

Memorandum

To: Dave Wilwerding, AICP, City of Johnston **Date:** 1/16/2018
From: Mark Perington, P.E., PTOE
RE: Foxboro Road Origin/Destination & Through Traffic Analysis
SW Area Road & Traffic Working Group
S&A Project # 116.0848.01

Data Collection: On Tuesday, October 24th 2017 Snyder & Associates conducted an origin/destination survey to determine the percentage of vehicles using Foxboro Road as a through-street during peak traffic periods. The traffic periods recorded included an AM Period (7:15-8:15AM), School Period (2:45-3:45PM), and PM Period (4:30-5:30PM). The AM and PM Periods were intended to observe traffic during the peak period for those traveling to work/school in the mornings and evenings. The School Period was intended to observe mid-afternoon traffic for those let out of school (High-School/Middle-School). Field technicians were stationed at the intersection of Foxboro Road and Crescent Chase (North Location) and Foxboro Road and Ashley Circle (South Location). License plate numbers were observed to identify vehicles that traveled between the North and South Locations.

Analysis: To determine the amount of through-traffic, the recorded license plate numbers were used to identify matching pairs observed at both the North and South locations. These matching pairs were then analyzed to determine if the observations fell within the time it took to travel between the two locations (travel time). The pairs that fell within these parameters were identified as the through volume. The through volume differed between time periods and directions. For the AM period, the through volume was higher for the northbound direction and for the PM period the through volume was higher for the southbound direction. For the School period, the through volume was higher for the southbound direction.

An origin – destination (OD) study was performed by Snyder & Associates in November 2016; at the time this previous study was conducted Johnston High School was located east of Foxboro Road on NW 62nd Ave. It was believed that school traffic used Foxboro Road as a commuter school route. Since then, the high school has been relocated to the west of Foxboro Road on NW 100th St where more direct routes (NW 54th Ave, NW 62nd Ave, NW 100th St, NW 86th St, Windsor Pkwy, etc...) are available for school traffic routes.

The purpose of this analysis was to replicate the previous study and determine whether the through volumes on Foxboro Road changed due to the Johnston High School relocation. Table 1 contains data from both 2016 and 2017 OD analyses for comparison purposes.

Table 1: Origin-Destination Raw Sample Data

Time	Location	Direction	2016			2017		
			Volume	Through	%	Volume	Through	%
AM	North	NB	117	53	45	84	26	31
		SB	23	10	43	22	6	28
	South	NB	84	53	63	92	26	28
		SB	89	10	11	49	6	12
School PM	North	NB	47	16	34	31	9	29
		SB	107	38	36	73	18	25
	South	NB	71	16	23	60	9	15
		SB	101	38	38	50	18	36
PM	North	NB	45	13	29	45	21	47
		SB	107	60	56	82	42	51
	South	NB	83	13	16	114	21	18
		SB	122	60	49	98	42	43

In Table 1, the volume, through volume, and the percentage of through volume are shown for 2016 and 2017. ‘Volume’ describes the total number of vehicles observed travelling in the north or south direction at each location of Foxboro Road. The ‘Through’ volume describe vehicles that were observed in both locations travelling in the same direction within a reasonable travel time period. Percentages shown in Table 1 represent the portion of through traffic in each direction and location. It should be noted that traffic volumes were slightly higher during the 2016 study, therefore percentages of through volumes should be used as the main indicator when comparing 2017 and 2016 through traffic on Foxboro Road.

Therefore, to project the through percentage of traffic for the entire corridor and each direction, the observed through counts were calculated as a percentage of the road tube volume as opposed to the sample volume. Road tube counts were collected at two locations for Foxboro Road. To reduce the variability in percentages caused by the observation location, north and south location totals for the road tube counts were averaged for the directional through percentages and the combined (NB + SB) percentages. This was done to determine an overall percentage of through-traffic for the corridor as well as the directional percentages can be found in Table 2.

Table 2: Origin-Destination Analysis Results

Time	Direction	2016			2017		
		Volume	Through	%	Volume	Through	%
AM	NB	113	53	47	66	26	40
	SB	76	10	13	45	6	13
	TOTAL	189	63	33	111	32	29
School PM	NB	62	16	26	33	9	27
	SB	112	38	34	56	18	32
	TOTAL	174	54	31	89	27	30
PM	NB	83	13	16	74	21	28
	SB	125	60	40	75	42	56
	TOTAL	208	73	35	149	63	42

Traffic volumes for Foxboro Road have greatly reduced since 2016; 41%, 48%, and a 28% decrease in volumes for the AM, school PM, and PM peak periods, respectively.

Considering that traffic volumes vary through time, when analyzing through trips on Foxboro Road, the percentages of through movements are considered to be the main indicator of portion of through trips. Given the influence that the relocation of the Johnston High School has on traffic along this facility, this analysis is mostly focused on the time periods that directly correlate to school arrival and dismissal times, AM and School PM.

In 2016, during the AM peak hour 33% of total vehicles on this facility used Foxboro Road as a through street; 47% of total northbound traffic and 10% of total southbound traffic traveled Foxboro Road as a through street. During the school PM peak hour, 31% of total vehicles used Foxboro Road as a through street; 26% of total northbound traffic and 34% of total southbound traffic traveled Foxboro Road as a through street.

In 2017, during the AM peak hour 29% of total vehicles on this facility used Foxboro Road as a through street; 40% of total northbound traffic and 13% of southbound total traffic traveled on Foxboro Road as a through street. During the school PM peak hour, 30% of total vehicles used Foxboro Road as a through street; 27% of total northbound traffic and 32% of total southbound traffic traveled Foxboro as a through street.

It is believed that the relocation of the Johnston High School has influenced the traffic volumes and patterns through Foxboro Road. Traffic volumes have greatly decreased as well as the portion of traffic utilizing Foxboro Road as a through street for both the AM and School PM peak hours. For illustration purposes traffic movement diagrams regarding the OD analysis are shown in figures 1, 2, and 3 below.

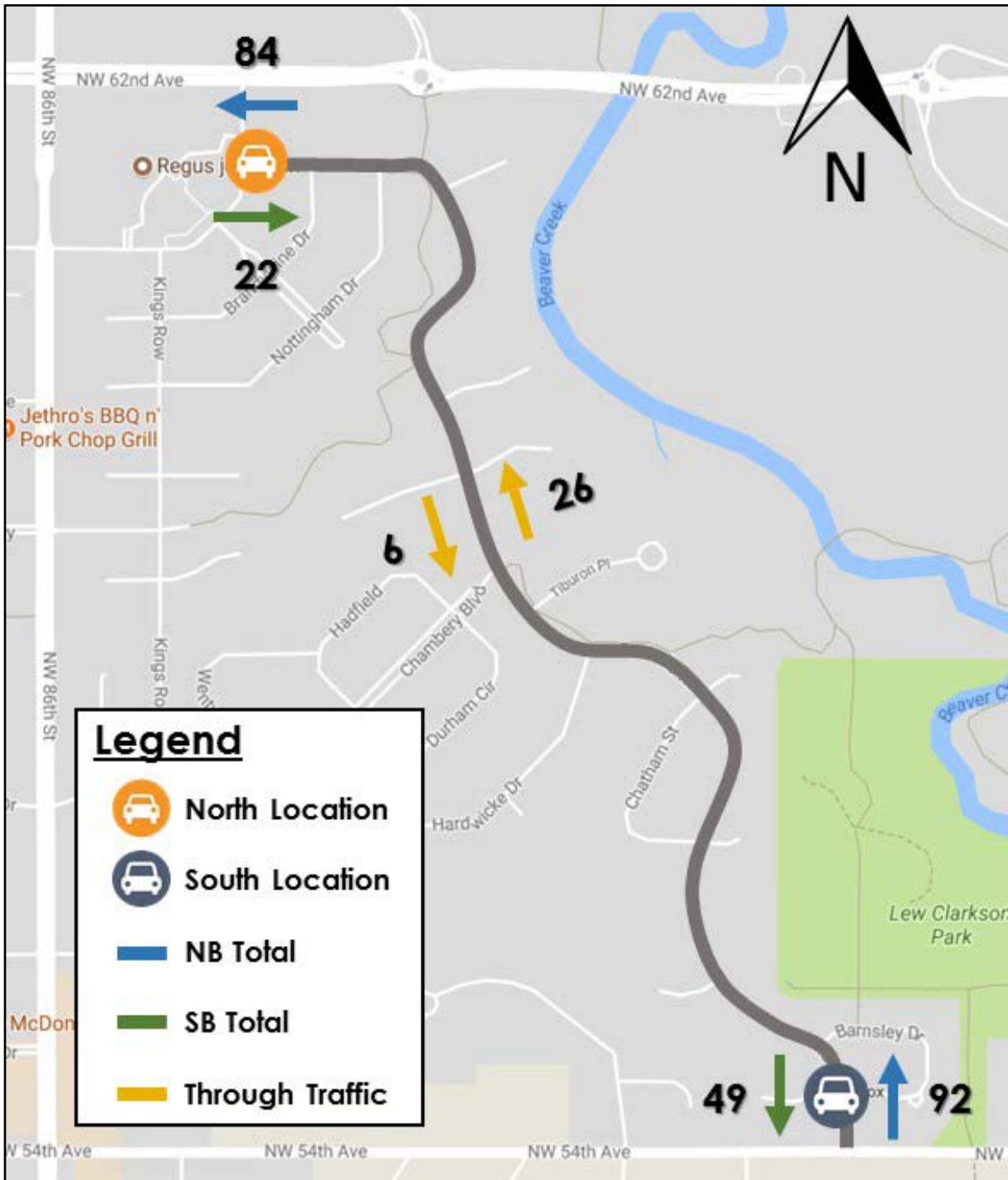


Figure 1: AM Peak Period – Foxboro Road (Johnston, IA)

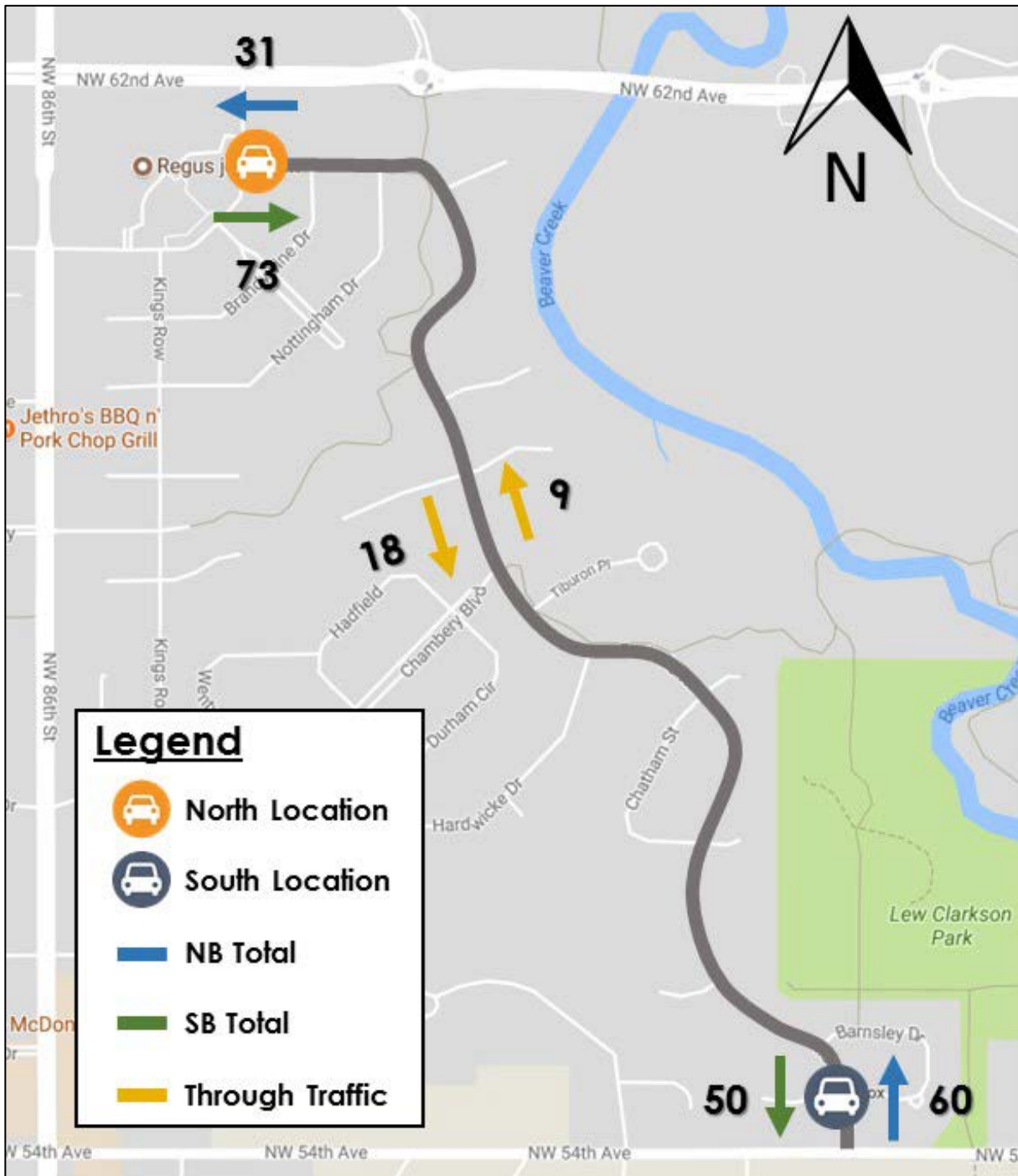


Figure 2: School PM Peak Period – Foxboro Road (Johnston, IA)

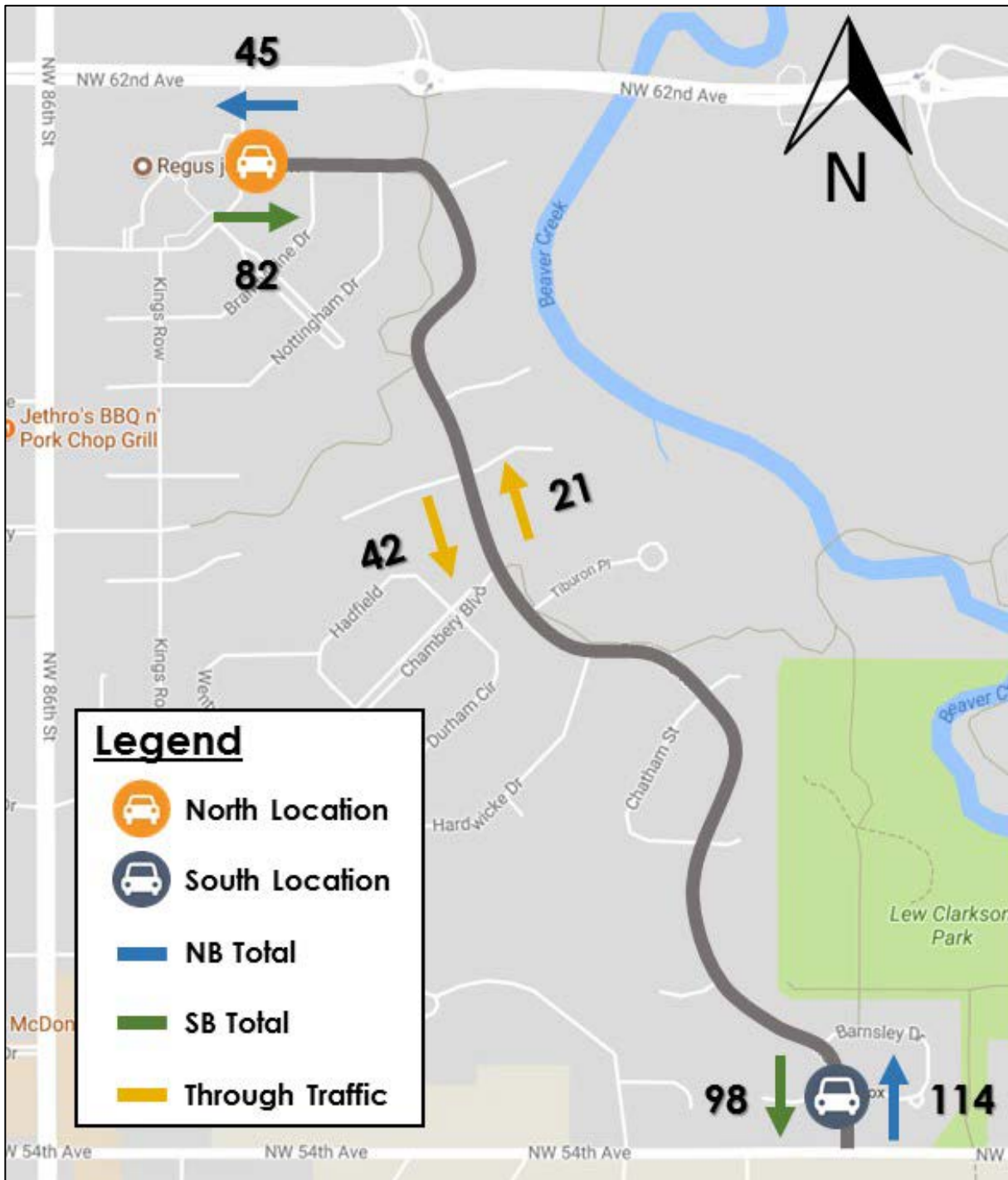


Figure 3: PM Peak Period – Foxboro Road (Johnston, IA)