

# DAVID PLUMMER & ASSOCIATES, INC.

TRANSPORTATION • CIVIL • STRUCTURAL • ENVIRONMENTAL

## Memorandum

**To:** Wayne Arnold  
**From:** Deven Long  
**Date:** November 22, 2016  
**RE:** **Pelican Landing CPD/RPD Amendment TIS - #15534**  
**Response to City of Bonita Springs Transportation Comments**  
**cc:** Neale Montgomery; Sharon Umpenhour; Barry Ernst; Stephen Leung

---

DPA is in receipt of City of Bonita Springs Development Review comments dated October 7, 2016 (refer to Attachment A of this memorandum) for the above referenced Project. In the process of reviewing comments provided by the City of Bonita Springs and the Village of Estero, DPA deemed that adjustments to the traffic analysis are warranted. Several area specific developments within the Pelican Landing DRI boundaries were classified as future background traffic rather than future Pelican Landing traffic. The revised traffic study dated November 22, 2016 has addressed this issue and features minor modifications to traffic volumes and distribution that were subsequent to the correction. Please note that there are no changes to the conclusions found in the original study.

DPA would like to offer the following response to the City of Bonita Springs review comments.

### Comment #1

**1. The Existing Traffic Conditions Table on Page 12 indicates that US 41 is currently operating at LOS C. However, this does not reflect peak season, peak hour, peak direction conditions. Use the data from the FDOT count station 120065 on US 41 north of Old 41. The peak hour/peak direction count taken on 10-20-2015 was 2910 vph. This volume must be converted to peak season for the concurrency evaluation. Use the PSCF for the Bonita Springs Area for 2015 for the week of 10-18-2015 which is 1.29. This results in an existing peak hour/peak direction/peak season volume of 3754 vph. Using this data, existing US 41 is over capacity during the peak season, peak hour, peak direction. Copies of the FDOT 2015 traffic count for this location and the FDOT 2015 Peak Season Factors for the Bonita Springs Area are attached for reference.**

## Response:

The segment volume used in the TIS for US 41 **does** reflect the peak season, peak hour, and peak direction conditions because it referenced the 2015 Lee County Concurrency Report. The Concurrency Reports presents the Lee County's evaluation of the road systems ability to provide the minimum LOS standards established in the Lee Plan.

According to the Lee Plan (Policy 37.1.1), the peak season, peak hour and peak direction conditions will be defined as the 100th highest volume hour of the year in the predominant traffic flow direction. The 100th highest hour approximates the typical peak hour during the peak season. Peak season, peak hour and peak direction conditions will be calculated using K-100 factors and "D" factors from the nearest, most appropriate county permanent traffic count station.

For segment capacity analysis, the peak season, peak hour, and peak direction conditions will be synonymous with directional design hour volume (DDHV) and denoted by the following equation:

$$DDHV = AADT * D * K$$

Where:

- *AADT = ADT \* Seasonal Adjustment Factor \* Axle Correction Factor*
- *D = Directional Distribution Factor*
- *K = Design Hour Factor*

In the Concurrency Report, segment volumes on state roadways are calculated from FDOT counts which are converted to the peak season, peak hour, and peak direction traffic using FDOT adjustment factors. The volumes are then reviewed by FDOT to ensure the correct adjustments are made. This is consistent with the Lee Plan's definition of the peak season, peak hour, and peak direction conditions acknowledging that FDOT data is used for state roads. Therefore, the segment volumes in the Concurrency Report (and subsequently the TIS) are correctly reflecting the peak season, peak hour, and peak direction conditions.

In contrast, the segment volume reflecting the peak season, peak hour, and peak direction conditions proposed by the reviewer is invalid for several reasons as summarized below.

- The 2910 vph does not reflect the peak hour, peak direction for that particular count sheet. The peak hour, peak direction is not the highest directional volume within any given hour. It is the direction of travel (during the 60-minute peak hour) that contains the highest percentage of travel. For the count the reviewer is referencing, the peak hour is 16:45 and the 2910 vph occurs at 7:30.
- It is not clear whether or not the 2910 vph reflects the design hour and there is no way to determine what K factor it actually represents. ADT should be developed (and then AADT) rather than selecting an individual directional volume from a raw count so the K factor can be applied.

- The ADT should be calculated using all traffic counts within a given year to avoid outliers and skewed data. The reviewer only considered the most recent count despite two additional counts in March (peak season) being available. It is appropriate to include all available data in order to produce a more reliable ADT volume.
- The peak season conversion factor (PSCF) is used to convert a 24-hour count representing the average weekday daily traffic to peak season weekday average daily traffic (PSWADT) for travel demand forecasting planning models. This is not the correct conversion and the AADT should be calculated instead of the PSWADT. FDOT provides the necessary seasonal and axle correction factors to convert ADT to the AADT. From here, the AADT can be converted to the peak season, peak hour, and peak direction conditions using K and D factors.

During the time of the study, the 2015 Lee County Concurrency Report was the current edition and was referenced for the study. Recently, the 2016 Concurrency Report has been published and uses 2015 FDOT count data. According to the 2016 Concurrency Report, the segment volume for US 41 is 2564 vph (only 2.7% difference from previous value) which indicates it is still operating at LOS C.

The Concurrency Report is the standard source of information Lee County typically expects traffic studies to be based on and it was listed as a reference in the agreed upon methodology. Given the minor changes in the 2016 Concurrency Report, there will be no changes in the TIS regarding this comment.

## **Comment #2**

**2. The Project Trip Generation Tables on Pages 16 and 17 are mislabeled. The third row refers to the trip type as “External (Pelican Landing)” but Footnote (3) identifies this row as internal captured trips. Please clarify.**

### **Response:**

It was assumed that some trips would be captured by the Pelican Landing DRI. These trips were considered external trips since they would still have to use Coconut Road in order to reach the various residential and commercial land uses within the DRI.

To address this comment, the footnotes for the referenced Project Trip Generation Tables have been updated to identify the row as external trips captured by the Pelican Landing DRI. Please refer to the revised traffic study dated November 22, 2016.

### **Comment #3**

**3. Future Traffic Projections on Page 15: The text indicates that growth rates of between 2% and greater than 10% were applied to the existing traffic volumes. This is not necessarily appropriate for US 41. The Applicant must add all trips from approved and vested developments in Bonita Springs, the Village of Estero and Lee County to the existing traffic volumes and compare the results to applying historical growth rates to existing traffic volumes. Use which ever method results in the highest background traffic volumes. Document the comparison.**

#### **Response:**

The standard practice accepted by the county for projecting future volumes is to apply a growth rate to existing segment volumes. The growth rate is the result of a historical growth trend analysis of nearby count stations (both FDOT and Lee County DOT count stations). The highest observed rate from this analysis was 2% which was applied to all segments except for Coconut Road west of US 41.

Future segment volumes on Coconut Road west of US 41 were derived from 2016 turning movement counts with the trip generation of the proposed and surrounding future developments layered on to account for growth. Doing it in this way not only ensured conservative growth higher than a 2% growth rate, it allows Pelican Landing traffic to be distinguished and quantified from other traffic. Also, this process of layering the trip generation of area specific developments is similar to what was done in the Coconut Road Traffic Study.

With the exception of Coconut Road west of US 41, there will be no further deviations from the county accepted practice.

### **Comment #4**

**4. Comment 2.a. regarding the TIS Methodology has not been addressed. This comment is restated here: For proposed internal capture, please identify the sites, land uses, locations and proposed capture rate. Please be advised that any proposed internal capture trip exchange between complimentary uses within the Pelican Landing DRI that must use or cross an external roadway, including Coconut Road, will be considered an external trip for this study. All internal capture trips must stay on private property for the entirety of the trip.**

#### **Response:**

There is no internal capture assumed at the Project site. For the overall DRI, a 20% capture rate was assumed and the trip assignment goes as followed.

- Site: Hyatt Hotel
  - Land Use: Hotel
  - Location: Coconut Road/ Hyatt Main Entrance
  - Capture Rate: 2%
- Site: The Colony
  - Land Use: Residential
  - Location: Entrance at Via Veneto
  - Capture Rate: 3%
- Site: Developments on Walden Center Drive south of Pelican Colony Boulevard
  - Land Use: Commercial and Residential
  - Location: Walden Center Drive south of Pelican Colony Boulevard
  - Capture Rate: 12%
- Site: Developments on Walden Center Drive south of Coconut Road
  - Land Use: Commercial and Residential
  - Location: Walden Center Drive south of Coconut Road
  - Capture Rate: 2%
- Site: The Colony
  - Land Use: Residential
  - Location: Entrance at Pelican Colony Boulevard
  - Capture Rate: 3%

These DRI captured trips acknowledge that there will be trips going to and from the various residential and commercial uses located within the Pelican Landing DRI but they were considered external trips for the traffic study.

### **Comment #5**

**5. The LOS F conditions identified along Coconut Road west of US 41 must be addressed at the time of Development Order.**

### **Response:**

A detailed analysis concluded that Coconut Road west of US 41 is operating at an acceptable level of service. Future segment volumes do exceed Lee County generalized service volumes but these generalized service volumes do not consider segment specific characteristics. A Synchro arterial analysis was performed because it takes into account segment specific characteristics such as intersection spacing, the running time between intersections, and the delay experienced at the signalized intersections along Coconut Road. This link specific arterial analysis indicates that Coconut Road west of US 41 operates at LOS C. This is consistent with the fact that there are no improvements for Coconut Road mentioned in the needs plan per the Lee County MPO LRTP. Lee County maintains the road and has expressed no concern regarding over-capacity.

Regardless of the LOS conditions, the trips generated by the proposed 400 high-rise units at Raptor Bay are not anticipated to exceed the vested trips at Coconut Road and US 41. The DRI has already fulfilled all of its off-site mitigation in terms of roadway and intersection improvements reflective of the vested trips under buildout conditions. Even without the Pelican Colony Boulevard signal, it is anticipated that Pelican Landing traffic will comprise only half (54%) of the total traffic using Coconut Road. The Pelican Landing DRI is not solely responsible for the traffic conditions and has paid its share to improve Coconut Road. There will be no committed improvements to address impacts that are caused by developments not associated with the Pelican Landing DRI. However, future traffic conditions on Coconut Road will be observed as part of the traffic monitoring process to ensure segment volumes are consistent with the approved DRI.

### **Comment #6**

**6. Include summary tables in the body of the TIS to demonstrate/support the values stated in Conclusions 4, 5 and 6. Clarify these statements by specifying which segments of Coconut Road are being referred to. It is not intuitive that Pelican Landing DRI traffic only represents 46% of the total future traffic on Coconut Road considering the size of the Pelican Landing DRI compared to all other development trips that utilize Coconut Road.**

#### **Response:**

Please refer to the Exhibit 12 in the revised traffic study dated November 22, 2016. Exhibit 12 has been revised to include a summary that supports conclusions 4, 5, and 6. The Pelican Landing DRI traffic represents approximately half (54% without PCB signal, 41% with PCB signal) of the total future traffic on Coconut Road at the US 41 intersection. This number is reasonable considering that nearly half of the developments adjacent to Coconut Road (the majority of developments to the north) are non-Pelican Landing.

### **Comment #7**

**7. Explain the statement made in Conclusion No. 8 that “Coconut Road is expected to operate at acceptable level of service without the need for widening.” Future volumes shown for Coconut Road west of US 41 clearly show that this segment will be over capacity. Also, the signalized LOS analysis results for the US 41 intersection indicate that the eastbound approach will be over capacity.**

#### **Response:**

As explained in the response to Comment #5, it was concluded that Coconut road does not exceed

capacity. There is insufficient evidence to conclude that Coconut road requires widening to accommodate future volumes. Such an improvement can potentially result in Coconut Road being over designed which would adversely impact the surrounding community.

Widening Coconut Road will increase roadway capacity but it will come at a cost to other (and equally important) aspects of Coconut Road serviceability. Widening roads typically encourage higher vehicular speeds and this will result in residents experiencing more difficulty entering and exiting their communities due to higher gap acceptance requirements. Furthermore, higher vehicle speeds can potentially be detrimental to the safety of drivers, bicyclists, and pedestrians since the probability of fatal accidents significantly increases with speed. The community residents have expressed a particular concern with children crossing Coconut Road to school bus stops. If the road were to be widened, children going to their bus stops would find themselves crossing a larger and more dangerous obstacle on a daily basis. Overall, the viability of alternative modes of transportation and the quality of community life will be diminished if Coconut Road is widened.

As an alternative to widening, it is recommended that the local jurisdictions fund a roundabout feasibility study for use on Coconut Road. Properly designed roundabouts can improve traffic operations, safety, and the community. This alternative, if deemed feasible and implemented with Pelican Colony Boulevard in mind, would achieve a "walkable" community that is pedestrian friendly where vehicular traffic would move easily through a continuous, attractive street system. This option would be in accordance with the community goals and ideals expressed by the Lee Plan, and the visions of the City of Bonita Springs and the Village of Estero. Widening Coconut Road should be avoided unless it is determined to be an improvement that is absolutely necessary where all other alternatives (e.g. roundabouts on Coconut Road and signal at Pelican Colony Boulevard) are insufficient.

For the signal at US 41 and Coconut Road, the intersection has an overall LOS D. The Coconut Road approaches may be failing, but the main arterial serving Lee County is functioning at this intersection as the overall LOS indicates. Also, the significance of LOS F is relative to the segment. Coconut Road is classified as a collector and its importance as a corridor does not compare to a major arterial such as US 41 as it does not serve a widespread area (especially west of US 41). On each approach, the delay per vehicle is less than two minutes which may be frustrating for drivers during peak season but it is not a critical issue to impeding mobility within Estero and Bonita Springs. This all assumes that there are no geometric improvements to this intersection. If the additional NB left turn lane is installed, more green time may potentially be allocated to Coconut Road. Additionally, the Pelican Colony Boulevard signal may potentially divert Coconut Road WB traffic (this was not assumed in the report) and further reduce traffic at the US 41/ Coconut Road signal.