



Rail Committee Staff Report

From: City Manager

Report Type: ACTION ITEMS

Lead Department: Transportation

Meeting Date: August 20, 2024

Report #:2405-3085

TITLE

Review and Discuss the Initial Analysis of the City's Quiet Zone Implementation Project at Existing At-Grade Crossings (Churchill Avenue, Meadow Drive, and Charleston Road); CEQA status – statutorily exempt per Section 15262 (Feasibility and Planning Studies).

RECOMMENDATION

Staff recommends the Rail Committee to consider recommending safety measures at each of the crossings to bring Quiet Zone Risk Index (QZRI) to below the existing Risk Index With Horns (RIWH), which involves implementing a quad gate arms mechanism at each of the three crossings i.e. Churchill Avenue, Meadow Drive, and Charleston Road (Option 1). In addition, staff recommends considering Wayside Horns (Option 4) for interim purposes to reduce Train Horn Noise levels in the community.

EXECUTIVE SUMMARY

The Office of Transportation staff is progressing with a Quiet Zone Study at three rail crossings: Churchill Avenue, Meadow Drive, and Charleston Road. On March 4, 2024, the City Council approved an agreement with Kimley Horn and Associates to perform the Quiet Zone Study for the implementation of Quiet Zones at the project crossings in Palo Alto. The Federal Railroad Administration (FRA) regulations require a quiet zone study to review the Quiet Zone Risk Index (QZRI) qualifying for quiet zone or Supplemental Safety Measures (SSM) at each crossing. The Consultant has completed the initial review of the existing conditions and developed options for improvements at these crossings. This staff report shares the findings from this initial review and analysis and seeks direction in furthering the next steps for implementing Quiet Zone.

BACKGROUND

Federal regulation requires that locomotive horns begin sounding 15–20 seconds before entering public rail grade crossings, no more than one-quarter mile in advance. These horns produce sounds from 96 to 110 decibels for at-grade crossings. The sound noise affects the quality of life of the Palo Alto residents in the vicinity of the railroad crossings and causes significant noise pollution.

The City of Palo Alto (City) has received several requests for consideration of Quiet Zone (QZ) at crossings across the Caltrain Corridor. As the first phase of this project, the City of Palo Alto in collaboration with the City of Menlo Park conducted a QZ study for establishing a quiet zone at the Palo Alto Avenue/Alma Street crossing. The City Council has approved the Conceptual plans for the improvements required at this crossing and staff is working with the consultant to develop the improvement plans for the construction of required improvements. Also, after this phase, the Office of Transportation staff initiated a QZ project for implementation of QZ at the remaining three at-grade crossings of Churchill Avenue, Meadow Drive, and Charleston Road. As the City is progressing towards the Grade Separation at these crossings, the QZ will therefore serve as an interim measure until Grade Separation Projects are constructed at these crossings.

On March 4, 2024, the City Council approved an agreement with Kimley Horn and Associates for performing a Quiet Zone Study which also includes the scope of providing recommendations for improvements necessary at these three crossings to implement QZ in Palo Alto (Staff Report 2311-2269¹). The Federal Railroad Administration (FRA) Title 49 regulations provide guidelines to local agencies nationwide to mitigate the effects of train horn noise by establishing Quiet Zones. The regulations require a quiet zone study to review the Quiet Zone Risk Index (QZRI) qualifying for quiet zone or Supplemental Safety Measures (SSM) at each crossing. There are fourteen SSMs recognized by the FRA. Due to the community goals and the surrounding street geometry, the only feasible SSM was a quad-gate system for each of these crossings.

ANALYSIS

The project consultant has completed the initial review of the existing conditions and analyzed the crossings, and this initial review precedes any conceptual design, diagnostic meetings, and coordination with Caltrain and CPUC. There are three main methods by which a set of crossings can achieve quiet zone approval. Due to community goals and the surrounding street geometry, the only feasible SSM was a quad-gate system. The analysis of the risk index for each of these options is as follows:

Option 1: Upgrade each crossing: this option considers implementing safety measures at each of the crossings to bring QZRI to below the existing Risk Index With Horns (RIWH). This option involves implementing a quad gate arms mechanism at each of the three crossings i.e. Churchill Avenue, Meadow Drive, and Charleston Road.

¹ City Council Meeting, March 4, 2024; Consent Item SR# 2311-2269
<https://portal.laserfiche.com/Portal/DocView.aspx?id=70841&repo=r-704298fc>

Table 1: All Crossings upgraded to Quad Gates

Street	Pre-SSM	SSM	Risk
Palo Alto Avenue (Alma Street)	13	0	82,827.10
Churchill Avenue	0	6	135,461.91
E Meadow Drive	0	6	68,019.50
W Charleston Road	0	6	97,993.91
<i>Risk Index with Horns (RIWH)</i>			258,527.84
<i>Quiet Zone Risk Index (QZRI)</i>			96,075.6

Option 2: Upgrade minimum subset to gain QZ approval: A second way by which a quiet zone can be achieved is by upgrading crossings with SSMs such that the QZRI is less than the RIWH. During this evaluation, it was determined that two crossings in the Study Area are required to be upgraded to Quad gates (SSM 6) for the Quiet Zone to qualify for QZ. This could be a combination of any two crossings as depicted in the tables below.

Table 2: Churchill and Meadow upgraded to Quad Gates

Street	Pre-SSM	SSM	Risk
Palo Alto Avenue (Alma Street)	13	0	82,827.10
Churchill Avenue	0	6	135,461.91
E Meadow Drive	0	6	68,019.50
W Charleston Road	0	0	426,060.47
<i>Risk Index with Horns (RIWH)</i>			258,527.84
<i>Quiet Zone Risk Index (QZRI)</i>			178,092.24

Table 3: Meadow Drive and Charleston Road crossings upgraded to Quad Gates

Street	Pre-SSM	SSM	Risk
Palo Alto Avenue (Alma Street)	13	0	82,827.10
Churchill Avenue	0	0	588,964.84
E Meadow Drive	0	6	68,019.50
W Charleston Road	0	6	97,993.91
<i>Risk Index with Horns (RIWH)</i>			258,527.84
<i>Quiet Zone Risk Index</i>			209,451.34

Table 4: Churchill Avenue and Charleston Road crossings upgraded to Quad Gates

Street	Pre-SSM	SSM	Risk
Palo Alto Avenue (Alma Street)	13	0	82,827.10
Churchill Avenue	0	6	135,461.91
E Meadow Drive	0	0	68,019.50
W Charleston Road	0	6	97,993.91
<i>Risk Index with Horns (RIWH)</i>			258,527.84
<i>Quiet Zone Risk Index (QZRI)</i>			153,004.96

Option 3: Alternative Safety Measures: In locations where implementing upgrades may be infeasible due to geometry or spatial constraints, Alternative Safety Measures (ASMs) may be implemented. ASMs require a more frequent cycle of re-certification of the quiet zone and are evaluated on a subjective basis. “Engineering” ASMs may include roadway changes, such as reprofiling, sight visibility enhancements, or signalization upgrades. “Non-engineering” ASMs could include public outreach initiatives or police enforcement.

For the crossings in the Study Area, ASMs may be useful if the City determines four-quadrant gates would not be feasible, specifically related to the limited clearance between the grade crossings and nearby intersections with Alma Street. However, it is important to note the risk associated with the implementation of ASMs, due to the increased frequency of recertification (2.5 – 3 years) as well as the subjective evaluation of the safety measures.

Option 4: Wayside Horns: Wayside horns are allowed to be installed at crossings already equipped with flashing lights and automatic gates. The wayside horn would be placed on the warning device, and oriented to face the roadway. The sound would be directed down the roadway, which can reduce the overall spread of the noise. However, wayside horns are not the same as establishing a quiet zone.

Wayside horns may be an interim measure to reduce the spread of the sound associated with train horns while a more permanent solution is evaluated, planned for, and constructed.

To implement QZ at these crossings, the analysis assumed all four crossings in the FRA Quiet Zone Calculator, since the City cannot create two different quiet zones under CFR 222.35(a)(1)(iii). The likely quiet zone implementation will involve getting Palo Alto Avenue/Alma Street quiet zone certified, and then amending the quiet zone in the future when the remaining three crossings are upgraded.

To have a QZ, implementation of the quad gate system will be necessary to meet the Quiet Zone Risk Index. The next steps will therefore involve the consultant reviewing the existing conditions at each intersection and developing the conceptual plans. These conceptual plans will allow discussions with FRA and CPUC staff during the diagnostic meeting for the development of the QZ at these crossings. Therefore, staff recommends that the consultant proceeds with the review and development of the conceptual plans that would meet the FRA requirements for implementation of the QZ.

RESOURCE IMPACT

Funding for this Quiet Zone Study is included in the 2025-2029 Capital Improvement Plan in the Transportation and Parking Improvements project (PL-12000). No additional impacts are anticipated at this time.

STAKEHOLDER ENGAGEMENT

The Rail Committee meetings are open to the public and therefore provide the community with opportunities to provide comments to the rail committee and the City. Regular updates on the project are provided at this meeting. Staff plans to conduct outreach to seek input and feedback from the community after conducting the diagnostic meeting and the development of the conceptual plan

ENVIRONMENTAL REVIEW

Conducting a Quiet Zone Study is statutorily exempt under CEQA section 15262 as a feasibility or planning study. Review of this study does not approve or fund any specific project. Any future capital improvements recommended through the study will be subject to CEQA review as required by law.

ATTACHMENTS

Attachment A: Palo Alto Quiet Zone Technical Memorandum

APPROVED BY:

Philip Kamhi, Chief Transportation Official