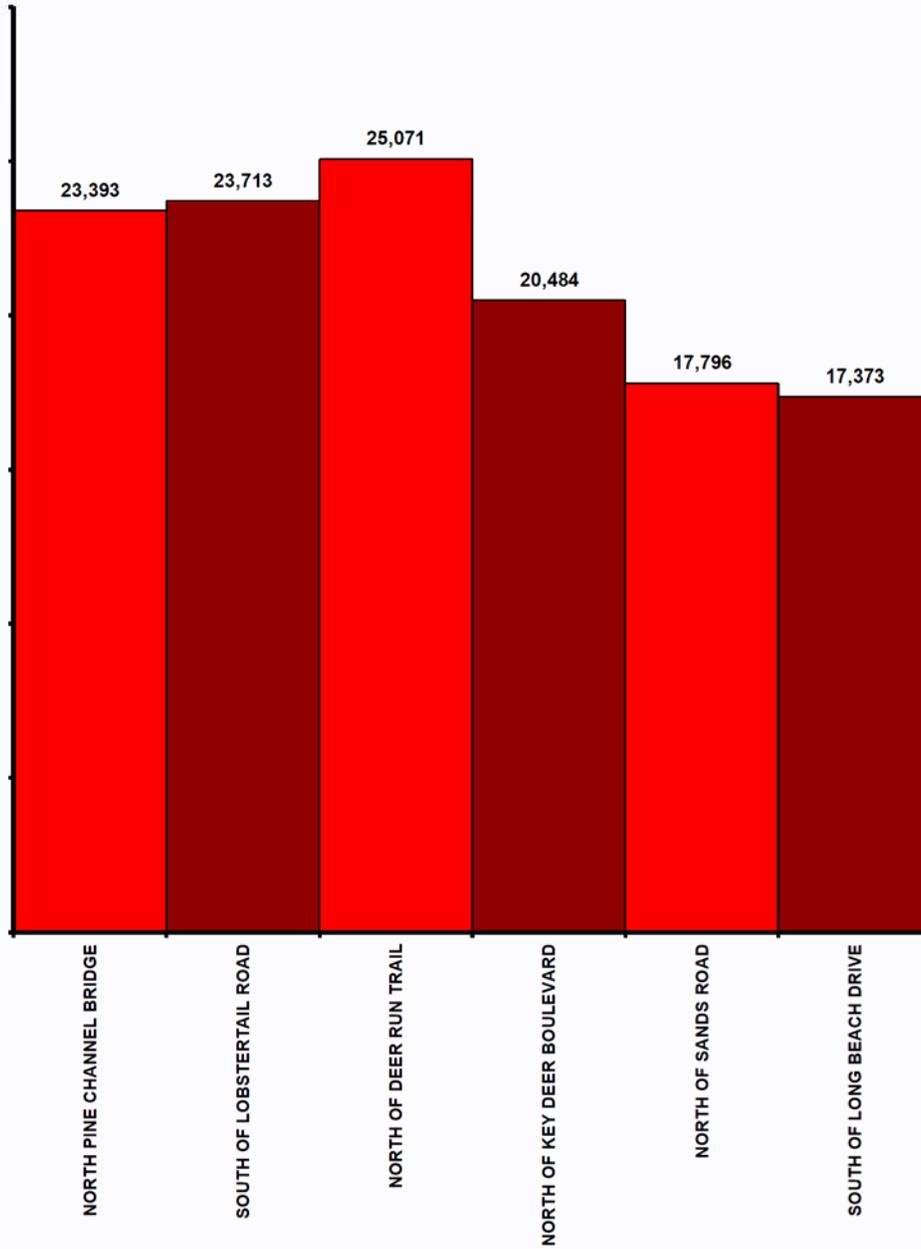


2019  
TRAVEL TIME DELAY STUDY  
MONROE COUNTY, FLORIDA

EXHIBIT C-2  
TWO-WAY DAILY VOLUMES  
US 1 - WEDNESDAY

TO KEY WEST  
←

TO MARATHON  
→



**AECOM**

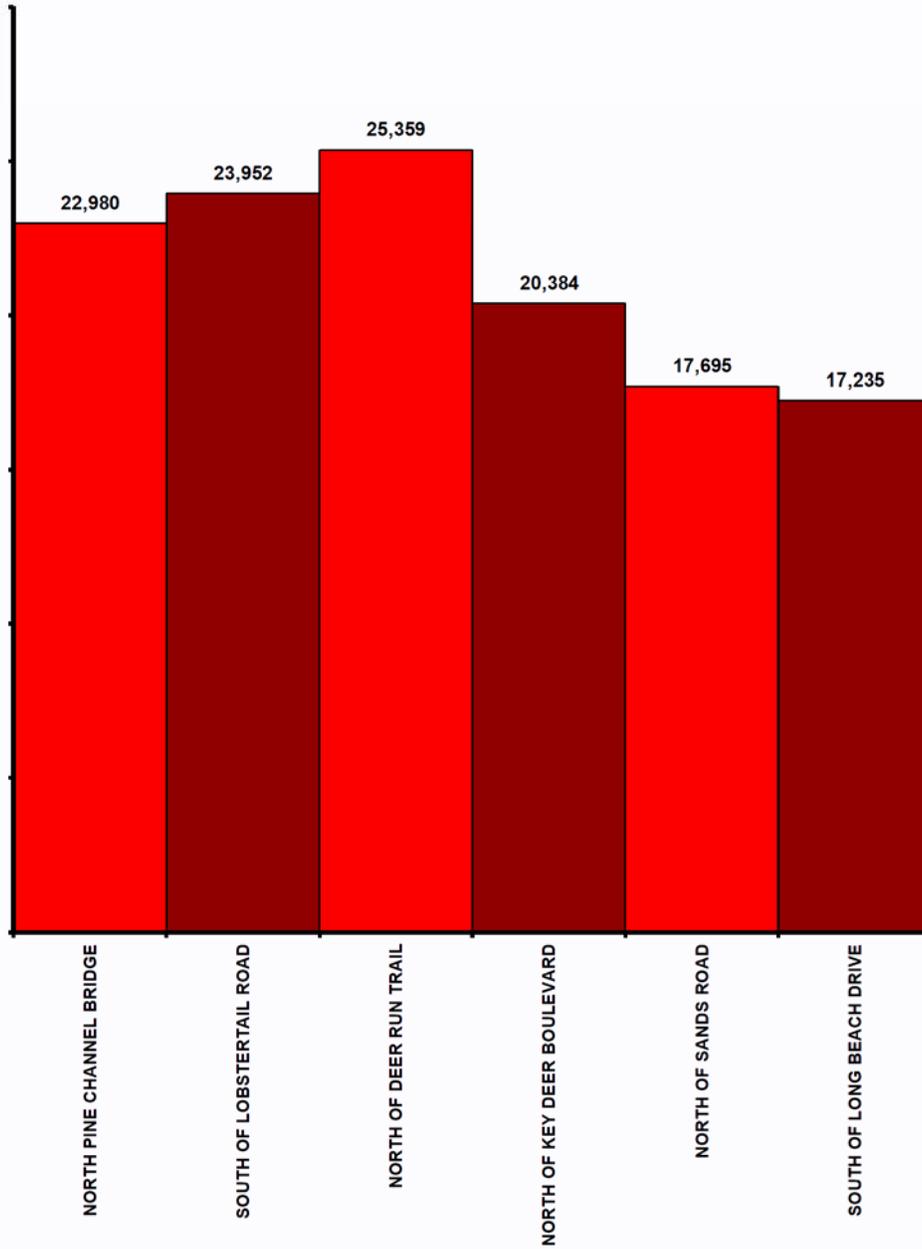


2019  
TRAVEL TIME DELAY STUDY  
MONROE COUNTY, FLORIDA

EXHIBIT C-3  
TWO-WAY DAILY VOLUMES  
US 1 - THURSDAY

TO KEY WEST  
←

TO MARATHON  
→

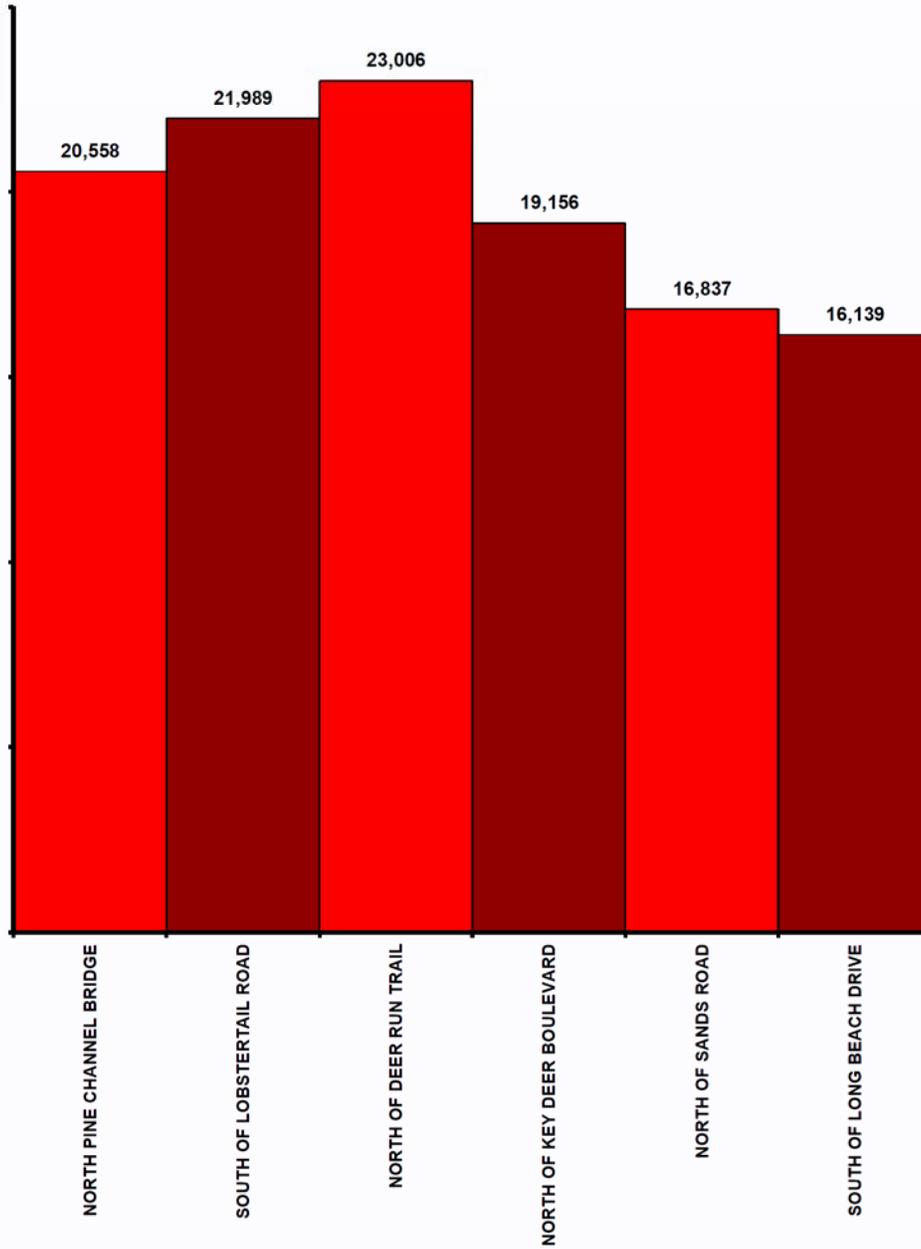


2019  
TRAVEL TIME DELAY STUDY  
MONROE COUNTY, FLORIDA

EXHIBIT C-4  
TWO-WAY DAILY VOLUMES  
US 1 - FRIDAY

TO KEY WEST  
←

TO MARATHON  
→

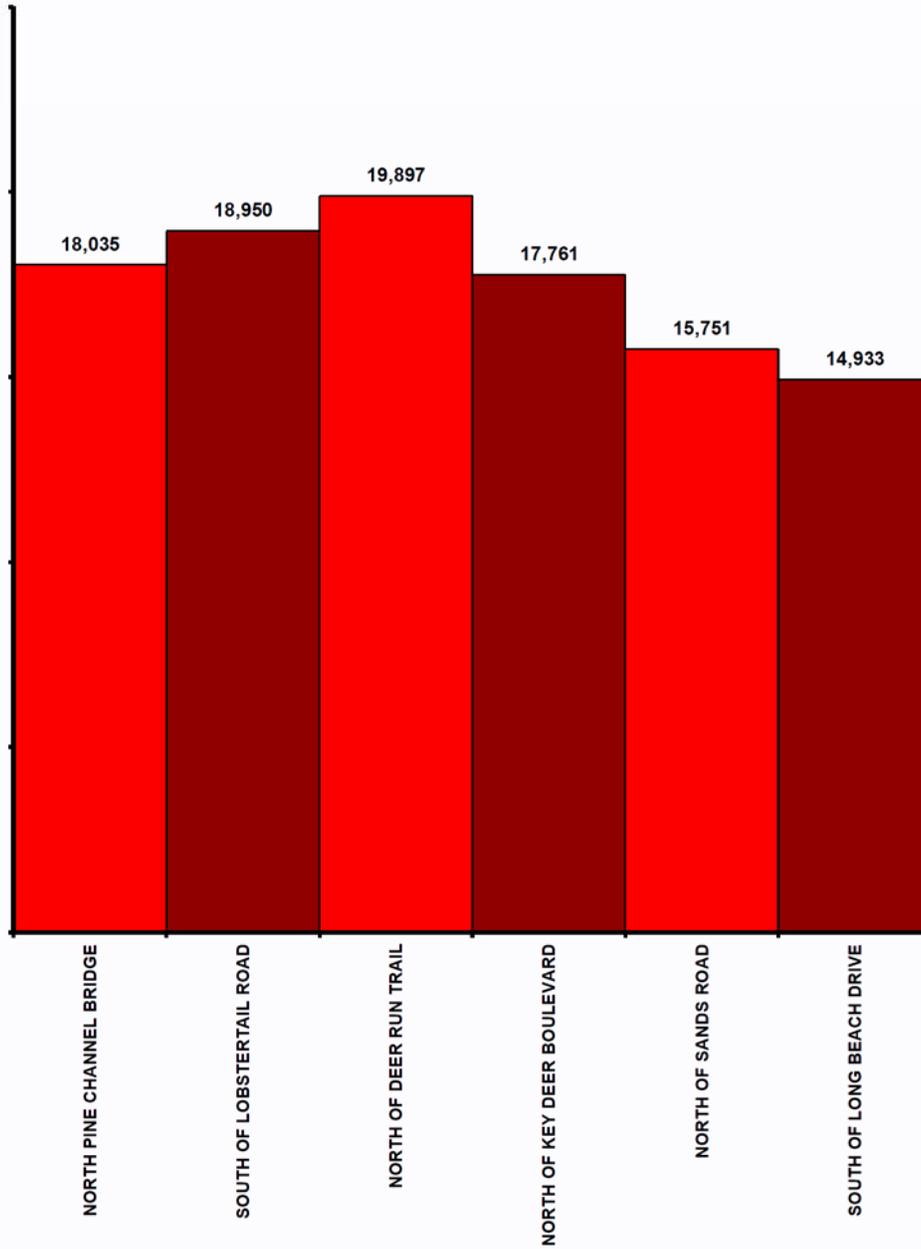


2019  
TRAVEL TIME DELAY STUDY  
MONROE COUNTY, FLORIDA

EXHIBIT C-5  
TWO-WAY DAILY VOLUMES  
US 1 - SATURDAY

TO KEY WEST  
←

TO MARATHON  
→

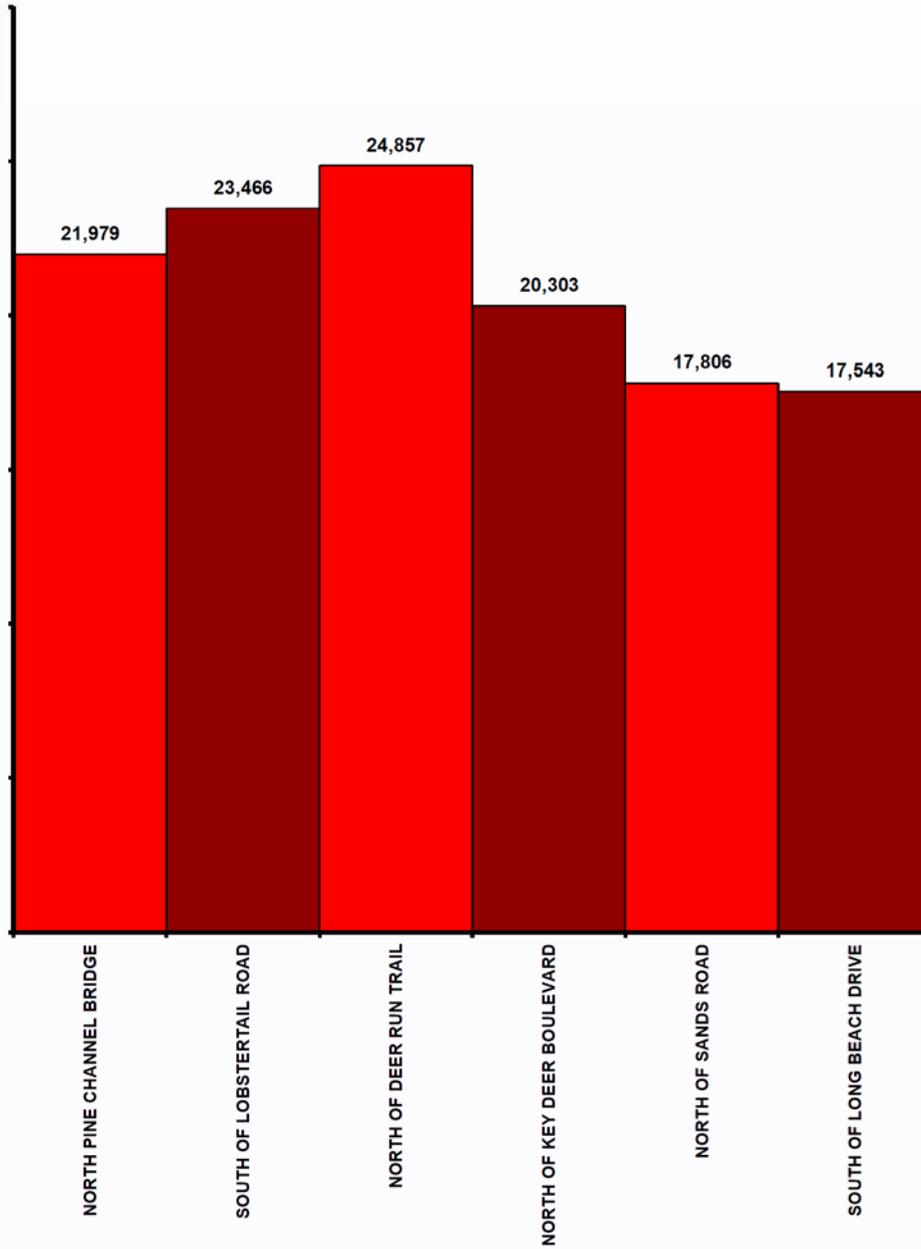


2019  
TRAVEL TIME DELAY STUDY  
MONROE COUNTY, FLORIDA

EXHIBIT C-6  
TWO-WAY DAILY VOLUMES  
US 1 - SUNDAY

TO KEY WEST  
←

TO MARATHON  
→



2019  
TRAVEL TIME DELAY STUDY  
MONROE COUNTY, FLORIDA

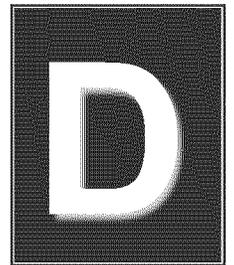
EXHIBIT C-7  
TWO-WAY DAILY VOLUMES  
US 1 - MONDAY

# APPENDIX D

## Historical Count Data



# A P P E N D I X



**AECOM**

# HISTORICAL COUNT DATA

	1993		1994		1995		1996		1997		1998		1999		2000		2001		2002		2003	
	Count	% Change																				
<b>Big Pine</b>																						
5 - Day Average	23,811	-13.47%	27,533	33.63	24,270	11.85%	25,295	4.22%	24,224	-4.23%	25,819	6.58%	26,846	3.98%	23,403	-12.38%	22,612	-3.38%	23,341	-3.22%	23,341	0.00%
7 - Day Average	23,893	-14.01%	26,885	30.86%	23,476	-12.68%	24,371	3.81%	23,786	-2.40%	24,955	4.91%	26,070	4.47%	22,648	-13.13%	21,937	-3.14%	22,788	3.89%	22,788	0.00%
AAADT	-	-17.74%	22,688	27.87%	21,186	-6.62%	21,496	1.46%	19,866	-7.58%	20,843	4.92%	21,774	4.47%	19,991	-8.19%	19,364	-3.14%	20,115	3.88%	20,115	0.00%
<b>Marathon</b>																						
5 - Day Average	34,515	-31.484	-3.78%	35,771	13.62%	33,620	-6.01%	34,528	2.70%	35,417	-2.57%	38,619	9.04%	36,431	-5.67%	33,777	-7.29%	36,989	9.51%	36,817	-0.47%	
7 - Day Average	33,517	30,449	-9.15%	34,278	12.58%	31,919	-6.88%	32,800	2.76%	34,305	-4.59%	36,818	7.33%	34,742	-5.64%	32,106	-7.59%	35,442	10.39%	35,984	1.53%	
AAADT	27,688	26,297	-5.02%	28,927	10.00%	27,924	-3.47%	28,930	3.60%	28,651	-0.96%	30,750	7.33%	29,017	-5.64%	28,340	-2.33%	31,285	10.39%	31,763	1.53%	
<b>Upper Matecumbe</b>																						
5 - Day Average	22,312	21,929	-1.72%	24,026	9.56%	22,987	-4.32%	24,539	6.75%	24,988	1.83%	26,512	6.10%	26,642	0.49%	24,177	-9.25%	26,589	9.98%	26,759	0.64%	
7 - Day Average	23,358	22,687	-2.87%	24,260	6.93%	22,826	-5.91%	24,489	7.29%	25,504	4.14%	26,465	3.77%	26,831	1.38%	24,719	-7.87%	26,475	7.10%	26,514	0.15%	
AAADT	19,296	19,593	1.54%	20,473	4.49%	20,083	-1.90%	21,599	7.55%	21,301	-1.38%	22,103	3.77%	22,410	1.39%	21,819	-2.64%	23,369	7.10%	23,404	0.15%	

# HISTORICAL COUNT DATA (Continued)

	2003		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013	
	Count	% Change																				
<b>Big Pine</b>																						
5 - Day Average	23,341	3.22%	23,108	-0.0101	24,304	5.17%	22,451	-7.62%	25,235	12.40%	21,495	-14.82%	21,242	-2.78%	20,651	-2.78%	20,468	-0.88%	21,056	2.87%	20,986	-0.33%
7 - Day Average	22,788	3.88%	22,538	-1.10%	23,788	5.65%	21,691	-8.82%	25,550	17.79%	20,612	-19.33%	20,666	0.21%	20,115	-2.62%	20,070	-0.22%	20,579	2.53%	20,066	-2.49%
AAADT	20,115	3.88%	19,894	-1.10%	19,844	-0.25%	18,095	-8.81%	20,215	11.72%	16,308	-19.33%	16,680	2.28%	17,842	6.97%	17,684	-0.88%	18,011	1.85%	17,943	-0.38%
<b>Marathon</b>																						
5 - Day Average	36,817	-0.47%	37,604	2.14%	37,405	-0.53%	36,388	-5.39%	36,742	3.83%	34,414	-6.34%	34,193	-0.64%	31,883	-6.76%	32,166	0.85%	34,145	6.19%	34,087	-0.14%
7 - Day Average	35,984	1.53%	36,563	1.61%	36,085	-1.32%	33,414	-7.40%	34,811	4.18%	31,731	-8.85%	32,298	1.79%	30,548	-5.42%	31,097	1.79%	32,985	6.07%	32,783	-0.61%
AAADT	31,763	1.53%	32,274	1.61%	30,102	-7.22%	27,874	-7.40%	27,942	-1.19%	25,106	-8.84%	26,081	3.88%	27,547	5.62%	27,782	0.85%	29,208	5.13%	29,153	-0.19%
<b>Upper Matecumbe</b>																						
5 - Day Average	26,759	0.64%	27,194	1.63%	27,980	2.89%	23,982	-14.29%	27,933	16.47%	23,416	-16.17%	23,071	-1.47%	22,588	-2.09%	24,326	7.69%	24,561	0.97%	23,656	-3.68%
7 - Day Average	26,514	0.15%	27,561	3.95%	27,693	0.48%	23,916	-13.64%	28,410	18.79%	23,024	-18.96%	23,016	-0.03%	22,634	-1.66%	24,508	8.27%	24,936	1.75%	23,164	-7.11%
AAADT	23,404	0.15%	24,328	3.95%	22,927	-6.11%	19,951	-12.98%	23,455	17.56%	19,008	-18.96%	18,585	-2.23%	19,516	5.01%	21,017	7.69%	21,009	-0.04%	20,226	-3.73%

# HISTORICAL COUNT DATA (Continued)

	2015		2016		2017		2018		2019		2020		2021		2022		2023		2024		2025	
	Count	% Change	Count	% Change	Count	% Change	Count	% Change	Count	% Change	Count	% Change	Count	% Change	Count	% Change	Count	% Change	Count	% Change	Count	% Change
<b>Big Pine</b>																						
5 - Day Average	22,833	8.80%			21,915	-4.02%			22,408	2.25%												
7 - Day Average	22,106	10.17%			21,595	-2.31%			21,722	0.59%												
AAADT	20,139	12.24%			20,319	0.59%			20,438	0.59%												
<b>Marathon</b>																						
5 - Day Average	38,824	13.86%			39,382	1.44%			43,041	9.29%												
7 - Day Average	36,144	16.35%			39,239	2.87%			42,530	8.39%												
AAADT	34,243	17.46%			36,920	7.82%			40,016	8.39%												
<b>Upper Matecumbe</b>																						
5 - Day Average	26,079	10.24%			25,598	-1.84%			25,856	1.01%												
7 - Day Average	25,817	11.45%			26,126	1.20%			25,837	-1.11%												
AAADT	23,002	13.72%			23,043	0.18%			24,310	5.50%												

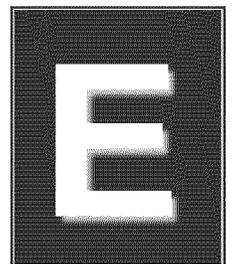
Note: For the years that the Travel Time Delay study is not scheduled (2014, 2016), volumes were obtained from the nearest FDOT FTI count site which may only have three (3) days of data.

# APPENDIX E

## 2019 Travel Speed Summary Data and Statistics



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**AECOM**

2019 TRAVEL SPEED DATA

	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0						
	Stock Island	Boca Chica	Big Coyote	Saddlebunch	Sugarloaf	Cudjoe	Sumnerland	Rainford	Torch	Big Pine	Bahia Honda	7-Mile Bridge	Manthron	Grassy	Duck	Long	L. Maccumbas	Tea Table	U. Maccumbas	Windley	Plantation	Tavernier	Largo	Cross	Date	
Sunday 03-03-19	32.9	56.7	47.6	54.5	51.8	48.7	48.2	48.4	48.2	52.0	48.3	44.0	56.0	55.7	55.7	56.4	46.9	26.4	34.9	26.8	50.1	45.1	17.3	53.0	42.1	
Northbound																										
Southbound	32.7	54.5	46.7	54.6	48.5	49.3	42.0	45.3	45.0	41.1	55.0	49.6	45.7	51.1	45.2	52.1	49.6	34.4	37.4	39.6	34.6	47.6	46.9	39.9	35.9	46.0
Monday 03-04-19	26.5	55.7	43.0	52.1	48.0	44.5	45.2	45.8	47.2	47.4	57.6	56.3	38.1	57.4	60.2	58.0	44.7	38.4	32.1	42.6	37.1	48.9	50.9	54.6	47.6	
Northbound																										
Southbound	44.1	55.5	38.7	47.2	43.5	46.6	42.0	43.8	46.3	43.6	52.7	52.0	38.7	51.0	55.7	54.4	45.4	41.4	31.1	26.5	37.2	47.4	42.3	48.4	52.1	45.1
Tuesday 03-05-19	41.6	54.4	49.2	52.5	48.6	47.8	48.2	49.9	47.9	46.6	54.2	56.9	39.2	49.8	52.9	53.0	47.5	55.5	42.8	44.6	28.3	41.5	38.8	49.0	55.7	46.1
Northbound																										
Southbound	42.2	53.5	41.5	47.3	45.3	44.0	34.2	45.0	44.8	43.8	54.5	54.3	40.1	47.2	48.3	46.1	46.0	46.9	41.2	42.9	43.1	45.6	43.4	51.4	56.2	45.9
Wednesday 03-06-19	39.5	54.1	45.1	51.9	47.5	45.1	43.9	39.6	44.9	39.6	55.7	53.3	33.1	48.5	52.9	48.5	46.7	45.9	24.5	17.7	24.8	19.7	37.8	44.3	54.1	37.8
Northbound																										
Southbound	7.9	57.2	42.3	48.8	45.2	40.7	40.6	42.7	45.3	12.4	37.3	53.5	37.0	52.2	52.4	47.0	42.3	49.5	35.6	30.1	35.6	49.8	41.7	54.8	58.3	39.1
Thursday 03-07-19	43.1	59.9	46.3	46.9	48.1	50.7	49.9	48.0	47.3	45.8	56.6	47.9	36.5	50.5	51.4	48.7	46.4	47.7	18.0	10.3	46.1	33.1	44.0	53.4	56.1	41.3
Northbound																										
Southbound	27.6	56.1	37.2	49.4	44.2	44.0	44.9	49.7	50.6	31.1	56.0	53.8	40.3	49.2	51.4	49.5	49.5	49.4	32.5	29.3	36.5	44.7	43.9	51.3	58.0	44.9
Friday 03-08-19	33.3	59.3	49.1	52.9	47.1	50.5	45.3	43.8	49.3	41.1	54.2	56.6	31.4	49.9	53.8	54.1	48.7	51.2	38.9	28.5	30.1	44.6	43.9	33.5	56.5	44.1
Northbound																										
Southbound	46.3	56.3	43.7	48.7	40.8	44.8	39.5	42.7	46.8	38.7	52.1	51.5	42.1	47.8	52.3	50.7	46.2	50.4	35.5	29.6	19.6	47.0	42.7	50.2	55.3	42.9
Saturday 03-09-19	42.1	55.4	50.7	52.2	52.6	49.3	45.1	50.5	49.4	47.9	54.8	57.1	38.4	55.1	57.6	51.9	49.8	53.7	36.4	36.8	31.1	44.2	42.1	50.6	50.3	47.1
Northbound																										
Southbound	30.9	57.1	44.8	53.9	46.7	47.0	47.2	47.2	52.0	31.5	53.7	54.9	37.5	50.8	52.7	52.7	52.2	47.1	34.5	20.2	21.0	47.7	31.8	31.6	28.4	41.1
Sunday 03-10-19	33.1	53.9	46.9	54.6	49.9	45.2	44.2	49.3	50.3	44.0	51.1	47.8	30.1	49.9	51.7	49.8	48.0	42.9	39.4	45.1	34.9	47.7	44.5	31.5	56.9	43.9
Northbound																										
Southbound	33.4	56.2	44.3	54.2	50.5	47.1	49.1	52.1	51.5	52.1	57.0	55.0	42.3	55.0	54.6	53.8	50.5	41.4	36.5	23.2	30.9	52.5	48.4	26.6	44.6	45.4
Monday 03-11-19	28.4	55.2	44.0	51.3	41.8	44.9	38.3	43.9	45.1	40.1	51.2	52.3	37.4	49.1	52.3	51.8	51.1	49.9	41.0	40.3	40.7	45.7	48.7	51.2	58.6	46.3
Northbound																										
Southbound	47.3	57.9	49.7	56.4	50.7	50.6	50.3	48.9	49.7	45.4	56.9	57.0	46.4	52.8	55.2	53.8	52.5	46.3	44.3	46.3	42.4	51.0	44.8	51.7	58.4	50.5
Tuesday 03-12-19	28.8	55.5	56.6	52.1	45.5	43.9	42.6	46.3	46.3	47.2	52.1	46.0	34.7	49.0	57.0	53.2	52.5	52.1	36.6	44.3	39.0	47.7	49.2	49.6	54.3	46.7
Northbound																										
Southbound	21.7	57.5	42.8	50.3	45.3	44.5	47.8	41.3	44.6	37.2	54.9	57.0	38.8	51.6	57.8	54.0	43.6	45.3	36.0	44.2	39.4	46.5	43.6	46.1	57.8	46.0
Wednesday 03-13-19	44.8	54.7	44.6	47.1	45.8	48.9	45.8	52.7	44.1	47.1	51.5	50.2	33.0	49.3	52.5	48.5	47.1	48.4	36.7	36.1	33.9	34.8	50.0	51.7	55.3	44.4
Northbound																										
Southbound	5.3	59.4	46.2	51.6	50.5	49.1	47.4	48.0	51.7	35.8	55.8	56.0	39.8	50.7	54.3	49.7	51.7	49.2	36.0	48.9	40.9	49.5	48.7	43.5	56.9	44.2
Tuesday 03-14-19	49.2	55.3	47.8	51.4	51.2	47.3	39.5	38.5	44.6	37.3	53.7	51.1	35.7	50.4	52.1	53.1	50.1	46.1	32.8	39.6	37.2	41.9	45.9	54.2	56.4	45.6
Northbound																										
Southbound	27.8	56.4	46.2	51.3	48.1	49.1	49.8	44.7	45.2	45.8	54.1	50.1	37.6	53.7	56.2	52.7	51.8	39.2	35.1	37.5	18.5	46.7	47.3	50.2	57.6	43.9
Friday 03-15-19	34.9	50.6	48.3	51.4	48.6	44.5	45.0	44.7	48.6	38.5	53.1	48.3	34.0	47.7	56.0	49.5	47.7	38.9	14.7	37.2	29.2	48.5	43.8	51.2	55.5	41.5
Northbound																										
Southbound	23.5	58.1	43.5	52.1	51.5	50.4	49.1	50.3	49.9	35.5	54.5	56.0	40.1	51.5	57.7	52.3	49.5	48.4	27.3	24.1	16.5	49.9	46.0	56.2	60.1	42.7
Saturday 03-16-19	31.3	55.9	46.0	56.7	51.9	50.2	47.6	48.0	49.6	45.1	54.2	52.2	36.9	54.3	51.2	51.5	50.7	44.7	36.3	43.6	40.4	42.0	48.0	52.8	60.6	47.4
Northbound																										
Southbound	32.4	55.2	48.7	56.1	50.4	47.6	46.9	47.6	53.2	39.7	54.8	57.1	37.5	53.2	56.5	46.2	51.6	46.8	33.4	44.1	39.8	47.0	31.7	26.7	16.8	42.8
<b>Highest Speed</b>	<b>47.3</b>	<b>59.9</b>	<b>56.6</b>	<b>56.7</b>	<b>52.6</b>	<b>50.7</b>	<b>50.3</b>	<b>52.7</b>	<b>53.2</b>	<b>52.1</b>	<b>58.6</b>	<b>57.1</b>	<b>46.4</b>	<b>57.4</b>	<b>60.2</b>	<b>58.0</b>	<b>56.5</b>	<b>55.5</b>	<b>44.3</b>	<b>48.9</b>	<b>46.1</b>	<b>52.5</b>	<b>50.0</b>	<b>56.2</b>	<b>60.6</b>	<b>50.5</b>
<b>Lowest Speed</b>	<b>5.3</b>	<b>50.6</b>	<b>37.2</b>	<b>46.9</b>	<b>40.8</b>	<b>40.7</b>	<b>34.2</b>	<b>38.5</b>	<b>44.1</b>	<b>12.4</b>	<b>37.3</b>	<b>46.0</b>	<b>30.1</b>	<b>47.2</b>	<b>45.2</b>	<b>46.1</b>	<b>42.3</b>	<b>34.4</b>	<b>14.7</b>	<b>10.3</b>	<b>16.5</b>	<b>19.7</b>	<b>31.7</b>	<b>17.3</b>	<b>16.8</b>	<b>37.8</b>

2019 TRAVEL SPEED DATA

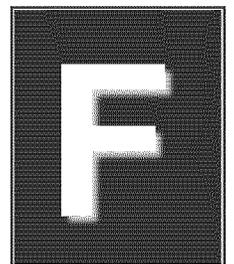
	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	OVERALL	
	Stock Island	Boca Chica	Big Coppitt	Saddlebunch	Sugarloaf	Cudjoe	Summerland	Ramrod	Torch	Big Pine	Bahia Honda	7-Mile Bridge	Marathon	Grassy	Duck	Long	L. Macacumb	Windley	Panation	Tavernier	Largo	Cross	Dade				
<b>TRAVEL SPEED ANALYSIS</b>																											
Mean	33.0	56.1	45.8	51.8	47.8	47.1	45.0	46.4	47.9	41.1	53.7	52.9	38.1	51.2	53.9	51.6	49.4	46.6	34.6	34.9	33.6	44.7	44.0	45.4	52.7	44.4	44.4
Median	33.0	55.8	46.1	52.0	48.1	47.2	45.2	46.7	48.1	42.4	54.2	53.4	37.9	50.7	53.3	52.0	49.6	46.9	36.4	37.0	35.3	46.9	44.2	50.2	55.9	44.6	44.6
Standard Deviation	10.3	2.0	3.8	2.8	3.1	2.7	4.0	3.6	2.6	7.7	3.7	3.4	3.9	2.6	3.2	2.8	3.3	4.6	6.9	9.8	8.1	6.7	4.6	10.2	9.9	2.7	2.7
Highest Speed	47.3	59.9	56.6	56.7	52.6	50.7	50.3	52.7	53.2	52.1	58.6	57.1	46.4	57.4	60.2	58.0	56.5	55.5	44.3	48.9	46.1	52.5	50.0	56.2	60.6	50.5	50.5
Lowest Speed	5.3	50.6	37.2	46.9	40.8	40.7	34.2	38.5	44.1	12.4	37.3	46.0	30.1	47.2	45.2	46.1	42.3	34.4	14.7	10.3	16.5	19.7	31.7	17.3	16.8	37.8	37.8
95% Confidence Interv	3.8	0.7	1.4	1.0	1.2	1.0	1.5	1.3	1.0	2.8	1.4	1.3	1.5	1.0	1.2	1.0	1.2	1.7	2.6	3.6	3.0	2.5	1.7	3.8	3.7	1.0	1.0
Upper Speed	36.8	56.8	47.2	52.8	49.0	48.1	46.5	47.7	48.9	43.9	55.1	54.2	39.6	52.2	55.1	52.6	50.6	48.3	37.1	38.5	36.6	47.2	45.7	49.1	56.3	45.4	45.4
Lower Speed	29.2	55.3	44.4	50.7	46.7	46.1	43.5	45.0	46.9	38.2	52.3	51.7	36.7	50.3	52.7	50.6	48.2	44.9	32.0	31.3	30.6	42.2	42.3	41.6	49.0	43.4	43.4
<b>LOS ANALYSIS</b>																											
Posted Speed	42.9	54.7	45.7	53.6	45.0	45.0	45.0	45.0	45.0	45.0	52.4	54.4	42.3	54.6	55.0	53.4	54.0	52.9	45.0	45.0	47.2	45.0	45.0	51.4	54.9	50.0	50.0
Signal Adjustment	N/A	N/A	N/A	N/A	4.5	N/A	N/A	N/A	N/A	4.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.6	2.0	3.2	N/A	N/A	N/A	N/A
Level of Service Median	B	B	B	C	A	A	B	A	A	B	A	B	A	C	C	C	B	C	D	E	E	D	A	A	B	N/A	D
95% Upper	A	A	A	B	A	A	A	A	A	A	A	B	A	C	B	B	B	C	D	E	D	A	A	C	N/A	C	C
95% Lower	B	B	B	C	A	B	B	A	C	B	C	A	C	A	C	C	C	D	E	F	E	C	B	E	N/A	D	D
LOS C Standard	22.0	50.2	41.2	49.1	36.0	40.5	40.5	40.5	40.5	36.5	47.9	49.9	22.0	48.7	50.5	48.9	49.5	48.4	40.5	40.5	37.9	40.7	37.3	46.9	N/A	45.0	45.0
Reserve	11.0	5.6	4.9	2.9	12.1	6.7	4.7	6.2	7.6	5.9	6.3	3.5	15.9	2.1	2.8	3.1	0.1	-1.5	-4.1	-3.5	-2.6	6.2	6.9	3.3	N/A	-0.4	-0.4

# APPENDIX F

## Comparisons of Historical Travel Speed Data

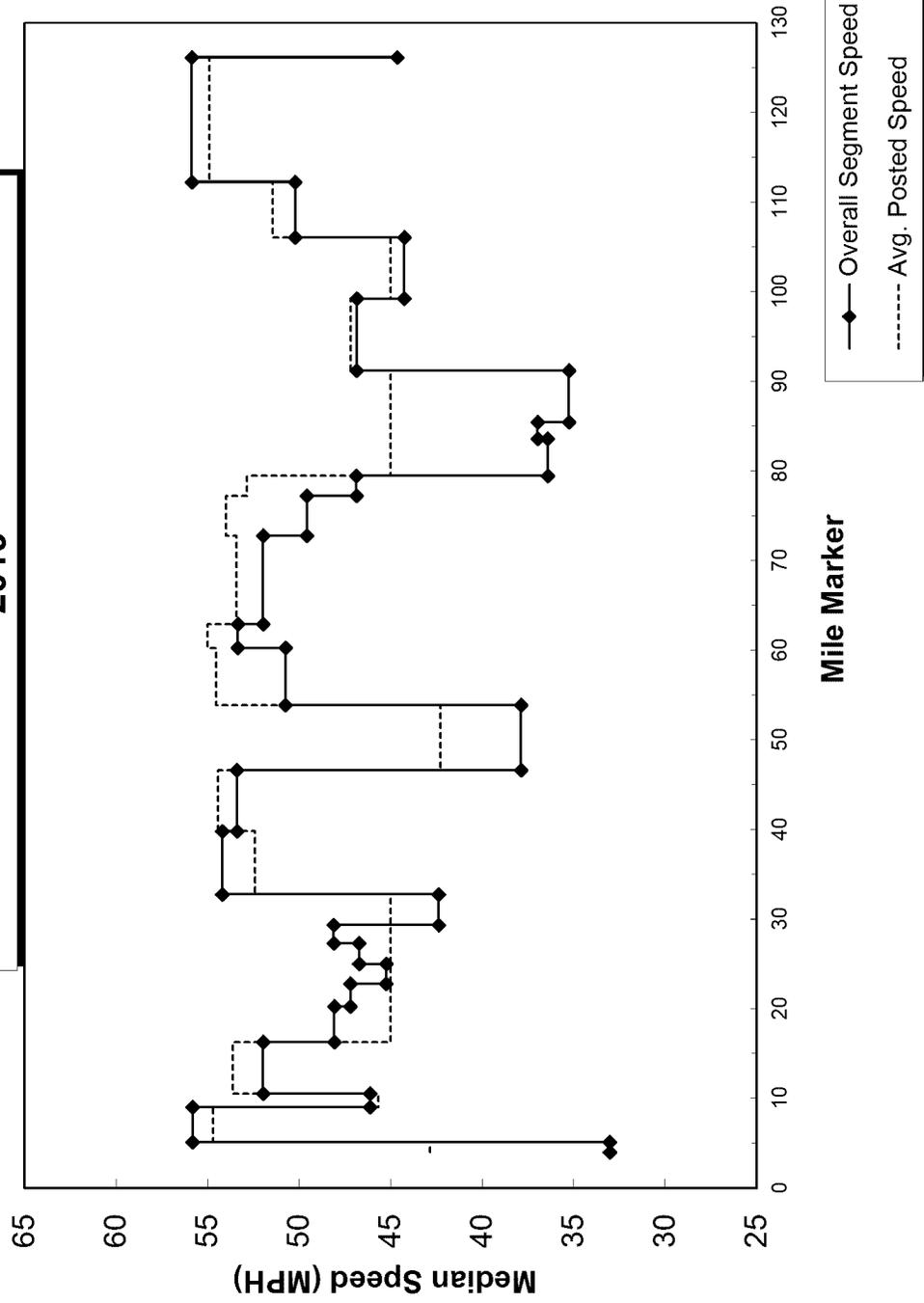


# A P P E N D I X

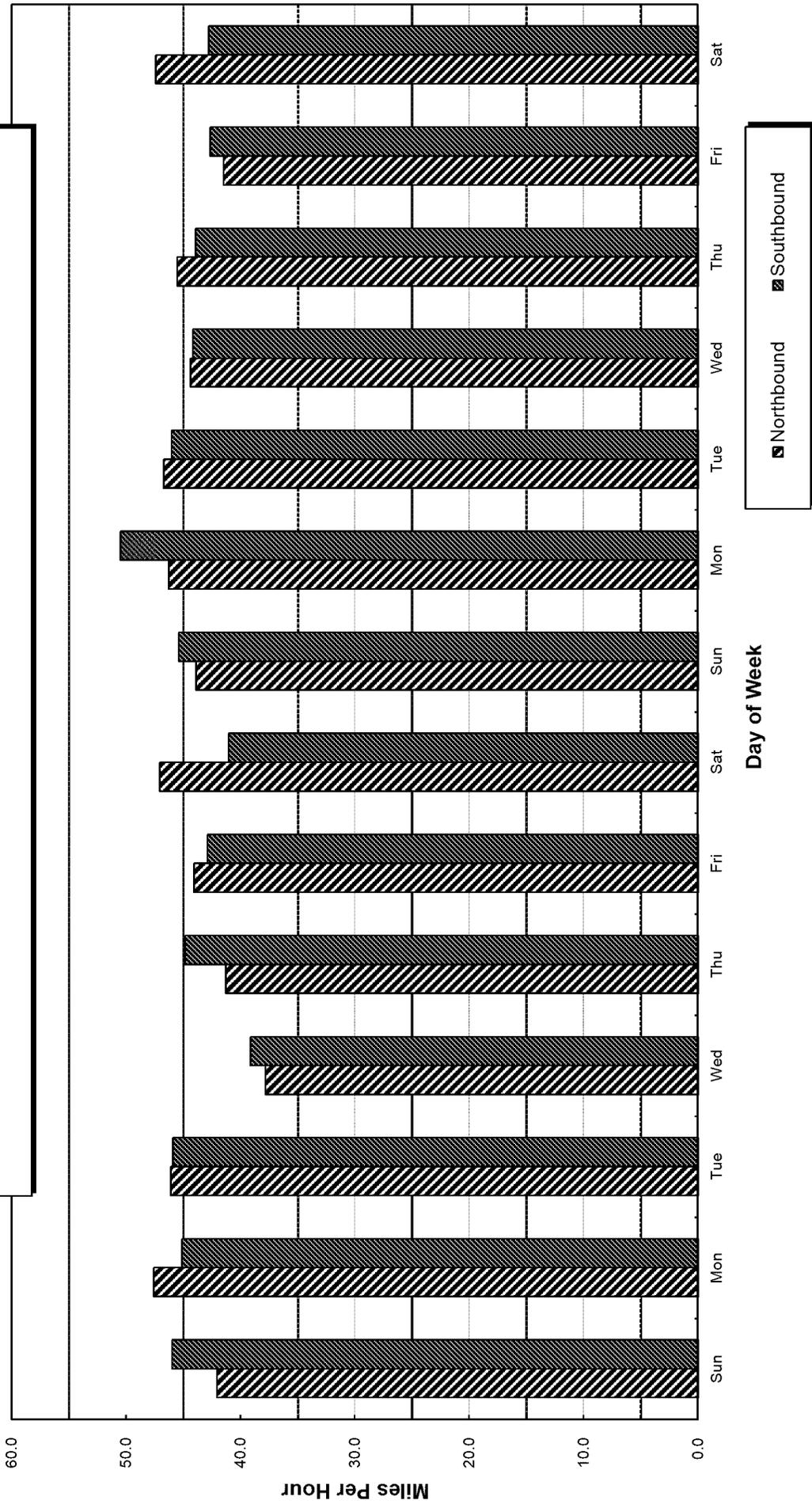


**AECOM**

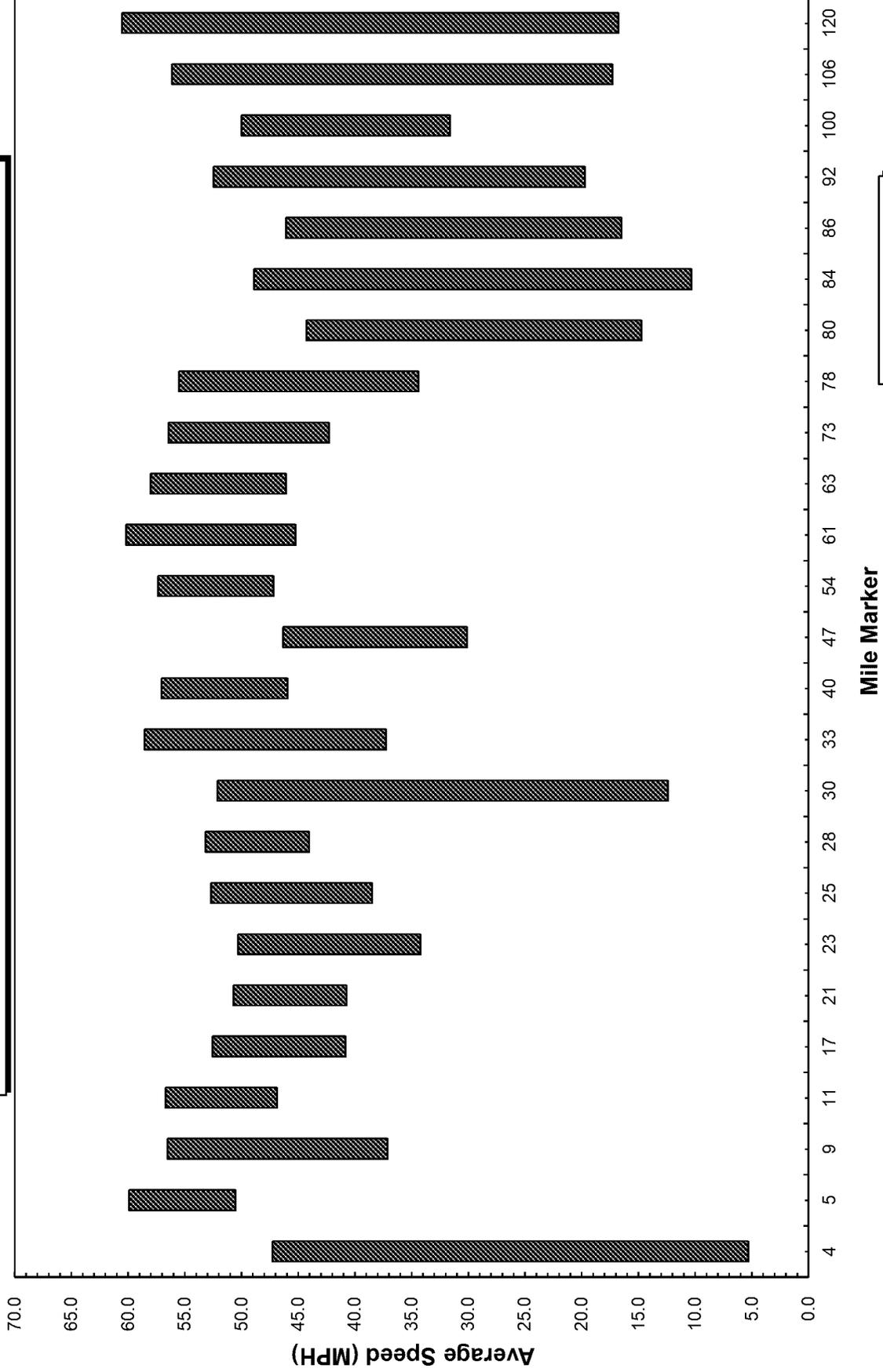
# US - 1 MEDIAN NON-DIRECTIONAL SPEEDS 2019



# US -1 OVERALL TRAVEL SPEEDS BY DAY OF WEEK 2019



# US - 1 RANGE OF NON-DIRECTIONAL TRAVEL SPEEDS 2019



COMPARISON OF HISTORICAL TRAVEL SPEED DATA (SHEET 1 OF 2)

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100																																																																																																																																																																																																																																																																																																																																																																																						
Mean (mph)	39.0	39.7	40.1	40.5	40.9	41.3	41.7	42.1	42.5	42.9	43.3	43.7	44.1	44.5	44.9	45.3	45.7	46.1	46.5	46.9	47.3	47.7	48.1	48.5	48.9	49.3	49.7	50.1	50.5	50.9	51.3	51.7	52.1	52.5	52.9	53.3	53.7	54.1	54.5	54.9	55.3	55.7	56.1	56.5	56.9	57.3	57.7	58.1	58.5	58.9	59.3	59.7	60.1	60.5	60.9	61.3	61.7	62.1	62.5	62.9	63.3	63.7	64.1	64.5	64.9	65.3	65.7	66.1	66.5	66.9	67.3	67.7	68.1	68.5	68.9	69.3	69.7	70.1	70.5	70.9	71.3	71.7	72.1	72.5	72.9	73.3	73.7	74.1	74.5	74.9	75.3	75.7	76.1	76.5	76.9	77.3	77.7	78.1	78.5	78.9	79.3	79.7	80.1	80.5	80.9	81.3	81.7	82.1	82.5	82.9	83.3	83.7	84.1	84.5	84.9	85.3	85.7	86.1	86.5	86.9	87.3	87.7	88.1	88.5	88.9	89.3	89.7	90.1	90.5	90.9	91.3	91.7	92.1	92.5	92.9	93.3	93.7	94.1	94.5	94.9	95.3	95.7	96.1	96.5	96.9	97.3	97.7	98.1	98.5	98.9	99.3	99.7	100.1																																																																																																																																																																																																																																																																																																																																	
Median (mph)	33.0	33.5	34.0	34.5	35.0	35.5	36.0	36.5	37.0	37.5	38.0	38.5	39.0	39.5	40.0	40.5	41.0	41.5	42.0	42.5	43.0	43.5	44.0	44.5	45.0	45.5	46.0	46.5	47.0	47.5	48.0	48.5	49.0	49.5	50.0	50.5	51.0	51.5	52.0	52.5	53.0	53.5	54.0	54.5	55.0	55.5	56.0	56.5	57.0	57.5	58.0	58.5	59.0	59.5	60.0	60.5	61.0	61.5	62.0	62.5	63.0	63.5	64.0	64.5	65.0	65.5	66.0	66.5	67.0	67.5	68.0	68.5	69.0	69.5	70.0	70.5	71.0	71.5	72.0	72.5	73.0	73.5	74.0	74.5	75.0	75.5	76.0	76.5	77.0	77.5	78.0	78.5	79.0	79.5	80.0	80.5	81.0	81.5	82.0	82.5	83.0	83.5	84.0	84.5	85.0	85.5	86.0	86.5	87.0	87.5	88.0	88.5	89.0	89.5	90.0	90.5	91.0	91.5	92.0	92.5	93.0	93.5	94.0	94.5	95.0	95.5	96.0	96.5	97.0	97.5	98.0	98.5	99.0	99.5	100.0																																																																																																																																																																																																																																																																																																																																																			
High (mph)	47.3	48.0	48.7	49.4	50.1	50.8	51.5	52.2	52.9	53.6	54.3	55.0	55.7	56.4	57.1	57.8	58.5	59.2	59.9	60.6	61.3	62.0	62.7	63.4	64.1	64.8	65.5	66.2	66.9	67.6	68.3	69.0	69.7	70.4	71.1	71.8	72.5	73.2	73.9	74.6	75.3	76.0	76.7	77.4	78.1	78.8	79.5	80.2	80.9	81.6	82.3	83.0	83.7	84.4	85.1	85.8	86.5	87.2	87.9	88.6	89.3	90.0	90.7	91.4	92.1	92.8	93.5	94.2	94.9	95.6	96.3	97.0	97.7	98.4	99.1	99.8	100.5																																																																																																																																																																																																																																																																																																																																																																																																													
Lowest (mph)	5.3	5.5	5.7	5.9	6.1	6.3	6.5	6.7	6.9	7.1	7.3	7.5	7.7	7.9	8.1	8.3	8.5	8.7	8.9	9.1	9.3	9.5	9.7	9.9	10.1	10.3	10.5	10.7	10.9	11.1	11.3	11.5	11.7	11.9	12.1	12.3	12.5	12.7	12.9	13.1	13.3	13.5	13.7	13.9	14.1	14.3	14.5	14.7	14.9	15.1	15.3	15.5	15.7	15.9	16.1	16.3	16.5	16.7	16.9	17.1	17.3	17.5	17.7	17.9	18.1	18.3	18.5	18.7	18.9	19.1	19.3	19.5	19.7	19.9	20.1	20.3	20.5	20.7	20.9	21.1	21.3	21.5	21.7	21.9	22.1	22.3	22.5	22.7	22.9	23.1	23.3	23.5	23.7	23.9	24.1	24.3	24.5	24.7	24.9	25.1	25.3	25.5	25.7	25.9	26.1	26.3	26.5	26.7	26.9	27.1	27.3	27.5	27.7	27.9	28.1	28.3	28.5	28.7	28.9	29.1	29.3	29.5	29.7	29.9	30.1	30.3	30.5	30.7	30.9	31.1	31.3	31.5	31.7	31.9	32.1	32.3	32.5	32.7	32.9	33.1	33.3	33.5	33.7	33.9	34.1	34.3	34.5	34.7	34.9	35.1	35.3	35.5	35.7	35.9	36.1	36.3	36.5	36.7	36.9	37.1	37.3	37.5	37.7	37.9	38.1	38.3	38.5	38.7	38.9	39.1	39.3	39.5	39.7	39.9	40.1	40.3	40.5	40.7	40.9	41.1	41.3	41.5	41.7	41.9	42.1	42.3	42.5	42.7	42.9	43.1	43.3	43.5	43.7	43.9	44.1	44.3	44.5	44.7	44.9	45.1	45.3	45.5	45.7	45.9	46.1	46.3	46.5	46.7	46.9	47.1	47.3	47.5	47.7	47.9	48.1	48.3	48.5	48.7	48.9	49.1	49.3	49.5	49.7	49.9	50.1	50.3	50.5	50.7	50.9	51.1	51.3	51.5	51.7	51.9	52.1	52.3	52.5	52.7	52.9	53.1	53.3	53.5	53.7	53.9	54.1	54.3	54.5	54.7	54.9	55.1	55.3	55.5	55.7	55.9	56.1	56.3	56.5	56.7	56.9	57.1	57.3	57.5	57.7	57.9	58.1	58.3	58.5	58.7	58.9	59.1	59.3	59.5	59.7	59.9	60.1	60.3	60.5	60.7	60.9	61.1	61.3	61.5	61.7	61.9	62.1	62.3	62.5	62.7	62.9	63.1	63.3	63.5	63.7	63.9	64.1	64.3	64.5	64.7	64.9	65.1	65.3	65.5	65.7	65.9	66.1	66.3	66.5	66.7	66.9	67.1	67.3	67.5	67.7	67.9	68.1	68.3	68.5	68.7	68.9	69.1	69.3	69.5	69.7	69.9	70.1	70.3	70.5	70.7	70.9	71.1	71.3	71.5	71.7	71.9	72.1	72.3	72.5	72.7	72.9	73.1	73.3	73.5	73.7	73.9	74.1	74.3	74.5	74.7	74.9	75.1	75.3	75.5	75.7	75.9	76.1	76.3	76.5	76.7	76.9	77.1	77.3	77.5	77.7	77.9	78.1	78.3	78.5	78.7	78.9	79.1	79.3	79.5	79.7	79.9	80.1	80.3	80.5	80.7	80.9	81.1	81.3	81.5	81.7	81.9	82.1	82.3	82.5	82.7	82.9	83.1	83.3	83.5	83.7	83.9	84.1	84.3	84.5	84.7	84.9	85.1	85.3	85.5	85.7	85.9	86.1	86.3	86.5	86.7	86.9	87.1	87.3	87.5	87.7	87.9	88.1	88.3	88.5	88.7	88.9	89.1	89.3	89.5	89.7	89.9	90.1	90.3	90.5	90.7	90.9	91.1	91.3	91.5	91.7	91.9	92.1	92.3	92.5	92.7	92.9	93.1	93.3	93.5	93.7	93.9	94.1	94.3	94.5	94.7	94.9	95.1	95.3	95.5	95.7	95.9	96.1	96.3	96.5	96.7	96.9	97.1	97.3	97.5	97.7	97.9	98.1	98.3	98.5	98.7	98.9	99.1	99.3	99.5	99.7	99.9

(1)-Change = 2019-2017 (2)-Change = 2019-1992

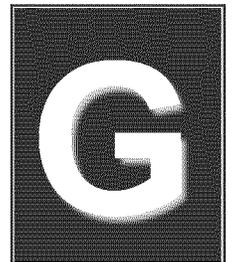


# APPENDIX G

## 2019 Level of Service and Reserve Capacity



# A P P E N D I X



**AECOM**

## 2019 LEVEL OF SERVICE AND RESERVE CAPACITY

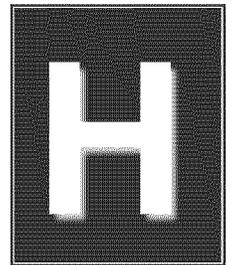
SEGMENT	LENGTH (miles)	FACILITY TYPE	POSTED SPEED		ADJ. FOR SIGNAL (mph)	ADJUSTED LOS C CRITERIA (mph)	MEDIAN TRAVEL SPEED (mph)	LOS	RESERVE SPEED (mph)	2019		2017	
			Limits (mph)	Average (mph)						MAXIMUM RESERVE VOLUME (trips)	5% ALLOCATION BELOW LOS C (trips)	MAXIMUM RESERVE VOLUME (trips)	
1 Stock Island (4.0 - 5.0)	1.10	4-L/D	30/45	42.9	N/A	22.0	33.0	B	11.0	2,004	2,207	1,348	
2 Boca Chica (5.0- 9.0)	3.9	4-L/D	45/55	54.7	N/A	50.2	55.8	B	5.6	3,617	5,249	6,071	
3 Big Coppitt (9.0- 10.5)	1.5	2-L/U	45/55	45.7	N/A	41.2	46.1	B	4.9	1,217	1,737	1,341	
4 Saddlebunch (10.5- 16.5)	5.8	2-L/U	45/55	53.6	N/A	49.1	52.0	C	2.9	2,785	5,102	4,034	
5 Sugarloaf (16.5- 20.5)	3.9	2-L/U	45	45.0	4.5	36.0	48.1	A	12.1	7,815	8,966	7,944	
6 Cudjoe (20.5- 23.0)	2.5	2-L/U	45	45.0	N/A	40.5	47.2	A	6.7	2,774	3,612	3,188	
7 Summerland (23.0- 25.0)	2.2	2-L/U	45	45.0	N/A	40.5	45.2	B	4.7	1,712	2,466	1,639	
8 Ramrod (25.0- 27.5)	2.3	2-L/U	45	45.0	N/A	40.5	46.7	A	6.2	2,361	3,138	2,133	
9 Torch (27.5- 29.5)	2.1	2-L/U	45	45.0	N/A	40.5	48.1	A	7.6	2,643	3,352	2,504	
10 Big Pine (29.5- 33.0)	3.4	2-L/U	45	45.0	4.0	36.5	42.4	B	5.9	3,322	4,332	1,295	
11 Bahia Honda (33.0- 40.0)	7.0	2-L/U (70%) 4-L/D (30%)	45/50/55	52.4	N/A	47.9	54.2	A	6.3	7,303	10,047	6,723	
12 7-Mile Bridge (40.0- 47.0)	6.8	2-L/U	45/50/55	54.4	N/A	49.9	53.4	B	3.5	3,941	6,711	3,603	
13 Marathon (47.0- 54.0)	7.3	2-L/U (13%) 4-L/D (87%)	35/45	42.3	N/A	22.0	37.9	A	15.9	19,221	20,518	19,221	
14 Grassy (54.0- 60.5)	6.4	2-L/U	45/55	54.6	1.4	48.7	50.7	C	2.1	2,226	4,794	3,286	
15 Duck (60.5- 63.0)	2.7	2-L/U	55	55.0	N/A	50.5	53.3	C	2.8	1,252	2,402	1,252	
16 Long (63.0- 73.0)	9.9	2-L/U	40/45/50/55	53.4	N/A	48.9	52.0	B	3.1	5,082	9,017	2,459	
17 L Matecumbe (73.0- 77.5)	4.5	2-L/U	50/55	54.0	N/A	49.5	49.6	C	0.1	75	1,890	224	
18 Tea Table (77.5- 79.5)	2.2	2-L/U	45/55	52.9	N/A	48.4	46.9	D	-1.5	(546)	342	(692)	
19 U Matecumbe (79.5- 84.0)	4.1	2-L/U	30/40/45	45.0	N/A	40.5	36.4	E	-4.1	(2,784)	(1,404)	(883)	
20 Windley (84.0- 86.0)	1.9	2-L/U	30/40/45	45.0	N/A	40.5	37.0	E	-3.5	(1,101)	(476)	157	
21 Plantation (86.0- 91.5)	5.8	2-L/U	45	45.0	4.2	36.3	35.3	D	-1.0	(960)	743	3,266	
22 Tavernier (91.5- 99.5)	8.0	4-L/D	45/50	47.2	2.0	40.7	46.9	A	6.2	8,214	10,884	8,876	
23 Key Largo (99.5- 106.0)	6.8	4-L/D	45	45.0	3.8	36.7	44.2	A	7.5	8,446	10,568	8,333	
24 Cross (106.0- 112.5)	6.2	2-L/U	45/55	51.4	N/A	46.9	50.2	B	3.3	3,388	5,775	5,852	
Overall	108.3					45.0	44.6	D	-0.4			(7,419)	

# APPENDIX H

## Summary of Delay Events



# A P P E N D I X



**AECOM**



NB	EXCLUDED FROM OVERALL TIME	EXCLUDED FROM SEGMENT TIME	TOTAL DELAY TIME	TS DELAY	# OF TS EVENTS	DB DELAY	# OF DB EVENTS	AC DELAY	# OF AC EVENTS	LT DELAY	# OF LT EVENTS	SPECIAL EVENT DELAY	# OF SE EVENTS	RT DELAY	# OF RT EVENTS	CG DELAY	# OF CG EVENTS	SB DELAY	# OF SB EVENTS	CS DELAY	# OF CS EVENTS	EV DELAY	# OF EV EVENTS	TOTAL # OF EVENTS
1	00:00:00	00:00:00	00:03:05	00:03:05	8																			8
2	00:00:00	00:00:00	00:00:00																					0
3	00:00:00	00:00:00	00:00:00																					0
4	00:00:00	00:00:00	00:00:00																					0
5	00:00:00	00:00:00	00:00:34	00:00:34	2																			2
6	00:00:00	00:00:00	00:00:00																					0
7	00:00:00	00:00:00	00:00:00																					0
8	00:00:00	00:00:00	00:00:00																					0
9	00:00:00	00:00:00	00:00:00																					0
10	00:00:00	00:00:00	00:01:12	00:01:12	3																			3
11	00:00:00	00:00:00	00:00:11							00:00:11	1													1
12	00:00:00	00:00:00	00:00:00																					0
13	00:03:02	00:03:02	00:20:03	00:16:48	27							0:01:59	3			00:00:13	1	00:01:03	2					33
14	00:00:00	00:00:00	00:00:05	00:00:05	2																			2
15	00:00:00	00:00:00	00:00:00																					0
16	00:00:00	00:00:00	00:00:00																					0
17	00:00:00	00:00:00	00:00:00																					0
18	00:00:00	00:00:00	00:00:37													00:00:37	1							1
19	00:00:00	00:00:00	00:30:11													00:30:11	11							11
20	00:00:00	00:00:00	00:11:53													00:05:17	6							6
21	00:00:00	00:00:00	00:15:00	00:05:05	11					00:00:54	1					00:09:01	9							9
22	00:27:50	00:27:50	01:30:59	00:17:19	13			00:17:55	1							00:16:50	4			00:09:55	1			16
23	00:00:38	00:00:38	00:07:07	00:03:55	15							0:00:38	1			00:02:36	3							16
24	00:00:00	00:00:00	00:17:54													00:17:54	6							6
25	00:00:00	00:00:00	00:00:00																					0
TOTAL	00:31:30	00:31:30	02:48:51	00:48:01	81	00:00:36	1	00:17:55	1	00:01:05	2	00:02:37	4	00:01:35	41	00:21:35	41	00:01:03	2	00:09:55	1			153
SB																								0
25	00:00:00	00:00:00	00:00:00																					0
24	00:05:22	00:05:22	00:11:21					00:05:22	3							00:05:59	6							9
23	00:14:08	00:14:08	00:25:12	00:11:04	14			00:14:08	2															16
22	00:00:00	00:00:00	00:11:33	00:11:33	10																			10
21	00:01:49	00:01:49	00:37:13	00:04:25	13							0:01:49	1			00:30:59	14							28
20	00:00:00	00:00:00	00:06:02			00:00:18	1									00:05:44	4							5
19	00:00:00	00:00:00	00:02:52											00:00:23	1	00:02:29	6							7



## SUMMARY OF DELAY EVENTS

2019 TTDS

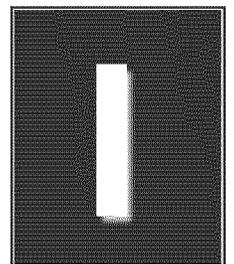
Delay Source	Segment Number	Segment Limits			Number of Events	Total Delay	Mean Delay Per Event	Mean Delay Per Trip
		From	To	Length (miles)				
Traffic Signal	1	Cow Key Bridge (N) - MM 4.0	Key Haven Blvd - MM 5.0	1.1	19	00:26:49	00:01:25	00:00:57
	5	Harris Channel Bridge (N) - MM 16.5	Bow Channel Bridge (N) -MM 20.5	4.0	5	00:01:51	00:00:22	00:00:04
	7	Spanish Main Drive -MM 23.0	East Shore Drive - MM 25.0	2.0	1	00:00:18	00:00:18	00:00:01
	10	N Pine Channel Br (N) - MM 29.5	Long Beach Dr - MM 33.0	3.5	10	00:06:00	00:00:36	00:00:13
	13	7-Mile Bridge (N) -MM 47.0	Cocoa Plum Drive -MM 54.0	7.0	42	00:22:59	00:00:32	00:00:47
	14	Cocoa Plum Dr - MM 54.0	Toms Harbor Ch Br (S) - MM 60.5	6.5	4	00:00:32	00:00:08	00:00:01
	21	Snake Creek Br (N) - MM 86.0	Ocean Blvd - MM 91.5	5.5	24	00:09:31	00:00:24	00:00:20
	22	Ocean Blvd - MM 91.5	Atlantic Blvd - MM 99.5	8.0	23	00:28:52	00:01:15	00:01:02
	23	Atlantic Blvd - MM 99.5	C-905 (Flashing Light) - MM 106.0	6.5	29	00:14:57	00:00:31	00:00:32
					Subtotal	157	01:51:49	00:00:43
Congestion	10	N Pine Channel Br (N) - MM 29.5	Long Beach Dr - MM 33.0	3.5	4	00:11:55	00:02:59	00:00:26
	11	Long Beach Dr - MM 33.0	7-Mile Bridge (N) - MM 47.0	14.0	1	00:03:31	00:03:31	00:00:08
	13	7-Mile Bridge (N) -MM 47.0	Cocoa Plum Drive -MM 54.0	7.0	2	00:00:32	00:00:16	00:00:01
	17	Channel #2 Br (N) - MM 73.0	Lignum V Br (S) - MM 77.5	4.5	1	00:00:25	00:00:25	00:00:01
	18	Lignumvitae Bridge (S) -MM 77.5	Tea Table Relief Bridge (N) -MM 79.5	2.0	1	00:00:37	00:00:37	00:00:01
	19	Tea Table Relief Bridge (N) - MM 79.5	Whale Harbor Bridge (S) -MM 84.0	4.5	17	00:32:40	00:01:55	00:01:10
	20	Whale Harbor Br (S) - MM 84.0	Snake Creek Br (N) - MM 86.0	2.0	10	00:11:01	00:01:06	00:00:24
	21	Snake Creek Br (N) - MM 86.0	Ocean Blvd - MM 91.5	5.5	23	00:39:59	00:01:44	00:01:26
	22	Ocean Blvd - MM 91.5	Atlantic Blvd - MM 99.5	8.0	4	00:15:50	00:03:57	00:00:34
	23	Atlantic Blvd - MM 99.5	C-905 (Flashing Light) - MM 106.0	6.5	3	00:02:36	00:00:52	00:00:06
24	C-905 - MM 106.0	County Line Sign - MM 112.5	6.5	12	00:23:53	00:01:59	00:00:51	
				Subtotal	78	02:22:59	00:01:50	00:05:06
Left Turn/Right Turn	11	Long Beach Dr - MM 33.0	7-Mile Bridge (N) - MM 47.0	14.0	1	00:00:11	00:00:11	00:00:00
	13	7-Mile Bridge (N) -MM 47.0	Cocoa Plum Drive -MM 54.0	7.0	1	00:00:17	00:00:17	00:00:01
	16	Long Key Br (S) - MM 63.0	Channel #2 Br (N) - MM 73.0	10.0	1	00:00:07	00:00:07	00:00:00
	19	Tea Table Relief Bridge (N) - MM 79.5	Whale Harbor Bridge (S) -MM 84.0	4.5	1	00:00:23	00:00:23	00:00:01
	21	Snake Creek Br (N) - MM 86.0	Ocean Blvd - MM 91.5	5.5	1	00:00:54	00:00:54	00:00:02
				Subtotal	5	00:01:52	00:00:22	00:00:04
Drawbridge Signal	20	Whale Harbor Br (S) - MM 84.0	Snake Creek Br (N) - MM 86.0	2.0	2	00:06:54	00:03:27	00:00:15
				Subtotal	2	00:06:54	00:03:27	00:00:15
Construction / Accident / School Bus / Emergency Vehicle / Special Events	12	7-Mile Bridge (S) -MM 40.0	7-Mile Bridge (N) -MM 47.0	7.0	1	00:01:22	00:01:22	00:00:03
	13	7-Mile Bridge (N) -MM 47.0	Cocoa Plum Drive -MM 54.0	7.0	6	00:05:57	00:01:00	00:00:13
	17	Channel #2 Br (N) - MM 73.0	Lignum V Br (S) - MM 77.5	4.5	1	00:00:22	00:00:22	00:00:01
	21	Snake Creek Br (N) - MM 86.0	Ocean Blvd - MM 91.5	5.5	1	00:01:49	00:01:49	00:00:04
	22	Ocean Blvd - MM 91.5	Atlantic Blvd - MM 99.5	8.0	2	00:27:50	00:13:55	00:01:00
	23	Atlantic Blvd - MM 99.5	C-905 (Flashing Light) - MM 106.0	6.5	3	00:14:46	00:04:55	00:00:32
	24	C-905 (Flashing Light) - MM 106.0	County Line Sign - MM 112.5	6.5	3	00:05:22	00:01:47	00:00:12
				Subtotal	17	00:57:28	00:03:23	00:02:03
<b>All Sources</b>				<b>TOTAL</b>	<b>259</b>	<b>05:21:02</b>	<b>00:01:14</b>	<b>00:11:28</b>

# APPENDIX I

## 2019 Data Collection Schedule



# A P P E N D I X



**AECOM**

<p style="text-align: center;"><b>2019 Monroe County Travel Time &amp; Delay Study 2019</b></p>						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
<b>February/March</b>						
<b>24 Feb</b>	<b>25 Feb</b>	<b>26 Feb</b>	<b>27 Feb</b>	<b>28 Feb</b>	<b>1 Mar</b>	<b>2 Mar</b>
<b>3 Mar</b>	<b>4 Mar</b>	<b>5 Mar</b>	<b>6 Mar</b>	<b>7 Mar</b>	<b>8 Mar</b>	<b>9 Mar</b>
1 - HS 11:15am 2 - KW 3:30pm	3 - HS 11:45am 4 - KW 4:00pm	5 - HS 9:30am 6 - KW 1:45pm	7 - HS 9:45am 8 - KW 1:30pm	9 - HS 9:45am 10 - KW 2:00pm	11 - HS 10:15am 12 - KW 2:30pm	13 - HS 10:45am 14 - KW 3:00pm
<b>10 Mar</b>	<b>11 Mar</b>	<b>12 Mar</b>	<b>13 Mar</b>	<b>14 Mar</b>	<b>15 Mar</b>	<b>16 Mar</b>
15 - KW 11:30am 16 - HS 3:15pm	17 - KW 12:00pm 18 - HS 3:45pm	19 - KW 10:45am 20 - HS 2:30pm	21 - KW 10:15am 22 - HS 1:45pm	23 - KW 10:00am 24 - HS 1:45pm	25 - KW 10:30am 26 - HS 2:15pm	27 - KW 11:00am 28 - HS 2:45pm
<b>17 Mar</b>	<b>18 Mar</b>	<b>19 Mar</b>	<b>20 Mar</b>	<b>21 Mar</b>	<b>22 Mar</b>	<b>23 Mar</b>

Notes:

1. Data should be downloaded from the DMI and QCD immediately after every travel run.
2. A copy of the raw data sheet should be faxed/emailed to the office every day.
3. Vehicle tire pressure should be checked before every run and maintained as constant.
4. HS - Start at Homestead; KW - Start at Key West.