

# *TRAFFIC ANALYSIS REPORT*

## Capstone Port St. Lucie, FL

*Prepared for:*  
Capstone Companies, Inc.

*Prepared by:*



Engineering & Planning, Inc.

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## ***EXECUTIVE SUMMARY***

MacKenzie Engineering and Planning, Inc. performed an analysis of the traffic impacts resulting from the Capstone. The project is located at the southwest corner of Paar Drive and Village Parkway, Port St. Lucie, Florida. The applicant proposes 286 attached and detached homes.

The proposed project is expected to generate the following net new external trips and driveway trips:

- 2,734 daily, 208 AM peak hour (52 in/156 out), and 279 PM peak hour (176 in/103 out) trips.

Paar Drive will need to be constructed from Village Parkway to the western project entrance. A left-turn deceleration lane is recommended at the western driveway. A traffic signal is not warranted at the Paar Drive & Village Parkway intersection at this time. The Village Parkway northbound left-turn lane and southbound right-turn lanes at Paar Drive will need to be restriped with turn arrows.

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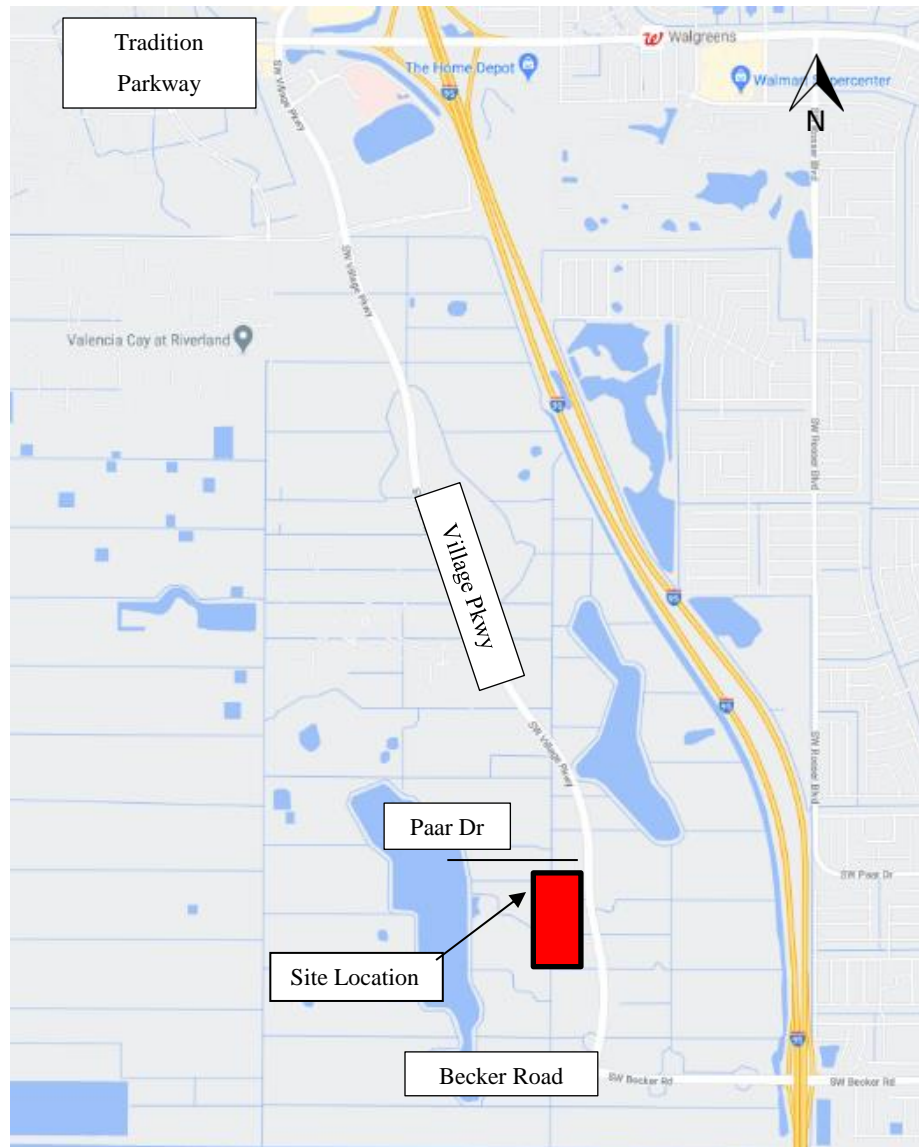
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## ***INTRODUCTION***

MacKenzie Engineering & Planning, Inc. was retained to prepare a traffic impact analysis for Capstone. This document presents the methodology used and the findings of the traffic impact analysis. The analysis was conducted in accordance with the requirements of the City of Port St. Lucie.

This analysis has been prepared to evaluate traffic impacts resulting from 286 homes. The project is located at the southwest corner of Paar Drive and Village Parkway.

**Figure 1. Site Location Map**



## ***PROJECT TRAFFIC***

### ***Trip Generation***

The study uses trip generation rates for Single Family homes (ITE Land Use 210) published in the Institute of Traffic Engineers' (ITE) report, *Trip Generation (10<sup>th</sup> Edition)*. The proposed plan includes single family detached homes and two-unit attached homes. The homes are generally one and two bedrooms which is smaller than a traditional suburban home with attached garages. The homes are a hybrid between a single-family detached home and multi-family low rise home. Multi-family low-rise homes are a minimum of three attached units as defined in ITE's 10<sup>th</sup> edition. Therefore, the homes will be classified as single family homes in order to provide a conservative analysis.

The applicant proposes 286 single family homes.

The proposed project is expected to generate the following net new external trips and driveway trips:

- 2,734 daily, 208 AM peak hour (52 in/156 out), and 279 PM peak hour (176 in/103 out) trips.

### ***Internal Capture***

The site contains no internal capture.

### ***Pass-by Trip Capture***

The pass-by trip capture rate is 0.

Table 1. Trip Generation

<b>EXHIBIT 1</b>									
<b>CAPSTONE</b>									
<b>TRIP GENERATION</b>									
Land Use	Intensity		Daily Trips	AM Peak Hour			PM Peak Hour		
				Total	In	Out	Total	In	Out
<b>Proposed Site Traffic</b>									
Single Family Detached	286	DU	2,734	208	52	156	279	176	103
Note: Trip generation was calculated using the following data:									
Land Use	ITE Code	Unit	Daily Rate	Pass-by Rate	AM Peak Hour		PM Peak Hour		
					in/out	Rate	in/out	Equation	
Single Family Detached	210	DU	$\ln(T) = 0.92 \ln(X) + 2.71$	0%	25/75	$T = 0.71 (X) + 4.8$	63/37	$\ln(T) = 0.96 \ln(X) + 0.2$	

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## ***TRAFFIC DISTRIBUTION***

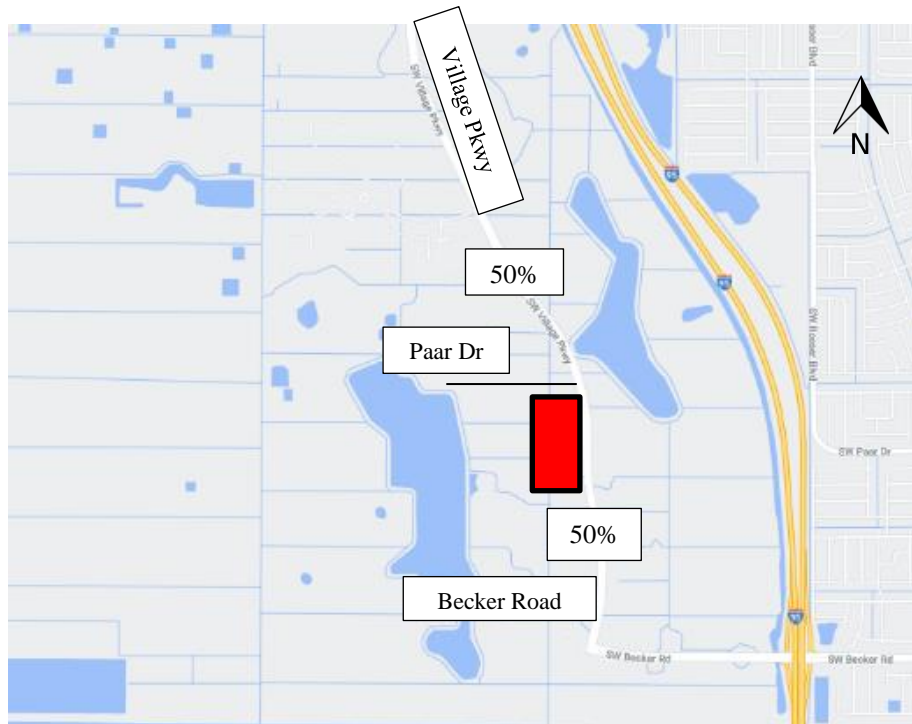
Traffic distribution and assignment was determined using engineering judgment, trip lengths, surrounding uses and review of the roadway network. The overall distribution is summarized by general directions and is depicted below:

NORTH	-	50 percent
SOUTH	-	50 percent
WEST	-	0 percent
EAST	-	0 percent

## ***TRAFFIC ASSIGNMENT***

The distributed external trips for the project were assigned to the roadway network within the radius of influence. The project assignment is shown in Figure 2.

**Figure 2. Traffic Assignment**



## ***INTERSECTION ANALYSIS***

The Paar Drive and Village Parkway intersection is currently not constructed. The traffic volumes on Village Parkway are currently too low to warrant a traffic signal based on existing traffic volumes. A traffic signal is expected to be warranted in the future.

The following are recommended initially:

1. Restripe the northbound left-turn with left-turn arrows
2. Remove the existing hatching and restripe the southbound right-turn lane with right-turn arrows
3. Stop signs on the side street approach(es)

The intersection should be monitored for signalization in the future because a signal is anticipated to be needed in the future.



## ***DRIVEWAYS***

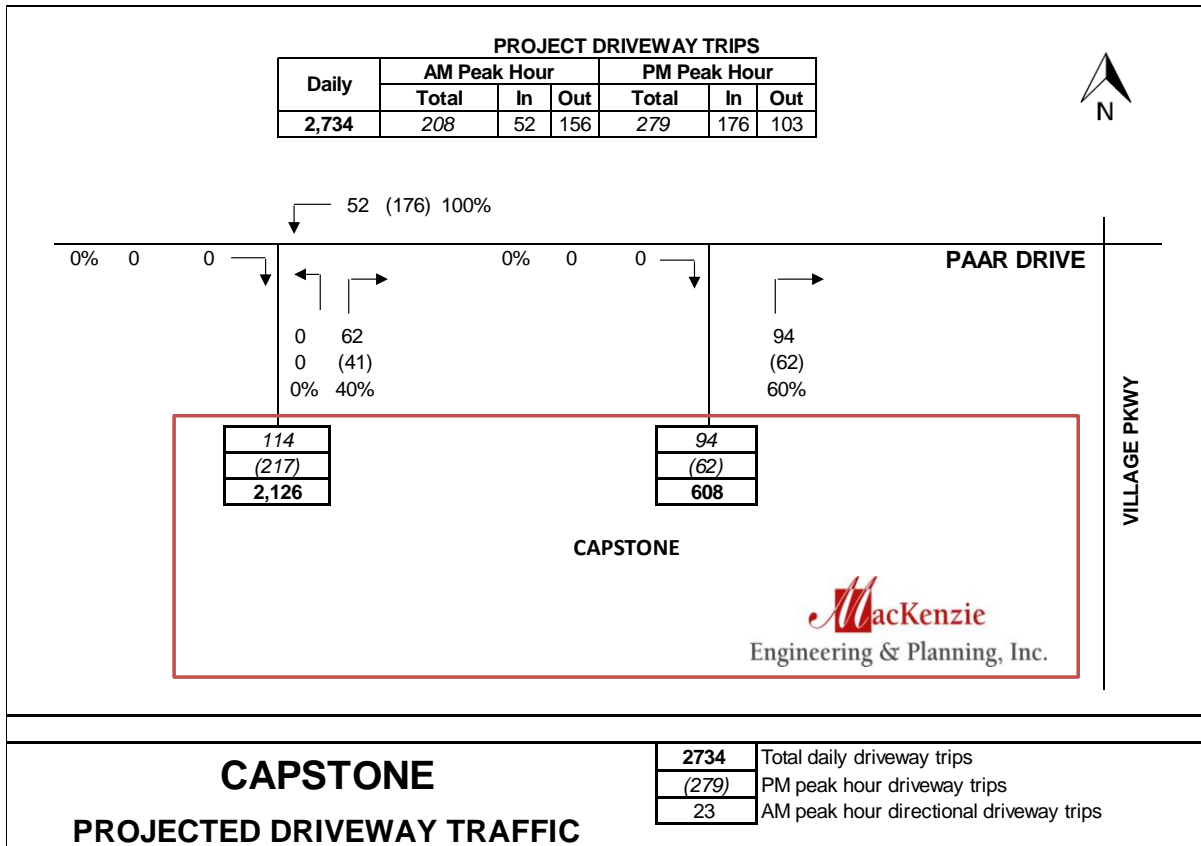
### ***Proposed Access***

The site proposes two points of access:

- Paar Drive West – Full Opening
- Paar Drive East – Right-in/Right-out

Figure 3 displays the proposed driveway volumes.

**Figure 3. Proposed Driveway Volumes**



### ***Paar Drive West Entrance***

Paar Drive West entrance is approximately 700 feet west of the Paar Drive & Village Parkway intersection. The intersection is recommended for a full opening. Based on the existing road network, no traffic is destined to or from the west because Paar Drive does not exist. Based on the proposed land uses in Southern Grove, Riverland and Wilson Groves, only a small amount of traffic will be destined

to the west in the future because of a lack of destinations for residential trips. It is expected that a small of school trips will be destined to the west once schools are constructed to the west. Therefore, the following geometry is recommended:

- Northbound – one lane approach
- Eastbound – none
- Westbound – Left-turn Lane

### *Paar Drive East Entrance*

Paar Drive east entrance is approximately 300 feet west of the Paar Drive & Village Parkway intersection. Therefore, the intersection is recommended for a right-in/right-out because of proximity to a future signalized intersection. Based on the existing road network, no traffic is destined to or from the west because Paar Drive does not exist. Paar Drive is expected to be constructed as a two-lane undivided roadway and it is not expected that vehicles will be able to U-turn at the western entrance to enter the eastern entrance. Therefore no inbound traffic is expected at this entrance in the near future. It is expected that a small of school trips will arrive from the west once schools are constructed to the west. Therefore, the following geometry is recommended:

- Northbound – one lane approach
- Eastbound – none
- Westbound – no access

## ***CONCLUSION***

MacKenzie Engineering and Planning, Inc. performed an analysis of the traffic impacts resulting from the Capstone. The project is located at the southwest corner of Paar Drive and Village Parkway, Port St. Lucie, Florida. The applicant proposes 286 attached and detached homes.

The proposed project is expected to generate the following net new external trips and driveway trips:

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## ***APPENDICES***

A- ITE Trip Generation 10<sup>th</sup> Ed.: Single Family Detached (Land Use 210)

B- Site Plan

## Single-Family Detached Housing (210)

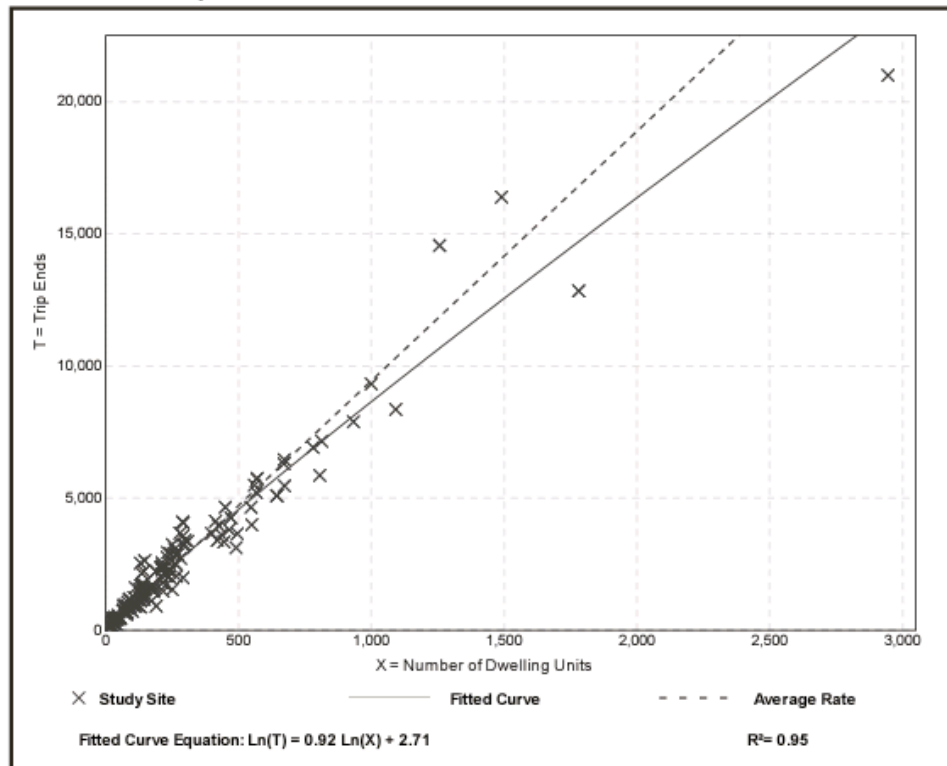
**Vehicle Trip Ends vs: Dwelling Units**  
**On a: Weekday**

**Setting/Location: General Urban/Suburban**  
Number of Studies: 159  
Avg. Num. of Dwelling Units: 264  
Directional Distribution: 50% entering, 50% exiting

### Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.44	4.81 - 19.39	2.10

### Data Plot and Equation



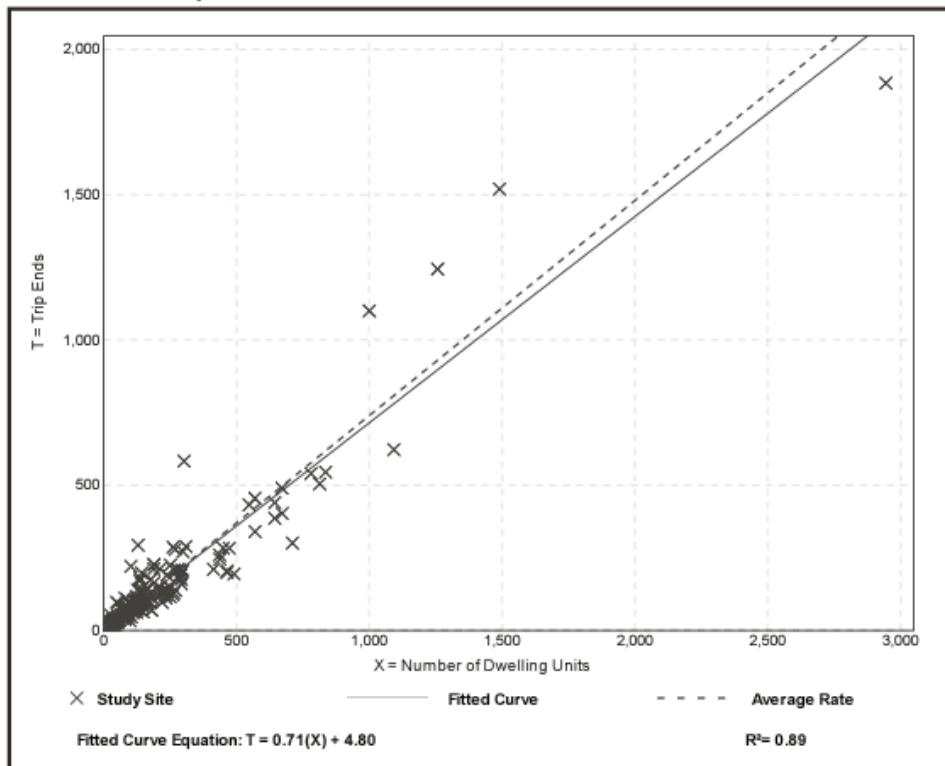
## Single-Family Detached Housing (210)

**Vehicle Trip Ends vs: Dwelling Units**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 7 and 9 a.m.**  
**Setting/Location: General Urban/Suburban**  
 Number of Studies: 173  
 Avg. Num. of Dwelling Units: 219  
 Directional Distribution: 25% entering, 75% exiting

### Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.74	0.33 - 2.27	0.27

### Data Plot and Equation



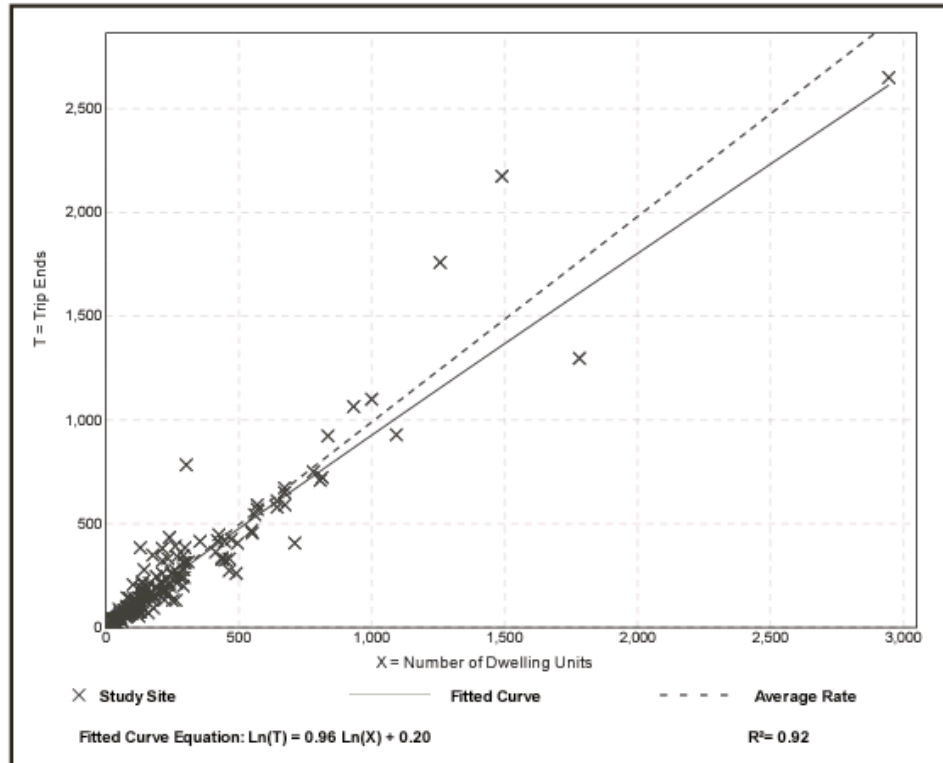
## Single-Family Detached Housing (210)

**Vehicle Trip Ends vs: Dwelling Units**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 4 and 6 p.m.**  
**Setting/Location: General Urban/Suburban**  
 Number of Studies: 190  
 Avg. Num. of Dwelling Units: 242  
 Directional Distribution: 63% entering, 37% exiting

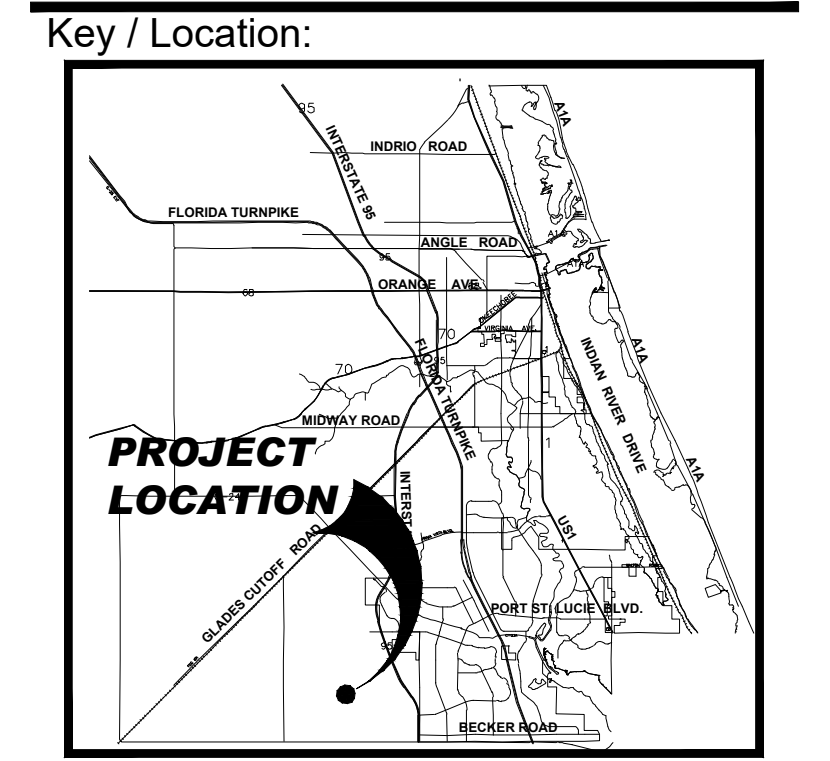
### Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.99	0.44 - 2.98	0.31

### Data Plot and Equation







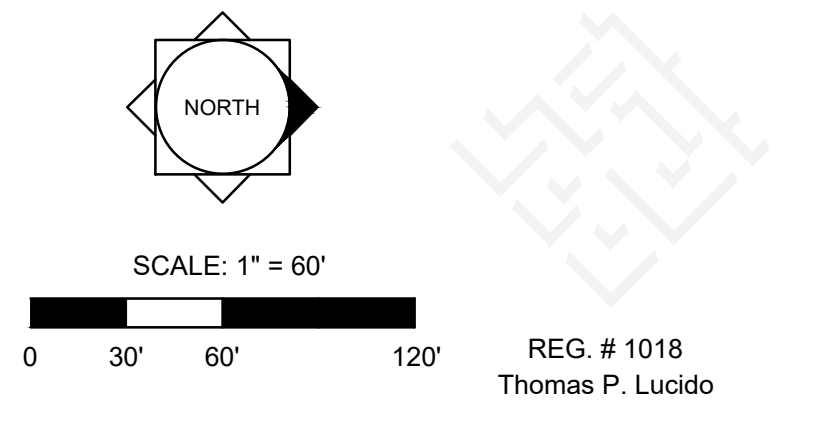
**Project Team:**  
 Owner/Developer: Mattany Homes  
 1500 Gateway Blvd, Suite 212  
 Boynton Beach, FL 33426  
 561-739-7902  
 Engineer: Kimley-Horn  
 445 24th Street, Suite 200  
 Vero Beach, FL 32960  
 772-794-4100  
 Surveyor: Caulfield & Wheeler, Inc  
 410 SE Port St. Lucie Blvd  
 Port St Lucie, FL 34984  
 772-408-1920  
 Landscape Architect/Land Planner: Lucido & Associates  
 701 E Ocean Blvd  
 Stuart, FL 34904  
 772-220-2100

# Capstone Community

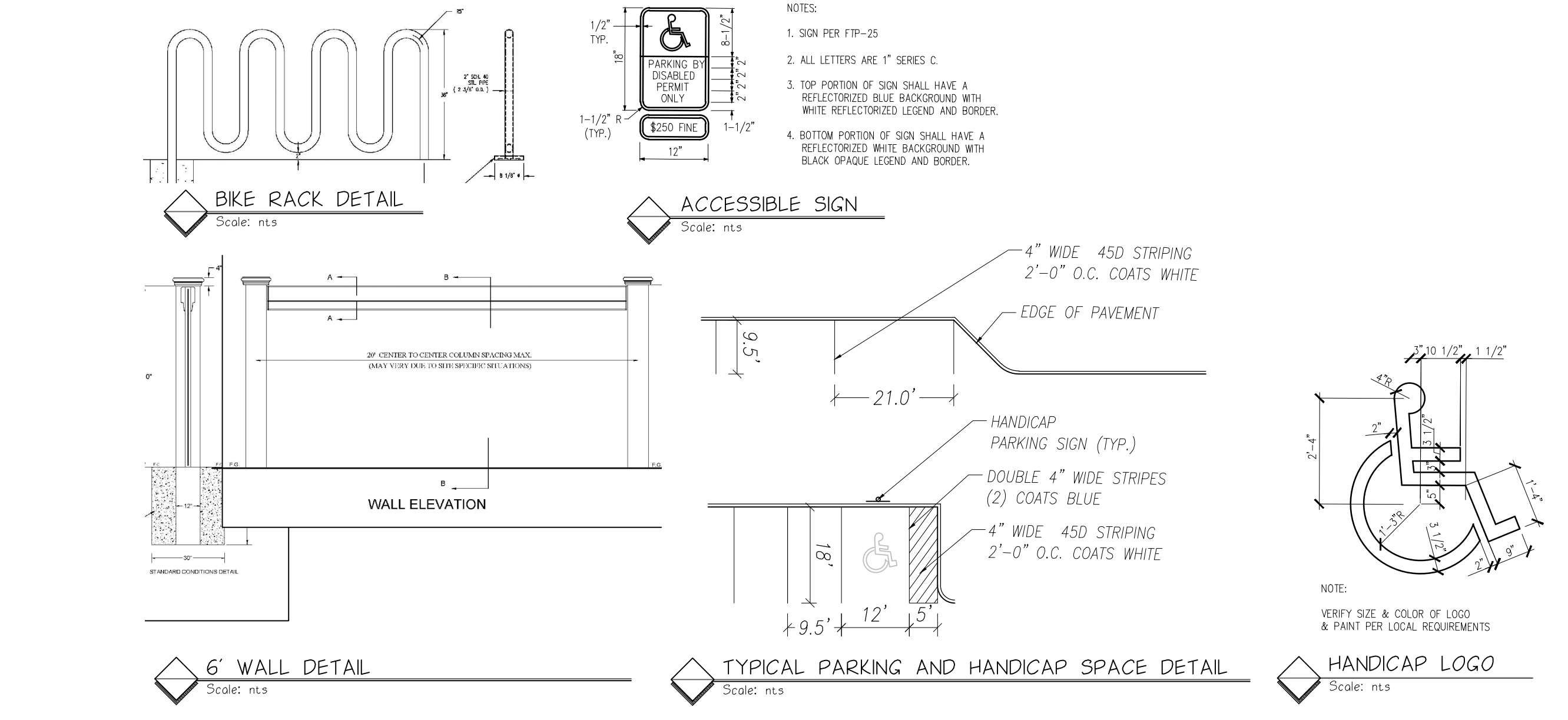
Port St. Lucie, Florida  
**Site Plan**  
 August 5, 2020

City of Port St. Lucie P# 20-141  
 PLSUD No. 5367

Date	By	Description
9.11.20	MY	Response to SPRC comm



Designer: [Blank] Sheet: [Blank]  
 Manager: [Blank]  
 Project Number: LA 20-370  
 Municipal Number: P20-141  
 Computer File: [Blank]



**Product Type / Unit Count**

1 BR / 1 STORY	1 Bedroom Cottage	15 Units
1 BR / 2 STORY	1 Bedroom Cottage / Over Garage	33 Units
2 BR / 1 STORY	2 Bedroom Cottage	119 Units
3 BR / 1 STORY	3 Bedroom Cottage	29 Units
<b>Total Units</b>		<b>286 Units</b>

**Building Setback Requirements**

	Required	Provided
Front:	25'	25'
Side:	10'	14'
Side:	10'	94.7'
Rear:	10'	21.3'

**Legal Description:**

A PORTION OF PARCEL 28 ACCORDING TO SOUTHERN GROVE PLAT NO. 3, AS RECORDED IN PLAT BOOK 61, PAGE 17, PUBLIC RECORDS OF ST. LUCIE COUNTY, FLORIDA AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS: BEGINNING AT THE NORTHERLY NORTHEAST CORNER OF PARCEL 28 OF THE ABOVE MENTIONED SOUTHERN GROVE PLAT NO. 3, THENCE SOUTH 44°59'52" EAST, A DISTANCE OF 42.43 FEET; THENCE SOUTH 00°00'00" EAST, TO THE WEST RIGHT-OF-WAY LINE OF VILLAGE PARKWAY, A DISTANCE OF 14.19 FEET TO A POINT OF CURVATURE OF A CURVE CONCAVE TO THE EAST, HAVING A RADIUS OF 4119.00 FEET; THENCE SOUTHERLY, ALONG THE ARC OF SAID CURVE AND ALONG SAID WEST RIGHT-OF-WAY LINE THROUGH A CENTRAL ANGLE OF 11°51'40", A DISTANCE OF 852.70 FEET; THENCE SOUTH 11°51'40" EAST, ALONG SAID WEST RIGHT-OF-WAY LINE OF VILLAGE PARKWAY, A DISTANCE OF 675.54 FEET TO A POINT OF CURVATURE OF A CURVE CONCAVE TO THE EAST, HAVING A RADIUS OF 3669.00 FEET; THENCE SOUTHERLY, ALONG THE ARC OF SAID CURVE AND ALONG SAID WEST RIGHT-OF-WAY LINE THROUGH A CENTRAL ANGLE OF 01°59'38", A DISTANCE OF 133.47 FEET; THENCE DEPARTING SAID WEST RIGHT-OF-WAY LINE, NORTH 90°00'00" WEST, A DISTANCE OF 394.21 FEET TO A POINT OF INTERSECTION WITH THE EAST LINE OF THAT CERTAIN FFL EASEMENT AS RECORDED IN DEED BOOK 234, PAGE 102, AND DEED BOOK 238, PAGE 34, OF THE PUBLIC RECORDS OF ST. LUCIE COUNTY, FLORIDA; THENCE, ALONG SAID EAST LINE, NORTH 00°02'34" EAST, A DISTANCE OF 163.05 FEET TO THE NORTH LINE OF SAID PARCEL 28, THENCE, ALONG SAID NORTH LINE, SOUTH 89°59'43" EAST, A DISTANCE OF 650.91 FEET TO THE POINT OF BEGINNING, CONTAINING 30.000 ACRES OF LAND, MORE OR LESS.

**Site Data**

Total Site Area: 1,306,710 sq ft (29.99 ac) 100%  
 Future Land Use Designation: NCD - New Community Development  
 Existing Zoning: MPUD  
 Building Height: 35' max  
 Total Units: 286 DU  
 Density: 9.53 DU/ac  
 Building Coverage: 6.31 ac (21%)  
 Maximum Impervious Area Allowed: 23.99 ac (80%)  
 Open Space: 16.41 ac (55%)

**Pervious / Impervious Calculations**

Impervious Area:	591,852 sq ft (13.59 ac)	45%
Building Coverage:	274,736 sq ft (6.31 ac)	47%
Pavement:	225,743 sq ft (5.18 ac)	38%
Sidewalks/Pedestrian Areas:	91,373 sq ft (2.10 ac)	15%
Pervious Area:	714,858 sq ft (16.41 ac)	55%
Landscape:	511,581 sq ft (11.74 ac)	72%
Ponds/Lakes:	203,277 sq ft (4.67 ac)	28%

**Useable Open Space Area:**

Trail and Open Space:	60,234 sq ft (1.38 ac)	4%
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**Parking Requirements**

Parking Required - 1.5 sp/unit at 286 units	429 sp
(parking rate per SG-4 MPUD Sec.3 A.1)	
Total Parking Provided:	490 sp (1.7 sp/unit)
(quantity does not exceed allowable maximum of 125% of required spaces)	
Garage Spaces: (may be considered as ADA spaces)	66 sp
On-Street Spaces:	424 sp
Perpendicular Spaces (includes 2 ADA)	241 sp
Parallel Spaces	183 sp