

TECHNICAL MEMORANDUM

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Arlington County

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From: Katharine G. Eggleston, P.E.

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Date: February 19, 2013

Subject: Met Park 4/5 Supplemental Traffic Analysis and Response to Comments

Introduction

This memorandum addresses the comments received via email on January 17, 2012 for the Traffic Impact Study and Transportation Management Plan for Metropolitan Park 4/5 in Arlington County, Virginia dated July 13, 2012.

This memorandum also includes supplemental analysis requested by Arlington County DES on December 14, 2012 in accordance with the supplemental analysis scope dated January 4, 2013.

Response to Comments

- 1. Please indicate which version of the GLUP is referenced on page 6. The latest edition on the Arlington County website looks different from the one presented in the report.*

The figure on page 6 of the TIA is from a copy of the GLUP dated November 2008. An updated copy of the GLUP dated November 2011 is shown in Figure 1.

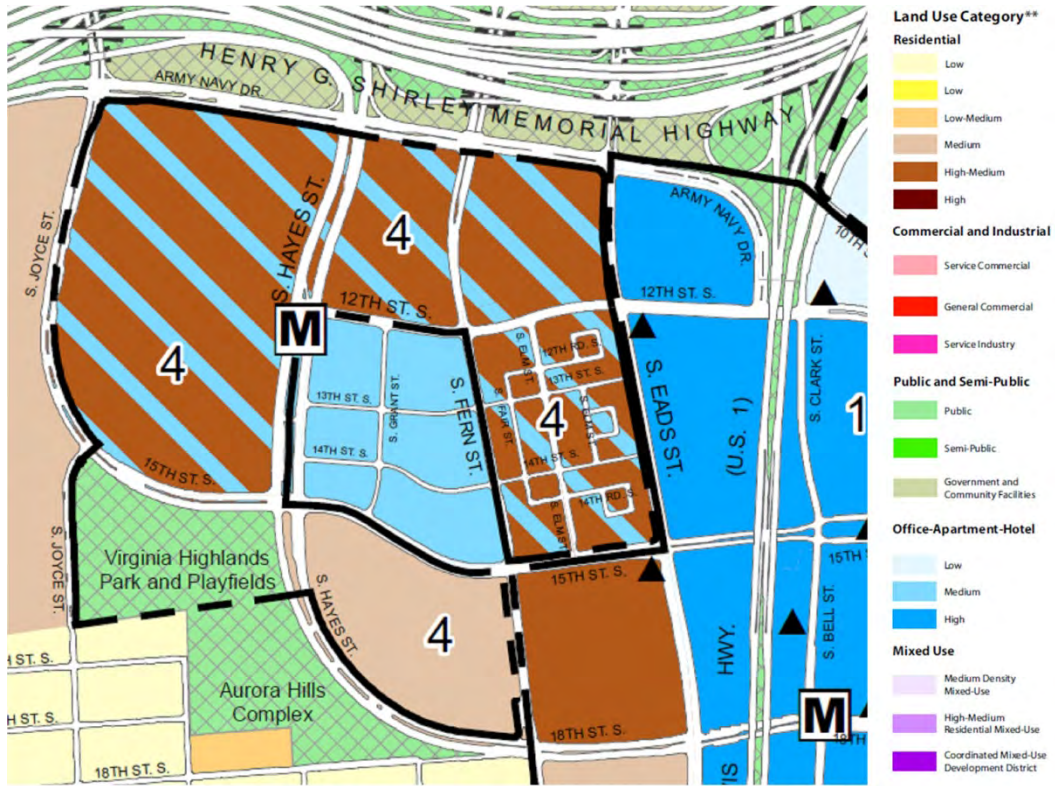


Figure 1: Arlington General Land Use Plan (GLUP), dated November 2011

2. Please include 13th St S/S Elm St as a study intersection.

The 13th Street S and S Elm Street approach volumes are presented in the figure below. The intersection was assumed to have a single lane on all approaches, with the southbound approach controlled by a stop sign. Volumes were balanced based on entering and exiting volumes at 13th & Fern and 13th & Eads, as well as an assumption that the through movements on 13th Street South at South Elm Street would have a trivial volume of 10 vehicles per hour. The volumes and analysis results are presented below. The results of the analysis show that all movements operate at level of service A or B during the AM, PM and Saturday peak hours.

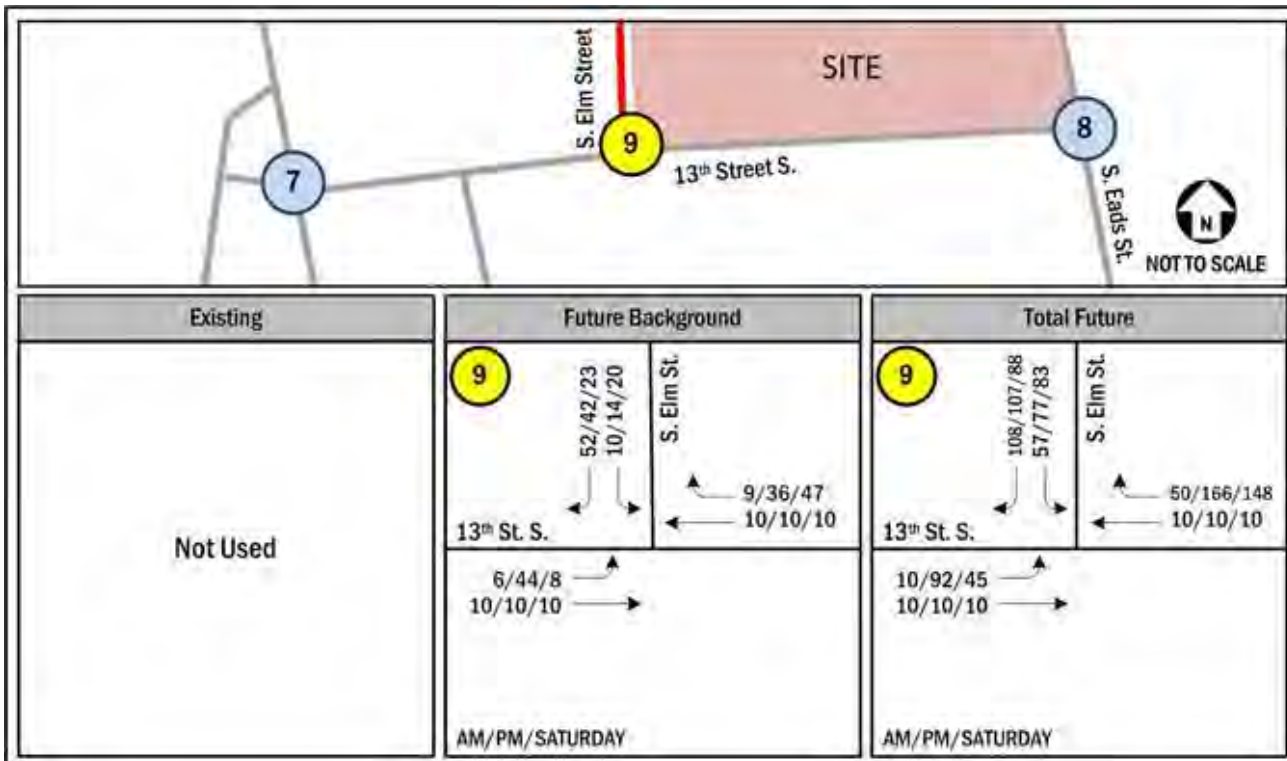


Figure 2: 13th Street S and S Elm Street Traffic Volumes

Table 1: 13th Street S and S Elm Street LOS Results

	AM				PM				Saturday			
	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
Future Background												
Eastbound Left/Thru	A	2.7	0	0.01	A	6.1	0	0.03	A	3.3	0	0.01
Westbound Thru/Right	n/a	n/a	n/a	0.01	n/a	n/a	n/a	0.03	n/a	n/a	n/a	0.04
Southbound Left/Right	A	8.7	5	0.06	A	8.9	5	0.06	A	8.8	4	0.05
Total Future												
Eastbound Left/Thru	A	3.7	1	0.01	A	7.1	6	0.07	A	6.3	3	0.03
Westbound Thru/Right	n/a	n/a	n/a	0.04	n/a	n/a	n/a	0.11	n/a	n/a	n/a	0.10
Southbound Left/Right	A	9.4	16	0.18	B	11.1	25	0.25	B	10.4	21	0.22

- Please explain the reasoning behind the volume redistribution in Figure 13. For example, the report assumes that background traffic will turn left onto 12th St S after the construction of 12th St S between S Fern St and S Eads St.

The redistribution of existing traffic volume shown in Figure 13 shifts some existing traffic to the new section of 12th Street S that is being constructed between S Fern Street and S Eads Street.

Specifically, traffic that is traveling eastbound toward Crystal City is expected to use the new 12th Street connection. Therefore, a portion of traffic that currently travels eastbound along 12th Street and turns right onto S. Fern Street, then left onto 15th Street has been re-routed to continue through on 12th Street. Similarly, traffic that is currently traveling southbound on S. Eads and turning left onto 12th Street has been assumed to shift to 12th Street west of S. Fern Street and will continue through on 12th Street to the west.

Figure 3 shows the trips that have been re-routed.

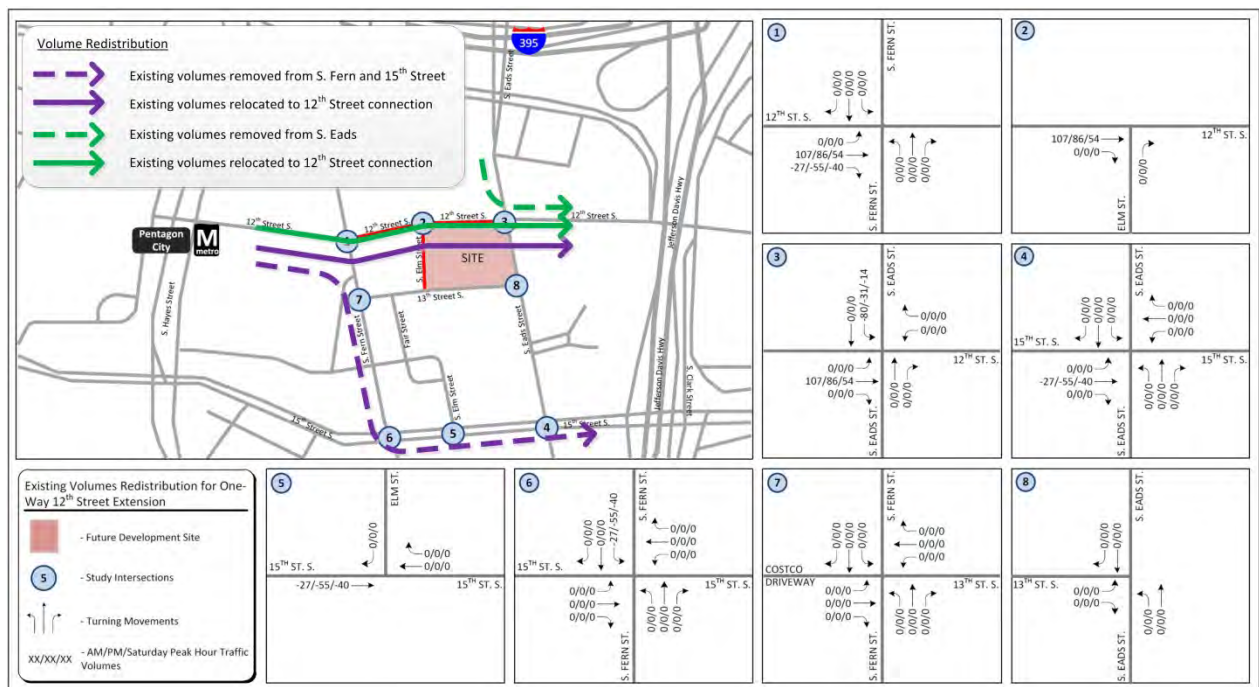


Figure 3: Volume Redistribution

4. *Include LOS for the southbound approach of #8 and the westbound approach of #5, using another option within Synchro or by hand.*

The HCM two-way stop control LOS methodology does not include a procedure for the uncontrolled movements because they are not affected by the intersection control. Therefore, the delay (and LOS) cannot be computed for these movements. An alternative measure of effectiveness, the volume to capacity (v/c) ratio, is presented below. This measure indicates the degree to which a particular movement is below (or above) its capacity. For example, a v/c ratio of 0.50 indicates that the movement is operating at half of its capacity. As shown by the v/c ratio results in the tables below, the westbound through movement at 15th Street S and S Elm, and the southbound through/right at 13th Street S and S Eads are both operating well below capacity and should not experience delay at these intersections.

Table 2: Intersection #5 – 15th Street South & South Elm Street – Westbound Through Movement

Analysis Scenario	AM	PM	SAT
Existing	0.21	0.21	0.19
Future Background	0.22	0.22	0.20
Total Future	0.22	0.22	0.20

Table 3: Intersection #8 – 13th Street South & South Eads Street – Southbound Through/Right Movement

Analysis Scenario	AM	PM	SAT
Future Background	0.10	0.12	0.10
Total Future	0.12	0.15	0.12

Supplemental Analysis Summary

The following sections present supplemental traffic analysis for the Met Park 4/5 development. This document serves as an addendum to the Traffic Impact Study (TIS) for the project prepared by Gorove/Slade Associates dated July 13, 2012. Analysis methodologies used in this memorandum are consistent with those used in the original TIS.

The following three investigations are documented in this memorandum:

- Alternate transit reductions for the proposed grocery – The original TIS for the project assumed a transit reduction of 50% for the grocery during the analysis peak hours based on proximity to Metro and Metrobus service and observations of similar sites. The proposed parking plan for the grocery will accommodate a higher level of vehicular traffic, although it is expected that much of the grocery parking will be primarily used during off-peak periods. To be conservative, supplemental analyses were performed to evaluate a 25% and a 0% transit reduction for grocery to account for the potential higher vehicular mode split. Most movements are expected to experience the same LOS under all three scenarios, and all movements are expected to operate with LOS D or better.
- Alternate lane configuration for South Eads Street – The original TIS for the project assumed lane configuration on South Eads Street in accordance with the Met Park Design Guidelines and site plan dated July 13, 2012, which includes two lanes in each direction. The supplemental analysis documented in this memorandum evaluates alternate configurations with fewer vehicular lanes on South Eads Street. Most movements are expected to experience the same LOS even with the reduced vehicular cross section, and all movements are expected to operate with LOS D or better under all three scenarios that were evaluated.
- Alternate lane configuration for 12th Street – The original TIS for the project assumed only the south (eastbound) half-section of 12th Street South, and did not include westbound traffic or revised lane configuration for the proposed streetcar since at the time it was not anticipated to be in operation when the site is constructed. Because the County may accelerate the schedule for the streetcar construction, supplemental analysis of 12th Street South was performed to evaluate the effects of the streetcar lane configuration on Met Park 4/5 traffic. Most movements are expected to experience the same LOS under the scenarios evaluated, and all movements are expected to operate with LOS D or better.

Grocery Transit Reduction

The original TIS for the project assumed a transit reduction of 50% for the grocery during the analysis peak hours based on proximity to Metro and Metrobus service and observations of similar sites. The proposed parking plan for the grocery will accommodate a higher level of vehicular traffic, although it is expected that much of the grocery parking will be primarily used during the off-peak periods. However to be conservative, supplemental peak hour analyses were performed to evaluate a 25% transit reduction and a 0% transit reduction for grocery to account for the potential higher vehicular mode split.

Trip Generation

Trip generation for the three scenarios is presented in Table 4. A new edition of ITE Trip Generation was published since the original TIS. The trip generation below is based on this newest (9th) edition. The 25% pass-by assumption for vehicular trips is consistent with the methodology used in the original TIS.

Table 4: Trip Generation Comparison - Alternate Grocery Transit Reduction

Land Use	Reduction rate	ITE Code	Size	Units	Week day						Week end		
					AM Peak Hour			PM Peak Hour			Saturday Peak Hour		
					In	Out	Total	In	Out	Total	In	Out	Total
Apartment		220	699	DU	69	278	347	262	141	403	153	153	306
<i>Transit/TDM Reduction</i>	60%				<u>-41</u>	<u>-166</u>	<u>-208</u>	<u>-157</u>	<u>-84</u>	<u>-241</u>	<u>-91</u>	<u>-91</u>	<u>-183</u>
Residential Total					28	112	139	105	57	162	62	62	123
50% Retail Transit Reduction (Original TIS Assumption)													
Grocery Store		850	40	kSF	83	53	136	202	194	396	273	263	536
<i>Transit/TDM Reduction</i>	50%				<u>-41</u>	<u>-26</u>	<u>-68</u>	<u>-100</u>	<u>-97</u>	<u>-198</u>	<u>-136</u>	<u>-131</u>	<u>-268</u>
Retail Subtotal					42	27	68	102	97	198	137	132	268
<i>Pass By</i>	25%				<u>-10</u>	<u>-6</u>	<u>-17</u>	<u>-25</u>	<u>-24</u>	<u>-49</u>	<u>-34</u>	<u>-32</u>	<u>-67</u>
Retail Total					32	21	51	77	73	149	103	100	201
Total					152	331	483	464	335	799	426	416	842
Reductions					-92	-198	-293	-282	-205	-488	-261	-254	-518
Total Proposed Trips					60	133	190	182	130	311	165	162	324
25% Retail Transit Reduction													
Grocery Store		850	40	kSF	83	53	136	202	194	396	273	263	536
<i>Transit/TDM Reduction</i>	25%				<u>-20</u>	<u>-13</u>	<u>-34</u>	<u>-50</u>	<u>-48</u>	<u>-99</u>	<u>-68</u>	<u>-65</u>	<u>-134</u>
Retail Subtotal					63	40	102	152	146	297	205	198	402
<i>Pass By</i>	25%				<u>-15</u>	<u>-10</u>	<u>-25</u>	<u>-37</u>	<u>-36</u>	<u>-74</u>	<u>-51</u>	<u>-49</u>	<u>-100</u>
Retail Total					48	30	77	115	110	223	154	149	302
Total					152	331	483	464	335	799	426	416	842
Reductions					-76	-189	-267	-244	-168	-414	-210	-205	-417
Total Proposed Trips					76	142	216	220	167	385	216	211	425
% Increase from Original TIS Assumption					27%	7%	14%	21%	28%	24%	31%	30%	31%
0% Retail Transit Reduction													
Grocery Store		850	40	kSF	83	53	136	202	194	396	273	263	536
<i>Transit/TDM Reduction</i>	0%				<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Retail Subtotal					83	53	136	202	194	396	273	263	536
<i>Pass By</i>	25%				<u>-20</u>	<u>-13</u>	<u>-34</u>	<u>-50</u>	<u>-48</u>	<u>-99</u>	<u>-68</u>	<u>-65</u>	<u>-134</u>
Retail Total					63	40	102	152	146	297	205	198	402
Total					152	331	483	464	335	799	426	416	842
Reductions					-61	-179	-242	-207	-132	-340	-159	-156	-317
Total Proposed Trips					91	152	241	257	203	459	267	260	525
% Increase from Original TIS Assumption					51%	14%	27%	41%	56%	48%	62%	61%	62%

Intersection Operations

Analysis of the two additional scenarios was performed in accordance with the methodology used for the 50% scenario. The traffic volumes associated with the 0%, 25% and 50% grocery transit reduction scenarios are included in Appendix A. A presentation the level of service (LOS) at each intersection within the original study area is included in Table 5. Most movements are expected to experience the same LOS under all three scenarios, and all movements are expected to operate with LOS D or better under all three scenarios. Detailed traffic operations results including delay and queuing for each of the scenarios are presented in Appendix B.

The results shown in Table 5 present the LOS as a single letter where the results are the same for all three scenarios. For example, the overall intersection operation at 12th Street South & South Eads Street is LOS B with 0% mode split reduction,

and LOS A with 25% or 50% reduction in the AM peak period and is represented as “B/A/A”, while the PM and Saturday operation remains LOS B with 0%, 25%, or 50% mode split reduction and is represented as “B”.

Table 5: Level of Service Comparison – Alternate Grocery Transit Reduction

Intersection (Movement)	AM Peak	PM Peak	Sat Peak
	LOS [0 / 25 / 50]*	LOS [0 / 25 / 50]*	LOS [0 / 25 / 50]*
12th St. S. & S. Fern St.			
Overall Intersection (Signalized)	B	B	B
Eastbound Left/Thru/Right	C	C	C
Northbound Left/Thru/Right	A	A	A
Southbound Left/Thru/Right	A	A	A
S. 12th St. & S. Eads St.			
Overall Intersection (Signalized)	B / A / A	B	B
Eastbound Left/Thru	B	C	C
Eastbound Right	B	C / D / D	C
Westbound Left	C	C	C
Westbound Right	B	C	C
Northbound Thru	A	A	A
Northbound Right	A	A	A
Southbound Left	A	A	A
Southbound Thru	A	A	A
15th St. S. & S. Eads St.			
Overall Intersection (Signalized)	B	B	B
Eastbound Left	B	B	B
Eastbound Thru/Right	B	A	A
Westbound Left	C	C	B
Westbound Thru/Right	B	B	B
Northbound Left/Thru	C	C	C
Northbound Right	B	C	C
Southbound Left/Thru/Right	C	C	C
15th St. S. & S. Fern St.			
Overall Intersection (Signalized)	B	B	B
Eastbound Left	A	C	D
Eastbound Thru/Right	A	B	A
Westbound Left	A	A	A
Westbound Thru/Right	A	A	A
Northbound Left/Thru	C	C	C
Northbound Right	C	C	C
Southbound Left/Thru/Right	C	C	C
15th St. S. & S. Elm St.			
Southbound Left	A	A	A
13th St. S. & S. Fern St.			
Eastbound Left / Thru / Right	A	C	A
Westbound Left / Thru / Right	C / B / B	C	C / C / B
Northbound Left	A	A	A
Southbound Left / Thru / Right	A	A	A
13th St. S. & S. Eads St.			
Eastbound Left / Right	B	B	B
Northbound Left / Thru	A	A	A
12th St. S. & S. Elm St.			
Northbound Right	A	A	A

Note:

* LOS results presented as a single letter for movements where results are the same for all three scenarios

Alternate Lane Configuration for South Eads Street

The original TIS for the project assumed lane configuration on South Eads Street in accordance with the Met Park Design Guidelines and site plan dated July 13, 2012, which includes two lanes in each direction. It may be possible to reduce the number of vehicular lanes on South Eads Street beyond what was in these plans to accommodate dedicated bike lanes in one or both directions between 12th Street South and 15th Street South.

Alternate Lane Configurations

Two alternate lane configuration scenarios were evaluated: one assuming a single northbound through lane and two southbound lanes on South Eads Street between 15th Street South and 12th Street South, and one assuming a single northbound through lane, a single southbound through lane, and a two-way left turn lane on South Eads Street between 15th Street South and 12th Street South. Figure 4 contains a diagram of the alternate lane configurations, along with the lane configuration that was studied in the original TIS. This analysis is limited to the intersections included in the study area of the original TIS, which along the South Eads Street corridor includes 12th Street South, 13th Street South and 15th Street South.



Figure 4: S. Eads Street Alternate Lane Configurations

Intersection Operations

Analysis of the two additional scenarios was performed in accordance with the methodology used in the original TIS. Volumes were updated to be consistent with the Trip Generation 9th Edition, with trip reduction assumptions consistent with those used in the original TIS (50% transit reduction for grocery). These volumes are presented in Appendix C. A presentation of the level of service (LOS) at each intersection along South Eads Street within the original study area is included in Table 6. Most movements are expected to experience the same LOS under all three scenarios, and all movements are expected to operate with LOS D or better under all three scenarios. Detailed traffic operations results including delay and queuing for each of the scenarios are presented in Appendix D.

Table 6: Level of Service Comparison – Alternate Lane Configuration for S. Eads St.

Intersection (Movement)	AM Peak	PM Peak	Sat Peak
	LOS [1 / 2 / 3]*	LOS [1 / 2 / 3]*	LOS [1 / 2 / 3]*
12th St. & S. Eads St.			
Overall Intersection (Signalized)	A	B	B
Eastbound Left/Thru	B	C	C
Eastbound Right	B	D	C
Westbound Left	C	C	C
Westbound Right	B	C	C
Northbound Thru	A	A	A
Northbound Right	A	A	A
Southbound Left	A	A	A
Southbound Thru	A	A	A
15th St. S. & S. Eads St.			
Overall Intersection (Signalized)	B	B	B
Eastbound Left	B	B	B
Eastbound Thru/Right	B	A	A
Westbound Left	C	C	B
Westbound Thru/Right	B	B	B
Northbound Left	- / C / B	- / C / C	- / C / C
Northbound Thru	C	C	C
Northbound Right	B	C	C
Southbound Left	- / - / C	- / - / C	- / - / C
Southbound Thru/Right	C	C	C
13th St. S. & S. Eads St.			
Eastbound Left / Right	B	B	B
Northbound Left / Thru [Left]	A	A	A

Notes:

* LOS results presented as a single letter for movements where results are the same for all three scenarios

1 - Original TIS Configuration

2 - One Northbound Through Lane on South Eads Street

3 - Two-Way Left Turn Lane on South Eads Street

Alternate Lane Configuration for 12th Street South

The original TIS for the project assumed only the south (eastbound) half-section of 12th Street South would be built by the design year of the project, and did not include westbound traffic or revised lane configuration for the proposed streetcar. The County may accelerate the construction schedule for the streetcar, so a supplemental analysis of 12th Street South with Met Park 4/5 traffic was requested.

Alternate Lane Configurations

Two alternate lane configurations for 12th Street south were evaluated. The first is presented in Figure 5 and was provided by Arlington County. This lane configuration suggests possible signal control at the intersection of 12th Street South and South Elm Street. This configuration was also evaluated with two-way stop control at 12th Street South and South Elm Street assuming 12th Street South as the main street.

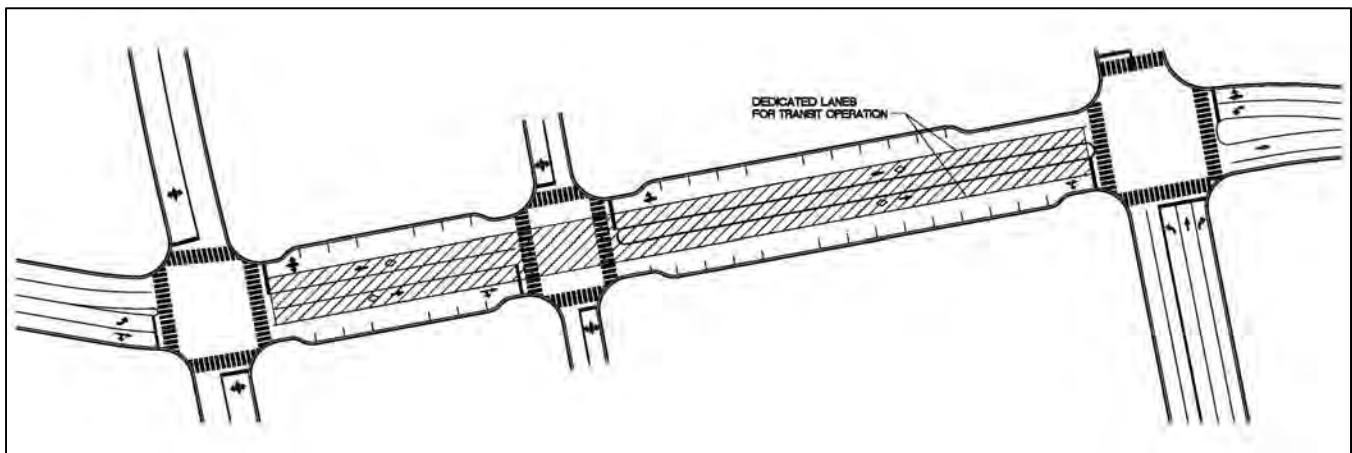


Figure 5: Proposed 12th Street South Lane Configuration With Streetcar [Source: Arlington County]

The second lane configuration is the same as the configuration presented in Figure 5, except that left turns would be allowed on 12th Street South eastbound at South Elm Street, westbound at South Elm Street, and eastbound at South Eads Street via a combination left/through/right lane. This configuration was also evaluated as both signal controlled and two-way stop controlled at 12th Street South and South Elm Street with 12th Street South assumed to be the main street.

Analysis of the additional scenarios was performed in accordance with the methodology used in the original TIS. Volumes were updated to be consistent with the Trip Generation 9th Edition, with trip reduction assumptions consistent with those used in the original TIS (50% transit reduction for grocery). The volumes were rerouted to revised lane configurations. The total volumes with rerouting are presented in Figure 6 and Figure 7. Figures depicting the volume rerouting are included in Appendix E.

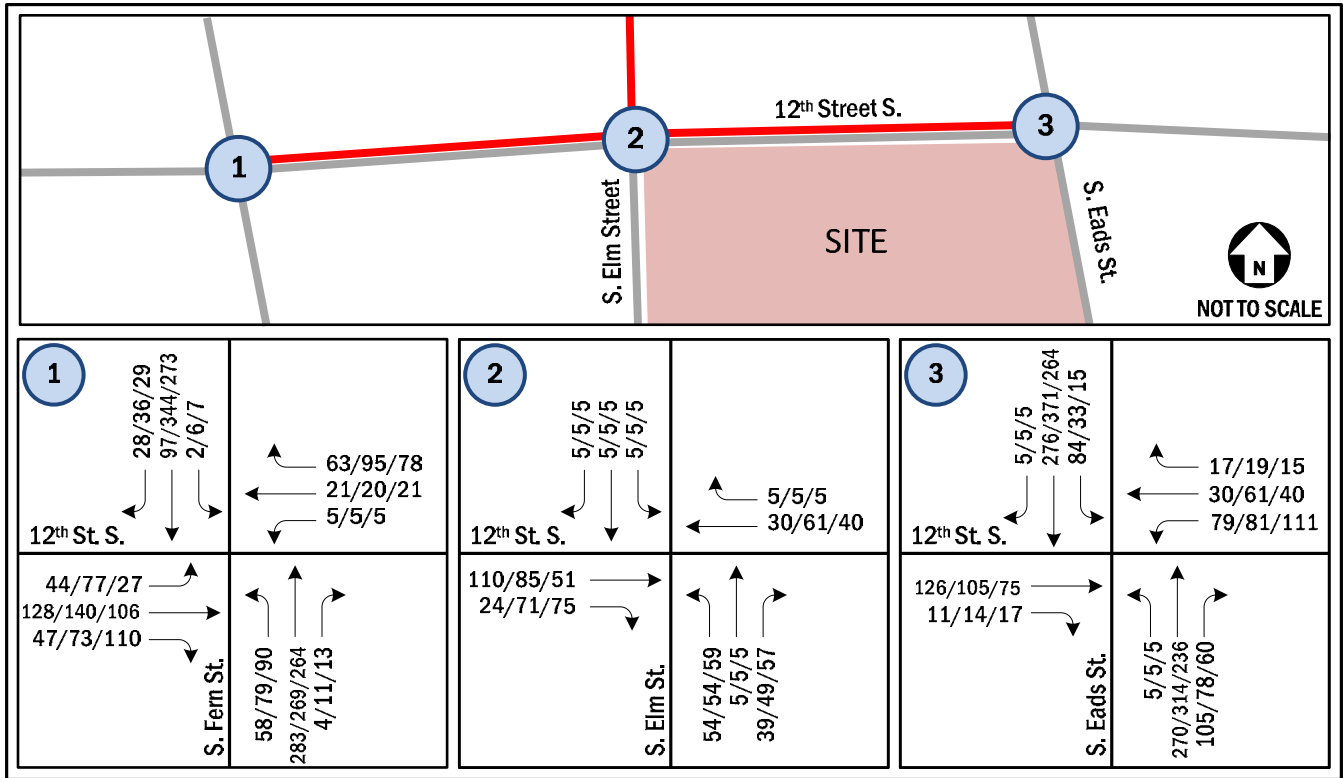


Figure 6: Total Future Traffic with Rerouting Due to Alternate 12th Street Lane Configuration (Limited Left Turns)

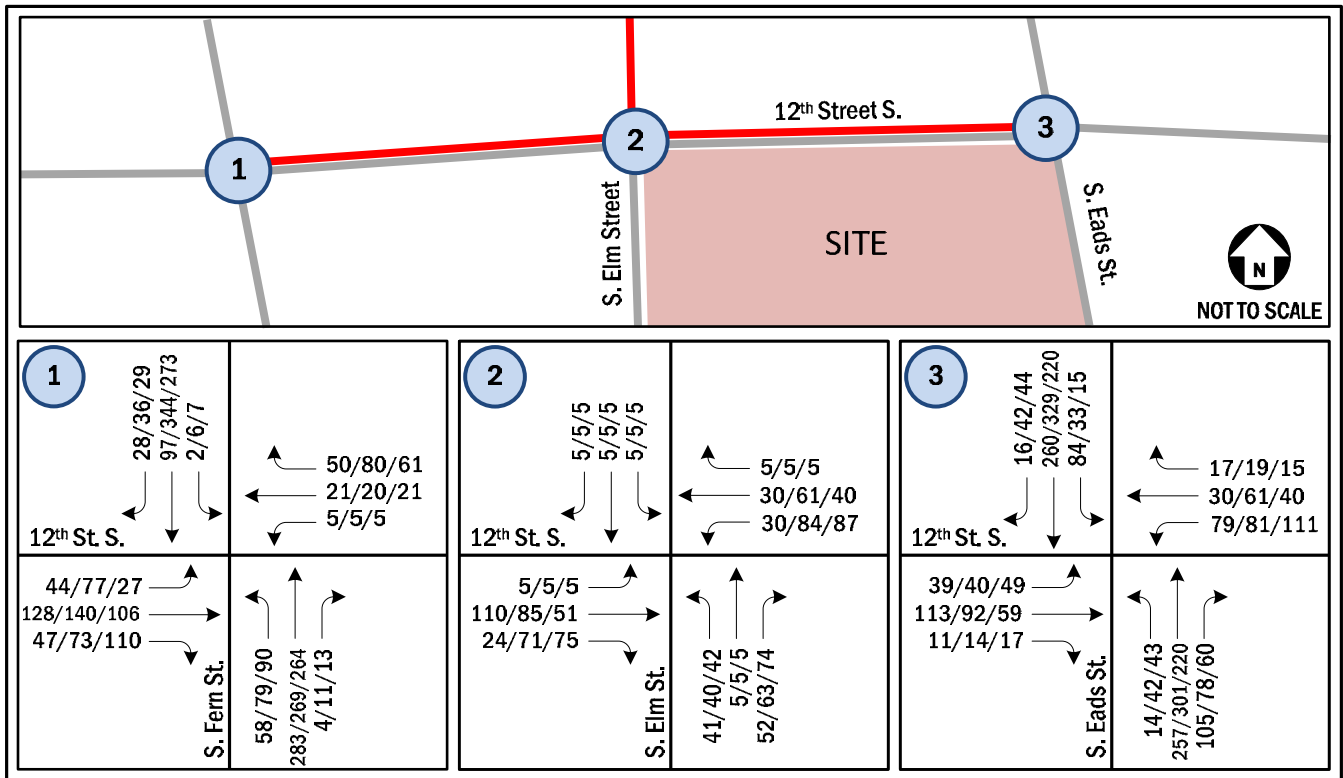


Figure 7: Total Future Traffic with Rerouting Due to Alternate 12th Street Lane Configuration (Left Turns Allowed)

Intersection Operations

Analysis of the additional scenarios was performed in accordance with the methodology used in the original TIS. A presentation of the level of service (LOS) at each intersection along 12th Street South within the original study area is included in Table 6. Most movements are expected to experience the same LOS under all three scenarios, and all movements are expected to operate with LOS D or better under all three scenarios. Detailed traffic operations results including delay and queuing for each of the scenarios are presented in Appendix F.

Table 7: Level of Service Comparison – Alternate Lane Configuration for 12th St. S.

Intersection (Movement)	AM Peak	PM Peak	Sat Peak
	LOS [1 / 2 / 3]*	LOS [1 / 2 / 3]*	LOS [1 / 2 / 3]*
12th St. & S. Fern St.			
Overall Intersection (Signalized)	B	B	B
Eastbound Left	- / C / C	- / C / C	- / B / B
Eastbound (Left)/Thru/Right	C	C	C
Westbound Left/Thru/Right	- / C / B	- / B / C	- / C / C
Northbound Left/Thru/Right	A	A	A
Southbound Left/Thru/Right	A	A	A
12th St. & S. Elm St.			
Overall Intersection (Signalized)	- / A / A	- / A / A	- / B / B
Eastbound (Left)/Thru/Right	- / A / A	- / A / A	- / B / B
Westbound (Left)/Thru/Right	- / B / B	- / A / B	- / A / B
Northbound (Left)/(Thru)/Right	A / B / B	A / B / B	A / B / B
Southbound Left/Thru/Right	- / B / B	- / B / B	- / B / B
12th St. & S. Elm St. (Unsignalized)			
Eastbound (Left)/Thru/Right	- / - / A	- / - / A	- / - / A
Westbound (Left)/Thru/Right	- / - / A	- / - / A	- / - / A
Northbound (Left)/(Thru)/Right	A / A / B	A / B / B	A / B / B
Southbound Left/Thru/Right	- / A / B	- / A / B	- / A / B
S. 12th St. & S. Eads St.			
Overall Intersection (Signalized)	A / A / B	B	B
Eastbound Left/Thru/(Right)	B	C	C
Eastbound Right	B / - / -	D / - / -	C / - / -
Westbound Left	C	C	C
Westbound Thru/Right	- / C / C	- / C / C	- / C / C
Westbound Right	B / - / -	C / - / -	C / - / -
Northbound Left	- / A / A	- / A / A	- / A / A
Northbound Thru	A	A	A
Northbound Right	A	A	A
Southbound Left	A	A	A
Southbound Thru/Right	A	A	A

Notes:

* LOS results presented as a single letter for movements where results are the same for all three scenarios

1 - Original TIS Configuration - 12th EB only, lefts allowed

2 - Two-Way 12th with no left turns on 12th EB and WB at S. Elm and EB at S. Eads

3 - Two-Way 12th with left turns allowed on 12th EB and WB at S. Elm and EB at S. Eads
Lane Configuration

Left/Thru/Right - Left/Thru/Right movements allowed where a LOS is reported

(Left)/Thru/Right - Left movement allowed from this lane in one or two scenarios only

Additional Considerations

The analysis documented above suggests that the intersections along 12th Street South adjacent to Met Park 4/5 will operate with acceptable levels of service with either left turns allowed or with left turns limited due to streetcar operations. However, further analysis should be performed as the plans for the streetcar become more developed. In particular, there are several design elements which are unknown at this time that could affect vehicular operations in this area.

Conclusions

This memorandum presents supplemental traffic analysis for the Met Park 4/5 development and serves as an addendum to the Traffic Impact Study (TIS) for the project prepared by Gorove/Slade Associates dated July 13, 2012. Analysis methodologies used in this memorandum are consistent with those used in the original TIS.

The analysis presented in this memorandum supports the following conclusions:

- Alternate transit reductions for the proposed grocery – The original TIS for the project assumed a transit reduction of 50% for the grocery during the analysis peak hours based on proximity to Metro and Metrobus service and observations of similar sites. Supplemental analyses were performed to evaluate a 25% and a 0% transit reduction for grocery. Most movements are expected to experience the same LOS under all three scenarios, and all movements are expected to operate with LOS D or better.
- Alternate lane configuration for South Eads Street – The original TIS for the project assumed lane configuration on South Eads Street in accordance with the Met Park Design Guidelines and site plan dated July 13, 2012, which includes two lanes in each direction. The supplemental analysis documented in this memorandum evaluates alternate configurations with fewer vehicular lanes on South Eads Street. Most movements are expected to experience the same LOS even with the reduced vehicular cross section, and all movements are expected to operate with LOS D or better under all three scenarios that were evaluated.
- Alternate lane configuration for 12th Street – The original TIS for the project assumed only the south (eastbound) section of 12th Street South, and did not include westbound traffic or revised lane configuration for the proposed streetcar. Because the County may accelerate the schedule for the streetcar construction, supplemental analysis of 12th Street South was performed to evaluate the effects of the streetcar lane configuration on Met Park 4/5 traffic. Most movements are expected to experience the same LOS with two-way traffic on 12th Street South with streetcar, and all movements are expected to operate with LOS D or better. As plans for the streetcar advance, additional consideration should be given to signal timing and coordination changes that may be required for efficient streetcar operation, as well as the possible prohibition of certain turn movements across the tracks to provide acceptable conditions for vehicles.

Appendix A

Grocery Transit Reduction – Volumes

0% Grocery Reduction

TF AM Peak Hour

Thu Jan 3, 2013 11:32:59

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Turning Movement Report AM Peak Hour

Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
#101 Fern/12th Street													
Base	53	283	4	2	88	28	44	116	47	0	0	0	665
Added	30	23	0	0	14	0	0	18	0	0	0	0	85
Total	83	306	4	2	102	28	44	134	47	0	0	0	750
#102													
Base	0	0	18	0	0	0	0	112	10	0	0	0	140
Added	0	0	38	0	0	0	0	0	18	0	0	0	56
PassBy	0	0	2	0	0	0	0	-4	4	0	0	0	2
Total	0	0	58	0	0	0	0	108	32	0	0	0	198
#103 Eads/12th Street													
Base	0	257	101	84	261	0	6	113	11	77	0	47	957
Added	0	0	5	0	23	0	38	0	0	3	0	0	69
Total	0	257	106	84	284	0	44	113	11	80	0	47	1026
#104													
Base	78	252	208	156	212	28	35	622	50	99	485	106	2331
Added	0	14	0	23	23	0	0	0	0	0	0	14	74
PassBy	0	0	0	0	-2	0	0	0	0	0	0	0	-2
Total	78	266	208	179	233	28	35	622	50	99	485	120	2403
#105 Elm/15th													
Base	0	0	0	0	0	48	0	707	0	0	575	15	1345
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	48	0	707	0	0	575	15	1345
#106 15th/Fern													
Base	16	90	105	87	38	21	24	514	38	43	343	237	1556
Added	0	2	0	0	3	8	5	0	0	0	0	0	18
Total	16	92	105	87	41	29	29	514	38	43	343	237	1574
#107 13th/Fern													
Base	2	302	9	7	116	2	0	0	4	25	1	36	504
Added	0	0	6	14	0	0	0	0	0	11	0	53	84
PassBy	0	0	0	2	-2	0	0	0	0	2	0	0	2
Total	2	302	15	23	114	2	0	0	4	38	1	89	590
#108 Eads/13th													
Base	7	351	0	0	337	12	7	0	13	0	0	0	727
Added	28	0	0	0	0	26	5	0	45	0	0	0	104
PassBy	7	-7	0	0	-7	7	4	0	4	0	0	0	8
Total	42	344	0	0	330	45	16	0	62	0	0	0	839

0% Grocery Reduction

TF PM Peak Hour

Thu Jan 3, 2013 11:34:04

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 Turning Movement Report
 PM Peak Hour

Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
#101 Fern/12th Street													
Base	73	268	11	6	317	36	77	103	73	0	0	0	964
Added	41	30	0	0	39	0	0	52	0	0	0	0	162
Total	114	298	11	6	356	36	77	155	73	0	0	0	1126
#102													
Base	0	0	22	0	0	0	0	90	29	0	0	0	141
Added	0	0	51	0	0	0	0	0	52	0	0	0	103
PassBy	0	0	8	0	0	0	0	-10	10	0	0	0	8
Total	0	0	81	0	0	0	0	80	91	0	0	0	252
#103 Eads/12th Street													
Base	0	301	74	33	325	0	7	92	14	76	0	80	1002
Added	0	0	6	0	65	0	51	0	0	8	0	0	130
Total	0	301	80	33	390	0	58	92	14	84	0	80	1132
#104													
Base	85	245	119	93	252	50	37	590	67	232	963	150	2883
Added	0	39	0	30	30	0	0	0	0	0	0	39	138
PassBy	0	0	0	0	-2	0	0	0	0	0	0	0	-2
Total	85	284	119	123	280	50	37	590	67	232	963	189	3019
#105 Elm/15th													
Base	0	0	0	0	0	32	0	694	0	0	1050	48	1824
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	32	0	694	0	0	1050	48	1824
#106 15th/Fern													
Base	24	114	36	174	147	54	108	484	38	74	791	216	2260
Added	0	5	0	0	4	10	13	0	0	0	0	0	32
Total	24	119	36	174	151	64	121	484	38	74	791	216	2292
#107 13th/Fern													
Base	7	316	28	26	441	1	4	0	9	20	0	32	884
Added	0	0	18	39	0	0	0	0	0	14	0	71	142
PassBy	0	-2	2	7	-7	0	0	0	0	5	0	1	6
Total	7	314	48	72	434	1	4	0	9	39	0	104	1032
#108 Eads/13th													
Base	21	375	0	0	390	25	8	0	16	0	0	0	835
Added	77	0	0	0	0	72	6	0	61	0	0	0	216
PassBy	16	-16	0	0	-16	16	11	0	11	0	0	0	22
Total	114	359	0	0	374	113	25	0	88	0	0	0	1073

0% Grocery Reduction

Saturday

Thu Jan 3, 2013 11:34:47

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Turning Movement Report Saturday

Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
#101 Fern/12th Street													
Base	79	260	13	7	248	29	27	73	110	0	0	0	846
Added	52	39	0	0	40	0	0	53	0	0	0	0	184
Total	131	299	13	7	288	29	27	126	110	0	0	0	1030
#102													
Base	0	0	27	0	0	0	0	57	36	0	0	0	120
Added	0	0	65	0	0	0	0	0	53	0	0	0	118
PassBy	0	0	13	0	0	0	0	-13	13	0	0	0	13
Total	0	0	105	0	0	0	0	44	102	0	0	0	251
#103 Eads/12th Street													
Base	0	220	55	15	223	0	8	59	17	106	0	55	758
Added	0	0	8	0	67	0	65	0	0	8	0	0	148
Total	0	220	63	15	290	0	73	59	17	114	0	55	906
#104													
Base	126	209	67	105	132	69	39	526	86	79	998	87	2523
Added	0	40	0	39	39	0	0	0	0	0	0	40	158
Total	126	249	67	144	171	69	39	526	86	79	998	127	2681
#105 Elm/15th													
Base	0	0	0	0	0	21	0	651	0	0	1177	16	1865
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	21	0	651	0	0	1177	16	1865
#106 15th/Fern													
Base	36	73	35	169	69	72	112	489	32	51	922	225	2285
Added	0	5	0	0	5	13	13	0	0	0	0	0	36
Total	36	78	35	169	74	85	125	489	32	51	922	225	2321
#107 13th/Fern													
Base	5	327	11	7	368	11	0	0	0	7	0	26	762
Added	0	0	19	40	0	0	0	0	0	18	0	91	168
PassBy	0	-3	3	10	-10	0	0	0	0	10	0	3	13
Total	5	324	33	57	358	11	0	0	0	35	0	120	943
#108 Eads/13th													
Base	25	310	0	0	314	32	10	0	20	0	0	0	711
Added	80	0	0	0	0	75	8	0	78	0	0	0	241
PassBy	20	-20	0	0	-20	20	20	0	20	0	0	0	40
Total	125	290	0	0	294	127	38	0	118	0	0	0	992

25% Grocery Reduction

TF AM Peak Hour

Thu Jan 3, 2013 11:21:18

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Turning Movement Report AM Peak Hour

Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
#101 Fern/12th Street													
Base	53	283	4	2	88	28	44	116	47	0	0	0	665
Added	28	21	0	0	12	0	0	15	0	0	0	0	76
Total	81	304	4	2	100	28	44	131	47	0	0	0	741
#102													
Base	0	0	18	0	0	0	0	112	10	0	0	0	140
Added	0	0	35	0	0	0	0	0	15	0	0	0	50
PassBy	0	0	2	0	0	0	0	-3	3	0	0	0	2
Total	0	0	55	0	0	0	0	109	28	0	0	0	192
#103 Eads/12th Street													
Base	0	257	101	84	261	0	6	113	11	77	0	47	957
Added	0	0	4	0	19	0	35	0	0	2	0	0	60
Total	0	257	105	84	280	0	41	113	11	79	0	47	1017
#104													
Base	78	252	208	156	212	28	35	622	50	99	485	106	2331
Added	0	12	0	21	21	0	0	0	0	0	0	12	66
PassBy	0	0	0	0	-2	0	0	0	0	0	0	0	-2
Total	78	264	208	177	231	28	35	622	50	99	485	118	2395
#105 Elm/15th													
Base	0	0	0	0	0	48	0	707	0	0	575	15	1345
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	48	0	707	0	0	575	15	1345
#106 15th/Fern													
Base	16	90	105	87	38	21	24	514	38	43	343	237	1556
Added	0	2	0	0	3	7	4	0	0	0	0	0	16
Total	16	92	105	87	41	28	28	514	38	43	343	237	1572
#107 13th/Fern													
Base	2	302	9	7	116	2	0	0	4	25	1	36	504
Added	0	0	5	12	0	0	0	0	0	10	0	49	76
PassBy	0	0	0	2	-2	0	0	0	0	2	0	0	2
Total	2	302	14	21	114	2	0	0	4	37	1	85	582
#108 Eads/13th													
Base	7	351	0	0	337	12	7	0	13	0	0	0	727
Added	23	0	0	0	0	22	4	0	42	0	0	0	91
PassBy	5	-5	0	0	-5	5	3	0	3	0	0	0	6
Total	35	346	0	0	332	39	14	0	58	0	0	0	824

25% Grocery Reduction

TF PM Peak Hour

Thu Jan 3, 2013 11:22:25

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Turning Movement Report PM Peak Hour

Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
#101 Fern/12th Street													
Base	73	268	11	6	317	36	77	103	73	0	0	0	964
Added	33	25	0	0	33	0	0	44	0	0	0	0	135
Total	106	293	11	6	350	36	77	147	73	0	0	0	1099
#102													
Base	0	0	22	0	0	0	0	90	29	0	0	0	141
Added	0	0	42	0	0	0	0	0	44	0	0	0	86
PassBy	0	0	8	0	0	0	0	-8	8	0	0	0	8
Total	0	0	72	0	0	0	0	82	81	0	0	0	235
#103 Eads/12th Street													
Base	0	301	74	33	325	0	7	92	14	76	0	80	1002
Added	0	0	5	0	55	0	42	0	0	7	0	0	109
Total	0	301	79	33	380	0	49	92	14	83	0	80	1111
#104													
Base	85	245	119	93	252	50	37	590	67	232	963	150	2883
Added	0	33	0	25	25	0	0	0	0	0	0	33	116
PassBy	0	0	0	0	-1	0	0	0	0	0	0	0	-1
Total	85	278	119	118	276	50	37	590	67	232	963	183	2998
#105 Elm/15th													
Base	0	0	0	0	0	32	0	694	0	0	1050	48	1824
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	32	0	694	0	0	1050	48	1824
#106 15th/Fern													
Base	24	114	36	174	147	54	108	484	38	74	791	216	2260
Added	0	4	0	0	3	8	11	0	0	0	0	0	26
Total	24	118	36	174	150	62	119	484	38	74	791	216	2286
#107 13th/Fern													
Base	7	316	28	26	441	1	4	0	9	20	0	32	884
Added	0	0	15	33	0	0	0	0	0	12	0	58	118
PassBy	0	-1	1	5	-5	0	0	0	0	5	0	1	6
Total	7	315	44	64	436	1	4	0	9	37	0	91	1008
#108 Eads/13th													
Base	21	375	0	0	390	25	8	0	16	0	0	0	835
Added	66	0	0	0	0	62	5	0	50	0	0	0	183
PassBy	11	-11	0	0	-11	11	11	0	11	0	0	0	22
Total	98	364	0	0	379	98	24	0	77	0	0	0	1040

25% Grocery Reduction

Saturday

Thu Jan 3, 2013 11:26:17

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Turning Movement Report Saturday

Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
#101 Fern/12th Street													
Base	79	260	13	7	248	29	27	73	110	0	0	0	846
Added	42	32	0	0	32	0	0	43	0	0	0	0	149
Total	121	292	13	7	280	29	27	116	110	0	0	0	995
#102													
Base	0	0	27	0	0	0	0	57	36	0	0	0	120
Added	0	0	53	0	0	0	0	0	43	0	0	0	96
PassBy	0	0	9	0	0	0	0	-9	-0	0	0	0	0
Total	0	0	89	0	0	0	0	48	79	0	0	0	216
#103 Eads/12th Street													
Base	0	220	55	15	223	0	8	59	17	106	0	55	758
Added	0	0	6	0	54	0	53	0	0	6	0	0	119
Total	0	220	61	15	277	0	61	59	17	112	0	55	877
#104													
Base	126	209	67	105	132	69	39	526	86	79	998	87	2523
Added	0	32	0	32	32	0	0	0	0	0	0	32	128
Total	126	241	67	137	164	69	39	526	86	79	998	119	2651
#105 Elm/15th													
Base	0	0	0	0	0	21	0	651	0	0	1177	16	1865
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	21	0	651	0	0	1177	16	1865
#106 15th/Fern													
Base	36	73	35	169	69	72	112	489	32	51	922	225	2285
Added	0	4	0	0	4	11	11	0	0	0	0	0	30
Total	36	77	35	169	73	83	123	489	32	51	922	225	2315
#107 13th/Fern													
Base	5	327	11	7	368	11	0	0	0	7	0	26	762
Added	0	0	15	32	0	0	0	0	0	15	0	74	136
PassBy	0	-2	2	8	-8	0	0	0	0	8	0	2	10
Total	5	325	28	47	360	11	0	0	0	30	0	102	908
#108 Eads/13th													
Base	25	310	0	0	314	32	10	0	20	0	0	0	711
Added	65	0	0	0	0	60	6	0	63	0	0	0	194
PassBy	15	-15	0	0	-15	15	15	0	15	0	0	0	30
Total	105	295	0	0	299	107	31	0	98	0	0	0	935

50% Grocery Reduction

TF AM Peak Hour

Tue Jan 29, 2013 16:08:19

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Turning Movement Report AM Peak Hour

Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
#101 Fern/12th Street													
Base	53	283	4	2	88	28	44	116	47	0	0	0	665
Added	26	20	0	0	9	0	0	12	0	0	0	0	67
Total	79	303	4	2	97	28	44	128	47	0	0	0	732
#102													
Base	0	0	18	0	0	0	0	112	10	0	0	0	140
Added	0	0	33	0	0	0	0	0	12	0	0	0	45
PassBy	0	0	1	0	0	0	0	-2	2	0	0	0	1
Total	0	0	52	0	0	0	0	110	24	0	0	0	186
#103 Eads/12th Street													
Base	0	257	101	84	261	0	6	113	11	77	0	47	957
Added	0	0	4	0	15	0	33	0	0	2	0	0	54
Total	0	257	105	84	276	0	39	113	11	79	0	47	1011
#104													
Base	78	252	208	156	212	28	35	622	50	99	485	106	2331
Added	0	9	0	20	20	0	0	0	0	0	0	9	58
PassBy	0	0	0	0	-1	0	0	0	0	0	0	0	-1
Total	78	261	208	176	231	28	35	622	50	99	485	115	2388
#105 Elm/15th													
Base	0	0	0	0	0	48	0	707	0	0	575	15	1345
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	48	0	707	0	0	575	15	1345
#106 15th/Fern													
Base	16	90	105	87	38	21	24	514	38	43	343	237	1556
Added	0	1	0	0	3	7	3	0	0	0	0	0	14
Total	16	91	105	87	41	28	27	514	38	43	343	237	1570
#107 13th/Fern													
Base	2	302	9	7	116	2	0	0	4	25	1	36	504
Added	0	0	4	9	0	0	0	0	0	9	0	46	68
PassBy	0	0	0	1	-1	0	0	0	0	1	0	0	1
Total	2	302	13	17	115	2	0	0	4	35	1	82	573
#108 Eads/13th													
Base	7	351	0	0	337	12	7	0	13	0	0	0	727
Added	18	0	0	0	0	17	4	0	40	0	0	0	79
PassBy	3	-3	0	0	-3	3	2	0	2	0	0	0	4
Total	28	348	0	0	334	32	13	0	55	0	0	0	810

50% Grocery Reduction

TF PM Peak Hour

Thu Jan 3, 2013 11:10:54

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 Turning Movement Report
 PM Peak Hour

Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
#101 Fern/12th Street													
Base	73	268	11	6	317	36	77	103	73	0	0	0	964
Added	26	20	0	0	27	0	0	37	0	0	0	0	110
Total	99	288	11	6	344	36	77	140	73	0	0	0	1074
#102													
Base	0	0	22	0	0	0	0	90	29	0	0	0	141
Added	0	0	33	0	0	0	0	0	37	0	0	0	70
PassBy	0	0	8	0	0	0	0	-5	5	0	0	0	8
Total	0	0	63	0	0	0	0	85	71	0	0	0	219
#103 Eads/12th Street													
Base	0	301	74	33	325	0	7	92	14	76	0	80	1002
Added	0	0	4	0	46	0	33	0	0	5	0	0	88
Total	0	301	78	33	371	0	40	92	14	81	0	80	1090
#104													
Base	85	245	119	93	252	50	37	590	67	232	963	150	2883
Added	0	27	0	20	20	0	0	0	0	0	0	27	94
PassBy	0	0	0	0	-1	0	0	0	0	0	0	0	-1
Total	85	272	119	113	271	50	37	590	67	232	963	177	2976
#105 Elm/15th													
Base	0	0	0	0	0	32	0	694	0	0	1050	48	1824
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	32	0	694	0	0	1050	48	1824
#106 15th/Fern													
Base	24	114	36	174	147	54	108	484	38	74	791	216	2260
Added	0	4	0	0	3	7	9	0	0	0	0	0	23
Total	24	118	36	174	150	61	117	484	38	74	791	216	2283
#107 13th/Fern													
Base	7	316	28	26	441	1	4	0	9	20	0	32	884
Added	0	0	13	27	0	0	0	0	0	9	0	46	95
PassBy	0	-1	1	3	-3	0	0	0	0	5	0	1	6
Total	7	315	42	56	438	1	4	0	9	34	0	79	985
#108 Eads/13th													
Base	21	375	0	0	390	25	8	0	16	0	0	0	835
Added	55	0	0	0	0	51	4	0	39	0	0	0	149
PassBy	8	-8	0	0	-8	8	11	0	11	0	0	0	22
Total	84	367	0	0	382	84	23	0	66	0	0	0	1006

50% Grocery Reduction

Saturday

Thu Jan 3, 2013 11:13:12

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Turning Movement Report Saturday

Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
#101 Fern/12th Street													
Base	79	260	13	7	248	29	27	73	110	0	0	0	846
Added	32	24	0	0	25	0	0	33	0	0	0	0	114
Total	111	284	13	7	273	29	27	106	110	0	0	0	960
#102													
Base	0	0	27	0	0	0	0	57	36	0	0	0	120
Added	0	0	41	0	0	0	0	0	33	0	0	0	74
PassBy	0	0	6	0	0	0	0	-6	6	0	0	0	6
Total	0	0	74	0	0	0	0	51	75	0	0	0	200
#103 Eads/12th Street													
Base	0	220	55	15	223	0	8	59	17	106	0	55	758
Added	0	0	5	0	41	0	41	0	0	5	0	0	92
Total	0	220	60	15	264	0	49	59	17	111	0	55	850
#104													
Base	126	209	67	105	132	69	39	526	86	79	998	87	2523
Added	0	25	0	24	24	0	0	0	0	0	0	25	98
Total	126	234	67	129	156	69	39	526	86	79	998	112	2621
#105 Elm/15th													
Base	0	0	0	0	0	21	0	651	0	0	1177	16	1865
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	21	0	651	0	0	1177	16	1865
#106 15th/Fern													
Base	36	73	35	169	69	72	112	489	32	51	922	225	2285
Added	0	3	0	0	3	8	8	0	0	0	0	0	22
Total	36	76	35	169	72	80	120	489	32	51	922	225	2307
#107 13th/Fern													
Base	5	327	11	7	368	11	0	0	0	7	0	26	762
Added	0	0	12	25	0	0	0	0	0	11	0	57	105
PassBy	0	-1	1	5	-5	0	0	0	0	5	0	1	6
Total	5	326	24	37	363	11	0	0	0	23	0	84	873
#108 Eads/13th													
Base	25	310	0	0	314	32	10	0	20	0	0	0	711
Added	50	0	0	0	0	46	5	0	49	0	0	0	150
PassBy	10	-10	0	0	-10	10	10	0	10	0	0	0	20
Total	85	300	0	0	304	88	25	0	79	0	0	0	881

Appendix B

Grocery Transit Reduction – Analysis Results

Traffic Operations Results - 0% Grocery Transit Reduction

Intersection (Movement)	Bay Length (feet)	AM Peak				PM Peak				Saturday Peak			
		LOS	Delay	50th Queue	95th Queue	LOS	Delay	50th Queue	95th Queue	LOS	Delay	50th Queue	95th Queue
12th St. S. & S. Fern St.													
Overall Intersection (Signalized)		B	13.5	n/a	n/a	B	14.6	n/a	n/a	B	11.5	n/a	n/a
Eastbound Left/Thru/Right		C	32.8	91	146	C	30.9	121	189	C	28.0	78	144
Northbound Left/Thru/Right		A	5.6	64	141	A	9.3	98	196	A	6.5	75	149
Southbound Left/Thru/Right		A	4.1	14	40	A	7.8	83	160	A	4.9	45	89
S. 12th St. & S. Eads St.													
Overall Intersection (Signalized)		B	10.1	n/a	n/a	B	12.0	n/a	n/a	B	11.8	n/a	n/a
Eastbound Left/Thru		B	19.4	77	125	C	28.5	72	m111	C	24.1	57	84
Eastbound Right	260	B	16.2	1	m0	C	34.7	2	m10	C	21.8	0	12
Westbound Left		C	21.3	33	54	C	22.1	35	59	C	22.4	48	74
Westbound Right	260	B	19.8	0	19	C	20.1	0	25	C	20.1	0	21
Northbound Thru		A	6.1	37	113	A	6.4	44	134	A	5.7	31	96
Northbound Right		A	5.1	0	22	A	5.0	2	22	A	4.8	0	17
Southbound Left	50	A	6.0	11	47	A	5.1	4	22	A	4.7	2	12
Southbound Thru		A	6.4	42	127	A	7.3	62	185	A	6.3	43	130
15th St. S. & S. Eads St.													
Overall Intersection (Signalized)		B	17.7	n/a	n/a	B	19.9	n/a	n/a	B	18.3	n/a	n/a
Eastbound Left	184	B	12.6	9	23	B	15.0	11	m31	B	13.1	12	m31
Eastbound Thru/Right		B	12.4	63	86	A	8.8	61	75	A	8.4	56	68
Westbound Left		C	20.6	44	91	C	28.0	116	#263	B	11.8	26	54
Westbound Thru/Right		B	17.9	142	187	B	17.9	292	366	B	15.7	264	328
Northbound Left/Thru		C	20.3	85	122	C	27.7	107	154	C	30.7	115	166
Northbound Right	100	B	19.3	34	86	C	22.8	0	39	C	23.3	0	31
Southbound Left/Thru/Right		C	22.4	114	161	C	29.9	134	190	C	30.6	111	162
15th St. S. & S. Fern St.													
Overall Intersection (Signalized)		B	13.1	n/a	n/a	B	14.5	n/a	n/a	B	14.4	n/a	n/a
Eastbound Left	98	A	8.6	8	21	C	33.2	58	#172	D	43.4	62	#190
Eastbound Thru/Right		A	9.7	89	118	B	11.6	93	124	A	9.6	83	112
Westbound Left	110	A	6.2	8	m18	A	4.7	8	m12	A	4.7	7	m12
Westbound Thru/Right		A	7.3	48	65	A	6.7	45	54	A	7.0	77	91
Northbound Left/Thru		C	28.3	58	105	C	26.4	75	128	C	29.4	63	113
Northbound Right	35	C	29.2	2	45	C	25.2	4	28	C	28.0	1	26
Southbound Left/Thru/Right		C	28.1	37	66	C	29.5	111	160	C	31.7	87	134
15th St. S. & S. Elm St.													
Southbound Left		A	9.2	n/a	5	A	9.6	n/a	3	A	9.4	n/a	2
13th St. S. & S. Fern St.													
Eastbound Left / Thru / Right		A	9.6	n/a	0	C	19.6	n/a	4	A	0.0	n/a	0
Westbound Left / Thru / Right		C	15.1	n/a	29	C	24.8	n/a	59	C	16.3	n/a	38
Norhtbound Left		A	7.7	n/a	0	A	8.6	n/a	1	A	8.1	n/a	0
Southbound Left / Thru / Right		A	1.6	n/a	2	A	2.0	n/a	6	A	1.6	n/a	4
13th St. S. & S. Eads St.													
Eastbound Left / Right		B	11.4	n/a	11	B	11.4	n/a	24	B	14.8	n/a	34
Northbound Left / Thru		A	2.5	n/a	3	A	2.5	n/a	10	A	5.4	n/a	11
12th St. S. & S. Elm St.													
Northbound Right		A	9.0	n/a	5	A	9.2	n/a	8	A	9.4	n/a	10

Notes:

n/a - not applicable

m - Volume for 95th percentile queue is metered by upstream signal

~ - Volume exceeds capacity, queue is theoretically infinite

- 95th percentile volume exceeds capacity, queue may be longer

Traffic Operations Results - 25% Grocery Transit Reduction

Intersection (Movement)	Bay Length (feet)	AM Peak				PM Peak				Saturday Peak			
		LOS	Delay	50th Queue	95th Queue	LOS	Delay	50th Queue	95th Queue	LOS	Delay	50th Queue	95th Queue
12th St. S. & S. Fern St.													
Overall Intersection (Signalized)		B	13.6	n/a	n/a	B	14.4	n/a	n/a	B	11.1	n/a	n/a
Eastbound Left/Thru/Right		C	33.3	90	145	C	30.8	118	185	C	27.6	73	137
Northbound Left/Thru/Right		A	5.5	62	137	A	8.9	92	186	A	6.1	68	139
Southbound Left/Thru/Right		A	4.0	13	39	A	7.7	80	157	A	4.7	42	86
S. 12th St. & S. Eads St.													
Overall Intersection (Signalized)		A	10.0	n/a	n/a	B	11.8	n/a	n/a	B	11.6	n/a	n/a
Eastbound Left/Thru		B	19.3	76	124	C	28.8	68	m107	C	23.9	52	77
Eastbound Right	260	B	16.5	2	m8	D	36.2	1	m10	C	21.9	0	12
Westbound Left		C	21.3	32	53	C	22.2	35	58	C	22.4	47	72
Westbound Right	260	B	19.9	0	19	C	20.2	0	25	C	20.1	0	21
Northbound Thru		A	6.1	36	113	A	6.3	43	134	A	5.7	30	96
Northbound Right		A	5.1	0	22	A	4.9	1	22	A	4.8	0	17
Southbound Left	50	A	6.0	11	47	A	5.0	4	22	A	4.7	2	12
Southbound Thru		A	6.3	41	125	A	7.1	58	179	A	6.2	40	124
15th St. S. & S. Eads St.													
Overall Intersection (Signalized)		B	17.7	n/a	n/a	B	19.7	n/a	n/a	B	18.0	n/a	n/a
Eastbound Left	184	B	12.6	9	23	B	14.7	11	m31	B	13.0	12	m31
Eastbound Thru/Right		B	12.5	63	86	A	8.8	61	75	A	8.4	56	69
Westbound Left		C	20.6	44	91	C	28.0	116	#263	B	11.8	26	54
Westbound Thru/Right		B	17.9	142	187	B	17.9	290	362	B	15.6	260	325
Northbound Left/Thru		C	20.3	84	121	C	27.5	105	151	C	30.3	112	161
Northbound Right	100	B	19.3	34	86	C	22.8	0	39	C	23.3	0	31
Southbound Left/Thru/Right		C	22.3	113	159	C	29.5	131	185	C	30.0	104	154
15th St. S. & S. Fern St.													
Overall Intersection (Signalized)		B	13.1	n/a	n/a	B	14.4	n/a	n/a	B	14.3	n/a	n/a
Eastbound Left	98	A	8.5	7	20	C	32.0	56	#165	D	42.0	60	#188
Eastbound Thru/Right		A	9.7	89	118	B	11.6	93	124	A	9.6	83	112
Westbound Left	110	A	6.2	8	m18	A	4.7	8	m12	A	4.7	7	m12
Westbound Thru/Right		A	7.3	48	65	A	6.8	45	54	A	7.1	77	91
Northbound Left/Thru		C	28.3	58	105	C	26.4	75	128	C	29.3	63	113
Northbound Right	35	C	29.2	2	45	C	25.2	4	28	C	28.0	1	26
Southbound Left/Thru/Right		C	28.1	37	66	C	29.4	110	158	C	31.7	87	133
15th St. S. & S. Elm St.													
Southbound Left		A	9.2	n/a	5	A	9.5	n/a	3	A	9.4	n/a	2
13th St. S. & S. Fern St.													
Eastbound Left / Thru / Right		A	9.6	n/a	0	C	18.8	n/a	4	A	0.0	n/a	0
Westbound Left / Thru / Right		B	14.9	n/a	27	C	23.3	n/a	50	C	15.2	n/a	30
Northbound Left		A	7.7	n/a	0	A	8.6	n/a	1	A	8.1	n/a	0
Southbound Left / Thru / Right		A	1.4	n/a	2	A	1.8	n/a	5	A	1.3	n/a	3
13th St. S. & S. Eads St.													
Eastbound Left / Right		B	11.2	n/a	10	B	13.9	n/a	20	B	13.4	n/a	24
Northbound Left / Thru		A	2.1	n/a	3	A	4.5	n/a	8	A	4.9	n/a	9
12th St. S. & S. Elm St.													
Northbound Right		A	8.9	n/a	5	A	9.1	n/a	7	A	9.3	n/a	9

Notes:

n/a - not applicable

m - Volume for 95th percentile queue is metered by upstream signal

~ - Volume exceeds capacity, queue is theoretically infinite

- 95th percentile volume exceeds capacity, queue may be longer

Traffic Operations Results - 50% Grocery Transit Reduction

Intersection (Movement)	Bay Length (feet)	AM Peak				PM Peak				Saturday Peak			
		LOS	Delay	50th Queue	95th Queue	LOS	Delay	50th Queue	95th Queue	LOS	Delay	50th Queue	95th Queue
12th St. S. & S. Fern St.													
Overall Intersection (Signalized)		B	12.7	n/a	n/a	B	14.1	n/a	n/a	B	10.7	n/a	n/a
Eastbound Left/Thru/Right		C	29.2	87	140	C	30.6	114	179	C	26.7	68	129
Northbound Left/Thru/Right		A	6.0	67	143	A	8.5	87	177	A	5.7	63	130
Southbound Left/Thru/Right		A	4.5	14	40	A	7.5	77	154	A	4.6	40	84
S. 12th St. & S. Eads St.													
Overall Intersection (Signalized)		A	9.9	n/a	n/a	B	11.6	n/a	n/a	B	11.4	n/a	n/a
Eastbound Left/Thru		B	19.2	75	123	C	30.4	64	m102	C	23.7	46	71
Eastbound Right	260	B	16.6	3	m8	D	39.2	1	m10	C	21.9	0	12
Westbound Left		C	21.4	32	53	C	23.3	34	57	C	22.3	47	72
Westbound Right	260	B	19.9	0	19	C	21.2	0	25	C	20.1	0	21
Northbound Thru		A	6.0	36	113	A	5.7	42	134	A	5.7	30	96
Northbound Right		A	5.1	0	22	A	4.4	1	22	A	4.8	0	17
Southbound Left	50	A	5.9	11	47	A	4.5	4	22	A	4.7	2	12
Southbound Thru		A	6.3	40	123	A	6.3	56	174	A	6.1	38	118
15th St. S. & S. Eads St.													
Overall Intersection (Signalized)		B	17.6	n/a	n/a	B	19.5	n/a	n/a	B	17.8	n/a	n/a
Eastbound Left	184	B	12.6	9	23	B	14.6	11	m31	B	12.8	12	m31
Eastbound Thru/Right		B	12.5	63	86	A	8.8	61	75	A	8.4	57	69
Westbound Left		C	20.6	44	91	C	28.0	116	#263	B	11.8	26	54
Westbound Thru/Right		B	17.9	141	185	B	17.7	287	359	B	15.5	257	322
Northbound Left/Thru		C	20.3	83	120	C	27.3	103	148	C	30.0	109	157
Northbound Right	100	B	19.3	34	86	C	22.8	0	39	C	23.3	0	31
Southbound Left/Thru/Right		C	22.2	112	158	C	29.1	127	180	C	29.4	97	145
15th St. S. & S. Fern St.													
Overall Intersection (Signalized)		B	13.1	n/a	n/a	B	14.4	n/a	n/a	B	14.1	n/a	n/a
Eastbound Left	98	A	8.5	7	20	C	31.2	54	#162	D	39.2	57	#181
Eastbound Thru/Right		A	9.7	89	118	B	11.6	93	124	A	9.6	83	112
Westbound Left	110	A	6.3	8	18	A	4.7	8	m12	A	4.7	7	m12
Westbound Thru/Right		A	7.3	48	65	A	6.9	45	54	A	7.2	77	91
Northbound Left/Thru		C	28.2	58	104	C	26.4	75	128	C	29.3	62	111
Northbound Right	35	C	29.2	1	44	C	25.2	4	28	C	28.0	1	26
Southbound Left/Thru/Right		C	28.1	37	66	C	29.4	110	158	C	31.6	86	132
15th St. S. & S. Elm St.													
Southbound Left		A	9.2	n/a	5	A	9.5	n/a	3	A	9.4	n/a	2
13th St. S. & S. Fern St.													
Eastbound Left / Thru / Right		A	9.6	n/a	0	C	18.1	n/a	4	A	0.0	n/a	0
Westbound Left / Thru / Right		B	14.7	n/a	25	C	21.9	n/a	41	B	14.1	n/a	22
Norhtbound Left		A	7.7	n/a	0	A	8.6	n/a	1	A	8.1	n/a	0
Southbound Left / Thru / Right		A	1.2	n/a	1	A	1.6	n/a	4	A	1.1	n/a	3
13th St. S. & S. Eads St.													
Eastbound Left / Right		B	11.0	n/a	9	B	13.5	n/a	17	B	12.5	n/a	17
Northbound Left / Thru		A	1.8	n/a	2	A	4.0	n/a	7	A	4.3	n/a	7
12th St. S. & S. Elm St.													
Northbound Right		A	8.9	n/a	5	A	9.1	n/a	6	A	9.2	n/a	7

Notes:

n/a - not applicable

m - Volume for 95th percentile queue is metered by upstream signal

~ - Volume exceeds capacity, queue is theoretically infinite

- 95th percentile volume exceeds capacity, queue may be longer

Appendix C

South Eads Street Alternate Configuration – Volumes

12th Street - Restricted Lefts

TF AM Peak Hour

Tue Jan 29, 2013 16:20:09

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Turning Movement Report AM Peak Hour

Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
#101 Fern/12th Street													
Base	53	283	4	2	88	28	44	116	47	0	0	0	665
Added	26	20	0	0	9	0	0	12	0	0	0	0	67
PassBy	0	-41	0	0	0	0	0	0	0	5	5	84	53
Total	79	262	4	2	97	28	44	128	47	5	5	84	785
#102													
Base	0	0	18	0	0	0	0	112	10	0	0	0	140
Added	0	0	33	0	0	0	0	0	12	0	0	0	45
PassBy	54	5	-12	5	5	5	0	-2	2	0	30	5	97
Total	54	5	39	5	5	5	0	110	24	0	30	5	282
#103 Eads/12th Street													
Base	0	257	101	84	261	0	6	113	11	77	0	47	957
Added	0	0	4	0	15	0	33	0	0	2	0	0	54
PassBy	14	13	0	0	0	5	-39	13	0	0	30	-30	6
Total	14	270	105	84	276	5	0	126	11	79	30	17	1017
#104													
Base	78	252	208	156	212	28	35	622	50	99	485	106	2331
Added	0	9	0	20	20	0	0	0	0	0	0	9	58
PassBy	0	0	0	0	-1	0	0	0	0	0	0	0	-1
Total	78	261	208	176	231	28	35	622	50	99	485	115	2388
#105 Elm/15th													
Base	0	0	0	0	0	48	0	707	0	0	575	15	1345
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	48	0	707	0	0	575	15	1345
#106 15th/Fern													
Base	16	90	105	87	38	21	24	514	38	43	343	237	1556
Added	0	1	0	0	3	7	3	0	0	0	0	0	14
Total	16	91	105	87	41	28	27	514	38	43	343	237	1570
#107 13th/Fern													
Base	2	302	9	7	116	2	0	0	4	25	1	36	504
Added	0	0	4	9	0	0	0	0	0	9	0	46	68
PassBy	0	0	0	1	-1	0	0	0	0	1	0	0	1
Total	2	302	13	17	115	2	0	0	4	35	1	82	573
#108 Eads/13th													
Base	7	351	0	0	337	12	7	0	13	0	0	0	727
Added	18	0	0	0	0	17	4	0	40	0	0	0	79
PassBy	3	-3	0	0	-3	3	2	0	2	0	0	0	4
Total	28	348	0	0	334	32	13	0	55	0	0	0	810

12th Street - Restricted Lefts

TF PM Peak Hour

Tue Jan 29, 2013 16:20:56

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Turning Movement Report PM Peak Hour

Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
#101 Fern/12th Street													
Base	73	268	11	6	317	36	77	103	73	0	0	0	964
Added	26	20	0	0	27	0	0	37	0	0	0	0	110
PassBy	0	-39	0	0	0	0	0	0	0	5	5	115	86
Total	99	249	11	6	344	36	77	140	73	5	5	115	1160
#102													
Base	0	0	22	0	0	0	0	90	29	0	0	0	141
Added	0	0	33	0	0	0	0	0	37	0	0	0	70
PassBy	40	5	-6	5	5	5	0	-5	5	0	61	5	120
Total	40	5	49	5	5	5	0	85	71	0	61	5	331
#103 Eads/12th Street													
Base	0	301	74	33	325	0	7	92	14	76	0	80	1002
Added	0	0	4	0	46	0	33	0	0	5	0	0	88
PassBy	42	13	0	0	0	5	-40	13	0	0	61	-61	33
Total	42	314	78	33	371	5	0	105	14	81	61	19	1123
#104													
Base	85	245	119	93	252	50	37	590	67	232	963	150	2883
Added	0	27	0	20	20	0	0	0	0	0	0	27	94
PassBy	0	0	0	0	-1	0	0	0	0	0	0	0	-1
Total	85	272	119	113	271	50	37	590	67	232	963	177	2976
#105 Elm/15th													
Base	0	0	0	0	0	32	0	694	0	0	1050	48	1824
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	32	0	694	0	0	1050	48	1824
#106 15th/Fern													
Base	24	114	36	174	147	54	108	484	38	74	791	216	2260
Added	0	4	0	0	3	7	9	0	0	0	0	0	23
Total	24	118	36	174	150	61	117	484	38	74	791	216	2283
#107 13th/Fern													
Base	7	316	28	26	441	1	4	0	9	20	0	32	884
Added	0	0	13	27	0	0	0	0	0	9	0	46	95
PassBy	0	-1	1	3	-3	0	0	0	0	5	0	1	6
Total	7	315	42	56	438	1	4	0	9	34	0	79	985
#108 Eads/13th													
Base	21	375	0	0	390	25	8	0	16	0	0	0	835
Added	55	0	0	0	0	51	4	0	39	0	0	0	149
PassBy	8	-8	0	0	-8	8	11	0	11	0	0	0	22
Total	84	367	0	0	382	84	23	0	66	0	0	0	1006

12th Street - Restricted Lefts

Saturday

Tue Jan 29, 2013 16:22:07

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Turning Movement Report Saturday

Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
#101 Fern/12th Street													
Base	79	260	13	7	248	29	27	73	110	0	0	0	846
Added	32	24	0	0	25	0	0	33	0	0	0	0	114
PassBy	0	-42	0	0	0	0	0	0	0	5	5	99	67
Total	111	242	13	7	273	29	27	106	110	5	5	99	1027
#102													
Base	0	0	27	0	0	0	0	57	36	0	0	0	120
Added	0	0	41	0	0	0	0	0	33	0	0	0	74
PassBy	59	5	-11	5	5	5	0	-6	6	0	40	5	113
Total	59	5	57	5	5	5	0	51	75	0	40	5	307
#103 Eads/12th Street													
Base	0	220	55	15	223	0	8	59	17	106	0	55	758
Added	0	0	5	0	41	0	41	0	0	5	0	0	92
PassBy	43	16	0	0	0	5	-49	16	0	0	40	-40	31
Total	43	236	60	15	264	5	0	75	17	111	40	15	881
#104													
Base	126	209	67	105	132	69	39	526	86	79	998	87	2523
Added	0	25	0	24	24	0	0	0	0	0	0	25	98
Total	126	234	67	129	156	69	39	526	86	79	998	112	2621
#105 Elm/15th													
Base	0	0	0	0	0	21	0	651	0	0	1177	16	1865
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	21	0	651	0	0	1177	16	1865
#106 15th/Fern													
Base	36	73	35	169	69	72	112	489	32	51	922	225	2285
Added	0	3	0	0	3	8	8	0	0	0	0	0	22
Total	36	76	35	169	72	80	120	489	32	51	922	225	2307
#107 13th/Fern													
Base	5	327	11	7	368	11	0	0	0	7	0	26	762
Added	0	0	12	25	0	0	0	0	0	11	0	57	105
PassBy	0	-1	1	5	-5	0	0	0	0	5	0	1	6
Total	5	326	24	37	363	11	0	0	0	23	0	84	873
#108 Eads/13th													
Base	25	310	0	0	314	32	10	0	20	0	0	0	711
Added	50	0	0	0	0	46	5	0	49	0	0	0	150
PassBy	10	-10	0	0	-10	10	10	0	10	0	0	0	20
Total	85	300	0	0	304	88	25	0	79	0	0	0	881

12th Street - With Lefts

TF AM Peak Hour

Tue Jan 29, 2013 16:23:08

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Turning Movement Report AM Peak Hour

Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
#101 Fern/12th Street													
Base	53	283	4	2	88	28	44	116	47	0	0	0	665
Added	26	20	0	0	9	0	0	12	0	0	0	0	67
PassBy	0	-41	0	0	0	0	0	0	0	5	5	72	41
Total	79	262	4	2	97	28	44	128	47	5	5	72	773
#102													
Base	0	0	18	0	0	0	0	112	10	0	0	0	140
Added	0	0	33	0	0	0	0	0	12	0	0	0	45
PassBy	41	5	1	5	5	5	5	-2	2	16	30	5	118
Total	41	5	52	5	5	5	5	110	24	16	30	5	303
#103 Eads/12th Street													
Base	0	257	101	84	261	0	6	113	11	77	0	47	957
Added	0	0	4	0	15	0	33	0	0	2	0	0	54
PassBy	14	0	0	0	-16	16	0	0	0	0	30	-30	14
Total	14	257	105	84	260	16	39	113	11	79	30	17	1025
#104													
Base	78	252	208	156	212	28	35	622	50	99	485	106	2331
Added	0	9	0	20	20	0	0	0	0	0	0	9	58
PassBy	0	0	0	0	-1	0	0	0	0	0	0	0	-1
Total	78	261	208	176	231	28	35	622	50	99	485	115	2388
#105 Elm/15th													
Base	0	0	0	0	0	48	0	707	0	0	575	15	1345
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	48	0	707	0	0	575	15	1345
#106 15th/Fern													
Base	16	90	105	87	38	21	24	514	38	43	343	237	1556
Added	0	1	0	0	3	7	3	0	0	0	0	0	14
Total	16	91	105	87	41	28	27	514	38	43	343	237	1570
#107 13th/Fern													
Base	2	302	9	7	116	2	0	0	4	25	1	36	504
Added	0	0	4	9	0	0	0	0	0	9	0	46	68
PassBy	0	0	0	1	-1	0	0	0	0	1	0	0	1
Total	2	302	13	17	115	2	0	0	4	35	1	82	573
#108 Eads/13th													
Base	7	351	0	0	337	12	7	0	13	0	0	0	727
Added	18	0	0	0	0	17	4	0	40	0	0	0	79
PassBy	3	-3	0	0	-3	3	2	0	2	0	0	0	4
Total	28	348	0	0	334	32	13	0	55	0	0	0	810

12th Street - With Lefts

TF PM Peak Hour

Tue Jan 29, 2013 16:24:25

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Turning Movement Report PM Peak Hour

Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
#101 Fern/12th Street													
Base	73	268	11	6	317	36	77	103	73	0	0	0	964
Added	26	20	0	0	27	0	0	37	0	0	0	0	110
PassBy	0	-39	0	0	0	0	0	0	0	5	5	101	72
Total	99	249	11	6	344	36	77	140	73	5	5	101	1146
#102													
Base	0	0	22	0	0	0	0	90	29	0	0	0	141
Added	0	0	33	0	0	0	0	0	37	0	0	0	70
PassBy	40	5	8	5	5	5	5	-5	5	42	61	5	181
Total	40	5	63	5	5	5	5	85	71	42	61	5	392
#103 Eads/12th Street													
Base	0	301	74	33	325	0	7	92	14	76	0	80	1002
Added	0	0	4	0	46	0	33	0	0	5	0	0	88
PassBy	42	0	0	0	-42	42	0	0	0	0	61	-61	42
Total	42	301	78	33	329	42	40	92	14	81	61	19	1132
#104													
Base	85	245	119	93	252	50	37	590	67	232	963	150	2883
Added	0	27	0	20	20	0	0	0	0	0	0	27	94
PassBy	0	0	0	0	-1	0	0	0	0	0	0	0	-1
Total	85	272	119	113	271	50	37	590	67	232	963	177	2976
#105 Elm/15th													
Base	0	0	0	0	0	32	0	694	0	0	1050	48	1824
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	32	0	694	0	0	1050	48	1824
#106 15th/Fern													
Base	24	114	36	174	147	54	108	484	38	74	791	216	2260
Added	0	4	0	0	3	7	9	0	0	0	0	0	23
Total	24	118	36	174	150	61	117	484	38	74	791	216	2283
#107 13th/Fern													
Base	7	316	28	26	441	1	4	0	9	20	0	32	884
Added	0	0	13	27	0	0	0	0	0	9	0	46	95
PassBy	0	-1	1	3	-3	0	0	0	0	5	0	1	6
Total	7	315	42	56	438	1	4	0	9	34	0	79	985
#108 Eads/13th													
Base	21	375	0	0	390	25	8	0	16	0	0	0	835
Added	55	0	0	0	0	51	4	0	39	0	0	0	149
PassBy	8	-8	0	0	-8	8	11	0	11	0	0	0	22
Total	84	367	0	0	382	84	23	0	66	0	0	0	1006

12th Street - With Lefts

Saturday

Tue Jan 29, 2013 16:25:35

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Turning Movement Report Saturday

Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
#101 Fern/12th Street													
Base	79	260	13	7	248	29	27	73	110	0	0	0	846
Added	32	24	0	0	25	0	0	33	0	0	0	0	114
PassBy	0	-42	0	0	0	0	0	0	0	5	5	82	50
Total	111	242	13	7	273	29	27	106	110	5	5	82	1010
#102													
Base	0	0	27	0	0	0	0	57	36	0	0	0	120
Added	0	0	41	0	0	0	0	0	33	0	0	0	74
PassBy	42	5	6	5	5	5	5	-6	6	44	40	5	162
Total	42	5	74	5	5	5	5	51	75	44	40	5	356
#103 Eads/12th Street													
Base	0	220	55	15	223	0	8	59	17	106	0	55	758
Added	0	0	5	0	41	0	41	0	0	5	0	0	92
PassBy	43	0	0	0	-44	44	0	0	0	0	40	-40	43
Total	43	220	60	15	220	44	49	59	17	111	40	15	893
#104													
Base	126	209	67	105	132	69	39	526	86	79	998	87	2523
Added	0	25	0	24	24	0	0	0	0	0	0	25	98
Total	126	234	67	129	156	69	39	526	86	79	998	112	2621
#105 Elm/15th													
Base	0	0	0	0	0	21	0	651	0	0	1177	16	1865
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	21	0	651	0	0	1177	16	1865
#106 15th/Fern													
Base	36	73	35	169	69	72	112	489	32	51	922	225	2285
Added	0	3	0	0	3	8	8	0	0	0	0	0	22
Total	36	76	35	169	72	80	120	489	32	51	922	225	2307
#107 13th/Fern													
Base	5	327	11	7	368	11	0	0	0	7	0	26	762
Added	0	0	12	25	0	0	0	0	0	11	0	57	105
PassBy	0	-1	1	5	-5	0	0	0	0	5	0	1	6
Total	5	326	24	37	363	11	0	0	0	23	0	84	873
#108 Eads/13th													
Base	25	310	0	0	314	32	10	0	20	0	0	0	711
Added	50	0	0	0	0	46	5	0	49	0	0	0	150
PassBy	10	-10	0	0	-10	10	10	0	10	0	0	0	20
Total	85	300	0	0	304	88	25	0	79	0	0	0	881

Appendix D

South Eads Street Alternate Configuration – Analysis Results

Traffic Operations Results – Original TIS Lane Configuration on South Eads Street

Intersection (Movement)	Bay Length (feet)	AM Peak				PM Peak				Saturday Peak			
		LOS	Delay	50th Queue	95th Queue	LOS	Delay	50th Queue	95th Queue	LOS	Delay	50th Queue	95th Queue
12th St. & S. Eads St.													
Overall Intersection (Signalized)		A	9.9	n/a	n/a	B	11.6	n/a	n/a	B	11.4	n/a	n/a
Eastbound Left/Thru		B	19.2	75	123	C	30.4	64	m102	C	23.7	46	71
Eastbound Right		B	16.6	3	m8	D	39.2	1	m10	C	21.9	0	12
Westbound Left		C	21.4	32	53	C	23.3	34	57	C	22.3	47	72
Westbound Right		B	19.9	0	19	C	21.2	0	25	C	20.1	0	21
Northbound Thru		A	6.0	36	113	A	5.7	42	134	A	5.7	30	96
Northbound Right	100	A	5.1	0	22	A	4.4	1	22	A	4.8	0	17
Southbound Left		A	5.9	11	47	A	4.5	4	22	A	4.7	2	12
Southbound Thru		A	6.3	40	123	A	6.3	56	174	A	6.1	38	118
15th St. S. & S. Eads St.													
Overall Intersection (Signalized)		B	17.6	n/a	n/a	B	19.5	n/a	n/a	B	17.8	n/a	n/a
Eastbound Left		B	12.6	9	23	B	14.6	11	m31	B	12.8	12	m31
Eastbound Thru/Right		B	12.5	63	86	A	8.8	61	75	A	8.4	57	69
Westbound Left		C	20.6	44	91	C	28.0	116	#263	B	11.8	26	54
Westbound Thru/Right		B	17.9	141	185	B	17.7	287	359	B	15.5	257	322
Northbound Left/Thru		C	20.3	83	120	C	27.3	103	148	C	30.0	109	157
Northbound Right		B	19.3	34	86	C	22.8	0	39	C	23.3	0	31
Southbound Left/Thru/Right		C	22.2	112	158	C	29.1	127	180	C	29.4	97	145
13th St. S. & S. Eads St.													
Eastbound Left / Right		B	11	n/a	9	B	13.5	n/a	17	B	12.5	n/a	17
Northbound Left		A	1.8	n/a	2	A	4	n/a	7	A	4.3	n/a	7

Notes:

n/a - not applicable

m - Volume for 95th percentile queue is metered by upstream signal

~ - Volume exceeds capacity, queue is theoretically infinite

- 95th percentile volume exceeds capacity, queue may be longer

Traffic Operations Results - One Northbound Through Lane on South Eads Street

Intersection (Movement)	Bay Length (feet)	AM Peak				PM Peak				Saturday Peak			
		LOS	Delay	50th Queue	95th Queue	LOS	Delay	50th Queue	95th Queue	LOS	Delay	50th Queue	95th Queue
12th St. & S. Eads St.													
Overall Intersection (Signalized)		A	9.9	n/a	n/a	B	11.6	n/a	n/a	B	11.4	n/a	n/a
Eastbound Left/Thru		B	19.2	75	123	C	30.4	64	m102	C	23.7	46	71
Eastbound Right		B	16.6	3	m8	D	39.2	1	m10	C	21.9	0	12
Westbound Left		C	21.4	32	53	C	23.3	34	57	C	22.3	47	72
Westbound Right		B	19.9	0	19	C	21.2	0	25	C	20.1	0	21
Northbound Thru		A	6.0	36	113	A	5.7	42	134	A	5.7	30	96
Northbound Right	100	A	5.1	0	22	A	4.4	1	22	A	4.8	0	17
Southbound Left		A	5.9	11	47	A	4.5	4	22	A	4.7	2	12
Southbound Thru		A	6.3	40	123	A	6.3	56	174	A	6.1	38	118
15th St. S. & S. Eads St.													
Overall Intersection (Signalized)		B	17.7	n/a	n/a	B	19.7	n/a	n/a	B	17.8	n/a	n/a
Eastbound Left		B	12.6	9	23	B	14.6	11	m31	B	12.8	12	m31
Eastbound Thru/Right		B	12.5	63	86	A	8.8	61	75	A	8.4	57	69
Westbound Left		C	20.6	44	91	C	28.0	116	#263	B	11.8	26	54
Westbound Thru/Right		B	17.9	141	185	B	17.7	287	359	B	15.5	257	322
Northbound Left		C	20.6	35	73	C	28.7	45	92	C	34.2	73	138
Northbound Thru		C	21.0	124	190	C	27.9	150	230	C	28.5	129	202
Northbound Right		B	19.3	34	86	C	23.0	5	45	C	23.3	0	31
Southbound Left/Thru/Right		C	22.2	112	158	C	29.4	127	181	C	29.0	97	144
13th St. S. & S. Eads St.													
Eastbound Left / Right		B	11.6	n/a	10	B	15.5	n/a	21	B	13.6	n/a	20
Northbound Left		A	8.2	n/a	2	A	8.7	n/a	7	A	8.5	n/a	7

Notes:

n/a - not applicable

m - Volume for 95th percentile queue is metered by upstream signal

~ - Volume exceeds capacity, queue is theoretically infinite

- 95th percentile volume exceeds capacity, queue may be longer

Traffic Operations Results - Two-Way Left Turn Lane on South Eads Street

Intersection (Movement)	Bay Length (feet)	AM Peak				PM Peak				Saturday Peak			
		LOS	Delay	50th Queue	95th Queue	LOS	Delay	50th Queue	95th Queue	LOS	Delay	50th Queue	95th Queue
12th St. & S. Eads St.													
Overall Intersection (Signalized)		A	9.9	n/a	n/a	B	11.7	n/a	n/a	B	11.5	n/a	n/a
Eastbound Left/Thru		B	19.2	75	123	C	30.2	63	m102	C	23.6	46	71
Eastbound Right		B	16.6	3	m8	D	38.7	1	m10	C	21.8	0	12
Westbound Left		C	21.4	32	53	C	23.7	34	60	C	22.3	47	72
Westbound Right		B	19.9	0	19	C	20.9	0	25	C	20.1	0	21
Northbound Thru		A	6.0	36	113	A	5.8	46	134	A	5.7	30	96
Northbound Right	100	A	5.1	0	22	A	4.5	1	22	A	4.8	0	17
Southbound Left		A	5.9	11	47	A	4.7	4	22	A	4.7	2	12
Southbound Thru		A	6.3	40	123	A	6.5	61	174	A	6.1	38	118
15th St. S. & S. Eads St.													
Overall Intersection (Signalized)		B	17.7	n/a	n/a	B	19.9	n/a	n/a	B	17.8	n/a	n/a
Eastbound Left		B	12.6	9	23	B	14.7	11	m31	B	12.9	12	m31
Eastbound Thru/Right		B	12.5	63	86	A	8.8	61	75	A	8.4	57	69
Westbound Left		C	20.6	44	91	C	28.0	116	#263	B	11.8	26	54
Westbound Thru/Right		B	17.9	141	185	B	18.0	290	364	B	15.6	258	323
Northbound Left		B	19.7	35	70	C	29.5	45	94	C	32.6	72	134
Northbound Thru		C	21.0	124	190	C	27.9	150	230	C	28.5	129	202
Northbound Right		B	19.3	34	86	C	23.0	5	45	C	23.3	0	31
Southbound Left	50	C	25.0	89	158	C	31.7	63	123	C	32.3	73	136
Southbound Thru/Right		C	20.7	119	184	C	29.3	177	267	C	28.0	112	182
13th St. S. & S. Eads St.													
Eastbound Left / Right		B	11.8	n/a	10	B	14.5	n/a	19	B	13.7	n/a	20
Northbound Left		A	8.2	n/a	2	A	8.8	n/a	7	A	8.5	n/a	7

Notes:

n/a - not applicable

m - Volume for 95th percentile queue is metered by upstream signal

~ - Volume exceeds capacity, queue is theoretically infinite

- 95th percentile volume exceeds capacity, queue may be longer

Appendix E

12th Street South Alternate Configuration – Volumes

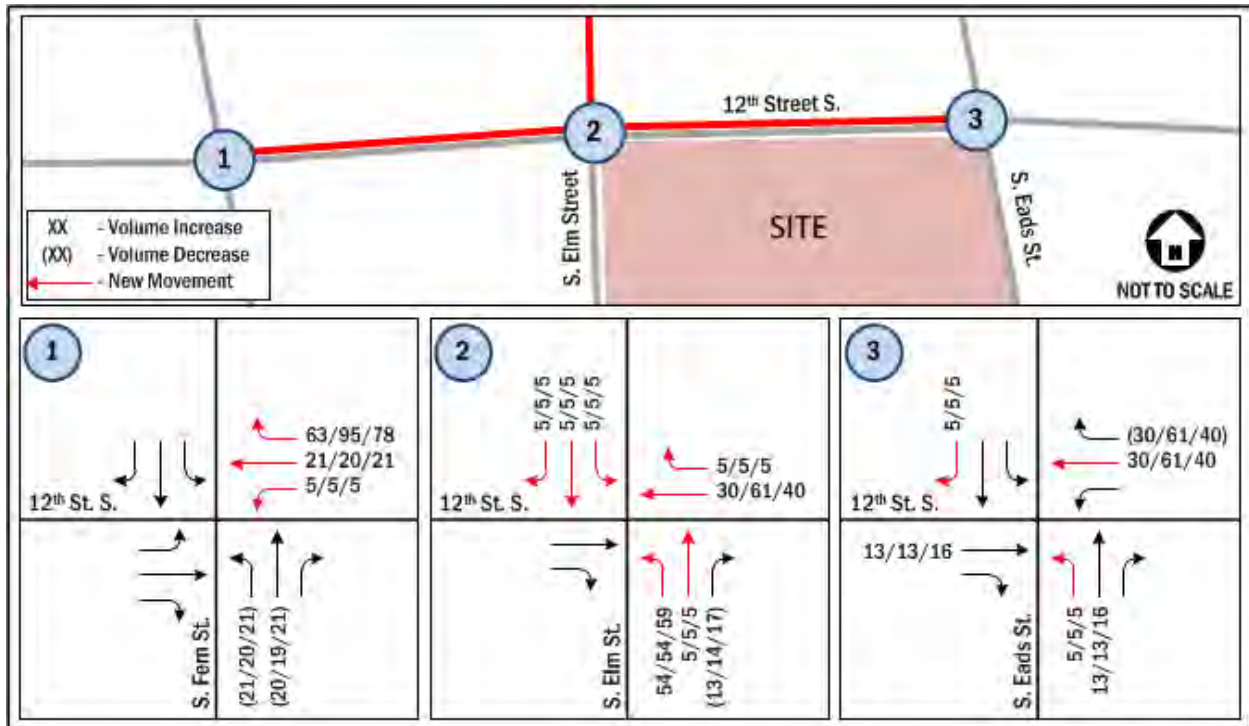


Figure 1: 12th Street Rerouting - Restricted Lefts

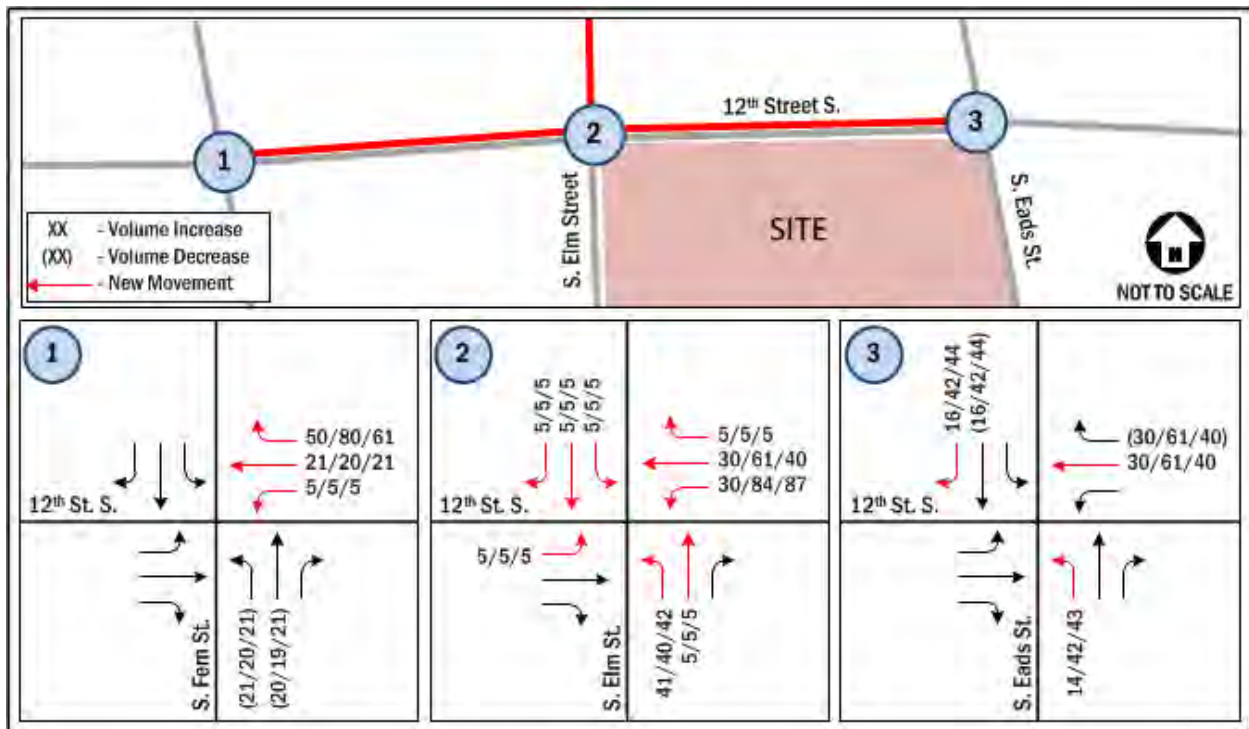


Figure 2: 12th Street Rerouting - With Lefts

Appendix F

12th Street South Alternate Configuration – Analysis Results

Traffic Operations Results – 12th Street South, Eastbound Traffic Only (Original TIS Configuration)

Intersection (Movement)	Bay Length (feet)	AM Peak				PM Peak				Saturday Peak			
		LOS	Delay	50th Queue	95th Queue	LOS	Delay	50th Queue	95th Queue	LOS	Delay	50th Queue	95th Queue
12th St. S. & S. Fern St.													
Overall Intersection (Signalized)		B	12.7	n/a	n/a	B	14.1	n/a	n/a	B	10.7	n/a	n/a
Eastbound Left/Thru/Right		C	29.2	87	140	C	30.6	114	179	C	27.1	68	129
Northbound Left/Thru/Right		A	6.0	67	143	A	8.5	87	177	A	5.7	62	130
Southbound Left/Thru/Right		A	4.5	14	40	A	7.5	77	154	A	4.5	40	84
S. 12th St. & S. Eads St.													
Overall Intersection (Signalized)		A	9.9	n/a	n/a	B	11.6	n/a	n/a	B	11.4	n/a	n/a
Eastbound Thru		B	19.2	75	123	C	30.4	64	m102	C	23.7	46	71
Eastbound Right		B	16.6	3	m8	D	39.2	1	m10	C	21.9	0	12
Westbound Left		C	21.4	32	53	C	23.3	34	57	C	22.3	47	72
Westbound Right		B	19.9	0	19	C	21.2	0	25	C	20.1	0	21
Northbound Left/Thru/Right		A	6.0	36	113	A	5.7	42	134	A	5.7	30	96
Northbound Right		A	5.1	0	22	A	4.4	1	22	A	4.8	0	17
Southbound Left		A	5.9	11	47	A	4.5	4	22	A	4.7	2	12
Southbound Left/Thru/Right		A	6.3	40	123	A	6.3	56	174	A	6.1	38	118
12th St. S. & S. Elm St.													
Northbound Right		A	8.9	n/a	5	A	9.1	n/a	6	A	9.2	n/a	7

Notes:

n/a - not applicable

m - Volume for 95th percentile queue is metered by upstream signal

~ - Volume exceeds capacity, queue is theoretically infinite

- 95th percentile volume exceeds capacity, queue may be longer

Traffic Operations Results - 12th Street South, Two-Way Traffic with Limited Left Turns

Intersection (Movement)	Bay Length (feet)	AM Peak				PM Peak				Saturday Peak			
		LOS	Delay	50th Queue	95th Queue	LOS	Delay	50th Queue	95th Queue	LOS	Delay	50th Queue	95th Queue
12th St. S. & S. Fern St.													
Overall Intersection (Signalized)		B	13.1	n/a	n/a	B	11.9	n/a	n/a	B	11.1	n/a	n/a
Eastbound Left		C	22.9	17	38	C	22.1	29	55	B	19.6	9	24
Eastbound Thru/Right		C	28.1	65	111	C	27.9	75	123	C	25.8	52	106
Westbound Left/Thru/Right		C	23.6	11	40	B	10.7	0	22	C	21.6	9	41
Northbound Left/Thru/Right		A	5.0	51	119	A	6.6	65	152	A	4.8	48	111
Southbound Left/Thru/Right		A	3.9	12	38	A	6.3	67	153	A	4.1	36	84
12th St. & S. Elm St.													
Overall Intersection (Signalized)		A	8.1	n/a	n/a	A	6.5	n/a	n/a	B	12.5	n/a	n/a
Eastbound Thru/Right		A	1.9	0	7	A	1.1	0	4	B	13.1	14	45
Westbound Thru/Right		B	16.5	12	34	A	7.1	24	47	A	8.2	5	19
Northbound Left/Thru/Right		B	13.1	16	44	B	14.2	13	41	B	13.4	18	49
Southbound Left/Thru/Right		B	12.1	2	13	B	13.4	3	13	B	12.1	2	13
12th St. & S. Elm St. (Unsignalized)													
Eastbound Thru/Right		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Westbound Thru/Right		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Northbound Left/Thru/Right		A	9.8	n/a	11	B	10.0	n/a	11	B	10.0	n/a	14
Southbound Left/Thru/Right		A	9.5	n/a	2	A	10.0	n/a	2	A	9.8	n/a	2
S. 12th St. & S. Eads St.													
Overall Intersection (Signalized)		A	9.5	n/a	n/a	B	11.0	n/a	n/a	B	11.4	n/a	n/a
Eastbound Thru/Right		B	18.1	60	98	C	28.6	53	94	C	28.6	35	71
Westbound Left		C	21.8	33	53	C	23.4	34	57	C	23.3	47	72
Westbound Thru/Right		C	22.6	13	31	C	24.0	25	48	C	23.4	16	36
Northbound Left		A	5.4	1	6	A	5.0	1	6	A	5.1	1	6
Northbound Thru		A	5.9	36	119	A	5.7	44	140	A	5.3	33	103
Northbound Right		A	4.9	0	22	A	4.4	2	22	A	4.4	0	17
Southbound Left	50	A	5.7	10	47	A	4.5	4	22	A	4.3	2	12
Southbound Thru/Right		A	6.1	37	125	A	6.3	56	176	A	5.6	38	120

Notes:

n/a - not applicable

m - Volume for 95th percentile queue is metered by upstream signal

~ - Volume exceeds capacity, queue is theoretically infinite

- 95th percentile volume exceeds capacity, queue may be longer

Traffic Operations Results - 12th Street South, Two-Way Traffic with Left Turns Allowed

Intersection (Movement)	Bay Length (feet)	AM Peak				PM Peak				Saturday Peak			
		LOS	Delay	50th Queue	95th Queue	LOS	Delay	50th Queue	95th Queue	LOS	Delay	50th Queue	95th Queue
12th St. S. & S. Fern St.													
Overall Intersection (Signalized)		B	12.5	n/a	n/a	B	13.3	n/a	n/a	B	10.9	n/a	n/a
Eastbound Left		C	23.3	17	39	C	22.2	30	54	B	19.6	9	24
Eastbound Thru/Right		C	28.5	65	111	C	28.4	76	123	C	25.8	52	106
Westbound Left/Thru/Right		B	18.5	0	32	C	26.2	8	35	C	21.5	9	39
Northbound Left/Thru/Right		A	4.9	51	119	A	6.4	62	152	A	4.8	48	111
Southbound Left/Thru/Right		A	3.8	12	38	A	6.2	64	153	A	4.1	36	84
12th St. & S. Elm St.													
Overall Intersection (Signalized)		A	8.3	n/a	n/a	A	8.5	n/a	n/a	B	13.1	n/a	n/a
Eastbound Left/Thru/Right		A	2.4	5	9	A	1.1	0	4	B	12.5	15	46
Westbound Left/Thru/Right		B	13.3	20	39	B	11.2	41	75	B	13.0	38	78
Northbound Left/Thru/Right		B	13.0	13	40	B	15.0	13	44	B	13.9	13	45
Southbound Left/Thru/Right		B	12.1	2	13	B	14.0	3	14	B	12.7	3	13
12th St. & S. Elm St. (Unsignalized)													
Eastbound Left/Thru/Right		A	0.3	n/a	0	A	0.3	n/a	0	A	0.3	n/a	0
Westbound Left/Thru/Right		A	3.6	n/a	2	A	4.6	n/a	5	A	5.2	n/a	5
Northbound Left/Thru/Right		B	10.1	n/a	11	B	11.2	n/a	15	B	11.0	n/a	16
Southbound Left/Thru/Right		B	10.1	n/a	2	B	11.6	n/a	2	B	11.5	n/a	2
S. 12th St. & S. Eads St.													
Overall Intersection (Signalized)		B	10.0	n/a	n/a	B	11.3	n/a	n/a	B	11.9	n/a	n/a
Eastbound Left/Thru/Right		B	18.9	71	109	C	26.7	67	109	C	28.2	53	94
Westbound Left		C	21.2	32	53	C	21.9	34	56	C	22.3	47	71
Westbound Thru/Right		C	22.0	12	31	C	22.7	25	48	C	22.7	16	36
Northbound Left		A	5.9	2	13	A	6.2	6	28	A	5.9	6	28
Northbound Thru		A	6.2	38	113	A	6.4	44	134	A	5.6	29	96
Northbound Right		A	5.2	0	22	A	5.0	1	22	A	4.7	0	17
Southbound Left	50	A	6.0	12	47	A	5.1	4	22	A	4.6	2	12
Southbound Thru/Right		A	6.4	41	122	A	7.1	57	171	A	6.0	34	112

Notes:

n/a - not applicable

m - Volume for 95th percentile queue is metered by upstream signal

~ - Volume exceeds capacity, queue is theoretically infinite

- 95th percentile volume exceeds capacity, queue may be longer