

Memo

To: Brevard County Traffic Operations

From: Chris Russo, PE	Email: chris.russo@atkinsglobal.com
Date: March 4, 2022	Phone: +1 407 806 4233
Ref:	cc:

Subject: Health First Merritt Island PUD Traffic Information

The following traffic due diligence effort is prepared for the PUD application of the Health First Merritt Island Campus, located in Brevard County, Florida at the northwest quadrant of Merritt Island Causeway (SR 520) and Borman Drive.

Site Environs

Site Location: The development property is located within Merritt Island, which is part of Brevard County Florida. The development property comprises four existing parcels bounded north and south by the roadways of Merritt Island Causeway (SR 520) and Merritt Avenue and bounded to the east by Borman Drive. The development property borders one property that is to remain: a stand-alone banking facility with its own private driveway.

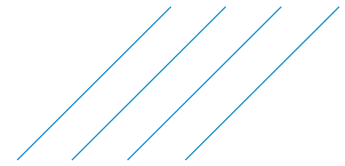
Of the four site development parcels, two are currently generating traffic on site. The parcel details are provided below. The approximate building area units are provided in square feet of gross floor area (KSF GFA).

- Parcel 24-36-36-00-250.1 (6.84 acres): Existing development includes 54.72 KSF of GFA Health and Fitness Center usage and 24.50 KSF of GFA Rehabilitation Center and medical office space.
- Parcel 24-36-00-276 (0.84 acres): Existing development includes a 2.5 KSF “Express Lube” Auto service facility with two services bays and a 5.9 SKF of Small Office space.
- Parcel 24-36-36-00-251.2 (6.64 acres): No existing developments
- Parcel 24-36-36-003298 (0.7 acres): No existing developments

Development Size: The combined acreage of four parcels planned for development is approximately 15 acres. The planned development includes an approximate gross floor area of 1,036 KSF.

Adjacent Roadways: The three adjacent roadways that border the development property are classified as follows:

- Merritt Island Causeway (SR-520) is a six-lane state-maintained Urban Principal Arterial with a divided median and access management openings.
- Merritt Avenue is a four-lane county maintained Urban Major Collector with no median and no exclusive turn lanes into the site driveways.
- Borman Drive is a two-lane local roadway with no median and no exclusive turn lanes.



Site Access: Access to the existing properties comes from 10 driveways along the three bordering roadways. Along Merritt Island Causeway, there is a signalized intersection on the southwest corner of the property at Merritt Square. Also, along Merritt Island Causeway, between the Merritt Square signal and Borman Drive, are two right-in/right-out driveways spaced approximately 100-feet apart. One of these driveways provides access to the development parcel and the other for the existing *Chase Bank*. Along Borman Drive there are five existing full access driveways where turning is capable, however, only one of the access points shows a break in the centerline striping. The intersection of Borman Drive and Merritt Island Causeway is an unsignalized limited access intersection that does not allow left-turns from Borman Drive. From Merritt Avenue, there are three driveways, two to the mobile service facility and one right-in, right-out driveway to the existing Health First location.

Adjacent Facilities Volume and LOS Standard: The Brevard County target level of service (LOS) for an arterial or collector within the urban boundary is LOS E. The target LOS for arterials on the State Highway System are LOS D.

Table 1 below provides Annual Average Daily Traffic (AADT) for the 2019 traffic counts, projected volumes, and corresponding LOS results. Traffic volumes from 2019 are used as the “existing” volumes to avoid impacts that COVID-19 had on traffic volumes in 2020-2021.

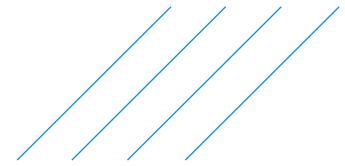
For background traffic analysis, the estimated opening year is assumed to be 2024. The growth rate for the 2024 volumes was estimated based on assuming a 2% annual growth rate. A 2% annual growth is higher than the historical growth in this area but represents an industry practice for estimating conservative growth projections in low growth areas.

Projected 2024 volumes are compared to the maximum volume service capacity for the adopted LOS for the maintaining agency. Based on the 2019 and projected 2024 background traffic growth it is anticipated that all roadway segments within the study area will be operating under the adopted roadway service volume capacities.

Table 1 – Adjacent Roadway Traffic Volumes

Segment	Begin	End	2019 AADT	2024 AADT	LOS D Service Capacity	2024 Bkgd V/C	2024 Bkgd LOS
Merritt Island Cswy	Humphrey Bridge	Tropical Ln	43,440	47,800	59,900	0.80	C
	Tropical Ln	SR 3	35,120	38,600	59,900	0.64	C
	SR 3	Goodwin	25,840	28,400	62,900	0.45	C
	Goodwin	Plumosa	31,230	34,400	62,900	0.55	C
	Plumosa	Mall Entrance	28,870	31,800	62,900	0.51	C
	Mall Entrance	Sykes Creek Pkwy	24,130	26,500	62,900	0.42	C
	Sykes Creek Pkwy	Newfound Harbor Dr	30,070	33,100	62,900	0.53	C
Merritt Ave	Plumosa St	Sykes Creek Pkwy	14,910	16,400	33,800	0.49	D
Borman Dr	Merritt Ave	Merritt Island Cswy	6,400* (est.)	7,000* (est.)	15,600*	0.45	C

* No counts were available on Borman Drive, so this count and service capacity represents data from Plumosa Street, which represents a parallel facility located just to the west of Borman Drive. It has a similar cross-section and similar north-south connectivity but because Plumosa Street continues north-south it likely carries more traffic than Borman Drive.



A preliminary review of traffic distributions between existing traffic on Merritt Island Causeway and Merritt Avenue shows that Merritt Island Causeway currently carries more AADT than does Merritt Avenue. The proportional split between the two east/west roadways shows that SR 520 historically carries 2.4 times the traffic than traffic on Merritt Avenue (or a 70/30 distribution). The volumes used for this approximation were based on the amount of AADT at the highest segment within the proposed study area, ie. AADT of 43,440 and 14,910. Until a local demand model is run, or more analyzed manual distribution of traffic is performed, it is a simple assumption that future generated traffic may follow similar patterns.

Anticipated Site Traffic Volumes

Land Uses: In order to preliminarily assess the trip generation of the proposed development, the ITE Trip Generation process will be used to estimate the number of new trips applied to the surrounding transportation network. It is understood based on development goals and zoning that the development may include the following land uses: Hospital, Offices, Retail, Day Care, Restaurant, and Fitness Center.

Table 2 provides a summary of the existing and proposed site land usage, corresponding ITE Trip Generation land use codes, and sizes for proposed developments that are expected to generate traffic. There are additional land uses not included in this analysis because they are not expected to generate off-site trips; they are: a coffee/juice bar, maintenance facilities/structures, energy plants, and parking structures.

Table 2 – Land Use Summary

Land Use	Units		ITE Land Use Code	
Existing Land Uses				
Health and Fitness Center	54.7	KSF	492	Health/Fitness Club
Medical & Rehab Offices	24.5	KSF	720	Medical-Dental Office Building
Express Lube Auto Service	2.5	KSF	943	Automobile Parts & Service Center
Variety of Small Offices	6.9	KSF	712	Small Office Building
Proposed Land Uses				
Hospital	320.0	KSF	610	Hospital
General Office/Education Center	19.1	KSF	710	General Office Building
Medical Office Building (MOB)	120.0	KSF	720	Medical-Dental Office Building
Retail	5.8	KSF	820	Shopping Center
Day Care	7.5	KSF	565	Day Care Center
Fitness Center/Spa	22.8	KSF	492	Health/Fitness Club
Food Hall	5.7	KSF	932	High-Turnover Sit-Down Rest.

Proposed Land Use Categories and Sizes obtained from the latest site concept (12/7/21)



Trip Generation: The peak hour and daily trip generation was calculated for the existing and proposed concept land uses. The net difference in trips between the two scenarios was calculated to provide a summary of net-new trips that the site is estimated to incur. **Table 3** and **Table 4** provide a trip generation summary for the existing and proposed conditions. **Table 5** provides a summary of the net change in trips to the site.

Overall, the proposed site redevelopment is estimated to increase site trip volumes from the existing site trip generation by 609 vehicles in the AM peak hour, 736 vehicles in the PM peak hour, and 8,012 vehicles on a weekday. The full trip generation calculation tables for each period and scenario is provided on the following pages

Table 3 – Existing Trip Generation Summary

Land Use	AM Peak Hour Trips ¹			PM Peak Hour Trips ¹			Weekday Daily Trips ¹		
	Total ²	Enter	Exit	Total ²	Enter	Exit	Total ²	Enter	Exit
LU 492 - Health/Fitness Club ³	72	37	35	189	108	81	1,802	901	901
LU 720 - Medical-Dental Office Building	64	50	14	85	24	61	854	427	427
LU 712 – Small Office Buildings	13	11	2	17	5	12	112	56	56
LU 943 – Auto Parts and Service Center	5	4	1	6	2	4	41	20	21
Total	154	102	52	297	139	158	2,809	1,405	1,404

¹ Peak Hour Trips represent the development trips generated during the peak hour of adjacent traffic. Adjacent peak hours occur within the highest peak hour within the following peak periods: AM (7-9 AM) and PM (4-6 PM).

² Total Trips is the sum of entering and exiting trips occurring at all access points available to the overall development.

³ The latest available daily trip generation rate from the ITE 9th edition was used. AM and PM rates are from the 10th edition.

Table 4 – Proposed Trip Generation Summary

Land Use	AM Peak Hour Trips ¹			PM Peak Hour Trips ¹			Weekday Daily Trips ¹		
	Total ²	Enter	Exit	Total ²	Enter	Exit	Total ²	Enter	Exit
LU 492 - Health/Fitness Club ³	30	15	15	79	45	34	751	376	375
LU 565 - Day Care Center	83	44	39	83	39	44	357	179	178
LU 610 - Hospital	185	194	91	310	99	211	3,430	1,715	1,715
LU 710 – General Office Building	44	38	6	24	4	20	213	107	106
LU 720 - Medical Office Building	263	205	58	415	116	299	4,523	2,262	2,261
LU 820 - Shopping Center	5	3	2	66	32	34	867	434	433
LU 932 – High-Turnover Sit Down Restaurant	57	29	28	55	28	27	639	320	319
Total	767	528	239	1,032	363	669	10,780	5,393	5,387

¹ Peak Hour Trips represent the development trips generated during the peak hour of adjacent traffic. Adjacent peak hours occur within the highest peak hour within the following peak periods: AM (7-9 AM) and PM (4-6 PM).

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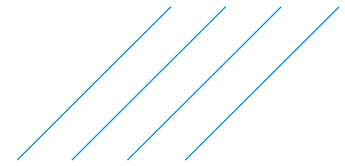
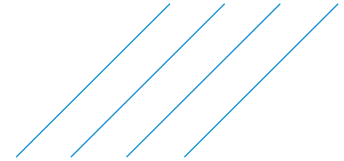


Table 5 – Summary of Site Trip Generation

Site Scenario	AM Peak Hour Trips			PM Peak Hour Trips			Weekday Daily Trips		
	Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
Proposed Trips	767	528	239	1,032	363	669	10,780	5,393	5,387
Existing Trips (Removed)	-154	-102	-52	-297	-139	-158	-2,809	-1,405	-1404
Net Increase in Trips	613	426	187	735	224	511	7,971	3,988	3,983

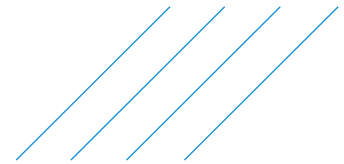


Attachment 1: Existing Trip Generation Tables

Existing AM Peak Hour Trips										
Trip Generation Reference	Code	Description	Units	Size	Average Rate (if used)	Fitted Curve Equation (if used)	Directional Distribution	New Total	New Entering	New Exiting
ITE 10	LU 492	Health/Fitness Club	1000 Sq-Ft GFA	54.72	1.31	-	51% / 49%	72	37	35
ITE 10	LU 720	Medical Office Building	1000 Sq-Ft GFA	24.50	2.78	$\ln(T)=0.89\ln(X)+1.31$	78% / 22%	64	50	14
ITE 10	LU 712	Small Office Building	1000 Sq. Ft. GFA	6.89	1.92	-	83% / 17%	13	11	2
ITE 10	LU 943	Automobile Parts & Service Center	1000 Sq. Ft. GFA	2.50	1.96	-	73% / 27%	5	4	1
Total:								154	102	52

Existing PM Peak Hour Trips										
Trip Generation Reference	Code	Description	Units	Size	Average Rate (if used)	Fitted Curve Equation (if used)	Directional Distribution	New Total	New Entering	New Exiting
ITE 10	LU 492	Health/Fitness Club	1000 Sq-Ft GFA	54.72	3.45	-	57% / 43%	189	108	81
ITE 10	LU 720	Medical Office Building	1000 Sq-Ft GFA	24.50	3.46	-	28% / 72%	85	24	61
ITE 10	LU 712	Small Office Building	1000 Sq. Ft. GFA	6.89	2.45	-	32% / 68%	17	5	12
ITE 10	LU 943	Automobile Parts & Service Center	1000 Sq. Ft. GFA	2.50	2.26	-	40% / 60%	6	2	4
Total:								297	139	158

Existing Daily Trips										
Trip Generation Reference	Code	Description	Units	Size	Average Rate (if used)	Fitted Curve Equation (if used)	Directional Distribution	New Total	New Entering	New Exiting
ITE 9	LU 492	Health/Fitness Club	1000 Sq-Ft GFA	54.72	32.93	-	50% / 50%	1,802	901	901
ITE 10	LU 720	Medical Office Building	1000 Sq-Ft GFA	24.50	34.8	$T=38.42(X)-87.62$	50% / 50%	854	427	427
ITE 10	LU 712	Small Office Building	1000 Sq. Ft. GFA	6.89	16.19	-	50% / 50%	112	56	56
ITE 10	LU 943	Automobile Parts & Service Center	1000 Sq. Ft. GFA	2.50	16.28	-	50% / 50%	41	21	20
Total:								2,809	1,405	1,404



Attachment 2: Proposed Lane Use Trip Generation Tables (not adjusted for existing trip credits, pass-by trips, or internal capture trips)

Proposed AM Peak Hour Trips										
Trip Generation Reference	Code	Description	Units	Size	Average Rate (if used)	Fitted Curve Equation (if used)	Directional Distribution	New Total	New Entering	New Exiting
ITE 10	LU 492	Health/Fitness Club	1000 Sq. Ft. GFA	22.80	1.31	Not Given	51% / 49%	30	15	15
ITE 10	LU 565	Day Care Center	1000 Sq. Ft. GFA	7.50	11	Not Given	53% / 47%	83	44	39
ITE 10	LU 610	Hospital	1000 Sq. Ft. GFA	320.00	0.89	$T=0.74(X)+126.36$	68% / 32%	285	194	91
ITE 10	LU 710	General Office Building	1000 Sq. Ft. GFA	19.10	1.16	$T=0.94(X)+26.49$	86% / 14%	44	38	6
ITE 10	LU 720	Medical Office Building	1000 Sq. Ft. GFA	120.00	2.78	$\ln(T)=0.89\ln(X)+1.31$	78% / 22%	263	205	58
ITE 10	LU 820	Shopping Center	1000 Sq. Ft. GFA	5.80	0.94	$T=0.5(X)+151.78$	62% / 38%	5	3	2
ITE 10	LU 932	High-Turnover Sit Down Restaurant	1000 Sq. Ft. GFA	5.70	9.94	Not Given	50% / 50%	57	29	28
Total:								767	528	239

Proposed PM Peak Hour Trips										
Trip Generation Reference	Code	Description	Units	Size	Average Rate (if used)	Fitted Curve Equation (if used)	Directional Distribution	New Total	New Entering	New Exiting
ITE 10	LU 492	Health/Fitness Club	1000 Sq. Ft. GFA	22.80	3.45	$\ln(T)=0.67\ln(X)+2.44$	57% / 43%	79	45	34
ITE 10	LU 565	Day Care Center	1000 Sq. Ft. GFA	7.50	11.12	Not Given	47% / 53%	83	39	44
ITE 10	LU 610	Hospital	1000 Sq. Ft. GFA	320.00	0.97	$T=0.84(X)+100.56$	32% / 68%	310	99	211
ITE 10	LU 710	General Office Building	1000 Sq. Ft. GFA	19.10	1.15	$\ln(T)=0.95\ln(X)+0.36$	16% / 84%	24	4	20
ITE 10	LU 720	Medical Office Building	1000 Sq. Ft. GFA	120.00	3.46	$T=3.39(X)+2.02$	28% / 72%	415	116	299
ITE 10	LU 820	Shopping Center	1000 Sq. Ft. GFA	5.80	3.81	$\ln(T)=0.74\ln(X)+2.89$	48% / 52%	66	32	34
ITE 10	LU 932	High-Turnover Sit Down Restaurant	1000 Sq. Ft. GFA	5.70	9.7	Not Given	50% / 50%	55	28	27
Total:								1,032	363	669

Proposed Daily Trips										
Trip Generation Reference	Code	Description	Units	Size	Average Rate (if used)	Fitted Curve Equation (if used)	Directional Distribution	New Total	New Entering	New Exiting
ITE 9	LU 492	Health/Fitness Club	1000 Sq. Ft. GFA	22.80	32.93	Not Given	50% / 50%	751	376	375
ITE 10	LU 565	Day Care Center	1000 Sq. Ft. GFA	7.50	47.62	Not Given	50% / 50%	357	179	178
ITE 10	LU 610	Hospital	1000 Sq. Ft. GFA	320.00	10.72	$T=5.88(X)+2723.70$	50% / 50%	3,430	1,715	1,715
ITE 10	LU 710	General Office Building	1000 Sq. Ft. GFA	19.10	9.74	$\ln(T)=0.97\ln(X)+2.50$	50% / 50%	213	107	106
ITE 10	LU 720	Medical Office Building	1000 Sq. Ft. GFA	120.00	34.8	$T=38.42(X)-87.62$	50% / 50%	4,523	2,262	2,261
ITE 10	LU 820	Shopping Center	1000 Sq. Ft. GFA	5.80	37.75	$\ln(T)=0.68\ln(X)+5.57$	50% / 50%	867	434	433
ITE 10	LU 932	High-Turnover Sit Down Restaurant	1000 Sq. Ft. GFA	5.70	112.18	Not Given	50% / 50%	639	320	319
Total:								10,780	5,393	5,387

* The latest available daily trip generation rate from the ITE 9th edition was used.