Internship Report: Florida Department of Transportation

My name is Liana Lantigua Cuni and I am a Civil Engineering student coursing my last semester at Florida International University. A couple of months ago, I was given the opportunity of interning as an Undergraduate Assistant at Florida Department of Transportation (FDOT). I started my internship at District VI's Intelligent Transportation Systems (ITS) department and I soon realized what an exciting and extraordinary field ITS is. Through my work, I have proudly contributed to the continuity of the ITS program mission: "enhance the safety, security, and efficiency of Florida's transportation system through the implementation of interoperable ITS technology in support of local, regional, and statewide mobility."

Figure 1. FDOT District Six's SunGuide Transportation Management Center (TMC)

Experience

My internship started on June 2nd, 2015 as a Florida International University consultant for FDOT. Since the first day, I have been involved in both engineering and administrative projects which have developed my critical thinking, group-work, and communication skills among many others. I have closely worked with both consultants (from FIU and other private companies including AECOM and C2S Engineering) and DOT employees. Some of them include Maria Guevara, Alejandro Motta, Jose Grullon, and Rodney Carrero-Villa. The support and knowledge they have all shared with me has empowered me and allowed me to grow both personal and professionally.

Assignments and Responsibilities

As an intern, I have been responsible for several projects and assignments which I will further discuss.

Completion of Travel Time Reliability Monthly Report

As traffic in major cities worsens almost on a daily basis, travel time reliability becomes crucial in order to ensure the client (i.e. the public) is content and does not experience unexpected traffic delays. The Travel Time Reliability Monthly Report is prepared every month by an FIU consultant and submitted to the ITS Special Projects Coordinator during the first week of the month in order to be approved. Ultimately, the report is uploaded and published on the SunGuide website for the public to access.

The report is intended to provide an understanding of how reliable the traffic behavior is, focusing on the travel time. It includes information related to travel time index (TTI) by roadways, weekdays travel times by time of day, and weekdays speeds and volumes by time of day for each roadway analyzed. Travel time index is an indication of how much longer travel times are during congestion compared to during light traffic.

I completed the Travel Time Reliability Monthly Reports corresponding to the months of May and June. I did so by following FDOT District VI's Standard Operating Guidelines and retrieving the necessary data from the Operations Task Manager (OTM) software related to the segments being analyzed. During the process, I had the complete support and assistance from Maria Guevara.

Centennial FDOT 1915★2015

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SUNGUIDE

TRAVEL TIME RELIABILITY REPORT
Travel Time Index by Roadway*

Time	I-95		I-195		I-75		SR 826					
	NB	SB	EB	WB	NB	SB	NB	EB	NB/EB	SB	WB	SB/WB
0:00	1.07	1.11	1.07	1.05	1.01	0.99	1.00	0.98	0.99	1.01	0.98	0.99
1:00	1.03	1.09	1.07	1.03	1.02	1.00	1.01	0.99	1.00	1.02	0.99	1.00
2:00	1.03	1.09	1.08	1.04	1.06	1.02	1.03	1.00	1.02	1.04	1.01	1.01
3:00	1.02	1.09	1.09	1.04	1.11	1.01	1.05	1.01	1.03	1.03	1.01	1.01
4:00	1.02	1.08	1.07	1.04	1.16	1.01	1.05	1.01	1.03	1.02	1.01	1.00
5:00	1.01	1.06	1.06	1.02	1.13	0.99	1.03	0.99	1.01	1.01	0.98	0.99
6:00	1.02	1.24	1.09	1.01	1.10	1.00	1.07	1.08	1.07	1.23	1.09	1.15
7:00	1.04	1.84	1.18	1.02	1.09	1.26	1.09	1.35	1.21	1.71	1.41	1.56
8:00	1.08	2.19	1.52	1.07	1.10	1.47	1.09	1.32	1.18	1.97	1.50	1.74

Figure 2. Travel Time Reliability Report posted on TMC.SunGuide.info

Travel Time Link Configurations

As previously discussed, travel time information is available in Miami Dade County. However, such information is not only found in the SunGuide website, but also in the form of Dynamic

Message Signs (DMS) located on the roadways travelers use daily. DMSs around the county assist motorists in making educated decisions about their travelling itineraries as seen in Figure 3. The travel time information posted on the signs is estimated based on real-time data collected by roadway detectors placed along the corridors. Such detectors consider real travel time speeds, which can be later translated into time when the length of roadway associated with the each detector is accounted for.

Figure 3. Dynamic Message Sign (DMS)

After the last Travel Time (TvT) study performed by FIU, some of the published travel times were found to be off range when compared to the live data. As a result, for the past months I have been in charge of modifying such links in order to obtain more accurate records. I have done so by adjusting the lengths (weights) of their detectors using collected speed data, as well as my engineering judgement. The changes I proposed will be tested during the Fall TvT study carried out by FIU. While completing this assignment, the support and help of Maria Guevara and Alejandro Motta was instrumental.

Procedures Validation

One of the main tasks I have been involved with while interning at FDOT is the validation of several procedures. Monthly and yearly reports are usually completed following standard procedures recorded under the FDOT District VI's Standard Operating Guidelines. The accuracy and clarity of such procedures are critical for the successful completion of the reports. Hence, testing their capabilities to be duplicated is indispensable for the well-functioning of the department.

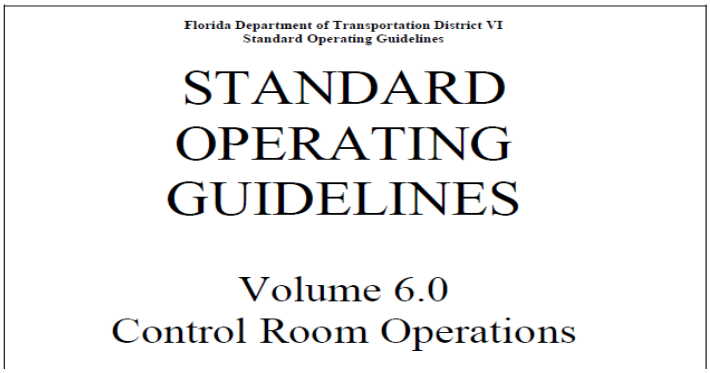

Figure 4. FDOT District VI's Standard Operating Guidelines

The procedures validations I have been assigned are directly related to the Control Room Operations at TMC and include:

1. DMS Usage Report Procedure
2. Error to Event Ratio Report Procedure
3. FLATIS Monthly Report Procedure
4. ITS Operations Summary Procedure
5. SERFTOC Report Procedure

In order to successfully validate the previous procedures, I collected data from the OTM and Sunguide software. In addition, I was assisted by Jose Grullon and Maria Guevara.

Other Activities

Although less time consuming, I was also involved in a variety of other activities pertaining to ITS during the duration of the internship.

For instance, I conducted video traffic counts at the location of NB I-95 Ramp at NW 81st street. I did so using video collected from camera at the said location and an excel macro. Data was recorded in intervals of 15 minutes for a time length of 2 hours. Finally, the results were provided to the traffic analyst.

Figure 5. Video collected for traffic count

In addition, I also revised monthly report procedures such as the D6 TMC Systems Administration Monthly Report. The recommendations were passed along to Maria Guevara and the IT specialist.

I was also responsible of elaborating a proposal of modified names for some of the Closed Circuit TVs (CCTV) cameras used along the county's main roadways. The proposal also included the tentative names according to the new naming convention to be adopted by the department.

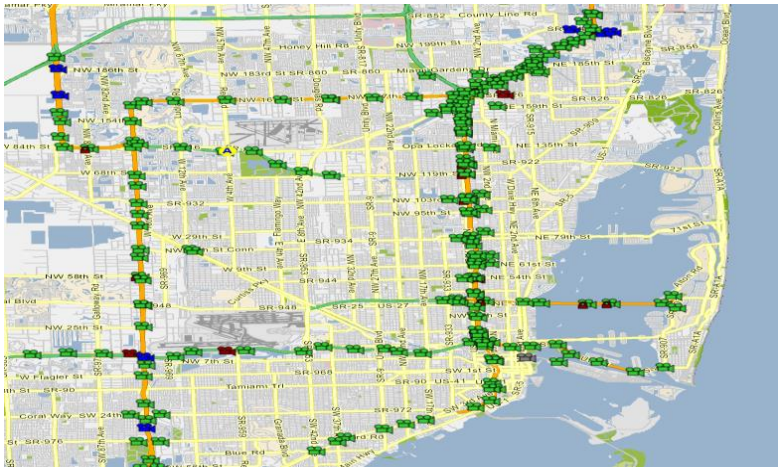
Figure 6. Distribution of CCTVs cameras around Miami Dade County

Moreover, I was also involved in the recording of activities and expenditures corresponding to the FHP troops patrolling KROME Avenue. Hours, miles, and events were logged in the corresponding file.

Other activities performed include inventory of master keys, revision of Operations QA/QC for June by verifying the logged comments for a 10% random selection of events, and collected data for component availability corresponding to CCTVs and detectors along I-95 and SR-826.

Summary

As an FIU intern at District VI, I have been directly exposed to a myriad of engineering tasks and duties as previously discussed. Through this experience I have improved and further developed my critical thinking skills as well as my learning capabilities. In addition, I also enhanced my oral and written communication as I participated in meetings, communicated with engineers and staff via email, and composed technical reports and requests.

Finally, I will forever appreciate the opportunity given to me by Dr. Gan, the University, and DOT D6 to become an intern during these past months. It has been an extremely rewarding experience which has ultimately given me the tools to succeed in today's competitive labor market.