

Oakview Storage

TRAFFIC IMPACT STUDY

March 16, 2018

Prepared For:
Oak View Capital Partners, LLC
201 Hawks Ridge Trail
Colleyville, TX 76034

Prepared By:
Priority Engineers, Inc.
PO Box 563
Garden City, MO 64747





March 16, 2018

Mr. Brad Tidwell
Oak View Capital Partners, LLC
201 Hawks Ridge Trail

Re: Oakview Storage – Lee’s Summit, MO

Dear Mr. Tidwell:

In response to your request, Priority Engineers, Inc. has completed a traffic impact study for the above referenced project. The purpose of the analysis is to determine the potential traffic impacts associated with this development on the intersections and streets surrounding this site, primarily during the AM and PM peak hours. The following report documents our analysis and recommendations.

We appreciate the opportunity to work with you on this project. Please contact us with any questions or if you require additional information.

Sincerely,

PRIORITY ENGINEERS, INC.

A handwritten signature in black ink, appearing to read 'Kristin L. Skinner', is written over the printed name.

Kristin L. Skinner, P.E., PTOE
President

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1) INTRODUCTION

The purpose of this study is to examine the potential traffic impacts associated with the proposed Oakview Storage development located at the northwest corner of NE Douglas Street and NE Victoria Drive. The development will have two right-in/right-out entrances onto Douglas Street, and will also access the existing Polytainer Drive.

The study area is shown in Figure 1. The site layout is shown in Figure 2.

2) EXISTING CONDITIONS

The existing site is located on the northwest corner of NE Douglas Street and NE Victoria Drive. The property is currently vacant.

Douglas Street is a four lane arterial adjacent to this property with a posted speed limit of 45 miles per hour. Victoria Drive is a two lane collector that intersects Douglas at a signalized intersection.

To the west and adjacent to this site is the existing Polytainer site. To the south are light industrial uses. To the north is the St. Luke's East Hospital. On the east side of Douglas are existing restaurants and retail uses and the B & B Lee's Summit 16 Theater.

Peak Hour turning movement traffic counts for the intersections of Douglas Street with Mulberry Street, Victoria Drive, and Sycamore Street and the intersection of Victoria Drive with the existing Polytainer entrance were collected between November 15th and 17th of 2016 between the hours of 7:00 and 9:00 AM and from 4:00 to 6:00 PM. The peak hours were determined to be 7:00 to 8:00 AM and from 4:30 to 5:30 PM. The complete traffic counts are shown in Appendix II. The peak hour traffic volumes and existing lane configurations are shown in Figures 3-7.

3) PROPOSED DEVELOPMENT

The proposed site plan is shown in Figure 2. The site will contain a variety of uses. To the western edge of the property, there will be 110,599 square feet of climate controlled storage. At the northern end of the site there will be a 135 room hotel. To the east and south, it is currently expected that there will be three fast-food restaurants totaling 9,104 square feet.

The proposed site will include two right-in/right-out entrances onto Douglas Street. Access to these drives will be limited by the existing concrete median on Douglas Street. Access will also be provided through the existing Polytainer drive onto Victoria Drive.

4) TRIP GENERATION

The vehicle trips generated by the proposed development were estimated using the Institute of Transportation Engineers' Trip Generation Manual, 10th Edition. The following Land Uses were utilized: Mini-Warehouse for the self-storage facility (Land Use 151), Hotel (Land Use 310), and Fast-Food Restaurant with Drive-Through Window (Land Use 934). The setting/location for all uses was assumed to be "General Urban/Suburban". The estimated AM and PM peak hour traffic volumes associated with these uses are shown in Table 1.

Table 1: Trip Generation

<i>Land Use</i>	<i>Intensity</i>	<i>Daily</i>	<i>AM Peak</i>			<i>PM Peak</i>		
			<i>Total</i>	<i>In</i>	<i>Out</i>	<i>Total</i>	<i>In</i>	<i>Out</i>
Mini-Warehouse	110,599 SF	167	11	7	4	19	9	10
Hotel	135 Rooms	1097	62	37	25	75	38	37
Fast-Food Restaurant with Drive-Through Window	9,104 SF	4288	366	187	179	297	154	143
Total		5552	439	231	208	391	201	190

5) PASS-BY TRIPS

Pass-by trips are made as intermediate stops on the way from an origin to a primary trip destination without a route diversion. For this site, pass-by trips are those drivers who are already traveling north and southbound on Douglas Street who will stop at this development. Pass-by trips were estimated utilizing the Tables provided in Chapter 10 of the Trip Generation Handbook, 3rd Edition. Pass-by data was available for Land Use 934 (Fast-Food Restaurant with Drive-Through Window). 85 percent of the average pass-by rate was applied to this land use.

Table 2: Trip Generation (Pass-By)

<i>Land Use</i>	<i>Intensity</i>	<i>Land Use</i>	<i>AM Peak</i>			<i>PM Peak</i>		
			<i>Total</i>	<i>In</i>	<i>Out</i>	<i>Total</i>	<i>In</i>	<i>Out</i>
Mini-Warehouse	110,599 SF	151	11	7	4	19	9	10
Hotel	135 Rooms	310	62	37	25	75	38	37
Fast-Food Restaurant with Drive-Through Window	9,104 SF	934	366	187	179	297	154	143
			-150	-75	-75	-122	-61	-61
Total External Trips			439	231	208	391	201	190
Pass-By Trips			-150	-75	-75	-122	-61	-61
Total			289	156	133	269	140	129

6) TRIP DISTRIBUTION

Trips generated by the Oakview Storage development were distributed based on existing traffic flows and a general analysis of the surrounding area. The trips were distributed onto the existing street system approximately as follows:

- 52 percent to/from the north on Douglas Street
- 30 percent to/from the south on Douglas Street
- 5 percent to/from the east on Mulberry Street
- 2 percent to/from the west on Mulberry Street (St. Luke's Hospital)
- 5 percent to/from the east on Victoria Drive
- 2 percent to/from the west on Victoria Drive
- 2 percent to/from the east on Sycamore Street
- 2 percent to/from the west on Sycamore Street

The proposed development trips are shown in Figures 7-8.

7) LEVEL OF SERVICE AND VOLUME/CAPACITY ANALYSES

Capacity analysis was used to quantify the impacts of the increased traffic on the intersections studied. The methodology outlined in the Highway Capacity Manual, 2000 Edition, was used as a basis to perform the analysis for this study. Although newer versions of the Highway Capacity Manual are available, Synchro software limits the use of shared left/through lanes. Capacity analysis defines the quality of traffic operation for an intersection using a grading system called Level of Service (LOS). The LOS is defined in terms of average vehicle delay. Levels of service A through F have been established with A representing the best and F the worst.

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

The study intersections were evaluated using Synchro, an analysis package based in part on Highway Capacity Manual methods. The analysis reports are included in Appendix II.

Existing Conditions

The levels of service, lane configuration, and queue lengths for existing conditions are shown in Figures 5 and 6 in Appendix I.

The overall levels of service at each of the signalized intersections was a C or better in both the AM and PM Peak Hour. Individual movements are all a level of service D or better with queues that are contained within the existing turn lanes.

The existing Polytainer Drive has a level of service of A for the stop controlled movement with a design queue of less than one vehicle.

Proposed Conditions

The levels of service, lane configuration, and queue lengths for the proposed conditions are shown in Figures 9 and 10 in Appendix I.

The trips generated by the proposed Oakview Storage Development are comparable to those in the plan proposed in 2016 for this location. The overall levels of service at each of the signalized intersections was a C or better in both the AM and PM Peak Hour. Individual movements are all a level of service D or better with queues that are contained within the existing turn lanes.

The stop controlled movement at the Polytainer Drive has a level of service of B during both the AM and PM Peak Hours with a design queue of approximately one vehicle.

8) TURN LANES & ACCESS MANAGEMENT

According to the Lee's Summit Access Management Code, right turn lanes are required at each driveway onto an arterial street. Because Douglas Street is an arterial, both the North Entrance and the South Entrance should be constructed with a 150' southbound right turn lane.

The Access Management Code indicated that a Polytainer Drive should include a throat length of 125', which has been met with the currently proposed plan.

According to the Access Management Code, the drives from Douglas Street should include a throat length of 100'. Lot 4 has access onto the South Entrance approximately 50' west of Douglas Street. A variance will need to be sought for this entrance.

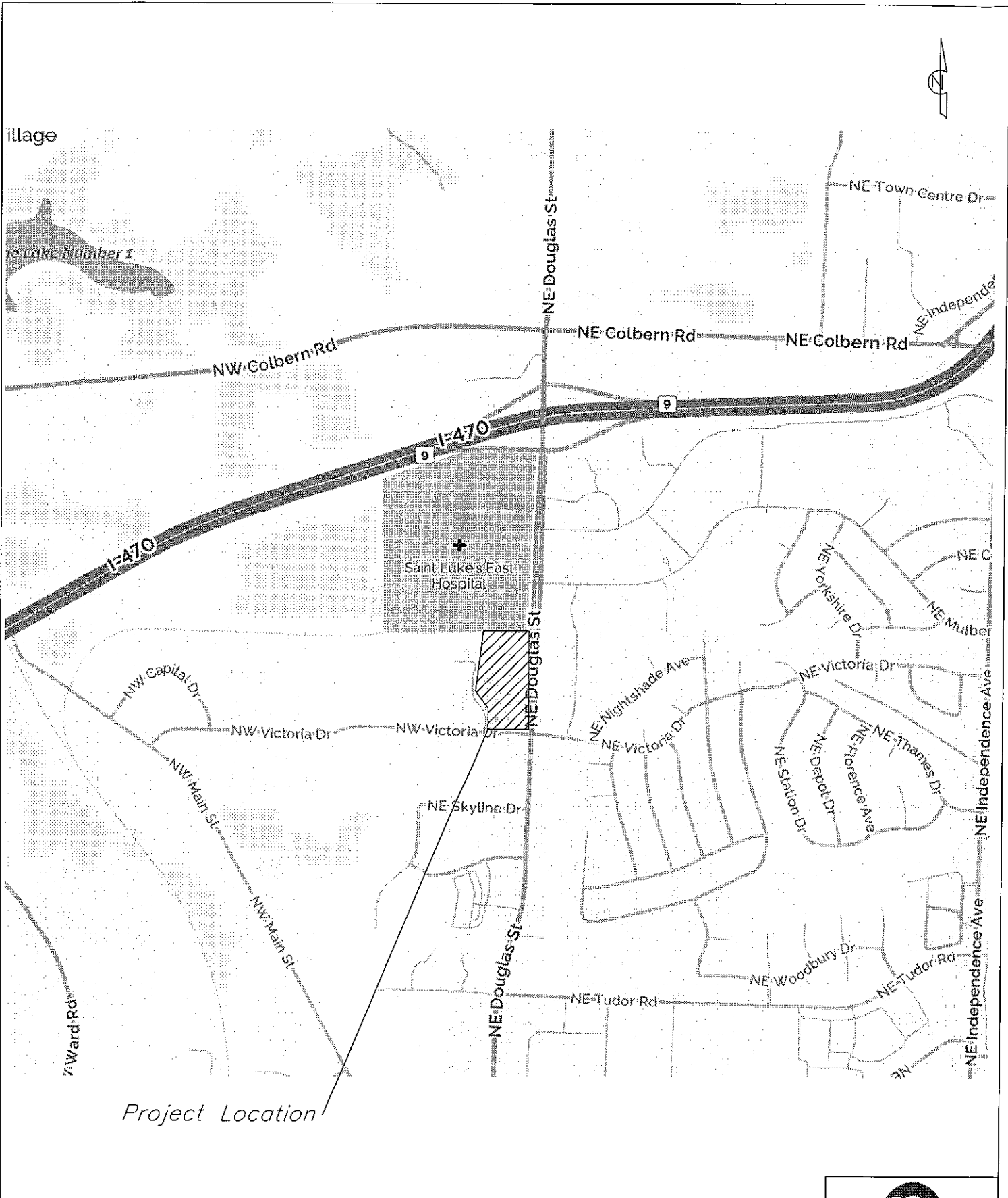
9) RECOMMENDATIONS & CONCLUSIONS

This study documents the impact of the proposed Oakview Storage Development on adjacent intersections during the AM and PM peak hours. Based on the findings of this report, the following improvements are recommended:


- Construction of a 150' southbound right-turn lane into the North Entrance
- Construction of a 150' southbound right-turn lane into the South Entrance

APPENDIX I

Project Location	Figure 1
Site Plan	Figure 2
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Proposed PM Peak Hour Lane Configurations & Levels of Service	Figure 10



Project Location

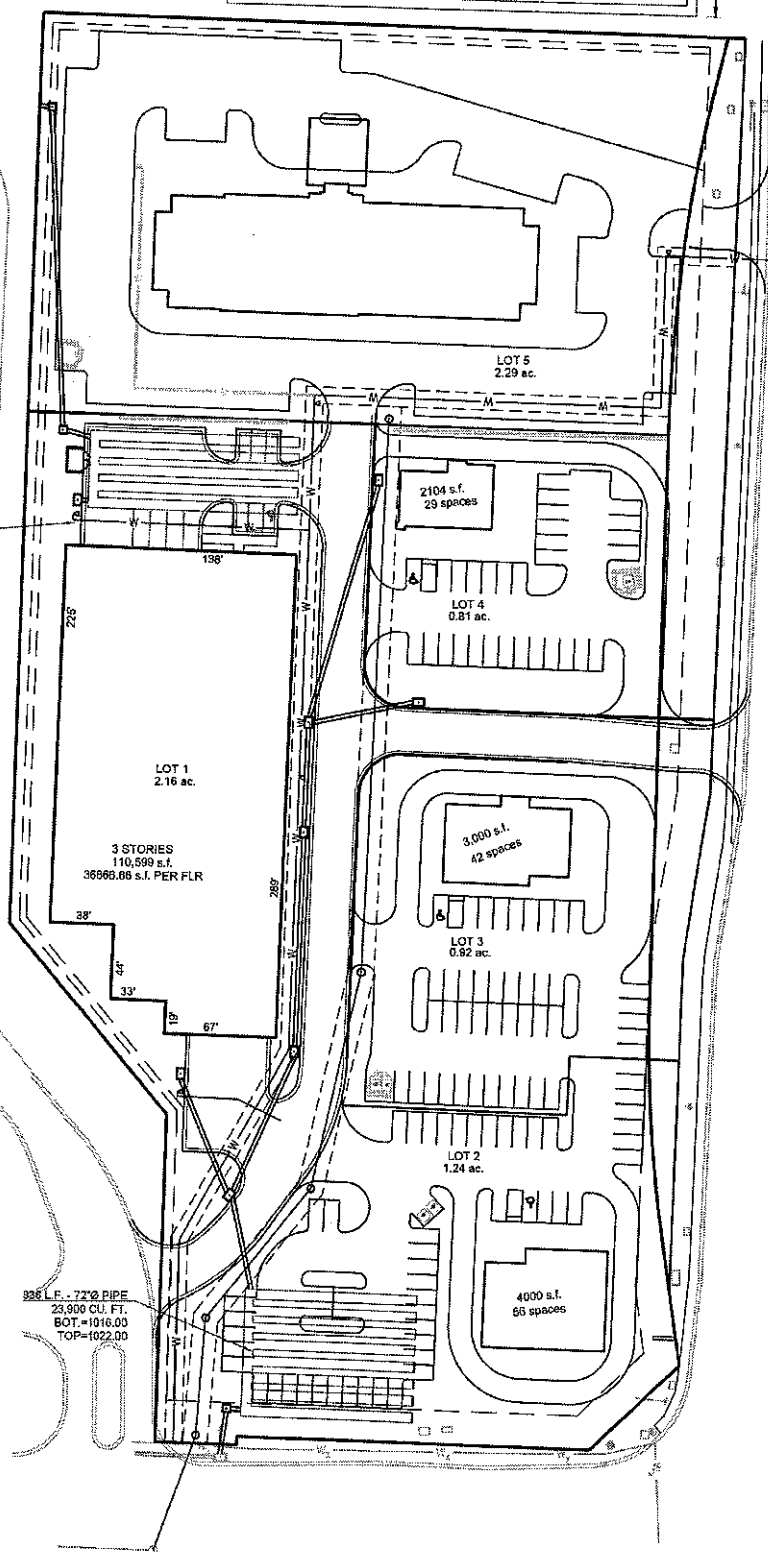
Project Location	Oakview Storage	No Scale	
	Lee's Summit, MO	Figure 1	



1136 L.F. - 72" PIPE
32,444 CU. FT.
BOT.=1005.0
TOP=1011.0

628 L.F. - 72" PIPE
17,500 CU. FT.
BOT.=1016.0
TOP=1022.0

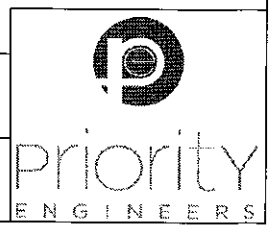
936 L.F. - 72" PIPE
23,900 CU. FT.
BOT.=1016.00
TOP=1022.00

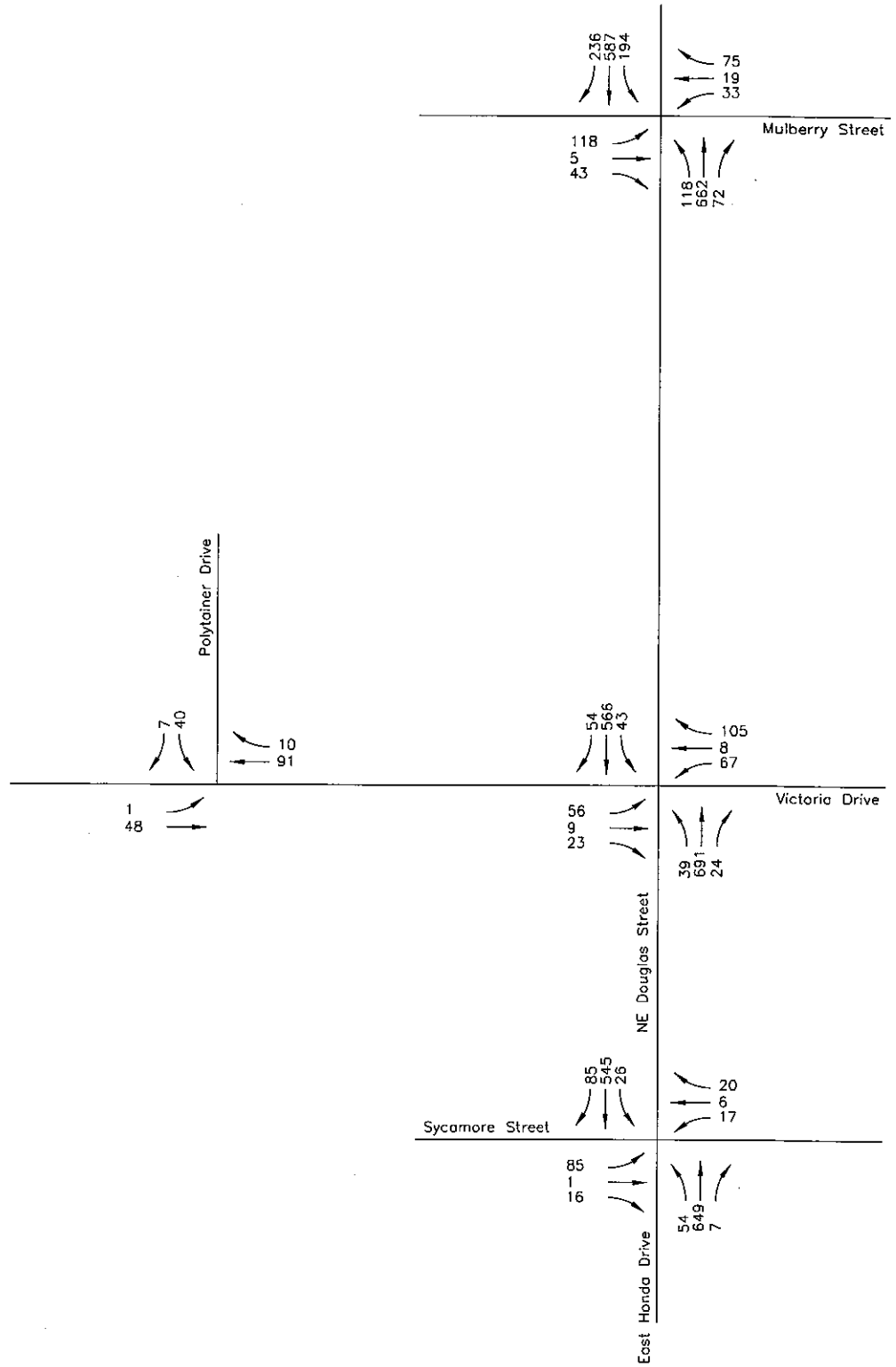


Site Plan


Oakview Storage
Lee's Summit, MO

No Scale
Figure 2





LEGEND

 Total Volume

Existing AM Peak Hour
Traffic Volumes

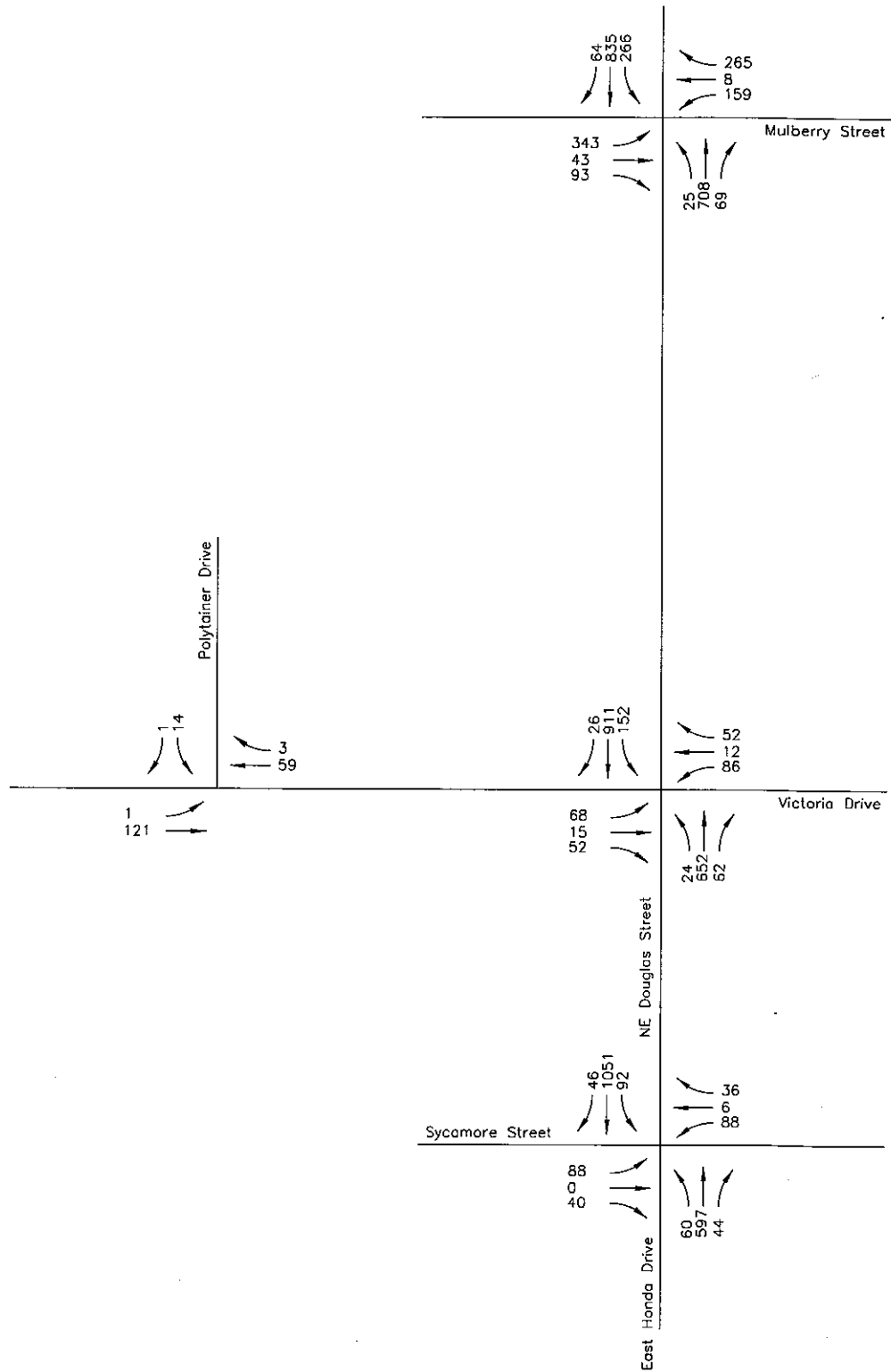
Oakview Storage
Lee's Summit, MO

No Scale


Figure 3



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LEGEND

 Total Volume

Existing PM Peak Hour
Traffic Volumes

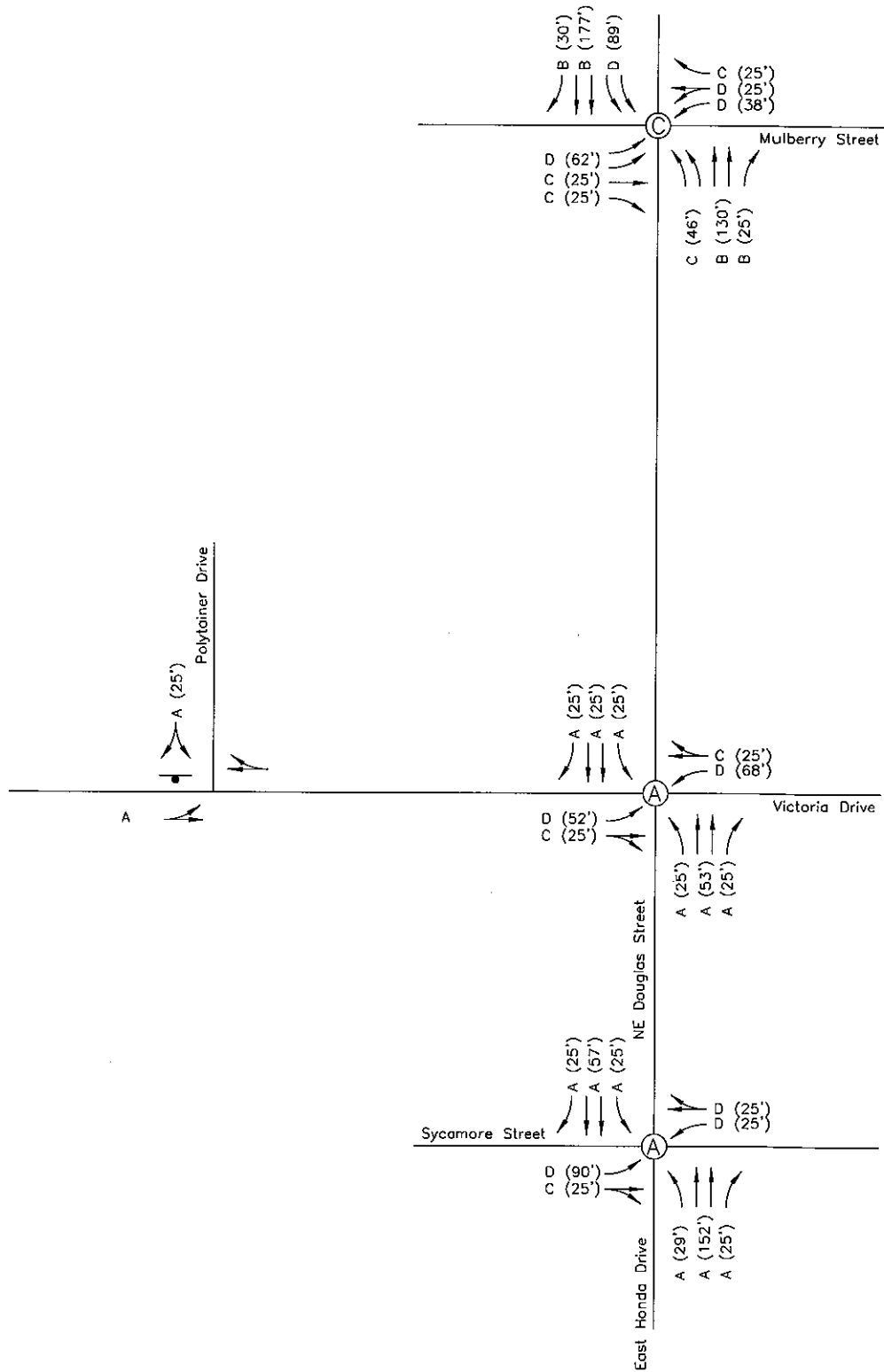
Oakview Storage
Lee's Summit, MO

No Scale

Figure 4



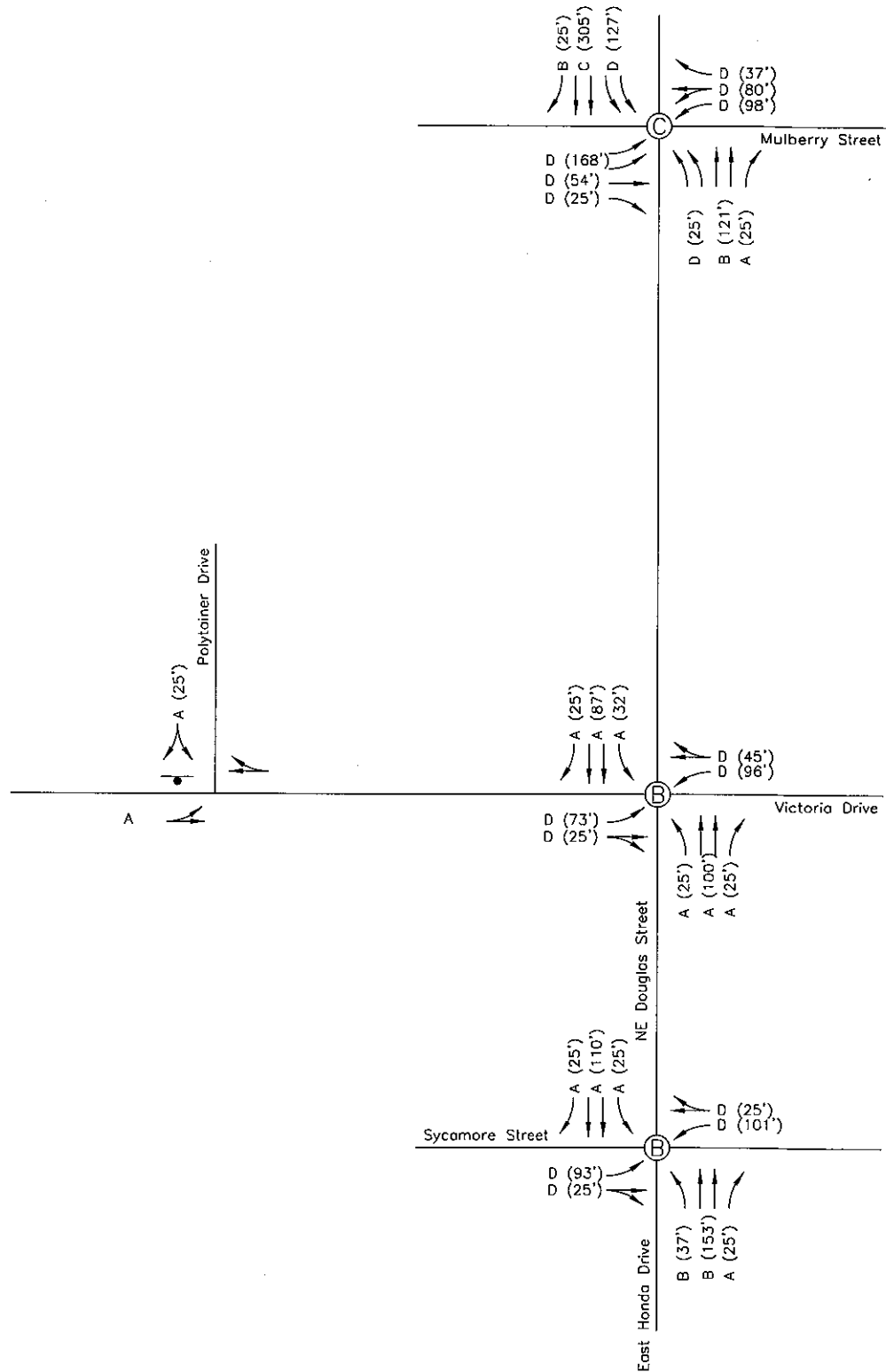
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ENGINEERS



LEGEND

- HCM LOS (95th Percentile Queue in Vehicles)
- Stop Sign
- Traffic Signal LOS

Existing AM Peak Hour Lane Configurations & Levels of Service	Oakview Storage	No Scale	
	Lee's Summit, MO	Figure 5	



LEGEND

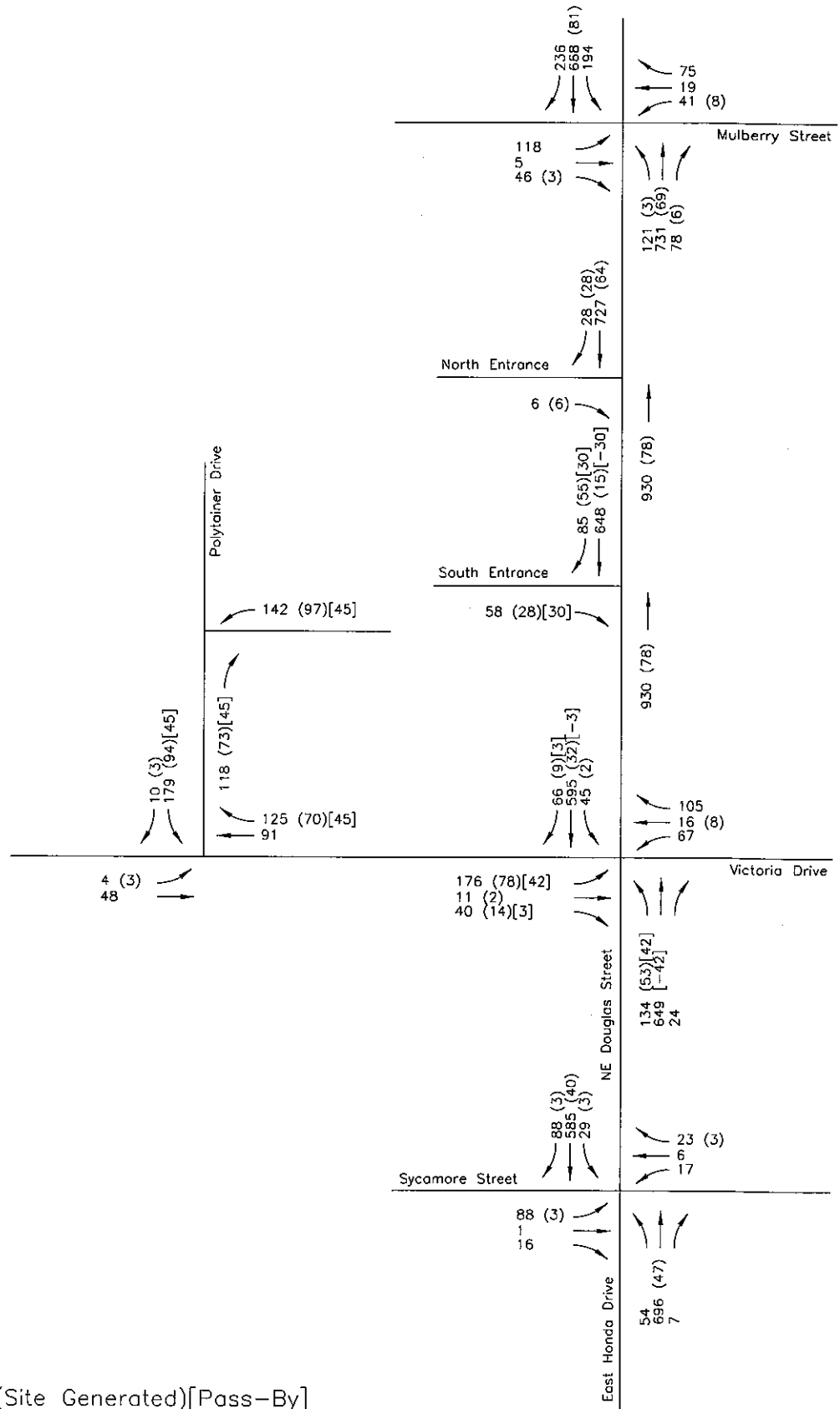
- HCM LOS (95th Percentile Queue in Vehicles)
- Stop Sign
- Traffic Signal LOS

Existing PM Peak Hour
Lane Configurations &
Levels of Service

Oakview Storage
Lee's Summit, MO

No Scale
Figure 6





LEGEND

Total Volume (Site Generated)[Pass-By]

Existing + Proposed Development
AM Peak Hour Traffic Volumes

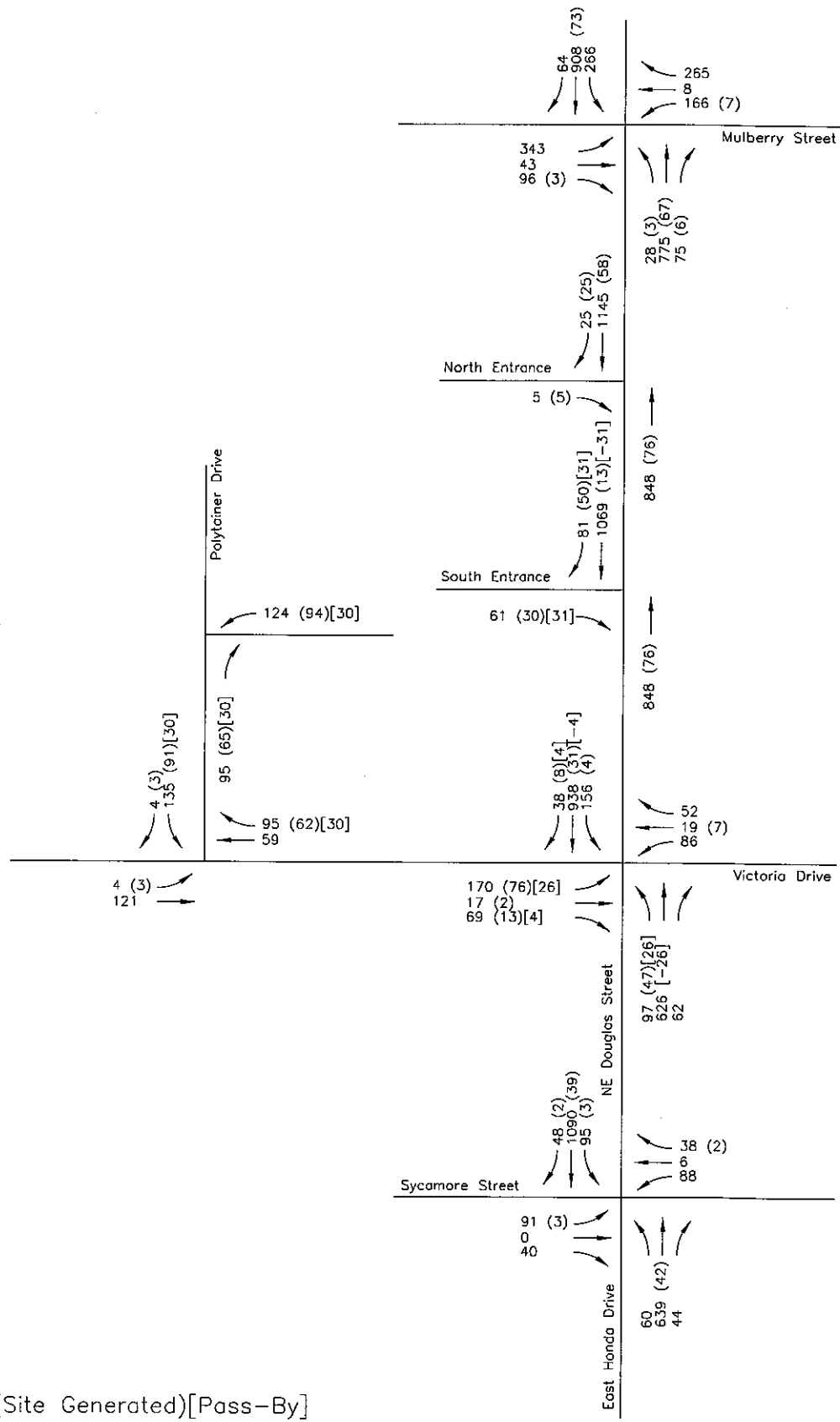
Oakview Storage
Lee's Summit, MO

No Scale

Figure 7



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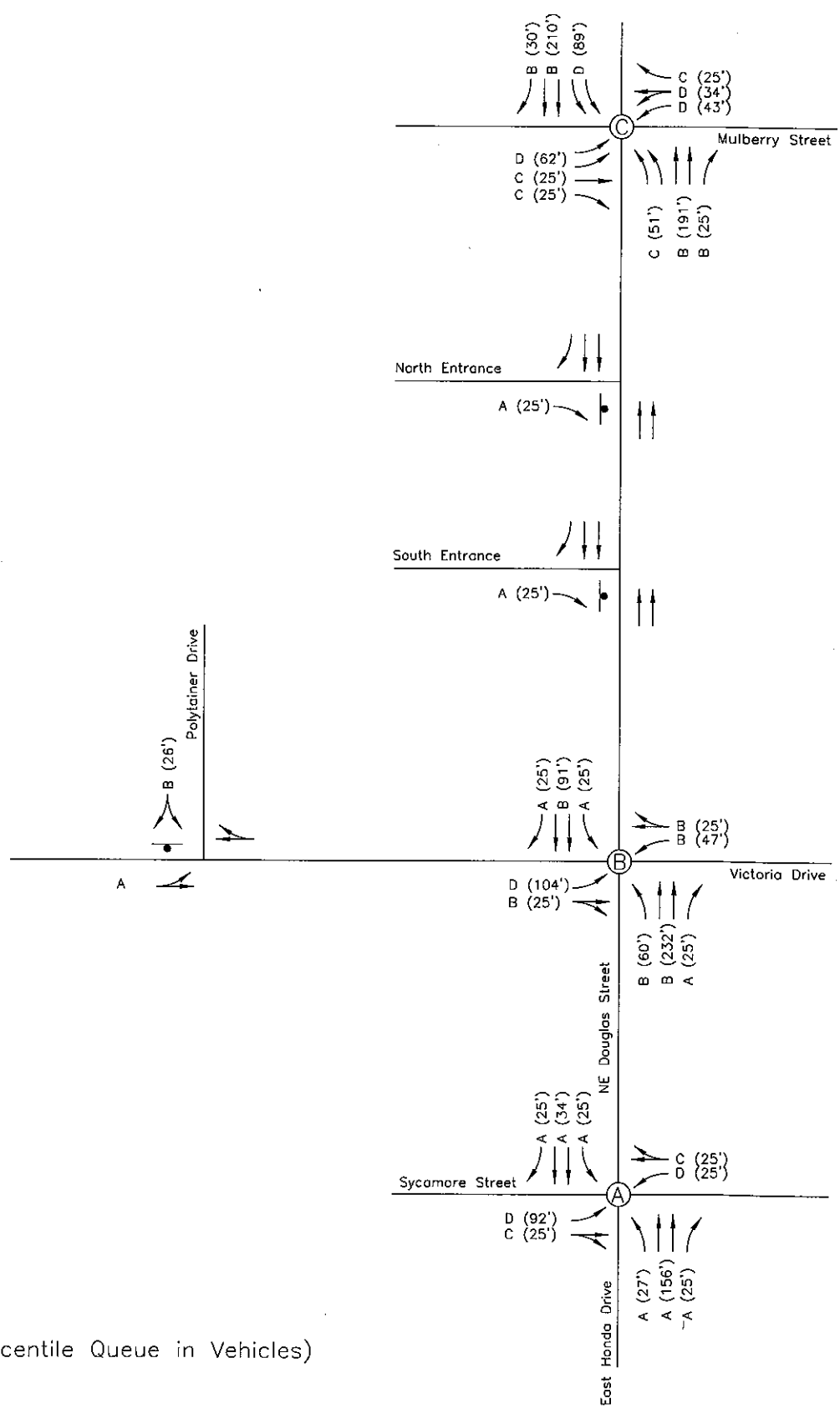
Existing + Proposed Development
 PM Peak Hour Traffic Volumes

Oakview Storage
 Lee's Summit, MO

No Scale

Figure 8





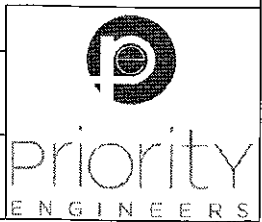
LEGEND

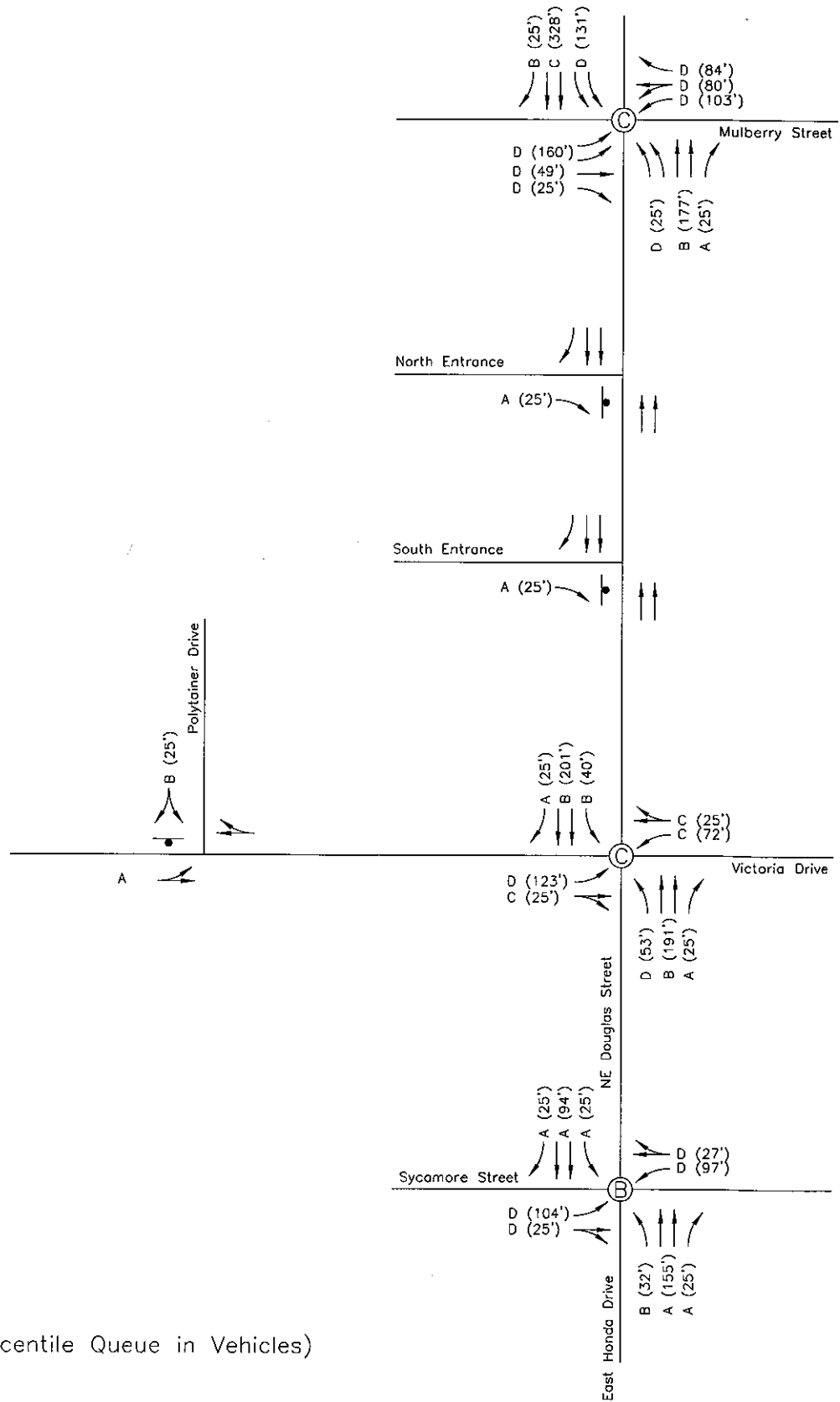
- HCM LOS (95th Percentile Queue in Vehicles)
- Stop Sign
- Traffic Signal LOS

Existing + Proposed Development
AM Peak Hour Lane Configurations
& Levels of Service

Oakview Storage
Lee's Summit, MO

No Scale
Figure 9





LEGEND

- HCM LOS (95th Percentile Queue in Vehicles)
- Stop Sign
- Traffic Signal LOS

Existing + Proposed Development
PM Peak Hour Lane Configurations
& Levels of Service

Oakview Storage
Lee's Summit, MO

No Scale

Figure 10



APPENDIX II

Peak Hour Traffic Counts

Synchro Reports

Existing AM Peak Hour	Pages 1-7
Existing PM Peak Hour	Pages 8-14
Proposed AM Peak Hour	Pages 15-23
Proposed PM Peak Hour	Pages 24-32