Whipple Consulting Engineers, Inc.

Revised
July 1, 2014

W.O. No. 2014-1231

City of Spokane
Department of Engineering Services
801 W. Spokane Falls Boulevard
Spokane, WA 99201

Attn: **Igna Note, P.E.**
Re: **Proposed Sportsman's Warehouse**
6720 N Division Street
Expanded Traffic (Trip) Distribution Letter and COS Analysis

Dear Inga,

The store area has been revised to match the COS application, all trip generation, and LOS analysis has been revised accordingly

PURPOSE

The purpose of this document is to provide an updated Trip Generation and Distribution letter (TGDL) for a portion of the original Diamond Shopping Center. The project is a sportsman's warehouse retail store to be located in the existing 45,436 sf building on the southwest corner of Colton Street and Wedgewood Avenue, as shown on Figure 2 Preliminary Site Plan. This letter will follow the standards for doing Trip Distribution Letters as required by the City of Spokane and the Institute of Transportation Engineers (ITE).

PROJECT DESCRIPTION

The project is proposed to develop approximately 3.1 acres of an 8.51 acre parcel of land. The parcel currently has an existing building that is currently not used, as well as an unpaved parking lot covered by gravel and weeds. The existing building will be remodeled into a Sportsman's Warehouse Retail Store with a total area of 45,436 sf. The parking lot and site will be completed with the project. The property is proposed to be accessed by three roads; Division Street, Wedgewood Avenue, and Lyons Avenue. Lyons Avenue and Wedgewood Avenue are proposed to have three accesses and Division Street is proposed to have one access.

VICINITY / SITE PLAN86

The site is currently listed on the Comprehensive Plan and Zoning Map as General Commercial Zone (GC). The site lies on the W ½ of Section 29, T. 26 N., R. 43 E., W.M. within the City of Spokane, Washington. The parcel number for the site is 36293.0068. A vicinity map is included as Figure 1, along with a preliminary site plan as Figure 2.

TRIP GENERATION AND DISTRIBUTION

Trip Types

The proposed land use is a Shopping Center; ITE has developed data regarding various trip types that all developments experience. These are found in several places, however, for this analysis the *Trip Generation Manual 9th Edition* as well as the Institute of Transportation Engineers (ITE) *Trip Generation Handbook* were used to develop the criteria for this analysis. Generally, all existing and proposed developments will be made up of one or more of the following four trip types: new (destination) trips, pass-by trips, diverted trips, and shared (internal trips). In order to better understand the trip types available for land access a description of each specific trip type follows.

New (Destination) Trips - These types of trips occur only to access a specific land use such as a new retail development or a new residential subdivision. These types of trips will travel to and from the new site and a single other destination such as home or work. This is the only trip type that will result in a net increase in the total amount of traffic within the study area. The reason primarily is that these trips represent planned trips to a specific destination that never took trips to that part of the City prior to the development being constructed and occupied. This project will develop new trips.

Pass-by Trips - These trips represent vehicles which currently use adjacent roadways providing primary access to new land uses or projects and are trips of convenience. These trips, however, have an ultimate destination other than the project in question. They should be viewed as customers who stop in on their way home from work. An example would be on payday, where an individual generally drives by their bank every day without stopping, except on payday. On that day, this driver would drive into the bank, perform the prerequisite banking and then continue on home. In this example, the trip started from work with a destination of home, however on the way, the driver stopped at the grocery store/latte stand and/or bank directly adjacent to their path. Pass-by trips are most always associated with commercial/retail types of development along major roadways. Therefore, for this project pass-by trips will be considered.

Diverted (Linked) Trips - These trips occur when a vehicle takes a different route than normal to access a specific facility. Diverted trips are similar to pass-by trips, but diverted trips occur from roadways, which do not provide direct access to the site. Instead, one or more streets must be utilized to get to and from the site. For this project, no diverted trips are anticipated.

Shared / Internal / Trips - These are trips which occur on the site where a vehicle/ consumer/ tenant will stop at more than one place on the site. For example, someone destined for a certain shop at a commercial site may stop at a bank just before or after they visit the shop that they went to the site to visit. This trip type reduces the number of new trips generated on the public road system and is most commonly used for commercial developments. These trips are considered within the shopping center land use and will not be broken out separately.

Trip Generation Characteristics for the Existing and Proposed land uses

As noted earlier, trip generation rates for the AM and PM peak hours are determined by the use of the *Trip Generation Manual, 9th Edition* published by the Institute of Transportation Engineers (ITE). The purpose of the *Trip Generation Manual* is to compile and quantify empirical data into trip generation rates for specific land uses within the US, UK and Canada.

The proposed development includes a 45,436 sf (45.4 ksf) Sportsman's Warehouse retail Building. The ITE Trip Generation rates for a Shopping Center Land Use Code #820 shown in Table 1, shows the number of new and pass-by trips generated by the Sportsman's Warehouse.

Table 1 - Trip Generation Rates for Shopping Center #820

Thousand Square Feet (KSF)	AM Peak Hour Trips			PM Peak Hour Trips		
	Vol. @ 0.96 trips/ KSF	Directional Distribution		Vol. @ 3.71 trips/ KSF	Directional Distribution	
		61% In	39% Out		49% In	51% Out
45.4	44	27	17	169	83	86
Pass-by	15	9	6	57	28	29
New	29	18	11	112	55	57
Average Daily Trip Ends (ADT)				Pass-by 34% per ITE Trip Generation Handbook Table 5.4		
KSF	Rate	ADT				
45.4	42.7	1,941				

New Trips – as shown in Table 1, in the AM peak hour the project is anticipated to generate 29 new trips, with 18 new trips entering the site, and 11 new trips exiting the site. In the PM peak hour the project is expected to generate 112 new trips; with 55 new trips entering the site, and 57 new trips exiting the site.

Pass By Trips – as shown in Table 1, in the AM peak hour the project is anticipated to generate 15 pass-by trips, with 9 pass-by trips entering the site and 6 pass-by trips exiting the site. In the PM peak hour pass-by trips are expected to be 57 total pass-by trips, with 28 pass-by trips entering the site and 29 pass-by trips exiting the site.

TRIP DISTRIBUTION

As previously discussed and as shown on the site plan (Figure 2), the site will be accessed from Division Street, Wedgewood Avenue, and Lyons Avenue by several driveways.

Division Street within the study area is a North-South, two-way, seven-lane, state route/urban principal arterial in the City of Spokane. Division Street connects I-90 to Newport Hwy and U.S Hwy 395. Division Street serves primarily commercial land uses. The posted speed limit within the study area is 30 MPH.

Wedgewood Avenue is an East-West two-way two lane local access road. Wedgewood Avenue extends east from Division Street through Standard Street to Dakota Street, and west from

Division Street to Wall Street. Wedgewood Avenue serves commercial and single-family residential uses. The posted speed limit on Wedgewood Avenue is 25 MPH.

Lyons Avenue is an East-West two-way two lane local access road. Lyons Avenue extends east from Wall Street through Division Street to Standard Street. Lyons Avenue serves commercial and single family residential uses. The posted speed limit on Lyons Avenue is 25 MPH.

Based upon the existing transportation facilities as well as the Average Daily Traffic counts, it is anticipated that trip to/from the site will distribute as follows: 44% of the trips generated will go to/from the north via Division Street, 45% of the trips generated will go to/from the south via Division Street. Also, 5% of the trips generated will go east on Lyons Avenue, and 5% will go west on Lyons Avenue. Additionally 1% of trips will go east on Wedgewood Avenue. Please see Figure 3 and 4 for a graphical representation of AM-PM Pass-By Trip Distribution, and Figure 4 and 6 for a graphical representation of AM-PM New Trip Distribution.

Additionally, based upon field investigations, there does not appear to be any sight distance conflicts for this proposed use at the driveways.

The above-mentioned traffic distribution percentages are based on engineering judgment and actual traffic observations.

TRAFFIC ANALYSIS

The limited traffic analysis of intersections within the study area includes the following intersections during the PM peak hour:

- Division Street and East Wedgewood Avenue

The background growth rate for the intersection is 1% per year.

LEVEL OF SERVICE

Level of Service (LOS) is an empirical premise developed by the transportation profession to quantify driver perception for such elements as travel time, number of stops, total amount of stopped delay, and impediments caused by other vehicles afforded to drivers who utilize the transportation network. It has been defined by the Transportation Research Board in the *2010 Highway Capacity Manual.* This document has quantified level of service into a range from "A" which indicates little, if any, vehicle delay, to "F" which indicates significant vehicle delay and traffic congestion that may lead to system breakdown due to volumes that may exceed capacity.

Signalized Intersections
For signalized intersections, recent research has determined that average stopped delay per vehicle is the best available measure of level of service. The technical appendix of this report includes a section on the level of service, Methods and Criteria. The tables in the technical appendix identify the relationships between level of service and average stopped delay per vehicle. Spokane County and WSDOT have adopted level of service D as the minimum acceptable level for all signalized intersections.

Unsignalized Intersections
The calculation of Level of Service (LOS) at an unsignalized one/two-way stop-controlled intersection is examined in the Transportation Research Board's *2000 Highway Capacity Manual.* For unsignalized intersections, level of service is based on the delay experienced by each movement and approach within the intersection.

The concept of delay as presented for unsignalized intersections in the Highway Capacity Manual is based on the amount of time a vehicle must spend at the intersection. Vehicles passing straight through the intersection on the major (uncontrolled) street experience no delay at the intersection. On the other hand, vehicles which are turning left from the minor street, because they must yield the right of way to all right turning vehicles, all left turning vehicles from the major street and all through vehicles on both the minor and major streets, must spend more time at the intersection. Levels of service are assigned to individual movements and approaches within the intersection, and are based upon the delay experienced by each movement or approach.

The Transportation Research Board has determined what levels of service for unsignalized intersections should be by designating level of service A through F, where level of service A represents a facility where no vehicle in any movement is delayed very long and level of service F which represents a facility where there is excessive delay for the average vehicle in at least one movement in the intersection. Spokane County and WSDOT have adopted level of service E for all unsignalized intersections within the study area.

All level of service analyses described in this report were performed in accordance with the procedures described above. As a final note, the Highway Capacity Manual (HCM) analysis and procedures are based upon worst case conditions. Therefore, most of each weekday and the weekends will experience traffic conditions better than those described within this document, which are only for the peak hours of operation.

Francis Avenue Construction Dilemma

WCE counted the intersection of Division Street & Wedgewood Avenue on June 17th 2014 during the Francis Avenue Reconstruction Project. With the reconstruction of Francis Avenue, we have noticed a sizeable shift in traffic volumes within the new traffic counts, as well as public information reports (radio) of traffic congestion in the area. Please note WCE counted the area in 2007 in conjunction with the Wedgewood Street Vacation evaluation, when the Lowes retail store was looking to expand its original location on the northeast corner of Division & Wedgewood. With the Lowes relocation last year we anticipated a greater reduction in traffic volumes at the intersection. Therefore we explored deeper into the traffic volumes by requesting counts from the City of Spokane and comparing all of the counts available.

With these counts we compared the main peak hour flows of Division Street, over the years 2007(northbound 1,826 vehicles/southbound 1,559 vehicles) and concluded the following: In 2007 volumes were at their highest level before the economy dropped and traffic volumes decreased by about 20% over the entire transportation system. Since 2009 volumes have been increasing steadily per the city of Spokane's 2012 count (northbound 1,557 vehicles/southbound 1,277 vehicles).

So when WCE completed this current count and had (northbound 2,093 vehicles/ southbound 1,562 vehicles) such an increase in volume beyond the 2007 counts we needed to understand the reason for this increase. Given the temporary volume of cars on Division Street it should be understood that a level of service analysis, using the current 2014 counts would be highly conservative when compared to normal weekday operations without the Francis Avenue construction, and misconstrue traffic conditions without the construction.

Therefore, for a more representative analysis, we have taken the City of Spokane 2012 north/southbound volumes and have grown them to the 2014 volumes with a 1% background growth rate, northbound 1,588 vehicles/southbound 1,303 vehicles. And have used these volumes to evaluate Level of Service at Wedgewood, hence the "Adjusted Volumes" note.

Existing Level of Service (Adjusted for Francis Avenue Construction)

The existing levels of service at the subject intersections were calculated using the methods from the *2010 Highway Capacity Manual* as implemented in HCS 2010 Version 5.6. The existing level of service for the intersection within the study area is shown on Table 2 the traffic volumes used for this report are shown on Figure 7, please see the appendix.

Table 2 – Year 2014 PM Peak Hour Level of Service

INTERSECTION	(S)ignalized (U)nsignalized	PM Peak Hour	
		Delay (sec)	LOS
Division Street and East Wedgewood Avenue	U	22.0	C

The City of Spokane and WSDOT have established level of service D as the minimum acceptable level for signalized intersections and level of service E for unsignalized intersections.

As shown on Table 2 the intersection is currently operating at an acceptable level of service.

Future Year Traffic Impact Analysis

Level of service calculations for the Year 2015 conditions assume that the existing traffic volumes as shown on Figure 7 experience an increase above the 2014 volumes at the established background rates. Two scenarios were examined for the year 2015 analysis. The first scenario assumes that the development has not moved forward and analyses the scoped intersections with the background growth rate. The second scenario assumes that the development has moved forward and analyzes the scoped intersections with the background growth rate, and the proposed project trips. These scenarios will allow a determination to be made of what the future conditions may be with and without the project.

Year 2015 Level of Service Without Project (Adjusted for Francis Avenue Construction)

This scenario assumes that the development has not moved forward. The traffic volumes for this condition include the existing traffic volumes, as shown on Figure 7 multiplied by the background growth rate. Please see Figure 8 for the traffic volumes used for this scenario. A summary of the level of service results are shown in the following table.

Table 3 – Year 2015 PM Peak Hour Level of Service Without Project

INTERSECTION	(S)ignalized (U)nsignalized	PM Peak Hour Delay (sec)	PM Peak Hour LOS
Division Street and Wedgewood Avenue	U	22.4	C

As shown in Table 3 for the year 2015 without the project but with the background growth the intersection is anticipated to operate at an acceptable level of service.

Year 2015 Level of Service With Project (Adjusted for Francis Avenue Construction)

This scenario assumes that the development has moved forward and that future improvements have been completed. The traffic volumes for this condition include the existing traffic volumes, as shown on Figure 7 multiplied by the background growth rate, plus the project trips as shown on Figures 4 and 6. Please see Figure 9 for the traffic volumes used for this scenario. A summary of the level of service results are shown in the following table.

Table 4– Year 2015 PM Peak Hour Level of Service With Project

INTERSECTION	(S)ignalized (U)nsignalized	PM Peak Hour Delay (sec)	PM Peak Hour LOS
Division Street and Wedgewood Avenue	U	23.8	C

As shown on Table 4 the intersection with the project is anticipated to function at an acceptable level of service in the year 2015.

LOS Conclusion

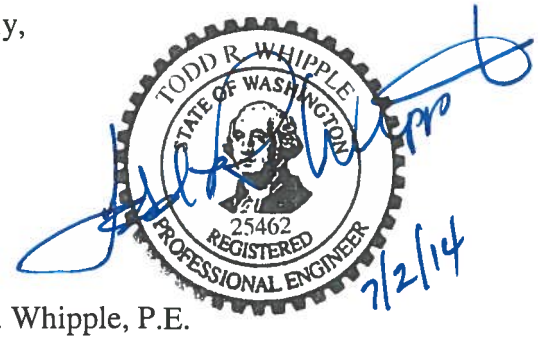
Based upon this level of service analysis it is concluded that with the project trips on the transportation system will have no Impact on the transportation system. Therefore we recommend that the project be allowed to move forward with the inclusion of the offsite installation of a porkchop island at the intersection.

CONCLUSIONS AND RECOMMENDATIONS

It is anticipated that this project will generate 29 new AM peak hour trips and 112 new PM peak hour trips. Based upon the number of anticipated trips, distribution of those trips on Division Street and the connectivity into the neighborhood to the east, we believe that the proposed project will not have an impact on the transportation system. Furthermore with the LOS analysis we do not believe that any mitigation of the intersection is necessary with the development of this project.

Should you have any questions related to this document please do not hesitate to call at 893-2617.

Sincerely,



Todd R. Whipple, P.E.

TRW/AMN

encl. Appendix (Vicinity Map, Site Plan, Trip Dist %, Photos)

cc:
Sponsor
File

APPENDIX

1. Vicinity Map

2. Site Plan

3. AM Pass-by Trips

4. PM Pass-by Trips

5. AM New Trips

6. PM New Trips

7. PM Existing LOS

8. PM 2015 W/O Project LOS

9. PM 2015 W/ Project LOS

10. Raw Counts

11. LOS Calculations

PROJ #: 14-1231 DATE: 6/3/14 DRAWN: AMN APPROVED: TRW	**SPORTSMANS WAREHOUSE** **DIVISION ST & WEDGEWOOD AVE** **SPOKANE, WASHINGTON**	WCE WHIPPLE CONSULTING ENGINEERS CIVIL AND TRANSPORTATION ENGINEERING 2528 NORTH SULLIVAN ROAD SPOKANE VALLEY, WASHINGTON 99216 PH: 509-893-2617 FAX: 509-926-0227
FIGURE 1	**VICINITY MAP**	

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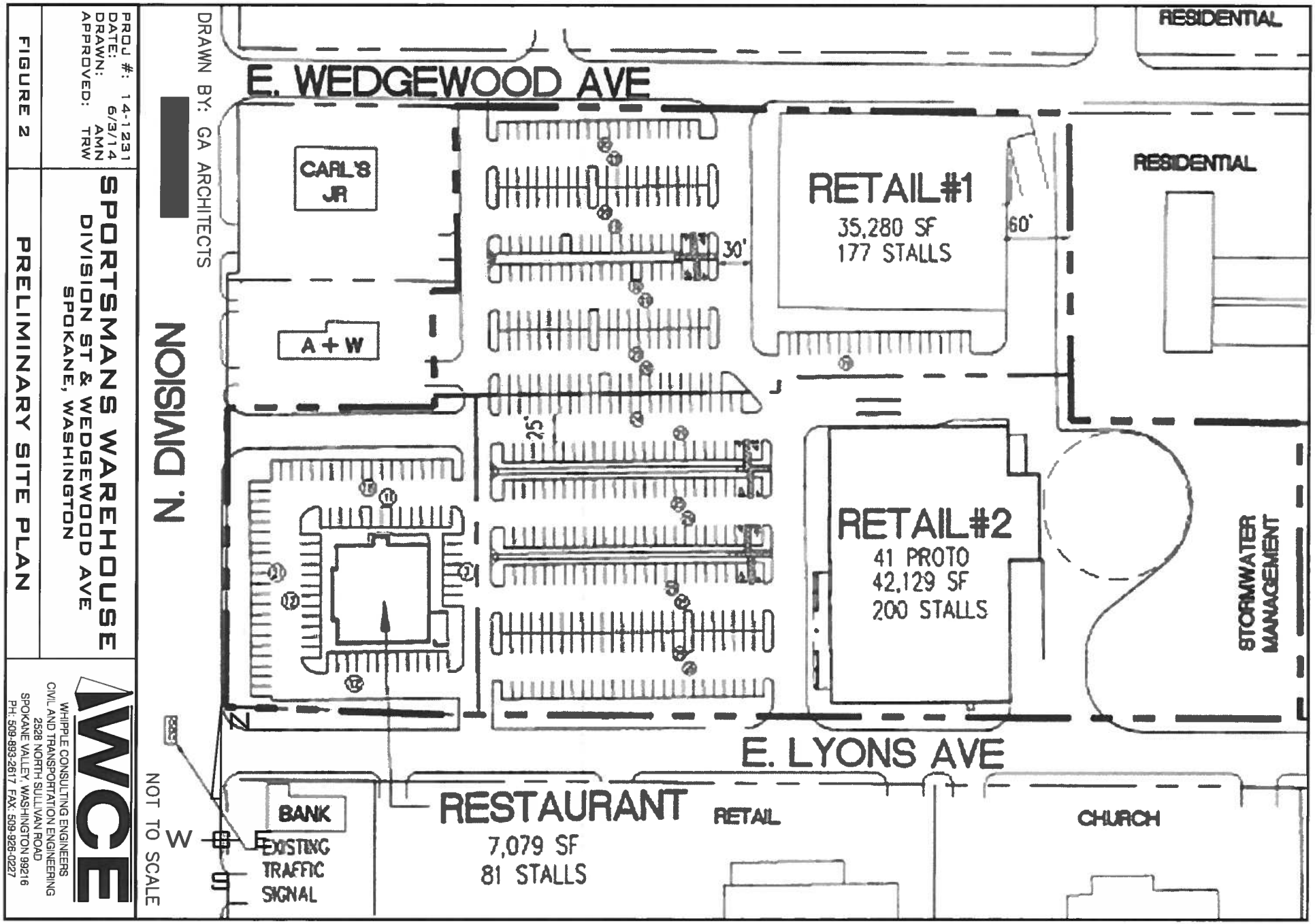
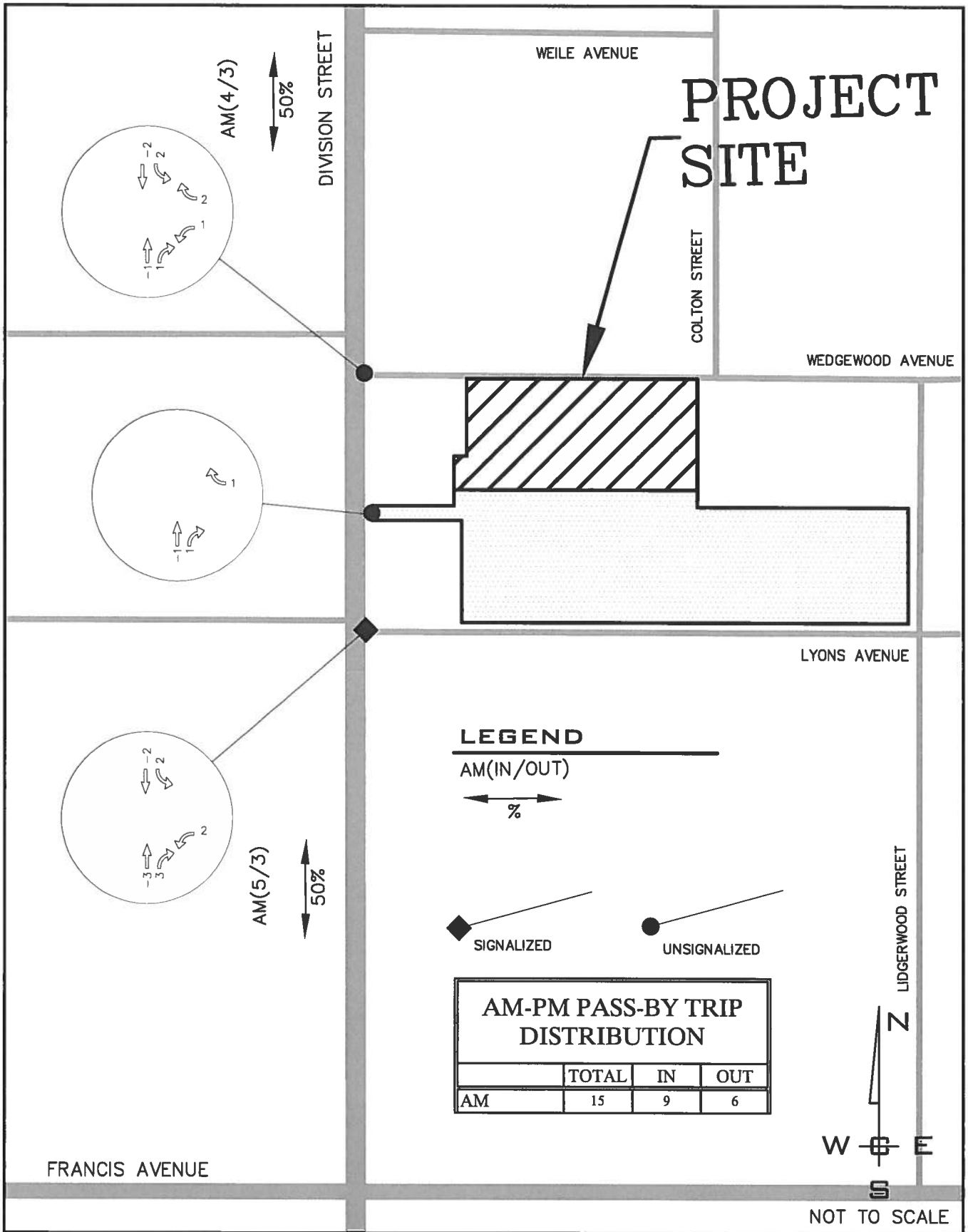




AM-PM PASS-BY TRIP DISTRIBUTION			
	TOTAL	IN	OUT
AM	15	9	6

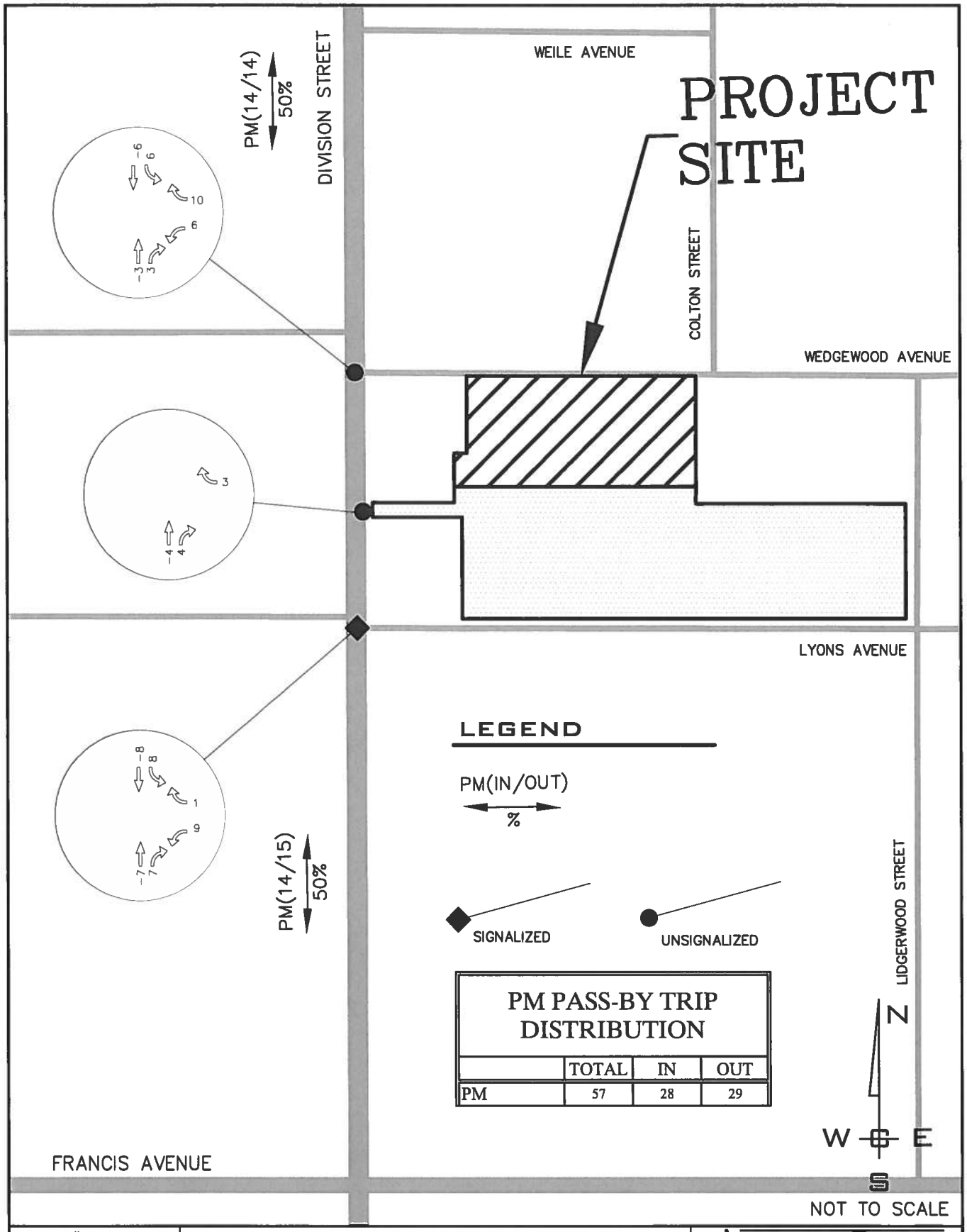
PROJ #: 14-1231
DATE: 6/3/14
DRAWN: AMN
APPROVED: TRW

SPORTSMANS WAREHOUSE
DIVISION ST & WEDGEWOOD AVE
SPOKANE, WASHINGTON

FIGURE 3

AM PASS-BY TRIP DISTRIBUTION

WCE
WHIPPLE CONSULTING ENGINEERS
CIVIL AND TRANSPORTATION ENGINEERING
2528 NORTH SULLIVAN ROAD
SPOKANE VALLEY, WASHINGTON 99216
PH: 509-893-2617 FAX: 509-926-0227



PM PASS-BY TRIP DISTRIBUTION			
	TOTAL	IN	OUT
PM	57	28	29

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FIGURE 4	**PM PASS-BY TRIP DISTRIBUTION**	

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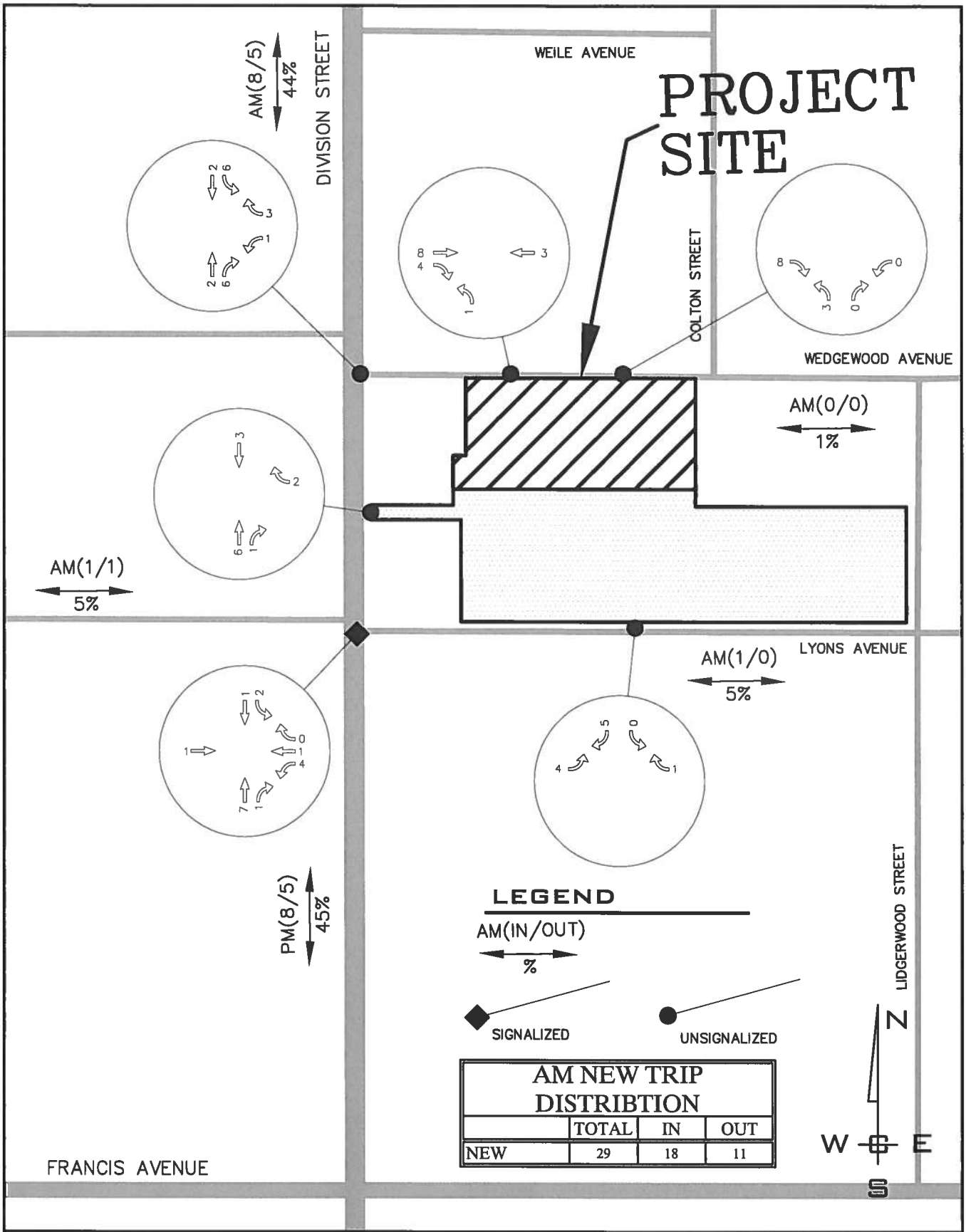


AM NEW TRIP DISTRIBTION			
	TOTAL	IN	OUT
NEW	29	18	11

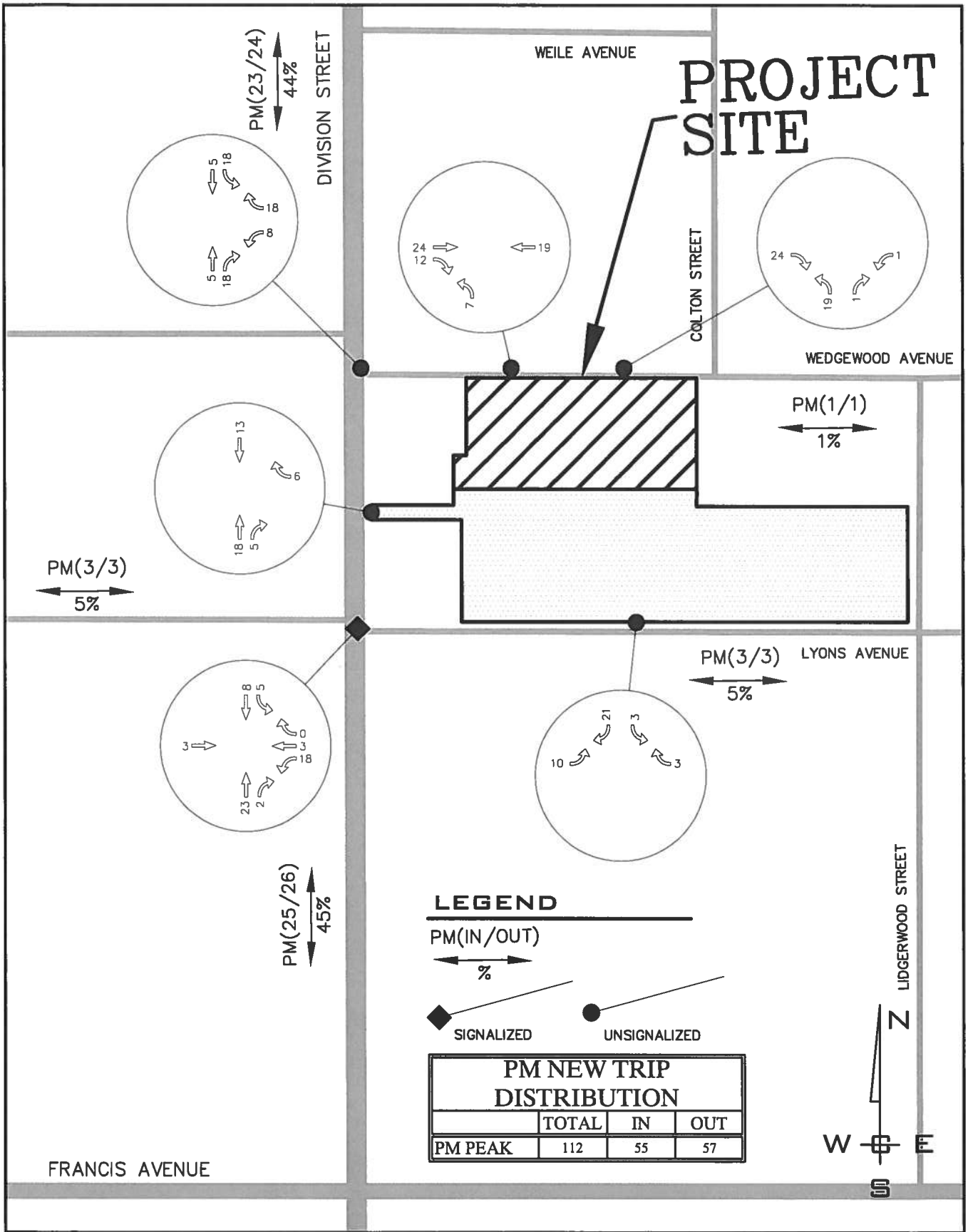
PROJ #: 14-1231
DATE: 6/3/14
DRAWN: AMN
APPROVED: TRW

SPORTSMANS WAREHOUSE
DIVISION ST & WEDGEWOOD AVE
SPOKANE, WASHINGTON

FIGURE 5

AM NEW TRIP DISTRIBUTION

WCE
WHIPPLE CONSULTING ENGINEERS
CIVIL AND TRANSPORTATION ENGINEERING
2528 NORTH SULLIVAN ROAD
SPOKANE VALLEY, WASHINGTON 99216
PH: 509-893-2617 FAX: 509-926-0227



PM NEW TRIP DISTRIBUTION			
	TOTAL	IN	OUT
PM PEAK	112	55	57

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FIGURE 6	**PM NEW TRIP DISTRIBUTION**	

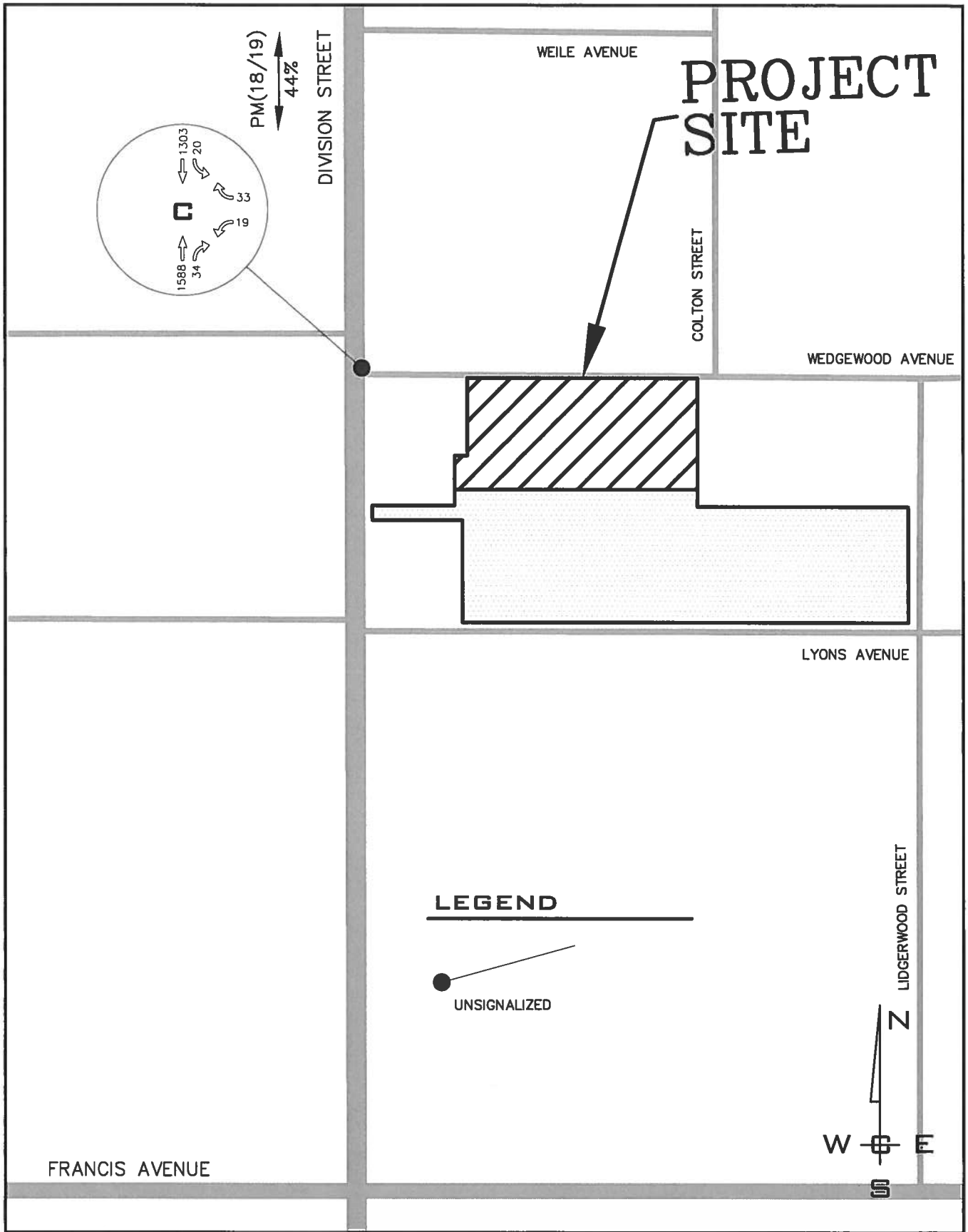

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FIGURE 7	**CURRENT PM LEVEL OF SERVICE**	

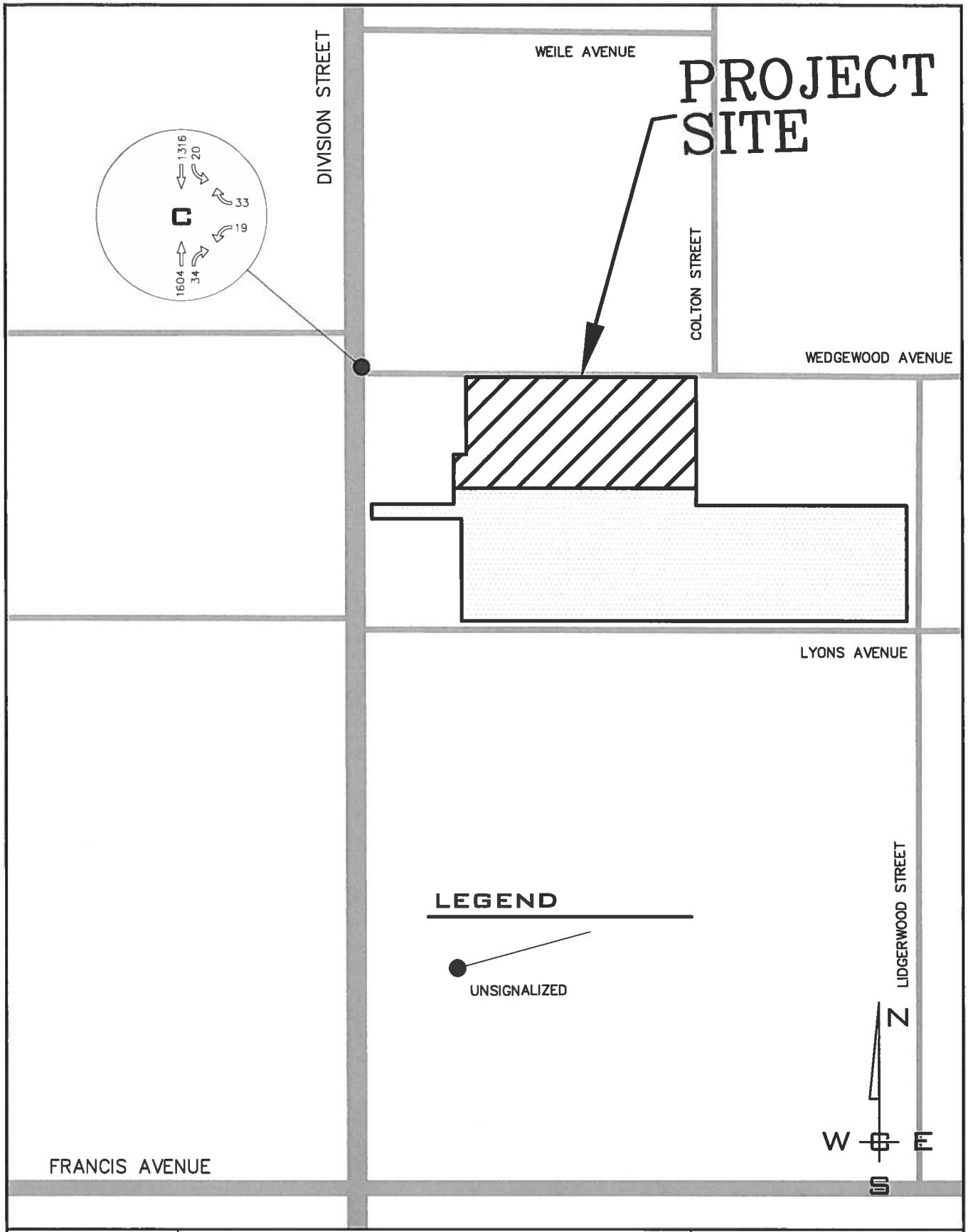

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FIGURE 8	**LOS WITH BACKGROUND WITHOUT PROJECT**	

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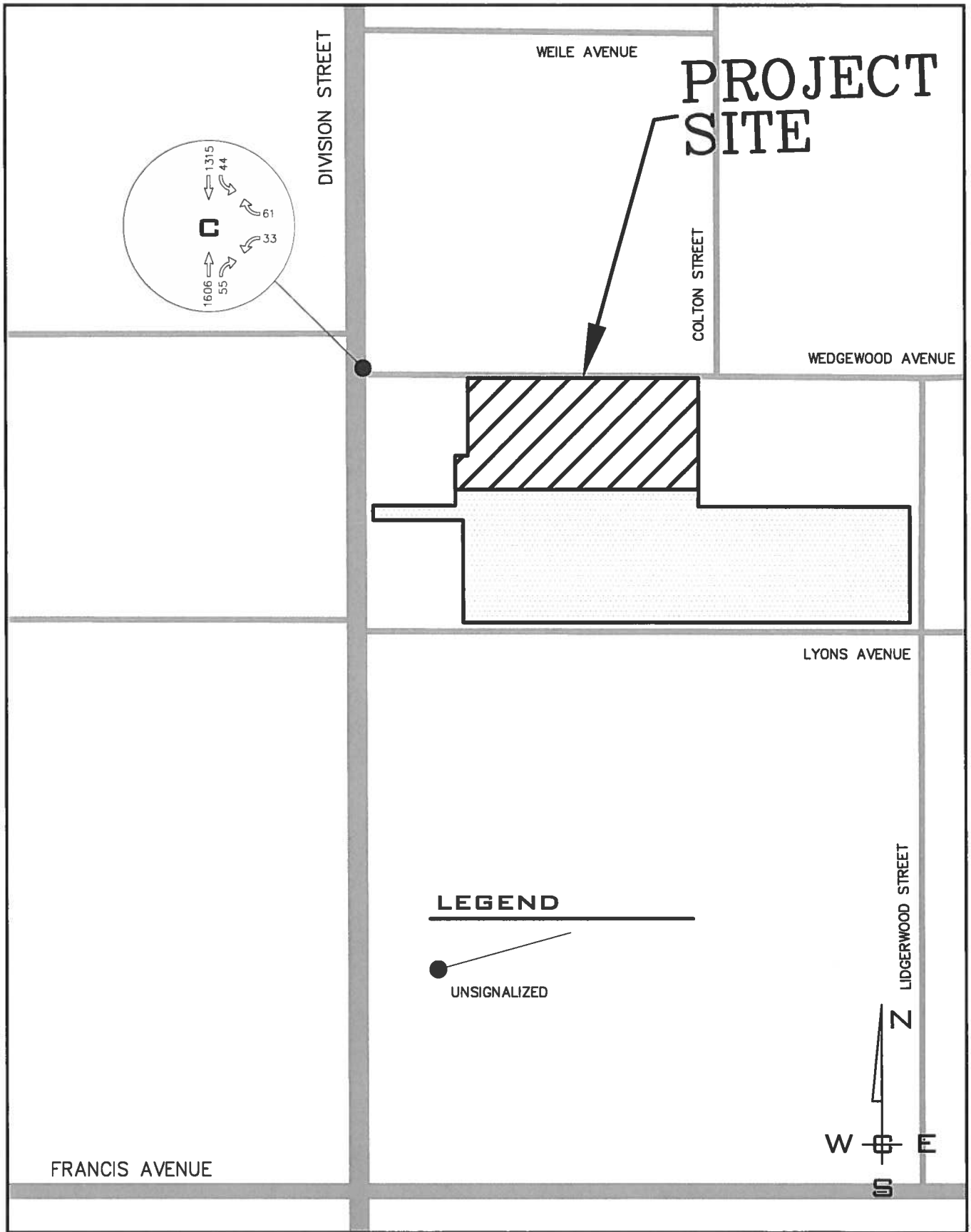

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FIGURE 9	**LOS WITH BACKGROUND WITH PROJECT**	

PROJECT: Sportsmans Warehouse
JOB NO. 14-1231
INTERSECTION: E Wedgwood Avenue & Division Street

Whipple Consulting Engineers, Inc
TRAFFIC COUNT REDUCTION WORKSHEET

DATE OF COUNT: 6/17/2014

Counter	Analyst	PM PEAK HOURS																							
BNG/AMN	AMN	15 Minute Period Beginning @																							
APPROACH	MOVEMENT	3:30 PM		3:45 PM		4:00 PM		4:15 PM		4:30 PM		4:45 PM		5:00 PM		5:15 PM		5:30 PM		5:45 PM		6:00 PM		6:15 PM	
		pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk
Eastbound	Left																								
	Through																								
	Right																								
	App. Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pct Trucks																								
Westbound	Left	4		5		6		6		3		4		6		1		5		8					
	Through																								
	Right	8		10		8		9		11		5		2		5		3		4					
	App. Total	12	0	15	0	14	0	15	0	14	0	9	0	8	0	6	0	8	0	12	0	0	0	0	0
	Pct Trucks		0		0		0		0		0		0		0		0		0		0				
Northbound	Left																								
	Through	353	3	465	3	459	3	505	3	536	3	578	6	439	1	426	2	576	6	421	2				
	Right	8		8		9	0	10		10		5		6		6		7		6					
	App. Total	361	3	473	3	468	3	515	3	546	3	583	6	445	1	432	2	583	6	427	2	0	0	0	0
	Pct Trucks		0.008		0.006		0.006		0.006		0.005		0.01		0.002		0.005		0.01		0.005				
Southbound	Left	5		5		5		5		6		4		2		1		3		4					
	Through	319	10	379	16	340	7	374	8	412	7	405	9	267	6	326	6	358	5	347	7				
	Right																								
	App. Total	324	10	384	16	345	7	379	8	418	7	409	9	269	6	327	6	361	5	351	7	0	0	0	0
	Pct Trucks		0.03		0.04		0.02		0.021		0.016		0.022		0.022		0.018		0.014		0.02				
Total Intersection Volume		697	13	872	19	827	10	909	11	978	10	1001	15	722	7	765	8	952	11	790	9	0	0	0	0
Intersection Pct Trucks		1.8%		2.1%		1.2%		1.2%		1.0%		1.5%		1.0%		1.0%		1.1%		1.1%					

Intersection Total		Pct
One Hour Volumes		Trucks
3:30 PM	3358	1.6%
3:45 PM	3636	1.4%
4:00 PM	3761	1.2%
4:15 PM	3653	1.2%
4:30 PM	3506	1.1%
4:45 PM	3481	1.2%

Intersection Total		Pct
	One Hour Volumes	Trucks
5:00 PM	3264	1.1%
5:15 PM	2535	1.1%
5:30 PM	1762	1.1%

Notes:

PROJECT: Sportsmans Warehouse
JOB NO. 14-1231
INTERSECTION: E Wedgwood Avenue & Division Street

Data Transfer
Intersection No. 1

DATE OF COUNT: 6/17/2014
Counter Analyst
BNG/AMN AMN

Whipple Consulting Engineers, Inc
PM PEAK HOUR BREAKDOWN

APPROACH	MOVEMENT	4:00 PM		4:15 PM		4:30 PM		4:45 PM				Pct
		pass	trk	pass	trk	pass	trk	pass	trk	TOTAL	P.H.F.	Trucks
Eastbound	Left									0		
	Through									0		
	Right									0		
	App. Total	0	0	0	0	0	0	0	0	0		
	Pct Trucks											
Westbound	Left	6		6		3		4		19	0.79	0%
	Through									0		
	Right	8		9		11		5		33	0.75	0%
	App. Total	14	0	15	0	14	0	9	0	52	0.87	
	Pct Trucks		0		0		0		0			
Northbound	Left									0		
	Through	459	3	505	3	536	3	578	6	2093	0.90	1%
	Right	9	0	10		10		5		34	0.85	0%
	App. Total	468	3	515	3	546	3	583	6	2127	0.90	
	Pct Trucks		0.006369		0.005792		0.005464		0.010187			
Southbound	Left	5		5		6		4		20	0.83	0%
	Through	340	7	374	8	412	7	405	9	1562	0.93	2%
	Right									0		
	App. Total	345	7	379	8	418	7	409	9	1582	0.93	
	Pct Trucks		0.019886		0.020672		0.016471		0.021531			
Total Intersection Volume		827	10	909	11	978	10	1001	15	3761	0.93	
Intersection Pct Trucks			1.2%		1.2%		1.0%		1.5%			

Pedestrian Calls

APPROACH	MOVEMENT	7:15		7:30		7:45		8:00		
		ped	bike	ped	bike	ped	bike	ped	bike	TOTAL
Eastbound	Through									0
Westbound	Through									0
N orthbound	Through									0
Southbound	Through									0
	App. Total	0	0	0	0	0	0	0	0	0

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*BNG*	Intersection	*E. Wedgewood & Division*
Agency/Co.	*WCE*	Jurisdiction	*COS/WSDOT*
Date Performed	*6/20/2014*	Analysis Year	*2014*
Analysis Time Period	*PM Peak Hour*		
Project Description	*14-1231 Sportsmans Warehouse*		
East/West Street:	*E Wedgewood Avenue*	North/South Street:	*Disvision Street*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		*1588*	*34*	*20*	*1303*	
Peak-Hour Factor, PHF	*1.00*	*0.93*	*0.93*	*0.93*	*0.93*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*0*	*1707*	*36*	*21*	*1401*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Two Way Left Turn Lane*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*2*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*1*			*1*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				*19*		*33*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*0.93*	*1.00*	*0.93*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*20*	*0*	*35*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*		*LR*				
v (veh/h)		*21*		*55*				
C (m) (veh/h)		*365*		*266*				
v/c		*0.06*		*0.21*				
95% queue length		*0.18*		*0.76*				
Control Delay (s/veh)		*15.5*		*22.0*				
LOS		*C*		*C*				
Approach Delay (s/veh)	--	--	*22.0*					
Approach LOS	--	--	*C*					

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*BNG*	Intersection	*E. Wedgewood & Division*
Agency/Co.	*WCE*	Jurisdiction	*COS/WSDOT*
Date Performed	*6/20/2014*	Analysis Year	*2015 W-O Proj*
Analysis Time Period	*PM Peak Hour*		
Project Description	*14-1231 Sportsmans Warehouse*		
East/West Street:	*E Wedgewood Avenue*	North/South Street:	*Division Street*
Intersection Orientation:	*North-South*	Study Period (hrs):	

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		*1604*	*34*	*20*	*1316*	
Peak-Hour Factor, PHF	*1.00*	*0.93*	*0.93*	*0.93*	*0.93*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*0*	*1724*	*36*	*21*	*1415*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Two Way Left Turn Lane*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*2*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*1*			*1*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				*19*		*33*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*0.93*	*1.00*	*0.93*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*20*	*0*	*35*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*		*LR*				
v (veh/h)		*21*		*55*				
C (m) (veh/h)		*360*		*262*				
v/c		*0.06*		*0.21*				
95% queue length		*0.19*		*0.79*				
Control Delay (s/veh)		*15.6*		*22.4*				
LOS		*C*		*C*				
Approach Delay (s/veh)	--	--	*22.4*					
Approach LOS	--	--	*C*					

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*BNG*	Intersection	*E. Wedgewood & Division*
Agency/Co.	*WCE*	Jurisdiction	*COS/WSDOT*
Date Performed	*6/20/2014*	Analysis Year	*2015 W- Proj*
Analysis Time Period	*PM Peak Hour*		
Project Description	*14-1231 Sportsmans Warehouse*		
East/West Street:	*E Wedgewood Avenue*	North/South Street:	*Division Street*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		*1606*	*55*	*44*	*1315*	
Peak-Hour Factor, PHF	*1.00*	*0.93*	*0.93*	*0.93*	*0.93*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*0*	*1726*	*59*	*47*	*1413*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Two Way Left Turn Lane*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*2*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*1*			*1*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				*33*		*61*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*0.93*	*1.00*	*0.93*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*35*	*0*	*65*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*		*LR*				
v (veh/h)		*47*		*100*				
C (m) (veh/h)		*352*		*290*				
v/c		*0.13*		*0.34*				
95% queue length		*0.46*		*1.49*				
Control Delay (s/veh)		*16.8*		*23.8*				
LOS		*C*		*C*				
Approach Delay (s/veh)	--	--	*23.8*					
Approach LOS	--	--	*C*					

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