

Ref: 5688.05

TECHNICAL MEMORANDUM

To: Frank Watanabe, City of Palm Bay

From:

Kady Dearing, P.E.

Date: November 27, 2023

Palm Bay Pointe Commercial – Trip Generation Technical Memorandum Subject: City of Palm Bay, Florida

INTRODUCTION

LTG, Inc. has been retained by Kimaya, LLC to prepare a trip generation evaluation for the proposed mixed-use development, known as Palm Bay Pointe, located along the west side of Babcock Street and along St. Johns Heritage Parkway (SJHP) in Palm Bay, Florida. It should be noted that the proposed development is within the Waterstone Master Development area and includes two separate analysis areas identified as the West Development area and the East Development area.

The purpose of the following technical memorandum is to compare the proposed development to the original Master Traffic Impact Study (TIS) developed for the Waterstone Development as it relates to net external PM Peak Hour trips. The location and boundary of each development area (West and East) are graphically depicted in the conceptual site plans attached as Exhibit A.

MASTER DEVELOPMENT PLAN

The master development plan and resulting PM external trips from the approved Waterstone Development TIS, dated August 2017, is provided in **Table 1**. The total overall, net new external PM Peak Hour trips equate to 2,938.

Paim Bay Pointe Mixed-Use										
Owner	ITE Land Use	ITE Code	Unit	s (X)	Trip Rate Equation	Total Trips	Percent Enter	Percent Exit	Trips Entering	Trips Exiting
	Single-Family Residential	210	250	DU	Ln(T)=0.90Ln(X)+0.51	240	65%	35%	156	84
	Townhomes	230	100	DU	Ln(T)=0.82Ln(X)+0.32	60	67%	33%	41	19
	Home Improvement Store	862	80	KSF	T=2.33(X)	186	49%	51%	92	94
	Shopping Center	820	130	KSF	Ln(T)=0.67Ln(X)+3.31	714	48%	52%	343	371
Cypress	General Office	710	30	KSF	T=1.12(X)+78.45	112	17%	83%	20	92
Bay Farms	Church	560	30	KSF	T=0.34(X)+5.24	15	48%	52%	8	7
	Research and Development Center	760	50	KSF	Ln(T)=0.83Ln(X)+1.06	74	15%	85%	12	62
	Assisted Living Facility	254	100	Beds	T=0.22(X)	22	44%	56%	10	12
	Nursing Home	620	100	Beds	T=0.22(x)	22	33%	67%	8	14
	Apartments (Age Restricted)	252	160	DU	T=0.24(X)+1.64	40	67%	33%	27	13
	Single-Family Residential	210	1100	DU	Ln(T)=0.90Ln(X)+0.51	909	63%	37%	573	336
Waterstone Farms	Single-Family (Age Restricted)	251	200	DU	Ln(T)=0.75Ln(X)+0.35	75	61%	39%	46	29
1 diffio	Townhomes (Age Restricted)	252	100	DU	T=0.24(X)+1.64	26	54%	46%	15	11
	Single-Family Residential	210	171	DU	Ln(T)=0.90Ln(X)+0.51	170	63%	37%	108	62
	Townhomes	230	64	DU	Ln(T)=0.82Ln(X)+0.32	42	67%	33%	29	13
Waterstone Holdings	Shopping Center	820	205	KSF	Ln(T)=0.67Ln(X)+3.31	969	48%	52%	466	503
riolaligo	Mini-Warehouse	151	80	KSF	T=0.26(X)	21	50%	50%	11	10
	General Office	710	30 KSF		T=1.12(X)+78.45	112	17%	83%	20	92
	-	-	-	- P.M. Pe	ak-Hour Gross Totals:	3,809		-	1,985	1,824
			Inte	ernal Ca	pture Percent Reduction	17.80%			17.80%	17.80%
					Internal Capture Trips	678			353	325
	Pass-By Trips (34% of Shopping Center)					470			244	226
	Allowal	le Pass-	By Trips	s (14% o	f Adjacent Street Traffic)	193			97	96
	No	t New E	xternal	Project	Trips (P.M. Peak-Hour)	2,938			1,535	1,403

Table 1 Waterstone Development PM Peak Hour Trips Palm Bay Pointe Mixed-Use

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In order to compare the commercial aspect of the development, those trips in the master plan (Table 1) associated with residential development were removed. Additionally, the commercial trips associated with the previously approved Cypress Bay Commercial Project, which includes 70,500 sq. ft. of general shopping center, a 48,400 sq. ft. supermarket, and a 2,100 sq. ft. liquor store, were also deducted from the total (689 total PM peak hour net external trips as reported in the Cypress Bay Commercial Site Access Analysis, dated April 2022). The resulting PM peak hour trip bank equates to 965 trips.

PALM BAY POINTE DEVELOPMENT PLAN

The Palm Bay Pointe Development Plan, divided into West and East development areas are listed below:

Development West:

- Mini Warehouse = 90,000 sq. ft.
- Multifamily Residential = 668 dwelling units (DUs)
- Assisted Living Facility = 120 Beds
- Day Care Center = 8,000 sq. ft.
- Medical Office = 35,000 sq. ft.
- General Retail/Shopping Plaza = 45,000 sq. ft.
- High-Turnover (Sit-Down) Restaurant = 2,000 sq. ft.

Development East:

- Charter Elementary School = 750 Students
- General Retail/Shopping Plaza = 30,000 sq. ft.
- High-Turnover (Sit-Down) Restaurant = 2,000 sq. ft.
- Fast-Food Restaurant w/ Drive Thru = 2,000 sq. ft.
- Convenience Store/Gas Station = 12 Fuel Pumps (FP)

The p.m. peak hour gross total trip generation is based on the rates published in the latest edition of the Institute of Transportation Engineers (ITE), *Trip Generation Manual*, 11th Edition. The resulting PM Peak Hour trip generation for each development area are shown in **Table 2** and **Table 3**, respectively.

Palm Bay Pointe Mixed-Use										
Time Period	Land Use	ITE Code	Trip Rate Equation	Quantity (X)		Total Trips (T)	% Entering	% Exiting	Entering	Exiting
	Mini Warehouse	151	T = 0.15(X)	90.0	KSF	14	47%	53%	7	7
	Multifamily Residential (Mid-Rise)	221	T = 0.39(X) + 0.34	668	DU	308	61%	39%	188	120
	Assisted Living Facility	254	T = 0.24(X)	120	Beds	29	39%	61%	11	18
PM Peak	Day Care Center	565	T = 11.12(X)	8.0	KSF	89	47%	53%	42	47
Hour	Medical Office	720	T = 4.07(X) - 3.17	35.0	KSF	139	30%	70%	42	97
	Shopping Plaza (40-150k) ¹	821	T = 5.19(X)	45.0	KSF	234	49%	51%	115	119
	High-Turnover Restaurant	932	T = 9.05(X)	2.0	KSF	18	61%	39%	11	7
	Total					831			416	415

Table 2 Development West Gross Total Trip Generation Palm Bay Pointe Mixed-Use

¹Land use subcategory: No Supermarket



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Time Period	Land Use	ITE Code	Trip Rate Equation	Qua	ntity (X)	Total Trips (T)	% Entering	% Exiting	Entering	Exiting
	Charter Elementary School	536	T = 0.16(X)	750	Students	120	35%	65%	42	78
	Shopping Plaza (40-150k) ¹	821	T = 5.19(X)	30.0	KSF	156	49%	51%	76	80
PM Peak	High-Turnover Restaurant	932	T = 9.05(X)	2.0	KSF	18	61%	39%	11	7
Hour	Fast-Food w/ Drive Thru	934	T = 33.03(X)	2.0	KSF	66	52%	48%	34	32
	Convenience Store/Gas Station	945	T = 26.90(X)	12	FP ²	323	50%	50%	162	161
	Total					683			325	358

Table 3 Development East Gross Total Trip Generation Palm Bay Pointe Mixed-Use

¹Land use subcategory: No Supermarket

²FP = Fueling Positions

Due to the mixed-use nature of the development a portion of trips, known as internal capture, are expected to remain within the Waterstone Development Boundary. The internal capture reduction, as adopted and implemented for those developments within the Waterstone Master Development, equates to 17.8% of the total PM Peak Hour Traffic. In order to determine the number of trips associated with the commercial portion of the internal capture, the National Cooperative Highway Research Program (NCHRP) Report 8-51 for internal trip capture was used. The residential component of the calculation includes existing and previously approved residential developments within the Waterstone Development area, such as The Lakes, The Courtyards, The Gardens, Cypress Bay East, and Cypress Bay West.

In addition, a Comprehensive Plan Amendment application is currently underway for the allowance of the 668 Multifamily units proposed within the Palm Bay Pointe development plan. The current future land use on the proposed Multifamily site (approximately 35 acres) is designated as Commercial (COM), which allows a maximum floor area ratio (FAR) of 2.5. As documented in the Comprehensive Plan Amendment prepared for the site, the proposed future land use would result in a net decrease in potential trip generation. These units are "new" to the Waterstone Development plan and would result in additional internal capture within the West Development plan. Only the residential component of the west development internal capture was deducted from the total.

Due to the commercial aspects of the development a certain number of trips, known as pass-by capture, are expected for each development area (West and East). The pass-by capture has been limited to 14% of the adjacent peak-hour two-way volume along Babcock Street and SJHP. Due to the uncertainty in timing for full buildout of the project, the existing 2022 data was used for the calculation for a more conservative approach.

The internal capture and pass-by trips were deducted from the total gross trip generation in order to determine the new net external trips anticipated by the proposed development. The resulting PM peak hour external trips are summarized in **Table 4**.



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Table 4	
Net External PM Peak Hour Trip	Generation
Palm Bay Pointe Mixed-	Use

Time Period	Development Area / Description	Total Trips (T)
	West	831
	East	683
PM Peak Hour	Gross Total:	1,514
	Waterstone Master Internal Capture	347
	West Development Internal Capture	53
	Pass-By Limited to 14% of Adjacent Traffic	150
	New External Project Trips	964

CONCLUSION

An analysis was conducted to determine whether the proposed development plan was within the net external, PM peak hour trip allocations for the commercial component of the Waterstone Master TIS. The residential and previously approved commercial trips (Cypress Bay Commercial) were deducted from the total net external trips documented in the Waterstone TIS to determine the number of commercial trips remaining (EQ: 2,938–1,284 – 689 = 965). When deducting internal capture and pass-by capture, as custom to mixed-use, commercial developments, the new external total trips for the Palm Bay Pointe project is one (1) trip below the threshold.

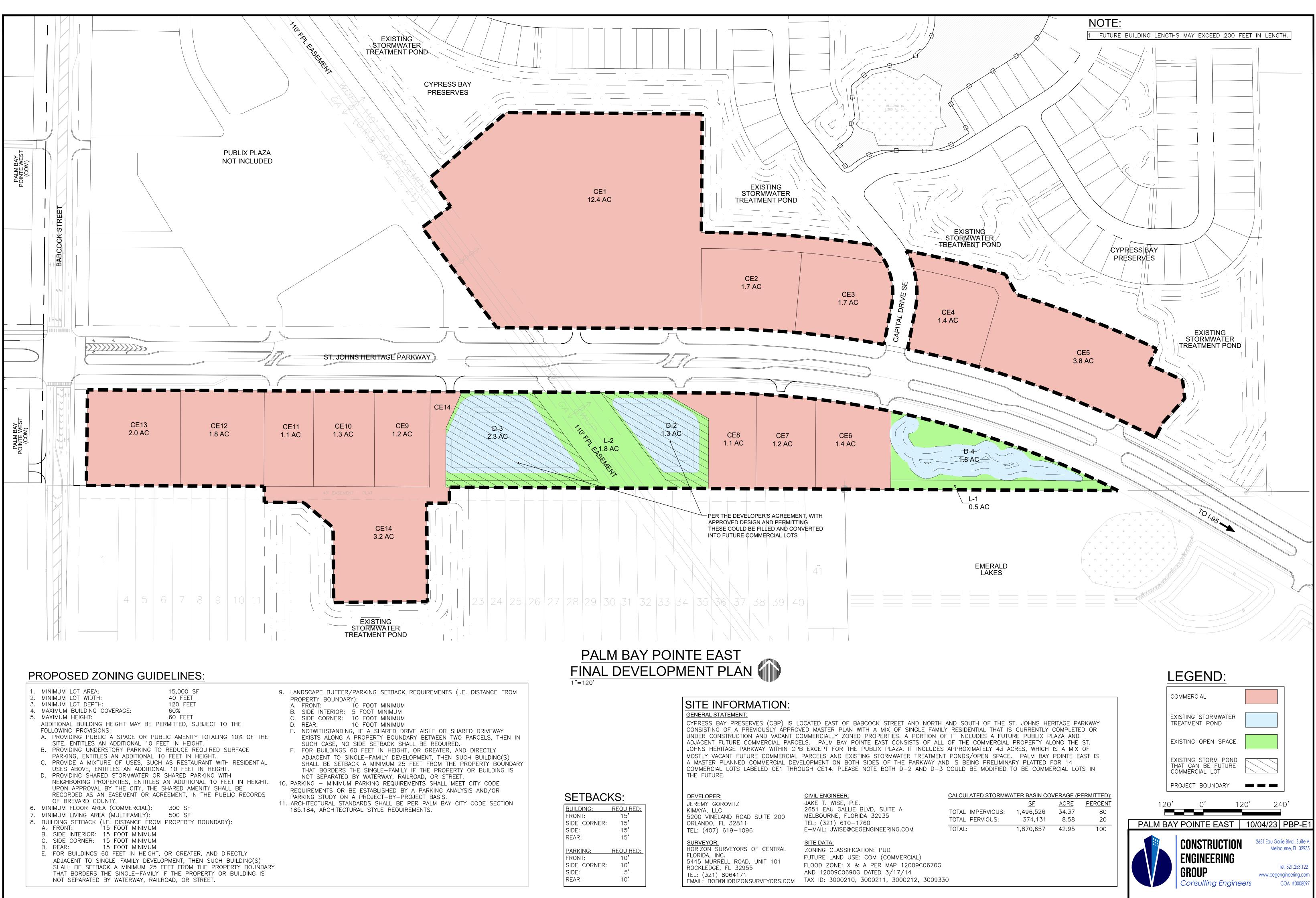
Attachments:

Exhibit A - Conceptual Site Plans



EXHIBIT A

Conceptual Site Plan



SHARED DRIVEWAY
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