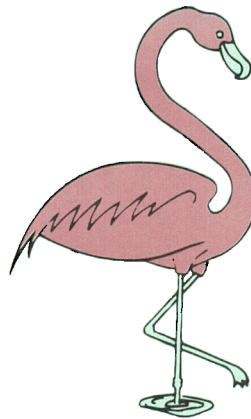


HUNTLEY COMMERCIAL CENTER TRAFFIC STUDY METHODOLOGY

CLAY COUNTY, FLORIDA

February 2024



BUCKHOLZ TRAFFIC

INTRODUCTION

This proposed commercial development will be located in the southeast quadrant of the US 17/SR 16 intersection in Green Cove Springs, Florida. As currently proposed, the development will have two full access driveways (one existing and one new) and one new right-in-right-out only driveway on SR 16 as well as two new full access driveways on US 17 (one opposite the entrance to the shopping center). Exclusive left turn lanes will be provided at all site driveways except driveways limited to right turns. This commercial center is planned for completion and full occupancy in 2035 and is expected to include the following new land uses:

- 119,000 sf of manufacturing space,
- 231,200 sf of retail space (including one gas station with convenience market on southeast corner of the US 17/SR 16 intersection),
- 264,000 sf of warehouse space,
- 130,500 sf of light industrial space, and
- A train-to-truck Transfer Facility.

The proposed site plan is provided in Attachment A. The development will proceed in phases with Phase 1 scheduled for completion by the end of 2025. This Phase is expected to include the following new land uses:

- 81,500 sf of manufacturing space, and
- 25,600 sf of retail space.

The proposed Phase 1 site plan is included in Attachment A. Access for this phase will be provided via the three SR 16 driveways.

The Phase 2 development is scheduled for completion in 2030 and is expected to include the following cumulative new land uses:

- 81,500 sf of manufacturing space
- 56,600 sf of retail space, and
- 70,500 sf of warehouse space
- A train-to-truck Transfer Facility.

The proposed Phase 2 site plan is included in Attachment A. Access for this phase will be provided using the same access scheme as for full development.

The existing full access driveway on SR 16 currently provides access to a boat manufacturing facility which will remain in place. The facility occupies two existing buildings (Buildings 1 and 2) that total 87,200 sf in size. The third existing building (Building 3) is 81,500 sf in size. This building will be renovated, and its square footage is included in the future manufacturing space listed above. US 17 (S. Orange Avenue) is a four-lane divided urban principal arterial with an FDOT access management classification of 3 and a posted speed limit of 45 mph in the vicinity of the site. SR 16 (Leonard C. Taylor Parkway) is also a four-lane divided urban principal arterial in the vicinity of the site with an FDOT access management classification of 3 and a posted speed limit of 45 mph.

STUDY AREA

The study area will consist of all roadway segments where site traffic represents at least 5% of the maximum service volume for the adopted level of service. An estimated pre-model trip distribution will be used to test the 5% criterion. Major intersections within these segments and all site driveway intersections will be evaluated.

FUTURE ROADWAY IMPROVEMENTS

The Outer Beltway, which is scheduled for completion in November of 2024, will be included as a future roadway for all three phases. Other future roadway improvements, as reflected in the NERPM-AB areawide model, will be included in the future road network.

EXISTING TRAFFIC VOLUMES

During February of 2024 weekday AM and PM peak period manual turning movement counts will be conducted at the existing intersections listed above - as well as at the SR 16/Existing Site Entrance intersection. The data will be recorded at 15-minute intervals and will include a separate tabulation for trucks and pedestrians. Weekday AM and PM peak hours for analysis will be identified from a review of the peak period counts. Counts will be adjusted to the peak season using the latest set of FDOT seasonal adjustment factors for Clay County.

SITE TRIP GENERATION

Trip generation calculations will be carried out using the 11th edition of ITE's Trip Generation Manual and referencing land use codes 110 (General Light Industrial), 140 (Manufacturing), 150 (Warehousing) and 820 (Shopping Center). Attached Tables 1 through 5 provide the trip generation calculations for the full development. Trip generation for the Train-to-Truck Transfer Facility was calculated using reasonable trip generation rates based on truck and employee activity. No internal trip-making reduction will be made although a reduction for retail pass-by traffic will be taken for road segments and off-site intersections. The expected total daily trip generation for the new development is 13,634 (6817 entering and 6817 exiting) with 516 trips occurring during the AM peak hour (366 entering and 150 exiting) and 1241 occurring during the PM peak hour (548 entering and 693 exiting). Expected truck trip generation will also be developed using available ITE trip rates.

SITE TRIP DISTRIBUTION AND TRAFFIC ASSIGNMENT

Weekday AM and PM peak hour site trips will be directionally distributed and assigned to the future road network based on the results of an areawide model run supplemented by engineering judgment. Trucks will be distributed separately and a map provide showing expected truck volumes.

DIVERTED TRAFFIC

Opening of the Outer Beltway can be expected to significantly alter traffic patterns and traffic volumes in the study area. The NERPM-AB areawide model will be used to estimate this diversion as well as the level of anticipated traffic growth through the development of growth-diversion factors for each intersection turning movement. Future model years include 2030 and 2045. 2035 growth-diversion factors will be identified via interpolation.

FUTURE TRAFFIC VOLUMES

The expected weekday AM and PM peak hour background (No Build) traffic volumes and total (Build) traffic volumes using road segments and intersections in the study area will be calculated for 2025 (Phase 1), 2030 (Phase 2) and 2035 (Full Build-Out). These volumes will be used in subsequent analyses. Traffic associated with the planned Rookery development will be included in future No Build traffic.

TURN LANE ANALYSIS

A formal analysis will be conducted to determine if an exclusive right turn lane is warranted on US 17 or SR 16 at any of the Site Drives under Build conditions. The methodology contained in NCHRP Report 457 will be used to conduct the right turn lane evaluation.

ROADWAY LINK ANALYSIS

The expected level of service for each roadway segment will be evaluated under 2025, 2030 and 2035 No Build and Build conditions using FDOT Generalized Level of Service Tables.

INTERSECTION CAPACITY ANALYSIS

Signalized intersections will be analyzed under both Existing and Build conditions using the operational control methodology contained in the 2024 version of the Highway Capacity Software. Unsignalized intersections will be analyzed under both Existing, No Build and Build conditions using the two-way stop control methodology contained in the 2024 version of the Highway Capacity Software. The effect of truck traffic will be included in the analysis.

ACCESS MANAGEMENT EVALUATION

FDOT access management guidelines will be evaluated based on the proposed driveway and median opening locations.

TRAIN CROSSING REVIEW

Determine the number of trains expected to use the at-grade crossing on US 17 and the expected delay to US 17 traffic.

RECOMMENDED IMPROVEMENTS

Recommended mainline and intersection improvements for each of the three development phases will be identified.

FINAL REPORT

A signed and sealed traffic engineering report will be submitted.

TABLE 1

TRIP GENERATION CALCULATIONS

WAREHOUSING

Land Use Code 150

T = Number of Vehicle Trip Ends

Size of Building = 264,000 gsf (X = 264)

<u>TIME PERIOD</u>	<u>TOTAL TRIP GENERATION EQUATION</u>	<u>TOTAL TRIP ENDS</u>	<u>PERCENT ENTERING</u>	<u>PERCENT EXITING</u>	<u>TOTAL TRIP ENDS ENTERING</u>	<u>TOTAL TRIP ENDS EXITING</u>
AVERAGE WEEKDAY						
Daily	$T = 1.58 (X) + 38.29$	456	50%	50%	228	228
AM Peak Hour	$T = 0.12 (X) + 23.62$	55	77%	23%	42	13
PM Peak Hour	$T = 0.12 (X) + 26.48$	58	28%	72%	16	42

SOURCE: Institute of Transportation Engineers, "Trip Generation", 11th Edition (2021)

BUCKHOLZ TRAFFIC

TABLE 2

TRIP GENERATION CALCULATIONS

GENERAL LIGHT INDUSTRIAL

Land Use Code 110

T = Number of Vehicle Trip Ends

Size of Building = 130,500 gsf (X = 130.5)

<u>TIME PERIOD</u>	<u>TOTAL TRIP GENERATION EQUATION</u>	<u>TOTAL TRIP ENDS</u>	<u>PERCENT ENTERING</u>	<u>PERCENT EXITING</u>	<u>TOTAL TRIP ENDS ENTERING</u>	<u>TOTAL TRIP ENDS EXITING</u>
WEEKDAY						
Daily	$T = 3.76 (X) + 50.47$	542	50%	50%	271	271
AM Peak Hour	$T = 0.68 (X) + 3.81$	93	88%	12%	82	11
PM Peak Hour	$\ln(T) = 0.72 \ln(X) + 0.38$	49	14%	86%	7	42

SOURCE: Institute of Transportation Engineers, "Trip Generation", 11th Edition (2021)

BUCKHOLZ TRAFFIC

TABLE 3

TRIP GENERATION CALCULATIONS

MANUFACTURING

Land Use Code 140

T = Number of Vehicle Trip Ends

Size of Buildings = 119,000 gsf (X = 119.0 kgsf)

<u>TIME PERIOD</u>	<u>TOTAL TRIP GENERATION EQUATION</u>	<u>TOTAL TRIP ENDS</u>	<u>PERCENT ENTERING</u>	<u>PERCENT EXITING</u>	<u>TOTAL TRIP ENDS ENTERING</u>	<u>TOTAL TRIP ENDS EXITING</u>
WEEKDAY						
Daily	$T = 3.77 (X) + 201.98$	650	50%	50%	325	325
AM Peak Hour	$T = 0.61 (X) + 9.54$	82	76%	24%	62	20
PM Peak Hour	$T = 0.87 (X) - 17.50$	86	31%	69%	27	59

SOURCE: Institute of Transportation Engineers, "Trip Generation", 11th Edition (2021)

BUCKHOLZ TRAFFIC

**TABLE 4
TRIP GENERATION CALCULATIONS**

SHOPPING CENTER (> 150,000 gsf)

Land Use Code 820

T = Number of Vehicle Trip Ends

Size of Buildings = 231,200 gsf -----> X= 231.2

<u>TIME PERIOD</u> <u>AVERAGE WEEKDAY</u>	<u>TOTAL</u> <u>TRIP GENERATION</u> <u>EQUATION</u>	<u>TOTAL</u> <u>TRIP</u> <u>ENDS</u>	<u>PERCENT</u> <u>ENTERING</u>	<u>PERCENT</u> <u>EXITING</u>	<u>TOTAL</u> <u>TRIP ENDS</u> <u>ENTERING</u>	<u>TOTAL</u> <u>TRIP ENDS</u> <u>EXITING</u>
Daily	$T = 26.11 (X) + 5863.73$	11900	50%	50%	5950	5950
AM Peak Hour	$T = 0.59 (X) + 133.55$	270	62%	38%	167	103
PM Peak Hour	$\ln(T) = 0.72 \ln(X) + 3.02$	1032	48%	52%	495	537

SOURCE: Institute of Transportation Engineers, "Trip Generation", 11th Edition (2021)

NEW TRIPS

<u>TIME PERIOD</u> <u>AVERAGE WEEKDAY</u>	<u>PERCENT NEW TRIPS</u>	<u>NEW</u> <u>TRIP</u> <u>ENDS</u>	<u>PERCENT</u> <u>ENTERING</u>	<u>PERCENT</u> <u>EXITING</u>	<u>NEW</u> <u>TRIP ENDS</u> <u>ENTERING</u>	<u>NEW</u> <u>TRIP ENDS</u> <u>EXITING</u>
Daily	71.0%	8450	50%	50%	4225	4225
AM Peak Hour	71.0%	192	62%	38%	119	73
PM Peak Hour	71.0%	733	48%	52%	352	381

SOURCE: ITE, "Trip Generation", 11th Edition, Excel Spreadsheet (LUC 820), < 300,000 gsf

Estimated Value

BUCKHOLZ TRAFFIC

TABLE 5

TRIP GENERATION CALCULATIONS

TRAIN-TO-TRUCK TRANSFER FACILITY

T = Number of Vehicle Trip Ends

Size of Buildings = 119,000 gsf (X = 119.0 kgsf)

<u>TIME PERIOD</u>	<u>TRIP GENERATION</u>	<u>TRIP ENDS</u>	<u>TRIP ENDS ENTERING</u>	<u>TRIP ENDS EXITING</u>
WEEKDAY				
Daily	10 Employees (10 x 1.5)	86	15	15
	24 Trucks		24	24
	Miscellaneous		<u>4</u>	<u>4</u>
			43	43
AM Peak Hour	10 Employees	16	10	0
	24 Trucks (24 x 10%)		2	2
	Miscellaneous		<u>1</u>	<u>1</u>
			13	3
PM Peak Hour	10 Employees	16	0	10
	24 Trucks (24 x 10%)		2	2
	Miscellaneous		<u>1</u>	<u>1</u>
			3	13

SOURCE: Estimated From Client-Supplied Activity Data

TRUCKS - Average 10 per day, Maximum 24 per day

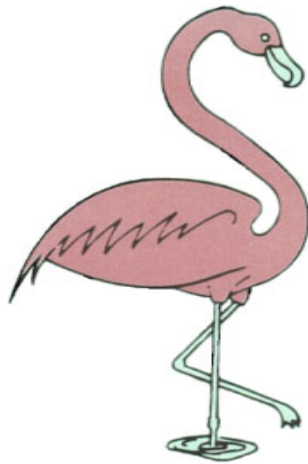
EMPLOYEES - 5 to 10

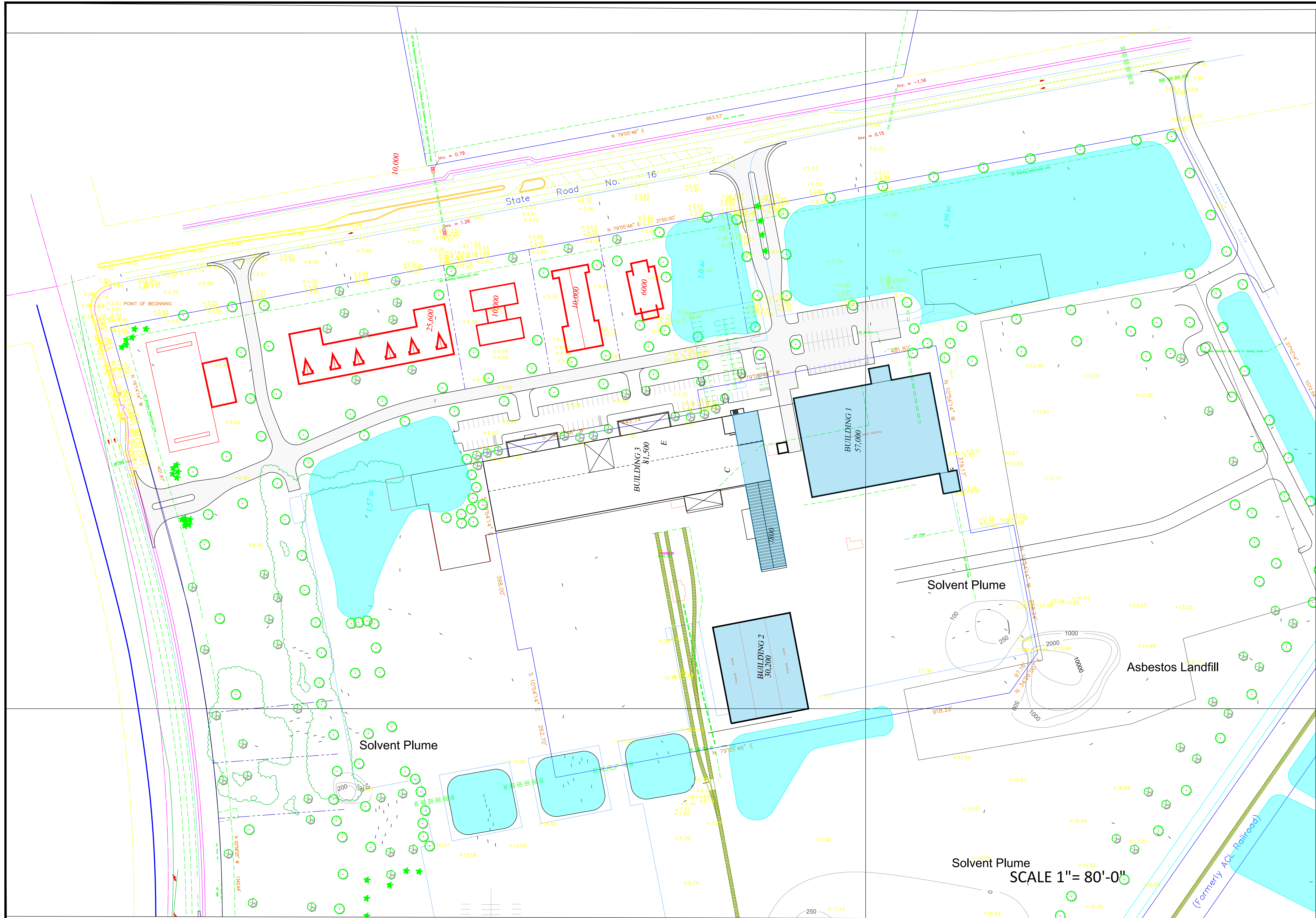
Use Max Values

Assume 10% Miscellaneous Trips

BUCKHOLZ TRAFFIC

ATTACHMENT A





Solvent Plume
 SCALE 1" = 80'-0"

CYPRESS MANAGEMENT
 AND DESIGN
 P.O. BOX 8880 FLEMING ISLAND, FL 32006
 904-759-9576 ---- SITEOPT@BELLSOUTH.NET

DATE	REVISIONS

17-16 COMMERCE PARK
 PRELIMINARY MASTER
 SITE PLAN

DATE 5-9-2023
 DRAWN BY
 CHKD. BY
 JOB NO.

KELLY W HARTWIG
 LA 1252
 SHT. LC-3.1

ENTRANCE

FUTURE BIG BOX AND RETAIL

M-1 WAREHOUSE

OUTSIDE STORAGE

RAIL SPURS

OUTSIDE STORAGE

M-2 INDUSTRIAL

ENTRANCES

COMMERCIAL DEVELOPMENT AREA

COMMERCIAL DEVELOPMENT AREA

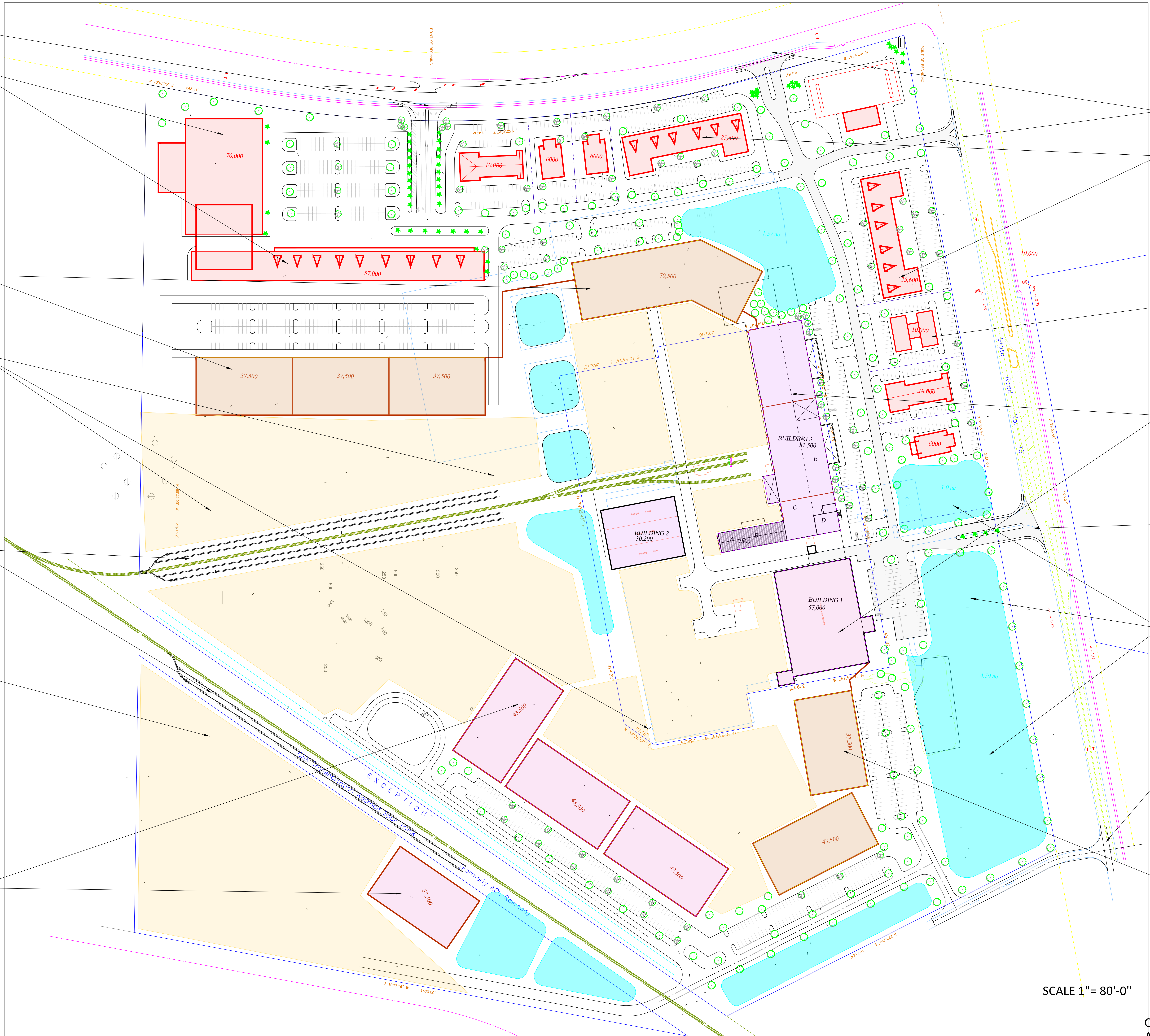
M-2 INDUSTRIAL

ENTRANCE

NEW RETENTION AREAS

ENTRANCE

M-1 WAREHOUSE



SCALE 1"= 80'-0"