

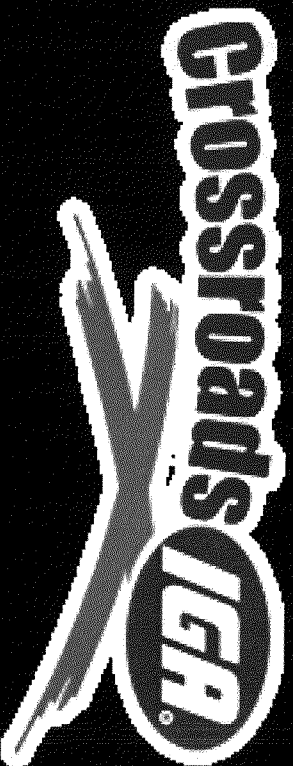
Louisville Metro Land Development & Transportation Committee – July 7, 2016

Follow-Up Neighborhood Meeting – March 16, 2016

Previous Neighborhood Meeting – November 30, 2015

Docket No. 15ZONE1065

Zone change from R-4 to C-1 to allow a combination Crossroads IGA grocery store with restaurant, hardware store and fuel pumps on property located at 8001 Smyrna Parkway

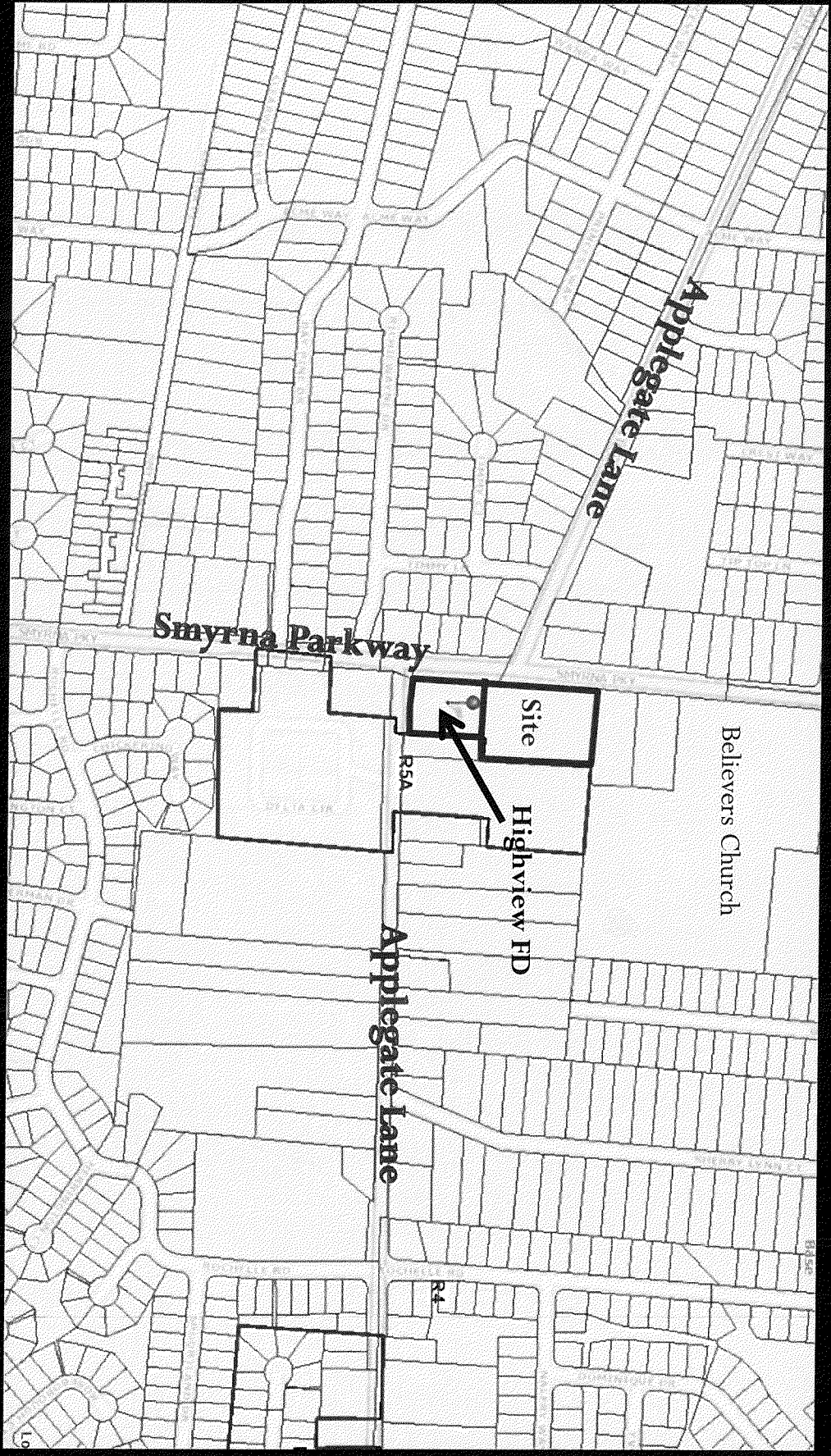


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Land Planners, Landscape Architects & Engineers: Arnold Consulting Engineering Services, Inc.

Traffic Engineer: CDM Smith Engineers

*Received at LDET 7/14/16
by WRR*



Smyrna Parkway

Applegate Lane

Site

Highview FD

Believers Church

Applegate Lane

R5A

R4

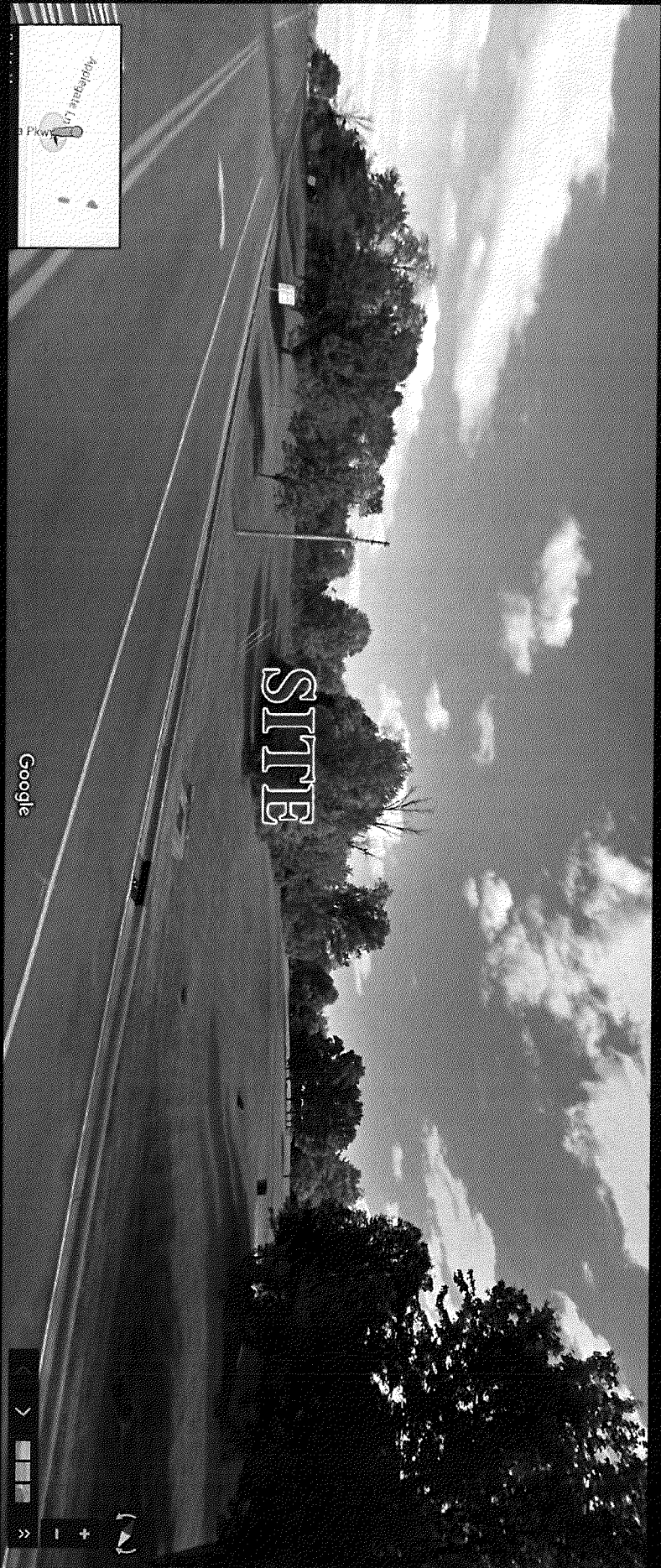




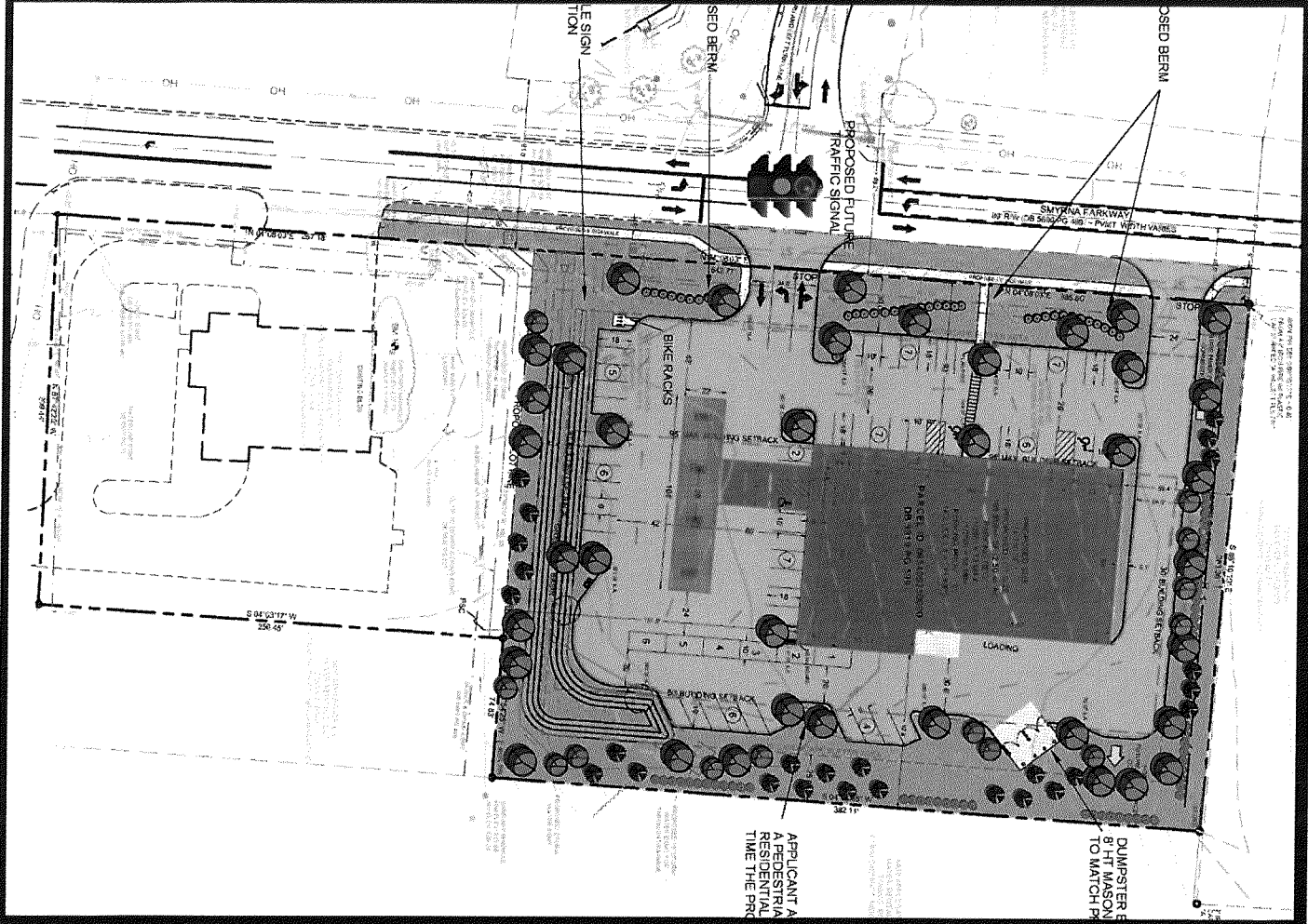
View of Smyrna Parkway looking south towards Gene Snyder. Site is on the left.



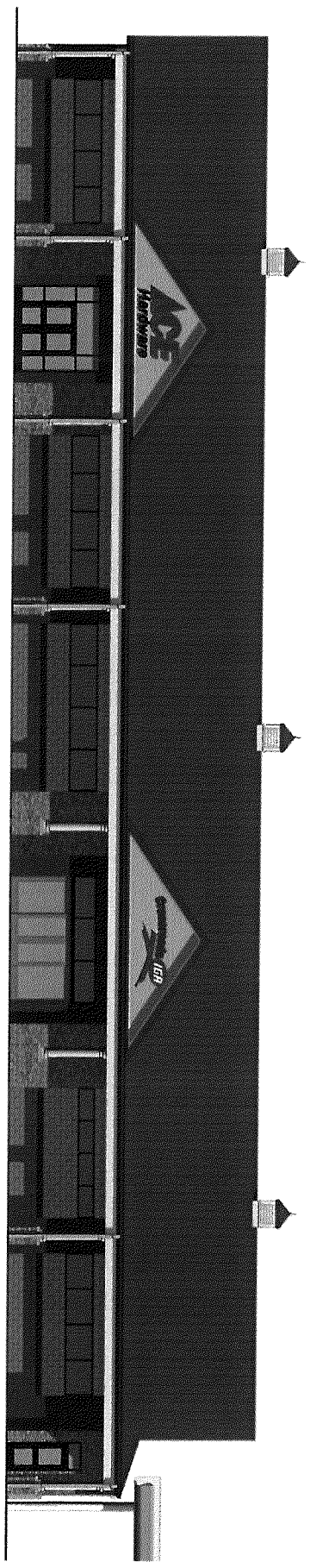
View of Smyrna Parkway looking north towards Outer Loop. Site is on the right just past the fire station.



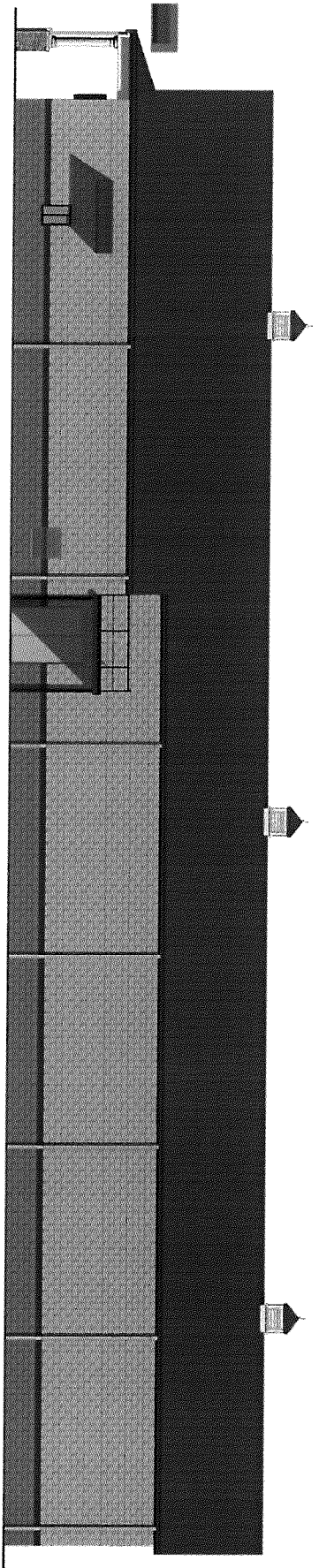
View of site from Smyrna Parkway just past the fire station.



1 EXTERIOR BUILDING COLOR ELEVATION - GROCERY ENTRANCE
1/8" = 1'-0"

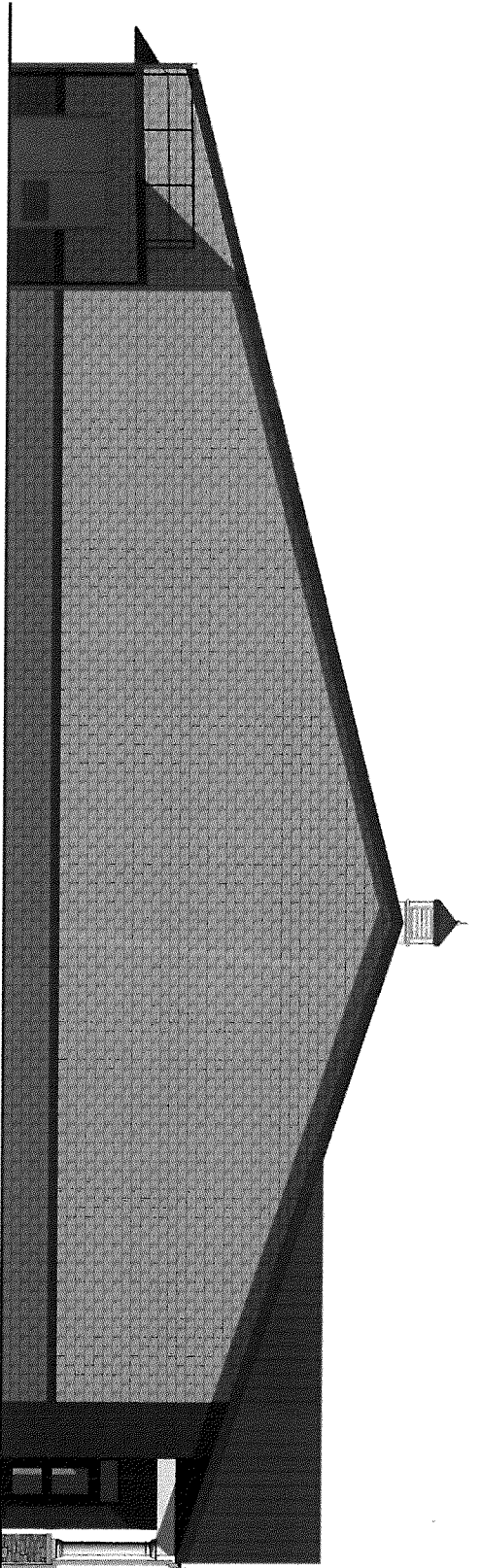


2 EXTERIOR BUILDING COLOR ELEVATION - DRIVE THRU
1/8" = 1'-0"



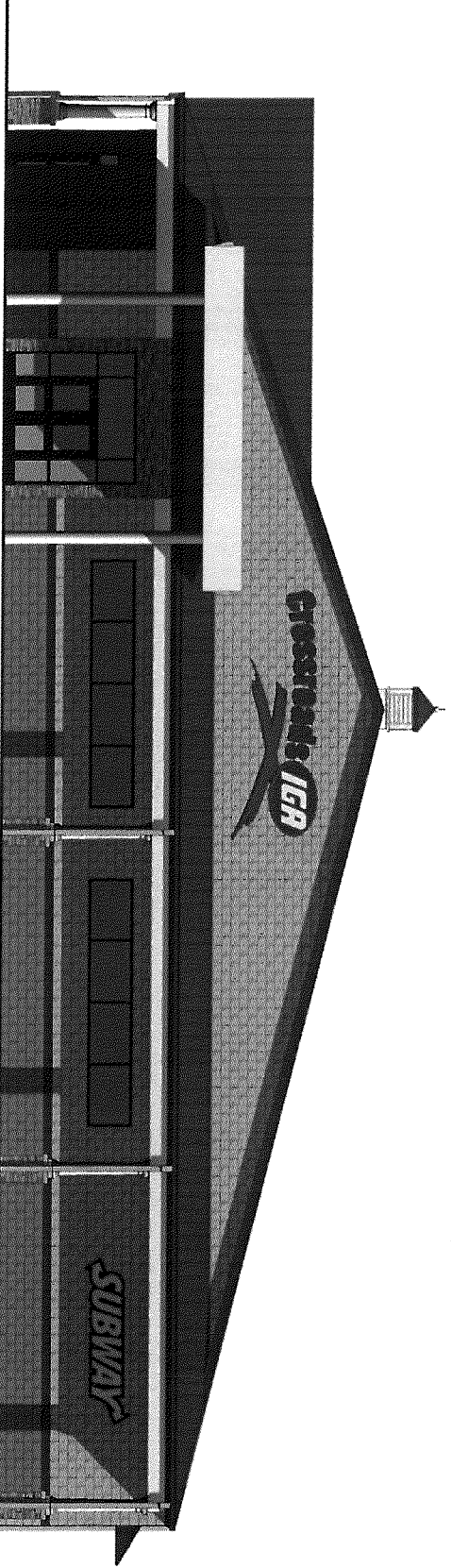
4 EXTERIOR BUILDING COLOR ELEVATION - SERVICE / LOADING

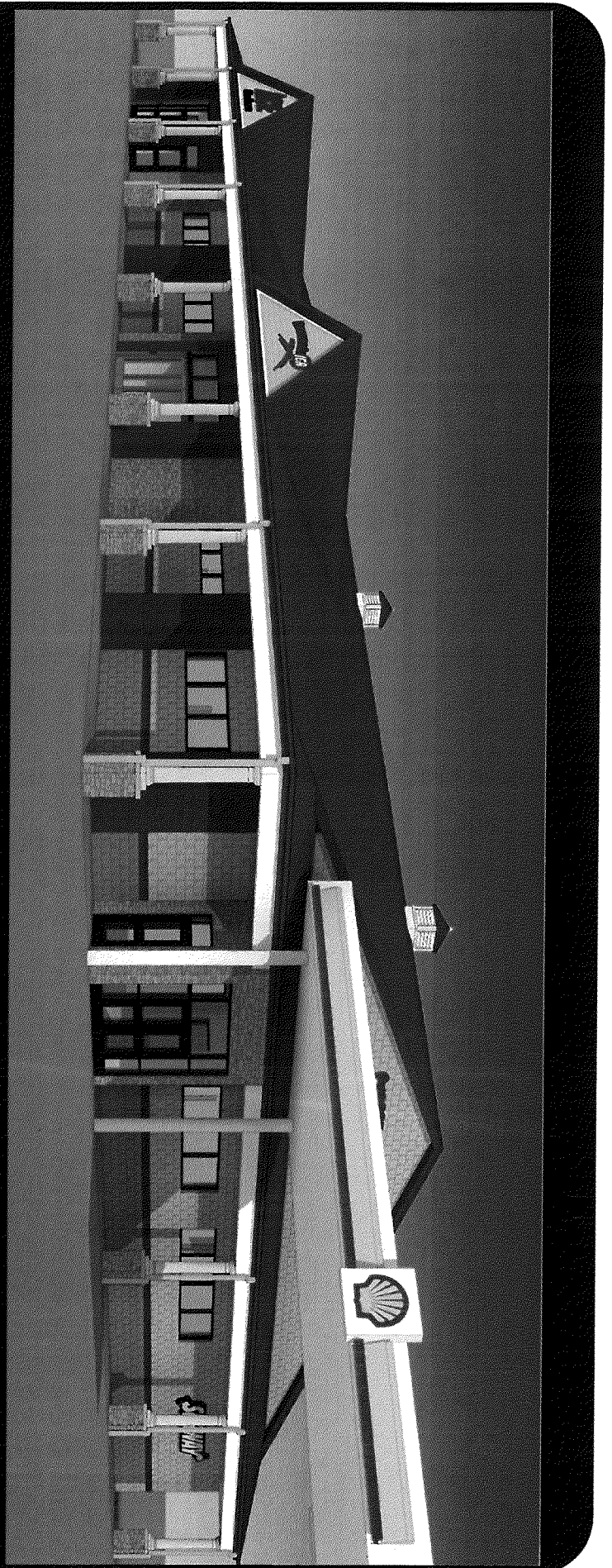
1/8" = 1'-0"



3 EXTERIOR BUILDING COLOR ELEVATION - GAS ENTRANCE

1/8" = 1'-0"





Typical Grocery Section Featuring Fresh Produce



Fresh Fruits, Vegetables, and Meat





PREPARED PANINIS
\$6.99

\$2.99

IGA

SUB

Frozen Food Department



Dairy Department



Breakfast and Deli Meats



Standard Grocery Offerings



Coffee Area



In-Store Restaurant



Crossroads IGA
8001 Smyrna Parkway
Louisville, KY

Traffic Impact Study

REPORT

Louisville Metro Planning

March 8, 2016

Revised May 2, 2016

CDM
Smith

AM Peak Hour Levels of Service highlighted in RED
 PM Peak Hour Levels of Service highlighted in BLUE

Table 2 - Level of Service Results

	AM Peak Hour				PM Peak Hour				Traffic Signal	
	2015 Existing	2017 No Build	2017 Build	2017 Build EB R	2015 Existing	2017 No Build	2017 Build	2017 Build EB R	2017 AMI Build	2017 PM Build
Smyrna Parkway at Applegate Lane									C	C
Applegate Lane Eastbound	A	A	F	F	F	F	D	D	D	D
Crossroads IGA Westbound	NA	NA	F	F	NA	NA	F	F	D	E
			377.8	377.8			1537.8	1537.8	54.7	55.9

1st Conclusion: Traffic signal at Crossroads entrance for Smyrna Parkway and eastbound Applegate Lane traffic required to improve the “build” traffic conditions in the AM peak hour.

2nd Conclusion: Traffic signal at Crossroads entrance for Smyrna Parkway and eastbound Applegate Lane traffic required to improve both the “no-build” and “build” traffic conditions in the PM peak hour.

3rd Conclusion: Traffic signal at Crossroads entrance for Smyrna Parkway and westbound Applegate Lane traffic required to provide acceptable ingress and egress in both the AM and PM peak hours.

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Introduction

The proposed Crossroads IGA in Louisville, KY is located on Smyrna Parkway east of Applegate Lane (west) intersection and north of Highway Fire Station Number 2. Crossroads IGA is proposing a 14,532 square foot neighborhood grocery with eight fueling positions. The building will also house a hardware store and a fast-food restaurant. Figure 1 displays a map of the site. Access to the tract will be from two entrances on Smyrna Parkway. The purpose of this study is to examine the traffic impacts of the proposed development upon the adjacent highway system. For this study the impact area was defined to be the intersection of Applegate Lane (west) and Smyrna Parkway.

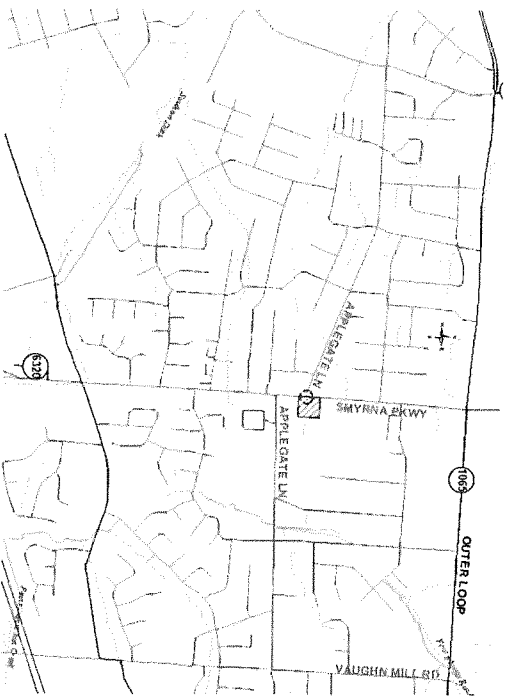
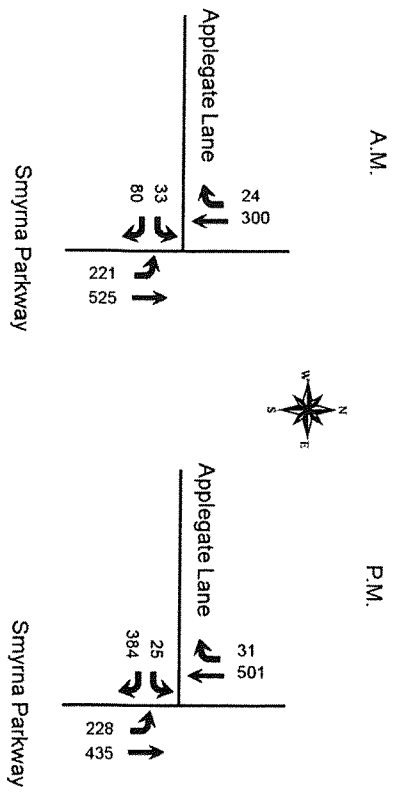


Figure 1
Site Location

Existing Conditions

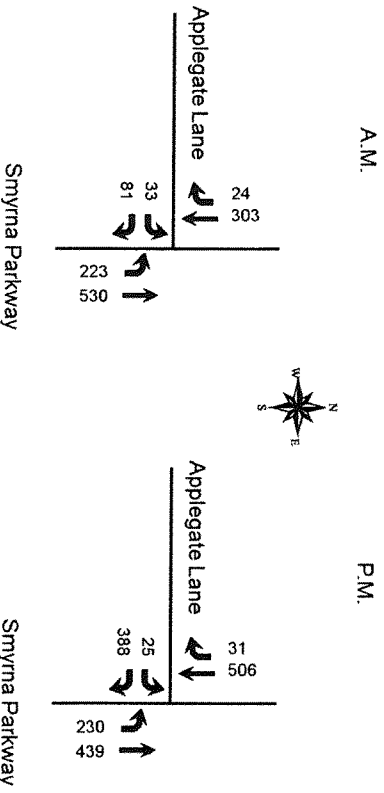
Smyrna Parkway is maintained by Metro Louisville with an estimated 2015 ADT of 12,200 vehicles per day between Outer Loop (KY 1065) and Manslick Road (KY 2845), as estimated from the Kentucky Transportation Cabinet 2014 count at station 402. The road is a three lane road with ten-foot lanes a two-way left turn lane and curb and gutter. The posted speed limit is 35 mph. There are sidewalks on the west side. The intersection with Applegate Lane is controlled with a stop sign. There are no turn lanes on Applegate Lane.

A.m. and p.m. peak hour traffic counts were obtained at the intersection on December 17, 2015 (see Appendix A). The a.m. peak hour occurred between 7:00 and 8:00 and the p.m. peak hour occurred between 5:00 and 6:00 p.m. Figure 2 illustrates the existing peak hour traffic volumes.



Future Conditions

The projected completion year for this development is 2017, so the analysis year for this study is 2017. To predict traffic conditions in 2017, one percent annual growth in traffic was added. This growth is based upon a review of the historical growth at KYTC count stations 401 and 402. Figure 3 displays the 2017 No Build volumes.



Trip Generation

The Institute of Transportation Engineers Trip Generation Manual, 9th Edition contains trip generation rates for a wide range of developments. The land uses of "Gasoline/Service Station with Convenience Market (945)", "Fast-Food with Drive-Through Window (934)" and "Hardware Store (816)" best describes this development. The trip generation results were compared with existing Crossroads IGA sites to confirm this as the best match. The trip generation results are listed in Table 1. The results of the trip generation analysis are that this development will generate 129 a.m. peak hour trips and 179 p.m. peak hour trips. The trips were assigned to the highway network with 70 percent to/from the south, 15 percent to/from the north and 15 percent to/from the west. This is based upon the residential density in the vicinity. Figure 4 shows the trips generated by this development and distributed throughout the road network for the year 2017 during the peak hours. Figure 5 displays the individual turning movements for the year 2017 for the peak hours when the development is completed.

Table 1 – Trip Generation

	A.M. Peak Hour			P.M. Peak Hour		
	Total	Enter	Exit	Total	Enter	Exit
Gasoline/Service Station with Conv Market (8 fueling positions)	81	41	40	108	54	54
Hardware Store (3,000 square feet)	3	2	1	38	18	20
Fast-Food with Drive-Through Window (1,000 square feet)	45	23	22	33	17	16
TOTAL	129	65	63	179	89	90

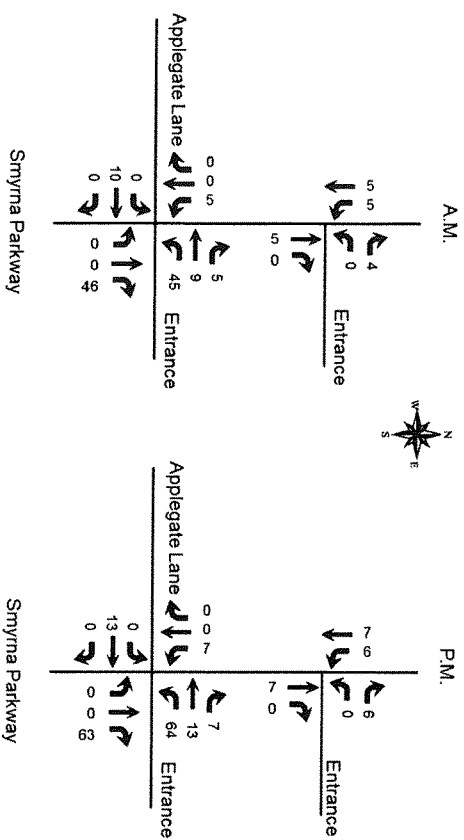
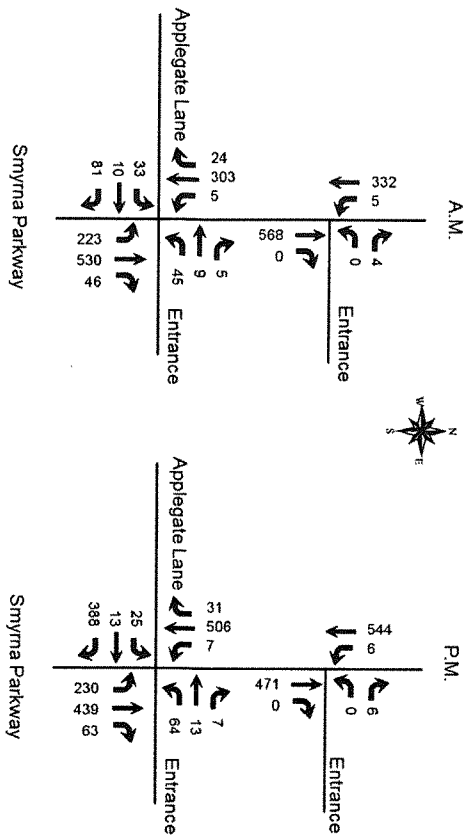


Figure 4
Trip Distribution for Site



Analysis

The qualitative measure of operation for a roadway facility or intersection is evaluated by assigning a "Level of Service" or LOS. Level of Service is a ranking scale from A through F with each level representing a range. LOS results depend upon the type of facility that is analyzed. In this case, the LOS is based upon the average vehicle delay each movement experiences at an intersection.

To evaluate the impact of the proposed development, the vehicle delays at the intersection were determined using procedures detailed in the Highway Capacity Manual, 2010 edition. Future delay and Level of Service were determined for the intersection using HCS 2010 TWSC and Streets software (version 6.7.0). Table 2 shows the results of the analysis for the three scenarios analyzed. The full printouts are included in Appendix B.

Table 2 - Level of Service Results

	AM Peak Hour				PM Peak Hour				Traffic Signal	
	2015 Existing	2017 No Build	2017 Build	2017 Build EB R	2015 Existing	2017 No Build	2017 Build	2017 Build EB R	2017 AM Build	2017 PM Build
Smyrna Parkway at Applegate Lane	A	A	F	F	F	F	F	D	C	C
Eastbound	9.7	9.7	213.9	87.8	50.7	54.3	158.6	32.0	37.5	39.5
Crossroads IGA Westbound	NA	NA	F	F	NA	NA	1537.8	1537.8	D	E
Smyrna Parkway	A	A	A	A	A	A	A	A	C	C
Southbound	9.2	9.2	9.2	9.2	9.6	9.6	9.5	9.5	21.9	25.8
Smyrna Parkway Northbound	NA	NA	A	A	NA	NA	A	A	C	C
			9.1	9.1			8.4	8.4	24.2	33.7

Note: Level of Service, delay in seconds

Because the intersection currently experiences Level of Service F during the current p.m. peak hour and during both build peak hours, two options were evaluated. The first option is to construct an eastbound right turn lane and the second was the installation of a traffic signal. The addition of an eastbound right turn lane does not eliminate Level of Service F conditions in both peak hours.

The Manual on Uniform Traffic Control Device Warrants for installing a traffic signal were reviewed. A speed study was conducted on Smyrna Parkway on April 26, 2016. The 85th percentile speed was 46 mph. Therefore, the speed reduction has been applied to the signal warrants. Using only the volumes from the existing count, Warrant 1A is satisfied for all twelve hours. The speed study and warrant chart are included in Appendix B. The full volume on the minor street approach includes the right turn volume due to the single lane approach on Applegate Lane. Additionally, the signal meets the recommendation for installing protected left turn movement for northbound Smyrna Parkway. Installing a traffic signal will improve the overall operation of the intersection.

In order to achieve the level of service results shown in the table above, an eastbound right turn lane will also be constructed on Applegate Lane.

Conclusions

Based upon the volume of traffic generated by the development and the amount of traffic forecasted for the year 2017, there will be an impact to the existing highway network. Due to the delays currently experienced on Applegate Lane at Smyrna Parkway, a traffic signal with an eastbound right turn lane is recommended for the intersection. The installation of the traffic signal will improve the overall operation of the intersection.

6-2-16 Signal Warrant Analysis for Applegate Lane at Smyrna Parkway

TRAFFIC SIGNAL WARRANT ANALYSIS

COUNTY Jefferson DATE December 17, 2015 DAY OF WEEK Thurs

CITY Louisville MILEPOST Smyrna Parkway NO. OF CORRECTIBLE CRASHES IN 12 MONTH PERIOD N/A

MAJOR STREET NAME Applegate Lane (west) w/ Crossroads volumes NO. OF MAJOR STREET APPROACH LANES 1

MINOR STREET NAME Applegate Lane (west) w/ Crossroads volumes NO. OF MINOR STREET APPROACH LANES 1

POSTED SPEED LIMIT MAJOR SREET 45 MPH POPULATION < 10,000 YES NO REDUCED WARRANTS BASED UPON SPEED POPULATION

POSTED SPEED LIMIT MINOR SREET 35 MPH

TIME	MAJOR STREET TWO WAY VOLUME	MINOR STREET HIGHEST VOLUME APPROACH	Warrant 1 Condition A		Warrant 1 Condition B		Warrant 7 - CRASH EXPERIENCE (Warrant 1 Condition A or B 80% Satisfied) AND (5 or More Correctible Crashes in 12 Month Period)				
			Minimum Vehicular Volume	Interruption of Continuous Traffic	MAJOR	MINOR	MAJOR	MINOR	MAJOR	MINOR	
7-8 am	1,070	83	X	X	X	X	X	X	X	X	X
8-9 am	756	79	X	X	X	X	X	X	X	X	X
9-10 am	643	65	X	X	X	X	X	X	X	X	X
10-11 am	611	65	X	X	X	X	X	X	X	X	X
11-12 am	711	105	X	X	X	X	X	X	X	X	X
12-1 pm	741	109	X	X	X	X	X	X	X	X	X
1-2 pm	885	145	X	X	X	X	X	X	X	X	X
2-3 pm	1,064	182	X	X	X	X	X	X	X	X	X
3-4 pm	1,010	186	X	X	X	X	X	X	X	X	X
4-5 pm	1,188	208	X	X	X	X	X	X	X	X	X
5-6 pm	1,195	230	X	X	X	X	X	X	X	X	X
6-7 pm	1,052	154	X	X	X	X	X	X	X	X	X
NUMBER OF HOURS COMPLIANCE			8	12	8	12					
COMPLIANCE			YES	YES	YES	YES					

* additional 12 trips added by development

Proposed Additional Binding Element

- Funding for the design and installation of a traffic signal and right turn lane (eastbound) shall be provided by the Owner/Developer at the Applegate Lane and Smyrna Parkway intersection. Traffic Signal installation shall be performed by Louisville Metro. Construction plans for the traffic signal and right turn lane, a bond and encroachment permit from Transportation Planning will be required prior to construction approval for the site. The traffic signal installation and right turn lane construction shall be completed before the issuance of the certificate of occupancy. Additional intersection improvements may be required after construction plan review by Transportation Planning, Traffic Engineering and Metro Public Works.