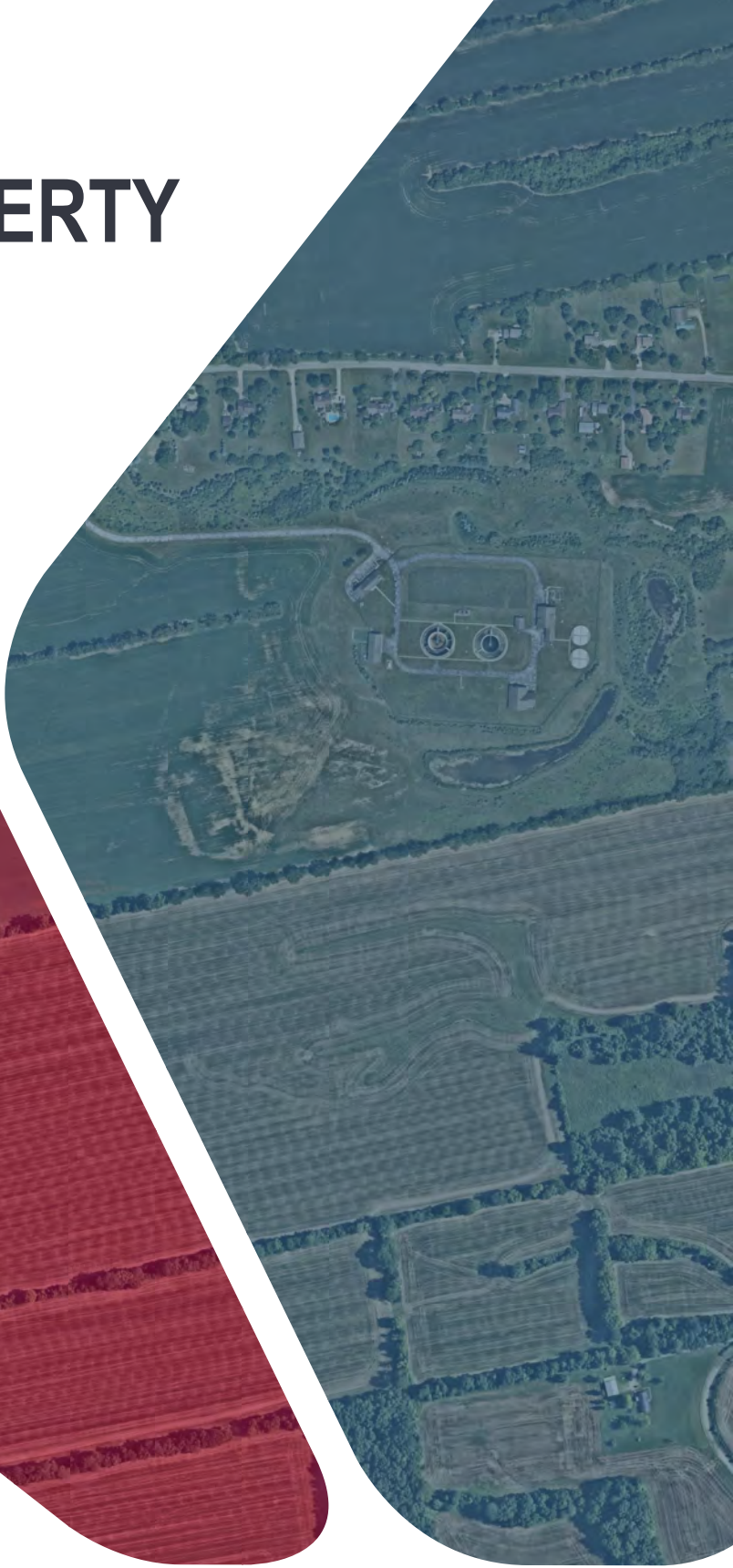


FARNEMAN PROPERTY



Approved - MAL
Date: 05/13/2024
*Approval for traffic/access
under DCEO jurisdiction only



Delaware County, Ohio

May, 2024

Kimley»»Horn

EXHIBIT H-1

Farneman Property Traffic Study

May 2024

PREPARED BY:

Nick Brady, P.E.

Kimley-Horn

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Direct: 614.696.5162

Nick.Brady@kimley-horn.com



Registered Engineer No. E-82874, Ohio

May 8, 2024

Date



Kimley»Horn

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INTRODUCTION

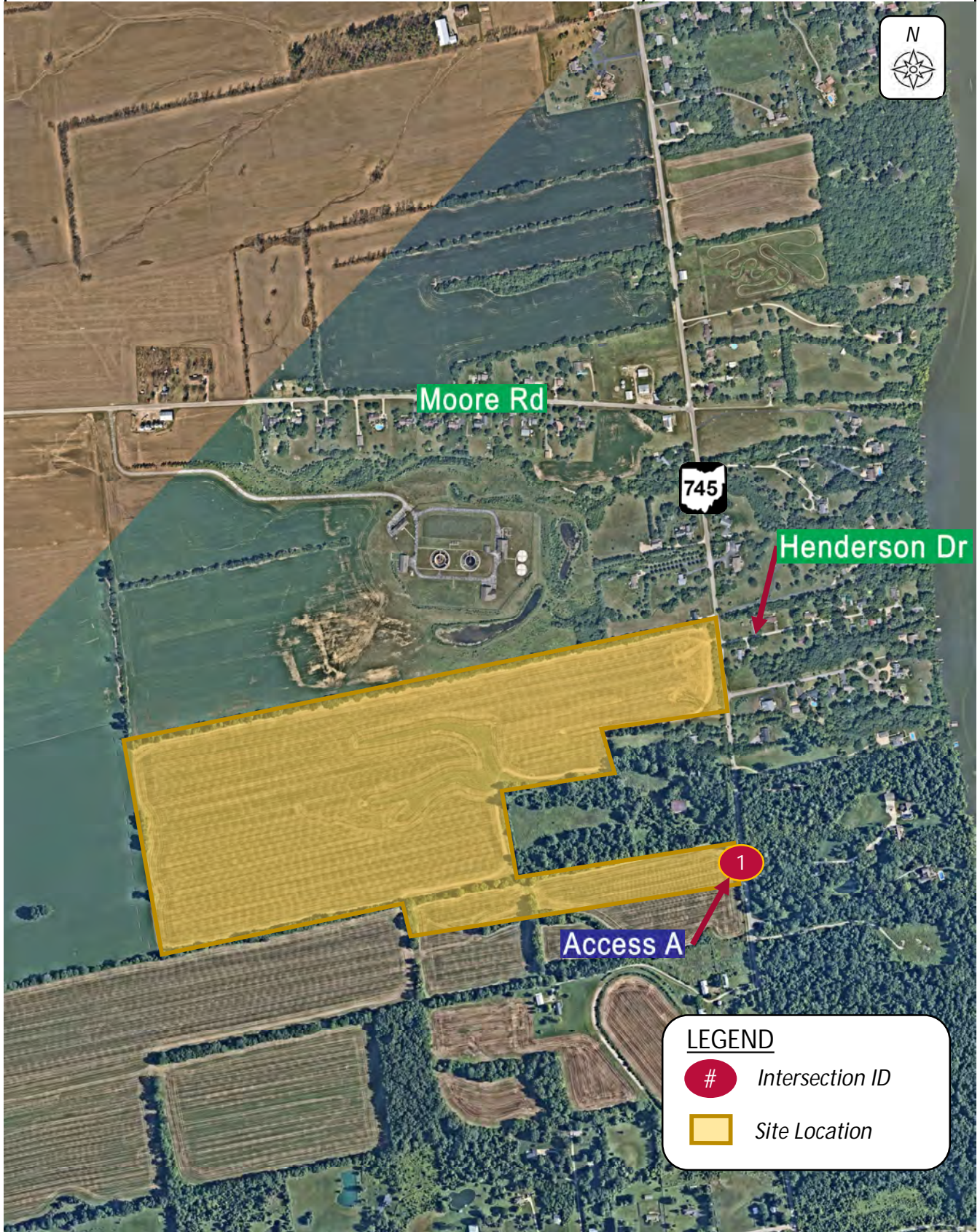
Kimley-Horn and Associates, Inc. (Kimley-Horn) was retained to perform a traffic study for a proposed 140-unit single family housing development located on SR-745 (Dublin Road) in Delaware County, Ohio. In the previous submittal, a single access point was proposed across from Henderson Drive. The site has since been revised, and the access is now proposed south of Henderson Drive near the southern boundary of the property. An aerial view of the study location and the surrounding roadway network is presented in **Exhibit 1**, and the revised conceptual site plan is provided in **Appendix A**.

A Memorandum of Understanding (MOU) was completed to summarize a scoping call on September 18th, 2023. A copy of the agreed upon MOU is provided in **Appendix B**. Note that Kimley-Horn and the review agencies mutually agreed to modify the MOU after approval to adjust the data collection procedures. Historical count data is available on SR-745 from 2021 and serves as the base volumes for the analysis. Based on the site trips generated, it is anticipated that a left turn warrant would be met at the site access and results would not be impacted by the age of the counts. It is recommended that any future entities who reference this document note that the traffic data was outside of the typical age for using historical counts and use engineering judgement to determine if the data is suitable for their use.

Additionally, analysis for the southbound right turn lane warrant has been included in this submittal for Opening and Horizon year conditions. This analysis also uses the historical data and the ODOT Traffic Forecast Management System (TFMS) growth rate of 2.7% as listed in the MOU document.

The study includes derivation of trip generation characteristics for the proposed residential use. A turn lane warrant analysis, capacity analysis, and intersection site distance analysis were completed as part of the study process. This document summarizes the methodology, results, and conclusions of the traffic analysis.

Exhibit 1: Site Location Map



NO BUILD CONDITIONS

This section of the report details information on the existing roadway conditions.

Area Land Uses and Existing Roadway Characteristics

The subject site is located on SR-745 south of Henderson Drive in Delaware County, Ohio. The area in the vicinity of the site generally consists of agricultural and residential land uses. The study area for this analysis includes the following intersections:

- SR-745 and Site Access A

Kimley-Horn used the ODOT Transportation Information Mapping System (TIMS) to determine the roadway classifications. Characteristics of the stud16y roadways are summarized below.

SR-745 is a minor arterial roadway generally running north-south in the site vicinity. In the study area, SR-745 provides one lane in each direction and has an unposted speed limit indicating a legal speed of 55 mph in the vicinity of the subject site. No designated sidewalks are present on either side of the existing SR-745 where the site access will be located. Vertical curvature is present to the north and south of the proposed site access, and no horizontal curvature is present in the study area.

Traffic Count Data Collection

Traffic count data for SR-745 northbound and southbound approaches was obtained using the ODOT Transportation Information Mapping System (TIMS). The counts include volumes for a full 24-hour period and were collected in August of 2021. The AM and PM peak hour periods are 8:00am-9:00am and 4:45pm-5:45pm, respectively. The peak hour traffic volumes are shown in **Exhibit 2**. Using the ODOT Peak Hour to Design Hour Factors tables, a design hour factor of 1.12 was applied to the existing traffic volumes. The design hour volumes are shown in **Exhibit 3**. Traffic count data can be found in **Appendix C**.

Traffic Volume Projections

Kimley-Horn utilized the ODOT Traffic Forecast Management System (TFMS) to obtain growth rates for the study area. Based on the TFMS results, a 2.7% linear growth rate was applied to SR-745. This rate was used to project data to a 2025 Opening Year and a 2035 Horizon Year. The TFMS data can be found in **Appendix D**.

The 2025 No Build volumes are illustrated in **Exhibit 4** and the 2035 No Build volumes are illustrated in **Exhibit 5**.

Exhibit 2: Existing Traffic AM & PM Peak Hour Vehicle Volumes

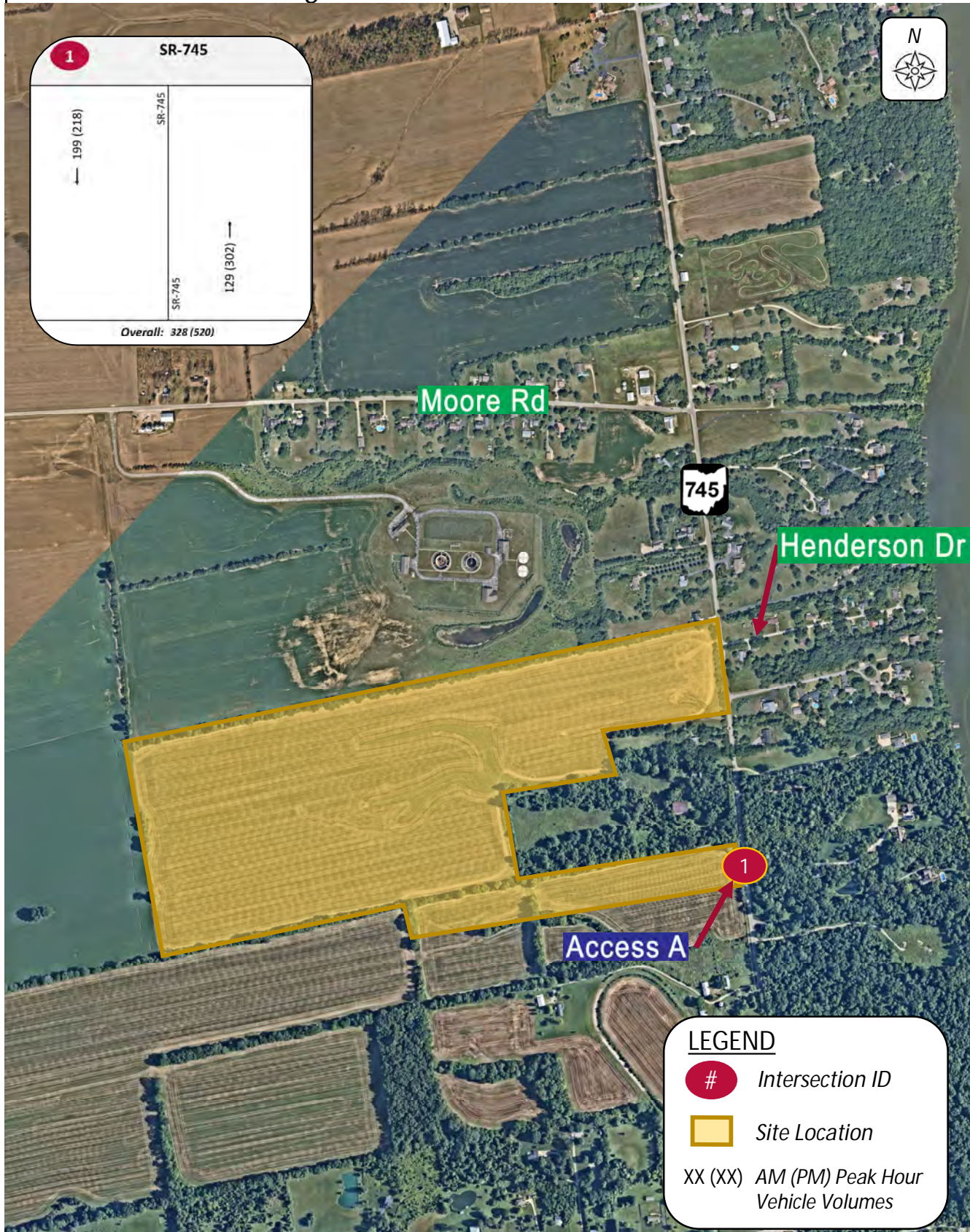


Exhibit 3: Existing Traffic With DHV AM & PM Peak Hour Vehicle Volumes

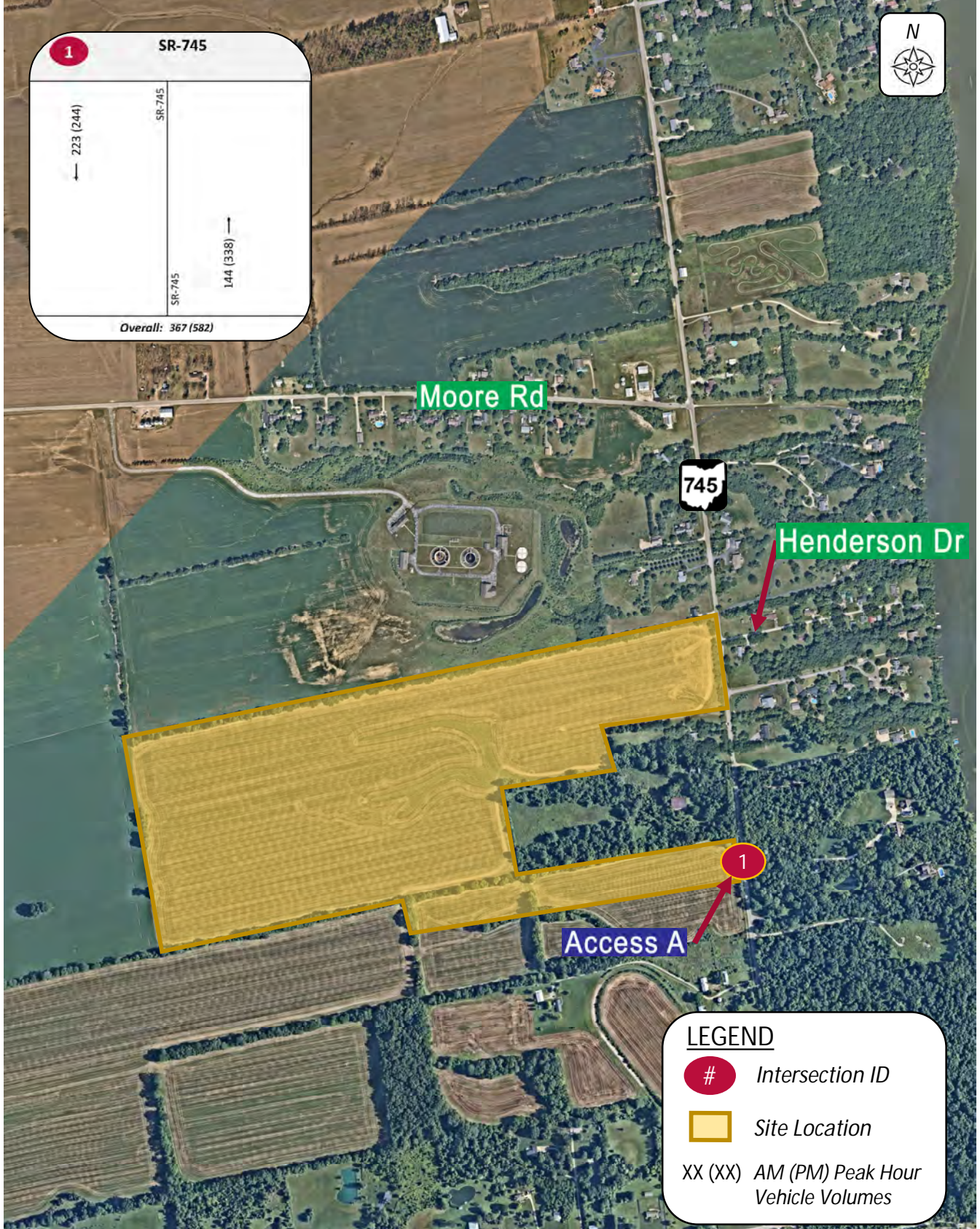
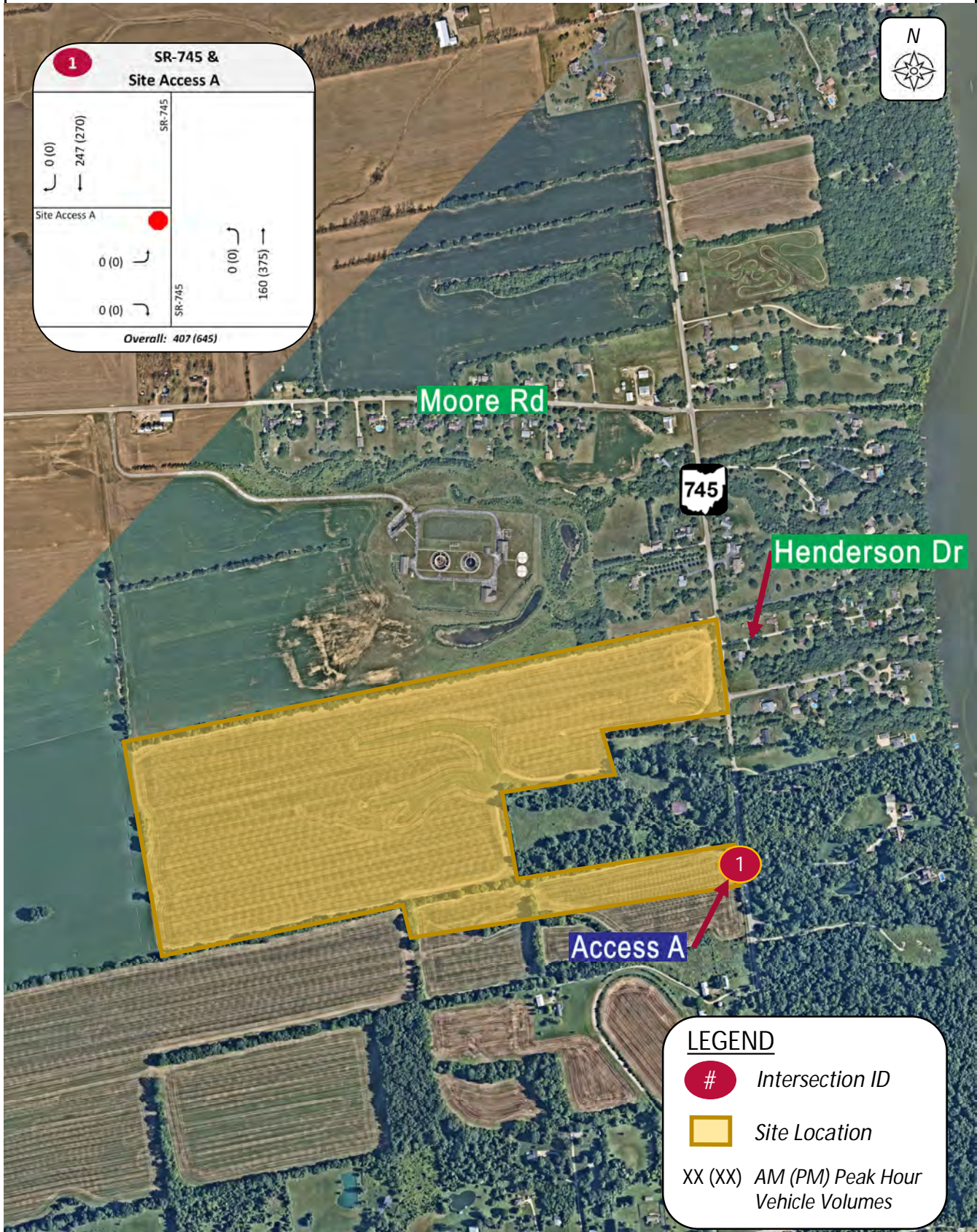


Exhibit 4: 2025 No Build AM & PM Peak Hour Vehicle Volumes



1		SR-745 & Site Access A	
0 (0)	247 (270)	SR-745	
Site Access A	0 (0)	SR-745	160 (375)
0 (0)	0 (0)		
Overall: 407 (645)			



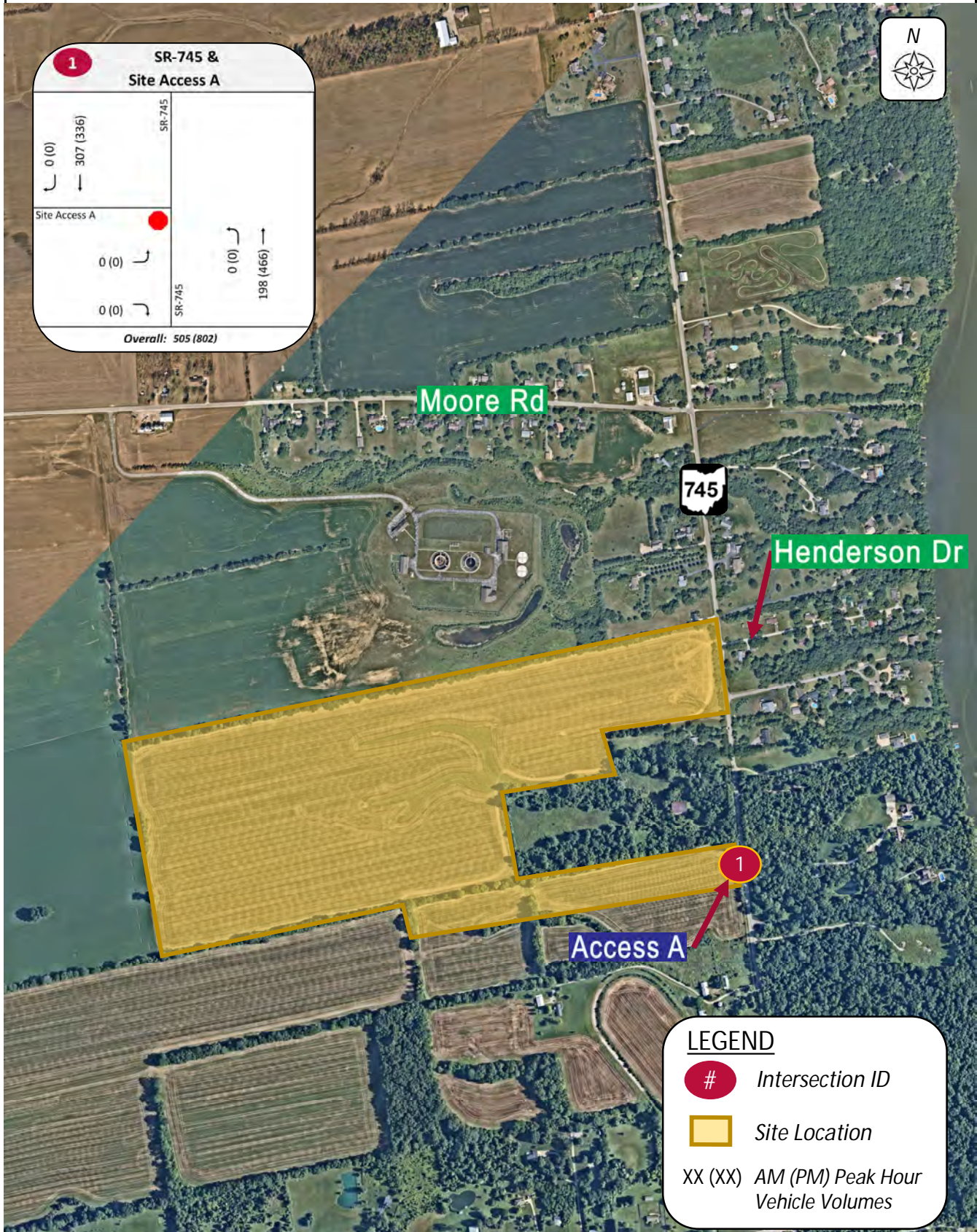
LEGEND

- # Intersection ID
- Site Location
- XX (XX) AM (PM) Peak Hour Vehicle Volumes

Exhibit 5: 2035 No Build AM & PM Peak Hour Vehicle Volumes



1		SR-745 & Site Access A	
0 (0)	307 (336)	SR-745	
↶	↓		
Site Access A		SR-745	
0 (0)	↷	0 (0)	↷
0 (0)	↶	SR-745	198 (466)
			↑
Overall: 505 (802)			



LEGEND

- # Intersection ID
- Site Location
- XX (XX) AM (PM) Peak Hour Vehicle Volumes

BUILD CONDITIONS

This section of the report outlines the proposed site plan and summarizes site-specific traffic characteristics.

Development Characteristics

The proposed development consists of 140 units of single-family residential homes. It is located to the west of SR-745 with a single proposed access point on SR-745 south of Henderson Drive. This access is located near the south property line. An emergency-only access is also proposed on SR-745 near the north property line. The emergency access will be blocked with a gate that will be siren-actuated to open for emergency vehicle use.

Trip Generation

To calculate trips generated by the proposed industrial development, data was referenced from the Institute of Transportation Engineers (ITE) manual titled *Trip Generation, Eleventh Edition*. Trip generation rates for the ITE Land Use Code (LUC) corresponding to the proposed use are shown in **Table 1**. Copies of the ITE data are included in **Appendix E**.

Table 1: ITE Trip Generation Data – Residential Units

ITE Land Use	Units	Weekday		
		Daily	AM Peak Hour	PM Peak Hour
<i>Single-Family Detached Housing (210)</i>	140	$\ln(T) = 0.92 \ln(X) + 2.68$ 50% in/50% out	$\ln(T) = 0.91 \ln(X) + 0.12$ 26% in/74% out	$\ln(T) = 0.94 \ln(X) + 0.27$ 63% in/37% out

All site generated trips are expected to be “Primary Trips” when traveling to and from the subject site. Primary trips are trips to the proposed residential site that would not normally travel on the study roadways and are considered new trips within the study area. No pass-by traffic is assumed to be generated as part of this land use. Per these assumptions, site-generated traffic projections are presented in **Table 2**.

Table 2: Proposed Site Generated Traffic Projections - Residential

ITE Land Use	Units	Vehicle Type	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
<i>Single-Family Detached Housing (210)</i>	140	All	1,375	24	77	101	86	50	136

Directional Distribution

The distribution of trips entering/exiting the proposed site was determined based on the existing traffic patterns on the roadway network. Existing data shows that the traffic coming to and from the proposed site SR-745 does so predominately to/from the south. Kimley-Horn assumed 65% of the traffic would travel to/from the south on SR-745 and the remaining 35% was assumed to travel to/from the north on SR-745. Input from DECO as well as these calculations and assumptions were used to determine the distribution shown in **Table 3**.

Table 3: Estimated Trip Distribution

<i>Traveling to/from:</i>	<i>Estimated Total Trip Distribution</i>
<i>South on SR-745 Road</i>	<i>65%</i>
<i>North on SR-745 Road</i>	<i>35%</i>

Build Traffic Assignment

The Build traffic assignment represents traffic volumes at the study intersections upon construction of the proposed development. Kimley-Horn assigned traffic volumes using the distribution shown in **Table 3** to produce Build volumes for analysis. AM Peak and PM Peak hour assignments were made using the trip generation and the distribution shown above. The site traffic assignment is shown in **Exhibit 6**. The 2025 Build Vehicular Volumes are illustrated in **Exhibit 7** and the 2035 Build Vehicular Volumes are illustrated in **Exhibit 8**.

Exhibit 6: Total Site Traffic AM & PM Peak Hour Vehicle Volumes

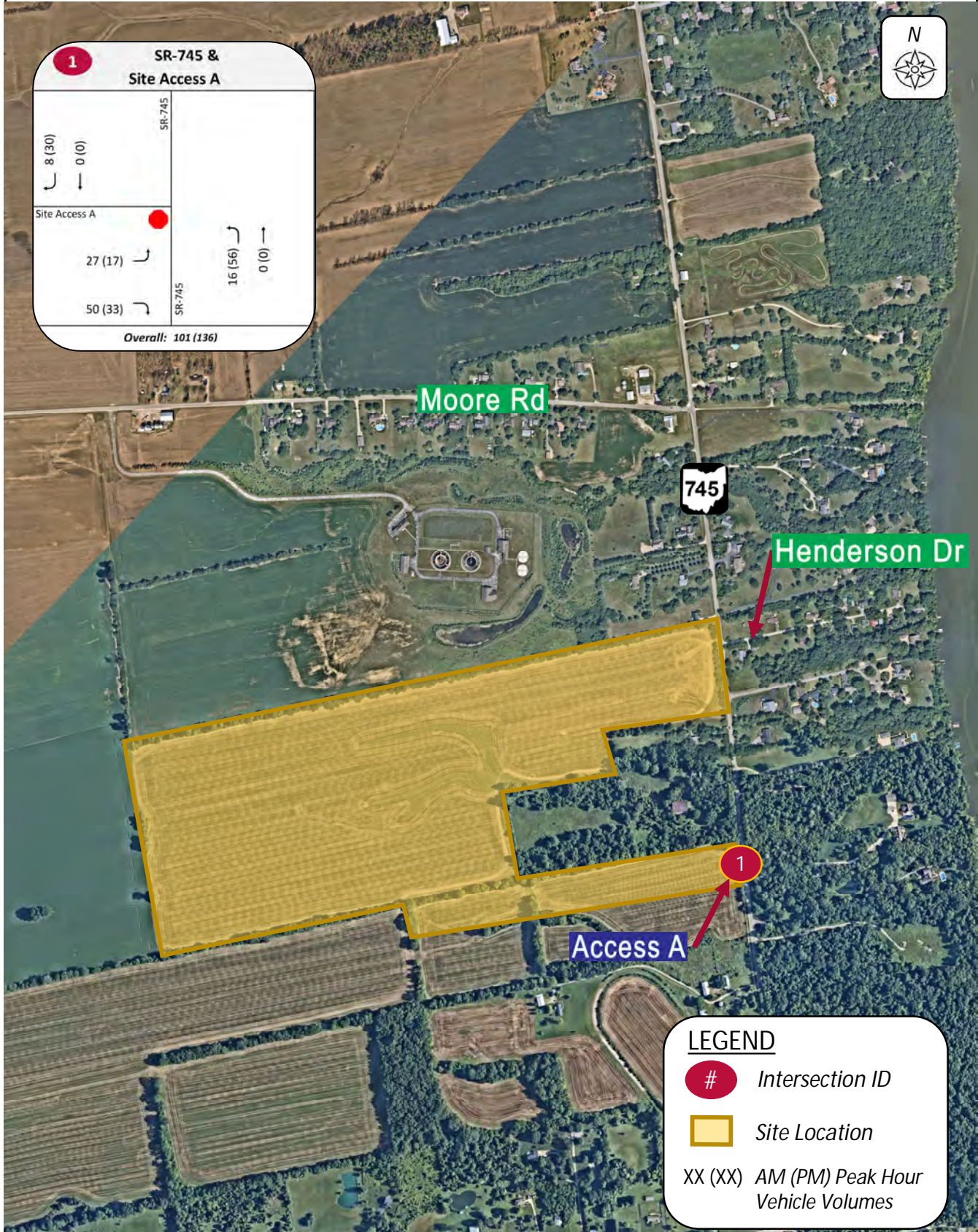


Exhibit 7: 2025 Build AM & PM Peak Hour Vehicle Volumes

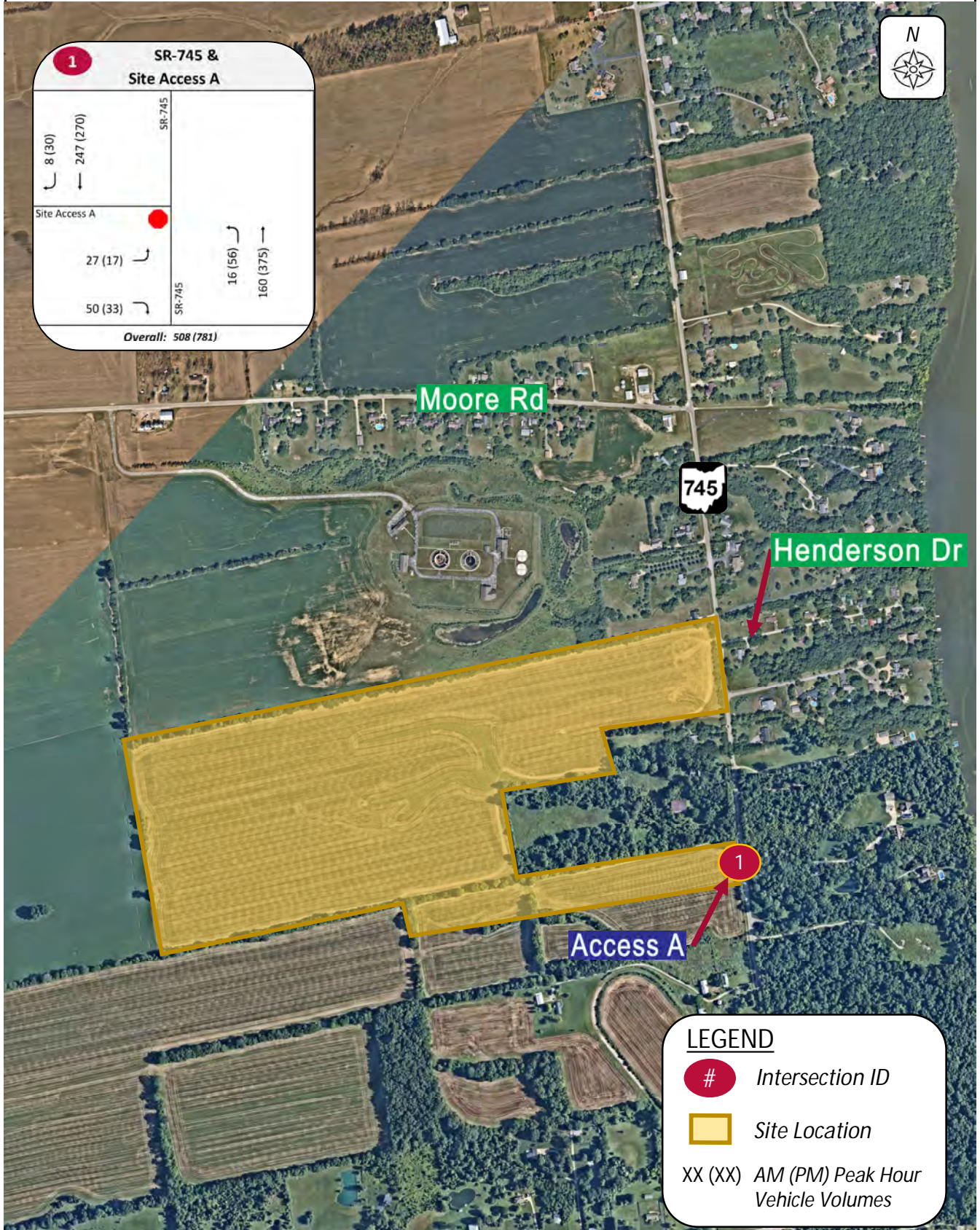
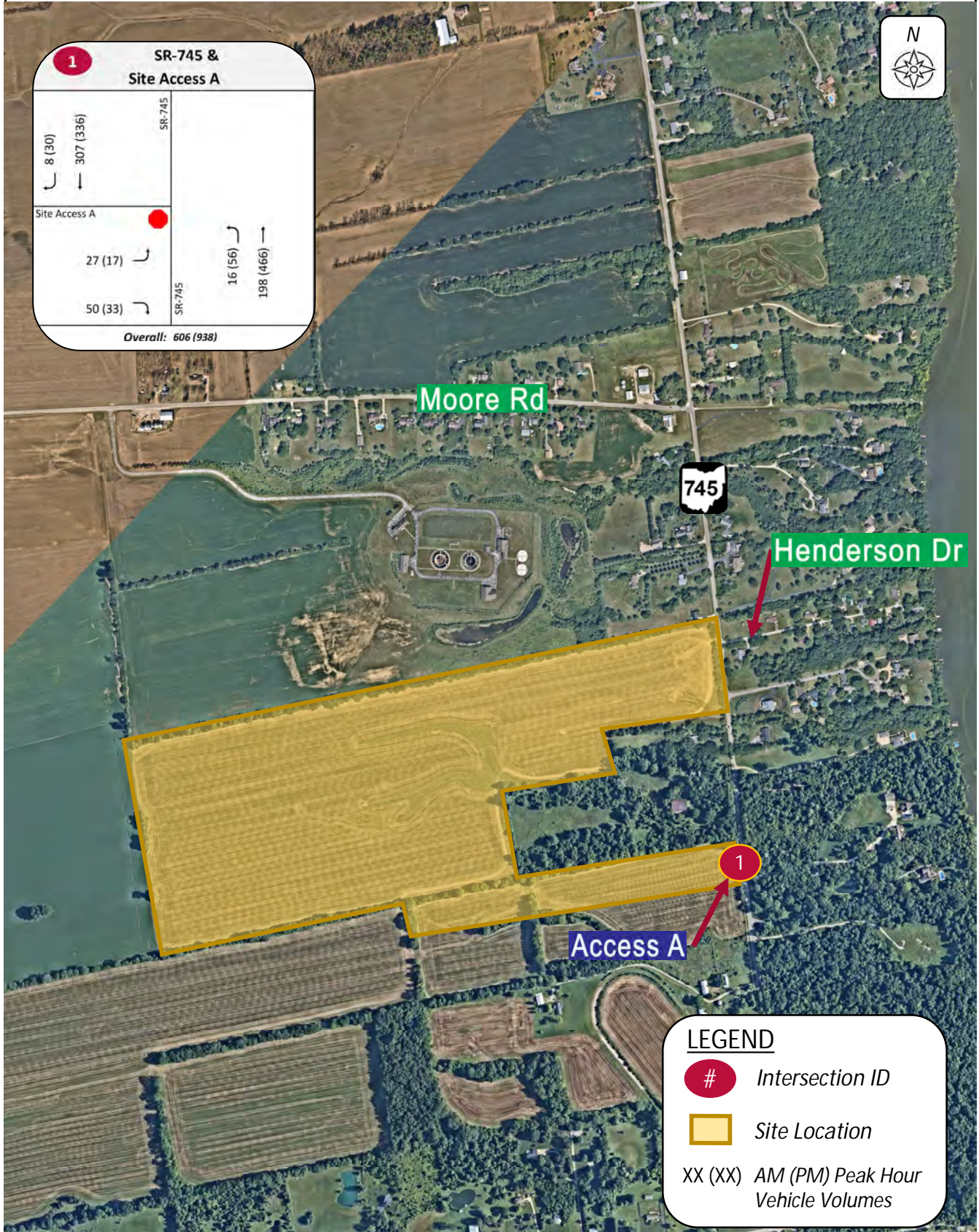


Exhibit 8: 2035 Build AM & PM Peak Hour Vehicle Volumes



ANALYSIS

This section of the report provides a summary of the traffic analyses completed for the subject site. This includes turn lane warrant analysis, capacity analysis, and intersection site distance analysis. The methodology and results of the analysis are included below.

Turn-Lane Warrant Analysis

A turn lane warrant analysis was completed at the site access point. Kimley-Horn completed a right-turn and left-turn lane warrant analysis using the guidance of Section 400 of the ODOT Location & Design Manual, Volume 1 (L&D Manual). This analysis was completed for the AM and PM peak periods of the 2025 Build and 2035 Build. Based on the results of this analysis, a northbound left-turn lane is warranted at the intersection of SR-745 and the site access. No other turn lanes are warranted at the proposed access point. The turn lane warrant graphs and turn lane length calculations are provided in **Appendix F** and **Appendix G**. See the conclusions and recommendations section below for additional discussion.

Capacity Analysis

A capacity analysis was conducted at the Site Access intersection with SR-745 to evaluate operations in the various scenarios. **Table 4** is from section 5.9 of the ODOT Analysis and Traffic Simulation (OATS) Manual, which outlines the LOS criteria for intersections. The study area is inside of the MORPC MPO boundary, therefore intersections exceeding LOS “D” do not meet operational goals as defined by the OATS Manual.

Table 4: Level of Service Grading Descriptions

Result	Inside an MPO	Outside of an MPO
Intersection LOS	D or better	C of better
Approach LOS	E or better	
Control LOS	E or better	
v/c	All movements < 1.0 with < 0.93 preferred.	
QSR	All movements < 1.0 from HCS analysis, otherwise TransModeler may be needed to determine if queuing impacts upstream intersections.	

HCS 2023 software was used to assess the capacity of the study intersections in the 2025 and 2035 Build scenarios. The intersection capacity is reported by approach during the peak hour of site generated traffic. For this analysis, an LOS D or better was considered acceptable for overall intersection results and an LOS E or better was considered acceptable for individual approaches or movements.

Table 5 summarizes the results of the capacity analysis for the study intersection under the Build conditions, both with and without the addition of a northbound left-turn lane.

Table 5: 2025 Build Capacity Analysis Results

Intersection	Without Left-Turn Lanes				With Left-Turn Lanes			
	Weekday AM Peak Hour		Weekday PM Peak Hour		Weekday AM Peak Hour		Weekday PM Peak Hour	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS
▲ SR-745 / Access A								
Eastbound	11.5	B	12.7	B	11.5	B	12.6	B
Northbound (Left)	7.9	A	8	A	7.9	A	8	A

▲ – Minor-Leg Stop-Controlled Intersection

Table 6: 2035 Build Capacity Analysis Results

Intersection	Without Left-Turn Lanes				With Left-Turn Lanes			
	Weekday AM Peak Hour		Weekday PM Peak Hour		Weekday AM Peak Hour		Weekday PM Peak Hour	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS
▲ SR-745 / Access A								
Eastbound	12.5	B	14.3	B	12.5	B	14.2	B
Northbound (Left)	8.1	A	8.2	A	8.1	A	8.2	A

▲ – Minor-Leg Stop-Controlled Intersection

Based on the results of the capacity analysis, the SR-745 and Site Access intersection is anticipated to operate under acceptable conditions under all scenarios. The HCS capacity analysis reports are included in **Appendix H**.

Intersection Sight Distance Analysis

A sight distance exhibit was prepared for proposed access point. This exhibit was completed using the ODOT L&D Manual, Section 200. A design speed of 60 miles per hour was utilized for both the eastbound right-turn movement at Access A and the eastbound left-turn at Access A. There are no anticipated sight distance concerns for the sight access, and the sight distance exhibit is included in **Appendix I**. Additional discussion is provided in the Conclusions section.

CONCLUSIONS

Kimley-Horn completed a traffic analysis for a proposed single-family site located west of SR-745 in Delaware County, Ohio. The site is proposed to consist of 140 single-family residences with a full access point south of Henderson Drive.

The results of the study and recommendations are as follows.

- A turn lane warrant analysis was completed using standard ODOT turn lane warrant graphs. Based on the results of this analysis, a northbound left-turn lane is warranted at SR-745 and Site Access intersection. It is recommended that the northbound turn lane be 285 feet including a 50-foot taper. No additional turn lanes are warranted at the subject site.
- Capacity analysis was completed using HCS 2023 software and shows that the intersection is anticipated to operate under acceptable conditions in all scenarios.
- An intersection site distance analysis was completed for the proposed site access, and it is anticipated that the access point will meet sight distance requirements. It is recommended that trees and vegetation that may impact sight distance is cleared or trimmed to facilitate adequate sight lines.

Based on an evaluation of traffic conditions at the study intersection, the addition of site-generated traffic is not expected to significantly impact existing traffic operations. All approaches are anticipated to operate at a LOS of B or better during the Build condition. No improvements are recommended at the study intersection in addition to the northbound left turn lane.

APPENDIX

A – Conceptual Site Plan

B – Memorandum of Understanding (MOU)

C – Traffic Count Data from ODOT Transportation Information Mapping System

D – ODOT Traffic Forecast Management System (TFMS)

E – Data from ITE Trip Generation, 11th Edition

F – Turn Lane Warrant Charts

G – Turn Lane Length Calculations

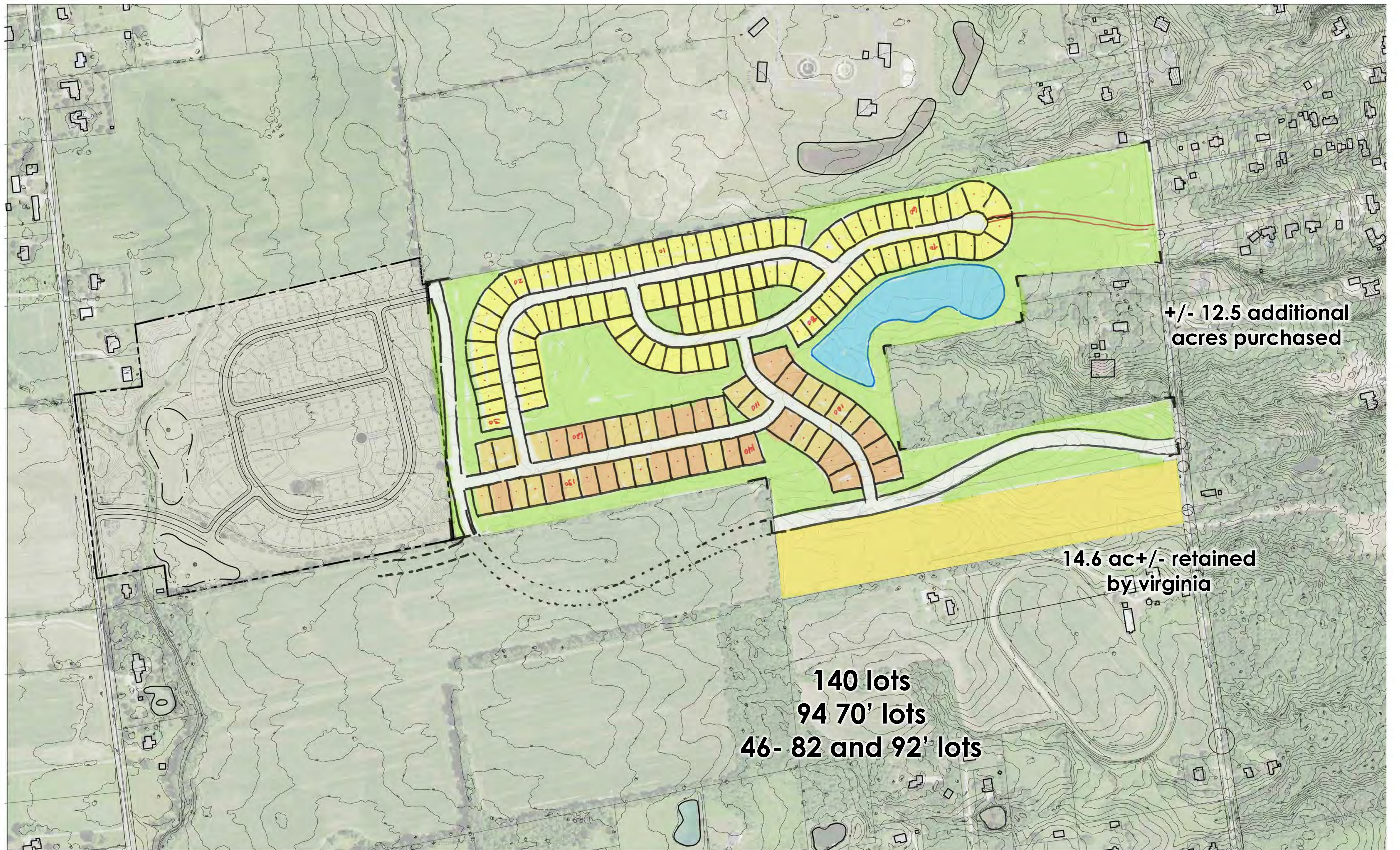
H – HCS Capacity Analysis Reports

I – Sight Distance Exhibits

APPENDIX

A.

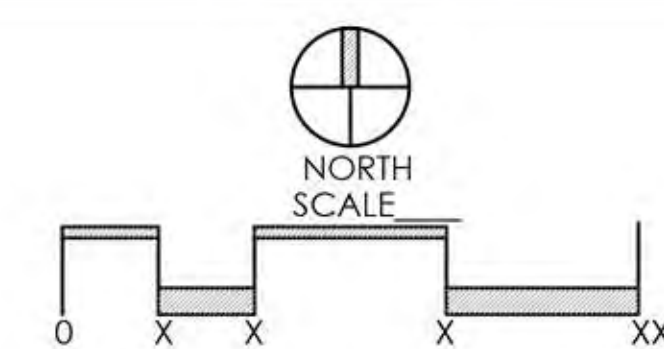
Conceptual Site Plan



CONCEPT PLAN B

FARNEMAN PROPERTY

PREPARED FOR KIRAN BASIREDDY
 DATE: 10.27.23



Faris Planning & Design

LAND PLANNING LANDSCAPE ARCHITECTURE
 4876 Cemetery Road Hilliard, OH 43026
 p (614) 487-1964 www.farisplanninganddesign.com

APPENDIX

B.

Memorandum of Understanding (MOU)

MEMORANDUM

To: Mike Love, PE, Delaware County Engineer's Office (DCEO)
Jessica Ormeroid, PE, Ohio Department of Transportation (ODOT) District 6

From: Nick Brady, PE, Kimley-Horn

Date: November 17, 2023

Subject: Farneman Property - MOU

The purpose of this memo is to formalize the requirements of the Traffic Access Study for the Farneman Property Development located in Delaware County, Ohio. This document summarizes the scope of study discussed in a call on September 18th, 2023. The residential site is proposed to be constructed west of SR-745, just south of Moore Road and is shown in the conceptual plan below. The proposed site is anticipated to include a 140 single family homes with a single access point on SR-745.



Study Intersections

The study intersection for the proposed development will include the intersection of SR-745 (Dublin Road) and Buechel Drive/Access Drive.

Traffic Counts

A 24-hour weekday midweek turning movement count will be collected via MioVision traffic cameras at the at the SR-745 (Dublin Road) and Buechel Drive intersection. These counts will be used to establish AM peak hour and PM peak hour volumes for use in the analysis.

Traffic Volumes

Trip generation estimates will be based on the Institute of Transportation Engineers (ITE), *Trip Generation – 11th Edition*. The trip estimates will be prepared for the AM and PM peak-hour using the ITE best fit equations for LUC 210 (Single-Family Detached Housing). The table below is a summary of the trip generation projections for the proposed development.

Table 1: ITE Trip Generation Data – Residential Units

ITE Land Use	Units	Weekday		
		Daily	AM Peak Hour	PM Peak Hour
Single-Family Detached Housing (210)	140	$\ln(T) = 0.92 \ln(X) + 2.68$ 50% in/50% out	$\ln(T) = 0.91 \ln(X) + 0.12$ 26% in/74% out	$\ln(T) = 0.94 \ln(X) + 0.27$ 63% in/37% out

For this study, all site generated trips are expected to be “Primary Trips” when traveling to and from the subject site. Per this assumption, the anticipated site generated traffic volumes are shown in **Table 2**.

Table 2: Proposed Site Generated Traffic Projections – Residential

ITE Land Use	Units	Vehicle Type	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Single-Family Detached Housing (210)	140	All	1,320	24	77	101	86	50	136

ODOT’s Traffic Forecast Management System (TFMS) will be utilized to provide growth rates for the study area roadways. For this project it is assumed that the opening year is 2025 and the horizon year is 2035. Based on the TFMS data, a linear growth rate of 2.7% is proposed to project existing count data to the study years.

Analysis will be completed for the following AM & PM peak hour scenarios: 2025 No Build, 2025 Build, 2035 No Build, and 2035 Build. **Table 3** is from section 5.9 of the *ODOT Analysis and Traffic Simulation (OATS) Manual*, which outlines the LOS criteria for intersections. The study area is inside of the MORPC MPO boundary, therefore intersections exceeding LOS “D” do not meet operational goals as defined by the OATS Manual.

Table 3: Operational Goals of Intersections

Result	Inside an MPO	Outside of an MPO
Intersection LOS	D or better	C of better
Approach LOS	E or better	
Control LOS	E or better	
v/c	All movements < 1.0 with < 0.93 preferred.	
QSR	All movements < 1.0 from HCS analysis, otherwise TransModeler may be needed to determine if queuing impacts upstream intersections.	

v/c = Volume-to-capacity ratio, QSR = Queue-Storage ratio

Analysis

The study intersections will be evaluated for level-of-service (LOS) and the need for turn lanes for each study scenario. Capacity analysis will be completed using HCS 2023 software at the following intersections:

- SR-745 (Dublin Road) and Buechel Drive/Access Drive

Turn lane warrants will be completed per the guidance of Section 400 of the ODOT *Location & Design Manual, Volume 1* (L&D) and criteria outlined in the Delaware County Engineer’s Office *Standards Manual, Appendix I*. If a turn lane is warranted, it is understood that an opposing southbound left turn lane would also be required to be installed. Site distance exhibits will be prepared for the Access Drive at SR-745 (Dublin Road) and Buechel Drive. These exhibits will be prepared using the ODOT L&D Manual, Section 200. The analysis results and recommendations will be documented in a summary report.

If you have any questions, need additional information, or would like to modify these study requirements, please contact me (Nick.Brady@kimley-horn.com). If you concur with the information provided in this memorandum of understanding, please sign, and forward a copy for our records, or provide an email indicating your acceptance.

Nick Brady, PE
Kimley-Horn

Jessica Ormeroid, PE
ODOT, District 6

Mike Love, PE
DCEO

Cc: Mike Reeves, PE - Kimley-Horn

Attachments: Conceptual Site Plan, TFMS Print Out

APPENDIX

C.

**Traffic Count Data from
ODOT Transportation
Information Mapping System**

Location Info	
Location ID	8421_NB
Type	I-SECTION
Functional Class	4
Located On	SR-745
	SR745 S OF C124 HOME RD, NW OF POWELL
Direction	NB
Community	NW OF POWELL
MPO_ID	
HPMS ID	
Agency	Ohio Department of Transportation

Count Data Info	
Start Date	8/5/2021
End Date	8/6/2021
Start Time	12:00 AM
End Time	12:00 AM
Direction	
Notes	odot
Count Source	84211050
File Name	8421_vol.prn
Weather	
Study	
Owner	southerntraffic
QC Status	Accepted

Interval: 15 mins					
Time	15 Min				Hourly Count
	1st	2nd	3rd	4th	
00:00 - 01:00	2	4	1	1	8
01:00 - 02:00	0	1	1	0	2
02:00 - 03:00	1	3	1	0	5
03:00 - 04:00	0	0	0	1	1
04:00 - 05:00	0	0	0	0	0
05:00 - 06:00	3	1	4	1	9
06:00 - 07:00	4	8	9	18	39
07:00 - 08:00	20	22	19	35	96
08:00 - 09:00	34	24	36	35	129
09:00 - 10:00	27	32	38	30	127
10:00 - 11:00	38	31	35	31	135
11:00 - 12:00	30	40	44	32	146
12:00 - 13:00	34	35	43	39	151
13:00 - 14:00	35	44	30	42	151
14:00 - 15:00	36	37	40	37	150
15:00 - 16:00	46	50	43	66	205
16:00 - 17:00	48	73	53	73	247
17:00 - 18:00	87	73	69	50	279
18:00 - 19:00	57	62	44	34	197
19:00 - 20:00	39	34	23	26	122
20:00 - 21:00	20	22	17	27	86
21:00 - 22:00	28	24	10	5	67
22:00 - 23:00	13	8	8	6	35
23:00 - 24:00	4	2	2	4	12
TOTAL					2399

Location Info	
Location ID	8421_SB
Type	I-SECTION
Functional Class	4
Located On	SR-745
	SR745 S OF C124 HOME RD, NW OF POWELL
Direction	SB
Community	NW OF POWELL
MPO_ID	
HPMS ID	
Agency	Ohio Department of Transportation

Count Data Info	
Start Date	8/5/2021
End Date	8/6/2021
Start Time	12:00 AM
End Time	12:00 AM
Direction	
Notes	odot
Count Source	84211050
File Name	8421_vol.prn
Weather	
Study	
Owner	southerntraffic
QC Status	Accepted

Interval: 15 mins					
Time	15 Min				Hourly Count
	1st	2nd	3rd	4th	
00:00 - 01:00	4	1	1	1	7
01:00 - 02:00	2	0	1	0	3
02:00 - 03:00	0	0	0	0	0
03:00 - 04:00	1	0	0	0	1
04:00 - 05:00	0	2	0	2	4
05:00 - 06:00	2	9	11	4	26
06:00 - 07:00	5	17	25	29	76
07:00 - 08:00	43	42	63	54	202
08:00 - 09:00	47	47	45	60	199
09:00 - 10:00	41	40	29	35	145
10:00 - 11:00	37	32	32	36	137
11:00 - 12:00	29	45	37	29	140
12:00 - 13:00	33	35	44	32	144
13:00 - 14:00	36	26	34	28	124
14:00 - 15:00	37	41	35	27	140
15:00 - 16:00	30	41	42	31	144
16:00 - 17:00	44	55	46	56	201
17:00 - 18:00	48	53	61	40	202
18:00 - 19:00	48	31	26	35	140
19:00 - 20:00	27	27	27	24	105
20:00 - 21:00	22	20	29	30	101
21:00 - 22:00	23	26	13	4	66
22:00 - 23:00	8	4	4	5	21
23:00 - 24:00	9	6	5	5	25
TOTAL					2353

Location Info		Count Data Info	
Location ID	8421	Start Date	8/5/2021
Type	I-SECTION	End Date	8/6/2021
Functional Class	4	Start Time	12:00 AM
Located On	SR-745	End Time	12:00 AM
	SR745 S OF C124 HOME RD, NW OF POWELL	Direction	
Direction	2-WAY	Notes	odot
Community	NW OF POWELL	Count Source	84211050
MPO_ID		File Name	
HPMS ID		Weather	
Agency	Ohio Department of Transportation	Study	
		Owner	southerntraffic
		QC Status	Accepted

Interval: 15 mins					
Time	15 Min				Hourly Count
	1st	2nd	3rd	4th	
00:00 - 01:00	6	5	2	2	15
01:00 - 02:00	2	1	2	0	5
02:00 - 03:00	1	3	1	0	5
03:00 - 04:00	1	0	0	1	2
04:00 - 05:00	0	2	0	2	4
05:00 - 06:00	5	10	15	5	35
06:00 - 07:00	9	25	34	47	115
07:00 - 08:00	63	64	82	89	298
08:00 - 09:00	81	71	81	95	328
09:00 - 10:00	68	72	67	65	272
10:00 - 11:00	75	63	67	67	272
11:00 - 12:00	59	85	81	61	286
12:00 - 13:00	67	70	87	71	295
13:00 - 14:00	71	70	64	70	275
14:00 - 15:00	73	78	75	64	290
15:00 - 16:00	76	91	85	97	349
16:00 - 17:00	92	128	99	129	448
17:00 - 18:00	135	126	130	90	481
18:00 - 19:00	105	93	70	69	337
19:00 - 20:00	66	61	50	50	227
20:00 - 21:00	42	42	46	57	187
21:00 - 22:00	51	50	23	9	133
22:00 - 23:00	21	12	12	11	56
23:00 - 24:00	13	8	7	9	37
TOTAL					4752

APPENDIX

D. ODOT Traffic Forecasting Management System (TFMS)

TFMS - Segment Forecast Report

Username	Email	Script Import Date	Script Version	Model Version
Jacob.Campbell	Jacob.Campbell@kimley-horn.com	4/14/2020 5:30:19 PM	2020.001	2023.1900

Forecast Summary

Project ID	Project Name	Opening Year	Design Year
	Farneman	2025	2035

Project Description

DCEO Access Study

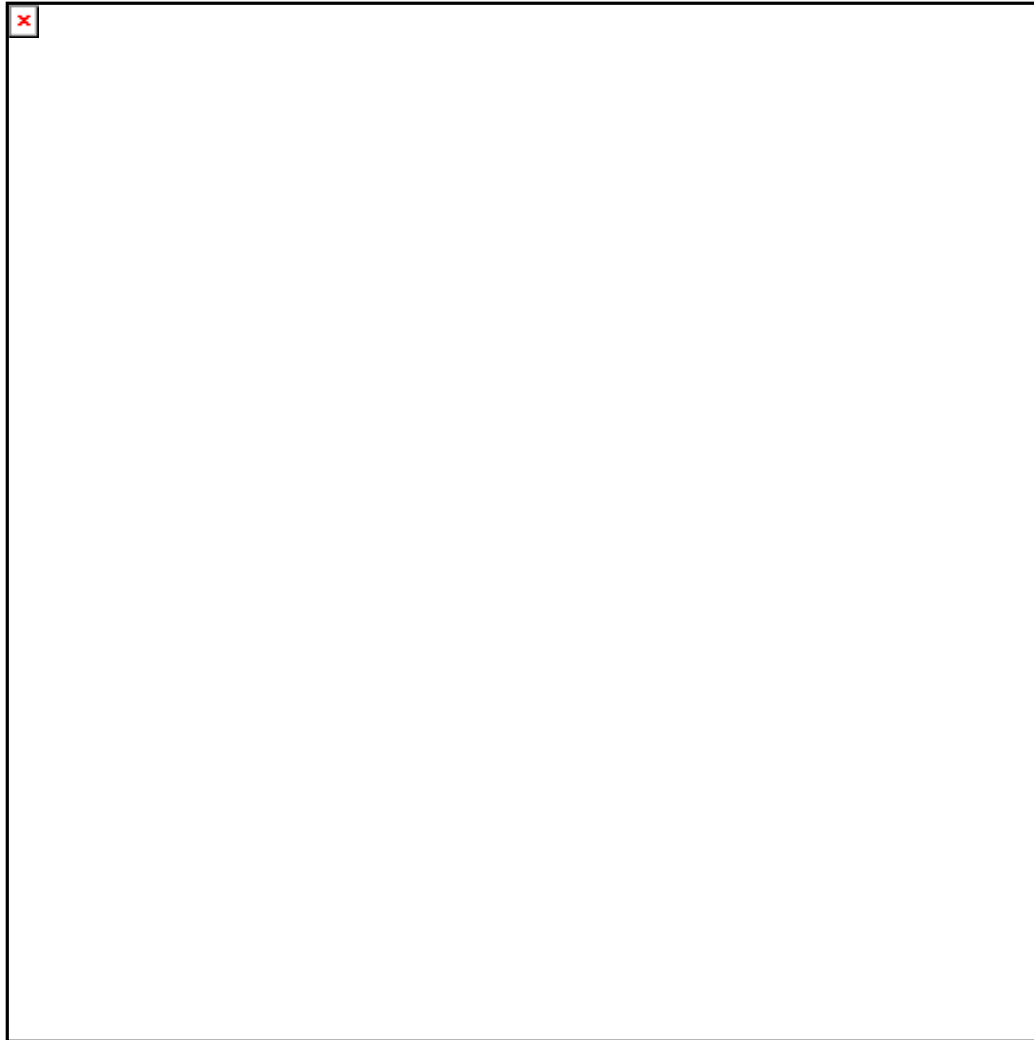
*Users of this data need to be aware that there are limitations to the forecasts generated by this product that make it suitable only for roadway design projects which are low risk.

Segment Information

Segment ID	LRS ID	BMP	EMP	Length	Latitude	Longitude
1833509	SDELSR00745**C	3.970	5.424	1.454	-83.1471131017338	40.2065416324816
1833510	SDELSR00745**C	5.424	7.003	1.579	-83.1509433531063	40.2283128023978

Forecast Information

Segment ID	2025 AADT	2035 AADT	DHV-30	K%	D%	T24%	TD%
1833509	4,500	5,500	800	14.4	58.0	5	3
1833510	3,000	3,700	550	14.8	65.5	3	1



Definitions:

- o AADT – Annual Average Daily Traffic
- o DHV30 – Design Hour Volume for 30th highest hour of the year
- o $DHV30 = K * AADT$
- o K % – Design Hour Factor
- o D % – Peak Direction Factor
- o T24 % – Percent Daily Trucks
- o TD % – Percent Design Hour Trucks

Forecast Segment ID	Route	BMP	EMP
1833509	SDELSR00745**C	3.970	5.424

Forecast

Year	K%	T24 % (Existing)	PA AADT	PA Method	PA Growth Rate %	PA Calculated Rate %
2050	◆ 14.4	5	6,600	Model	2.400	2.400
AAADT	D%	TD % (Existing)	BC AADT	BC Method	BC Growth Rate %	BC Calculated Rate %
6,970	◆ 58.0	3	370	Average	2.300	2.300

◆ K/D factors from TCDS were used.

Regression

Method Number	PA AADT	BC AADT	AAADT
4	1,275	495	1,770

95% Confidence Min/Max

PA Min	PA Max	BC Min	BC Max	Year
-3836	8057	-293	692	2050

Method Number	PA Growth %	BC Growth %	PA Drop Count	BC Drop Count	PA AADT	BC AADT	PA Adjustment	PA Adjustment
1	-0.20	-0.91	0	0	4,348	111	3,740	167
2	-0.93	3.67	5	1	3,181	438	2,930	454
3	-1.47	3.67	0	0	2,738	438	2,329	454
4	-2.42	4.32	5	5	1,273	495	1,275	495
5	-1.84	3.89	0	0	2,297	453	1,924	468
6	-2.67	4.46	5	5	972	505	996	504

Adjustment Info

ID	Adjustment Methods Name	Model vs Count AADT	Adjusted AADT	Model vs Count BC	Adjusted BC	PA Growth Rate %	BC Growth Rate %
1	DIF	-2,787	7,241	-293	258	2.73	0.54
2	RAT	0.60	6,017	0.43	239	1.64	0.24
3	MRAT	1.44	6,390	1.06	240	1.98	0.26
4	RAF		6,815		249	2.35	0.40
Adjust Method AADT		Adjust Method BC		Selected PA Growth Rate %		Selected BC Growth Rate %	
Average		Model Ratio		2.400		0.300	

Method 1 - 4 Volume

PA Min Volume	PA Max Volume	BC Min Volume	BC Max Volume	Total Min Volume	Total MaxVolume
5778	6983	239	258	6017	7241

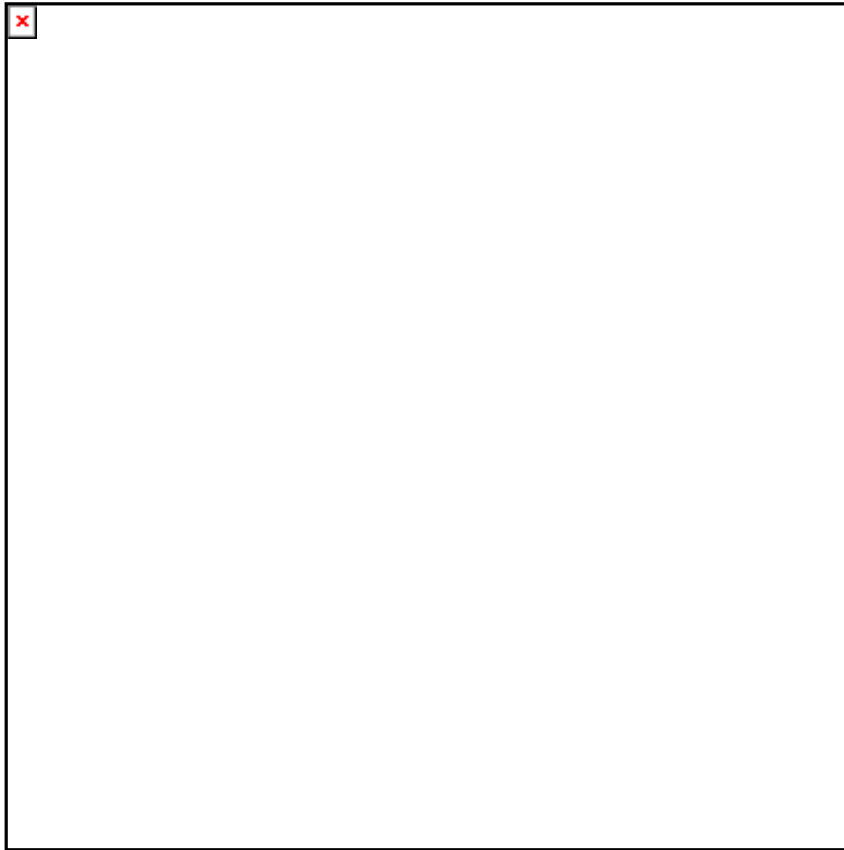
Process Flag: Adjusted model to counts with process per ODOT 255 spreadsheet

Comment: No Comment

Historical Count

Year	All	Cars	Trucks
2008	4,540	4,260	280
2012	4,960	4,830	130
2013	5,067	4,934	133
2016	4,664	4,496	167
2019	5,401	5,245	156
* 2022	4,182	3,958	224

* Pivot Point



Segment ID	LRS ID	BMP	EMP	Length	Yr 2025 AADT	Yr 2035 AADT	DHV30	K %	D %	T24 %	TD %
1833509	SDELSR00745**C	3.970	5.424	1.454	4,500	5,500	800	14.4	58.0	5	3

Forecast Segment ID	Route	BMP	EMP
1833510	SDELSR00745**C	5.424	7.003

Forecast

Year	K%	T24 % (Existing)	PA AADT	PA Method	PA Growth Rate %	PA Calculated Rate %
2050	◆ 14.8	3	4,700	Model	2.700	2,700
AADT	D%	TD % (Existing)	BC AADT	BC Method	BC Growth Rate %	BC Calculated Rate %
4,840	◆ 65.5	2	140	Average	1.700	1,700

◆ K/D factors from TCDS were used.

Regression

Method Number	PA AADT	BC AADT	AADT
2	2,189	176	2,365

95% Confidence Min/Max

PA Min	PA Max	BC Min	BC Max	Year
-854	5741	-237	612	2050

Method Number	PA Growth %	BC Growth %	PA Drop Count	BC Drop Count	PA AADT	BC AADT	PA Adjustment	PA Adjustment
1	-0.14	3.57	0	0	2,813	209	2,584	190
2	-0.67	3.05	5	4	2,244	182	2,189	176
3	-0.70	5.23	0	0	2,337	260	2,167	234
4	-1.36	5.64	5	4	1,641	260	1,666	245
5	-0.91	3.08	0	0	2,160	198	2,004	177
6	-1.50	5.38	5	4	1,530	252	1,564	238

Adjustment Info

ID	Adjustment Methods Name	Model vs Count AADT	Adjusted AADT	Model vs Count BC	Adjusted BC	PA Growth Rate %	BC Growth Rate %
1	DIF	-3,036	5,873	-424	132	4.05	1.39
2	RAT	0.48	4,263	0.18	102	1.95	0.26
3	MRAT	1.53	4,821	1.07	104	2.69	0.34
4	RAF		5,347		118	3.37	0.86

Adjust Method AADT	Adjust Method BC	Selected PA Growth Rate %	Selected BC Growth Rate %
Model Ratio	Model Ratio	2.700	0.300

Method 1 - 4 Volume

PA Min Volume	PA Max Volume	BC Min Volume	BC Max Volume	Total Min Volume	Total MaxVolume
4161	5741	102	132	4263	5873

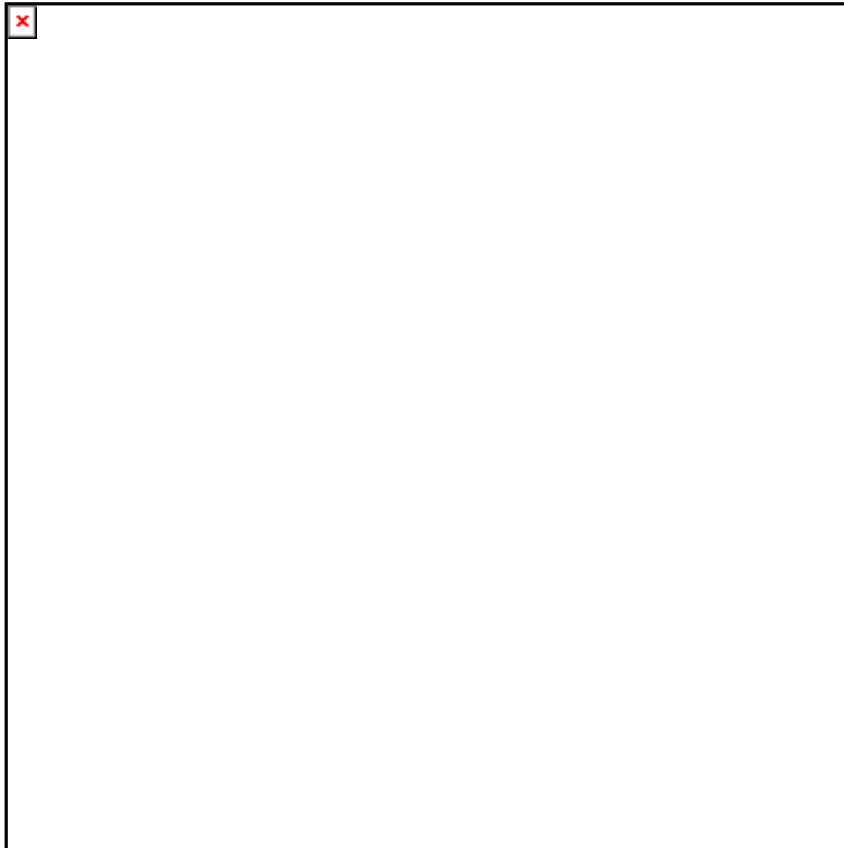
Process Flag: Adjusted model to counts with process per ODOT 255 spreadsheet

Comment: No Comment

Historical Count

Year	All	Cars	Trucks
2008	2,930	2,850	80
2012	3,054	3,000	54
2013	3,143	3,087	56
2016	2,942	2,798	143
2019	3,366	3,251	115
* 2022	2,786	2,691	95

* Pivot Point



Segment ID	LRS ID	BMP	EMP	Length	Yr 2025 AADT	Yr 2035 AADT	DHV30	K %	D %	T24 %	TD %
1833510	SDELSR00745**C	5.424	7.003	1.579	3,000	3,700	550	14.8	65.5	3	1

APPENDIX

E.

Data from ITE Trip Generation 11th Edition

Land Use: 210

Single-Family Detached Housing

Description

A single-family detached housing site includes any single-family detached home on an individual lot. A typical site surveyed is a suburban subdivision.

Specialized Land Use

Data have been submitted for several single-family detached housing developments with homes that are commonly referred to as patio homes. A patio home is a detached housing unit that is located on a small lot with little (or no) front or back yard. In some subdivisions, communal maintenance of outside grounds is provided for the patio homes. The three patio home sites total 299 dwelling units with overall weighted average trip generation rates of 5.35 vehicle trips per dwelling unit for weekday, 0.26 for the AM adjacent street peak hour, and 0.47 for the PM adjacent street peak hour. These patio home rates based on a small sample of sites are lower than those for single-family detached housing (Land Use 210), lower than those for single-family attached housing (Land Use 251), and higher than those for senior adult housing -- single-family (Land Use 251). Further analysis of this housing type will be conducted in a future edition of *Trip Generation Manual*.

Additional Data

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (<https://www.ite.org/technical-resources/topics/trip-and-parking-generation/>).

For 30 of the study sites, data on the number of residents and number of household vehicles are available. The overall averages for the 30 sites are 3.6 residents per dwelling unit and 1.5 vehicles per dwelling unit.

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Arizona, California, Connecticut, Delaware, Illinois, Indiana, Kentucky, Maryland, Massachusetts, Minnesota, Montana, New Jersey, North Carolina, Ohio, Ontario (CAN), Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Vermont, Virginia, and West Virginia.

Source Numbers

100, 105, 114, 126, 157, 167, 177, 197, 207, 211, 217, 267, 275, 293, 300, 319, 320, 356, 357, 367, 384, 387, 407, 435, 522, 550, 552, 579, 598, 601, 603, 614, 637, 711, 716, 720, 728, 735, 868, 869, 903, 925, 936, 1005, 1007, 1008, 1010, 1033, 1066, 1077, 1078, 1079

Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban

Number of Studies: 174

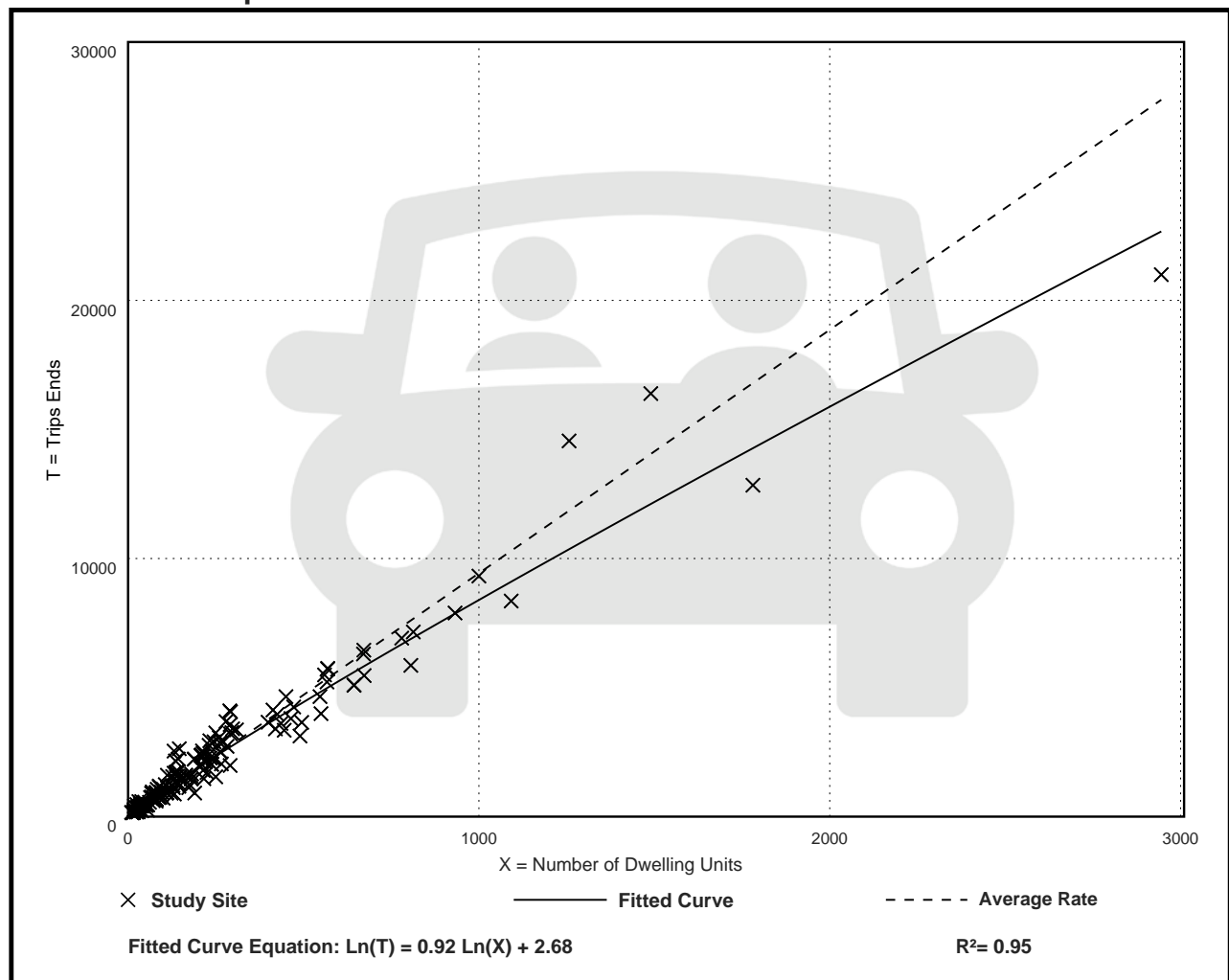
Avg. Num. of Dwelling Units: 246

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.43	4.45 - 22.61	2.13

Data Plot and Equation



Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 192

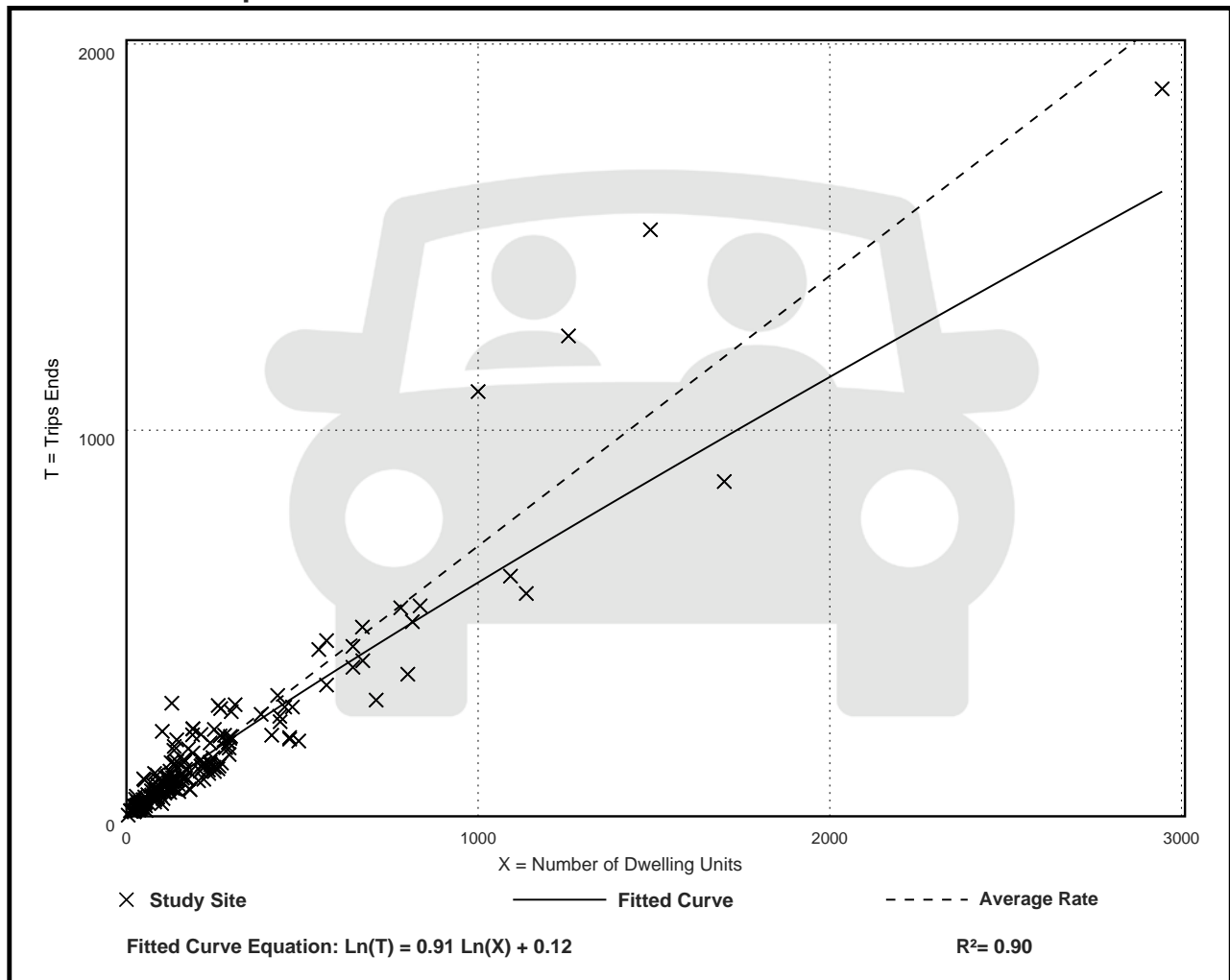
Avg. Num. of Dwelling Units: 226

Directional Distribution: 26% entering, 74% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.70	0.27 - 2.27	0.24

Data Plot and Equation



Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 208

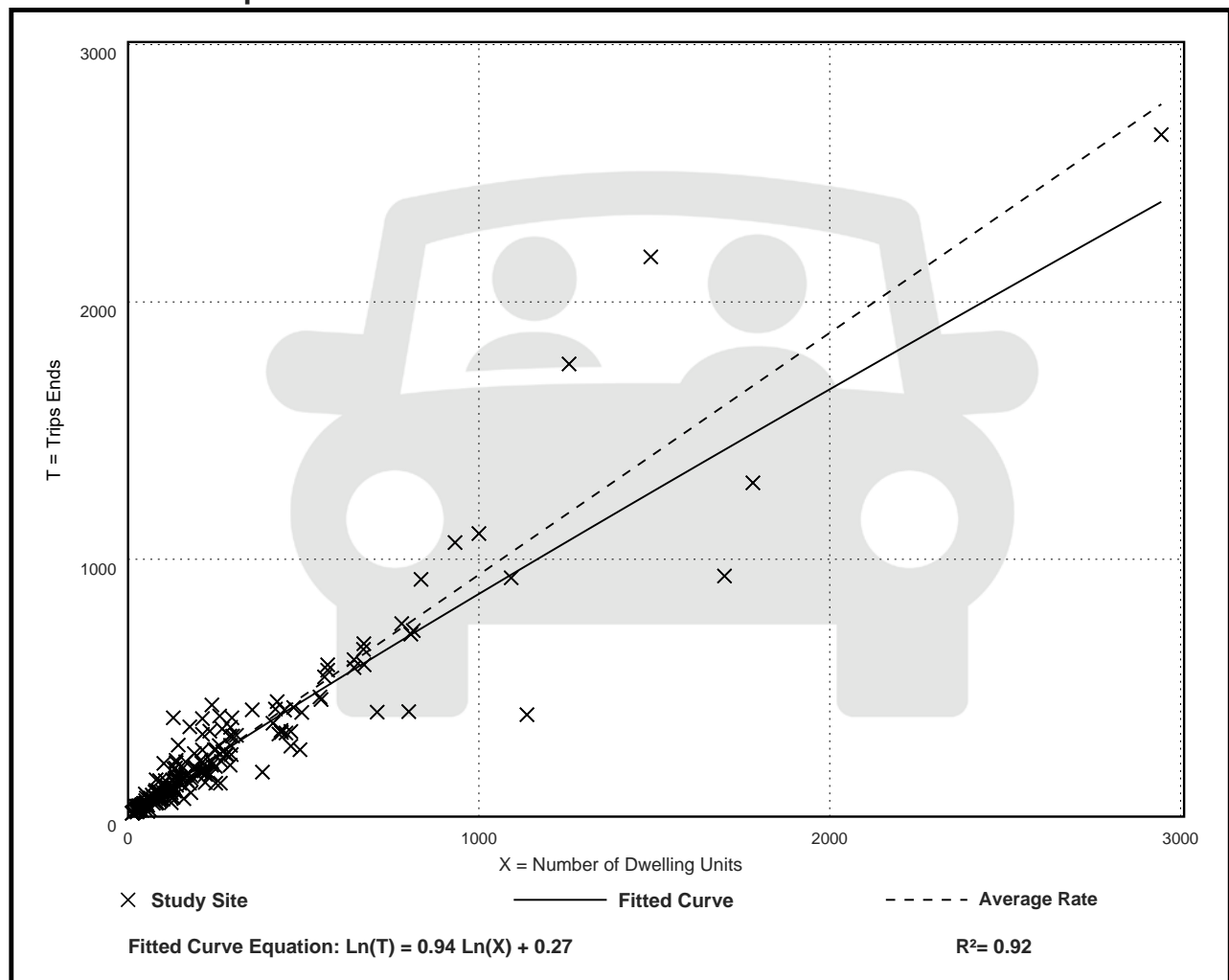
Avg. Num. of Dwelling Units: 248

Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.94	0.35 - 2.98	0.31

Data Plot and Equation

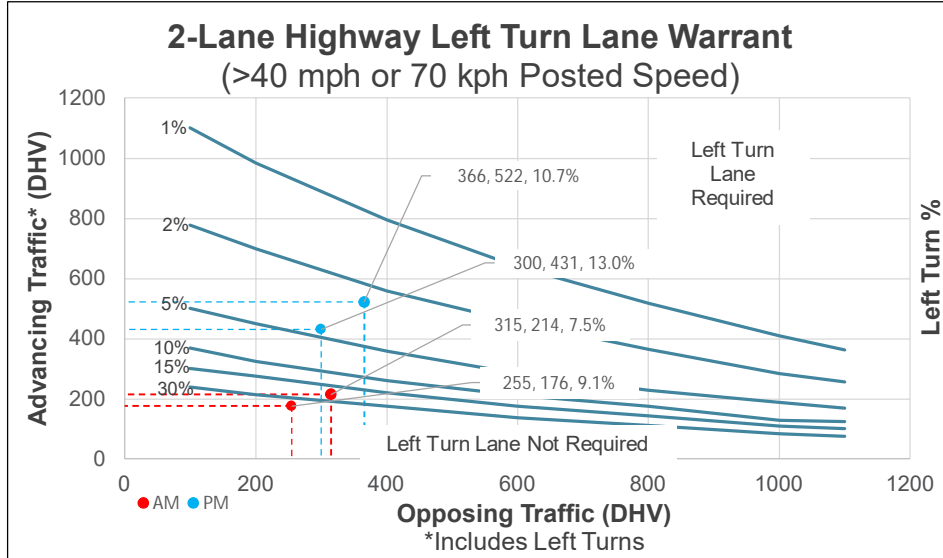


APPENDIX

F.

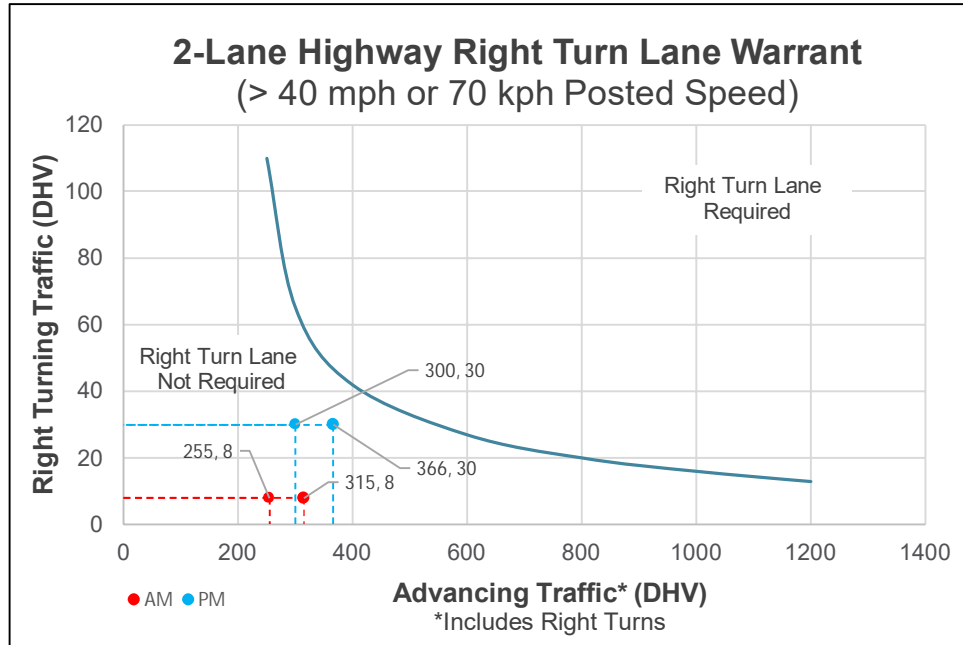
Turn Lane Warrant Charts

Project: Farneman Property
 Intersection: SR-745 and Site Access A/Henderson Drive
 Turning Movement: NBL



	2025 Build AM Peak	2025 Build PM Peak	2035 Build AM Peak	2035 Build PM Peak
Design Speed (mph)	55	55	55	55
Left Turn Volume (VPH)	16	56	16	56
Advancing Traffic (DHV)	176	431	214	522
Opposing Volume (VPH)	255	300	315	366
Left Turn Percentage	9.1%	13.0%	7.5%	10.7%
Is Left Turn Warrant Met?	No	Yes	No	Yes

Project: Farneman Property
 Intersection: SR-745 and Site Access A/Henderson Drive
 Turning Movement: SBR



	2025 Build AM Peak	2025 Build PM Peak	2035 Build AM Peak	2035 Build PM Peak
Design Speed (mph)	55	55	55	55
Right Turning Traffic (dhv)	8	30	8	30
Advancing Traffic (VPH)	255	300	315	366
Is Right Turn Warrant Met?	No	No	No	No

APPENDIX

G.

Turn Lane Length Calculations

2025 Build		Site Access A & SR-745									
Cycle Length (Secs.)	Movement	Design Speed (mph)	# of Lanes		Peak	Thru Lane DHV	Turn Lane DHV	Calculated Turn Lane (FT)	Thru Movement Backup (FT)	Blocked	Reccommended Turn Lane (FT)
			Thru	Turn							
60	EBL	25	1	0	AM	50	27	N/A	N/A	N/A	N/A
					PM	33	17	N/A	N/A	N/A	
	EBR		1	0	AM	27	50	N/A	N/A	N/A	N/A
					PM	17	33	N/A	N/A	N/A	
	WBL	0	0	0	AM	0	0	N/A	N/A	N/A	N/A
					PM	0	0	N/A	N/A	N/A	
	WBR		0	0	AM	0	0	N/A	N/A	N/A	N/A
					PM	0	0	N/A	N/A	N/A	
	NBL	55	1	1	AM	160	16	285	200	N/A	285
					PM	375	56	285	325	N/A	
	NBR		1	0	AM	160	0	N/A	N/A	N/A	N/A
					PM	375	0	N/A	N/A	N/A	
	SBL	55	1	0	AM	255	0	N/A	N/A	N/A	N/A
					PM	300	0	N/A	N/A	N/A	
SBR	1		0	AM	247	8	N/A	N/A	N/A	N/A	
				PM	270	30	N/A	N/A	N/A		

*Turn Lane Length Constraint

2035 Build		Site Access A & SR-745									
Cycle Length (Secs.)	Movement	Design Speed (mph)	# of Lanes		Peak	Thru Lane DHV	Turn Lane DHV	Calculated Turn Lane (FT)	Thru Movement Backup (FT)	Blocked	Reccommended Turn Lane (FT)
			Thru	Turn							
60	EBL	25	1	0	AM	50	27	N/A	N/A	N/A	N/A
					PM	33	17	N/A	N/A	N/A	
	EBR		1	0	AM	27	50	N/A	N/A	N/A	N/A
					PM	17	33	N/A	N/A	N/A	
	WBL	0	0	0	AM	0	0	N/A	N/A	N/A	N/A
					PM	0	0	N/A	N/A	N/A	
	WBR		0	0	AM	0	0	N/A	N/A	N/A	N/A
					PM	0	0	N/A	N/A	N/A	
	NBL	55	1	1	AM	198	16	285	225	N/A	285
					PM	466	56	285	375	N/A	
	NBR		1	0	AM	198	0	N/A	N/A	N/A	N/A
					PM	466	0	N/A	N/A	N/A	
	SBL	55	1	0	AM	315	0	N/A	N/A	N/A	N/A
					PM	366	0	N/A	N/A	N/A	
SBR	1		0	AM	307	8	N/A	N/A	N/A	N/A	
				PM	336	30	N/A	N/A	N/A		

*Turn Lane Length Constraint

APPENDIX

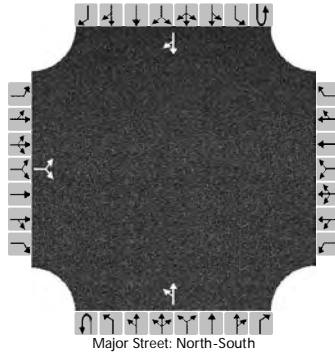
H.

HCS Capacity Analysis Reports

HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	Kimley-Horn			Intersection	SR-745 and Site Access A		
Agency/Co.	ODOT			Jurisdiction	District 6		
Date Performed	12/14/2023			East/West Street	Site Access A		
Analysis Year	2025			North/South Street	SR-745		
Time Analyzed	Build AM Peak			Peak Hour Factor	0.86		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	Farneman Property						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		27		50						16	160				247	8
Percent Heavy Vehicles (%)		3		3						3						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.43		6.23						4.13						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.53		3.33						2.23						

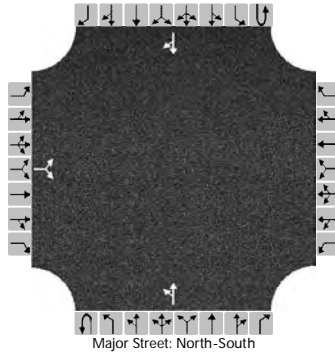
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			90							19						
Capacity, c (veh/h)			641							1259						
v/c Ratio			0.14							0.01						
95% Queue Length, Q ₉₅ (veh)			0.5							0.0						
Control Delay (s/veh)			11.5							7.9	0.1					
Level of Service (LOS)			B							A	A					
Approach Delay (s/veh)	11.5								0.8							
Approach LOS	B								A							

HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	Kimley-Horn			Intersection	SR-745 and Site Access A		
Agency/Co.	ODOT			Jurisdiction	District 6		
Date Performed	12/14/2023			East/West Street	Site Access A		
Analysis Year	2025			North/South Street	SR-745		
Time Analyzed	Build PM Peak			Peak Hour Factor	0.96		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	Farneman Property						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		17		33						56	375				270	30
Percent Heavy Vehicles (%)		3		3						3						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.43		6.23						4.13						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.53		3.33						2.23						

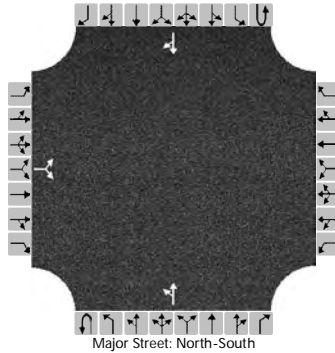
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			52							58						
Capacity, c (veh/h)			520							1242						
v/c Ratio			0.10							0.05						
95% Queue Length, Q ₉₅ (veh)			0.3							0.1						
Control Delay (s/veh)			12.7							8.0	0.5					
Level of Service (LOS)			B							A	A					
Approach Delay (s/veh)	12.7								1.5							
Approach LOS	B								A							

HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	Kimley-Horn	Intersection	SR-745 and Site Access A				
Agency/Co.	ODOT	Jurisdiction	District 6				
Date Performed	12/14/2023	East/West Street	Site Access A				
Analysis Year	2035	North/South Street	SR-745				
Time Analyzed	Build AM Peak	Peak Hour Factor	0.86				
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25				
Project Description	Farneman Property						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		27		50						16	198				307	8
Percent Heavy Vehicles (%)		3		3						3						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.43		6.23						4.13						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.53		3.33						2.23						

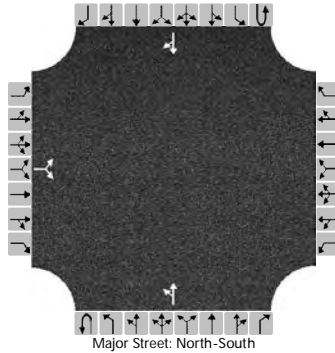
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			90							19						
Capacity, c (veh/h)			569							1187						
v/c Ratio			0.16							0.02						
95% Queue Length, Q ₉₅ (veh)			0.6							0.0						
Control Delay (s/veh)			12.5							8.1	0.1					
Level of Service (LOS)			B							A	A					
Approach Delay (s/veh)	12.5								0.7							
Approach LOS	B								A							

HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	Kimley-Horn			Intersection	SR-745 and Site Access A		
Agency/Co.	ODOT			Jurisdiction	District 6		
Date Performed	12/14/2023			East/West Street	Site Access A		
Analysis Year	2035			North/South Street	SR-745		
Time Analyzed	Build PM Peak			Peak Hour Factor	0.96		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	Farneman Property						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		17		33						56	466				336	30
Percent Heavy Vehicles (%)		3		3						3						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.43		6.23						4.13						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.53		3.33						2.23						

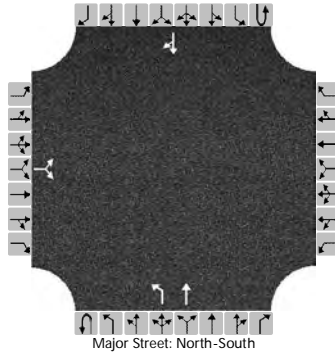
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			52							58						
Capacity, c (veh/h)			440							1172						
v/c Ratio			0.12							0.05						
95% Queue Length, Q ₉₅ (veh)			0.4							0.2						
Control Delay (s/veh)			14.3							8.2	0.6					
Level of Service (LOS)			B							A	A					
Approach Delay (s/veh)	14.3								1.4							
Approach LOS	B								A							

HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	Kimley-Horn			Intersection	SR-745 and Site Access A		
Agency/Co.	ODOT			Jurisdiction	District 6		
Date Performed	12/14/2023			East/West Street	Site Access A		
Analysis Year	2025			North/South Street	SR-745		
Time Analyzed	Build AM Peak			Peak Hour Factor	0.86		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	Farneman Property						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	1	1	0	0	0	1	0
Configuration			LR							L	T					TR
Volume (veh/h)		27		50						16	160				247	8
Percent Heavy Vehicles (%)		3		3						3						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.43		6.23						4.13						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.53		3.33						2.23						

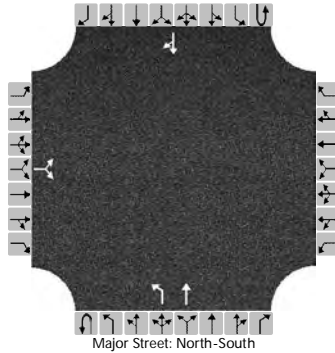
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			90							19						
Capacity, c (veh/h)			642							1259						
v/c Ratio			0.14							0.01						
95% Queue Length, Q ₉₅ (veh)			0.5							0.0						
Control Delay (s/veh)			11.5							7.9						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)	11.5								0.7							
Approach LOS	B								A							

HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	Kimley-Horn			Intersection	SR-745 and Site Access A		
Agency/Co.	ODOT			Jurisdiction	District 6		
Date Performed	12/14/2023			East/West Street	Site Access A		
Analysis Year	2025			North/South Street	SR-745		
Time Analyzed	Build PM Peak			Peak Hour Factor	0.96		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	Farneman Property						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	1	1	0	0	0	1	0
Configuration			LR							L	T					TR
Volume (veh/h)		17		33						56	375				270	30
Percent Heavy Vehicles (%)		3		3						3						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.43		6.23						4.13						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.53		3.33						2.23						

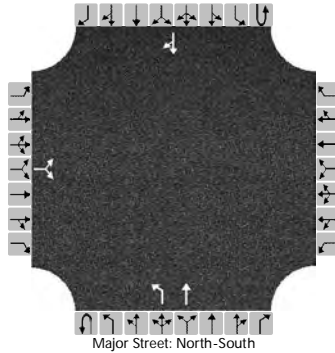
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			52							58						
Capacity, c (veh/h)			524							1242						
v/c Ratio			0.10							0.05						
95% Queue Length, Q ₉₅ (veh)			0.3							0.1						
Control Delay (s/veh)			12.6							8.0						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)	12.6								1.0							
Approach LOS	B								A							

HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	Kimley-Horn			Intersection	SR-745 and Site Access A		
Agency/Co.	ODOT			Jurisdiction	District 6		
Date Performed	12/14/2023			East/West Street	Site Access A		
Analysis Year	2035			North/South Street	SR-745		
Time Analyzed	Build AM Peak			Peak Hour Factor	0.86		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	Farneman Property						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	1	1	0	0	0	1	0
Configuration			LR							L	T					TR
Volume (veh/h)		27		50						16	198				307	8
Percent Heavy Vehicles (%)		3		3						3						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.43		6.23						4.13						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.53		3.33						2.23						

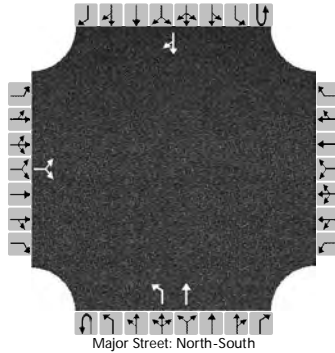
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			90							19						
Capacity, c (veh/h)			570							1187						
v/c Ratio			0.16							0.02						
95% Queue Length, Q ₉₅ (veh)			0.6							0.0						
Control Delay (s/veh)			12.5							8.1						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)	12.5								0.6							
Approach LOS	B								A							

HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	Kimley-Horn			Intersection	SR-745 and Site Access A		
Agency/Co.	ODOT			Jurisdiction	District 6		
Date Performed	12/14/2023			East/West Street	Site Access A		
Analysis Year	2035			North/South Street	SR-745		
Time Analyzed	Build PM Peak			Peak Hour Factor	0.96		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	Farneman Property						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	1	1	0	0	0	1	0
Configuration			LR							L	T					TR
Volume (veh/h)		17		33						56	466				336	30
Percent Heavy Vehicles (%)		3		3						3						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.43		6.23						4.13						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.53		3.33						2.23						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			52							58						
Capacity, c (veh/h)			444							1172						
v/c Ratio			0.12							0.05						
95% Queue Length, Q ₉₅ (veh)			0.4							0.2						
Control Delay (s/veh)			14.2							8.2						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)	14.2								0.9							
Approach LOS	B								A							

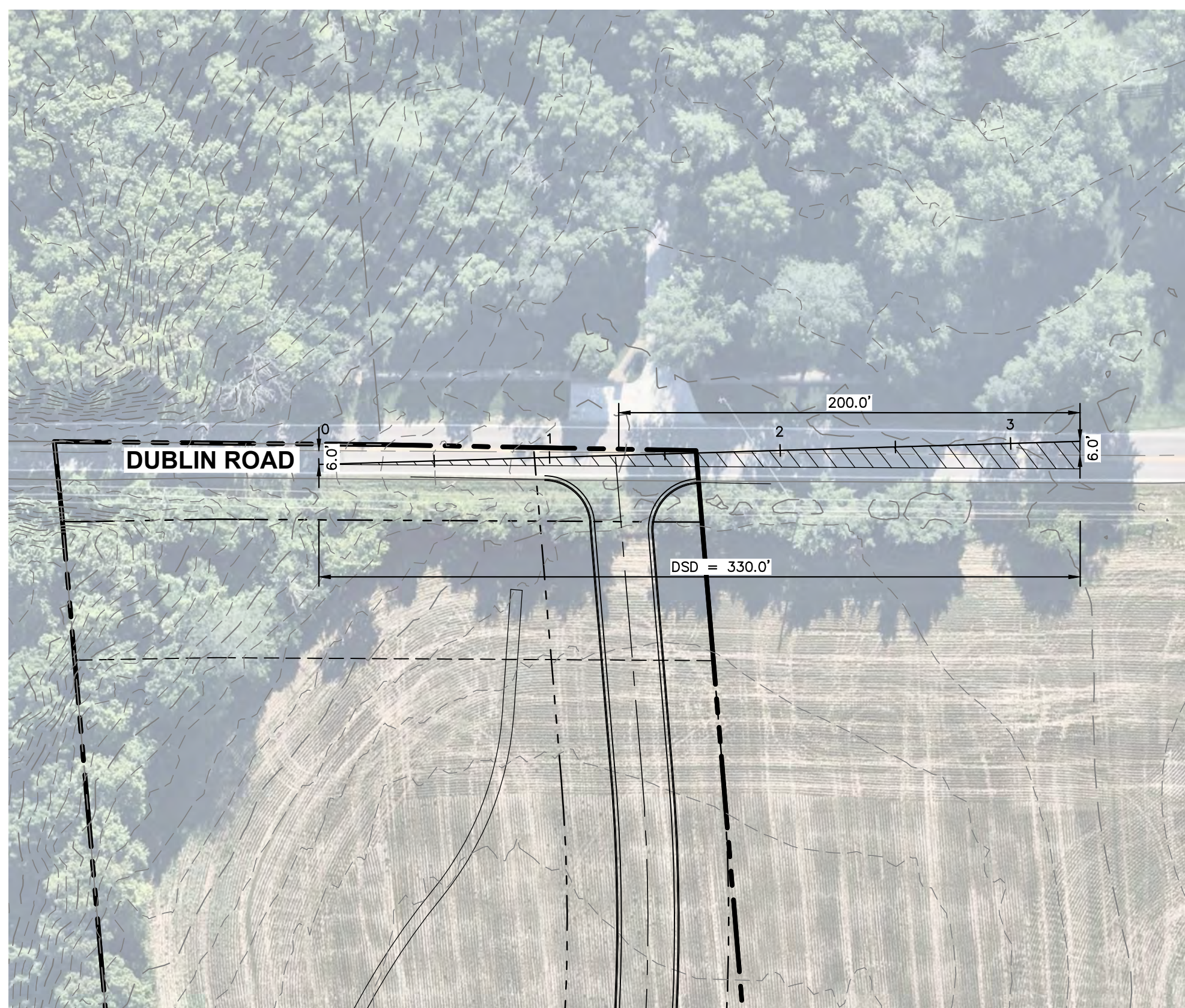
APPENDIX

I.

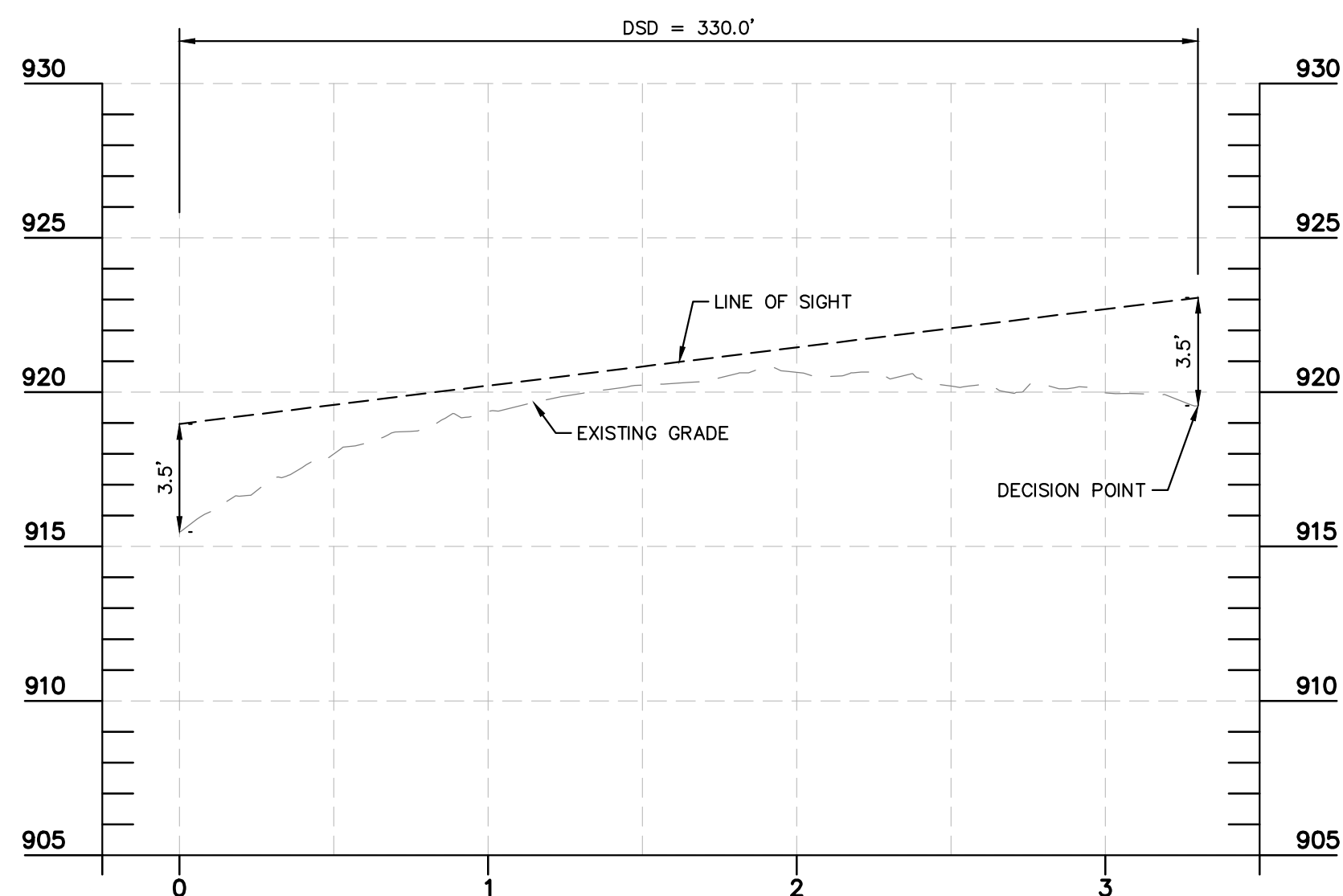
Site Distance Exhibits

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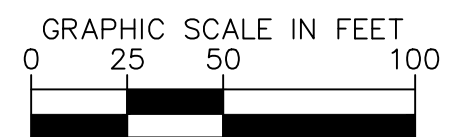
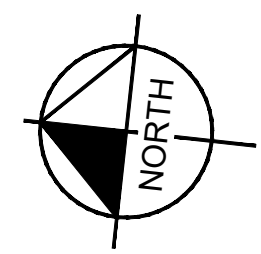
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**DUBLIN ROAD / ACCESS DRIVE A
SIGHT DISTANCE PLAN**
DESIGN SPEED=40 MPH



**DUBLIN ROAD / ACCESS DRIVE A
SIGHT DISTANCE PROFILE**
SCALE: H: 1"=50' ; V: 1"=5'



NOTES

1. DECISION SIGHT DISTANCE (LT): 330 FT
2. DESIGN SPEED: 40 MPH
3. AVOIDANCE MANEUVER ASSUMED FOR DECISION SIGHT DISTANCE PER ODOT 201-6

No.	REVISIONS	DATE	BY

Kimley»Horn
 © 2023 KIMLEY-HORN AND ASSOCIATES, INC.
 1000 W. MAIN STREET, SUITE 200,
 COLUMBUS, OH 43235
 PHONE: 614-454-6699
 WWW.KIMLEY-HORN.COM

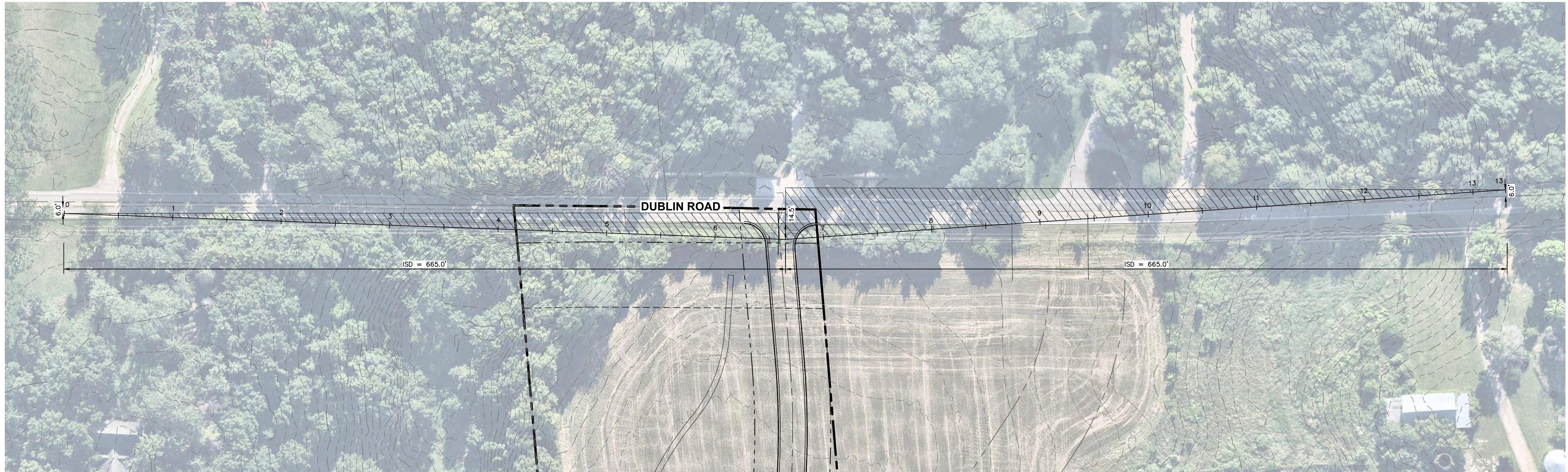
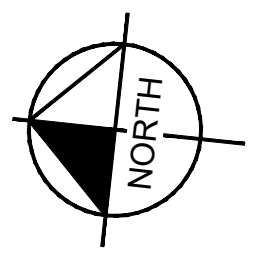
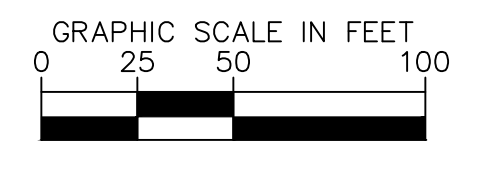
SCALE: H: 1"=50'
 V: 1"=5'
 DESIGNED BY: DMK
 DRAWN BY: DMK
 CHECKED BY: NRB

**DECISION SIGHT
DISTANCE**

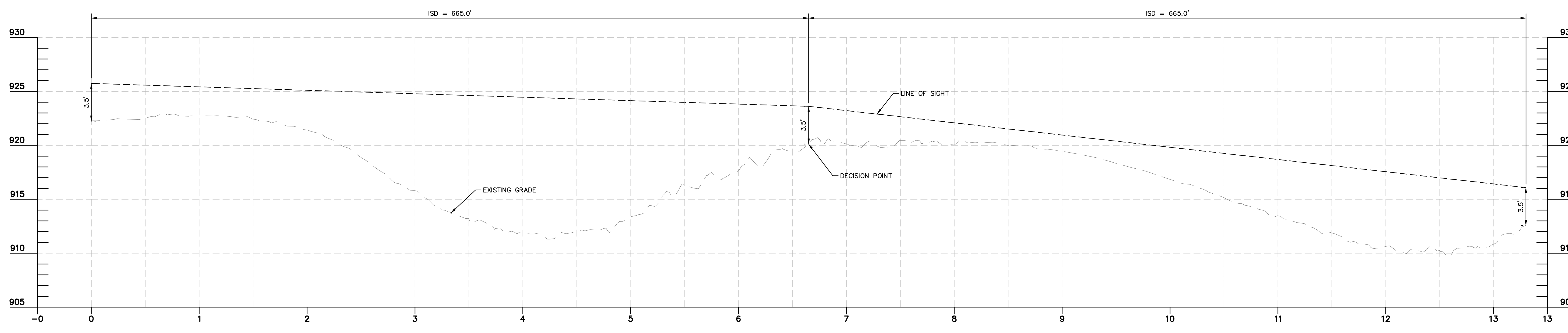
**FARNEMAN
PROPERTY**
 DELEWARE COUNTY
 CONCORD TOWNSHIP, OHIO

ORIGINAL ISSUE:
 05/03/2024
 KHA PROJECT NO.
 190273000
 SHEET NUMBER

Drawing name: K:\CIB_LDE\190273000_Fisher Homes_Foreman Property\2_Design\CAD\Exhibits\0503 - Sight Distance_South Entrance.dwg, Lopsu11, May 07, 2024, 2:41pm, by: chris.schneider
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DUBLIN ROAD / ACCESS DRIVE A
SIGHT DISTANCE PLAN
 SPEED LIMIT=55 MPH
 DESIGN SPEED=60 MPH



DUBLIN ROAD / ACCESS DRIVE A
SIGHT DISTANCE PROFILE
 SCALE: H: 1"=50' ; V: 1"=5'

NOTES

1. DESIGN SPEED: 60 MPH
2. INTERSECTION SIGHT DISTANCE (LT/RT): 665 FT

No.	REVISIONS	DATE	BY

Kimley-Horn
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 1000 W. WASHINGTON ST., SUITE 200,
 COLUMBUS, OH 43235
 PHONE: 614-454-6699
 WWW.KIMLEY-HORN.COM

SCALE: H: 1"=50'
 V: 1"=5'
 DESIGNED BY: DMK
 DRAWN BY: DMK
 CHECKED BY: NRB

INTERSECTION
SIGHT DISTANCE

FARNEMAN
PROPERTY
 DELEWARE COUNTY
 CONCORD TOWNSHIP, OHIO

ORIGINAL ISSUE:
05/03/2024

KHA PROJECT NO.
190273000

SHEET NUMBER

Photo 1 – Decision Distance

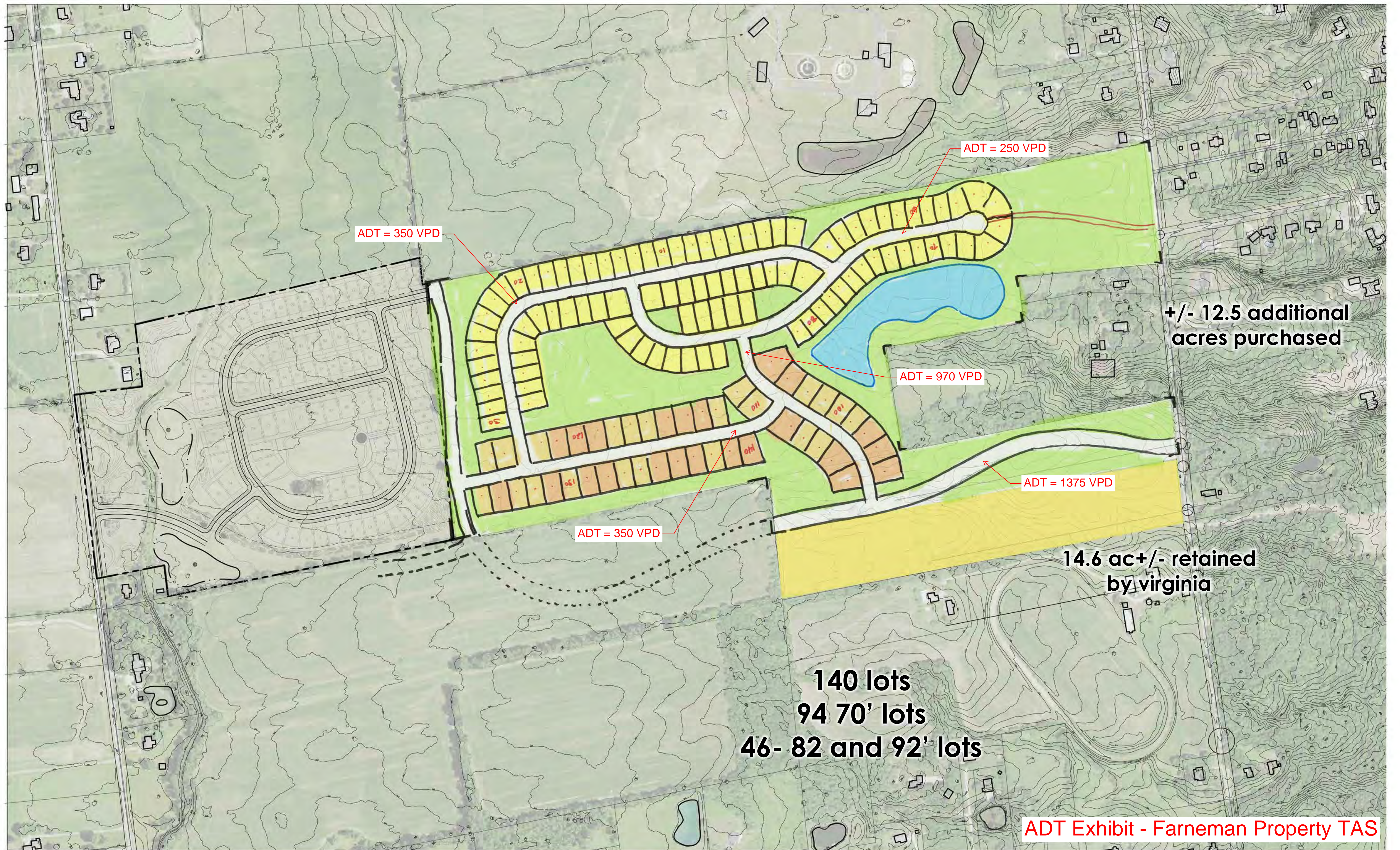


Photo 2 – Sight Distance, 665' North of Proposed Access



Photo 3 – Sight Distance, 665' South of Proposed Access

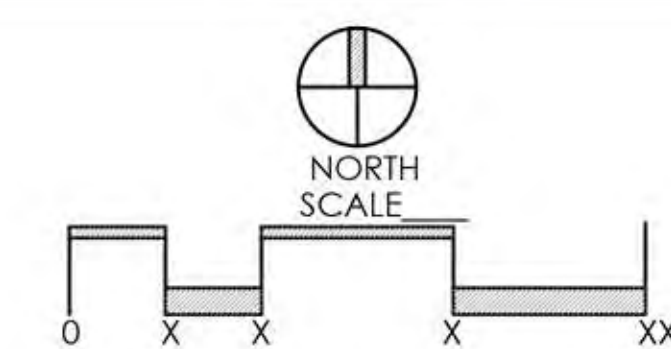




CONCEPT PLAN B

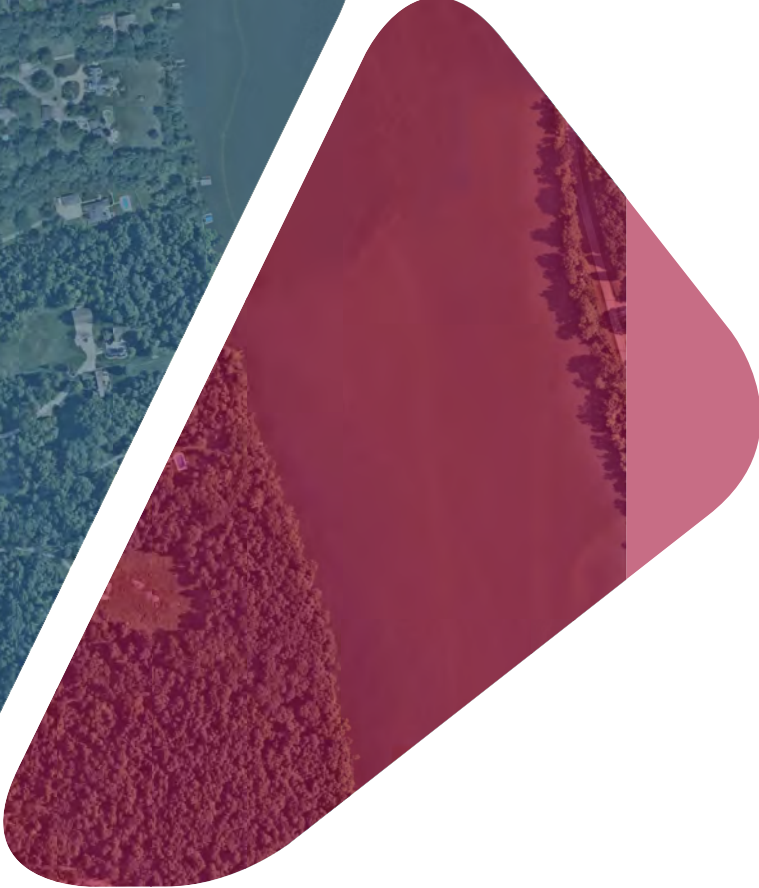
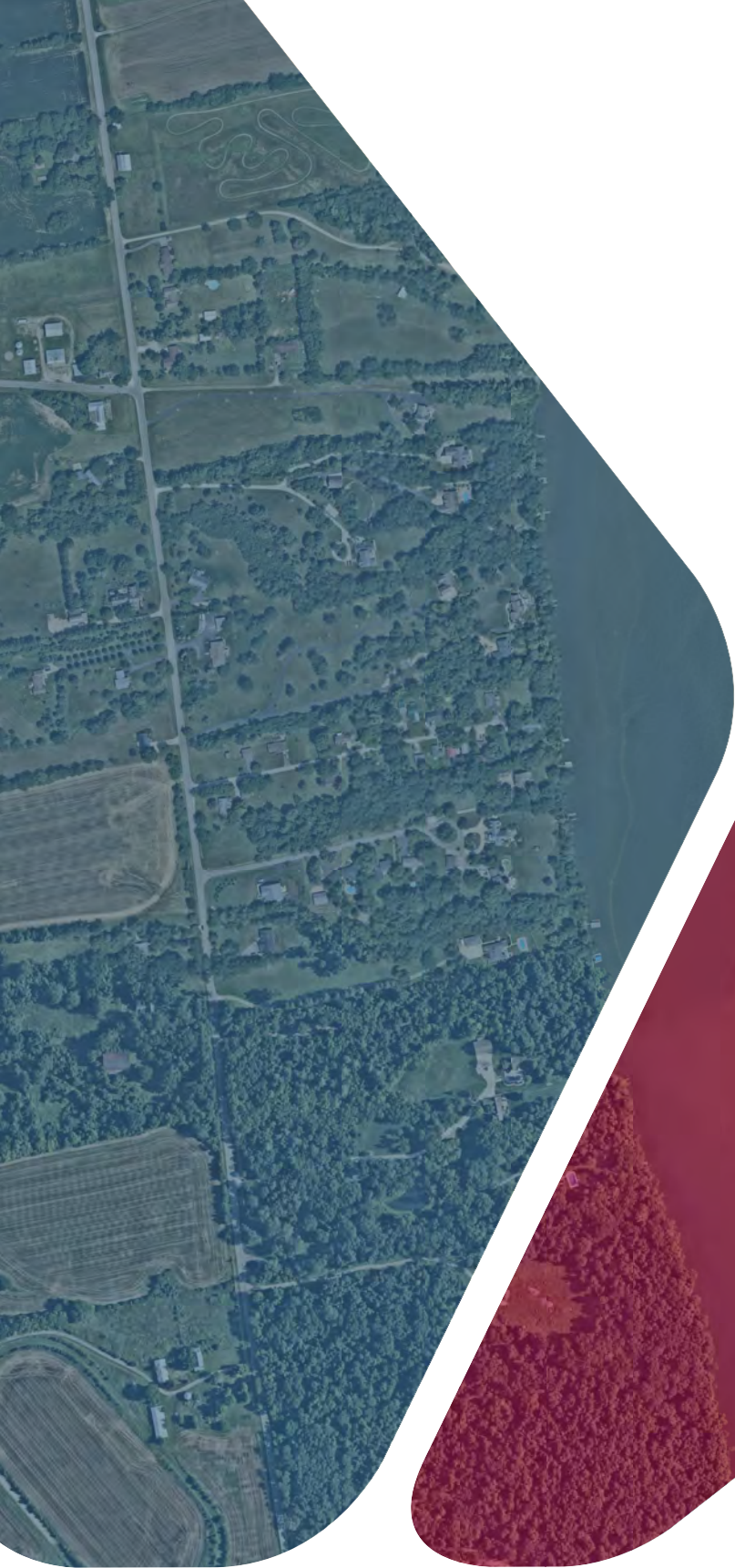
FARNEMAN PROPERTY

PREPARED FOR KIRAN BASIREDDY
DATE: 10.27.23



Faris Planning & Design

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