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Transportation Supporting Data

The purpose of the Transportation Element is to plan for systems that ensure the provision of adequate transit, circulation, parking, pedestrian and non-vehicular circulation facilities to meet the future needs of the University and to coordinate the location and implementation of these facilities with the host community and related entities.

TRANSIT, CIRCULATION, AND PARKING SUB-ELEMENT

Transportation Principles

The Florida Atlantic University Treasure Coast Campus is a branch college campus located in Port St. Lucie, Florida. FAU offers junior, senior, and graduate level courses at this campus. Freshman and sophomore level courses are offered at Indian River Community College (IRCC; which has its main campus in Fort Pierce and a branch campus adjacent to the FAU Treasure Coast Campus).

The FAU Treasure Coast campus consists of 50 acres. In addition, FAU and IRCC have formed a partnership to build joint facilities. IRCC's St. Lucie West branch campus consists of 40 acres. Access to the campus is provided by St. Lucie West Boulevard, a four-lane, major east-west facility that connects to both I-95 and US 1 (via Prima Vista Boulevard). (See **Figure 11.1**).

The Treasure Coast Campus reflects the travel characteristics of a campus oriented toward part-time, commuter students, with all of the student population living off-campus. The campus is being designed with an internal circulation and parking system that accommodates users' needs and provides for pedestrian access. Given the proximity of the campus to Interstate 95 (less than one mile) and the large commuter component, quantifying the campus's transportation interactions with the host community will be critical to maintain a high level of transportation facilities.

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Due to higher automobile usage on a campus oriented to commuter students, access to the campus from outlying residential areas must be achieved through either the local roadway network or through a transit system. The local roadway network provides entrance opportunities from University Boulevard and California Boulevard (see **Figure 11.4**). In addition to entrance locations, major gateway entrances will be designed to provide pleasing visual experiences upon entering campus. Local area traffic operations must also be addressed to ensure convenient access to the campus and operational efficiency of the surrounding roadway network.

To analyze the transportation element of the Florida Atlantic University Treasure Coast Campus Master Plan, the Florida Board of Regents, in *Guideline for the Comprehensive Campus Master Plan System*, outlines the effort to consist of the following three primary components:

- Transit
- Circulation
- Parking

The analyses presented in this section follow the *Guidelines* for the Treasure Coast Campus.

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1 Existing Facilities and Inventory

The FAU Treasure Coast Campus is located in Port St. Lucie. It is anticipated that the majority of students attending this campus will reside in St. Lucie, Indian River, and Martin counties. The campus is located within the St. Lucie West community, and is situated within one mile of the Interstate 95 interchange at St. Lucie West Boulevard. The campus is bounded by California Boulevard to the east and University Drive to the south. Access to the campus is provided by St. Lucie West Boulevard, a four-lane, major east-west facility that connects to both I-95 and US 1 (via Prima Vista Boulevard).

The following *Existing Facilities and Inventory* documentation relates to the data requirements referenced in Rule 6C-21.203(3)(a), FAC.

1.a. Inventory of Existing Campus Parking Facilities

There are approximately 150 existing campus parking spaces. The campus will be designed to meet future needs with adequate and convenient parking for students, faculty, administrative staff, visitors, disabled persons, and service vehicles. (See *2.a Future Parking Needs Analysis*)

Special Events Parking

It is anticipated that many special events can be scheduled during off-peak parking demand periods. Campus design of internal circulation roadways and parking facilities should provide convenient access to events held anywhere on campus. (See *2.a Future Parking Needs Analysis*)

Surface and Multi-Level Parking (Context Parking)

As the campus and its transportation facilities are designed as a self-contained system, there will be no provision for context (non-university controlled) parking. (See *2.a Future Parking Needs Analysis*)

1.b Inventory of Off-Campus Parking

While parking is available at the adjacent Indian River Community College branch campus, it is anticipated that those spaces will be used by IRCC students, and that FAU's parking supply will be designed to accommodate the anticipated demand.

1.c Crash Locations and Occurrences

Crash data was obtained for a three-year period (1997-1999) for all roadways within the vicinity of the campus. There were no reported crashes within the campus roadways or parking lots. **Table 11.1** lists crashes by type.

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Table 11.1
Traffic Crashes in Vicinity of Campus 1997-1999

Crash Location	Crash Type		
	Total	With Injuries	Without Injuries
University Blvd	0	0	0
California Blvd/St Lucie West Blvd	16	8	8
Country Club Dr/St Lucie West Blvd	9	4	5
Peacock Blvd/California Blvd	3	3	0

source: St. Lucie County Traffic Engineering, June 2000

1.d Campus Roadway Classifications

Existing campus roadway facilities consist only of access drives to parking lots. Therefore, this data requirement does not apply.

1.e Context Roadway Classifications

The context area roadways and laneages are depicted in **Figure 11.1**. Roadways in the transportation context area of shown on **Figure 11.1** that are not assigned a classification category are designated local roadways.

1.f Level of Service (LOS)

All roads within the campus boundaries will exclusively serve campus generated trips. It is not anticipated that traffic volumes for these roadways will be recorded in the future, unless circumstances dictate otherwise.

Context roadway volumes were provided by the St. Lucie County Community Development Department. **Table 11.2** lists these roadways:

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Table 11.2 Context Roadway Volumes and Level of Service

	1999/2000 Conditions			LOS
	Lanes	Capacity	AADT	
University Blvd				
California Blvd to FAU entrance	2	16,000	1,600	C
FAU entrance to Peacock Blvd	2	16,000	1,900	C
Peacock Blvd				
California Blvd to University Blvd	2	16,000	11,100	D
University Blvd to St Lucie West Blvd	2	16,000	11,100	D
California Blvd				
St. Lucie West Blvd to University Blvd	2	16,000	2,500	C
University Blvd to IRCC	2	16,000	1,500	C
St Lucie West Blvd (Prima Vista)				
west of I-95	2	10,900	3,400	C
I-95 to Peacock Blvd	4	35,000	14,000	B
Peacock Blvd to Country Club	4	35,000	19,700	B
Country Club to Cashmere	4	35,000	20,000	C
Cashmere to Bayshore	4	34,300	20,000	C
Bayshore to Airoso	4	34,300	20,000	C
Interstate 95				
Midway Rd to St Lucie West Blvd	6	73,400	40,200	B
St Lucie West Blvd to Gatlin Blvd	6	73,400	37,100	B
Cashmere Blvd				
Torino to Prima Vista Blvd	2	17,430	12,780	C
Prima Vista Blvd to S Peacock Blvd	2	17,430	9,420	B
Bayshore Blvd				
Floresta to Prima Vista	2	18,260	8,500	B
Prima Vista to West Virginia	2	18,260	13,400	C

source: City of Port St Lucie, St Lucie County Traffic Engineering, FDOT
LOS determined by use of 1998 FDOT Generalized LOS Tables

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1.g Traffic Counts

See **Table 11.2** for traffic counts on context roadways and access points to the campus.

1.h Trip Generation

Trip generation was determined by the BR-052 study prepared for University campuses throughout Florida. The appropriate rates for this campus were determined to be 1.70 trips per student headcount and 3.21 trips per faculty/staff headcount. Based on 1998/99 enrollment, this equates to 1,160 vehicle trips per day. Based on actual traffic counts, this number may be on the high conservative side, although the generation generally compares well with actual traffic counts conducted at the campus considering the 'newness' of the campus and the adjustments to area travel patterns.

1.i Existing Traffic Analysis Zone (TAZ) Identification

The FAU Treasure Coast Campus is contained within TAZ number 170 of the St. Lucie Metropolitan Planning Organization (MPO) traffic model. This model is maintained by the St. Lucie MPO and was most recently re-validated in 1999.

1.j Transit Routes

The St. Lucie County Council on Aging is now operating a fixed route transit system to provide transportation to the transportation around the St. Lucie area. Trips provided by this system include medical, adult day care, shopping, and social trip purposes and may in the future connect to local educational campuses.

2 Analysis Requirements

For developing transportation related data and analysis for Florida's University Campuses, the Board of Regents (BOR) funded the State University System Transportation Study (SUSTS) in 1992-93. This study documented the trip generation and characteristics at 14 University campuses, including the FAU Boca Raton and Davie Campuses. The primary results or products of the study were the estimated daily auto trip rates (external), mean auto occupancy rates, and average trip lengths (external) for both students and employees (faculty/staff). While the State University System of Florida utilizes the full time equivalent (FTE) parameter for much of its programming and planning, actual headcount data is more adequate and commonly used for transportation related analyses. Most of the following analyses involve the use of student enrollment (headcount). For the Treasure Coast Campus, head count numbers are calculated 2.5:1 ratio for *branch students to FTE*. This ratio is relatively high, since many of those attending classes at this campus are part-time students. **Table 11.3** details the FTE and Headcount totals for various years of the campus development.

SUPPORTING DATA**11 Transportation****Table 11.3 FAU Treasure Coast Campus FTE and Headcount**

Year	FTE	Headcount ^a
1998/99 (Current)	240	600
1999/00	216	540
2000/01	233	583
2001/02	269	673
2002/03 (Five Year)	289	723
2003/04	315	788
2004/05	335	838
2005/06	355	888
2006/07	378	945
2007/08 (Ten Year)	400	1,000
2008/09	421	1,053

^a Headcount calculation assumes 2.5 to 1 ratio (Headcount to FTE) for branch campus students.

^b Based on 1998/99 enrollment & projection data.

2.a Future Parking Needs Analysis

Future parking needs for the FAU Treasure Coast Campus were calculated for the beginning of the planning period (Year 1998/99) and subsequent years through the Ten Year Master Plan (Year 2007/08). Parking demand was calculated for the different user groups associated with the campus. These users include branch campus, faculty and administrative staff, and visitors. Parking must also be provided for service and delivery vehicles as well.

To calculate the number of parking spaces needed, certain assumptions regarding the parking needs of the user groups were made. For students, a *parking space per student* ratio of 0.35:1 was used. A *parking space per faculty/staff* ratio of 0.65:1 was used for faculty and administrative staff, and *visitor* parking needs were estimated at 3% of the total student parking. **Table 11.4** details the number of parking spaces estimated for various years.

Table 11.4 Required Parking Spaces for FAU Treasure Coast Campus

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Year	Headcount ^a		Number of Parking Spaces ^b			
	Students	Fac/Staff ^c	Students	Fac/Staff	Visitor	Total
1998/99	600	14	210	9	6	225
1999/00	540	54	189	35	6	230
2000/01	583	58	204	38	6	248
2001/02	673	67	236	44	7	286
2002/03	723	72	253	47	8	308
2003/04	788	79	276	51	8	335
2004/05	838	84	293	54	9	357
2005/06	888	89	311	58	9	378
2006/07	945	95	331	61	10	402
2007/08	1,000	100	350	65	11	426
2008/09	1,053	105	369	68	11	448

^a Headcount number represents total at each interim period.

^b Number of spaces based on: 0.35 spaces per student and 0.65 spaces per employee. Visitor parking needs were estimated at 3% of the total student parking.

^c Number of faculty and staff represent approximately 10% of total FTE. 1998/99 reflects actual number of faculty/staff.

The analysis above indicates that there is a current parking demand of 225 parking spaces and a ten-year buildout demand of 959 parking spaces at the FAU Treasure Coast Campus. These numbers reflect the assumptions pertaining to parking ratios described, which is based on the characteristics at the FAU Boca Raton Campus and sound planning assumptions. *Note: These initial parking estimates are considered “worst case” or conservatively high due to part-time student orientation, minimal transit, bicycle and walking trip-making occurring today, and a standard 10:1 student to faculty/staff ratio.*

The parking supply should be evaluated as the campus matures to validate the relationship between the building program and this demand analysis. If actual future parking demand varies significantly from the assumed demand, then the demand analysis should be revised accordingly. Additionally, policies implemented to reduce the amount of required parking (see 2.d *Parking Reduction Analysis*) should be evaluated for their effectiveness and potential to decrease the future parking demand estimates.

Figure 11.4 depicts the anticipated parking lot layout and internal circulation roadways. The

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parking lots are denoted with their approximate capacity and their relationship to the phasing of the academic program.

Special Events

It is anticipated that special events will occur during off-peak parking demand periods and may be accommodated with special events parking plans implemented with event parking staff.

Surface and Multi-level Parking

The FAU Treasure Coast Campus and its transportation facilities are designed as a self-contained system. All parking needs are satisfied on the campus site and there is no programmed provision for university-controlled parking on roadways adjacent to the campus or for off-campus sites. Currently, no multi-level parking structures are planned on the campus.

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2.b Required Land Area Analysis

The required land area analysis is based on general parking facility layouts, with an average assumed area of 350 sf/space, or 125 spaces per acre. *The use of less dense ratios, such as 100 spaces per acre, would result in higher land requirements.* Actual parking facility size will vary based on pavement configuration, landscaping and other factors, but this average area per space provides a sound planning estimate. **Table 11.5** details the acreage necessary to meet the parking demand estimates for the campus. The table shows a current requirement of 2.05 acres and a ten-year Master Plan requirement of 7.7 acres, which is about 15% of the total campus land area.

Table 11.5 Required Parking Land Area for FAU Treasure Coast Campus

Year	Required Parking Area in Acres			
	Students	Fac/Staff	Visitor	Total
1998/99	1.69	0.31	0.05	2.05
1999/00	0.00	0.00	0.00	-
2000/01	0.00	0.00	0.00	-
2001/02	0.00	0.00	0.00	-
2002/03	4.39	0.81	0.13	5.33
2003/04	4.75	0.88	0.14	5.77
2004/05	5.10	0.95	0.15	6.21
2005/06	5.48	1.02	0.16	6.67
2006/07	5.90	1.10	0.18	7.17
2007/08	6.34	1.18	0.19	7.70
2008/09	6.81	1.27	0.20	8.28
2009/10	7.33	1.36	0.22	8.91

2.c Capacity of University Lands to Accommodate Parking Needs

The Campus Master Plan is designed to accommodate all future parking needs on-site.

2.d Practical Methods to Reduce Amount of Parking

Objective 3C of **Element 11** will define the monitoring and analysis of the demand/supply relationship of parking on campus. It is the intent of that Objective and related Policies to target or maintain parking ratios at levels no higher than initially planned, and to thereby support alternative transportation modes.

2.e Off-Campus Lands for University Parking

University-related parking is not planned for off-campus lands.

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2.f Impact of Off-Campus Parking

Not applicable given that no off-campus parking facilities are planned or anticipated.

2.g Analysis of Projected Traffic Volumes

To estimate the FAU Treasure Coast Campus auto trip generation (external to campus), a person-based trip generation approach was used. This approach utilizes the trip characteristics information contained in the State University System Transportation Study (SUSTS) conducted and prepared in 1993. **Table 11.6** details the SUSTS data and other data used to estimate future daily trip generation at the FAU Treasure Coast Campus.

Table 11.6 External Trip Characteristics by Auto

Population	Person Trip Rate by Auto ^a	Auto Occupancy ^b
Branch Students	1.70	1.11
Faculty/Staff	3.21	1.24

^a Number of person trip ends by automobile

^b Persons per vehicle

The *person trip by auto* rate for branch students (1.70 person trips by auto) is derived from the SUSTS data related to the FAU Boca Raton campus. This rate is based on personal interviews and daily trip logs administered primarily to off-campus (commuter) students, with only a very small sample of on-campus housing students. This rate was utilized for branch students because the Boca campus and the proposed Treasure Coast campus are anticipated to be very similar in their commuter characteristics during the initial 10 year planning horizon.

The SUSTS also found that the trip rates for faculty and staff varied very little among all university sites surveyed. Therefore, the weighted mean *person trip by auto* rate of 3.21 for faculty and staff for all sites was deemed the most reliable rate for trip generation purposes. The auto occupancy rates for all three populations were derived from the SUSTS data corresponding to the Boca Raton campus.

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Table 11.7 details the trip generation at the FAU Treasure Coast Campus using the assumptions discussed above.

Table 11.7 External Trip Generation

	Trip Rate ^a	Current 1998/99	Five Year 2003/04	Ten Year 2007/08	2009/10
Branch Students Headcount	1.70	600	788	1,000	2,605
Faculty/Staff Headcount	3.21	60	156	226	261
Student Mean Auto Occupancy		1.11	1.11	1.11	1.11
Fac/Staff Mean Auto Occupancy		1.24	1.24	1.24	1.24
Daily Branch Student Trips		919	2,389	3,451	3,990
Daily Fac/Staff Trips		155	404	585	676
Daily Visitor Trips ^b		86	223	323	373
TOTAL DAILY		1,160	3,016	4,358	5,039
<i>AM Peak Hour (7-9 am)^c</i>		65	169	244	282
<i>PM Peak Hour (4-6 pm)^c</i>		84	217	314	363

^a Trip rate reflects Person Trips by Auto Per Day

^b Visitor trips are estimated at 8% of total student and faculty/staff trips

^c AM Peak-to-daily ratio (K factor) of 5.6%; PM Peak-to-daily ratio (K factor) of 7.2%

2.h Analysis of Future Campus Roadway System

The campus roadway system consists of a series of parking circulation roadways and access points to the local roadway system, and as such, are not used by non-campus users. Specific laneage at these intersections will be determined during design to include number of spaces being constructed and distribution characteristics of the campus.

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2.i Analysis of Future Off-Campus Roadway System

Table 11.8 lists future roadway traffic volumes, FAU Treasure Coast campus trips, and Level of Service.

Table 11.8 Future Off-Campus Roadway System

Roadway	2010 Projected Conditions					2010 LOS
	Lanes	Capacity	Background Traffic	FAU Trips	Total Traffic	
University Blvd						
California Blvd to FAU entrance	2	16,000	1,950	2,016	3,966	C
FAU entrance to Peacock Blvd	2	16,000	2,316	3,023	5,339	C
Peacock Blvd						
California Blvd to University Blvd	2	16,000	13,531	504	14,035	D
University Blvd to St Lucie West Blvd	2	16,000	13,531	2,520	16,050	F
California Blvd						
St. Lucie West Blvd to University Blvd	2	16,000	3,047	2,016	5,063	C
University Blvd to IRCC	2	16,000	1,828	-	1,828	C
St Lucie West Blvd (Prima Vista)						
west of I-95	2	10,900	4,993	252	5,245	B
I-95 to Peacock Blvd	4	35,000	26,399	2,268	28,667	D
Peacock Blvd to Country Club	4	35,000	37,147	252	37,399	F
Country Club to Cashmere	4	35,000	33,301	2,016	35,317	F
Cashmere to Bayshore	4	34,300	33,301	1,512	34,813	D
Bayshore to Airoso	4	34,300	33,301	504	33,805	D
Interstate 95						
Midway Rd to St Lucie West Blvd	6	73,400	59,035	1,260	60,295	C
St Lucie West Blvd to Gatlin Blvd	6	73,400	54,483	756	55,238	C
Cashmere Blvd						
Torino to Prima Vista Blvd	2	16,000	15,762	252	16,014	D
Prima Vista Blvd to S Peacock Blvd		16,000	11,618	252	11,870	C
	2					
Bayshore Blvd						
Floresta to Prima Vista	2	16,000	12,483	504	12,986	C
Prima Vista to West Virginia	2	16,000	17,334	504	17,838	E

sources: City of Port St Lucie Planning Department, St Lucie County Planning Department, St Lucie MPO
1998 FDOT Generalized Tables used for LOS analysis

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2.j Future Transit Service

Currently, there are no plans for future fixed-route mass transit service in the area of the campus. The St. Lucie MPO will however, undertake a long-range transit plan during the next two years. The University will coordinate with this planning effort.

2.k Alternative Transportation Techniques

Being oriented to part-time students and commuters, the FAU Treasure Coast Campus has some potential for travel reduction due to alternative transportation techniques and other travel reduction methods. Policies that facilitate the use of transportation methods other than the single occupant vehicle have been established and are critical in supporting this effort. Equally important is continued intergovernmental coordination, the implementation of Transportation Demand Management (TDM) strategies and an emphasis on non-auto related travel options.

2.l/m Permit Description/Fee Description

Currently, there is no system established which limits parking opportunities through a permitting system.

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PEDESTRIAN AND NON-VEHICULAR CIRCULATION SUB-ELEMENT

1. Inventory and Analysis of Existing Conditions

The site currently has minimal development.

1.a. Existing Pedestrian and Non-Vehicular Circulation on Campus

Since there is no existing campus (only one small building with a walkway from the parking lot), data on existing circulation facilities does not exist, therefore, this data requirement does not apply.

1.b. Planned Location of Future Academic, Support and Utility Facilities

See Elements 5 (Figure 5.1).

1.c. Existing Pedestrian and Non-Vehicular Circulation Facilities in the Context Area

Indian River Community Center has internal pedestrian walkways commensurate with the functional requirements of its campus. There are currently no off-site pedestrian links.

1.d. Planned Future Pedestrian and Non-Vehicular Circulation Facilities in Context Area

Pedestrian and non-vehicular traffic will enter and leave the FAU campus primarily along University Drive heading west. It is anticipated that one or more connections will also occur at the northern boundary with IRCC. See Figure 11.5.

1.d.1. Goals, Objectives and Policies from the Comprehensive Plan

The St. Lucie County Comprehensive Plan notes that the County will establish a Comprehensive Bicycle Plan (CBP) that will formally define the role of the bicycle as an alternative mode of transportation. This plan will address issues concerned with finding ways to make bicycle travel safer and easier for residents and tourists, reduce motorized traffic on roadways and reduce the amount of pollutants released in the atmosphere. The following policies are specifically stated in the Comprehensive Plan:

- Bikeways shall be given full consideration in the planning and development of state, regional and local transportation facilities and programs.

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- All new development or redevelopment shall provide bicycle facilities to promote bicycling unless the establishment of bicycle facilities is contrary to public safety, the cost of doing so is excessively disproportionate to the need or probable use, or other factors indicate an absence of any need for such facilities.
- Bicycle parking requirements shall be incorporated into local government parking and zoning ordinances and building codes as appropriate. Parking requirements shall be designed to promote bicycling as a viable transportation alternative in high-density areas and central business districts.

1.e. **On-Campus Problem Areas**

Since there is no existing campus, data on existing problem areas does not exist, therefore this data requirement does not apply.

2. **Future Needs/Requirements**

2.a. **Analysis of the Amount and Type of Future Pedestrian and Non-Vehicular Circulation Facilities Required**

Future pedestrian and non-vehicular circulation facilities will be required to serve the future campus buildings and spaces. The concept of shaded walkways, built either through structures or landscaping, is appropriate for Florida's hot sun and blowing rains.

Pedestrian walkways are required to connect all buildings, to link parking areas to buildings and to provide access to off-site facilities. Width of walkways are to meet minimum ADA requirements and, at major circulation zones shall range from 8' - 16' wide to allow for pedestrian and bicycle traffic. Since this is a planned as a commuter campus with no campus housing, bicycle use is not anticipated to be significant. Bicycle racks for at least 5% of the FTE students are to be placed at academic buildings to encourage bicycle use from the surrounding residential neighborhoods.

Lighting along pedestrian and non-vehicular circulation routes should be developed to give the feeling of security and safety. Areas especially in need of attention are the routes leading to and from the parking areas.

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2.b. Pedestrian and Non-Vehicular Circulation in the Context Area Adjacent to the University

Clear pedestrian and bicycle paths should be created to serve off-campus housing and student activities. A pedestrian network which will link the FAU campus with the IRCC campus and ultimately with the Baseball Spring Training Facility should be developed in a clear pattern. The pedestrian and bicycle facilities should be well lighted and safe to travel on.

2.c. Adequacy of Lighting Conditions along Circulation Routes

Since there is no existing Campus, data upon which to base an analysis of inadequate lighting conditions along pedestrian and non-vehicular circulation routes does not exist, therefore this analysis requirement does not apply.