



## Item No. 10 Town of Atherton

### **CITY COUNCIL STAFF REPORT – REGULAR AGENDA**

**TO: HONORABLE MAYOR AND CITY COUNCIL  
GEORGE RODERICKS, CITY MANAGER**

**FROM: MICHAEL KASHIWAGI  
COMMUNITY SERVICES DIRECTOR**

**DATE: DECEMBER 7, 2016**

**SUBJECT: UPDATE – ATHERTON FAIR OAKS QUIET ZONE**

#### **RECOMMENDATION**

Review and discuss staff report and provide any additional direction to staff.

#### **DISCUSSION**

The Atherton Fair Oaks Quiet Zone was officially established by the Town of Atherton at 12:01 AM on Monday, June 13, 2016. It is the first quiet zone established on the Caltrain Corridor. Although new to the San Francisco Peninsula, communities across the United States have been able to establish Quiet Zones to improve the quality of life for residents since 2005.

To help educate residents regarding the Atherton Fair Oaks Quiet Zone, staff prepared informational material which describes the federal regulations which govern the establishment of Quiet Zones. Also included was information regarding the required sounding of locomotive train horns at public highway-rail grade crossings along with the limits and limitations of the Atherton Fair Oaks Quiet Zone. This information is included with the staff report and has been posted on the Town's web site since mid October 2016.

Here is a link to that information:

<http://www.ci.atherton.ca.us/index.aspx?NID=456>

The website also has a series of Frequently Asked Questions which is linked here:

<http://www.ci.atherton.ca.us/FAQ.aspx?FID=49&NID=456>

### Quiet Zone Compliance

In August 2016, staff solicited proposals from professional noise consultants to perform an independent check of Quiet Zone compliance by Caltrain and freight operators on the Caltrain corridor. Based upon review of submitted cost proposals, Edward L. Pack Associates, Inc. was selected to perform the noise monitoring. The monitoring was performed midweek over a continuous 48-hour period in early October.

Per Federal Railroad Administration regulations, locomotive horns cannot be sounded more than ¼ mile (1320 feet) in advance of highway-rail grade crossings. For our study, the noise meter which measured continuous recordings of sound levels was located approximately 1,120 feet north of Fair Oaks Lane. This location was selected since train horns detected in this area would be a violation of the Quiet Zone. The audio recordings captured horn soundings for each train that sounded their horn. The recorded events were also time logged which were then correlated with the Caltrain schedule to determine if the train horn was from a northbound or southbound train. The sounds from Caltrain were distinctly different from those of freight trains which provided a distinction of freight train violations vs Caltrain violations.

Over the 48-hour measurement period, 216 train noise events were recorded. Per the Caltrain weekday schedule, there are 46 southbound trains and 46 northbound trains per day for a total of 92 trains per day or 184 trains over the 2-day monitoring period. Accordingly, 184 of the train noise events were Caltrain and the remaining were attributed to freight trains. Quiet Zone violations were determined based upon horn sounds detected within 10 seconds of the train passing by the noise meter.

The results of the study determined that over the 48-hour monitoring period, horn soundings occurred within the Quiet Zone from 23 Caltrain trains. In addition, 2 to 4 freight train violations were identified. Table II of the Railroad Horn Soundings Report (attached) provides a summary of Quiet Zone violations.

### POLICY FOCUS

There are no policy considerations associated with review of the Quiet Zone compliance report.

### FISCAL IMPACT

There is no identified fiscal impact associated with this item at this time.

### PUBLIC NOTICE

Public notification was achieved by posting the agenda, with this agenda item being listed, at least 72 hours prior to the meeting in print and electronically. Information about the project is also disseminated via the Town's electronic News Flash and Atherton Online. There are approximately 1,200 subscribers to the Town's electronic News Flash publications. Subscribers include residents as well as stakeholders – to include, but be not limited to, media outlets, school districts, Menlo Park Fire District, service providers (water, power, and sewer), and regional elected officials.

Update - Atherton Fair Oaks Quiet Zone  
December 7, 2016  
Page 3 of 3

**ATTACHMENTS**

Quiet Zone Web Site Information  
Railroad Horn Sounding Report



## ATHERTON FAIR OAKS QUIET ZONE

At 12:01 AM on Monday, June 13, 2016, the Atherton Fair Oaks Quiet Zone was officially established by the Town of Atherton. Railroad Quiet Zones can be established based on criteria outlined in the *Final Rule on Use of Locomotive Horns at Highway-Rail Grade Crossings (Final Rule)*, which was made effective on June 24, 2005 by the Federal Railroad Administration (FRA) and amended on August 17, 2006.

Since 2005, communities across the United States have been able to establish Quiet Zones to improve the quality of life of their residents. A quiet zone is a section of rail line that contains one or more consecutive public highway-rail grade crossings at which locomotive horns are not routinely sounded. The *Final Rule* contains guidelines and minimum requirements for the establishment of a quiet zone. The *Final Rule* was issued to provide guidelines for consistency in locomotive horn sounding throughout the United States. It requires the sounding of locomotive horns 15-20 seconds before entering public highway-rail grade crossings and no more than one-quarter mile in advance of the crossing. Train horn restrictions within Quiet Zones do not apply in emergency situations.



**Atherton Fair Oaks Quiet Zone** – The Town of Atherton has two public highway-rail grade crossings, Fair Oaks Lane and Watkins Avenue. The Fair Oaks Lane crossing is equipped with 4-quadrant gates and the Watkins Avenue crossing has a 2-quadrant gate system.



The 4-quadrant gate system provides a higher level of safety since gates are installed across all roadway lanes entering and exiting the crossing which fully block the crossing in the event of an approaching train. The 4-quadrant gate system prohibits cars from physically entering the crossing. It is an approved FRA Supplemental Safety Measure which qualified the Fair Oaks Lane crossing for Quiet Zone establishment.

Per regulations established and governed by the FRA, as the Public Authority responsible for Fair Oaks Lane, the Town of Atherton has the authority to establish the Quiet Zone after following a specific process of notifying and soliciting comments from railroad operators and State and Federal agencies responsible for railroad operations and safety, documenting responses to comments, sending the Notice of Establishment, and installing required roadway signage.

## **Frequently Asked Questions**

### **What is a Quiet Zone ?**

A Quiet Zone is a section of a rail line that contains one or more consecutive public highway-rail at-grade crossings at which locomotive horns are not routinely sounded. A quiet zone does not preclude the sounding of locomotive horns in emergency situations, nor does it impose a legal duty to sound the horn in such situations. Nothing in the *Final Rule* restricts the use of locomotive horns during malfunctions, maintenance or testing.

### **Why Do Trains Sound Their Horns ?**

In response to an increase in train/automobile collisions, in 1994 Congress enacted a law that required the FRA to issue a Federal Regulation requiring the consistent sounding of locomotive horns at public highway-rail grade crossings. It also gave the FRA the ability to provide for exceptions through which communities may establish “quiet zones”.

The Train Horn Rule became effective in June 2005. The rule set nationwide standards for the sounding of locomotive train horns at public highway-rail grade crossings. The FRA has very specific requirements as to when, where, how long, and how loud a train must sound its horn. According to FRA rules, train horns must:

- Be between 96 and 110 decibels
- Sound at least 15 seconds but no more than 20 seconds before reaching a crossing
- Sound no more than ¼ of a mile in advance of a crossing if the train is traveling faster than 60 mph

### **Who is Responsible for Establishing a Quiet Zone ?**

Per FRA Rule, a Quiet Zone may be established by the Public Authority responsible for traffic control or law enforcement at the public highway-rail grade crossing. The Town of Atherton is the Public Authority for the Fair Oaks Lane and Watkins Avenue rail grade crossings.

When was the Atherton Fair Oaks Quiet Zone Established ?

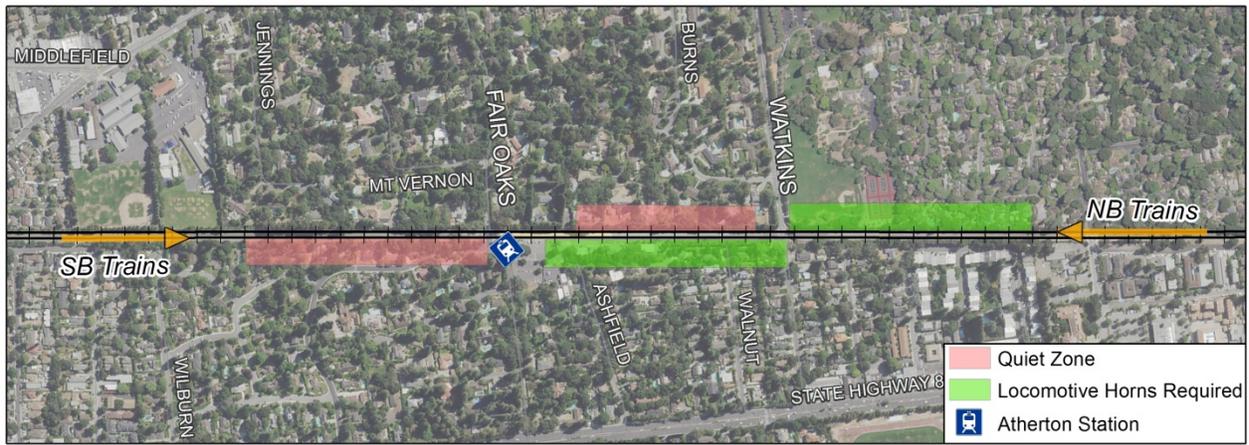
12:01 AM, June 13, 2016

Is the Atherton Caltrain Station Part of the Quiet Zone ?

No. The *Final Rule* regulates locomotive train horns at public highway-rail grade crossings. Commuter rail stations and associated audible warnings are regulated by the operating rules of the passenger rail agency (Caltrain). Caltrain should be contacted to obtain information regarding their operating rules related to audible warnings for Stations.

Is the Sounding of Train Horns Now Prohibited Through the Town of Atherton ?

No. Trains are still required to sound locomotive horns in accordance with the *Final Rule* as they approach the Watkins Avenue public highway-rail grade crossing.



Are Quiet Zones Safe ?

Each crossing within a Quiet Zone must be equipped with active grade crossing warning devices and meet other criteria in accordance with the *Final Rule* in order to be eligible for Quiet Zone establishment. The safety equipment provided at the Fair Oaks Lane highway-rail grade crossing is the installation of a 4 quadrant gate system which provides a physical barrier to prohibit cars from entering the railroad corridor in the event of an approaching train. The 4 quadrant gate system is an approved FRA Supplemental Safety Measure which provides additional warning to minimize the risk of vehicle/train collisions.

### Did the Town Assume Any Potential Liability by Establishing the Atherton Fair Oaks Quiet Zone ?

The absence of routine locomotive train horn sounding increases the risk of a crossing collision, but the FRA required Supplemental Safety Measure (4 quadrant gate system) is intended to mitigate any increased risk. In the event of a collision, liability would be determined by a court on a case-by-case basis, but the idea is that installation of the Supplemental Safety Measure makes the crossing at least as safe, if not safer, than it was prior to establishment of the quiet zone. As a result, establishment of a quiet zone should not result in additional liability for the Town.

### Can the Town Create a Quiet Zone at the Watkins Railroad Crossing ?

Not at this time. The Watkins highway-rail grade crossing currently does not have the required Supplemental Safety Measure to make this crossing Quiet Zone eligible. The Town of Atherton has funded an engineering study to determine the feasibility and cost to construct a 4-quadrant gate system at the Watkins Avenue crossing. Once completed, funding and construction will need to be coordinated with and through Caltrain.

### How Can I Report Violations of the Quiet Zone ?

Quiet Zone violations can be reported to the FRA using the following online form:

<https://www.fra.dot.gov/app/violationreport>

### Where Can I Learn More About How Quiet Zones are Established ?

The FRA Guide to Quiet Zone Establishment can be found at <https://www.fra.dot.gov/eLib/Details/L04781>.



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November 17, 2016  
Project No. 48-038

Mr. Mike Kashiwagi  
City of Atherton  
91 Ashfield Road  
Atherton, CA 94027

Subject: Railroad Horn Soundings, Fair Oaks Quiet Zone, Atherton

Dear Mr. Kashiwagi:

This report presents the results of an investigation into railroad horn soundings in the Fair Oaks Quiet Zone in Atherton. The purpose of this analysis was to determine if horn soundings occur within the quiet zone, the consistency of soundings and who the responsible party is. The results of the study revealed that it was evident that over a 48 hour period, horn soundings occurred within the Quiet Zone from 23 CalTrains. In addition 2, and possibly 4, freight trains sounded their horns within the Quiet Zone.

Sections I, II and III of this report contains a description of the Quiet Zone, descriptions of the analytical methodologies and the results of the study, respectively. Appendix A, attached, contains the CalTrain schedule.

## **I. The Quiet Zone**

The Fair Oaks Quiet Zone background information and requirements, as shown on the City of Atherton website, are provided below.

*At 12:01 AM on Monday, June 13, 2016, the Atherton Fair Oaks Quiet Zone was officially established by the Town of Atherton. Railroad Quiet Zones can be established based on criteria outlined in the Final Rule on Use of Locomotive Horns at Highway-Rail Grade Crossings (Final Rule), which was made effective on June 24, 2005 by the Federal Railroad Administration (FRA) and amended on August 17, 2006.*

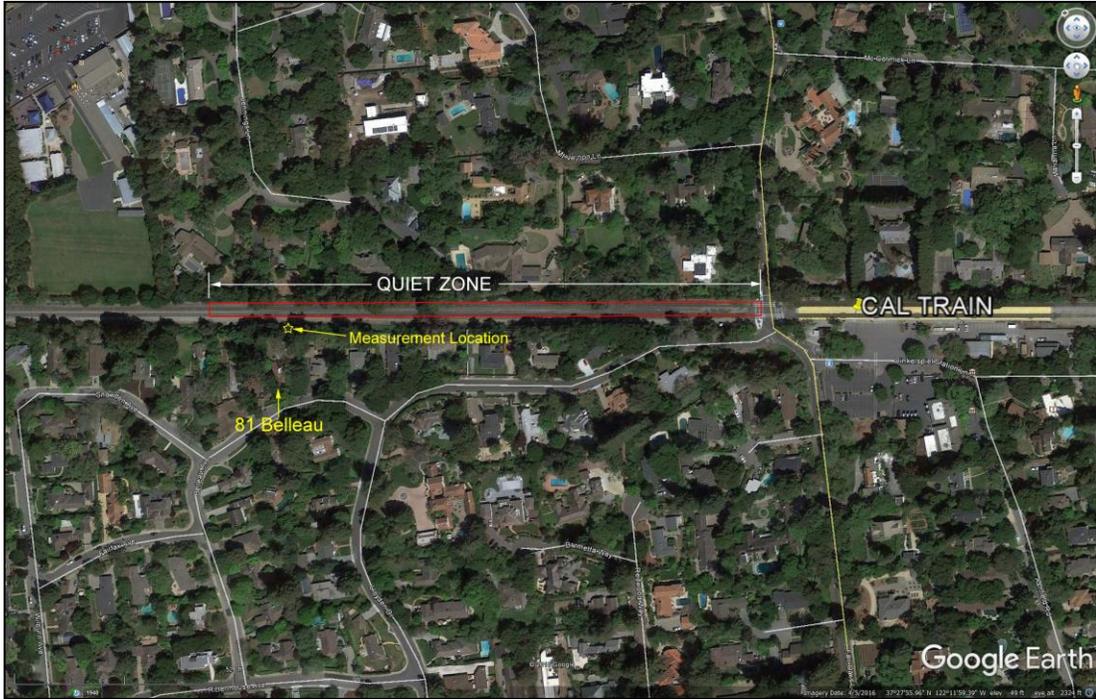
*Since 2005, communities across the United States have been able to establish Quiet Zones to improve the quality of life of their residents. A quiet zone is a section of rail line that contains one or more consecutive public highway-rail grade crossings at which locomotive horns are not routinely sounded. The Final Rule contains guidelines and minimum requirements for the establishment of a quiet zone. The Final Rule was issued to provide guidelines for consistency in locomotive horn sounding throughout the United States. It requires the sounding of locomotive horns 15-20 seconds before entering public highway-rail grade crossings and no more than one-quarter mile in advance of the crossing. Train horn restrictions within Quiet Zones do not apply in emergency situations.*

*The Town of Atherton has two public highway-rail grade crossings, Fair Oaks Lane and Watkins Avenue. The Fair Oaks Lane crossing is equipped with 4-quadrant gates and the Watkins Avenue crossing has a 2-quadrant gate system.*

*The 4-quadrant gate system provides a higher level of safety since gates are installed across all roadway lanes entering and exiting the crossing which fully block the crossing in the event of an approaching train. The 4-quadrant gate system prohibits cars from physically entering the crossing. It is an approved FRA Supplemental Safety Measure which qualified the Fair Oaks Lane crossing for Quiet Zone establishment.*

*Per regulations established and governed by the FRA, as the Public Authority responsible for Fair Oaks Lane, the Town of Atherton has the authority to establish the Quiet Zone after following a specific process of notifying and soliciting comments from railroad operators and State and Federal agencies responsible for railroad operations and safety, documenting responses to comments, sending the Notice of Establishment, and installing required roadway signage.*

The Fair Oaks Quiet Zone area is shown by the red outlined band on Figure 1 on page 3. Also shown is the noise measurement location at 81 Belleau.



**FIGURE 1 – Quiet Zone Area**

## **II. Descriptions of the Analytical Methodologies**

To determine if trains sound their horns within the Quiet Zone, as shown in Figure 1, continuous recordings of the sound levels were made on October 4-6, 2016 at the rear property line of the Drake residence at 81 Belleau in Atherton for a continuous period of 48 hours. Because of the audio recording function, the sound level meter battery limited the sound recording period to 48 hours. The measurement location was 1,120 ft. north of the Fair Oaks crossing and is shown on Figure 1. The sound levels were recorded and processed using a Larson Davis 831 Precision Integrating Sound Level Meter placed on a mast so that the microphone was 8 ft. above the ground and unshielded by the property line fencing.

The sound meter was programmed to perform a short audio recording of any noise event that reached 70 dBA. The meter will record the noise source while the sound level exceeds 70 dBA for up to 10 seconds of the event. Thus, a brief audio recording of each train passby was made. On a few occasions, the source sound level was over 70 dBA for more than 10 seconds so the meter re-triggered and made consecutive recordings of the same event. This was indicative of the freight trains. The audio recordings captured horn soundings for each train passby that sounded their horn. The recorded events were also time logged so that the time of occurrence could be correlated with the CalTrain schedule to determine if the horn was from a CalTrain or freight train, which direction the train was traveling (if it was a CalTrain) and which train number it was. The CalTrain schedule is provided in Appendix A of this report. The sounds of the CalTains were distinctly different than those of the freight trains.

The passby times were interpolated from the Menlo Park and Redwood City data provided in the CalTrain schedule as the Atherton station is not shown in the schedule. The recorded passby times and the times shown on the schedule may differ by up to a couple of minutes. Therefore, there were a few instances where southbound and northbound trains occurred within the same time window. For these instances, we assumed that the recorded horn event was from the southbound train.

During the listening analysis of each recorded passby, the time delay between the first sound of the horn and when the train passed by the sound meter (highest sound level) provided the location of the horn sounding, assuming that the CalTrains run at approximately 50 mph in the area. The distance from the north end of the Quiet Zone to the sound meter was 200 ft. For southbound trains at 50 mph, a horn sound within approximately 3 seconds of the train passby would occur within the Quiet Zone. Horn sounds that occur during the passby, evidenced by hearing a rise to a peak then a diminishing of the horn sound, obviously occurred in the Quiet Zone. For southbound trains at 50 mph when the horn was sounded after passing by, if the horn occurred within 15 seconds of the peak passby, then the horn occurred within the Quiet Zone.

### **1III. Results of the Study**

The CalTrain schedule indicates that there are 46 southbound trains and 46 northbound trains per day for a total of 92 trains per day or 184 trains over the two day period. Freight trains are usually not scheduled. Our experience with noise studies of this rail line indicates that there are often 2-10 freights per day or 4-20 freights over the two day period.

Over the 48 hour measurement period, 216 train noise events were recorded. Of those 216 events, 184 trains were CalTrains and 32 trains were assumed to be freight trains. The audio recordings revealed that these events sounded like freight trains. The freight trains were typically of longer duration, generated a lower frequency rumble and it was apparent that the passby speeds were much slower than the CalTrains. In addition, when the source was of longer duration than the recording period limitation, the sound meter would re-trigger resulting in two to three audio events for one source. Therefore, it is safe to say that there were not 32 freight trains over the 2 day period.

Table I, below, provides the time durations between the ¼ mile limit and the measurement location (200 ft.) and between the Fair Oaks crossing and the measurement location (1,120 ft.) for various train speeds.

<b>TABLE I</b>		
<b>Time between measurement location and Quiet Zone end points</b>		
<b>Train Speed</b>	<b>Time, sec.</b>	
	<b>200 ft.</b>	<b>1,120 ft.</b>
30	4.5	25.4
35	3.9	21.8
40	3.4	19.0
45	3.0	16.9
50	2.7	15.2
55	2.5	13.8
60	2.3	12.7
65	2.1	11.7
70	1.9	10.9

Table II, below, provides the sound recording event number, the time of occurrence, the direction of train travel (CalTrains only), the CalTrain number or if the train was a freight train, if the horn sounded before, during or after the passby and the time difference between the horn sounding and the passby.

TABLE II								
Railroad Horn Sounding Events, Fair Oaks Quiet Zone								
sound recording	time	AM/PM	NB	SB		Horn re: passby	Time between horn and passby, secs.	Violation?
DAY 1			CalTrain Number					
25	4:42	PM		360		During		Yes
32	5:29	PM	273			Before	4	Yes
37	6:00	PM		272		During		Yes
45	6:47	PM		380		Before	1	Yes
49	7:10	PM		386		Before	1	Yes
55	8:29	PM		190		Before	2	Yes
								Yes
66	5:07	AM	101			Before	4	Yes
77	7:22	AM		208		After	7	Yes
84	7:52	AM	221			Before	5 to zero	Yes
85						During		
DAY 2								
121	3:55	PM		156		During		Yes
123	4:25	PM		258		Before	3	Yes
129	5:11	PM		366		Before	4	Yes
139	6:11	PM		376		During		Yes
145	6:47	PM		380		Before	1	Yes
151	7:27	PM		284		During		Yes
155	8:31	PM		190		Before	2	Yes
159	10:08	PM			Freight	Before	3 to zero	Yes
160						During		
168	5:07	AM			Freight	Before	4	Yes
171	5:47	AM		102		Before	1	Yes
174	6:29	AM		309		Before	1	Yes
177	6:50	AM			Freight	Before	5	violation if NB
178								
179								
184	7:22	AM		208		Before	4	Yes
187	7:35	AM		312		During		Yes
190	7:58	AM		216		Before	10	No
194	8:11	AM			Freight	Before	8	violation if NB
196	8:18	AM		218		During		Yes
208	9:34	AM		332		During		Yes

Horn sounds occurred during 20 southbound CalTrain passbys, according to the CalTrain schedule. For horn sounds within 3 seconds of the engine passing by (loudest portion of the noise event), it is evident that the horn sounded within the Quiet Zone, assuming a minimum 45 mph train speed. Eight of the southbound trains sound their horn during the passby, which, obviously occurred in the Quiet Zone. For horn sounds after a southbound train passby, the horn would need to occur within 17 seconds of the peak sound level. Therefore, 19 of the 20 southbound trains appeared to have sounded their horns within the Quiet Zone.

Horn sounds also occurred during 3 northbound CalTrain passbys. This is a curious scenario as there would be no reason for a northbound train to sound its horn since it had already passed through the Fair Oaks crossing and is approximately 1.73 miles from Fair Oaks to the Chestnut Street crossing in Redwood City, which is the next grade crossing. The Redwood City CalTrain station is 0.54 miles “north” of the Chestnut Street crossing. All of the northbound horn soundings occurred on the first day of measurements. Therefore, either the trains were sounding their horns for no apparent reasons or the CalTrain schedule was off and these passbys were actually southbound trains.

There were four freight train horn soundings, all occurring on the second day of the measurements. Because the sound meter has one microphone, there is no stereophonic imaging that gives a sense of direction of the source. The CalTrain directions were reasonably assumed by correlating the passby time with the schedule. The freight trains have no set schedule. So, the recorded train could be either a southbound or a northbound train. Of the four freight trains, one sounded its horn during the passby, yielding an obvious violation of the Quiet Zone requirement. The remaining horn soundings occurred 4, 5 and 8 seconds before the passby peak. Because of the slower freight train speeds, it is likely that the horn soundings occurred within the Quiet Zone for at least one of the trains. At 30 mph, a southbound train is not allowed to sound the horn within 4.5 seconds before the peak. For northbound freights at 30 mph, again a curious scenario, horn sounds within 25.4 seconds before the peak or 4.5 seconds after the peak are not allowed.

In summary, there appears to be a significant number of trains that sound their horns within the Quiet Zone. CalTrain numbers 360, 380, 190 and 208 violated the Quiet Zone restriction on both days of measurements. Violations occurred from as early as 5:07 AM to as late as 10:08 PM, which are in the most noise sensitive nighttime period of 10:00 PM to 7:00 AM.

Although horn soundings within the Quiet Zone are allowed under emergency situations, the high number of soundings within the Quiet Zone provide evidence that not all of the horn soundings were under emergent conditions.

This report presents the results of a railroad horn sounding analysis for the Fair Oaks Quiet Zone in Atherton. The results of this study were from on-site noise measurements and recording and are correct to the best of our knowledge. Reliability of the CalTrain schedule was also assumed in this study.

If you have any questions or would like an elaboration on this report, please call me.

Sincerely,

EDWARD L. PACK ASSOC., INC.

A handwritten signature in blue ink, reading "Jeffrey K. Pack", is written over a horizontal line.

Jeffrey K. Pack  
President

Attachment: Appendix A

**APPENDIX A**

**CALTRAIN SCHEDULE**

# Printer-Friendly Caltrain Schedule

Morning to Early Afternoon - Page 1 of 2

## Northbound - WEEKDAY SERVICE to SAN FRANCISCO

Train No.	101	103	305	207	309	211	313	215	217	319	221	323	225	227	329	231	233	135	237	139	143	147	151	
Gilroy									6:06		6:28			7:06										
San Martin	AM								6:15		6:37			7:15								AM	PM	
Morgan Hill									6:21		6:43			7:21										
Blossom Hill									6:36		6:56			7:36										
Capitol									6:42		7:02			7:42										
Tamien		4:58		5:50	5:56				6:50	6:56	7:10			7:50	7:56		8:33		9:43					
San Jose Diridon	4:30	5:05	5:45	5:57	6:03	6:19	6:45	6:50	6:57	7:03	7:18	7:45	7:50	7:57	8:03	8:22	8:40	9:15	9:50	10:15	11:10	12:10	1:10	
College Park	-	-	-	-	-	-	-	-	-	-	-	-	-	8:01	-	-	-	-	-	-	-	-	-	-
Santa Clara	4:36	5:11	-	6:04	-	6:25	-	-	7:04	-	7:24	-	-	8:06	-	8:28	8:46	9:21	9:56	10:21	11:16	12:16	1:16	
Lawrence	4:41	5:16	-	6:14	-	-	-	-	7:14	-	7:29	-	-	8:16	-	-	8:52	9:26	10:01	10:26	11:22	12:22	1:22	
Sunnyvale	4:45	5:20	-	6:21	6:16	6:33	-	7:02	7:21	7:16	7:34	-	8:02	8:23	8:16	8:36	8:57	9:31	10:05	10:31	11:26	12:26	1:26	
Mountain View	4:50	5:25	6:00	6:26	-	6:39	7:00	7:07	7:26	-	7:40	8:00	8:07	8:29	-	8:42	9:03	9:37	10:11	10:37	11:31	12:31	1:31	
San Antonio	4:54	5:29	-	6:30	-	-	-	-	7:30	-	-	-	-	8:33	-	-	9:07	9:41	10:15	10:41	11:34	12:34	1:34	
California Avenue	4:58	5:33	-	6:34	-	-	-	7:14	7:34	-	-	-	8:14	8:37	-	-	9:11	9:45	10:19	10:45	11:38	12:38	1:38	
Palo Alto	5:02	5:37	6:08	6:39	6:26	-	7:08	7:19	7:39	7:26	-	8:08	8:19	8:42	8:27	-	9:18	9:49	10:24	10:49	11:42	12:42	1:42	
Menlo Park	5:05	5:40	-	6:42	-	6:48	-	-	7:42	-	7:48	-	-	8:45	-	8:51	9:21	9:52	10:27	10:52	11:45	12:45	1:45	
Redwood City	5:10	5:45	-	6:48	6:33	6:54	-	-	7:48	7:33	7:54	-	-	8:51	8:35	8:57	9:27	9:58	10:32	10:58	11:51	12:51	1:51	
San Carlos	5:14	5:49	-	-	-	6:58	-	7:27	-	-	7:58	-	8:27	-	-	9:01	9:31	10:02	10:36	11:02	11:55	12:55	1:55	
Belmont	5:17	5:52	-	-	-	7:02	-	-	-	-	8:01	-	-	-	-	9:05	9:34	10:05	10:39	11:05	11:58	12:58	1:58	
Hillsdale	5:20	5:55	6:19	6:54	-	7:05	7:19	7:33	7:54	-	8:05	8:19	8:33	8:59	-	9:08	9:38	10:08	10:42	11:08	12:02	1:02	2:02	
Hayward Park	5:23	5:58	-	-	-	7:09	-	-	-	-	8:08	-	-	-	-	9:12	-	10:11	-	11:11	12:05	1:05	2:05	
San Mateo	5:26	6:01	-	-	6:42	7:12	-	7:38	-	7:42	8:11	-	8:38	-	8:44	9:15	9:42	10:15	10:47	11:15	12:08	1:08	2:08	
Burlingame	5:30	6:05	-	-	-	7:16	-	7:42	-	-	8:15	-	8:42	-	-	9:19	9:46	10:18	10:51	11:18	12:12	1:12	2:12	
Millbrae	5:35	6:10	6:29	7:03	6:50	7:21	7:29	-	8:03	7:50	8:21	8:29	-	9:08	8:52	9:24	9:51	10:23	10:56	11:23	12:17	1:17	2:17	
San Bruno	5:39	6:14	-	-	-	7:25	-	7:48	-	-	8:25	-	8:48	-	-	9:29	9:55	10:27	11:00	11:27	12:21	1:21	2:21	
So. San Francisco	5:43	6:18	-	7:09	-	7:29	-	-	8:09	-	8:29	-	-	9:14	-	9:32	-	10:31	-	11:31	12:25	1:25	2:25	
Bayshore	5:49	6:24	-	-	-	7:37+	-	-	-	-	8:37+	-	-	-	-	9:38	-	10:37	-	11:37	12:31	1:31	2:31	
22 <sup>nd</sup> Street	5:54	6:29	-	-	-	7:44+	-	-	-	-	8:44+	-	-	-	-	9:44	-	10:43	-	11:43	12:37	1:37	2:37	
San Francisco	6:03	6:38	6:47	7:22	7:07	7:51	7:47	8:03	8:22	8:07	8:51	8:47	9:03	9:27	9:09	9:50	10:09	10:50	11:15	11:50	12:43	1:43	2:43	

100 Local

200 Limited

300 Baby Bullet

6:29 6:37  
7:11 7:18

Timed transfers for local service.

+ Train may leave up to 5 minutes early.  
- Train bypasses station.

See Page 2 For Early Afternoon and Evening Times

**EFFECTIVE APRIL 4, 2016**

04.16 - USB

# Printer-Friendly Caltrain Schedule

Early Afternoon to Evening - Page 2 of 2

## Northbound - WEEKDAY SERVICE to SAN FRANCISCO

Train No.	155	257	159	261	263	365	267	269	371	273	375	277	279	381	283	385	287	289	191	193	195	197	*199	
Gilroy																								
San Martin																								
Morgan Hill																								
Blossom Hill																								
Capitol																								
Tamien		2:33		3:38	4:01			4:33		5:01			5:33		6:01		6:24					8:23	9:23	
San Jose Diridon	2:15	2:40	3:05	3:45	4:08	4:22	4:31	4:40	4:45	5:08	5:22	5:31	5:40	5:45	6:08	6:22	6:31	6:45	6:50	7:30	8:30	9:30	10:30	
College Park	-	-	3:09	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Santa Clara	2:21	2:46	3:13	3:51	4:14	-	-	4:46	-	5:14	-	-	5:46	-	6:14	-	-	-	6:56	7:36	8:36	9:36	10:36	
Lawrence	2:26	2:51	3:18	3:56	-	-	4:40	4:54	-	-	-	5:40	5:54	-	-	-	6:40	6:54	7:01	7:41	8:41	9:41	10:41	
Sunnyvale	2:31	2:55	3:22	4:00	-	-	-	5:00	-	-	-	-	6:00	-	-	-	-	-	7:05	7:46	8:46	9:46	10:46	
Mountain View	2:37	3:00	3:27	4:05	-	4:35	4:48	5:05	5:00	-	5:35	5:48	6:05	6:00	-	6:35	6:48	7:01	7:10	7:51	8:51	9:51	10:51	
San Antonio	2:41	3:04	3:31	4:09	-	-	-	5:09	-	-	-	-	6:09	-	-	-	-	-	7:14	7:55	8:55	9:55	10:55	
California Avenue	2:45	3:08	3:35	4:13	-	-	-	5:14	-	-	-	-	6:14	-	-	-	-	7:07	7:18	7:59	8:59	9:59	10:59	
Palo Alto	2:49	3:12	3:40	4:18	4:29	4:44	4:56	5:20	5:08	5:29	5:44	5:56	6:20	6:08	6:29	6:44	6:56	7:11	7:22	8:04	9:04	10:04	11:04	
Menlo Park	2:52	3:15	3:43	4:21	-	4:48	4:59	5:23	-	-	5:48	5:59	6:23	-	-	6:48	6:59	7:14	7:25	8:07	9:07	10:07	11:07	
Redwood City	2:58	3:20	3:48	4:27	4:37	4:54	-	5:29	-	5:37	5:54	-	6:29	-	6:37	6:54	-	7:20	7:30	8:12	9:12	10:12	11:12	
San Carlos	3:02	3:24	3:52	4:31	4:41	-	5:06	5:33	-	5:41	-	6:06	6:33	-	6:41	-	7:06	7:24	7:34	8:16	9:16	10:16	11:16	
Belmont	3:05	3:27	3:55	-	4:45	-	-	-	-	5:45	-	-	-	-	6:45	-	-	-	7:37	8:20	9:20	10:20	11:20	
Hillsdale	3:08	3:30	3:58	-	4:49	-	5:10	-	5:19	5:49	-	6:10	-	6:19	6:49	-	7:10	7:29	7:40	8:23	9:23	10:23	11:23	
Hayward Park	3:11	-	4:01	-	4:52	-	-	-	-	5:52	-	-	-	-	6:52	-	-	-	7:43	8:26	9:26	10:26	11:26	
San Mateo	3:15	3:34	4:04	4:38	4:55	-	5:14	5:40	-	5:55	-	6:14	6:40	-	6:55	-	7:14	7:33	7:46	8:29	9:29	10:29	11:29	
Burlingame	3:18	3:38	4:08	-	4:59	-	5:18	-	-	5:59	-	6:18	-	-	6:59	-	7:18	7:37	7:50	8:33	9:33	10:33	11:33	
Millbrae	3:23	3:43	4:13	4:46	5:04	5:09	-	5:48	5:29	6:04	6:09	-	6:48	6:29	7:04	7:09	-	7:43	7:55	8:38	9:38	10:38	11:38	
San Bruno	3:27	3:47	4:17	-	5:08	-	5:25	-	-	6:08	-	6:25	-	-	7:08	-	7:25	-	7:59	8:42	9:42	10:42	11:42	
So. San Francisco	3:31	-	4:21	-	5:13	-	-	-	-	6:13	-	-	-	-	7:13	-	-	-	8:03	8:46	9:46	10:46	11:46	
Bayshore	3:37	-	4:27	-	5:19+	-	-	-	-	6:19+	-	-	-	-	7:19+	-	-	-	8:09	8:52	9:52	10:52	11:52	
22nd Street	3:43	-	4:32	4:58	5:25+	5:21	5:35	6:00	5:43	6:25+	6:21	6:35	7:00	6:43	7:25+	7:21	7:35	7:55	8:14	8:57	9:57	10:57	11:57	
San Francisco	3:50	4:04	4:40	5:06	5:32	5:27	5:43	6:06	5:49	6:33	6:27	6:43	7:06	6:49	7:32	7:27	7:43	8:02	8:23	9:04	10:04	11:04	12:04	

100 Local    200 Limited    300 Baby Bullet    6:29 → 6:37 Timed transfers for local service.    7:11 → 7:16

- + Train may leave up to 5 minutes early.
- Train bypasses station.
- Train departure may be delayed up to 15 minutes after Sharks game.

See Page 1 For Morning and Early Afternoon Times

**EFFECTIVE APRIL 4, 2016**

04-16 - JSB

# Printer-Friendly Caltrain Schedule

Morning to Early Afternoon - Page 1 of 2

## Southbound - WEEKDAY SERVICE to SAN JOSE / GILROY

Train No.	102	104	206	208	210	312	314	216	218	220	322	324	226	228	230	332	134	236	138	142	146	150	152
San Francisco	4:55	5:25	6:06	6:24	6:44	6:56	7:12	7:19	7:24	7:44	7:56	8:12	8:19	8:24	8:44	8:56	9:00	9:37	10:00	11:00	12:00	1:00	2:00
22nd Street	5:00	5:30	6:11	6:29	6:50	7:02	7:18	7:25	7:29	7:50	8:02	8:18	8:25	8:29	8:50	9:02	9:05	-	10:05	11:05	12:05	1:05	2:05
Bayshore	5:05	5:35	-	6:35	-	-	-	-	7:35	-	-	-	-	8:35	-	-	9:10	-	10:10	11:10	12:10	1:10	2:10
So. San Francisco	5:11	5:41	-	6:41	-	-	-	-	7:41	-	-	-	-	8:41	-	-	9:15	-	10:15	11:15	12:15	1:15	2:15
San Bruno	5:15	5:45	-	6:44	-	-	-	7:37	7:44	-	-	-	8:37	8:44	-	-	9:18	9:52	10:18	11:18	12:18	1:18	2:18
Millbrae	5:19	5:49	6:24	6:49	7:02	7:17	7:32	-	7:49	8:02	8:17	8:32	-	8:49	9:02	9:17	9:22	9:56	10:22	11:22	12:22	1:22	2:22
Burlingame	5:23	5:53	6:28	6:53	-	-	-	7:44	7:53	-	-	-	8:44	8:53	-	-	9:27	10:01	10:27	11:27	12:27	1:27	2:27
San Mateo	5:28	5:58	6:32	6:56	7:09	-	-	7:48	7:56	8:09	-	-	8:48	8:56	9:09	-	9:30	10:04	10:30	11:30	12:30	1:30	2:30
Hayward Park	5:31	6:01	-	7:00	-	-	-	-	8:00	-	-	-	-	9:00	-	-	9:33	-	10:33	11:33	12:33	1:33	2:33
Hillsdale	5:34	6:04	6:36	7:04	-	-	7:42	7:52	8:04	-	-	8:42	8:52	9:04	-	-	9:37	10:08	10:37	11:37	12:37	1:37	2:37
Belmont	5:37	6:07	-	7:07	-	-	-	-	8:07	-	-	-	-	9:07	-	-	9:41	10:11	10:41	11:41	12:41	1:41	2:41
San Carlos	5:40	6:10	6:40	7:11	7:16	-	-	7:58	8:11	8:16	-	-	8:58	9:11	9:16	-	9:44	10:14	10:44	11:44	12:44	1:44	2:44
Redwood City	5:45	6:15	6:45	7:15	7:22	7:32	-	-	8:15	8:22	8:32	-	-	9:15	9:22	9:32	9:48	10:20	10:48	11:48	12:48	1:48	2:48
Menlo Park	5:50	6:20	6:50	-	7:28	7:38	-	8:06	-	8:28	8:38	-	9:06	-	9:28	9:38	9:53	10:26	10:53	11:53	12:53	1:53	2:53
Palo Alto	5:53	6:23	6:53	7:22	7:32	7:41	7:54	8:09	8:22	8:32	8:41	8:54	9:09	9:22	9:32	9:41	9:58	10:30	10:58	11:58	12:58	1:58	2:58
California Avenue	5:57	6:27	6:57	-	7:35	-	-	-	8:35	-	-	-	-	9:35	-	-	10:01	10:34	11:01	12:01	1:01	2:01	3:01
San Antonio	6:01	6:31	-	-	7:40	-	-	-	8:40	-	-	-	-	9:40	-	-	10:06	10:38	11:06	12:06	1:06	2:06	3:06
Mountain View	6:05	6:35	7:03	-	7:44	7:49	8:01	8:17	-	8:44	8:49	9:01	9:17	-	9:44	9:49	10:10	10:43	11:10	12:10	1:10	2:10	3:10
Sunnyvale	6:10	6:40	-	-	7:49	-	-	-	8:49	-	-	-	-	9:49	-	-	10:15	10:48	11:15	12:15	1:15	2:15	3:15
Lawrence	6:14	6:44	7:08	-	7:55+	-	-	8:24	-	8:55+	-	-	9:24	-	9:55+	-	10:20	10:52	11:20	12:20	1:20	2:20	3:20
Santa Clara	6:19	6:49	-	7:36	8:02+	-	-	8:36	9:02+	-	-	-	9:36	10:02+	-	-	10:25	10:57	11:25	12:25	1:25	2:25	3:25
College Park	-	-	-	-	8:05+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
San Jose Diridon	6:28	6:58	7:20	7:45	8:11	8:03	8:16	8:34	8:45	9:10	9:03	9:16	9:34	9:45	10:10	10:03	10:34	11:04	11:34	12:34	1:34	2:34	3:34
Tamien		7:05		7:52	8:18				8:52	9:17				9:52	10:17				11:11				
Capitol																							
Blossom Hill																							
Morgan Hill	AM																						
San Martin																	AM				PM		
Gilroy																							

100 Local
200 Limited
300 Baby Bullet

6:29
6:37
Timed transfers for local service.
+ Train may leave up to 5 minutes early.  
- Train bypasses station.

See Page 2 For Afternoon and Evening Times

**EFFECTIVE APRIL 4, 2016**  
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# Printer-Friendly Caltrain Schedule

Early Afternoon to Evening - Page 2 of 2

## Southbound - WEEKDAY SERVICE to SAN JOSE / GILROY

Train No.	254	156	258	360	262	264	366	268	370	272	274	376	278	380	282	284	386	288	190	192	194	196	198
San Francisco	2:37	3:00	3:37	4:10	4:19	4:28	4:33	4:55	5:12	5:20	5:28	5:33	5:55	6:12	6:20	6:28	6:33	6:55	7:33	8:40	9:40	10:40	12:01
22nd Street	-	3:05	-	-	-	4:33	-	-	-	-	5:33	-	-	-	-	6:33	-	-	7:38	8:45	9:45	10:45	12:06
Bayshore	-	3:12	-	-	-	4:41	-	-	-	-	5:41	-	-	-	-	6:41	-	-	7:43	8:50	9:50	10:50	12:11
So. San Francisco	-	3:17	-	-	-	4:49	-	5:08	-	-	5:49	-	6:08	-	-	6:49	-	7:08	7:49	8:56	9:56	10:56	12:17
San Bruno	2:52	3:21	3:52	-	4:33	4:53	-	-	-	5:35	5:53	-	-	-	6:35	6:53	-	-	7:53	9:00	10:00	11:00	12:21
Millbrae	2:56	3:25	3:56	4:26	-	4:57	4:50	5:14	5:30	-	5:57	5:50	6:14	6:30	-	6:57	6:50	7:14	7:57	9:05	10:05	11:05	12:25
Burlingame	3:01	3:30	4:01	-	4:38	5:01	-	-	-	5:42	6:01	-	-	-	6:42	7:01	-	-	8:01	9:09	10:09	11:09	12:29
San Mateo	3:04	3:33	4:04	-	4:43	5:06	4:59	-	-	5:45	6:06	5:59	-	-	6:45	7:06	6:59	-	8:06	9:13	10:13	11:13	12:34
Hayward Park	-	3:36	-	-	-	5:09	-	-	-	6:09	-	-	-	-	7:09	-	-	-	8:09	9:16	10:16	11:16	12:37
Hillsdale	3:08	3:40	4:08	4:36	4:48	5:13	-	5:24	5:40	5:50	6:13	-	6:24	6:40	6:50	7:13	-	7:24	8:12	9:20	10:20	11:20	12:40
Belmont	3:11	3:44	4:11	-	-	5:16	-	-	-	-	6:16	-	-	-	-	7:16	-	-	8:15	9:24	10:24	11:24	12:43
San Carlos	3:14	3:47	4:14	-	4:52	5:20	-	-	-	5:55	6:20	-	-	-	6:55	7:20	-	-	8:18	9:27	10:27	11:27	12:46
Redwood City	3:20	3:51	4:20	-	-	5:24	5:08	5:30	-	-	6:24	6:08	6:30	-	-	7:24	7:08	7:30	8:23	9:31	10:31	11:31	12:51
Menlo Park	3:26	3:56	4:26	-	-	5:30	-	5:36	-	-	6:30	-	6:36	-	-	7:30	-	7:36	8:28	9:36	10:36	11:36	12:56
Palo Alto	3:30	4:01	4:30	4:47	5:02	-	5:16	5:40	5:52	6:04	-	6:16	6:40	6:52	7:04	-	7:16	7:40	8:31	9:40	10:40	11:40	12:59
California Avenue	3:34	4:04	4:34	-	5:06	-	-	5:44	-	6:08	-	-	6:44	-	7:08	-	-	7:44	8:35	9:44	10:44	11:44	1:03
San Antonio	3:38	4:09	4:38	-	-	-	-	5:48	-	-	-	-	6:48	-	-	-	-	7:48	8:39	9:48	10:48	11:48	1:07
Mountain View	3:43	4:13	4:43	4:54	5:12	5:38	-	5:52	5:59	6:14	6:38	-	6:52	6:59	7:14	7:38	-	7:52	8:43	9:52	10:52	11:52	1:11
Sunnyvale	3:48	4:18	4:48	-	5:17	5:43	5:26	5:57	-	6:20	6:43	6:26	6:57	-	7:20	7:43	7:26	7:57	8:48	9:57	10:57	11:57	1:16
Lawrence	3:52	4:23	4:52	-	-	-	-	6:03+	-	-	6:47	-	7:03+	-	-	-	-	8:03	8:52	10:01	11:01	12:01	1:20
Santa Clara	3:57	4:28	4:57	-	-	5:52	-	6:10+	-	-	6:52	-	7:10+	-	-	7:52	-	8:10	8:57	10:06	11:06	12:06	1:25
College Park	-	4:32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
San Jose Diridon	4:04	4:38	5:04	5:09	5:28	6:00	5:36	6:20	6:14	6:30	7:00	6:36	7:20	7:14	7:30	8:00	7:36	8:18	9:06	10:13	11:13	12:13	1:34
Tamien	4:11	4:45	5:11	-	-	-	5:43	6:26	-	-	7:06	6:43	7:26	-	-	-	7:43	8:25	-	10:20	11:20	-	-
Capitol	-	4:52	-	-	-	-	-	6:33	-	-	7:13	-	-	-	-	-	-	-	-	-	-	-	-
Blossom Hill	-	4:58	-	-	-	-	-	6:39	-	-	7:19	-	-	-	-	-	-	-	-	-	-	-	-
Morgan Hill	-	5:11	-	-	-	-	-	6:52	-	-	7:32	-	-	-	-	-	-	-	-	-	-	-	-
San Martin	-	5:17	-	-	-	-	-	6:58	-	-	7:38	-	-	-	-	-	-	-	-	-	-	-	-
Gilroy	-	5:30	-	-	-	-	-	7:11	-	-	7:51	-	-	-	-	-	-	-	-	-	-	-	-

100 Local

200 Limited

300 Baby Bullet

6:29 6:37  
7:11 7:18

Timed transfers for local service.

+ Train may leave up to 5 minutes early.  
- Train bypasses station.

See Page 1 For Morning and Early Afternoon Times

EFFECTIVE APRIL 4, 2016

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PM AM