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TECHNICAL MEMORANDUM

17th Street Corridor Mobility Plan

Peak Season Traffic Data Collection Summary

Date:	June 10, 2016	Project #: 19196.4
To:	City of Fort Lauderdale	
From:	Zachary Clark, PE , Jessica Josselyn, Yi-Min Ha, and Shing Tsoi, PE	

The purpose of the 17th Street Corridor Mobility Plan is to perform a multi-model level of service (LOS) analysis for the transportation area of the 17th Street corridor. This includes developing a prioritized, time-constrained list of implementable recommendations with estimated capital and operations costs. Recommendations may include policy changes, infrastructure, service, and operational practices.

This technical memorandum provides a summary of the data collection performed during the 2016 peak season and the concluding results.

DATA COLLECTION

Vehicular, bicycle, and pedestrian counts were collected as per the scope of services. The count types and locations are:

1. Vehicle Counts:
    a. 24-hour bi-directional volume counts (6):
        i. Federal Highway (US 1) (North of SE 14th Court)
        ii. Federal Highway (US 1) (North of SE 21st Street)
        iii. Miami Road (North of SE 16th Street)
        iv. SR 84 (West of Federal Highway)
        v. SE 17th Street (West of Federal Highway)
        vi. Davie Boulevard (West of Federal Highway)
    b. 72-hour bi-directional volume counts (8):
        i. 10th Ave (North of SE 17th Street)
        ii. 10th Ave (South of SE 17th Street)
        iii. SE 3rd Ave (South of SE 17th Street)
        iv. Cordova Road (North of SE 17th Street)
        v. Cordova Road (South of SE 17th Street)
        vi. Eisenhower Boulevard (North of SE 17th Street)
        vii. 15th Street (East of Federal Highway)
        viii. Miami Road (South of SE 17th Street)
    c. 6-hour peak period (AM/PM) turning movement counts (12):
        i. Andrews Avenue at SW 17th St
        ii. SE 3rd Avenue at SE 17th St
        iii. Federal Highway (US 1) at SE 17th St

iv. Miami Rd at SE 17th St
v. SE 10th Avenue at SE 17th St
vi. Cordova Road at SE 17th St
vii. SE 15th Avenue at SE 17th St (Unsignalized)
viii. Eisenhower Boulevard at SE 17th St
ix. SE 23rd Avenue at SE 17th St
x. Mayan Drive at SE 17th St/SR A1A
xi. Federal Highway (US 1) at Davie Boulevard
xii. Federal Highway (US 1) at SE 24th Street (SR 84)

d. 7-Day bi-directional volume counts (2):
i. SE 17th Street (East of SE 23rd Ave, West of Mayan Drive)
ii. SE 17th Street (East of Cordova Rd, West of 15th Ave)

2. Bicycle and Pedestrian Counts:
a. 6-hour peak period (AM/PM) volume counts (12):
i. Andrews Avenue at SW 17th St
ii. SE 3rd Avenue at SE 17th St
iii. Federal Highway (US 1) at SE 17th St
iv. Miami Rd at SE 17th St
v. SE 10th Avenue at SE 17th St
vi. Cordova Road at SE 17th St
vii. SE 15th Avenue at SE 17th St (Unsignalized)
viii. Eisenhower Boulevard at SE 17th St
ix. SE 23rd Avenue at SE 17th St
x. Mayan Drive at SE 17th St/SR A1A
xi. Federal Highway (US 1) at Davie Boulevard
xii. Federal Highway (US 1) at SE 24th Street (SR 84)

Data collections were performed on the following dates:

- 24-hour bi-directional volume counts and speed – July 16, 2015 (Th), July 21, 2015 (T) and March 16, 2016 (W)
- 72-hour bi-directional volume counts and speed – July 21-23, 2015 (T-Th), March 15-17, 2016 (T-Th) and March 15-18, 2016 (T-F)
- 7-day bi-directional volume counts and speed– July 21-27, 2015 (T-M), July 24-30, 2015 (F-Th) and March 16-22, 2016 (W-T)
- 6-hour peak period (AM/PM) turning movement counts (incl. ped and bike) – July 16 (Th), July 22, 2015 (W), July 29, 2015 (W) and March 16-17, 2016 (W-Th)

According to the Fort Lauderdale Convention Center Calendar of Events, all days where pedestrian and bicycle information was collected, there was at least one ongoing event at the Convention Center. The relevant events occurring during the data collection periods are as follows:

- July 2015 Data Collection
    - Conference on Global Leadership, Learning, & Research – July 12-16, 2015 (Su – Th)
    - USA Karate National Championships & Team Trials (Public Event) – July 15-19, 2015 (W-Su)
    - Junior US Open Judo Championships (Public Event)– July 17-19, 2015 (F-Su)
    - National Cheerleaders Association Camp (Public Event) – July 21-24, 2015 (T-F)
    - All Aboard Florida (Public Event) – July 22, 2015 (W)
    - National Urban League Conference –July 29 – August 1, 2015 (W-Sa)
- March 2016 Data Collection
    - Seatrade Cruise Global – March 14-17, 2016 (M-Th)

Traffic Volume Adjustment and Verification

Daily Traffic

US 1 and 17th Street are both under the jurisdiction of the FDOT. The methodology followed for the development of typical daily traffic for this study is consistent with the FDOT's 2014 *Project Traffic Forecasting Handbook*.

The July 2015 and March 2016 counts were adjusted to reflect the seasonal changes in traffic volumes. The FDOT TranStat office determines the Seasonal Adjustment Factor (SF) using traffic data collected from permanent count locations. There are no permanent count locations within the study area. Therefore, the SF was taken from the FDOT's 2014 Peak Season Factor Category Report for this area of Broward County. The applicable SF for the July 2015 traffic counts is 1.06. A SF of 0.87 was applied to the March 2016 counts.

Collected traffic volumes were adjusted to reflect the average day. The collected 24-hour, 72-hour, and 7-day counts provide an Average Daily Traffic (ADT) that is converted to an Average Annual Daily Traffic (AADT) to represent the typical daily traffic on a road segment. This is carried out by applying the SF and an Axle Correction Factor (ACF) to the collected ADT.

Table 1 shows the ACF taken from the FDOT's 2014 Weekly Axle Factor Category Report.

Table 1: Axle Correction Factors

Roadway	From	To	ACF
SR 84/SE 24th Street	SR 7	SR 5/US 1/ Federal Highway	0.96
A1A/SE 17th Street	SR 5/US 1	SR 814/ Atlantic Boulevard	0.98
SR 736/Davie Boulevard	SR 7	SR 5/US 1/ Federal Highway	0.83
SR 5/US 1/Federal Highway	I-595	SR 870/ Commercial Boulevard	0.98
Intracoastal Water Way Bridge Crossings – South Broward County			0.99
Broward County Roads			0.98

Table 2 summarizes the AADT comparison of the collected counts. As seen, the calculated AADT from March 2016 data collection efforts are generally consistent with the calculated AADT from the July 2015 counts.

Table 2: AADT Calculation and Comparison

Roadway	Location	Count Duration	July 2015 Counts			March 2016 Counts			July 2015 AADT (vpd)	March 2016 AADT (vpd)
			ADT (vpd)	SF	ACF	ADT (vpd)	SF	ACF*		
US 1	North of SE 14th Ct	24-hr	41,163	1.06	0.98	50,419	0.87	0.98	43,000	43,000
US 1	North of SE 21st St	24-hr	52,044	1.06	0.98	58,501	0.87	0.98	54,000	50,000
Miami Rd	North of SE 16th St	24-hr	1,950	1.06	0.98	2,277	0.87	1.00	2,000	2,000
SR 84	West of US 1	24-hr	16,466	1.06	0.96	18,025	0.87	1.00	17,000	15,500
SE 17th St	West of US 1	24-hr	13,923	1.06	0.98	14,794	0.87	1.00	14,500	13,000
Davie Blvd	West of US 1	24-hr	16,631	1.06	0.83	19,877	0.87	0.83	14,500	14,500
SE 10th Ave	North of SE 17th St	72-hr	3,018	1.06	0.98	4,168	0.87	1.00	3,100	3,600
SE 10th Ave	South of SE 17th St	72-hr	3,091	1.06	0.98	5,999	0.87	1.00	3,200	5,200
SE 3rd Ave	South of SE 17th St	72-hr	2,256	1.06	0.98	2,458	0.87	1.00	2,300	2,100
Cordova Rd	North of SE 17th St	72-hr	8,832	1.06	0.98	8,455	0.87	1.00	9,200	7,400
Cordova Rd	South of SE 17th St	72-hr	11,051	1.06	0.98	11,636	0.87	0.98	11,500	9,900
Eisenhower Blvd	North of SE 17th St	72-hr	1,799	1.06	0.98	3,338	0.87	1.00	1,900	2,800
SE 15th St	East of US 1	72-hr	5,345	1.06	0.98	7,081	0.87	1.00	5,600	6,200
Miami Rd	South of SE 17th St	72-hr	4,234	1.06	0.98	5,817	0.87	0.98	4,400	5,000
SE 17th St	West of Mayan Dr	7-day	23,940	1.06	0.98	30,215	0.87	0.98	25,000	26,000
SE 17th St	West of SE 15th Ave	7-day	35,434	1.06	0.98	42,077	0.87	0.98	37,000	36,000

* ACF adjustment was not required (ACF = 1.00) for some counts because the collected counts already represent the number of vehicles instead of the number of axles.

Vehicular Turning Movements

Comparisons were performed using the number of vehicles entering the intersection during the AM and PM peak hour. The unadjusted volume (raw counts) comparison between the July 2015 and March 2016 data collection effort can be seen in Table 3.

Table 3: Intersection Peak Hour Entering Vehicles Comparison (Raw Count Comparison)

Intersection	AM Peak Hour				PM Peak Hour			
	July 2015 (veh)	March 2016 (veh)	Difference (vpd) [2015 vs. 2016]	%-Difference [2015 vs. 2016]	July 2015 (veh)	March 2016 (veh)	Difference (vpd) [2015 vs. 2016]	%-Difference [2015 vs. 2016]
SW 17th St & Andrews Ave	2,542	2,860	+318	+12.5%	2,851	3,458	+607	+21.3%
SE 17th St & SE 3rd Ave	1,338	1,527	+189	+14.1%	1,903	2,242	+339	+17.8%
SE 17th St & US 1	4,957	5,161	+204	+4.1%	5,649	5,716	+67	+1.2%
SE 17th St & Miami Rd	2,850	3,398	+548	+19.2%	3,435	3,860	+425	+12.4%
SE 17th St & SE 10th Ave	3,001	3,345	+344	+11.5%	3,749	3,874	+125	+3.3%
SE 17th St & Cordova Rd	3,040	3,444	+404	+13.3%	3,980	3,977	-3	-0.1%
Mayan Dr & SE 17th St/SR A1A	1,589	1,957	+368	+23.2%	1,919	2,004	+85	+4.4%
SE 17th St & SE 15th Ave	2,564	2,905	+341	+13.3%	2,934	3,004	+70	+2.4%
SE 17th St & Eisenhower Blvd	2,420	2,937	+517	+21.4%	2,868	3,457	+589	+20.5%
SE 17th St & SE 23rd Ave/Harbor Inlet Dr	1,922	2,284	+362	+18.8%	2,324	2,639	+315	+13.6%
Davie Blvd & US 1	3,613	4,011	+398	+11.0%	3,768	4,638	+870	+23.1%
SE 24th St & US 1	4,352	4,483	+131	+3.0%	5,083	5,284	+201	+4.0%

As seen, the peak hour turning movement volumes collected in March 2016 are generally greater than those collected in July 2015.

In addition to the Seasonal Adjustment Factor (SF), FDOT TranStat office also determines the Peak Season Conversion Factor (PSCF) from permanent count locations. The PSCF is used to convert a 24-hour count to peak season weekday average daily traffic.

The applicable PSCF for days where data was collected in July 2015 and March 2016 is 1.18 and 0.97 respectively, a difference of approximately 22%. Most peak hour turning movement counts collected in March 2016 are 11%-24% greater than those collected in July 2015. Although the PSCF is applied to 24-hour counts, in general the relative difference between the peak hour turning movement counts of July 2015 and March 2016 is consistent with what would be expected based on the PSCF.

Pedestrian Counts

Comparison between the July 2015 and March 2016 pedestrian volumes were performed using the total number of pedestrians crossing at the intersection during the AM and PM peak hour. The unadjusted pedestrian volume (raw counts) comparison can be seen in Table 4.

Table 4: Intersection Pedestrian Counts Comparison (Raw Counts)

Intersection	AM Peak Hour		PM Peak Hour	
	July 2015 (ped)	March 2016 (ped)	July 2015 (ped)	March 2016 (ped)
SW 17th St & Andrews Ave	14	16	18	11
SE 17th St & SE 3rd Ave	247	244	457	264
SE 17th St & US 1	28	38	49	58
SE 17th St & Miami Rd	13	41	21	30
SE 17th St & SE 10th Ave	22	53	74	72
SE 17th St & Cordova Rd	43	71	141	171
Mayan Dr & SE 17th St/SR A1A	19	29	10	25
SE 17th St & SE 15th Ave	106	89	160	64
SE 17th St & Eisenhower Blvd	225	219	163	242
SE 17th St & SE 23rd Ave/Harbor Inlet Dr	54	40	42	30
Davie Blvd & US 1	9	10	13	24
SE 24th St & US 1	7	6	1	9

As seen, the peak hour pedestrian volumes collected in March 2016 are generally greater than those collected in July 2015.

Bicycle Counts

Comparison between the July 2015 and March 2016 bicycle volume were performed using the total number of bicycle entering at the intersection during the AM and PM peak hour. The unadjusted bicycle volume (raw counts) comparison can be seen in Table 5.

Table 5: Intersection Bicycle Counts Comparison (Raw Counts)

Intersection	AM Peak Hour		PM Peak Hour	
	July 2015 (bicycles)	March 2016 (bicycles)	July 2015 (bicycles)	March 2016 (bicycles)
SW 17th St & Andrews Ave	1	4	6	7
SE 17th St & SE 3rd Ave	12	8	6	3
SE 17th St & US 1	1	8	3	6
SE 17th St & Miami Rd	2	5	1	2
SE 17th St & SE 10th Ave	2	6	4	2
SE 17th St & Cordova Rd	4	11	5	10
Mayan Dr & SE 17th St/SR A1A	19	18	8	15
SE 17th St & SE 15th Ave	6	10	3	10
SE 17th St & Eisenhower Blvd	8	9	6	13
SE 17th St & SE 23rd Ave/Harbor Inlet Dr	9	8	5	16
Davie Blvd & US 1	0	0	0	1
SE 24th St & US 1	1	3	2	3

As seen, the peak hour bicycle volumes collected in March 2016 are generally greater than those collected in July 2015.

CONCLUSION

The comparison performed shows that traffic data collected for the study in July 2015 and March 2016 traffic counts are acceptable for use. The AADTs developed from the bi-directional counts collected in July 2015 are generally consistent with the AADTs developed from the bi-directional counts collected in March 2016. Peak hour turning movement counts collected in March 2016 are greater than those collected in July 2015 and are reflective of the peak season. Similarly, peak hour pedestrian and bicycle counts were greater in the peak season, March 2016, than the July 2015 data collection.