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.

6612 Singletree Drive Columbus, Ohio 43229 ▪ 614.656.2424 ▪ www.cmtran.com

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 or 614.656.2429 anytime.

Sincerely,

Gina Balsamo, PE, PTOE
Project Manager
Carpenter Marty Transportation

Attachment A
Site Plan

CARPENTER MARTY transportation

Attachment A

Legend

Lot Boundaries

- Other Lot Lines
- Area Subject to PCD Rezoning
- FR-1 Lot Area
- +/- 36.83 acres
- Road Centerline

+/- 5.01 acres

+/- 36.83 acres

947.68'
S 88°01'56" E

194.89'
S 87°22'05" E

340.17'
S 64°31'08" E

199.74'
N 02°42'39" E

27.54'

217.76
S 61°51'44" E

N 61°51'44" W

120.09'
S 75°47'14" E

N 75°47'14" W

129.81'
S 87°23'51" E

S 87°23'51" E

102.80'
S 80°37'57" E

N 78°33'27" E

S 16°11'15" W

242.85'
N 07°06'57" E

289.73'
S 04°07'16" W

491.94'
S 85°59'03" E

46.86'

262.46'
S 04°00'57" W

426.80'
S 73°36'00" E

N 03°31'30" W

1,194.55'

R=1,909.86'

239.50'
N 62°21'49" W

337.89'

129.17'
S 24°20'44" E

99.75'
S 88°57'50" W

S 09°35'29" W

880.73'
S 81°29'04" W

N 04°15'25" W

570.55'

521.10'
S 30°49'14" W

423.95'
S 36°16'15" W

STATE ROUTE 257 S

THOMPSON LN

DUBLIN ROAD

US HIGHWAY 42 S

VICINITY MAP (NOT TO SCALE)

SITE

0 100' 200' 300' 400'

NORTH

SITE INFORMATION
4910 State Route 257 South, Delaware, OH 43015 (+/- 41.84 acres)
Concord Township, Delaware County, State of Ohio
Parcel Nos. 500-320-02-016-000 & 500-320-02-017-000

PROJECT NAME
Emerald Farm

CLIENT
Avasar LLC, Chanakya Gandhi & Arindam Guha
970 Dearborn Dr., Worthington, OH 43085

PREPARED BY
Plan 4 Land

Plan 4 Land, LLC, Joe Clase, AICP, Principal
1 S. Harrison St., P.O. Box 306, Ashley, OH 43003
(740) 413-4084 | joe@plan4land.net | www.plan4land.net

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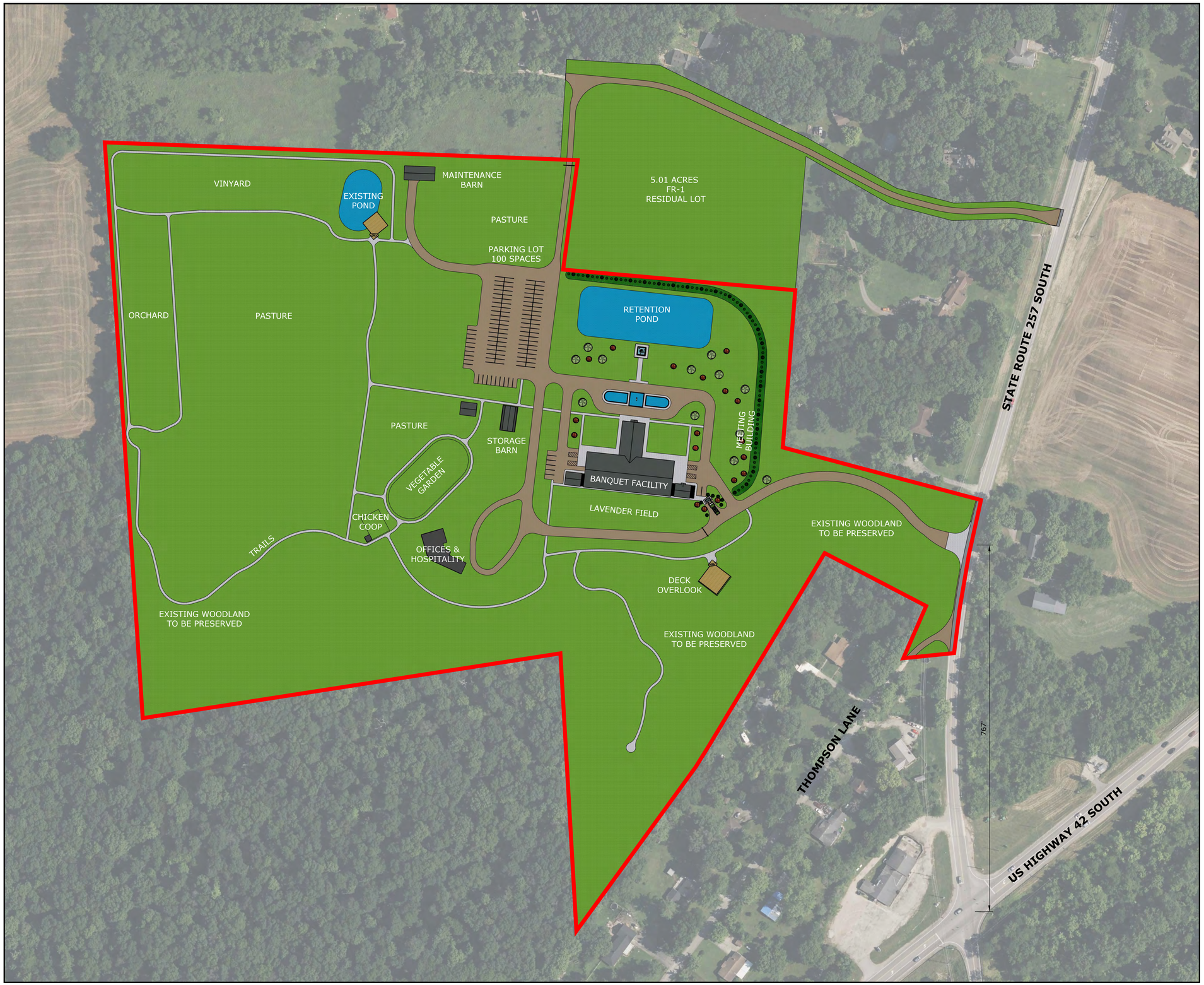
PRINTED
June 18, 2024

Emerald Farm

REZONING BOUNDARY

01 / 06



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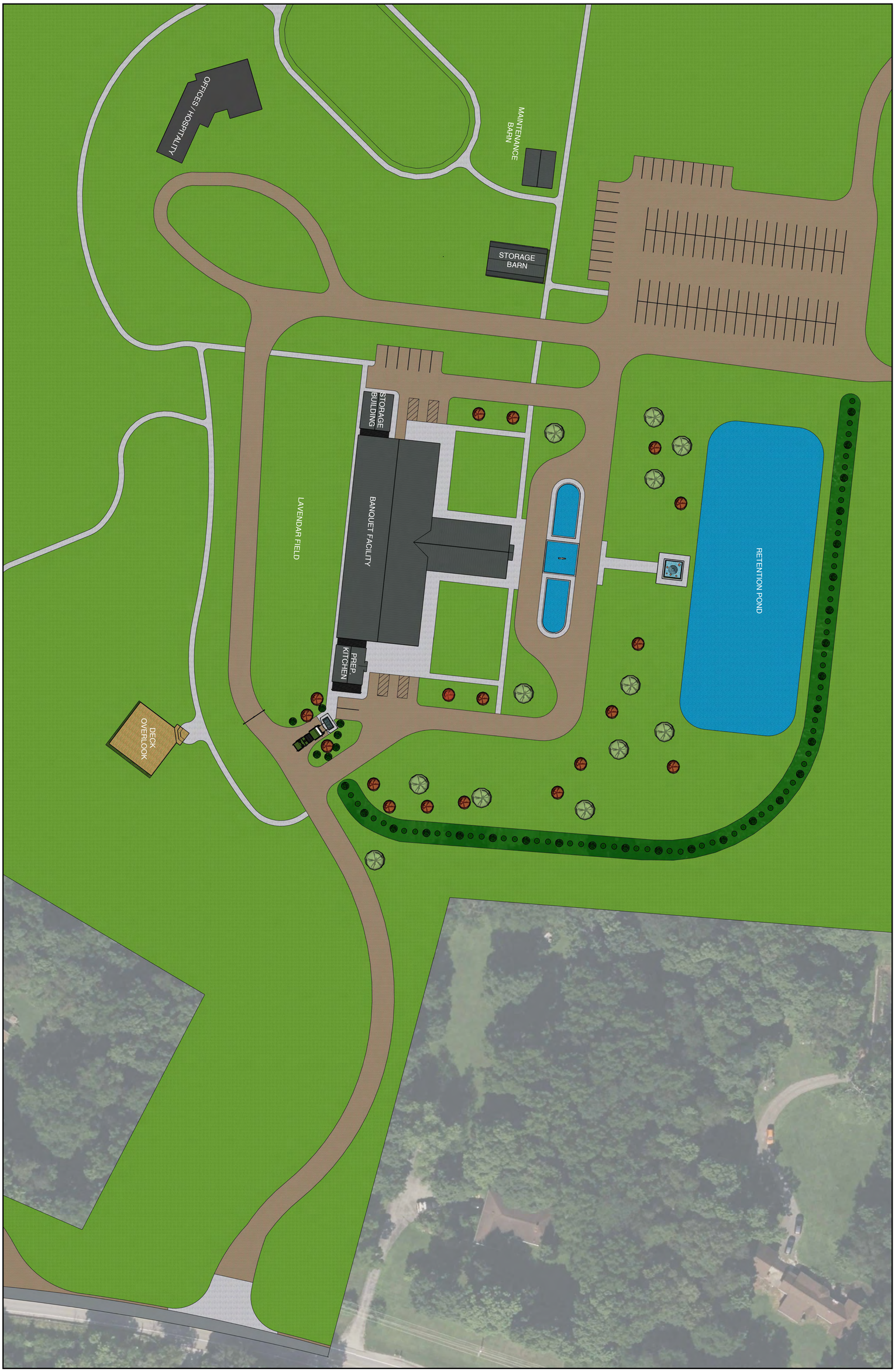
Emerald Farm

SITE PLAN

NORTH

02 / 06



A4 of 7

03 / 06

Emerald Farm

SITE PLAN - DETAIL

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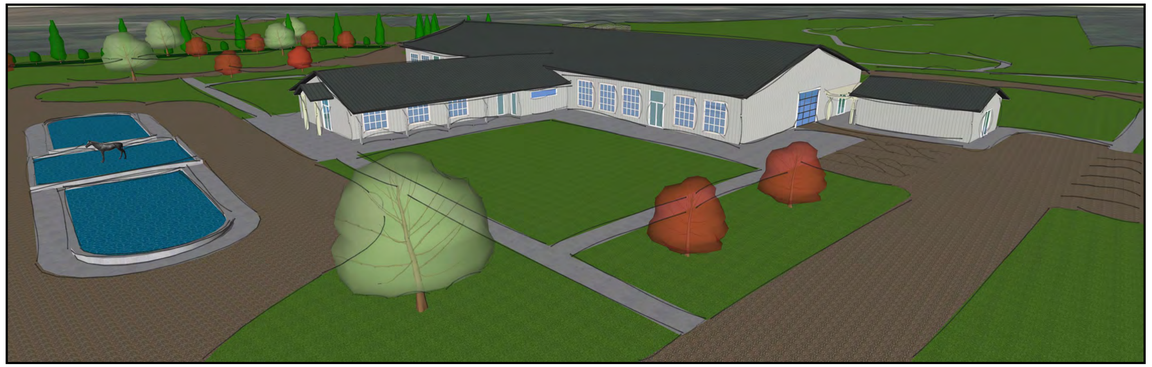
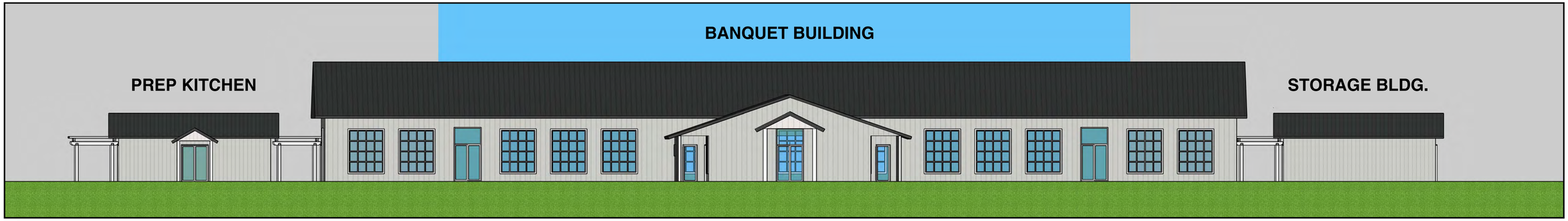
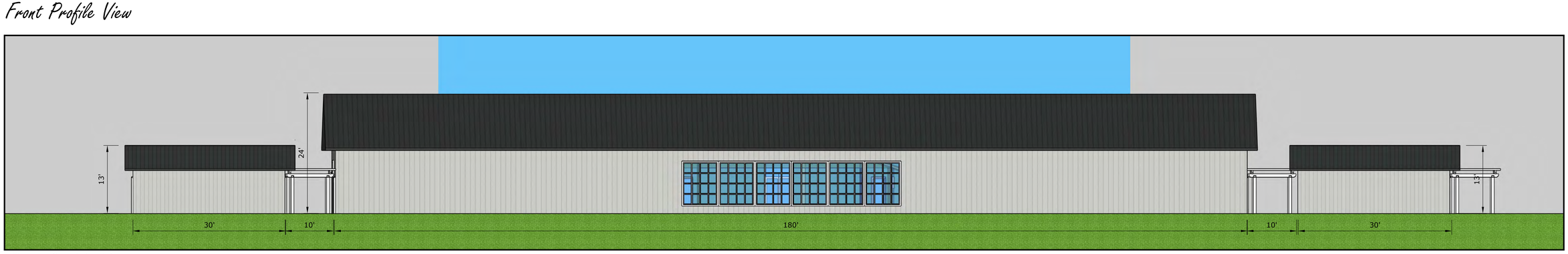


View of Entrance to Main Facility

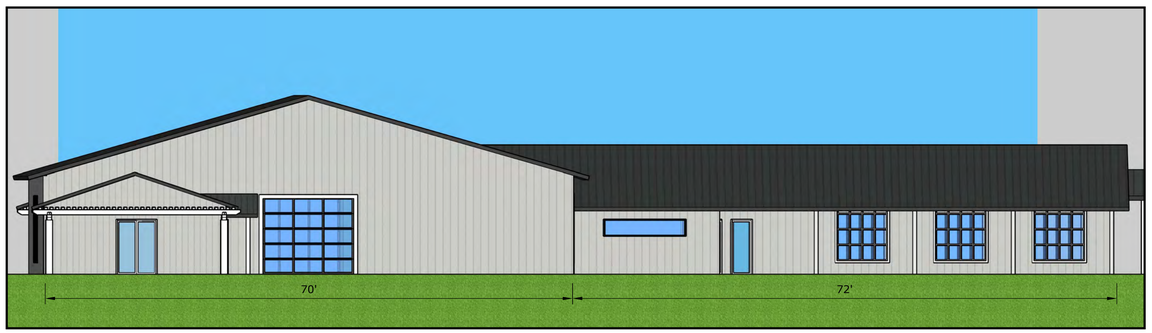
View of Rear of Main Facility



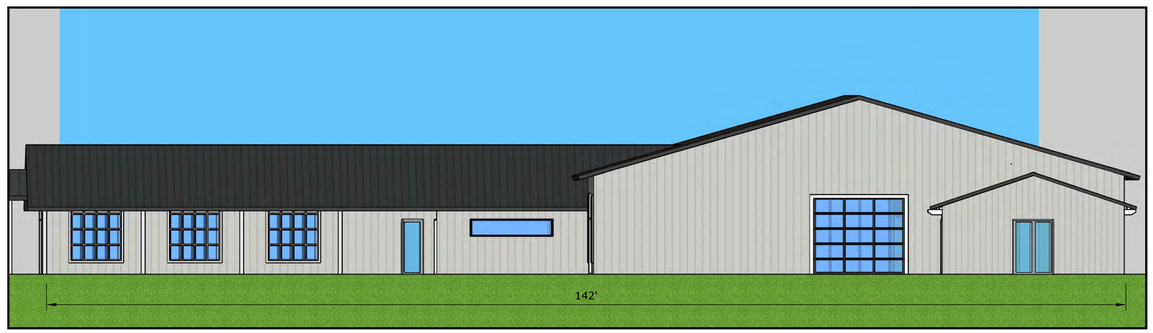
Front Profile View



Rear Profile View



Left Profile View



Right Profile View

0 40' 80' 120' 160'

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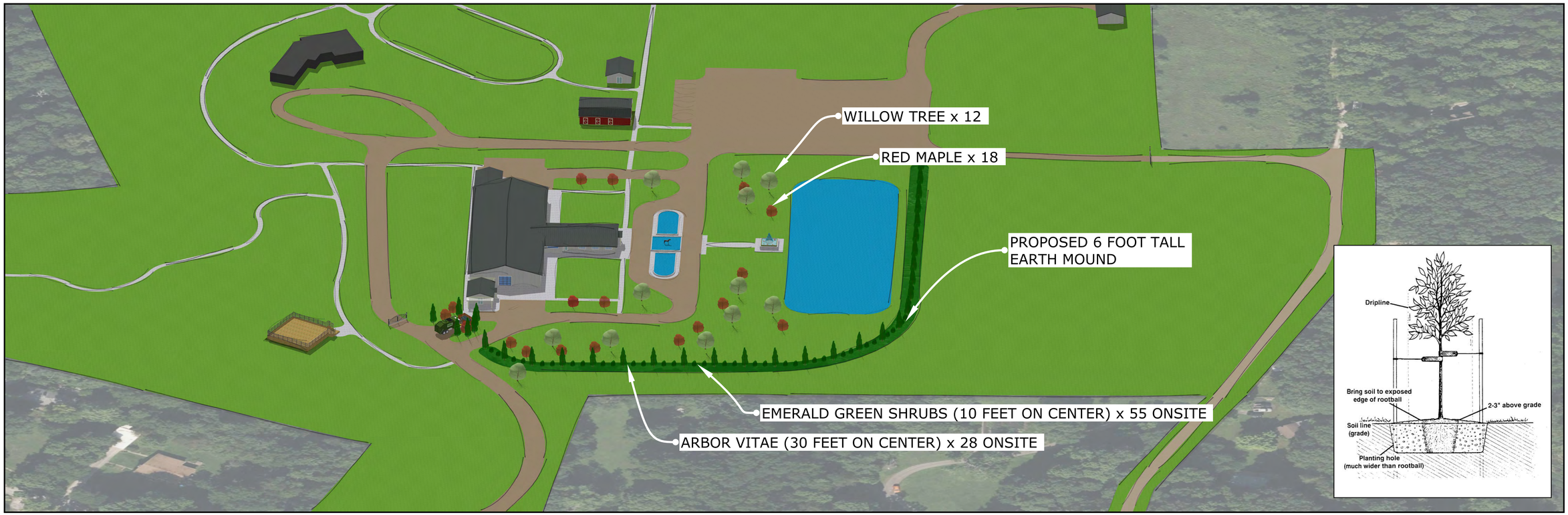
Emerald Farm
MAIN BUILDING

NORTH

04 / 06



OAKLAND NURSERIES — If you haven't been to Oakland Nursery, you simply haven't been to a nursery!

PLANT FINDER

Emerald Triumph Viburnum

Viburnum 'Emerald Triumph'

Height: 7 feet

Spread: 7 feet

Sunlight: ○ ◐

Hardiness Zone: 4a

Description:

An outstanding hybrid garden shrub, featuring flat-topped clusters of creamy white flowers in spring and fruit which starts orange-red changing to black in fall; rounded and compact, tough and adaptable, a great specimen for the shrub garden

Emerald Triumph Viburnum
Photo courtesy of NetPS Plant Finder

Ornamental Features

Emerald Triumph Viburnum features showy creamy white flat-top flowers at the ends of the branches in mid spring. The red fruits are held in abundance in spectacular clusters from late summer to late fall. It has dark green deciduous foliage. The fuzzy pointy leaves turn an outstanding burgundy in the fall.

Emerald Triumph Viburnum in bloom
Photo courtesy of NetPS Plant Finder

Landscape Attributes

Emerald Triumph Viburnum is a multi-stemmed deciduous shrub with a more or less rounded form. Its average texture blends into the landscape, but can be balanced by one or two finer or coarser trees or shrubs for an effective composition.

This is a relatively low maintenance shrub, and should only be pruned after flowering to avoid removing any of the current season's flowers. It is a good choice for attracting birds to your yard, but is not particularly attractive to deer who tend to leave it alone in favor of tastier treats. It has no significant negative characteristics.

Emerald Triumph Viburnum is recommended for the following landscape applications;

Columbus Garden Center - 1156 Oakland Park Avenue, Columbus, OH 43224-3317 Phone: 614-268-3511 Fax: 614-784-7700
Delaware Garden Center - 25 Kilbourne Road, Delaware, OH 43015 Phone: 740-548-6633 Fax: 740-363-2091
Dublin Garden Center - 4261 West Dublin-Granville Road, Dublin, Ohio 43017 Phone: 614-874-2400 Fax: 614-874-2420
New Albany Garden Center - 5211 Johnstown Rd, New Albany, Ohio 43054 Phone: 614-917-1020 Fax: 614-917-1023

1. EMERALD TRIUMPH VIBURNUM x 20 PLANTS ON PCD LOT + 60 OFF-LOT ON EARTH MOUND (1 GALLON POTS)

OAKLAND NURSERIES — If you haven't been to Oakland Nursery, you simply haven't been to a nursery!

PLANT FINDER

Arborvitae

Thuja occidentalis

Height: 30 feet

Spread: 20 feet

Sunlight: ○ ◐

Hardiness Zone: 2b

Other Names: Eastern White Cedar

Description:

An extremely hardy and rugged northern evergreen; the species is typically a tall, pyramidal tree with reddish peeling bark, very attractive, however foliage tends to yellow in winter; numerous and diverse cultivars are available

Arborvitae
Photo courtesy of NetPS Plant Finder

Ornamental Features

Arborvitae is primarily valued in the landscape for its distinctively pyramidal habit of growth. It has rich green evergreen foliage. The scale-like sprays of foliage remain green throughout the winter. The shaggy antique red bark adds an interesting dimension to the landscape.

Landscape Attributes

Arborvitae is a dense evergreen tree with a strong central leader and a distinctive and refined pyramidal form. Its relatively fine texture sets it apart from other landscape plants with less refined foliage.

This is a relatively low maintenance tree. When pruning is necessary, it is recommended to only trim back the new growth of the current season, other than to remove any dieback. It has no significant negative characteristics.

Arborvitae is recommended for the following landscape applications;

- Shade
- Vertical Accent
- Hedges/Screening

Planting & Growing

Arborvitae will grow to be about 30 feet tall at maturity, with a spread of 20 feet. It has a low canopy with a typical clearance of 2 feet from the ground, and should not be planted underneath power lines. It grows at a slow rate, and under ideal conditions can be expected to live for 50 years or more.

Columbus Garden Center - 1156 Oakland Park Avenue, Columbus, OH 43224-3317 Phone: 614-268-3511 Fax: 614-784-7700
Delaware Garden Center - 25 Kilbourne Road, Delaware, OH 43015 Phone: 740-548-6633 Fax: 740-363-2091
Dublin Garden Center - 4261 West Dublin-Granville Road, Dublin, Ohio 43017 Phone: 614-874-2400 Fax: 614-874-2420
New Albany Garden Center - 5211 Johnstown Rd, New Albany, Ohio 43054 Phone: 614-917-1020 Fax: 614-917-1023

2. ARBORVITAE x 20 PLANTS ON PCD LOT + 30 OFF-LOT ON EARTH MOUND AND PARKING SCREEN (5 FOOT HEIGHT)

OAKLAND NURSERIES — If you haven't been to Oakland Nursery, you simply haven't been to a nursery!

PLANT FINDER

Niobe Golden Weeping Willow

Salix alba 'Niobe'

Height: 50 feet

Spread: 50 feet

Sunlight: ○

Hardiness Zone: 2a

Description:

A picturesque specimen tree featuring gracefully weeping golden branches; stunning when overhanging water; needs plenty of wide open space to achieve its finest form at maturity; tends to drop branchlets, aggressive root system, so do not plant near homes

Niobe Golden Weeping Willow
Photo courtesy of NetPS Plant Finder

Ornamental Features

Niobe Golden Weeping Willow is primarily valued in the landscape for its highly ornamental weeping form. It has rich green deciduous foliage. The glossy narrow leaves turn yellow in fall. The furrowed brown bark and gold branches are extremely showy and add significant winter interest.

Landscape Attributes

Niobe Golden Weeping Willow is a dense deciduous tree with a rounded form and gracefully weeping branches. Its relatively fine texture sets it apart from other landscape plants with less refined foliage.

This is a high maintenance tree that will require regular care and upkeep, and is best pruned in late winter once the threat of extreme cold has passed. Gardeners should be aware of the following characteristic(s) that may warrant special consideration;

- Messy
- Invasive

Niobe Golden Weeping Willow is recommended for the following landscape applications;

- Accent

Planting & Growing

Niobe Golden Weeping Willow will grow to be about 50 feet tall at maturity, with a spread of 50 feet. It has a low canopy with a typical clearance of 1 foot from the ground, and should not be planted underneath power lines. It grows at a fast rate, and under ideal conditions can be expected to live for 50 years or more.

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3. NIOBE GOLDEN WEEPING WILLOW x 12 PLANTS ON PCD LOT AROUND VEHICULAR USE AREA (2 1/2 INCH DIAMETER)

OAKLAND NURSERIES — If you haven't been to Oakland Nursery, you simply haven't been to a nursery!

PLANT FINDER

Red Maple

Acer rubrum

Height: 50 feet

Spread: 40 feet

Sunlight: ○

Hardiness Zone: 3b

Other Names: Swamp Maple, Scarlet Maple

Description:

The tree that lights up New England yellow and red in fall; a great shade tree, but very intolerant of alkaline soils; fall color is not consistently red in the species, so the many named cultivars are often chosen

Red Maple in fall
Photo courtesy of NetPS Plant Finder

Ornamental Features

Red Maple features showy clusters of red flowers along the branches in early spring before the leaves. It has green deciduous foliage which emerges red in spring. The lobed leaves turn an outstanding red in the fall. It produces red samaras in late spring. The furrowed silver bark and brick red branches add an interesting dimension to the landscape.

Red Maple in fall
Photo courtesy of NetPS Plant Finder

Landscape Attributes

Red Maple is a deciduous tree with a shapely oval form. Its average texture blends into the landscape, but can be balanced by one or two finer or coarser trees or shrubs for an effective composition.

This is a relatively low maintenance tree, and should only be pruned in summer after the leaves have fully developed, as it may 'bleed' sap if pruned in late winter or early spring. It has no significant negative characteristics.

Red Maple is recommended for the following landscape applications;

- Accent
- Shade

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4. RED MAPLE x 18 PLANTS ON PCD LOT AROUND VEHICULAR USE AREA (2 1/2 INCH DIAMETER)

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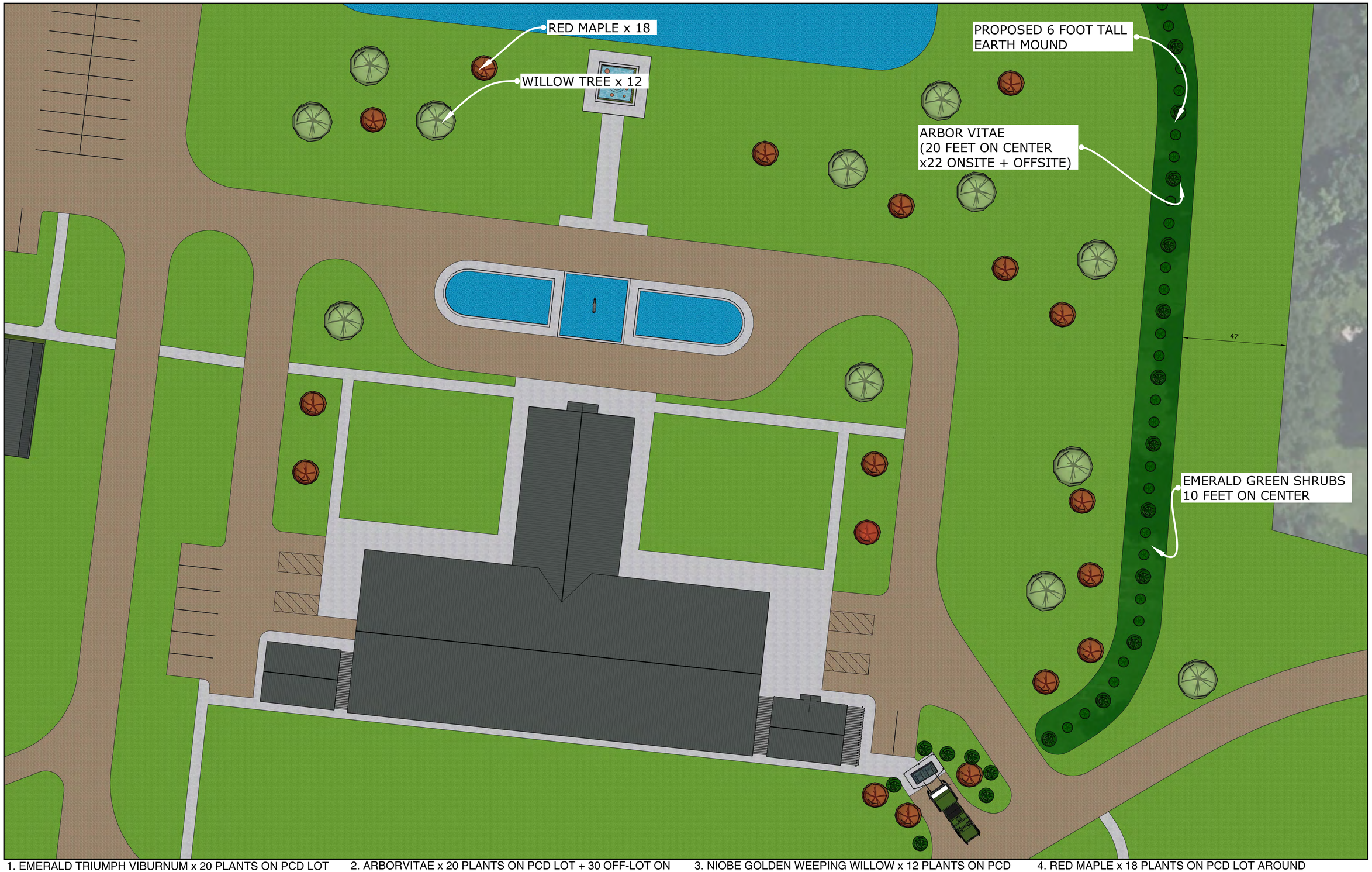
LANDSCAPE DETAILS

NORTH

05 / 06



1. EMERALD TRIUMPH VIBURNUM x 20 PLANTS ON PCD LOT + 60 OFF-LOT ON EARTH MOUND (1 GALLON POTS)

2. ARBORVITAE x 20 PLANTS ON PCD LOT + 30 OFF-LOT ON EARTH MOUND AND PARKING SCREEN (5 FOOT HEIGHT)

3. NIOBE GOLDEN WEEPING WILLOW x 12 PLANTS ON PCD LOT AROUND VEHICULAR USE AREA (2 1/2 INCH DIAMETER)

4. RED MAPLE x 18 PLANTS ON PCD LOT AROUND VEHICULAR USE AREA (2 1/2 INCH DIAMETER)

0 20' 40' 60' 80'

23-0050

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LANDSCAPE PLAN

NORTH

06 / 06

Attachment B
Count Data and Growth Rate Data

Attachment B

CARPENTER MARTY transportation

OHIO DEPARTMENT OF TRANSPORTATION

MS2

Transportation Data Management System

Volume Count Report

LOCATION INFO	
Location ID	6621_NB
Type	SPOT
Fnct'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	

INTERVAL:15-MIN

Time	15-min Interval 1st	2nd	3rd	4th	Hourly Count
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
Total					1,847
AM Peak					10:15-11:15 125
PM Peak					15:15-16:15 240

OHIO DEPARTMENT OF TRANSPORTATION

MS2

Transportation Data Management System

Volume Count Report

LOCATION INFO	
Location ID	6621_SB
Type	SPOT
Fnct'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	

INTERVAL:15-MIN

Time	15-min Interval 1st	2nd	3rd	4th	Hourly Count
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
Total					1,862
AM Peak					06:45-07:45 225
PM Peak					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
111 Liberty Street, Suite 100 | Columbus, OH 43215

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. 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

Attachment C
Volume Calculations

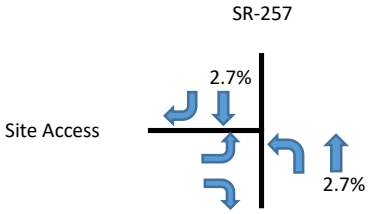
Attachment C

CARPENTER MARTY transportation

CARPENTER MARTY transportation	Year	Period	Scenario	Plate
			Growth Rates	

^

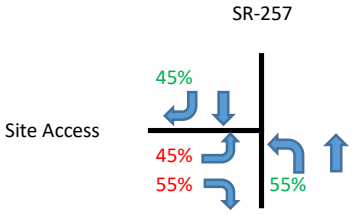
N



CARPENTER MARTY transportation	Year	Period	Scenario	Plate
			Non-Pass-By Distribution	

^

N



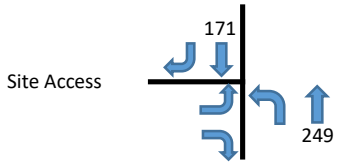
Emerald Farms Traffic Study
Traffic Volume Calculations

CARPENTER MARTY transportation	Year	Period	Scenario	Plate
	2023	Entry*	Count	

^
N

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

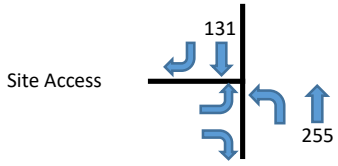
SR-257
(2023 Thursday)



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

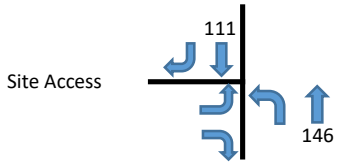
The 2021 segment data was grown to 2023 segment data using growth rates obtained from ODOT Traffic Forcasting Management System.

SR-257
(2023 Friday)



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

SR-257
(2023 Saturday)



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

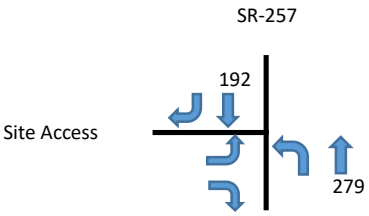
Since the 2023 Thursday segment data shows the highest combined volumes along SR-257 during the Entry Peak (4:15-5:15 PM), that data was utilized to develop OY and HY volumes for this project.

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

^

N

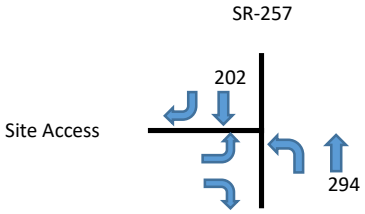
Peak Hour to Design Hour Factor 1.12



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

^

N

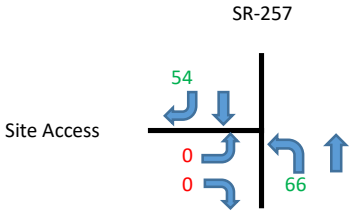


CARPENTER MARTY transportation	Year	Period	Scenario	Plate
	2025	Entry Peak	Non-Pass-By Trips	C1

^

N

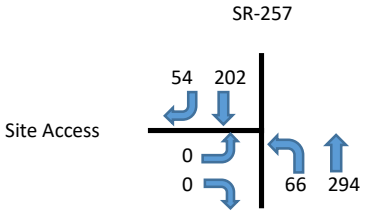
Entry	120
Exit	0



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

^

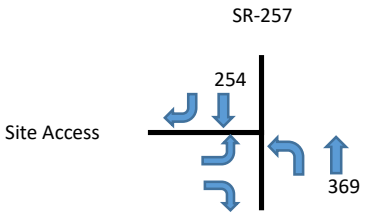
N



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

^

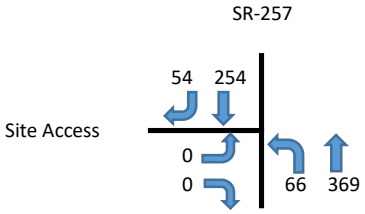
N



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

^

N

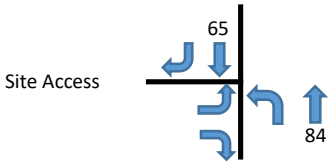


CARPENTER MARTY transportation	Year	Period	Scenario	Plate
	2023	Exit*	Count	

^
N

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

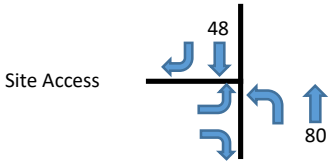
SR-257
(2023 Thursday)



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

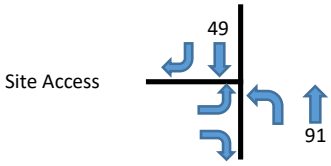
The 2021 segment data was grown to 2023 segment data using growth rates obtained from ODOT Traffic Forcasting Management System.

SR-257
(2023 Friday)



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

SR-257
(2023 Saturday)



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

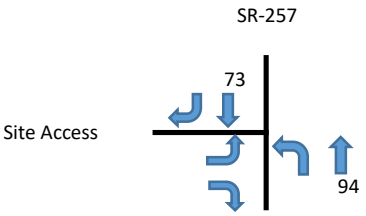
Since the 2023 Thursday segment data shows the highest volumes along SR-257 during the Exit Peak (7-8 PM), that data was utilized to develop OY and HY volumes for this project.

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

^

N

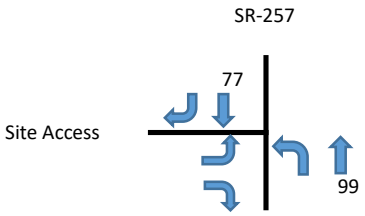
Peak Hour to Design Hour Factor 1.12



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

^

N

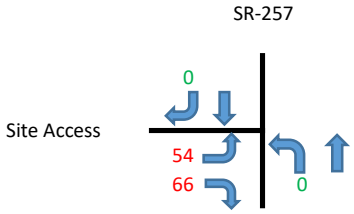


CARPENTER MARTY transportation	Year	Period	Scenario	Plate
	2025	Exit Peak	Non-Pass-By Trips	C2

^
N

Entry	0
Exit	120

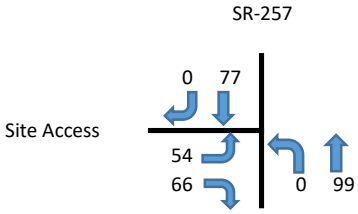
*For the purposes of this analysis, it is assumed that all exiting traffic occurs within the peak hour. This is the most conservative approach, and would be likely if an event with no reception is held at this venue.



CARPENTER MARTY transportation	Year	Period	Scenario	Plate
	2025	Exit Peak	Build	D2 = B2 + C2

^

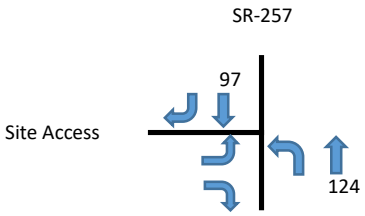
N



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

^

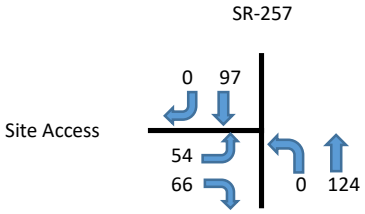
N



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

^

N



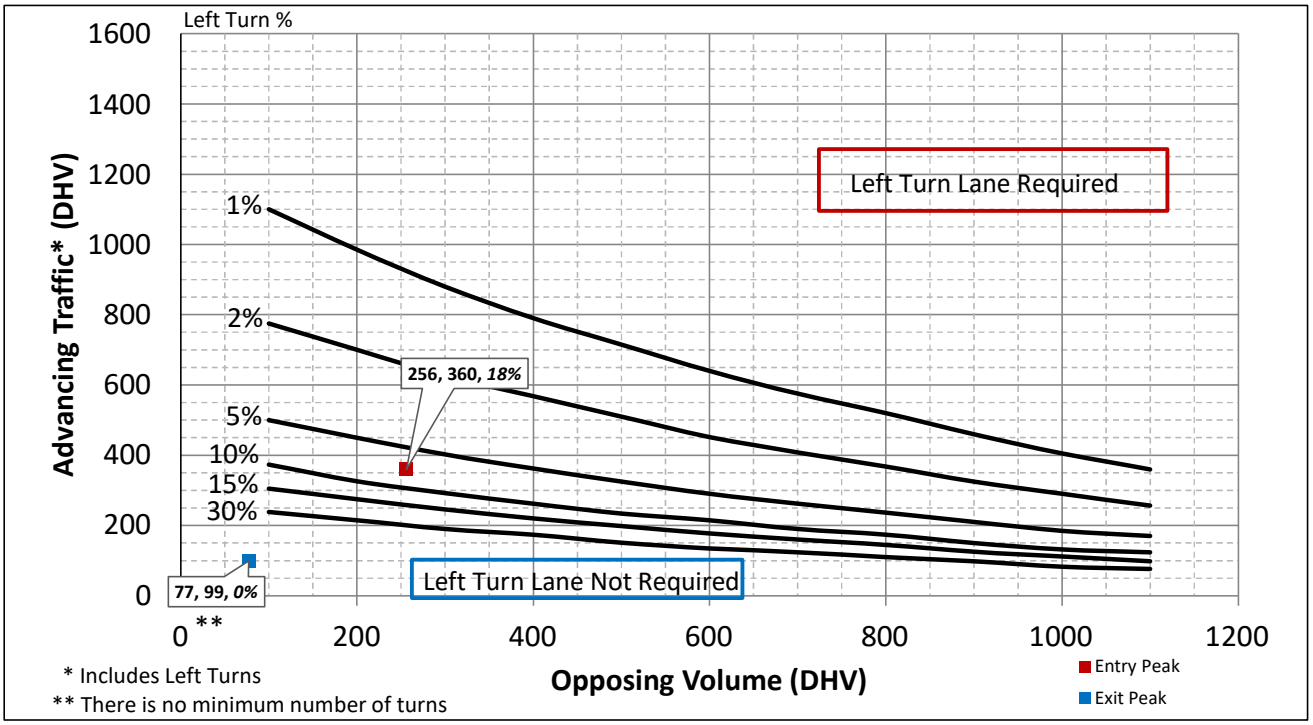
Attachment D
Turn Lane Warrant Analysis

Attachment D

CARPENTER MARTY transportation

2-Lane Highway Left Turn Lane Warrant

(> 40 mph or 70 kph Posted Speed)



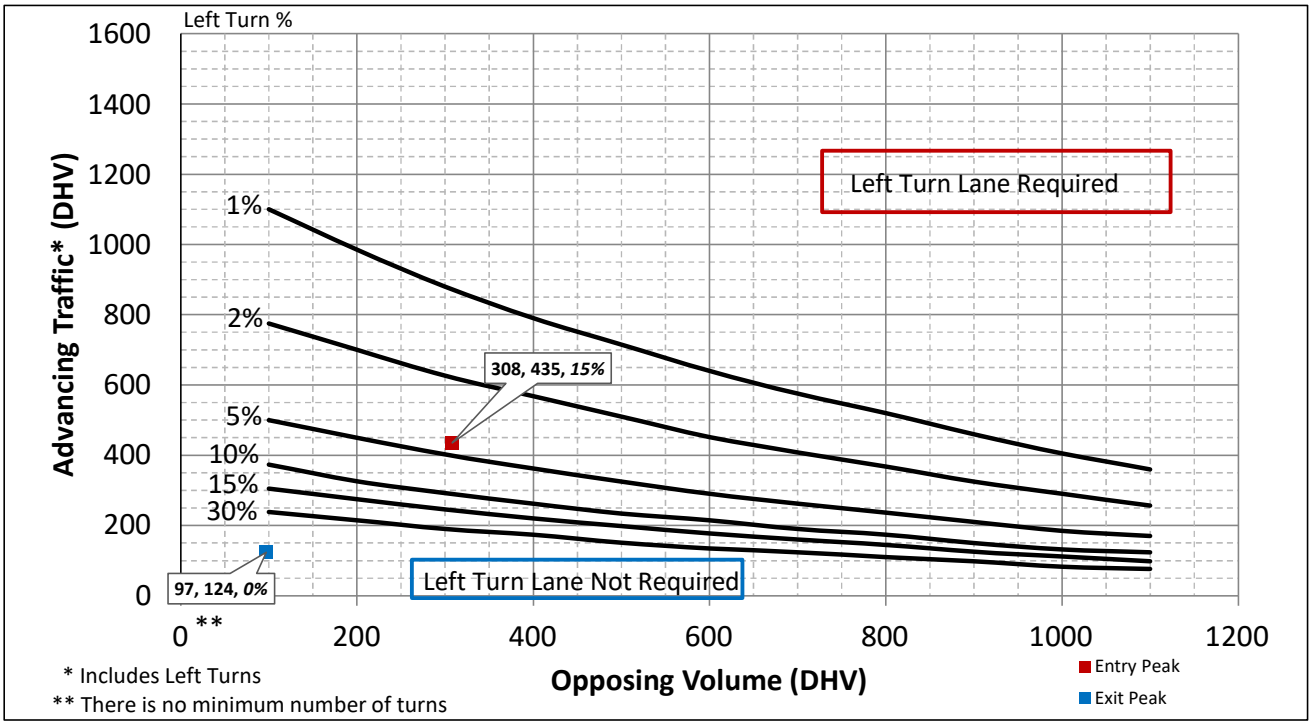
* Includes Left Turns
** There is no minimum number of turns

Turn Lane Length Calculations

Entry Peak	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	* Turn Lane Length includes 50 ft diverging taper
	Offset Width	12		
	Approach Taper	600		
Exit Peak	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		* Turn Lane Length includes 50 ft diverging taper
	Offset Width	12		
	Approach Taper	600		
Is Left Turn Warrant Met		Yes	**See Above**	

2-Lane Highway Left Turn Lane Warrant

(> 40 mph or 70 kph Posted Speed)

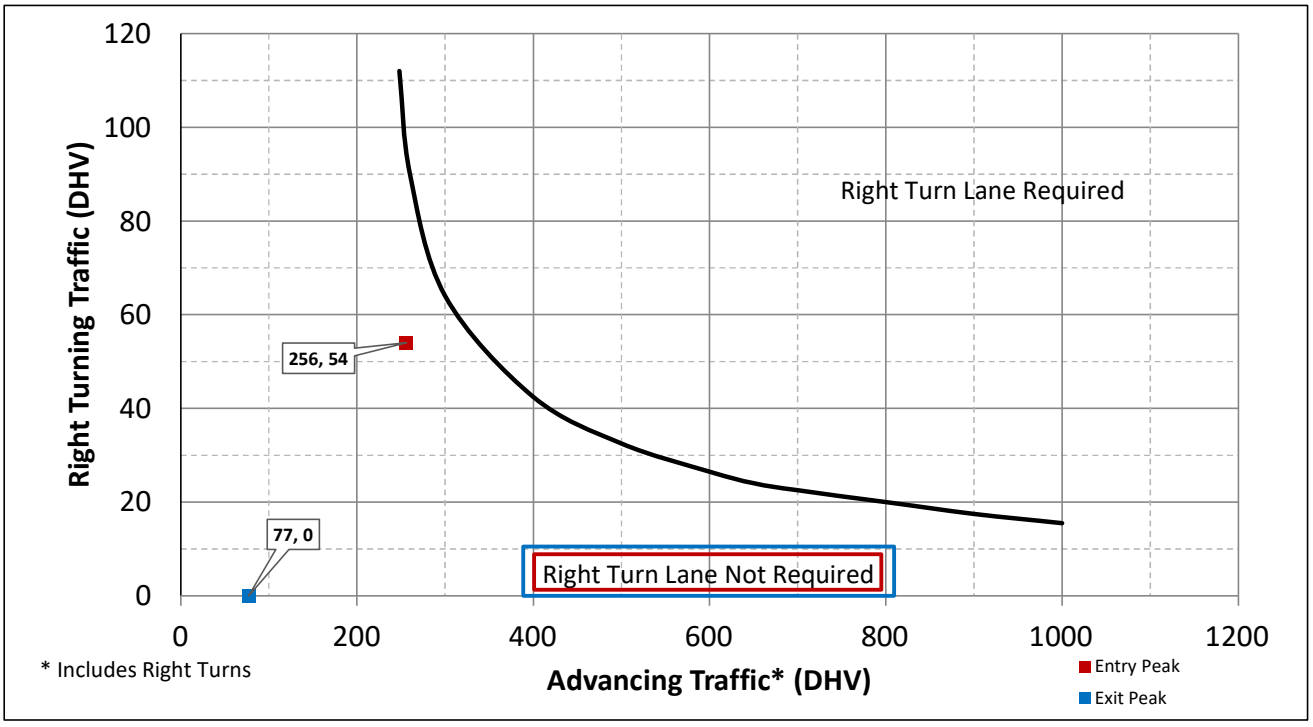


Turn Lane Length Calculations

Entry Peak	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		
Exit Peak	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		
Is Left Turn Warrant Met		Yes	**See Above**	

2-Lane Highway Right Turn Lane Warrant

(> 40 mph or 70 kph Posted Speed)



Turn Lane Length Calculations

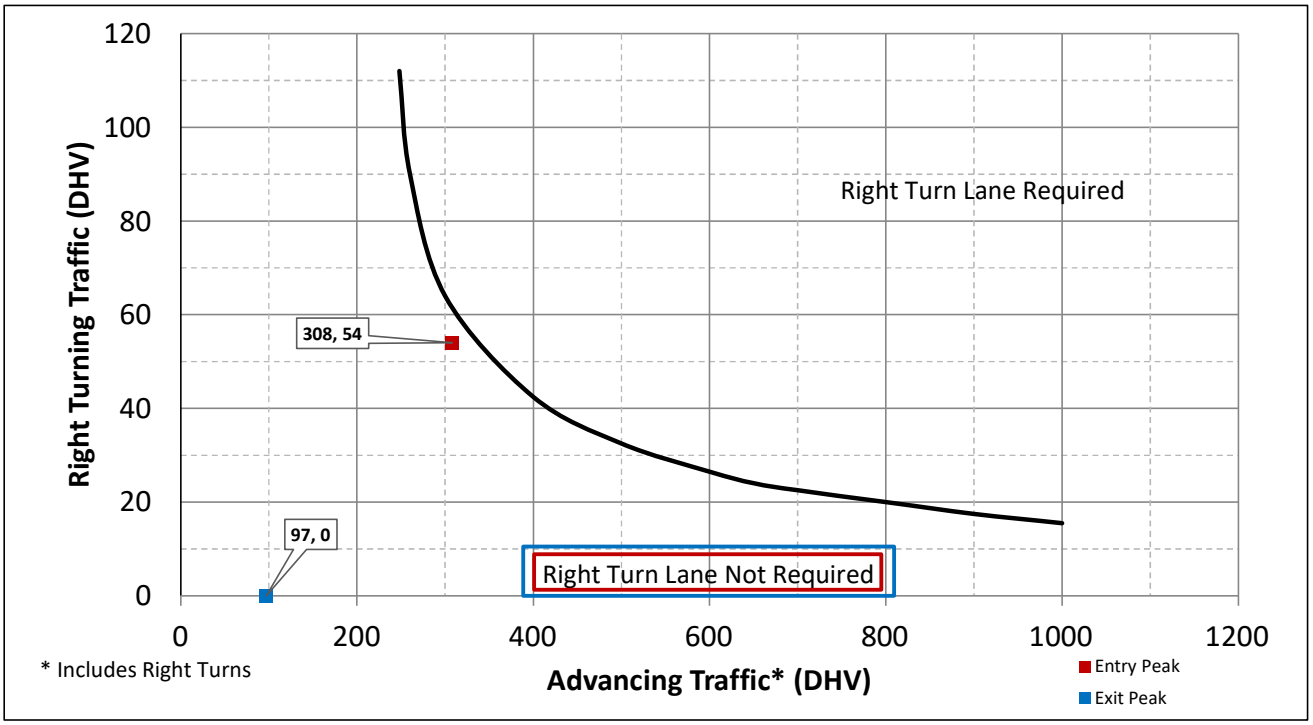
Entry Peak	Design Speed	50	mph
	Traffic Control	Unsignalized	
	Cycle Length	Unsignalized	
	Cycles Per Hour	60	*Assume 60*
	Turn Lane Volume	54	VPH
	Advancing Traffic	256	VPH
	Right Turn Percentage	21%	
	Location Type	Through Road	
	Condition	B or C	
	Vehicles/Cycle	1	
	Turn Lane Length	See Column to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

** Turn Lane Length includes 50 ft diverging taper*

** Turn Lane Length includes 50 ft diverging taper*

2-Lane Highway Right Turn Lane Warrant

(> 40 mph or 70 kph Posted Speed)



Turn Lane Length Calculations

Entry Peak	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
Exit Peak	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
Is Right Turn Warrant Met		No	No Right Turn Lane Required	

Attachment E
Sight Distance Exhibit

CARPENTER MARTY transportation

Attachment E

STALLION RANCH TRAFFIC STUDY

MODEL: Sheet 1 PAPERSIZE: 34x22 (in.) DATE: 6/19/2024 TIME: 7:42:48 AM USER: lyates
P:\TRA\24\24007 - Stallion Ranch Traffic Study\Analysis\Sight Distance\Basemap.dgn

E2 of 2

SHEET P.1 / TOTAL 1	PROJECT ID 0	REVIEWER XXX MM-DD-YY	DESIGNER LRY	DESIGN AGENCY CARPENTER MARTY transportation

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

HORIZONTAL SCALE IN FEET
0 40
20 80