# PROJECT DELIVERY REPORT
## Trade Corridors Improvement Fund

*The submitting agency will be responsible for maintaining documentation of the information entered on this report.* ***(Please type your response, handwritten reports will not be accepted)***

**A. Project Information** Date: 11/15/2018

TCIF # (Segment): 53 Other Project Identifier (EA, Project #, PPNO, etc): PPNO 1129

Project Title: Magnolia Avenue Railroad Grade Separation (BNSF)

Delivery Report: [X] Final- Due within six months of project becoming operable.
[ ] Supplemental - Due at the conclusion of all project activities.

Location: County: Riverside City: Home Gardens area

Project Description: Construct grade separation over BNSF railroad mainlines

**B. Contact Information**

Implementing Agency: County of Riverside Caltrans District Numb 8

Contact Person: Scott Staley Phone: 951-955-2092

Email Address: cstaley@rivco.org

| C. Cost | Adopted Program Amount ($) | Current Approved Amount ($) | Actual Expended Amount ($) | Net Difference (Dollars) |
|---|---|---|---|---|
| Environmental | | | | |
| Total Amount | $1,780,000 | $563,000 | $253,635 | $309,365 |
| Design | | | | |
| Total Amount | $4,220,000 | $3,700,000 | $4,401,867 | -$701,867 |
| Right of Way | | | | |
| Total Amount | $3,880,000 | $1,923,000 | $11,682,455 | -$9,759,455 |
| Construction | | | | |
| TCIF | $13,700,000 | $17,673,000 | $16,669,791 | $1,003,209 |
| Federal | $15,000,000 | $16,400,000 | $15,178,490 | $1,221,510 |
| Federal | | | $4,344,295 | -$4,344,295 |
| Local | $10,800,000 | $4,350,000 | | $4,350,000 |
| Local | $298,000 | $2,000,000 | $115,061 | $1,884,939 |
| Local | $28,882,000 | | $7,204,184 | -$7,204,184 |
| Other State | $3,190,000 | $5,000,000 | | $5,000,000 |
| | | | | |
| Totals | $81,750,000 | $51,609,000 | $59,849,778 | -$8,240,778 |

| D. Schedule | Adopted Program Date | Current Approved Date | Actual Begin/End Date | Net Difference (Months) |
|---|---|---|---|---|
| Environmental Phase | | | | |
| Begin | 09/30/08 | 12/02/09 | 06/17/09 | -5 |
| End | 09/30/10 | 05/10/11 | 05/10/11 | 0 |
| Design (PS&E) Phase | | | | |
| Begin | 10/01/10 | 05/10/11 | 05/10/11 | 0 |
| End | 12/30/11 | 03/29/13 | 05/13/13 | 1 |
| Right of Way Phase | | | | |
| Begin | 12/30/10 | 05/03/11 | 05/11/11 | 0 |
| End | 03/29/13 | 05/30/13 | 05/30/13 | 0 |
| Construction Phase | | | | |
| Begin | 09/30/13 | 12/01/13 | 12/10/13 | 0 |
| End | 09/30/15 | 06/01/16 | 05/31/18 | 23 |
| Closeout Date | | | | |
| Begin | 10/01/15 | 08/01/16 | 07/18/18 | 23 |
| End | 12/31/15 | 11/30/16 | 11/08/18 | 23 |

*E. Amendments*

*List approved amendments*

| Amendment # | CTC Meeting | Summary of Changes (Scope, Cost, Schedule) |
|---|---|---|
| TCIF-AA-1314-23 | 06/25/2014 | Reduce allocation due to cost savings |
| TCIF-P-1213-25 | 12/06/2012 | Schedule, cost, and funding revisions |

*F. Project Benefits*

***Describe and compare project benefits with those included in the approved Baseline Agreement.***

| Outcomes | Adopted Program | Current Approved | Actual |
|---|---|---|---|
| Safety | Elimination of at-grade crossing will improve public safety by elliminating the potential for train versus automobile/truck/pedestrian accidents. Recent accident data obtained from the FRA and the County of Riverside for a 10-year period shows 12 accidents reported involving trains (1 fatality and 6 injuries) and 24 accidents reported (1 fatality and 12 injuries) were vehicle to vehicle within 100 feet of the crossing area which may have been caused due to frequent interruption in the normal flow of traffic. The potential for vehicle or pedestrian versus train accidents are expected to increase as vehicular and train volumes increase. The project will eliminate the need for pedestrians to walk across the mainline tracks. These improvements will eliminate the number of rear-end vehicular accidents at the crossing. The proposed project will also improve public safety and emergency vehicles response time. | Elimination of at-grade crossing will improve public safety by eliminating the potential for train versus automobile/truck/pedestrian accidents. Recent accident data obtained from the FRA and the County of Riverside for a 10-year period shows 12 accidents reported involving trains (1 fatality and 6 injuries) and 24 accidents reported (1 fatality and 12 injuries) were vehicle to vehicle within 100 feet of the crossing area which may have been caused due to frequent interruption in the normal flow of traffic. The potential for vehicle or pedestrian versus train accidents are expected to increase as vehicular and train volumes increase. The project will eliminate the need for pedestrians to walk across the mainline tracks. These improvements will eliminate the number of rear-end vehicular accidents at the crossing. The proposed project will also improve public safety and emergency vehicles response time. | The low skew angle between the railroad tracks and Magnolia Avenue caused a long exposure to pedestrians and motorists at the crossing. The close proximity of Buchanan Avenue and Lincoln Street on either side of the tracks increased the potential for vehicles to stop on the tracks during a red light. Construction of the grade separation eliminated the possibility for train accidents with vehicles and pedestrians. Rear end accidents were also eliminated at the crossing by removing the need to stop for trains. Emergency response vehicles no longer have to wait at the crossing when a train is present. The anticipated increase in rail freight volumes will not affect vehicle or pedestrian safety due to the grade separated crossing. Pedestrians and cyclists enjoy the safety of a continuous sidewalk and bicycle lane across the bridge. Collision reports indicate there were five (5) collisions within the project limits in the year prior to construction and four (4) collisions in the year after bridge opening. None of the collisions were related to the bridge or train. According to the FRA, no pedestrian or vehicle related train accidents have occurred at the crossing since the bridge was opened to traffic. |

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|---|---|---|---|
| Velocity | Elimination of at-grade crossing will improve train velocity by eliminating the potential for train versus automobile/truck/pedestrian accidents and associated delays to investigate and clear tracks. The proposed project will also eliminate idling of trucks and passenger cars at the crossing. Although the train speed limit at this crossing is 50 mph for the freight and 60 mph for the passenger trains, these trains pass through with a much lower speed roughly 25 to 30 mph in this area. After the improvements are complete both freight and passenger trains will be able to operate at their maximum designated speed for the area and also improve the volume of trains traveling though this crossing. Vehicular traffic on Magnolia Avenue will also be able to flow at 45 mph speed without the interruptions of train traffic. | Elimination of at-grade crossing will improve train velocity by eliminating the potential for train versus automobile/truck/pedestrian accidents and associated delays to investigate and clear tracks. The proposed project will also eliminate idling of trucks and passenger cars at the crossing. Although the train speed limit at this crossing is 50 mph for the freight and 60 mph for the passenger trains, these trains pass through with a much lower speed roughly 25 to 30 mph in this area. After the improvements are complete both freight and passenger trains will be able to operate at their maximum designated speed for the area and also improve the volume of trains traveling though this crossing. Vehicular traffic on Magnolia Avenue will also be able to flow at 45 mph speed without the interruptions of train traffic. | The new bridge provides unrestricted movement on Magnolia Avenue over the railroad tracks vehicles, including trucks and school buses traveling in the area. Motor vehicles are now able to operate at the posted speed limit of 45 mph. Mobility for emergency response vehicles is no longer inhibited by waiting for trains at the crossing. Additionally, train velocity has been nearly doubled to allow trains to operate at the prescribed 50 mph for freight and 60 mph for passenger trains since slowing for the crossing is no longer needed. |
| Throughput | This grade separation project will improve the operational efficiency by eliminating accidents and associated delays. Currently, 41 freight trains pass through Magnolia Avenue crossing and the number is projected to increase to 62 by 2030. | This grade separation project will improve the operational efficiency by eliminating accidents and associated delays. Currently, 41 freight trains pass through Magnolia Avenue crossing and the number is projected to increase to 62 by 2030. | Construction of this bridge has improved operational efficiency by eliminating accidents and associated delays from occurring by eliminating the interface between trains and automobiles / trucks / pedestrians.<br>The improvements in throughput benefit the local communities, businesses, and seven schools in the area.<br>Construction of this grade separation provides for the projected 50% increase in freight train traffic and future track expansion without affecting vehicular traffic. |
| Reliability | This project will improve freight train movement and reliability by eliminating the potential for accidents. These accidents create costly schedule impacts to other trains when the operation on rail shuts down for several hours to investigate and clear the accident. | This project will improve freight train movement and reliability by eliminating the potential for accidents. These accidents create costly schedule impacts to other trains when the operation on rail shuts down for several hours to investigate and clear the accident. | Construction of this grade separation has improved freight train movement and reliability by eliminating the potential for accidents between trains and automobiles/trucks/pedestrians. Such accidents create costly schedule impacts to other trains on this line when the operation on this rail shuts down for several hours due to investigating and clearing of accidents. The project has improved public safety and emergency vehicle response times by eliminating delays caused by lengthily train crossings or due to the re-routing of emergency vehicles because of lengthily train crossings. |
| Congestion Reduction | On average, 68 freight and passenger trains pass through Magnolia Avenue Railroad crossing each day causing 104.8 minutes of delays at this crossing; delay is projected to rise to 203.5 minutes by 2030. The vehicle hours of delay per day were 24.8 in 2005 but are projected to increase by more than four times to 103.4 vehicle hours of delay per day by 2030. | On average, 68 freight and passenger trains pass through Magnolia Avenue Railroad crossing each day causing 104.8 minutes of delays at this crossing; delay is projected to rise to 203.5 minutes by 2030. The vehicle hours of delay per day were 24.8 in 2005 but are projected to increase by more than four times to 103.4 vehicle hours of delay per day by 2030. | Construction of this grade seperation eliminated vehicular traffic congestion caused by the train crossing at this location. An estimated 60 vehicle hours of delay per day have been eliminated since the bridge opening. The grade separation currently eliminates approximately 148 vehicle hours of delay per day and is on target to meet the 2030 vehicle hours of delay by allowing traffic to free flow beneath the railroad crossing. The time savings will continue to increase as traffic and train volumes increase. |

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|---|---|---|---|
| Emissions Reductions | The emissions benefit of the project in 2030 is calculated to be 15 tons per year of combined PM10, ROG, NOx and $CO_2$. Additionally, noise from train horns is eliminated for a population of 23,596 within 6,400' of the project. | The emissions benefit of the project in 2030 is calculated to be 15 tons per year of combined PM10, ROG, NOx and $CO_2$. Additionally, noise from train horns is eliminated for a population of 23,596 within 6,400' of the project. | With completion of this grade separation, we are on target and anticipate meeting year 2030 emissions reductions projections. Additionally, the need for train horns at this location have been eliminated by construction of this grade separation and have directly reduced acoustical impacts to over 23,500 people in poximatey of this location. |

***G. Differences/Variances***

***Describe differences/variances (if any) and reason for, between approved scope, cost, schedule, and actual.***

After construction began it became apparent that keeping the road open during construction was not feasible for public safety reasons. The road was closed to traffic and detour routes were established.

Right-of-way costs increased by 85% because of negotiated land acquisition costs with BNSF and the need to compensate owners for business goodwill and construction impacts while the road was closed during bridge construction.

Construction completion was extended by 23 months due to delays experienced during structural work caused by challenges in obtaining BNSF work windows, providing continuous access to adjacent businesses, establishing detour routes—including a temporary traffic signal, and to perform additional work under contract change orders.

Project closeout was extended by 23 months due to the delay in construction completion.

More than $1 million in savings was returned to TCIF.

***H. Lessons-Learned/Best Practices***

***Describe lessons-learned and best practices for future projects.***

Additional railroad coordination time needs to be included in the construction schedule, particularly to accommodate track work and closures for construction activities. Utilization of short, multi-hour, track closure periods should be anticipated in the schedule rather than planning for longer blocks of time.

The queue-cutter signal installed at the railroad crossing to clear vehicles off of the tracks was not effective enough to ensure public safety during construction. Establishing detour routes and closing Magnolia Avenue benefitted public safety and eliminated conflicts within the construction area and at the railroad crossing. A temporary pedestrian walkway was established at the crossing which was monitored by a 24-hour railroad flagman for safety.

## Certification Signature

**Implementating Agency**
I hereby certify to the best of my knowledge and belief, the information in this report is a true and accurate record. The work was performed in accordance with the CTC approved scope, cost, schedules, and benefit information in the Baseline Agreement.

C. Scott Staley
(Print name) Project Manager

(Signature) Project Manager — November 15, 2018 Date

**Caltrans**

The TCIF Division Program Coordinator and/or the Project Manager from the California Department of Transportation has reviewed the information contained in this report and has verified the information presented is correct.

(Print Name) TCIF Division Program Coordinator/Project Manager

(Signature)TCIF Division Program Coordinator/Project Manager — 12/5/18 Date

The TCIF Program Lead from the California Department of Transportation has reviewed the information contained in the report and concurs with the approval.

Tony Lanc
(Print Name) TCIF Program Lead

(Signature) TCIF Program Lead — 12/10/18 Date

Distribution: 1) Local Agency, 2) Division Program Coordinator/Project Manager, 3) TCIF Program Lead, 4) CTC