



April 22, 2024

Joe Clase, AICP  
Plan4 Land LLC  
1 South Harrison St., P.O. Box 306  
Ashley, Ohio 43003

Mr. Clase:

Please consider this a feasibility report for the property located at 4910 State Route 257, Delaware, Ohio, and Parcel Nos. are 500-320-02-016-000 and 500-320-02-017-000 (Property). Smart Services Inc. conducted a soil evaluation on February 1, 2024, It is our understanding that the project consists of a 41.84-acre parcel and proposed Equestrian and Event Center.

The soil evaluation was to determine if the proposed lots have sufficient areas suitable for primary and secondary soil-based Household Sanitary Treatment Systems (HSTS).

Soils on the Property are in the Glynwood catena, topographic sequence, and consist of deep somewhat poorly drained soils formed in loamy glacial till with expected perched seasonal high-water tables ranging from 8 to 10 inches below the soil surface and a dense till restrictive feature at 50 inches of the soil surface. Both lots have sufficient area for HSTS. The specific HSTS has not been determined but could include spray irrigation, drip, or engineered mound. Copies of this letter, soil profile description, and aerial mapping should be submitted to the Delaware County Health Department (DCHD) for their approval.

If you have questions or need more information, please do not hesitate to contact me at 614.202.821 or electronically at [mstrain@smartservices-inc.com](mailto:mstrain@smartservices-inc.com).

Sincerely,

*Mitchel R Strain*

**SMART SERVICES, INC.**  
Mitchel R. Strain, CPSS  
Director of Environmental Services

# Site and Soil Evaluation for Sewage Treatment and Dispersal

County: Delaware Land Use / Vegetation: Ag/Grass & Forbs  
 Township / Sec: Concord Landform: Upland  
 Property Address/Location: 4910 SR 257 S. Position on Landform: Flat  
Delaware, Ohio 43015 Percent Slope: 1-4  
 Applicant Name: Joe Chase, AICP, Plan 4 Land LLC Shape of Slope: Linear  
 Address: 1 S. Harrison St., P.O. Box 306  
Ashley, Ohio 43003  
 Date: 2/1/24 Certification Stamp or #: 02619  
 Phone #: 833.752.6452 Evaluator: Mitchel R. Strain  
 Parcel #: 500-320-02-016-000 & 500-320-02-017-00 Smart Services Inc.  
88 W. Church St  
 Newark, Ohio  
 Signature: Mitchel R Strain  
 Test Hole #: 1 Latitude/Longitude: N/A Phone #: 614.202.8621  
 Method:  Pit  Auger  Probe

Soil Profile	Estimating Soil Saturation				Estimating Soil Permeability				Other Soil Features		
	Horizon	Depth (inches)	Matrix Color	Redoximorphic Features	Class	Texture	Structure	Consistence			
			Concentrations	Depletions	Approx. % Clay	Approx. % Fragments	Grade	Size	Type (shape)		
Ap	0-7	10YR 4/3	None	None	15	0	2	f	gr	vfr	Few Fine Roots
BE	7-8	10 YR 5/4	None	None	20	2	2	m	sbk	fr	Few Fine Roots
Big	8-30	10 YR 6/2	7.5YR 5/4	None	35	5	2	m	sbk	fi	
BCt	30-50	10YR 4/4	7.5YR 5/6	10YR 5/2	40	5	1	co	sbk	fi	
Cd	50-60	10YR 4/3	10YR 5/6	10YR 5/2	40	5	0	NA	m	vfr	
Limiting Conditions		Depth to (in)	Descriptive Notes		Remarks / Risk Factors:						
Perched Seasonal Water Table		8	Reduced Matrix								
Apparent Water Table		None									
Highly Permeable Material		None									
Bedrock		>60									
Restrictive Layer		50	Dense Till								

# Site and Soil Evaluation for Sewage Treatment and Dispersal

County: Delaware  
 Township / Sec: Concord  
 Property Address/Location: 4910 SR 257 S.  
Delaware, Ohio 43015  
 Applicant Name: Joe Clase, AICP, Plan 4 Land LLC  
 Address: 1 S. Harrison St., P.O. Box 306  
Ashley, Ohio 43003  
 Phone #: 833.752.6452  
 Parcel #: 500-320-02-016-000 & 500-320-02-017-00  
 Test Hole #: 2  
 Latitude/Longitude: N/A  
 Method:  Pit  Auger  Probe

Land Use / Vegetation: Ag/Grass & Forbs  
 Landform: Upland  
 Position on Landform: Flat  
 Percent Slope: 1-4  
 Shape of Slope: Linear  
 Date: 2/1/24  
 Evaluator: Mitchel R. Strain  
Smart Services Inc.  
88 W. Church St  
Newark, Ohio

Certification Stamp or #: 02619  
 Signature: Mitchel R Strain  
 Phone #: 614.202.8621

Soil Profile	Depth (inches)	Estimating Soil Saturation				Estimating Soil Permeability				Other Soil Features		
		Matrix Color	Redoximorphic Features		Class	Texture		Structure			Consistence	
			Concentrations	Depletions		Approx. % Clay	Approx. % Fragments	Grade	Size			Type (shape)
Ap	0-8	10YR 4/3	None	None	sil	15	0	2	f	gr	vfr	Few Fine Roots
BE	8-10	10 YR 5/4	None	None	sil	20	2	2	m	sbk	fr	Few Fine Roots
Big	10-30	10 YR 6/2	7.5YR 5/4	None	sicl	35	5	2	m	sbk	fi	
BCt	30-50	10YR 4/4	7.5YR 5/6	10YR 5/2	cl	40	5	1	co	sbk	fi	
Cd	50-60	10YR 4/3	10YR 5/6	10YR 5/2	cl	40	5	0	NA	m	fi	
Limiting Conditions											Remarks / Risk Factors:	
Perched Seasonal Water Table		Depth to (in)		Descriptive Notes								
Apparent Water Table		None		Reduced Matrix								
Highly Permeable Material		None										
Bedrock		>60										
Restrictive Layer		50		Dense Till								

Note: The evaluation should include a complete site plan or site drawing.

# Site and Soil Evaluation for Sewage Treatment and Dispersal

County: Delaware Land Use / Vegetation: Residential/Maintained Grass  
 Township / Sec: Concord Landform: Upland  
 Property Address/Location: 4910 SR 257 S. Position on Landform: Flat  
 Applicant Name: Joe Clase, AICP, Plan 4 Land LLC Percent Slope: 1-4  
 Address: 1 S. Harrison St., P.O. Box 306 Shape of Slope: Linear  
 Phone #: 833.752.6452 Date: 2/1/24 Certification Stamp or #: 02619  
 Parcel #: 500-320-02-016-000 & 500-320-02-017-00 Evaluator: Mitchel R. Strain  
 Test Hole #: 3 Signature: *Mitchel R Strain*  
 Latitude/Longitude: N/A Newark, Ohio Phone #: 614.202.8621  
 Method:  Pit  Auger  Probe

Soil Profile	Depth (inches)	Estimating Soil Saturation				Estimating Soil Permeability				Other Soil Features		
		Matrix Color	Redoximorphic Features	Depletions	Class	Texture	Structure	Consistence				
		Munsell Color (hue, value, chroma)	Concentrations			Approx. % Clay	Approx. % Fragments	Grade	Size	Type (shape)		
Ap	0-7	10YR 4/3	None	None	sil	15	0	2	f	gr	vfr	Few Fine Roots
BE	7-8	10 YR 5/4	None	None	sil	20	2	2	m	sbk	fr	Few Fine Roots
Btg	8-30	10 YR 6/2	7.5YR 5/4	None	sicl	35	5	2	m	sbk	fi	
Bct	30-50	10YR 4/4	7.5YR 5/6	10YR 5/2	cl	40	5	1	co	sbk	fi	
Cd	50-60	10YR 4/3	10YR 5/6	10YR 5/2	cl	40	5	0	NA	m	fi	
Limiting Conditions												
Perched Seasonal Water Table		Depth to (in.)		Descriptive Notes				Remarks / Risk Factors:				
Apparent Water Table		None		Reduced Matrix								
Highly Permeable Material		None										
Bedrock		>60										
Restrictive Layer		50		Dense Till								

Note: The evaluation should include a complete site plan or site drawing.

Upland*
Terrace
Flood Plain
Lake Plain
Beach Ridge
*Includes glacial till plain and end moraine

Depression
Flat
Knoll
Crest
Hillslope
Footslope

Convex
Concave
Linear
Complex

Master Horizons		Horizon Suffixes		Horizon Modifiers	
O	Predominantly organic matter (litter & humus)	a	Highly decomposed organic matter	Numerical Prefixes Used to denote lithologic discontinuities	
A	Mineral, organic matter (humus) accumulation, loss of Fe, Al, clay	b	Buried genetic horizon		
E	Mineral, loss of Si, Fe, Al, clay, organic matter	d	Dense layer (physically root restrictive)	Numerical Suffixes Used to denote subdivisions within a master horizon	
B	Subsurface accumulation of clay, Fe, Al, Si, humus, sesquioxides, loss of CaCO <sub>3</sub> , subsurface soil structure	e	Moderately decomposed organic matter		
C	Little or no pedogenic alteration, unconsolidated earthy material, soft bedrock	g	Strong gley		
R	Hard bedrock	i	Slightly decomposed organic matter		
		p	Plow layer or artificial disturbance		
		r	Weathered or soft bedrock		
		s	Illuvial accumulation of silicate clay		
		w	Weak color or structure within B		
		x	Fragipan characteristics		

Texture Class Abbreviations		Textural Class Modifiers	
Course Sand	cos	Gravelly	GR
Sand	s	Fine Gravelly	FGR
Fine Sand	fs	Medium Gravelly	MGR
Very Fine Sand	vfs	Coarse Gravelly	CGR
Loamy Coarse Sand	lcos	Very Gravelly	VGR
Loamy Sand	ls	Extremely Gravelly	XGR
Loamy Fine Sand	lfs	Cobbly	CB
Loamy Very Fine Sand	lvfs	Very Cobbly	VCB
Coarse Sandy Loam	cosl	Extremely Cobbly	XCB
Sandy Loam	sl	Stony	ST
Fine Sandy Loam	fsl	Very Stony	VST
Very Fine Sandy Loam	vfsl	Extremely Stony	XST
Loam	l	Bouldery	BY
Silt Loam	sil	Very Bouldery	VBY
Silt	si	Extremely Bouldery	XBY
Sandy Clay Loam	scl	Channery	CN
Clay Loam	cl	Very Channery	VCN
Silty Clay Loam	sicl	Extremely Channery	XCN
Sandy Clay	sc	Flaggy	FL
Silty Clay	sic	Very Flaggy	VFL
Clay	c	Extremely Flaggy	XFL

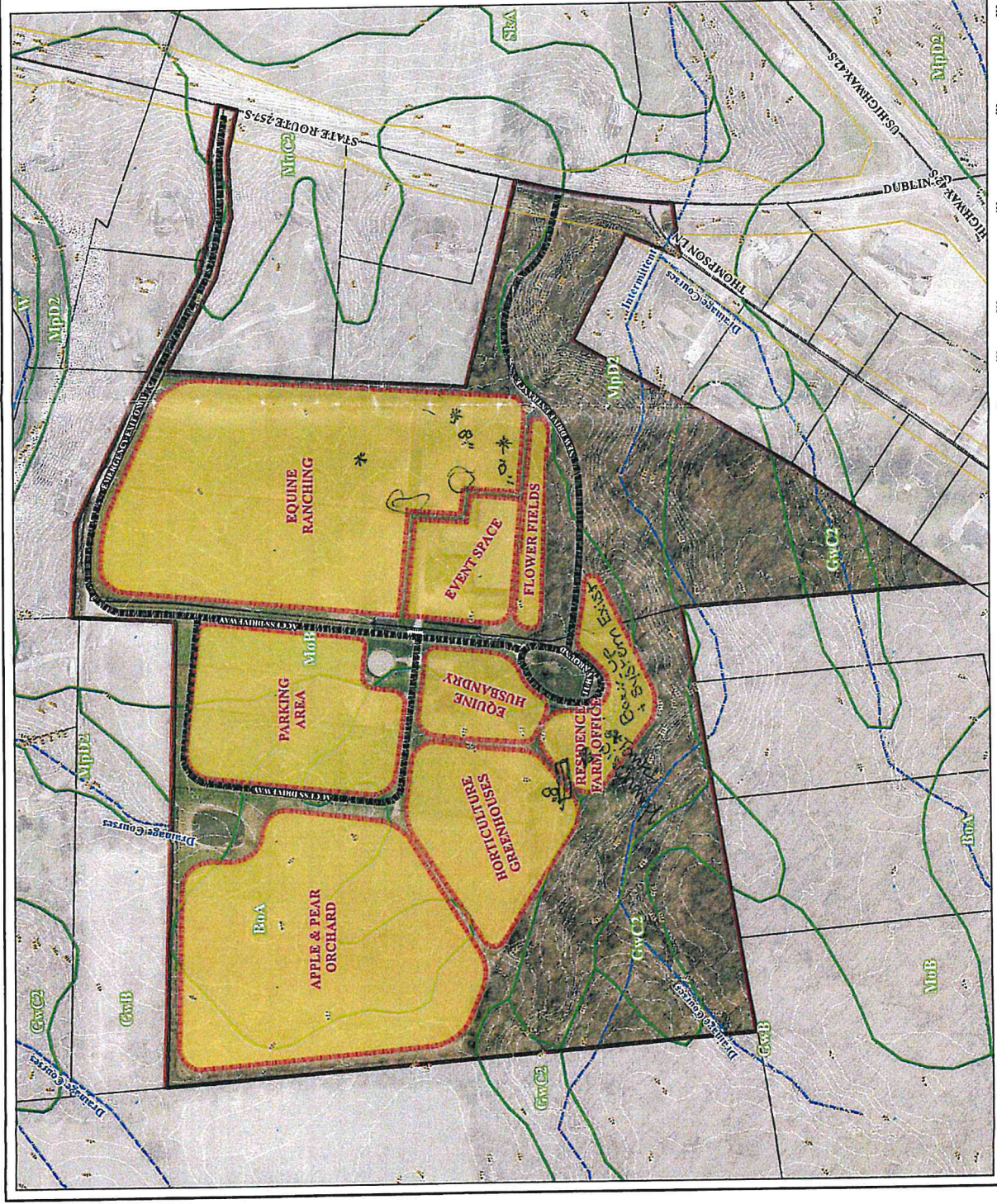
\* Estimate approximate clay percentage within 5 percent

Grade		Size		Type (Shape)	
Structureless	0	Very Fine	vf	Granular	gr
Weak	1	Fine	f	Angular Blocky	abk
Moderate	2	Medium	m	Subangular Blocky	sbk
Strong	3	Coarse	co	Platy	pl
		Very Coarse	vc	Prismatic	pr
		Extr Coarse	ec	Columnar	cpr
		Very Thin*	vn	Single Grain	sg
		Thin*	tn	Massive	m
		Thick*	tk	Cloddy	CDY
		Very Thick*	vk		

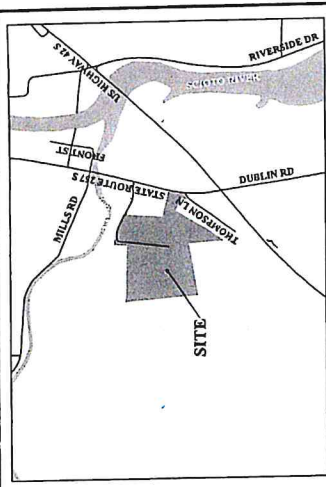
\* The sizes Very Thin, Thin, Thick, and Very Thick are used when describing platy structure only. Substitute thin for fine, and thick for coarse when describing platy structure.

Loose	l
Very Friable	vfr
Friable	fr
Firm	fi
Very Firm	vfi
Extremely Firm	efi

For a more detailed explanation on describing and sampling soils, please refer to the "Field Book for Describing and Sampling Soils" Schoeneberger, P. J., Wysocki, D. A., Benham, E. C., and Broderson, W. D. (editors) 2002. Field book for describing and sampling soils, version 2.0. Natural Resources Conservation Service, USDA, National Soil Survey Center, Lincoln, NE



SITE PLAN



LOCATION MAP

### CONCEPT PLAN

Avasat LLC Property | +/- 41.84 Gross Acres  
 4910 State Route 257 S, Delaware, Ohio 43015  
 (Concord Township, Delaware County, State of Ohio)  
 Parcel Nos. 500-320-02-016-000 and 500-320-02-017-000

**Legend**

- Site Boundaries
- Concept Plan
- Proposed Access
- Existing Road Right-of-Way
- Soil Types
- 2' Topography
- Drainage Courses
- Road Centerline
- Property Lines

**Plan 4 Land**  
 WWW.PLAN4LAND.NET

Sheet No. 1  
 Project Number: 21-0659  
 Prepared by: JOE CLASE, AICP  
 Date: 09/11/2023

June 19, 2024

**RE: Disposition of Comments for Stallion Ranch TIS submittal dated 3/18/24**

The Stallion Ranch TIS was submitted on March 18, 2024. ODOT District 6 provided comments on May 3, 2024. The comments are provided below, followed by the Carpenter Marty Transportation (CM) response in red.

- 1) Refer to Sections 4.1 and 4.2 of ODOT's SHAMM for allowable access and driveway spacing. Based on the site drawing provided, the 360' minimum spacing is not met at the current location. Consider using the existing Dublin Road access point to maintain adequate spacing. Additionally, only one driveway per parcel or contiguous parcels under the same owner is permitted.  
**CM Response: Noted. The updated site plan is provided in the revised study. A new access is proposed to separate commercial traffic from residential traffic on Dublin Road. The Dublin Road access to the proposed development will be emergency only. A meeting will be requested with ODOT to discuss.**
- 2) ODOT recommends analyzing the entering volumes during the PM peak hour of the roadway since start times will vary and may occur during this time.  
**CM Response: Complied.**
- 3) Apply Peak Hour to Design Hour Factors to the count volumes.  
**CM Response: Complied.**
- 4) Please contact MORPC for growth rates.  
**CM Response: Complied.**
- 5) The full capacity of the venue should be used for the trip generation. In previous studies, ODOT has accepted an average trip generation rate of 0.40\* (capacity) for event centers.  
**CM Response: Updated.**
- 6) Update the turn lane warrant labels to Entry/Exit instead of AM/PM.  
**CM Response: Updated.**
- 7) Provide a sight distance drawing at the proposed drive.  
**CM Response: Complied.**

## Joe Clase

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**From:** Drew Laurent <dlaurent@cmtran.com>  
**Sent:** Tuesday, July 9, 2024 1:16 PM  
**To:** Joe Clase  
**Subject:** FW: Stallion Ranch Development

Joe,

See below.

### Drew Laurent, AICP

Carpenter Marty Transportation  
614.656.2421

---

**From:** Kristine.Norfolk@dot.ohio.gov <Kristine.Norfolk@dot.ohio.gov>  
**Sent:** Friday, May 3, 2024 7:19 AM  
**To:** Drew Laurent <dlaurent@cmtran.com>  
**Cc:** Jessica.Ormeroid@dot.ohio.gov; Andrew.Hurst@dot.ohio.gov  
**Subject:** Stallion Ranch Development

Drew,

We have completed our review of the Stallion Ranch TIS dated March 18, 2024 and ODOT's comments are below:

1. Refer to Sections 4.1 and 4.2 of ODOT's SHAMM for allowable access and driveway spacing. Based on the site drawing provided, the 360' minimum spacing is not met at the current location. Consider using the existing Dublin Road access point to maintain adequate spacing. Additionally, only one driveway per parcel or contiguous parcels under the same owner is permitted.
2. ODOT recommends analyzing the entering volumes during the PM peak hour of the roadway since start times will vary and may occur during this time.
3. Apply Peak Hour to Design Hour Factors to the count volumes.
4. Please contact MORPC for growth rates.
5. The full capacity of the venue should be used for the trip generation. In previous studies, ODOT has accepted an average trip generation rate of 0.40\* (capacity) for event centers.
6. Update the turn lane warrant labels to Entry/Exit peaks instead of AM/PM.
7. Provide a sight distance drawing at the proposed drive.

Thanks,

**Kristi Norfolk, PE, PTOE**  
**Transportation Engineer**  
**ODOT District 6**

400 E. William Street  
Delaware, Ohio 43015  
D: 740.833.8253

[kristine.norfolk@dot.ohio.gov](mailto:kristine.norfolk@dot.ohio.gov)



June 19, 2024

**RE: Results of the Emerald Farms Traffic Study (4910 State Route 257)  
Traffic Access Study (TAS)**

To whom it may concern,

We have completed a traffic access study for the proposed Emerald Farms (formerly Stallion Ranch) development site. The proposed development is along SR-257, north of US-42 in Concorde Township, Delaware County, OH. The methods and results of this analysis are summarized below.

## Background

Figure 1 shows the location of the proposed site in Delaware, OH.

*Figure 1—Location of the Proposed Site (Yellow Shading)*



The site currently contains a 4,167 SF single-family home and various agricultural buildings including horse stables. The site is proposed to be redeveloped as an agritourism destination and a wedding/event venue with a maximum capacity of 300 people.

Agritourism is defined as an agriculturally related educational, entertainment, historical, cultural, or recreational activity, including you-pick operations or farm markets, conducted on a farm that allows or invites members of the general public to observe, participate in, or enjoy that activity. The event venue portion of the site is expected to host mainly weddings, family get togethers, or other such private events.

The site is proposed to have one full access on SR-257. The site concept plan can be found in **Attachment A**.

The purpose of this traffic study is to analyze the proposed site access point and determine if roadway improvements are required as a result of the site redevelopment.

## **Projected Traffic**

In order to conduct analysis, Opening Year (2025) and Horizon Year (2035) traffic volumes were developed.

The proposed site will provide agritourism activities throughout the week and is expected to host events mainly on Fridays and Saturdays. Since the agritourism portion of the site is expected to only generate about 10 vehicular trips a day, volumes were developed focusing on the event venue portion of the site, which is expected to be the driving force of any roadway improvements that may be required as a result of this proposed site. The peak hour of vehicles entering the event center was assumed to be the same as the PM peak hour of SR-257 which is 4:15-5:15 PM (Entry peak), and the peak hour of vehicles exiting the event center is expected to be 7:00-8:00 PM (Exit peak). For events that hold receptions, the Exit peak hour would experience even less exiting trips, as vehicles would filter out throughout the remainder of the night. To be conservative, volumes were developed assuming all entering trips and all exiting trips would occur within their respective peak hour.

Entry and Exit peak hour segment count data from a Thursday in 2021 was obtained from the ODOT Transportation Data Management System. This data was grown to 2023 using a 2.7% linear annual growth rate obtained from the Mid-Ohio Regional Planning Commission (MORPC).

Segment data was also obtained from StreetLight for an average Friday and Saturday in 2023. StreetLight produces origin-destination (OD) data by utilizing Connected Vehicle Data (CVD) from vehicles with location technology, along with other sources. The OD data can show the relative amount of traffic that starts, or enters, a user-defined zone (the origin) and exits, or stops, at a separate zone (the destination). Using these OD zones, coupled with permanent count station data, volumes can be estimated for all roadways.

The 2021 Thursday segment count data grown to 2023 was compared to the 2023 Friday and 2023 Saturday segment data obtained from StreetLight. Since the 2023 Thursday count data was higher in both the Entry and Exit peak, the 2023 Thursday count was carried forward in volume development. Count data and growth rate data can be found in **Attachment B**.

The 2023 Thursday counts volumes were adjusted using Peak Hour to Design Hour factors obtained from ODOT resources.

The adjusted count volumes were then projected to the Opening (2025) and Horizon (2035) years of this study based on the previously mentioned 2.7% linear annual growth rate to produce Background, or No Build, volumes for the Opening and Horizon Years.

The Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition, does not include a Land Use Code (LUC) for event centers or wedding venues. Thus, an alternative method of estimating trips was required. A trip generation method for event centers was provided by ODOT. In previous studies, ODOT has accepted an average trip generation rate of 0.40 vehicle trips per person. The developer has indicated that the event center will have a maximum capacity of 300 people. In order to produce conservative results, the analysis herein assumes a wedding without a reception and a maximum capacity wedding.

*Table 1- Trip Generation Summary*

Land Use	Size	Entry Peak		Exit Peak	
		Entry	Exit	Entry	Exit
Wedding/Event Venue	300-person max capacity	120	0	0	120

Site traffic was distributed to/from the site based on the count data, knowledge of the surrounding area, and engineering judgment. Site traffic was added to the No Build traffic to produce Build traffic for the Opening and Horizon Years. The full volume calculations can be found in **Attachment C**.

## Analysis

A turn lane warrant analysis was conducted at the site access point using methodologies located in the ODOT Location & Design (L&D) Manual. If a turn lane was warranted in any scenario, the required length was calculated using ODOT criteria.

An intersection sight distance analysis was conducted at the site access point using methodologies located in the ODOT L&D Manual, to determine if any obstructions would block the sight lines of vehicles exiting the proposed site.

## Results & Conclusions

The turn lane warrant analysis shows that a 245' northbound left turn lane is warranted at the site access point. The full turn lane warrant analysis can be found in **Attachment D**.

The sight distance analysis shows that the sight lines for vehicles exiting the site are not expected to be obstructed. The sight distance exhibit can be found in **Attachment E**.

Based on the results of this traffic study herein, it is recommended that a 245' northbound left turn lane be installed at the proposed site access point. No other improvements are required nor recommended for the proposed development.

If I can help in any way, do not hesitate to contact me at [gbalsamo@cmtran.com](mailto:gbalsamo@cmtran.com) or 614.656.2429 anytime.

Sincerely,



Gina Balsamo, PE, PTOE  
Project Manager  
Carpenter Marty Transportation

# Attachment A

## Site Plan





# Volume Count Report

LOCATION INFO	
Location ID	6621_NB
Type	SPOT
Frct'l Class	4
Located On	SR-257
Loc On Alias	
Direction	NB
County	Delaware
Community	SW OF DELAWARE
MPO ID	
HPMS ID	
Agency	ODOT

COUNT DATA INFO	
Count Status	Accepted
Holiday	No
Start Date	Thu 8/26/2021
End Date	Fri 8/27/2021
Start Time	12:00:00 AM
End Time	12:00:00 AM
Direction	
Notes	odot
Station	000066211050
Study	
Speed Limit	
Description	
Sensor Type	Tube Class
Source	
Latitude, Longitude	

Time	15-min Interval				Hourly Count
	1st	2nd	3rd	4th	
0:00-1:00	2	4	2	0	8
1:00-2:00	1	0	1	2	4
2:00-3:00	1	1	1	0	3
3:00-4:00	2	0	1	1	4
4:00-5:00	0	0	0	1	1
5:00-6:00	0	0	1	4	5
6:00-7:00	5	4	8	11	28
7:00-8:00	14	15	15	22	66
8:00-9:00	13	19	25	20	77
9:00-10:00	25	16	23	21	85
10:00-11:00	20	33	26	44	123
11:00-12:00	22	25	22	25	94
12:00-13:00	19	22	31	15	87
13:00-14:00	23	27	24	18	92
14:00-15:00	20	38	34	37	129
15:00-16:00	47	60	56	58	221
16:00-17:00	66	57	58	58	239
17:00-18:00	63	51	48	50	212
18:00-19:00	37	42	33	22	134
19:00-20:00	17	22	19	22	80
20:00-21:00	19	21	17	15	72
21:00-22:00	22	16	5	7	50
22:00-23:00	7	4	4	2	17
23:00-24:00	4	4	1	7	16
<b>Total</b>					<b>1,847</b>
<b>AM Peak</b>					<b>10:15-11:15 125</b>
<b>PM Peak</b>					<b>15:15-16:15 240</b>



# Volume Count Report

LOCATION INFO	
Location ID	6621_SB
Type	SPOT
Funct'l Class	4
Located On	SR-257
Loc On Alias	
Direction	SB
County	Delaware
Community	SW OF DELAWARE
MPO ID	
HPMS ID	
Agency	ODOT

COUNT DATA INFO	
Count Status	Accepted
Holiday	No
Start Date	Thu 8/26/2021
End Date	Fri 8/27/2021
Start Time	12:00:00 AM
End Time	12:00:00 AM
Direction	
Notes	odot
Station	000066211050
Study	
Speed Limit	
Description	
Sensor Type	Tube Class
Source	
Latitude, Longitude	

Time	15-min Interval				Hourly Count
	1st	2nd	3rd	4th	
0:00-1:00	1	0	2	0	3
1:00-2:00	1	1	1	2	5
2:00-3:00	0	0	1	1	2
3:00-4:00	0	1	1	0	2
4:00-5:00	0	3	4	4	11
5:00-6:00	5	12	23	15	55
6:00-7:00	16	30	57	46	149
7:00-8:00	53	60	66	35	214
8:00-9:00	45	30	49	32	156
9:00-10:00	29	28	29	21	107
10:00-11:00	13	20	30	21	84
11:00-12:00	68	21	30	17	136
12:00-13:00	17	30	19	26	92
13:00-14:00	23	18	13	21	75
14:00-15:00	22	32	29	16	99
15:00-16:00	30	34	45	49	158
16:00-17:00	23	37	46	35	141
17:00-18:00	44	39	25	19	127
18:00-19:00	24	18	26	24	92
19:00-20:00	17	12	15	18	62
20:00-21:00	4	17	13	12	46
21:00-22:00	10	11	3	5	29
22:00-23:00	2	0	3	3	8
23:00-24:00	5	3	1	0	9
<b>Total</b>					1,862
<b>AM Peak</b>					06:45-07:45 225
<b>PM Peak</b>					16:30-17:30 164

## Leiana Yates

---

**From:** Hwashik Jang <hjang@morpc.org>  
**Sent:** Wednesday, May 22, 2024 3:08 PM  
**To:** Leiana Yates  
**Cc:** Raj Roy; Nick Gill; Drew Laurent  
**Subject:** RE: Growth Rate Request - Stallion Ranch Traffic Study

Leiana,

We have completed processing growth rates for your traffic study.

Please use linear annual growth rates below.

Segment of SR-257 north of US-42 in Concord Township: 2.7%

Note: The above rate was derived based on planning level analysis by using MORPC's regional travel demand model.

If you have any questions, please let me know.

Thanks,

### HWASHIK JANG

Senior Planner | Mid-Ohio Regional Planning Commission

T: 614.233.4145 | [hjang@morpc.org](mailto:hjang@morpc.org)

111 Liberty Street, Suite 100 | Columbus, OH 43215



MID-OHIO REGIONAL  
**MORPC**  
PLANNING COMMISSION

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**From:** Leiana Yates <lyates@cmtran.com>  
**Sent:** Monday, May 6, 2024 11:42 AM  
**To:** Hwashik Jang <hjang@morpc.org>  
**Cc:** Raj Roy <rroy@morpc.org>; Nick Gill <NGILL@morpc.org>; Drew Laurent <dlaurent@cmtran.com>  
**Subject:** Growth Rate Request - Stallion Ranch Traffic Study

Some people who received this message don't often get email from [lyates@cmtran.com](mailto:lyates@cmtran.com). [Learn why this is important](#)

**Caution:** This email originated from outside the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe. When in doubt, contact the IT team

Good morning,

We would like to request growth rates for a segment of SR-257 north of US-42 and south of Front Street in Concord Township, Delaware County, OH.



We are conducting a traffic study for a development on the west side of SR-257 along the noted segment. The site is proposed to be an agritourism destination and a wedding/event venue with a maximum capacity of 200 people. The opening year will be 2025 with a 10 year horizon. The study will be reviewed by ODOT District 6. Please see the attached counts and preliminary site plan for your use.

Please note that the count data does not include truck counts.

Thank you,

**Leiana Yates**

Project Engineer

**CARPENTER**

**MARTY** *transportation*


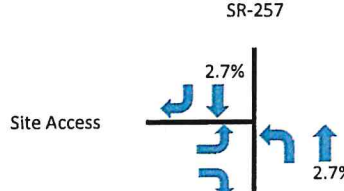
614-656-2508 | [www.cmtran.com](http://www.cmtran.com)

# Attachment C


## Volume Calculations



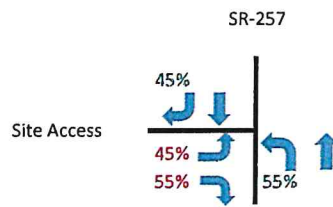
Emerald Farms Traffic Study  
Traffic Volume Calculations

	Year	Period	Scenario	Plate
			Growth Rates	
<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;"> <p>^</p> <p>N</p> </div> <div style="text-align: center;"> <p>SR-257</p>  </div> </div>				


Emerald Farms Traffic Study  
Traffic Volume Calculations

	Year	Period	Scenario	Plate
				Non-Pass-By Distribution

^  
N

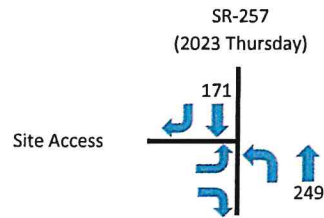


**Emerald Farms Traffic Study  
Traffic Volume Calculations**

	<b>Year</b>	<b>Period</b>	<b>Scenario</b>	<b>Plate</b>
	2023	Entry*	Count	

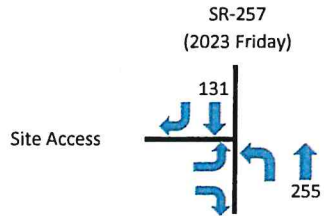
^  
N

\*The Entry peak hour utilizes the PM peak hour of SR-257 (4:15-5:15 PM)

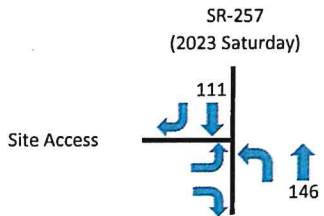


2021 Thursday segment data along SR-257 was obtained from ODOT Transportation Data Management System

The 2021 segment data was grown to 2023 segment data using growth rates obtained from ODOT Traffic Forecasting Management System.




2023 Friday segment data along SR-257 was obtained from StreetLight



2023 Saturday segment data along SR-257 was obtained from StreetLight

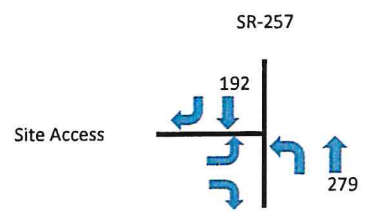
Since the 2023 Thursday segment data shows the highest combined volumes along SR-257 during the Entry Peak (4:15-5:15 PM), that data was utilized to develop OY and HY volumes for this project.

Emerald Farms Traffic Study  
Traffic Volume Calculations


	Year	Period	Scenario	Plate
	2023	Entry Peak	Peak Hour to Design Hour Adjustment	A1

^  
N

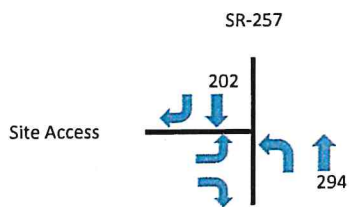
Peak Hour to Design Hour Factor    1.12




Emerald Farms Traffic Study  
Traffic Volume Calculations

	Year	Period	Scenario	Plate
	2025	Entry Peak	No Build	B1 = A1 Grown

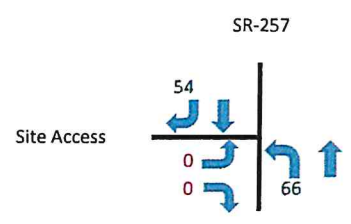
^  
N



Emerald Farms Traffic Study  
Traffic Volume Calculations


	Year	Period	Scenario	Plate
	2025	Entry Peak	Non-Pass-By Trips	C1

^  
 N  
 Entry      120  
 Exit        0

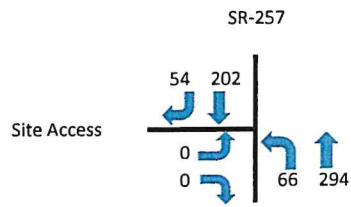





Emerald Farms Traffic Study  
Traffic Volume Calculations

	Year	Period	Scenario	Plate
	2025	Entry Peak	Build	D1 = B1 + C1

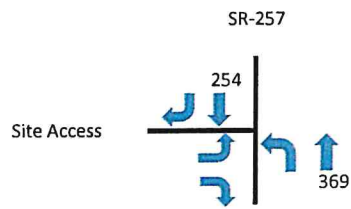
^  
N




Emerald Farms Traffic Study  
Traffic Volume Calculations

	Year	Period	Scenario	Plate
	2035	Entry Peak	No Build	E1 = A1 Grown

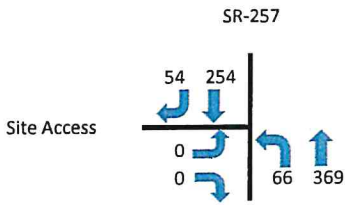
^  
N




Emerald Farms Traffic Study  
Traffic Volume Calculations

	Year	Period	Scenario	Plate
	2035	Entry Peak	Build	F1 = C1 + E1

^  
N

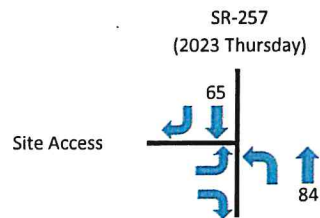


## Emerald Farms Traffic Study Traffic Volume Calculations

	Year	Period	Scenario	Plate
	2023	Exit*	Count	

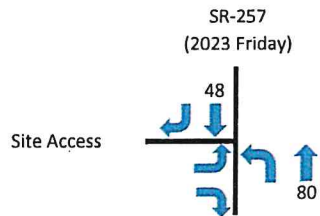
^  
N

\*The Exit peak hour of the proposed development is expected to be from 7-8 PM

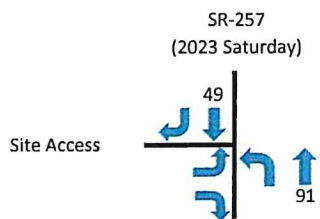


2021 Thursday segment data along SR-257 was obtained from ODOT Transportation Data Management System

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2023 Friday segment data along SR-257 was obtained from StreetLight



2023 Saturday segment data along SR-257 was obtained from StreetLight

Since the 2023 Thursday segment data shows the highest volumes along SR-257 during the Exit Peak (7-8 PM), that data was utilized to develop OY and HY volumes for this project.

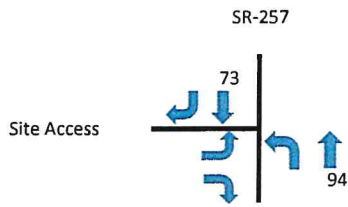
Emerald Farms Traffic Study  
Traffic Volume Calculations

	Year	Period	Scenario	Plate
	2023	Exit Peak	Peak Hour to Design Hour Adjustment	A2


^

N

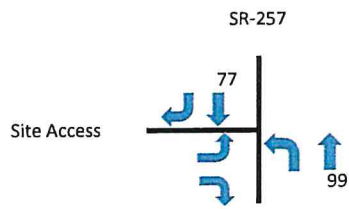
Peak Hour to Design Hour Factor    1.12




Emerald Farms Traffic Study  
Traffic Volume Calculations

	Year	Period	Scenario	Plate
	2025	Exit Peak	No Build	B2 = A2 Grown

^  
N



Emerald Farms Traffic Study  
Traffic Volume Calculations

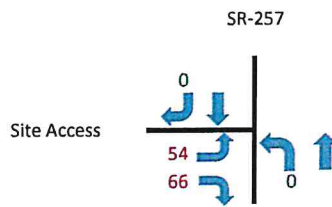
	Year	Period	Scenario	Plate
	2025	Exit Peak	Non-Pass-By Trips	C2

^


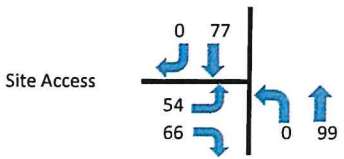
N

Entry      0  
Exit        120

\*For the purposes of this analysis, it is assumed that all exiting traffic occurs within the peak hour. This is the most conservative approach, and would be likely if an event with no reception is held at this venue.




Emerald Farms Traffic Study  
Traffic Volume Calculations

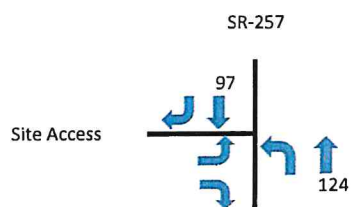
	Year	Period	Scenario	Plate
	2025	Exit Peak	Build	$D2 = B2 + C2$
<div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="text-align: center;"> <p>^</p> <p>N</p> </div> <div style="text-align: center; margin-top: 200px;"> <p>SR-257</p>  </div> </div>				




Emerald Farms Traffic Study  
Traffic Volume Calculations

	Year	Period	Scenario	Plate
	2035	Exit Peak	No Build	E2 = A2 Grown

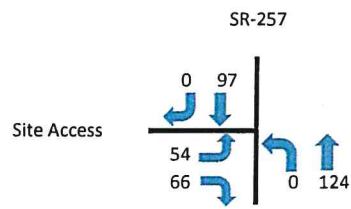
^  
N



Emerald Farms Traffic Study  
Traffic Volume Calculations

	Year	Period	Scenario	Plate
	2035	Exit Peak	Build	F2 = C2 + E2

^  
N

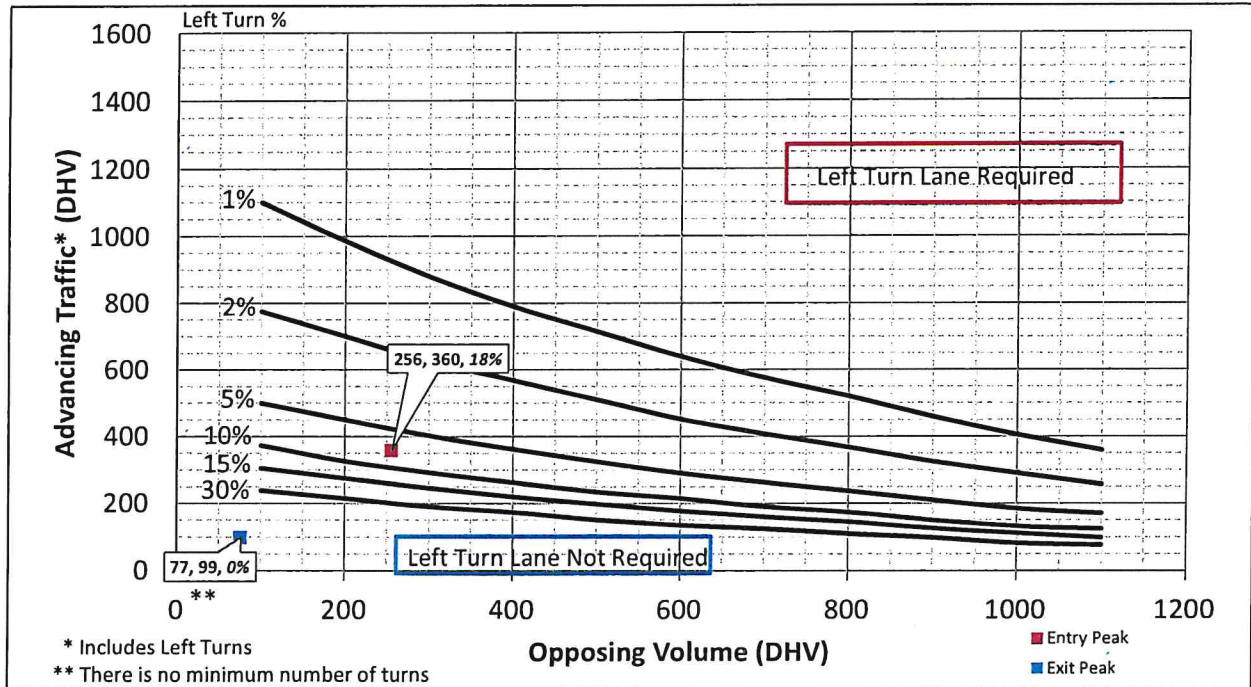


# Attachment D

## Turn Lane Warrant Analysis



**2-Lane Highway Left Turn Lane Warrant  
( > 40 mph or 70 kph Posted Speed )**



\* Includes Left Turns  
\*\* There is no minimum number of turns

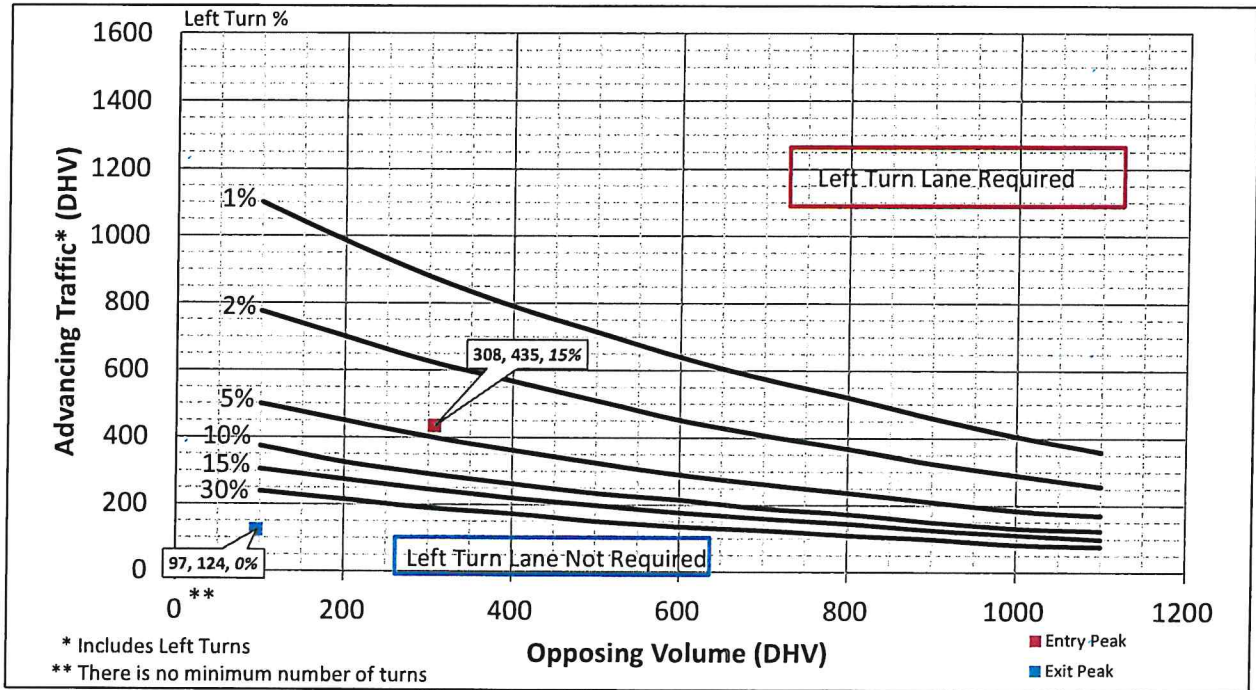
**Turn Lane Length Calculations**

<b>Entry Peak</b>	Design Speed	50	mph
	Traffic Control	Unsignalized	
	Cycle Length	Unsignalized	
	Cycles Per Hour	60	Assume 60
	Turn Lane Volume	66	VPH
	Advancing Traffic	360	VPH
	Opposing Volume	256	VPH
	Left Turn Percentage	18%	
	Location Type	Through Road	
	Condition	B or C	
	Vehicles/Cycle	2	
	Turn Lane Length	See Column to Right	245
Offset Width	12		
Approach Taper	600		
<b>Exit Peak</b>	Design Speed	50	mph
	Traffic Control	Unsignalized	
	Cycle Length	Unsignalized	
	Cycles Per Hour	60	Assume 60
	Turn Lane Volume	0	VPH
	Advancing Traffic	99	VPH
	Opposing Volume	77	VPH
	Left Turn Percentage	0%	
	Location Type	Through Road	
	Condition	B	
	Vehicles/Cycle	1	
	Turn Lane Length	225	
Offset Width	12		
Approach Taper	600		
<b>Is Left Turn Warrant Met</b>		Yes	See Above

\* Turn Lane Length includes 50 ft diverging taper

\* Turn Lane Length includes 50 ft diverging taper

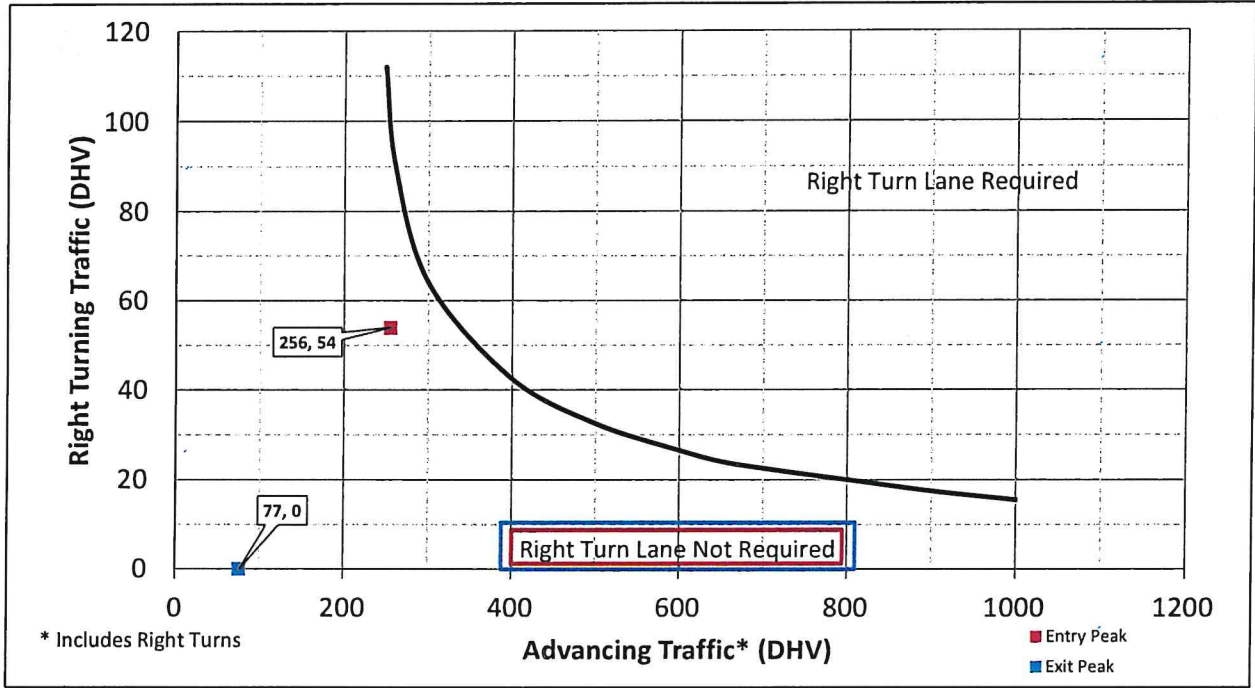
**2-Lane Highway Left Turn Lane Warrant  
( > 40 mph or 70 kph Posted Speed )**



**Turn Lane Length Calculations**

<b>Entry Peak</b>	Design Speed	50	mph	
	Traffic Control	Unsignalized		
	Cycle Length	Unsignalized		
	Cycles Per Hour	60	Assume 60	
	Turn Lane Volume	66	VPH	
	Advancing Traffic	435	VPH	
	Opposing Volume	308	VPH	
	Left Turn Percentage	15%		
	Location Type	Through Road		
	Condition	B or C		
	Vehicles/Cycle	2		
	Turn Lane Length	See Column to Right	245	* Turn Lane Length includes 50 ft diverging taper
	Offset Width	12		
Approach Taper	600			
<b>Exit Peak</b>	Design Speed	50	mph	
	Traffic Control	Unsignalized		
	Cycle Length	Unsignalized		
	Cycles Per Hour	60	Assume 60	
	Turn Lane Volume	0	VPH	
	Advancing Traffic	124	VPH	
	Opposing Volume	97	VPH	
	Left Turn Percentage	0%		
	Location Type	Through Road		
	Condition	B		
	Vehicles/Cycle	1		
	Turn Lane Length		225	* Turn Lane Length includes 50 ft diverging taper
	Offset Width	12		
Approach Taper	600			
<b>Is Left Turn Warrant Met</b>		Yes	See Above	

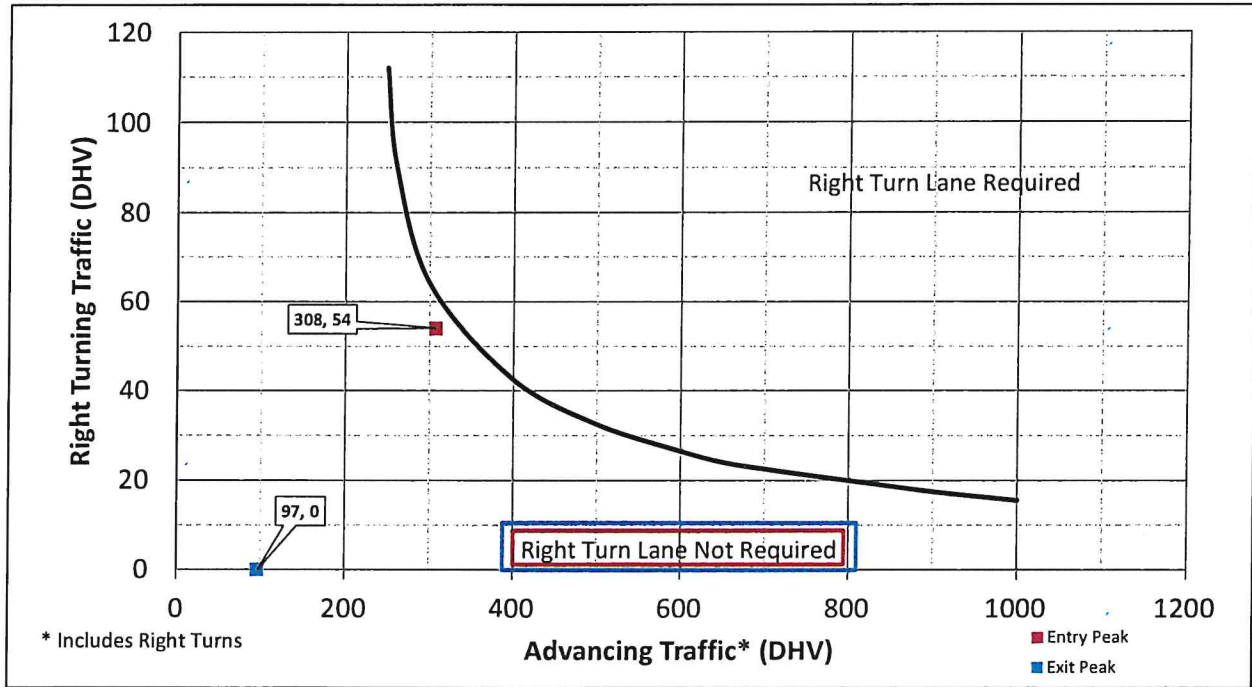
**2-Lane Highway Right Turn Lane Warrant  
( > 40 mph or 70 kph Posted Speed)**



**Turn Lane Length Calculations**

<b>Entry Peak</b>	Design Speed	50	mph	
	Traffic Control	Unsignalized		
	Cycle Length	Unsignalized		
	Cycles Per Hour	60	Assume 60	
	Turn Lane Volume	54	VPH	
	Advancing Traffic	256	VPH	
	Right Turn Percentage	21%		
	Location Type	Through Road		
	Condition	B or C		
	Vehicles/Cycle	1		
	Turn Lane Length	See Column to Right	225	
<b>Exit Peak</b>	Design Speed	50	mph	
	Traffic Control	Unsignalized		
	Cycle Length	Unsignalized		
	Cycles Per Hour	60	Assume 60	
	Turn Lane Volume	0	VPH	
	Advancing Traffic	77	VPH	
	Right Turn Percentage	0%		
	Location Type	Through Road		
	Condition	B		
	Vehicles/Cycle	1		
	Turn Lane Length	225		
<b>Is Right Turn Warrant Met</b>	No	No Right Turn Lane Required		

**2-Lane Highway Right Turn Lane Warrant**  
( > 40 mph or 70 kph Posted Speed)



**Turn Lane Length Calculations**

<b>Entry Peak</b>	Design Speed	50	mph	
	Traffic Control	Unsignalized		
	Cycle Length	Unsignalized		
	Cycles Per Hour	60	Assume 60	
	Turn Lane Volume	54	VPH	
	Advancing Traffic	308	VPH	
	Right Turn Percentage	18%		
	Location Type	Through Road		
	Condition	B or C		
	Vehicles/Cycle	1		
	Turn Lane Length	See Column to Right	225	* Turn Lane Length includes 50 ft diverging taper
<b>Exit Peak</b>	Design Speed	50	mph	
	Traffic Control	Unsignalized		
	Cycle Length	Unsignalized		
	Cycles Per Hour	60	Assume 60	
	Turn Lane Volume	0	VPH	
	Advancing Traffic	97	VPH	
	Right Turn Percentage	0%		
	Location Type	Through Road		
	Condition	B		
	Vehicles/Cycle	1		
	Turn Lane Length	225		* Turn Lane Length includes 50 ft diverging taper
<b>Is Right Turn Warrant Met</b>		No	No Right Turn Lane Required	

# Attachment E

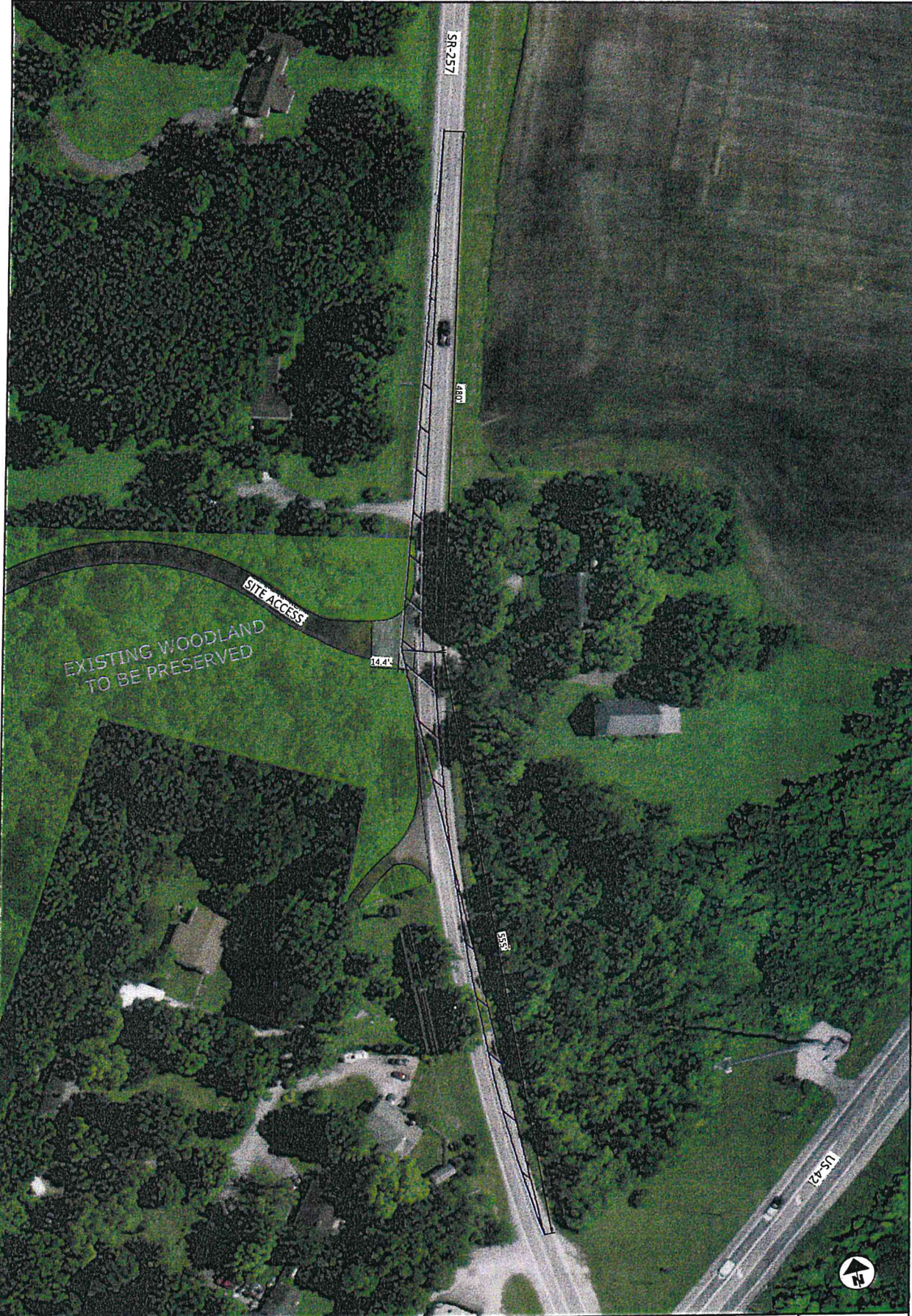
## Sight Distance Exhibit





STALLION RANCH TRAFFIC STUDY

MODEL: Sheet 1 PAPER SIZE: 34x22 (in.) DATE: 6/19/2024 TIME: 7:42:48 AM USER: lyaies  
P:\TRA\14124007 - Stallion Ranch Traffic Study\analysis\Light Distance\Basemap.dgn



14.4'

EXISTING WOODLAND  
TO BE PRESERVED

SR-257

E551

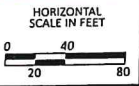
E551

US-421



DESIGN AGENCY	CARPENTER MARTY
DATE	6/19/2024
PROJECT	0
SHEET	1
TOTAL	1

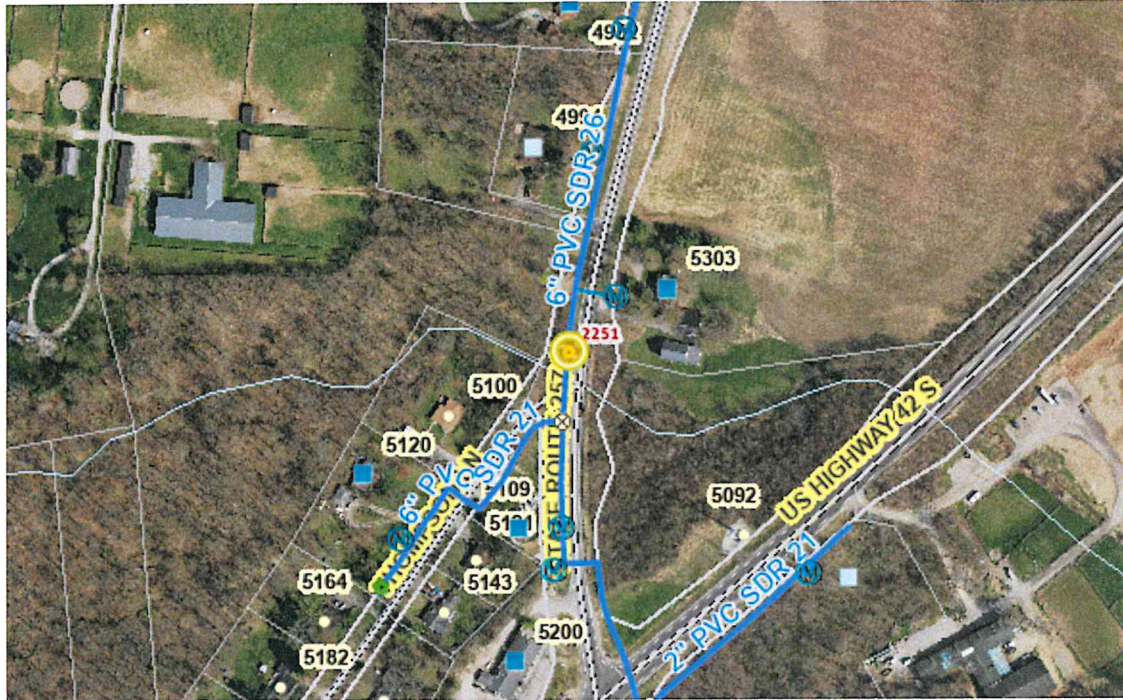
EMERALD FARMS TRAFFIC STUDY  
SR-257 & SITE ACCESS SIGHT DISTANCE EXHIBIT



# Del-Co Flow Test Report



6658 Olentangy River Rd  
Delaware, OH 43015  
(740) 548-7746 Office  
(740) 549-1149 Fax



**Date of Test:** 7/3/2024  
**Time of Test:** 2:24 PM  
**Tester 1:** Chris Hoffman  
**Tester 2:** Gregg Frentsos

**Residual Hydrant:** 6781  
**Residual Hyd Elev:** 862'  
**Test Hydrant:** 2251  
**Test Hyd Elev:** 896'  
**Approx Dist  
Between Hydrants:** 1,244'  
**Water Source  
(MPRV, Tank, Etc.):**

## Test Results

**Nozzle Coefficient:** 0.9  
**Measured Flow Rate:** 530 GPM  
**Static Pressure:** 95 PSI  
**Residual Pressure:** 28 PSI  
**Calculated Flow at 20 PSI:** 563.29 GPM

## Comments:

DISCLAIMER: The test results shown above represent the hydraulic conditions at the date and time the test was conducted. These results may be different at other times based on current tank levels and the intermittent operation of booster stations. Del-Co Water provides this data as a courtesy to interested parties and fire departments for water system planning purposes. This test result data should not be used for the final sizing or design of fire suppression systems.