LTG Engineering & Planning

Via email: tom@tmimscorp.com

Ref: 6245.01

TECHNICAL MEMORANDUM

To: Tom Mims, T. Mims Corporation

From: Matthew West, AICP

Subject: County Road 640 (CR 640) Industrial Park – Comprehensive Plan Amendment (CPA)
Polk County, FL

Date: April 9, 2024

INTRODUCTION

LTG, Inc. (LTG) has been retained by T. Mims Corporation to conduct traffic engineering and transportation planning services on behalf of the proposed future land use change for the CR 640 Industrial Park. The proposed future land use Comprehensive Plan Amendment (CPA) will change the future land use designation of a 380-acre property from Phosphate Mining to Industrial. The subject property is located north of CR 640 and west of Anderson Road in unincorporated Polk County, Florida. The project location in relation to the adjacent roadway network in shown in **Figure 1**.

The methodology and procedures used in this analysis are consistent with the guidelines for Polk County, the Florida Department of Commerce, and the Florida Department of Transportation (FDOT). Rather than analyze the theoretical maximum development program for the requested future land use of Industrial, this memorandum examines a more realistic development program limited by the available roadway capacity in the study area.

THEORETICAL MAXIMUM DEVELOPMENT PROGRAM VS. REALISTIC DEVELOPMENT PROGRAM

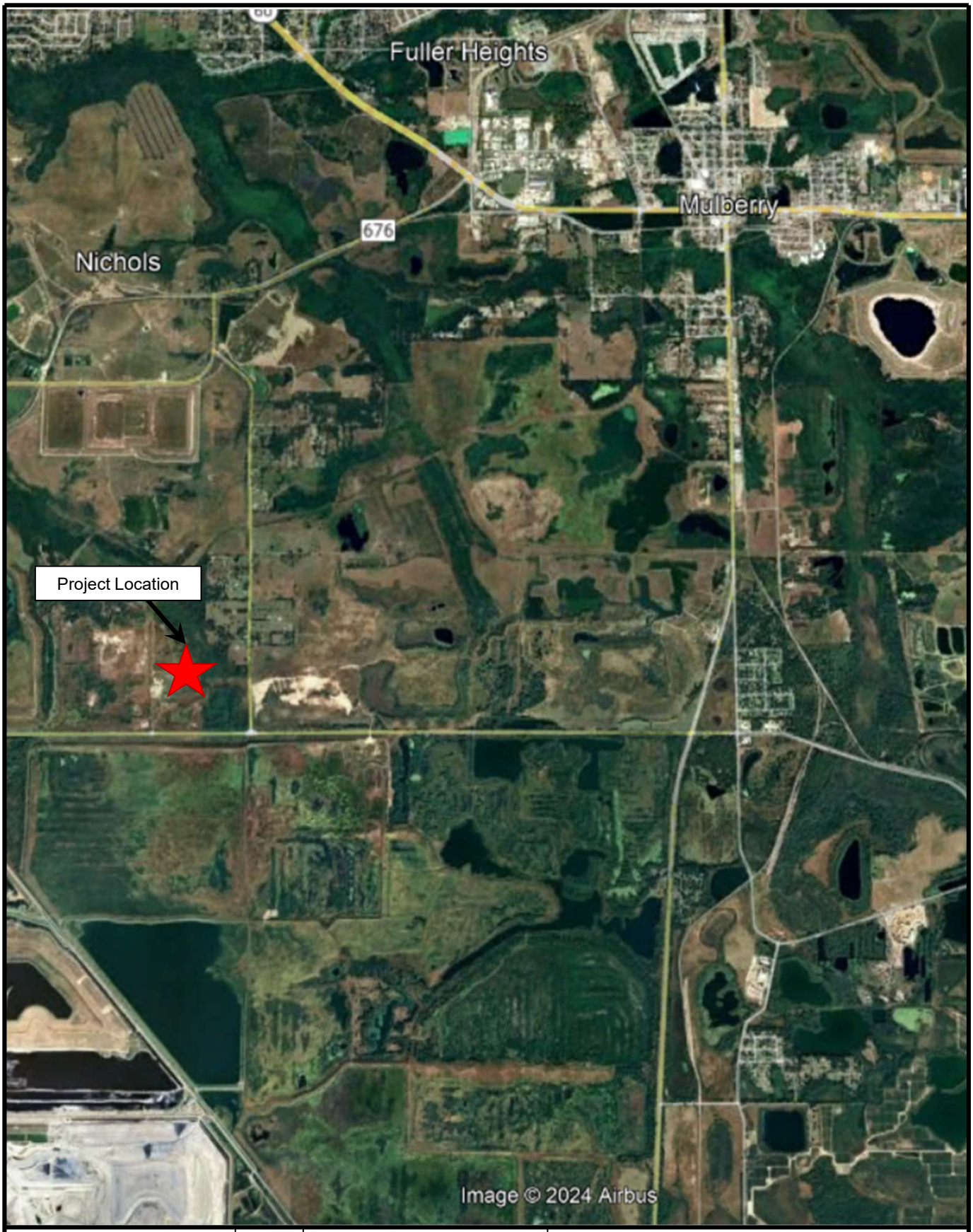
If the projected roadway capacity within the study area were not a consideration, the proposed Industrial designation would permit a maximum allowable intensity of the site of 0.5 floor-area-ratio (FAR). For the 380-acre parcel, this results in 8,276,400 square-feet of industrial land uses. Given the large size of the property, it was determined that based on the constraints of the study area roadway capacity, a more realistic development program should be determined.

PROJECT ROADWAY CAPACITY IN 2045

To determine the amount of development the available roadway network could support before capacity enhancing improvements are necessary, a segment analysis was conducted on the following roadway segments (the study area) in order to determine the capacity available for the planning horizon year of 2045:

- CR 640 from Hillsborough County Line to SR 37
- CR 640 from SR 37 to US 17/98
- SR 37 from SR 674 to CR 640
- SR 37 from CR 640 to Alafia River/North Prong

Utilizing the Polk County TPO Roadway Network Database, a 2% annual background traffic growth rate was applied to each segment through the 2045 planning horizon. The background traffic was added to the 2023 peak directional counts to provide a total background volume in 2045. The results of the existing and background analysis are shown in **Table 1**. The remaining directional capacity is shown in **Table 2**. The segment of CR 640 between the county line and SR 37 is projected to have 500 directional trips available in 2045.



CR 640 Industrial Park	N NTS	**Project Location Map** Project No.: 6245.01 | Figure: 1	LTG Engineering & Planning 1450 W. Granada Blvd., Suite 2, Ormond Beach, Florida 32174 Telephone: 386.257.2571 Fax: 386.257.6996

Table 1
Existing and Background PM Peak-Hour Roadway Segment Analysis
CR 640 Industrial Park – CPA

Roadway	Segment		Link No.	No. of Lanes	Adopted LOS	Peak-Hour Directional Capacity	Existing Peak-Hour Directional Volume	Applied Growth (%)	Growth Factor	2045 Total Background Volume	Background PM Volume Exceed Adopted LOS?
CR 640	Hillsborough County Line	SR 37	4069E	2	C	900	278	2%	1.44	400	No
CR 640	Hillsborough County Line	SR 37	4069W	2	C	900	289	2%	1.44	416	No
CR 640	SR 37	US 17/98	4070E	2	D	1,220	185	2%	1.44	266	No
CR 640	SR 37	US 17/98	4070W	2	D	1,220	193	2%	1.44	278	No
SR 37	SR 674	CR 640	5801N	2	C	900	304	2%	1.44	438	No
SR 37	SR 674	CR 640	5801S	2	C	900	317	2%	1.44	456	No
SR 37	CR 640	Alafia River (North Prong)	5802N	2	D	1,220	465	2%	1.44	670	No
SR 37	CR 640	Alafia River (North Prong)	5802S	2	D	1,220	447	2%	1.44	644	No

**Data obtained from the Polk TPO Roadway Network Database*

The process of determining the directional flow of traffic associated with a new development is called trip distribution. The Polk County Model, developed for use in forecasting future travel patterns, was used to determine the project trip distribution for a theoretical 6,000,000 square feet industrial use. Please note, the model distribution was manually modified based on engineering judgement and recent projects in the area. The trip distribution is graphically illustrated in **Figure 2**.

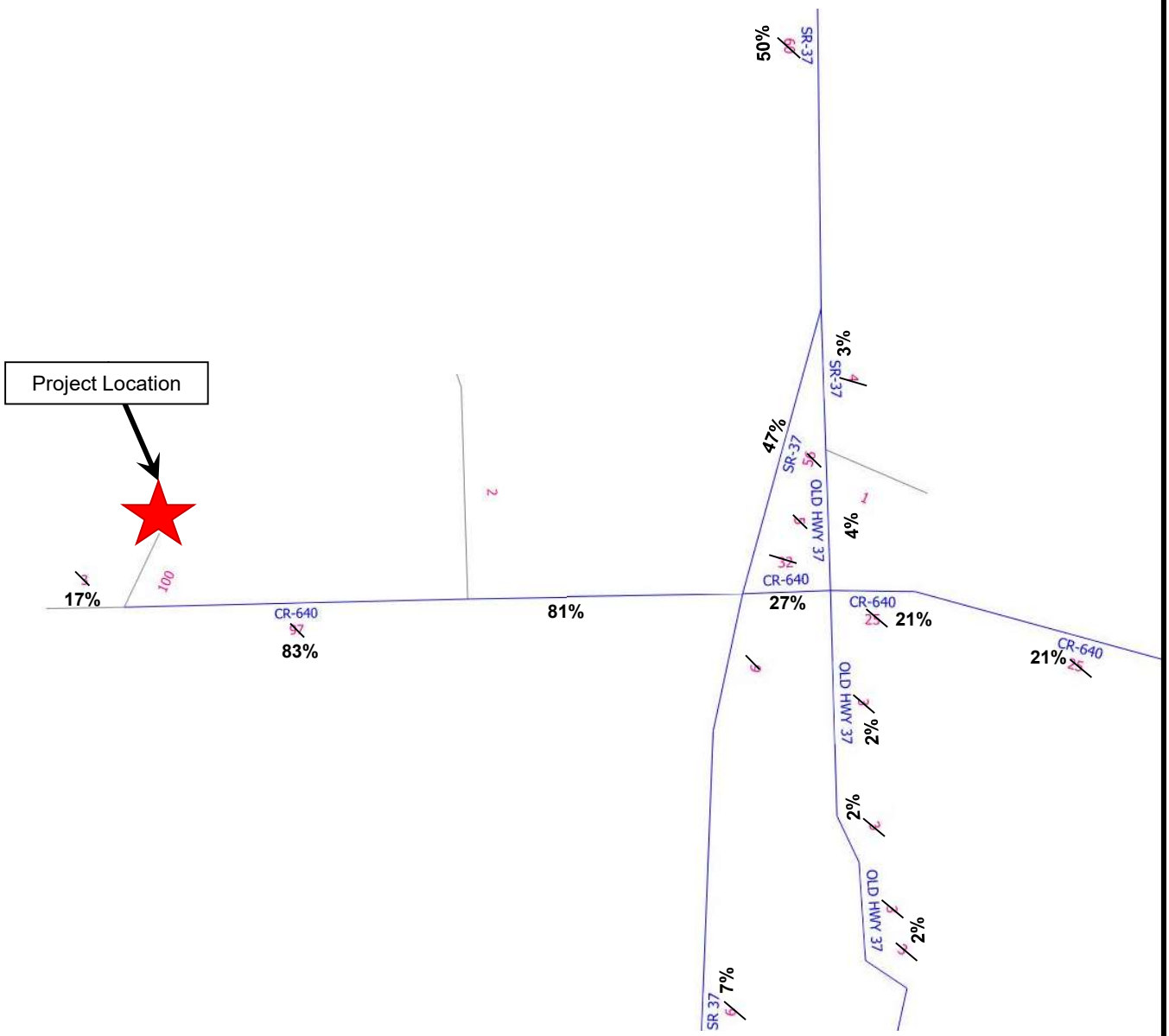
Using the project trip distribution, PM peak-hour trips based on different square footage (SF) amounts for each proposed land use were tested and applied to the roadway network in order to determine which segment would exceed capacity first and require additional capacity enhancing improvements under simulated build-out conditions. Since this is a directional analysis, the project trip distribution was applied to either the entering or exiting trips (whichever is higher) of the square footage being tested. The segment of CR 640 between Hillsborough County line and SR 37 provides access to the development and will experience project trips entering and exiting in both directions (east and west). Therefore, exiting trips were applied to the distribution for that segment of CR 640 for a more conservative analysis. This capacity allotment along this segment will limit the development due to the high project trip distribution assumed in the eastbound direction. The results of the tested SF values, segment data, and distribution are shown in **Table 2**.

Table 2
Remaining Roadway Capacity with Project Data
CR 640 Industrial Park – CPA

Roadway	Segment		Link No.	No. of Lanes	Adopted LOS	Peak-Hour Directional Capacity	2045 Total Background Volume	Remaining Directional Capacity Before LOS exceeded	Project Distribution	Direction (Enter/Exit)	Manufacturing Project Trips (1,178 KSF)	Gen. Light Ind. Project Trips (1,077 KSF)
CR 640	Hillsborough County Line	SR 37	4069E	2	C	900	400	500	83%	Exit	500	500
CR 640	Hillsborough County Line	SR 37	4069W	2	C	900	416	484	17%	Exit	102	102
CR 640	SR 37	US 17/98	4070E	2	D	1,220	266	954	21%	Exit	126	126
CR 640	SR 37	US 17/98	4070W	2	D	1,220	278	942	21%	Enter	57	21
SR 37	SR 674	CR 640	5801N	2	C	900	438	462	2%	Enter	5	2
SR 37	SR 674	CR 640	5801S	2	C	900	456	444	2%	Exit	12	12
SR 37	CR 640	Alafia River (North Prong)	5802N	2	D	1,220	670	550	50%	Exit	301	301
SR 37	CR 640	Alafia River (North Prong)	5802S	2	D	1,220	644	576	50%	Enter	135	49

To convert the remaining roadway capacity into an equivalent building program. the trip generation for potential land uses was determined using the Institute of Transportation Engineers (ITE) document, Trip Generation Manual, 11th Edition. The trip rate used to determine the total PM peak hour trips for the proposed future land use (FLU) designation are shown in Table 3. Manufacturing (ITE land use code 140) and General Light Industrial (ITE land use code 110) were used to demonstrate two potential land uses within the proposed FLU designation.

As shown in **Table 3**, it was determined that the maximum SF of Manufacturing that could be built is 1,178,000 SF and the maximum amount of General Light Industrial that could be built is 1,177,000 SF before capacity improvements are necessary. These SF values result in approximately 500 directional project trips along the segment of CR 640 (east), which then will require additional capacity. This results in a total of 872 two-way PM peak-hour trips for Manufacturing and 700 two-way PM peak-hour trips for General Light Industrial.



CR 640 Industrial Park	N NTS	**Project Trip Distribution**	LTG Engineering & Planning
		Project No.: 6245.01 | Figure: 2	1450 W. Granada Blvd., Suite 2, Ormond Beach, Florida 32174 Telephone: 386.257.2571 Fax: 386.257.6996

Table 3
Trip Generation Trip Rates for Potential FLU Uses
CR 640 Industrial Park – CPA

Time Period	Land Use	ITE LUC	Trip Rate Equation	Size	Units	Percent Entering	Percent Exiting	Trips Entering	Trips Exiting	Total Trips
PM Peak-Hour	Manufacturing	140	T=0.74(X)	1178.0	KSF	31%	69%	270	602	872
PM Peak-Hour	General Light Industrial	110	T=0.65(X)	1077.0	KSF	14%	86%	98	602	700

CONCLUSION

Table 4
Potential Development Program
CR 640 Industrial Park – CPA

Land Use	Maximum KSF	PM Peak-Hour Trips
Manufacturing	1,178	872
General Light Industrial	1,077	700

The study was conducted to evaluate the potential impact the proposed CPA would have on area roadways. Based on this analysis, the proposed development can produce 872 PM peak-hour Manufacturing trips or 700 PM peak-hour trips of General Light Industrial before capacity enhancing improvements are required under build-out conditions. Concurrency is maintained and approved for proposed developments by FDOT and Polk County, which will continue to track local developmental approvals and roadway capacity. Concurrency and any required mitigation to support a proposed development plan will be assessed in greater detail during the final development permitting process.

I affirm, by affixing my signature below, that the findings contained herein are, to my knowledge, accurate and truthful and were developed using current procedures standard to the practice of professional planning.

Name: Matthew West

Signature: Matthew West AICP

Digitally signed by Matthew West AICP
DN: C=US, E=mwest@ltg-inc.us, O="LTG, Inc.", OU=Director of Planning, CN=Matthew West AICP
Reason: I am approving this document
Date: 2024.04.09 12:49:33-05'00'

Date: April 9, 2024