Chollas Creek Multi-Use Path
Dorothy Petway Park to Harbor Drive
Analysis of Vehicular Traffic Impacts
San Diego, California

Prepared by

PSOMAS

333 East Wetmore Rd, Suite 450
Tucson, AZ 85705
Ph. (520) 292 2300

Prepared for

1010 Second Avenue, Suite 1400
San Diego, CA 92101

Psomas Project No. 5SAN021000

January 2014

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

1. INTRODUCTION

This project consists of constructing a multi-use path between the Dorothy Petway Neighborhood Park (located in Southcrest Park Estates) and Harbor Boulevard. The proposed multi-use path is expected to be located along Chollas Creek between the Dorothy Petway Neighborhood Park and Norman Scott Road, with a portion located along Rigel Street and Main Street. At Norman Scott Road, the path is expected to cross Wabash Boulevard (SR-15) at the signalized intersection, then travel along 32nd Street to Harbor Drive, where it will connect to the Bayshore Bikeway. Due to geometric restrictions, the path is expected to consist of an off-street path along Chollas Creek, Class II or III bike lanes along Rigel Street, and a two-way cycle track along the Main Street and 32nd Street segments. Figure 1 shows the proposed alignment of the path.

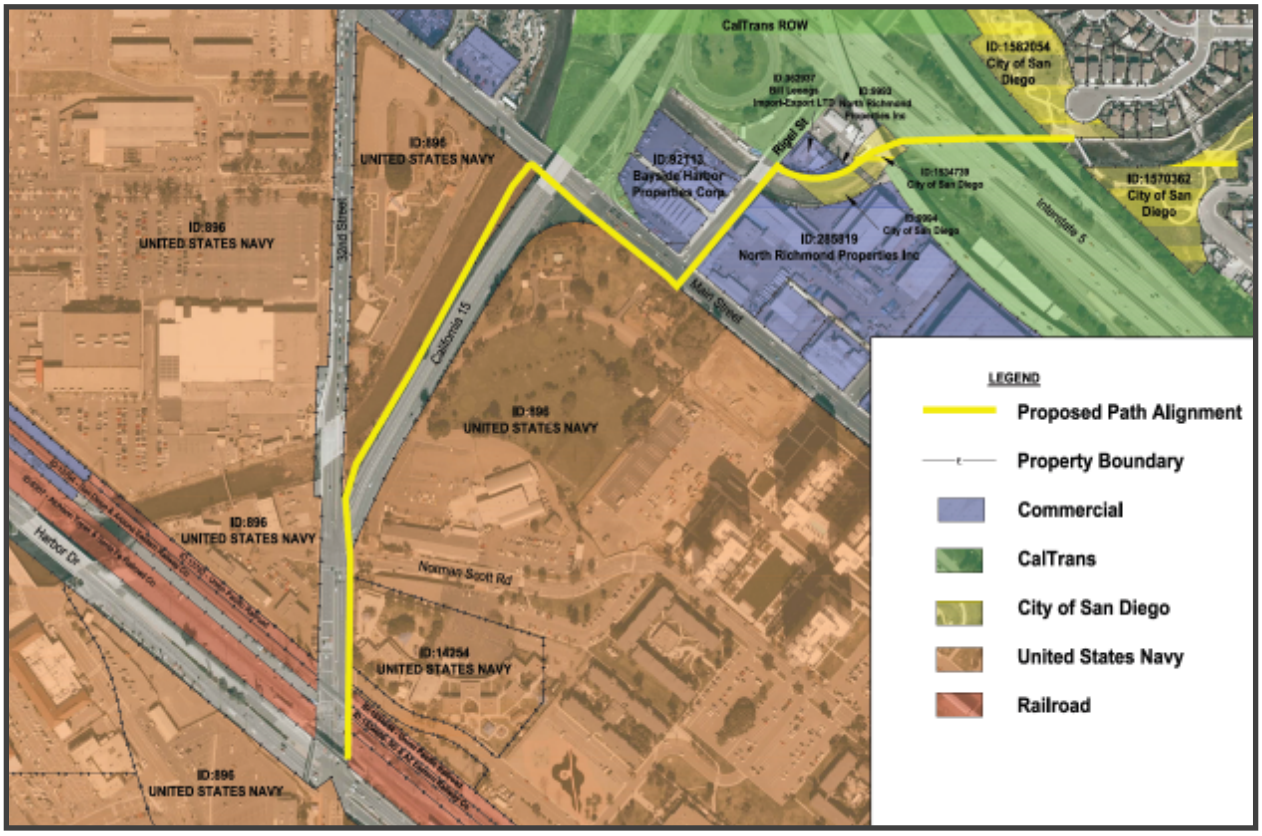


Figure 1. Project Area

The goal of this study is to evaluate the vehicular traffic operations at key intersections in the project area with and without the proposed multi-use path to determine what impacts, if any, the multi-use path would have on vehicular traffic operations.

2. EXISTING CONDITIONS

2.1. ROADWAY NETWORK

Table 1 provides some information about the roadways in the project area, including classification[1]. Note that Main Street is a designated Class III bikeway and Harbor Drive is a Class II bikeway[2].

Table 1. Roadway Network

Roadway	Classification	# of Lanes	Posted Speed (mph)
Rigel Street	Major Collector	2	25
Main Street	Minor Arterial	2/4	35
Wabash Boulevard	Freeway/Expressway	6	25*
32nd Street	Major/Principal Arterial**	6	30
Harbor Drive	Principal Arterial	4	40

* SB approaching 32nd Street

** Major arterial N of Wabash Blvd, principal arterial S of Wabash Blvd

Main Street is generally a two-lane roadway, but there is a short section (approximately ¼ mile) from west of Rigel Street where Main Street is a four-lane roadway. East of Rigel Street, Main Street has one through lane per direction as well as a two-way left turn lane. West of 32nd Street, there are two westbound through lanes as far west as 27th Street, but the eastbound direction has a single through lane until a second lane becomes available approximately 230 feet west of 32nd Street.

As shown in Figure 2, 32nd Street south of Norman Scott has three through lanes in the northbound direction to distribute traffic to Wabash Boulevard (SR-15) and to continue onto 32nd Street. In the southbound direction, there are two through lanes that continue past Harbor Drive, and an auxiliary lane that changes from a through lane to a right turn lane at Harbor Drive.

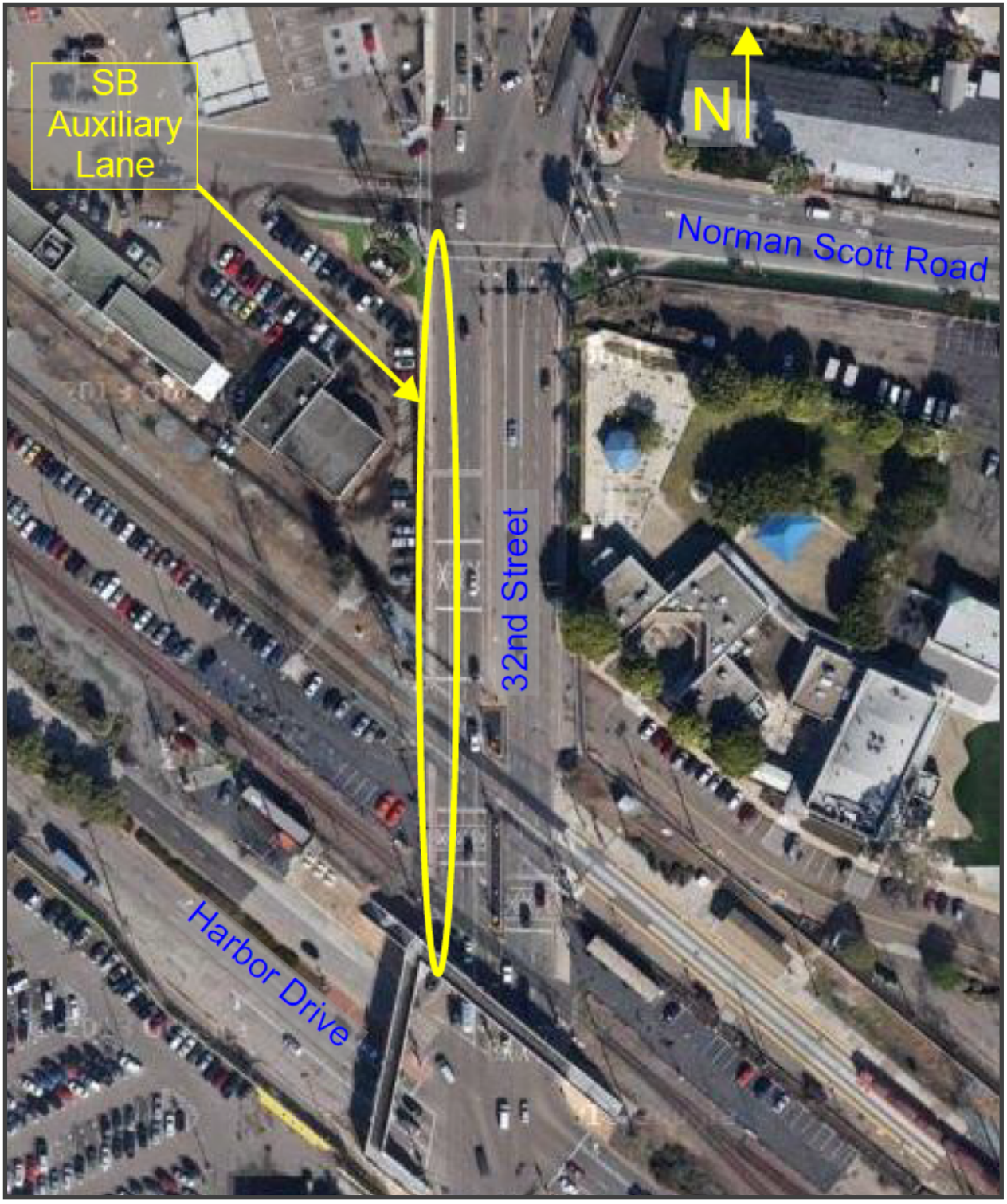


Figure 2. 32nd Street Auxiliary Lane

Based on the proposed alignment of the multi-use path, three signalized intersections will be evaluated in this report, including:

- ***Main Street and SR-15 Ramps***. This is a three-leg intersection with an exclusive eastbound left turn lane, a free/exclusive westbound right turn lane, and a single southbound shared left and right turn lane. Figure 3 shows the intersection.

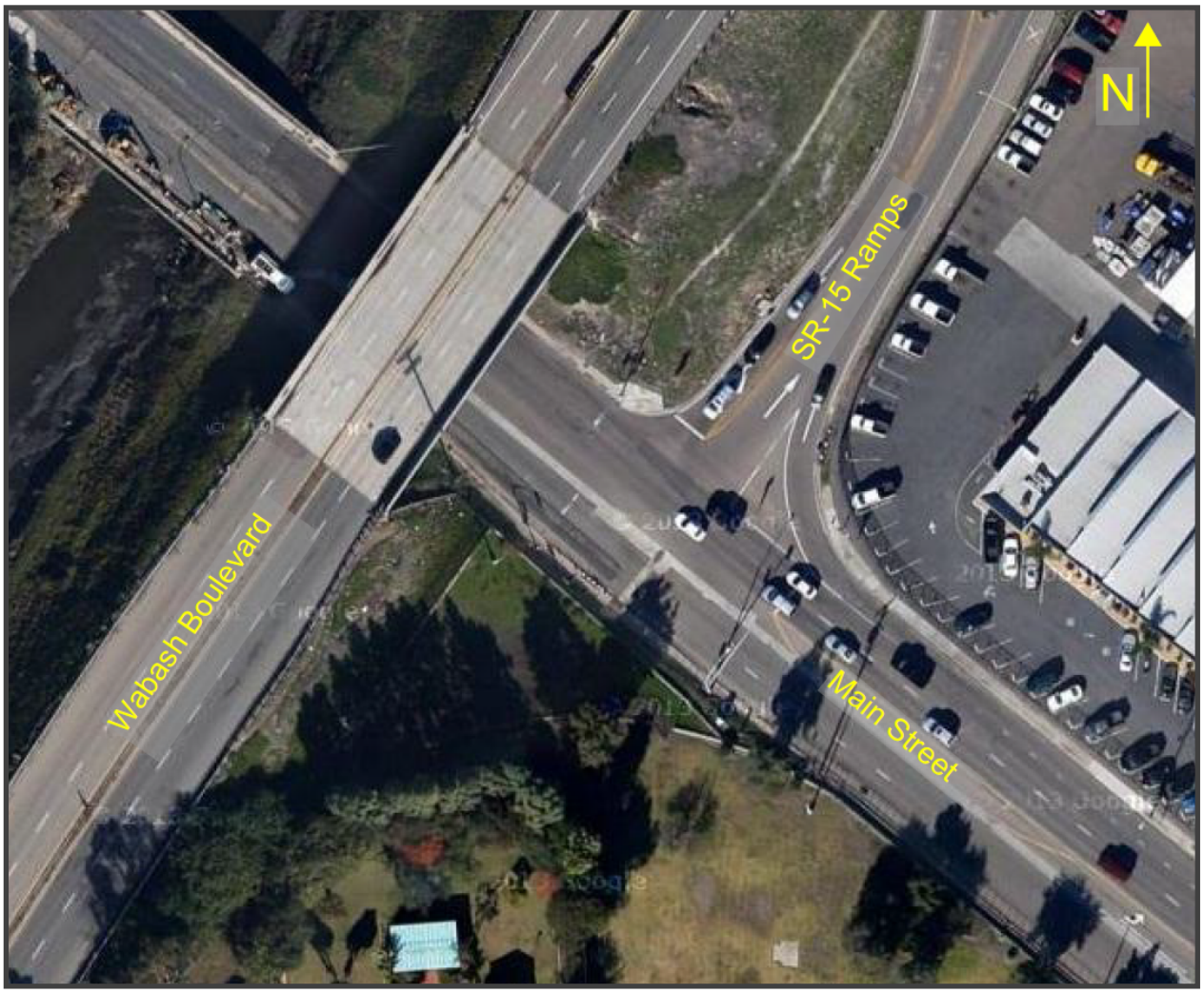


Figure 3. Main Street/SR-15 Ramps Intersection

- ***32nd Street/Norman Scott Road/Wabash Boulevard.*** As shown in Figure 4, this is a five-leg intersection. The west leg (Norman Scott Road) provides access to a retail area, and the east leg provides access to US Navy facilities. The west leg has a shared through and right turn lane and an exclusive left turn lane, and the east leg has a shared through and left turn lane and an exclusive right turn lane. Northbound 32nd Street has an exclusive left turn lane, a single through lane, and two right turn lanes onto Wabash Boulevard. Southbound 32nd Street includes an exclusive left turn lane, an exclusive through lane, and a shared through and right turn lane. Lastly, Wabash Boulevard

includes a shared through and left turn lane (for access to southbound 32nd Street and eastbound Norman Scott Road, respectively) and a shared through and right turn lane (for access to southbound 32nd Street, westbound Norman Scott Road, and NB 32nd Street). There are existing crosswalks at the intersection on both legs of Norman Scott Road as well as on the south leg of 32nd Street.

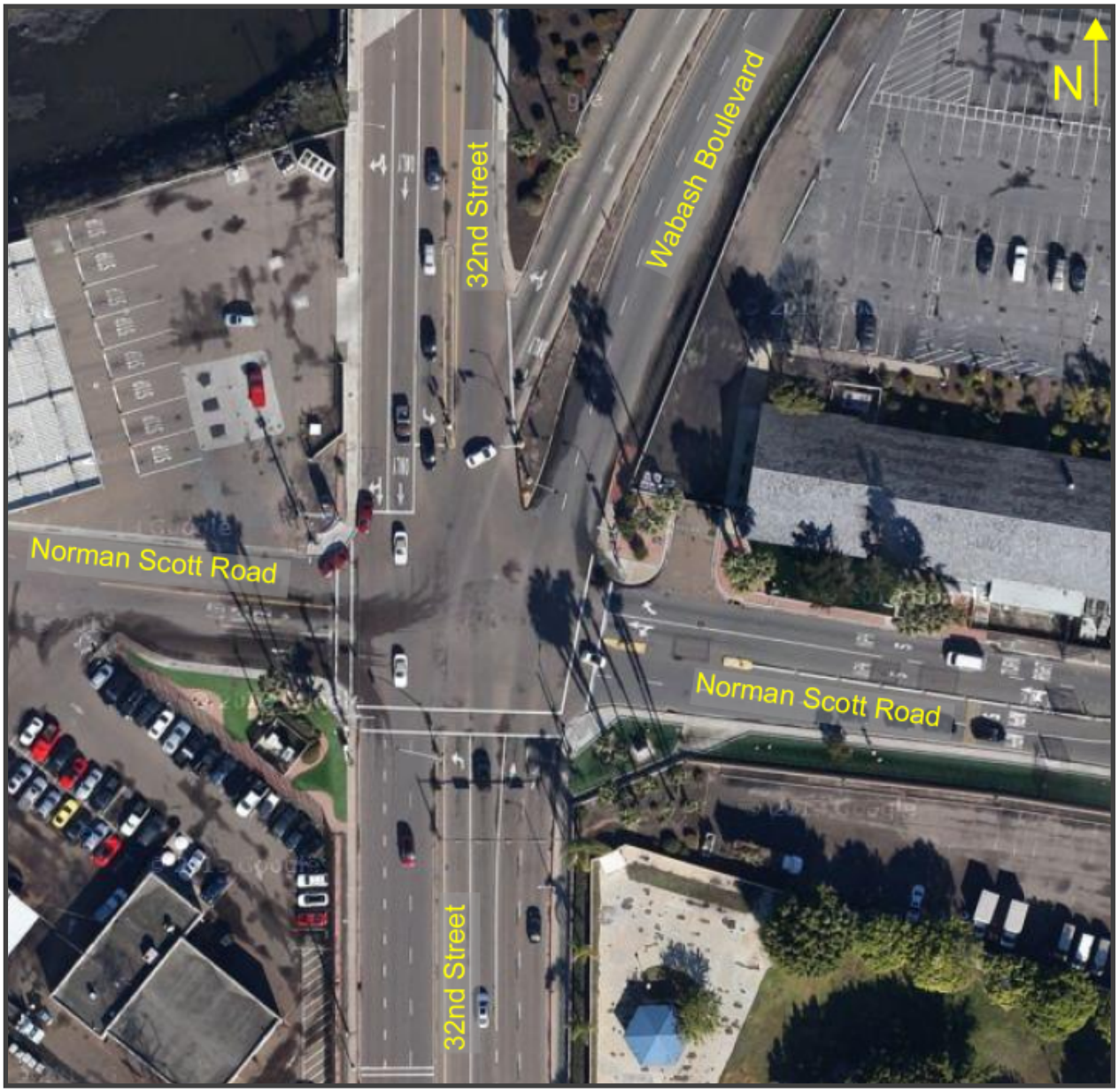


Figure 4. 32nd Street/Norman Scott Road/Wabash Boulevard Intersection

- ***32nd Street and Harbor Drive***. This is a four-leg intersection with a single exclusive left turn lane in each direction. In addition, there are exclusive right turn lanes on the west, east, and north legs. Figure 5 shows the intersection.

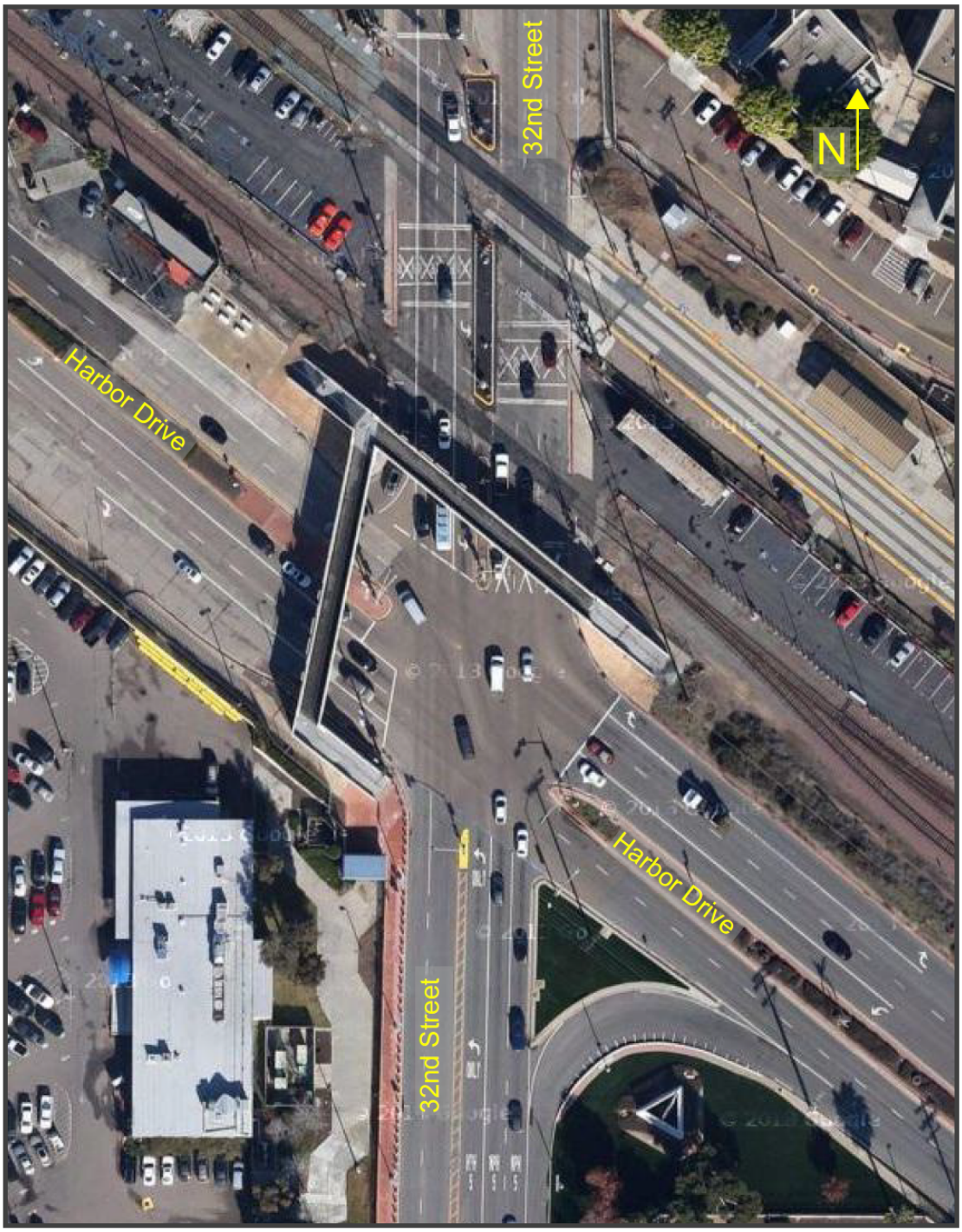


Figure 5. 32nd Street/Harbor Drive Intersection

2.2. TRAFFIC VOLUMES

Traffic volumes were collected at the intersections of 32nd Street and Harbor Drive and 32nd Street/Norman Scott Road/Wabash Boulevard in September 2013. In addition, 2008 volumes for the intersection of Main Street and the SR-15 Ramps were taken from the *Barrio Logan Traffic Impact Analysis*. Because newer volumes for the Main Street intersection were not available, and given the low projected growth at the intersection (discussed later in Section 3.3), the 2008 volumes were used as for the existing (2013) analysis without any changes. Figure 6 shows the existing traffic volumes, and the data is included in Appendix A.

2.3. OPERATIONAL ANALYSIS

The existing Level of Service (LOS) at the study intersections was evaluated using *Synchro 8*, which follows the methodology of the *Highway Capacity Manual*[3]. The LOS was evaluated based on the existing traffic volumes (in the previous section) and signal timing which was provided by the City of San Diego. Level of Service is a qualitative measure that describes operational conditions in terms of travel speed (for arterials), density (for freeways), and delays (for intersections). LOS ranges from A to F, with A representing the best operating conditions and F representing the worst. LOS D is generally considered acceptable for major intersections in an urban area. Table 2 shows the results from the *Synchro* models. The *Synchro* reports are included in Appendix B.

As seen in the table, the intersection of Main Street and SR-15 operates at LOS A in the AM peak hour and LOS B in the PM peak hour, with all of the movements operating at LOS C or better in both peak hours. Because the volumes used for this intersection were identical to those used in the Barrio Logan TIA, the LOS results were compared to those in the original study (Table 3) to verify the validity of the Psomas model. The LOS results were found to be very similar, with the minor differences being attributed to the different versions of Synchro which were used for the different analyses.

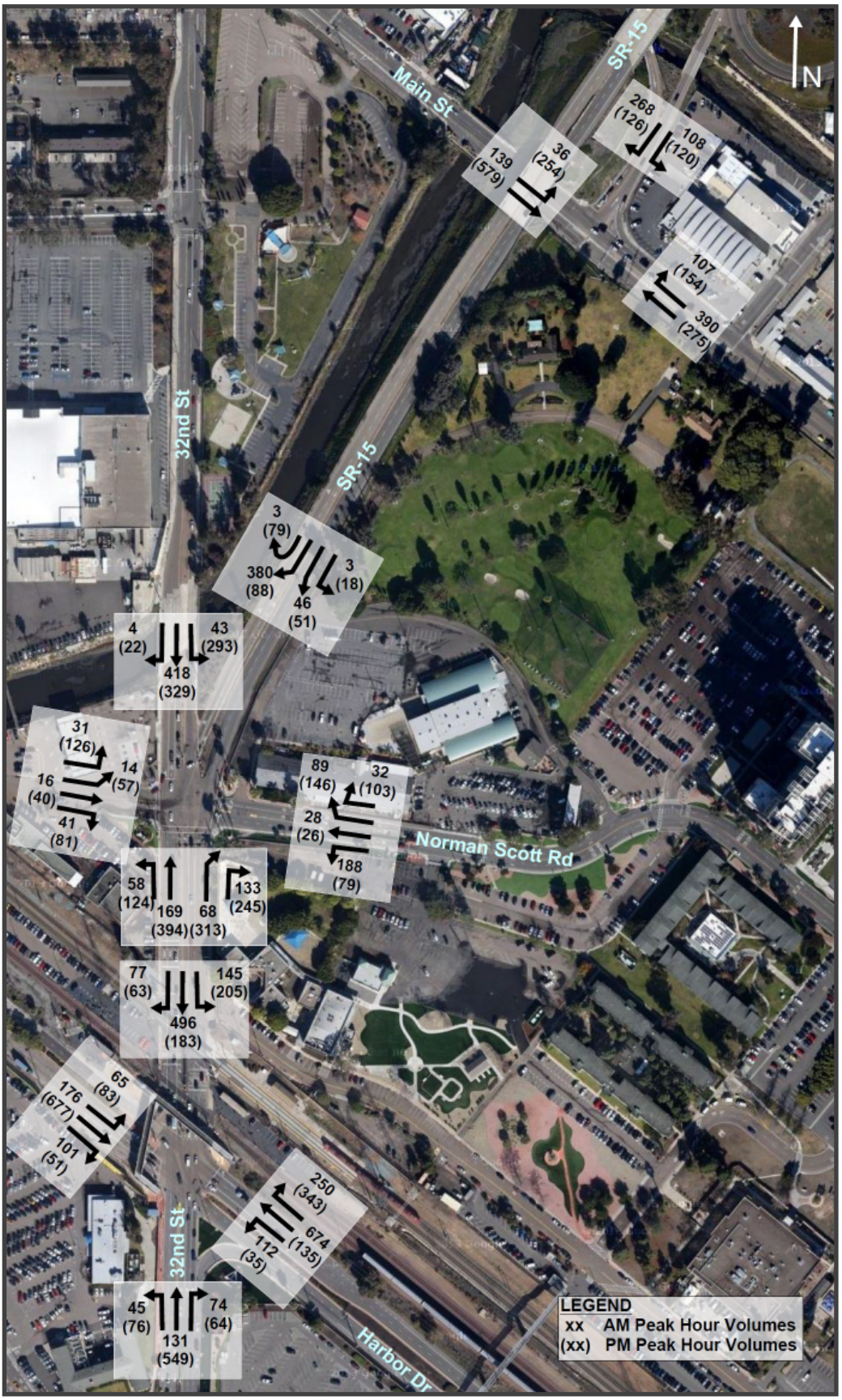


Figure 6. Existing Traffic Volumes (2013)

Table 2. Existing Level of Service

		Harbor Drive						*32nd Street*						Total
		Eastbound			Westbound			Northbound			Southbound			
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
AM	LOS	E	C	A	E	C	A	E	D	B	D	D	A	C
	Delay	59.0	27.4	4.0	57.5	32.3	8.3	58.9	40.9	11.3	51.0	38.8	4.8	32.1
PM	LOS	E	D	A	E	D	B	E	D	A	F	C	A	D
	Delay	71.7	45.1	7.6	72.2	37.0	12.0	72.0	48.2	7.7	85.5	29.2	4.0	41.7

		EB Norman Scott Rd				WB Norman Scott Rd				NB 32nd St			
		LT	SL LT	TH	RT	LT	TH	SL RT	RT	LT	TH	SL RT	RT
		to 32nd	to SR15	to NS	to 32nd	to 32nd	to NS	to 32nd	to SR15	to NS	to 32nd	to SR15	to NS
AM	LOS	D	D	B	B	D	D	B	B	E	D	B	B
	Delay	39.7	39.7	15.8	15.8	51.6	51.6	18.9	18.9	69.5	48.9	18.9	18.9
PM	LOS	E	E	D	D	E	E	D	D	F	E	C	C
	Delay	77.8	77.8	36.6	36.6	61.4	61.4	48.8	48.8	89.6	78.4	27.5	27.5

		SB 32nd St			SWB Wabash Blvd				Total
		LT	TH	RT	LT	TH	SL RT	RT	
		to NS	to 32nd	to NS	to NS	to 32nd	to NS	to 32nd	
AM	LOS	E	D	D	D	D	D	D	D
	Delay	69.6	54.0	54.0	55.0	55.0	55.0	55.0	46.4
PM	LOS	F	D	D	E	E	E	E	E
	Delay	204.9	44.0	44.0	76.7	76.7	76.7	76.7	73.2

		Main Street						*I-15 Ramps*						Total
		Eastbound			Westbound			Northbound			Southbound			
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
AM	LOS	C	A			A	A				A		A	A
	Delay	21.7	5.4			8.9	3.0				9.8		9.8	8.7
PM	LOS	C	A			B	A				B		B	B
	Delay	22.7	4.9			16.1	5.3				14.6		14.6	11.8

Table 3. Existing Level of Service (Barrio Logan Report)

		Main Street						*I-15 Ramps*						Total
		Eastbound			Westbound			Northbound			Southbound			
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
AM	LOS	C	A			B	B				B		B	B
	Delay	21.4	6.4			11.5	10.1				10.8		10.8	10.8
PM	LOS	B	A			B	B				B		B	B
	Delay	16.6	5.1			15.4	14.2				15.2		15.2	11.5

The intersection of 32nd Street and Harbor Drive was found to operate at LOS C and D in the AM and PM peak hours, respectively, both of which are acceptable. However, the southbound left turns were found to operate at LOS F in the PM peak hour. At 32nd Street/Norman Scott Road/Wabash Boulevard, both the northbound and southbound left turns on 32nd Street operate at LOS F in the PM peak hour. All other movements operate at LOS E or better in both peak hours, and the overall intersections operates at LOS D in the AM peak hour and LOS E in the PM peak hour. However, note that a cursory analysis showed that some adjustments to the signal timing may help reduce delays and improve LOS at both intersections.

3. FUTURE CONDITIONS

3.1. PLANNING DOCUMENTS

In addition to this project, the *Barrio Logan Community Plan and Local Costal Program*[4] encompasses the project area. The *Bayshore Bikeway Plan*[5] (San Diego Association of Governments (SANDAG) is also related to this project. Both plans are discussed below in further detail.

3.1.1. Barrio Logan Community Plan

The current *Barrio Logan Community Plan and Local Costal Program* is an update to the original plan and update adopted by the San Diego City Council in 1978 and 1979, respectively. The plan aims to build upon the historic character of the area while planning for the needs of future residents, businesses, and other developments. The plan does not include rezoning, but provides a blueprint for development as well as land use, public facility, and development policies.

The plan includes a mobility element which discusses the projected traffic volumes and roadway network as well as transit, pedestrian, and bicycle facilities. Goals for the area include:

- Pedestrian-friendly facilities throughout the community
- Transit as a mode of choice for residents and employees
- Adequate capacity and improved regional access for vehicular traffic
- A parking management plan to reduce impacts of Port tenants and Naval facilities
- Safe and efficient truck routes
- A safe bicycle network which connects community destinations and links to surrounding communities and the regional bicycle network

Figure 7 shows the planned bicycle network shown in the *Barrio Logan Community Plan*. It should be noted that the plan is consistent with this project, in that both Main Street and 32nd Street are shown as proposed bike routes. In addition, the *Barrio Logan Traffic Impact Analysis* evaluates traffic-related impacts associated with the community plan update.

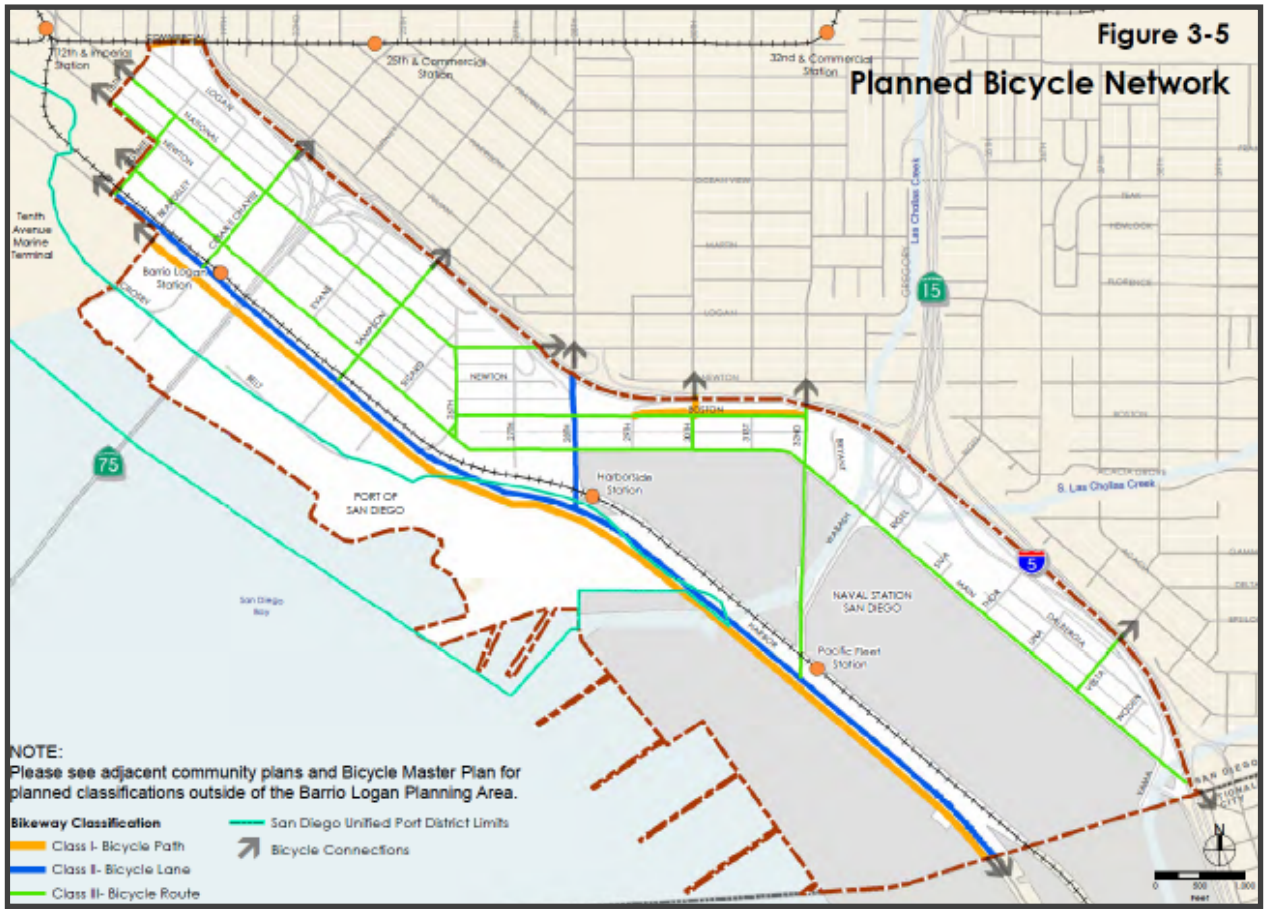


Figure 7. Planned Bicycle Network (From Barrio Logan Community Plan)

3.1.2. Bayshore Bikeway Plan

The Bayshore Bikeway is a 24-mile route around San Diego Bay, passing through Barrio Logan along Harbor Drive. At the time the study was completed, 12 miles of the bikeway consisted of off-street paths. Additional segments have since been constructed, adding approximately two miles of off-street paths. The remaining segments of the bikeway consist of on-street bike lanes. The plan is an update to the original study released in 1976, and identifies an off-street bike path alignment for the entire bikeway. Figure 8 shows the current condition of the Bayshore Bikeway[6]. Note that this Chollas Creek project is located at the northwest end of the planned 2014 construction project shown on the map.

Figure 8. Existing Bayshore Bikeway

3.2. PROPOSED IMPROVEMENTS

The proposed multi-use path is expected to be located along Chollas Creek between the Dorothy Petway Neighborhood Park and Norman Scott Road, with a portion located along Rigel Street and Main Street. At Norman Scott Road, the path is expected to cross Wabash Boulevard at the signalized intersection, then travel along 32nd Street to Harbor Drive, which is currently designated as a Class II bikeway.

Along Chollas Creek, it is expected that a 14- to 16-foot-wide multi-use path will be constructed. While the goal will be to provide the standard 16-foot width used by the City of San Diego[7], right-of-way and water surface elevation constraints may limit the width of the path to 14 feet in certain areas. On Rigel Street, which currently allows parking along both sides of the roadway, a Class II or Class III bikeway will be constructed. Rigel Street serves a relatively low traffic volume (1,723 vehicles per day in 2008), and has a posted speed limit of 25 mph. In addition, the Class II or Class III bike lanes will help avoid vehicle-bicycle conflicts with the numerous existing driveways along the roadway better than a cycle track.

On Main Street, the proposed multi-use path alignment includes converting the outside eastbound through lane into a two-way cycle track (Figure 9). As previously discussed, eastbound Main Street only has two lanes for a short (approximately ¼ mile) section between 32nd Street and Rigel Street, so converting one of those lanes to a cycle track will maintain lane balance, and would in fact avoid the need to merge after a short two lane section. In order to cross Main Street, a crossing will be constructed on the east side of the intersection with Rigel Street as shown in Figure 10. Locating the crossing on the east side of the intersection will eliminate conflicts with eastbound left turn vehicles on Main Street. Further, Main Street has only one lane per direction on the east side of the intersection, so a crossing (with a median refuge) would eliminate a multiple-threat scenario for path users crossing the roadway. It is anticipated that a Rectangular Rapid Flashing Beacon (RRFB) would be used at the crossing to enhance safety. The City has already installed a RRFB at another location, and therefore has already obtained FHWA approval to use the devices.

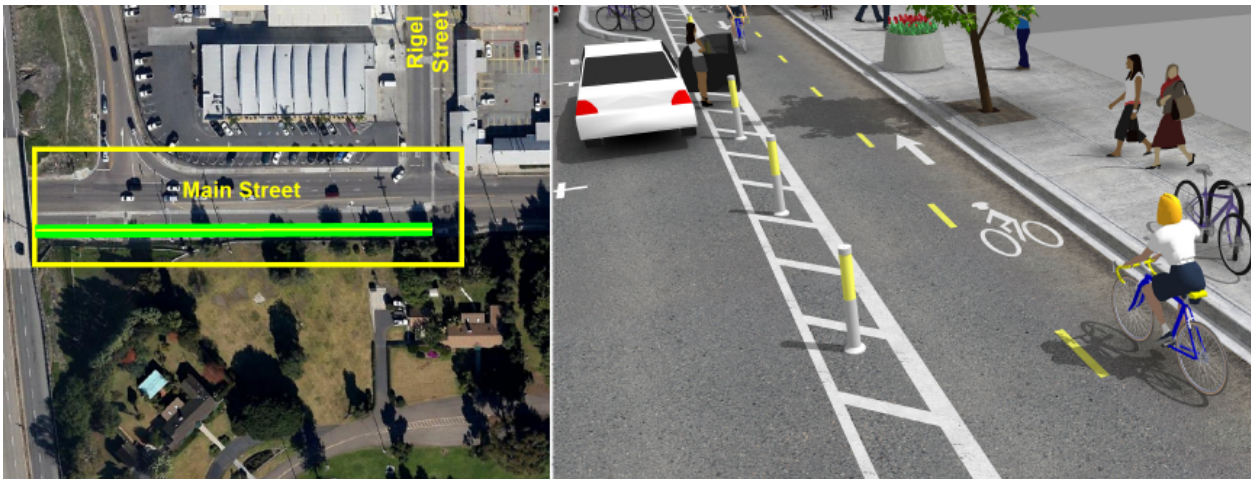


Figure 9. Proposed Main Street Cycle Track

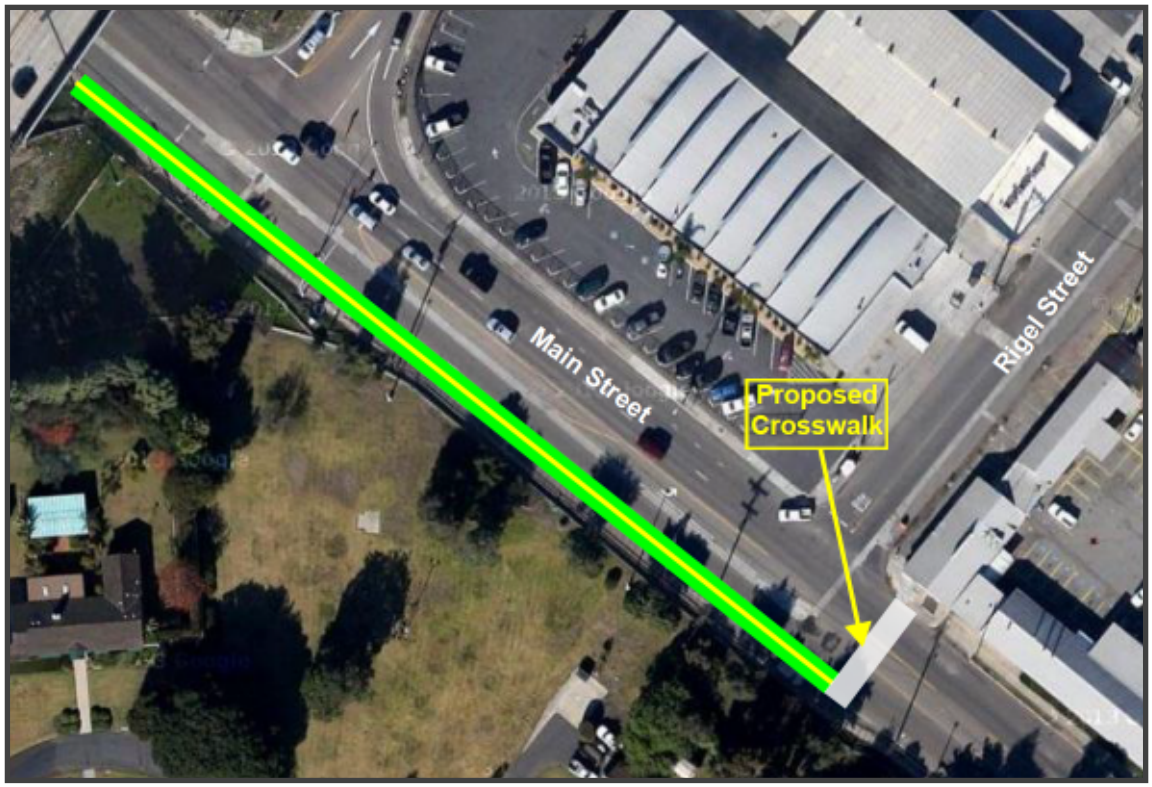


Figure 10. Proposed Main Street Crossing

On 32nd Street, it is recommended that the southbound auxiliary lane be removed between Norman Scott Road and Harbor Drive, and that a two-way cycle track be constructed. Because there are two southbound through lanes north of Norman Scott Road and south of Harbor Drive, lane balance would be maintained along 32nd Street. In addition, because the southbound right turn volume on 32nd Street at Harbor Drive is very low, removing the exclusive right turn lane would not have significant operational impacts at the intersection (refer to Sections 3.4 and 3.5

for the operational analysis). Coordination would be needed with the railroad to install new gates because the roadway will be shifted to accommodate the cycle track. The proposed improvements are shown in Figure 11.

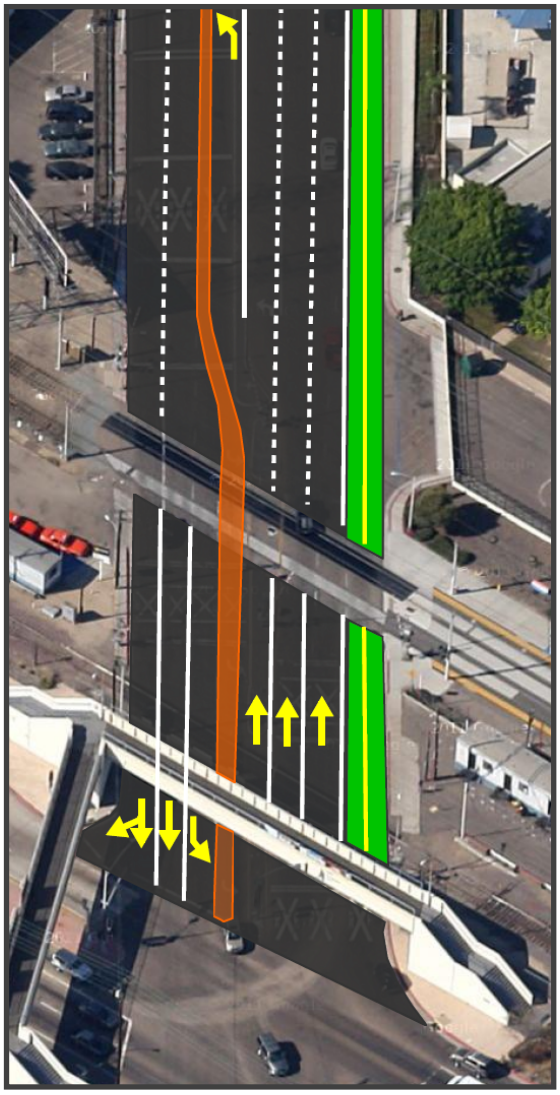


Figure 11. Proposed 32nd Street Improvements

At the 32nd Street/Norman Scott Road/Wabash Boulevard intersection, the lane configuration would remain unchanged. In order to accommodate path users to cross the intersection, a crosswalk would be added across Wabash Boulevard as shown in Figure 12. The signal timing at the intersection is such that the crossing could be added without having to extend the phase or otherwise affect signal operations. For southbound traffic at 32nd Street and Harbor Drive, there would be a single exclusive left turn lane, a single exclusive through lane, and a shared through and right turn lane.

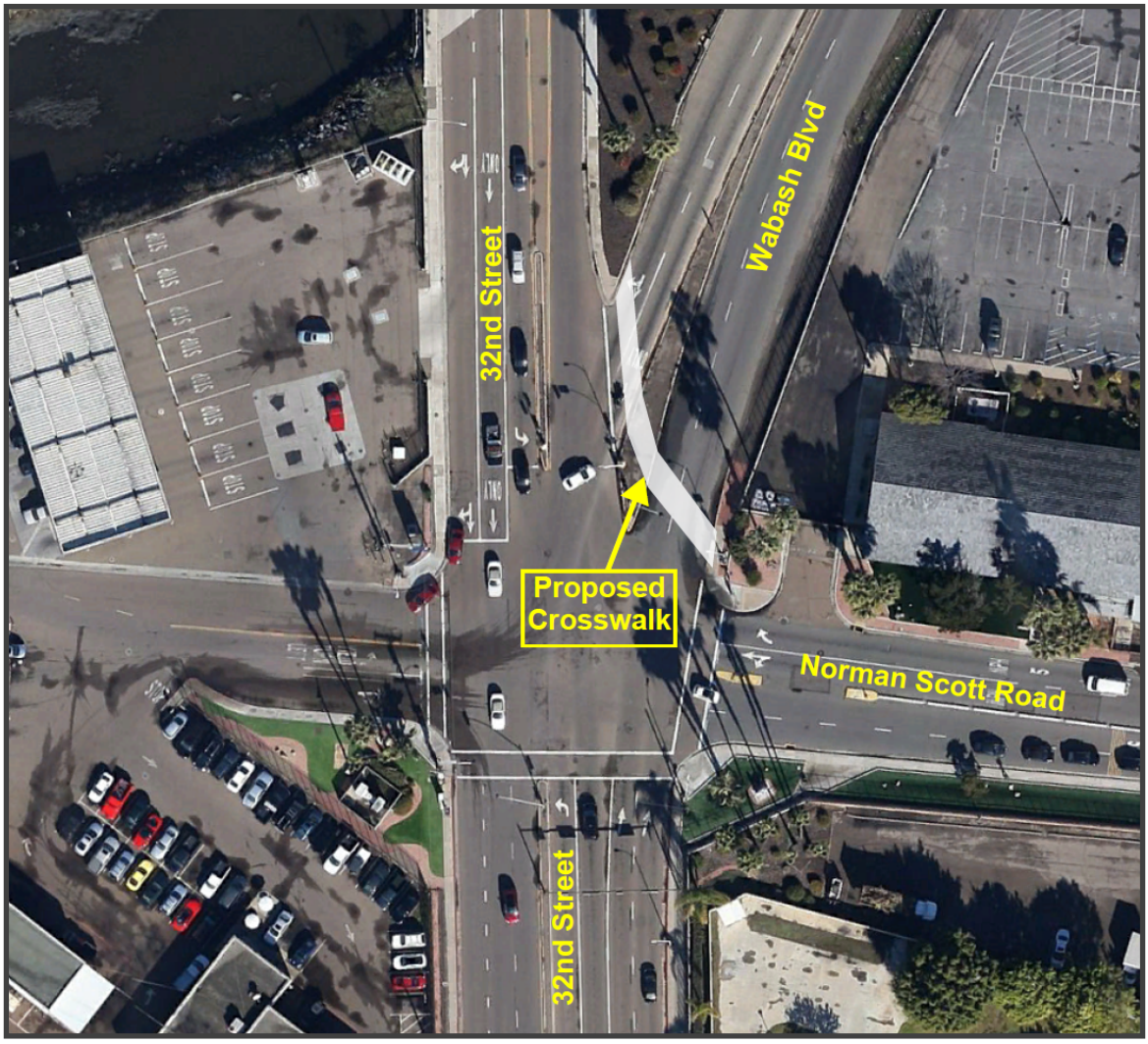


Figure 12. Proposed Wabash Boulevard Crosswalk

3.3. PROJECTED TRAFFIC VOLUMES

For build out conditions (2030), the traffic volumes were taken from the *Barrio Logan Traffic Impact Analysis* for all three study intersections. Figure 13 is a reproduction of the projected 2030 ADTs taken from that study. In order to develop volumes for the opening year conditions, volumes were interpolated assuming a constant exponential growth rate between 2013 and 2030 for each movement at each intersection. Volumes were calculated this way because the analysis in the Barrio Logan study showed that certain movements are expected to increase at a higher rate than other movements given future projects and land uses. Figure 14 shows the projected opening year (2016) traffic volumes, and Figure 15 shows the projected build out (2030) traffic volumes.

THIS MAP IS PROVIDED WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS, FOR A PARTICULAR PURPOSE. Copyright SanGIS. All Rights Reserved.
This product may contain information from the SANDAG Regional Information System which cannot be reproduced without written permission of SANDAG.
This product may contain information which has been reproduced with permission granted by Thomas Bros. Maps.

LEGEND

- Barrio Logan Community Plan Area
- City Boundary
- Freeway/Ramp
- SDMTS Trolley and Station
- Park/Open Space
- School
- Port District
- Naval Station San Diego

(1) ADT volumes along Cesar Chavez Parkway between Newton Avenue and Main Street were reduced by 4,300 ADT to account for Newton Avenue not being in the model. This adjustment was based on existing traffic patterns .

(2) ADT volumes along 28th Street between Boston Avenue and Harbor Drive were increased by 4,000 ADT as recommended during the traffic model calibration process.

(3) ADT volumes along 32th Street between Main Street and Harbor Drive were increased by 600 ADT as recommended during the traffic model calibration process.

0 500 1000 2000 feet

N

Figure 4-1: Horizon Year (2030) ADT Volumes (Adopted Community Plan)

January 2011

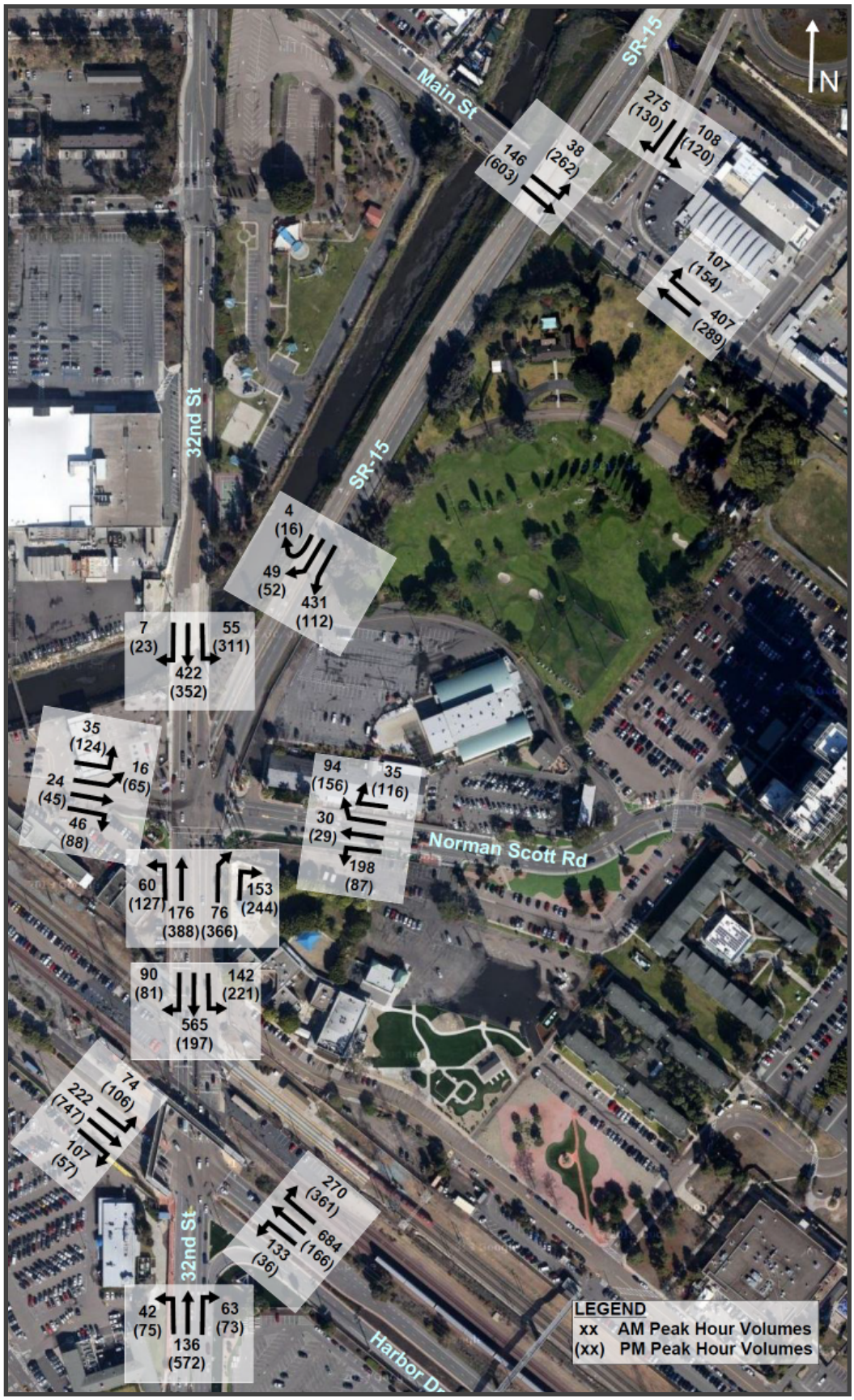


Figure 14. Projected Opening Year Traffic Volumes (2016)

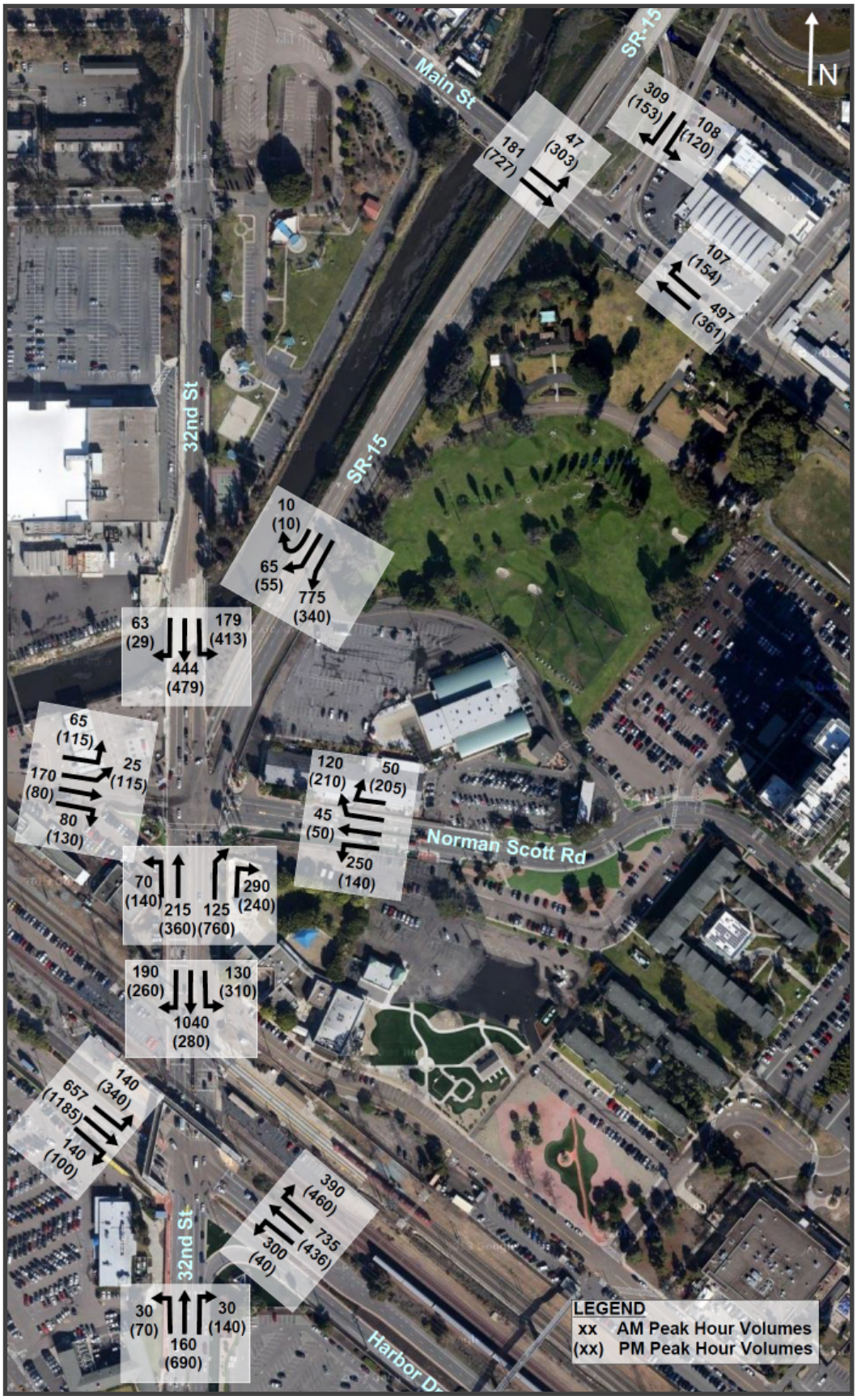


Figure 15. Projected Build Out Traffic Volumes (2030)

3.4. OPERATIONAL ANALYSIS, OPENING YEAR (2016)

As was done for the operational analysis of the existing conditions, *Synchro* was used to evaluate the projected operations in 2016 both with and without the multi-use path. Table 4 shows the LOS results without the multi-use path, and Table 5 shows the results with the multi-use path. In both cases, adjustments to the signal timing were made to optimize operations.

As seen in Table 4, all of the intersections are expected to operate at LOS D or better in both peak hours in 2016 without the project. At the 32nd Street/Norman Scott Road/Wabash Boulevard intersection, some movements in both peak hours are expected to operate at LOS E in each peak hour, but at the other two intersections, all of the movements are expected to operate at LOS D or better in both peak hours. This holds true with the project for all movements except the northbound left turns at 32nd Street and Harbor Drive, which are expected to operate at LOS E in the AM peak hour. In addition, the overall intersection is expected to operate at LOS D in the PM peak hour, which is still considered acceptable. The intersection LOS at the other intersections is expected to remain unchanged with the project.

Table 4. Projected 2016 Level of Service Without Project

		Harbor Drive						*32nd Street*						Total
		Eastbound			Westbound			Northbound			Southbound			
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
AM	LOS	D	C	A	D	C	A	D	C	A	C	C	A	C
	Delay	40.2	26.0	1.2	40.1	30.9	5.9	48.3	28.9	0.6	34.6	25.5	0.9	24.7
PM	LOS	D	C	A	D	C	A	D	D	A	D	C	A	C
	Delay	54.4	32.7	0.2	53.2	29.1	8.6	48.1	36.1	0.5	47.2	20.1	2.7	29.3

		EB Norman Scott Rd				WB Norman Scott Rd				NB 32nd St			
		LT	SL LT	TH	RT	LT	TH	SL RT	RT	LT	TH	SL RT	RT
		to 32nd	to SR15	to NS	to 32nd	to 32nd	to NS	to 32nd	to SR15	to NS	to 32nd	to SR15	to NS
AM	LOS	D	D	B	B	D	D	A	A	E	D	B	B
	Delay	37.9	37.9	16.1	16.1	50.5	50.5	7.4	7.4	66.2	49.4	17.7	17.7
PM	LOS	E	E	C	C	D	D	B	B	E	E	C	C
	Delay	67.2	67.2	20.7	20.7	47.1	47.1	13.5	13.5	64.1	75.4	29.6	29.6

		SB 32nd St			SWB Wabash Blvd				Total
		LT	TH	RT	LT	TH	SL RT	RT	
		to NS	to 32nd	to NS	to NS	to 32nd	to NS	to 32nd	
			E	D	D	D	D	D	D
			61.1	46.4	46.4	45.3	45.3	45.3	40.5
			E	C	C	D	D	D	D
			67.3	30.1	30.1	54.8	54.8	54.8	45.2

		Main Street						*I-15 Ramps*						Total
		Eastbound			Westbound			Northbound			Southbound			
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
AM	LOS	B	A			A	A				A		A	A
	Delay	16.4	5.3			8.1	3.0				9.2		9.2	7.9
PM	LOS	C	A			B	A				C		C	B
	Delay	26.5	5.0			16.3	5.0				21.6		21.6	13.3

Table 5. Projected 2016 Level of Service With Project

		Harbor Drive						*32nd Street*						Total
		Eastbound			Westbound			Northbound			Southbound			
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
AM	LOS	D	C	A	D	D	A	E	C	A	D	C	C	C
	Delay	46.4	31.2	2.4	44.6	41.5	6.5	57.4	27.5	0.5	43.2	29.1	29.1	30.8
PM	LOS	D	D	A	D	C	B	D	D	A	D	B	B	D
	Delay	53.2	42.7	0.6	50.8	30.9	14.5	51.7	49.9	0.6	52.2	17.3	17.3	36.2

		EB Norman Scott Rd				WB Norman Scott Rd				NB 32nd St			
		LT	SL LT	TH	RT	LT	TH	SL RT	RT	LT	TH	SL RT	RT
		to 32nd	to SR15	to NS	to 32nd	to 32nd	to NS	to 32nd	to SR15	to NS	to 32nd	to SR15	to NS
AM	LOS	D	D	B	B	D	D	A	A	E	D	B	B
	Delay	36.3	36.3	15.0	15.0	54.8	54.8	9.8	9.8	55.2	51.7	17.2	17.2
PM	LOS	E	E	C	C	D	D	C	C	E	E	C	C
	Delay	77.4	77.4	22.4	22.4	51.7	51.7	23.9	23.9	66.2	76.5	30.3	30.3

		SB 32nd St			SWB Wabash Blvd				Total
		LT	TH	RT	LT	TH	SL RT	RT	
		to NS	to 32nd	to NS	to NS	to 32nd	to NS	to 32nd	
			E	D	D	D	D	D	D
			56.8	42.2	42.2	45.9	45.9	45.9	40.0
			E	C	C	E	E	E	D
			76.9	30.4	30.4	56.8	56.8	56.8	48.9

		Main Street						*I-15 Ramps*						Total
		Eastbound			Westbound			Northbound			Southbound			
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
AM	LOS	C	A			A	A				A		A	A
	Delay	22.1	6.2			9.0	3.0				9.9		9.9	8.8
PM	LOS	C	A			B	A				C		C	B
	Delay	26.6	8.0			16.3	5.0				21.0		21.0	14.4

3.5. OPERATIONAL ANALYSIS, BUILD OUT (2030)

As with the previous analyses, the projected traffic operations in 2030 were evaluated using *Synchro*. Table 6 shows the projected LOS without the multi-use path, and Table 7 shows the projected LOS with the multi-use path. As seen in Table 6, the 32nd Street/Norman Scott Road/Wabash Boulevard intersection is expected to operate at LOS F in both peak hours. In addition, several movements in both peak hours are expected to operate at LOS F. The intersection of 32nd Street and Harbor Drive is expected to operate at LOS D in the AM peak hour and LOS E in the PM peak hour, with the southbound throughs (AM peak hour), northbound throughs (PM peak), and southbound left turns (PM peak) operating at LOS F. The intersection of Main Street and the I-15 Ramps is expected to operate at LOS A in the AM peak hour and LOS B in the PM peak hour, with all movements operating at LOS C or better.

As seen in Table 7, the delays at the 32nd Street/Norman Scott Road/Wabash Boulevard intersection are the same with or without the project, which was expected since the new crossing of Wabash Boulevard can be accommodated without impacts to the signal timing. In addition, there are only minor increases at the intersection of Main Street and the I-15 Ramps, the but overall intersection is expected to continue to operate at LOS A in the AM peak hour and LOS B in the PM peak hour. At the intersection of 32nd Street and Harbor Drive, the southbound right turn delays are expected to increase, resulting in LOS E for the AM peak hour. However, note that the analysis only shows an additional 3 seconds of delay per vehicle at the intersection with the project.

Table 6. Projected 2030 Level of Service Without Project

		Harbor Drive						*32nd Street*						Total
		Eastbound			Westbound			Northbound			Southbound			
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
AM	LOS	E	D	A	E	E	A	D	C	A	D	F	A	D
	Delay	61.3	48.3	3.9	61.8	62.9	7.5	53.7	27.1	0.2	44.4	87.1	5.0	54.1
PM	LOS	E	E	A	E	E	C	E	F	A	F	C	A	E
	Delay	73.6	63.3	6.1	78.8	64.7	24.8	77.9	95.0	7.4	134.2	34.6	4.8	62.2

		EB Norman Scott Rd				WB Norman Scott Rd				NB 32nd St			
		LT	SL LT	TH	RT	LT	TH	SL RT	RT	LT	TH	SL RT	RT
		to 32nd	to SR15	to NS	to 32nd	to 32nd	to NS	to 32nd	to SR15	to NS	to 32nd	to SR15	to NS
AM	LOS	D	D	D	D	F	F	B	B	F	F	C	C
	Delay	51.8	51.8	44.3	44.3	187.2	187.2	13.0	13.0	110.2	82.8	28.1	28.1
PM	LOS	F	F	C	C	F	F	B	B	E	F	F	F
	Delay	137.3	137.3	32.0	32.0	93.9	93.9	17.5	17.5	71.4	102.0	98.8	98.8

		SB 32nd St			SWB Wabash Blvd				Total
		LT	TH	RT	LT	TH	SL RT	RT	
		to NS	to 32nd	to NS	to NS	to 32nd	to NS	to 32nd	
			F	E	E	F	F	F	F
			124.3	64.1	64.1	111.5	111.5	111.5	85.5
			F	D	D	F	F	F	F
			118.7	35.7	35.7	128.8	128.8	128.8	84.8

		Main Street						*I-15 Ramps*						Total
		Eastbound			Westbound			Northbound			Southbound			
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
AM	LOS	B	A			B	A				A		A	A
	Delay	16.9	5.4			10.7	3.5				9.4		9.4	9.1
PM	LOS	C	A			B	A				C		C	B
	Delay	28.0	5.4			17.8	5.2				21.9		21.9	14.1

Table 7. Projected 2030 Level of Service With Project

		Harbor Drive						*32nd Street*						Total
		Eastbound			Westbound			Northbound			Southbound			
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
AM	LOS	E	D	A	E	D	A	D	C	A	D	F	F	E
	Delay	67.7	47.2	3.9	61.9	54.5	7.2	54.0	27.2	0.2	44.5	88.2	88.2	57.3
PM	LOS	E	E	A	E	E	C	E	F	A	F	C	C	E
	Delay	73.6	63.6	6.1	78.8	64.7	24.8	77.9	95.0	7.4	134.2	31.6	31.6	63.6

		EB Norman Scott Rd				WB Norman Scott Rd				NB 32nd St			
		LT	SL LT	TH	RT	LT	TH	SL RT	RT	LT	TH	SL RT	RT
		to 32nd	to SR15	to NS	to 32nd	to 32nd	to NS	to 32nd	to SR15	to NS	to 32nd	to SR15	to NS
AM	LOS	D	D	D	D	F	F	B	B	F	F	C	C
	Delay	51.8	51.8	44.3	44.3	187.2	187.2	13.0	13.0	110.2	82.8	28.1	28.1
PM	LOS	F	F	C	C	F	F	B	B	E	F	F	F
	Delay	137.3	137.3	32.0	32.0	93.9	93.9	17.5	17.5	71.4	102.0	98.8	98.8

		SB 32nd St			SWB Wabash Blvd				Total
		LT	TH	RT	LT	TH	SL RT	RT	
		to NS	to 32nd	to NS	to NS	to 32nd	to NS	to 32nd	
			F	E	E	F	F	F	F
			124.3	64.1	64.1	111.5	111.5	111.5	85.5
			F	D	D	F	F	F	F
			118.7	35.7	35.7	128.8	128.8	128.8	84.8

		Main Street						*I-15 Ramps*						Total
		Eastbound			Westbound			Northbound			Southbound			
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
AM	LOS	B	A			B	A				A		A	A
	Delay	16.9	6.2			10.7	3.5				9.4		9.4	9.2
PM	LOS	C	B			B	A				C		C	B
	Delay	28.0	10.1			17.8	5.2				21.9		21.9	16.0

4. FINDINGS

As discussed, the proposed multi-use path will interact with vehicular traffic and existing roadways in the following areas:

- Class II or III bike lanes on Rigel Street from the Chollas Creek Channel to Main Street
- Controlled crossing (using Rectangular Rapid Flashing Beacons) of Main Street at Rigel Street
- Two-way cycle track on Main Street in conjunction with road diet (eliminate outside eastbound through lane)
- New crosswalk on Wabash Boulevard at intersection of 32nd Street/Norman Scott Road/Wabash Boulevard
- Two-way cycle track on 32nd Street in conjunction with removal of southbound auxiliary lane on 32nd Street between Norman Scott Road and Harbor Drive

The analyses have shown that these improvements will not have any significant impacts on the vehicular traffic operations. In the opening (2016) and build out (2030) years, there will only be minor changes to delays at the intersections of 32nd Street/Harbor Drive and Main Street/I-15 Ramps. In addition, it should be noted that these improvements will not preclude any potential capacity improvements to the roadway network in the project area.

5. REFERENCES

[1] California Road System Maps, California Department of Transportation. http://www.dot.ca.gov/hq/tsip/hseb/crs_map/15y34.pdf, accessed January 2014.

[2] *Barrio Logan Community Plan Update, Traffic Impact Analysis*. Kimley-Horn and Associates, Inc., March 2011.

[3] *Highway Capacity Manual*. Transportation Research Board, Washington D.C., 2002.

[4] *Barrio Logan Community Plan and Local Costal Program Draft*. City of San Diego.

[5] *Bayshore Bikeway Plan*. Alta Planning + Design and Berryman & Henigar, March 2006.

[6] Bayshore Bikeway Map. http://www.sandag.org/uploads/projectid/projectid_63_16442.pdf, accessed December 2013.

[7] *The City of San Diego Street Design Manual*. City of San Diego, November 2002. http://www.sandiego.gov/planning/documents/pdf/trans/complete.pdf

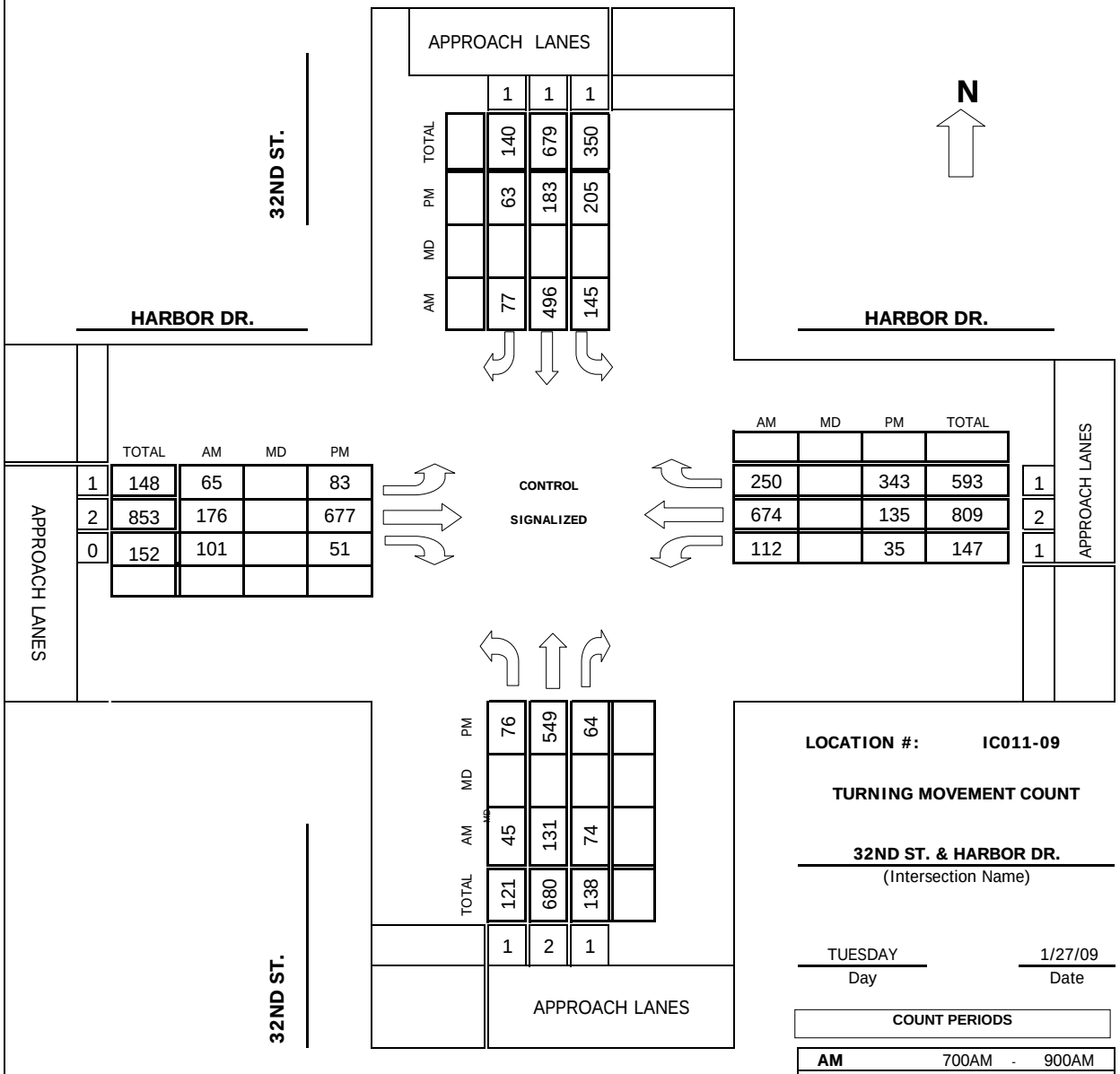
6. APPENDIX A: TRAFFIC VOLUMES

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: IC011-09

TMC SUMMARY OF 32ND ST. & HARBOR DR.



LOCATION #: IC011-09

TURNING MOVEMENT COUNT

32ND ST. & HARBOR DR.
(Intersection Name)

TUESDAY (Day) 1/27/09 (Date)

COUNT PERIODS

AM	700AM	-	900AM
NOON		-	
PM	400PM	-	600PM

AM PEAK HOUR 700 AM

NOON PEAK HOUR

PM PEAK HOUR 415 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

N-S STREET:	32ND ST.	DATE:	1/27/09	LOCATION:	SAN DIEGO
E-W STREET:	HARBOR DR.	DAY:	TUESDAY	PROJECT#	IC011-09

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	1	1	1	1	1	2	0	1	2	1	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	12	29	13	42	144	18	18	44	34	37	162	54	607
7:15 AM	14	35	17	41	129	25	10	50	29	31	174	61	616
7:30 AM	10	33	25	37	115	22	19	34	23	28	172	67	585
7:45 AM	9	34	19	25	108	12	18	48	15	16	166	68	538
8:00 AM	15	30	20	21	92	19	20	34	15	16	133	52	467
8:15 AM	12	41	12	34	77	14	14	29	16	15	107	61	432
8:30 AM	16	37	14	34	64	11	24	23	16	6	84	56	385
8:45 AM	15	31	14	29	66	12	20	27	14	9	88	53	378
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	103	270	134	263	795	133	143	289	162	158	1086	472	4008
Approach %	20.32	53.25	26.43	22.08	66.75	11.17	24.07	48.65	27.27	9.21	63.29	27.51	
App/Depart	507	/	885	1191	/	1115	594	/	686	1716	/	1322	

AM Peak Hr Begins at: 700 AM

PEAK													
Volumes	45	131	74	145	496	77	65	176	101	112	674	250	2346
Approach %	18.00	52.40	29.60	20.19	69.08	10.72	19.01	51.46	29.53	10.81	65.06	24.13	

PEAK HR. FACTOR:	0.919	0.880	0.891	0.970	0.952

CONTROL: SIGNALIZED
COMMENT 1:
COMMENT 2:

Intersection Turning Movement

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

N-S STREET:	32ND ST.	DATE:	1/27/09	LOCATION:	SAN DIEGO
E-W STREET:	HARBOR DR.	DAY:	TUESDAY	PROJECT#	IC011-09

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	1	1	1	1	1	2	0	1	2	1	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	13	139	22	60	49	20	24	125	12	1	30	84	579
4:15 PM	21	139	15	50	45	16	32	138	9	6	27	94	592
4:30 PM	14	147	11	55	39	19	25	168	10	6	27	80	601
4:45 PM	19	123	17	51	48	15	11	181	15	11	37	81	609
5:00 PM	22	140	21	49	51	13	15	190	17	12	44	88	662
5:15 PM	12	132	14	53	43	10	20	179	12	9	29	76	589
5:30 PM	15	122	11	41	38	12	11	158	8	4	35	79	534
5:45 PM	11	119	12	52	36	9	14	141	11	7	31	79	522
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	127	1061	123	411	349	114	152	1280	94	56	260	661	4688
Approach %	9.69	80.93	9.38	47.03	39.93	13.04	9.96	83.88	6.16	5.73	26.61	67.66	
App/Depart	1311	/	1874	874	/	499	1526	/	1814	977	/	501	

PM Peak Hr Begins at: 415 PM

PEAK													
Volumes	76	549	64	205	183	63	83	677	51	35	135	343	2464
Approach %	11.03	79.68	9.29	45.45	40.58	13.97	10.23	83.48	6.29	6.82	26.32	66.86	
PEAK HR. FACTOR:		0.941			0.989			0.913			0.891		0.931

CONTROL:	SIGNALIZED
COMMENT 1:	0
COMMENT 2:	0

Pedestrian & Bicycle Study

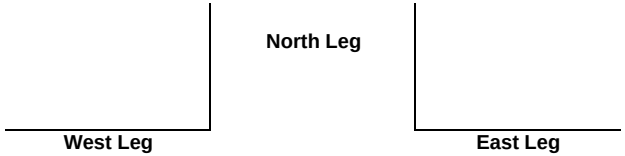
Location: 28TH ST. @ HARBOR DR.

Date: 1/27/09
Day: TUESDAY

City: SAN DIEGO
Project #: IC 011-09

	PEDESTRIANS			
	N-LEG	S-LEG	E-LEG	W-LEG
7:00 AM	0	0	3	7
7:15 AM	0	0	1	3
7:30 AM	0	0	0	0
7:45 AM	0	0	1	1
8:00 AM	0	0	0	0
8:15 AM	0	0	0	2
8:30 AM	0	0	1	0
8:45 AM	0	0	0	1
TOTAL	**0**	**0**	**6**	**14**

	BICYCLES			
	NT	ST	ET	WT
7:00 AM	0	0	2	1
7:15 AM	0	0	0	1
7:30 AM	0	0	2	1
7:45 AM	0	1	0	0
8:00 AM	0	0	0	1
8:15 AM	0	0	0	0
8:30 AM	0	0	1	0
8:45 AM	0	0	0	1
TOTAL	**0**	**1**	**5**	**5**

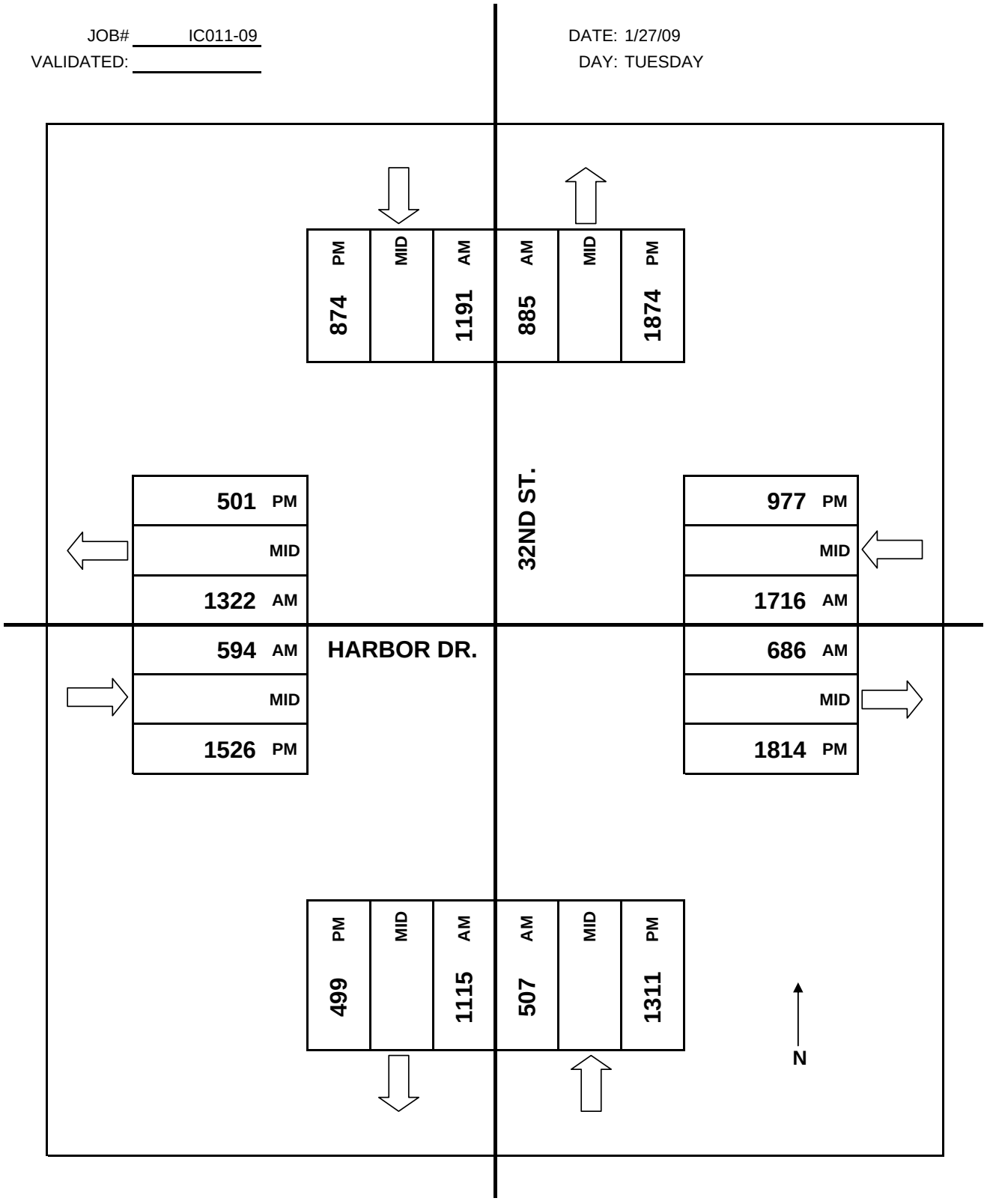


	PEDESTRIANS			
	N-LEG	S-LEG	E-LEG	W-LEG
4:00 PM	0	0	0	0
4:15 PM	1	0	0	1
4:30 PM	0	0	0	0
4:45 PM	1	0	1	0
5:00 PM	0	0	0	0
5:15 PM	0	0	1	0
5:30 PM	0	0	0	1
5:45 PM	0	0	0	0
TOTAL	**2**	**0**	**2**	**2**

	BICYCLES			
	NT	ST	ET	WT
4:00 PM	0	0	1	0
4:15 PM	0	0	0	1
4:30 PM	0	0	0	0
4:45 PM	0	0	1	1
5:00 PM	0	0	0	0
5:15 PM	1	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	1
TOTAL	**1**	**0**	**2**	**3**

JOB# IC011-09
VALIDATED:

DATE: 1/27/09
DAY: TUESDAY

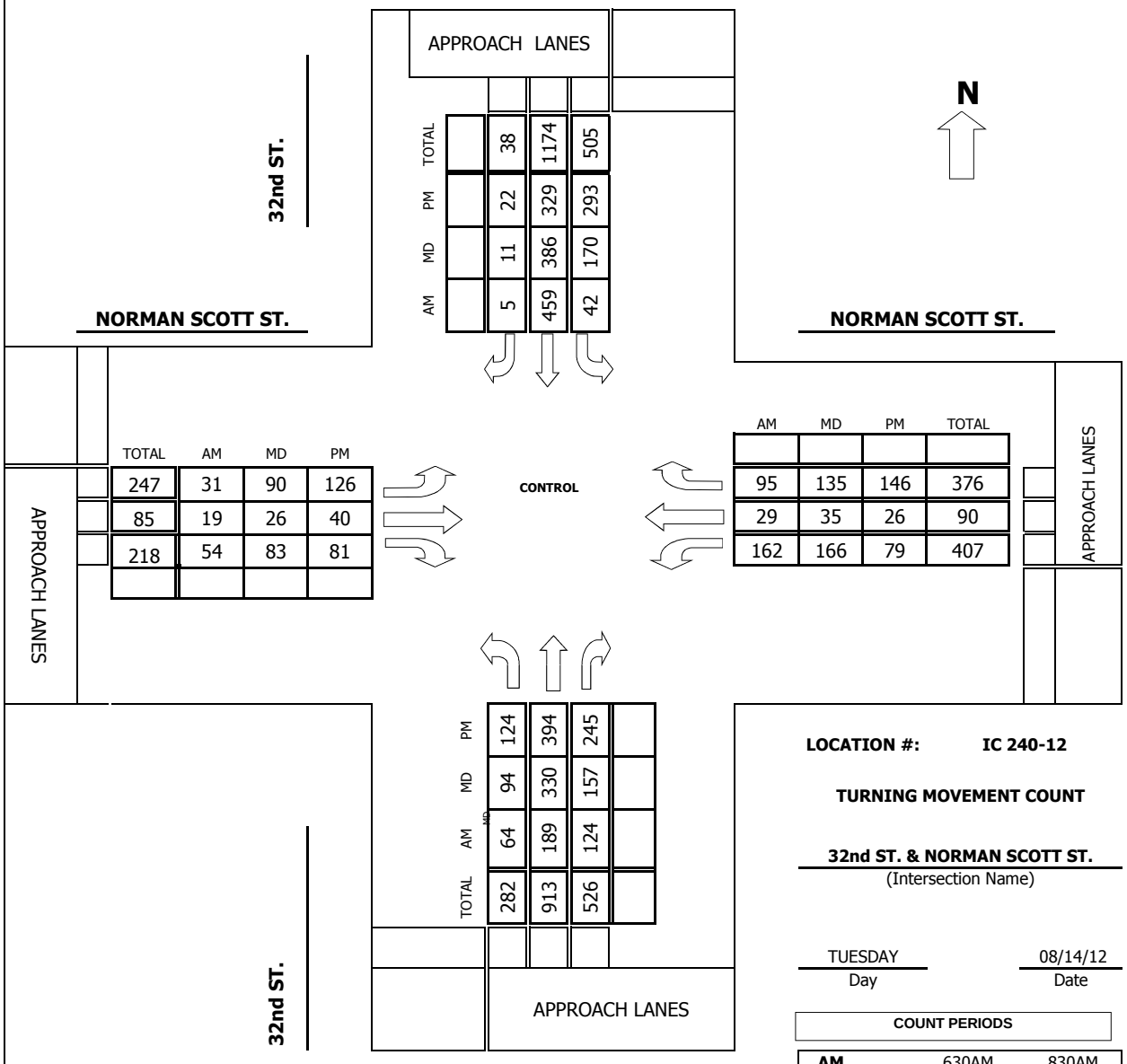


Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.

Project #: IC 240-12

TMC SUMMARY OF 32nd ST. & NORMAN SCOTT ST.



LOCATION #: IC 240-12

TURNING MOVEMENT COUNT

32nd ST. & NORMAN SCOTT ST.
(Intersection Name)

TUESDAY (Day) 08/14/12 (Date)

COUNT PERIODS			
AM	630AM	-	830AM
NOON	1130AM	-	130PM
PM	300PM	-	500PM

AM PEAK HOUR 715 AM

NOON PEAK HOUR 1130 AM

PM PEAK HOUR 315 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

N-S STREET:	32nd ST.	DATE:	08/14/12	LOCATION:	SAN DIEGO
E-W STREET:	NORMAN SCOTT ST.	DAY:	TUESDAY	PROJECT#	IC 240-12

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	2	2	1	1.5	0.5	1	0.5	0.5	0.5	0.5	1	
6:00 AM													
6:15 AM													
6:30 AM	5	25	24	8	120	3	3	0	8	59	1	7	263
6:45 AM	1	34	33	15	99	1	2	4	9	67	5	12	282
7:00 AM	9	35	41	10	67	0	4	6	5	65	6	20	268
7:15 AM	8	29	40	14	116	3	9	3	7	48	6	14	297
7:30 AM	15	48	33	4	89	0	11	4	14	34	8	30	290
7:45 AM	26	57	19	15	146	1	7	3	15	41	8	25	363
8:00 AM	15	55	32	9	108	1	4	9	18	39	7	26	323
8:15 AM	18	44	32	22	90	3	9	7	15	28	4	17	289
8:30 AM													
8:45 AM													
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	97	327	254	97	835	12	49	36	91	381	45	151	2375
Approach %	14.31	48.23	37.46	10.28	88.45	1.27	27.84	20.45	51.70	66.03	7.80	26.17	
App/Depart	678	/	527	944	/	1307	176	/	387	577	/	154	

AM Peak Hr Begins at: 715 AM

PEAK													
Volumes	64	189	124	42	459	5	31	19	54	162	29	95	1273
Approach %	16.98	50.13	32.89	8.30	90.71	0.99	29.81	18.27	51.92	56.64	10.14	33.22	
PEAK HR. FACTOR:		0.924			0.781			0.839			0.966		0.877

CONTROL:	SIGNAL
COMMENT 1:	
COMMENT 2:	

Intersection Turning Movement

Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

N-S STREET:	32nd ST.	DATE:	08/14/12	LOCATION:	SAN DIEGO
E-W STREET:	NORMAN SCOTT ST.	DAY:	TUESDAY	PROJECT#	IC 240-12

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	2	2	1	1.5	0.5	1	0.5	0.5	0.5	0.5	1	
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM	27	103	33	43	114	4	22	8	14	44	5	23	440
11:45 AM	27	112	42	43	112	5	22	7	15	37	11	35	468
12:00 PM	15	52	43	47	77	2	21	6	23	52	12	49	399
12:15 PM	25	63	39	37	83	0	25	5	31	33	7	28	376
12:30 PM	16	58	49	41	60	3	22	6	9	37	6	23	330
12:45 PM	27	49	45	47	103	3	33	7	18	39	4	32	407
1:00 PM	30	74	44	47	125	1	28	11	15	37	5	25	442
1:15 PM	24	87	57	44	102	5	19	5	18	25	4	21	411
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	191	598	352	349	776	23	192	55	143	304	54	236	3273
Approach %	16.74	52.41	30.85	30.40	67.60	2.00	49.23	14.10	36.67	51.18	9.09	39.73	
App/Depart	1141	/	1026	1148	/	1223	390	/	756	594	/	268	

NOON Peak Hr Begins at: 1130 AM

PEAK													
Volumes	94	330	157	170	386	11	90	26	83	166	35	135	1683
Approach %	16.18	56.80	27.02	29.98	68.08	1.94	45.23	13.07	41.71	49.40	10.42	40.18	
PEAK HR. FACTOR:		0.802			0.880			0.816			0.743		0.899

CONTROL: SIGNAL
COMMENT 1: 0
COMMENT 2: 0

HOURS:

	FROM:		TO:	
AM	630	AM	830	AM
NOON	1130	AM	130	PM
PM	300	PM	500	PM

Intersection Turning Movement

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

N-S STREET:	32nd ST.	DATE:	08/14/12	LOCATION:	SAN DIEGO
E-W STREET:	NORMAN SCOTT ST.	DAY:	TUESDAY	PROJECT#	IC 240-12

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	2	2	1	1.5	0.5	1	0.5	0.5	0.5	0.5	1	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM	21	52	54	46	73	7	27	12	12	20	7	47	378
3:15 PM	28	123	65	79	82	5	34	9	25	22	5	41	518
3:30 PM	28	102	67	69	81	6	23	7	19	23	10	34	469
3:45 PM	31	102	67	63	76	3	30	15	19	17	4	30	457
4:00 PM	37	67	46	82	90	8	39	9	18	17	7	41	461
4:15 PM	44	71	72	73	84	3	27	22	23	21	8	43	491
4:30 PM	32	53	61	74	73	2	33	12	29	25	12	41	447
4:45 PM	33	23	60	53	60	7	46	19	18	17	2	47	385
5:00 PM													
5:15 PM													
5:30 PM													
5:45 PM													
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	254	593	492	539	619	41	259	105	163	162	55	324	3606
Approach %	18.97	44.29	36.74	44.95	51.63	3.42	49.15	19.92	30.93	29.94	10.17	59.89	
App/Depart	1339	/	1176	1199	/	944	527	/	1136	541	/	350	

PM Peak Hr Begins at: 315 PM

PEAK													
Volumes	124	394	245	293	329	22	126	40	81	79	26	146	1905
Approach %	16.25	51.64	32.11	45.50	51.09	3.42	51.01	16.19	32.79	31.47	10.36	58.17	
PEAK HR. FACTOR:		0.883			0.894			0.908			0.923		0.919

CONTROL: SIGNAL
COMMENT 1: 0
COMMENT 2: 0

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Pedestrian & Bicycle Study

N-S STREET: 32nd ST.
E-W STREET: NORMAN SCOTT ST.

Date: 08/14/12
Day: TUESDAY

City: SAN DIEGO
Project #: IC 240-12

	PEDESTRIANS			
	N-LEG	S-LEG	E-LEG	W-LEG
6:30 AM	0	5	1	6
6:45 AM	0	8	2	9
7:00 AM	1	13	1	7
7:15 AM	0	4	1	3
7:30 AM	0	7	1	0
7:45 AM	0	10	2	0
8:00 AM	0	6	2	0
8:15 AM	0	2	1	1
TOTAL	1	55	11	26

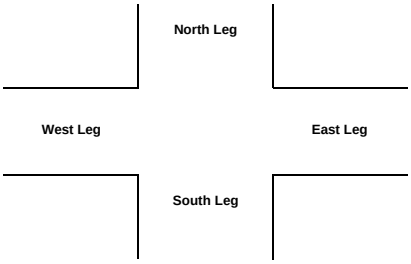
	BICYCLES			
	N-LEG	S-LEG	E-LEG	W-LEG
6:30 AM	4	0	0	0
6:45 AM	0	0	0	0
7:00 AM	1	0	0	0
7:15 AM	2	1	1	1
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	1	1	0	0
8:15 AM	1	0	0	0
TOTAL	9	2	1	1

	PEDESTRIANS			
	N-LEG	S-LEG	E-LEG	W-LEG
11:30 AM	0	7	6	10
11:45 AM	0	8	0	2
12:00 PM	0	6	0	11
12:15 PM	0	6	0	4
12:30 PM	0	12	9	8
12:45 PM	0	1	1	2
1:00 PM	0	11	1	5
1:15 PM	0	4	3	1
TOTAL	0	55	20	43

	BICYCLES			
	N-LEG	S-LEG	E-LEG	W-LEG
11:30 AM	0	0	0	0
11:45 AM	0	0	0	0
12:00 PM	0	0	0	0
12:15 PM	0	0	0	0
12:30 PM	0	0	0	0
12:45 PM	0	0	0	0
1:00 PM	0	0	0	0
1:15 PM	0	0	0	0
TOTAL	0	0	0	0

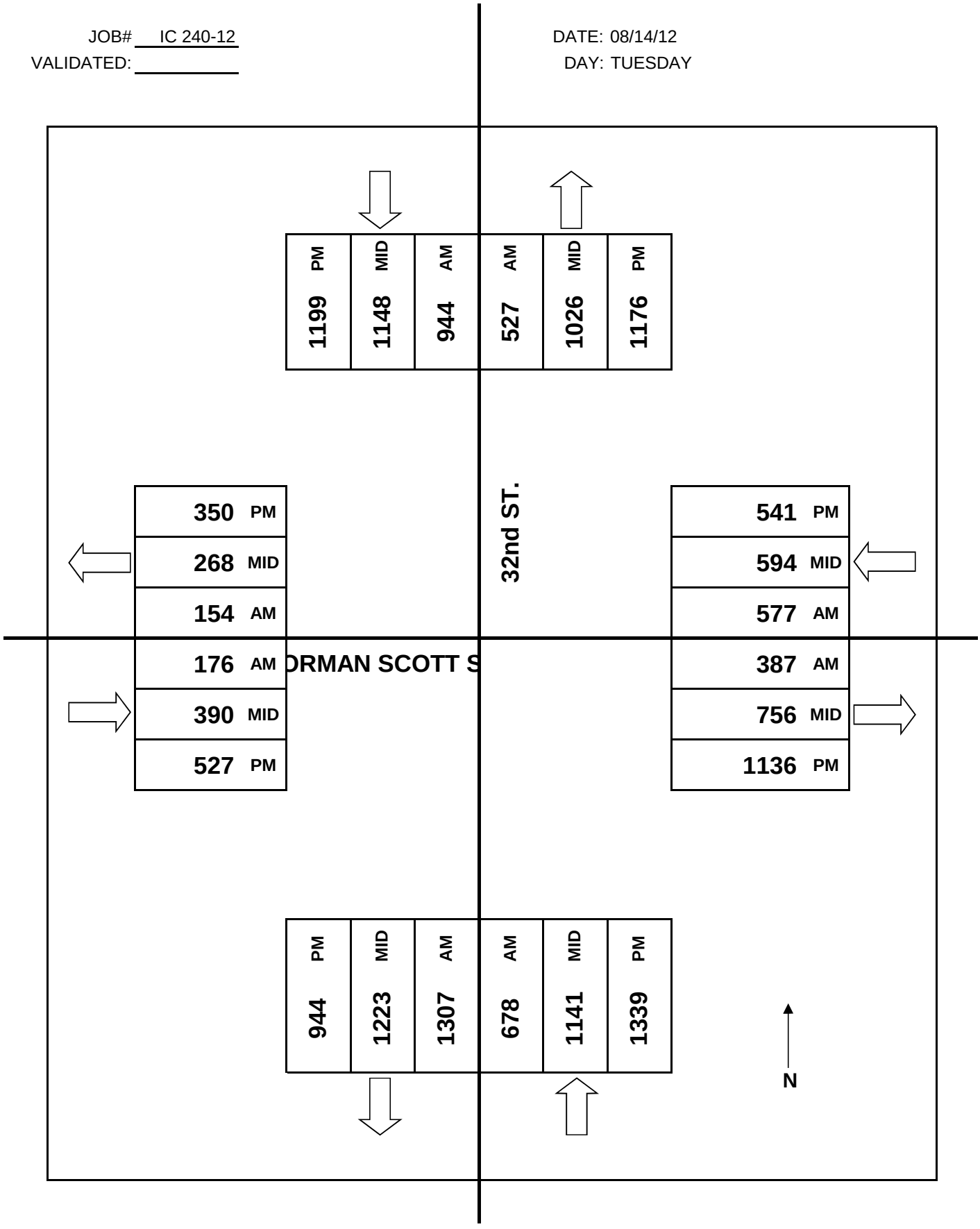
	PEDESTRIANS			
	N-LEG	S-LEG	E-LEG	W-LEG
3:00 PM	0	9	1	7
3:15 PM	0	9	6	2
3:30 PM	0	11	3	3
3:45 PM	0	10	3	6
4:00 PM	0	11	0	5
4:15 PM	0	11	6	5
4:30 PM	0	9	9	5
4:45 PM	0	15	3	8
TOTAL	0	85	31	41

	BICYCLES			
	N-LEG	S-LEG	E-LEG	W-LEG
3:00 PM	0	0	0	0
3:15 PM	0	1	0	0
3:30 PM	2	0	0	0
3:45 PM	0	0	0	0
4:00 PM	1	1	2	0
4:15 PM	0	0	0	0
4:30 PM	0	0	2	0
4:45 PM	2	0	1	0
TOTAL	5	2	5	0



JOB# IC 240-12
VALIDATED: _____

DATE: 08/14/12
DAY: TUESDAY

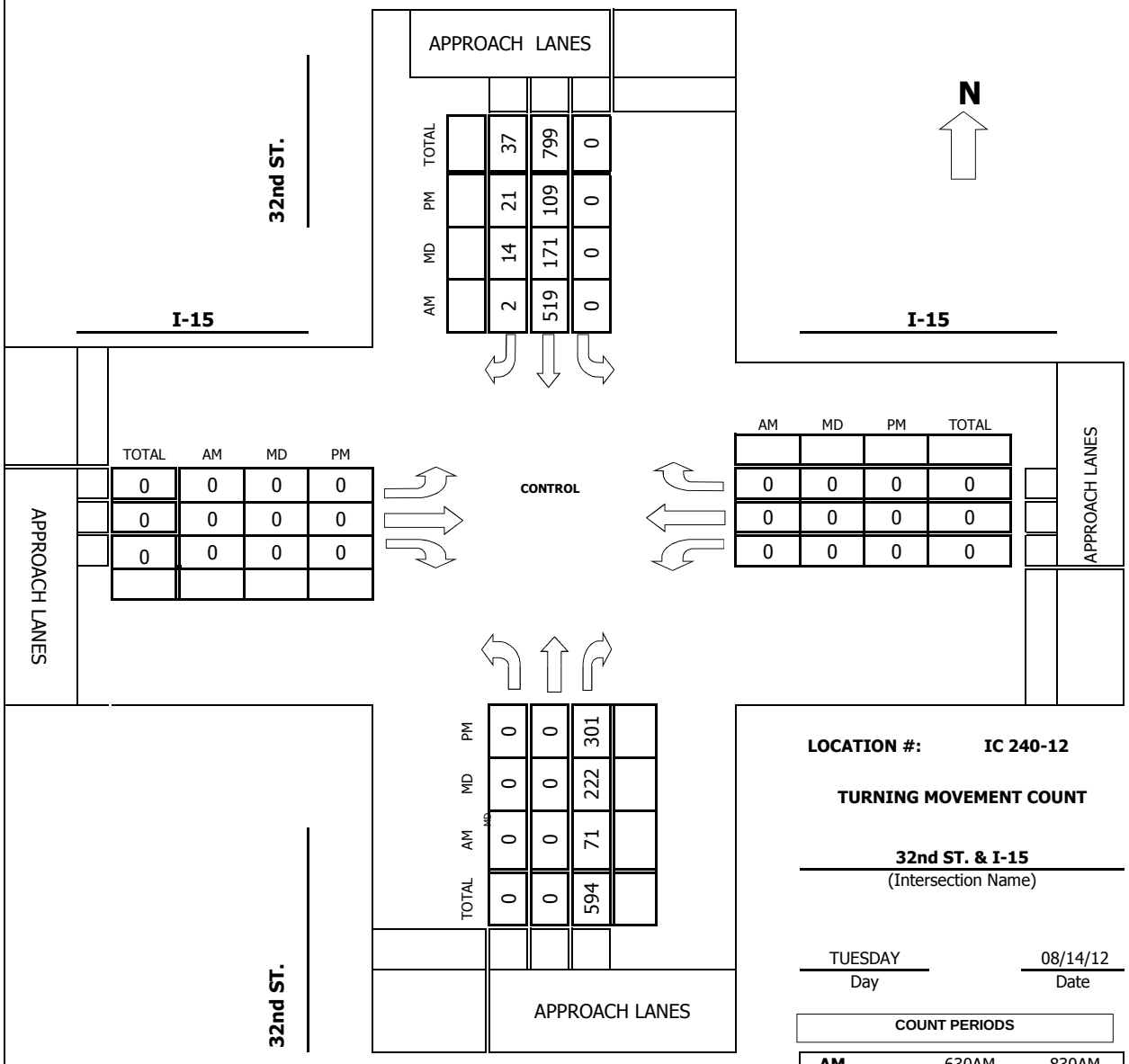


Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.

Project #: IC 240-12

TMC SUMMARY OF 32nd ST. & I-15



LOCATION #: IC 240-12

TURNING MOVEMENT COUNT

32nd ST. & I-15
(Intersection Name)

TUESDAY (Day) 08/14/12 (Date)

COUNT PERIODS			
AM	630AM	-	830AM
NOON	1130AM	-	130PM
PM	300PM	-	500PM

AM PEAK HOUR	700 AM
NOON PEAK HOUR	1200 PM
PM PEAK HOUR	300 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

N-S STREET:	32nd ST.	DATE:	08/14/12	LOCATION:	SAN DIEGO
E-W STREET:	I-15	DAY:	TUESDAY	PROJECT#	IC 240-12

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
6:00 AM													
6:15 AM													
6:30 AM			4		119	1							124
6:45 AM			16		113	0							129
7:00 AM			12		152	0							164
7:15 AM			18		131	0							149
7:30 AM			22		122	0							144
7:45 AM			19		114	2							135
8:00 AM			13		53	0							66
8:15 AM			20		38	0							58
8:30 AM													
8:45 AM													
9:00 AM			32ND ST		I-15	I-15							
9:15 AM			TO		TO	TO							
9:30 AM			I-15		32ND	32ND							
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	0	0	124	0	842	3	0	0	0	0	0	0	969
Approach %	0.00	0.00	100.00	0.00	99.64	0.36	####	####	####	####	####	####	
App/Depart	124	/	0	845	/	842	0	/	124	0	/	3	

AM Peak Hr Begins at: 700 AM

PEAK													
Volumes	0	0	71	0	519	2	0	0	0	0	0	0	592
Approach %	0.00	0.00	100.00	0.00	99.62	0.38	####	####	####	####	####	####	
PEAK HR. FACTOR:		0.807			0.857			0.000			0.000		0.902

CONTROL: SIGNAL
COMMENT 1:
COMMENT 2:

Intersection Turning Movement

Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

N-S STREET:	32nd ST.	DATE:	08/14/12	LOCATION:	SAN DIEGO
E-W STREET:	I-15	DAY:	TUESDAY	PROJECT#	IC 240-12

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
10:00 AM													
10:15 AM			32ND ST		I-15	I-15							
10:30 AM			TO		TO	TO							
10:45 AM			I-15		32ND	32ND							
11:00 AM													
11:15 AM													
11:30 AM			46		28	2							76
11:45 AM			43		42	4							89
12:00 PM			58		37	3							98
12:15 PM			54		45	5							104
12:30 PM			54		39	2							95
12:45 PM			56		50	4							110
1:00 PM			41		34	1							76
1:15 PM			29		33	2							64
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	0	0	381	0	308	23	0	0	0	0	0	0	712
Approach %	0.00	0.00	100.00	0.00	93.05	6.95	####	####	####	####	####	####	
App/Depart	381	/	0	331	/	308	0	/	381	0	/	23	

NOON Peak Hr Begins at: 1200 PM

PEAK													
Volumes	0	0	222	0	171	14	0	0	0	0	0	0	407
Approach %	0.00	0.00	100.00	0.00	92.43	7.57	####	####	####	####	####	####	
PEAK HR. FACTOR:		0.957			0.856			0.000			0.000		0.925

CONTROL: SIGNAL
COMMENT 1: 0
COMMENT 2: 0

HOURS:

	FROM:		TO:	
AM	630	AM	830	AM
NOON	1130	AM	130	PM
PM	300	PM	500	PM

Intersection Turning Movement

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

N-S STREET:	32nd ST.	DATE:	08/14/12	LOCATION:	SAN DIEGO
E-W STREET:	I-15	DAY:	TUESDAY	PROJECT#	IC 240-12

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
1:00 PM													
1:15 PM													
1:30 PM			32ND ST		I-15	I-15							
1:45 PM			TO		TO	TO							
2:00 PM			I-15		32ND	32ND							
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM			72		28	4							104
3:15 PM			68		19	8							95
3:30 PM			87		32	6							125
3:45 PM			74		30	3							107
4:00 PM			59		24	5							88
4:15 PM			63		28	4							95
4:30 PM			66		25	2							93
4:45 PM			50		24	5							79
5:00 PM													
5:15 PM													
5:30 PM													
5:45 PM													
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	0	0	539	0	210	37	0	0	0	0	0	0	786
Approach %	0.00	0.00	100.00	0.00	85.02	14.98	####	####	####	####	####	####	
App/Depart	539	/	0	247	/	210	0	/	539	0	/	37	

PM Peak Hr Begins at: 300 PM

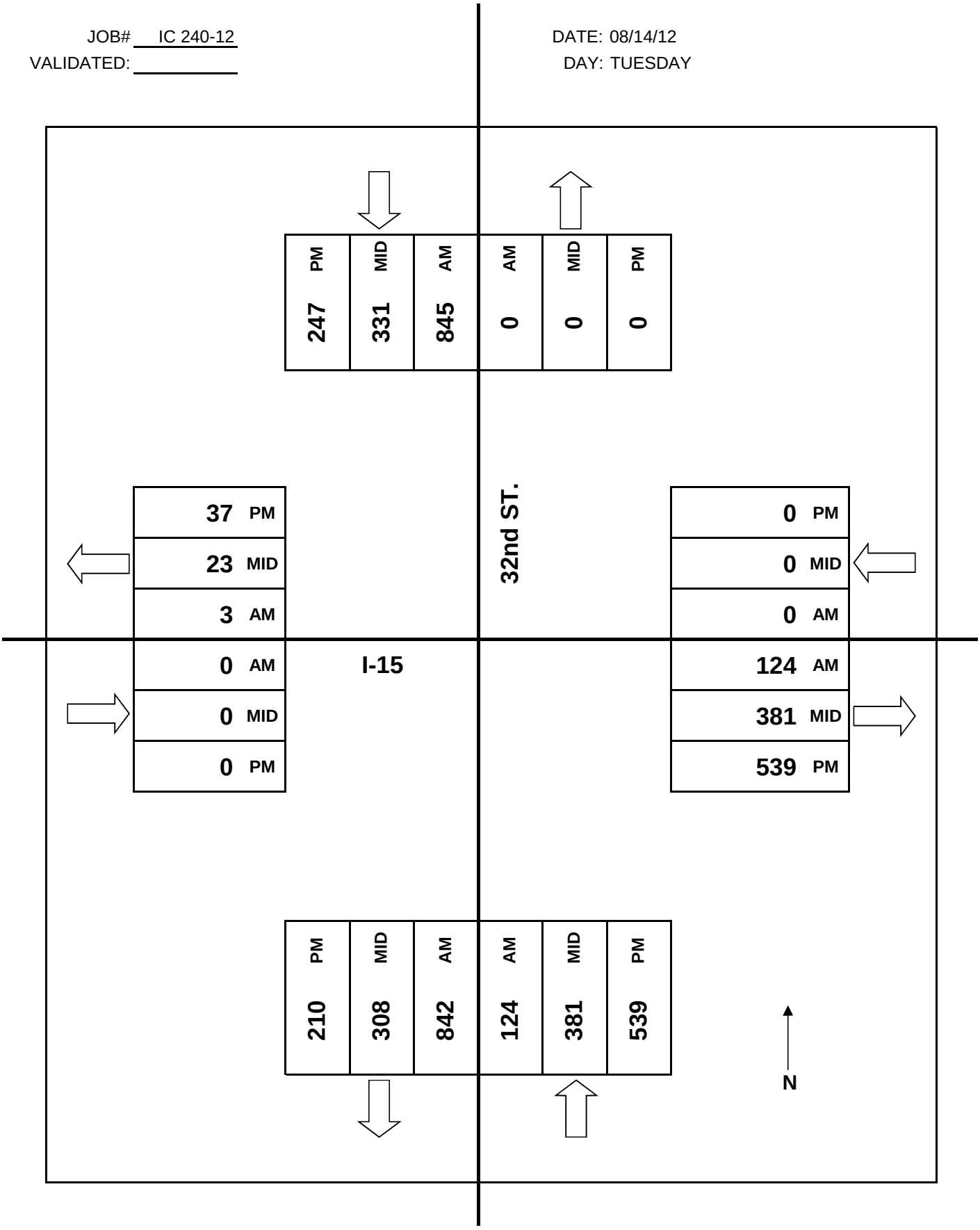
PEAK													
Volumes	0	0	301	0	109	21	0	0	0	0	0	0	431
Approach %	0.00	0.00	100.00	0.00	83.85	16.15	####	####	####	####	####	####	

PEAK HR. FACTOR:	0.865	0.855	0.000	0.000	0.862

CONTROL: SIGNAL
COMMENT 1: 0
COMMENT 2: 0

JOB# IC 240-12
VALIDATED: _____

DATE: 08/14/12
DAY: TUESDAY

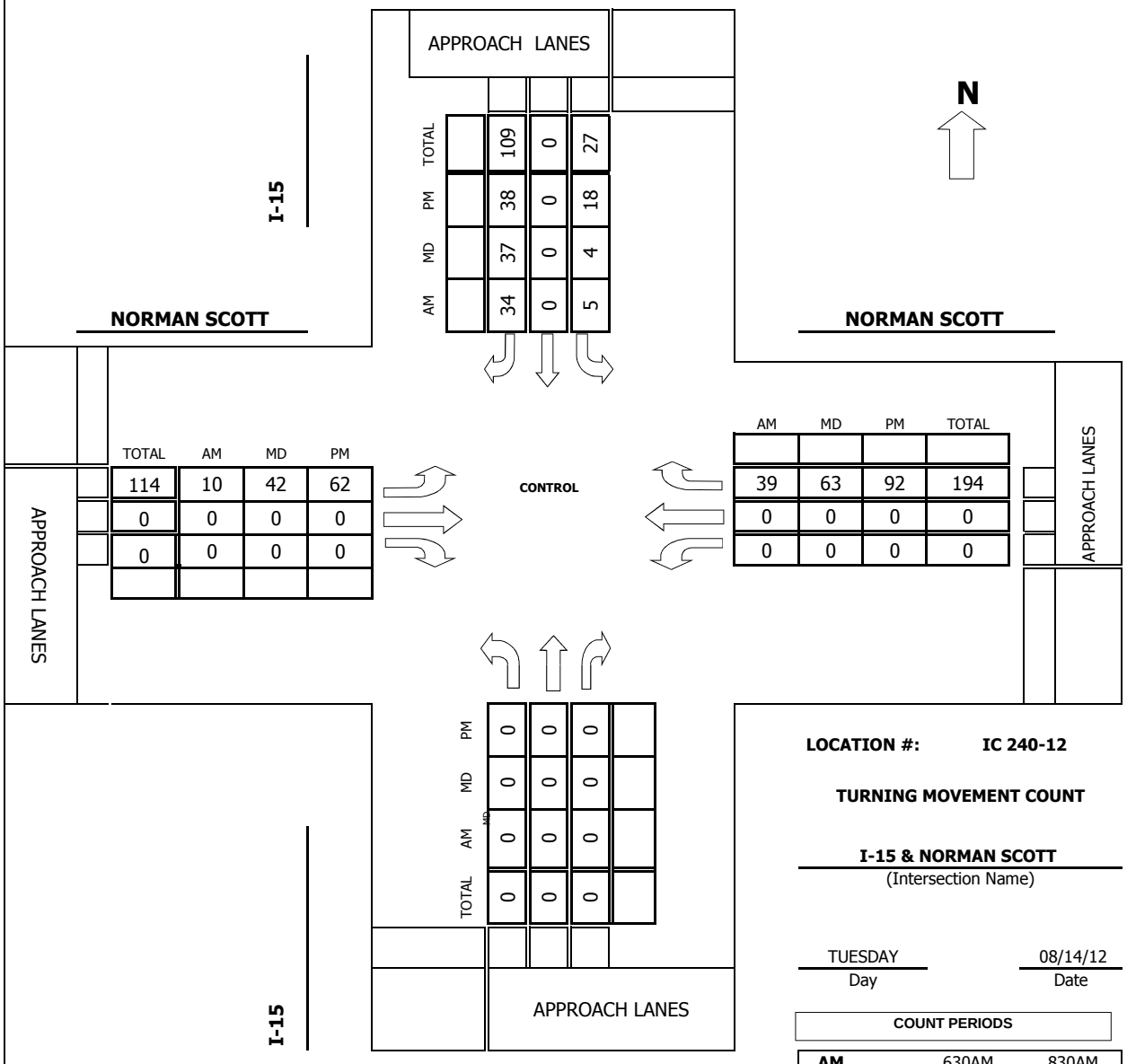


Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.

Project #: IC 240-12

TMC SUMMARY OF I-15 & NORMAN SCOTT



LOCATION #: IC 240-12

TURNING MOVEMENT COUNT

I-15 & NORMAN SCOTT
(Intersection Name)

TUESDAY (Day) 08/14/12 (Date)

COUNT PERIODS			
AM	630AM	-	830AM
NOON	1130AM	-	130PM
PM	300PM	-	500PM

AM PEAK HOUR 715 AM

NOON PEAK HOUR 1230 PM

PM PEAK HOUR 345 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

N-S STREET:	I-15	DATE:	08/14/12	LOCATION:	SAN DIEGO
E-W STREET:	NORMAN SCOTT	DAY:	TUESDAY	PROJECT#	IC 240-12

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
6:00 AM													
6:15 AM													
6:30 AM				0		3	0					2	5
6:45 AM				2		4	1					1	8
7:00 AM				0		8	2					4	14
7:15 AM				1		11	3					8	23
7:30 AM				2		7	2					9	20
7:45 AM				1		9	1					11	22
8:00 AM				1		7	4					11	23
8:15 AM				0		5	2					9	16
8:30 AM													
8:45 AM													
9:00 AM				I-15		I-15	NORMAN SCOTT					NORMAN SCOTT	
9:15 AM				TO		TO	TO					TO	
9:30 AM			NORMAN SCOTT		NORMAN SCOTT		I-15					I-15	
9:45 AM			ILLEGAL TURNS										
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	0	0	0	7	0	54	15	0	0	0	0	55	131
Approach %	####	####	####	11.48	0.00	88.52	100.00	0.00	0.00	0.00	0.00	100.00	
App/Depart	0	/	70	61	/	0	15	/	7	55	/	54	

AM Peak Hr Begins at: 715 AM

PEAK													
Volumes	0	0	0	5	0	34	10	0	0	0	0	39	88
Approach %	####	####	####	12.82	0.00	87.18	100.00	0.00	0.00	0.00	0.00	100.00	

PEAK HR. FACTOR:	0.000	0.813	0.625	0.886	0.957

CONTROL: SIGNAL
COMMENT 1:
COMMENT 2:

Intersection Turning Movement

Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

N-S STREET:	I-15	DATE:	08/14/12	LOCATION:	SAN DIEGO
E-W STREET:	NORMAN SCOTT	DAY:	TUESDAY	PROJECT#	IC 240-12

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
10:00 AM													
10:15 AM				I-15		I-15	NORMAN SCOTT					NORMAN SCOTT	
10:30 AM				TO		TO	TO					TO	
10:45 AM				NORMAN SCOTT	NORMAN SCOTT		I-15					I-15	
11:00 AM				ILLEGAL TURNS									
11:15 AM													
11:30 AM				5		12	8					11	36
11:45 AM				0		7	7					9	23
12:00 PM				0		11	8					12	31
12:15 PM				1		8	9					14	32
12:30 PM				2		13	6					13	34
12:45 PM				1		8	11					15	35
1:00 PM				0		7	12					18	37
1:15 PM				1		9	13					17	40
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	0	0	0	10	0	75	74	0	0	0	0	109	268
Approach %	####	####	####	11.76	0.00	88.24	100.00	0.00	0.00	0.00	0.00	100.00	
App/Depart	0	/	183	85	/	0	74	/	10	109	/	75	

NOON Peak Hr Begins at: 1230 PM

PEAK													
Volumes	0	0	0	4	0	37	42	0	0	0	0	63	146
Approach %	####	####	####	9.76	0.00	90.24	100.00	0.00	0.00	0.00	0.00	100.00	

PEAK HR. FACTOR:	0.000	0.683	0.000	0.875	0.913

CONTROL: SIGNAL
COMMENT 1: 0
COMMENT 2: 0

HOURS:

	FROM:		TO:	
AM	630	AM	830	AM
NOON	1130	AM	130	PM
PM	300	PM	500	PM

Intersection Turning Movement

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

N-S STREET:	I-15	DATE:	08/14/12	LOCATION:	SAN DIEGO
E-W STREET:	NORMAN SCOTT	DAY:	TUESDAY	PROJECT#	IC 240-12

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
1:00 PM													
1:15 PM													
1:30 PM				I-15		I-15	NORMAN SCOTT						
1:45 PM				TO		TO	TO					TO	
2:00 PM				NORMAN SCOTT	NORMAN SCOTT		I-15					I-15	
2:15 PM				ILLEGAL TURNS									
2:30 PM													
2:45 PM													
3:00 PM				8		7	12					24	51
3:15 PM				6		5	11					26	48
3:30 PM				2		9	14					20	45
3:45 PM				2		12	16					26	56
4:00 PM				4		12	13					25	54
4:15 PM				6		8	15					24	53
4:30 PM				6		6	18					17	47
4:45 PM				6		6	12					12	36
5:00 PM													
5:15 PM													
5:30 PM													
5:45 PM													
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	0	0	0	40	0	65	111	0	0	0	0	174	390
Approach %	####	####	####	38.10	0.00	61.90	100.00	0.00	0.00	0.00	0.00	100.00	
App/Depart	0	/	285	105	/	0	111	/	40	174	/	65	

PM Peak Hr Begins at: 345 PM

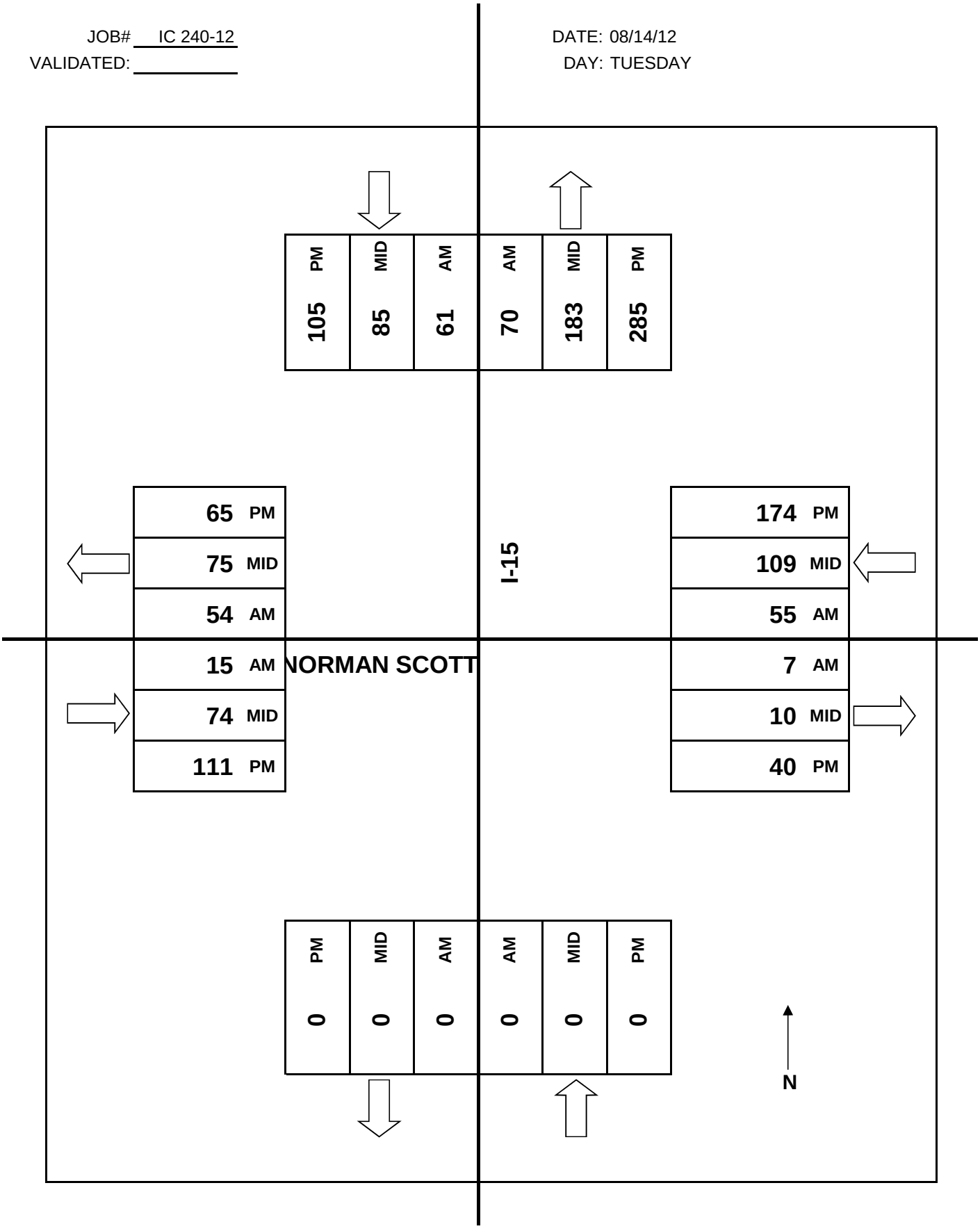
PEAK													
Volumes	0	0	0	18	0	38	62	0	0	0	0	92	210
Approach %	####	####	####	32.14	0.00	67.86	100.00	0.00	0.00	0.00	0.00	100.00	

PEAK HR. FACTOR:	0.000	0.875	0.861	0.885	0.938

CONTROL: SIGNAL
COMMENT 1: 0
COMMENT 2: 0

JOB# IC 240-12
VALIDATED: _____

DATE: 08/14/12
DAY: TUESDAY

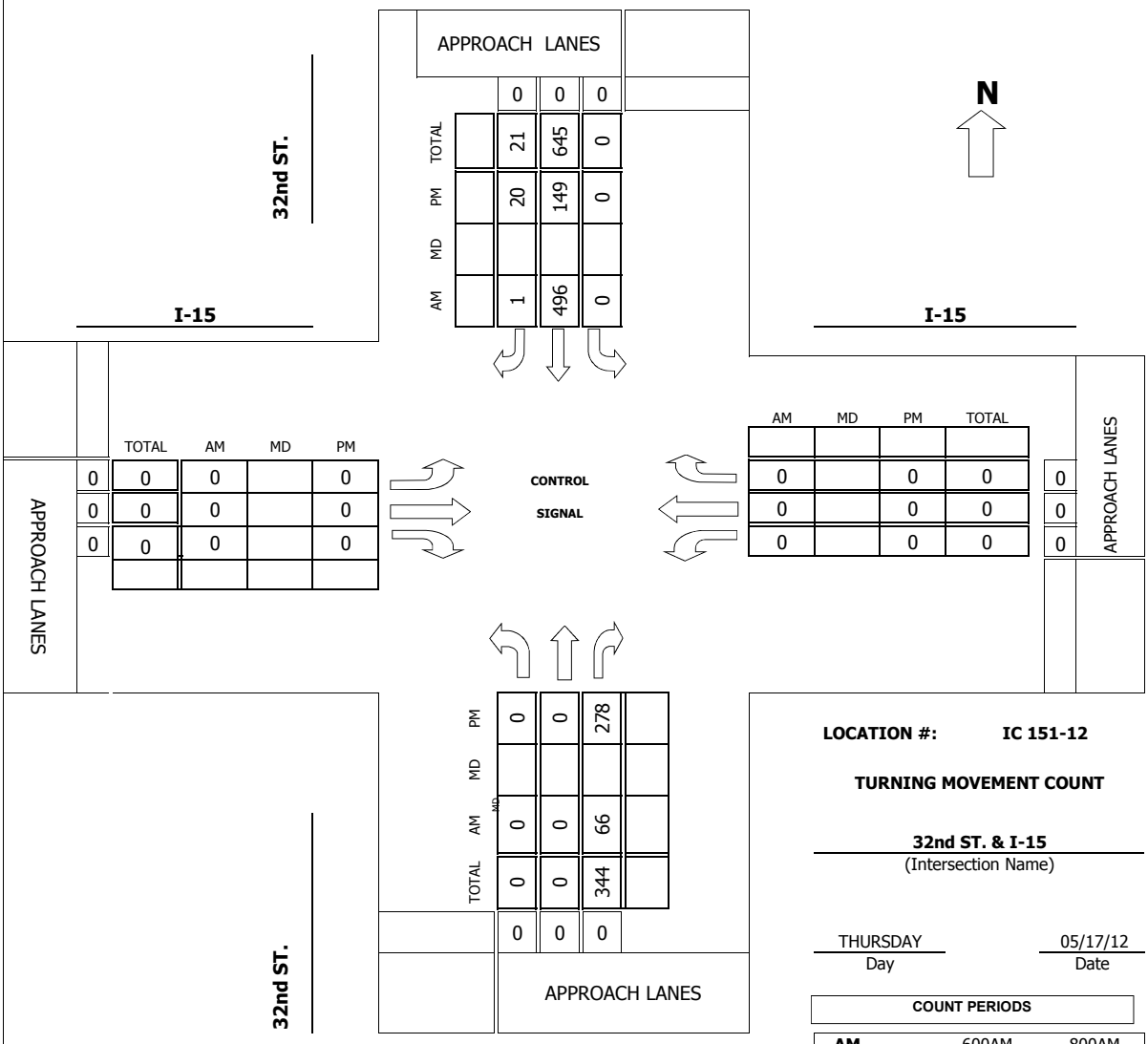


Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: IC 151-12

TMC SUMMARY OF 32nd ST. & I-15



LOCATION #: IC 151-12

TURNING MOVEMENT COUNT

32nd ST. & I-15
(Intersection Name)

THURSDAY (Day) 05/17/12 (Date)

COUNT PERIODS			
AM	600AM	-	800AM
NOON		-	
PM	300PM	-	500PM

AM PEAK HOUR 615 AM

NOON PEAK HOUR

PM PEAK HOUR 345 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

N-S STREET:	32nd ST.	DATE:	05/17/12	LOCATION:	SAN DIEGO
E-W STREET:	I-15	DAY:	THURSDAY	PROJECT#	IC 151-12

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
6:00 AM			5		123	1							129
6:15 AM			16		141	0							157
6:30 AM			12		133	0							145
6:45 AM			17		110	0							127
7:00 AM			21		112	1							134
7:15 AM			8		115	0							123
7:30 AM			15		84	2							101
7:45 AM			24		69	0							93
8:00 AM													
8:15 AM			32ND ST		I-15	I-15							
8:30 AM			TO		TO	TO							
8:45 AM			I-15		32ND	32ND							
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	0	0	118	0	887	4	0	0	0	0	0	0	1009
Approach %	0.00	0.00	100.00	0.00	99.55	0.45	####	####	####	####	####	####	
App/Depart	118	/	0	891	/	887	0	/	118	0	/	4	

AM Peak Hr Begins at: 615 AM

PEAK													
Volumes	0	0	66	0	496	1	0	0	0	0	0	0	563
Approach %	0.00	0.00	100.00	0.00	99.80	0.20	####	####	####	####	####	####	
PEAK HR. FACTOR:		0.786			0.881			0.000			0.000		0.896

CONTROL:	SIGNAL
COMMENT 1:	
COMMENT 2:	

Intersection Turning Movement

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

N-S STREET:	32nd ST.	DATE:	05/17/12	LOCATION:	SAN DIEGO
E-W STREET:	I-15	DAY:	THURSDAY	PROJECT#	IC 151-12

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	0	0	0	0	0	0	0	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM			65		17	3							85
3:15 PM			85		26	0							111
3:30 PM			85		15	12							112
3:45 PM			59		25	1							85
4:00 PM			84		22	5							111
4:15 PM			67		43	5							115
4:30 PM			68		59	9							136
4:45 PM			36		28	3							67
5:00 PM													
5:15 PM			32ND ST		I-15	I-15							
5:30 PM			TO		TO	TO							
5:45 PM			I-15		32ND	32ND							
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	0	0	549	0	235	38	0	0	0	0	0	0	822
Approach %	0.00	0.00	100.00	0.00	86.08	13.92	####	####	####	####	####	####	
App/Depart	549	/	0	273	/	235	0	/	549	0	/	38	

PM Peak Hr Begins at: 345 PM

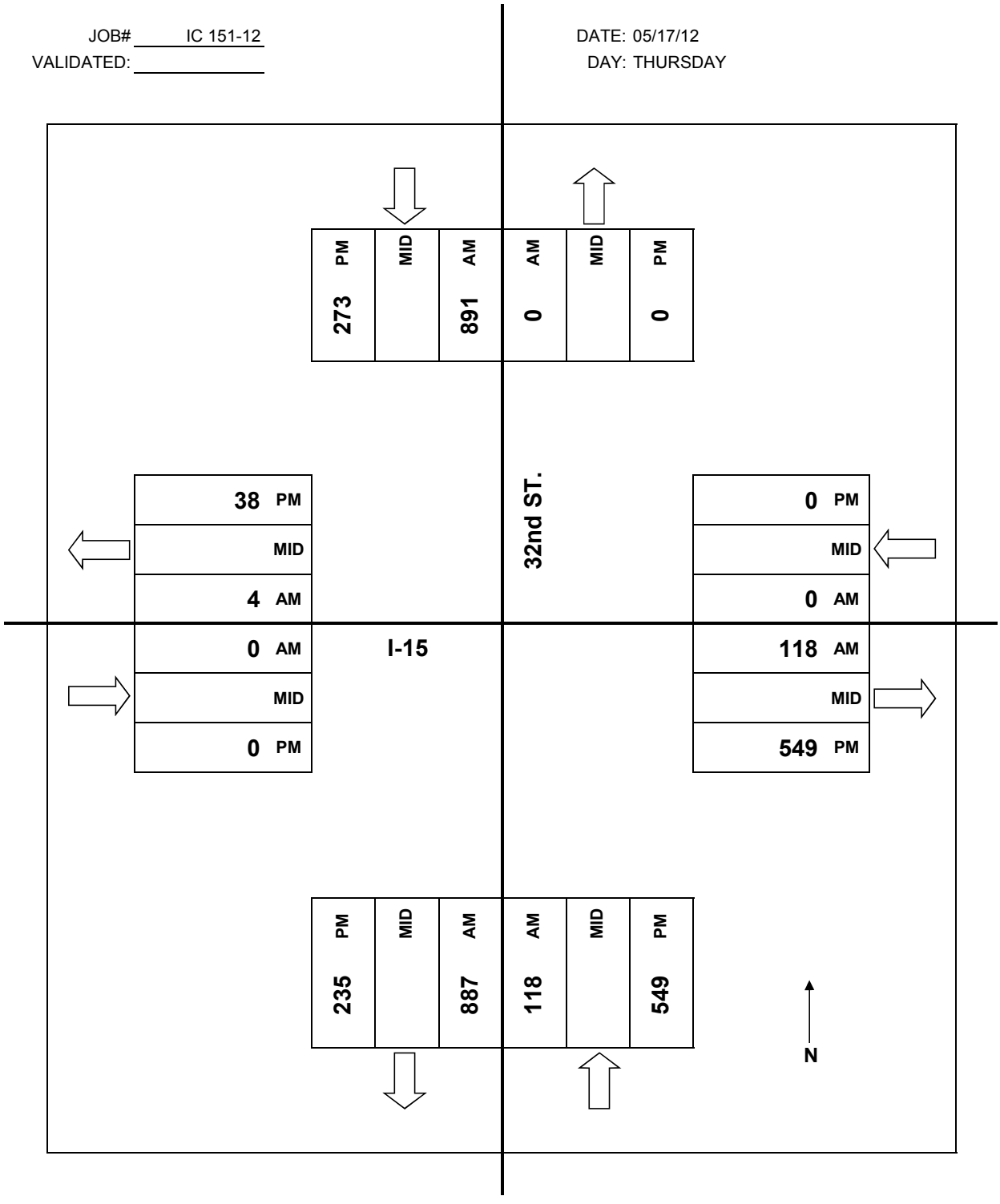
PEAK													
Volumes	0	0	278	0	149	20	0	0	0	0	0	0	447
Approach %	0.00	0.00	100.00	0.00	88.17	11.83	####	####	####	####	####	####	

PEAK HR. FACTOR:	0.827	0.621	0.000	0.000	0.822

CONTROL:	SIGNAL
COMMENT 1:	0
COMMENT 2:	0

JOB# IC 151-12
VALIDATED:

DATE: 05/17/12
DAY: THURSDAY

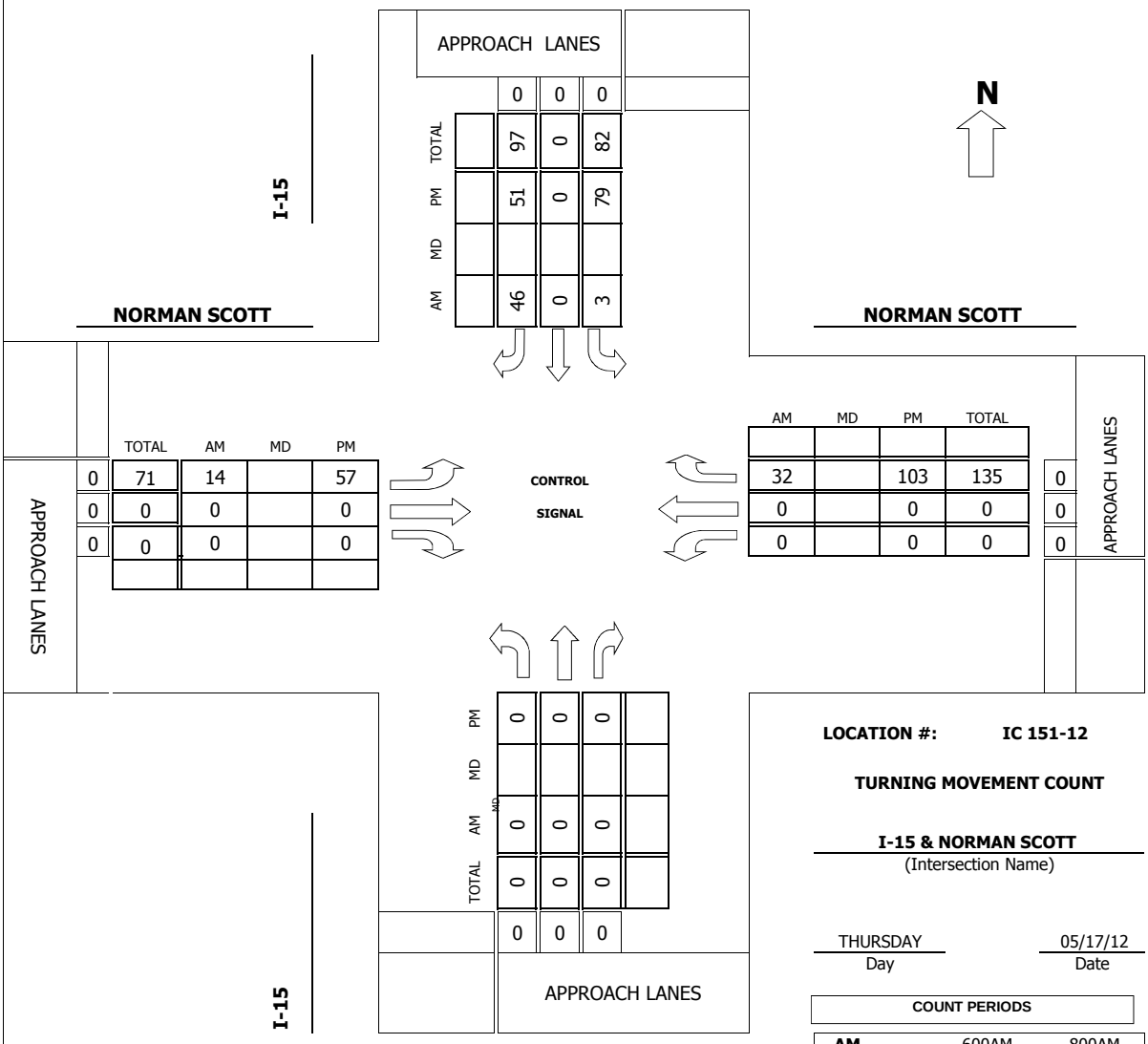


Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: IC 151-12

TMC SUMMARY OF I-15 & NORMAN SCOTT



LOCATION #: IC 151-12

TURNING MOVEMENT COUNT

I-15 & NORMAN SCOTT
(Intersection Name)

THURSDAY (Day) 05/17/12 (Date)

COUNT PERIODS			
AM	600AM	-	800AM
NOON		-	
PM	300PM	-	500PM

AM PEAK HOUR 700 AM

NOON PEAK HOUR

PM PEAK HOUR 315 PM

Intersection Turning Movement
Prepared by:

N-S STREET:	I-15	DATE:	05/17/12	LOCATION:	SAN DIEGO
E-W STREET:	NORMAN SCOTT	DAY:	THURSDAY	PROJECT#	IC 151-12

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
6:00 AM				0		4	0					1	5
6:15 AM				0		7	0					3	10
6:30 AM				0		9	0					9	18
6:45 AM				0		13	0					2	15
7:00 AM				1		16	2					3	22
7:15 AM				0		9	3					7	19
7:30 AM				0		10	4					10	24
7:45 AM				2		11	5					12	30
8:00 AM													
8:15 AM				I-15		I-15	NORMAN SCOTT			NORMAN SCOTT			
8:30 AM				TO		TO	TO					TO	
8:45 AM				NORMAN SCOTT		NORMAN SCOTT	I-15					I-15	
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	0	0	0	3	0	79	14	0	0	0	0	47	143
Approach %	####	####	####	3.66	0.00	96.34	100.00	0.00	0.00	0.00	0.00	100.00	
App/Depart	0	/	61	82	/	0	14	/	3	47	/	79	

AM Peak Hr Begins at: 700 AM

PEAK													
Volumes	0	0	0	3	0	46	14	0	0	0	0	32	95
Approach %	####	####	####	6.12	0.00	93.88	100.00	0.00	0.00	0.00	0.00	100.00	

PEAK HR. FACTOR:	0.000	0.721	0.700	0.667	0.792

CONTROL:	SIGNAL
COMMENT 1:	
COMMENT 2:	

Intersection Turning Movement

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

N-S STREET:	I-15	DATE:	05/17/12	LOCATION:	SAN DIEGO
E-W STREET:	NORMAN SCOTT	DAY:	THURSDAY	PROJECT#	IC 151-12

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	0	0	0	0	0	0	0	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM				25		7	11					26	69
3:15 PM				18		16	12					23	69
3:30 PM				14		8	18					20	60
3:45 PM				23		13	13					30	79
4:00 PM				24		14	14					30	82
4:15 PM				19		4	20					21	64
4:30 PM				9		4	12					16	41
4:45 PM				10		10	11					14	45
5:00 PM													
5:15 PM				I-15		I-15	NORMAN SCOTT				NORMAN SCOTT		
5:30 PM				TO		TO	TO					TO	
5:45 PM				NORMAN SCOTT		NORMAN SCOTT	I-15					I-15	
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	0	0	0	142	0	76	111	0	0	0	0	180	509
Approach %	####	####	####	65.14	0.00	34.86	100.00	0.00	0.00	0.00	0.00	100.00	
App/Depart	0	/	291	218	/	0	111	/	142	180	/	76	

PM Peak Hr Begins at: 315 PM

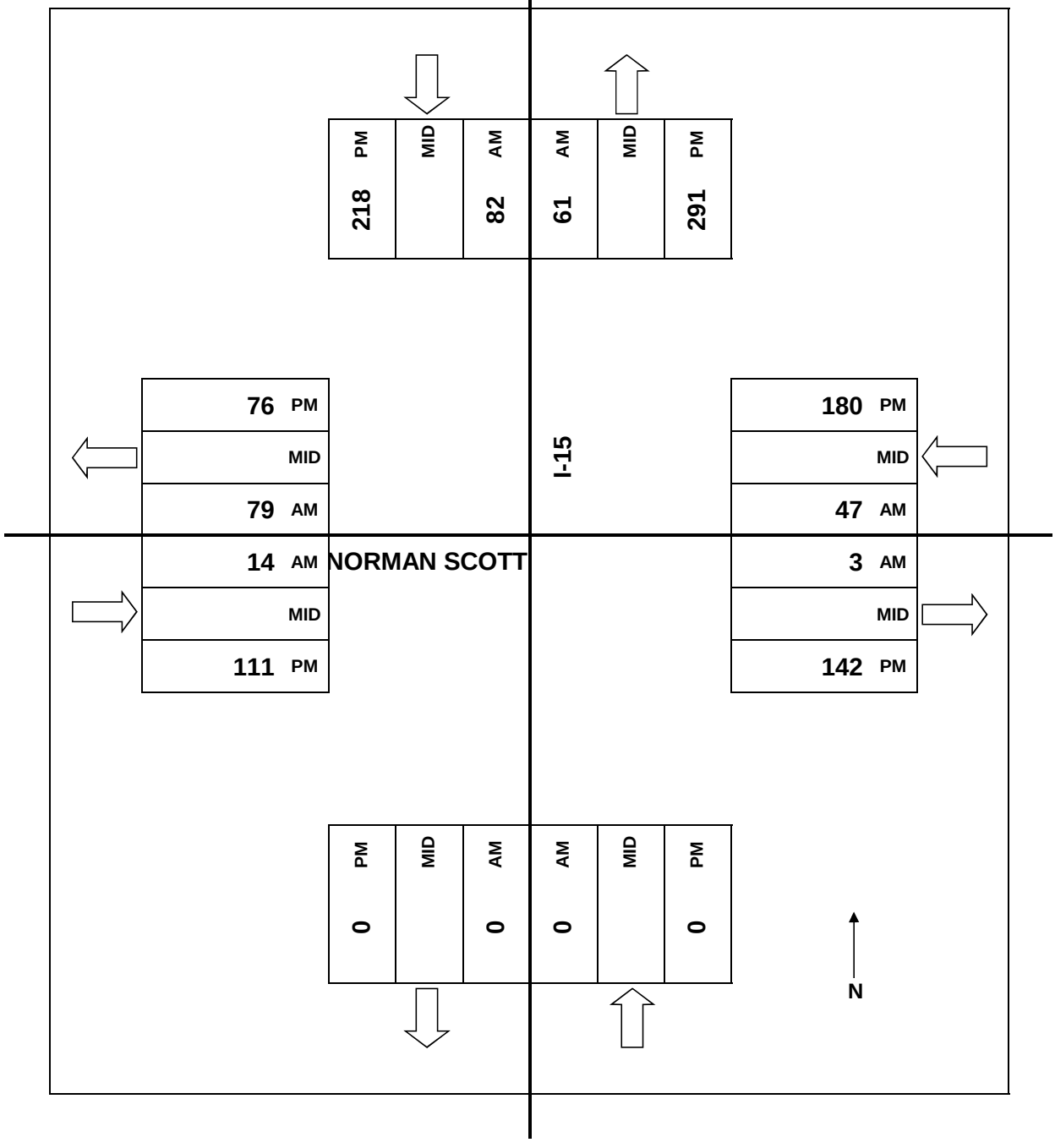
PEAK													
Volumes	0	0	0	79	0	51	57	0	0	0	0	103	290
Approach %	####	####	####	60.77	0.00	39.23	100.00	0.00	0.00	0.00	0.00	100.00	

PEAK HR. FACTOR:	0.000	0.855	0.792	0.858	0.884

CONTROL:	SIGNAL
COMMENT 1:	0
COMMENT 2:	0

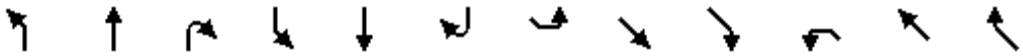
JOB# IC 151-12
VALIDATED:

DATE: 05/17/12
DAY: THURSDAY



7. APPENDIX B: SYNCHRO REPORTS

Existing Conditions

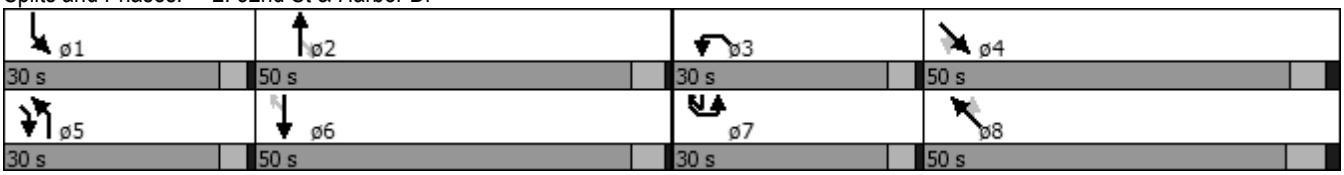


Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	45	131	74	145	496	77	65	176	101	112	674	250
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	225		0	245		185	200		195
Storage Lanes	1		1	1		1	1		2	1		0
Taper Length (ft)	25			25			145			185		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	1719	3438	1538	1687	3374	1509
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1719	3438	1538	1719	3438	1538	1719	3438	1538	1687	3374	1509
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			85			95			128			239
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		678			263			723			932	
Travel Time (s)		15.4			6.0			12.3			15.9	
Peak Hour Factor	0.88	0.88	0.88	0.81	0.81	0.81	0.79	0.79	0.79	0.86	0.86	0.86
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	7%	7%	7%
Adj. Flow (vph)	51	149	84	179	612	95	82	223	128	130	784	291
Shared Lane Traffic (%)												
Lane Group Flow (vph)	51	149	84	179	612	95	82	223	128	130	784	291
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		20			12			30			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	Perm
Protected Phases	5	2		1	6	7	7	4	5	3	8	
Permitted Phases			2			6			4			8
Detector Phase	5	2	2	1	6	7	7	4	5	3	8	8
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0	4.0	4.0	10.0	4.0	4.0	10.0	10.0
Minimum Split (s)	9.4	21.9	21.9	8.4	21.9	9.4	9.4	22.2	9.4	8.4	22.6	22.6
Total Split (s)	30.0	50.0	50.0	30.0	50.0	30.0	30.0	50.0	30.0	30.0	50.0	50.0
Total Split (%)	18.8%	31.3%	31.3%	18.8%	31.3%	18.8%	18.8%	31.3%	18.8%	18.8%	31.3%	31.3%
Yellow Time (s)	3.4	3.9	3.9	3.4	3.9	3.4	3.4	4.2	3.4	3.4	4.6	4.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0	1.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.4	4.9	4.9	4.4	4.9	4.4	4.4	6.2	4.4	4.4	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	None	Min	None	None	Min	Min
Act Effct Green (s)	7.9	17.6	17.6	17.9	27.5	42.6	9.9	33.3	47.7	13.2	36.1	36.1
Actuated g/C Ratio	0.08	0.17	0.17	0.17	0.27	0.42	0.10	0.32	0.46	0.13	0.35	0.35
v/c Ratio	0.38	0.25	0.25	0.60	0.66	0.14	0.49	0.20	0.16	0.60	0.66	0.42

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Control Delay	58.9	40.9	11.3	50.5	38.5	4.7	59.0	27.4	4.0	57.5	32.3	8.3
Queue Delay	0.0	0.0	0.0	0.5	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.9	40.9	11.3	51.0	38.8	4.8	59.0	27.4	4.0	57.5	32.3	8.3
LOS	E	D	B	D	D	A	E	C	A	E	C	A
Approach Delay		35.4			37.6			26.5			29.2	
Approach LOS		D			D			C			C	
Queue Length 50th (ft)	32	45	0	109	189	0	52	54	0	82	221	22
Queue Length 95th (ft)	81	86	42	187	257	24	102	92	24	158	344	88
Internal Link Dist (ft)		598			183			643			852	
Turn Bay Length (ft)				225			245		185	200		195
Base Capacity (vph)	444	1567	747	444	1567	926	444	1521	1038	436	1479	795
Starvation Cap Reductn	0	0	0	72	385	386	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.10	0.11	0.48	0.52	0.18	0.18	0.15	0.12	0.30	0.53	0.37

Intersection Summary			
Area Type:	Other		
Cycle Length: 160			
Actuated Cycle Length: 102.6			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 32.1		Intersection LOS: C	
Intersection Capacity Utilization 56.2%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: 32nd St & Harbor Dr



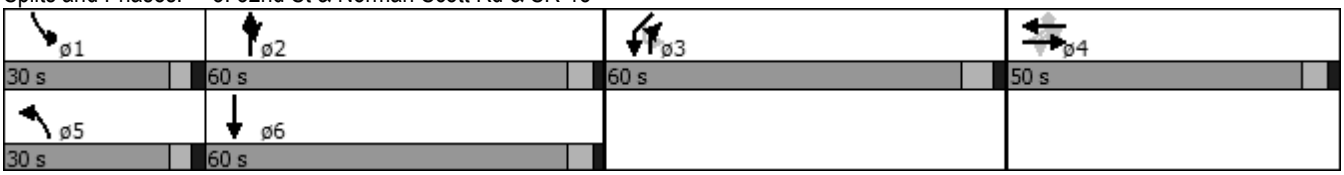
Lane Group	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Lane Configurations												
Volume (vph)	31	14	16	41	188	28	89	32	58	169	68	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0		0	0		0		280		0	
Storage Lanes		1		0	0		1		1		2	
Taper Length (ft)		25			25				50			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.88	1.00
Frt			0.892				0.850				0.850	
Flt Protected		0.950				0.958			0.950			
Satd. Flow (prot)	0	1759	1662	0	0	1785	1576	0	1719	1810	2707	0
Flt Permitted		0.431				0.709			0.950			
Satd. Flow (perm)	0	798	1662	0	0	1321	1576	0	1719	1810	2707	0
Right Turn on Red				Yes				Yes				No
Satd. Flow (RTOR)			46				82					
Link Speed (mph)			25			25				30		
Link Distance (ft)			369			662				437		
Travel Time (s)			10.1			18.1				9.9		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.78	0.78	0.78	0.92	0.73	0.73	0.73	0.92
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	2%	4%	5%	5%	5%	5%
Adj. Flow (vph)	34	16	18	46	241	36	114	35	79	232	93	145
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	50	64	0	0	277	149	0	79	232	238	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Left	Right	Right	Left	Left	Right	Right
Median Width(ft)			12			12				12		
Link Offset(ft)			0			0				0		
Crosswalk Width(ft)			16			16				16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	15		9	15		9	9	15		9	9
Turn Type	Perm	Perm	NA		Perm	NA	Perm		Prot	NA	custom	
Protected Phases			4			4			5	2	2 3	
Permitted Phases	4	4			4		4				2	
Detector Phase	4	4	4		4	4	4		5	2	2 3	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0		10.0	10.0	10.0		4.0	10.0		
Minimum Split (s)	34.9	34.9	34.9		34.9	34.9	34.9		9.5	27.9		
Total Split (s)	50.0	50.0	50.0		50.0	50.0	50.0		30.0	60.0		
Total Split (%)	25.0%	25.0%	25.0%		25.0%	25.0%	25.0%		15.0%	30.0%		
Yellow Time (s)	3.9	3.9	3.9		3.9	3.9	3.9		3.4	3.9		
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	2.0		2.0	2.0		
Lost Time Adjust (s)		0.0	0.0			0.0	0.0		0.0	0.0		
Total Lost Time (s)		5.9	5.9			5.9	5.9		5.4	5.9		
Lead/Lag									Lead	Lag		
Lead-Lag Optimize?												
Recall Mode	None	None	None		None	None	None		None	Min		
Act Effct Green (s)		38.0	38.0			38.0	38.0		11.9	31.5	63.5	
Actuated g/C Ratio		0.30	0.30			0.30	0.30		0.09	0.25	0.51	
v/c Ratio		0.21	0.12			0.69	0.28		0.49	0.51	0.17	

Lane Group	SBL	SBT	SBR	SWL2	SWL	SWR	SWR2
Lane Configurations							
Volume (vph)	43	418	4	3	380	46	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	280		0		0	0	
Storage Lanes	1		0		2	0	
Taper Length (ft)	70				25		
Lane Util. Factor	1.00	0.95	0.95	0.95	0.97	0.95	0.95
Frt		0.999			0.983		
Flt Protected	0.950				0.958		
Satd. Flow (prot)	1770	3436	0	0	3338	0	0
Flt Permitted	0.950				0.953		
Satd. Flow (perm)	1770	3436	0	0	3320	0	0
Right Turn on Red			No				No
Satd. Flow (RTOR)							
Link Speed (mph)		30			55		
Link Distance (ft)		1001			1502		
Travel Time (s)		22.8			18.6		
Peak Hour Factor	0.83	0.83	0.83	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	5%	2%	4%	4%	4%	4%
Adj. Flow (vph)	52	504	5	3	413	50	3
Shared Lane Traffic (%)							
Lane Group Flow (vph)	52	509	0	0	469	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Right
Median Width(ft)		12			30		
Link Offset(ft)		0			0		
Crosswalk Width(ft)		16			16		
Two way Left Turn Lane		Yes					
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15	15	9	9
Turn Type	Prot	NA		Perm	NA		
Protected Phases	1	6			3		
Permitted Phases				3			
Detector Phase	1	6		3	3		
Switch Phase							
Minimum Initial (s)	4.0	10.0		10.0	10.0		
Minimum Split (s)	9.4	26.9		16.7	16.7		
Total Split (s)	30.0	60.0		60.0	60.0		
Total Split (%)	15.0%	30.0%		30.0%	30.0%		
Yellow Time (s)	3.4	3.9		4.7	4.7		
All-Red Time (s)	2.0	2.0		2.0	2.0		
Lost Time Adjust (s)	0.0	0.0			0.0		
Total Lost Time (s)	5.4	5.9			6.7		
Lead/Lag	Lead	Lag					
Lead-Lag Optimize?							
Recall Mode	None	Min		None	None		
Act Effct Green (s)	9.6	26.1			25.1		
Actuated g/C Ratio	0.08	0.21			0.20		
v/c Ratio	0.39	0.71			0.71		

Lane Group	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Control Delay		39.7	15.8			51.6	18.9		69.5	48.8	18.9	
Queue Delay		0.0	0.0			0.0	0.0		0.0	0.0	0.0	
Total Delay		39.7	15.8			51.6	18.9		69.5	48.9	18.9	
LOS		D	B			D	B		E	D	B	
Approach Delay			26.3			40.2				38.9		
Approach LOS			C			D				D		
Queue Length 50th (ft)		30	10			197	39		63	171	62	
Queue Length 95th (ft)		79	52			307	88		107	230	79	
Internal Link Dist (ft)			289			582				357		
Turn Bay Length (ft)									280			
Base Capacity (vph)		288	631			478	623		347	804	2012	
Starvation Cap Reductn		0	0			0	0		0	42	0	
Spillback Cap Reductn		0	0			0	0		0	0	0	
Storage Cap Reductn		0	0			0	0		0	0	0	
Reduced v/c Ratio		0.17	0.10			0.58	0.24		0.23	0.30	0.12	

Intersection Summary			
Area Type:	Other		
Cycle Length: 200			
Actuated Cycle Length: 125.7			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 46.4		Intersection LOS: D	
Intersection Capacity Utilization 65.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: 32nd St & Norman Scott Rd & SR-15



Lane Group	SBL	SBT	SBR	SWL2	SWL	SWR	SWR2
Control Delay	69.6	54.0			55.0		
Queue Delay	0.0	0.0			0.0		
Total Delay	69.6	54.0			55.0		
LOS	E	D			D		
Approach Delay		55.5			55.0		
Approach LOS		E			D		
Queue Length 50th (ft)	41	206			188		
Queue Length 95th (ft)	89	284			286		
Internal Link Dist (ft)		921			1422		
Turn Bay Length (ft)	280						
Base Capacity (vph)	357	1526			1453		
Starvation Cap Reductn	0	0			0		
Spillback Cap Reductn	0	0			0		
Storage Cap Reductn	0	0			0		
Reduced v/c Ratio	0.15	0.33			0.32		

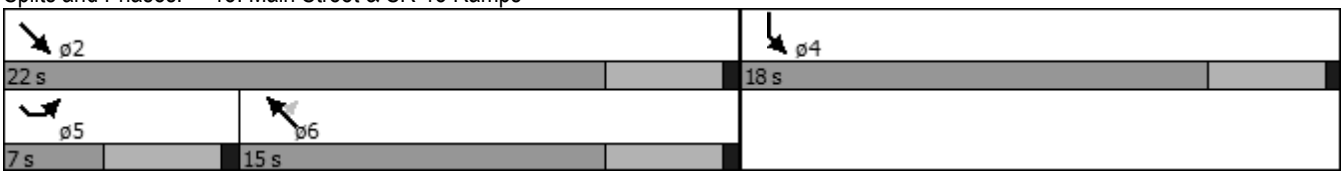
Intersection Summary

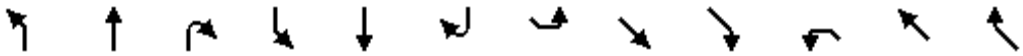
Lane Group	SBL	SBR	SEL	SET	NWT	NWR	NWR2	SWL	SWR
Lane Configurations									
Volume (vph)	108	268	36	139	390	0	107	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	130			265		0	0
Storage Lanes	1	0	1			1		0	0
Taper Length (ft)	25		60					25	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00
Frt	0.904						0.850		
Flt Protected	0.986		0.950						
Satd. Flow (prot)	1660	0	1770	3539	3539	0	1583	0	0
Flt Permitted	0.986		0.950						
Satd. Flow (perm)	1660	0	1770	3539	3539	0	1583	0	0
Right Turn on Red		Yes					Yes		
Satd. Flow (RTOR)	327						136		
Link Speed (mph)	30			30	30			30	
Link Distance (ft)	849			1195	718			618	
Travel Time (s)	19.3			27.2	16.3			14.0	
Peak Hour Factor	0.82	0.82	0.86	0.86	0.93	0.93	0.93	0.92	0.92
Adj. Flow (vph)	132	327	42	162	419	0	115	0	0
Shared Lane Traffic (%)									
Lane Group Flow (vph)	459	0	42	162	419	0	115	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right	Right	Left	Right
Median Width(ft)	12			12	12			0	
Link Offset(ft)	0			0	0			0	
Crosswalk Width(ft)	16			16	16			16	
Two way Left Turn Lane									
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9	9	15	9
Turn Type	NA		Prot	NA	NA		Perm		
Protected Phases	4		5	2	6				
Permitted Phases							6		
Detector Phase	4		5	2	6		6		
Switch Phase									
Minimum Initial (s)	4.0		4.0	4.0	4.0		4.0		
Minimum Split (s)	20.0		8.0	20.0	20.0		20.0		
Total Split (s)	18.0		7.0	22.0	15.0		15.0		
Total Split (%)	45.0%		17.5%	55.0%	37.5%		37.5%		
Yellow Time (s)	3.5		3.5	3.5	3.5		3.5		
All-Red Time (s)	0.5		0.5	0.5	0.5		0.5		
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		0.0		
Total Lost Time (s)	4.0		4.0	4.0	4.0		4.0		
Lead/Lag			Lead		Lag		Lag		
Lead-Lag Optimize?									
Recall Mode	None		None	Max	None		None		
Act Effct Green (s)	9.0		3.0	18.8	16.2		16.2		
Actuated g/C Ratio	0.25		0.08	0.53	0.45		0.45		
v/c Ratio	0.69		0.28	0.09	0.26		0.15		
Control Delay	9.8		21.7	5.4	8.9		3.0		

Lane Group	SBL	SBR	SEL	SET	NWT	NWR	NWR2	SWL	SWR
Queue Delay	0.0		0.0	0.0	0.0		0.0		
Total Delay	9.8		21.7	5.4	8.9		3.0		
LOS	A		C	A	A		A		
Approach Delay	9.8			8.8	7.6				
Approach LOS	A			A	A				
Queue Length 50th (ft)	20		8	6	18		0		
Queue Length 95th (ft)	56		28	20	68		20		
Internal Link Dist (ft)	769			1115	638			538	
Turn Bay Length (ft)			130				265		
Base Capacity (vph)	852		149	1853	1598		789		
Starvation Cap Reductn	0		0	0	0		0		
Spillback Cap Reductn	0		0	0	0		0		
Storage Cap Reductn	0		0	0	0		0		
Reduced v/c Ratio	0.54		0.28	0.09	0.26		0.15		

Intersection Summary			
Area Type:	Other		
Cycle Length: 40			
Actuated Cycle Length: 35.8			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 8.7		Intersection LOS: A	
Intersection Capacity Utilization 46.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 15: Main Street & SR-15 Ramps





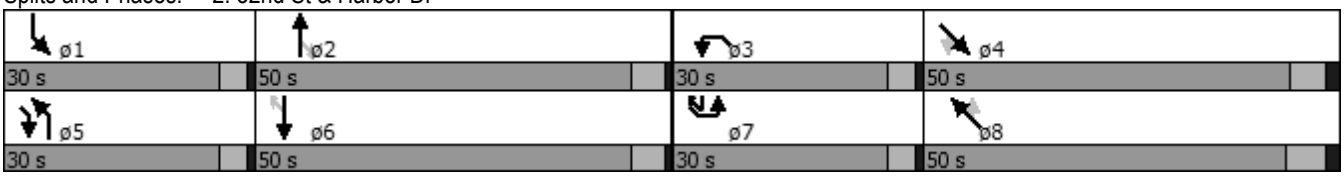
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	76	549	64	205	183	63	83	677	51	35	135	343
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	225		0	245		185	200		195
Storage Lanes	1		1	1		1	1		2	1		0
Taper Length (ft)	25			25			145			185		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	1719	3438	1538	1687	3374	1509
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1719	3438	1538	1719	3438	1538	1719	3438	1538	1687	3374	1509
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			85			78			52			435
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		678			263			723			932	
Travel Time (s)		15.4			6.0			12.3			15.9	
Peak Hour Factor	0.80	0.80	0.80	0.81	0.81	0.81	0.80	0.80	0.80	0.70	0.70	0.70
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	7%	7%	7%
Adj. Flow (vph)	95	686	80	253	226	78	104	846	64	50	193	490
Shared Lane Traffic (%)												
Lane Group Flow (vph)	95	686	80	253	226	78	104	846	64	50	193	490
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		20			12			30			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	Perm
Protected Phases	5	2		1	6	7	7	4	5	3	8	
Permitted Phases			2			6			4			8
Detector Phase	5	2	2	1	6	7	7	4	5	3	8	8
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0	4.0	4.0	10.0	4.0	4.0	10.0	10.0
Minimum Split (s)	9.4	21.9	21.9	8.4	21.9	9.4	9.4	22.2	9.4	8.4	22.6	22.6
Total Split (s)	30.0	50.0	50.0	30.0	50.0	30.0	30.0	50.0	30.0	30.0	50.0	50.0
Total Split (%)	18.8%	31.3%	31.3%	18.8%	31.3%	18.8%	18.8%	31.3%	18.8%	18.8%	31.3%	31.3%
Yellow Time (s)	3.4	3.9	3.9	3.4	3.9	3.4	3.4	4.2	3.4	3.4	4.6	4.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0	1.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.4	4.9	4.9	4.4	4.9	4.4	4.4	6.2	4.4	4.4	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	None	Min	None	None	Min	Min
Act Effct Green (s)	11.6	32.4	32.4	24.5	45.3	62.7	12.3	38.8	56.9	8.4	31.7	31.7
Actuated g/C Ratio	0.10	0.27	0.27	0.20	0.37	0.51	0.10	0.32	0.47	0.07	0.26	0.26
v/c Ratio	0.58	0.75	0.17	0.74	0.18	0.09	0.60	0.77	0.09	0.43	0.22	0.69

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Control Delay	72.0	48.2	7.7	62.9	28.7	4.0	71.7	45.1	7.6	72.2	37.6	12.0
Queue Delay	0.0	0.0	0.0	22.6	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.0	48.2	7.7	85.5	29.2	4.0	71.7	45.1	7.6	72.2	37.6	12.0
LOS	E	D	A	F	C	A	E	D	A	E	D	B
Approach Delay		47.0			51.2			45.4			22.8	
Approach LOS		D			D			D			C	
Queue Length 50th (ft)	78	283	0	201	67	0	85	330	5	41	63	34
Queue Length 95th (ft)	129	318	25	#312	98	20	138	405	26	70	85	25
Internal Link Dist (ft)		598			183			643			852	
Turn Bay Length (ft)				225			245		185	200		195
Base Capacity (vph)	375	1323	644	375	1379	1000	375	1285	927	368	1250	832
Starvation Cap Reductn	0	0	0	116	791	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.52	0.12	0.98	0.38	0.08	0.28	0.66	0.07	0.14	0.15	0.59

Intersection Summary			
Area Type:	Other		
Cycle Length: 160			
Actuated Cycle Length: 122.1			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 41.7		Intersection LOS: D	
Intersection Capacity Utilization 65.2%		ICU Level of Service C	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: 32nd St & Harbor Dr



Lane Group	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Lane Configurations												
Volume (vph)	126	57	40	81	79	26	146	103	124	394	313	245
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0		0	0		0		280		0	
Storage Lanes		1		0	0		1		1		2	
Taper Length (ft)		25			25				50			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.88	1.00
Frt			0.900				0.850				0.850	
Flt Protected		0.950				0.964			0.950			
Satd. Flow (prot)	0	1758	1676	0	0	1796	1571	0	1719	1810	2707	0
Flt Permitted		0.614				0.614			0.950			
Satd. Flow (perm)	0	1136	1676	0	0	1144	1571	0	1719	1810	2707	0
Right Turn on Red				Yes				Yes				No
Satd. Flow (RTOR)			47				82					
Link Speed (mph)			25			25				30		
Link Distance (ft)			369			662				437		
Travel Time (s)			10.1			18.1				9.9		
Peak Hour Factor	0.92	0.87	0.87	0.87	0.82	0.82	0.82	0.92	0.93	0.93	0.93	0.92
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	2%	4%	5%	5%	5%	5%
Adj. Flow (vph)	137	66	46	93	96	32	178	112	133	424	337	266
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	203	139	0	0	128	290	0	133	424	603	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Left	Right	Right	Left	Left	Right	Right
Median Width(ft)			12			12				12		
Link Offset(ft)			0			0				0		
Crosswalk Width(ft)			16			16				16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	15		9	15		9	9	15		9	9
Turn Type	Perm	Perm	NA		Perm	NA	Perm		Prot	NA	custom	
Protected Phases			4			4			5	2	2 3	
Permitted Phases	4	4			4		4				2	
Detector Phase	4	4	4		4	4	4		5	2	2 3	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0		10.0	10.0	10.0		4.0	10.0		
Minimum Split (s)	34.9	34.9	34.9		34.9	34.9	34.9		9.5	27.9		
Total Split (s)	50.0	50.0	50.0		50.0	50.0	50.0		30.0	60.0		
Total Split (%)	25.0%	25.0%	25.0%		25.0%	25.0%	25.0%		15.0%	30.0%		
Yellow Time (s)	3.9	3.9	3.9		3.9	3.9	3.9		3.4	3.9		
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	2.0		2.0	2.0		
Lost Time Adjust (s)		0.0	0.0			0.0	0.0		0.0	0.0		
Total Lost Time (s)		5.9	5.9			5.9	5.9		5.4	5.9		
Lead/Lag									Lead	Lag		
Lead-Lag Optimize?												
Recall Mode	None	None	None		None	None	None		None	Min		
Act Effct Green (s)		37.3	37.3			37.3	37.3		17.8	45.6	78.6	
Actuated g/C Ratio		0.24	0.24			0.24	0.24		0.11	0.29	0.50	
v/c Ratio		0.76	0.32			0.48	0.67		0.69	0.82	0.45	

Lane Group	SBL	SBT	SBR	SWL2	SWL	SWR	SWR2
Lane Configurations							
Volume (vph)	293	329	22	79	88	51	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	280		0		0	0	
Storage Lanes	1		0		2	0	
Taper Length (ft)	70				25		
Lane Util. Factor	1.00	0.95	0.95	0.95	0.97	0.95	0.95
Frt		0.991			0.956		
Flt Protected	0.950				0.966		
Satd. Flow (prot)	1770	3413	0	0	3273	0	0
Flt Permitted	0.950				0.640		
Satd. Flow (perm)	1770	3413	0	0	2169	0	0
Right Turn on Red			No				No
Satd. Flow (RTOR)							
Link Speed (mph)		30			55		
Link Distance (ft)		1001			1502		
Travel Time (s)		22.8			18.6		
Peak Hour Factor	0.81	0.81	0.81	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	5%	2%	4%	4%	4%	4%
Adj. Flow (vph)	362	406	27	86	96	55	20
Shared Lane Traffic (%)							
Lane Group Flow (vph)	362	433	0	0	257	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Right
Median Width(ft)		12			30		
Link Offset(ft)		0			0		
Crosswalk Width(ft)		16			16		
Two way Left Turn Lane		Yes					
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15	15	9	9
Turn Type	Prot	NA		Perm	NA		
Protected Phases	1	6			3		
Permitted Phases				3			
Detector Phase	1	6		3	3		
Switch Phase							
Minimum Initial (s)	4.0	10.0		10.0	10.0		
Minimum Split (s)	9.4	26.9		16.7	16.7		
Total Split (s)	30.0	60.0		60.0	60.0		
Total Split (%)	15.0%	30.0%		30.0%	30.0%		
Yellow Time (s)	3.4	3.9		4.7	4.7		
All-Red Time (s)	2.0	2.0		2.0	2.0		
Lost Time Adjust (s)	0.0	0.0			0.0		
Total Lost Time (s)	5.4	5.9			6.7		
Lead/Lag	Lead	Lag					
Lead-Lag Optimize?							
Recall Mode	None	Min		None	None		
Act Effct Green (s)	25.2	53.0			26.1		
Actuated g/C Ratio	0.16	0.33			0.16		
v/c Ratio	1.29	0.38			0.72		

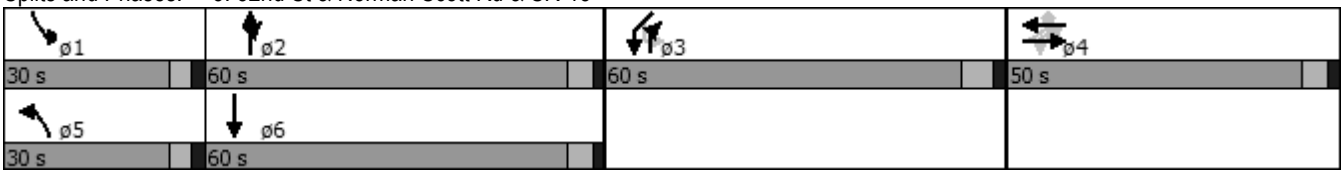
Lane Group	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Control Delay		77.8	36.6			61.4	48.8		89.6	67.6	27.2	
Queue Delay		0.0	0.0			0.0	0.0		0.0	10.8	0.3	
Total Delay		77.8	36.6			61.4	48.8		89.6	78.4	27.5	
LOS		E	D			E	D		F	E	C	
Approach Delay			61.1			52.7				53.2		
Approach LOS			E			D				D		
Queue Length 50th (ft)		204	81			119	207		143	430	238	
Queue Length 95th (ft)		322	153			188	298		233	618	300	
Internal Link Dist (ft)			289			582				357		
Turn Bay Length (ft)									280			
Base Capacity (vph)		323	510			325	505		272	632	1822	
Starvation Cap Reductn		0	0			0	0		0	180	600	
Spillback Cap Reductn		0	0			0	0		0	0	0	
Storage Cap Reductn		0	0			0	0		0	0	0	
Reduced v/c Ratio		0.63	0.27			0.39	0.57		0.49	0.94	0.49	

Intersection Summary			
Area Type:	Other		
Cycle Length: 200			
Actuated Cycle Length: 158.7			
Natural Cycle: 120			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.29			
Intersection Signal Delay: 73.2		Intersection LOS: E	
Intersection Capacity Utilization 88.6%		ICU Level of Service E	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: 32nd St & Norman Scott Rd & SR-15



Lane Group	SBL	SBT	SBR	SWL2	SWL	SWR	SWR2
Control Delay	204.9	44.0			76.7		
Queue Delay	0.0	0.0			0.0		
Total Delay	204.9	44.0			76.7		
LOS	F	D			E		
Approach Delay		117.3			76.7		
Approach LOS		F			E		
Queue Length 50th (ft)	~526	191			140		
Queue Length 95th (ft)	#714	247			201		
Internal Link Dist (ft)		921			1422		
Turn Bay Length (ft)	280						
Base Capacity (vph)	280	1210			746		
Starvation Cap Reductn	0	0			0		
Spillback Cap Reductn	0	0			0		
Storage Cap Reductn	0	0			0		
Reduced v/c Ratio	1.29	0.36			0.34		

Intersection Summary

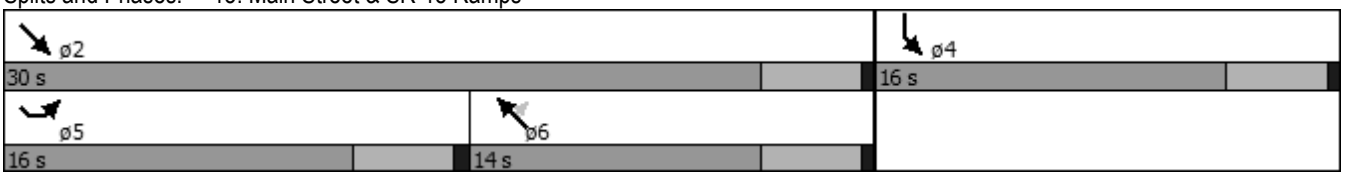
Lane Group	SBL	SBR	SEL	SET	NWT	NWR	NWR2	SWL	SWR
Lane Configurations									
Volume (vph)	120	126	254	579	375	0	154	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	130			265		0	0
Storage Lanes	1	0	1			1		0	0
Taper Length (ft)	25		60					25	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00
Frt	0.931						0.850		
Flt Protected	0.976		0.950						
Satd. Flow (prot)	1693	0	1770	3539	3539	0	1583	0	0
Flt Permitted	0.976		0.950						
Satd. Flow (perm)	1693	0	1770	3539	3539	0	1583	0	0
Right Turn on Red		Yes					Yes		
Satd. Flow (RTOR)	119						173		
Link Speed (mph)	30			30	30			30	
Link Distance (ft)	849			1195	718			618	
Travel Time (s)	19.3			27.2	16.3			14.0	
Peak Hour Factor	0.94	0.94	0.91	0.91	0.89	0.89	0.89	0.92	0.92
Adj. Flow (vph)	128	134	279	636	421	0	173	0	0
Shared Lane Traffic (%)									
Lane Group Flow (vph)	262	0	279	636	421	0	173	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right	Right	Left	Right
Median Width(ft)	12			12	12			0	
Link Offset(ft)	0			0	0			0	
Crosswalk Width(ft)	16			16	16			16	
Two way Left Turn Lane									
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9	9	15	9
Turn Type	NA		Prot	NA	NA		Perm		
Protected Phases	4		5	2	6				
Permitted Phases							6		
Detector Phase	4		5	2	6		6		
Switch Phase									
Minimum Initial (s)	4.0		4.0	4.0	4.0		4.0		
Minimum Split (s)	20.0		8.0	20.0	20.0		20.0		
Total Split (s)	16.0		16.0	30.0	14.0		14.0		
Total Split (%)	34.8%		34.8%	65.2%	30.4%		30.4%		
Yellow Time (s)	3.5		3.5	3.5	3.5		3.5		
All-Red Time (s)	0.5		0.5	0.5	0.5		0.5		
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		0.0		
Total Lost Time (s)	4.0		4.0	4.0	4.0		4.0		
Lead/Lag			Lead		Lag		Lag		
Lead-Lag Optimize?									
Recall Mode	None		None	Max	None		None		
Act Effct Green (s)	8.9		10.6	26.3	11.7		11.7		
Actuated g/C Ratio	0.21		0.25	0.61	0.27		0.27		
v/c Ratio	0.59		0.65	0.30	0.44		0.31		
Control Delay	14.6		22.7	4.9	16.1		5.3		

Lane Group	SBL	SBR	SEL	SET	NWT	NWR	NWR2	SWL	SWR
Queue Delay	0.0		0.0	0.0	0.0		0.0		
Total Delay	14.6		22.7	4.9	16.1		5.3		
LOS	B		C	A	B		A		
Approach Delay	14.6			10.3	13.0				
Approach LOS	B			B	B				
Queue Length 50th (ft)	30		58	31	46		0		
Queue Length 95th (ft)	80		#128	62	85		35		
Internal Link Dist (ft)	769			1115	638			538	
Turn Bay Length (ft)			130				265		
Base Capacity (vph)	557		492	2152	959		555		
Starvation Cap Reductn	0		0	0	0		0		
Spillback Cap Reductn	0		0	0	0		0		
Storage Cap Reductn	0		0	0	0		0		
Reduced v/c Ratio	0.47		0.57	0.30	0.44		0.31		

Intersection Summary			
Area Type:	Other		
Cycle Length: 46			
Actuated Cycle Length: 43.2			
Natural Cycle: 55			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 11.8		Intersection LOS: B	
Intersection Capacity Utilization 48.8%		ICU Level of Service A	
Analysis Period (min) 15			

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 15: Main Street & SR-15 Ramps



2016 Conditions
No Build

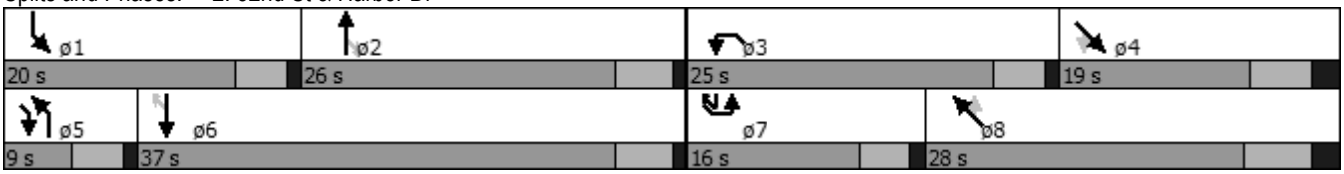
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	42	136	63	142	565	90	74	222	107	133	684	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	225		0	245		185	200		195
Storage Lanes	1		1	1		1	1		2	1		0
Taper Length (ft)	25			25			145			185		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	1719	3438	1538	1687	3374	1509
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1719	3438	1538	1719	3438	1538	1719	3438	1538	1687	3374	1509
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			257			150			183			293
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		678			263			723			932	
Travel Time (s)		15.4			6.0			12.3			15.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	7%	7%	7%
Adj. Flow (vph)	46	148	68	154	614	98	80	241	116	145	743	293
Shared Lane Traffic (%)												
Lane Group Flow (vph)	46	148	68	154	614	98	80	241	116	145	743	293
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		20			12			30			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	Perm
Protected Phases	5	2		1	6	7	7	4	5	3	8	
Permitted Phases			2			6			4			8
Detector Phase	5	2	2	1	6	7	7	4	5	3	8	8
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0	4.0	4.0	10.0	4.0	4.0	10.0	10.0
Minimum Split (s)	9.4	21.9	21.9	8.4	21.9	9.4	9.4	22.2	9.4	8.4	22.6	22.6
Total Split (s)	9.0	26.0	26.0	20.0	37.0	16.0	16.0	19.0	9.0	25.0	28.0	28.0
Total Split (%)	10.0%	28.9%	28.9%	22.2%	41.1%	17.8%	17.8%	21.1%	10.0%	27.8%	31.1%	31.1%
Yellow Time (s)	3.4	3.9	3.9	3.4	3.9	3.4	3.4	4.2	3.4	3.4	4.6	4.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0	1.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.4	4.9	4.9	4.4	4.9	4.4	4.4	6.2	4.4	4.4	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	None	Min	None	None	Min	Min
Act Effct Green (s)	4.9	13.6	13.6	14.5	21.3	34.5	8.0	19.6	31.1	10.9	21.6	21.6
Actuated g/C Ratio	0.07	0.19	0.19	0.20	0.30	0.48	0.11	0.27	0.44	0.15	0.30	0.30
v/c Ratio	0.39	0.23	0.14	0.44	0.60	0.12	0.42	0.26	0.15	0.56	0.73	0.44

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Control Delay	48.3	28.9	0.6	34.6	25.4	0.9	40.2	26.0	1.2	40.1	30.9	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.3	28.9	0.6	34.6	25.5	0.9	40.2	26.0	1.2	40.1	30.9	5.9
LOS	D	C	A	C	C	A	D	C	A	D	C	A
Approach Delay		24.9			24.4			22.0			25.8	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	21	32	0	66	131	0	36	47	0	64	166	0
Queue Length 95th (ft)	#70	61	0	138	194	8	84	96	9	128	#312	61
Internal Link Dist (ft)		598			183			643			852	
Turn Bay Length (ft)				225			245		185	200		195
Base Capacity (vph)	117	1081	659	399	1645	905	297	942	772	517	1076	680
Starvation Cap Reductn	0	0	0	5	300	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.14	0.10	0.39	0.46	0.11	0.27	0.26	0.15	0.28	0.69	0.43

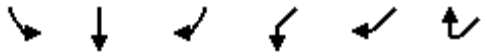
Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 71.4			
Natural Cycle: 70			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 24.7		Intersection LOS: C	
Intersection Capacity Utilization 58.9%		ICU Level of Service B	
Analysis Period (min) 15			

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: 32nd St & Harbor Dr



Lane Group	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Lane Configurations												
Volume (vph)	35	16	24	46	198	30	94	35	60	176	76	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0		0	0		0		280		0	
Storage Lanes		1		0	0		1		1		2	
Taper Length (ft)		25			25				50			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.88	1.00
Frt			0.901				0.850				0.850	
Flt Protected		0.950				0.958			0.950			
Satd. Flow (prot)	0	1759	1678	0	0	1785	1575	0	1719	1810	2707	0
Flt Permitted		0.469				0.701			0.950			
Satd. Flow (perm)	0	868	1678	0	0	1306	1575	0	1719	1810	2707	0
Right Turn on Red				Yes				Yes				No
Satd. Flow (RTOR)			50				136					
Link Speed (mph)			25			25				30		
Link Distance (ft)			369			662				437		
Travel Time (s)			10.1			18.1				9.9		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	2%	4%	5%	5%	5%	5%
Adj. Flow (vph)	38	17	26	50	215	33	102	38	65	191	83	166
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	55	76	0	0	248	140	0	65	191	249	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Left	Right	Right	Left	Left	Right	Right
Median Width(ft)			12			12				12		
Link Offset(ft)			0			0				0		
Crosswalk Width(ft)			16			16				16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	15		9	15		9	9	15		9	9
Turn Type	Perm	Perm	NA		Perm	NA	Perm		Prot	NA	custom	
Protected Phases			4			4			5	2	2 3	
Permitted Phases	4	4			4		4				2	
Detector Phase	4	4	4		4	4	4		5	2	2 3	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0		10.0	10.0	10.0		4.0	10.0		
Minimum Split (s)	34.9	34.9	34.9		34.9	34.9	34.9		9.5	27.9		
Total Split (s)	40.0	40.0	40.0		40.0	40.0	40.0		17.0	30.0		
Total Split (%)	33.3%	33.3%	33.3%		33.3%	33.3%	33.3%		14.2%	25.0%		
Yellow Time (s)	3.9	3.9	3.9		3.9	3.9	3.9		3.4	3.9		
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	2.0		2.0	2.0		
Lost Time Adjust (s)		0.0	0.0			0.0	0.0		0.0	0.0		
Total Lost Time (s)		5.9	5.9			5.9	5.9		5.4	5.9		
Lead/Lag									Lead	Lag		
Lead-Lag Optimize?												
Recall Mode	None	None	None		None	None	None		None	Min		
Act Effct Green (s)		24.1	24.1			24.1	24.1		9.2	19.1	47.2	
Actuated g/C Ratio		0.25	0.25			0.25	0.25		0.10	0.20	0.50	
v/c Ratio		0.25	0.16			0.75	0.28		0.39	0.53	0.19	

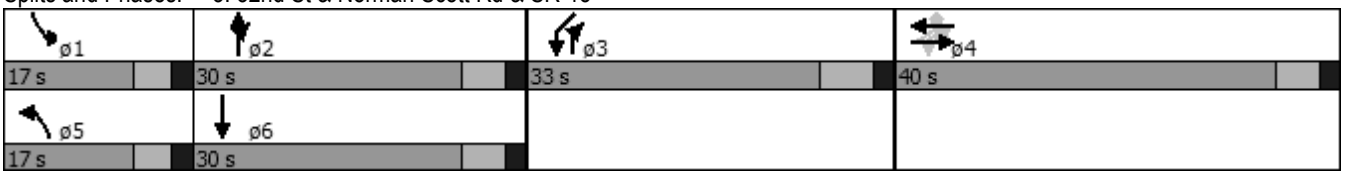


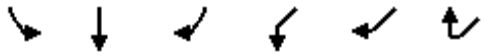
Lane Group	SBL	SBT	SBR	SWL	SWR	SWR2
Lane Configurations						
Volume (vph)	55	422	7	431	49	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	280		0	0	0	
Storage Lanes	1		0	2	0	
Taper Length (ft)	70			25		
Lane Util. Factor	1.00	0.95	0.95	0.97	0.95	0.95
Frt		0.997		0.984		
Flt Protected	0.950			0.957		
Satd. Flow (prot)	1770	3429	0	3338	0	0
Flt Permitted	0.950			0.957		
Satd. Flow (perm)	1770	3429	0	3338	0	0
Right Turn on Red			No			No
Satd. Flow (RTOR)						
Link Speed (mph)		30		55		
Link Distance (ft)		1001		1502		
Travel Time (s)		22.8		18.6		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	5%	2%	4%	4%	4%
Adj. Flow (vph)	60	459	8	468	53	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	60	467	0	525	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Right
Median Width(ft)		12		30		
Link Offset(ft)		0		0		
Crosswalk Width(ft)		16		16		
Two way Left Turn Lane		Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15	9	9
Turn Type	Prot	NA		NA		
Protected Phases	1	6		3		
Permitted Phases						
Detector Phase	1	6		3		
Switch Phase						
Minimum Initial (s)	4.0	10.0		10.0		
Minimum Split (s)	9.4	26.9		16.7		
Total Split (s)	17.0	30.0		33.0		
Total Split (%)	14.2%	25.0%		27.5%		
Yellow Time (s)	3.4	3.9		4.7		
All-Red Time (s)	2.0	2.0		2.0		
Lost Time Adjust (s)	0.0	0.0		0.0		
Total Lost Time (s)	5.4	5.9		6.7		
Lead/Lag	Lead	Lag				
Lead-Lag Optimize?						
Recall Mode	None	Min		None		
Act Effct Green (s)	9.0	18.8		20.8		
Actuated g/C Ratio	0.09	0.20		0.22		
v/c Ratio	0.36	0.69		0.72		

Lane Group	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Control Delay		35.3	15.2			50.7	7.8		54.9	44.3	16.0	
Queue Delay		0.0	0.0			0.0	0.0		0.0	0.0	0.0	
Total Delay		35.3	15.2			50.7	7.8		54.9	44.3	16.0	
LOS		D	B			D	A		D	D	B	
Approach Delay			23.6			35.2				31.7		
Approach LOS			C			D				C		
Queue Length 50th (ft)		28	13			146	2		40	111	49	
Queue Length 95th (ft)		70	53			266	51		95	210	90	
Internal Link Dist (ft)			289			582				357		
Turn Bay Length (ft)									280			
Base Capacity (vph)		340	689			512	700		229	503	1562	
Starvation Cap Reductn		0	0			0	0		0	0	0	
Spillback Cap Reductn		0	0			0	0		0	0	0	
Storage Cap Reductn		0	0			0	0		0	0	0	
Reduced v/c Ratio		0.16	0.11			0.48	0.20		0.28	0.38	0.16	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 95.1			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 38.3		Intersection LOS: D	
Intersection Capacity Utilization 68.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: 32nd St & Norman Scott Rd & SR-15





Lane Group	SBL	SBT	SBR	SWL	SWR	SWR2
Control Delay	54.1	44.2		43.5		
Queue Delay	0.0	0.0		0.0		
Total Delay	54.1	44.2		43.5		
LOS	D	D		D		
Approach Delay		45.3		43.5		
Approach LOS		D		D		
Queue Length 50th (ft)	37	148		160		
Queue Length 95th (ft)	89	236		257		
Internal Link Dist (ft)		921		1422		
Turn Bay Length (ft)	280					
Base Capacity (vph)	236	951		1010		
Starvation Cap Reductn	0	0		0		
Spillback Cap Reductn	0	0		0		
Storage Cap Reductn	0	0		0		
Reduced v/c Ratio	0.25	0.49		0.52		

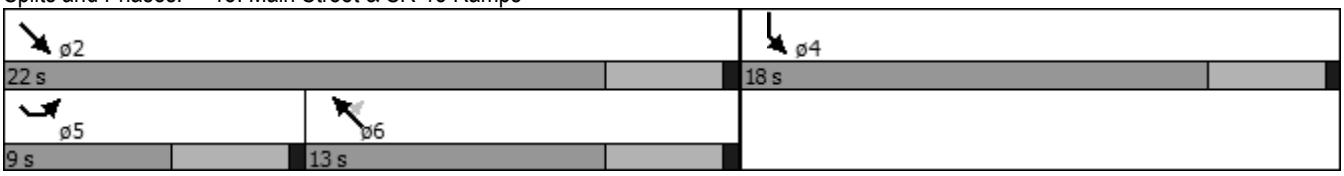
Intersection Summary

Lane Group	SBL	SBR	SEL	SET	NWT	NWR	NWR2	SWL	SWR
Lane Configurations									
Volume (vph)	108	275	38	146	407	0	107	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	130			265		0	0
Storage Lanes	1	0	1			1		0	0
Taper Length (ft)	25		60					25	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00
Frt	0.903						0.850		
Flt Protected	0.986		0.950						
Satd. Flow (prot)	1659	0	1770	3539	3539	0	1583	0	0
Flt Permitted	0.986		0.950						
Satd. Flow (perm)	1659	0	1770	3539	3539	0	1583	0	0
Right Turn on Red		Yes					Yes		
Satd. Flow (RTOR)	299						136		
Link Speed (mph)	30			30	30			30	
Link Distance (ft)	849			1195	718			618	
Travel Time (s)	19.3			27.2	16.3			14.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	117	299	41	159	442	0	116	0	0
Shared Lane Traffic (%)									
Lane Group Flow (vph)	416	0	41	159	442	0	116	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right	Right	Left	Right
Median Width(ft)	12			12	12			0	
Link Offset(ft)	0			0	0			0	
Crosswalk Width(ft)	16			16	16			16	
Two way Left Turn Lane									
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9	9	15	9
Turn Type	NA		Prot	NA	NA		Perm		
Protected Phases	4		5	2	6				
Permitted Phases							6		
Detector Phase	4		5	2	6		6		
Switch Phase									
Minimum Initial (s)	4.0		4.0	4.0	4.0		4.0		
Minimum Split (s)	20.0		8.0	20.0	20.0		20.0		
Total Split (s)	18.0		9.0	22.0	13.0		13.0		
Total Split (%)	45.0%		22.5%	55.0%	32.5%		32.5%		
Yellow Time (s)	3.5		3.5	3.5	3.5		3.5		
All-Red Time (s)	0.5		0.5	0.5	0.5		0.5		
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		0.0		
Total Lost Time (s)	4.0		4.0	4.0	4.0		4.0		
Lead/Lag			Lead		Lag		Lag		
Lead-Lag Optimize?									
Recall Mode	None		None	Max	None		None		
Act Effct Green (s)	8.7		5.0	19.1	17.5		17.5		
Actuated g/C Ratio	0.24		0.14	0.53	0.49		0.49		
v/c Ratio	0.66		0.17	0.08	0.26		0.14		
Control Delay	9.2		16.4	5.3	8.1		3.0		

Lane Group	SBL	SBR	SEL	SET	NWT	NWR	NWR2	SWL	SWR
Queue Delay	0.0		0.0	0.0	0.0		0.0		
Total Delay	9.2		16.4	5.3	8.1		3.0		
LOS	A		B	A	A		A		
Approach Delay	9.2			7.6	7.0				
Approach LOS	A			A	A				
Queue Length 50th (ft)	18		7	6	18		0		
Queue Length 95th (ft)	65		28	20	78		23		
Internal Link Dist (ft)	769			1115	638			538	
Turn Bay Length (ft)			130				265		
Base Capacity (vph)	832		248	1885	1726		841		
Starvation Cap Reductn	0		0	0	0		0		
Spillback Cap Reductn	0		0	0	0		0		
Storage Cap Reductn	0		0	0	0		0		
Reduced v/c Ratio	0.50		0.17	0.08	0.26		0.14		

Intersection Summary			
Area Type:	Other		
Cycle Length: 40			
Actuated Cycle Length: 35.9			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 7.9		Intersection LOS: A	
Intersection Capacity Utilization 47.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 15: Main Street & SR-15 Ramps



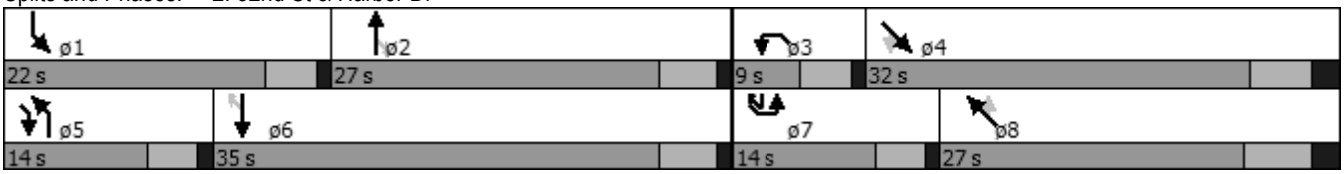
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	75	572	73	221	197	81	106	747	57	36	166	361
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	225		0	245		185	200		195
Storage Lanes	1		1	1		1	1		2	1		0
Taper Length (ft)	25			25			145			185		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	1719	3438	1538	1687	3374	1509
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1719	3438	1538	1719	3438	1538	1719	3438	1538	1687	3374	1509
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			257			97			130			392
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		678			263			723			932	
Travel Time (s)		15.4			6.0			12.3			15.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	7%	7%	7%
Adj. Flow (vph)	82	622	79	240	214	88	115	812	62	39	180	392
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	622	79	240	214	88	115	812	62	39	180	392
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		20			12			30			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	Perm
Protected Phases	5	2		1	6	7	7	4	5	3	8	
Permitted Phases			2			6			4			8
Detector Phase	5	2	2	1	6	7	7	4	5	3	8	8
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0	4.0	4.0	10.0	4.0	4.0	10.0	10.0
Minimum Split (s)	9.4	21.9	21.9	8.4	21.9	9.4	9.4	22.2	9.4	8.4	22.6	22.6
Total Split (s)	14.0	27.0	27.0	22.0	35.0	14.0	14.0	32.0	14.0	9.0	27.0	27.0
Total Split (%)	15.6%	30.0%	30.0%	24.4%	38.9%	15.6%	15.6%	35.6%	15.6%	10.0%	30.0%	30.0%
Yellow Time (s)	3.4	3.9	3.9	3.4	3.9	3.4	3.4	4.2	3.4	3.4	4.6	4.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0	1.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.4	4.9	4.9	4.4	4.9	4.4	4.4	6.2	4.4	4.4	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	None	Min	None	None	Min	Min
Act Effct Green (s)	7.8	19.2	19.2	15.6	29.6	43.1	8.5	24.8	38.9	4.7	16.2	16.2
Actuated g/C Ratio	0.10	0.24	0.24	0.19	0.37	0.54	0.11	0.31	0.48	0.06	0.20	0.20
v/c Ratio	0.49	0.76	0.14	0.72	0.17	0.10	0.64	0.77	0.08	0.40	0.27	0.64

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Control Delay	48.1	36.1	0.5	45.8	20.1	2.7	54.4	32.7	0.2	53.2	29.1	8.6
Queue Delay	0.0	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.1	36.1	0.5	47.2	20.1	2.7	54.4	32.7	0.2	53.2	29.1	8.6
LOS	D	D	A	D	C	A	D	C	A	D	C	A
Approach Delay		33.7			29.3			33.2			17.5	
Approach LOS		C			C			C			B	
Queue Length 50th (ft)	45	171	0	129	44	0	64	226	0	22	44	0
Queue Length 95th (ft)	90	233	0	#231	71	20	#134	#303	0	#61	73	75
Internal Link Dist (ft)		598			183			643			852	
Turn Bay Length (ft)				225			245		185	200		195
Base Capacity (vph)	211	972	619	387	1330	894	211	1134	848	99	880	683
Starvation Cap Reductn	0	0	0	46	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.64	0.13	0.70	0.16	0.10	0.55	0.72	0.07	0.39	0.20	0.57

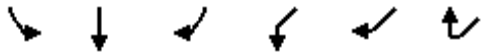
Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 80.4			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 29.3		Intersection LOS: C	
Intersection Capacity Utilization 68.6%		ICU Level of Service C	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: 32nd St & Harbor Dr



Lane Group	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Lane Configurations												
Volume (vph)	124	65	45	88	87	29	156	116	127	388	366	244
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0		0	0		0		280		0	
Storage Lanes		1		0	0		1		1		2	
Taper Length (ft)		25			25				50			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.88	1.00
Frt			0.901				0.850				0.850	
Flt Protected		0.950				0.964			0.950			
Satd. Flow (prot)	0	1758	1678	0	0	1796	1570	0	1719	1810	2707	0
Flt Permitted		0.653				0.636			0.950			
Satd. Flow (perm)	0	1208	1678	0	0	1185	1570	0	1719	1810	2707	0
Right Turn on Red				Yes				Yes				No
Satd. Flow (RTOR)			78				87					
Link Speed (mph)			25			25				30		
Link Distance (ft)			369			662				437		
Travel Time (s)			10.1			18.1				9.9		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	2%	4%	5%	5%	5%	5%
Adj. Flow (vph)	135	71	49	96	95	32	170	126	138	422	398	265
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	206	145	0	0	127	296	0	138	422	663	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Left	Right	Right	Left	Left	Right	Right
Median Width(ft)			12			12				12		
Link Offset(ft)			0			0				0		
Crosswalk Width(ft)			16			16				16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	15		9	15		9	9	15		9	9
Turn Type	Perm	Perm	NA		Perm	NA	pm+ov		Prot	NA	custom	
Protected Phases			4			4	1		5	2	2 3	
Permitted Phases	4	4			4		4				2	
Detector Phase	4	4	4		4	4	1		5	2	2 3	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0		10.0	10.0	4.0		4.0	10.0		
Minimum Split (s)	34.9	34.9	34.9		34.9	34.9	9.4		9.5	27.9		
Total Split (s)	35.0	35.0	35.0		35.0	35.0	32.0		22.0	33.0		
Total Split (%)	29.2%	29.2%	29.2%		29.2%	29.2%	26.7%		18.3%	27.5%		
Yellow Time (s)	3.9	3.9	3.9		3.9	3.9	3.4		3.4	3.9		
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	2.0		2.0	2.0		
Lost Time Adjust (s)		0.0	0.0			0.0	0.0		0.0	0.0		
Total Lost Time (s)		5.9	5.9			5.9	5.4		5.4	5.9		
Lead/Lag							Lead		Lead	Lag		
Lead-Lag Optimize?												
Recall Mode	None	None	None		None	None	None		None	Min		
Act Effct Green (s)		23.3	23.3			23.3	53.5		13.5	27.4	46.4	
Actuated g/C Ratio		0.21	0.21			0.21	0.48		0.12	0.25	0.42	
v/c Ratio		0.81	0.35			0.51	0.37		0.67	0.95	0.59	



Lane Group	SBL	SBT	SBR	SWL	SWR	SWR2
Lane Configurations						
Volume (vph)	311	352	23	112	52	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	280		0	0	0	
Storage Lanes	1		0	2	0	
Taper Length (ft)	70			25		
Lane Util. Factor	1.00	0.95	0.95	0.97	0.95	0.95
Frt		0.991		0.943		
Flt Protected	0.950			0.970		
Satd. Flow (prot)	1770	3413	0	3242	0	0
Flt Permitted	0.950			0.970		
Satd. Flow (perm)	1770	3413	0	3242	0	0
Right Turn on Red			No			No
Satd. Flow (RTOR)						
Link Speed (mph)		30		55		
Link Distance (ft)		1001		1502		
Travel Time (s)		22.8		18.6		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	5%	2%	4%	4%	4%
Adj. Flow (vph)	338	383	25	122	57	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	338	408	0	196	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Right
Median Width(ft)		12		30		
Link Offset(ft)		0		0		
Crosswalk Width(ft)		16		16		
Two way Left Turn Lane		Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15	9	9
Turn Type	Prot	NA		NA		
Protected Phases	1	6		3		
Permitted Phases						
Detector Phase	1	6		3		
Switch Phase						
Minimum Initial (s)	4.0	10.0		10.0		
Minimum Split (s)	9.4	26.9		16.7		
Total Split (s)	32.0	43.0		20.0		
Total Split (%)	26.7%	35.8%		16.7%		
Yellow Time (s)	3.4	3.9		4.7		
All-Red Time (s)	2.0	2.0		2.0		
Lost Time Adjust (s)	0.0	0.0		0.0		
Total Lost Time (s)	5.4	5.9		6.7		
Lead/Lag	Lead	Lag				
Lead-Lag Optimize?						
Recall Mode	None	Min		None		
Act Effct Green (s)	24.2	38.1		12.3		
Actuated g/C Ratio	0.22	0.34		0.11		
v/c Ratio	0.88	0.35		0.55		

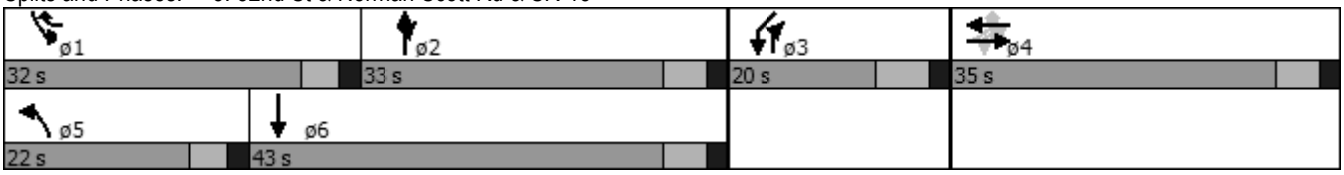
Lane Group	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Control Delay		67.2	20.7			47.1	13.5		64.1	75.4	29.1	
Queue Delay		0.0	0.0			0.0	0.0		0.0	0.0	0.5	
Total Delay		67.2	20.7			47.1	13.5		64.1	75.4	29.6	
LOS		E	C			D	B		E	E	C	
Approach Delay			48.0			23.6				49.3		
Approach LOS			D			C				D		
Queue Length 50th (ft)		146	41			84	89		100	~323	221	
Queue Length 95th (ft)		#251	99			147	152		171	#551	303	
Internal Link Dist (ft)			289			582				357		
Turn Bay Length (ft)									280			
Base Capacity (vph)		318	500			312	835		258	444	1156	
Starvation Cap Reductn		0	0			0	0		0	0	166	
Spillback Cap Reductn		0	0			0	0		0	0	0	
Storage Cap Reductn		0	0			0	0		0	0	0	
Reduced v/c Ratio		0.65	0.29			0.41	0.35		0.53	0.95	0.67	

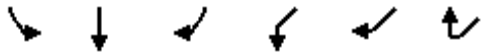
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 111.3			
Natural Cycle: 110			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay: 45.2		Intersection LOS: D	
Intersection Capacity Utilization 89.6%		ICU Level of Service E	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: 32nd St & Norman Scott Rd & SR-15





Lane Group	SBL	SBT	SBR	SWL	SWR	SWR2
Control Delay	67.3	30.1		54.8		
Queue Delay	0.0	0.0		0.0		
Total Delay	67.3	30.1		54.8		
LOS	E	C		D		
Approach Delay		47.0		54.8		
Approach LOS		D		D		
Queue Length 50th (ft)	245	121		73		
Queue Length 95th (ft)	#416	176		114		
Internal Link Dist (ft)		921		1422		
Turn Bay Length (ft)	280					
Base Capacity (vph)	427	1174		391		
Starvation Cap Reductn	0	0		0		
Spillback Cap Reductn	0	0		0		
Storage Cap Reductn	0	0		0		
Reduced v/c Ratio	0.79	0.35		0.50		

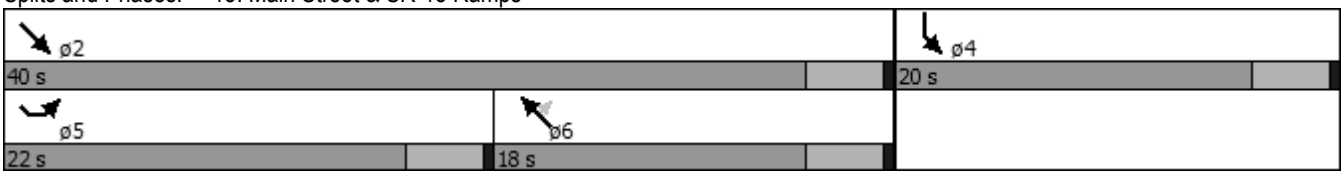
Intersection Summary

Lane Group	SBL	SBR	SEL	SET	NWT	NWR	NWR2	SWL	SWR
Lane Configurations									
Volume (vph)	120	130	262	603	289	0	154	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	130			265		0	0
Storage Lanes	1	0	1			1		0	0
Taper Length (ft)	25		60					25	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00
Frt	0.930						0.850		
Flt Protected	0.977		0.950						
Satd. Flow (prot)	1693	0	1770	3539	3539	0	1583	0	0
Flt Permitted	0.977		0.950						
Satd. Flow (perm)	1693	0	1770	3539	3539	0	1583	0	0
Right Turn on Red		Yes					Yes		
Satd. Flow (RTOR)	91						167		
Link Speed (mph)	30			30	30			30	
Link Distance (ft)	849			1195	718			618	
Travel Time (s)	19.3			27.2	16.3			14.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	130	141	285	655	314	0	167	0	0
Shared Lane Traffic (%)									
Lane Group Flow (vph)	271	0	285	655	314	0	167	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right	Right	Left	Right
Median Width(ft)	12			12	12			0	
Link Offset(ft)	0			0	0			0	
Crosswalk Width(ft)	16			16	16			16	
Two way Left Turn Lane									
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9	9	15	9
Turn Type	NA		Prot	NA	NA		Perm		
Protected Phases	4		5	2	6				
Permitted Phases							6		
Detector Phase	4		5	2	6		6		
Switch Phase									
Minimum Initial (s)	4.0		4.0	4.0	4.0		4.0		
Minimum Split (s)	20.0		8.0	20.0	20.0		20.0		
Total Split (s)	20.0		22.0	40.0	18.0		18.0		
Total Split (%)	33.3%		36.7%	66.7%	30.0%		30.0%		
Yellow Time (s)	3.5		3.5	3.5	3.5		3.5		
All-Red Time (s)	0.5		0.5	0.5	0.5		0.5		
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		0.0		
Total Lost Time (s)	4.0		4.0	4.0	4.0		4.0		
Lead/Lag			Lead		Lag		Lag		
Lead-Lag Optimize?									
Recall Mode	None		None	Max	None		None		
Act Effct Green (s)	11.0		13.5	36.1	18.6		18.6		
Actuated g/C Ratio	0.20		0.24	0.65	0.34		0.34		
v/c Ratio	0.66		0.66	0.28	0.26		0.26		
Control Delay	21.3		26.5	5.0	16.3		5.0		

Lane Group	SBL	SBR	SEL	SET	NWT	NWR	NWR2	SWL	SWR
Queue Delay	0.0		0.0	0.0	0.0		0.0		
Total Delay	21.3		26.5	5.0	16.3		5.0		
LOS	C		C	A	B		A		
Approach Delay	21.3			11.5	12.4				
Approach LOS	C			B	B				
Queue Length 50th (ft)	53		84	38	39		0		
Queue Length 95th (ft)	116		151	77	82		40		
Internal Link Dist (ft)	769			1115	638			538	
Turn Bay Length (ft)			130				265		
Base Capacity (vph)	557		579	2316	1191		644		
Starvation Cap Reductn	0		0	0	0		0		
Spillback Cap Reductn	0		0	0	0		0		
Storage Cap Reductn	0		0	0	0		0		
Reduced v/c Ratio	0.49		0.49	0.28	0.26		0.26		

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 55.2			
Natural Cycle: 55			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 13.3		Intersection LOS: B	
Intersection Capacity Utilization 47.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 15: Main Street & SR-15 Ramps



2016 Conditions
With Project

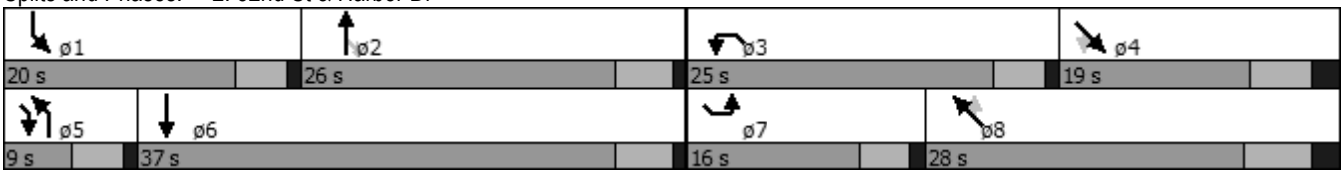
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	42	136	63	142	565	90	74	222	107	133	684	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	225		0	245		185	200		195
Storage Lanes	1		1	1		0	1		2	1		0
Taper Length (ft)	25			25			145			185		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850		0.979				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	3438	1538	1719	3366	0	1719	3438	1538	1687	3374	1509
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1719	3438	1538	1719	3366	0	1719	3438	1538	1687	3374	1509
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			257		22				183			314
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		678			263			723			932	
Travel Time (s)		15.4			6.0			12.3			15.9	
Peak Hour Factor	0.88	0.88	0.88	0.81	0.81	0.81	0.79	0.79	0.79	0.86	0.86	0.86
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	7%	7%	7%
Adj. Flow (vph)	48	155	72	175	698	111	94	281	135	155	795	314
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	155	72	175	809	0	94	281	135	155	795	314
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		20			12			30			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	pm+ov	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4	5	3	8	
Permitted Phases			2						4			8
Detector Phase	5	2	2	1	6		7	4	5	3	8	8
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0		4.0	10.0	4.0	4.0	10.0	10.0
Minimum Split (s)	9.4	21.9	21.9	8.4	21.9		9.4	22.2	9.4	8.4	22.6	22.6
Total Split (s)	9.0	26.0	26.0	20.0	37.0		16.0	19.0	9.0	25.0	28.0	28.0
Total Split (%)	10.0%	28.9%	28.9%	22.2%	41.1%		17.8%	21.1%	10.0%	27.8%	31.1%	31.1%
Yellow Time (s)	3.4	3.9	3.9	3.4	3.9		3.4	4.2	3.4	3.4	4.6	4.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	2.0	1.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.4	4.9	4.9	4.4	4.9		4.4	6.2	4.4	4.4	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None		None	Min	None	None	Min	Min
Act Effct Green (s)	4.7	18.0	18.0	13.2	26.5		8.5	16.5	27.5	11.8	21.9	21.9
Actuated g/C Ratio	0.06	0.23	0.23	0.17	0.33		0.11	0.21	0.34	0.15	0.27	0.27
v/c Ratio	0.48	0.20	0.13	0.62	0.72		0.51	0.40	0.21	0.62	0.86	0.49

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Control Delay	57.4	27.5	0.5	43.2	27.1		46.4	31.2	2.4	44.6	41.5	6.5
Queue Delay	0.0	0.0	0.0	0.1	2.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.4	27.5	0.5	43.2	29.1		46.4	31.2	2.4	44.6	41.5	6.5
LOS	E	C	A	D	C		D	C	A	D	D	A
Approach Delay		25.6			31.6			26.4			33.2	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	25	35	0	85	186		47	65	0	78	213	0
Queue Length 95th (ft)	#74	62	0	142	225		85	100	8	132	#336	54
Internal Link Dist (ft)		598			183			643			852	
Turn Bay Length (ft)				225			245		185	200		195
Base Capacity (vph)	101	929	603	343	1397		255	729	649	445	924	641
Starvation Cap Reductn	0	0	0	5	418		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.17	0.12	0.52	0.83		0.37	0.39	0.21	0.35	0.86	0.49

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 79.9			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 30.8		Intersection LOS: C	
Intersection Capacity Utilization 61.7%		ICU Level of Service B	
Analysis Period (min) 15			

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: 32nd St & Harbor Dr



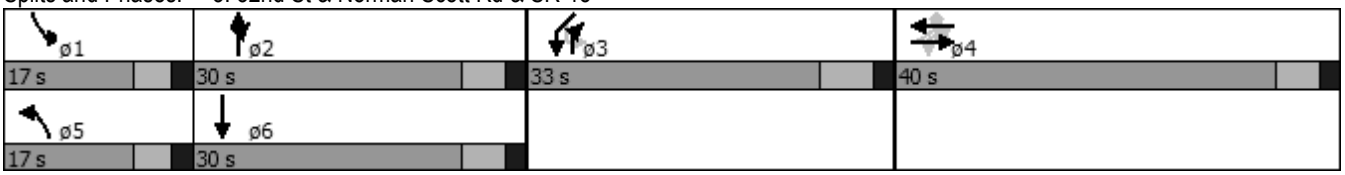
Lane Group	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Lane Configurations												
Volume (vph)	35	16	24	46	198	30	94	35	30	176	76	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0		0	0		0		280		0	
Storage Lanes		1		0	0		1		1		2	
Taper Length (ft)		25			25				50			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.88	1.00
Frt			0.902				0.850				0.850	
Flt Protected		0.950				0.958			0.950			
Satd. Flow (prot)	0	1759	1680	0	0	1785	1576	0	1719	1810	2707	0
Flt Permitted		0.407				0.699			0.950			
Satd. Flow (perm)	0	753	1680	0	0	1302	1576	0	1719	1810	2707	0
Right Turn on Red				Yes				Yes				No
Satd. Flow (RTOR)			51				136					
Link Speed (mph)			25			25				30		
Link Distance (ft)			369			662				437		
Travel Time (s)			10.1			18.1				9.9		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.78	0.78	0.78	0.92	0.73	0.73	0.73	0.92
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	2%	4%	5%	5%	5%	5%
Adj. Flow (vph)	39	18	27	51	254	38	121	38	41	241	104	166
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	57	78	0	0	292	159	0	41	241	270	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Left	Right	Right	Left	Left	Right	Right
Median Width(ft)			12			12				12		
Link Offset(ft)			0			0				0		
Crosswalk Width(ft)			16			16				16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	15		9	15		9	9	15		9	9
Turn Type	Perm	Perm	NA		Perm	NA	Perm		Prot	NA	custom	
Protected Phases			4			4			5	2	2 3	
Permitted Phases	4	4			4		4				2	
Detector Phase	4	4	4		4	4	4		5	2	2 3	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0		10.0	10.0	10.0		4.0	10.0		
Minimum Split (s)	34.9	34.9	34.9		34.9	34.9	34.9		9.5	27.9		
Total Split (s)	40.0	40.0	40.0		40.0	40.0	40.0		17.0	30.0		
Total Split (%)	33.3%	33.3%	33.3%		33.3%	33.3%	33.3%		14.2%	25.0%		
Yellow Time (s)	3.9	3.9	3.9		3.9	3.9	3.9		3.4	3.9		
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	2.0		2.0	2.0		
Lost Time Adjust (s)		0.0	0.0			0.0	0.0		0.0	0.0		
Total Lost Time (s)		5.9	5.9			5.9	5.9		5.4	5.9		
Lead/Lag									Lead	Lag		
Lead-Lag Optimize?												
Recall Mode	None	None	None		None	None	None		None	Min		
Act Effct Green (s)		27.7	27.7			27.7	27.7		8.3	19.5	48.2	
Actuated g/C Ratio		0.28	0.28			0.28	0.28		0.08	0.20	0.48	
v/c Ratio		0.27	0.16			0.81	0.30		0.29	0.68	0.21	

Lane Group	SBL	SBT	SBR	SWL2	SWL	SWR	SWR2
Lane Configurations							
Volume (vph)	55	422	7	3	431	49	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	280		0		0	0	
Storage Lanes	1		0		2	0	
Taper Length (ft)	70				25		
Lane Util. Factor	1.00	0.95	0.95	0.95	0.97	0.95	0.95
Frt		0.998			0.984		
Flt Protected	0.950				0.957		
Satd. Flow (prot)	1770	3433	0	0	3338	0	0
Flt Permitted	0.950				0.953		
Satd. Flow (perm)	1770	3433	0	0	3324	0	0
Right Turn on Red			No				No
Satd. Flow (RTOR)							
Link Speed (mph)		30			55		
Link Distance (ft)		1001			1502		
Travel Time (s)		22.8			18.6		
Peak Hour Factor	0.83	0.83	0.83	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	5%	2%	4%	4%	4%	4%
Adj. Flow (vph)	66	508	8	3	468	53	4
Shared Lane Traffic (%)							
Lane Group Flow (vph)	66	516	0	0	528	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Right
Median Width(ft)		12			30		
Link Offset(ft)		0			0		
Crosswalk Width(ft)		16			16		
Two way Left Turn Lane		Yes					
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15	15	9	9
Turn Type	Prot	NA		Perm	NA		
Protected Phases	1	6			3		
Permitted Phases				3			
Detector Phase	1	6		3	3		
Switch Phase							
Minimum Initial (s)	4.0	10.0		10.0	10.0		
Minimum Split (s)	9.4	26.9		16.7	16.7		
Total Split (s)	17.0	30.0		33.0	33.0		
Total Split (%)	14.2%	25.0%		27.5%	27.5%		
Yellow Time (s)	3.4	3.9		4.7	4.7		
All-Red Time (s)	2.0	2.0		2.0	2.0		
Lost Time Adjust (s)	0.0	0.0			0.0		
Total Lost Time (s)	5.4	5.9			6.7		
Lead/Lag	Lead	Lag					
Lead-Lag Optimize?							
Recall Mode	None	Min		None	None		
Act Effct Green (s)	9.3	23.0			21.5		
Actuated g/C Ratio	0.09	0.23			0.22		
v/c Ratio	0.40	0.65			0.74		

Lane Group	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Control Delay		36.3	15.0			54.8	9.8		55.2	51.7	17.2	
Queue Delay		0.0	0.0			0.0	0.0		0.0	0.0	0.0	
Total Delay		36.3	15.0			54.8	9.8		55.2	51.7	17.2	
LOS		D	B			D	A		E	D	B	
Approach Delay			24.0			38.9				35.1		
Approach LOS			C			D				D		
Queue Length 50th (ft)		31	14			190	12		28	160	62	
Queue Length 95th (ft)		74	53			264	45		54	205	77	
Internal Link Dist (ft)			289			582				357		
Turn Bay Length (ft)									280			
Base Capacity (vph)		276	650			478	665		215	470	1476	
Starvation Cap Reductn		0	0			0	0		0	0	0	
Spillback Cap Reductn		0	0			0	0		0	0	0	
Storage Cap Reductn		0	0			0	0		0	0	0	
Reduced v/c Ratio		0.21	0.12			0.61	0.24		0.19	0.51	0.18	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 99.8			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 40.0		Intersection LOS: D	
Intersection Capacity Utilization 68.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: 32nd St & Norman Scott Rd & SR-15



Lane Group	SBL	SBT	SBR	SWL2	SWL	SWR	SWR2
Control Delay	56.8	42.2			45.9		
Queue Delay	0.0	0.0			0.0		
Total Delay	56.8	42.2			45.9		
LOS	E	D			D		
Approach Delay		43.9			45.9		
Approach LOS		D			D		
Queue Length 50th (ft)	45	181			180		
Queue Length 95th (ft)	87	237			259		
Internal Link Dist (ft)		921			1422		
Turn Bay Length (ft)	280						
Base Capacity (vph)	221	940			942		
Starvation Cap Reductn	0	0			0		
Spillback Cap Reductn	0	0			0		
Storage Cap Reductn	0	0			0		
Reduced v/c Ratio	0.30	0.55			0.56		

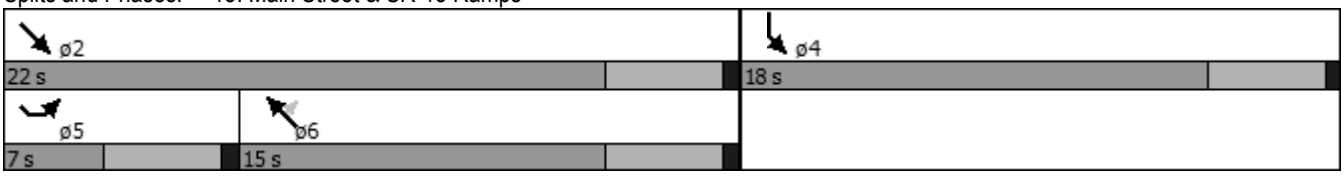
Intersection Summary

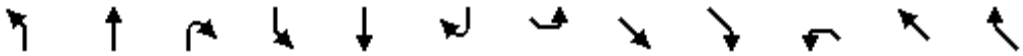
Lane Group	SBL	SBR	SEL	SET	NWT	NWR	NWR2	SWL	SWR
Lane Configurations									
Volume (vph)	108	275	38	146	407	0	107	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	130			265		0	0
Storage Lanes	1	0	1			1		0	0
Taper Length (ft)	25		60					25	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frt	0.903						0.850		
Flt Protected	0.986		0.950						
Satd. Flow (prot)	1659	0	1770	1863	3539	0	1583	0	0
Flt Permitted	0.986		0.950						
Satd. Flow (perm)	1659	0	1770	1863	3539	0	1583	0	0
Right Turn on Red		Yes					Yes		
Satd. Flow (RTOR)	335						136		
Link Speed (mph)	30			30	30			30	
Link Distance (ft)	849			1195	718			618	
Travel Time (s)	19.3			27.2	16.3			14.0	
Peak Hour Factor	0.82	0.82	0.86	0.86	0.93	0.93	0.93	0.92	0.92
Adj. Flow (vph)	132	335	44	170	438	0	115	0	0
Shared Lane Traffic (%)									
Lane Group Flow (vph)	467	0	44	170	438	0	115	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right	Right	Left	Right
Median Width(ft)	12			12	12			0	
Link Offset(ft)	0			0	0			0	
Crosswalk Width(ft)	16			16	16			16	
Two way Left Turn Lane									
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9	9	15	9
Turn Type	NA		Prot	NA	NA		Perm		
Protected Phases	4		5	2	6				
Permitted Phases							6		
Detector Phase	4		5	2	6		6		
Switch Phase									
Minimum Initial (s)	4.0		4.0	4.0	4.0		4.0		
Minimum Split (s)	20.0		8.0	20.0	20.0		20.0		
Total Split (s)	18.0		7.0	22.0	15.0		15.0		
Total Split (%)	45.0%		17.5%	55.0%	37.5%		37.5%		
Yellow Time (s)	3.5		3.5	3.5	3.5		3.5		
All-Red Time (s)	0.5		0.5	0.5	0.5		0.5		
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		0.0		
Total Lost Time (s)	4.0		4.0	4.0	4.0		4.0		
Lead/Lag			Lead		Lag		Lag		
Lead-Lag Optimize?									
Recall Mode	None		None	Max	None		None		
Act Effct Green (s)	9.0		3.0	18.7	16.1		16.1		
Actuated g/C Ratio	0.25		0.08	0.52	0.45		0.45		
v/c Ratio	0.70		0.30	0.17	0.27		0.15		
Control Delay	9.9		22.1	6.2	9.0		3.0		

Lane Group	SBL	SBR	SEL	SET	NWT	NWR	NWR2	SWL	SWR
Queue Delay	0.0		0.0	0.0	0.0		0.0		
Total Delay	9.9		22.1	6.2	9.0		3.0		
LOS	A		C	A	A		A		
Approach Delay	9.9			9.4	7.7				
Approach LOS	A			A	A				
Queue Length 50th (ft)	20		8	14	19		0		
Queue Length 95th (ft)	56		30	43	72		20		
Internal Link Dist (ft)	769			1115	638			538	
Turn Bay Length (ft)			130				265		
Base Capacity (vph)	857		149	973	1594		787		
Starvation Cap Reductn	0		0	0	0		0		
Spillback Cap Reductn	0		0	0	0		0		
Storage Cap Reductn	0		0	0	0		0		
Reduced v/c Ratio	0.54		0.30	0.17	0.27		0.15		

Intersection Summary			
Area Type:	Other		
Cycle Length: 40			
Actuated Cycle Length: 35.7			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 8.8		Intersection LOS: A	
Intersection Capacity Utilization 47.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 15: Main Street & SR-15 Ramps





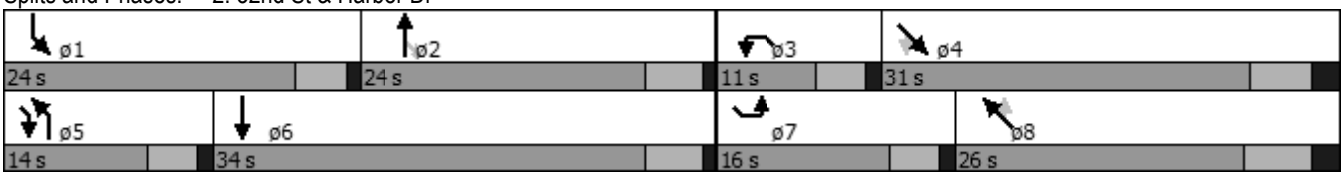
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	75	572	73	221	197	81	106	747	57	36	166	361
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	225		0	245		185	200		195
Storage Lanes	1		1	1		0	1		2	1		0
Taper Length (ft)	25			25			145			185		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850		0.956				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	3438	1538	1719	3287	0	1719	3438	1538	1687	3374	1509
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1719	3438	1538	1719	3287	0	1719	3438	1538	1687	3374	1509
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			257		73				130			454
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		678			263			723			932	
Travel Time (s)		15.4			6.0			12.3			15.9	
Peak Hour Factor	0.80	0.80	0.80	0.81	0.81	0.81	0.80	0.80	0.80	0.70	0.70	0.70
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	7%	7%	7%
Adj. Flow (vph)	94	715	91	273	243	100	132	934	71	51	237	516
Shared Lane Traffic (%)												
Lane Group Flow (vph)	94	715	91	273	343	0	132	934	71	51	237	516
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		20			12			30			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	pm+ov	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4	5	3	8	
Permitted Phases			2						4			8
Detector Phase	5	2	2	1	6		7	4	5	3	8	8
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0		4.0	10.0	4.0	4.0	10.0	10.0
Minimum Split (s)	9.4	21.9	21.9	8.4	21.9		9.4	22.2	9.4	8.4	22.6	22.6
Total Split (s)	14.0	24.0	24.0	24.0	34.0		16.0	31.0	14.0	11.0	26.0	26.0
Total Split (%)	15.6%	26.7%	26.7%	26.7%	37.8%		17.8%	34.4%	15.6%	12.2%	28.9%	28.9%
Yellow Time (s)	3.4	3.9	3.9	3.4	3.9		3.4	4.2	3.4	3.4	4.6	4.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	2.0	1.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.4	4.9	4.9	4.4	4.9		4.4	6.2	4.4	4.4	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None		None	Min	None	None	Min	Min
Act Effct Green (s)	8.1	19.3	19.3	17.4	30.8		9.7	25.4	39.7	6.0	16.9	16.9
Actuated g/C Ratio	0.10	0.23	0.23	0.21	0.37		0.12	0.30	0.47	0.07	0.20	0.20
v/c Ratio	0.57	0.91	0.17	0.77	0.27		0.66	0.90	0.09	0.42	0.35	0.77

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Control Delay	51.7	49.9	0.6	47.6	17.0		53.2	42.7	0.6	50.8	30.9	14.5
Queue Delay	0.0	0.0	0.0	4.6	0.3		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.7	49.9	0.6	52.2	17.3		53.2	42.7	0.6	50.8	30.9	14.5
LOS	D	D	A	D	B		D	D	A	D	C	B
Approach Delay		45.1			32.8			41.3			21.7	
Approach LOS		D			C			D			C	
Queue Length 50th (ft)	52	214	0	145	58		72	277	0	28	60	29
Queue Length 95th (ft)	89	#270	0	204	81		115	#332	0	50	71	34
Internal Link Dist (ft)		598			183			643			852	
Turn Bay Length (ft)				225			245		185	200		195
Base Capacity (vph)	198	790	551	405	1262		240	1040	824	134	790	701
Starvation Cap Reductn	0	0	0	76	451		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.91	0.17	0.83	0.42		0.55	0.90	0.09	0.38	0.30	0.74

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 83.8			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay: 36.2		Intersection LOS: D	
Intersection Capacity Utilization 68.6%		ICU Level of Service C	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: 32nd St & Harbor Dr



Lane Group	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Lane Configurations												
Volume (vph)	124	65	45	88	87	29	156	116	127	388	366	244
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0		0	0		0		280		0	
Storage Lanes		1		0	0		1		1		2	
Taper Length (ft)		25			25				50			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.88	1.00
Frt			0.901				0.850				0.850	
Flt Protected		0.950				0.964			0.950			
Satd. Flow (prot)	0	1757	1678	0	0	1796	1571	0	1719	1810	2707	0
Flt Permitted		0.617				0.611			0.950			
Satd. Flow (perm)	0	1141	1678	0	0	1138	1571	0	1719	1810	2707	0
Right Turn on Red				Yes				Yes				No
Satd. Flow (RTOR)			76				185					
Link Speed (mph)			25			25				30		
Link Distance (ft)			369			662				437		
Travel Time (s)			10.1			18.1				9.9		
Peak Hour Factor	0.92	0.87	0.87	0.87	0.82	0.82	0.82	0.92	0.93	0.93	0.93	0.92
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	2%	4%	5%	5%	5%	5%
Adj. Flow (vph)	135	75	52	101	106	35	190	126	137	417	394	265
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	210	153	0	0	141	316	0	137	417	659	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Left	Right	Right	Left	Left	Right	Right
Median Width(ft)			12			12				12		
Link Offset(ft)			0			0				0		
Crosswalk Width(ft)			16			16				16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	15		9	15		9	9	15		9	9
Turn Type	Perm	Perm	NA		Perm	NA	Perm		Prot	NA	custom	
Protected Phases			8			4			5	2	2 3	
Permitted Phases	8	8			4		4				2	
Detector Phase	8	8	8		4	4	4		5	2	2 3	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0		10.0	10.0	10.0		4.0	10.0		
Minimum Split (s)	34.9	34.9	34.9		34.9	34.9	34.9		9.5	27.9		
Total Split (s)	34.0	34.0	34.0		34.0	34.0	34.0		22.0	34.0		
Total Split (%)	28.3%	28.3%	28.3%		28.3%	28.3%	28.3%		18.3%	28.3%		
Yellow Time (s)	3.9	3.9	3.9		3.9	3.9	3.9		3.4	3.9		
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	2.0		2.0	2.0		
Lost Time Adjust (s)		0.0	0.0			0.0	0.0		0.0	0.0		
Total Lost Time (s)		5.9	5.9			5.9	5.9		5.4	5.9		
Lead/Lag									Lead	Lag		
Lead-Lag Optimize?												
Recall Mode	None	None	None		None	None	None		None	Min		
Act Effct Green (s)		24.4	24.4			24.4	24.4		13.6	28.2	47.2	
Actuated g/C Ratio		0.21	0.21			0.21	0.21		0.12	0.24	0.41	
v/c Ratio		0.87	0.37			0.59	0.66		0.68	0.95	0.60	

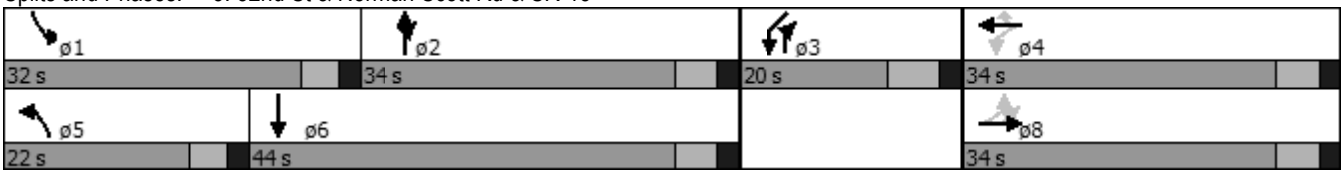
Lane Group	SBL	SBT	SBR	SWL	SWR	SWR2
Lane Configurations						
Volume (vph)	311	352	23	112	52	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	280		0	0	0	
Storage Lanes	1		0	2	0	
Taper Length (ft)	70			25		
Lane Util. Factor	1.00	0.95	0.95	0.97	0.95	0.95
Frt		0.991		0.943		
Flt Protected	0.950			0.970		
Satd. Flow (prot)	1770	3413	0	3242	0	0
Flt Permitted	0.950			0.970		
Satd. Flow (perm)	1770	3413	0	3242	0	0
Right Turn on Red			No			No
Satd. Flow (RTOR)						
Link Speed (mph)		30		55		
Link Distance (ft)		1001		1502		
Travel Time (s)		22.8		18.6		
Peak Hour Factor	0.81	0.81	0.81	0.92	0.92	0.92
Heavy Vehicles (%)	2%	5%	2%	4%	4%	4%
Adj. Flow (vph)	384	435	28	122	57	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	384	463	0	196	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Right
Median Width(ft)		12		30		
Link Offset(ft)		0		0		
Crosswalk Width(ft)		16		16		
Two way Left Turn Lane		Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15	9	9
Turn Type	Prot	NA		NA		
Protected Phases	1	6		3		
Permitted Phases						
Detector Phase	1	6		3		
Switch Phase						
Minimum Initial (s)	4.0	10.0		10.0		
Minimum Split (s)	9.4	26.9		16.7		
Total Split (s)	32.0	44.0		20.0		
Total Split (%)	26.7%	36.7%		16.7%		
Yellow Time (s)	3.4	3.9		4.7		
All-Red Time (s)	2.0	2.0		2.0		
Lost Time Adjust (s)	0.0	0.0		0.0		
Total Lost Time (s)	5.4	5.9		6.7		
Lead/Lag	Lead	Lag				
Lead-Lag Optimize?						
Recall Mode	None	Min		None		
Act Effct Green (s)	26.7	41.2		12.3		
Actuated g/C Ratio	0.23	0.36		0.11		
v/c Ratio	0.94	0.38		0.57		

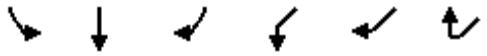
Lane Group	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Control Delay		77.4	22.4			51.7	23.9		66.2	75.6	30.0	
Queue Delay		0.0	0.0			0.0	0.0		0.0	0.9	0.6	
Total Delay		77.4	22.4			51.7	23.9		66.2	76.5	30.6	
LOS		E	C			D	C		E	E	C	
Approach Delay			54.2			32.5				50.4		
Approach LOS			D			C				D		
Queue Length 50th (ft)		154	48			96	88		102	322	225	
Queue Length 95th (ft)		#263	103			147	152		169	#530	296	
Internal Link Dist (ft)			289			582				357		
Turn Bay Length (ft)									280			
Base Capacity (vph)		278	466			277	523		247	441	1130	
Starvation Cap Reductn		0	0			0	0		0	3	181	
Spillback Cap Reductn		0	0			0	0		0	0	0	
Storage Cap Reductn		0	0			0	0		0	0	0	
Reduced v/c Ratio		0.76	0.33			0.51	0.60		0.55	0.95	0.69	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 115.5			
Natural Cycle: 110			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay: 48.9		Intersection LOS: D	
Intersection Capacity Utilization 89.6%		ICU Level of Service E	
Analysis Period (min) 15			

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: 32nd St & Norman Scott Rd & SR-15





Lane Group	SBL	SBT	SBR	SWL	SWR	SWR2
Control Delay	76.9	30.4		56.8		
Queue Delay	0.0	0.0		0.0		
Total Delay	76.9	30.4		56.8		
LOS	E	C		E		
Approach Delay		51.5		56.8		
Approach LOS		D		E		
Queue Length 50th (ft)	297	144		75		
Queue Length 95th (ft)	#416	174		114		
Internal Link Dist (ft)		921		1422		
Turn Bay Length (ft)	280					
Base Capacity (vph)	408	1217		374		
Starvation Cap Reductn	0	0		0		
Spillback Cap Reductn	0	0		0		
Storage Cap Reductn	0	0		0		
Reduced v/c Ratio	0.94	0.38		0.52		

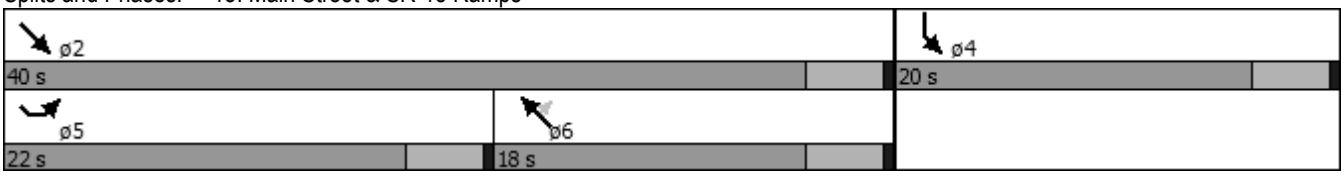
Intersection Summary

Lane Group	SBL	SBR	SEL	SET	NWT	NWR	NWR2	SWL	SWR
Lane Configurations									
Volume (vph)	120	130	262	603	289	0	154	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	130			265		0	0
Storage Lanes	1	0	1			1		0	0
Taper Length (ft)	25		60					25	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frt	0.930						0.850		
Flt Protected	0.977		0.950						
Satd. Flow (prot)	1693	0	1770	1863	3539	0	1583	0	0
Flt Permitted	0.977		0.950						
Satd. Flow (perm)	1693	0	1770	1863	3539	0	1583	0	0
Right Turn on Red		Yes					Yes		
Satd. Flow (RTOR)	91						173		
Link Speed (mph)	30			30	30			30	
Link Distance (ft)	849			1195	718			618	
Travel Time (s)	19.3			27.2	16.3			14.0	
Peak Hour Factor	0.94	0.94	0.91	0.91	0.89	0.89	0.89	0.92	0.92
Adj. Flow (vph)	128	138	288	663	325	0	173	0	0
Shared Lane Traffic (%)									
Lane Group Flow (vph)	266	0	288	663	325	0	173	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right	Right	Left	Right
Median Width(ft)	12			12	12			0	
Link Offset(ft)	0			0	0			0	
Crosswalk Width(ft)	16			16	16			16	
Two way Left Turn Lane									
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9	9	15	9
Turn Type	NA		Prot	NA	NA		Perm		
Protected Phases	4		5	2	6				
Permitted Phases							6		
Detector Phase	4		5	2	6		6		
Switch Phase									
Minimum Initial (s)	4.0		4.0	4.0	4.0		4.0		
Minimum Split (s)	20.0		8.0	20.0	20.0		20.0		
Total Split (s)	20.0		22.0	40.0	18.0		18.0		
Total Split (%)	33.3%		36.7%	66.7%	30.0%		30.0%		
Yellow Time (s)	3.5		3.5	3.5	3.5		3.5		
All-Red Time (s)	0.5		0.5	0.5	0.5		0.5		
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		0.0		
Total Lost Time (s)	4.0		4.0	4.0	4.0		4.0		
Lead/Lag			Lead		Lag		Lag		
Lead-Lag Optimize?									
Recall Mode	None		None	Max	None		None		
Act Effct Green (s)	10.9		13.5	36.2	18.6		18.6		
Actuated g/C Ratio	0.20		0.25	0.66	0.34		0.34		
v/c Ratio	0.65		0.66	0.54	0.27		0.27		
Control Delay	21.0		26.6	8.0	16.3		5.0		

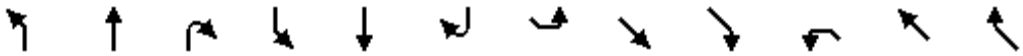
Lane Group	SBL	SBR	SEL	SET	NWT	NWR	NWR2	SWL	SWR
Queue Delay	0.0		0.0	0.0	0.0		0.0		
Total Delay	21.0		26.6	8.0	16.3		5.0		
LOS	C		C	A	B		A		
Approach Delay	21.0			13.6	12.4				
Approach LOS	C			B	B				
Queue Length 50th (ft)	52		84	95	40		0		
Queue Length 95th (ft)	114		152	214	83		39		
Internal Link Dist (ft)	769			1115	638			538	
Turn Bay Length (ft)			130				265		
Base Capacity (vph)	558		580	1222	1194		649		
Starvation Cap Reductn	0		0	0	0		0		
Spillback Cap Reductn	0		0	0	0		0		
Storage Cap Reductn	0		0	0	0		0		
Reduced v/c Ratio	0.48		0.50	0.54	0.27		0.27		

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 55.1			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 14.4		Intersection LOS: B	
Intersection Capacity Utilization 53.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 15: Main Street & SR-15 Ramps



2030 Conditions
No Build

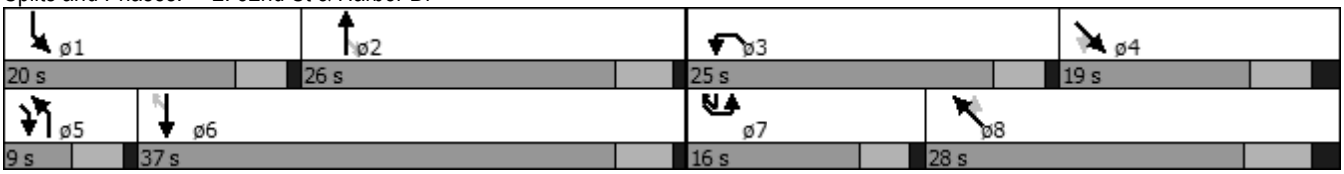


Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	30	160	30	130	1040	190	140	357	140	300	735	390
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	225		0	245		185	200		195
Storage Lanes	1		1	1		1	1		2	1		0
Taper Length (ft)	25			25			145			185		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	1719	3438	1538	1687	3374	1509
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1719	3438	1538	1719	3438	1538	1719	3438	1538	1687	3374	1509
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			257			150			183			424
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		678			263			723			932	
Travel Time (s)		15.4			6.0			12.3			15.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	7%	7%	7%
Adj. Flow (vph)	33	174	33	141	1130	207	152	388	152	326	799	424
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	174	33	141	1130	207	152	388	152	326	799	424
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		20			12			30			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	Perm
Protected Phases	5	2		1	6	7	7	4	5	3	8	
Permitted Phases			2			6			4			8
Detector Phase	5	2	2	1	6	7	7	4	5	3	8	8
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0	4.0	4.0	10.0	4.0	4.0	10.0	10.0
Minimum Split (s)	9.4	21.9	21.9	8.4	21.9	9.4	9.4	22.2	9.4	8.4	22.6	22.6
Total Split (s)	9.0	26.0	26.0	20.0	37.0	16.0	16.0	19.0	9.0	25.0	28.0	28.0
Total Split (%)	10.0%	28.9%	28.9%	22.2%	41.1%	17.8%	17.8%	21.1%	10.0%	27.8%	31.1%	31.1%
Yellow Time (s)	3.4	3.9	3.9	3.4	3.9	3.4	3.4	4.2	3.4	3.4	4.6	4.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0	1.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.4	4.9	4.9	4.4	4.9	4.4	4.4	6.2	4.4	4.4	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	None	Min	None	None	Min	Min
Act Effct Green (s)	4.6	23.8	23.8	12.9	32.1	47.5	10.5	13.1	23.9	19.3	21.5	21.5
Actuated g/C Ratio	0.05	0.27	0.27	0.14	0.36	0.53	0.12	0.15	0.27	0.22	0.24	0.24
v/c Ratio	0.38	0.19	0.06	0.57	0.91	0.23	0.75	0.77	0.28	0.89	0.98	0.62

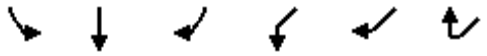
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Control Delay	53.7	27.1	0.2	44.4	39.7	4.1	61.3	48.3	3.9	61.8	62.9	7.5
Queue Delay	0.0	0.0	0.0	0.0	47.4	0.9	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.7	27.1	0.2	44.4	87.1	5.0	61.3	48.3	3.9	61.8	62.9	7.5
LOS	D	C	A	D	F	A	E	D	A	E	E	A
Approach Delay		27.0			71.5			41.4			47.5	
Approach LOS		C			E			D			D	
Queue Length 50th (ft)	19	40	0	75	319	15	84	113	0	178	239	0
Queue Length 95th (ft)	49	70	0	132	#452	47	#169	#182	30	#323	#366	77
Internal Link Dist (ft)		598			183			643			852	
Turn Bay Length (ft)				225			245		185	200		195
Base Capacity (vph)	88	919	599	301	1241	908	224	506	547	391	813	685
Starvation Cap Reductn	0	0	0	0	428	462	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.19	0.06	0.47	1.39	0.46	0.68	0.77	0.28	0.83	0.98	0.62

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 89			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.98			
Intersection Signal Delay: 54.1		Intersection LOS: D	
Intersection Capacity Utilization 77.1%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 2: 32nd St & Harbor Dr



Lane Group	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Lane Configurations												
Volume (vph)	65	25	170	80	250	45	120	50	70	215	125	290
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0		0	0		0		280		0	
Storage Lanes		1		0	0		1		1		2	
Taper Length (ft)		25			25				50			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.88	1.00
Frt			0.952				0.850				0.850	
Flt Protected		0.950				0.959			0.950			
Satd. Flow (prot)	0	1760	1773	0	0	1786	1574	0	1719	1810	2707	0
Flt Permitted		0.369				0.433			0.950			
Satd. Flow (perm)	0	684	1773	0	0	807	1574	0	1719	1810	2707	0
Right Turn on Red				Yes				Yes				No
Satd. Flow (RTOR)			15				139					
Link Speed (mph)			25			25				30		
Link Distance (ft)			369			662				437		
Travel Time (s)			10.1			18.1				9.9		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	2%	4%	5%	5%	5%	5%
Adj. Flow (vph)	71	27	185	87	272	49	130	54	76	234	136	315
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	98	272	0	0	321	184	0	76	234	451	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Left	Right	Right	Left	Left	Right	Right
Median Width(ft)			12			12				12		
Link Offset(ft)			0			0				0		
Crosswalk Width(ft)			16			16				16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	15		9	15		9	9	15		9	9
Turn Type	Perm	Perm	NA		Perm	NA	Perm		Prot	NA	custom	
Protected Phases			4			4			5	2	2 3	
Permitted Phases	4	4			4		4				2	
Detector Phase	4	4	4		4	4	4		5	2	2 3	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0		10.0	10.0	10.0		4.0	10.0		
Minimum Split (s)	34.9	34.9	34.9		34.9	34.9	34.9		9.5	27.9		
Total Split (s)	55.0	55.0	55.0		55.0	55.0	55.0		15.0	36.0		
Total Split (%)	34.4%	34.4%	34.4%		34.4%	34.4%	34.4%		9.4%	22.5%		
Yellow Time (s)	3.9	3.9	3.9		3.9	3.9	3.9		3.4	3.9		
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	2.0		2.0	2.0		
Lost Time Adjust (s)		0.0	0.0			0.0	0.0		0.0	0.0		
Total Lost Time (s)		5.9	5.9			5.9	5.9		5.4	5.9		
Lead/Lag									Lead	Lag		
Lead-Lag Optimize?												
Recall Mode	None	None	None		None	None	None		None	Min		
Act Effct Green (s)		49.1	49.1			49.1	49.1		9.3	25.2	71.2	
Actuated g/C Ratio		0.32	0.32			0.32	0.32		0.06	0.16	0.46	
v/c Ratio		0.45	0.48			1.26	0.31		0.75	0.80	0.36	



Lane Group	SBL	SBT	SBR	SWL	SWR	SWR2
Lane Configurations						
Volume (vph)	179	444	63	775	65	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	280		0	0	0	
Storage Lanes	1		0	2	0	
Taper Length (ft)	70			25		
Lane Util. Factor	1.00	0.95	0.95	0.97	0.95	0.95
Frt		0.981		0.987		
Flt Protected	0.950			0.956		
Satd. Flow (prot)	1770	3385	0	3344	0	0
Flt Permitted	0.950			0.956		
Satd. Flow (perm)	1770	3385	0	3344	0	0
Right Turn on Red			No			No
Satd. Flow (RTOR)						
Link Speed (mph)		30		55		
Link Distance (ft)		1001		1502		
Travel Time (s)		22.8		18.6		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	5%	2%	4%	4%	4%
Adj. Flow (vph)	195	483	68	842	71	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	195	551	0	924	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Right
Median Width(ft)		12		30		
Link Offset(ft)		0		0		
Crosswalk Width(ft)		16		16		
Two way Left Turn Lane		Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15	9	9
Turn Type	Prot	NA		NA		
Protected Phases	1	6		3		
Permitted Phases						
Detector Phase	1	6		3		
Switch Phase						
Minimum Initial (s)	4.0	10.0		10.0		
Minimum Split (s)	9.4	26.9		16.7		
Total Split (s)	23.0	44.0		46.0		
Total Split (%)	14.4%	27.5%		28.8%		
Yellow Time (s)	3.4	3.9		4.7		
All-Red Time (s)	2.0	2.0		2.0		
Lost Time Adjust (s)	0.0	0.0		0.0		
Total Lost Time (s)	5.4	5.9		6.7		
Lead/Lag	Lead	Lag				
Lead-Lag Optimize?						
Recall Mode	None	Min		None		
Act Effct Green (s)	17.6	33.5		39.3		
Actuated g/C Ratio	0.11	0.22		0.25		
v/c Ratio	0.97	0.75		1.09		

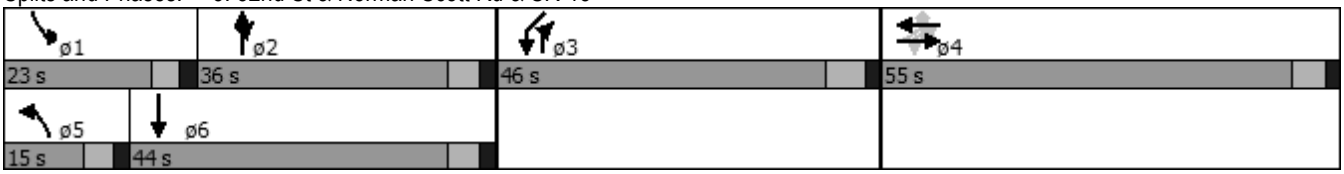
Lane Group	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Control Delay		51.8	44.3			187.2	13.0		110.2	82.5	28.1	
Queue Delay		0.0	0.0			0.0	0.0		0.0	0.3	0.0	
Total Delay		51.8	44.3			187.2	13.0		110.2	82.8	28.1	
LOS		D	D			F	B		F	F	C	
Approach Delay			46.3			123.7				53.1		
Approach LOS			D			F				D		
Queue Length 50th (ft)		81	214			~414	33		78	231	166	
Queue Length 95th (ft)		150	316			#631	100		#170	332	214	
Internal Link Dist (ft)			289			582				357		
Turn Bay Length (ft)									280			
Base Capacity (vph)		216	571			255	593		106	351	1232	
Starvation Cap Reductn		0	0			0	0		0	7	0	
Spillback Cap Reductn		0	0			0	0		0	0	0	
Storage Cap Reductn		0	0			0	0		0	0	0	
Reduced v/c Ratio		0.45	0.48			1.26	0.31		0.72	0.68	0.37	

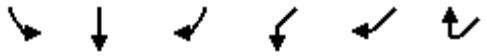
Intersection Summary			
Area Type:	Other		
Cycle Length: 160			
Actuated Cycle Length: 155.2			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.26			
Intersection Signal Delay: 85.5		Intersection LOS: F	
Intersection Capacity Utilization 100.6%		ICU Level of Service G	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: 32nd St & Norman Scott Rd & SR-15





Lane Group	SBL	SBT	SBR	SWL	SWR	SWR2
Control Delay	124.3	64.1		111.5		
Queue Delay	0.0	0.0		0.0		
Total Delay	124.3	64.1		111.5		
LOS	F	E		F		
Approach Delay		79.8		111.5		
Approach LOS		E		F		
Queue Length 50th (ft)	203	278		~553		
Queue Length 95th (ft)	#383	347		#708		
Internal Link Dist (ft)		921		1422		
Turn Bay Length (ft)	280					
Base Capacity (vph)	200	832		847		
Starvation Cap Reductn	0	0		0		
Spillback Cap Reductn	0	0		0		
Storage Cap Reductn	0	0		0		
Reduced v/c Ratio	0.97	0.66		1.09		

Intersection Summary

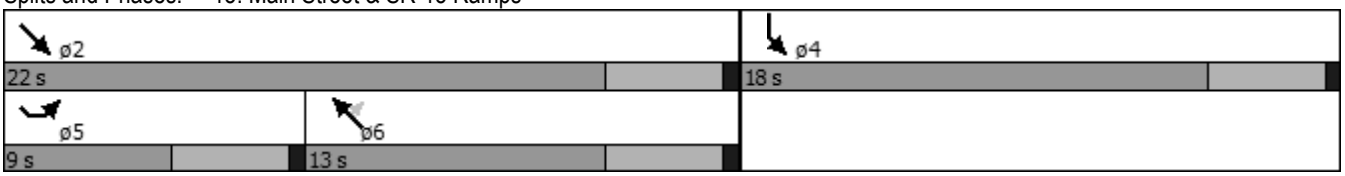
Lane Group	SBL	SBR	SEL	SET	NWT	NWR	NWR2	SWL	SWR
Lane Configurations									
Volume (vph)	108	309	47	181	497	0	107	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	130			265		0	0
Storage Lanes	1	0	1			1		0	0
Taper Length (ft)	25		60					25	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00
Frt	0.900						0.850		
Flt Protected	0.987		0.950						
Satd. Flow (prot)	1655	0	1770	3539	3539	0	1583	0	0
Flt Permitted	0.987		0.950						
Satd. Flow (perm)	1655	0	1770	3539	3539	0	1583	0	0
Right Turn on Red		Yes					Yes		
Satd. Flow (RTOR)	336						136		
Link Speed (mph)	30			30	30			30	
Link Distance (ft)	849			1195	718			618	
Travel Time (s)	19.3			27.2	16.3			14.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	117	336	51	197	540	0	116	0	0
Shared Lane Traffic (%)									
Lane Group Flow (vph)	453	0	51	197	540	0	116	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right	Right	Left	Right
Median Width(ft)	12			12	12			0	
Link Offset(ft)	0			0	0			0	
Crosswalk Width(ft)	16			16	16			16	
Two way Left Turn Lane									
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9	9	15	9
Turn Type	NA		Prot	NA	NA		Perm		
Protected Phases	4		5	2	6				
Permitted Phases							6		
Detector Phase	4		5	2	6		6		
Switch Phase									
Minimum Initial (s)	4.0		4.0	4.0	4.0		4.0		
Minimum Split (s)	20.0		8.0	20.0	20.0		20.0		
Total Split (s)	18.0		9.0	22.0	13.0		13.0		
Total Split (%)	45.0%		22.5%	55.0%	32.5%		32.5%		
Yellow Time (s)	3.5		3.5	3.5	3.5		3.5		
All-Red Time (s)	0.5		0.5	0.5	0.5		0.5		
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		0.0		
Total Lost Time (s)	4.0		4.0	4.0	4.0		4.0		
Lead/Lag			Lead		Lag		Lag		
Lead-Lag Optimize?									
Recall Mode	None		None	Max	None		None		
Act Effct Green (s)	8.7		5.0	18.8	15.5		15.5		
Actuated g/C Ratio	0.24		0.14	0.53	0.44		0.44		
v/c Ratio	0.69		0.20	0.11	0.35		0.15		
Control Delay	9.4		16.9	5.4	10.7		3.5		

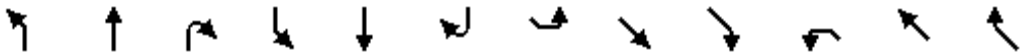
Lane Group	SBL	SBR	SEL	SET	NWT	NWR	NWR2	SWL	SWR
Queue Delay	0.0		0.0	0.0	0.0		0.0		
Total Delay	9.4		16.9	5.4	10.7		3.5		
LOS	A		B	A	B		A		
Approach Delay	9.4			7.7	9.4				
Approach LOS	A			A	A				
Queue Length 50th (ft)	18		8	7	23		0		
Queue Length 95th (ft)	67		32	24	#99		23		
Internal Link Dist (ft)	769			1115	638			538	
Turn Bay Length (ft)			130				265		
Base Capacity (vph)	858		250	1868	1538		764		
Starvation Cap Reductn	0		0	0	0		0		
Spillback Cap Reductn	0		0	0	0		0		
Storage Cap Reductn	0		0	0	0		0		
Reduced v/c Ratio	0.53		0.20	0.11	0.35		0.15		

Intersection Summary			
Area Type:	Other		
Cycle Length: 40			
Actuated Cycle Length: 35.6			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 9.1		Intersection LOS: A	
Intersection Capacity Utilization 52.1%		ICU Level of Service A	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 15: Main Street & SR-15 Ramps





Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	70	690	140	310	280	260	340	1185	100	40	436	460
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	225		0	245		185	200		195
Storage Lanes	1		1	1		1	1		2	1		0
Taper Length (ft)	25			25			145			185		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	1719	3438	1538	1687	3374	1509
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1719	3438	1538	1719	3438	1538	1719	3438	1538	1687	3374	1509
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			165			217			83			405
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		678			263			723			932	
Travel Time (s)		15.4			6.0			12.3			15.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	7%	7%	7%
Adj. Flow (vph)	76	750	152	337	304	283	370	1288	109	43	474	500
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	750	152	337	304	283	370	1288	109	43	474	500
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		20			12			30			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	Perm
Protected Phases	5	2		1	6	7	7	4	5	3	8	
Permitted Phases			2			6			4			8
Detector Phase	5	2	2	1	6	7	7	4	5	3	8	8
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0	4.0	4.0	10.0	4.0	4.0	10.0	10.0
Minimum Split (s)	9.4	21.9	21.9	8.4	21.9	9.4	9.4	22.2	9.4	8.4	22.6	22.6
Total Split (s)	21.0	33.0	33.0	36.0	48.0	43.0	43.0	57.0	21.0	14.0	28.0	28.0
Total Split (%)	15.0%	23.6%	23.6%	25.7%	34.3%	30.7%	30.7%	40.7%	15.0%	10.0%	20.0%	20.0%
Yellow Time (s)	3.4	3.9	3.9	3.4	3.9	3.4	3.4	4.2	3.4	3.4	4.6	4.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0	1.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.4	4.9	4.9	4.4	4.9	4.4	4.4	6.2	4.4	4.4	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	None	Min	None	None	Min	Min
Act Effct Green (s)	10.3	28.2	28.2	29.4	47.3	84.7	32.4	51.1	67.6	7.5	23.7	23.7
Actuated g/C Ratio	0.08	0.21	0.21	0.22	0.35	0.63	0.24	0.38	0.50	0.06	0.18	0.18
v/c Ratio	0.58	1.04	0.34	0.89	0.25	0.27	0.89	0.98	0.13	0.46	0.80	0.83

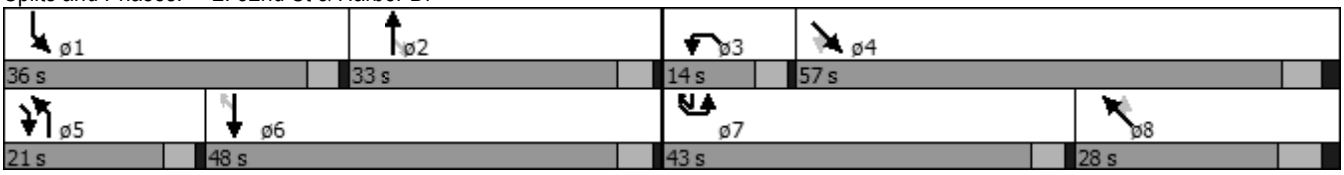
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Control Delay	77.9	95.0	7.4	77.7	32.8	3.3	73.6	63.3	6.1	78.8	64.7	24.8
Queue Delay	0.0	0.0	0.0	56.6	1.8	1.4	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	77.9	95.0	7.4	134.2	34.6	4.8	73.6	63.3	6.1	78.8	64.7	24.8
LOS	E	F	A	F	C	A	E	E	A	E	E	C
Approach Delay		80.0			61.8			61.9			45.7	
Approach LOS		F			E			E			D	
Queue Length 50th (ft)	67	~393	0	293	101	21	320	~644	12	38	218	82
Queue Length 95th (ft)	120	#532	50	#467	149	59	#442	#800	43	80	#330	#293
Internal Link Dist (ft)		598			183			643			852	
Turn Bay Length (ft)				225			245		185	200		195
Base Capacity (vph)	213	723	453	406	1213	1113	496	1308	885	121	596	600
Starvation Cap Reductn	0	0	0	163	736	632	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	1.04	0.34	1.39	0.64	0.59	0.75	0.98	0.12	0.36	0.80	0.83

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 134.2			
Natural Cycle: 120			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.04			
Intersection Signal Delay: 62.2		Intersection LOS: E	
Intersection Capacity Utilization 88.9%		ICU Level of Service E	
Analysis Period (min) 15			

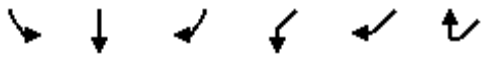
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: 32nd St & Harbor Dr



Lane Group	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Lane Configurations												
Volume (vph)	115	115	80	130	140	50	210	205	140	360	760	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0		0	0		0		280		0	
Storage Lanes		1		0	0		1		1		2	
Taper Length (ft)		25			25				50			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.88	1.00
Frt			0.907				0.850				0.850	
Flt Protected		0.950				0.964			0.950			
Satd. Flow (prot)	0	1752	1690	0	0	1796	1568	0	1719	1810	2707	0
Flt Permitted		0.502				0.483			0.950			
Satd. Flow (perm)	0	926	1690	0	0	900	1568	0	1719	1810	2707	0
Right Turn on Red				Yes				Yes				No
Satd. Flow (RTOR)			64				87					
Link Speed (mph)			25			25				30		
Link Distance (ft)			369			662				437		
Travel Time (s)			10.1			18.1				9.9		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	2%	4%	5%	5%	5%	5%
Adj. Flow (vph)	125	125	87	141	152	54	228	223	152	391	826	261
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	250	228	0	0	206	451	0	152	391	1087	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Left	Right	Right	Left	Left	Right	Right
Median Width(ft)			12			12				12		
Link Offset(ft)			0			0				0		
Crosswalk Width(ft)			16			16				16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	15		9	15		9	9	15		9	9
Turn Type	Perm	Perm	NA		Perm	NA	pm+ov		Prot	NA	custom	
Protected Phases			4			4	1		5	2	2 3	
Permitted Phases	4	4			4		4				2	
Detector Phase	4	4	4		4	4	1		5	2	2 3	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0		10.0	10.0	4.0		4.0	10.0		
Minimum Split (s)	34.9	34.9	34.9		34.9	34.9	9.4		9.5	27.9		
Total Split (s)	35.0	35.0	35.0		35.0	35.0	33.0		22.0	31.0		
Total Split (%)	29.2%	29.2%	29.2%		29.2%	29.2%	27.5%		18.3%	25.8%		
Yellow Time (s)	3.9	3.9	3.9		3.9	3.9	3.4		3.4	3.9		
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	2.0		2.0	2.0		
Lost Time Adjust (s)		0.0	0.0			0.0	0.0		0.0	0.0		
Total Lost Time (s)		5.9	5.9			5.9	5.4		5.4	5.9		
Lead/Lag							Lead		Lead	Lag		
Lead-Lag Optimize?												
Recall Mode	None	None	None		None	None	None		None	Min		
Act Effct Green (s)		29.1	29.1			29.1	62.6		14.5	25.1	46.1	
Actuated g/C Ratio		0.24	0.24			0.24	0.52		0.12	0.21	0.38	
v/c Ratio		1.12	0.50			0.94	0.53		0.73	1.03	1.05	

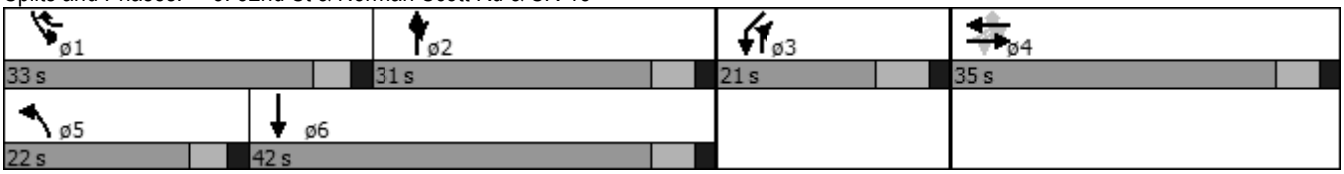


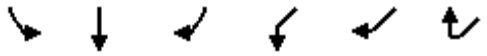
Lane Group	SBL	SBT	SBR	SWL	SWR	SWR2
Lane Configurations						
Volume (vph)	413	479	29	340	55	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	280		0	0	0	
Storage Lanes	1		0	2	0	
Taper Length (ft)	70			25		
Lane Util. Factor	1.00	0.95	0.95	0.97	0.95	0.95
Frt		0.991		0.976		
Flt Protected	0.950			0.960		
Satd. Flow (prot)	1770	3413	0	3321	0	0
Flt Permitted	0.950			0.960		
Satd. Flow (perm)	1770	3413	0	3321	0	0
Right Turn on Red			No			No
Satd. Flow (RTOR)						
Link Speed (mph)		30		55		
Link Distance (ft)		1001		1502		
Travel Time (s)		22.8		18.6		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	5%	2%	4%	4%	4%
Adj. Flow (vph)	449	521	32	370	60	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	449	553	0	441	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Right
Median Width(ft)		12		30		
Link Offset(ft)		0		0		
Crosswalk Width(ft)		16		16		
Two way Left Turn Lane		Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15	9	9
Turn Type	Prot	NA		NA		
Protected Phases	1	6		3		
Permitted Phases						
Detector Phase	1	6		3		
Switch Phase						
Minimum Initial (s)	4.0	10.0		10.0		
Minimum Split (s)	9.4	26.9		16.7		
Total Split (s)	33.0	42.0		21.0		
Total Split (%)	27.5%	35.0%		17.5%		
Yellow Time (s)	3.4	3.9		4.7		
All-Red Time (s)	2.0	2.0		2.0		
Lost Time Adjust (s)	0.0	0.0		0.0		
Total Lost Time (s)	5.4	5.9		6.7		
Lead/Lag	Lead	Lag				
Lead-Lag Optimize?						
Recall Mode	None	Min		None		
Act Effct Green (s)	27.6	38.2		14.3		
Actuated g/C Ratio	0.23	0.32		0.12		
v/c Ratio	1.10	0.51		1.12		

Lane Group	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Control Delay		137.3	32.0			93.9	17.5		71.4	102.0	77.3	
Queue Delay		0.0	0.0			0.0	0.0		0.0	0.0	21.5	
Total Delay		137.3	32.0			93.9	17.5		71.4	102.0	98.8	
LOS		F	C			F	B		E	F	F	
Approach Delay			87.1			41.4				97.0		
Approach LOS			F			D				F		
Queue Length 50th (ft)		~222	109			157	178		114	~325	~519	
Queue Length 95th (ft)		#388	190			#311	272		186	#520	#664	
Internal Link Dist (ft)			289			582				357		
Turn Bay Length (ft)									280			
Base Capacity (vph)		224	458			218	859		237	378	1039	
Starvation Cap Reductn		0	0			0	0		0	0	114	
Spillback Cap Reductn		0	0			0	0		0	0	0	
Storage Cap Reductn		0	0			0	0		0	0	0	
Reduced v/c Ratio		1.12	0.50			0.94	0.53		0.64	1.03	1.18	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Natural Cycle: 120			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.12			
Intersection Signal Delay: 84.8		Intersection LOS: F	
Intersection Capacity Utilization 101.5%		ICU Level of Service G	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 3: 32nd St & Norman Scott Rd & SR-15





Lane Group	SBL	SBT	SBR	SWL	SWR	SWR2
Control Delay	118.7	35.7		128.8		
Queue Delay	0.0	0.0		0.0		
Total Delay	118.7	35.7		128.8		
LOS	F	D		F		
Approach Delay		72.9		128.8		
Approach LOS		E		F		
Queue Length 50th (ft)	~396	186		~202		
Queue Length 95th (ft)	#600	245		#306		
Internal Link Dist (ft)		921		1422		
Turn Bay Length (ft)	280					
Base Capacity (vph)	407	1086		395		
Starvation Cap Reductn	0	0		0		
Spillback Cap Reductn	0	0		0		
Storage Cap Reductn	0	0		0		
Reduced v/c Ratio	1.10	0.51		1.12		

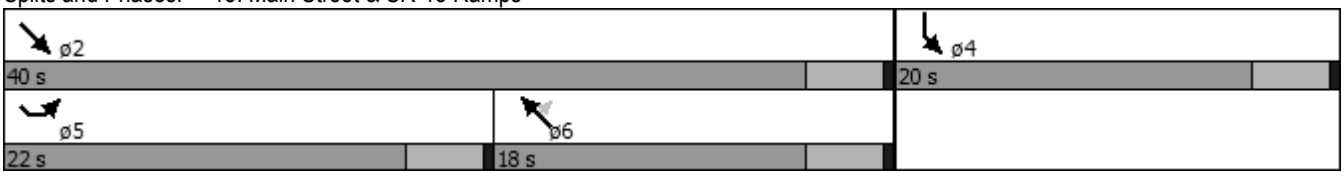
Intersection Summary

Lane Group	SBL	SBR	SEL	SET	NWT	NWR	NWR2	SWL	SWR
Lane Configurations									
Volume (vph)	120	153	303	727	361	0	154	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	130			265		0	0
Storage Lanes	1	0	1			1		0	0
Taper Length (ft)	25		60					25	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00
Frt	0.924						0.850		
Flt Protected	0.979		0.950						
Satd. Flow (prot)	1685	0	1770	3539	3539	0	1583	0	0
Flt Permitted	0.979		0.950						
Satd. Flow (perm)	1685	0	1770	3539	3539	0	1583	0	0
Right Turn on Red		Yes					Yes		
Satd. Flow (RTOR)	104						167		
Link Speed (mph)	30			30	30			30	
Link Distance (ft)	849			1195	718			618	
Travel Time (s)	19.3			27.2	16.3			14.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	130	166	329	790	392	0	167	0	0
Shared Lane Traffic (%)									
Lane Group Flow (vph)	296	0	329	790	392	0	167	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right	Right	Left	Right
Median Width(ft)	12			12	12			0	
Link Offset(ft)	0			0	0			0	
Crosswalk Width(ft)	16			16	16			16	
Two way Left Turn Lane									
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9	9	15	9
Turn Type	NA		Prot	NA	NA		Perm		
Protected Phases	4		5	2	6				
Permitted Phases							6		
Detector Phase	4		5	2	6		6		
Switch Phase									
Minimum Initial (s)	4.0		4.0	4.0	4.0		4.0		
Minimum Split (s)	20.0		8.0	20.0	20.0		20.0		
Total Split (s)	20.0		22.0	40.0	18.0		18.0		
Total Split (%)	33.3%		36.7%	66.7%	30.0%		30.0%		
Yellow Time (s)	3.5		3.5	3.5	3.5		3.5		
All-Red Time (s)	0.5		0.5	0.5	0.5		0.5		
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		0.0		
Total Lost Time (s)	4.0		4.0	4.0	4.0		4.0		
Lead/Lag			Lead		Lag		Lag		
Lead-Lag Optimize?									
Recall Mode	None		None	Max	None		None		
Act Effct Green (s)	11.4		14.5	36.2	17.6		17.6		
Actuated g/C Ratio	0.21		0.26	0.65	0.32		0.32		
v/c Ratio	0.69		0.71	0.34	0.35		0.27		
Control Delay	21.9		28.0	5.4	17.8		5.2		

Lane Group	SBL	SBR	SEL	SET	NWT	NWR	NWR2	SWL	SWR
Queue Delay	0.0		0.0	0.0	0.0		0.0		
Total Delay	21.9		28.0	5.4	17.8		5.2		
LOS	C		C	A	B		A		
Approach Delay	21.9			12.1	14.0				
Approach LOS	C			B	B				
Queue Length 50th (ft)	57		97	51	53		0		
Queue Length 95th (ft)	125		176	96	101		40		
Internal Link Dist (ft)	769			1115	638			538	
Turn Bay Length (ft)			130				265		
Base Capacity (vph)	560		575	2301	1122		615		
Starvation Cap Reductn	0		0	0	0		0		
Spillback Cap Reductn	0		0	0	0		0		
Storage Cap Reductn	0		0	0	0		0		
Reduced v/c Ratio	0.53		0.57	0.34	0.35		0.27		

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 55.6			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 14.1		Intersection LOS: B	
Intersection Capacity Utilization 52.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 15: Main Street & SR-15 Ramps



2030 Conditions
With Project

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	30	160	30	130	1040	190	140	357	140	300	735	390
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	225		0	245		185	200		195
Storage Lanes	1		1	1		0	1		2	1		0
Taper Length (ft)	25			25			145			185		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850		0.977				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	3438	1538	1719	3359	0	1719	3438	1538	1687	3374	1509
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1719	3438	1538	1719	3359	0	1719	3438	1538	1687	3374	1509
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			257		26				183			424
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		678			263			723			932	
Travel Time (s)		15.4			6.0			12.3			15.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	7%	7%	7%
Adj. Flow (vph)	33	174	33	141	1130	207	152	388	152	326	799	424
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	174	33	141	1337	0	152	388	152	326	799	424
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		20			12			30			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	pm+ov	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4	5	3	8	
Permitted Phases			2						4			8
Detector Phase	5	2	2	1	6		7	4	5	3	8	8
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0		4.0	10.0	4.0	4.0	10.0	10.0
Minimum Split (s)	9.4	21.9	21.9	8.4	21.9		9.4	22.2	9.4	8.4	22.6	22.6
Total Split (s)	9.0	26.0	26.0	20.0	37.0		15.0	19.0	9.0	25.0	29.0	29.0
Total Split (%)	10.0%	28.9%	28.9%	22.2%	41.1%		16.7%	21.1%	10.0%	27.8%	32.2%	32.2%
Yellow Time (s)	3.4	3.9	3.9	3.4	3.9		3.4	4.2	3.4	3.4	4.6	4.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	2.0	1.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.4	4.9	4.9	4.4	4.9		4.4	6.2	4.4	4.4	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None		None	Min	None	None	Min	Min
Act Effct Green (s)	4.6	23.8	23.8	12.9	32.1		10.0	13.5	24.3	19.3	22.4	22.4
Actuated g/C Ratio	0.05	0.27	0.27	0.14	0.36		0.11	0.15	0.27	0.22	0.25	0.25
v/c Ratio	0.38	0.19	0.06	0.57	1.09		0.79	0.75	0.28	0.89	0.95	0.61

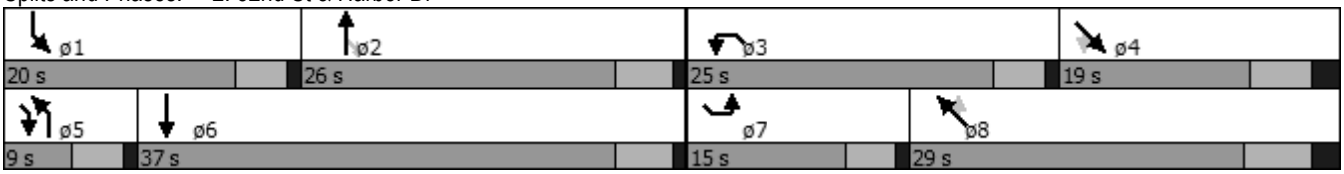
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Control Delay	54.0	27.2	0.2	44.5	84.1		67.7	47.2	3.9	61.9	54.5	7.2
Queue Delay	0.0	0.0	0.0	0.0	4.1		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.0	27.2	0.2	44.5	88.2		67.7	47.2	3.9	61.9	54.5	7.2
LOS	D	C	A	D	F		E	D	A	E	D	A
Approach Delay		27.2			84.0			42.2			43.1	
Approach LOS		C			F			D			D	
Queue Length 50th (ft)	19	40	0	75	~455		85	113	0	178	235	0
Queue Length 95th (ft)	49	70	0	132	#588		#180	#182	30	#323	#354	75
Internal Link Dist (ft)		598			183			643			852	
Turn Bay Length (ft)				225			245		185	200		195
Base Capacity (vph)	88	913	597	299	1222		203	517	551	389	845	696
Starvation Cap Reductn	0	0	0	0	365		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.19	0.06	0.47	1.56		0.75	0.75	0.28	0.84	0.95	0.61

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 89.4			
Natural Cycle: 100			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.09			
Intersection Signal Delay: 57.3		Intersection LOS: E	
Intersection Capacity Utilization 83.1%		ICU Level of Service E	
Analysis Period (min) 15			

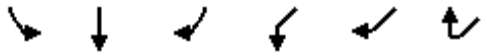
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: 32nd St & Harbor Dr



Lane Group	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Lane Configurations												
Volume (vph)	65	25	170	80	250	45	120	50	70	215	125	290
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0		0	0		0		280		0	
Storage Lanes		1		0	0		1		1		2	
Taper Length (ft)		25			25				50			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.88	1.00
Frt			0.952				0.850				0.850	
Flt Protected		0.950				0.959			0.950			
Satd. Flow (prot)	0	1760	1773	0	0	1786	1574	0	1719	1810	2707	0
Flt Permitted		0.369				0.433			0.950			
Satd. Flow (perm)	0	684	1773	0	0	807	1574	0	1719	1810	2707	0
Right Turn on Red				Yes				Yes				No
Satd. Flow (RTOR)			15				139					
Link Speed (mph)			25			25				30		
Link Distance (ft)			369			662				437		
Travel Time (s)			10.1			18.1				9.9		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	2%	4%	5%	5%	5%	5%
Adj. Flow (vph)	71	27	185	87	272	49	130	54	76	234	136	315
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	98	272	0	0	321	184	0	76	234	451	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Left	Right	Right	Left	Left	Right	Right
Median Width(ft)			12			12				12		
Link Offset(ft)			0			0				0		
Crosswalk Width(ft)			16			16				16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	15		9	15		9	9	15		9	9
Turn Type	Perm	Perm	NA		Perm	NA	Perm		Prot	NA	custom	
Protected Phases			4			4			5	2	2 3	
Permitted Phases	4	4			4		4				2	
Detector Phase	4	4	4		4	4	4		5	2	2 3	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0		10.0	10.0	10.0		4.0	10.0		
Minimum Split (s)	34.9	34.9	34.9		34.9	34.9	34.9		9.5	27.9		
Total Split (s)	55.0	55.0	55.0		55.0	55.0	55.0		15.0	36.0		
Total Split (%)	34.4%	34.4%	34.4%		34.4%	34.4%	34.4%		9.4%	22.5%		
Yellow Time (s)	3.9	3.9	3.9		3.9	3.9	3.9		3.4	3.9		
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	2.0		2.0	2.0		
Lost Time Adjust (s)		0.0	0.0			0.0	0.0		0.0	0.0		
Total Lost Time (s)		5.9	5.9			5.9	5.9		5.4	5.9		
Lead/Lag									Lead	Lag		
Lead-Lag Optimize?												
Recall Mode	None	None	None		None	None	None		None	Min		
Act Effct Green (s)		49.1	49.1			49.1	49.1		9.3	25.2	71.2	
Actuated g/C Ratio		0.32	0.32			0.32	0.32		0.06	0.16	0.46	
v/c Ratio		0.45	0.48			1.26	0.31		0.75	0.80	0.36	



Lane Group	SBL	SBT	SBR	SWL	SWR	SWR2
Lane Configurations						
Volume (vph)	179	444	63	775	65	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	280		0	0	0	
Storage Lanes	1		0	2	0	
Taper Length (ft)	70			25		
Lane Util. Factor	1.00	0.95	0.95	0.97	0.95	0.95
Frt		0.981		0.987		
Flt Protected	0.950			0.956		
Satd. Flow (prot)	1770	3385	0	3344	0	0
Flt Permitted	0.950			0.956		
Satd. Flow (perm)	1770	3385	0	3344	0	0
Right Turn on Red			No			No
Satd. Flow (RTOR)						
Link Speed (mph)		30		55		
Link Distance (ft)		1001		1502		
Travel Time (s)		22.8		18.6		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	5%	2%	4%	4%	4%
Adj. Flow (vph)	195	483	68	842	71	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	195	551	0	924	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Right
Median Width(ft)		12		30		
Link Offset(ft)		0		0		
Crosswalk Width(ft)		16		16		
Two way Left Turn Lane		Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15	9	9
Turn Type	Prot	NA		NA		
Protected Phases	1	6		3		
Permitted Phases						
Detector Phase	1	6		3		
Switch Phase						
Minimum Initial (s)	4.0	10.0		10.0		
Minimum Split (s)	9.4	26.9		16.7		
Total Split (s)	23.0	44.0		46.0		
Total Split (%)	14.4%	27.5%		28.8%		
Yellow Time (s)	3.4	3.9		4.7		
All-Red Time (s)	2.0	2.0		2.0		
Lost Time Adjust (s)	0.0	0.0		0.0		
Total Lost Time (s)	5.4	5.9		6.7		
Lead/Lag	Lead	Lag				
Lead-Lag Optimize?						
Recall Mode	None	Min		None		
Act Effct Green (s)	17.6	33.5		39.3		
Actuated g/C Ratio	0.11	0.22		0.25		
v/c Ratio	0.97	0.75		1.09		

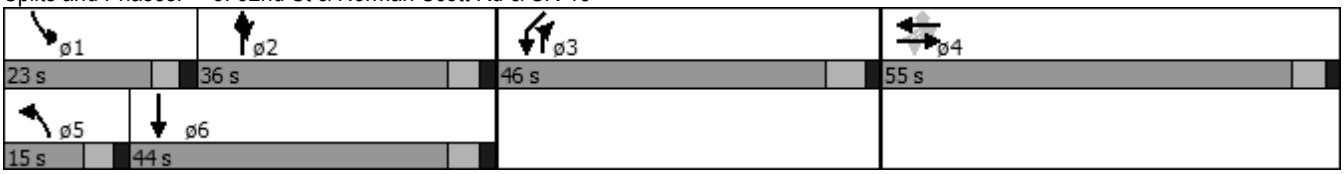
Lane Group	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Control Delay		51.8	44.3			187.2	13.0		110.2	82.5	28.1	
Queue Delay		0.0	0.0			0.0	0.0		0.0	0.3	0.0	
Total Delay		51.8	44.3			187.2	13.0		110.2	82.8	28.1	
LOS		D	D			F	B		F	F	C	
Approach Delay			46.3			123.7				53.1		
Approach LOS			D			F				D		
Queue Length 50th (ft)		81	214			~414	33		78	231	166	
Queue Length 95th (ft)		150	316			#631	100		#170	332	214	
Internal Link Dist (ft)			289			582				357		
Turn Bay Length (ft)									280			
Base Capacity (vph)		216	571			255	593		106	351	1232	
Starvation Cap Reductn		0	0			0	0		0	7	0	
Spillback Cap Reductn		0	0			0	0		0	0	0	
Storage Cap Reductn		0	0			0	0		0	0	0	
Reduced v/c Ratio		0.45	0.48			1.26	0.31		0.72	0.68	0.37	

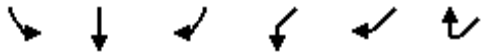
Intersection Summary			
Area Type:	Other		
Cycle Length: 160			
Actuated Cycle Length: 155.2			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.26			
Intersection Signal Delay: 85.5		Intersection LOS: F	
Intersection Capacity Utilization 100.6%		ICU Level of Service G	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: 32nd St & Norman Scott Rd & SR-15





Lane Group	SBL	SBT	SBR	SWL	SWR	SWR2
Control Delay	124.3	64.1		111.5		
Queue Delay	0.0	0.0		0.0		
Total Delay	124.3	64.1		111.5		
LOS	F	E		F		
Approach Delay		79.8		111.5		
Approach LOS		E		F		
Queue Length 50th (ft)	203	278		~553		
Queue Length 95th (ft)	#383	347		#708		
Internal Link Dist (ft)		921		1422		
Turn Bay Length (ft)	280					
Base Capacity (vph)	200	832		847		
Starvation Cap Reductn	0	0		0		
Spillback Cap Reductn	0	0		0		
Storage Cap Reductn	0	0		0		
Reduced v/c Ratio	0.97	0.66		1.09		

Intersection Summary

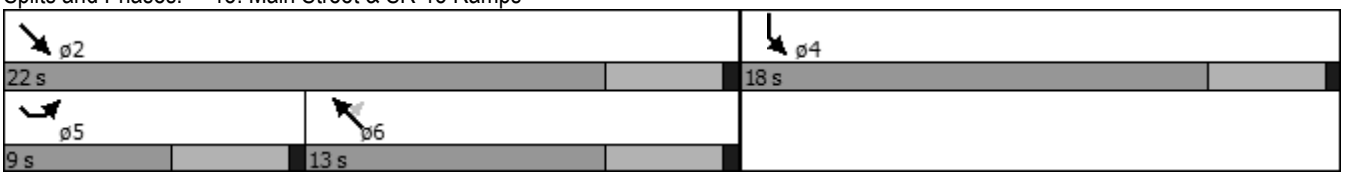
Lane Group	SBL	SBR	SEL	SET	NWT	NWR	NWR2	SWL	SWR
Lane Configurations									
Volume (vph)	108	309	47	181	497	0	107	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	130			265		0	0
Storage Lanes	1	0	1			1		0	0
Taper Length (ft)	25		60					25	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frt	0.900						0.850		
Flt Protected	0.987		0.950						
Satd. Flow (prot)	1655	0	1770	1863	3539	0	1583	0	0
Flt Permitted	0.987		0.950						
Satd. Flow (perm)	1655	0	1770	1863	3539	0	1583	0	0
Right Turn on Red		Yes					Yes		
Satd. Flow (RTOR)	336						136		
Link Speed (mph)	30			30	30			30	
Link Distance (ft)	849			1195	718			618	
Travel Time (s)	19.3			27.2	16.3			14.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	117	336	51	197	540	0	116	0	0
Shared Lane Traffic (%)									
Lane Group Flow (vph)	453	0	51	197	540	0	116	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right	Right	Left	Right
Median Width(ft)	12			12	12			0	
Link Offset(ft)	0			0	0			0	
Crosswalk Width(ft)	16			16	16			16	
Two way Left Turn Lane									
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9	9	15	9
Turn Type	NA		Prot	NA	NA		Perm		
Protected Phases	4		5	2	6				
Permitted Phases							6		
Detector Phase	4		5	2	6		6		
Switch Phase									
Minimum Initial (s)	4.0		4.0	4.0	4.0		4.0		
Minimum Split (s)	20.0		8.0	20.0	20.0		20.0		
Total Split (s)	18.0		9.0	22.0	13.0		13.0		
Total Split (%)	45.0%		22.5%	55.0%	32.5%		32.5%		
Yellow Time (s)	3.5		3.5	3.5	3.5		3.5		
All-Red Time (s)	0.5		0.5	0.5	0.5		0.5		
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		0.0		
Total Lost Time (s)	4.0		4.0	4.0	4.0		4.0		
Lead/Lag			Lead		Lag		Lag		
Lead-Lag Optimize?									
Recall Mode	None		None	Max	None		None		
Act Effct Green (s)	8.7		5.0	18.8	15.5		15.5		
Actuated g/C Ratio	0.24		0.14	0.53	0.44		0.44		
v/c Ratio	0.69		0.20	0.20	0.35		0.15		
Control Delay	9.4		16.9	6.2	10.7		3.5		

Lane Group	SBL	SBR	SEL	SET	NWT	NWR	NWR2	SWL	SWR
Queue Delay	0.0		0.0	0.0	0.0		0.0		
Total Delay	9.4		16.9	6.2	10.7		3.5		
LOS	A		B	A	B		A		
Approach Delay	9.4			8.4	9.4				
Approach LOS	A			A	A				
Queue Length 50th (ft)	18		8	16	23		0		
Queue Length 95th (ft)	67		32	52	#99		23		
Internal Link Dist (ft)	769			1115	638			538	
Turn Bay Length (ft)			130				265		
Base Capacity (vph)	858		250	983	1538		764		
Starvation Cap Reductn	0		0	0	0		0		
Spillback Cap Reductn	0		0	0	0		0		
Storage Cap Reductn	0		0	0	0		0		
Reduced v/c Ratio	0.53		0.20	0.20	0.35		0.15		

Intersection Summary			
Area Type:	Other		
Cycle Length: 40			
Actuated Cycle Length: 35.6			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 9.2		Intersection LOS: A	
Intersection Capacity Utilization 52.1%		ICU Level of Service A	
Analysis Period (min) 15			

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 15: Main Street & SR-15 Ramps

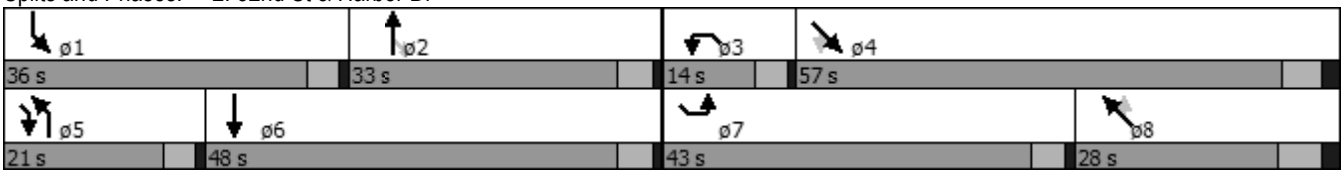


Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	70	690	140	310	280	260	340	1185	100	40	436	460
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	225		0	245		185	200		195
Storage Lanes	1		1	1		0	1		2	1		0
Taper Length (ft)	25			25			145			185		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850		0.928				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	3438	1538	1719	3191	0	1719	3438	1538	1687	3374	1509
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1719	3438	1538	1719	3191	0	1719	3438	1538	1687	3374	1509
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			165		175				83			405
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		678			263			723			932	
Travel Time (s)		15.4			6.0			12.3			15.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	7%	7%	7%
Adj. Flow (vph)	76	750	152	337	304	283	370	1288	109	43	474	500
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	750	152	337	587	0	370	1288	109	43	474	500
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		20			12			30			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	pm+ov	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4	5	3	8	
Permitted Phases			2						4			8
Detector Phase	5	2	2	1	6		7	4	5	3	8	8
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0		4.0	10.0	4.0	4.0	10.0	10.0
Minimum Split (s)	9.4	21.9	21.9	8.4	21.9		9.4	22.2	9.4	8.4	22.6	22.6
Total Split (s)	21.0	33.0	33.0	36.0	48.0		43.0	57.0	21.0	14.0	28.0	28.0
Total Split (%)	15.0%	23.6%	23.6%	25.7%	34.3%		30.7%	40.7%	15.0%	10.0%	20.0%	20.0%
Yellow Time (s)	3.4	3.9	3.9	3.4	3.9		3.4	4.2	3.4	3.4	4.6	4.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	2.0	1.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.4	4.9	4.9	4.4	4.9		4.4	6.2	4.4	4.4	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None		None	Min	None	None	Min	Min
Act Effct Green (s)	10.3	28.2	28.2	29.4	47.3		32.4	51.1	67.6	7.5	23.7	23.7
Actuated g/C Ratio	0.08	0.21	0.21	0.22	0.35		0.24	0.38	0.50	0.06	0.18	0.18
v/c Ratio	0.58	1.04	0.34	0.89	0.47		0.89	0.98	0.13	0.46	0.80	0.83

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Control Delay	77.9	95.0	7.4	77.7	25.4		73.6	63.3	6.1	78.8	64.7	24.8
Queue Delay	0.0	0.0	0.0	56.6	6.2		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	77.9	95.0	7.4	134.2	31.6		73.6	63.3	6.1	78.8	64.7	24.8
LOS	E	F	A	F	C		E	E	A	E	E	C
Approach Delay		80.0			69.0			61.9			45.7	
Approach LOS		F			E			E			D	
Queue Length 50th (ft)	67	~393	0	293	148		320	~644	12	38	218	82
Queue Length 95th (ft)	120	#532	50	#467	220		#442	#800	43	80	#330	#293
Internal Link Dist (ft)		598			183			643			852	
Turn Bay Length (ft)				225			245		185	200		195
Base Capacity (vph)	213	723	453	406	1238		496	1308	885	121	596	600
Starvation Cap Reductn	0	0	0	163	587		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.36	1.04	0.34	1.39	0.90		0.75	0.98	0.12	0.36	0.80	0.83

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 134.2			
Natural Cycle: 120			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.04			
Intersection Signal Delay: 63.6		Intersection LOS: E	
Intersection Capacity Utilization 88.9%		ICU Level of Service E	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 2: 32nd St & Harbor Dr



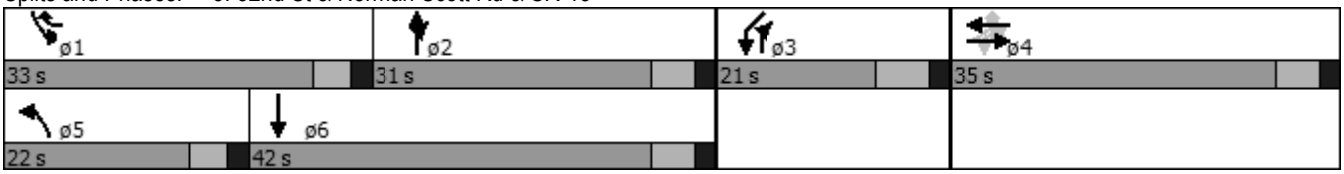
Lane Group	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Lane Configurations												
Volume (vph)	115	115	80	130	140	50	210	205	140	360	760	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0		0	0		0		280		0	
Storage Lanes		1		0	0		1		1		2	
Taper Length (ft)		25			25				50			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.88	1.00
Frt			0.907				0.850				0.850	
Flt Protected		0.950				0.964			0.950			
Satd. Flow (prot)	0	1752	1690	0	0	1796	1568	0	1719	1810	2707	0
Flt Permitted		0.502				0.483			0.950			
Satd. Flow (perm)	0	926	1690	0	0	900	1568	0	1719	1810	2707	0
Right Turn on Red				Yes				Yes				No
Satd. Flow (RTOR)			64				87					
Link Speed (mph)			25			25				30		
Link Distance (ft)			369			662				437		
Travel Time (s)			10.1			18.1				9.9		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	2%	4%	5%	5%	5%	5%
Adj. Flow (vph)	125	125	87	141	152	54	228	223	152	391	826	261
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	250	228	0	0	206	451	0	152	391	1087	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Left	Right	Right	Left	Left	Right	Right
Median Width(ft)			12			12				12		
Link Offset(ft)			0			0				0		
Crosswalk Width(ft)			16			16				16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	15		9	15		9	9	15		9	9
Turn Type	Perm	Perm	NA		Perm	NA	pm+ov		Prot	NA	custom	
Protected Phases			4			4	1		5	2	2 3	
Permitted Phases	4	4			4		4				2	
Detector Phase	4	4	4		4	4	1		5	2	2 3	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0		10.0	10.0	4.0		4.0	10.0		
Minimum Split (s)	34.9	34.9	34.9		34.9	34.9	9.4		9.5	27.9		
Total Split (s)	35.0	35.0	35.0		35.0	35.0	33.0		22.0	31.0		
Total Split (%)	29.2%	29.2%	29.2%		29.2%	29.2%	27.5%		18.3%	25.8%		
Yellow Time (s)	3.9	3.9	3.9		3.9	3.9	3.4		3.4	3.9		
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	2.0		2.0	2.0		
Lost Time Adjust (s)		0.0	0.0			0.0	0.0		0.0	0.0		
Total Lost Time (s)		5.9	5.9			5.9	5.4		5.4	5.9		
Lead/Lag							Lead		Lead	Lag		
Lead-Lag Optimize?												
Recall Mode	None	None	None		None	None	None		None	Min		
Act Effct Green (s)		29.1	29.1			29.1	62.6		14.5	25.1	46.1	
Actuated g/C Ratio		0.24	0.24			0.24	0.52		0.12	0.21	0.38	
v/c Ratio		1.12	0.50			0.94	0.53		0.73	1.03	1.05	

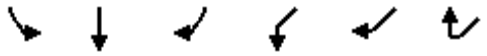
Lane Group	SBL	SBT	SBR	SWL	SWR	SWR2
Lane Configurations						
Volume (vph)	413	479	29	340	55	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	280		0	0	0	
Storage Lanes	1		0	2	0	
Taper Length (ft)	70			25		
Lane Util. Factor	1.00	0.95	0.95	0.97	0.95	0.95
Frt		0.991		0.976		
Flt Protected	0.950			0.960		
Satd. Flow (prot)	1770	3413	0	3321	0	0
Flt Permitted	0.950			0.960		
Satd. Flow (perm)	1770	3413	0	3321	0	0
Right Turn on Red			No			No
Satd. Flow (RTOR)						
Link Speed (mph)		30		55		
Link Distance (ft)		1001		1502		
Travel Time (s)		22.8		18.6		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	5%	2%	4%	4%	4%
Adj. Flow (vph)	449	521	32	370	60	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	449	553	0	441	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Right
Median Width(ft)		12		30		
Link Offset(ft)		0		0		
Crosswalk Width(ft)		16		16		
Two way Left Turn Lane		Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15	9	9
Turn Type	Prot	NA		NA		
Protected Phases	1	6		3		
Permitted Phases						
Detector Phase	1	6		3		
Switch Phase						
Minimum Initial (s)	4.0	10.0		10.0		
Minimum Split (s)	9.4	26.9		16.7		
Total Split (s)	33.0	42.0		21.0		
Total Split (%)	27.5%	35.0%		17.5%		
Yellow Time (s)	3.4	3.9		4.7		
All-Red Time (s)	2.0	2.0		2.0		
Lost Time Adjust (s)	0.0	0.0		0.0		
Total Lost Time (s)	5.4	5.9		6.7		
Lead/Lag	Lead	Lag				
Lead-Lag Optimize?						
Recall Mode	None	Min		None		
Act Effct Green (s)	27.6	38.2		14.3		
Actuated g/C Ratio	0.23	0.32		0.12		
v/c Ratio	1.10	0.51		1.12		

Lane Group	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL	NBT	NBR	NBR2
Control Delay		137.3	32.0			93.9	17.5		71.4	102.0	77.3	
Queue Delay		0.0	0.0			0.0	0.0		0.0	0.0	21.5	
Total Delay		137.3	32.0			93.9	17.5		71.4	102.0	98.8	
LOS		F	C			F	B		E	F	F	
Approach Delay			87.1			41.4				97.0		
Approach LOS			F			D				F		
Queue Length 50th (ft)		~222	109			157	178		114	~325	~519	
Queue Length 95th (ft)		#388	190			#311	272		186	#520	#664	
Internal Link Dist (ft)			289			582				357		
Turn Bay Length (ft)									280			
Base Capacity (vph)		224	458			218	859		237	378	1039	
Starvation Cap Reductn		0	0			0	0		0	0	114	
Spillback Cap Reductn		0	0			0	0		0	0	0	
Storage Cap Reductn		0	0			0	0		0	0	0	
Reduced v/c Ratio		1.12	0.50			0.94	0.53		0.64	1.03	1.18	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Natural Cycle: 120			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.12			
Intersection Signal Delay: 84.8		Intersection LOS: F	
Intersection Capacity Utilization 101.5%		ICU Level of Service G	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 3: 32nd St & Norman Scott Rd & SR-15





Lane Group	SBL	SBT	SBR	SWL	SWR	SWR2
Control Delay	118.7	35.7		128.8		
Queue Delay	0.0	0.0		0.0		
Total Delay	118.7	35.7		128.8		
LOS	F	D		F		
Approach Delay		72.9		128.8		
Approach LOS		E		F		
Queue Length 50th (ft)	~396	186		~202		
Queue Length 95th (ft)	#600	245		#306		
Internal Link Dist (ft)		921		1422		
Turn Bay Length (ft)	280					
Base Capacity (vph)	407	1086		395		
Starvation Cap Reductn	0	0		0		
Spillback Cap Reductn	0	0		0		
Storage Cap Reductn	0	0		0		
Reduced v/c Ratio	1.10	0.51		1.12		

Intersection Summary

Lane Group	SBL	SBR	SEL	SET	NWT	NWR	NWR2	SWL	SWR
Lane Configurations									
Volume (vph)	120	153	303	727	361	0	154	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	130			265		0	0
Storage Lanes	1	0	1			1		0	0
Taper Length (ft)	25		60					25	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frt	0.924						0.850		
Flt Protected	0.979		0.950						
Satd. Flow (prot)	1685	0	1770	1863	3539	0	1583	0	0
Flt Permitted	0.979		0.950						
Satd. Flow (perm)	1685	0	1770	1863	3539	0	1583	0	0
Right Turn on Red		Yes					Yes		
Satd. Flow (RTOR)	104						167		
Link Speed (mph)	30			30	30			30	
Link Distance (ft)	849			1195	718			618	
Travel Time (s)	19.3			27.2	16.3			14.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	130	166	329	790	392	0	167	0	0
Shared Lane Traffic (%)									
Lane Group Flow (vph)	296	0	329	790	392	0	167	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right	Right	Left	Right
Median Width(ft)	12			12	12			0	
Link Offset(ft)	0			0	0			0	
Crosswalk Width(ft)	16			16	16			16	
Two way Left Turn Lane									
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9	9	15	9
Turn Type	NA		Prot	NA	NA		Perm		
Protected Phases	4		5	2	6				
Permitted Phases							6		
Detector Phase	4		5	2	6		6		
Switch Phase									
Minimum Initial (s)	4.0		4.0	4.0	4.0		4.0		
Minimum Split (s)	20.0		8.0	20.0	20.0		20.0		
Total Split (s)	20.0		22.0	40.0	18.0		18.0		
Total Split (%)	33.3%		36.7%	66.7%	30.0%		30.0%		
Yellow Time (s)	3.5		3.5	3.5	3.5		3.5		
All-Red Time (s)	0.5		0.5	0.5	0.5		0.5		
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		0.0		
Total Lost Time (s)	4.0		4.0	4.0	4.0		4.0		
Lead/Lag			Lead		Lag		Lag		
Lead-Lag Optimize?									
Recall Mode	None		None	Max	None		None		
Act Effct Green (s)	11.4		14.5	36.2	17.6		17.6		
Actuated g/C Ratio	0.21		0.26	0.65	0.32		0.32		
v/c Ratio	0.69		0.71	0.65	0.35		0.27		
Control Delay	21.9		28.0	10.1	17.8		5.2		

Lane Group	SBL	SBR	SEL	SET	NWT	NWR	NWR2	SWL	SWR
Queue Delay	0.0		0.0	0.0	0.0		0.0		
Total Delay	21.9		28.0	10.1	17.8		5.2		
LOS	C		C	B	B		A		
Approach Delay	21.9			15.4	14.0				
Approach LOS	C			B	B				
Queue Length 50th (ft)	57		97	133	53		0		
Queue Length 95th (ft)	125		176	291	101		40		
Internal Link Dist (ft)	769			1115	638			538	
Turn Bay Length (ft)			130				265		
Base Capacity (vph)	560		575	1211	1122		615		
Starvation Cap Reductn	0		0	0	0		0		
Spillback Cap Reductn	0		0	0	0		0		
Storage Cap Reductn	0		0	0	0		0		
Reduced v/c Ratio	0.53		0.57	0.65	0.35		0.27		

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 55.6			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 16.0		Intersection LOS: B	
Intersection Capacity Utilization 61.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 15: Main Street & SR-15 Ramps