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November 6, 2015

Ms. Leah Fitzgerald  
VanTrust Real Estate, LLC  
4900 Main Street, Suite 400  
Kansas City, MO 64112

**RE: Traffic Impact Study  
Meadowbrook Redevelopment  
Overland Park, KS**

Dear Ms. Fitzgerald

In response to your request and authorization, Wilson & Company has completed a traffic impact study for the proposed development on the old Meadowbrook Country Club in Prairie Village, Kansas. The proposed development consists of a variety of land uses encompassing roughly 138 acres.

This report summarizes the results of our traffic study. This study is focused on the impact of the proposed development on the surrounding intersections in Overland Park, Kansas, during the A.M. and P.M. peak hours of a typical weekday. Included in this study are trip generation projections, volume/capacity analyses, and improvement to the street system to mitigate the impact of the proposed development.

## **PROPOSED DEVELOPMENT AND STUDY AREA**

The proposed development is located in Prairie Village, Kansas, at the location of the old Meadowbrook Country Club. *Figure A-1 in Appendix A* shows the location of the proposed development and its relationship with the surrounding streets. The proposed development is bounded by Nall Avenue on the west and 95<sup>th</sup> Street and 94<sup>th</sup> Terrace on the south. The remainder of the development is bounded by residences along Somerset Drive, 90<sup>th</sup> Street, and Roe Avenue on the north and east.

The proposed land use condition includes 330 units of senior housing, 280 units of apartments, 68 units of townhomes, 57 single family home units, a 50 room Inn, and 87 acres of public park. For analysis purposes, the proposed development was further broken down into two scenarios; All of the Proposed Development Without the Park (Development), and All Proposed Development Including the Park (Development Plus Park).

Access to the proposed development is to be provided from a main entrance at the intersection of Nall Avenue and 92<sup>nd</sup> Terrace and a secondary driveway onto 94<sup>th</sup> Terrace. A copy of the site plan showing driveway locations is included on *Figure A-2*.

95<sup>th</sup> Street is an east/west road with two-lanes in each direction and left turn lanes at various intersections. The posted speed is 35 mph adjacent to the development. Nall Avenue is a north/south road with two-lanes in each direction, and left turn lanes at its intersections with 95<sup>th</sup> Street and Somerset Drive. The posted speed is 35 mph adjacent to the development. Somerset Drive and 90<sup>th</sup> Street are both east/west streets with posted speed limits of 30 and 25 mph, respectively. Roe Avenue is a north/south roadway with a posted speed limit of 35 mph.

To assess the impacts of the proposed development, several intersections were identified for study during the peak hours. The intersections are located in the immediate area of the site and include:

- Nall Avenue and 92<sup>nd</sup> Terrace
- Nall Avenue and 94<sup>th</sup> Terrace
- Rosewood and 95<sup>th</sup> Street
- Roe Avenue and 91<sup>st</sup> Street
- Nall Avenue and 91<sup>st</sup> Street and Somerset Drive
- Nall Avenue and 95<sup>th</sup> Street
- Roe Avenue and 95<sup>th</sup> Street
- Roe Avenue and 93<sup>rd</sup> Street
- Roe Avenue and 92<sup>nd</sup> Terrace
- Roe Avenue and 90<sup>th</sup> Street

Traffic counts were taken at the intersection on typical weekdays from March 31 to April 1, 2015 from 7:00 A.M. – 9:00 A.M. and 4:00 P.M. – 6:00 P.M. The existing lane configurations and peak hour traffic volumes are shown on *Figures A-3 and A-4*.

## ANALYSIS

The analysis of the proposed development's impact includes calculations of vehicle trip generation, distribution of trips onto the street network, and analyses of peak hour operations. Each of these analysis techniques and their results are described below.

## TRIP GENERATION

The vehicle trips generated by the proposed development were calculated using the Institute of Transportation Engineers' Trip Generation, 9<sup>th</sup> Edition. The estimated daily, A.M. and P.M. peak hour traffic volumes associated with this development are shown on the following page in Table 1 and the estimated traffic volumes associated with the Park in Table 2.

Land Use	Intensity	Daily	A.M. Peak Hour			P.M. Peak Hour		
			In	Out	Total	In	Out	Total
Luxury Apartments	280	1,820	28	113	141	112	60	172
CCRC	330	792	40	21	61	29	36	65
Single Family Dwelling Unit	57	626	12	37	50	40	23	63
Townhomes (East)	34	252	4	18	22	17	8	25
Townhomes (West)	34	252	4	18	22	17	8	25
Inn	50	302	8	15	23	13	11	24
<b>TOTAL</b>		<b>4,043</b>	<b>96</b>	<b>222</b>	<b>318</b>	<b>228</b>	<b>146</b>	<b>374</b>

Due to limited and relatively volatile data available, a more rigorous procedure was used to project the trip generation of the proposed 87 acres of Park area. As of the date of this document the final plan for the Park has not been established, but the following is the plan at this time:

1. The existing clubhouse will remain and will be used on an interim basis as a local meeting space. Typical meetings may be: quarterly homes association meetings, holiday parties, wedding receptions, art classes, etc. The kitchen appliances in the facility will be removed.
2. The swimming pool will be removed.
3. There are four existing tennis courts. Two of the courts will be removed, two will remain.

ITE's Land Use: 412, County Park was used to calculate the trips generated by the Park area. ITE's description of the land use is as follows:

"County parks are owned and operated by a county. The county parks surveyed vary widely as to location, type and number of facilities, including boating or swimming facilities, ball fields, soccer fields, camp sites, picnic facilities and general open space."

Based on ITE's description, it appears that the ancillary facilities of the County Park land use will generate more traffic than the meeting space and tennis courts of the Meadowbrook site. Therefore, the county park trip generation rate was used for the entire Park area and appears to be a conservative analysis. Further, since there is substantial variability in the data, for both the AM and PM peak hours a trip generation rate for an actual data point was used instead of the average rate. The data points used can be seen on the attached figures. The data points represent a park with an area slightly less than 50 acres. Based on these sources, Table 2 shows the Park area of the Meadowbrook Redevelopment trip generation:

Land Use	Intensity	Daily	A.M. Peak Hour			P.M. Peak Hour		
			In	Out	Total	In	Out	Total
County Park	86.7	198	17	11	28	84	53	137
<b>TOTAL</b>		<b>198</b>	<b>17</b>	<b>11</b>	<b>28</b>	<b>84</b>	<b>53</b>	<b>137</b>

More detailed information on trip generation calculations are included in *Appendix B*.

## TRIP DISTRIBUTION

The estimated peak hour trips generated by the Proposed Development were distributed onto the street system based on existing travel patterns and expected service area of the development. Table 3 illustrated the general distribution patterns used in this study for Development Only. The Proposed Development distributions were achieved by treating the development as a node and then distributing the entering and exiting traffic based upon existing entering and exiting usage patterns. Table 4 shows the general distribution patterns for the Park. The detailed distribution patterns through the study intersections are documented in *Appendix B*.

To/From Direction & Route	Entering		Exiting	
	AM	PM	AM	PM
North on Nall Avenue	20%	10%	15%	15%
West on 91 <sup>st</sup> Street	5%	5%	5%	5%
Northeast on Somerset Drive	5%	10%	5%	10%
West on 95 <sup>th</sup> Street	15%	20%	20%	15%
South on Nall Avenue	25%	20%	15%	20%
South on Roe Avenue	5%	10%	15%	10%
East on 95 <sup>th</sup> Street	15%	15%	15%	20%
North on Roe Avenue	10%	10%	10%	5%
<b>TOTAL</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

To/From Direction & Route	Entering	Exiting
	AM & PM	AM & PM
North on Nall Avenue	18%	19%
West on 91 <sup>st</sup> Street	0%	0%
Northeast on Somerset Drive	13%	13%
West on Somerset Drive	19%	18%
West on 95 <sup>th</sup> Street	14%	15%
South on Nall Avenue	16%	15%
South on Roe Avenue	6%	6%
East on 90 <sup>th</sup> Street	4%	4%
East on 95 <sup>th</sup> Street	6%	6%
North on Roe Avenue	4%	4%
<b>TOTAL</b>	<b>100%</b>	<b>100%</b>

## TRAFFIC OPERATION ASSESSMENT

The operating characteristics of study area intersections were analyzed using Synchro 8.0, using methodologies from the 2010 Highway Capacity Manual (HCM) [TRB Special Report 209, 2000]. Intersection turning movement counts, the number of lanes and traffic control were used to determine existing and future levels of service. Level of service (LOS) ranges from A to F and describes traffic conditions at an intersection or on a roadway. LOS A, the highest grade, indicates a condition of little or no congestion and LOS F a condition with severe congestion, unstable traffic flow, and stop-and-go conditions. Table 5 shows the Highway Capacity Manual definitions for LOS and the corresponding delay for unsignalized and signalized intersections.

Level of Service (LOS)	Signalized	Unsignalized
A	< 10 Seconds	< 10 Seconds
B	< 20 Seconds	< 15 Seconds
C	< 35 Seconds	< 25 Seconds
D	< 55 Seconds	< 35 Seconds
E	< 80 Seconds	< 50 Seconds
F	≥ 80 Seconds	≥ 50 Seconds

For intersections, LOS is based on the average delay experienced by all traffic using the intersection during the busiest (peak) 15-minute period. LOS A through D is generally considered acceptable. Each of the aforementioned scenarios was analyzed during the weekday AM and PM peak hours. Under the existing scenario, existing cycle lengths, splits, and offsets were used in each of the time periods analyzed to reflect actual traffic operations, with signals currently being coordinated and some being fully actuated. Under the build scenarios, cycle lengths, splits, and offsets were optimized to reflect a completely coordinated signal system. The results are presented in the following summaries, and supporting calculations are presented in Appendix C.

Level of Service (LOS) analyses were performed using the Synchro software, which uses methodologies from the 2010 Highway Capacity Manual (HCM). The LOS values reported in this document are the HCM values.

## EXISTING CONDITIONS

The results of the intersection analysis for the A.M. and P.M. peak hour existing conditions are summarized in Table 6. The study intersections were evaluated with the existing traffic volumes, traffic controls and lane configurations shown on *Figures A-3 and A-4*.

Table 6: Existing Conditions					
Intersection	Movement	A.M. Peak Hour		P.M. Peak Hour	
		LOS <sup>1</sup>	Delay <sup>2</sup>	LOS <sup>1</sup>	Delay <sup>2</sup>
Nall Avenue/Somerset Drive/91 <sup>st</sup> Street	All Movements (Signalized)	C	20.9	C	27.2
Nall Avenue/Main Access/92 <sup>nd</sup> Terrace	EB Left/Thru/Right	C	24.5	C	16.6
	NB Left/Thru	B	10.9	A	0.3
Nall Avenue/94 <sup>th</sup> Terrace	WB Left/Thru/Right	C	16.5	F	68.8
	SB Left/Thru	A	1.3	B	0.6
Nall Avenue/95 <sup>th</sup> Street	All Movements (Signalized)	D	47.5	E	77.2
Rosewood Drive/95 <sup>th</sup> Street	All Movements (Signalized)	A	5.9	A	5.4
Roe Avenue/95 <sup>th</sup> Street	All Movements (Signalized)	D	37.0	D	45.3
Roe Avenue/93 <sup>rd</sup> Street	WB Left/Thru/Right	B	14.4	B	14.7
	SB Left/Thru	A	7.9	A	0.1
Roe Avenue/92 <sup>nd</sup> Terrace	WB Left/Thru/Right	B	14.8	C	16.6
	SB Left/Thru	A	0.2	A	0
Roe Avenue/91 <sup>st</sup> Street	WB Left/Thru/Right	B	11.4	B	12.5
	SB Left/Thru	A	0	A	0.4
Roe Avenue/90 <sup>th</sup> Street	NB Left/Thru	A	0.5	A	0.5
	EB Left/Thru/Right	C	16.1	C	21.1
	WB Left/Thru/Right	C	15.5	C	17.9
	SB Left/Thru	A	0.3	A	0.3

1 - Level of Service

2 - Delay in Seconds per Vehicle

The results indicate that all study intersections currently operate at an acceptable LOS with the exception of two intersection during the PM peak hour: Nall Avenue/94<sup>th</sup> Terrace and Nall Avenue/95<sup>th</sup> Street.

At the Nall Avenue/94<sup>th</sup> Terrace intersection the WB Left/Thru/Right was analyzed to operate at LOS F. Since the traffic volumes at this intersection do not approach the levels needed to meet traffic signal warrants, our recommendation for the westbound approach is to add a separate left-turn lane. This turn lane will isolate the unacceptable LOS to only the left-turn movement. Note that traffic on 94<sup>th</sup> Terrace, headed to destinations south, does have other, less direct, options that avoid the difficult left turn at Nall Avenue/94<sup>th</sup> Terrace. Also, based on field observations of existing traffic patterns, traffic signals on Nall

Avenue north and south of 94<sup>th</sup> Terrace, at 91<sup>st</sup> Street and 95<sup>th</sup> Street, platoon Nall Avenue traffic such that there are numerous traffic gaps that will accommodate the left-turning traffic. The Nall / 95<sup>th</sup> Street intersection operates at a LOS E with a delay of 77.2. For the purposes of this study, this delay and LOS is considered an acceptable level of service for this intersection. Our recommendation for this intersection is to change the phasing to protected/ permissive, and/or shorten the cycle. It should be noted that this signal is part of a coordinated traffic signal system on 95<sup>th</sup> Street.

Appendix C contains the output files from Synchro.

### EXISTING PLUS DEVELOPMENT PLUS PARK CONDITIONS

The results of the intersection analysis for the A.M. and P.M. peak hour existing plus development plus park conditions are summarized in Table 7. The study intersections were evaluated with the existing plus development plus park traffic volumes, traffic controls and lane configurations shown on Figures A-5 and A-6.

Table 7: Existing Plus Development Plus Park Condition					
Intersection	Movement	A.M. Peak Hour		P.M. Peak Hour	
		LOS <sup>1</sup>	Delay <sup>2</sup>	LOS <sup>1</sup>	Delay <sup>2</sup>
Somerset Drive/Parking Lot Driveway	NB Left/Right	B	113	C	17.2
	WB Left/Thru	A	7.9	A	8.6
	EB Thru/Right	A	0	A	0
	All Movements (Signalized)	C	31.1	D	45.4
Nall Avenue/Parking Lot Driveway	WB Right	B	10.8	B	13.6
	NB Thru/Right	A	0	A	0
	All Movements (Signalized)	C	31.1	D	45.4
Nall Avenue/Main Access/92 <sup>nd</sup> Terrace	NB Left	B	11	B	10
	NB Thru	A	0	A	0.2
	EB Left/Thru/Right	D	30.5	C	23.2
	WB Left	F	60.7	F	390.9
	WB Thru/Right	B	11.3	C	15.5
	SB Left	A	9.2	B	13.3
	SB Thru	A	0.5	A	1.7
	All Movements (Signalized)	C	31.1	D	45.4
Nall Avenue/94 <sup>th</sup> Terrace	NB Left/Thru/Right	A	0	A	0
	EB Left/Thru/Right	A	0	A	0
	WB Left	F	64	F	249.2
	WB Thru/Right	B	11.3	C	16.9
	SB Left	A	9.6	B	12
	SB Thru	A	1	A	0.8
	All Movements (Signalized)	C	31.1	D	45.4
Nall Avenue/95 <sup>th</sup> Street	All Movements (Signalized)	D	37.4	E	73.7

Secondary Access/94 <sup>th</sup> Terrace	SB Left/Right	B	10.8	B	11.1
	EB Left/Thru	A	7.5	A	7.7
	WB Thru/Right	A	0	A	0
Rosewood Drive/95 <sup>th</sup> Street	All Movements (Signalized)	A	7.7	A	5.9
Roe Avenue/95 <sup>th</sup> Street	All Movements (Signalized)	D	38.9	D	38.9
Roe Avenue/93 <sup>rd</sup> Street	NB Thru/Right	A	0	A	0
	WB Left/Right	B	14.5	B	14.8
	SB Left/Thru	A	7.9	A	8.4
Roe Avenue/92 <sup>nd</sup> Terrace	NB Thru/Right	A	0	A	0
	WB Left/Right	B	14.8	C	16.6
	SB Left/Thru	A	8	A	8.4
Roe Avenue/91 <sup>st</sup> Street	NB Left/Thru	A	0	A	0
	WB Left/Thru/Right	B	10.5	B	12.6
	SB Left/Thru	A	7.7	A	8.5
Roe Avenue/90 <sup>th</sup> Street	NB Left/Thru	A	8.4	A	8.3
	EB Left/Thru/Right	C	16.2	C	21.4
	WB Left/Thru/Right	C	15.9	C	19.2
	SB Left/Thru	A	8	A	8.4

Results from the analysis indicate the following intersections do not operate at an acceptable level of service:

- Nall Avenue / 95<sup>th</sup> Street
- Nall Avenue / Main Access / 92<sup>nd</sup> Terrace
- Nall Avenue / 94<sup>th</sup> Terrace.

The results indicate that the Nall / 95<sup>th</sup> Street intersection will operate with less delay due to the change in signal phasing from protected only to protected/permissive.

At the Nall Avenue/Main Access/92<sup>nd</sup> Terrace intersection a single lane westbound approach was analyzed to operate at LOS F. Since the Build traffic volumes at this intersection do not approach the levels needed to meet traffic signal warrants, the recommendation for the westbound approach is to add a separate left-turn lane. This turn lane will isolate the unacceptable LOS to only the left-turn movement. Note that westbound traffic on the Main Access, headed to destinations south, does have other, less direct options that avoid the difficult left turn at Nall Avenue/ Main Access/92<sup>nd</sup> Terrace. Also, based on field observations of existing traffic patterns, traffic signals on Nall Avenue north and south of Main Access/92<sup>nd</sup> Terrace, at 91<sup>st</sup> Street and 95<sup>th</sup> Street, platoon Nall Avenue traffic such that there are numerous traffic gaps that will accommodate the relatively low volume of left-turning traffic.



The Nall Avenue / 94<sup>th</sup> Terrace intersection should have a separate left turn lane to isolate the poor level of service. Like the Nall Avenue / Main Access / 92<sup>nd</sup> Terrace access, the traffic signals platoon traffic on Nall Avenue north and south of the intersection such that there are gaps to accommodate the left-turning vehicles.

The Nall Avenue/Parking Lot Driveway operates at an acceptable level of service and will be a right-in right-out only intersection due to the proximity to the Nall Avenue / Somerset Drive intersection. Table 8 shows the available queue length and calculated queues. The northbound Nall Avenue / Somerset Drive / 91<sup>st</sup> Street queue has 187' of available queue length. The PM northbound queue is expected to exceed the left-turn bay by 53' feet or approximately 2 vehicles. This queue may back up beyond the park entrance driveway to the south. The right-in right-out configuration at the driveway will address concerns of the lengthy queues.

Appendix C contains the output files from Synchro.

Table 8: 95 <sup>th</sup> Build Percentile Queue Lengths			
Intersection (Movement)	Bay / Link Length (feet)	AM Peak 95 <sup>th</sup> Queue	PM Peak 95 <sup>th</sup> Queue
<b>Nall Ave / West 95<sup>th</sup> Street</b>			
<b>Overall Intersection (Signalized)</b>			
<i>Eastbound Left</i>	200	85	252
<i>Eastbound Thru</i>	N/A	175	333
<i>Eastbound Thru / Right</i>	N/A	151	362
<i>Westbound Left</i>	147	155	134
<i>Westbound Thru</i>	N/A	241	153
<i>Westbound Thru / Right</i>	N/A	216	174
<i>Northbound Left</i>	140	63	219
<i>Northbound Thru</i>	N/A	209	598
<i>Northbound Thru / Right</i>	N/A	136	518
<i>Southbound Left</i>	160	85	96
<i>Southbound Thru</i>	N/A	201	160
<i>Southbound Thru / Right</i>	N/A	209	160
<b>Nall Ave / West 91<sup>st</sup> Street / Somerset Drive</b>			
<b>Overall Intersection (Signalized)</b>			
<i>Eastbound Left</i>	149	152	211
<i>Eastbound Thru / Right</i>	N/A	249	490
<i>Westbound Left</i>	65	159	162
<i>Westbound Thru / Right</i>	N/A	231	210
<i>Northbound Left</i>	187	183	240
<i>Northbound Thru</i>	N/A	288	384
<i>Northbound Right</i>	N/A	22	93
<i>Southbound Left</i>	182	37	41
<i>Southbound Thru</i>	N/A	184	167
<i>Southbound Thru / Right</i>	N/A	118	140

Intersection (Movement)	Bay / Link Length (feet)	AM Peak 95 <sup>th</sup> Queue	PM Peak 95 <sup>th</sup> Queue
Roe Avenue / West 95 <sup>th</sup> Street Overall Intersection (Signalized)			
<i>Eastbound Left</i>	146	54	147
<i>Eastbound Thru</i>	N/A	117	368
<i>Eastbound Thru / Right</i>	N/A	130	368
<i>Westbound Left</i>	116	180	91
<i>Westbound Thru</i>	N/A	309	155
<i>Westbound Thru / Right</i>	N/A	289	154
<i>Northbound Left</i>	38	37	131
<i>Northbound Thru / Right</i>	N/A	209	257
<i>Southbound Left</i>	76	94	89
<i>Southbound Thru / Right</i>	N/A	280	211
Roe Avenue / West 90 <sup>th</sup> Street Overall Intersection (Unsignalized)			
<i>Eastbound Left / Thru / Right</i>	N/A	41	48
<i>Westbound Left / Thru / Right</i>	N/A	30	36
<i>Northbound Left / Thru / Right</i>	N/A	0	35
<i>Southbound Left / Thru / Right</i>	N/A	0	25
Roe Avenue / West 91 <sup>st</sup> Street Overall Intersection (Unsignalized)			
<i>Westbound Left / Right</i>	N/A	26	28
<i>Southbound Left / Thru</i>	N/A	0	147
Nall Avenue / West 92 <sup>nd</sup> Terrace / Main Access Overall Intersection (Unsignalized)			
<i>Eastbound Left / Thru / Right</i>	N/A	53	0
<i>Westbound Left</i>	N/A	0	35
<i>Westbound Thru / Right</i>	N/A	51	30
<i>Northbound Left / Thru</i>	N/A	0	26
<i>Southbound Left / Thru</i>	N/A	71	19
<i>Southbound Thru / Right</i>	N/A	82	85
Nall Avenue / West 94 <sup>th</sup> Terrace Overall Intersection (Unsignalized)			
<i>Westbound Left</i>	N/A	37	48
<i>Westbound Thru / Right</i>	N/A	52	85
<i>Northbound Thru / Right</i>	N/A	19	0
<i>Southbound Left / Thru</i>	N/A	109	110
<i>Southbound Thru / Right</i>	N/A	95	74

Intersection (Movement)	Bay / Link Length (feet)	AM Peak 95 <sup>th</sup> Queue	PM Peak 95 <sup>th</sup> Queue
Roe Avenue / West 93 <sup>rd</sup> Street Overall Intersection (Unsignalized)			
<i>Westbound Left / Right</i>	N/A	43	36
<i>Southbound Left / Thru</i>	N/A	27	0
Rosewood / West 94 <sup>th</sup> Terrace / West 95 <sup>th</sup> Street Overall Intersection (Signalized)			
<i>Eastbound Left</i>	132	37	66
<i>Eastbound Thru</i>	N/A	37	73
<i>Eastbound Thru / Right</i>	N/A	50	62
<i>Westbound Left</i>	147	66	56
<i>Westbound Thru</i>	N/A	0	65
<i>Westbound Thru / Right</i>	N/A	43	83
<i>Northbound Left</i>	108	111	87
<i>Northbound Thru / Right</i>	N/A	78	58
<i>Southbound Left</i>	82	89	105
<i>Southbound Thru / Right</i>	N/A	43	104
West 94 <sup>th</sup> Terrace / Secondary Access Overall Intersection (Unsignalized)			
<i>Eastbound Left / Thru</i>	N/A	0	38
<i>Southbound Left / Right</i>	N/A	54	49
Roe Avenue / West 92 <sup>nd</sup> Terrace Overall Intersection (Unsignalized)			
<i>Westbound Left / Right</i>	N/A	40	40
<i>Southbound Left / Thru</i>	N/A	0	45
Parking Lot / Somerset Drive Overall Intersection (Unsignalized)			
<i>Northwest Left / Right</i>	N/A	0	22
Parking Lot Right-In Right-Out / Nall Avenue Overall Intersection (Unsignalized)			
<i>Westbound Right</i>	N/A	0	27
<i>Northbound Thru</i>	N/A	81	325
<i>Northbound Thru/Right</i>	N/A	0	264

## Geometry

The Rosewood Driveway/94<sup>th</sup> Terrace roadway segment, from 95<sup>th</sup> Street to Nall Avenue, currently has thirteen driveways. Two of these driveways are located within 50 feet of the intersection with 95<sup>th</sup> Street. Modern access design would not allow the driveways to be placed this close to a signalized intersection.

Addition of a raised median on Rosewood to make the driveways right-in right-out would increase safety along the corridor.

The sight distance required for a 35 mph roadway with a decline of 6% is 278 feet and for 25 mph on level roadway it is 155' according to the KDOT Access Management Policy. Table 9 below shows the new intersections with their sight distance.

Intersection	Speed Limit	Required Sight Distance	Provided Sight Distance
Nall Avenue / Main Access / 92 <sup>nd</sup> Terrace	35	278'	600'
Rosewood / Secondary Access	25	155'	350'

## WALKABILITY ASSESSMENT

The purpose of the Walkability Assessment is to review the pedestrian access to and around the perimeter of the property. *Figure A-9* shows the project location and the perimeter locations within the property where sidewalk currently exists and where sidewalk will be added.

## CRASH HISTORY

As part of the review of the Eastern Access/Roe Avenue connection, the crash history of the immediate area on Roe Avenue was reviewed. Table 10 shows the reported crashes during the most recent 5-years' worth of records.

	PDO		Injury		Fatal		Sequence of Events	
	SB	NB	SB	NB	SB	NB	1st Crash in Row	2nd Crash in Row
2010	1	0	0	0	0	0	Ran off Road Right, Hit Fixed Object	
2011	0	0	0	0	0	0		
2012	0	0	0	0	0	0		
2013	0	1*	0	1	0	0	Hit Fixed Object	Ran off Road Right, Hit Fixed Object, Overturned
2014	0	0	1*	0	0	0	Hit Fixed Object, Ran off Road Left, Hit Fixed Object	

\*Indicates DUI

There were a total of four crashes in a five-year span with two being property damage only and two injury. Of those four crashes, two were marked DUI. The locations of three of the four crashes is

south of the intersection of Roe Avenue and W 91st street. The last crash is located at the intersection.

## SUMMARY

This study documents the traffic impact of the proposed Redevelopment of the Meadowbrook Country Club on the roadway network in the vicinity of 91<sup>st</sup> Street, 95<sup>th</sup> Street, Nall Avenue and Roe Avenue in Prairie Village, Kansas. This report includes the analysis of the intersections adjacent to and surrounding the proposed development for Existing and Existing Plus Development Plus Park scenarios.

The operational analysis of existing traffic volumes shows that the existing roadway network operates within desirable levels of service with the exception of the following intersections:

- Nall Avenue/94<sup>th</sup> Terrace – addition of a westbound left-turn lane will isolate the poor LOS to only the left-turn.
- Nall Avenue/95<sup>th</sup> Street – addition of permissive left-turn to all approaches will maintain or improve the delay at the intersection and maintain the current LOS.

The operational analysis of existing plus proposed development traffic volumes shows that the roadway network needed to accommodate existing traffic volumes operates within desirable levels of service with the exception of the following intersection:

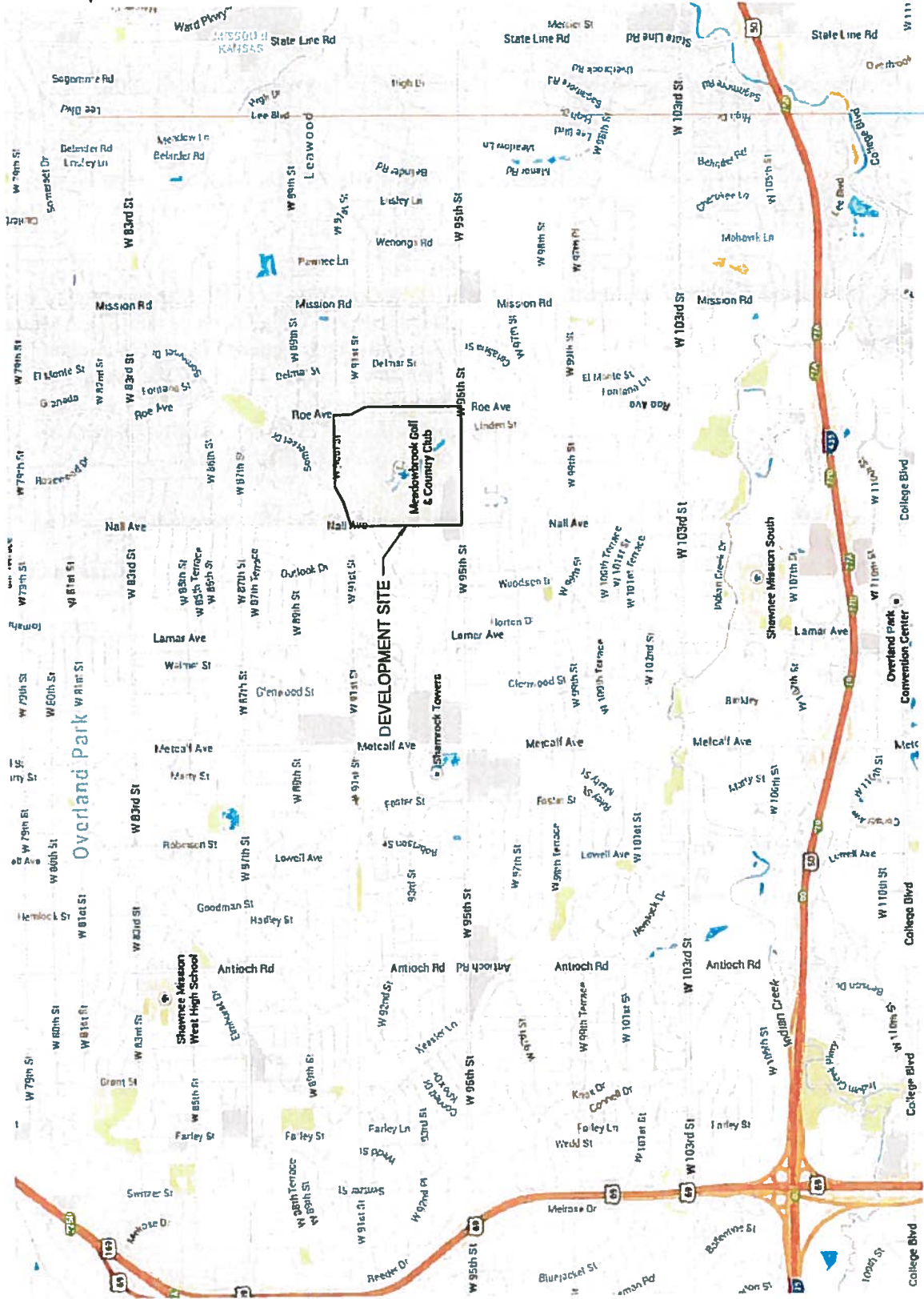
- Nall Avenue/Main Access/92<sup>nd</sup> Terrace – addition of a westbound left-turn lane will isolate the poor LOS to only the left-turn.

At the following two locations, due to access driveways located close to signalized intersections, the elimination of the driveway should be considered or a raised median constructed:

- Nall Avenue/Parking Lot
- North leg of Rosewood Drive/95<sup>th</sup> Street

At the time of the publication of this report there are two outstanding intersection questions:

1. The connection to 94<sup>th</sup>/Rosewood is being negotiated. The configuration shown in this report appears to be the final plan, however, negotiations are ongoing at this time.
2. There has been discussion of left-turn lane(s) on Nall Avenue at the Main entrance. The intersection has an acceptable LOS without the left-turn lane(s), therefore, the LOS will only improve with the addition of southbound and/or northbound left-turn lane(s).

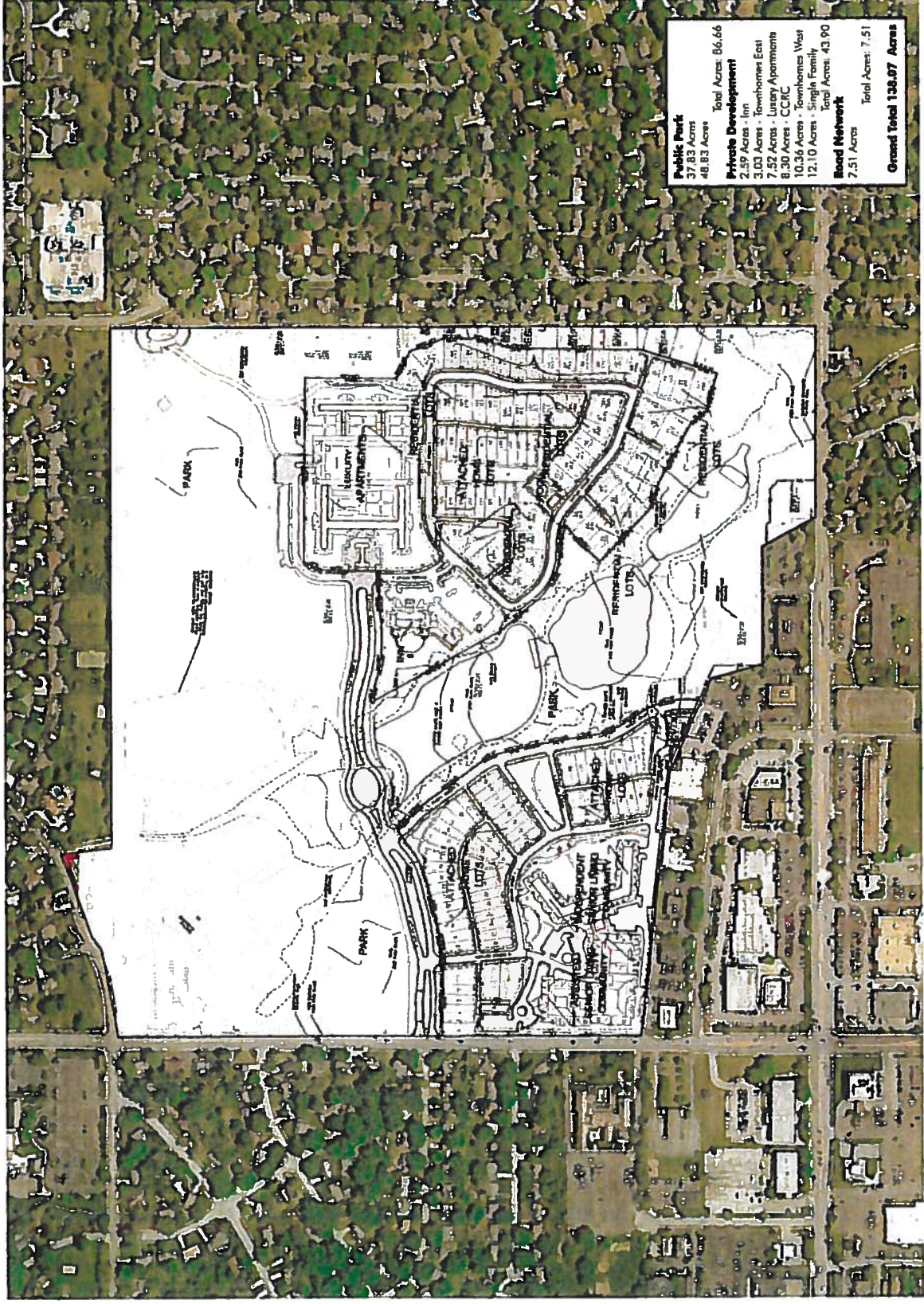


JULY 2015  
NO SCALE  
FIGURE A-1

MEADOWBROOK DEVELOPMENT  
PRAIRIE VILLAGE, KANSAS

LOCATION MAP



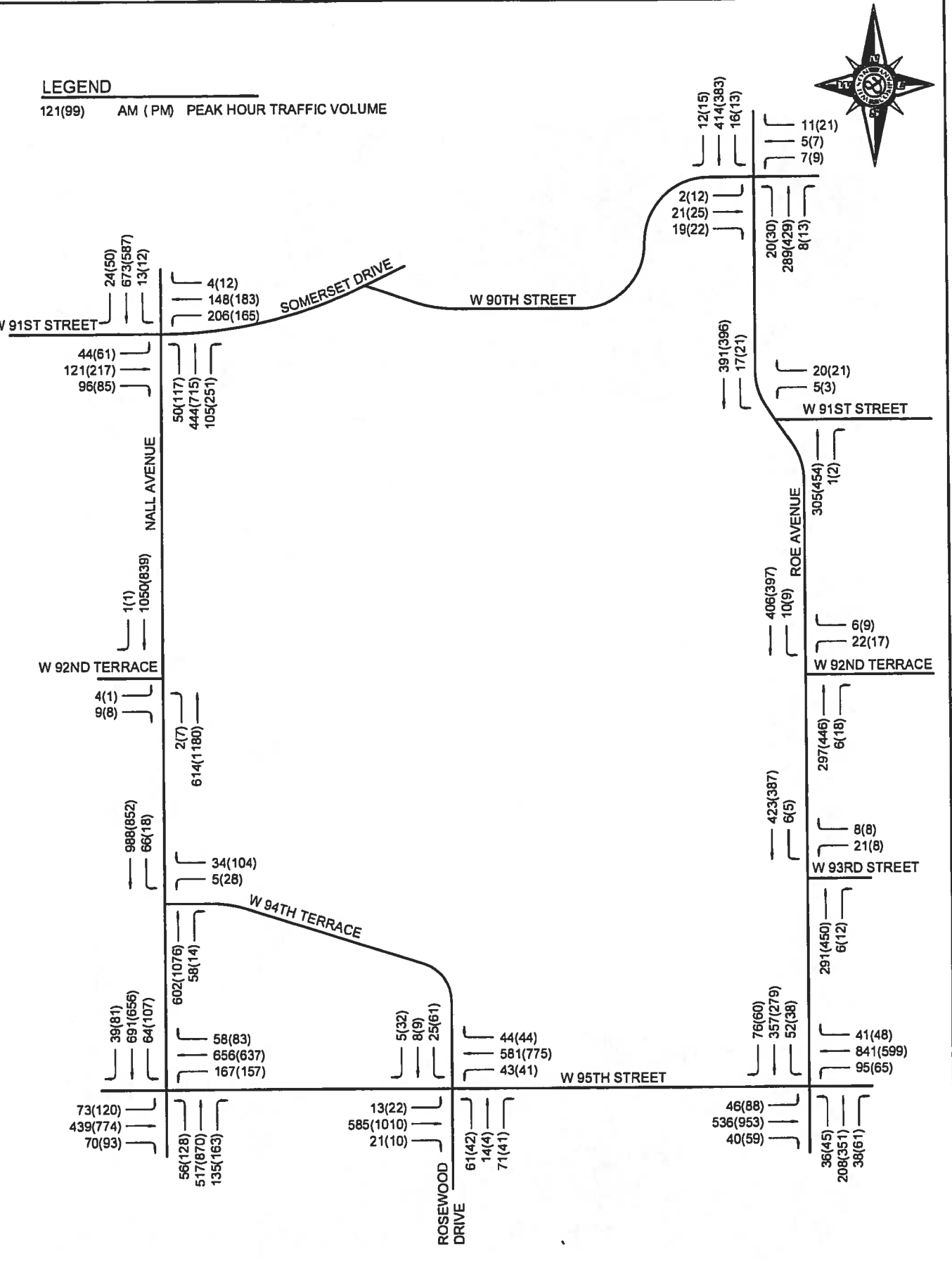


Area Calculations  
December 22, 2014



File: M:\TRN\15-100-038-002\_Disciplines\ SHEETS\3\_Sheets - roadway\A-3\_Existing Peak Hour Traffic Volumes.dgn

Date: 11/6/2015  
By: aabrucker



**WILSON & COMPANY**

EXISTING PEAK HOUR TRAFFIC COUNTS

MEADOWBROOK DEVELOPMENT PRAIRIE VILLAGE, KANSAS

JULY 2015

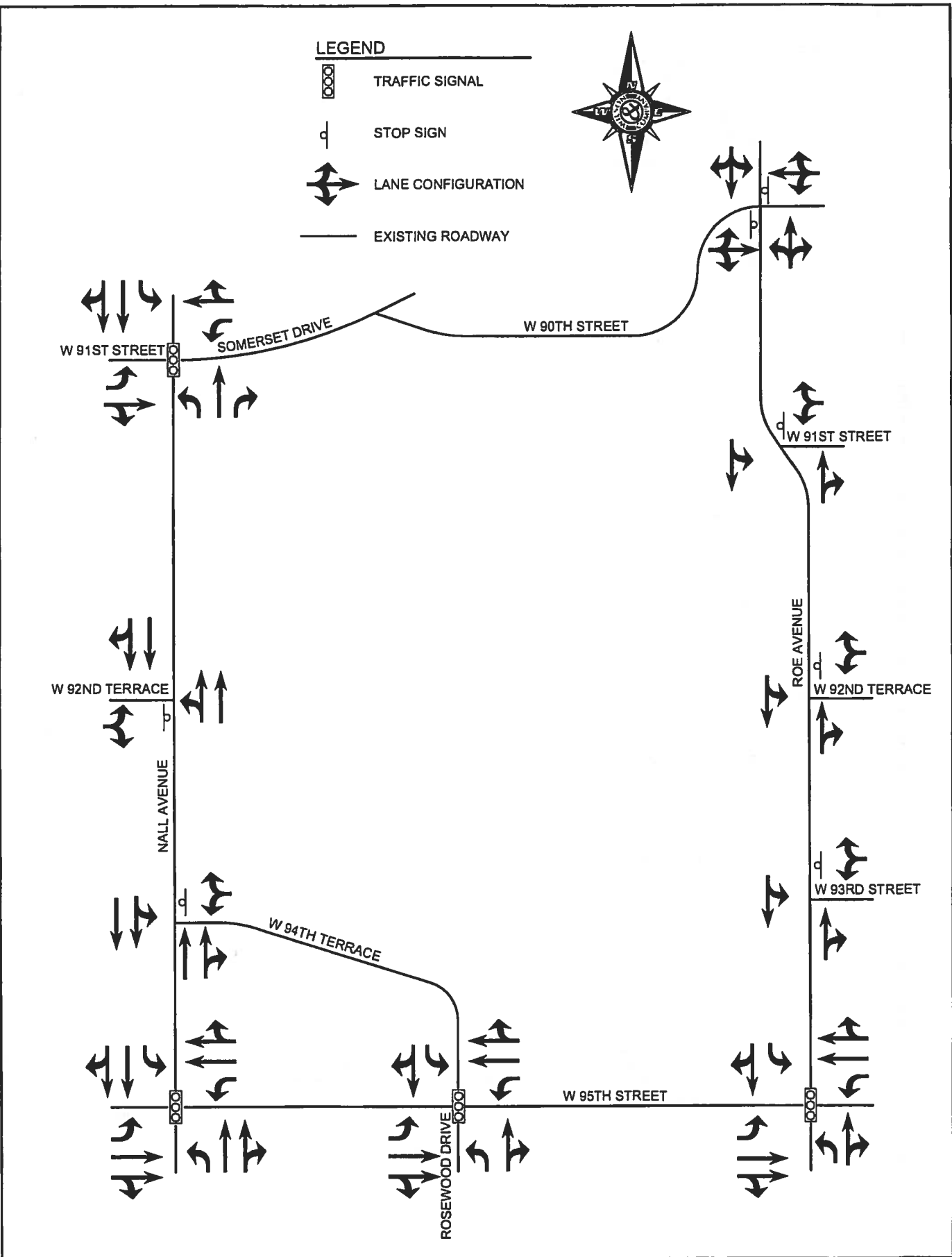
NO SCALE

FIGURE A-3



File: M:\TRN\15-100-038-00\2\_Disciplines\ SHEETS\3\_Sheets - roadway\A-4\_Existing lane configurations.dgn

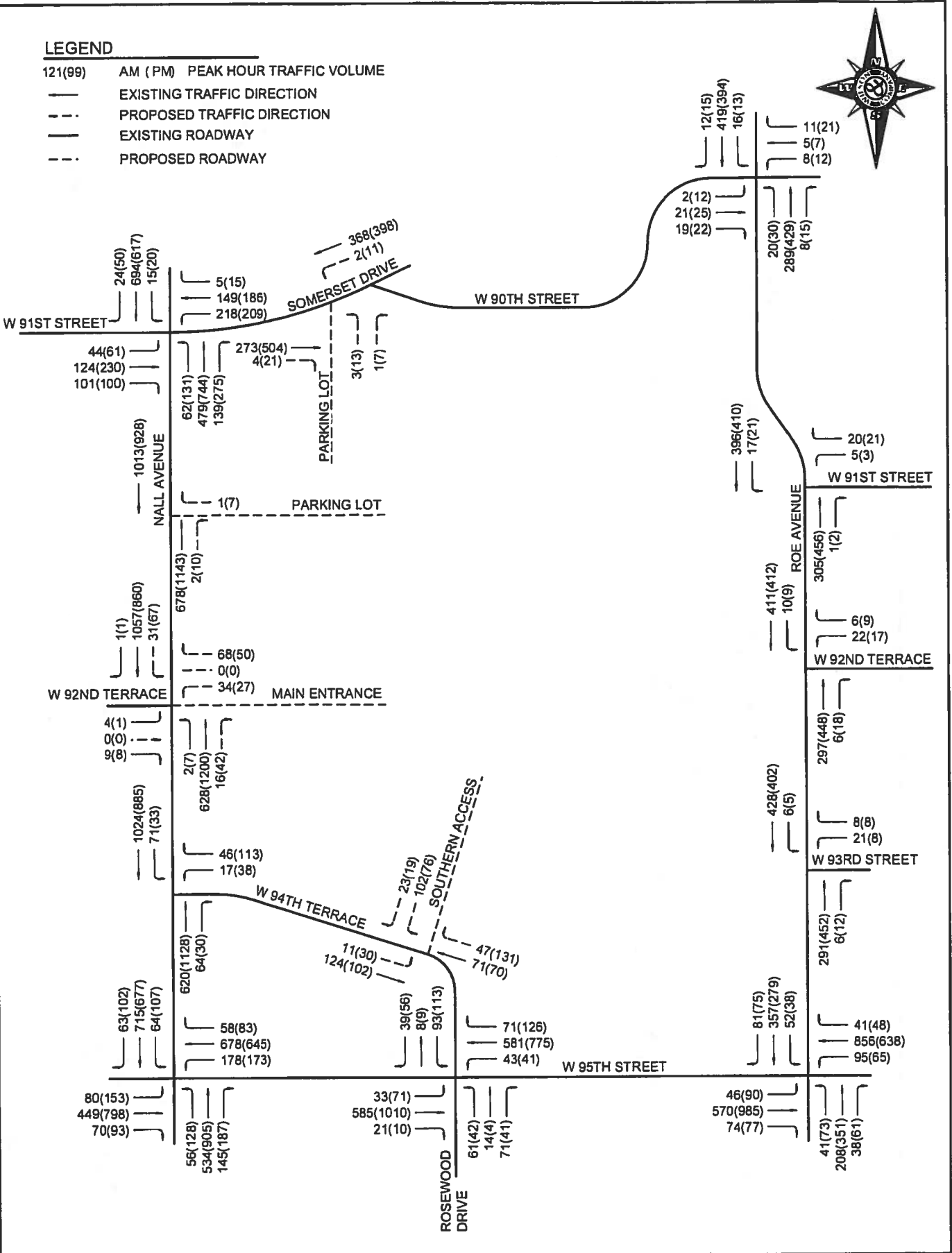
Date: 1/16/2015  
By: aabrucker



<b>WILSON &amp; COMPANY</b>	EXISTING LANE CONFIGURATIONS	MEADOWBROOK DEVELOPMENT PRAIRIE VILLAGE, KANSAS	JULY 2015
			NO SCALE
			FIGURE A-4

File: M:\TRN\15-100-038-002\_Disciplines\ SHEETS\3\_Sheets - roadway\2015\_10\_28\_A-7\_Development Plus Park Peak Hour Traffic Volumes.dgn

Date: 11/6/2015  
By: aabrucker



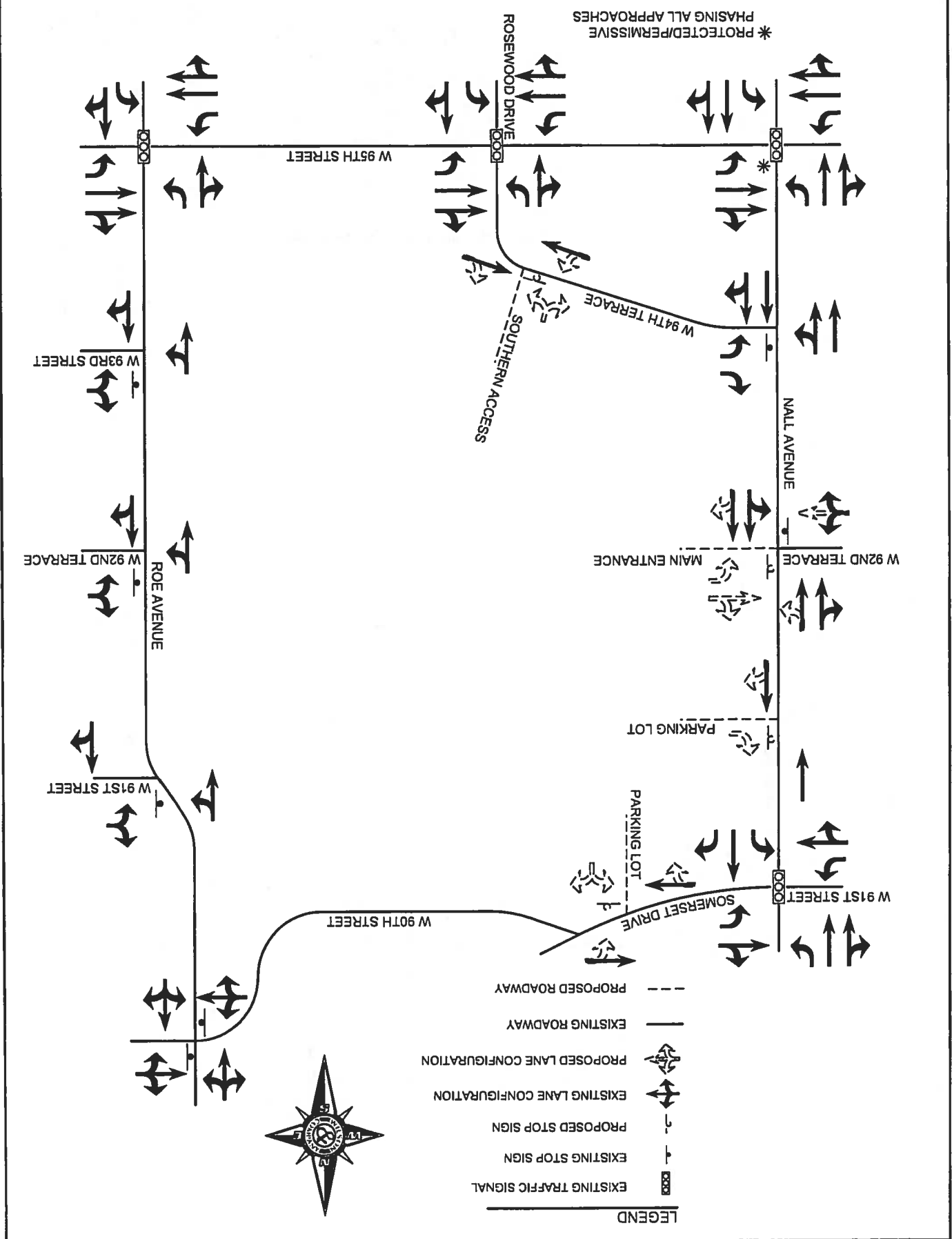
	EXISTING PLUS DEVELOPMENT PLUS PARK PEAK HOUR TRAFFIC COUNTS	MEADOWBROOK DEVELOPMENT PRAIRIE VILLAGE, KANSAS	JULY 2015
			NO SCALE
			FIGURE A-5

**WILSON & COMPANY**

EXISTING PLUS PARK DEVELOPMENT LANE CONFIGURATIONS

MEADOWBROOK DEVELOPMENT PRAIRIE VILLAGE, KANSAS

JULY 2015  
NO SCALE  
FIGURE A-6



- LEGEND**
- EXISTING TRAFFIC SIGNAL
  - EXISTING STOP SIGN
  - PROPOSED STOP SIGN
  - EXISTING LANE CONFIGURATION
  - PROPOSED LANE CONFIGURATION
  - EXISTING ROADWAY
  - PROPOSED ROADWAY



\* PROTECTED/PERMISSIVE PHASING ALL APPROACHES

