



# Traffic Impact Statement

---

## O'Donnell Nursery Planned Unit Development Amendment (PUDA)

Collier County, Florida  
10/19/2017

Prepared for:

Penninsula Engineering  
2600 Golden Gate Parkway  
Bonita Springs, FL 34105  
Phone: 239-403-6700

Prepared by:

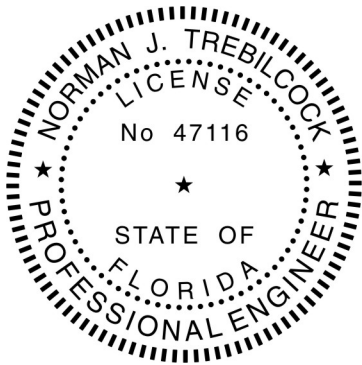
Trebilcock Consulting Solutions, PA  
1205 Piper Boulevard, Suite 202  
Naples, FL 34110  
Phone: 239-566-9551  
Email: ntrebilcock@trebilcock.biz

Collier County Transportation Methodology Fee – \$500.00 Fee  
Collier County Transportation Review Fee – Small Scale Study – No Fee

## Statement of Certification

---

I certify that this Traffic Impact Statement has been prepared by me or under my immediate supervision and that I have experience and training in the field of Traffic and Transportation Engineering.



This item has been electronically signed and sealed by Norman J. Trebilcock, PE using a *SHA-1* authentication code.

Printed copies of this document are not considered signed and sealed, and the *SHA-1* authentication code must be verified on any electronic copies.

---

Norman J. Trebilcock, AICP, P.E.  
FL Registration No. 47116  
Trebilcock Consulting Solutions, PA  
1205 Piper Boulevard, Suite 202  
Naples, FL 34110  
Company Cert. of Auth. No. 27796

## Table of Contents

Project Description .....	4
Trip Generation .....	5
Trip Distribution and Assignment .....	6
Background Traffic.....	8
Existing and Future Roadway Network.....	9
Project Impacts to Area Roadway Network-Link Analysis .....	9
Site Access Turn Lane Analysis.....	10
Improvement Analysis .....	12
Mitigation of Impact .....	12

### APPENDICES

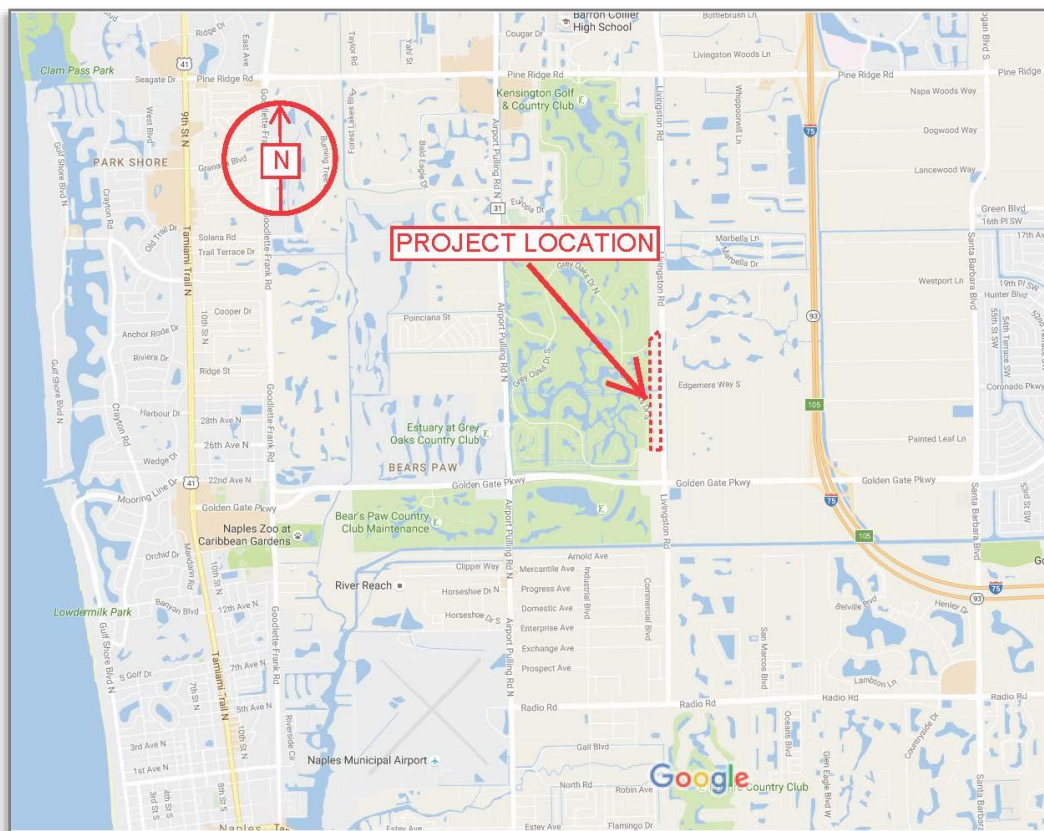
Appendix A: Project Master Site Plan .....	13
Appendix B: Grey Oaks DRI – Conceptual Roadway Master Plan .....	15
Appendix C: Trip Generation Calculations ITE 9th Edition .....	17
Appendix D: Turning Movements Exhibit .....	19

## Project Description

The O'Donnell Nursery project is a proposed wholesale nursery development located on the west side of Livingston Road approximately 1,400 feet north of the intersection of Livingston Road and Golden Gate Parkway and directly south of the intersection of Livingston Road and Grey Oaks Drive East, and is generally located within Section 24/25, Township 49 South, Range 25 East, in Collier County, Florida.

Refer to **Fig. 1 – Project Location Map**, which follows and **Appendix A: Project Master Site Plan**.

**Fig. 1 – Project Location Map**



The property is currently being used for this use the desire is to more formally establish the use. The subject site consists of 2 parcels totaling approximately 31 acres in total size, is currently zoned as Planned Unit Development (PUD) and is a part of the Grey Oaks Development of Regional Impact (DRI). As allowed by the PUD commercial permitted uses, the project proposes to develop this property into a wholesale nursery and support for a commercial landscaping company. The project plans to eliminate 2 commercial access locations (approved within the Grey Oaks DRI Master Plan); one from Golden Gate Parkway and one from Airport Road, and

proposes 2 new driveway access locations from Livingston Road to serve the proposed O'Donnell Nursery project. For details, see **Appendix B: Grey Oaks DRI – Conceptual Roadway Master Plan**.

For purposes of this evaluation, the project build-out year is assumed to be consistent with the Collier County 2022 planning horizon.

The project provides a highest and best use scenario with respect to the project's proposed trip generation. The development program is illustrated in **Table 1**.

**Table 1**  
**Development Program**

Development	ITE Land Use	ITE Land Use Code	Total Size
O'Donnell Nursery	Nursery – Wholesale	818	31 acres

Connection to subject project is proposed via one directional left-in/right-in/right-out access onto southbound Livingston Road (north access) and one right-out only access onto southbound Livingston Road (south access).

## Trip Generation

The project's site trip generation is based on the Institute of Transportation Engineers (ITE) Trip Generation Manual, 9<sup>th</sup> Edition. The software program OTISS – Online Traffic Impact Study Software (most current version) is used to create the raw unadjusted trip generation for the project. The ITE rates are used for the trip generation calculations. Directional distribution was not available for PM. This report utilizes a 50%/50% distribution for PM peak hour traffic.

Based on ITE recommendations, no reductions for internal capture or pass-by trips have been taken into consideration.

The proposed PUDA development trip generation is illustrated in **Table 2**. Detailed calculations can be found in **Appendix C: Trip Generation Calculations ITE 9<sup>th</sup> Edition**.

**Table 2**  
**Trip Generation (Proposed PUDA Development) - Average Weekday**

Development		24 Hour Two-Way Volume	AM Peak Hour			PM Peak Hour		
Land Use	Size		Enter	Exit	Total	Enter	Exit	Total
Nursery - Wholesale	31 acres	605	5	6	11	8	8	16

In agreement with the Collier County Traffic Impact Study (TIS) guidelines, significantly impacted roadways are identified based on the proposed project highest peak hour trip generation (net new total) and consistent with the peak hour of the adjacent street traffic. Based on the information contained in Collier County 2016 Annual Update and Inventory Report (AUIR), the peak hour for the adjacent roadway network is PM peak hour.

For the purpose of this TIS, the surrounding roadway network link concurrency analysis is analyzed based on projected PM peak hour Net External traffic generated by the proposed PUDA project. The site access turn lane analysis is calculated based on the Total External trips during the weekday AM and PM peak hour (as shown in **Table 2**).

## Trip Distribution and Assignment

The new traffic generated by the O'Donnell Nursery project is assigned to the adjacent roadways using the knowledge of the area and as coordinated with Collier County Transportation Planning Staff.

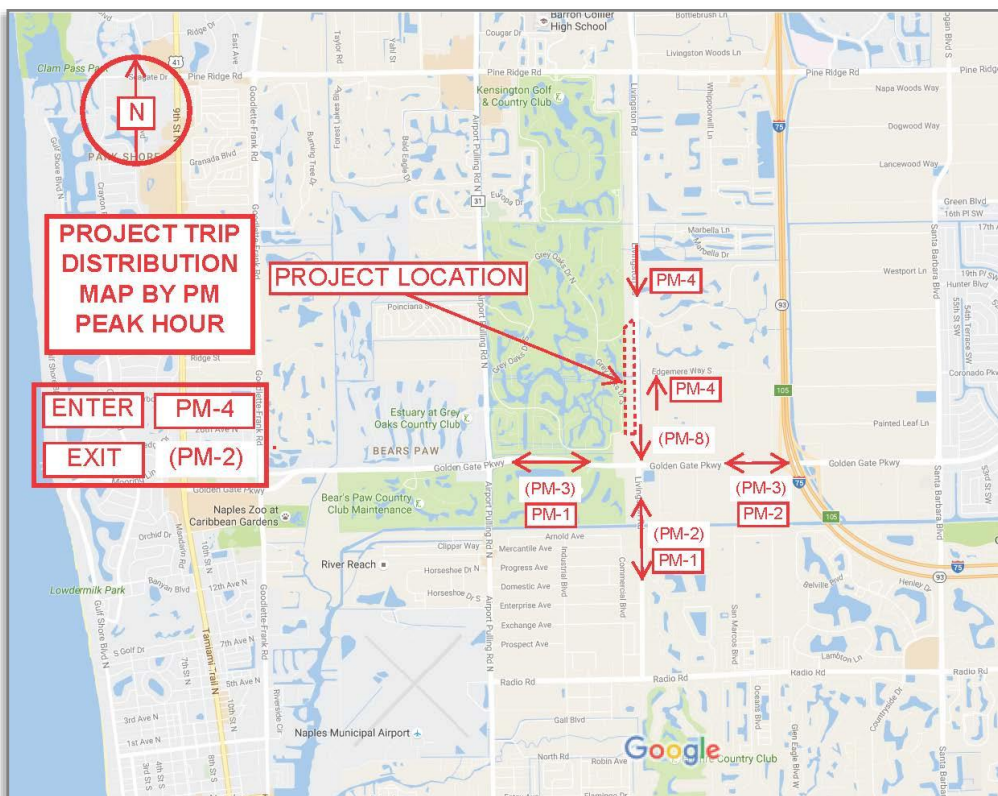
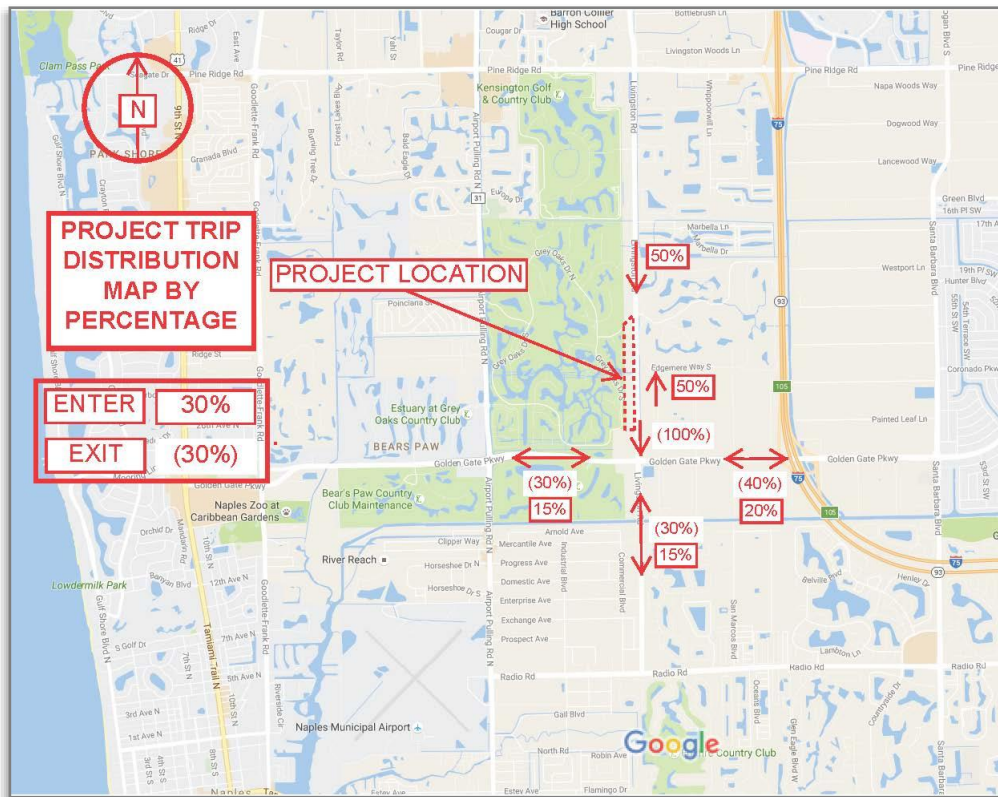
The site-generated trip distribution is shown in **Table 3, Project Traffic Distribution for Peak Hour** and is graphically depicted in **Fig. 2 – Project Distribution by Percentage and By PM Peak Hour**.

**Table 3**  
**Project Traffic Distribution for PM Peak Hour**

Roadway Link	Collier County Link No.	Roadway Link Location	Distribution of Project Traffic Enter/(Exit)	PM Peak Hour Project Vol.*	
				Enter	Exit
<b>Livingston Road</b>	54.0	South of project to Golden Gate Parkway	50%/(100%)	<b><u>NB – 4</u></b>	SB – 8
<b>Livingston Road</b>	54.0	North of project to Pine Ridge Road	50%/(N/A)	SB – 4	N/A
<b>Livingston Road</b>	55.0	Golden Gate Parkway to Radio Road	15%/(30%)	<b><u>NB – 1</u></b>	SB – 2
<b>Golden Gate Parkway</b>	20.2	Livingston Road to I-75	20%/(40%)	WB – 2	<b><u>EB – 3</u></b>
<b>Golden Gate Parkway</b>	20.1	Livingston Road to Airport Road	15%/(30%)	<b><u>EB – 1</u></b>	WB – 3

Note(s): \*Peak hour, peak direction traffic volumes are **underlined** and **bold** to be used in Roadway Link Level of Service calculations.

**Fig. 2 – Project Distribution by Percentage and By PM Peak Hour**





## Background Traffic

Average background traffic growth rates were estimated for the segments of the roadway network in the study area using the Collier County Transportation Planning Staff guidance of a minimum 2% growth rate, or the historical growth rate from annual traffic counts (estimated from 2008 through 2016), whichever is greater. Another way to derive the background traffic is to use the 2016 AUIR volume plus the trip bank volume. **Table 4, Background Traffic without Project** illustrates the application of projected growth rates to generate the projected background (without project) peak hour peak direction traffic volume for the build-out year 2022.

**Table 4**  
**Background Traffic without Project (2016 - 2022)**

Roadway Link	CC AUIR Link ID #	Roadway Link Location	2016 AUIR Pk Hr, Pk Dir Background Traffic Volume (trips/hr)	Projected Traffic Annual Growth Rate (%/yr)*	Growth Factor	2022 Projected Pk Hr, Peak Dir Background Traffic Volume w/out Project (trips/hr) Growth Factor**	Trip Bank	2022 Projected Pk Hr, Peak Dir Background Traffic Volume w/out Project (trips/hr) Trip Bank***
Livingston Road	54.0	South of project to Golden Gate Parkway	1,470	2.0%	1.1262	<u><b>1,656</b></u>	36	1,506
Livingston Road	54.0	North of project to Pine Ridge Road	1,470	2.0%	1.1262	<u><b>1,656</b></u>	36	1,506
Livingston Road	55.0	Golden Gate Parkway to Radio Road	1,220	2.0%	1.1262	<u><b>1,374</b></u>	40	1,260
Golden Gate Parkway	20.2	Livingston Road to I-75	2,890	2.0%	1.1262	<u><b>3,255</b></u>	2	2,892
Golden Gate Parkway	20.1	Livingston Road to Airport Road	2,280	2.0%	1.1262	<u><b>2,568</b></u>	0	2,280

Note(s): \*Annual Growth Rate - from 2016 AUIR, 2% minimum. \*\*Growth Factor =  $(1 + \text{Annual Growth Rate})^6$ . 2022 Projected Volume = 2016 AUIR Volume x Growth Factor. \*\*\*2022 Projected Volume = 2016 AUIR Volume + Trip Bank. The projected 2022 Peak Hour – Peak Direction Background Traffic is the greater of the Growth Factor or Trip Bank calculation, which is underlined and **bold** as applicable.



## Existing and Future Roadway Network

The existing roadway conditions are extracted from the 2016 Annual Update and Inventory Report (AUIR) and the project roadway conditions are based on the current Collier County 5-Year Work Program. Roadway improvements that are currently under construction or are scheduled to be constructed within the five-year Transportation Improvement Plan (TIP) or Capital Improvement program (CIP) are considered to be committed improvements. As no such improvements were identified in the Collier County 2016 AUIR, the evaluated roadways are anticipated to remain as such through project build-out. The existing and future roadway conditions are illustrated in **Table 5, Existing and Future Roadway Conditions**.

**Table 5**  
**Existing and Future Roadway Conditions**

Roadway Link	CC AUIR Link ID #	Roadway Link Location	Exist Roadway	Min. Standard LOS	Exist Peak Dir, Peak Hr Capacity Volume	Future Project Build out Roadway
Livingston Road	54.0	South of project to Golden Gate Parkway	6D	E	3,100 (NB)	6D
Livingston Road	54.0	North of project to Pine Ridge Road	6D	E	3,100 (NB)	6D
Livingston Road	55.0	Golden Gate Parkway to Radio Road	6D	E	3,000 (NB)	6D
Golden Gate Parkway	20.2	Livingston Road to I-75	6D	E	3,300 (EB)	6D
Golden Gate Parkway	20.1	Livingston Road to Airport Road	6D	E	3,300 (EB)	6D

Note(s): 2U = 2-lane undivided roadway; 4D, 6D, 8D = 4-lane, 6-lane, 8-lane divided roadway, respectively; LOS = Level of Service.

## Project Impacts to Area Roadway Network-Link Analysis

The Collier County Transportation Planning Services developed Level of Service (LOS) volumes for the roadway links impacted by the project, which were evaluated to determine the project impacts to the area roadway network in the future horizon (2022). The Collier County Transportation Planning Services guidelines have determined that a project will be considered to have a significant and adverse impact if **both** the percentage volume capacity exceeds 2% of the capacity for the link directly accessed by the project and for the link adjacent to the link directly accessed by the project; 3% for other subsequent links **and** if the roadway is projected to operate below the adopted LOS standard.

Based on these criteria, this project does not create a significant impact on the surrounding roadway network. All links analyzed are projected to operate above the adopted LOS standard with or without the project at 2022 future build-out conditions. **Table 6, Roadway Link Level of Service** illustrates the LOS impacts of the project on the roadway network closest to the project.

**Table 6**  
**Roadway Link Level of Service (LOS) – With Project in the Year 2022**

Roadway Link	CC AUIR Link ID #	Roadway Link Location	2016 Peak Dir, Peak Hr Capacity Volume	Roadway Link, Peak Dir, Peak Hr (Project Vol Added)*	2022 Peak Dir, Peak Hr Volume w/Project **	% Vol Capacity Impact by Project	Min LOS exceeded without Project? Yes/No	Min LOS exceeded with Project? Yes/No
Livingston Road	54.0	South of project to Golden Gate Parkway	3,100 (NB)	NB – 4	<u>1,660</u>	0.13%	No	No
Livingston Road	54.0	North of project to Pine Ridge Road	3,100 (NB)	N/A	<u>1,656</u>	N/A	No	No
Livingston Road	55.0	Golden Gate Parkway to Radio Road	3,000 (NB)	NB – 1	<u>1,375</u>	0.03%	No	No
Golden Gate Parkway	20.2	Livingston Road to I-75	3,300 (EB)	EB – 3	<u>3,258</u>	0.09%	No	No
Golden Gate Parkway	20.1	Livingston Road to Airport Road	3,300 (EB)	EB – 1	<u>2,569</u>	0.03%	No	No

Note(s): \*Refer to **Table 3** from this report. \*\*2022 Projected Volume = 2022 background (refer to **Table 4**) + Project Volume added.

As illustrated in the Collier County Land Development Code (LDC), Chapter 6.02.02 – M.2., once traffic from a development has been shown to be less than significant on any segment using the Collier County TIS criterion, the development's impact is not required to be analyzed further on any additional segments.

## Site Access Turn Lane Analysis

Connection to subject project is proposed via one directional left-in/right-in/right-out access onto southbound Livingston Road (north access) and one right-out only access onto southbound Livingston Road (south access). For details, refer to **Appendix A: Project Master Site Plan**.

**Livingston Road** is a 6-lane urban divided arterial roadway under Collier County jurisdiction, and has a posted legal speed of 45 mph in the vicinity of the project. Based on FDOT Index 301, design speed of 45 mph – urban conditions – the minimum turn lane length is 185 feet (which includes a 50 foot taper) plus required queue.

Project access is evaluated for turn lane warrants based on Collier County Right-of-way Manual: (a) two-lane roadways – 40vph for right-turn lane/20vph for left-turn lane; and (b) multi-lane divided roadways – right turn lanes shall always be provided; when new median openings are permitted, they shall always include left turn lanes.

Turn lane lengths required at build-out conditions are analyzed based on the number of turning vehicles in an average one-minute period for right-turning movements, and two-minute period for left-turning movements, within the peak hour traffic. The minimum queue length is 25 feet and the queue/vehicle is 25 feet.

Projected turning traffic movements are illustrated in **Appendix D: Turning Movements Exhibits**.

### **Main Site Entrance – Livingston Road – North Access**

A dedicated southbound right-turn lane is warranted as the project meets the multi-lane criteria. The proposed project is expected to generate 3 and 4vph right-turning movements during the AM and PM peak hour, respectively. At the minimum, the turn lane should be 210 feet long (which includes a minimum of 25 feet of storage). As such, a 210 foot right-turn lane is recommended to accommodate projected traffic at this location.

A dedicated northbound left-turn lane is warranted as the project meets the multi-lane criteria. There is an existing northbound left-turn lane approximately 550 feet long. The proposed project is expected to generate 2 and 4vph left-turning movements during the AM and PM peak hour, respectively. At the minimum, the turn lane should be 210 feet long (which includes a minimum of 25 feet of storage). As such, the existing 550 foot left-turn lane is adequate to accommodate projected traffic at this location.

A detailed evaluation of applicable access points will be performed at the time of site development permitting/platting to determine turn lane requirements, as applicable.

## **Improvement Analysis**

Based on the link analysis and trip distribution, the proposed project is not a significant and adverse traffic generator for the roadway network at this location.

Consistent with the site access turn lane analysis results, a 210 foot right-turn lane is recommended to accommodate traffic at build-out conditions. The existing northbound left-turn lane is adequate to accommodate projected traffic at this location.

## **Mitigation of Impact**

From a zoning perspective the use creates minimal trips and given that access is eliminated on Golden Gate Parkway and Airport Road due to less intensive established land uses, this proposal does not create a net increase in development external trips as compared to the original development parameters.

## **Appendix A: Project Master Site Plan**

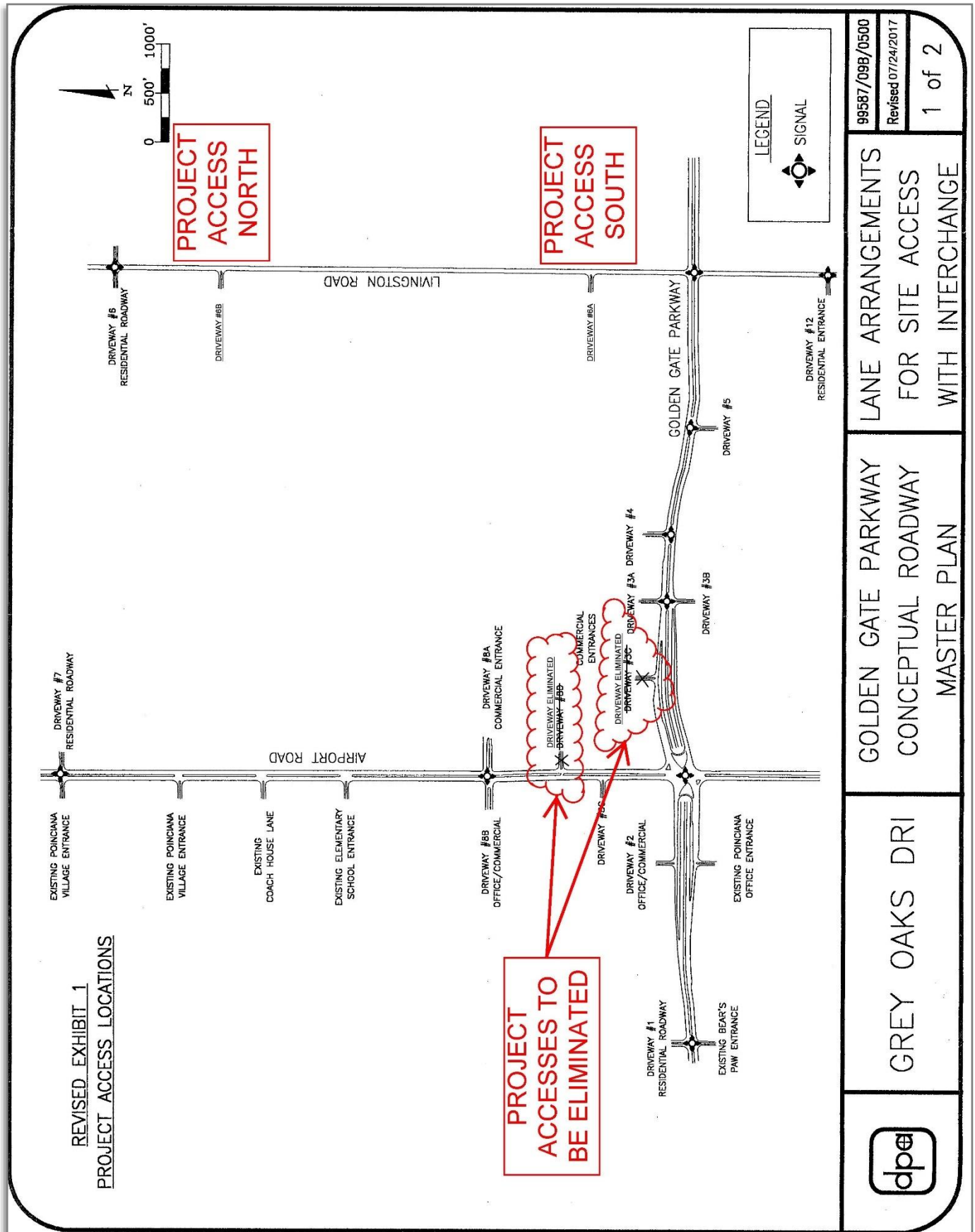
(1 Sheet)



## **Appendix B: Grey Oaks DRI – Conceptual Roadway Master Plan**

(1 Sheet)





## **Appendix C: Trip Generation Calculations ITE 9th Edition**

(1 Sheet)

Project Name: O'Donnell Nursery  
 Date: 8/10/2016  
 State/Province:  
 Country:  
 Analyst's Name:

No:  
 City:  
 Zip/Postal Code:  
 Client Name:  
 Edition: ITE-TGM 9th Edition

LAND USE	SIZE	DAILY		AM PEAK HOUR		PM PEAK HOUR *	
		Entry	Exit	Entry	Exit	Entry	Exit
818 - Nursery (Wholesale)	31 <sup>(1)</sup>	303	302	5	6	8	8
Reduction		0	0	0	0	0	0
Internal		0	0	0	0	0	0
Pass-by		0	0	0	0	0	0
Non-pass-by		303	302	5	6	0	0
<b>Total</b>		303	302	5	6	8	8
<b>Total Reduction</b>		0	0	0	0	0	0
<b>Total Internal</b>		0	0	0	0	0	0
<b>Total Pass-by</b>		0	0	0	0	0	0
<b>Total Non-pass-by</b>		303	302	5	6	8	8

(1) Acres \* ITE DID NOT HAVE DIRECTIONAL DISTRIBUTION FOR PM PEAK HOUR. A 50/50 DISTRIBUTION IS ASSUMED FOR THIS ANALYSIS.

PROJECT NAME: O'DONNELL NURSERY

ANALYSIS NAME: Daily

LAND USE	INDEPENDENT VARIABLE	SIZE	TIME PERIOD	METHOD	ENTRY	EXIT	TOTAL
818 - Nursery (Wholesale)	Acres	31 <sup>(0)</sup>	Weekday	Average 19.5	303 <sup>(1)</sup>	302 <sup>(1)</sup>	605 <sup>(1)</sup>

(0) indicates size out of range.  
 (1) indicates small sample size, use carefully.

PROJECT NAME: O'DONNELL NURSERY

ANALYSIS NAME: AM Peak Hour

LAND USE	INDEPENDENT VARIABLE	SIZE	TIME PERIOD	METHOD	ENTRY	EXIT	TOTAL
818 - Nursery (Wholesale)	Acres	31	Weekday, A.M. Pea	Average 0.34	5	6	11

PROJECT NAME: O'DONNELL NURSERY

ANALYSIS NAME: PM Peak Hour

LAND USE	INDEPENDENT VARIABLE	SIZE	TIME PERIOD	METHOD	ENTRY	EXIT	TOTAL
818 - Nursery (Wholesale)	Acres	31	Weekday, P.M. Pea	Average 0.53	N/A	N/A	16 <sup>(0)</sup>

(0) indicates directional distribution was not provided in the source document. This study cannot be used for trip distribution.

## **Appendix D: Turning Movements Exhibit**

(2 Sheets)

