NOISE TECHNICAL MEMORANDUM

TO: Brandon Larsen, Senior Environmental Planner, Caltrans District 1

THRU: Fred Pezeshk, Principal Civil Engineer, County of Lake

FROM: Emad Elias, Assistant Engineer, County of Lake

SUBJECT: Temporary Construction Noise – First Street Bridge (14C-0015) over Clover Creek, Bridge Replacement Project, Federal Aid No. BRLO-5914(079)

DATE: May 21, 2015

Introduction

This memorandum discusses temporary construction noise impacts from implementation of the First Street Bridge over Clover Creek project. See Figure 1 and 2 for Project Site and Project Vicinity, respectively.

Figure 1 Project Site

Figure 2 Project Vicinity

Project Description

The project consists of the replacement of an existing single span reinforced concrete haunched T-girder bridge (Bridge No. 14C-0015) over Clover Creek. The existing bridge is located on First Street approximately 0.1 miles east of Main Street, in the community of Upper Lake.

The concrete structure is too narrow for the roadway's Functional Classification and is considered Functionally Obsolete. The existing bridge has concrete bridge railing with no approach railings.

The project need is to provide a safe permanent crossing over Clover Creek on First Street since the existing structure is considered Functionally Obsolete.

The primary objective is to replace a Functionally Obsolete structure to improve public safety and to provide for a permanent structure that has long term value for the County.

The entire existing roadway is within County right-of-way which has a minimum width of 50'. It is anticipated that any additional need for right-of-way acquisition, rights of entry, or temporary construction easements will be minimized by maintaining the existing roadway alignment.

It is assumed that the roadway for one block will be closed during construction and traffic will be redirected onto other local streets.

It is anticipated that dozers, excavators, pavers, cranes, dump trucks, concrete trucks, concrete pumps, and pneumatic tools may be required to construct the new bridge. Construction is anticipated to be completed within one construction season.

The existing structure is approximately 39 feet long. Replacement structures are typically slightly longer than the existing. A reinforced concrete bridge or a culvert will be considered for this project. Since the bridge and culvert options are significantly different in hydraulic capacity, a detailed hydraulic study is required to verify the viability of the options being considered.

The existing bridge crosses Clover Creek upstream of its confluence with Middle Creek and the flow is primarily controlled by the upstream Clover Creek Diversion structure and seasonal runoff. The flows were reduced by the diversion structure from 8500 cfs to 500 cfs. The channel appears to have a good alignment with the current bridge configuration.

This project may involve permanent modification or alteration of the streambed. Access to the creek will be required to construct the new structure. Depending on flows during construction, temporary stream diversion may be required. The new structure will be designed to accommodate 100-year flow without overtopping the new bridge.

Due to weak soil and high ground water, either a box culvert or an arch culvert with mat/slab foundation is anticipated.

The project is not within an EPA designated or proposed sole-source aquifer. This project is not in an area regulated by the State Coastal Zone Management Agency. The project is not in the general vicinity of a Wild and Scenic River System. No agricultural resources will be affected. It remains to be determined whether wetland resources will be affected. The project is consistent with the plans and goals of the community.

Noise Setting

According to the Caltrans Environmental Handbook guidelines, construction noise is only substantial in exceptional cases, such as pile driving and crack and seal pavement rehabilitation operations. It also states that for local agency federal-aid transportation projects "off" the State Highway System (SHS) (Local Assistance projects), the determination as to whether or not a project is a Type 1 Project, and the decision to prepare a Noise Study, is made during completion of the Preliminary Environmental Study (PES) form. The signed PES for the project, dated August 7, 2012, determined that this is not a Type 1 project, but required that a Noise Technical Memorandum be prepared. This is due to potential construction related noise impacts to residents located immediately adjacent to the project.

Caltrans Standard Specifications 2010, Section 14-8.02, "Noise Control", requires that: a) construction noise not exceed 86 dBA at 50 feet from the job site activities from 9 p.m. to 6 a.m., and b) internal combustion engines be equipped with the manufacturer-recommended muffler and not operate on the job site without the appropriate muffler.

The project will take place in County of Lake road right-of-way and will be adjacent to areas zoned Low Density Residential, Medium Density Residential, and Agriculture. There are residences immediately adjacent to the project site, with the nearest residence approximately 40 feet away.

Noise sources that contribute to ambient noise levels in and adjacent to the project site include low levels of traffic from local streets and noise from residential activities. Potentially sensitive noise receptors in the vicinity of the project site include the nearby residences.

Environmental Consequences

The County does not anticipate any night-time work for this project; Therefore, the construction noise regulated by Caltrans Standard Specifications Section 14-8.02, "Noise Control", requiring construction noise not exceed 86 dBA at 50 feet from the job site activities from 9 p.m. to 6 a.m. shall not be of concern. Lake County exempts construction noise occurring between the hours of 7:00 AM and 7:00 PM from quantitative noise limits contained in the County's Zoning

Ordinance 41.11(e). General Plan Policy N-1.7 requires contractors to implement noise-reducing mitigation measures during construction when residential uses or other sensitive receptors are located within 500 feet. Some of these measures are included in the list below. Table-1 summarizes noise levels produced by construction equipment that is commonly used on roadway construction projects. Construction equipment is expected to generate noise levels ranging from 70 to 85 dBA at a distance of 50 feet, and noise produced by construction equipment would be reduced at a rate of about 6 dB per doubling of distance.

Equipment	Maximum Noise Level (dBA at 50 feet)
Backhoe	80
Concrete Pump Truck	82
Dozers	85
Excavator	85
Flat Bed Truck	84
Paver	85
Pneumatic Tools	85

Table 1 Construction Equipment Noise

Source: FHWA Construction Noise Handbook, August 2006

Adverse noise impacts from construction are anticipated to be minimal because construction would be conducted in accordance with Caltrans Standard Specifications Section 14-8.02 and applicable local noise standards. Construction noise would be short-term (April 15th to October 30th of the construction season), and intermittent. Further, implementing the following measures would minimize the temporary noise impacts from construction:

- Noise-generating construction activities should be restricted to the hours of 7:00 AM to 7:00 PM. If work is necessary outside of these hours, the County will require the contractor to implement a construction noise monitoring program and provide additional mitigation as necessary to meet the County's Zoning Ordinance noise limits (in the form of noise control blankets or other temporary noise barriers, etc.)
- Require contractors to assure that mobile noise-generating equipment and machinery are shut off when not in use.
- Locate stationary construction noise sources as far from sensitive receptors as feasible. If they must be located near receptors, adequate muffling (with enclosures where feasible and appropriate) will be used. Any enclosure openings or venting will face away from sensitive receptors.
- The construction contractor shall utilize "quiet" models of air compressors and other stationary noise sources where technology exists. Impact tools, such as jackhammers, rock drills, etc., used for project construction shall be hydraulically or electrically powered whenever possible to avoid noise associated with compressed-air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed-air exhaust shall be used; such mufflers can lower noise levels from the exhaust by up to 10 dBA. External jackets on the tools themselves shall be used where feasible, which could achieve a reduction of 5 dBA. Quieter procedures shall be used, such as drills rather than impact equipment, whenever feasible.
- At least 72 hours prior to commencing construction, neighbors located adjacent to the construction site shall be notified of the construction schedule in writing.

- Designate a project liaison that will be responsible for responding to noise complaints during the construction phase. The name and phone number of the liaison will be conspicuously posted at construction areas and on all advanced notifications. This person will take steps to resolve complaints, including periodic noise monitoring, if necessary. Results of noise monitoring will be presented at regular project meetings with the project contractor, and the liaison will coordinate with the contractor to modify any construction activities that generated excessive noise levels to the extent feasible.
- Require a reporting program that documents complaints received, actions taken to resolve problems, and effectiveness of these actions.
- Hold a preconstruction meeting with the job inspectors and the general contractor/on-site project manager to confirm that noise mitigation and practices (including construction hours, construction schedule, and noise coordinator) are completed.

Summary

Based on the above discussion, it is concluded that construction noise impacts due to the project would not be substantial based on 1) the project is not a Type 1 project; 2) proposed construction duration is temporary; and 3) construction of the project would use proposed minimization methods. Temporary construction-related noise impacts will be minimized by implementation of Caltrans standard noise control requirements.

Adverse noise impacts from construction are anticipated to be minimal because construction would be conducted in accordance with Caltrans Standard Specifications, would be consistent with local policies, and would be short term and intermittent.