CITY OF KEY WEST
TRAFFIC REVIEW COMMENTS

Date: August 16, 2017
Discipline: Traffic Engineering
Reviewed by: Eric Czerniejewski, P.E., ENV SP
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Application No.: **N/A**
Project Name: **Sonic Restaurant Traffic Impact Statement**

_____ No comments
_X_ Comments as followed or attached

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1. Please provide a detailed link analysis of existing conditions and future conditions of North Roosevelt Boulevard between Eisenhower Drive and Kennedy Drive. Please utilize the most recent daily traffic count from FDOT traffic count station #908108 (copy attached). The link capacity analysis should reference the adopted LOS standards per the transportation element of the comprehensive plan. The link analysis should also reference the LOS D capacity threshold and compare against the daily count plus the additional generated daily trips for the Sonic Restaurant.

   KBP Consulting, Inc. 08/11/17 response: Since Count Station #908108 is located on Northside Drive, a secondary local roadway, we have selected Count Station #905004 (US 1 / N. Roosevelt Boulevard 200 feet west of 1st Street) and Count Station #905034 (SR 5 / US 1 / N. Roosevelt Boulevard 200 feet west of Byrd Road) for this analysis. The 2016 daily traffic volume for station #905004 is 21,000 and the 2016 daily traffic volume for station #905034 is 34,500.

   According to the Florida Department of Transportation's (FDOT's) Quality / Level of Service (Q/LOS) Tables, N. Roosevelt Boulevard within the general area of the subject site has a daily LOS "D" capacity of 32,400 vehicles per day (vpd). This is based upon the State Signalized Arterial, Class II (35 miles per hour or slower posted speed limit) facility classification.

The trip generation data that was utilized for the preparation of the subject traffic study indicates that the daily vehicle trips for the proposed Sonic Restaurant are estimated to be 1,222. In order to assess the pass-by characteristics of this use, the Institute of Transportation Engineers (ITE) Trip Generation Handbook (3rd Edition) was consulted. The pass-by rate for this lane use is estimated to be 50%. For this facility, the gross daily vehicle trips are projected to be 1,222 and the net daily vehicle trips (considering pass-by characteristics) are projected to be 611.

The daily vehicle trips generated by the existing uses have also been considered. The tire store encompasses approximately 4,500 square feet and is estimated to generate approximately 112 daily vehicle trips. The existing high-turnover sit-down restaurant has an area of approximately 1,500 square feet and is estimated to generate 190 daily vehicle trips. The total existing daily vehicle trips associated with the subject site is approximately 302.

When considering the projected net new trips to be generated by the proposed fast-food restaurant (i.e. 611 daily vehicle trips) the net increase in trips is projected to be 309. (It should be noted that this value is likely to be overestimated given the location of the subject site which is characterized by a large number of pedestrians and bicyclists.) The forecast directional distribution (from the DDAI report) on N. Roosevelt Boulevard is 50% to the east and 50% to the west. Therefore, the net new daily trips to the east will be 155 and the net new daily trips to the west will be 154.

Due to the multi-year construction project on N. Roosevelt Boulevard that was recently completed, it is not possible to accurately estimate the historical growth rate for this area. Therefore, a 1.0% per year growth rate has been applied. The resulting 2018 (i.e. build-out year for the Sonic Restaurant) volumes are 21,420 vehicles per day (vpd) at station #905004 and 35,190 vpd at station #905034.

When considering the additional project traffic at these stations, the resulting volumes are 21,575 vpd at station #905004 and 35,344 vpd at station #905034. As a result, N. Roosevelt Boulevard to the west of the site (station #905004) is expected to operate at LOS "D" while the section of N. Roosevelt Boulevard to the east is expected to exceed LOS "D". While this section of N. Roosevelt Boulevard currently exceeds LOS "D" and will continue to do so with the subject project, the actual project impact is 0.44%. Since the project traffic impact is less than 1.0%, the project impact is considered to be minimal, or de minimis. Supporting documentation for this response is provided in Attachment A.

CGA response: Addressed.

2. Please provide a detailed driveway analysis including a stop controlled intersection analysis for existing and future conditions. This should include collecting manual turning movement counts at both driveway connections to North Roosevelt Boulevard for the am, mid-day and pm peak hour. Please include traffic counts at the driveway on the north side of North Roosevelt Boulevard at the Key West Yacht Club. Please provide LOS for each driveway for existing and future conditions. The traffic analysis should include evaluation of 95th percentile vehicle queues entering and exiting the driveways. Please summarize the LOS and vehicle stacking in table format.

   KBP Consulting 08/11/17 response: The required traffic counts were collected on Thursday, August 10, 2017 and are in the process of being tabulated. Once these counts are available, the requested driveway analyses will be performed.

   CGA response: This item is still pending.

3. In addition to the driveway analysis, please add a narrative in the traffic impact statement that discusses the available reservoir area at each driveway to allow for sufficient on-site traffic circulation including no conflicts with on-site parking, loading and drive through operations.

   KBP Consulting 08/11/17 response: The eastern driveway will allow for both ingress and egress maneuvers. Inbound vehicles at this driveway will generally turn right (i.e. to the west) to enter a parking space/order stall or the drive-through lane. The reservoir distance (i.e. the distance from the edge of the adjacent travel way to the first parking space and/or drive aisle) for this entrance is approximately 50 feet and the distance to the entry point for the drive-through lane is approximately 135 feet.

   The western driveway will also allow for both ingress and egress maneuvers. Inbound vehicles at this driveway will generally continue straight (i.e. to the south) to enter a parking space or to circulate around the building to an order stall or to the entrance of the drive-through lane. The reservoir distance (i.e. the distance from the edge of the adjacent travel way to the first parking space and/or drive aisle) for this entrance is approximately 35 feet.

   The subject site has been designed with a counter-clockwise traffic circulation plan throughout. With the counter-clockwise flow of traffic on this site, conflicts at the project driveways and within the overall site are expected to be minimal.

   CGA response: Addressed.

4. Please provide a drive through vehicle queue stacking analysis including both drive through lanes per the methods outlined in the *Institute of Transportation Engineers (ITE) Transportation and Land Development*. The vehicle queue (M) is calculated based on processing rate, demand rate, service positions and utilization factor as necessary. Please ensure that there is sufficient on-site vehicle stacking so that there is no vehicle back-up on to North Roosevelt Boulevard at both driveway connections.

KBP Consulting, Inc. 08/11/17 response: The proposed site plan contains a drive-through lane with a storage capacity of approximately 300 feet or 13 vehicles (including the dual order position entry) up to and including the service position plus approximately 25 feet after the service position. According to the Institute of Transportation Engineers' (ITE) publication Transportation and Land Development, 2nd Edition (by Virgil G. Stover and Frank J. Koepke), drive-through lane queue lengths for fast food restaurants exhibit a maximum queue length between two (2) and 13 vehicles and an average queue length between four (4) and seven (7) vehicles (see Table 11-9, page 11-18). For fast food restaurants in general, this same publication recommends four (4) positions in advance of the order board and four (4) positions between the order board and the service window (pages 11-7 & 11-8). With one (1) ordering position and one (1) service position, the recommended number of vehicle positions to be provided for a fast food restaurant drive-through lane is ten (10).

A queuing analysis of the proposed drive-through lane has also been performed in accordance with the procedures outlined in the first edition of the Transportation and Land Development manual. The peak hour vehicular demand according to the referenced Sonic Master Traffic Manual is 58 inbound vehicles during the mid-day peak hour. Of these inbound vehicles, the same traffic manual documents that the drive-through lane demand is approximately 50% (or 29 vehicles) during this time period. And, the total service time documented by Sonic is three (3) minutes per vehicle. This time represents the total service time from the placement of the order to exiting the drive-through lane. Although the target service time at the service window is 30 seconds, this analysis assumed a 90 second processing time (or, half of the overall service time) in order to present a conservative (i.e. "worst-case") analysis. Based upon these operational characteristics, the analysis yields a maximum queue (with a 95% confidence level) of eight (8) vehicles. Based upon this analysis it is evident that the proposed site plan provides more than adequate storage area for the drive-through lane. Supporting documentation for this analysis is presented in Attachment B.

CGA response: Addressed.

5. Please provide additional details regarding the Sonic Restaurant trip generation study provided in the Appendix of the traffic impact statement. There were various general references to the states the sites were evaluated in 2010. Please provide details regarding the road characteristics for the road segments that the existing locations were connected to, etc. This should include the peak vehicle queue stacking at each of the driveways and drive through facilities for the proposed restaurants studied.

Applicant's 08/08/17 response: As per our discussion see below as a quick summary of the information.

- ***The survey includes studies of seven (7) different sites, one of which was discarded due to interconnectivity with adjacent land uses.***
- ***Subject sites were located in the following State – Ohio, Illinois, California, Oregon, Pennsylvania, and New Jersey.***
- ***Variables analyzed – Bldg. Sq. Ft., # of Order Points, Total # of Parking Stalls, and Seating.***

CGA response: Addressed. Applicant will provide additional information beyond that provided prior to public hearing as necessary.

6. Please provide manual turning movement counts and intersection capacity analysis for the intersection of North Roosevelt Boulevard and 5th Street during the am, mid-day and pm peak hour periods. Please utilize Synchro and provide detailed LOS and 95th percentile vehicle queue reports in the Appendix.

KBP Consulting, Inc. 08/11/17 response: The required traffic counts were collected on Thursday, August 10, 2017 and are in the process of being tabulated. Once these counts are available, the requested intersection analyses will be performed.

CGA response: This item is still pending.

7. Please provide additional details in the Abutting Roadway Information regarding the roadway characteristics of North Roosevelt Boulevard near the new proposed Sonic Restaurant. This should include reference to existing bicycle facilities (sharrows) and pedestrian facilities including the mid-block crosswalk location near the Fairfield Inn and Suites. Please also update reference to arterial and change with Principal Arterial per the most recent transportation element of the Comprehensive Plan.

KBP Consulting, Inc. 08/11/17 response: The section of N. Roosevelt Boulevard in the immediate vicinity of the project consists of a five-lane section. There are two (2) eastbound lanes and two (2) westbound lanes and a center two-way left turn lane. Each lane is between 10 and 11 feet wide and the outside travel lanes also include "sharrows". The sharrow indicates that both automobiles and bicycles can utilize this lane. The sidewalk on the south side of N. Roosevelt Boulevard is approximately five (5) feet while the sidewalk width on the north side is approximately 17 feet. The following information was included in the updated traffic statement prepared by DDAI:

> ***North Roosevelt Boulevard is a four-lane principal arterial roadway in the City of Key West. The four-lane roadway includes four through lanes and a varying median or continuous opposing lefts center lane. A single lane in each direction is designated as a shared lane for bicycles and vehicles. The roadway also includes a raised concrete sidewalk on both sides of the road for pedestrian usage with cross-walks at various locations. The nearest crosswalks in relation to the center of the fifty feet to the northeast and three-***

hundred and thirty feet to the southwest at the intersection of N. Roosevelt and 5th Street. N. Roosevelt Blvd. is an FDOT roadway with a posted speed of 35 mph at site location and Level of Service (LOS) of classification C (City of Key West Code of Ordinances, Sec. 94-72).

CGA response: Addressed.

8. Please provide a full-size copy of the proposed site plan in the Appendix of the traffic impact statement.

KBP Consulting, Inc. 08/11/17 response: The requested site plan has been provided by the project team.

CGA response: Addressed.

9. Please include a detailed conclusions and recommendations section that provides more specific details regarding the proposed net site generated trips being added to the road network, the results of the road segment link analysis (specify excess capacity along North Roosevelt Boulevard), results of the driveway analysis and the drive through vehicle queue stacking analysis.

KBP Consulting, Inc. 08/11/17 response: The conclusions and recommendations section will be expanded upon completion of the requested driveway and intersection operation analyses.

CGA response: This item is still pending.

10. Please review the intersection sight distance issues at the driveway connections to North Roosevelt Boulevard. Please confirm if there is a crash history at this intersection location based on the most recent three-year crash history.

KBP Consulting, Inc. response: Regarding the sight distance at the eastern driveway, it appears that the proposed roadside entrance sign should be relocated approximately five (5) feet to the south. Based upon a review of available imagery, no other obstructions appear to be present at this location. No sight distance obstructions at the western project driveway were observed in the available imagery.

Crash data in the immediate area was obtained from the Signal Four Analytics application maintained by the University of Florida. Traffic data for the past three (3) years (2014 – 2016) was reviewed. During 2014 there were 13 crashes along N. Roosevelt Boulevard in the general vicinity of the project. In 2015 and 2016, the number of crashes in this same area dropped to six (6) per year. Based upon a review of the crash reports it is evident that roadway construction was still active during 2014 and, while it may not have been listed as a primary or contributing cause, it is likely to have played a role. Most of the crashes in this area were concentrated at the intersection of N. Roosevelt Boulevard and 5th Street and they typically involved rear-end collisions and sideswipes. Very few crashes involved vehicles entering or exiting the businesses along N. Roosevelt Boulevard.

CGA response: Addressed.

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