ELEMENT 11 – Transportation Element

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 existing and future needs of the University and to coordinate the location and implementation of these facilities with St. Lucie County (herein after referred to as the “host community”) and related entities.

TRANSPORT, CIRCULATION, AND PARKING SUB-ELEMENT

Transportation Principles

The Florida Atlantic University (FAU) Harbor Branch Campus is a branch college facility located in unincorporated St. Lucie County, Florida. This campus primarily serves a research-oriented mission offering graduate level courses.

The Harbor Branch Campus is bounded generally by US Highway 1 to the west, the Indian River to the east, and vacant lands to both the north and the south. The only direct vehicular access point to the Harbor Branch Campus is via the intersection of Harbor Branch Road & Old Dixie Highway. A Florida East Coast (FEC) railroad crossing lies between this intersection and a guarded security gate. Other roadways that indirectly provide access to the campus include US Highway 1 (State Road 5), Indrio Road (State Road 614), and Kings Highway (State Road 713). I-95 is located approximately six miles to the west of the campus. See Figure 11.1 for the campus location.

The Harbor Branch Campus reflects the travel characteristics of a college facility oriented toward part-time, commuter students, with the majority of the student population living off-campus. Given the operational characteristics of the research-oriented campus and its commuter component, quantifying the campus’s transportation interactions with the host community will be critical to maintain a high level of transportation facilities.

Access to the campus from outlying residential areas must be achieved via either the local roadway network or a transit system. Therefore, local area traffic operations must 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 Harbor Branch Campus Master Plan, the Florida Board of Regents, in accordance with the Guidelines 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 Harbor Branch Campus.
ELEMENT 11 – Transportation Element

1 Existing Facilities and Inventory

The FAU Harbor Branch Campus is located in unincorporated northern St. Lucie County, Florida. It is anticipated that the majority of students and faculty attending this campus will reside in either St. Lucie County or Indian River County. The Harbor Branch Campus is bounded generally by US Highway 1 to the west, the Indian River to the east, and vacant lands to both the north and the south. I-95 is located approximately six miles to the west.

The only direct vehicular access point to the main Harbor Branch Campus is via the intersection of Harbor Branch Road & Old Dixie Highway.

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 544 existing designated parking spaces on the campus (including both paved and unpaved designated spaces). Figures 11.2a through 11.2d illustrate the existing parking areas on the campus. 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 Section 2.a Future Parking Needs Analysis)

Special Events Parking
It is anticipated that frequent special events will be scheduled during off-peak parking demand periods. Campus design of internal circulation roadways and parking facilities should provide convenient access to events held throughout the campus. (See Section 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 Section 2.a Future Parking Needs Analysis)

1.b Inventory of Off-Campus Parking

Harbor Branch’s parking supply will be designed to accommodate its anticipated demand. Therefore, no off-campus parking requirements are currently anticipated.

1.c Campus Roadway Classifications

Existing campus roadway facilities consist only of two-lane access drives to parking lots. Therefore, this data requirement does not apply. However, existing roadway system details for the campus can be seen in Figures 11.2a through 11.2d.

1.d Context Roadway Classifications

The context area roadways, classifications and laneages are detailed in Figure 11.1.
ELEMENT 11 – Transportation Element

1.e  Level of Service (LOS)

All internal roads within the campus boundaries will exclusively serve campus generated trips. It is not anticipated that traffic volumes for these roadways will be quantified or collected in the future, unless circumstances dictate otherwise. Context roadway daily volumes were provided by the St. Lucie Metropolitan Planning Organization (MPO) and the Florida Department of Transportation 2007 Traffic Information Database. Table 11.1 details these daily volumes and their corresponding daily levels of service.

Table 11.1 – Context Roadway Volumes and Levels of Service

<table>
<thead>
<tr>
<th>Roadway</th>
<th>Segment Location</th>
<th>Daily Capacity</th>
<th>AADT*</th>
<th>AADT Source</th>
<th>Daily Level of Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Old Dixie Highway</td>
<td>North of Harbor Branch Road</td>
<td>14,600</td>
<td>1,550</td>
<td>(1) C</td>
<td></td>
</tr>
<tr>
<td>US Highway 1</td>
<td>Along Indian River/St. Lucie</td>
<td>35,700</td>
<td>25,000</td>
<td>(1) B</td>
<td></td>
</tr>
<tr>
<td></td>
<td>County Line</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>US Highway 1</td>
<td>South of Indrio Road</td>
<td>35,700</td>
<td>21,000</td>
<td>(1) B</td>
<td></td>
</tr>
<tr>
<td>Indrio Road</td>
<td>East of Kings Highway</td>
<td>14,600</td>
<td>6,400</td>
<td>(2) C</td>
<td></td>
</tr>
<tr>
<td>Kings Highway</td>
<td>South of US Highway 1</td>
<td>16,400</td>
<td>11,000</td>
<td>(1) C</td>
<td></td>
</tr>
<tr>
<td>Kings Highway</td>
<td>North of Indrio Road</td>
<td>16,400</td>
<td>13,600</td>
<td>(1) C</td>
<td></td>
</tr>
</tbody>
</table>

* AADT = Annual Average Daily Traffic
(1) FDOT Florida Traffic Information 2007 CD
(2) St. Lucie MPO Spring 2006 Traffic Table

1.f  Traffic Counts

See Table 11.1 and Figure 11.3 for daily traffic counts and levels of service on context roadways and access points to the campus.

1.g  Trip Generation

Trip generation calculations were performed using rates and equations found in the Institute of Transportation Engineers’ (ITE) Trip Generation Report, 8th Edition. Calculations were based on the existing and future number of employees at the campus. Although the calculations were based solely on the number of employees, it should be noted that the trip equations are inclusive of student and visitor trips.

Table 11.2 details the trip generation calculations and the projected impacts based on the proposed growth of the campus between 2009 and 2014.
As seen in Table 11.2, trip generation calculations were based on the number of employees at the campus. There are currently 231 employees at the Harbor Branch Campus. By the end of the year 2014, there will be an anticipated 290 employees at the Harbor Branch Campus. This increase of 59 employees is projected to generate an additional 539 daily trips, 43 AM peak hour trips, and 52 PM peak hour trips.

### 1.h Transit Routes

The Treasure Coast Connector is the public transportation program that serves northern St. Lucie County and the City of Fort Pierce. The routes that are offered by the Treasure Coast Connector travel through downtown Fort Pierce as well as along State Road 70 towards western Fort Pierce. None of the routes contain any bus stops within four miles of the Harbor Branch Campus. Currently, no transit routes are anticipated to be extended north to connect to the Harbor Branch Campus.
2 Analysis Requirements

The following elements are required to be analyzed for the Campus Master Plan:

- Future Parking Needs
- Projected Traffic Volumes (External To Campus)
- Future Campus Roadway System
- Future Off-Campus Roadway System
- Future Transit Service
- Alternative Transportation Techniques

2.a Future Parking Needs Analysis

The number of required parking spaces was calculated based on parking space ratios found in the Goals, Objectives and Policies (GOPs) of the Campus Master Plan. Parking space ratios of 0.80:1 were applied to both the number of students and the number of employees on the campus. The number of visitor parking spaces was calculated as 10 percent of the combined number of required parking spaces for students and employees. Table 11.3 details the total number of required parking spaces for the campus during the course of its five-year buildout.

<table>
<thead>
<tr>
<th>Year</th>
<th>Students</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Quantity</td>
<td>Ratio</td>
<td>Required Spaces</td>
<td>Quantity</td>
<td>Ratio</td>
<td>Required Spaces</td>
<td>Student + Employee Required Spaces</td>
<td>Visitors (10% of Student + Employee Required Spaces)</td>
<td>Total Required Parking Spaces</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current</td>
<td>219</td>
<td>0.80</td>
<td>175</td>
<td>231</td>
<td>0.80</td>
<td>185</td>
<td>360</td>
<td>36</td>
<td>396</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009-2010</td>
<td>322</td>
<td>0.80</td>
<td>258</td>
<td>260</td>
<td>0.80</td>
<td>208</td>
<td>466</td>
<td>47</td>
<td>513</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010-2011</td>
<td>427</td>
<td>0.80</td>
<td>342</td>
<td>270</td>
<td>0.80</td>
<td>216</td>
<td>558</td>
<td>56</td>
<td>614</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011-2012</td>
<td>429</td>
<td>0.80</td>
<td>343</td>
<td>277</td>
<td>0.80</td>
<td>222</td>
<td>565</td>
<td>57</td>
<td>622</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012-2013</td>
<td>431</td>
<td>0.80</td>
<td>345</td>
<td>284</td>
<td>0.80</td>
<td>227</td>
<td>572</td>
<td>57</td>
<td>629</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013-2014</td>
<td>433</td>
<td>0.80</td>
<td>346</td>
<td>290</td>
<td>0.80</td>
<td>232</td>
<td>578</td>
<td>58</td>
<td>636</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As seen in Table 11.3, based on the parking space ratios found in the Goals, Objectives and Policies of the Campus Master Plan, there is currently a parking demand of 396 spaces and upon the five-year buildout (in 2014), there will be a projected parking demand of 636 spaces.

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

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.
ELEMENT 11 – Transportation Element

Surface and Multi-level Parking

The FAU Harbor Branch Campus and its transportation facilities shall be 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. There is currently no multi-level parking structures planned for the campus.

2.b Required Land Area Analysis

The required land area analysis is based on general parking facility layouts (assuming an average area of 350 square feet per parking space). Actual parking facility size will vary based on pavement configuration, landscaping and other factors. However, this average area per parking space will provide a reasonable planning estimate. Table 11.4 details the acreage necessary to meet the parking demand projections for the campus.

<table>
<thead>
<tr>
<th>Year</th>
<th>Students</th>
<th>Employees</th>
<th>Visitors</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current</td>
<td>1.41</td>
<td>1.49</td>
<td>0.29</td>
<td>3.19</td>
</tr>
<tr>
<td>2009-2010</td>
<td>2.07</td>
<td>1.67</td>
<td>0.38</td>
<td>4.12</td>
</tr>
<tr>
<td>2010-2011</td>
<td>2.75</td>
<td>1.74</td>
<td>0.45</td>
<td>4.94</td>
</tr>
<tr>
<td>2011-2012</td>
<td>2.76</td>
<td>1.78</td>
<td>0.46</td>
<td>5.00</td>
</tr>
<tr>
<td>2012-2013</td>
<td>2.77</td>
<td>1.82</td>
<td>0.46</td>
<td>5.05</td>
</tr>
<tr>
<td>2013-2014</td>
<td>2.78</td>
<td>1.86</td>
<td>0.47</td>
<td>5.11</td>
</tr>
</tbody>
</table>

As seen in Table 11.4, the campus currently requires a parking area of 3.19 acres and upon the five-year buildout (in 2014), the campus is projected to require a parking area of 5.11 acres.

2.c Capacity of University Lands to Accommodate Parking Needs

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

2.d Practical Methods to Reduce Amount of Parking

Objective 3C of the Element 11 Goals, Objectives, and Policies will define the monitoring and analysis of the demand/supply relationship of parking on campus. It is the intent of that Objective and its 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 currently planned for off-campus lands.

2.f Impact of Off-Campus Parking

Not applicable, as no off-campus parking facilities are planned or anticipated.
2.g Analysis of Projected Traffic Volumes

Trip generation calculations were performed using rates and equations found in the Institute of Transportation Engineers’ (ITE) *Trip Generation* Report, 8th Edition. Calculations were based on the existing and future number of employees at the campus. Table 11.2 details the trip generation calculations and the projected impacts based on the proposed growth of the campus between 2009 and 2014.

As mentioned in Section 1.g, the proposed growth on the campus includes an increase of 59 employees by the end of 2014. This proposed increase in employees is projected to generate an additional 539 daily trips, 43 AM peak hour trips, and 52 PM peak hour trips.

2.h Analysis of Future Campus Roadway System

The campus roadway system consists of a series of internal roadways that are not traveled by non-campus users. Specific lane geometry at these intersections will be determined during design based on distribution characteristics of the campus.

2.i Analysis of Future Off-Campus Roadway System

A PM peak hour capacity analysis has been performed for the roadways adjacent to the Harbor Branch Campus. Table 11.5 details the future 2014 traffic volumes upon completion of the five-year development plan for the campus. A zip code survey of all existing campus employees was performed to determine an appropriate traffic assignment. See Figure 11.4 for the Harbor Branch Campus traffic distribution.
As seen in **Table 11.5**, all adjacent roadways within the study area are expected to operate acceptably and meet their adopted level of service standards upon completion of the five-year development plan for the campus.

### Table 11.5 Future Off-Campus Roadway System

<table>
<thead>
<tr>
<th>Roadway</th>
<th>From</th>
<th>To</th>
<th>Number of Lanes</th>
<th>Existing Data</th>
<th>Ambient Growth</th>
<th>Committed Trips</th>
<th>2014 Background</th>
<th>Project Traffic</th>
<th>2014 Total Traffic</th>
<th>Projected 2014 Level of Service</th>
<th>Meets LOS Standard?</th>
</tr>
</thead>
<tbody>
<tr>
<td>OLD DIXIE HIGHWAY</td>
<td>North of Harbor Branch Road</td>
<td>2L</td>
<td>760</td>
<td>124</td>
<td>59</td>
<td>2.0%</td>
<td>13</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>137</td>
</tr>
<tr>
<td></td>
<td>Harbor Branch Road</td>
<td>2L</td>
<td>760</td>
<td>95</td>
<td>117</td>
<td>2.0%</td>
<td>10</td>
<td>12</td>
<td>0</td>
<td>0</td>
<td>105</td>
</tr>
<tr>
<td></td>
<td>South of Indrio Road</td>
<td>2L</td>
<td>760</td>
<td>107</td>
<td>104</td>
<td>2.0%</td>
<td>11</td>
<td>11</td>
<td>0</td>
<td>0</td>
<td>118</td>
</tr>
<tr>
<td></td>
<td>Indrio Road</td>
<td>2L</td>
<td>760</td>
<td>218</td>
<td>370</td>
<td>2.0%</td>
<td>23</td>
<td>39</td>
<td>0</td>
<td>0</td>
<td>241</td>
</tr>
<tr>
<td></td>
<td>Kings Highway</td>
<td>2L</td>
<td>760</td>
<td>161</td>
<td>379</td>
<td>2.0%</td>
<td>17</td>
<td>39</td>
<td>0</td>
<td>0</td>
<td>178</td>
</tr>
<tr>
<td></td>
<td>East of Kings Highway</td>
<td>2L</td>
<td>31</td>
<td>65</td>
<td>2.0%</td>
<td>3</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>34</td>
<td>72</td>
</tr>
<tr>
<td></td>
<td>US Highway 1</td>
<td>2L</td>
<td>860</td>
<td>496</td>
<td>560</td>
<td>2.0%</td>
<td>63</td>
<td>71</td>
<td>61</td>
<td>32</td>
<td>620</td>
</tr>
<tr>
<td></td>
<td>Old Dixie Highway</td>
<td>2L</td>
<td>365</td>
<td>159</td>
<td>2.0%</td>
<td>46</td>
<td>20</td>
<td>61</td>
<td>32</td>
<td>472</td>
<td>211</td>
</tr>
<tr>
<td></td>
<td>Kings Highway</td>
<td>2L</td>
<td>860</td>
<td>1,118</td>
<td>788</td>
<td>2.0%</td>
<td>116</td>
<td>82</td>
<td>0</td>
<td>0</td>
<td>1,234</td>
</tr>
<tr>
<td></td>
<td>Winter Garden Pkwy</td>
<td>4L</td>
<td>1,360</td>
<td>872</td>
<td>647</td>
<td>2.0%</td>
<td>91</td>
<td>67</td>
<td>122</td>
<td>63</td>
<td>1,085</td>
</tr>
<tr>
<td></td>
<td>South of Indrio Road</td>
<td>2L</td>
<td>1,360</td>
<td>996</td>
<td>713</td>
<td>2.0%</td>
<td>126</td>
<td>90</td>
<td>122</td>
<td>63</td>
<td>1,244</td>
</tr>
<tr>
<td></td>
<td>Harbor Branch Road</td>
<td>4L</td>
<td>1,360</td>
<td>1,217</td>
<td>732</td>
<td>2.0%</td>
<td>154</td>
<td>92</td>
<td>63</td>
<td>122</td>
<td>1,434</td>
</tr>
</tbody>
</table>

**Notes:**
1. Per the methodology, committed trips included trips from the Coconut Cove project. The Coconut Cove Traffic Study (dated March 2004) was referenced.
2. Significance based on whether or not project trips are 1% of Service Capacity.
2.j Future Transit Service

The Treasure Coast Connector is the public transportation program that serves northern St. Lucie County and the City of Fort Pierce. None of the routes contain any bus stops within four miles of the Harbor Branch Campus. Currently, no transit routes are anticipated to be extended north to connect to the Harbor Branch Campus.

2.k Alternative Transportation Techniques

With an orientation towards research employees and commuter students, the FAU Harbor Branch 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 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.
PEDESTRIAN AND NON-VEHICULAR CIRCULATION SUB-ELEMENT

1. Inventory and Analysis of Existing Conditions

The campus currently does not contain substantial and adequate pedestrian walkways between its buildings. The design of future facilities will incorporate better interconnectivity between campus buildings. The new design will encourage pedestrian movements between campus buildings (pedestrian circulation) as opposed to vehicular circulation.

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

The campus currently does not contain substantial and adequate pedestrian walkways between its buildings. Existing pedestrian and bike circulation details for the campus can be seen in Figures 11.2a through 11.2d.

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

See Element 5.

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

There are currently no sidewalks on off-site roadways adjacent to the campus. There is a crosswalk at the intersection of Old Dixie Highway & Harbor Branch Road that allows pedestrians to cross Old Dixie Highway when entering and exiting the Campus.

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

Based on the FDOT Five-Year Work Program, there are no planned and funded pedestrian/non-vehicular circulation improvements for any context area roadways.

1.e On-Campus Problem Areas

Currently there are limited pedestrian circulation areas and no connectivity between the east and west campuses and between the north and south portions of the campus.
ELEMENT 11 – Transportation Element

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. Widths of walkways are to meet minimum ADA requirements and major circulation zones shall range from 8’ - 12’ wide to allow for golf cart, pedestrian and bicycle traffic. Since this is a planned as a commuter campus with minimal 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.

2.b Adequacy of Lighting Conditions along Circulation Routes

Lighting should be installed along the pedestrian routes to ensure safe passage along pedestrian routes.