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MEMORANDUM

To: Hamid Darbandi-Fard, P.E. – Engineering Division, Sustainable Development and Construction Department, City of Dallas

From: Steve E. Stoner, P.E., PTOE

CC: Cliff Spruil, AIA – Sterling Barnett Little, Inc.

Date: August 25, 2016

Subject: **Traffic Management Plan for Texas Rangers MLB Urban Youth Academy –**
Supplement: Roadway Link Analysis
PK# 2067-16.120

Background

This memorandum summarizes an analysis of the existing roadway link capacity for the two primary roadways fronting the proposed MLB Urban Youth Academy development – Bickers Street and Goldman Street. Daily (24-hour) traffic counts were conducted on Tuesday, August 23, 2016. The traffic volumes were 8,103 vehicles per day on Bickers Street, just west of N. Hampton Road, and 1,648 vehicles per day on Goldman Street, south of Bickers Street.

Analysis Methodology

A roadway link is a segment of roadway between two intersections. Roadway link capacity analysis is a comparison of actual or forecasted traffic volume on the link to the theoretical roadway capacity. The capacity of the roadway link is predominantly a function of the roadway's cross-section (i.e., number of lanes, lane widths, type of center divider, etc.), but also considers factors such as the environment and the functional classification of the roadway.

The North Central Texas Council of Governments (NCTCOG) – the metropolitan planning agency for the Dallas-Fort Worth region – has derived internal “hourly service volume” guidelines used for transportation modelling purposes. The NCTCOG values were based upon the principals presented in the *Highway Capacity Manual* with “regional calibration” factors applied. Though these per-lane capacities, or “Service Volumes” (summarized in the table below), are intended for modelling purposes, they do provide a reasonable gage of theoretical capacity.

Area Type	Hourly Service Volumes By Roadway Function					
	Principal Arterial		Minor Arterial & Frontage Road		Collector & Local Street	
	Median-Divided or One-Way	Undivided Two-Way	Median-Divided or One-Way	Undivided Two-Way	Median-Divided or One-Way	Undivided Two-Way
CBD	725	650	725	650	475	425
Urban/ Commercial	850	775	825	750	525	475
Residential	925	875	900	825	575	525
Rural	1,025	925	975	875	600	550

To determine the utilization of a roadway, the volume:capacity ratio can be calculated – a v/c ratio of less than 1.0 (or, 100%) indicates that the roadway is operating under capacity. NCTCOG's Level of Service denominations are as follows:

- Volume:Capacity Ratio \leq 45% is LOS A/B,
- Volume:Capacity Ratio $>$ 45% and \leq 65% is LOS C,
- Volume:Capacity Ratio $>$ 65% and \leq 80% is LOS D,
- Volume:Capacity Ratio $>$ 80% and \leq 100% is LOS E,
- Volume:Capacity Ratio \geq 100% is LOS F

Summary of Results

For the subject roadways, the volume/capacity ratio was calculated for existing conditions. A summary of the link capacity analysis is provided in Table 1.

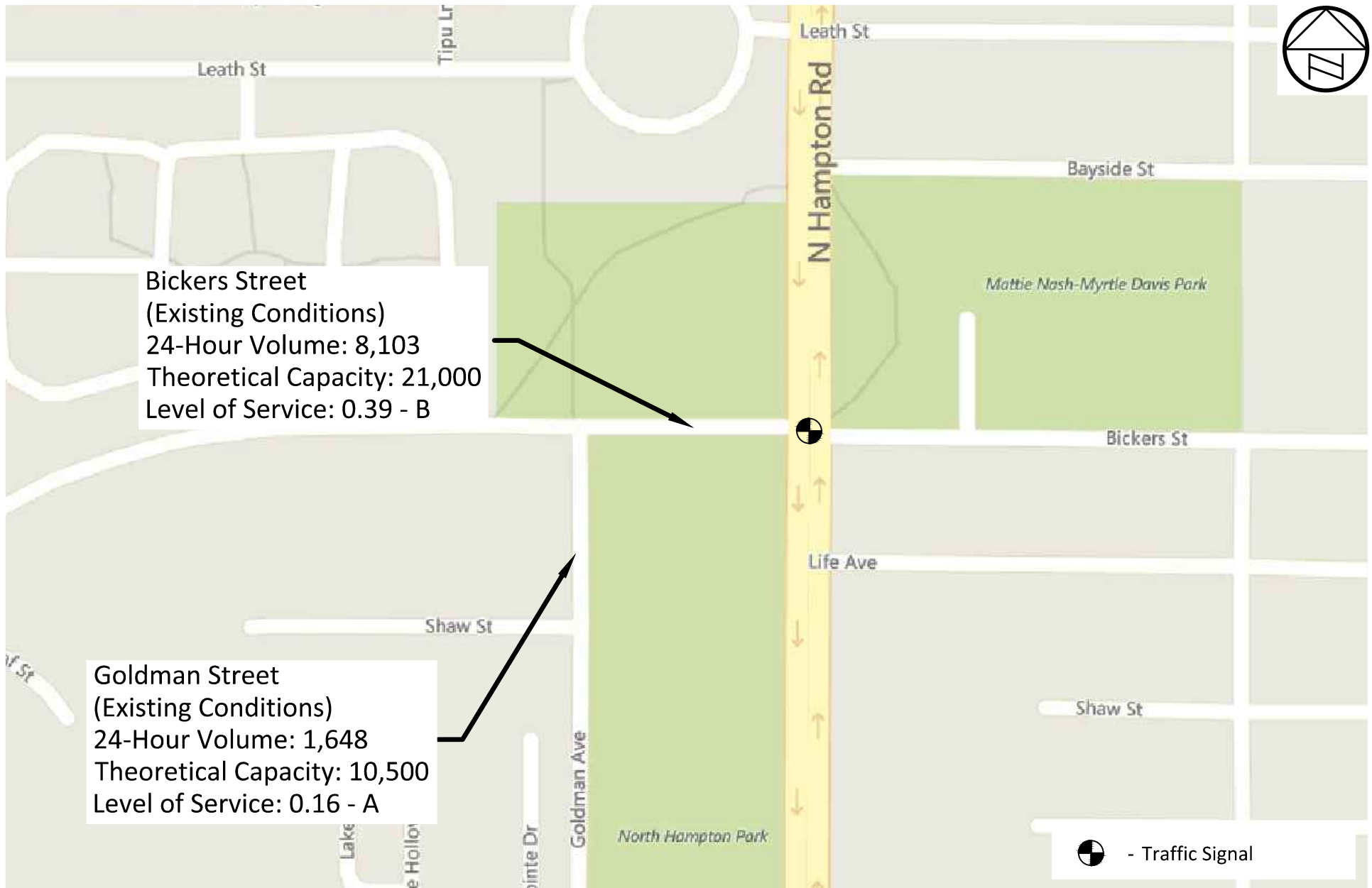
Table 1. Roadway Link Analysis Summary

ROADWAY/ SCENARIO	DAILY VOLUME	THEORETICAL DAILY CAPACITY	V:C RATIO/ LEVEL OF SERVICE
<u>Bickers Street</u> Existing Conditions	8,103	21,000	0.39 – B
<i>Hypothetical Scenario:</i> 2x Existing Condition	16,206	21,000	0.77 – D
<u>Goldman Street</u> Existing Conditions	1,648	10,500	0.16 – A
<i>Hypothetical Scenario:</i> 2x Existing Condition	3,296	10,500	0.31 – B

The results indicate that the existing traffic volumes on Bickers and Goldman streets are well-below the roadways' theoretical capacities. In fact, the roadways could even accommodate more than twice the current traffic volumes. A graphical summary is provided in **Exhibit A**.

END OF MEMO

Link Analysis



PK #2067-16.120 (HWL: 08/25/16)

MLB Youth Academy, Dallas, Texas

ROADWAY: Bickers Street
 LOCATION: between Hampton Road and Goldman Street
 DAY: Tuesday
 DATE: August 23rd
 YEAR: 2016
 SOURCE: CJ Hensch

24-HOUR, BI-DIRECTIONAL VOLUME
8,103
 (WEEKDAY)

Bickers Street

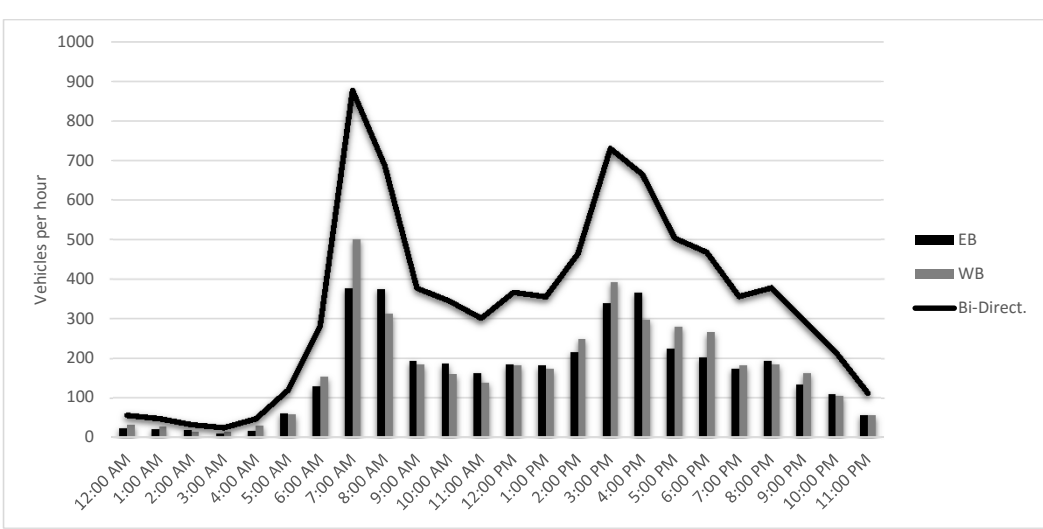
START TIME	Eastbound				Westbound				Totals		
	0:00	0:15	0:30	0:45	0:00	0:15	0:30	0:45	EB	WB	Bi-Direct.
12:00 AM	6	5	7	6	8	8	8	7	24	31	55
1:00 AM	3	4	12	2	9	8	8	1	21	26	47
2:00 AM	2	7	6	4	3	4	4	2	19	13	32
3:00 AM	1	2	4	3	2	4	1	7	10	14	24
4:00 AM	4	1	3	8	8	8	6	8	16	30	46
5:00 AM	4	15	24	18	10	12	16	20	61	58	119
6:00 AM	30	28	36	34	32	26	40	55	128	153	281
7:00 AM	50	92	97	138	96	120	161	124	377	501	878
8:00 AM	140	116	64	55	92	97	61	62	375	312	687
9:00 AM	52	47	49	45	58	44	54	28	193	184	377
10:00 AM	46	42	52	46	36	42	36	45	186	159	345
11:00 AM	46	29	48	39	40	35	30	34	162	139	301
12:00 PM	52	36	54	42	56	44	40	43	184	183	367
1:00 PM	51	39	44	48	52	34	37	50	182	173	355
2:00 PM	49	44	61	62	45	71	69	64	216	249	465
3:00 PM	62	59	102	115	96	98	101	98	338	393	731
4:00 PM	116	111	74	66	85	62	81	70	367	298	665
5:00 PM	57	46	60	61	66	71	76	67	224	280	504
6:00 PM	52	46	51	53	62	59	68	77	202	266	468
7:00 PM	53	40	46	35	48	41	42	51	174	182	356
8:00 PM	56	46	57	35	42	45	51	46	194	184	378
9:00 PM	42	34	33	24	42	45	37	39	133	163	296
10:00 PM	49	35	11	15	25	31	26	23	110	105	215
11:00 PM	11	14	20	11	16	12	12	15	56	55	111

7:30 AM 8:30 AM
 3:30 PM 4:30 PM
 7:30 AM 8:30 AM
 7:00 AM 8:00 AM

24-Hour Total: 8,103
 (Bi-Direct.) AM Peak Hour Total: 965
 (Bi-Direct.) PM Peak Hour Total: 790
 Highest By Direction (EB): 491
 Highest By Direction (WB): 501

	EB	WB	Bi-Direct.
24-Hour Total:	3,952	4,151	8,103
(Bi-Direct.) AM Peak Hour Total:	491	474	965
(Bi-Direct.) PM Peak Hour Total:	444	346	790
Highest By Direction (EB):	491		
Highest By Direction (WB):		501	

Graph



ROADWAY: Goldman Street
 LOCATION: south of Bickers Street
 DAY: Tuesday
 DATE: August 23rd
 YEAR: 2016
 SOURCE: CJ Hensch

24-HOUR, BI-DIRECTIONAL VOLUME
1,648
 (WEEKDAY)

Goldman Street

START TIME	Northbound				Southbound				Totals		
	0:00	0:15	0:30	0:45	0:00	0:15	0:30	0:45	NB	SB	Bi-Direct.
12:00 AM	2	2	0	1	0	2	0	0	5	2	7
1:00 AM	0	0	2	0	0	0	2	0	2	2	4
2:00 AM	0	0	1	1	0	0	1	0	2	1	3
3:00 AM	1	0	1	1	0	1	0	1	3	2	5
4:00 AM	1	1	1	0	0	1	0	0	3	1	4
5:00 AM	3	1	4	4	0	1	0	1	12	2	14
6:00 AM	5	5	5	5	1	1	4	2	20	8	28
7:00 AM	15	12	12	13	8	5	10	15	52	38	90
8:00 AM	17	12	12	12	25	13	19	31	53	88	141
9:00 AM	23	11	7	9	19	6	8	9	50	42	92
10:00 AM	7	3	7	8	10	9	8	5	25	32	57
11:00 AM	6	4	8	7	7	7	6	4	25	24	49
12:00 PM	15	11	11	8	10	10	6	9	45	35	80
1:00 PM	7	10	5	7	3	8	9	6	29	26	55
2:00 PM	13	10	12	11	8	7	12	6	46	33	79
3:00 PM	13	14	8	14	15	16	25	24	49	80	129
4:00 PM	16	65	28	35	26	21	10	10	144	67	211
5:00 PM	21	13	14	24	24	22	28	13	72	87	159
6:00 PM	12	17	15	13	19	32	23	13	57	87	144
7:00 PM	17	19	12	11	7	20	10	15	59	52	111
8:00 PM	19	23	12	10	8	7	12	6	64	33	97
9:00 PM	7	7	10	4	3	8	6	5	28	22	50
10:00 PM	6	2	1	2	4	5	4	1	11	14	25
11:00 PM	1	4	1	1	1	2	1	3	7	7	14

8:00 AM	9:00 AM	(Bi-Direct.) AM Peak Hour Total:	863	785	1,648
4:15 PM	5:15 PM	(Bi-Direct.) PM Peak Hour Total:	53	88	141
4:15 PM	5:15 PM	Highest By Direction (NB):	149		
3:30 PM	4:30 PM	Highest By Direction (SB):		96	

