



June 8, 2022

Mr. Jonathan Bridges
Bridges Construction, Inc.
5846 Live Oak Dr.
Kelseyville, CA 95451

DRAFT Focused Transportation Impact Study for Konocti Christian Academy

Dear Mr. Bridges;

As requested, W-Trans has prepared a transportation impact analysis for the proposed Konocti Christian Academy school to be located at 5805 Live Oak Drive in the community of Kelseyville in Lake County. The purpose of this letter is to present the results of our evaluation of the potential transportation impacts of the proposed project, including an assessment of potential traffic operational impacts on Live Oak Drive and the adequacy of the proposed frontage improvements to accommodate site-generated traffic.

Existing Conditions

The study area consists of Live Oak Drive, which runs north-south and would provide access to the project site. Along the project frontage the road has two 10-foot travel lanes and is marked with edgelines.

Project Description

The proposed project is a new facility at 5805 Live Oak Drive for the Konocti Christian Academy K-8 school, which is being relocated from a site in Lakeport. The school currently has an enrollment of approximately 100 students, which would increase to 126 students and 15 employees in the 2022/2023 school year, prior to the proposed relocation to Kelseyville. The project site is currently vacant, and the school would be accessed via driveways on Live Oak Drive, as shown in the enclosed site plan.

Trip Generation

The anticipated trip generation for the proposed project was estimated using standard rates published by the Institute of Transportation Engineers (ITE) in *Trip Generation Manual*, 11th Edition, 2021 for "Private School (K-8) (ITE LU #530). ITE publishes rates both for peak periods on the adjacent street system (7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m.) as well as for the peak hour of the generator, or those hours when the specific land use experiences its peak trip generation. The ITE rates for the peak hour of the generator represent the numbers of trips that the school would generate during the morning drop-off and afternoon pick-up periods and therefore better reflect the school's bell schedule than standard peak periods used for traffic analysis. Based on these rates, it was estimated that the proposed project would generate 518 daily trips, including 126 vehicle trips during the a.m. peak hour and 75 vehicle trips during the school p.m. peak hour. This is summarized in Table 1.

Table 1 – Trip Generation Summary

Land Use	Units	Daily		AM Peak Hour of Generator				PM Peak Hour of Generator			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
Proposed											
Private School (K-8)	126 students	4.11	518	1.01	126	71	56	0.60	76	36	40

Trip Distribution

The pattern used to allocate new project trips to the street network was determined by reviewing commute patterns in the Kelseyville area as indicated by 2019 Census data and student enrollment information provided by the school. The applied assumptions are shown in Table 2.

Table 2 – Trip Distribution Assumptions

Route	Percent
SR 29 (north)	55
SR 29 (south)	35
Live Oak Dr (north)	10
TOTAL	100

Vehicle Miles Traveled (VMT) Impacts

Under SB 743 impacts associated with development are to be measured based on the vehicle miles traveled (VMT) generated by a project. Like many other jurisdictions in California, the County of Lake has not yet adopted a policy or threshold of significance regarding VMT so the project-related VMT impacts were assessed based on guidance provided by the California Governor's Office of Planning and Research (OPR) in the publication *Transportation Impacts (SB 743) CEQA Guidelines Update and Technical Advisory*, 2018.

In the technical advisory, OPR did not specifically address the evaluation of VMT for schools. A common approach that jurisdictions have adopted considers public facilities as local-serving land uses, with the presumption that they have a less than significant impact on VMT. This is similar to the OPR-recommended approach for evaluating retail uses. Retail uses under 50,000 square feet are generally considered to be local-serving; as stated in the technical advisory, this has the effect of improving retail destination proximity, redistributing trips to what may be a more efficient pattern, resulting in shorter trips and reduced VMT.

While schools can be analyzed by considering them as local-serving public facilities, this approach is generally applied to public schools, and it is less clear that private schools exhibit this same pattern. The trip pattern associated with the Konocti Christian Academy was therefore analyzed to determine if it appears to be local-serving or if it might result in a potentially significant impact on VMT.

Addresses for the expanded enrollment (including current students and incoming students for the 2022-23 school year) and staff were provided by the school administration. The students and staff primarily live in Lakeport (55 percent) and Kelseyville (36 percent), with the remainder distributed among other communities in Lake County, with the exception of one student in Ukiah. Since the student body changes each year, specific addresses were not evaluated; rather, it was assumed that the geographic distribution of students and staff would remain similar, and the students' trip lengths were estimated based on the distance between a central point in each community of residence to the proposed school site in Kelseyville. Based on this analysis, the average distance that students

and staff travel to the proposed Kelseyville site for the Konocti Christian Academy was determined to be 6.3 miles. It is noted that ridesharing is likely to result in a considerable reduction in the number of vehicles that would be traveling to and from the school each day. Of the 126 students and 15 staff that will be at the Konocti Christian Academy in 2022-23, 67 individuals live with at least one sibling attending the school or a parent working there; assuming that those individuals living at the same address drive together each day, these 67 individuals would be expected to travel to and from the school each day in only 27 vehicles.

The California Household Travel Survey (CHTS), as cited in *SB 743 Vehicle Miles Traveled Regional Baseline Study*, Lake Area Planning Council, 2020, estimates that the average length of work trips in unincorporated Lake County is 16.2 miles. Since the trip length for travel to and from the proposed Konocti School site is only 39 percent of the average commute trip length, it is reasonable to assume that the school is local-serving and that the VMT impact would be less-than-significant.

The potential VMT impact of the school was also considered based on the distance that students would need to travel to reach other Christian schools if the option to attend Konocti Christian Academy at the Live Oak Drive site were not available. Other than the Konocti Academy, the only Christian schools identified in Lake County were the Middletown Christian School in Middletown and the Zemorah Christian Academy in Lower Lake. There were also three Seventh Day Adventist schools that were not seen as comparable so were not analyzed.

The travel distances to the other Christian school locations were considered for the students that live in Lakeport and Kelseyville, as they make up 90 percent of the study body. The distance between the center of Lakeport and the Live Oak Drive site in Kelseyville is approximately 7.5 miles. In comparison, the Middletown Christian School and Zemorah Christian Academy are 29.3 miles and 21.8 miles from Lakeport, respectively. Travel between Lakeport and the project site therefore equates to travel distances that are 74 or 66 percent less than if the students and staff were to travel to these alternative sites. For Kelseyville-based students, the Live Oak Drive site is 0.8 miles from the center of Kelseyville, while the Middletown Christian School and Zemorah Christian Academy are 22.7 and 15.1 miles from Kelseyville, respectively. The travel distance from Kelseyville to the proposed Live Oak Drive site would therefore be 96 percent shorter than the travel distance to the Middletown Christian School and 95 percent shorter than the distance to Zemorah Christian Academy. Based on the comparison of travel distances to the other available Christian school options, it is reasonable to conclude that the proposed Live Oak Drive site would have a less-than significant-impact on VMT.

Finding – The project-related VMT impact would be less than significant.

Site Circulation and Access

The project driveways on Live Oak Drive would provide access to and egress from the site, access to the on-site parking for staff and visitors, and access to the student drop-off/pick-up area.

Sight Distance

Sight distance on Live Oak Drive at the proposed project driveways was evaluated based on sight distance criteria contained in the *Highway Design Manual* published by Caltrans. The recommended sight distances for driveways are based on stopping sight distance, with approach travel speeds used as the basis for determining the recommended sight distance. For the posted 35 mph speed limit, the recommended stopping sight distance is 250 feet, and the available sight distances exceed this minimum. Live Oak Drive along the project frontage is straight and flat in both directions. The sight lines along Live Oak Drive approaching the project site from the south are more than adequate to allow a following driver to observe and react to a vehicle stopped in the roadway while the driver waits to turn left into the site.

On-Site Stacking Space

Vehicle queuing is not a concern during the morning when adults drop children off at school since drivers enter the parking lot, passengers leave, and then drivers can depart. However, vehicle queuing commonly occurs after school when adults arrive to pick children up at the end of the school day. Drivers who arrive at the site early are required to wait until the bell rings before students can exit the building, board the vehicles, and depart the school site.

To understand the typical patterns during the p.m. pick-up period, school personnel monitored queuing activity at the existing school site. A maximum of 15 vehicles were observed queuing just prior to the bell signaling the students' dismissal; while some vehicles continued to arrive after the bell, this was offset by departures from the school site. Since enrollment is planned to increase by 25 percent before the planned relocation of the school to Kelseyville, the estimated number of queuing vehicles was assumed to increase by a similar ratio of four vehicles. Based on these assumptions, space for 19 queuing vehicles would be adequate to serve the site during pick-up times at end of the school day. Based on the site plan, a 500-foot queue could be accommodated along the perimeter of the lot, which equates to about 20 vehicles. If in the future it is determined that the queueing capacity is inadequate for the site, the school could implement operational measures to reduce queueing, such as staggered bell times to reduce the number of students being released at one time. If students were split into two equal groups, it could be presumed that the queue length for each group would decrease by approximately 50 percent.

Finding – There would be adequate stacking space on-site to accommodate anticipated queuing.

Left Turn Lane Warrants

The need for a left-turn lane on Live Oak Drive into the project driveway was evaluated using the methodology from the American Association of State Highway and Transportation Officials (AASHTO), which is typically used by Caltrans District 1. Based on the number of project-generated trips and the trip distribution described above, 25 vehicles would be expected to make left turns into the site during the a.m. peak hour and 13 vehicles would be expected to make a left turn into the site during the p.m. peak hour. The estimated number of turning vehicles does not account for carpooling that is currently occurring; therefore, this assessment is conservative.

While traffic volumes were not available for Live Oak Drive, a sensitivity analysis was performed to determine the volumes that would result in meeting warrants for a left-turn lane. It was determined that the peak hour volumes would need to be approximately 1,200 vehicles during the peak hour. Based on 2019 data from the Caltrans Traffic Census Program, this is the approximate number of vehicles during the peak hour on SR 29, which is the most-heavily traveled roadway in the area. Since volumes on Live Oak Drive are considerably less than those on SR 29, it is reasonable to conclude that a left-turn lane would not be warranted at the project driveway.

It is noted that the number of vehicles entering the site was only evaluated for the a.m. peak hour, since the p.m. peak hour of generator volumes are lower and this period does not coincide with the standard p.m. peak hour used to evaluate traffic operation.

Finding – A northbound left-turn lane would not be required at the project driveway.

Alternative Modes

Pedestrian Facilities

Pedestrian facilities include sidewalks, crosswalks, pedestrian signal phases, curb ramps, curb extensions, and various streetscape amenities such as lighting, benches, etc. There are no sidewalks along Live Oak Drive though there are paved shoulders of varying width that can be used by pedestrians to travel to and from the project site.

Crosswalks are present on all legs of the signalized SR 29/Live Oak Drive intersection and there are shoulders along SR 29 that provide pedestrian access. The most densely developed parts of Kelseyville are on the north side of SR 29, where sidewalks are not present on most streets, except Main Street and State Street. Given the rural character of the area, a limited amount of pedestrian traffic occurs and the existing facilities are considered acceptable for the rural setting.

On-site pedestrian facilities are needed to provide access between the school entrance and the pick-up/drop-off area. The designated area for student drop-offs and pick-ups is indicated on the enclosed site plan. Students would be able to walk between the loading area and the classroom buildings without interacting with vehicle traffic. A pedestrian pathway should be provided along the project frontage for students walking within the project site; this would also provide access for pedestrians walking along Live Oak Drive, which currently has no designated pedestrian facilities.

Finding – Pedestrian facilities serving the project site are inadequate.

Recommendation – The project should provide a pedestrian pathway along the project frontage on Live Oak Drive. Given the character of the community and the lack of curb and gutter along Live Oak Drive, an asphalt path would be adequate.

Bicycle Facilities

There are no existing bicycle facilities in the immediate project area. There are several proposed bikeways identified in the *Active Transportation Plan for Lake County*, Lake Area Planning Council, 2016, including Class III bike routes on Live Oak Drive from Cole Creek Road to Main Street and along SR 29 from the Parallel Drive/Hwy 175 intersection to Bottle Rock Road. Bicyclist access is provided by shared use of streets with vehicle traffic.

Finding – Bicycle facilities serving the project area are adequate given the rural context.

Transit Facilities

Transit service is provided in the project area by Lake Transit. Lake Transit Route 4 serves Kelseyville and operates between Lakeport and Clearlake. Service is available Sunday through Friday from approximately 6 a.m. to 6 p.m., plus an additional evening eastbound bus. There are stops for Route 4 on Main Street near the intersection with Live Oak Drive, less than one-half mile from the project site. There are no designated pedestrian facilities along Live Oak Drive and shoulders providing pedestrian access are of varying width.

Finding – The addition of a walkway along the project frontage would improve pedestrian access, but there are inadequate facilities in the area to adequately connect the site to transit service. With the development of continuous pedestrian infrastructure as part of future development, access to transit facilities would be adequate.

Parking Supply

For elementary and middle schools, Section 21-46.5 of the Lake County Code requires one parking space per employee plus one space per eight students. The school is proposed to have 15 staff plus 126 students. Based on these anticipated staffing levels and enrollment, a total of 31 spaces would be required; the project as proposed includes 32 on-site spaces, which meets County requirements.

Section 21-46.11 requires bicycle parking for schools at a rate of one rack for each 15 vehicle spaces required. The project as proposed would provide 10 bicycle parking spaces, which would be adequate.

Finding – The project parking supply would be adequate to meet County requirements for both vehicle parking and bicycle parking.

Emergency Access

While the site plan for the Konocti Christian Academy is still preliminary, it is anticipated that all aspects of the site including street and driveway widths and parking lot circulation would be designed in accordance with applicable standards and would be subject to review by the Lake County Fire Protection District; therefore, access would be expected to function acceptably for emergency response vehicles.

Finding – Emergency access would be adequate.

Conclusions and Recommendations

- The project is estimated to generate 518 daily trips, including 126 during the a.m. peak hour of generator and 76 during the p.m. peak hour of generator.
- The VMT associated with the project would result in a less-than-significant impact.
- With the provision of a walkway along the project frontage, pedestrian access would be adequate to connect the drop-off/pick-up zone to the school buildings.
- Bicycle access is adequate given the rural context of the site.
- Transit access would be adequate with the enhancement of pedestrian infrastructure in the surrounding area in conjunction with future development.
- Site circulation and access would be adequate; a northbound left-turn lane into the project driveway would not be warranted.
- The project's proposed parking and bicycle parking supplies would be adequate.
- Emergency access for the site would be adequate.

Thank you for giving W-Trans the opportunity to provide these services. Please call if you have any questions.

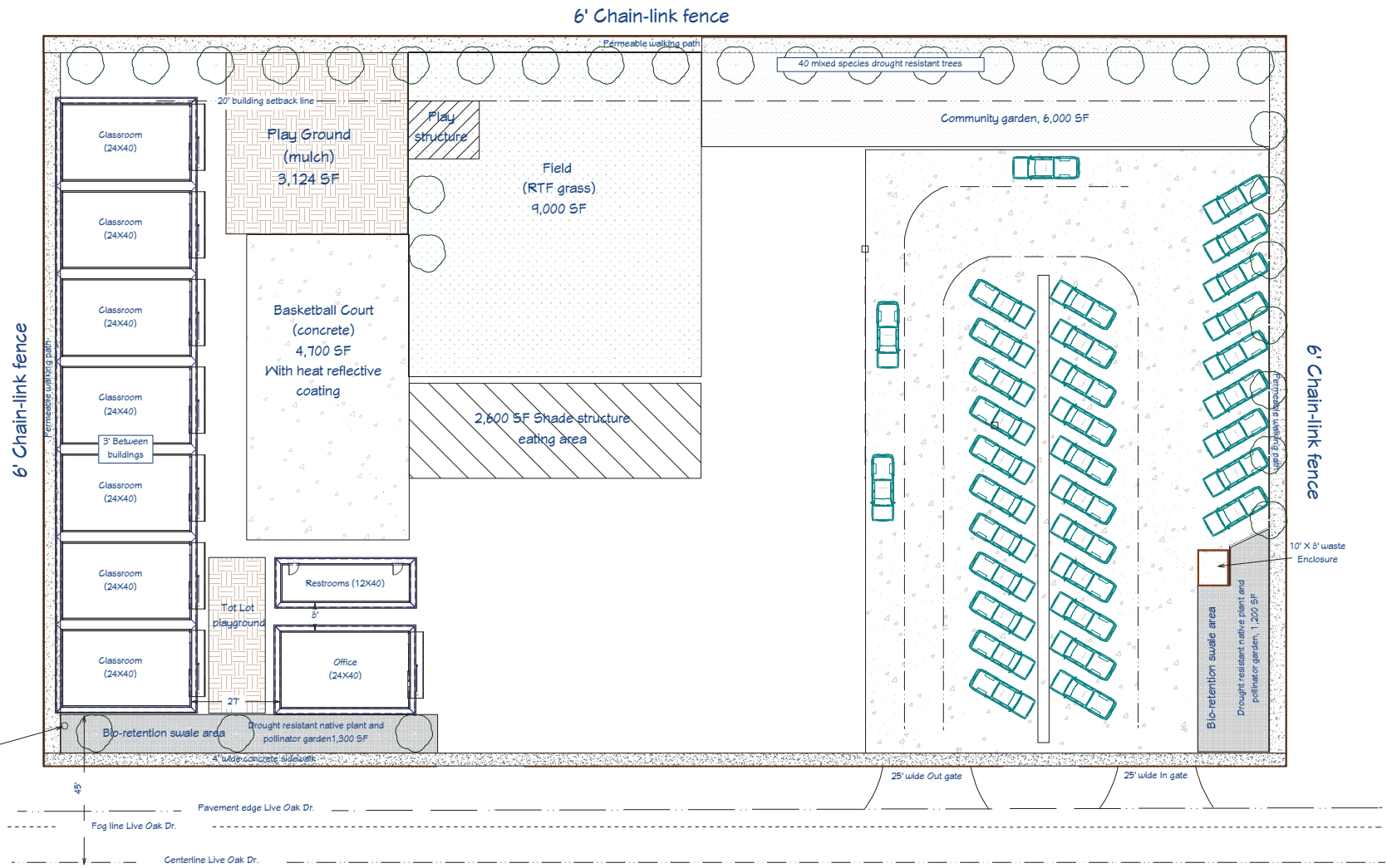
Sincerely,

Barry Bergman, AICP
Senior Planner

Dalene J. Whitlock, PE, PTOE
Senior Principal

DJW/bdb/LKX092.L1

Enclosures: Site Plan



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