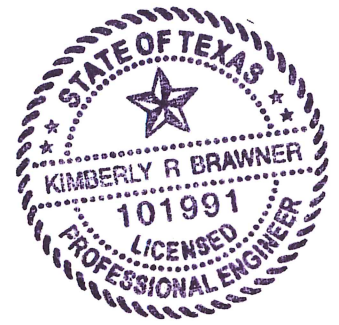




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**MEMO**

**To:** Carl Frontera  
VP of Development Services  
Children's Learning Adventure Childcare Centers

*Kimberly Brawner, PE*  
*July 1, 2013*

**From:** Kimberly Brawner, PE, PTOE  
Project Engineer

**Date:** July 2, 2013

**RE:** Revised Traffic Management Plan – Children’s Learning Adventure Center – Coppell, TX

This traffic study was conducted to analyze the traffic impacts associated with the proposed Children’s Learning Adventure Centers (CLAC) that will be located on the southwest corner of MacArthur Boulevard and Lake Vista Drive in Coppell, Texas. A map of the study area is shown in **Figure 1**. The proposed daycare center will accommodate approximately 470 students and 35 staff members. Approximately one-half (18) of the staff members will be part-time employees. The facility is planned to be open by the end of 2014. The proposed site plan is provided in **Figure 2**. CLAC will be open from 6:00 AM to 6:30 PM weekdays and after school care will be provide from local elementary schools beginning at approximately 3:00 PM.

**Figure 1: Study Area**





## TRIP GENERATION

### *ITE Trip Generation*

The number of trips generated by the development is a function of the type and quantity of the land use of the development. Typically, the number of vehicle trips generated by a proposed development can be estimated based on the trip generation rates and equations provided in the publication entitled *Trip Generation Manual, Ninth Edition*, by the Institute of Transportation Engineers (ITE). For this study, estimates of the number of trips generated by the site were made for the AM and PM peak hours, as well as on a daily basis using the ITE trip generation values. **Table 1** shows the trip generation equations used for this development and the directional splits for the proposed land use as shown in the ITE Manual. Using the trip generation equations from Table 1, the resulting estimated trips generated by the proposed CLAC are provided in **Table 2**.

**Table 1: Trip Generation Equations for CLAC Campus**

<b>LAND USE</b>	Land Use	Day Care Center
	ITE Land Use Code	565
<b>EQUATIONS (X = # of Students)</b>	Average Weekday	$T = 4.79 (X) - 33.46$
	AM Peak Hour	$T = 0.73 (X) + 4.67$
	PM Peak Hour	$\ln (T) = 0.88 * \ln (X) + 0.27$
<b>DIRECTIONAL SPLIT (% in / % out)</b>	Average Weekday	50 / 50
	AM Peak Hour	53 / 47
	PM Peak Hour	47 / 53

**Table 2: Estimated Trip Generation CLAC Campus**

	Day Care Center (470 students)		
	Total	In	Out
<b>Average Weekday</b>	2,218	1,109	1,109
<b>AM Peak Hour</b>	348	184	164
<b>PM Peak Hour</b>	294	138	156

It should be noted that the number of students and gross floor area exceed the data extremes provided in the *Trip Generation Manual*. The maximum number of students in ITE is 200 students versus the projected enrollment of 470 students at the Children’s Learning Adventure Center facility. In addition, the maximum gross floor area in ITE manual is 17,000 ft<sup>2</sup> versus the proposed 25,737 ft<sup>2</sup> for the proposed facility. In seven of the eight proposed scenarios in the ITE Manual, the maximum number of employees is 30 versus the 35 proposed employees for Children’s Learning Adventure Center. In one scenario, the maximum number of employees is 45, but this values falls on the data extremes and any values collected at each extreme should be reviewed.

Within the *Trip Generation Manual*, ITE provides a “Recommended Procedure for Selecting Between Trip Generation Average Rates and Equations”. This flow chart recommends

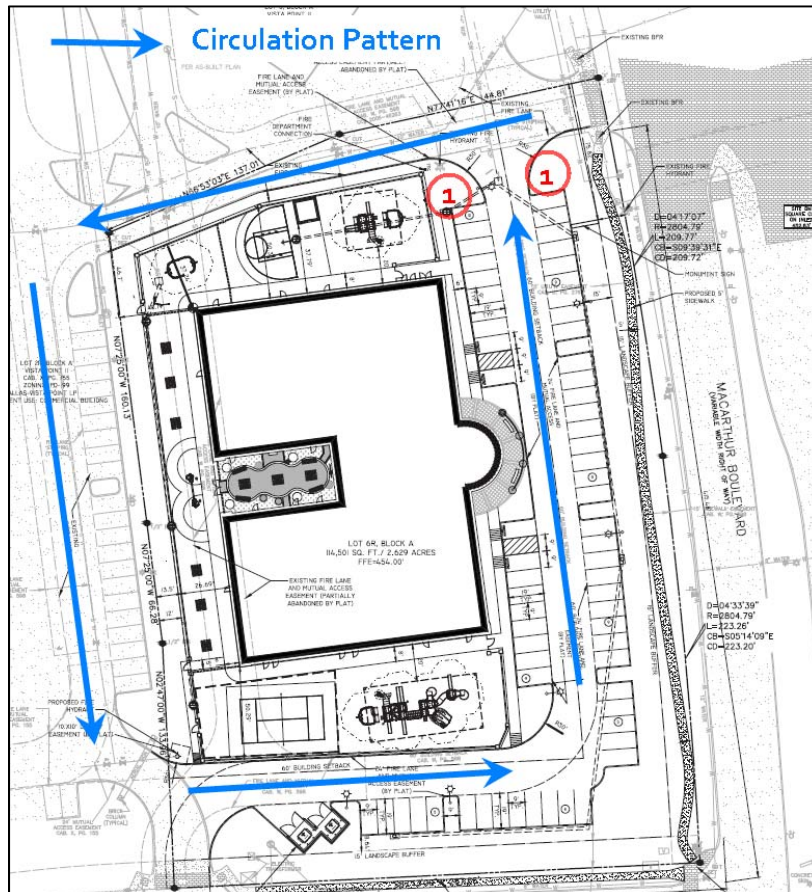
collecting local data to determine trip rates because the data does not fall within existing data extremes. However, Children's Learning Adventure Center has no local facilities within the Dallas/Ft. Worth Metroplex from which to collect data. The  $R^2$  values for this study range from 0.58 to 0.75. In addition, data collected from sites in Las Vegas, Nevada and Phoenix, Arizona show trips rates considerably less than ITE standards. By utilizing ITE trip generation rates, this study presents a conservative analysis.

### QUEUING ANALYSIS

Parents arrive between 6:00 AM to 9:00 AM and pick-up their child(ren) between 3:00 PM and 6:30 PM. The facility is designed such that parents will park their cars and enter the facility with their child(children) and deliver them to the appropriate employee. Because parents will park their cars and walk their children into the building, no "queue" is expected at this facility.

To limit the conflict at the MacArthur Boulevard and Lake Vista Drive intersection, parents will be directed to circulate counter-clockwise around the building and to not enter the drive aisle immediately adjacent to MacArthur Boulevard as shown in **Figure 6**. "DO NOT ENTER" signs will be installed at the location marked "1" in Figure 6.

Figure 3: Circulation Pattern



## PARKING ANALYSIS

To evaluate the predicted parking demand for the proposed Children’s Learning Adventure Center, local data was collected at two existing Children’s Learning Adventure Centers in Texas. One facility is located in The Woodlands and the second facility is located in League City. **Table 7** summarizes the parking data. The raw data is provided as an attachment to this letter.

**Table 3: Parking Data Summary**

Location	The Woodlands, TX	League City, TX	Average
Licensed Enrollment	553	339	446
Current Enrollment	253	232	243
Building Size (ft <sup>2</sup> )	25,737	16,462	21,100
Parking Spaces Provided	63	64	64
Max Occupied Spaces	41	26	31
Parking Rate per Student	0.16	0.11	0.14
Parking Rate per 1,000 ft <sup>2</sup>	1.59	1.58	1.59

The Children’s Learning Adventure Center in Coppell, Texas will be 25,737 ft<sup>2</sup> and will be licensed for 470 students. Using an average parking rate of 0.14 spaces per student, the Coppell facility will utilize 66 spaces during the peak 15 minutes. Based on an average parking rate of 1.59 spaces per 1,000 square feet, the facility will require 41 parking spaces. The City of Coppell parking requirement is 1 space per 10 students or 47 spaces. The proposed facility provides 69 parking spaces which exceeds the predicted demand.

## CONCLUSION

The proposed Children’s Learning Adventure Center will be located in the southwest corner of the intersection of MacArthur Boulevard and Lake Vista Drive in Coppell, Texas. Using ITE trip generation rates, the development is expected to generate approximately 348 trips during the AM peak hour and 294 trips during the PM peak hour.

To limit the potential conflict at the MacArthur Boulevard and Lake Vista Drive intersection, parents will be directed to circulate counter-clockwise around the building. “DO NOT ENTER” signs will be installed on the north and of the drive aisle east of the building to deter drivers.

Based on the parking rates at existing Children’s Learning Adventure Center facilities, the proposed site requires 66 parking spaces during the peak 15-minute period. The proposed site layout provides 69 parking spaces which exceeds the predicted demand.

