



## MEMORANDUM

Date: November 16, 2016

Project #:  
19323.03

To: Francis Franco

From: William Oliver, Jennifer Musselman

Project:

Lake-Sumter MPO Traffic Management System

Subject: Review of Love's Travel Stop - Sumter County Traffic Operational Analysis

At the request of Lake-Sumter MPO, Kittelson & Associates, Inc. (KAI) was retained for a review of a *Love's Travel Stop - Sumter County Traffic Operational Analysis* prepared by Peters and Yaffee, Inc. and dated April 6, 2016. The site is located on the south side of County Road (CR) 48 to the west of Interstate 75 (I-75) in Bushnell, Florida. The site is currently a vacant wooded lot.

As planned, the site would be redeveloped to a Love's Travel Stop which would include fuel stations, a convenience store, a small fast-food restaurant, a tire care facility, and a truck parking area. The site will be served by three driveways on CR 48. The site program is provided in Table 1.

Table 1 – Development Summary

Description	Size
Convenience Market	7,300 SF
Fast-food restaurant	2,700 SF
Fuel positions	23 fueling positions (14 passenger/9 trucks)
Tire care facility	8,069 SF

According to the report prepared by Peters and Yaffee, Inc., the tire care facility will not generate any new destination trips and will be an accessory use for those already visiting the site. For this reason, it was excluded from any trip generation estimates.

The following comments / questions have arisen from this review.

## TRIP GENERATION

Trip generation was primarily estimated using the Institute of Transportation Engineers (ITE) Trip Generation Manual, 9<sup>th</sup> Edition using Land Use Code (LUC) 950 – Truck Stop. Due to the limited data associated with this land use, rates were extrapolated using LUC 853-Convenience Market with Gasoline Pumps to determine the estimated number of daily, morning, and Saturday peak hour vehicle trips.

Historic trips for an existing Love’s Travel Stop in Le Roy, Illinois were also provided. These counts indicated the existing Love’s Travel Stop generated more trips than are estimated using LUC 950 – Truck Stop. Results are summarized in Table 2.

Table 2 –Trip Generation Summary (Number of Vehicles)

Description	ITE LUC Code	Variable	Daily	Peak Hour		
				AM	PM	Saturday
LUC 950 – Truck Stop (As Studied)	950	10,000 SF	2,266	110	136	124
Love’s Truckstop, Leroy Plaza	n/a	n/a	3,733	206	247	n/a

Another approach may be to use LUC 945 – Gasoline/Service Station with Convenience Market which provides substantially more survey data points. According to ITE:

*Land Use Code 945 - Gasoline/Service Station with Convenience Market provides trip generation data and rates for sites where the primary activity of business is the fueling of motor vehicles.*

Trip generation estimates, using LUC 945 – Gasoline/Service Station with Convenience Market are provided in Table 3. These results yield more similar trip results to the existing Love’s Travel Stop compared to LUC 950 - Truck Stop.

Table 3 –Trip Generation Summary (Number of Vehicles)

Description	ITE LUC Code	Variable	Daily	Peak Hour		
				AM	PM	Saturday
Love’s Truckstop, Leroy Plaza	n/a	n/a	3,733	206	247	n/a
LUC 945 Gasoline/Service Station with Convenience Market	945	23 Pumps	3,744	233	310	n/a

No clear reason was offered for using a trip generation estimate that is less than the field-observed Love’s in Le Roy, Illinois. The observed facility generates roughly double the trips used in the analysis. Further, the tire sales facility should be included in the trip generation estimate, since the presence of a tire facility would be a good reason for a trucker to choose to stop at this facility, rather than

another without the tire servicing capability, thus increasing the traffic generation of the site. The impact analysis and site access design should be based on the observed facility trip generation.

## PASS-BY TRIPS

It is anticipated that the planned Love's Travel Stop will be influenced by pass-by trips, thus reducing the overall impact of the Project. The traffic study considered ITE's LUC 853 – Convenience Market with Gasoline Pumps which suggests approximately 63-66 percent of the peak hour traffic will be pass-by trips. On a daily basis, the calculated ITE pass-by trips exceeded 10 percent of the adjacent street traffic and therefore a lesser credit was taken. Even as limited, the pass-by methodology seems excessive. It is not reasonable that one in every ten vehicles driving on CR 48 would need to stop and buy gasoline or make use of the facilities provided on-site. The net result of the pass-by capture during the p.m. peak hour, for example, is that 66 of 80 passenger cars (82.5%) entering the site would be captured from the adjacent road. More reasonable would be an assumption that two-thirds to three quarters of the passenger cars entering the site would be attracted from I-75, and be new trips in the interchange and on SR/CR 48.

## TRAFFIC DISTRIBUTION/ASSIGNMENT

What input variable was used in the CFRPM to estimate directional distribution of trips? If retail employees were used, home-based shopping trips would be generated; however, truck-stop land uses would not attract many home-based shopping trips. The determination that 38 percent of the traffic will be attracted from SR 48 east of I-75 may be inappropriate.

## PARKING

The site includes a substantial amount of truck parking. The number of spaces should be provided. The parking layout suggests that these spaces may attract additional truck volume beyond those just needing fuel.

## INTERSECTION ANALYSIS

A traffic model was developed using Synchro software for the following intersections:

- CR 48 at Hayes Road
- CR 48 and the I-75 Ramps
- CR 48 and I-75 NB Ramps
- All site driveways (3 locations)

Background traffic was applied at a rate of 3 percent for one year to the Project's build out year of 2017. Trends for CR 48 and I-75 suggest that traffic volumes have not grown in recent years.

According to the baseline count data, driveways along CR 48 between I-75 and Hayes Street contribute to a substantial amount of traffic volume variation between intersections during the peak hours. This unbalance is most evident during the Saturday peak hour when over 100 vehicles per hour are removed from CR 48 heading westbound between I-75 and Hayes Street. This suggests that the existing driveways may experience a notable amount of turning movement traffic that could affect driveway operations. Counts for these existing driveways were not provided and inclusion of them may impact LOS at the planned Love's Truck Stop driveways.

It is unclear how many exit lanes are proposed at the planned 'Center Project Drive.' The traffic model provided in the Appendix suggests that two lanes may have been coded; however, detailed lane use designations were not included in the reports. Lane designations at this driveway should be explored further, and any opposing traffic from neighboring businesses should be included in the model to ensure adequate capacity and safe operations.

The site will be in operation for many years beyond 2017. In considering site access provisions and warrants for auxiliary turn lanes, please consider that traffic volumes on CR 48 passing by the site will grow. Further, when multiple driveways are provided in close proximity, vehicles slowing for the downstream driveway will be slowing in the functional area of the first driveway. In such cases, it is not appropriate to treat each driveway independently. Please address the need for right-turn lanes for safety and efficiency in consideration of the higher trip generation and the above "long-term" considerations.

It is unclear exactly what the limits of FDOT jurisdiction are relative to the site, and what the finished FDOT improvements on SR/CR 48 will be and how they relate to the site access driveways. In the response to the above comments, please provide a clear drawing of the anticipated final roadway and driveway configuration. Please address how any FDOT or Sumter County access management standards are being accommodated. Please bear in mind that FDOT has special access requirements that extend beyond the limits of FDOT right-of-way in the vicinity of interchanges.

## SEGMENT ANALYSIS

A segment analysis was not provided in the study. The development is expected to generate more than 1,000 daily trips and is thus subject to a Major Land Development Traffic Assessment (LDTA). A Major LDTA requires that impacted segments include "segments within 1 mile of the project site and segments outside of 1 mile of the project site where the project consumes greater than 3 percent of the Generalized Peak Hour Two-Way Maximum Service Volume or more than 70 peak hour two way trips." It is recommended that additional segment analysis be conducted.

## RECOMMENDATIONS

In summary, KAI recommends the following:

- Trip generation estimates should be revisited. The trip estimates provided appear low compared to an existing Love's Truck Stop.
- Please review and revise the project traffic distribution and assignment of pass-by trip capture.
- The site driveway analysis should take into account opposing driveways which may negatively impact operations due to high turning volumes. Planned geometry at the driveways should be clarified.
- Segment analysis should be conducted.