



FINAL SOLANO RAIL CROSSING INVENTORY AND IMPROVEMENT PLAN



PREFACE

Rail transportation has always played an important part in Solano County life, and it continues to do so today. Raw materials and manufactured products are moved to and from businesses from one end of the county to the other, and hundreds of Solano residents commute to and from work every day by rail, as an alternative to driving on the congested freeways.

But the benefits of rail transportation come at a cost to the local communities. Where streets and railroad tracks cross, trains take priority over cars, resulting in traffic back-ups on local streets until the train has cleared the area. Sometimes cars or pedestrians just don't get out of the way in time, resulting in injuries or fatalities.

The Solano Rail Crossing Inventory and Improvement Plan has been developed to provide a complete inventory of rail crossings in Solano County; to identify where those crossings have negative impacts on vehicle and pedestrian safety; and, to recommend a prioritized series of improvements to reduce those negative impacts.

Contents

PREFACE 2

Executive Summary..... 5

STUDY PARTNERS..... 82

CROSSING INVENTORY..... 8

 NORTHEAST SOLANO COUNTY..... 10

 Northeast Rural Solano County 11

 City of Dixon 14

 North Central Rural Solano County..... 17

 CENTRAL SOLANO COUNTY 22

 City of Fairfield 23

 Table 5 – Fairfield -Pennsylvania Avenue to I-80..... 26

 Figure 5a – Fairfield -Pennsylvania Avenue to Thomasson Lane 30

 Figure 5b – Fairfield –Thomasson Lane to Red Top Road..... 31

 City of Suisun City 32

 Rural Solano County – Suisun Marsh 35

 WESTERN SOLANO COUNTY 39

 City of Benicia 40

 Table 8a – City of Benicia Combined Track and Main Track 1 40

 Table 8b – City of Benicia Main Track 2 41

 Table 8c – City of Benicia Spurs and Sidings 42

 Figure 8a – City of Benicia Combined Track and Main Tracks 1 and 2 46

 Figure 8b – City of Benicia Spurs and Sidings..... 47

 City of Vallejo 48

 Mare Island 57

 EASTERN SOLANO COUNTY 63

 Solano County East of Fairfield 64

ACCIDENT HISTORY 69

RAIL TRAFFIC 75

 Main Line Freight Traffic 75

Main Line Passenger Traffic 75

Side Line Freight Traffic..... 75

ROADWAY CONGESTION 75

AREAS FOR FUTURE INVESTMENT 76

Options for Improving Mobility and Safety 76

 Grade Separation 77

 Access Control..... 77

 Crossing Improvements 77

Areas with Mobility and/or Safety Issues 77

Funding Options..... 80

Recommended Priorities 81

 Priority Construction Project: 82

 Priority Planning Projects:..... 82

Executive Summary

The Solano Transportation Authority (STA), in association with the Capitol Corridor Joint Powers Authority (CCJPA), identified the need to develop a comprehensive plan to improve safety and reduce surface street congestion related to railroad crossings in Solano County. In addition, several Solano County cities and the County of Solano raised the issue about looking at Solano's rail crossings comprehensively. In order to develop an improvement plan, a comprehensive inventory of railroad crossings and accident involving trains was needed first.

The Solano rail crossing inventory identified 237 individual rail crossings, including at-grade street crossings, informal – and illegal – pedestrian crossings between street crossings and grade separations with roadways over or under rail lines, as well as crossings of agricultural drains, streams and industrial pipelines.

The accident inventory lists 26 rail-related accidents since January 1 of 2000, accounting for 10 deaths and 22 injuries. The accidents are clustered in three primary areas:

- The City of Dixon, around State Route 113 and the West B Street pedestrian crossing
- The cities of Fairfield and Suisun City, from East Tabor Avenue to the State Route 12 overcrossing between the two cities' downtowns
- The City of Vallejo, around Broadway Street and Sereno Drive.

The plan uses the Napa-Solano Travel demand model to project traffic patterns and volumes for the year 2030. The plan identifies 11 at-grade rail crossings where year 2030 traffic will exceed 80% of the roadway's capacity, a standard indication of a congested roadway. Of these 11 crossings, 1 is in the City of Dixon, 2 are in the City of Fairfield, 3 in the City of Suisun City, and 5 are in the City of Vallejo.

The plan did not identify any transit centers that were negatively impacted by rail traffic or by surface street congestion to which rail traffic contributed. Two schools were identified with access directly impacted by traffic congestion at a rail crossing are Vanden High and Golden West Middle, located south of the Union Pacific Rail Road tracks and east of Peabody Road in eastern Fairfield.

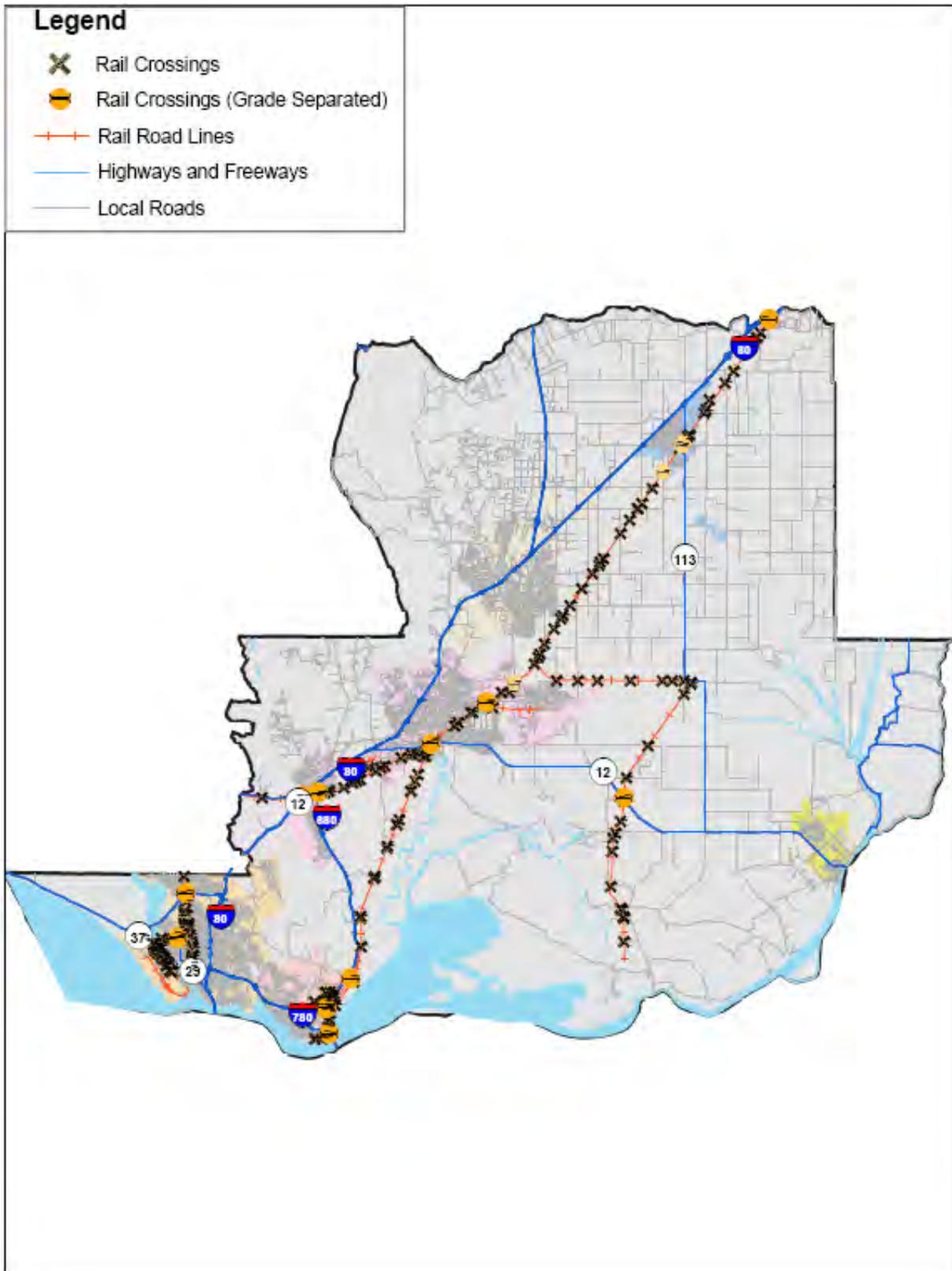
Based upon the inventory of crossings and accidents and projected future traffic congestion, the Solano Rail Crossing Inventory and Improvement Plan recommends four areas where future investment in rail safety and congestion relief should be concentrated:

- City of Dixon, from SR 113 to West A Street
- City of Fairfield, Peabody Road crossing
- City of Fairfield and City of Suisun City, East Tabor Avenue to SR 12 overcrossing
- City of Vallejo, Broadway Avenue north of Sereno Drive, subject to an increase in rail traffic to Mare Island

The plan additionally recommends a focus on investment in access control, as a way to focus bicycle and pedestrian traffic in the improved, designated rail crossings.

The plan identifies the estimated cost of converting at-grade rail crossings to grade-separated crossings, typically by raising the roadway over the tracks. Because the typical 2007 cost to construct a grade separation was \$26 million, the rail plan does not recommend an extensive program of grade separations. Instead, the plan recommends only pursuing grade separation projects where traffic congestion or safety issues are most significant: Peabody Road in eastern Fairfield, and the West B Street pedestrian crossing in Dixon. The Peabody Road grade separation will be constructed as a part of the Fairfield/Vacaville Intermodal Transportation Station, so no additional funds are recommended for that task. The plan does recommend pursuing additional funds for the West B Street pedestrian crossing. In addition, the rail plan recommends pursuing planning funds for the Blossom Drive pedestrian overcrossing from Suisun City to Fairfield, in the East Tabor to SR 12 corridor. Finally, the plan recommends working with each jurisdiction to identify opportunities to fund access control improvements.

Solano County Rail System Overview



PURPOSE

The purpose of the Solano Rail Crossing Inventory and Improvement Plan is:

- To provide a comprehensive listing of rail crossings in Solano County, including
 - At-grade crossings by public surface streets, highways and bicycle/pedestrian paths
 - Grade-separated crossings by public surface streets, highways, freeways and bicycle/pedestrian paths
 - Private and unofficial at-grade and grade-separated crossings
 - Crossings of industrial facilities such as pipelines, and of drainage and irrigation facilities and natural creeks
- To provide a database, starting in the year 2000, of all rail-vehicle and rail-pedestrian accidents
- To identify sensitive users near rail crossings, including
 - Schools
 - Transit Centers
- To identify current and projected future roadways suffering from traffic congestion around rail crossings
- To create a database and base map that can be updated on a periodic basis to keep the information current and relevant to decision makers and the public
- To identify key areas where improvements to rail crossings can improve the safety of both rail and road travelers, and/or result in reduced traffic congestion on local roadways
- To develop a prioritized list of key rail crossing improvements

CROSSING INVENTORY

The following is a summary of the rail facilities and rail crossings, both public and private, in 6 of the 7 Solano County cities and in unincorporated Solano County. The cities are listed in an east-to-west, north-to-south order along the main Union Pacific Rail road (UPRR) line, followed by Vallejo, which is not on the UPRR. The City of Rio Vista is not served by any rail lines, so is not included in the inventory. Crossing maps and 4-way photos can be found in Appendix A.

The rail data presented includes the following fields:

Street/Property – the location of the crossing, whether it is a public street, private driveway, or a bridge across a pipeline, creek or drainage ditch. Roads crossing over railroads are identified as Overcrossings; where the railroad crosses above the roadway, it is identified as a Crossover.

Crossing ID – where there is an assigned crossing ID (provided to STA by Wilson Company), it is provided. The owner/operator of the rail line at that point is also provided. For crossings without an assigned ID, STA has assigned an ID number using the following criteria:

- Road crossings without an official crossing ID have been assigned identifier SOL, and numbered sequentially with a 3-digit number starting with 001 (example SOL 001).

- Non-road crossings, such as drainages, creeks and pipelines without an official crossing ID have been assigned identifier SOL, and numbered sequentially with a 3-digit number starting with 501 (example (SOL 501).
- Private road crossings without an official crossing ID have been assigned identifier PC, and numbered sequentially with a 3-digit number starting with 601 (example PC 601).

Street Data – description of the street or other structure that crosses or is crossed by the rail line, and the material that makes up the crossing (concrete, asphalt, wood, metal, gravel).

Traffic – Where available, information on the peak-hour volume of street traffic is listed, rounded to the nearest 25 vehicles. Data is taken from traffic counts, studies or the STA traffic model. Low volume streets are listed as “less than 100” peak hour trips. Where the existing or future traffic is projected to be congested, the Level of Service (LOS) of a crossing is provided, based upon the Volume to Capacity Ratio. Traffic volumes on unpaved or private roads are unknown. Crossings of pipelines, creeks and drainage ditches have no surface vehicle traffic. Informal pedestrian crossings have no surface vehicle traffic, and pedestrian use has not been counted or monitored.

Signage/Guards – information provided by Wilson Company or available from aerial photos showing on-street signs and warning or control structures.

NORTHEAST SOLANO COUNTY

Northeast Solano County consists of the areas from the Solano County/Yolo County border to the Canon Road crossing of the UPRR tracks just northeast of the City of Fairfield, as shown in the accompanying map. Rail crossings in this area are described in Tables 1 (Northeast Rural Solano County), 2 (City of Dixon) and 3 (North Central Rural Solano County).

Northeast Solano County



Northeast Rural Solano County

The UPRR tracks enter Solano County from Yolo County where the tracks pass under Interstate 80. The railroad crosses Putah Creek and then runs from northeast to southwest through open agricultural areas used for row crop farming. The railroad tracks from I-80 to the City of Dixon cover 5.1 miles. All but 1 crossing in this area are at grade.

Table 1 – Northeast Rural Solano County

Street/Property	Crossing ID	Street Data	Traffic	Signage/Guards
I-80 Overcrossing	751238D 751239K UPRR Milepost 0.0	Grade Separated. 6 lanes eastbound, 5 lanes westbound; 2 structures. No sidewalk.	None – grade separated	No signage or controls
Old Davis Road	751241L UPRR Milepost 73.9	4 lanes, undivided; 45 degree angle; concrete apron; Class II bike lane on each side of road.	< 100	Painted on-street notice 450 feet; 2 gates
Levee Road	SOL 002 UPRR	Gravel road parallel to and on north side of Putah Creek; crossing unpaved. Road branches 200 feet before and after railroad with cutoff loop under the railroad overcrossing. No sidewalk.	Unknown	No signage or controls
Putah Creek	SOL 501 UPRR	No street. Bridge over Putah Creek	None	No signage or controls
Levee Road (Old Vineyard Road?)	SOL 003 UPRR	Unpaved road parallel to and on south side of Putah Creek; crossing unpaved. No sidewalk.	Unknown	No signage or controls
Agricultural Drain	SOL 502 UPRR	No street. Bridge over un-named agricultural drain.	None	No signage or controls

Street/Property	Crossing ID	Street Data	Traffic	Signage/Guards
Tremont Road	751246V UPRR	4 lanes undivided; 45 degree angle; concrete apron. No sidewalk.	< 100	Painted on-street notice 450 feet; 2 gates; overhead lights each direction.
Robben Road	751247C UPRR Milepost 70.9	2 lanes, painted divider; 45 degree angle; concrete apron. No sidewalk.	< 100	Painted on-street notice 500 feet; 2 gates; overhead lights each direction.
Campbell Soup	PC-601	Gravel crossing for trucks at Campbell Soup processing center; track appears to be unused, covered by gravel	Unknown	Unknown

Figure 1 – Northeast Rural Solano County



City of Dixon

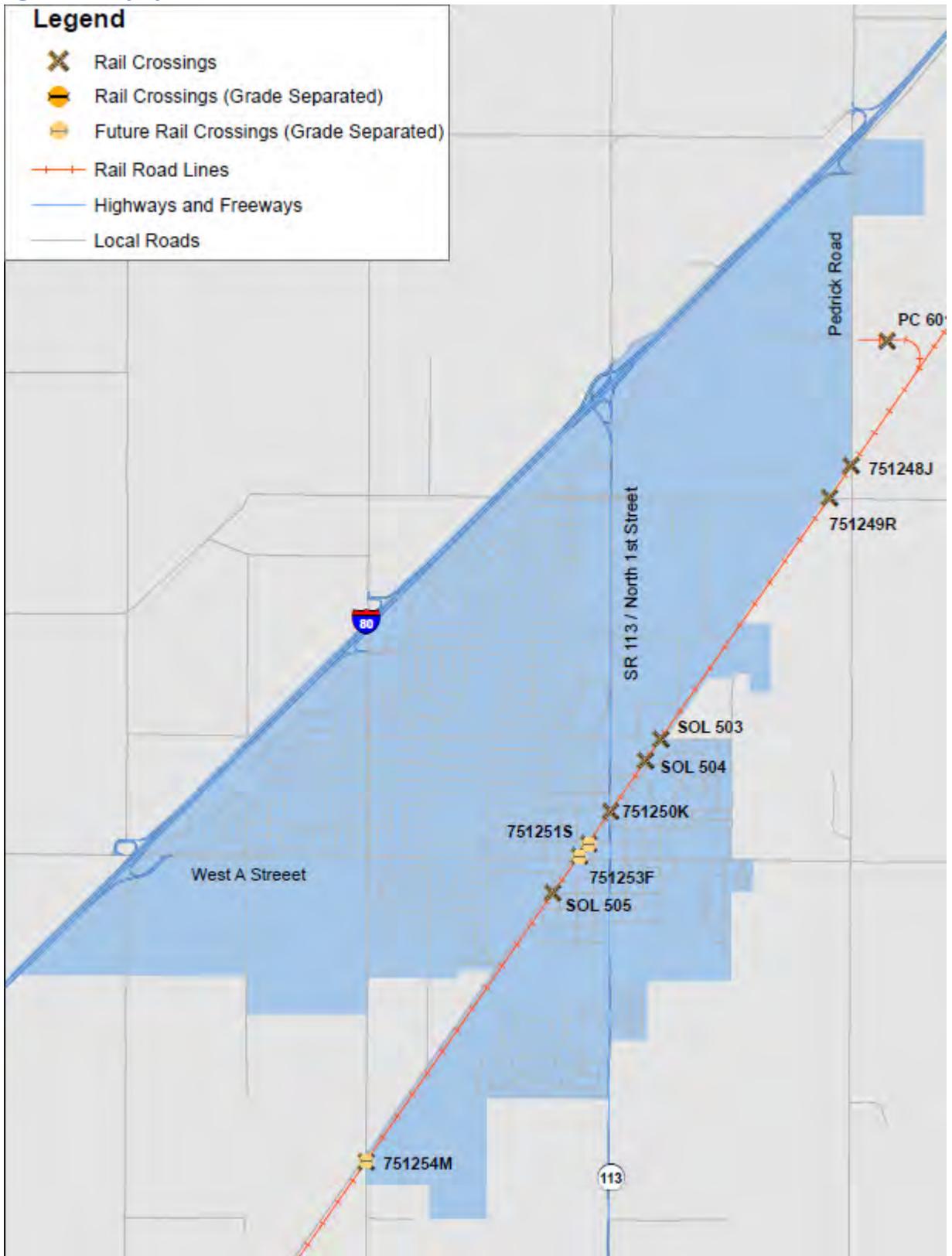
The UPRR tracks run for approximately 3.5 miles through Dixon, from the northeast at Pedrick Road to the southwest at Pitt School Road. The UPRR starts in the northeast industrial area of Dixon, then runs through the heart of Dixon’s older residential area and its downtown, where it is crossed by State Route (SR) 113. Beyond the downtown, the rail line runs through a mix of commercial and both older and newer residential, adjacent to approved but unbuilt single family lots, and finally out of the City and into rural Solano County. All of the crossings are at grade. There are two parallel tracks for the entire Dixon segment. There are no active sidings, switch yards or rail branches. From northeast to southwest, the crossings are:

Table 2 - City of Dixon

Street/Property	Crossing ID	Street Data	Traffic	Signage/Guards
Pedrick Road	751248J UPRR Milepost 69.4	2 lanes, undivided; 45 degree angle; concrete apron. No sidewalk.	< 100	Painted on-street notice 500 feet; 2 gates
Vaughn Road	751249R UPRR	2 lanes, undivided; 45 degree angle; concrete apron. No sidewalk.	< 100	Painted on-street notice 250 feet; 2 gates
East H Street	SOL 503 UPRR	No street present; informal pedestrian crossing between separated ends of East H Street.	None – informal pedestrian crossing	No signage or controls
East H Street/ North 2 nd Street	SOL 504 UPRR	No street present; informal pedestrian crossing between east H Street industrial area and North 2 nd Street residential area.	None – informal pedestrian crossing	No signage or controls
SR 113/ North 1 st Street	751250K UPRR Milepost 67.6	2 lanes, painted divider; 45 degree angle; concrete apron. Sidewalk on east side of street.	450 VC for 1 st St. just below crossing is 0.84	Painted on-street notice 250 feet and 350 feet; 2 gates

Street/Property	Crossing ID	Street Data	Traffic	Signage/Guards
West B Pedestrian Crossing	751251S UPRR	Improved at-grade pedestrian crossing between North Jefferson Street and West B Street; concrete apron.	Heavy pedestrian and bicycle use; 300+ crossings per day. Access for Anderson Elementary, C.A. Jacobs Middle School, and Dixon High School. Adjacent to train depot and park-and-ride lot. <u>This is the highest volume pedestrian crossing in Solano County.</u>	Pedestrian sign and signal at track; no gates
West A Street	751253F UPRR Milepost 67.4	2 lanes, undivided; 45 degree angle; concrete apron. Sidewalk on both sides of street.	225	Painted on-street notice 150 feet and 250 feet; 2 gates
Between West A Street and Cherry Street	SOL 505	No street present; informal at-grade pedestrian crossing between West A Street and Cherry Street.	None – informal pedestrian crossing	No signage or controls
Pitt School Road	751245M UPRR Milepost 65.9	1 lane southbound, 2 lanes (through and left turn) northbound, undivided; 45 degree angle; concrete apron; Porter Road/Pitt School Road intersection immediately north of crossing. No sidewalk.	< 100	Painted on-street notice at 450, 600 feet; overhead lights northbound; 2 gates

Figure 2 - City of Dixon



North Central Rural Solano County

Southwest of Dixon, the railroad again enters unincorporated Solano County. It remains in the county for 6.8 miles, briefly passes through the Vacaville city limits at Elmira, and then runs another 5.3 miles until it enters the City of Fairfield at Peabody Road. Most of the land in the vicinity of the railroad tracks is agricultural, used for row crop farming. The town of Elmira is an unincorporated community with approximately ½ mile of railroad frontage. All of the road crossings in this area are at grade; the railroad does cross over several significant creek channels and agricultural ditches. Just south of Cannon Road, a spur line that accesses northeast Fairfield and connects to the rail lines in the Jepson Prairie area of central Solano County splits off from the main rail line. Previous spurs into the Vacaville area have been abandoned and the tracks removed.

Table 3 – North Central Rural Solano County

Street/Property	Crossing ID	Street Data	Traffic	Signage/Guards
Midway Road	751255U UPRR Milepost 65.0	Complex intersection of Midway Road, Porter Road and UPRR tracks. Midway eastbound is 2 lanes across tracks; Midway westbound is 2 lanes angled across tracks, immediately splitting into left and right turns onto Porter (EB) and Midway WB). Concrete apron. No sidewalk.	< 100	Painted on-street notice at 250, 500 feet; 2 gates
Batavia Road	751256B UPRR	2 lanes, undivided; 45 degree angle; concrete apron. No sidewalk.	< 100	Painted on-street notice at 400 feet; 2 gates
Sweany Creek	SOL 506	No street. Crossing over channelized creek.	None	No signage or controls
Weber Road	571257H UPRR	2 lanes, undivided; 45 degree angle; concrete apron. No sidewalk.	< 100	Painted on-street notice at 350 feet; overhead lights; 2 gates
Drainage Culvert	SOL 507 UPRR	No street. Crossing over agricultural ditch.		No signage or controls

Street/Property	Crossing ID	Street Data	Traffic	Signage/Guards
Fox Road	751258P UPRR	2 lanes, undivided; 45 degree angle; concrete apron. No sidewalk.	< 100	Painted on-street notice at 350 feet; overhead lights; 2 gates
Gibson Canyon Creek	SOL 508 UPRR	No street. Crossing over channelized creek.	None	No signage or controls
Ulatis Creek Channel	SOL 509 UPRR	No street. Crossing over channelized creek.	None	No signage or controls
Lewis Road	751259W UPRR Milepost 60.6	4 lanes, undivided; 45 degree angle; concrete apron. No sidewalk.	< 100	Painted on-street notice at 400 feet; 2 gates
Hawking Road	751260R UPRR	2 lanes, undivided; 45 degree angle; concrete apron. No sidewalk.	< 100	Painted on-street notice at 400 feet; overhead lights; 2 gates
Water Street (Elmira Road)	751288G UPRR Milepost 59.2	4 lanes, undivided; concrete apron. Crossing immediately adjacent to California Pacific and Byrnes road intersection with Water Street. No sidewalk.	< 100	Painted on-street notice at 400 feet and 150 feet; overhead lights; 2 gates
Fry Road	751289N UPRR	4 lanes, undivided; 45 degree angle; concrete apron. No sidewalk.	< 100	Painted on-street notice at 500 feet; overhead lights; 2 gates
Alamo Creek Channel	SOL 510	Crossing over channelized creek.	None	No signage or controls
Cypress Footpath	SOL 511	Casual footpath at northwest edge of Cypress lakes golf course (Travis AFB).	None	No signage or controls
Drainage Culvert	SOL 512	No street. Crossing over agricultural ditch.	None	No signage or controls
Drainage Culvert	SOL 513	No street. Crossing over agricultural ditch.	None	No signage or controls

Street/Property	Crossing ID	Street Data	Traffic	Signage/Guards
Cannon Road	751291P UPRR Milepost 55.4	3 lanes (2 westbound, 1 eastbound) undivided; concrete apron. Crossing immediately adjacent to Cannon Road/Vanden Road intersection. No sidewalk.	350	Painted on-street notice at 500 feet (WB only); 2 gates
Drainage Culvert	SOL 514	No street. Crossing over agricultural ditch.	None	No signage or controls
Drainage Culvert	SOL 515	No street. Crossing over agricultural ditch.	None	No signage or controls

Figure 3a – North Central Rural Solano County



Figure 3b – North Central Rural Solano County



CENTRAL SOLANO COUNTY

Central Solano County consists of the areas from the Canon Road crossing of the UPRR tracks through the Suisun Marsh on the south and State Route 12 (Jameson Canyon) on the west. Rail crossings in this area are described in Tables 4 and 5 (City of Fairfield), 6 (City of Suisun City) and 7 (Suisun Marsh Rural Solano County).

Central Solano County



City of Fairfield

The UPRR tracks enter Fairfield at Peabody Road; however, near-term annexation is expected to extend the Fairfield city limits northeast past Cannon Road. The tracks in the northeast area serve a number of industrial facilities, and as such have 5 spurs between Peabody Road and Airbase Parkway. The total rail distance in Fairfield is 2.4 miles, from Peabody Road to the Tabor Road. The first 1.6 miles, from Peabody Road to Airbase Parkway, is industrial-serving. Between Airbase Parkway and East Tabor Avenue, the rail lines run through residential areas within the City of Fairfield. West of East Tabor Avenue, it continues through residential with the City of Fairfield to the north and west, and the City of Suisun City to the south and east.

The Peabody Road crossing is currently at-grade, but is planned to be converted to a grade-separated crossing (Peabody Road elevated) when the Fairfield-Vacaville train station is built in 2013. Airbase Parkway is also a grade-separated crossing (Airbase Parkway elevated). All other crossings in this area are at-grade. This segment also includes a spur that previously served Travis Air Force Base. The rails were removed from the rail bed in mid-2010.

The rail line splits after Suisun City, and one portion that eventually runs through Jameson Canyon and on to Napa and Vallejo again enters Fairfield between Pennsylvania and Beck avenues. This branch of the railroad runs for 4.9 miles through the City of Fairfield (with a 0.5 mile segment in Old Town Cordelia in the unincorporated County) before passing under I-80. This portion of the track is through a mix of industrial uses, agricultural fields and historic residences in Old Town Cordelia. A rail spur at Hale Ranch Road serves the Anheuser Busch brewery, and 3 other businesses are served by rail spurs in the Beck Avenue area. There are 3 rail spurs in the Cordelia area, but two are abandoned once they reach the border of the property they previously served. While most crossings in this area are at-grade, there is a tunnel just east of Old Town Cordelia, a grade separation at I-680 (I-680 elevated) and I-80 (railroad elevated).

Table 4 - Fairfield - Peabody Road to Tabor Road

Street/Property	Crossing ID	Street Data	Traffic	Signage/Guards
Peabody Road	751292W UPRR Milepost 53.8	2 lane undivided; 30 degree angle; concrete apron. No sidewalk.	5,600 VC 1.0 + <u>This is the highest-volume at-grade vehicle crossing in Solano County.</u>	Painted on-street notice at 500 feet; overhead lights; 2 gates
Huntington Drive	SOL 060 UPRR	2 lane undivided; 30 degree angle; concrete apron. No sidewalk.	< 100	Painted on-street notice at 500 feet; overhead lights; 2 gates
Drainage Culvert	SOL 516	No street. Crossing over agricultural ditch.	None	No signage or controls

FINAL Solano Rail Crossing Inventory and Improvement Plan

Street/Property	Crossing ID	Street Data	Traffic	Signage/Guards
Drainage Culvert	SOL 517	Crossing over agricultural ditch.	None	No signage or controls
Airbase Parkway	751293D	Grade Separated. 4 lane divided roadway overcrossing. No sidewalk.	None – grade separated	No signage or controls
E. Tabor Avenue	751294K UPRR Milepost 51.4	4 lane undivided; (2 lanes westbound, 1 through lane and 1 right-turn lane eastbound); 45 degree angle; concrete apron. Crossing is immediately adjacent to the intersection of East Tabor and Railroad Avenue. No sidewalk.	500 Railroad avenue adjacent to intersection VC 0.84	Painted on-street notice at 400 feet; 2 gates.
Walters Road	SOL 611 <u>Rails removed in 2010.</u>	4 lanes, undivided; asphalt apron. Sidewalk on west side of road.	750; No rail traffic	Painted on-street notice at 400 feet; lights beside road; no gates

Figure 4 - Fairfield - Peabody Road to Tabor Road

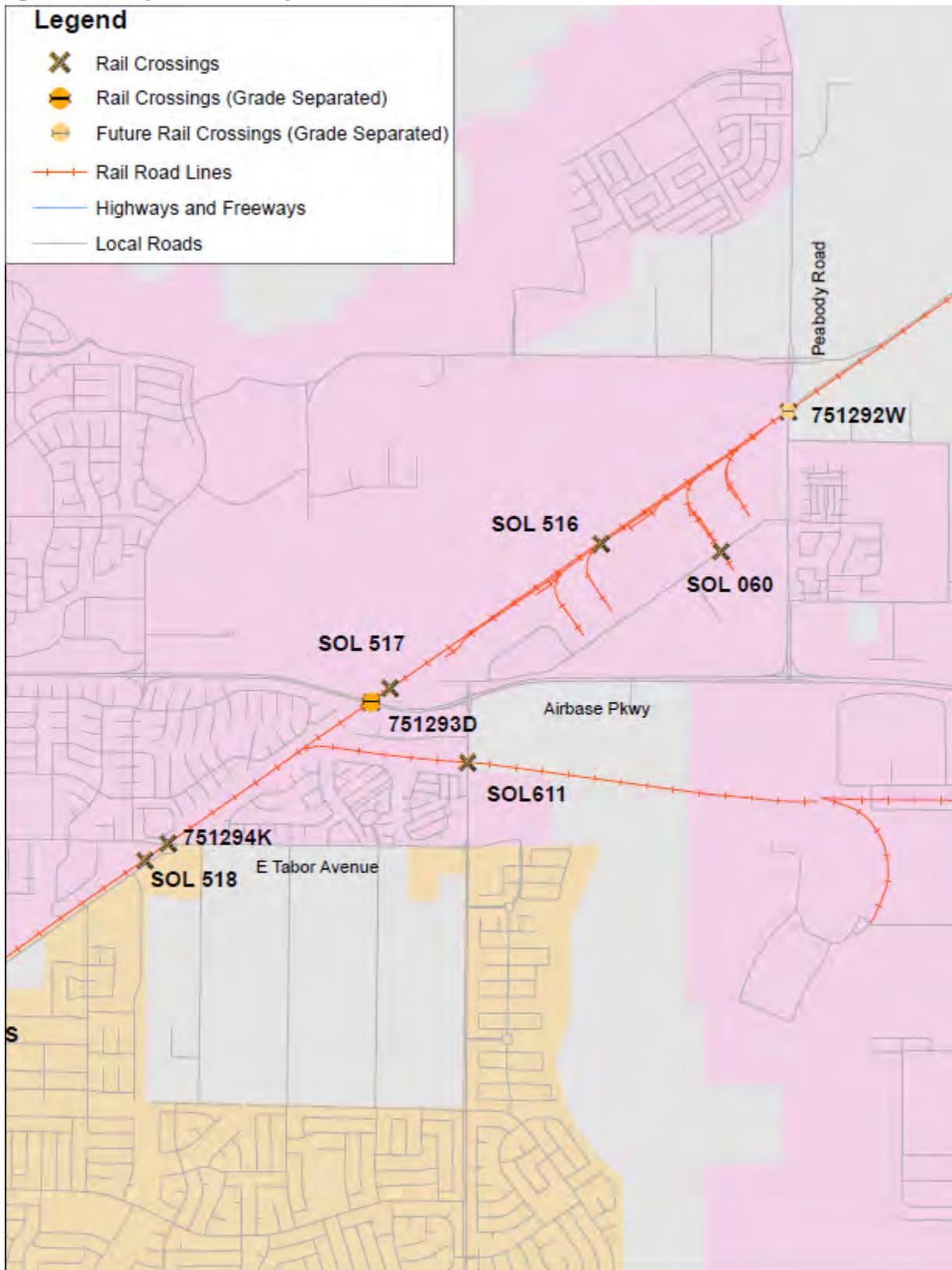


Table 5 - Fairfield -Pennsylvania Avenue to I-80

Street/Property	Crossing ID	Street Data	Traffic	Signage/Guards
Drainage Culvert	SOL 523	No street. Crossing over stormwater drainage ditch.	None	No signage or controls
Pennsylvania Ave	751300L Milepost 49.5	2 lanes, undivided; asphalt apron. Pennsylvania Ave./ Cordelia Road intersection immediately south of crossing. No sidewalk.	< 100	Painted on-street warning at 200 feet southbound and 50 feet northbound; overhead lights southbound only; 2 gates
Ledgewood Creek	SOL 524	No street. Overcrossing of Ledgewood Creek channel. Maintenance road on each side of the creek cross over the railroad tracks.	Maintenance vehicles and homeless pedestrians only. Creek ROW is fenced.	No signage or controls
Beck Avenue	751301T	1 lane southbound, 2 lanes and sidewalk northbound, divided; 60 degree angle; asphalt apron. Single rail track. Sidewalk on east side of street.	< 100	Painted on-street notice at 200 feet; overhead lights; 2 gates
Cordelia Road	751302A	2 lanes, undivided; 30 degree angle; asphalt apron. Sidewalk on north side of street; gap across railroad tracks	< 100	Painted on-street notice at 500 feet; overhead lights; 2 gates
Chadbourne Road	751303G Milepost 51.26	2 lanes, undivided; 60 degree angle; asphalt apron. No sidewalk.	< 100	No on-street notice; lights, no gates
West of Cordelia Road	SOL 525	No street. Crossing over agricultural ditch.	None	No signage or controls

Street/Property	Crossing ID	Street Data	Traffic	Signage/Guards
West of Cordelia Road	PC 602	Private road; gravel	< 100	No signage or controls
Cordelia Road	751305V	2 lanes painted divider; through and right turn lane westbound, through lane eastbound; asphalt apron. No sidewalk.	< 100	Stop sign at 200 feet eastbound; painted on-street warning at 500 feet westbound; overhead lights; 2 gates
East of Suisun Creek	SOL 527	No street. Crossing over agricultural ditch.	None	No signage or controls
Suisun Creek	SOL 528	No street. Overcrossing of Suisun Creek channel. Gravel ag road crosses tracks immediately east of Suisun creek riparian zone.	< 100	No signage or controls
Thomasson Lane	751307J	2 lanes; gravel apron. No sidewalk.	< 100	Stop sign only
West of Thomasson Lane	SOL 529	No street. Crossing of unnamed seasonal creek.	None	No signage or controls
Private Road	751309X Private	2 lanes; gravel apron. No sidewalk.	Unknown	Stop sign only
East of Wetlands Drive – Unnamed Creek	SOL 530	No street. Overcrossing of unnamed creek channel.	None	No signage or controls
East of Wetlands Drive – Green Valley Creek	SOL 531	No street; overcrossing of Green Valley Creek.	None	No signage or controls
Wetland Lane	751310S	Single track; 2 lanes, undivided; wooden apron. No sidewalk.	< 100	Stop sign only

Street/Property	Crossing ID	Street Data	Traffic	Signage/Guards
Bridgeport Avenue (Solano County jurisdiction)	751311Y	2 lanes, undivided; asphalt apron; crossing 50 feet away from Bridgeport Avenue/Cordelia Road intersection. No sidewalk.	< 100 Adjoining Bridgeport/Cordelia road intersection volume 650; VC1.0+	Painted on-street notice at 110 feet (northbound only); 2 gates
Central Way	SOL 549	Informal pedestrian crossing over rail line and adjoining drainage.	None – informal pedestrian crossing	No signage or controls
I-680 Overcrossing	751312F	Grade Separated. Separate northbound and southbound structures. No sidewalk.	None – grade separated	No signage or controls
Lopes Road	751313M Milepost 54.5	2 lanes (northbound 1 through, 1 right-turn only) divided; asphalt apron; crossing 70 feet from Lopes Road/Cordelia Road intersection. No sidewalk.	675 Adjoining Lopes/Cordelia road intersection VC 1.0+	Painted on-street notice at 350 feet northbound, 450 feet southbound; 2 gates in center divider; overhead lights
West Cordelia Road Spur Crossing	751314U	2 lanes, undivided; asphalt apron. No sidewalk.	None - spur is blocked at end; no rail traffic use	Painted on-street notice at 200 feet; flashing light eastbound, sign westbound
West Cordelia Road Spur Crossing (Solano County jurisdiction)	751315B	2 lanes, undivided; gravel apron. No sidewalk.	None - spur is blocked at end; no rail traffic use	No painted on-street notice; flashing lights
I-80 Crossover (Solano County jurisdiction)	751316H Milepost 55.2	Grade Separated. 5 lanes each direction. No sidewalk.	None – grade separated	No signage or controls

Street/Property	Crossing ID	Street Data	Traffic	Signage/Guards
Red Top Road (Solano County jurisdiction)	751317P	2 lane undivided; asphalt apron; crossing is 250 feet from Red Top Road/ SR 12 (Jameson Canyon) intersection. No sidewalk.	350 VC 1.0+	Painted on-street notice at 350 feet (northbound only); 2 gates; heavy vegetation around crossing
Private Crossing (Solano County jurisdiction)	PC 603	Private crossing south of Spur Trail; gravel road, gravel apron connecting agricultural buildings. No sidewalk.	Unknown	Stop sign

Figure 5a - Fairfield - Pennsylvania Avenue to Thomasson Lane

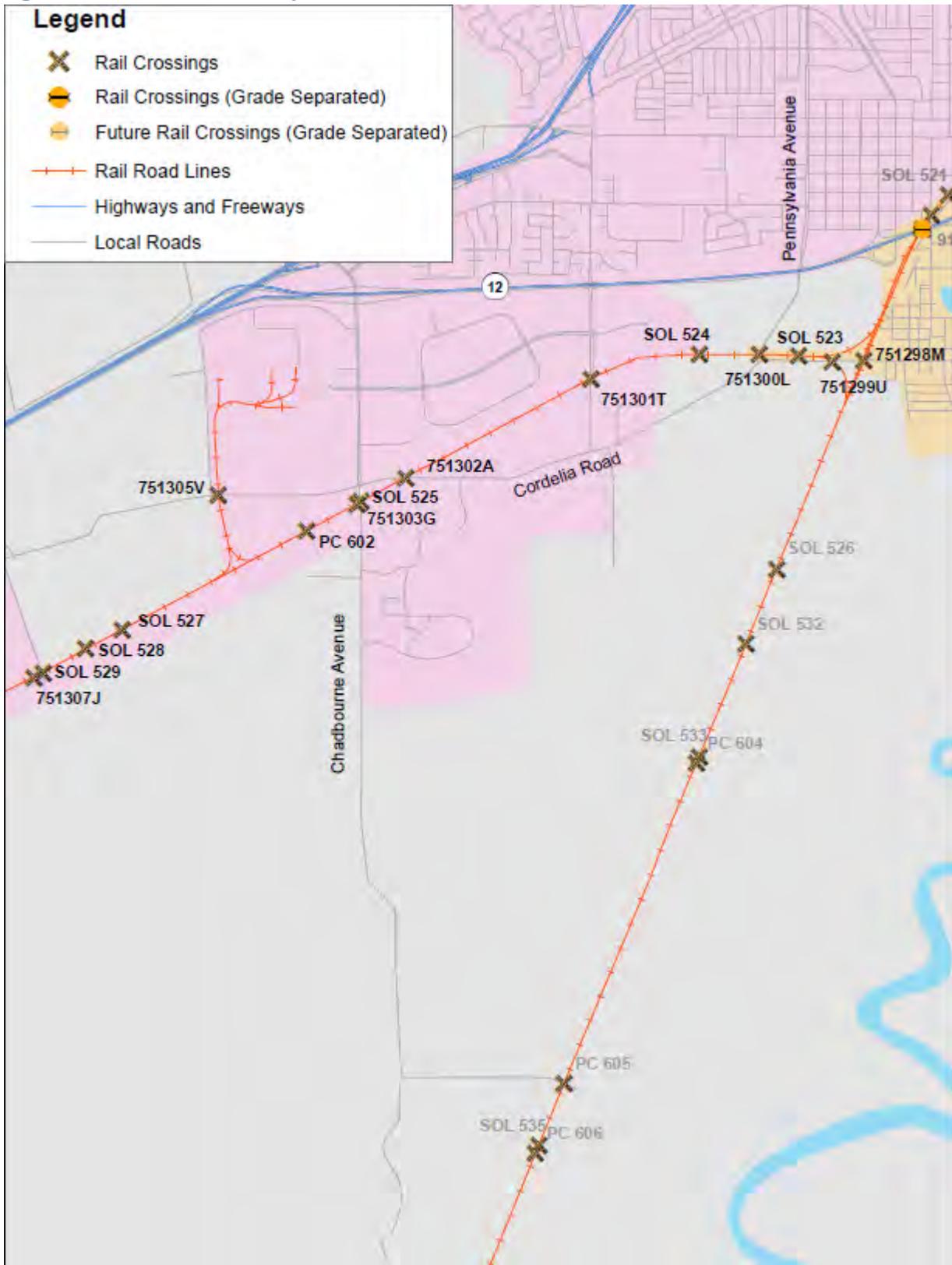
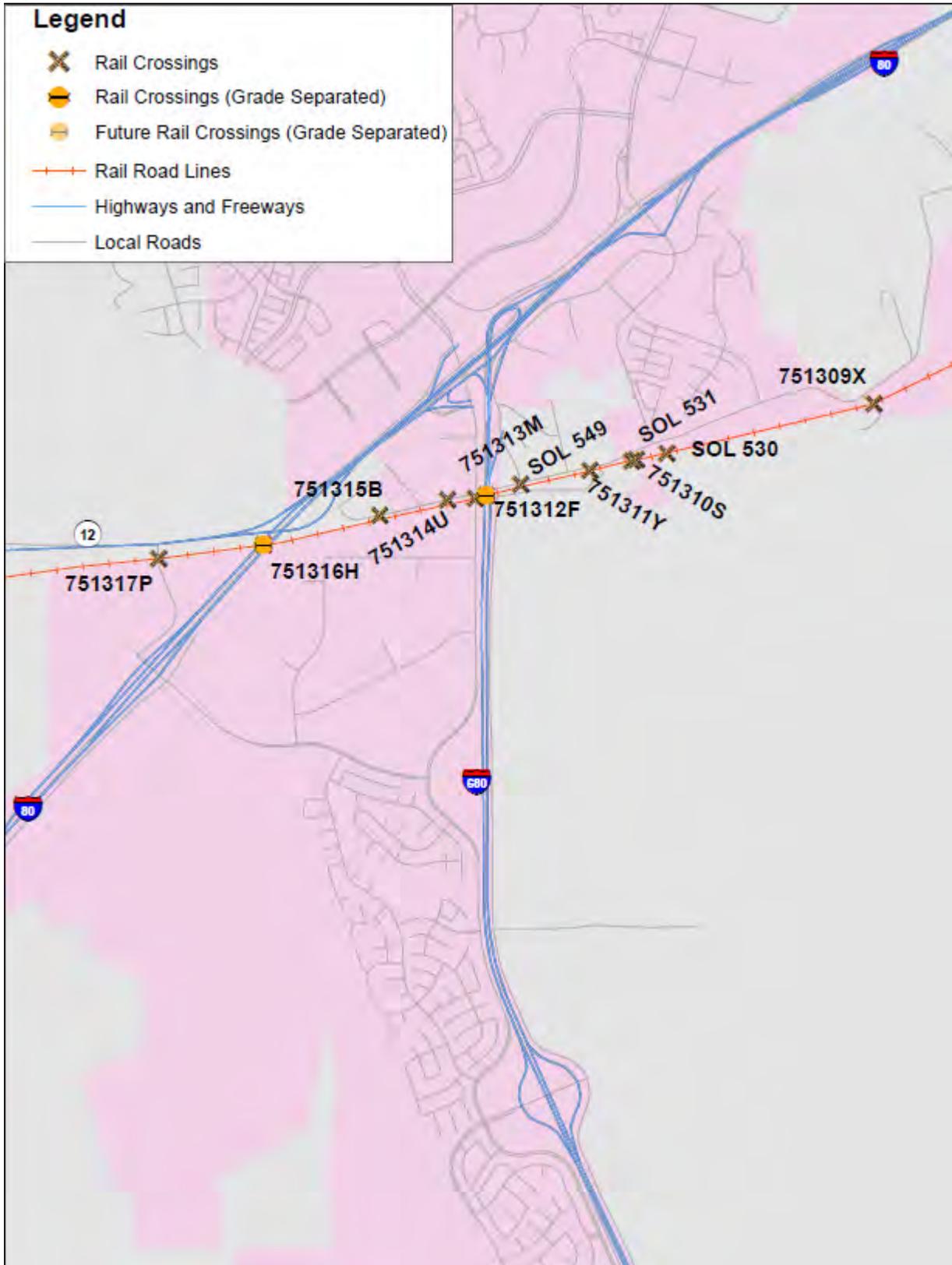


Figure 5b - Fairfield - Thomasson Lane to Red Top Road



City of Suisun City

The UPRR tracks enter Suisun City from the northeast immediately after the Tabor Road crossing, and run southwest between Suisun City and Fairfield for 3.1 miles to a junction. A 0.5 mile portion of this segment, from just south of the extended North Texas Street line to Union Avenue, is actually in the City of Fairfield. From the junction, the main line immediately enters unincorporated Solano County, while the western line runs for 0.5 miles west to Pennsylvania Avenue.

Table 6 - City of Suisun City

Street/Property	Crossing ID	Street Data	Traffic	Signage/Guards
Laurel Creek	SOL 519	No street. Overcrossing of Laurel Creek channel.	None	No signage or controls
Sunset Avenue	751295S UPRR Milepost 50.4	2 lanes southbound, 1 lane northbound, divided; 45 degree angle; concrete apron. Sidewalk on both sides of street.	1,100 VC 0.9+	Painted on-street notice at 200 feet; overhead and road divider lights; 2 gates
Drainage Culvert	SOL 520 UPRR	No street. Crossing over stormwater drainage ditch.	None	No signage or controls
Drainage Culvert	SOL 521 UPRR	No street. Crossing over stormwater drainage ditch.	None	No signage or controls
Union Avenue Pedestrian Crossing	912015J UPRR	Grade Separated. Pedestrian overcrossing from Union Avenue in Fairfield to Railroad Avenue/ Suisun City train station.	Pedestrian and bicycle only	No signage or controls
SR-12 Overcrossing	687624P UPRR Milepost 58.1	Grade Separated. Adjacent to Union Avenue Ped Crossing and Suisun-Fairfield train station. No sidewalk.	None – grade separated	No signage or controls

Street/Property	Crossing ID	Street Data	Traffic	Signage/Guards
Cordelia Road – Mainline	751298M UPRR	3 tracks, 2 lanes, undivided; 30 degree angle; concrete apron. Crossing is 700 feet east of the Cordelia Road junction crossing. No sidewalk.	< 100	Numerous painted on-street signs for both crossings; 2 gates
Cordelia Road – Junction	751299U Milepost 49.24	Single track; 2 lanes, undivided; 60 degree angle; asphalt apron. Crossing is 700 feet west of the Cordelia Road mainline crossing. No sidewalk.	< 100	Numerous painted on-street signs for both crossings; 2 gates; overhead lights (westbound)

Figure 6 - City of Suisun City



Rural Solano County – Suisun Marsh

After leaving Suisun City, the main UPRR tracks continue in an almost straight line for 7.5 miles across the Suisun Marsh, before reaching and paralleling I-680 for another 2.7 miles and then entering the City of Benicia at Goodyear Road. Crossings in this area are limited to small roads serving isolated residences or hunting clubs in the Suisun marsh. There are numerous crossings of marsh waterways. Just before Goodyear Road is the Bahia Crossover, where trains can switch tracks. For most of the length of this segment there are two parallel tracks. Just east of Morrow Lane, a third track is added, and the system remains 3-tracked where it enters the City of Benicia.

Table 7 – Suisun Marsh Rural Solano County

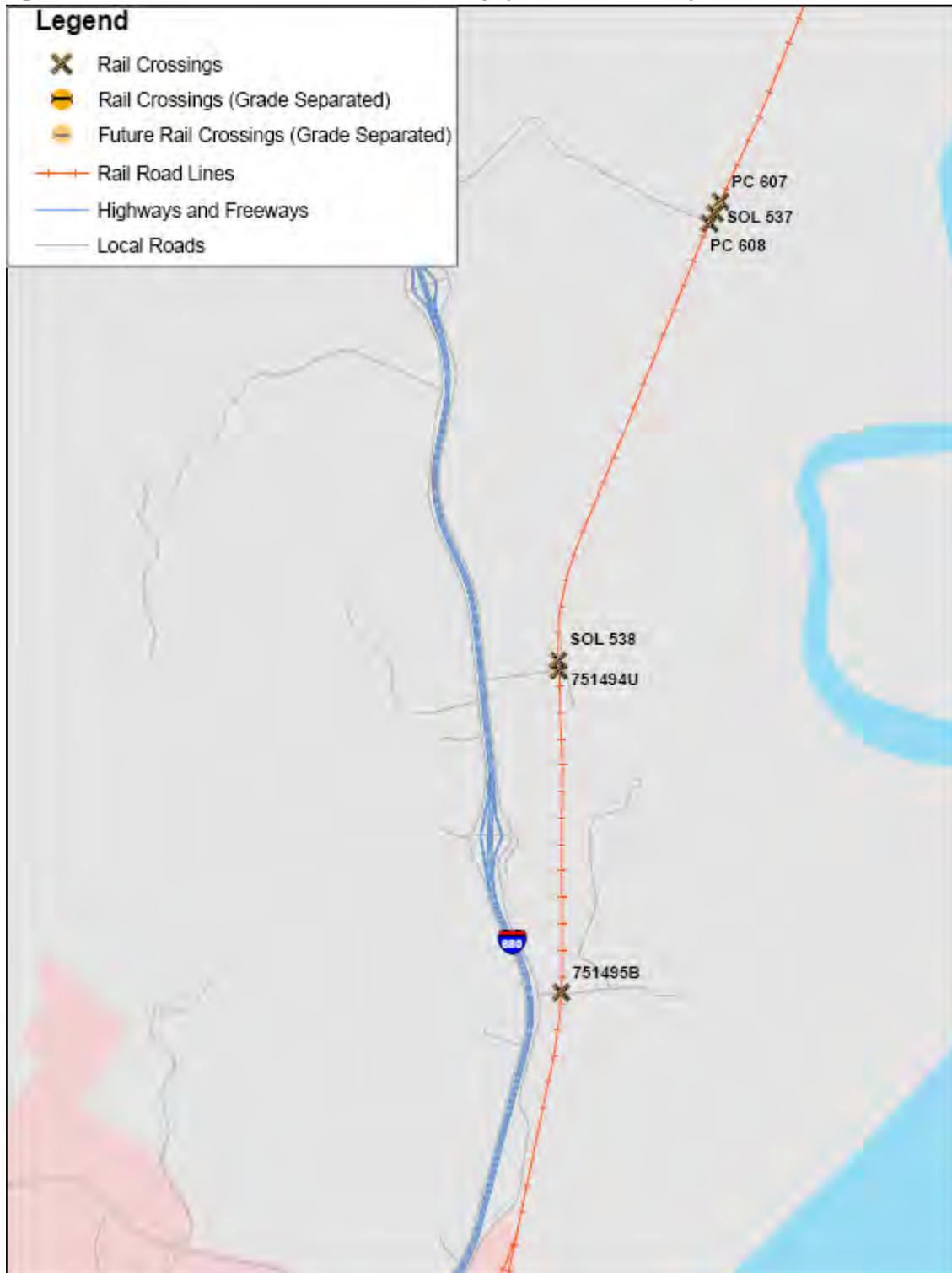
Street/Property	Crossing ID	Street Data	Traffic	Signage/Guards
Southwest of Old Cordelia Road	SOL 526 UPRR	No street. Crossing of Suisun Marsh waterway.	None	No signage or controls
Southwest of Old Cordelia Road – Peytonia Slough	SOL 532 UPRR	No street. Crossing of Suisun Marsh – Peytonia Slough.	None	No signage or controls
Southwest of Old Cordelia Road	SOL 533 UPRR	No street. Crossing of unnamed Suisun Marsh slough.	None	No signage or controls
Southwest of Old Cordelia Road	PC 604 UPRR	Private crossing accessed from Orchr Road. Gravel apron. No sidewalk.	Unknown	No signage or controls
Southwest of Orchr Road – Boynton Slough	SOL 535 UPRR	No street. Crossing of Suisun Marsh – Boynton Slough.	None	No signage or controls
Jacksnipe Road	PC 605 UPRR	Private crossing; concrete apron. No sidewalk.	< 100	Unlit signage, no gates
Wells Slough – Southwest of Jacksnipe Road	SOL 535 UPRR	No street. Crossing of Suisun Marsh – Wells Slough.	None	No signage or controls
Southwest of Wells Slough	PC 606 UPRR	Private crossing; concrete apron. No sidewalk.	< 100	Unlit signage, no gates
Chadbourne Slough – Southwest of Jacksnipe Road	SOL 536 UPRR	No street. Crossing of Suisun Marsh – Chadbourne Slough.	None	No signage or controls

Street/Property	Crossing ID	Street Data	Traffic	Signage/Guards
Chadbourne Road	751491Y UPRR Milepost 44.02	Private crossing; 2 lane gravel road, concrete apron; access to tracks may be restricted by metal gate. No sidewalk.	< 100	Metal gate; stop sign at tracks (southbound only)
Goodyear Road	PC 607 SOL 537 PC 608 UPRR	Three crossings combined as one entry; include a private road, the rail crossing of Cordelia Slough, and Goodyear road, all within 300 feet. Goodyear Road has 2 undivided lanes, concrete apron. No sidewalk.	< 100	No signs or controls
Northeast of Pierce Lane – unnamed slough	SOL 538 UPRR	No street. Crossing of Suisun Marsh – unnamed slough connected to Goodyear Slough.	None	No signage or controls
Pierce Lane	751494U UPRR	2 lanes, undivided; concrete apron. No sidewalk.	< 100	Painted on-street sign at 350 feet (eastbound); 2 gates
Morrow Lane	751495B UPRR Milepost 38.8	2 lanes, undivided; gravel road, concrete apron; 3 tracks. No sidewalk.	< 100	No painted on-street notice; warning lights at crossing

Figure 7a – Suisun Marsh Rural Solano County (northern extent)



Figure b – Suisun Marsh Rural Solano County (southern extend)



WESTERN SOLANO COUNTY

Western Solano County consists of the cities of Benicia and Vallejo, including Mare Island, as shown in the accompanying map. Rail crossings in this area are described in Tables 8a, 8b and 8c (City of Benicia), 2 (City of Dixon), Tables 9a and 9b (City of Vallejo) and Table 10 (Mare Island).

Northeast Solano County



City of Benicia

The main UPRR line runs for only 3.6 miles through Benicia, from the northeast corner at approximately Goodyear Road, through the industrial and port area of eastern Benicia, to the Solano County/ Contra Costa County line. The rail line crosses into Contra Costa County on a draw bridge across the Carqinez Strait that is impacted by ship traffic to the oil refinery and port facilities upstream. Between the entry and exit, the track splits into Main Track 1 (west-bound) and Main Track 2 (east-bound) rights-of-way, and has numerous spurs and sidings that serve industrial users and the Port of Benicia. The information below is divided into three segments: combined track and west-bound-only; east-bound only; and, spurs and sidings.

Table 8a – City of Benicia Combined Track and Main Track 1

Street/Property	Crossing ID	Street Data	Traffic	Signage/Guards
Lake Herman Road Overcrossing	751498W UPRR Milepost 37.2	Grade Separated. 2 lanes, undivided; roadway crosses over westbound railroad tracks, single structure. No sidewalk.	175	No signage or controls
Industrial Way Crossover	751550Y UPRR	Grade Separated. 2 lanes, undivided; westbound rail in elevated viaduct over roadways and marshland, single structure. No sidewalk on Industrial Way.	None – grade separated	No signage or controls
Private road/ Pipeline Crossover	SOL 538 Private	Private road, 2 lanes, undivided, and refinery pipeline; westbound rail in elevated viaduct over roadways and marshland, single structure. No sidewalk on private road.	None – grade separated	No signage or controls

Street/Property	Crossing ID	Street Data	Traffic	Signage/Guards
Bayshore Road/ spur line	751565N UPRR	2 lanes, undivided, and industrial- serving spur; westbound rail in elevated viaduct over roadways and marshland, single structure. No sidewalk.	None – grade separated	No signage or controls
I-680 Overcrossing	SOL 005 SOL 006 UPRR	Grade Separated. I-680 northbound/ George Miller Bridge connector ramps over rail line; 3 lanes, undivided and 2 lanes, undivided; 2 structures.	None – grade separated	No signage or controls
I-680 Overcrossing	SOL 061 UPRR	Grade Separated. I-680 southbound overcrossing; 4 lanes, undivided, and class 1 bikeway.	None – grade separated	No signage or controls
Bayshore Road crossover	751567V UPRR	Grade Separated. Approach to rail draw-bridge across Carqinez Strait crosses over Bayshore Road; 2 lanes, undivided. No sidewalk.	None – grade separated	No signage or controls

Table 8b – City of Benicia Main Track 2

Street/Property	Crossing ID	Street Data	Traffic	Signage/Guards
Private Road	753750P UPRR	2 lanes, undivided; concrete apron. No sidewalk.	Unknown	No notice painted on street; 2 gates
Private road at end of Lake Herman Road (mothball fleet access road)	751499D UPRR	1 lane, at end of 2 lane undivided roadway; concrete apron. No sidewalk.	< 100	Lights only; no gates.

Table 8c – City of Benicia Spurs and Sidings

Street/Property	Crossing ID	Street Data	Traffic	Signage/Guards
Port of Benicia auto lot	751500V	Entry to Port auto storage; 2 lanes, undivided; security gate adjacent to crossing. No sidewalk.	Unknown	No on-street notices; stop sign at crossing; no gates
Bayshore Road private driveway	751523C	2 lane undivided crossing into private business; wooden apron. Crossing immediately adjacent to Bayshore Road. No sidewalk.	Unknown	No on-street notice; stop sign at crossing; no gates
Bayshore Road private driveway	751524J	2 lane undivided crossing into private business; asphalt apron. Crossing immediately adjacent to Bayshore Road. No sidewalk.	Unknown	No on-street notice; stop sign at crossing; no gates
Bayshore Road private driveway	751564R	2 lane undivided crossing into private business; concrete apron. Crossing immediately adjacent to Bayshore Road. No sidewalk.	Unknown	No on-street notice; stop sign at crossing; no gates
I-680 Overcrossing	SOL 009	Grade Separated. Two separate structures.	None – grade separated	No signage or controls
Park Road	751527E	2 lanes, undivided; metal apron; crossing located 100 feet east of Park Blvd/ Bayshore Road intersection . No sidewalk.	500	Painted on-street notice at 250 feet; overhead lights; 2 gates

Street/Property	Crossing ID	Street Data	Traffic	Signage/Guards
Bayshore Road	751528L	2 lanes, undivided, 60 degree angle; asphalt apron; crossing just prior to gated entry to refinery. No sidewalk.	< 100	Painted on-street notice at 50 feet (northbound only); stop sign and lights, no gates
Valero Refinery	SOL 540	No street. Elevated pipeline crossing over rail line.	None	No signage or controls
Valero Refinery	SOL 541	No street. Elevated pipeline crossing over rail line.	None	No signage or controls
Valero Refinery	SOL 610	2 lanes, undivided; asphalt apron. No sidewalk.	Unknown	No signage or controls
Valero Refinery	SOL 009	2 lanes, undivided; asphalt apron. No sidewalk. Tracks separated.	Unknown	No signage or controls
Park Road	751558D	2 lanes, undivided, 60 degree angle; asphalt apron. No sidewalk.	< 100	Painted on-street notice at 200 feet; signs at crossing; no lights or gate
Park Road	751559K	2 lanes, undivided, 60 degree angle; asphalt apron. No sidewalk.	< 100	Painted on-street notice at 250 (eastbound) and 100 feet (westbound); signs at crossing; no lights or gates
Park Road	755212M	2 lanes, undivided, 60 degree angle; asphalt apron. No sidewalk. No sidewalk.	< 100	Painted on-street notice at 150 (eastbound) and 300 feet (westbound); signs at crossing; no lights or gates

Street/Property	Crossing ID	Street Data	Traffic	Signage/Guards
Stone Road	751548X A	2 lanes, undivided private drive immediately adjacent to Stone Road; concrete apron (1 of 2). No sidewalk.	< 100	Sign at crossing; no lights or gates
Stone Road	751562T	2 lanes, undivided, 60 degree angle; asphalt apron; also provides private driveway off of Stone Road. No sidewalk.	< 100	Painted on-street notice at 150 feet (northbound only); sign at crossing; no lights or gates
Iowa Street	751561L	2 lanes, undivided; asphalt apron. No sidewalk.	< 100	No painted on-street notice; signs at crossing; no lights or gates
Oregon Street	751547R	2 lanes, undivided; asphalt apron. No sidewalk.	< 100	Painted on-street notice at 250 feet (eastbound only); sign at crossing; no lights or gates
Industrial Court	751548X	2 lanes, undivided; asphalt apron; 3 rail tracks. No sidewalk.	< 100	Painted on-street notice at 300 feet; overhead lights; no gates
Harbor Road	751505E	2 lane undivided; asphalt apron; 3 rail lines, also crossed over by pipeline; adjacent to Bayshore Road and controlled gate access to port. No sidewalk.	< 100	No painted on-street notice; signs at crossing; no lights or gates
Bayshore Road/ Port of Benicia Pier access	SOL 610	2 crossings in 150 foot area from Bayshore Road to Port of Benicia pier; all crossings have 3 rail lines, asphalt aprons, adjacent to Bayshore Road. No sidewalk.	< 100	No painted on-street notice; signs at crossings; no lights or gates

Street/Property	Crossing ID	Street Data	Traffic	Signage/Guards
Van Buren Road/ Port of Benicia Pier access	751519M	Access to Port of Benicia pier; 3 rail lines, asphalt apron, adjacent to Bayshore Road. No sidewalk.	< 100	No painted on-street notice; signs at crossing; no lights or gates
Bayshore Road	751512P	2 lanes, undivided; 60 degree angle, asphalt apron. No sidewalk.	< 100	No painted on-street notice; no signs at crossing, lights or gates
Jackson Street	171516S	2 lanes, undivided; 60 degree angle, asphalt apron. No sidewalk.	< 100	No painted on-street notice; no signs at crossing, lights or gates

Figure 8a – City of Benicia Combined Track and Main Tracks 1 and 2



Figure 8b – City of Benicia Spurs and Sidings



City of Vallejo

The tracks serving Vallejo are owned and operated by the Northern California railroad. These tracks enter the City of Vallejo at the Napa/Solano county line, just east of SR 29 and Broadway Street. The tracks run parallel to Broadway Street for 1.7 miles, cross under SR 37, and then split just before Sereno Street. One branch of the rail continues to run south, slowly separating from Broadway Street, to the port area on the east side of the Mare Island Strait, to the old sugar facility on Derr Street. This area is mostly residential, but the tracks are adjacent to some commercial development, a Kaiser medical center, a high school, several parks and, finally, an industrial area of limited use. From the junction to the end of the line is 3.3 miles.

From the junction at Sereno Street, the second rail line runs largely west through commercial land uses to the Mare Island Strait. This spur belongs to The City of Vallejo and is being leased to San Francisco Bay Railroad (SFBR). SFBR has hired Summit Signal to upgrade and maintain this section. The rail line crosses the strait on the Mare Island causeway, and shares the causeway and drawbridge with G Street. From the Sereno Street junction to the west end of the Mare Island causeway is 2.5 miles. Once across the water, the rail line splits into numerous spurs that serve industrial facilities on Mare Island. Only limited rail service to Mare Island is provided.

Table 9a – City of Vallejo Main Track

Street/Property	Crossing ID	Street Data	Traffic	Signage/Guards
Mini Drive	751462N California Northern	4 lanes plus left turn westbound, undivided; asphalt apron. Rail crossing is located between two “T” intersections only 200 feet apart. Sidewalk on both sides of street; gap at tracks.	875 VC 1.0+	Painted on-street notices at 100 feet; 2 gates
SR 37 Overcrossing	SOL 010 California Northern	Grade Separated. 2 lane off ramp plus 3 lands divided; freeway crosses over railroad; 2 structures. No sidewalk.	None – grade separated	No signage or controls
Lewis Brown Road	751463V California Northern	4 lanes, painted divider; concrete apron. No sidewalk.	Unknown	Painted on-street notices at 100 feet; overhead lights; 2 gates

Street/Property	Crossing ID	Street Data	Traffic	Signage/Guards
Tuolumne Street	751464C California Northern	4 lanes, undivided; metal apron; crossing offset from Almond Street/Tuolumne Street intersection by 50 feet. Sidewalk on both sides of street; gap at rail.	600	Painted on-street notice at 200 feet; overhead lights; 2 gates
Sereno Drive	751465J California Northern	4 lanes plus shared left turn lane; concrete apron. Sidewalk on both sides of street; obstructed by signal base.	300 No rail service	Painted on-street notice at 350 feet (eastbound) and 100 feet (westbound); overhead lights; 2 gates
Redwood Street	751466R California Northern	Complex intersection; 4 lanes, divided, plus left turn lane; tracks adjacent to Broadway Street; crossing located between Sereno/Broadway and Sereno/Alameda intersection (250 foot separation). Sidewalk on both sides of street.	750 No rail service	Painted on-street notice at 150 feet; overhead lights; no gates
Valley Vista Avenue	751467X California Northern	Complex intersection; 2 lanes, undivided, plus left turn lane; tracks adjacent to Broadway Street; crossing located between Sereno/Broadway and Sereno/Alameda intersection (200 foot separation). No sidewalks.	650 No rail service	Painted on-street notice at 200 feet; overhead lights; 2 gates

Street/Property	Crossing ID	Street Data	Traffic	Signage/Guards
Nebraska Street	751468E California Northern	2 lanes, undivided; asphalt apron. Adjacent to High School, athletic field. Sidewalk on both sides of street; obstructed by signal base.	Unknown No rail service	Painted on-street notice at 200 feet; overhead lights; 2 gates
Tennessee Street	751469L California Northern	4 lanes, undivided; asphalt apron; crossing located 100 feet from Tennessee Street/ Monterey Street intersection. Sidewalk on both sides of street; obstructed by signal base.	1,725 No rail service	Painted on-street notice at 200 feet; 1 gate
Louisiana Street	751470F California Northern	2 lanes, undivided; asphalt apron. Sidewalk on both sides of street.	Unknown No rail service	Painted on-street notice at 300 feet (eastbound) and 150 feet (westbound); overhead lights; 2 gates
Spring Street	751471M California Northern	2 lanes, undivided; asphalt apron. Street dead-ends at rail line, but sidewalk access is open. Sidewalk on both sides of street.	Unknown No rail service	Street barricaded to prevent crossing of rail line
Florida Street	751472U California Northern	4 lanes, undivided; asphalt apron. Sidewalk on both sides of street.	125 No rail service	Painted on-street notice at 300 feet; overhead lights; 2 gates
Georgia Street	751474H California Northern	4 lanes, painted divider; asphalt apron. Sidewalk on both sides of street; obstructed by signal base.	500 No rail service	Painted on-street notice at 200 feet; 2 gates

Street/Property	Crossing ID	Street Data	Traffic	Signage/Guards
Maine Street	751475P California Northern	4 lanes, undivided; wooden apron; crossing is 100 feet from the Main Street/ Colusa Street intersection. Sidewalk on both sides of street; obstructed by signal base	850 No rail service	Painted on-street notice at 200 feet; overhead lights; 2 gates
Solano Avenue	751476W California Northern	2 lanes, undivided; 45 degree angle; concrete apron. No sidewalks.	1,350 No rail service	Painted on-street notice at 100 feet (eastbound) and 300 feet (westbound); 2 gates
Curtola Parkway	751980J California Northern	Complex intersection, located on curve of street; 4 lanes, painted divider; concrete apron; crossing located 10 feet from the Curtola/Solano/ Monterey intersection. Sidewalk on south side of street; obstructed by signal base.	1,750 VC 0.9 + No rail service	Painted on-street notice at 100 feet (eastbound) and 300 feet (westbound); overhead lights; 2 gates
5 th Street	751478K California Northern	2 lanes, undivided; 30 degree angle; asphalt apron. Sidewalk on north side of street; obstructed by signal base.	750 VC 0.8 + No rail service	Painted on-street notice at 300 feet; 2 gates

Table 9b – City of Vallejo Mare Island Access

Street/Property	Crossing ID	Street Data	Traffic	Signage/Guards
Sonoma Blvd/ SR 29	751479S California Northern	4 lanes, undivided; 30 degree angle; metal apron. Sidewalk on both sides of street; obstructed by signal base.	1,750 VC 0.9 + No rail service	Painted on-street notice at 400 feet; overhead lights; 2 gates
Broadway Street	928442W City of Vallejo/ San Francisco Bay Rail Road	4 lanes, undivided; asphalt apron. Sidewalk on east side of road.	1,700 VC 0.9 +	Painted on-street notice at 300 feet; overhead lights; 2 gates
Sereno Street	928443D City of Vallejo/ San Francisco Bay Rail Road	4 lanes, undivided; metal apron. Sidewalk on both sides of street; obstructed by signal base.	300	Painted on-street notice at 100 feet; overhead lights; 2 gates
Redwood Street	928445S City of Vallejo/ San Francisco Bay Rail Road	4 lanes plus painted left turn lane; metal apron. Sidewalk on both sides of street; obstructed by signal base.	575	Painted on-street notice at 100 feet (westbound) and 200 feet (eastbound); overhead lights; 2 gates
Valley Vista	928446Y City of Vallejo/ San Francisco Bay Rail Road	2 lanes, undivided; asphalt apron. Sidewalk on both sides of street;; gap at tracks; obstructed by signal base.	Unknown	Painted on-street notice at 150 feet; 2 gates
Sonoma Blvd/ SR 29	928447F City of Vallejo/ San Francisco Bay Rail Road	4 lanes plus left turn lane; 45 degree angle; concrete apron. Crossing located 250 feet north of Sonoma/ Mississippi intersection, 100 feet south of Sonoma/ Missouri intersection. Sidewalk on both sides of street.	1,650 VC 0.9 +	Painted on-street notice at 150 feet (northbound only); overhead lights; 2 gates

Street/Property	Crossing ID	Street Data	Traffic	Signage/Guards
Mississippi Street	928448M City of Vallejo/ San Francisco Bay Rail Road	2 lanes, undivided; 45 degree angle; asphalt apron. Sidewalk on both sides of street; south side obstructed by signal base.	Unknown	Painted on-street sign at 100 feet ; 1 gate
Nebraska Street	928449U City of Vallejo/ San Francisco Bay Rail Road	2 lanes, undivided; 45 degree angle; asphalt apron. Sidewalk on both sides of street.	Unknown	Painted on-street notice at 100 feet; lights, no gates
Sacramento Street Overcrossing.	SOL 011 City of Vallejo/ San Francisco Bay Rail Road	Grade Separated. 4 lanes, undivided; 45 degree angle. Sidewalk on both sides of street.	None – grade separated	No signage or controls
North Butte Street	928450N City of Vallejo/ San Francisco Bay Rail Road	2 lanes, undivided; asphalt apron; crossing immediately north of the N Butte/ Tennessee intersection. Sidewalk on both sides; east side obstructed by signal base.	850 VC 0.9 +	Painted on-street notice at 200 feet; 2 gates
Wilson Avenue	928451V City of Vallejo/ San Francisco Bay Rail Road	Complex intersection; Wilson and Tennessee streets both curve, crossing is located immediately north of Tennessee Street; 4 lanes plus left turn lane, right turn separated lane; concrete divider; concrete apron. Sidewalk on both sides of street.	2,300 VC 1.0 +	Painted on-street notice at 200 feet; overhead lights; 4 gates

Street/Property	Crossing ID	Street Data	Traffic	Signage/Guards
Mare Island Causeway	SOL 012 City of Vallejo/ San Francisco Bay Rail Road	2 lanes; asphalt surface. Rail line crosses from the north side of Mare Island Way to the center of the street, and crosses the Mare Island Strait down the middle of the causeway, including the draw bridge. Sidewalk on south side of causeway.	2,100 VC 1.0 +	No signage or controls

Figure 9a – City of Vallejo Main Track



Table 9b - City of Vallejo Mare Island Access



Mare Island

Mare Island is within the City of Vallejo city limits, but is listed separately. The island is the site of a former naval shipyard, but that facility is now closed, and the island is undergoing substantial redevelopment. Many of the old naval shipyard buildings are being removed or reused for non-industrial purposes, and numerous rail lines have already been removed from the island. However, there are still heavy industrial uses on the island, including one that refurbishes rail cars, and limited rail service to Mare Island was restarted in early 2010.

Because of the changing nature of rail service on Mare Island, many crossings do not have the designation or warning/control facilities found in the remainder of the county or cities. In addition, traffic volumes for most streets are unknown. Data is only provided for major through streets.

Table 10 – City of Vallejo -Mare Island

Street/Property	Crossing ID	Street Data	Traffic	Signage/Guards
West end of Mare Island Causeway – private road	PC 611	Rail/ causeway overcrossing; 2 lanes, undivided.	Unknown	No signage or controls
Nimitz Avenue	SOL 013	2 lanes, undivided; 30 degree angle; metal apron.	Unknown	Painted on-street notice at 100 feet; no lights or gates
Pintado Street	SOL 014	2 lanes, undivided; 60 degree angle; concrete apron.	Unknown	No signage or controls
Nimitz Avenue	SOL 015	2 lanes, undivided; metal apron; crossing runs through middle of Nimitz/ “C” Street/ Waterfront intersection.	Unknown	Painted on-street notice at 100 feet; no lights or gates
Nimitz Avenue	SOL 016 SOL 017	2 tracks merge at this crossing; 2 lanes, undivided; metal apron; bike lane on east side of Nimitz Ave crosses tracks.	Unknown	Painted on-street notice at 150 feet; no gates
A Street	SOL 019	2 lanes, undivided; 45 degree angle; asphalt apron.	Unknown	Painted on-street notice at 150 feet (eastbound only); no gates

Street/Property	Crossing ID	Street Data	Traffic	Signage/Guards
Nimitz Avenue	SOL 20	2 lanes, undivided; 45 degree angle; metal apron; bike lane on east side of Nimitz Ave crosses tracks.	Unknown	No signage or controls
Nimitz Avenue	SOL 21	2 lanes, undivided; 60 degree angle; asphalt apron.	Unknown	No signage or controls
Kansas Street	SOL 22	2 lanes, undivided; asphalt apron. @ rail lines merge at this point.	Unknown	No signage or controls
Nimitz Avenue	SOL 23	2 lanes, undivided; shallow angle crossing; asphalt apron.	Unknown	No signage or controls
Ferry Street/ Nimitz Avenue	SOL 24	2 lanes, undivided; concrete apron. Rail line crosses Nimitz Way and runs obliquely across west end of Ferry , then along north side of ferry.	Unknown	No signage or controls
Nimitz Avenue	SOL 25 SOL 26 SOL 27	2 lanes, undivided; asphalt apron; spurs from main line down the center of Nimitz Way to dry-docks.	Unknown	No signage or controls
Nimitz Avenue	SOL 28	2 lanes, undivided; asphalt apron.	Unknown	No signage or controls
Nimitz Avenue / Bagley Street	SOL 29 SOL 30	2 lanes, undivided; asphalt apron; spur cuts across corner of Nimitz/ Bagley intersection.	Unknown	No signage or controls
Nimitz Avenue	SOL 31	2 lanes, undivided; 45 degree angle; asphalt apron.	Unknown	No signage or controls
Nareus Street	SOL 32	2 lanes, undivided; 45 degree angle; asphalt apron.	Unknown	No signage or controls

Street/Property	Crossing ID	Street Data	Traffic	Signage/Guards
Nimitz Avenue	SOL 33	2 lanes, undivided; 60 degree angle; asphalt apron.	Unknown	No signage or controls
15 th Street	SOL 34	2 lanes, undivided; 30 degree angle; asphalt apron.	Unknown	No signage or controls
15 th Street	SOL 35	2 lanes, undivided; asphalt apron.	Unknown	No signage or controls
Railroad Avenue	SOL 36	2 lanes, undivided; 60 degree angle; asphalt apron.	Unknown	No signage or controls
Nereus Street	SOL 37	2 lanes, undivided; asphalt apron	Unknown	No signage or controls
13 th Street	SOL 38	2 lanes, undivided; asphalt apron. Crossing at intersection of 13 th and Railroad.	Unknown	No signage or controls
Railroad Avenue	SOL 39 SOL 40	Complex intersection; Railroad avenue (angled) and Bagley Street (offset); 2 lanes, undivided; railroad runs obliquely through intersection; concrete apron.	Unknown	No signage or controls
8 th Street	SOL 41	2 lanes, undivided; asphalt apron. Crossing at intersection of 8 th and Railroad.	Unknown	Painted on-street notice at 150 feet (eastbound only); no lights or gates
Railroad Avenue	SOL 42	2 lanes, undivided; 30 degree angle; metal apron.	Unknown	Painted on-street notice at 100 feet (eastbound only); no lights or gates
Connolly Street	SOL 43	Rail line along Connolly splits to Railroad at Connolly/Railroad intersection. 2 lanes, undivided; 30 degree angle; asphalt apron.	Unknown	Painted on-street notice at 150 feet (eastbound only); no lights or gates

Street/Property	Crossing ID	Street Data	Traffic	Signage/Guards
Walnut Street	SOL 44	2 lanes, undivided; metal apron.	Unknown	Painted on-street notice at 150 feet; no lights or gates
Walnut Street	SOL 45	3 parallel tracks; 2 lanes, undivided; metal aprons.	Unknown	Painted on-street notice at 200 feet; no lights or gates
A Street	SOL 46	2 lanes, undivided; 30 degree angle; asphalt apron.	Unknown	Painted on-street notice at 100 feet; no lights or gates
A Street	SOL 47	2 lanes, undivided; asphalt apron. Crossing located at A /Railroad intersection.	Unknown	No signage or controls
Railroad Avenue	SOL 48	3 lanes (2 northbound, 1 southbound); 30 degree angle; metal apron.	Unknown	Painted on-street notice at 150 feet; no lights or gates
Railroad Avenue	SOL 49	3 lanes (2 northbound, 1 southbound); 30 degree angle; metal apron.	1,500 VC 0.8 +	Painted on-street notice at 150 feet; no lights or gates
Railroad Avenue	SOL 50	3 lanes (2 northbound, 1 southbound); metal apron. Crossing located at Railroad/A intersection.	1,500 VC 0.8 +	Painted on-street notice at 150 feet (northbound only); no lights or gates
Railroad Avenue	SOL 51	3 lanes (2 northbound, 1 southbound); metal apron.	1,500 VC 0.8 +	Painted on-street notice at 150 feet (northbound only); no lights or gates
C Street	SOL 52	2 lanes, undivided; asphalt apron. Crossing located at edge of A Street/ Railroad intersection.	Unknown	No signage or controls
C Street	SOL 53	2 lanes, undivided; asphalt apron.	Unknown	No signage or controls

Street/Property	Crossing ID	Street Data	Traffic	Signage/Guards
Railroad Avenue	SOL 54	3 lanes (2 northbound, 1 southbound), undivided; 30 degree angle; metal apron.	1,500 VC 0.8 +	Painted on-street notice at 250 feet (northbound only); no lights or gates
I Street	SOL 55	2 lanes, undivided; asphalt apron. Crossing adjacent to I Street/Azuar intersection.	Unknown	No signage or controls
Azuar Drive	PC 612	Private driveway onto Azuar Drive. 2 lanes, asphalt apron.	Unknown	Stop sign
L Street	SOL 56	2 lanes, undivided; asphalt apron.	Unknown	Stop sign
Azuar Drive/ O Street	PC 613	Private driveway onto Azuar Drive; asphalt apron. Crossing adjacent to O Street/Azuar Drive intersection.	Unknown	No signage or controls

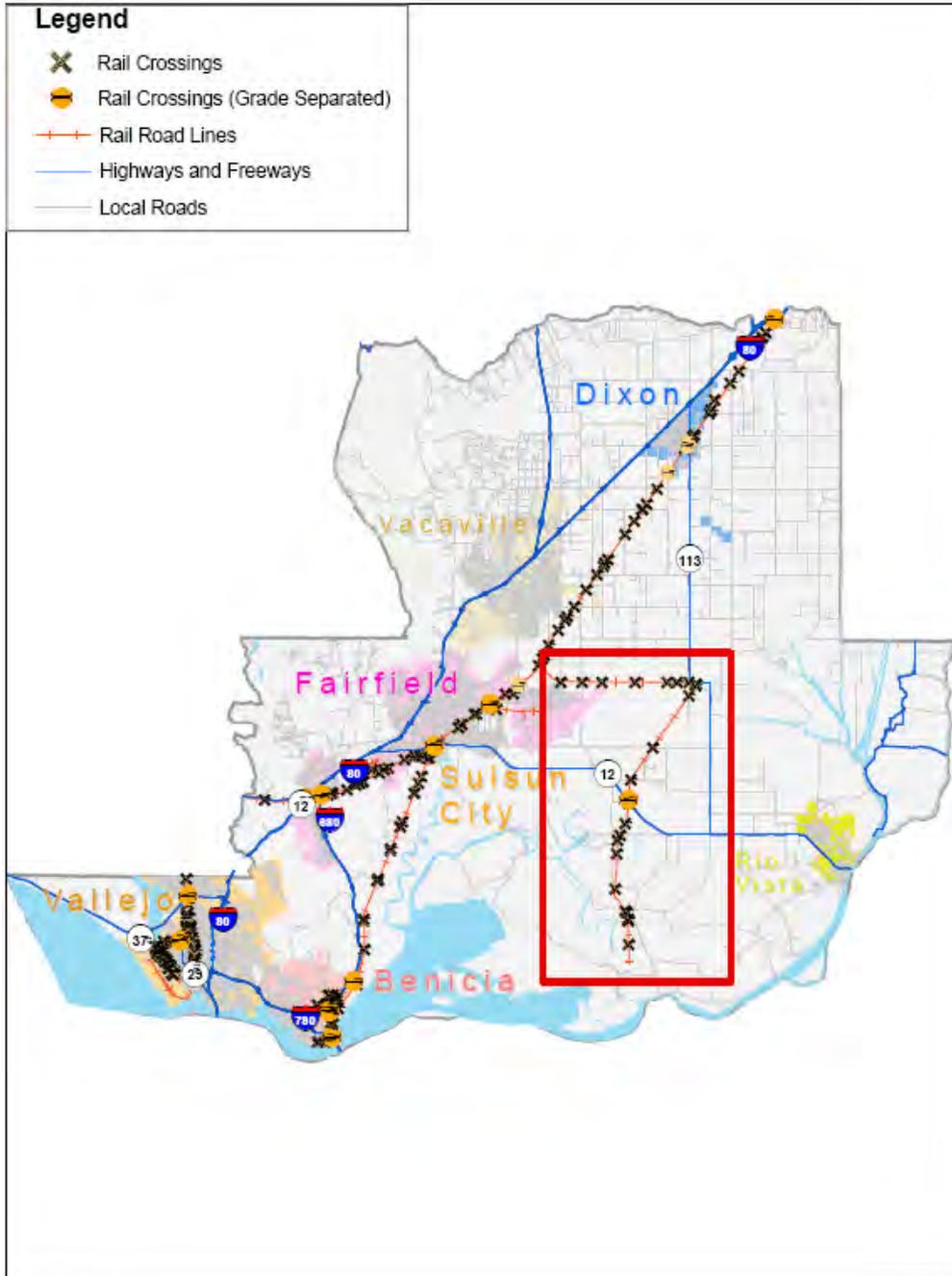
Figure 10 – City of Vallejo -Mare Island



EASTERN SOLANO COUNTY

Eastern Solano County consists of the areas north and east of Travis Air Force Base, as shown in the accompanying map. Rail crossings in this area are described in Table 11 (Solano County East of Fairfield).

Eastern Solano County



Solano County East of Fairfield

One-quarter mile south-west of Canon Road on Vanden Road, an additional rail line splits from the main UPRR track. This line runs along the north edge of Travis Air Force Base and out into the Jepson Prairie and SR 113, then turns south towards SR 12 and eventually to Birds Landing and Collinsville. The rail right of way exists for the entire length, but in some places the rails themselves have been removed. A portion of the rail line near SR 12 is used by the Western Rail Road Museum.

Table 11 - East Central Rural Solano County

Street/Property	Crossing ID	Street Data	Traffic	Signage/Guards
North Gate Road	687605K	2 lanes, undivided; asphalt apron. Railroad tracks are closed by gates on each side of road.	500 VC 0.9 +	Signs by side of road at crossing; no other signs, lights or gates
Meridian Road	687608F	2 lanes, undivided; gravel road and apron. Road closed by gate immediately south of crossing.	< 100	No signage or controls
Travis AFB Perimeter Road	PC 615	1 lane; gravel apron; immediately north of end of TAFB runway.	Unknown	No signage or controls
Drainage Culvert	SOL 542	No street. Crossing over agricultural ditch.	None	No signage or controls
Drainage Culvert	SOL 543	No street. Crossing over agricultural ditch.	None	No signage or controls
Argyle Park private crossing	PC 616	Gravel road and apron at Argyle Park off-road vehicle area.	Unknown	No signage or controls
SR 113	687614J	2 lanes, undivided; asphalt apron.	500	Signs by side of road at crossing; no other signs, lights or gates
SR 113	687615R	2 lanes, undivided; 60 degree angle; asphalt apron.	500	Painted on-street warning at 500 feet; signs by side of road at crossing; no lights or gates

Street/Property	Crossing ID	Street Data	Traffic	Signage/Guards
Southwest of SR 113	SOL 544	No street. Crossing over Barker slough.	None	No signage or controls
Cook Lane	687616X	2 lanes, undivided; 45 degree angle; gravel roadway and apron.	< 100	Signs by side of road at crossing; no other signs, lights or gates
Creed Road	687619T	2 lanes, undivided; 45 degree angle; gravel roadway and apron.	< 100	Signs by side of road at crossing; no other signs, lights or gates
Lambie Road	687622B	2 lanes, undivided; asphalt apron.	< 100	Painted on-street warning at 450 feet; signs by side of road at crossing; no lights or gates
North of SR 12	PC 617	Gravel crossing.	Unknown	No signage or controls
SR 12 Overcrossing	687624P	Highway passes over railroad tracks; 2 lanes, divided. Single structure	None – grade separated	No signage or controls
Western Railroad Museum	PC 618	Multiple private crossings of private rail line within museum grounds.	Unknown	Unknown
Northeast of Little Honker Bay Road	SOL 545	Bridge over unnamed drainage.	None	No signage or controls
Little Honker Bay Road	687626D	2 lanes, undivided; asphalt apron.	Unknown	Painted on-street warning at 450 feet; signs by side of road at crossing; no lights or gates
South of Little Honker bay road	SOL 546	No street. Culvert for unnamed drainage.	None	No signage or controls

Street/Property	Crossing ID	Street Data	Traffic	Signage/Guards
Private Crossing	SOL 547	Located 3 miles south of SR 12, east of Shiloh church. 2 parallel gravel roads, accessing ag building and gas well. 2 gravel ag access roads one-half mile south.	Unknown	No signage or controls
Shiloh Road	687632G	2 lanes, undivided; asphalt apron.	< 100	Painted on-street warning at 400 feet; signs by side of road at crossing; no lights or gates
Birds Landing Road	687632N	2 lanes, undivided; 60 degree angle; asphalt apron.	< 100	Painted on-street warning at 400 feet; signs by side of road at crossing; no lights or gates
South of Birds Landing Road	SOL 548	No street. Bridge over unnamed drainage.	None	No signage or controls
North of Dinkel Spiel	SOL 059	Private crossing; gravel apron.	Unknown	No signage or controls
Dinkel Spiel	687634V	2 lanes, undivided; gravel road and apron.	Unknown	Painted on-street warning at 400 feet; signs by side of road at crossing; no lights or gates
Dutton Road	SOL 058	Right-of-way crosses road, but tracks removed.	< 100 No rail service	No signage or controls

Figure 11a - East Central Rural Solano County, north of SR 12

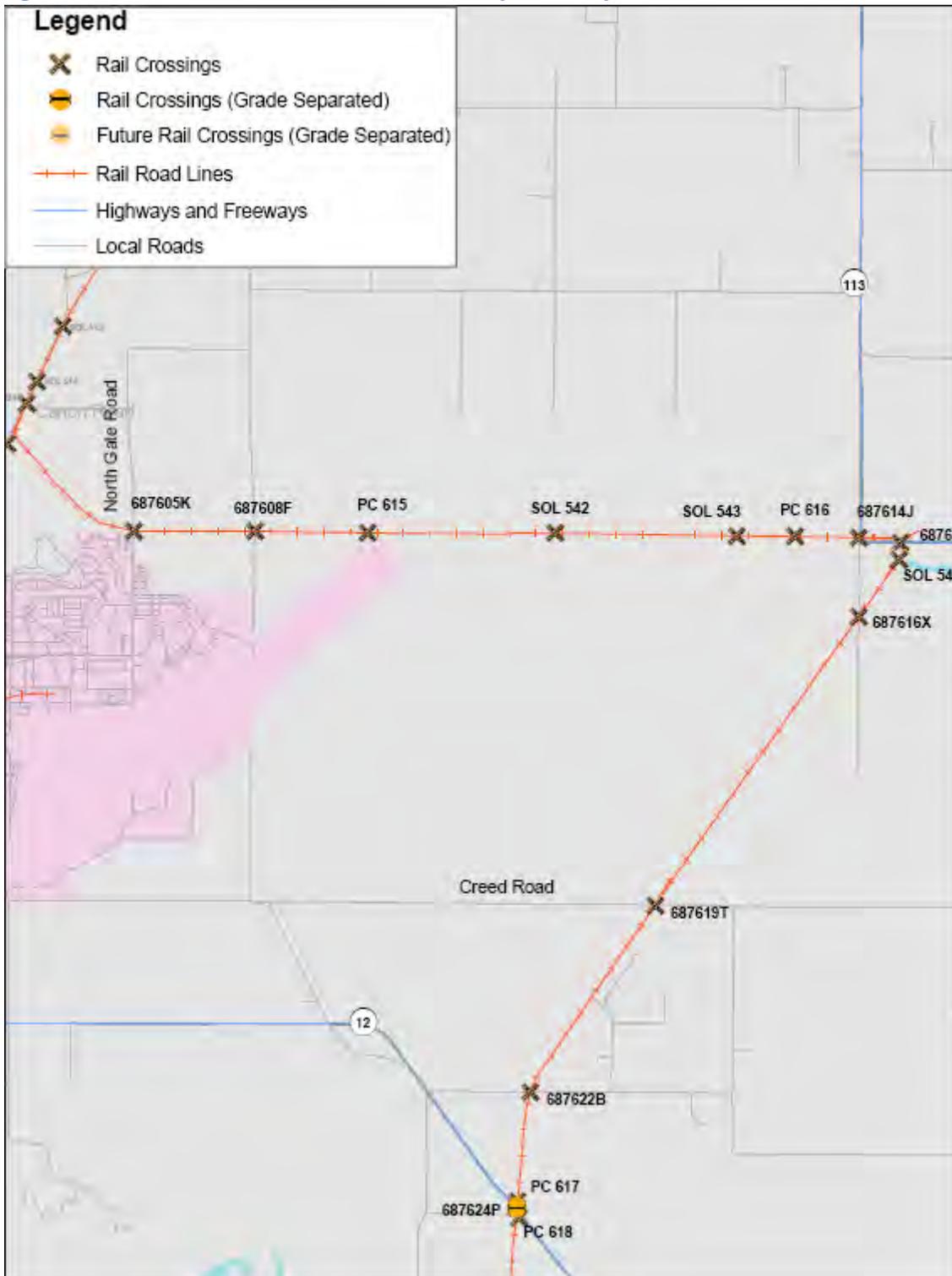


Figure 11b - East Central Rural Solano County, south of SR 12



ACCIDENT HISTORY

One of the most significant negative aspects of rail traffic in a community is the danger of collisions. Rail vehicles typically move at high rates of speed, have long stopping distances, and have no ability to maneuver around obstructions on the tracks. When vehicles, bicyclists or pedestrians are stopped in the path of a moving train, the results are catastrophic.

In Solano County, a review of rail and local law enforcement records shows 26 accidents since January 1, 2000. Those accidents have claimed 10 lives and injured an additional 22 people (18 in a single incident). Even when no one is killed or injured, the disruption to rail and surface street traffic from an accident is significant, often involving a train unable to move for hours as an accident investigation is completed.

The table below provides a summary of rail accidents in Solano County since January 1, 2000. The table provides information on the date, time and location of the accident, the type of crossing and the number of individuals injured or killed. Appendix B contains a more detailed database of accident information, including information on time of day and weather, and the behavior of the surface traffic involved in the accident.

Table 12 – Accident History

CROSSING	JURISDICTION	STREET	MILE-POST	CROSSING TYPE	INCIDENT NO	DATE	TIME	NO. KILLED	NO. INJURED
51500V	Benicia	Bay Shore Rd.	35.34	Private	0200RS011	2/5/00	6:30 pm	0	0
751516S	Benicia	Bayshore Rd.	37.53	Private	1204RS021	12/21/04	2:00 pm	0	0
751558D	Benicia	Park Road	38.12	Public	1006RS031	10/26/06	10:45 am	0	0
751494U	Solano County	Pierce Ln.	40.10	Public	105349	8/17/07	3:02 pm	0	18
751250K	Dixon	N 1 st St.	67.60	Public	069318	7/20/01	8:36 pm	0	1
751250K	Dixon	N 1 st St.	67.60	Public	SOLACC5	2/1/09		1	0
751254M	Dixon	Pitt School Rd.	65.90	Public	0405RS027	4/17/05	3:10 am	0	0
751246V	Dixon	Tremont Rd.	71.60	Public	CA0905203	9/19/05	7:15 am	0	1

FINAL Solano Rail Crossing Inventory and Improvement Plan

CROSSING	JURISDICTION	STREET	MILE-POST	CROSSING TYPE	INCIDENT NO	DATE	TIME	NO. KILLED	NO. INJURED
751251S	Dixon	W B Ped Xing	67.50	Public Ped/Bike	100891	6/1/06	9:10 pm	1	0
751255U	Dixon	Midway Rd.	65.00	Public	105515	9/5/07	9:05 am	1	0
751292W	Fairfield	Peabody	53.80	Public	065579	12/5/00	1:43 pm	0	1
751294K	Fairfield	E. Tabor	51.40	Public	1101RS037	11/2901	8:43 am	0	1
751291P	Solano County	Canon Rd.	55.40	Public	068688	6/18/01	6:50 am	1	0
751289N	Solano County	Fry Rd.	58.30	Public	091750	3/16/04	6:43 am	1	0
751241L	Solano County	Old Davis Rd.	73.00	Public	SOLACC1	8/25/09	9:35 am	1	0
751241L	Solano County	Old Davis Rd.	75.00	Public	SOLACC2	1/30/10	9:03 am	1	0
751295S	Suisun City	Sunset	50.40	Public	103640	2/2307	10:11 am	1	0
751294K	Suisun City	E. Tabor	51.40	Public	SOLACC3	7/28/09	4:45 pm	1	0
CR-4	Suisun City	Railroad Ave	48.00	Public	SOLACC4	8/4/09	7:00 pm	1	0
751465J	Vallejo	Broadway St	0.00	Public	480701022	2/24/01	9:22 am	0	0
928442W	Vallejo	Broadway St	0.00	Public	480701080	8/7/01	11:45 am	0	0
SOL 13	Vallejo	Railroad Ave	0.00	Public	0620694	11/21/02	10:26 am	0	0

CROSSING	JURISDICTION	STREET	MILE-POST	CROSSING TYPE	INCIDENT NO	DATE	TIME	NO. KILLED	NO. INJURED
928445S	Vallejo	Redwood St	0.00	Public	2093053	6/22/05	11:55 am	0	0
928443D	Vallejo	Sereno #1 (W)	0.00	Public	IX070161	3/9/07	12:53 pm	0	0
751465J	Vallejo	Broadway St	0.00	Public	3086470	3/9/07	1:13 pm	0	0
SOL 32	Vallejo	Nimitz Ave	0.00	Public	3620557	2/5/08	1:10 pm	0	0

Of the 26 accidents identified in this report, only 6 do not occur at road crossings. Two of these accidents occur in unincorporated Solano County northeast of Dixon, in an area with low traffic volumes. Two occur in Vallejo, in the Broadway Avenue area north of Sereno Drive. The last two occur in the East Tabor Avenue to Downtown Suisun City corridor.

The following figures show the locations of accidents listed in the table, grouped by location; Dixon, Fairfield/Suisun, and Benicia and Vallejo.

Figure 12 - Accident History, Northeast Rural Solano County and City of Dixon



Figure 13 – Accident History, Cities of Fairfield and Suisun City

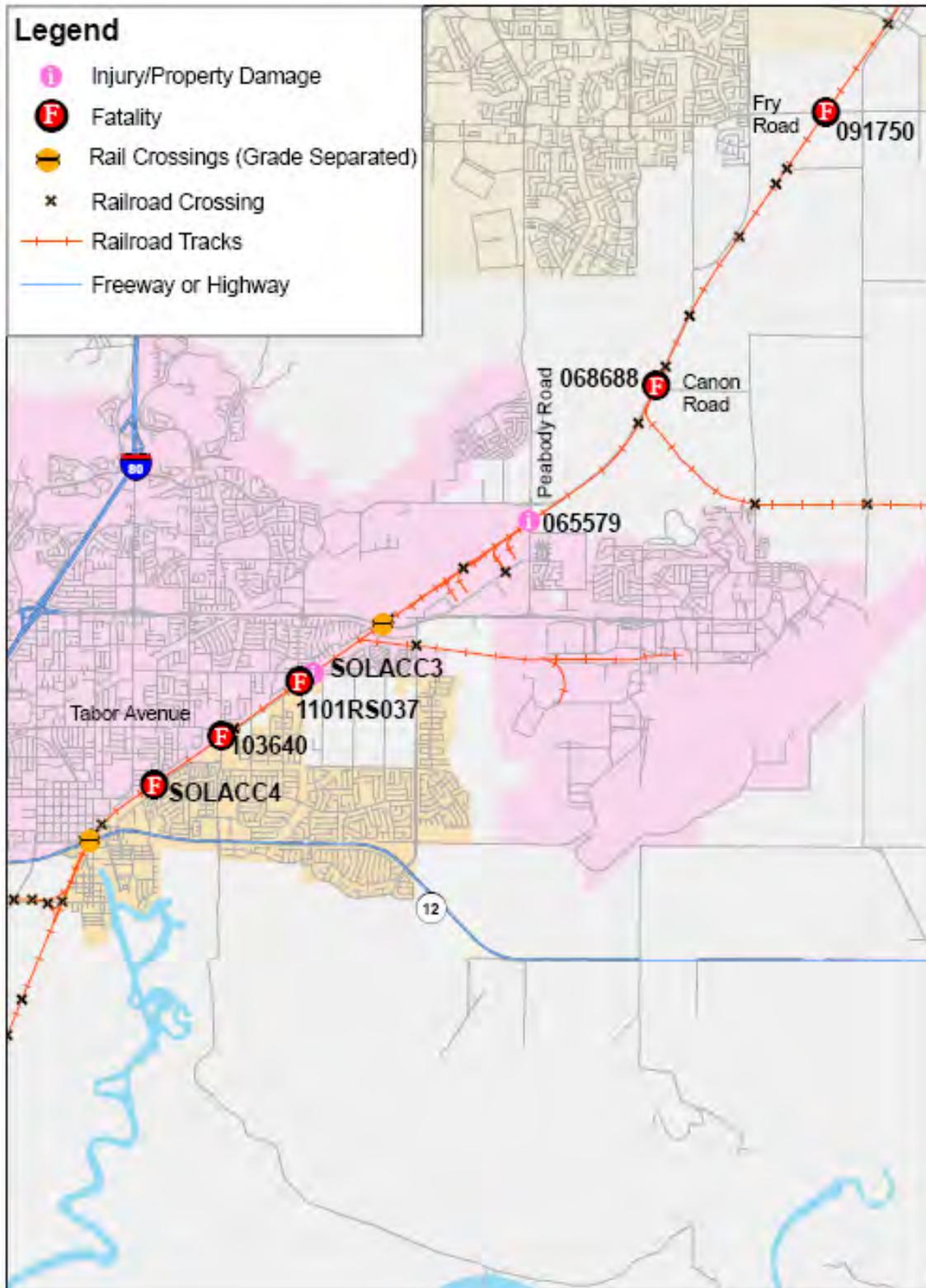
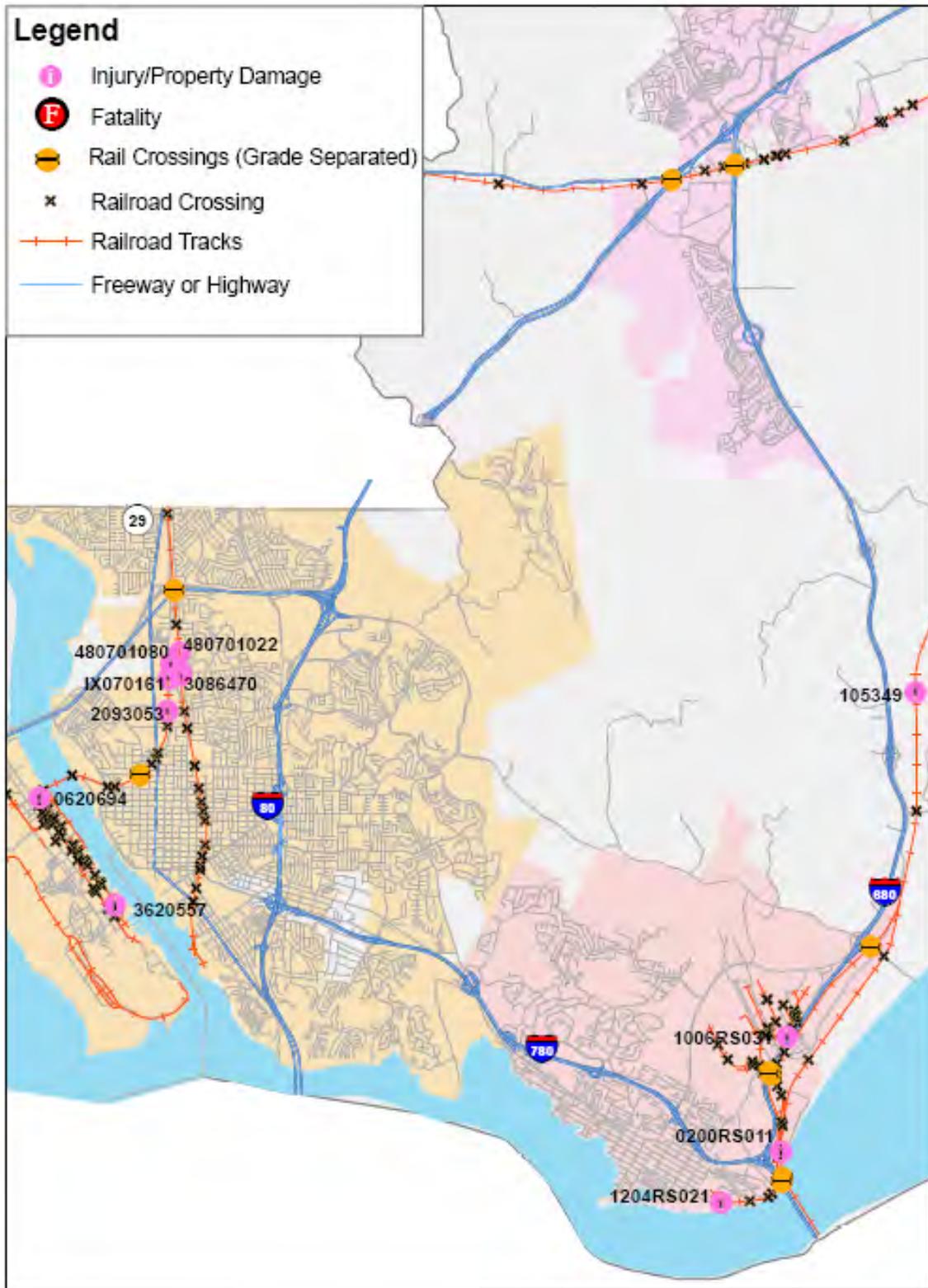


Figure 14 - Accident History, Cities of Benicia and Vallejo



As can be seen from preceding the table and figures, accidents are clustered in three areas:

- Dixon, in the 1st Street/West A Street area downtown
- Fairfield/Suisun City, from East Tabor Avenue to Sunset Avenue
- Vallejo, near Broadway Avenue and Sereno Drive .

RAIL TRAFFIC

The main rail line running through Solano County is operated by the UPRR, and carries both freight and passenger (Capitol Corridor and Amtrak) trains. The secondary rail line splits off from the main UPRR line in southwestern Suisun City, and runs west through Fairfield and Napa County to eventually serve Vallejo, including Mare Island. This line carries only freight traffic; there is no passenger service on this line. A third line splits off from the main UPRR line in east Fairfield and runs east, across the northern border of Travis Air Force Base, and then south into the Jepson Prairie. This line is discontinuous. It carries no freight traffic. A small portion carries periodic passenger/tourism traffic from the Western Railroad Museum.

Main Line Freight Traffic

UPRR does not provide detailed information on current or predicted future freight train traffic. In large part, this is because they are not in direct control of the volume of freight traffic; as a common carrier, they are obligated to handle whatever freight is presented for shipping, which is in turn based upon the overall level of economic activity. The UPRR operates most of their freight trains during the evening and nighttime hours, in order to avoid conflicts with the passenger trains. Due to customer needs, however, some freight trains are operated during daylight hours. Similarly, switching of cars between tracks/sidings or into or out of trains often occurs in industrial and business park areas during daylight hours, resulting in obstruction of surface streets at at-grade crossings. This is most likely to be a problem in the Fairfield industrial park areas near Peabody and Huntington Roads, and in the Port of Benicia.

Main Line Passenger Traffic

The Capitol Corridor operates 8 train sets, consisting of 1 locomotive and 4 to 5 passenger cars (1 of which also serves as a food service car). A train set has the capacity to carry from 320 to 350 passengers. The Capitol Corridor trains make 32 weekday trips, with 22 weekend trips.

Side Line Freight Traffic

No passenger trains operate on the secondary line from Suisun City west through Jameson Canyon and on to Napa and Vallejo. Information on the number, frequency and time of freight traffic run by California Northern Railroad on this track is not available.

ROADWAY CONGESTION

Rail traffic brings with it surface street congestion, for the same reason that it brings with it the risk of accidents; high speed, long stopping distances, and inflexibility of routing. In addition, trains – especially

freight trains – are long vehicles, with the typical length of a freight train on the UPRR tracks being 8,000 to 10,000 feet.

As trains move through a community, roadways are shut down. Lights sound and gates come down (where present) before the train arrives, stay down during its passage, and are deactivated after the train passes. For passenger trains, this time of road closure can be as short as 1 minute. For freight trains moving at 60 miles an hour, a 10,000 foot train takes more than 2 minutes to clear a crossing. In industrial areas or where trains are switching tracks or adding or removing cars, road traffic can be blocked for substantially longer.

Volume to Capacity Ratio ((VC Ratio) is a standard measure of roadway congestion. VC is calculated by identifying the volume of traffic by placing a pneumatic hose or other mechanical counting device across the roadway during a ‘typical’ time period. Capacity is based primarily upon the number of lanes and speed limit. The presence of an at-grade rail crossing that causes occasional roadway obstruction is not factored into capacity calculation. A standard measure of a congested roadway is one with a VC Ratio of 0.8 (80% of the capacity is being used) or more. In the area covered by the Solano Rail Crossing Inventory and Improvement Plan, the roadways with an existing or projected VC of 0.8 or greater are:

- City of Dixon – North 1st Street/SR 113, just south of the UPRR tracks.
- City of Fairfield – Peabody Road.
- City of Fairfield/City of Suisun city – East Tabor Avenue/Railroad Avenue.
- City of Suisun City – Sunset Avenue.
- City of Fairfield – Old Cordelia Road near Lopes Road.
- City of Fairfield – Red Top Road.
- City of Vallejo – Mini Drive
- City of Vallejo – Broadway Street
- City of Vallejo – Sonoma Blvd./SR 29
- City of Vallejo – Tennessee Street/Mare Island Causeway
- City of Vallejo – Railroad Avenue

Additional streets in the City of Vallejo that have existing or projected traffic congestion cross railroad tracks that are inactive. These streets are Tennessee Street, Curtola Parkway, 5th Avenue and Sonoma Blvd./SR 29. If rail use is resumed beyond Sereno Drive, rail/surface street interaction on these congested streets may once again become an issue.

AREAS FOR FUTURE INVESTMENT

Options for Improving Mobility and Safety

The safest and most efficient rail crossings are those where trains do not interact with vehicles, bicyclists or pedestrians. This can only be achieved by grade separation: the surface street passing over or under the railroad tracks. Where grade separation is not possible, mobility and safety gains can still be achieved by improving the crossing (including the street surface and lighting/signage) and by reducing

trespassing into the railroad right-of-way. There are insufficient funds to make all road crossings of railroad tracks in Solano County grade separated. As a result, funds must be prioritized into those areas where investments will have the greatest benefits. Those benefits come from improving mobility by reducing congestion on surface streets and improving the safety of rail crossings.

Grade Separation

Grade separated crossings provide the greatest improvement to safety and mobility by completely removing any interaction between rail and surface street traffic. However, they also are the most expensive solution, and have the greatest community impact. A 2007 report from the California State Auditor found that the typical cost for a grade separation project is \$26 million.

In addition to the financial burden, grade separations take up land for facilities such as approach ramps and bridge abutments. Grade separation structures are most easily built in anticipation of future use, such as would be the case with a new development on vacant land adjacent to a railroad track. Unfortunately, in most areas where there is sufficient traffic to justify a grade separation project, there is already development on the land that would be needed to construct the grade separated roadway.

Access Control

A second method of improving mobility and safety is to limit access into the railroad right-of-way. The temptation to trespass into the railroad right-of-way is reduced or removed if the trespasser receives no benefit from a shorter (in terms of time or distance) trip. Effective fencing, kept in good repair, is the biggest single factor in eliminating the ability of a trespasser to achieve a shorter trip.

Crossing Improvements

A final approach to improving mobility and safety is to improve the quality of the at-grade road surface where it crosses the railroad tracks. Smooth roadways allow more vehicles to pass through, and are less likely to have pedestrians or bicyclists immobilized in the crossing by an injury. Crossing improvements can also occur when better lighting, signage and/or barriers are installed.

A related issue is the quality of the roadway and/or bicycle/pedestrian path network beyond the crossing. If the roadways or trails are in good shape, connect to desired destinations and are not congested, drivers, pedestrians and bicyclists are likely to use the established crossings to get to where they want to go. If the roadways are congested, however, car traffic is more likely to be backed up into the crossing when a train comes through. More importantly, for pedestrian and bicycle traffic (which is not limited to paved streets), if the roads and trail system is inadequate, users are much more likely to trespass into the railroad right of way in order to shorten their trip.

Areas with Mobility and/or Safety Issues

An examination of the preceding data and maps shows the following areas crossings with high rates of accidents or closely-spaced congested crossings:

- City of Dixon downtown, from North 1st Street/SR 113 to West A Street.
- City of Fairfield, Peabody Road.
- City of Fairfield and City of Suisun City, from East Tabor Avenue to the SR 12 Overcrossing.

- City of Vallejo, along Broadway avenue north of Sereno Drive.

Each of these areas is discussed in detail below. Of these high volume, congested streets, 4 have recorded accidents: North 1st in Dixon (2), Peabody Road in Fairfield (1), E. Tabor in Fairfield/Suisun City (2), and Broadway Street in Vallejo (3).

City of Dixon downtown, from North 1st Street/SR 113 to West A Street. Downtown Dixon has three heavily-used crossings within a 1,200 foot area: North 1st Street/SR 113, the B Street pedestrian crossing, and west A Street. While the total traffic volume for North 1st Street and West A Street is low compared to some other communities, these streets represent the heart of Dixon's business and civic communities. The presence of more than 300 school-age pedestrian and bicycle users crossing the tracks twice per day at the West B street crossing, with an additional 200 daily crossings at North 1st Street and West A Street, means that this crossing has the greatest single rail safety risk in Solano County.

The City of Dixon has developed a plan to underground the B Street pedestrian crossing. The project would not only remove the potential for pedestrian/bicyclist conflict with trains, it would also serve as access to the center of the rail tracks for Dixon's proposed passenger rail station. The project, which is in preliminary design, is expected to cost in excess of \$6 million.

As a part of the City of Dixon train station plan, the City is also proposing to grade-separate West A Street. Initial plans call for the street to be undergrounded. Preliminary cost projections for the West A Street undergrounding were developed as a part of the West A Street Grade Separation Project prepared in 2009 for the City of Dixon by HDR Consulting. The project cost estimate was \$22.3 million.

City of Fairfield, Peabody Road. Peabody Road is projected to carry 5,600 p.m. peak hour trips in 2030, and is a critical north-south roadway link between Fairfield (including the Travis Air Force Base main entry) and Suisun City to the south, and Vacaville to the north. The crossing is adjacent to the rail-served industrial park along Huntington Drive, and switching activity associate with these businesses also contributes to back-ups on Peabody Road.

East of Peabody Road and south of the railroad tracks are 2 schools: Vanden High School and Golden West Middle School. Congestion on Peabody Road is in part due to these schools, and in turn limits access into and out of the schools. Both schools are part of the Travis Unified School District (TUSD). The TUSD attendance area extends into portions of Vacaville. As a result, some students attending these two schools must cross the UPRR tracks on Peabody Road in order to get to and from school.

The future Jepson Parkway project will build a new grade-separated crossing with the northern extension of Walters Road that will take traffic off of Peabody road. In addition, construction of the Fairfield-Vacaville train station will include building a grade separated crossing of Peabody Road over the UPRR tracks. This structure will carry both auto and bicycle/pedestrian traffic.

City of Fairfield and City of Suisun City, from East Tabor Avenue to the SR 12 Overcrossing.

This 2.5 mile stretch is surrounded on both sides by housing, and includes heavily-used at-grade crossings at both east Tabor Avenue and Sunset Avenue. Two grade –separated crossings – the Union Avenue pedestrian crossing and the SR 12 highway overcrossing – are at the west end of the corridor, adjacent to both Fairfield and Suisun City’s downtowns. Three fatal accidents have occurred in this corridor.

There are no plans for new at-grade crossings in this corridor, or to convert existing at-grade crossings to grade separations. The City of Suisun City has proposed constructing a grade-separated pedestrian overcrossing at Blossom Drive, but this is a preliminary proposal only, with no detailed engineering or environmental planning, and no estimate of the project’s cost.

The project to rebuild the I-80/I-680/SR 12 interchange, approximately 5.6 roadway miles west of the SR 12 railroad overcrossing, would include reworking of the SR 12/Jackson street off-ramps which lead to downtown Suisun City and are adjacent to the Suisun City passenger rail station. These plans, along with the designation of potential high-density residential development and existing concentrations of employment in the two cities’ downtowns, may result in the need to re-examine auto and pedestrian access across the train tracks between these two downtowns.

City of Vallejo, along Broadway Avenue north of Sereno Drive. This relatively small area (approximately 30 acres) has 5 recorded accidents; fortunately, all are property damage only, with no injuries or fatalities. With the closing of the Mare Island Naval Shipyard, train traffic in Vallejo has been substantially reduced, and the risk of additional accidents appears to be low at this time. However, as Mare Island is redeveloped and the potential for rail traffic increases, the traffic and accident statistics in this area deserve careful monitoring.

Other Locations of Concern. Other intersections with high volumes or levels of congestion are North 1st Street in Dixon (VC 0.8+), East Tabor Ave in Fairfield (VC 0.8+), Sunset Avenue in Suisun City (1,100 peak hour trips, VC 0.9+), and North Gate Road in the unincorporated county (VC 0.9+). If rail traffic increases to the City of Vallejo in general, and Mare Island in particular, other crossings with congestion issues include Mini Drive in Vallejo (VC 1.0+), Tennessee Street (1,725 peak hour trips), Solano Avenue (1,350 peak hour trips), Curtola Parkway (1,750 peak hour trips, VC 0.9+), 5th Street (VC 0.8+), Sonoma Blvd. in Vallejo (1,750 peak hour trips, VC 0.9+), Broadway Street (1,700 peak hour trips, VC 0.9+), Sonoma Blvd. (1,650 peak hour trips, VC 0.9+), Wilson Avenue (2,300 peak hour trips, VC 1.0+) the Mare Island Causeway (2,100 peak hour trips, VC 1.0+), and Railroad Avenue on Mare Island (1,500 peak hour trips, VC 0.8+).

Both the Vallejo and Suisun City areas were identified previously as containing both congested streets and a high concentration of accidents. As was also noted above, the Suisun City corridor is also an area with residential development on both sides of the tracks. Finally, anecdotal information from Capitol Corridor staff and local law enforcement and public works staff indicates that the Suisun City corridor is an area with numerous incidents of pedestrian trespassers within the railroad right-of-way.

The East Tabor Avenue to downtown Suisun City corridor has benefitted from recent improvements to the Central Solano bikeway, just east of the rail station. This project included the installation of new chain link fencing that has, so far, not been cut or torn down. However, this improvement only impacts the western one-half mile of the corridor. It remains to be seen if the reduction in trespassing in this area will have a benefit on the rest of the corridor.

In downtown Dixon, there is little in the way of access control, but there are adequate designated areas for crossing the railroad tracks, and the number of crossings reported away from these areas is low. The proposed changes to the North 1st Street/B Street pedestrian crossing/ West A Street area will not eliminate any of the crossing opportunities that currently exist. In contrast, to the east and west of downtown Dixon, there are several informal rail crossings identified, although rail and local government staff do not report frequent trespassing incidents in these areas. In Benicia, the three reported accidents are widely scattered in location.

The level of concern regarding accidents in Vallejo will be based upon future rail usage on these lines. If train traffic increases significantly, improvements to crossings and improved access control may become a high priority. At the current rate of rail usage, however, the potential for accidents is low, and investments in improving crossings and access control does not appear warranted.

Funding Options

STA does not have a local revenue source to fund grade separation projects. The Cities of Vacaville, Fairfield, Suisun City, Benicia and Vallejo have transportation impact fees, charged at the time of building permit issuance, to pay for improvements to roadways and other transportation facilities, and grade separation projects can be eligible for such funds if identified in the city's traffic Capital Improvement Plan. At this time, no city wide transportation impact fee program has a grade separation project included. The City of Dixon and Solano County do not have transportation impact fees.

Regional Bicycle Funds and Transportation Development Act (TDA) Article 3 Bicycle and Pedestrian Funds. MTC allocates funds to the 9 Bay Area counties for projects on the regional bicycle network. TDA funds are allocated to STA based upon a population-based formula; TDA Article 3 funds are specifically designated for bicycle and pedestrian projects. Both fund sources can be used for grade separation projects that are either part of the regional bicycle network or that carry significant pedestrian or bicycle traffic.

Congestion Mitigation and Air Quality (CMAQ) funds are federal funds allocated through MTC. CMAQ funds can be used for a variety of projects, so long as they result in improvements to air quality. Grade separation projects that reduce surface street congestion and/or increase bicycle and pedestrian use are eligible for CMAQ funds.

State Transportation Improvement Program (STIP) funds allocated to Solano County and the cities can be used for grade separation projects. STIP funds are also used for roadway improvements such as the new Jepson Parkway and North Connector projects. Statewide, the demand for STIP funds typically exceeds the available money. The current STIP fund estimate, covering the period from Fiscal Year 2009-2010 through Fiscal Year 2014-2015 is \$3.8 billion, but may be revised substantially downward due

reductions in tax revenues and changes to the funding formula by the state legislature. Projects seeking STIP funding often exceed STIP capacity by four to five times. For the 2010 STIP, there were no new funds available, and some projects were forced to delay anticipated construction by two years, until a time when new funds are anticipated to be available.

The California Department of Transportation (Caltrans) administers the Section 190 Grade Separation Fund Program, which provides funds to public agencies to separate existing crossings, or to improve existing grade-separated crossings. Projects are selected off a list of eligible projects, which is revised every two years. Funding is set by statute at \$15 million a year, with the Program able to fund up to 80% of a project's cost. Factors used to rank projects are Average Daily Vehicle Traffic, Average Daily Freight/Commuter Train Traffic, Average Daily Light Rail Train Traffic, Accident History, Project Cost Share to be allocated from Grade Separation Fund, and Special Conditions Factor and Separation Factor.

Proposition 1B, approved by California voters in 2006, authorized \$2 billion to the Trade Corridors Improvement Fund (TCIF), including "projects that separate rail lines from highway or local road traffic." The \$2 TCIF billion was allocated by the California Transportation Commission (CTC) along federally designated "Trade Corridors of National Significance" and other corridors with high volumes of freight movement. Another \$1 billion is authorized for distribution by the CTC to goods movement projects that result in emissions reduction. Proposition 1B also created the Highway-Railroad Crossing Safety Account (HRCSA), which was authorized at \$250 million. Projects funded from this account require a dollar-for-dollar match of non-state funds. \$150 million is to be allocated according to the California Public Utilities Commission's (CPUC) existing process for identifying and funding high-priority grade crossings. The other \$100 million is to be allocated by the CTC, in consultation with the CPUC, considering projects that are not on the CPUC's statewide list of high-priority grade crossings.

Recommended Priorities

Given the limited financial resources available, the significant cost of grade crossing projects and their impact on existing adjacent land uses, it is recommended that STA follow a strategy of funding grade separation projects only where there is a high level of safety concern or congested traffic, and where there is no foreseeable land use development project that can fund the grade separation on its own. In order to achieve this goal, it is recommended the STA focus on obtaining funding to design and construct one grade separation project at a time. STA should also seek to have two additional projects identified so that, when the priority project is constructed, there are options regarding which project to move into the planning and engineering phase, and ultimately to construction.

In addition, STA and the local jurisdictions should monitor where trespassing on the railroad right-of-way is occurring, and develop access control projects to address the areas with the greatest frequency of incidents. This should be supplemented by STA's on-going program of improving county-wide mobility by increasing the efficiency of existing local streets and, where appropriate, constructing new streets that provide access to key housing, employment, cultural and/or recreational centers.

Priority Construction Project:

This study indicates that, due to the large number of children crossing the tracks every school day, the top safety priority is the Dixon B Street under crossing. This project is partly designed, and is not fully funded for construction. This project should therefore be the top priority for grade separation planning funds and, when fully designed, should become the top priority for construction funds.

The top congestion relief priority is the Peabody Road crossing in Fairfield. This project will be built as a part of the Fairfield-Vacaville Multi Modal Center. The project is in design, and is not completely funded. STA should therefore help the City of Fairfield identify and obtain funds that can pay for this portion of the project.

Priority Planning Projects:

The recommended first priority for planning funds is the Blossom Drive pedestrian crossing between Fairfield and Suisun City. This crossing would be located between the Sunset Avenue and East Tabor Avenue at-grade crossings. West of Sunset Avenue, the two cities can work with proposed developers of vacant property in Suisun City to further extend the recently-installed effective barrier fencing.

The recommended second planning priority is to work with each jurisdiction to improve access control between official crossings, and at the same time to improve the quality of crossings (where needed) and the connections between crossings and end destinations. This combination of disincentives to use undesignated crossings – and to trespass into the railroad right-of-way – and incentives to use the designated, improve crossings can substantially improve the safety of the rail corridors. The City of Benicia has identified local priority crossings in the vicinity of the Port of Benicia for installation of signal lights and barriers. It is recommended that the STA support efforts by the City of Benicia to obtain funds to install these improvements. Crossing safety improvement ideas can be found in the California Public Utilities Commission’s 2008 report titled “Pedestrian-Rail Crossings in California - A Report Compiling the Designs and Devices Currently Utilized at Pedestrian-Rail Crossings within the State of California.”

STUDY PARTNERS

The STA is lead agency responsible for the conduct of the Solano Rail Crossing Inventory and Improvement Plan (Plan). Funding for the Plan was a combination of State Transit Assistance Fund (STAF) and Transportation Development Act (TDA) funds provided by STA, with additional funds contributed by the Capitol Corridor Joint Powers Authority (CCJPA), the operator of the Capitol Corridor passenger rail service for Solano County.

The consultant for the project was Wilson & Company, located in San Bernardino, CA. Wilson & Company provided initial data and mapping services and organized the rail crossing and accident databases. Crossing and accident data was subsequently reviewed and confirmed by STA member agencies. Information on existing and projected future rail activity were provided by Wilson & Company and CCJPA.

Traffic data for surface streets comes from the Napa Solano Travel Demand Model, the regional traffic model administered by the STA. The model uses existing roadway and land use data from the STA

member agencies and regional agencies such as MTC and the California Department of Transportation (Caltrans), as well as projections for future roadways and land use development for the year 2030.