

Quiet Zone Feasibility Study

Draft Report



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Quiet Zone Feasibility Study City of Morgan Hill

Draft Report May 25, 2017





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Executive Summary

A study analyzing the feasibility of creating a railroad crossing "Quiet Zone" in the City of Morgan Hill was performed. This study included the railroad corridor with the following at-grade highway-rail crossings (at-grade crossing): East Dunne Avenue, Morgan Hill Train Station Pedestrian Crossing, East Main Avenue, and Tilton Avenue.

These at-grade crossings were analyzed with the Federal Railroad Administration's Grade Crossing Risk Calculator. In this analysis, the risk was shown to be lower than the Risk Index With Horns with the installation of Constant Warning Time (CWT) signaling and automatic crossing gates at the Morgan Hill Train Station Pedestrian Crossing, and other enhancements at each of the three roadway crossings. This is due to the requirement that an at-grade crossing in a Quiet Zone must be equipped with automatic gates, CWT, and Power-On Indicators. Each at-grade crossing have Power-On indicators, but does not have CWT.

The establishment of a Quiet Zone will require a General Order 88-B Modification of Existing Crossing Application (G.O. 88-B) with the California Public Utilities Commission (CPUC). As part of the Quiet Zone process, a field diagnostic meeting with the City, CPUC, and Union Pacific Railroad will be required. Should the City move forward with the Quiet Zone process, a G.O. 88-B application will be filed with the CPUC. It is likely that additional requirements will be set forth in the diagnostic meeting for the implementation of a Quiet Zone. As a result, the following scenario was developed for the Quiet Zone enhancements:

- Includes the following:
 - Install CWT at all at-grade crossings,
 - Install pedestrian gates at the Morgan Hill Train Station Pedestrian Crossing,
 - Install pedestrian treatments at East Dunne Avenue, East Main Avenue, and Tilton Avenue, and
 - o Install automatic exit gates at East Main Avenue and Tilton Avenue.

Conceptual drawings showing the enhancements were developed. In addition, conceptual costs of the scenario was developed.

Upon approval of the City Council, the next steps for this program are to conduct field diagnostic meetings with the CPUC and the Union Pacific Railroad to determine what enhancements are desired at each at-grade crossing.

Introduction

Background

The Union Pacific Railroad (UP) Coast Subdivision goes through the City of Morgan Hill. This track carries UP freight trains, Amtrak Coast Starlight long distance passenger trains, and Caltrain commuter trains. This mainline track is adjacent to commercial and residential development, including existing and in-construction multi-family dwellings. There have been a series of concerns regarding the increasing train horn noise related to the at-grade crossings of East Dunne Avenue, East Main Avenue, and Tilton Avenue and compatibility with urban development patterns.



Due to the increased awareness of trains and safety, the Morgan Hill City Council discussed applying for grants and the establishment of a Quiet Zone in May 2015. In January of 2017, the City Council elected to begin a study of the feasibility of establishing a Quiet Zone in the corridor defined by the at-grade crossings of East Dunne Avenue, Morgan Hill Train Station Pedestrian Crossing, East Main Avenue, and Tilton Avenue. This study examined the feasibility of the Quiet Zone in addition to safety enhancements that could be implemented at the at-grade crossings. This is in consideration of the additional expected pedestrian traffic due to the proximity of the residential developments.

Each of the at-grade crossings within the Quiet Zone are referred to as at-grade highway-railroad crossings (at-grade crossing). With these types of crossings the roadway is not separated from the railroad tracks. At-grade crossings usually include warning devices such as automatic gates, signals, bells, train horns, and signage to warn motorists and pedestrians of approaching trains. In the instance of a Quiet Zone, additional devices are installed to minimize the risk associated with accidents at the at-grade crossing and the train horns are eliminated, except in the case of an emergency.

Train Horn Rule

In 2005, the Federal Railroad Administration (FRA) established a rule regarding the use of train horns at highway-rail at-grade crossings¹, Code of Federal Regulations, Title 49, Part 222 - Use of Locomotive Horns at Public Highway-Rail Grade Crossings). This rule describes the instances of train horn use at at-grade crossings in addition to the methods of blowing the horn. Furthermore, the rule established the process and conditions of situations where the use of horns can be excluded – No Train Horn Rule. This led to the establishment of Quiet Zones where the use of train horns is banned unless in emergency cases where the train engineer is empowered to blow the horn. The rule defined the development of a quiet zone at an at-grade crossing, or within a rail corridor consisting of more than one at-grade crossing.

Quiet Zone approval at at-grade crossings falls into two categories, 1) automatic approval and 2) the establishment of a new quiet zone. New at-grade crossings can qualify with the addition of Secondary Safety Measures (SSM) and, if necessary, Alternative Safety Measures (ASM). Quiet Zones are established through a comparison of the existing risk at the at-grade crossing with the Nationwide Significant Risk Threshold (NSRT) and the Risk Index With Horns (RIWH). During the comparison, scenarios are developed that apply SSMs and ASMs as necessary to reduce the risk index.

The establishment of a Quiet Zone involves enhancing the safety as well as reducing the risk at the atgrade crossing. The FRA has established the following to reduce the risk at at-grade crossings within the Quiet Zone:

- Supplementary Safety Measures (SSMs) SSMs include the following:
 - o four-quadrant gates gates installed so that the entire roadway is covered in both directions with an automatic gate arm,

¹ This regulation can be accessed through http://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=d989a71c879798a8b356d4b23364e5ad&mc=true&n=pt49.4.222&r=PART&ty=HTML



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- o non-traversable medians at least 100 feet long or mountable medians with traffic channelization devices, and
- o permanent closure of the at-grade crossing.
- Alternative Safety Measures (ASMs) ASMs include the following
 - o programmed enforcement,
 - partial closure of the at-grade crossing,
 - o public education,
 - o planned enforcement,
 - o photo enforcement, and
 - o engineering methods of reducing risk, such as adjusting the at-grade crossing geometry to increase sight distance.

In addition, the Quiet Zone must have the following:

- Constant Warning Time A railroad signal system for the operation of the at-grade crossing automatic warning devices. Constant Warning Time (CWT) is a motion sensing system that measures train speed and provides uniform warning time to the public at at-grade crossings. The benefit is that the at-grade crossing signals will always operate with the same timing, regardless of the speed of the train.
- Automatic Gates and Flashing Lights Automatic gates installed at each at-grade crossing in the Quiet Zone.
- Power-Out Indicator This is a signal light located on the signal house which indicates to railroad personnel that there is power at the at-grade crossing. The light is not lit when there is no commercial power at the at-grade crossing. Power-Out indicators are standard on UP signal houses.
- The Quiet Zone must be a minimum of one-half mile long.

Highway - Railroad At-Grade Crossing Devices

Highway - Railroad at-grade crossings usually utilize automatic gates at the entrance of the at-grade crossing to restrict vehicles from entering the crossing zone. These are operated by railroad signaling circuits that detect train presence at a specific interval from the at-grade crossing, designed according to the timetable speed of the train. With the development of a Quiet Zone, additional enhancements are sometimes installed in order reduce the risk associated with an at-grade crossing.

i. Signaling

Railroad signaling is an integral part of at-grade crossing warning devices. Signaling controls the actions of the automatic gates as well as interconnects with any traffic signals at intersections affected by the at-grade crossing.

Constant Warning Time

The installation of Constant Warning Time (CWT) is necessary in any Quiet Zone. With CWT the track circuit senses train movement and speed and applies this logic to the at-grade crossing device controller. This motion sensing system prevents excessive gate down time and, consequently, the tendency for motorists to drive around gates when they are down for an excessive amount of time.



Preemption

Preemption is the interconnection between traffic signals and the at-grade devices. Preemption can either be advanced or simultaneous. This system provides a signal to the traffic light controller through an interconnection with the railroad signaling system, indicating that a train is approaching the at-grade crossing. The traffic signals, working in concert with the at-grade devices, will provide signaling to motorists at the at-grade crossing.

ii. Supplemental Safety Measures (SSMs)

SSMs fall into two main categories – signals and civil infrastructure. The minimization of the opportunity to drive around down gates is a consideration with at-grade crossings. In a Quiet Zone there are three major methods that minimize this tendency – exit gates, medians or channelization, and CWT.

Exit Gates

Exit gates are installed along the roadway where the vehicle exits the at-grade crossing zone. These are part of a four-quadrant gate system. Exit gates effectively prevent vehicles traveling in the wrong direction on the roadway from entering the at-grade crossing when the gates are down and minimize the opportunities to drive around the entrance gate. The four-quadrant gate system operates as follows:

- 1. Through advance warning the entrance gate lowers.
- 2. The exit gate then lowers after the vehicle detection system has determined that the atgrade crossing is clear.

Raised Medians and Channelization

Another option available for consideration as an SSM are raised medians or channelization. A raised median with unmountable curbs is a significant deterrence to gate drive arounds. In addition, channelization can be used as a method of controlling this behavior. An example is shown in Figure 1. Each of these must be a minimum of 100 feet long in order to qualify as an SSM.



Figure 1: Roadway Channelization

iii. Alternate Safety measures (ASMs)



ASMs are utilized when there is no opportunity to reduce risk thorough traditional methods, or the installation of SSMs does not adequately reduce the risk. These methods involve several different methods of mitigation that are developed to reduce risk.

Programmed Enforcement

A policy of enhanced enforcement of traffic laws at the at-grade crossing. This involves active policing.

Partial Closure of the At-Grade Crossing

The at-grade crossing can be closed for certain periods during a 24-hour period to reduce risk. For example, the at-grade crossing could be closed at night, eliminating the opportunity for vehicle - train collisions during the period of closure.

Public Education

An official public outreach campaign to inform and educate about at-grade crossings and the subject at-grade crossing in particular.

Photo Enforcement

The installation of cameras at the at-grade crossing to enforce traffic laws.

Engineering Methods

Engineering methods may also be used as an ASM. This would include reconstructing the profile of the roadway to reduce an at-grade crossing hump or

other means to increase sight distance at the at-grade crossing.

iv. Pedestrian Treatments

The presence of pedestrians at an at-grade crossing requires additional considerations. In many cases, the same methods used for vehicles are also used for pedestrians. While not part of the specified treatments necessary for a Quiet Zone, it should be noted that the California Public Utilities Commission (CPUC) and the railroads are looking closer at pedestrian access at at-grade crossings and implementing additional means to control this access. In cases where there is the required diagnostic inspection involving the railroad and the CPUC, there are often suggestions to add pedestrian enhancements that will reduce the risk at the at-grade crossing. These enhancements are shown in Figure 2 and described below.



Figure 2: Pedestrian Treatments



Pedestrian Gates These automatic gates are mounted on separate masts, rather than the vehicle gates, and span the sidewalk at all quadrants of the at-grade crossing, restricting pedestrian access. These automatic gates are activated through the railroad signaling system.

Pedestrian Channelization

Pedestrian channelization includes modified sidewalks, striping, and railings. Through this channelization, the pedestrian is effectively guided through the at-grade crossing.

Pedestrian Swing Gates

In addition to the automatic gates, swing gates are also installed at pedestrian at-grade crossings. These gates open out, away from the track, and provide a means of exiting the at-grade crossing zone should a pedestrian get caught behind a down gate. An example is shown in Figure 3.



Figure 3: Pedestrian Swing Gate

The Quiet Zone Process

A quiet zone can be established by a public agency, having jurisdiction over the roadway using one of two methods: Public Authority Designation or Public Authority Application to the FRA.

i. Public Authority Designation

A public authority may designate a Quiet Zone when each highway-rail at-grade crossing within the Quiet Zone complies with one or more FRA approved measures. The installation of SSMs reduces the risk at the at-grade crossing to below the NSRT or the RIWH. The FRA approved safety measures include:

- installation of four-quadrant gates,
- power-on indicators,
- constant warning time circuitry,
- installation of non-traversable medians of at least 100 feet in length, or
- full or partial closure of the at-grade crossing. Full closure can be through the construction of a grade separation or closure of the at-grade crossing. Partial closure restricts usage, usually at night, of the at-grade crossing.

ii. Public Authority Application to the FRA

This method involves the use of ASMs to reduce the risk at the at-grade crossing. This includes the following:

- four-quadrant or two-quadrant gates that do not meet SSM standards for a Quiet Zone,
- non-engineering ASMs such as programmed enforcement and photo enforcement, or



• engineering ASMs such as at-grade crossing geometry modifications.

A Quiet Zone is created through a calculation of the risk associated with the at-grade crossing through the FRA Quiet Zone Risk Calculator. The at-grade crossings that are to be part of the Quiet Zone are entered into the calculator, which then loads the federal crossing inventory information.

The at-grade crossing inventory is completed by the railroad and updated regularly and contains the following information:

- street name, city and railroad,
- signal equipment,
- number of daily trains,
- · physical characteristics of the roadway, and
- average daily traffic.

From this information the NSRT and RIWH is determined within the calculator. Once these are obtained, then the user will add SSMs to reduce the risk to an acceptable level.

Figure 5 is a flow chart outlining the steps necessary for the creation of a Quiet Zone. These steps are based on the NSRT and RIWH at each at-grade crossing. If there is a single at-grade crossing that has a higher risk in the Quiet Zone, the cumulative total will reduce the overall risk to the threshold numbers. A broad overview of the process to establish a Quiet Zone is shown in Figure 4.

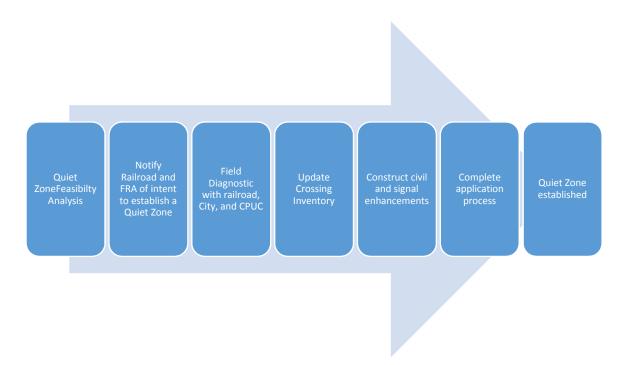


Figure 4: Quiet Zone Process



Chart 2 - Creating a New Quiet Zone using SSMs

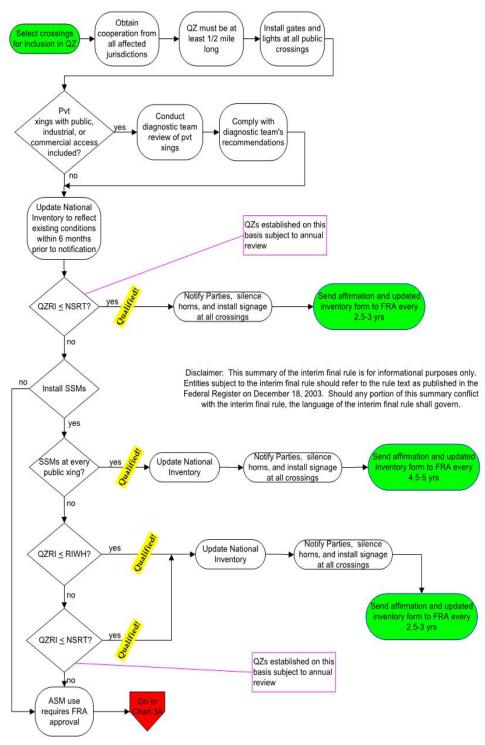


Figure 5: Quiet Zone Flow Chart



Source: FRA

Existing Conditions

Overview

The railroad right of way consists of a single mainline track that is owned, operated, and maintained by the UP. The railroad right of way is approximately 50 feet wide. The alignment is generally straight through the corridor considered for the Quiet Zone. While the visibility along the railroad is appropriate, there are buildings within the city that shorten the sight distance relative to the sidewalks. The length of the corridor being considered for the Quiet Zone is approximately 2.5 miles.

Railroad Operations

The proposed Quiet Zone has traffic from three different railroads; Amtrak, Caltrain, and UP. The operations for these railroads are shown in Table 1.

Table 1: Railroad Operations

	Amtrak Coast Starlight	Caltrain	Union Pacific Railroad
Trains per day	2 – 1 each northbound and southbound	3 – northbound	7
Time of Trains	During the day	Morning Peak	Throughout a 24-hour period
Typical Train Length	700 feet	700 feet	7000 – 8000 feet (lengths vary)
Maximum Timetable Speed	79 mph	79 mph	60 mph
Typical Speeds	30 mph to 60 mph	30 mph to 60 mph	30 mph to 60 mph
Train Horn Rules	GCOR ²	GCOR	GCOR

The frequency and amount of daily trains can increase in the future, although the numbers are not known at this time.

² GCOR refers to the General Code of Operating Rules. This can be found at: http://1405.utu.org/Files/%5B4886%5DBNSF-GCOR%202011-08-01_gcor_updated.pdf



At-Grade Crossing Information East Dunne Avenue

i. Environment

The at-grade crossing is located in a light urban environment. This is a commercial/residential area. There are commercial buildings on the north side of the road. There are multi-family rental and ownership dwellings on the south side of the roadway. This at-grade crossing is utilized by pedestrians as well as motor vehicles.

ii. Characteristics

East Dunne Avenue is a four-lane roadway, two in each direction,



Figure 6: East Dunne Avenue Looking East

oriented east—west. The eastbound and westbound traffic lanes are separated by an unmountable curbed median that extends for approximately 350 feet on the western approach and approximately 640 feet on the eastern approach. Each side of the street has a sidewalk that extends over the railroad at-grade crossing. The railroad at-grade crossing is constructed with rubber crossing panels that appear to need repair. The roadway is straight, offering significant sight distance in both directions. There is not a pronounced hump at the at-grade crossing. The traffic count is 15,000 vehicles per day (source: USDOT Crossing Inventory). The inventory for the at-grade crossing is attached in Appendix B - U.S. DOT Crossing Inventory Reports.

The existing at-grade crossing utilizes the following:

- 2 No. 9 Gate with Flashing Signals each direction. One mounted in the median, the other behind the curb face. These at-grade crossing gates have backlights,
- W-10 advance warning signs,
- Pavement markings, and
- Power-On indicator.

iii. Accident History

There were two accidents at the East Dunne Street at-grade crossing. The accident reports are shown in Appendix C – At-Grade Crossing Accident Data.

- 1976 A truck moving over the at-grade crossing struck rail equipment. There were no injuries or fatalities reported.
- 1978 A car that was stopped on the at-grade crossing was struck by a freight train. There were no injuries or fatalities reported.



Morgan Hill Train Station Pedestrian At-Grade Crossing

i. Environment

The Morgan Hill Train Station Pedestrian At-Grade Crossing is located near a small community park. Parking and a restaurant are located on the west side of the tracks.

ii. Characteristics

The Morgan Hill Train Station Pedestrian At-Grade Crossing is located at the southern end of the single track. This is a concrete crossing with tactile warning indicators on one side of the gates. The FRA inventory report for this at-grade crossing is shown in Appendix B - U.S. DOT Crossing Inventory Reports. The devices in place are:

- 4 No. 8 Flashing Signal, two each direction,
- 4 Pedestrian Swing Gates, two each direction, and
- Power-On indicator



Figure 7: Morgan Hill Train Station Pedestrian At-Grade Crossing Looking East

iii. Accident History

There are no accidents reported at this pedestrian at-grade crossing.

East Main Avenue

i. Environment:

East Main Avenue is an east-west running street located in downtown Morgan Hill. This is a commercial and residential area. A multifamily structure is located in the northeast quadrant. In addition, another multi-family dwelling is under construction at the at-grade crossing in the southwest quadrant. There are several utility poles located along the sidewalk on the southern side of the at-grade crossing that will be placed underground with the construction of the structure, increasing



Figure 8: East Main Avenue Looking West

visibility of at-grade crossing devices. South of the at-grade crossing are townhomes and condominiums.



ii. Characteristics:

East Main Avenue is a two-lane plus bike lane roadway; one traffic lane and one bike lane in each direction. The at-grade crossing utilizes concrete crossing panels. There are sidewalks on each side of the street. The roadway is oriented east—west. On the southern side of the atgrade crossing there is a 40-foot median on the approach to the at-grade crossing. In addition, there is a median on the east approach to the at-grade crossing that is wide at the at-grade crossing and narrows to approximately 12 inches in width. There is a driveway to a multi-family townhome complex located approximately 55 feet from the at-grade crossing on the eastbound lane. The FRA inventory report for this at-grade crossing is shown in Appendix B - U.S. DOT Crossing Inventory Reports. The devices in place are:

- 2- No. 9 Gate with Flashing Signals, one each direction,
- W-10 advance warning signs,
- · pavement markings, and
- Power –On indicator.

iii. Accident History

There is no accident history at the Main Avenue at-grade crossing.

Tilton Avenue

i. Environment

The Tilton Avenue at-grade crossing is located in a suburban residential area with single family dwellings nearby. There is a paved bike/pedestrian path within the railroad right of way, located on the eastern side of the single railroad track that is connected to the sidewalk at the at-grade crossing.

ii. Characteristics

Tilton Avenue is a two-lane roadway that is oriented east—west. The at-grade crossing is approximately 50 feet from the intersection of Tilton Avenue and Monterrey Road, a signal controlled intersection. There is a dedicated left turn onto Tilton Avenue from Monterrey Road. At the at-grade crossing, the eastbound lane becomes a dedicated left turn lane and a right turn

lane. The at-grade crossing utilizes concrete panels. The at-grade crossing inventory is shown in Appendix B - U.S. DOT Crossing Inventory Reports. The warning devices in place at the at-grade crossing are:

- 1 No. 9-A gate and cantilever signal,
- 1 No. 9 gate and signal,
- W-10-1 advanced warning signs,
- advance warning of intersection signs,



Figure 9: Tilton Avenue Looking East



- pavement markings, and
- Power-On indicator.

iii. Accident History

There was a single accident at Tilton. The accident occurred many years before the new intersection improvements were constructed report is attached in Appendix C – At-Grade Crossing Accident Data.

• 2006 – Amtrak train struck a truck that had driven around a crossing gate. The driver of the truck was killed.

Risk Analysis

The four at-grade crossings were analyzed using the FRA Quiet Zone Risk Calculator. The risk calculator takes the existing at-grade crossing inventory data along with configuration data and calculates the risk. The user has an opportunity to update the inventory data for the crossing through this risk calculator.

No modifications of the existing configuration data were proposed with two exceptions. In order to have a Quiet Zone, each at-grade crossing must have automatic gates. The pedestrian at-grade crossing at the Morgan Hill Train Station utilizes swing gates. In order to calculate the risks associated with the Quiet Zone, it was assumed that automatic pedestrian gates are in place at this at-grade crossing

The second exception concerns the railroad signaling and the warning devices at the at-grade crossing. In order to qualify for a Quiet Zone, the at-grade crossings must be equipped with Constant Warning Time (CWT) signal connections. This is a motion detecting system that measures train speed and provides relatively uniform warning time to the public traffic at the at-grade crossing.

The scenario discussed in the following section was analyzed for risk. The scenario is based on analysis of the Quiet Zone Calculator results using the flowchart in Figure 5.

The FRA Quiet Zone Calculator Report is shown in Appendix D - Quiet Zone Calculator Results.

Table 2 shows the risk indices for the analyzed scenario. This scenario indicates that the QZRI is below the NSRT. Under this scenario, the corridor would qualify as a Quiet Zone.

Table 2: Quiet Zone Risk Calculation

Individual At-Grade Crossing Index	Risk Index
East Dunne Avenue	37,016.64
Morgan Hill Train Station Pedestrian At-Grade	144.28
Crossing	
East Main Avenue	7,231.32
Tilton Avenue	1,857.81

Quiet Zone Indices (Corridor)	Risk Index
Risk Index With Horns (RIWH)	38,527.46
Quiet Zone Risk Index (QZRI)	11,562.51
National Significant Risk Threshold (NSRT)	14,347.00



Scenario

Any proposed modification of an at-grade crossing; warning devices, signal system, or civil infrastructure will require action by the CPUC, the regulator of railroad crossings, and the UP. In order to enact modifications, a field diagnostic must be performed that includes the City, UP, and the CPUC. From this diagnostic, the required modifications to the at-grade crossing will be determined. Once the City has decided to move forward with any enhancements to the crossing, a G.O. 88-B application will be filed with the CPUC for authority to modify the at-grade crossing(s). The G.O. 88-B outlines the final configuration of the at-grade crossing and demonstrates concurrence of the proposed modifications by the affected parties, including the railroad.

Due to the requirements of the CPUC regarding the regulations in place concerning at-grade crossings, there are two scenarios for establishing a Quiet Zone at these four at-grade crossings. Each requires the installation of CWT at each at-grade crossing and pedestrian gates at the Morgan Hill Train Station Pedestrian At-Grade Crossing.

It should be noted that this scenario represents a range of options that can be employed at the at-grade crossing and was developed absent of a diagnostic meeting with the CPUC and the railroad.

Scenario:

The requirement of the installation of CWT in the at-grade crossing circuitry will trigger action by the CPUC and the UP. It is possible that additional at-grade crossing enhancements over and above the minimum will be required by the UP and the CPUC in order to develop the Quiet Zone. Based on experience, the following may be required:

a. East Dunne Avenue

As discussed above, East Dunne Avenue has a long, un-mountable curbed median on both approaches to the at-grade crossing meeting the minimum 100-foot required length. Therefore four-quadrant gates are not necessary to prevent drive arounds. The enhancements in this scenario include:

- automatic pedestrian gates, swing gates, and associated channelization installed on each sidewalk, and
- Constant Warning Time signaling.
- b. Morgan Hill Train Station Pedestrian At-Grade Crossing

As discussed previously, in order to have a Quiet Zone, this at-grade crossing will need the installation of the following:

- automatic pedestrian gates and tactile warning strips, and
- Constant Warning Time signaling.

c. East Main Avenue

East Main Avenue is located in downtown Morgan Hill and adjacent to multi-family dwellings. The following enhancements will most likely be requested by the UP and the CPUC:

four-quadrant automatic gates with vehicle presence detection,



- automatic pedestrian gates, swing gates, and associated channelization installed on each sidewalk, and
- Constant Warning Time signaling.

d. Tilton Avenue

Tilton Avenue has the most modern enhancements of the four at-grade crossings. The following enhancements may be requested by the CPUC and the UP:

- four-quadrant automatic gates with vehicle presence detection,
- automatic pedestrian gates, swing gates, and associated channelization installed on each sidewalk, and
- Constant Warning Time signaling.

Costs of Enhancements

The costs associated with this scenario was developed using historical data as well as current cost records. These costs are shown summarized in Table 3, with a full estimate in Appendix E - Conceptual Cost Estimate.

In addition to these costs, there are additional maintenance costs associated with the at-grade crossings. These costs are as follows:

- Railroad Maintenance It is the policy of the UP to have the municipality pay for the annual maintenance of the exit gates. This is approximately \$5,000 per year for two gates.
- City Maintenance The four quadrant gate system utilizes in pavement detector loops to control the exit gates. The city would maintain these detectors. This is estimated at \$1,000 \$3,000 per year for each at-grade crossing.



Table 3: Scenario Cost Estimate

Ea	st Dunne Avenue				
	Civil Work	\$	359,434		
	Signal Work	\$	151,600		
	Total				\$ 511,034
М	organ Hill Train Station Pedestrian Cr	ossir	ng		
	Civil Work	\$	29,044		
	Signal Work	\$	95,900		
	Total				\$ 124,944
Ea	st Main Street			-	
	Civil Work	\$	260,955		
	Signal Work	\$	440,780		
	Total				\$ 701,735
Ti	ton Avenue			ı	
	Civil Work	\$	239,335		
	Signal Work	\$	440,495		
	Total				\$ 679,830
To	otals				
	Subtotal				\$ 2,017,543
	Contingency			30%	\$ 605,263
	Total				\$ 2,622,805
	Mobilization and Demobilization			10%	\$ 262,280.53
	Agency Costs			8%	\$ 209,824.42
	Engineering (Civil)			10%	\$ 262,280.53
	Engineering (Railroad)		-	10%	\$ 112,877.50
	Permitting			5%	\$ 131,140.26
					\$ 4,206,471



Funding

There is limited funding available for at-grade crossing enhancements. The following are potential sources of funding.

Section 130

The California Section 130 Grade Crossing Hazard Elimination Program (Section 130) provides state funding to local agencies and railroads to eliminate hazards at existing at-grade crossings.

This funding is available through a competitive grant process. However, funds are limited and seldom used for the creation of Quiet Zones.

State Transportation Improvement Program (STIP)

The State Transportation Improvement Program is multi-year capital program of transportation projects. This is funded with reserves from the Transportation Investment Fund and other sources. STIP programing occurs every two years. The cycle begins with the issuing of the fund estimate in July of odd-numbered years. This is followed by adoption of the estimate by the California Transportation Commission (CTC) in August of odd numbered years. Once the fund is adopted, Caltrans and the CTC prepare transportation improvement plans in December of odd years. The STIP is adopted by the CTC in even years. Local agencies should work through their Regional Transportation Planning Agency, County Transportation Commission, or Metropolitan Planning commission to nominate projects. Due to over programming of STIP funds, no new projects were funded for the 2016-2017 cycle. However, with the recent passage of SB1 there are additional funds programmed for the STIP. This could open up the plan for new projects.

Public Transportation Modernization, Improvement, and Service Enhancement Account (PTMISEA)

A component of the STIP is Proposition 1B PTMISEA. These funds are obligated by the state legislature each year and can be used for transit rehabilitation, safety or modernization improvements, capital service enhancements or expansions, new capital projects, bus rapid transit improvements, or rolling stock (buses and rail cars) procurement, rehabilitation or replacement. These funds usually flow through the local transportation commissions or railroad. The city may or may not get funding directly from the state.

Notice of Funding Allocation (NOFA)

Periodically, the FRA and FTA release a NOFA for funding of various types of projects. The last NOFA that could be used for the funding of at-grade crossings was issued in 2016. It is not known at this time if another opportunity will be offered in the future.

Next Steps

The work that has been done to date is a study of the feasibility of creating a Quiet Zone. This included a site visit with city staff and the development of a preliminary concept to use as discussion points. The next steps associated with the feasibility study include:

meet with the City Council to develop the next steps,



- field Diagnostic Meeting with the CPUC and the UP to determine what enhancements will be desired at the at-grade crossings, and
- finalize Quiet Zone Feasibility Study.

Conclusion

A review of the history for the four at-grade crossings showed that there were two accidents at one atgrade crossing and a single fatality at another, indicating the low hazard that currently exists at these atgrade crossings.

From this study it was determined that a Quiet Zone is feasible utilizing SSMs. ASMs would not be needed in either of the scenarios developed. A scenario was developed for the adoption of a Quiet Zone in this corridor. This alternative satisfies the requirements for the creation of a Quiet Zone. In addition, it should also be noted that the at-grade crossings would be subject to annual risk computation by the FRA, which may require SSM/ASM adjustments to reduce risk for at-grade crossings exceeding the NSRT or fully compensate for the absence of the train horn at the location. The conceptual cost of this scenario was developed as were conceptual drawings of the scenario. The costs are preliminary, with no civil engineering work having been completed to prepare these estimates.

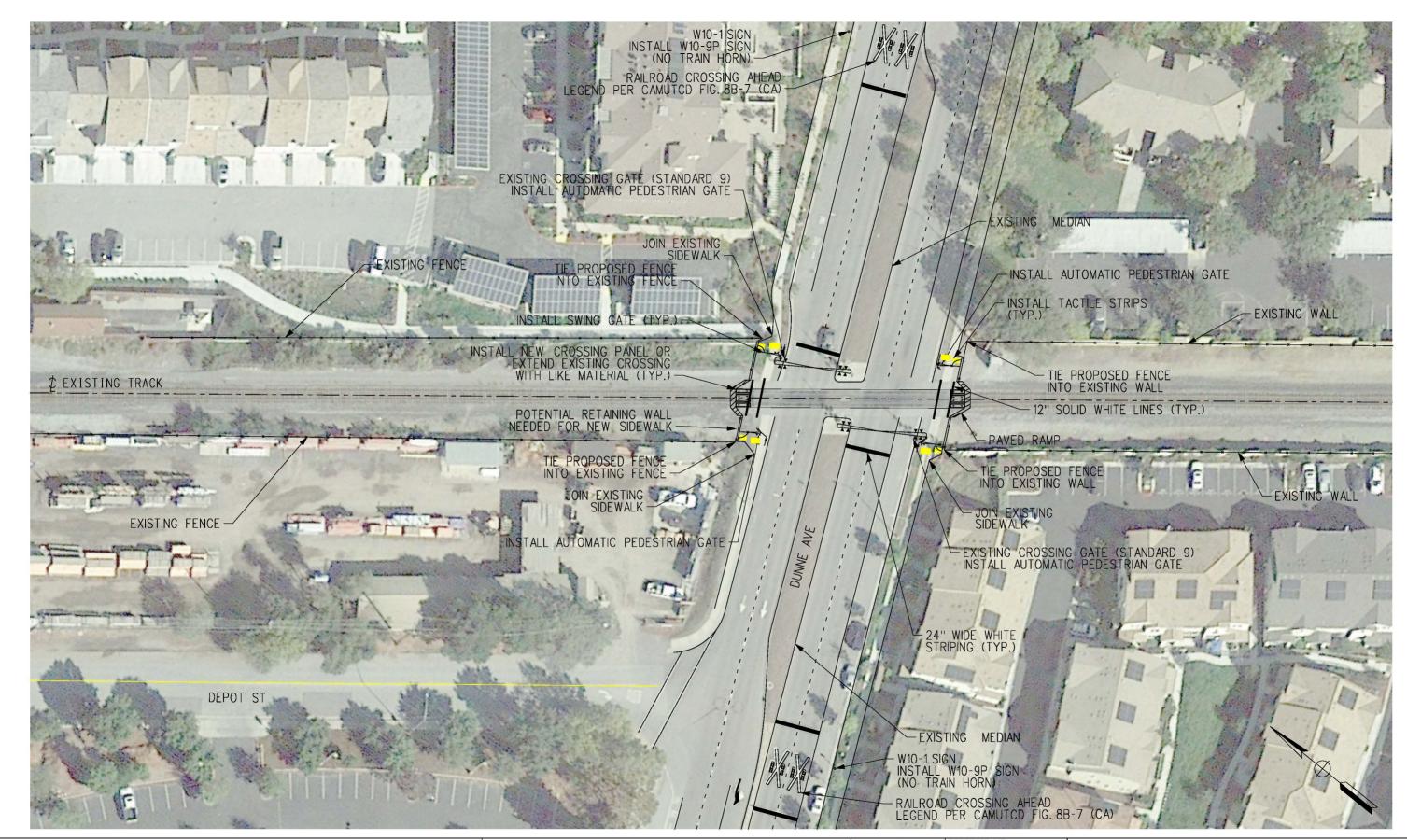


Appendices



Appendix A - Conceptual Drawings





Michael Baker

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CONTRACT NO.

C - XXXX

DRAWING NO.

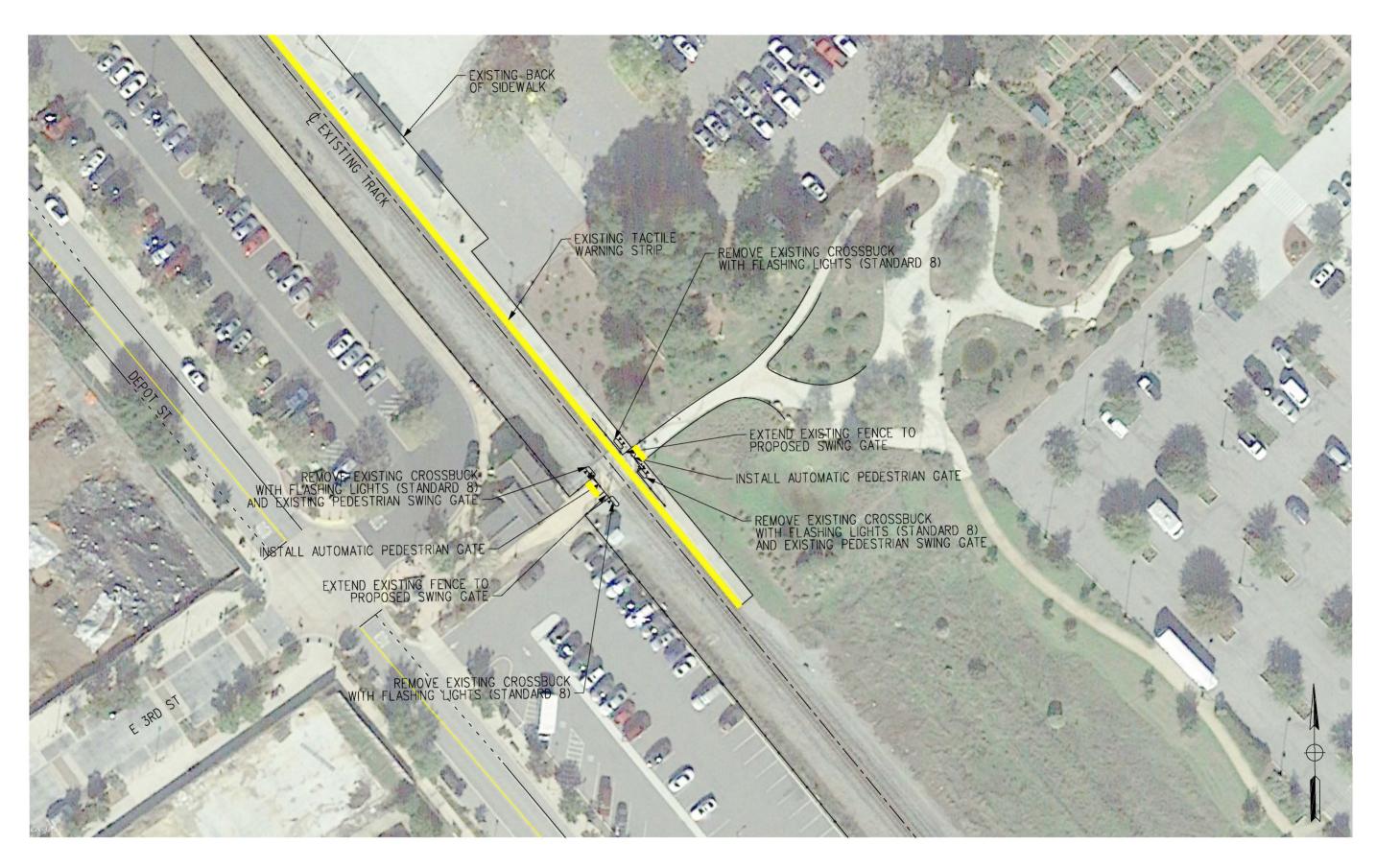
X - XX

REVISION
STATE

SCALE

1" = 50"

CITY OF MORGAN HILL
QUIET ZONE FEASIBILITY STUDY
SCENARIO 2
CONCEPTUAL PLANS
DUNNE AVENUE



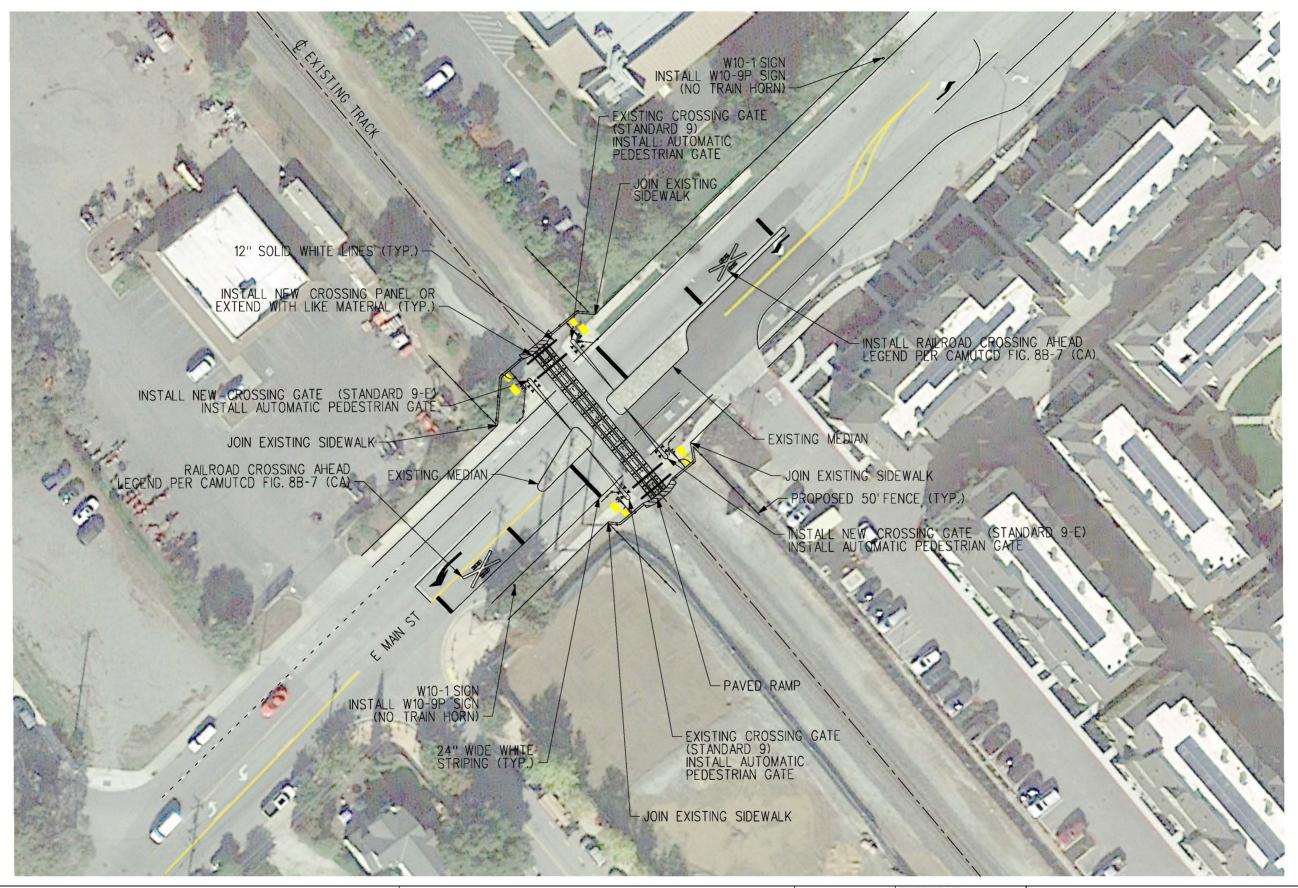
Michael Baker

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CONTRACT N	10.
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CITY OF MORGAN HILL
QUIET ZONE FEASIBILITY STUDY
SCENARIO 2
CONCEPTUAL PLANS
STATION PEDESTRIAN CROSSING



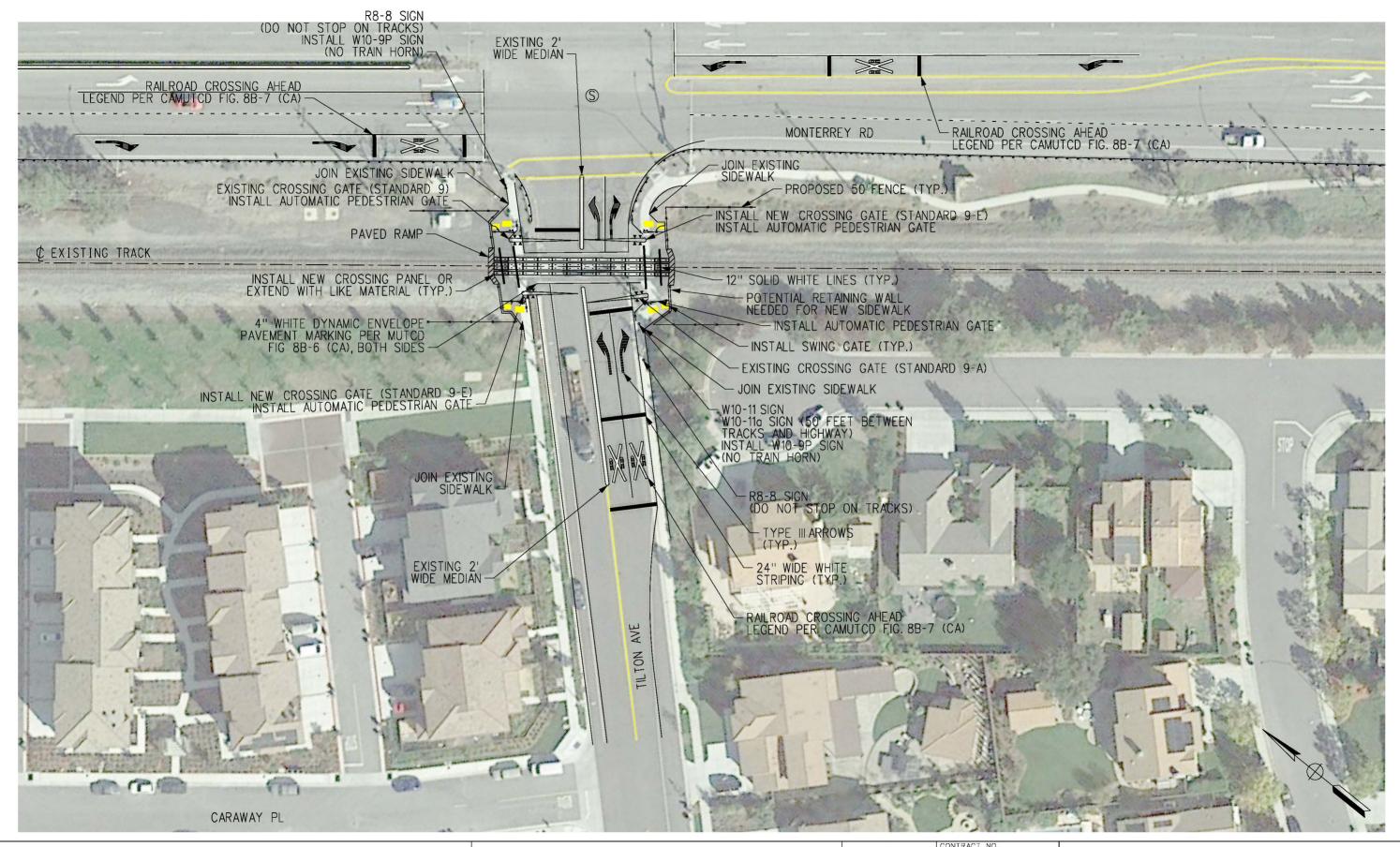
Michael Baker

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ONTRACT N	١٥.		
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	111 =	20.	

CITY OF MORGAN HILL QUIET ZONE FEASIBILITY STUDY SCENARIO 2 CONCEPTUAL PLANS E MAIN STREET



Michael Baker

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C-XXXX

RAWING NO.

X-XX

EVISION SHEET NO.
1 OF 1

CALE

1" = 50"

CITY OF MORGAN HILL
QUIET ZONE FEASIBILITY STUDY
SCENARIO 2
CONCEPTUAL PLANS
TILTON AVENUE

Appendix B - U.S. DOT Crossing Inventory Reports



DEPARTMENT OF TRANSPORTATION

FEDERAL RAILROAD ADMINISTRATION OMB No. 2130-0017

Form. For private his pedestrian station greats I and II, and the I, and the Submission	Instructions for the initial reporting of the following types of new or previously unreported crossings: For public highway-rail grade crossings, complete the entire inventory Form. For private highway-rail grade crossings, complete the Header, Parts I and II, and the Submission Information section. For public pathway grade crossings (including pedestrian station grade crossings), complete the Header, Parts I and II, and the Submission Information section. For grade-separated highway-rail or pathway crossings (including pedestrian station crossings), complete the Header, Part I, and the Submission Information section. For changes to existing data, complete the Header, Part I Items 1-3, and the Submission Information section, in addition to the updated data fields. Note: For private crossings only, Part I Item 20 and Part III Item 2.K. are required unless otherwise noted. An asterisk * denotes an optional field. C. Reason for Update (Select only one) D. DOT Crossing															
A. Revision Date			• ,	_				· · · · / _	,	□ Na Tasia	П О.::i			Ū		
(MM/DD/YYYY) 11 / 12 / 2016		■ Railroad□ State	□ Tra	Data	hange a e-Ope	Crossing		☐ Closed ☐ Change in Primary		☐ No TrainTraffic☐ Admin.	☐ Quiet Zone Update		755162	Inventory Number		
						Cha	nge C	Only C	perating RR	Correction			700102			
		<u>. </u>		Part I: Lo	ocat		Cla	ssificat	ion Informatio							
1. Primary Operating Union Pacific Railr					2. State CALIFORNIA					SANTA CLARA						
4. City / Municipality	•'			et/Road Na T DUNNE			ber	.l		6. Highway Ty	rpe & No.					
□ Near MORGA				et/Road Nan					k Number)	CITY		2 = 1				
7. Do Other Railroad If Yes, Specify RR	s Operat	e a Separate T	rack at Cro ,	ssing? □ Ye	es L	No		Yes, Spe	Railroads Operate O cify RR ATK	ver Your Track :	at Crossin _i	g?LXIY	es ⊔ No)		
9. Railroad Division	or Regior	1	10. Railro	ad Subdivision	on or	District		11. Bra	nch or Line Name		12. RR N	1ilepost				
□ None ROSE	/ILLE		☐ None	Coast				■ None	<u> </u>		(prefix)	(nnnn	nnn)	(suffix)		
13. Line Segment *		14. Nea	rest RR Tim	etable	1	.5. Parent F	RR (if	f applicab	le)	16. Crossir	ng Owner	(if appli	cable)			
						■ N/A				■ N/A						
17. Crossing Type		ssing Purpose		ssing Positio	n	20. Public			21. Type of Train					e Passenger		
■ Public	I ■ High	ıway ıway, Ped.	At G □ RR U			(if Private ☐ Yes	Cros	sing)	▼ Freight Intercity Passenge	☐ Transi zer ☐ Shared	t I Use Tran	Train Count Per Day se Transit ■ Less Than One Per				
☐ Private		ion, Ped.	□ RR O			□ No			☐ Commuter	☐ Touris		_	□ Numbei	•		
23. Type of Land Use ☐ Open Space	e Farm	□ Pos	dential	I Comm	orcia		ndus	trial	☐ Institutional	☐ Recreation	nal	□ RR	Vard			
24. Is there an Adjac					icicia				A provided)	- Necreation)iiai		Taru			
						[70] A.					5.5					
☐ Yes ☑ No If 26. HSR Corridor ID	Yes, Prov	vide Crossing N		mal degrees		_ No		□ 24 Hr □ Partial □ Chicago Excused □ Date Established □ Chicago Excused □ Date Established □ Chicago Excused □ 29. Lat/Long Source □ 29. Lat/Long Source □ Chicago Excused □ Date Established □ Dat								
				27	.1263	8623										
30.A. Railroad Use	_⊠ N/A *	(WGS84	std: nn.nr	nnnnn) O'	. 1200	7020	(W	WGS84 std: -nnn.nnnnnnn -121.6472013								
30.B. Railroad Use	*							31.B. State Use *								
30.C. Railroad Use	*							31.C. S	tate Use *							
30.D. Railroad Use	*							31.D. S	tate Use *							
32.A. Narrative (Rai	ilroad Us	e) *						32.B. N	larrative (State Use)	*						
33. Emergency Notif	ication T	elephone No.	(posted)	34. Rai	Iroad	Contact (7	eleph	hone No.)		35. State Cor	itact (Tele	phone i	No.)			
800-848-8715		-	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	402-5		·		,		415-703-372	,	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,			
					Par	t II: Rail	roa	d Infor	mation							
1. Estimated Number	r of Daily	Train Moveme	ents													
1.A. Total Day Thru T (6 AM to 6 PM) 5	Trains		otal Night T to 6 AM)	hru Trains	1.C 2	. Total Swit	ching	g Trains	1.D. Total Transit	Trains		vement	ss Than : Per Day is per wee	□ bk?		
2. Year of Train Coun	t Data (Y			3. Speed of		at Crossing	3		1		I TOW IIId	y u all	is her wet	-n.i		
2016				3.A. Maxim					9 oph) From 30	to 60						
4. Type and Count of	Tracks			s.b. Typical	spee	u Kange OV	rer Cr	ossing (m	ipii) Fluiii <u>90</u>	10 _00						
	Siding 0	Ya	ard 0	Trans	sit 0		Indu	ıstry 0								
5. Train Detection (N	1ain Traci	k only)	· · · · · · · · · · · · · · · · · · ·													
☐ Constant Warı 6. Is Track Signaled?		e 🗆 Motion	Detection	□AFO □		☐ DC Event Reco	order		None		7.B R4	emote F	lealth Mo	nitoring		
Yes No						Yes 🗆						Yes 🗷				

A. Revision Date (A 11/12/2016	MM/DD/YYYY)			PAGE 2 D. Crossing Inventory Number (7 char.) 755162N												
		Part	: III: Hi	ighway o	r Path	way ⁻	Traffic (Control De	vice							
1. Are there	2. Types of Pa	ssive Traffic	Control [Devices asso	ciated wi	ith the	Crossing									
Signs or Signals?	2.A. Crossbuck Assemblies (co	ount) (cou		gns <i>(R1-1)</i>	2.C. YIE (count)	_	ns <i>(R1-2)</i>	■ W10-1			□ W10-3	B	_ U W	V10-1	nt) 🗆 None 1	
2.E. Low Ground Cl (W10-5)	0 earance Sign	2.F. Pavem	ent Marl	kings			2.G. Char Devices/	□ W10-2 _ nnelization Medians		☐ W10-4 2.H. EXEMPT (R15-3)						
☐ Yes (count 0)	■ Stop Lin	es					approaches \square Median			☐ Yes		☐ Yes	cu		
■ No		■ RR Xing	•	☐ None	9		□ One A	• •	□ None		I No		■ No			
2.J. Other MUTCD S Specify Type				Signs (if µ		2.L. l	2.L. LED Enhanced Signs (List types)									
Specify Type Specify Type		Count Count _	,				☐ Yes [⊔ No								
3. Types of Train A					specify co	ount of	each dev	ice for all tha	t apply))						
3.A. Gate Arms (count) Roadway 2	3.B. Gate Conf	figuration Full (Barr.) Resistance	or Bridg 0	<i>ed)</i> Flashir □ In	ng Light candescent	<i>(coui</i> □ In	nt of n cande	Mounted Flash nasts) 2 scent hts Included	hing Lights —— □ LED □ Side			. Total Count of shing Light Pairs				
Pedestrian	☐ 4 Quad	☐ Median G	iates	Not Over T	raffic Lar	ne <u>0</u>	_	D				Include	ed			
3.F. Installation Dat Active Warning Dev	MM/Y	YYY)	_/		Crossi	lighway Traffi ing s ■ No	c Signals C	ontrollin		3.I. Bells (count)						
3.J. Non-Train Active Warning Stagging/Flagman Manually Operated Signals Watchman Floodlighting None Specify type																
4.A. Does nearby H Intersection have Traffic Signals? ☐ Yes ☐ No	Intersection have Interconnection Traffic Signals? □ Not Interconnected □ For Traffic Signals □ Simultane						S .					(Check al	Il that ap Photo/V Vehicle	ay Monitoring Devices I that apply) Photo/Video Recording Vehicle Presence Detection		
= 1c3 = 140	L 101 W	arning Signs		Advance	rt IV/· E	Physic		racteristic								
1. Traffic Lanes Cros	ssing Railroad	□ One-way	Traffic		Is Roady			3. Does Tr		n Dow	n a Street?	4. Is Cro	ssing Illu	ımina	ted? (Street	
Number of Lanes	2	☐ Two-way☐ Divided T	Traffic raffic	Pa	aved? ■ Ye:	s [□ No		⊒ Yes	lights Yes ■ No near				within approx. 50 feet from it rail) □ Yes I No		
5. Crossing Surface ☐ 1 Timber ■ ☐ 8 Unconsolidate	2 Asphalt \square	3 Asphalt ar	nd Timbe	er 🗆 4 Co							lth * r □ 7 Me	tal	Length *	* 		
6. Intersecting Roa	dway within 500) feet?					7. Smalle	st Crossing A	ngle			8. Is Commercial Power Available? *			ver Available? *	
Yes □ No	If Yes, Approxim	nate Distance	(feet) 7	5			□ 0° - 29	9° □ 30°	– 59°	×	60° - 90°		■ Yes	5	□ No	
	, , , ,		<u> </u>		V: Puk	olic H	ighway	Informat	ion							
	tate Highway Sy Nat Hwy Systen		☐ (1) I	ctional Classi (Interstate Other Freew	(0) Rural	X (1	L) Urban (5) Major		Sys	tem? Yes	sing on State I ■ No Referencing S			Poste	vay Speed Limit MPH d □ Statutory	
(03) Feder (08) Non-F	al AID, Not NHS ederal Aid			Other Princip Minor Arteria			(6) Minor (7) Local	Collector			epost *	,				
7. Annual Average Year 1989 AA	Daily Traffic <i>(AA</i> DT <u>15000</u>	ADT) 8. E	stimated	d Percent Tru	ıcks		ularly Use	d by School B Average Nu		er Day	0	_ 10. _ □ Y	_	ncy S	ervices Route	
Submi	ssion Inforr	mation - 7	his info	ormation is	s used f	for ad	ministra	tive purpo:	ses an	d is n	ot availabl	e on the	public	web	site.	
Submitted by				Organizat	ion						Phone		[Date		
Public reporting bu sources, gathering a agency may not cor displays a currently other aspect of this Washington, DC 20	and maintaining nduct or sponsor valid OMB cont collection, inclu	the data nee r, and a perso rol number.	ded and n is not i The valid	estimated to completing a required to, d OMB contro	average and revie nor shall ol numbe	ewing to a perso er for in	he collection be subj of formation	on of informa ect to a penal collection is	tion. A ty for fa 2130-00	.ccordi ailure t 017. S	e for reviewing to the Paperson comply with	erwork Re h, a collect ts regardin	ons, sea duction a tion of in	rching Act of formarden	1995, a federal ation unless it estimate or any	

DEPARTMENT OF TRANSPORTATION

FEDERAL RAILROAD ADMINISTRATION OMB No. 2130-0017

Form. For private hip pedestrian station gr Parts I and II, and the I, and the Submissio	Instructions for the initial reporting of the following types of new or previously unreported crossings: For public highway-rail grade crossings, complete the entire inventory Form. For private highway-rail grade crossings, complete the Header, Parts I and II, and the Submission Information section. For public pathway grade crossings (including pedestrian station grade crossings), complete the Header, Parts I and II, and the Submission Information section. For grade-separated highway-rail or pathway crossings (including pedestrian station crossings), complete the Header, Part I, and the Submission Information section. For changes to existing data, complete the Header, Part I Items 1-3, and the Submission Information section, in addition to the updated data fields. Note: For private crossings only, Part I Item 20 and Part III Item 2.K. are required unless otherwise noted. An asterisk * denotes an optional field. C. Reason for Update (Select only one) D. DOT Crossing															
			· ·	_				, , ,	/					•		
(<i>MM/DD/YYYY</i>) 09 /14 /2016		■ Railroad	☐ Tra		□ Chanୄଃ Data	o .	New ssing		Closed	☐ No Train Traffic	☐ Quie Zone U		Invento	ory Number		
	[□ State	□ Otl		□ Re-Op	pen 🗆 🛭	Date ange C		☐ Change in Primary Operating RR	☐ Admin. Correction	·		920463	βM		
				Part I	: Loca				tion Informatio	n						
1. Primary Operating Union Pacific Railre						2. State CALIFO		IA		3. County SANTA CLARA						
4. City / Municipality	•			eet/Road RGAN H		& Block Nun	nber	_l		6. Highway Ty	pe & No.					
□ Near MORGA				et/Road N		—			k Number)	NA -		- 74				
7. Do Other Railroad If Yes, Specify RR	s Operate	a Separate Tr	ack at Cro	ssing? L	⊒ Yes	X No		Do Other f Yes, Spe	Railroads Operate On cify RR ATK	ver Your Track a	at Crossing	g? L⊠ Υ	es ⊔ No)		
9. Railroad Division o	or Region	<u> </u>	10. Railro	ad Subdiv	vision o	r District		11. Bra	nch or Line Name	,	12. RR N	/ilepost				
□ None ROSE\	√ILLE		☐ None	Coast	it			■ None	e		(prefix)	.		 (suffix)		
13. Line Segment	· 		rest RR Tim	netable		15. Parent	RR (ij	f applicab	le)	16. Crossin	g Owner	(if appli	cable)			
* □		Station	*			■ N/A				I N/A						
17. Crossing Type	l	ssing Purpose		ssing Pos	sition	20. Publi			21. Type of Train	· · · · · · · · · · · · · · · · · · ·			_	ge Passenger		
■ Public	☐ Highv	way way, Ped.	I At G □ RR U			(if Private ☐ Yes	? Cros	sing)	■ Freight ■ Intercity Passeng	☐ Transit	t d Use Tran		Train Count Per Day ☐ Less Than One Per Day			
☐ Private	☐ Statio	• • • • • • • • • • • • • • • • • • • •				□ Yes		ĺ	☐ Commuter	ger \square Shared			r Per Day 2			
23. Type of Land Use					-								-			
✓ Open Space24. Is there an Adjace	☐ Farm	Resident			mmerci		Indus		☐ Institutional RA provided)	☐ Recreation	nal	□ RR	Yard			
24. IS there an Aujac	ent crossi	ng with a sep	arate ivuii	ibei r		25. 0	(uiet z	Zone (Fr	A provideu)							
	Yes, Provi	ide Crossing Nu				□ No				go Excused		stablishe				
26. HSR Corridor ID		27. Latite	ude in dec	imal degr	rees			Ū	le in decimal degrees			29. Lat/	/Long Sou	irce		
l	_ X N/A	(WGS84	std: nn.nı	nnnn <u>nn)</u>	37.129	92150	(W	(WGS84 std: -nnn.nnnnnnn) -121.6501230 ■ Actual □ Estimate						Estimated		
30.A. Railroad Use	*							31.A. State Use *								
30.B. Railroad Use	*							31.B. State Use *								
30.C. Railroad Use	*							31.C. State Use *								
30.D. Railroad Use	*							31.D. S	state Use *							
32.A. Narrative (Rai	Iroad Use,) *						32.B. N	larrative (State Use)	*						
33. Emergency Notifi 800-848-8715	ication Te	lephone No. (posted)			d Contact (ГеІерІ	hone No.)		35. State Con 555-555-555	•	phone I	No.)			
000-040-07 13				402	2-544-3					000-000-000)5					
4. Estimated Number	- C Daile I	- 1 - 11	• •		Pa	art II: Rai	lroa	d Intor	mation							
1. Estimated Number 1.A. Total Day Thru T			ents otal Night 1	Thru Trair	ns 1	.C. Total Swi	tching	Trains	1.D. Total Transit	Trains	1.E. Che	ck if I ps	c Than			
(6 AM to 6 PM)	Tanis		to 6 AM)	III u II u	2			; mumo	0	Hums	One Mo	vement	t Per Day ns per wee	□ ek?		
2. Year of Train Coun	t Data (YY	YY)		•		in at Crossin	_	70								
2016]			Timetable Speed Range Ov			<i>nph)</i> From 30	to_60						
4. Type and Count of	Tracks			J.E 71	100. 2 -	Cu nang-	70	0338 1	<i>pn,</i> 11c							
	Siding 0		ard 0	Tı	ransit <u>C</u>)	Indu	ustry 0								
5. Train Detection (M ☐ Constant Warr		,,	Dotaction	□AFO	□ pT(C 🗆 DC	▼ 0:	+hor 🗆	None							
6. Is Track Signaled?		□ IVIOLIOII I	Jetechon			A. Event Rec			None		7.B. Re	emote F	lealth Mo	nitoring		
☐ Yes 🗷 No						¥ Yes □	No					Yes 🛚		G		

A. Revision Date (NO) 09/14/2016	MM/DD/YYYY)				PAGE 2 D. Crossing Inventory Number (7 char.) 920463M											
			Part III	: Highway	or Pat	hway	Traffic (Control De	vice	Info	rmation					
1. Are there	2. Types of Pa	ssive Tra	affic Cont	trol Devices a	sociated	with the	Crossing									
Signs or Signals?	2.A. Crossbuck		2.B. STC	OP Signs (R1-1		_	gns <i>(R1-2)</i>	2.D. Advan	ce Wa	ce Warning Signs (Check all that apply				; include count) 🔲 None		
¥ Yes □ No	Assemblies (co	ount)	(count)		(cou	int)		□ W10-1 _ □ W10-2 _				3 1				
2.E. Low Ground Clo (W10-5)	earance Sign	2.F. Pa	vement	Markings				nnelization		2.H. EXEMPT (R15-3)			Sign 2.I. ENS Sign (I-13)			
☐ Yes (count)		p Lines						□ Me	dian	☐ Yes		Displayed			
□ No			Xing Sym		one			pproach [□ No		□ No					
2.J. Other MUTCD S	Signs	⊔Y	'es □ N	lo			2.K. Priva Signs (if	ate Crossing private)	2.L.	LED Er	nhanced Signs	(List types	;)			
Specify Type			nt													
Specify Type Specify Type			nt				☐ Yes	⊔ No								
3. Types of Train A					g (specify	y count o	f each dev	ice for all that	apply	<i>'</i>)						
3.A. Gate Arms	3.B. Gate Conf			3.C. Car	tilevered	(or Bridg	ged) Flashi		3.D	. Mast	Mounted Flas	hing Lights	5		. Total Count of	
(count)	☐ 2 Quad		(Barrier)		es <i>(count</i> affic Lane	•	□lr	ıcandescent			nasts) 2 escent	 ■ LED		Fla	shing Light Pairs	
Roadway	-	Resista	,	Over III	anne Lane		⊔"	icanuesceni			thts Included	☐ Side				
Pedestrian	☐ 4 Quad	\square Med	ian Gate	s Not Ove	er Traffic I	Lane	🗆 LI	D			•	Include				
3.F. Installation Dat	ate of Current 3.G. Wayside Horn 3.H. Highway Traffic Signals Controlling 3.I. Bells											3.I. Bells				
Active Warning Dev		•	اسمدند	☐ Yes Ir	nstalled o	n <i>(MM/</i>)	YYY)	_/		Cross	ing s □ No				(count)	
		Not Req	uirea	□ No		(⊔ Ye:	S □ NO				2	
3.J. Non-Train Active Warning See Signals Watchman Floodlighting None 3.K. Other Flashing Lights or Warning Devices Count Specify type																
4.A. Does nearby Hwy 4.B. Hwy Traffic Signal 4.C. Hwy Traffic Signal Preemption 5. Highway Traffic Pre-Signals 6. Highway Monitoring Device												g Devices				
Intersection have	Interconr		actad			☐ Yes ☐ I			No			•	Check all that apply) ☐ Yes - Photo/Video Recording			
Traffic Signals?	☐ Not Ir ☐ For Tr			☐ Simultan	ous Storage Dista				nce *				- Vehicle Presence Detection			
☐ Yes ☐ No	☐ For W	_		☐ Advance				Stop Line Dist	ance '	*		☐ None	!			
				Į.	Part IV	: Physi	ical Cha	racteristic	S							
1. Traffic Lanes Cros						adway/P	athway	3. Does Tr	ack Ru	ın Dow	n a Street?		•		ited? (Street	
Number of Lanes			-way Trai led Traffi		Paved?	Yes	□ No		Yes		No	_	tnın appr rail) 🗆 Ye		50 feet from \Box No	
5. Crossing Surface					allation D	ate * <i>(M</i>	M/YYYY) _	/		_ Wie			Length *			
☐ 1 Timber ☐ ☐ 8 Unconsolidate						e ⊔ 5	Concrete	and Rubber	□ 6	Rubbe	er ⊔ 7 Me ———	tal -				
6. Intersecting Roa	dway within 500) feet?					7. Smalle	est Crossing Ar	ngle	gle			8. Is Commercial Power Available?			
☐ Yes ☐ No	If Yes, Approxin	nate Dist	ance <i>(fee</i>	et)		_	□ 0°-2	9° □ 30°-	- 59°		60° - 90°		☐ Yes		□ No	
				Pa	rt V: P	ublic F	lighway	Informati	on							
1. Highway System			2.	Functional Cla	ssificatio	n of Road	d at Crossir	ng	3.	Is Cros	sing on State I	Highway	4. H	ighv	vay Speed Limit	
□ (01) Interes	tata III:aha C				. ,		1) Urban	. Callantan		stem?	□ N-				MPH	
	tate Highway Sy Nat Hwy Systen			(1) Interstate (2) Other Fre			〕(5) Majo swavs	r Collector			☐ No Referencing S	vstem /I R			ed Statutory	
	al AID, Not NHS			(3) Other Pri	ncipal Art	erial 🗆	(6) Mino	r Collector				ystem (Enc	noute 12	,		
☐ (08) Non-F		4071		(4) Minor Art			(7) Local	11 61 18		LKS IVII	lepost *	1.0		-		
7. Annual Average Year AA	. ,	AD1)	8. ESTIN	nated Percent	_ %	9. Reg □ Yes		d by School Bu Average Nur		oer Day	′	_ 10.	_	cy S No	ervices Route	
Submi	ssion Infor	matior	ı - This	informatio	n is use	d for ac	dministra	itive purpos	ses ai	nd is r	not availabl	e on the	public 1	vel	site.	
Submitted by				Organi	zation						Phone		D:	ate		
Public reporting but																
sources, gathering a agency may not cor	_			-	-	_										
displays a currently	valid OMB cont	rol numb	oer. The	valid OMB co	ntrol num	ber for i	nformation	collection is 2	2130-0	0017. S	Send commen	ts regardin	g this bur	den	estimate or any	
other aspect of this Washington, DC 20		ıding for	reducing	this burden t	o: Inform	nation Co	llection Of	ficer, Federal	Railro	ad Adm	ninistration, 12	200 New Je	ersey Ave	. SE,	MS-25	
displays a currently	valid OMB cont	rol numb	oer. The	valid OMB co	ntrol num	ber for i	nformation	collection is 2	2130-0	0017. S	Send commen	ts regardin	g this bur	den	estimate or any	
Washington, DC 20	590.															

DEPARTMENT OF TRANSPORTATION

FEDERAL RAILROAD ADMINISTRATION OMB No. 2130-0017

Instructions for the initial reporting of the following types of new or previously unreported crossings: For public highway-rail grade crossings, complete the entire inventory Form. For private highway-rail grade crossings, complete the Header, Parts I and II, and the Submission Information section. For public pathway grade crossings (including pedestrian station grade crossings), complete the Header, Parts I and II, and the Submission Information section. For Private pathway grade crossings, complete the Header, Parts I and II, and the Submission Information section crossings), complete the Header, Parts I and II, and the Submission Information section. For grade-separated highway-rail or pathway crossings (including pedestrian station crossings), complete the Header, Parts I and II, and the Submission Information section.																	
I, and the Submission Information section. For grade-separated highway-rail or pathway crossings (including pedestrian station crossings), complete the Header, Part I ltems 1-3, and the Submission Information section. For changes to existing data, complete the Header, Part I ltems 1-3, and the Submission Information section, in addition to the updated data fields. Note: For private crossings only, Part I ltem 20 and Part III ltem 2.K. are required unless otherwise noted. An asterisk * denotes an optional field.																	
A. Revision Date (MM/DD/YYYY)		B. Reporting A	Agency	_	eason fo Change in		t e (Sel New	lect only o	one)] Closed	☐ No Train	☐ Quiet		D. DOT Crossing Inventory Number				
11 / 12 / 2016		☐ State	□ Ot	□ Other □ Re-O		Crossing Open Date		\square Change in Primary		Traffic ☐ Admin.	Zone Update		755159F				
				Part I: I	ocatio		ange C		perating RR :ion Information	Correction							
1. Primary Operating			I dit i. E		2. State		SSIIICAL	ion information	3. County								
Union Pacific Railro		CALIFORNI						SANTA CLA									
4. City / Municipality In		5. Street/Road Name & Block Number EAST MAIN AVENUE						6. Highway Ty									
□ Near MORGA		e a Senarate "		et/Road Nam		No.	Ωг	• •	k Number)	CITY Voys Your Track at Crossing 7 W Yos No.							
7. Do Other Railroads Operate a Separate Track at Crossing?																	
9. Railroad Division o	or Region		, 10. Railro	,,,,,,					nch or Line Name		12. RR Mi	,,, Milepost					
5005	_											0067.	300				
None ROSEV	/ILLE	14. Nea		□ None Coast est RR Timetable			RR (i)	■ None f applicab		16. Crossin	(nnnn.nnn) (suffix) if applicable)						
*		Station		*			17	~FF	,		0 12	,,					
17. Crossing Type	18. Cro	ssing Purpose	19. Crc	ssing Positic	N/A ssing Position 20. Public A				21. Type of Train	■ N/A		2. Avera	ge Passenger				
<i>-</i>	■ High	nway	■ At G	Grade	((if Private □ Yes			I Freight	☐ Transit		Train Count Per Day					
■ Public □ Private		nway, Ped. ion, Ped.		☐ RR Under ☐ RR Over ☐					■ Intercity Passeng □ Commuter	ger Shared Tourist	l Use Transi t/Other	ansit ■ Less Than One Per Day □ Number Per Day					
23. Type of Land Use		·		_								·					
☐ Open Space 24. Is there an Adjace	☐ Farm ent Cross		sidential parate Num	™ Comm nber?	nercial	_	Indus Quiet 2		☐ Institutional (A provided)	☐ Recreation	nal	☐ RR \	/ard				
							`_										
☐ Yes ■ No If Y	Yes, Prov	vide Crossing N 27. Latit		imal degrees	s	I≝ No	1	□ 24 Hr □ Partial □ Chicago Excused Date Established 8. Longitude in decimal degrees 29. Lat/Long Source									
 _ 	□ 11/A			27	- '.13175	41		-121 6527200									
30.A. Railroad Use	_\ N/A *	(WGS84	4 std: nn.nr	innnnn)			(W	al 🗀	Estimated								
30.B. Railroad Use	*							31.B. State Use *									
30.C. Railroad Use	*							31.C. State Use *									
30.D. Railroad Use								31.D. State Use *									
32.A. Narrative (Rai									larrative (State Use)								
33. Emergency Notification Telephone No. (posted) 34. Railroa 800-848-8715 402-544-3						•	ГеІерІ	none No.)		35. State Contact (<i>Telephone No.</i>) 415-703-3722							
							Iroa	d Infor	mation								
1. Estimated Number	of Daily	Train Movem	ents		1 4. 5	11. 114	_	u III.o.									
1.A. Total Day Thru Trains (6 AM to 6 PM) 5 1.B. Total Night Thru Trains (6 PM to 6 AM) 5 2								g Trains	1.D. Total Transit	Trains	1.E. Check if Less Than One Movement Per Day How many trains per week? □						
2. Year of Train Count Data (YYYY) 3. Speed of Train at Crossing																	
3.A. Maximum Timetable Speed (mph) 79 2016 3.B. Typical Speed Range Over Crossing (mph) From 30 to 60																	
4. Type and Count of	Tracks				<u> </u>	<u> </u>		<u> </u>	<u></u>								
Main 1 Siding 0 Yard 0 Transit 0 Industry 0																	
5. Train Detection (Main Track only) Constant Warning Time Motion Detection AFO PTC DC Other None																	
6. Is Track Signaled? 7.A. Event Recorder 7.B. Remote Health Monitori										nitoring							
¥ Yes □ No											☐ Yes 🗷 No						

A. Revision Date (A 11/12/2016		PAGE 2 P. Crossing Inventory Number (7 char.) 755159F														
Part III: Highway or Pathway Traffic Control Device Information																
1. Are there 2. Types of Passive Traffic Control Devices associated with the Crossing																
Signs or Signals?	2.A. Crossbuc	k 2.6	S. STOP S	igns <i>(R1-1)</i>	2.C. YIEI	LD Sigr	ns <i>(R1-2)</i>	2.D. Advar	nce Wa	arning S	igns <i>(Check al</i>			e cou	nt) 🗆 None	
¥ Yes □ No	Assemblies (c)	ount) (co	unt)	unt)				■ W10-1				} 		W10-11 W10-12		
2.E. Low Ground Cl	earance Sign	ent Markings				2.G. Channelization 2.H. EXEMP					PT Sign 2.I. ENS Sign (I-13)					
(W10-5) \square Yes (count 0	■ Stop Li	200	□Dvna	mic Envelo	one	Devices/Medians ☐ All Approaches ☐			edian	(R15-3) □ Yes	Displayed ☐ Yes					
			Symbols	, .		ope	☐ One A			■ No		■ No				
2.J. Other MUTCD S	Signs	☐ Yes	■ No					ate Crossing	2.L	2.L. LED Enhanced Signs (List types)						
Specify Type		0				Signs (if p	orivate)									
Specify Type		0				☐ Yes ☐ No										
Specify Type Count Specify Type Count Specify Count of each device for all that apply Specify Count of ea																
3. Types of Train A	3.B. Gate Con		the Grad	the Grade Crossing (specify count of 3.C. Cantilevered (or Bridge							Mounted Flasl	2 5	3.E. Total Count of			
(count)	J.B. Gate Con	nguration			Structures (count)			Jea/ Flashing Light			nasts) 2	iiig Ligiits			shing Light Pairs	
	☐ 2 Quad	☐ Full (Bar	rier)	Over Traffi	c Lane 0		_	candescent		Incande		LED				
Roadway <u>0</u> Pedestrian	☐ 3 Quad ☐ 4 Quad	Resistance Median	Gates	ates Not Over Traffic Lane 0				□ LED			hts Included	☐ Side Include	•	0		
2. F. Installation Dat	of Current		120				_			2111	lighway Traffi	s Cianals C	antrallin		3.I. Bells	
3.F. Installation Dat Active Warning Dev		()		G. Wayside H						Cross		c Signais C	ontrollin	g	(count)	
	' ' _	Not Require	u	Yes Insta No	alled on (A	MM/YY	′YY)	_/	_	- Yes No 2						
3.J. Non-Train Activ ☐ Flagging/Flagma		o tchman □ Floodlighting □ None					3.K. Other Flashing Lights or Warning Devices Count 0 Specify type									
4.A. Does nearby H	wy 4.B. Hwy	Traffic Signa	1 4.0	C. Hwy Traffic	Signal Pre	eempt	ion	raffic I	Pre-Sigr	nals	6. Highway Monitoring Devices					
Intersection have	Interconi						☐ Yes 🗷 N				(Check all that apply) ☐ Yes - Photo/Video Recording					
Traffic Signals? □ Not Interconnecte □ For Traffic Signals				Simultaneou	ıs		Storage Distar						-		Recording ence Detection	
☐ Yes ☐ No ☐ For Warning Signs ☐ Advance ☐ Stop Line Distance * ☐ ☐ None ☐ None																
Part IV: Physical Characteristics																
1. Traffic Lanes Cros	ic Paved?							n a Street?		4. Is Crossing Illuminated? (Street lights within approx. 50 feet from						
Number of Lanes	2	☐ Divided	Traffic	Yes □ No □					☐ Yes ☑ No nearest rail) ☐ Yes ☑ No Width * Length *							
5. Crossing Surface (on Main Track, multiple types allowed) Installation Date * (MM/YYYY) Width * Length * Length * I Timber																
6. Intersecting Roa	7. Smallest Crossing Ai					ngle			8. Is Commercial Power Available? *							
□ Ves 🖼 No	·) □ 0° – 29° □ 30°					_ 50°	₽		₩ Vo	,	□No					
☐ Yes ☑ No If Yes, Approximate Distance (feet) ☐ 0° − 29° ☐ 30° − 59° ☑ 60° - 90° ☑ Yes ☐ No Part V: Public Highway Information																
							cation of Road at Crossing				sing on State H	Highway	4.1	High	vay Speed Limit	
_		☐ (0) Rural 🖼 ((1) Urban			/stem?		0 ,			MPH		
□ (01) Interstate Highway System□ (02) Other Nat Hwy System (NHS)□ (03) Federal AID, Not NHS				☐ (1) Interstate ☐ ☐ (2) Other Freeways and Expres				☐ (5) Major Collector			■ No				Posted Statutory	
				Other Princip	,	•	•	Collector		5. Linear Referencing System (LRS Route ID) *						
ጃ (08) Non-F								(7) Local			lepost *					
	age Daily Traffic (AADT) 8. Estimated Percent Trucks 05 %							d by School B Average Nu		per Day	0	10. Emergency Services Route ☐ Yes ☐ No				
Submission Information - This information is used for administrative purposes and is not available on the public website.																
Submitted by		tion						Phone		Date						
Public reporting burden for this information collection is estimated to average 30 minutes per response, including the time for reviewing instructions, searching exists.										g existing data						
sources, gathering and maintaining the data needed and completing and reviewing the collection of information. According to the Paperwork Reduction Act of 1995, a federal																
agency may not conduct or sponsor, and a person is not required to, nor shall a person be subject to a penalty for failure to comply with, a collection of information unless it displays a currently valid OMB control number. The valid OMB control number for information collection is 2130-0017. Send comments regarding this burden estimate or any																
other aspect of this collection, including for reducing this burden to: Information Collection Officer, Federal Railroad Administration, 1200 New Jersey Ave. SE, MS-25																
Washington, DC 20	590.															

U. S. DOT CROSSING INVENTORY FORM

DEPARTMENT OF TRANSPORTATION

FEDERAL RAILROAD ADMINISTRATION OMB No. 2130-0017

Instructions for the i Form. For private hip pedestrian station gr Parts I and II, and the I, and the Submissio	ghway-ra ade cros Submiss n Inform	ail grade cross ssings), complosion Information nation section.	ings, compete the Headon section. For chang	rete the He der, Parts I For grade-se es to existir	ader, Pand II, eparate ng data	arts I and and the S d highway , complet	l II, a Subm y-rail e the	nd the Suission Info or pathwa Header,	ubmission Information formation section. Fo ay crossings (includin Part I Items 1-3, an	n section. For private pathw g pedestrian sta d the Submission	public path ray grade oution crossion Informa	hway gi crossing ings), co ation se	rade cros s, compl omplete t ction, in	ssings (including ete the Header, the Header, Part addition to the
updated data fields. I	Note: Fo	•	· ·							noted.	An aste	risk * de		optional field.
A. Revision Date (MM/DD/YYYY)		B. Reporting	Agency ☐ Tra	_	ceason Change	for Updat	i e (Sei New	, .	one)] Closed	☐ No Train	☐ Quie	ıt.		Crossing ory Number
11 / 12 / 2016		□ State	□ Oti	Dat	_	Cro	ssing Date			Traffic	Zone U		755158	•
		□ State	□ 00	ier \Box i	ke-Oper		nge (Change in Primary perating RR	Correction			75515	טכ
				Part I: L	.ocati	on and	Cla	ssificat	ion Informatio	n				
1. Primary Operating Union Pacific Railre						2. State CALIFO		Α		3. County SANTA CLA	.RA			
4. City / Municipality ☐ In	'			et /Road N a FON AVEN		Block Nun	nber			6. Highway Ty	pe & No.			
■ Near MORGA				et/Road Nai			1		k Number)	CITY				
7. Do Other Railroad If Yes, Specify RR	s Operat	te a Separate 1	Frack at Cro	ssing? 🗆 Y	es 🗶	No		Oo Other Yes, Spe	Railroads Operate On Cify RR ATK	ver Your Track a	at Crossing	g? ⊠ Y	es 🗆 N)
9. Railroad Division o	or Region	 n	10. Railro	ad Subdivisi	ion or D	District		11. Bra	nch or Line Name		12. RR M	lilepost		
2005								_				0065.	230	
□ None ROSE\ 13. Line Segment	/ILLE	14 Nos	☐ None rest RR Tim	Coast	11	5. Parent		None		16. Crossin	(prefix)			(suffix)
*		Station	*	ietable	1.	o. Parent	NN (1)	пиррпсив	ie)	10. Crossiii	ig Owner (іј иррік	.ubie)	
15.0			110.0			N/A				■ N/A				
17. Crossing Type	18. Cro ■ High	ossing Purpose	! 19. Cro	ssing Position	on	20. Publi (if Private			21. Type of Train ✓ Freight	☐ Transit				ge Passenger nt Per Day
■ Public	_	nway, Ped.	□ RR L			☐ Yes	. 0,00	Sirig)	Intercity Passeng		I Use Trans			an One Per Day
☐ Private		ion, Ped.	☐ RR C	ver		□ No			☐ Commuter	☐ Tourist	t/Other		Numbe	r Per Day
23. Type of Land Use ☐ Open Space	□ Farm	n 🗷 Res	idential	☐ Comr	nercial		Indus	trial	☐ Institutional	☐ Recreation	onal	□ RR `	Yard	
24. Is there an Adjac									'A provided)					
□ Yes 🗷 No If	Vac Dray	uido Crossina N	Lumbar			ı ™ No		1 2 4 Uz	□ Dowtiol □ Chicae	go Excused	Data Fa	+ablich	. d	
☐ Yes ■ No If	res, Prov	vide Crossing N 27. Lati		imal degree	·s	LE INC	_	24 Hr Longitud	e in decimal degrees		Date Es		Long So	urce
	□ N/A	(14/660	• • • • • • • • •	37	7.15497	702	(14)	CC04 -1-1		1.6765074		-	•	
30.A. Railroad Use	_ X N/A *	[(WGS8 ²	1 std: nn.nı	innnnn)			(// /		-nnn.nnnnnnn) -12' tate Use * 001E-65			⊠ Actu	dI ⊔	Estimated
30.B. Railroad Use	*							31.B. S	tate Use *					
30.C. Railroad Use	*							31.C. S	tate Use *					
30.D. Railroad Use	*							31.D. S	tate Use *					
32.A. Narrative (Rai	Iroad Us	re) *						32.B. N	larrative (State Use)	*				
33. Emergency Notifi	ication T	elephone No.	(posted)			Contact (Telepi	hone No.)		35. State Con		phone I	Vo.)	
800-848-8715				402-5	544-372					415-703-372				
					Part	t II: Rai	Iroa	d Infor	mation					
1. Estimated Number 1.A. Total Day Thru T	-		ents otal Night 1	hru Trainc	1.0	Total Swi	tchine	Trains	1.D. Total Transit	Trains	1.E. Che	ck if Loc	c Than	
(6 AM to 6 PM) 5	Tallis		to 6 AM)	iliu italiis	2	TOtal Swi	CHIII	3 ITallis	0	Trailis	One Mov	vement	Per Day	□ ek?
2. Year of Train Coun	t Data (Y	YYY)		3. Speed o			_		\			,		
2016				3.A. Maxim					<i>ph)</i> From 30	to_60				
4. Type and Count of	Tracks			э.в. туріса	тэреец	Narige O	vei Ci	USSIIIE (III	phy 110m <u>ee</u>					
Main <u>1</u>	Siding 0	Y	ard 0	Tran	ısit 0		Indi	ustry 0						
5. Train Detection (M		,,	Detecti		DEC				Ness	·				
☐ Constant Warr 6. Is Track Signaled?	ning Time	e 🗌 Motion	Detection	□AFO □		☐ DC Event Rec			None		7.B Re	mote H	ealth Mo	nitoring
Yes No						Yes \square						res ∑		

U. S. DOT CROSSING INVENTORY FORM

A. Revision Date (<i>N</i> 11/12/2016	ЛМ/DD/YYYY)					PAC	GE 2			D. C r 7551	ossing Inve 55D	ntory Num	iber (7 c	har.)	
		P	art III: I	Highway o	r Pathw	ay Tra	affic C	ontrol De							
1. Are there	2. Types of Pa	assive Traff	ic Contro	l Devices asso	ciated with	h the Cro	ossing								
Signs or Signals?	2.A. Crossbuc	:k 2	.B. STOP	Signs (R1-1)	2.C. YIEL	D Signs ((R1-2)	2.D. Advan	ce Warnir	ng Sigr	ns (Check all			е сои	nt) 🗆 None
¥ Yes □ No	Assemblies (c	count) (count)		(count)			■ W10-1 _ □ W10-2 _			☐ W10-3 ☐ W10-4				1
2.E. Low Ground Cl	earance Sign	2.F. Pav	ement Ma	arkings	1	2.	.G. Chan	nelization		2	2.H. EXEMP		2.I. ENS		
(W10-5) □ Yes (sount 0	1	G CL	C				Devices/N			1 2	(R15-3)		Display	ed	
☐ Yes (count <u>0</u> ■ No	/	■ Stop	Lines ng Symbo	, .	mic Envelo		ጃ All App □ One Ap		☑ Mediar □ None	-	□ Yes ¤ No		☐ Yes ☐ No		
2.J. Other MUTCD S	 Signs		s \square No					te Crossing			anced Signs	(List types)			
	3						igns (if p	U				(====,	,		
Specify Type Specify Type		Count	t <u>2</u> t <u>1</u>				∃Yes □	7 N.a							
Specify Type		Coun	t				⊒ res ∟	J NO							
3. Types of Train A	ctivated Warnii	ng Devices	at the Gr	ade Crossing (:	specify cou	unt of ea	ach devic	ce for all that	apply)						
3.A. Gate Arms	3.B. Gate Con	figuration		3.C. Cantile	•	Bridged)) Flashin	g Light			ounted Flash	ning Lights			. Total Count of
(count)	□ 2 Ouad			Structures Over Traffic		1	□Inc	doccont	(count	•		 LED		Fla	shing Light Pairs
Roadway 2	☐ 2 Quad ☐ 3 Quad	☐ Full (Bares) Resistance		Over Traffic	C Lane		⊔ шс	candescent			ent s Included	☐ Side	Lights	_	
Pedestrian		☐ Media		Not Over T	Not Over Traffic Lane $0 \square$ LED				☐ Back Lights Included ☐ Side Lights 7 Included						
3.F. Installation Dat	e of Current			B.G. Wayside Ho	orn				3	Н Нір	hway Traffic	r Signals Co	ontrollin	<u>σ</u>	3.I. Bells
Active Warning Dev		Ύ)		•					Crossing			Jigilais C.	01111 011111	5	(count)
	` 🗷	Not Requi	rea i	□ Yes Insta □ No	alled on (M	1M/YYYY	Y)	J	— ☐ Yes 🖼 No						
3.J. Non-Train Activ	•	Contract of Ci			TI- adlight	·: □ N	Neno			_	ashing Light:		_		
☐ Flagging/Flagma								- 100-barra T	Count		Sp				5
4.A. Does nearby Harring Intersection have	wy 4.B. Hwy Intercon	y Traffic Sig inection	nal 4	I.C. Hwy Traffic	: Signal Pre	emption		5. Highway Tı □ Yes 🗷 I		Signai	S	6. Highwa (Check al	•		g Devices
Traffic Signals?		nterconnec	ted						110			•			Recording
□ V □ No		raffic Signa		Simultaneou	ıs		9	Storage Dista	nce * _					Prese	nce Detection
▼ Yes □ No	□ For W	Varning Sig	ns L	Advance				Stop Line Dist				☐ None			
4.7.60			- cc:					acteristic			C: 12	4			. 12 (6)
1. Traffic Lanes Cros		☐ Two-w	ay Traffic		. Is Roadwa	•	•	3. Does Tr				lights wit	thin appi	rox. 5	ted? (Street 0 feet from
Number of Lanes _ 5. Crossing Surface				wed) Installa	Yes		No /vvvv)			₩ No Width) n *	nearest r			No
☐ 1 Timber ☐ ☐ 8 Unconsolidate	2 Asphalt \square	3 Asphalt	t and Timl	ber 🗆 4 Co	ncrete	I 5 Co	oncrete a	and Rubber	☐ 6 Ru				zengen		
6. Intersecting Roa						7.	. Smalles	st Crossing Ar	ngle			8. Is Cor	mmercia	ıl Pov	ver Available? *
₩ Vaa □ Na	If Yes, Approxin	t. Diete	/6 \	75			□ 0° – 29°	° □ 30°-	F0°		60° - 90°		■ Yes		
Yes □ No	ii res, Approxii	nate Distai	ice (jeet)		V: Dubl			Informati		L A 0	0 - 90		La res	•	□ No
1 Highway Cyatana			1 2 50								Ct-t- I	link	141	1: -le	C
1. Highway System			Z. Fu	nctional Classif ☐ ((0) Rural		_	5	Syster		g on State F	ngnway	4. 1	⊣ıgnv	vay Speed Limit MPH
☐ (01) Inters	tate Highway Sy	ystem	□ (1	1) Interstate	,-,	٠,		Collector	☐ Ye		₫ No			Poste	d 🗆 Statutory
	Nat Hwy Syster		,	2) Other Freewa	,	•	•	Callantan	5. Line	ear Re	ferencing Sy	stem (LRS	Route II	D) *	
□ (08) Non-F	al AID, Not NHS ederal Aid	,	-	3) Other Princip 4) Minor Arteria			7) Local	Collector	6. LRS	Milep	oost *				
7. Annual Average				ted Percent Tru	ucks 9.		arly Used	by School Bu		Day _	0	10. □ Y	_	ncy S No	ervices Route
Submi	ission Infor	mation	- This in	formation i	s used fo	or admí	inistrat	tive purpos	ses and	is no	t availabl	e on the	public	wek	site.
C. le selle e d le				0	•						Diama		-		
Submitted by	rdon for this inf	formation	allastian	Organizat		20 minut	toc por r		uding the		Phone	a instruction		Date	a ovistina data
Public reporting but sources, gathering a															
agency may not cor	nduct or sponso	or, and a pe	rson is no	ot required to,	nor shall a	person l	be subje	ct to a penal	ty for failu	ire to	comply with	n, a collect	ion of in	form	ation unless it
displays a currently													-		•
other aspect of this Washington, DC 20		uuiiig ior re	aucing th	iis puraen to:	miormatio	ni collec	Juon Offi	icer, rederal	raiif0a0 <i>F</i>	aumin	istration, 12	oo new Je	isey AV6	:. 3L,	IVI3-23

Appendix C – At-Grade Crossing Accident Data



DEPARTMENT OF TRANSPORTATION FEDERAL RAILROAD ADMINISTRATION (FRA)

OMB Approval No. 2130-0500

Name Of							Alphab	oetic Code	e RR Accident/Ind	cident No.
Reporting Railroad		S	outhern Pac	ific Tr	ansportation Comp	any [SP]	1a. SP	•	1b. 30698	
2. Other Railroad Involved in Train	Accident/I	ncident					2a.		2b.	
3. Railroad Responsible for Track N	1aintenan	ce Se	outhern Paci	ific Tr	ansportation Compa	any [SP]	3a. SF	•	3b. 30698	
4. U.S. DOT-AAR Grade Crossing I	D No.	755	162N	5. Dat	e of Accident/Incident	05/16/78	6. Time	of Accide	ent/Incident 12:15	AM
7. Nearest Railroad Station			8. Divi	ision		9. County			10. State	Code
MORGAN HILL							A CLARA			6 CA
11. City (if in a city) MORGA			12. Hig	hway N	lame or No. E DUN				✓ Public	Private
,	User Invo	olved		0 1	47.5		pment Involve		24 (15.1	
13. Type C. Truck-trailer F. Bus		J. Other Mo		Code	17. Equipment 1. Train (units pullin	4. Car(s) g) 5. Car(s)	(moving) (standing)		Other (specify) Frain pulling- RCL	Code
A. Auto D. Pick-up truck G. Sch B. Truck E. Van H. Mot	ool Bus	K. Pedestri M. Other (A	2. Train (units push	٥,	. , .	٥,	Frain pushing- RCL	1
	rection	(geograp		Code	3. Train (standing) 18. Position of Car Un		loco(s) (stand	iirig) C.	Train standing- RCL	
•		outh 3. East		4				1		
16. Position 1. Stalled on crossing	3. Mc	oving over cr	ossing	Code	19. Circumstance 1. F	Rail equipme	nt struck highv	vay user		Code
2. Stopped on Crossii		• • • • • • • • • • • • • • • • • • • •		2			nt struck by hig		er	1
20a. Was the highway user and/or in the impact transporting haz			d	Code	20b. Was there a haza	ardous mater	ials release by	/		Code
1. Highway User 2. Rail Eq			4. Neither	4	1. Highway Us	ser 2. Rail	Equipment	3. Both	4. Neither	
20c. State the name and quantity of	f the haza	rdous mater	ial released, if	any						
'	/isibility	(single entry	<i>'</i>)	Code	23. Weather (single	entry)				Code
,	Dawn 2.	Day 3. Du		4	1. Clear 2. Cloudy	/ 3. Rain 4.	Fog 5. Sleet	6. Snow	V	1
24. Type of Equipment Consist 1. Freight train 4	Mark tra	in 7. Yard/S	A. Spec. MoW	/ Equip	25. Track Type Used	•		Code 2	26. Track Number o	Name
(single entry) 2. Passenger train 5			•	Code	Equipment Involv	red	1	,		
3. Commuter train 6	•	•	. ,	1	1. Main 2. Yard	3. Siding	4. Industry	1	MAINLINE	
27. FRA Track 28. Number of	of	29. Number	of 30. Cons	sist Spe	eed (Recorded if availa	ble) Code	31. Time Tab	ole Directi	on	Code
Class Locomoti 2 Units	ve 2	Cars	~ I	ecorde stimate	•	ph E	1 North 2	South 3	. East 4. West	3
	Wig wag				agged by crew		led Crossing	- 1	4. Whistle Ban	Code
Crossing 2. Cantilever FLS 5.					ther (specify)	Warn	ŭ		1. Yes	0000
Warning 3. Standard FLS 6.	Audible		9. Watchman	12. N	one		· ·		2. No	1
Code(s) 01 07						20 sec w	arn min (1)	;	3. Unknown	
35. Location of Warning		С		•	Warning Interconnected	l Code	I .	ng Illumina or Special	ated by Street	Code
 Both Sides Side of Vehicle Approach 		١.		ui nigii	way Signals	1 2	Lights	ог орестат	Lights	
3. Opposite Side of Vehicle App	roach	1	1.	Yes 2	. No 3. Unknown	2	1. Yes	2. No	3. Unknown	2
38. Driver's 39. Driver's Code	40. Drive	r Drove Beh	ind or in Front	of Train	n Code 41. Dri	iver				Code
Age Gender			s Struck by Se						topped on crossing	
1. Male 2. Female		1. Yes 2. N	lo 3. Unknow	vn		Stopped and Did not stop	I then proceed	led 5. O	ther (specify)	5
42. Driver Passed Standing	Code	43. View o	f Track Obscu	red by	(primary obstruction	•				Code
Highway Vehicle			nanent Structu		3. Passing Train 5.		7. Othe			1
1. Yes 2. No 3. Unknown	2	2. Stan	ding railroad e	quipme	ent 4. Topography 6.					8
Casualties to:	Killed	Injured	44. Driver w		ured 3. Uninjured	Code	45. Was Driv		Vehicle?	Code
		-			,		1. Yes			2
46. Highway-Rail Crossing Users	0	0	47. Highway (est. dol		le Property Damage	\$150	48. Total Nu (include o		Highway-Rail Crossin	ng Users)
49. Railroad Employees	0	0			of People on Train	ΨΙΟ			nt Accident /	Code
52. Passengers on Train	0	0	(include	passer	ngers and crew)		Incident 1. Yes		eing Filed	2
53a. Special Study Block	<u> </u>				53b. Special Study Blo	nck	1. 163	2.110		1
54. Narrative Description					1 -52. Special Olday Di					
34. Narrauve Description										
55. Typed Name and Title		56. Signatu	re						57. Date	

DEPARTMENT OF TRANSPORTATION FEDERAL RAILROAD ADMINISTRATION (FRA)

OMB Approval No. 2130-0500

Name Of						Alphal	oetic Code	RR Accident/l	ncident No.
Reporting Railroad		outhern Pac	ific Tr	ansportation Comp	any [SP]	1a. SI	•	1b. 28956	
2. Other Railroad Involved in Train Accide	t/Incident					2a.		2b.	
3. Railroad Responsible for Track Mainter	ance					3a.		3b.	
4. U.S. DOT-AAR Grade Crossing ID No.	755	162N	5. Dat	e of Accident/Incident	05/17/76	6. Time	of Accide	ent/Incident 06:4	40 AM
7. Nearest Railroad Station		8. Div	ision		9. County			10. State	Code
MORGAN HILL						A CLARA			06 CA
11. City (if in a city) MORGAN HI	L	12. Hig	hway N	lame or No. E DUN I	NE ST			✓ Public	Private
Highway User	volved					oment Involve			
13. Type C. Truck-trailer F. Bus		otor Vehicle	Code	17. Equipment 1. Train <i>(units pullir</i>	4. Car(s) ng) 5. Car(s)	(moving) (standing)		Other <i>(specif</i> Frain pulling- RCL	y) Code
A. Auto D. Pick-up truck G. School Bu			В	2. Train (units push	ing) 6. Light l	oco(s) (movi	٥,	rain pushing- RC	. x .
B. Truck E. Van H. Motorcycl 14. Vehicle Speed 15. Direction	M. Other (geographics)		Code	3. Train (standing) 18. Position of Car Un		oco(s) (stand	iing) C. I	Γrain standing- RC	,L
· · · · · · · · · · · · · · · · · · ·	South 3. Eas	t 4. West	4				1		
	Moving over o	rossing	Code	19. Circumstance 1. F		•	•		Code
Stopped on Crossing 4. 20a. Was the highway user and/or rail equ		2d	0 1 -	2. F 20b. Was there a haza	Rail equipmer			er	2
in the impact transporting hazardous	•	,u	Code	200. Was there a maze	ardous materi	als release by	'		Code
1. Highway User 2. Rail Equipme	3. Both	4. Neither	4	1. Highway U	ser 2. Rail	Equipment	3. Both	4. Neither	
20c. State the name and quantity of the ha	zardous mate	rial released, it	fany						
21. Temperature 22. Visibilit	(single entr	v)	Code	23. Weather (single	entry)				Code
'	2. Day 3. Du	•	1	1. Clear 2. Cloudy	• /	Foa 5. Sleet	6. Snow	I	1
24. Type of Equipment		A. Spec. MoV	1		•		1	26. Track Number	or Name
	rain 7. Yard/			Equipment Involv	•		Code 2	LO. Track Number	or ivaile
(single entry) 2. Passenger train 5. Singl 3. Commuter train 6. Cut of	•	` '	Code	1. Main 2. Yard	l 2 Siding	4. Industry	1	MAIN LINE	
27. FRA Track 28. Number of	29. Numbe			eed (Recorded if availa		31. Time Tal			Code
Class Locomotive	Cars		sist opi Recorde	•	ibie) Code	SI. IIIIle Tai	DIE DITECTI	OH	Loue
4 Units	0	1 E. E	stimate	ed 15 m	ph E	1. North 2	South 3.	East 4. West	3
32. Type of 1. Gates 4. Wig w	•			lagged by crew		ed Crossing	3.	4. Whistle Ban	Code
Crossing 2. Cantilever FLS 5. Hwy. Warning 3. Standard FLS 6. Audib	•	Stop signs Watchman	11. O	ther (specify)	Warn	ing		1. Yes 2. No	
Code(s) 01 07		o. waterman	12.14	<u> </u>	Allgd. n	o warn (4);		3. Unknown	
35. Location of Warning	(Code 36. Cr	ossing '	Warning Interconnected	Code	37. Crossir	ng Illumina	ated by Street	Code
1. Both Sides	1	wi	th High	way Signals	1	Lights	or Special	Lights	
Side of Vehicle Approach Opposite Side of Vehicle Approach		1 1.	Yes 2	2. No 3. Unknown	2	1. Yes	2. No	3. Unknown	1
	er Drove Bel	nind or in Front	of Trai	n Code 41. Dr	iver				Code
		as Struck by Se						opped on crossing	g
1. Male 2. Female	1. Yes 2. I	No 3. Unknov	vn	1 /4	Stopped and Did not stop	then proceed	led 5. O	ther (specify)	5
42. Driver Passed Standing Co	e 43. View o	of Track Obscu	red by	(primary obstruction					Code
Highway Vehicle		manent Structu		3. Passing Train 5.			r (speci		1 -
1. Yes 2. No 3. Unknown 2	2. Stai	nding railroad e	equipme	ent 4. Topography 6.	Highway Ver	nicles 8. Not	Obstructe	d	8
Casualties to: Killed	Injured	44. Driver w			Code	45. Was Dri		Vehicle?	Code
Odddailloo to.	Injurou	1. Kille	d 2. Inj	ured 3. Uninjured	3	1. Yes			1
46. Highway-Rail Crossing Users 0	0		•	le Property Damage				lighway-Rail Cros	
		(est. do		· ·	\$200	(include		nt Accident /	1 Code
49. Railroad Employees 0	0	1		of People on Train ngers and crew)			Report Be		Code
52. Passengers on Train 0	0	(,,,,,,,,,,	- P4000.	igere and even,		1. Yes	2. No		2
53a. Special Study Block				53b. Special Study Bl	ock				
54. Narrative Description									
55 Typod Name and Title	56 Si	ıro						E7 Data	
55. Typed Name and Title	56. Signati	ii C						57. Date	

DEPARTMENT OF TRANSPORTATION FEDERAL RAILROAD ADMINISTRATION (FRA)

OMB Approval No. 2130-0500

Name Of							Alphat	etic Coc	de RR Acc	ident/Incid	dent No.
Reporting Railroad		A	mtrak (Nati	onal R	Railroad Passenger C	orporation	1) 1a. A	ГΚ	1b. 102	2409	
2. Other Railroad Involved in Train	Accident/I	ncident					2a.		2b.		
3. Railroad Responsible for Track M	laintenand	ce U	nion Pacific	Railro	oad Company [UP]		3a. U]	P	3b. XX	X	
4. U.S. DOT-AAR Grade Crossing I	D No.		155D	1	e of Accident/Incident	10/12/06	6. Time	of Accid	ent/Incident	08:32 I	PM
7. Nearest Railroad Station			8. Div	ision		9. County			10. State		Code
SAN JOSE			PAC			•	A CLARA		Abbı		CA
11. City (if in a city) MORGA			12. Hig	hway N	lame or No. CITY:				✓ Publ	ic P	rivate
	User Invo	olved		0-4-	47 Faulian and		pment Involve		O41 /	:6.	0-4-
13. Type C. Truck-trailer F. Bus		J. Other Mo		Code	17. Equipment 1. Train (units pulling	4. Car(s) g) 5. Car(s)	(moving) (standing)	8. A.	Other (Train pulling	specify) - RCL	Code
A. Auto D. Pick-up truck G. Sch B. Truck E. Van H. Mot	ool Bus orcycle	K. Pedestri M. Other (В	2. Train (units pushir	0,	loco(s) (movii loco(s) (stand	0,	Train pushin Train standir	٠ ١	1
	rection	(geograp	,	Code	Train (standing) Standing) Standing) Standing)		oco(s) (stand	irig) C.	Train Standii	ig- KCL	
·		outh 3. East	t 4. West	1				1			
16. Position 1. Stalled on crossing		ving over cr	ossing	Code 3	19. Circumstance 1. R		•	•		1	Code
Stopped on Crossir 20a. Was the highway user and/or r		• • • • • • • • • • • • • • • • • • • •	d	Code	20b. Was there a hazar		nt struck by hig ials release by		sei .		Code
in the impact transporting haza			-				•			1	4
1. Highway User 2. Rail Eq	uipment	3. Both	4. Neither	4	1. Highway Us	er 2. Rail	Equipment	3. Both	4. Neither		
20c. State the name and quantity of	the haza	rdous mater	ial released, if	any							
21. Temperature 22. V	/isibility (single entry)	Code	23. Weather (single e	entry)					Code
(specify if minus) 65 °F 1. [Dawn 2.	Day 3. Du	sk 4. Dark	4	1. Clear 2. Cloudy	3. Rain 4.	Fog 5. Sleet	6. Sno	w		1
24. Type of Equipment			A. Spec. MoW	/ Equip	25. Track Type Used b	bv Rail		Code	26. Track Nu	umber or N	Name
		in 7. Yard/S	0		Equipment Involve	•					
(single entry) 2. Passenger train 5. 3. Commuter train 6.	•	•	. ,	Code 2	1. Main 2. Yard	3. Siding	4. Industry	1	MAIN		
27. FRA Track 28. Number of	of	29. Number	of 30. Con	sist Spe	leed (Recorded if availab	ole) Code	31. Time Tab	ole Direc	tion		Code
Class Locomoti 4 Units	ve 2	Cars 1		ecorde stimate	_	oh E	1 North 2	South 1	3. East 4. V	Noot	1
	Wig wags		-		ed <u> </u>		led Crossing		34. Whistle E		Code
Crossing 2. Cantilever FLS 5.	Hwy. traff	fic signals 8	B. Stop signs	11. O	ther (specify)	Warn	ŭ	,	1. Yes	odii	Code
Warning 3. Standard FLS 6.			9. Watchman			20,000 11	arn min (1)	.	2. No 3. Unkno		2
Code(s) 01 02 35. Location of Warning	03				07 Warning Interconnected	Code	1		nated by Stre		Code
1. Both Sides		· ·		•	way Signals	Oodc		or Specia	•	· Ct	Oode
2. Side of Vehicle Approach		1		V 0	No. O Halmann	1	4 ٧	0 N-	0. 11-1	. 1	1
3. Opposite Side of Vehicle App					2. No 3. Unknown		1. Yes	2. NO	3. Unknowr	1	
			ind or in Front s Struck by Se				d or thru the g	oto 1 C	Stannad on a	rossina	Code
4 Mala			lo 3. Unknov		29		then proceed				_
40 1. Wale 1 2. Female 1						Did not stop				,,	1
42. Driver Passed Standing	Code		f Track Obscu	,	(primary obstruction	,	- 0.1	,			Code
Highway Vehicle 1. Yes 2. No 3. Unknown	2		nanent Structu ding railroad e		3. Passing Train 5. \ ent 4. Topography 6. H			r (sped Obstructe			8
			44. Driver w	as	C	ode	45. Was Driv	ver in the	Vehicle?		Code
Casualties to:	Killed	Injured	1. Killed	d 2. Inj	ured 3. Uninjured	1	1. Yes	2. No			1
			47. Highway	/ Vehic	le Property Damage		48. Total Nu	mber of	Highway-Rai	I Crossing	Users
46. Highway-Rail Crossing Users	1	0	(est. dol	lar dam	nage)	\$3,000	(include	driver)		1	
49. Railroad Employees	0	0			of People on Train				ent Accident Being Filed	/	Code
52. Passengers on Train	0	0	(include	passer	ngers and crew)	185	1. Yes		cing riled		1
53a. Special Study Block		'			53b. Special Study Blo	ock					
54. Narrative Description TRAIN NO.#14 OPERATING WITH	LOCOMO	OTIVES 114/:	507 AND 10 C	ARS ST	RUCK A TRUCK AT MP	65.3, TILTO	N AVE CROS	SING.			
55. Typed Name and Title		56. Signatu	re						57. D	ate	

Appendix D - Quiet Zone Calculator Results



Home | Help | Contact | logoff don.sepulveda@mbakerintl.com

Cancel Change Scenario: MORGAN HIL_49751 ▼ Continue

Create New Zone Manage Existing Zones Log Off

Crossing	Street	Traffic	Warning Device	Pre-SSM	SSM	Risk	
755155D	TILTON AVENUE	25	Gates	13	6	1,857.81	MODIFY
75515 9 F	EAST MAIN AVENUE	5500	Gates	0	6	7,231.32	MODIFY
755162N	EAST DUNNE AVENUE	15000	Gates	13	0	37,016.64	MODIFY
920463M	MORGAN HILL PED X	0	Gates	0	0	144.28	MODIFY

Step by Step Instructions:

Step 1: To specify New Warning Device (For Pre-Rule Quiet Zone Only) and/or SSM, click the <u>MODIFY</u> Button

Step 2: Select proposed warning device or SSM. Then click the <u>UPDATE</u> button.To generate a spreadsheet of the values on this page, click on <u>ASM</u> button—This spreadsheet can then be used for ASM calculations.

Step 3: Repeat Step (2) until the SELECT button is shown at the bottom right side of this page. Note that the SELECT button is shown ONLY when the Quiet Zone Risk Index falls below the NSRT or the RIsk Index with Horn.

Step 4: To save the scenario and continue, click the SELECT button

* Only Public At Grade Crossings are listed.

Click for Supplementary Safety Measures [SSM]

Click for ASM spreadsheet: ASM * Note:The use of ASMs requires an application to and approval from the FRA.

Proposed Quiet Zone:	Morgan Hil
Type:	New 24-hour QZ
Scenario:	MORGAN HIL_49751
Estimated Total Cost:	\$256,000.00
Nationwide Significant Risk Threshold:	14347 .00
Risk Index with Horns:	38527.46
Quiet Zone Risk Index:	11562.51
Select	1

Appendix E - Conceptual Cost Estimate



City of Morgan Hill

Cost Estimate At-Grade Crossing Design Summary

East Dunne Avenue				
	Civil Work	359,434		
	Signal Work	\$ 151,600		
	Total		\$	511,034
Morgan Hill Train Station Pedes	strian Crossing			
	Civil Work	\$ 29,044		
	Signal Work	\$ 95,900		
	Total		\$	124,944
East Main Street				
	Civil Work	260,955		
	Signal Work	\$ 440,780		
	Total		\$	701,735
Tilton Avenue				
	Civil Work	239,335		
	Signal Work	\$ 440,495		
	Total		\$	679,830
Totals				
	Subtotal		\$	2,017,543
	Contingency	30%	\$	605,263
	Total		\$	2,622,805
	Mobilization and			
	Demobilization	10%	\$	262,280.53
	Agency Costs	8%		209,824.42
	Engineering (Civil)	10%		262,280.53
	Engineering (Railroad)	10%		112,877.50
	Permitting	5%		131,140.26
	remitting	3/0	\$	
			Ŷ	4,206,471

City of Morgan Hill East Dunne Avenue

Cost Estimate At-Grade Crossing Design

Roadway Cost

Demolish and Remove		Unit	Quantity	Unit (Cost	Cost		Tota	l
	Median	SY	0	\$	14	\$	-		
	Asphalt Paving	SY	815	\$	12	\$	9,780		
	Crossing Panel	TF	114	\$	45	\$	5,130		
	Curb and Gutter	LF	90	\$	6.25	\$	563		
	Curb Ramp	EA	0	\$	1,000	\$	-		
	Detectable Warning Strip	LF	0	\$	10	\$	-		
	Sidewalk	SY	145	\$	6.25	\$	906		
	Landscaped Area	SY	0	\$	2.50	\$	-		
	Chain Link Fence	LF	0	\$	6.25	\$	-		
	Pedestian Railing	LF	0	\$	25	\$	-		
	Signing and Striping	SF	0	\$	3.50	\$	-		
Subtotal								\$	16.37

Roadway Cost

Construct		Unit	Quantity	Unit	Cost	Cos	st	Tota	al
	Median	LF	0	\$	375	\$	-		
	Asphalt Paving (4")	SF	815	\$	37	\$	30,155		
	Crossing Panel	TF	130	\$	1,500	\$	195,000		
	Curb and Gutter	LF	90	\$	25	\$	2,250		
	Curb Ramp	EA	0	\$	6,200	\$	-		
	Detectable Warning Strip	SF	100	\$	25	\$	2,500		
	Sidewalk	SF	1280	\$	65	\$	83,200		
	Landscaped Area	SF	0	\$	50	\$	-		
	Chain Link Fence	LF	0	\$	150	\$	-		
	4' High Welded Wire Fence	LF	0	\$	150	\$	-		
	Pedestian Railing	LF	50	\$	150	\$	7,500		
	Pedestrian Swing Gate	EA	4	\$	2,500	\$	10,000		
	Retaining Wall	LS	1	\$	10,000	\$	10,000		
	W10-9P Sign	EA	2	\$	100	\$	200		
	Signing and Striping	LF	90	\$	25	\$	2,250		
Subtotal		•	-		•			\$	343,055

Signal		Unit	Quantity	Unit	Cost	Cos	t	Tota	al
	Exit Gates and Gate								
	Management System	EA	0	\$	128,000	\$	-		
	Pedestrian Gate	EA	4	\$	25,000	\$	100,000		
	Conduit	LF	400	\$	19	\$	7,600		
	Additional Track Circuitry	EA	1	\$	44,000	\$	44,000		
	System Integrated								
	Preemption	EA	0	\$	33,000	\$	-		
	Exit Gate Detection	EA	0	\$	16,400	\$	-		
Subtotal								\$	151,600
Subtotal (all categories)		·			•		•	\$	511,034
Contingency			30%					\$	153,310
Total							•	\$	664,344

City of Morgan Hill Morgan Hill Train Station Pedestrian Crossing

Cost Estimate At-Grade Crossing Design

Civil Cost

Demolish and Remove		Unit	Quantity	Unit C	Cost	Cost		Total
	Median	SY	0	\$	14	\$	-	
	Asphalt Paving	SY	0	\$	12	\$	-	
	Crossing Panel	TF	0	\$	45	\$	-	
	Curb and Gutter	LF	0		6.25	\$	-	
	Curb Ramp	EA	0	\$	1,000	\$	-	
	Detectable Warning Strip	LF	0	\$	10	\$	-	
	No. 8 Signal	EA	4	\$	625	\$	2,500	
	Sidewalk	SY	35	\$	6.25	\$	219	
	Swing Gate	EA	2	\$	100	\$	200	
	Landscaped Area	SY	0	\$	2.50	\$	-	
	Chain Link Fence	LF	0	\$	6.25	\$	-	
	Pedestian Railing	LF	0	\$	25	\$	-	
	Signing and Striping	SF	0	\$	3.50	\$	-	
Subtotal								\$ 2,9

Roadway Cost

Construct		Unit	Quantity	Uni	t Cost	Cost		Tota	al
	Median	LF	0	\$	375				
	Asphalt Paving (4")	SF	0	\$	37	\$	-		
	Crossing Panel	TF	0	\$	1,500	\$	-		
	Curb and Gutter	LF	0	\$	25	\$	-		
	Curb Ramp	EA	0	\$	6,200	\$	-		
	Detectable Warning Strip	SF	55	\$	25	\$	1,375		
	Sidewalk	SF	300	\$	65	\$	19,500		
	4' High Welded Wire Fence	LF	15	\$	150	\$	2,250		
	Landscaped Area	SF	0	\$	50	\$	-		
	Chain Link Fence	LF	0	\$	150	\$	-		
	Pedestian Railing	LF	20	\$	150	\$	3,000	1	
	Pedestrian Swing Gate	EA	0	\$	2,500	\$	-		
	Signing and Striping	LF	0	\$	25	\$	-		
Subtotal								Ś	26.125

Signal		Unit	Quantity	Un	it Cost	Cost		Tot	al
	Exit Gates and Gate								
	Management System	EA	0	\$	128,000	\$	-		
	Conduit	LF	100	\$	19	\$	1,900		
	Additional Track Circuitry	EA	1	\$	44,000	\$	44,000		
	Pedestrian Gate	EA	2	\$	25,000	\$	50,000		
	System Integrated								
	Preemption	EA	0	\$	33,000	\$	-		
	Exit Gate Detection	EA	0	\$	16,400	\$	-		
Subtotal								\$	95,900
Subtotal (all categories)		•			•	•		\$	124,944
Contingency			30%					\$	37,483
Total		•	•		•	•		ς	162 427

City of Morgan Hill East Main Street

Cost Estimate At-Grade Crossing Design

Roadway Cost

Demolish and Remove		Unit	Quantity	Unit	Cost	Cost		Total	-
	Median	SY	0	\$	14	\$	-		
	Asphalt Paving	SY	770	\$	12	\$	9,240		
	Crossing Panel	TF	0	\$	45	\$	-		
	Curb and Gutter	LF	105	\$	6.25	\$	656		
	Curb Ramp	EA	0	\$	1,000	\$	-		
	Detectable Warning Strip	LF	0	\$	10	\$	-		
	Sidewalk	SY	195	\$	6.25	\$	1,219		
	Landscaped Area	SY	0	\$	2.50	\$	-		
	Chain Link Fence	LF	0	\$	6.25	\$	-		
	Pedestian Railing	LF	0	\$	25	\$	-		
	Signing and Striping	SF	0	\$	3.50	\$	-		
Subtotal								\$	11,115

Civil Cost

Construct		Unit	Quantity	Unit	Cost	Cos	t	Tota	al
	Median	LF	0	\$	375	\$	-		
	Asphalt Paving (4")	SF	770	\$	37	\$	28,490		
	Crossing Panel	TF	16	\$	1,500	\$	24,000		
	Curb and Gutter	LF	105	\$	25	\$	2,625		
	Curb Ramp	EA	2	\$	6,200	\$	12,400		
	Detectable Warning Strip	SF	100	\$	25	\$	2,500		
	Sidewalk	SF	1725	\$	65	\$	112,125		
	4' High Welded Wire Fence	LF	310	\$	150	\$	46,500		
	Landscaped Area	SF	0	\$	50	\$	-		
	Chain Link Fence	LF	0	\$	150	\$	-		
	Pedestian Railing	LF	60	\$	150	\$	9,000		
	W10-9P Sign	EA	2	\$	100	\$	200		
	Pedestrian Swing Gate	EA	4	\$	2,500	\$	10,000		
	Signing and Striping	LF	80	\$	25	\$	2,000		
Subtotal								\$	249,840

Signal		Unit	Quantity	Un	it Cost	Cos	t	Tot	al
	Exit Gates and Gate								
	Management System	EA	2	\$	128,000	\$	256,000		
	Conduit	LF	420	\$	19	\$	7,980		
	Additional Track Circuitry	EA	1	\$	44,000	\$	44,000		
	Pedestrian Gate	EA	4	\$	25,000	\$	100,000		
	System Integrated								
	Preemption	EA	0	\$	33,000	\$	-		
	Exit Gate Detection	EA	2	\$	16,400	\$	32,800		
Subtotal								\$	440,780
Subtotal (all categories)								\$	701,735
Contingency			30%		<u> </u>		·	\$	210,521
Total								\$	912,256

City of Morgan Hill Tilton Avenue

Cost Estimate At-Grade Crossing Design

Roadway Cost

Demolish and Remove	Unit	Quantity	Unit (Cost	Cost		Total
Median	SY	0	\$	14	\$	-	
Asphalt Paving	SY	740	\$	12	\$	8,880	
Crossing Panel	TF	0	\$	45	\$	-	
Curb and Gutter	LF	95	\$	6.25	\$	594	
Curb Ramp	EA	0	\$	1,000	\$	-	
Detectable Warning S	trip LF	0	\$	10	\$	-	
Sidewalk	SY	145	\$	6.25	\$	906	
Landscaped Area	SY	0	\$	2.50	\$	-	
Chain Link Fence	LF	0	\$	6.25	\$	-	
Pedestian Railing	LF	0	\$	25	\$	-	
Signing and Striping	SF	0	\$	3.50	\$	-	

Roadway Cost

Construct		Unit	Quantity	Uni	t Cost	Cost		Tot	al
	Median	LF	0	\$	375	\$	-		
	Asphalt Paving (4")	SF	740	\$	37	\$	27,380		
	Crossing Panel	TF	16	\$	1,500	\$	24,000		
	Curb and Gutter	LF	95	\$	25	\$	2,375		
	Curb Ramp	EA	2	\$	6,200	\$	12,400		
	Detectable Warning Strip	SF	100	\$	25	\$	2,500		
	Sidewalk	SF	1290	\$	65	\$	83,850		
		LF							
	4' High Welded Wire Fence		305	\$	150	\$	45,750		
	Landscaped Area	SF	0	\$	50	\$	-		
	Chain Link Fence	LF	0	\$	150	\$	-		
	Pedestian Railing	LF	55	\$	150	\$	8,250		
	Retaining Wall	LS	1	\$	10,000	\$	10,000		
	W10-9P Sign	EA	2	\$	100	\$	200		
	Pedestrian Swing Gate	EA	4	\$	2,500	\$	10,000		
	Signing and Striping	LF	90	\$	25	\$	2,250		
ubtotal								Ś	228.95

Signal		Unit	Quantity	Un	it Cost	Cost	t	Tot	al
	Exit Gates and Gate								
	Management System	EA	2	\$	128,000	\$	256,000		
	Conduit	LF	405	\$	19	\$	7,695		
	Additional Track Circuitry	EA	1	\$	44,000	\$	44,000		
	Pedestrian Gate	EA	4	\$	25,000	\$	100,000		
	System Integrated								
	Preemption	EA	0	\$	33,000	\$	-		
	Exit Gate Detection	EA	2	\$	16,400	\$	32,800		
Subtotal								\$	440,495
Subtotal (all categories)								\$	679,830
Contingency			30%					\$	203,949
Total								\$	883,779

