



Memo

Date: Wednesday, August 22, 2018

Project: Alameda Rail Corridor and Crossings Assessment

To: Carolyn Clevenger, Alameda CTC

From: Cathy LaFata and Wayne Short, HDR

Subject: Oakland Rail Corridors and Crossings

This memorandum provides an assessment of the grade crossings along the Union Pacific Railroad's (UPRR) Niles Subdivision between Mile Posts (MP) 6.20 and MP 7.65, between MP 9.50 and MP 10.77, and between MP 11.62 and MP 13.70, as well as along UPRR's Coast Subdivision between MP 13.47 and MP 15.53 in the City of Oakland. The assessment includes a description of the existing conditions at each crossing, proposed near-term safety improvements, potential long-term grade separations, and a preliminary assessment of whether the safety improvements would be sufficient for a quiet zone. The quiet zone feasibility assessment was done given the general interest throughout the county in quiet zones. Individual jurisdictions would need to determine if a quiet zone is appropriate for their local conditions.

This memo presents technical information for consideration but is in no way a funding commitment or recommendation of specific improvements. Additional discussion with local jurisdictions and other partners (e.g., UPRR, CPUC) would need to take place before any improvements could be developed further. More refined cost assessment would also occur should any improvements move forward. The costs presented in this memo are conceptual and subject to refinement as design advances.

1.0 Overview of Analysis

The Alameda County Transportation Commission (CTC) Rail Strategy Study (RSS) is an outgrowth of recommendations included in the Countywide Goods Movement Plan and the Countywide Transit Plan, both of which identified significant growth potential for rail in the county. The RSS includes an analysis of at-grade rail crossings on the mainline rail system within Alameda County. A key aspect of the strategy is to identify a list of high-priority crossings or collection of crossings, referred to as corridors, for funding advocacy and project development. The corridors include those areas between individual crossings. Field visits were conducted to assess the current condition of all the crossings located within each corridor, as well as those not within a crossing corridor, as identified above. During each site visit, HDR observed and documented the condition of crossing surfaces and panels, identified the existing safety measures in place, and assessed if any additional safety measures may be appropriate at each crossing.

In November 2017 and February 2018, staff met with Alameda County Technical Advisory Committee (ACTAC) to get input on the methodology used to screen crossings, review initial results, and share the



toolkit resource. This analysis was used to prioritize a subset of the 133 at-grade rail crossings¹ and 23 rail corridors in the county in order to focus resources and advocate to implement improvements. An update on the grade crossing component of the RSS, including the prioritized list of Tier 1 crossings and corridors, was presented to the Alameda County Planning, Policy and Legislation Committee (PPLC) on March 5, 2018. The Alameda CTC approved the item at its March Commission meeting. The March PPLC Grade Crossing Analysis and Safety Improvements Update Memorandum is available online at: https://www.alamedactc.org/files/managed/Document/22626/5.3_Grade_Crossing_Update.pdf

The March PPLC memorandum identifies the final prioritization methodology and draft results. Crossings and corridors have been prioritized based on safety, vehicle delay, emissions, and noise impacts, as well as whether or not the crossing is in a high-growth Priority Development Area or a Community of Concern². Application of this analysis has identified a set of 23 Tier 1 crossings and 10 Tier 1 corridors.

Following the identification of the Tier 1 crossings and corridors, the Alameda CTC retained HDR Engineering, Inc. (HDR) to conduct a site assessment of at-grade crossings within the Tier 1 corridors (including those grade crossings not identified as Tier 1 crossings) as well as identified Tier 1 grade crossings not within Tier 1 corridors. Based on proximity of closely spaced Tier 1 crossings within a corridor, two additional corridors were assessed compared to the original list of Tier 1 corridors. Figure 1 presents the crossings and corridors that were included in this assessment.

The grade crossing assessment is a critical element of the RSS as it seeks to develop a strategic framework for advancing grade crossing improvements throughout the county in order to improve safety and reduce community impacts. The analysis is used to identify potential improvements to help Alameda CTC and partner agencies prioritize crossings and corridors, and to inform a strategy to advance a program of improvements to the next phase of project development. Note that this site assessment does not replace the formal consultation process required by the California Public Utilities Commission (CPUC) under General Order 88-b; Modifications to Existing Crossings.

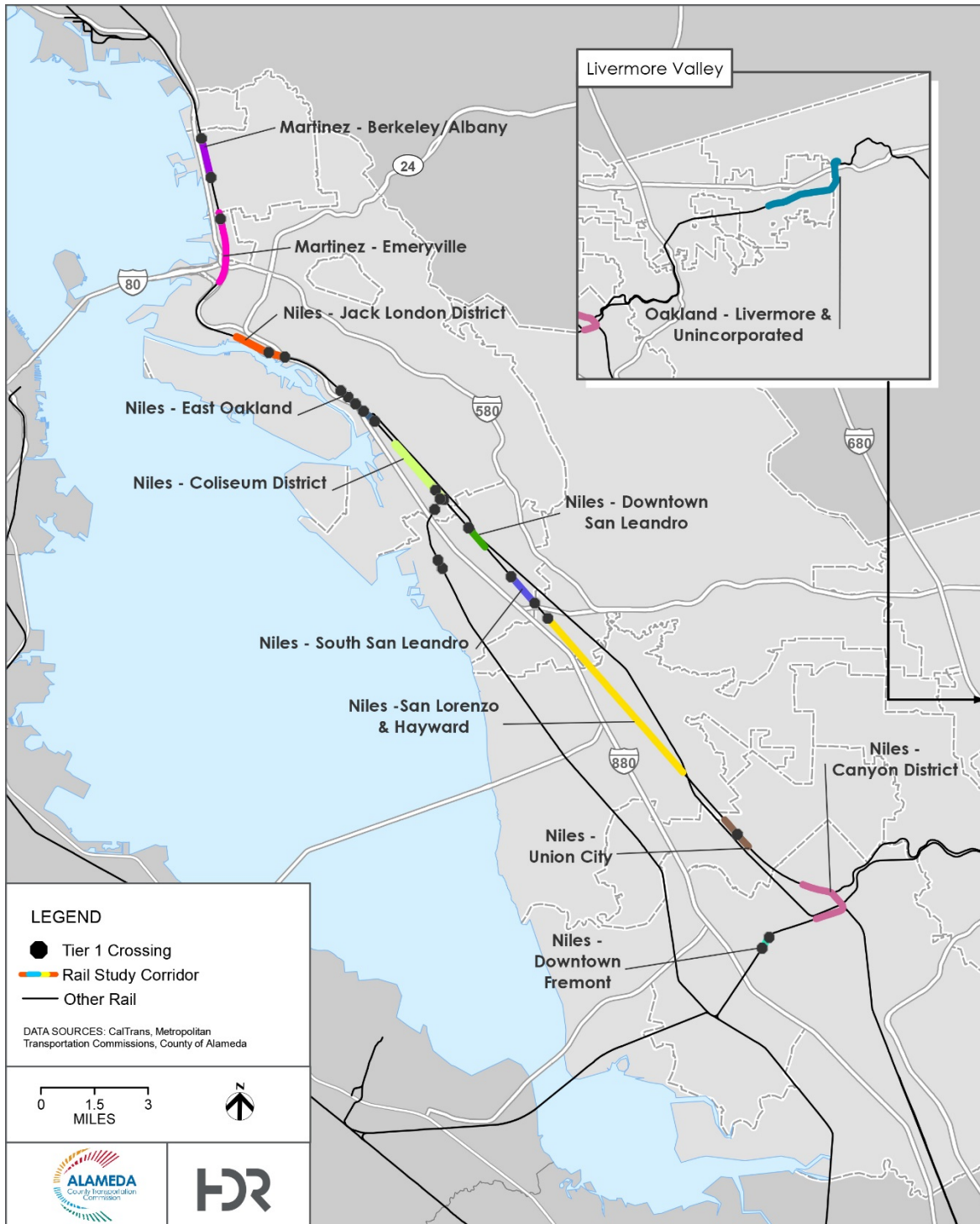
This technical memorandum includes the Tier 1 corridors and grade crossings included in the City of Oakland, as shown in Figure 2. These include the following:

- Niles – Jack London District Crossing Corridor
 - Including crossings at: Market Street, Martin Luther King Jr. Way, Jefferson Street, Clay Street, Washington Street, Broadway, Franklin Street, Webster Street, Oak Street (Tier 1), and 5th Avenue (Tier 1)
- Niles – East Oakland Crossing Corridor
 - Including crossings at: 29th Avenue (Tier 1), Fruitvale Avenue (Tier 1), 37th Avenue (Tier 1), High Street (Tier 1), and 50th Avenue (Tier 1)
- Niles – Coliseum District Crossing Corridor
 - Including crossings at: 66th Avenue, 85th Avenue, 98th Avenue (Tier 1), and 105th Avenue (Tier 1)
- Coast – Crossings at: Edes Avenue (Tier 1) and Knight Street (Tier 1)

¹ Prioritization was done among the crossings along the mainline and does not include spurs.

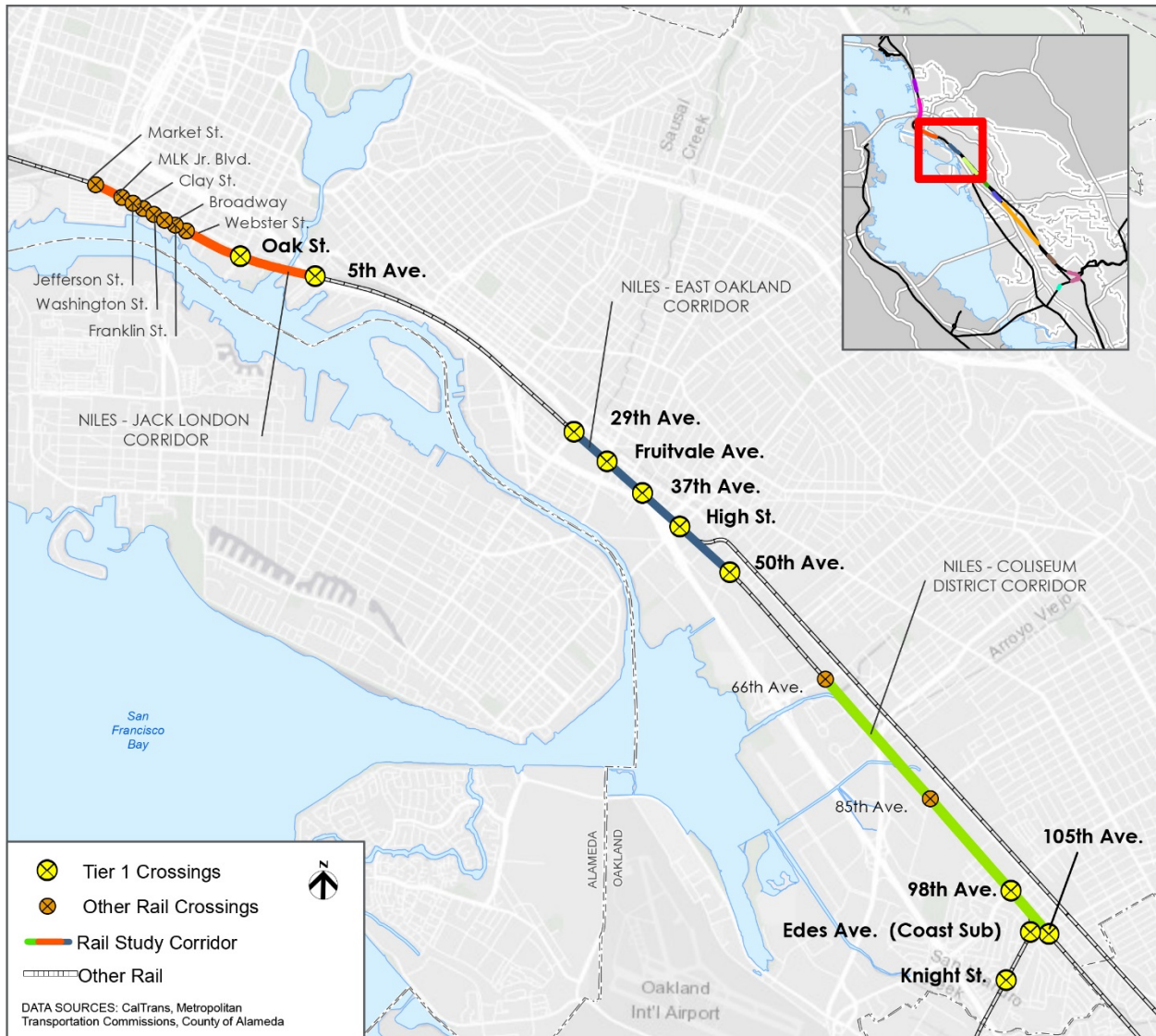
² Community of Concern refers to the Metropolitan Transportation Commission's (MTC) designation of communities that have high concentration of both minority and low-income households or that have a concentration of other factors including people with disabilities, seniors, and cost-burdened renters.

Figure 1. Rail Study Corridors and Tier 1 Crossings



Note: Due to close proximity of Tier 1 crossings within a corridor, two additional corridors are included in this assessment. The two additional corridors are the Niles – Downtown San Leandro and the Niles – Downtown Fremont corridors.

Figure 2. City of Oakland Corridors and Tier 1 Crossings



2.0 Methodology

Field visits were conducted to assess the current condition of all the crossings located within each corridor, as well as those not within a crossing corridor, as identified above. During each site visit, HDR observed and documented the condition of crossing surfaces and panels, identified the existing safety measures in place, and assessed if any additional safety measures may be appropriate at each crossing.

For Tier 1 crossings, the assessment also included a grade separation analysis to determine the feasibility of grade separating the crossing and type of grade separation, i.e. overpass or underpass. For the corridors, a trespass assessment was also performed to identify any locational factors contributing to



trespassing and potential improvements to deter trespassing. **Appendix A**, Grade Crossing Site Visit Reports, includes detailed information on the assessment.

For the recommended near-term improvements and initial scan of grade separations, concept-level project capital expenditure (Capex) costs are estimated in 2017 dollars and have not been escalated. Capex costs do not include right-of-way costs or other project development costs except for design, environmental, and construction management. Given the level of design (5 to 10%), the accuracy of the estimates could vary significantly from -30% on the low end to +50% on the high end and could vary by project, as more detailed design information becomes available and quantities are more accurately defined. Labor, material, and equipment rates may also vary significantly based on regional and national economic conditions at the time of construction. Therefore, no guarantees are made or implied that the estimates of project costs will not vary significantly in following phases of project development. The Capex costs are intended to provide order-of-magnitude costs for future funding programming.

3.0 Niles – Jack London District

3.1 Description

The Niles – Jack London District Corridor is located on the UPRR Niles subdivision between MP 6.20 and MP 7.65. The corridor includes ten crossings, of which two are classified as Tier 1 crossings (see Table 1). The Niles – Jack London District Corridor and its grade crossings are shown in Figure 2. North of the Amtrak Jack London Station, MP 7.0, 18 freight and 42 passenger trains use this corridor each weekday; south of the station, 16 freight and 16 passenger trains use the corridor each weekday³.

Table 1. Niles – Jack London District Crossing List

Street Name	Location	Mile Post	Average Daily Traffic (ADT) ¹	Tier 1 Crossing
Market Street	City of Oakland	6.20	3,800	NO
Martin Luther King Jr Way	City of Oakland	6.38	5,400	NO
Jefferson Street (Reopen)	City of Oakland	6.47	n/a	NO
Clay Street	City of Oakland	6.53	2,200	NO
Washington Street	City of Oakland	6.60	2,800	NO
Broadway	City of Oakland	6.68	4,500	NO
Franklin Street	City of Oakland	6.75	2,400	NO
Webster Street	City of Oakland	6.83	2,000	NO
Oak Street	City of Oakland	7.20	4,500	YES
5 th Avenue	City of Oakland	7.65	12,300	YES

Notes:

1. Source: Alameda CTC Rail Strategy Study, Task 8 Report – Grade Crossing Improvements, 2018.

3.2 Crossing Assessment

The eight crossing between Market Street and Webster Street are being considered as a single crossing due to their close proximity and the location of Embarcadero West within the crossings. The crossings at Oak Street and 5th Avenue are treated as individual crossings.

³ Source: Alameda CTC Rail Strategy Study, Task 3 Report – Future Train Volumes, 2017

3.2.1 Jack London and Embarcadero Street



The eight crossings between Market Street and Webster Street are spread across 0.6 mile in the Jack London District just south of downtown Oakland. The core set of crossings in this corridor runs from Market Street in the north to Webster Street in the south and includes Broadway (4,500 ADT) which connects Jack London Square to downtown Oakland. Along this stretch, the double-track rail corridor runs in the middle of Embarcadero West with no infrastructure restricting pedestrians from crossing the rail tracks. Train volumes on the corridor include 42 daily passenger trains and an estimated 18 freight trains daily. Combined average daily traffic volume at the corridor crossings is relatively low at 37,700. Vehicle volumes on Embarcadero West are minimal as it is an inconvenient roadway to travel north-south in Jack London District. Due to the wide range of pedestrian and vehicle activity at this corridor, train speeds are limited to 15 mph for freight trains and 20 mph for passenger trains.

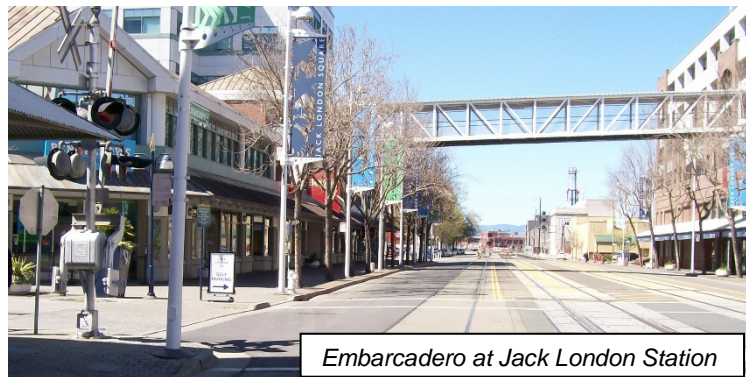
This corridor has had significant safety issues with seven crashes over the last ten years resulting in two fatalities. These seven crashes are the third highest of all corridors in Alameda County. Additionally, over the last six years, there were also two trespass collisions that occurred. Moreover, train horns along this corridor create noise that impacts the quality of life at Jack London Square. The residential noise index at this location of 102,334 is 15th highest of all corridors due to the low residential population in the area. However, this underestimates the impact of



noise as the shopping and recreation activities along this corridor are immediately adjacent to the rail tracks and heavily impacted by train noise and their frequency during peak hours. The primary issues for vehicles, pedestrians, and bicyclists along this corridor are safety and noise, and the primary issue for train operations in this corridor is slow train speed that increases trip times for both passenger and freight trains.

A potential solution for this corridor would be grade separation. However, this would involve trenching of the rail line which has an estimated construction cost of over \$250 million and several hundred millions of dollars more in freight mitigation costs during construction⁴. A lower-cost option for the corridor would be comprised of the following improvements:

- Eliminate eastbound travel on Embarcadero and convert one lane of roadway into a pedestrian esplanade
- Retain the westbound travel lane for one-way traffic; eastbound traffic would need to use 2nd Street or 3rd Street which are both lightly traveled roads
- Reopen Jefferson Street to replace access to Howard Terminal lost by converting Embarcadero to one way street; traffic analysis is required to determine if additional access is needed to Howard Terminal



- Eliminate left turning movements from westbound Embarcadero across the tracks at all crossings
- Install a 4-foot decorative barrier parallel to the tracks between crossings to deter pedestrians from crossing tracks between crossings
- Install pedestrian crossing gates and refuge islands at all crossings
- Add additional street lighting at select locations
- Install improved wayfinding signage on nearby roadway to direct visitors to the District
- Install new pavement markings and striping at crossings

Implementing these solutions would also meet the criteria that would allow for a Quiet Zone to be implemented in Jack London Square should the City of Oakland decide to pursue this option.

Appendix B includes the conceptual crossing plan for this area.

⁴ Capitol Corridor Vision Implementation Plan Final Report Appendices, 2016.



3.2.2 Oak Street

The Tier 1 Oak Street crossing is a two-lane roadway with medians, bike lanes, and shoulders. The roadway crosses the three tracks at a 90-degree angle, and sidewalk extends across the tracks on the north side of the roadway. There is no paved sidewalk to the southwest of the crossing. Warning devices consist of two-quadrant flashing lights with gates and cantilevered arms with flashing lights located on the outside of lanes. The crossing panels and pavement markings are in good condition. There appears to be adequate street lighting.

Potential deficiencies noted in the site visit include:

- Medians on both sides of the crossing end too far from the crossing; western median is not long enough to qualify as a supplemental safety measure
- No curb, gutter, or sidewalk on the south side of the crossing
- Pedestrians on the south side have no refuge between the eastern side of Fallon Street and the western gate
- Gate on the south side of the street is not protected from the roadway
- No fence in the northwest and southwest quadrants
- No fence on top of the barrier along Fallon Street; no fence or gate at the end of the barrier, approximately 350 feet south of the crossing

Recommended near-term safety enhancements include:

- Construct curb, gutter, and sidewalk through crossing on south side of crossing
- Place fences on west side of railroad right-of-way
- Install partial 200-foot-long fence (100 feet on each side of the street) and maintenance access gates to each quadrant to deter trespassing
- Close the Fallon Street intersection so pedestrians have a refuge area in the southeast quadrant
- Install new pavement markings and striping at crossing



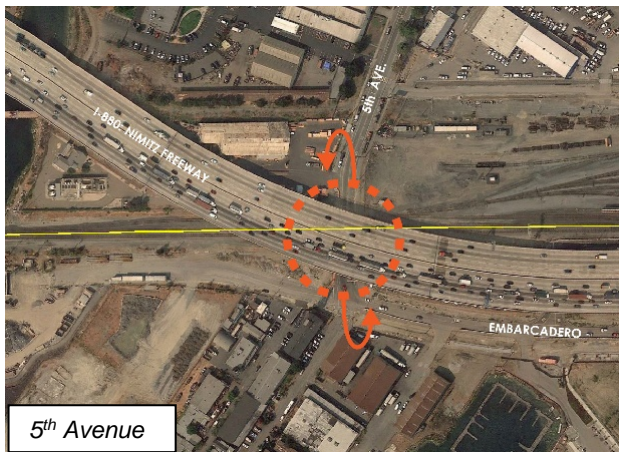
Four-quadrant warning devices would likely be required as a supplemental safety measure should the City desire to apply for Quiet Zone that includes this crossing. Extending the median to the west was considered, but this would disrupt through traffic on Embarcadero. The portion of Fallon Street parallel to the tracks will be required to be closed as a part of this improvement because its location is in conflict with the location of a new warning device in the southeast quadrant.

Grade Separation “Initial Scan”: As a Tier 1 crossing, HDR assessed the design options for a grade separation at Oak Street. Based on site observations, a 100-foot-long roadway underpass (100-foot-long

railroad structure over the roadway) would likely be required at this location. Based on experience with similar sites, the preferred railroad superstructure type would likely consist of a two-span 50-foot-long rolled steel beam deck bridge with a steel ballast pan to bring the superstructure depth down to 6 feet from top of rail. For foundations, the center pier and abutments would need to be supported by large diameter Cast-in-Drilled Hole (CIDH) or Cast-in-Steel Shell (CISS) piles, concrete columns, and precast concrete caps. The roadway profile would need to be depressed approximately 21 feet below the surrounding ground. A pump station would be required to pump stormwater out of the roadway portion of the underpass. The roadway profile conform points are approximately 450 feet to the east to limit the effects to the intersection with 3rd Street. To the west, the conform point extends approximately 900 feet.

Access to the properties adjacent to Oak Street between the tracks and 3rd Street may need to be reconfigured or the property may need to be acquired. Major utilities and roadway infrastructure would need to be relocated, including street lighting, PG&E underground power lines, the drainage system, sewer line, water line, and communication line along the street. There are fiber optic and Kinder Morgan lines crossing the street along the railroad, and they also would need to be relocated.

Oak Street would likely be categorized as a lower priority grade separation due to its relatively low daily traffic counts relative to other Tier 1 crossings. **Appendix B1** includes an exhibit of the conceptual grade separation, as well as profile and typical section at Oak Street.



3.2.3 5th Avenue

The Tier 1 5th Avenue crossing is a two-lane roadway with bike lanes and shoulders. The roadway crosses the three tracks at a 90-degree angle. There are no sidewalks through the crossing. Warning devices consist of two-quadrant flashing lights with gates located on the outside lanes. The crossing panels are in good condition. There appears to be adequate street lighting.

Potential deficiencies noted in the site visit include:

- Worn railroad pavement markings
- Eastbound warning device not protected from the roadway
- No curbs, gutters, or sidewalks through the crossing
- Northwest quadrant and railroad right-of-way not fenced

Recommended near-term safety enhancements include:

- Construct a 100-foot-long raised median on both sides of crossing; this may require the relocation of the driveway in the northeast quadrant
- Repaint worn railroad pavement markings
- Construct curb, gutter, and sidewalk through crossing on each side of the road; new curbs will help protect the warning devices
- Install partial 200-foot-long fence (100 feet on each side of the street) and maintenance access gates to each quadrant to deter trespassing

- Install “No Trespassing” signs
- Install new pavement markings and striping at crossing

The existing two-quadrant gates with the raised median and restricted access are sufficient supplemental safety measures should the City decide to apply for a Quiet Zone that includes this crossing. Four-quadrant gates are not required since the combination of gates and median is an approved supplemental safety measure that prevents vehicles from driving around the gates.



Grade Separation “Initial Scan”: As a Tier 1 crossing, 5th Avenue is a potential candidate for a grade separation. Based on site observations, HDR does not recommend this crossing for a grade separation due to the complications involving the I-880 overpass and its foundations. In addition, the intersection of 5th Avenue and Embarcadero is about 100 feet from the crossing and therefore would require Embarcadero to be depressed starting near the Merritt Channel Bridge.

3.3 Trespass Assessment

The portion of the corridor north of Webster Street is covered in Section 3.2.1. Starting south of Webster Street, the railroad right-of-way is fenced and secure for the length of the Amtrak platform. Between Oak Street and 5th Avenue, there is no fence or sidewalk along Embarcadero and the most convenient pedestrian path is along the railroad. Constructing a sidewalk and fencing along the east side of Embarcadero between Oak Street and 5th Avenue, in addition to the improvements described at the crossings, should help deter trespassing along the railroad.

3.4 Recommendations

3.4.1 Crossing Corridor Improvements

Table 2 provides a summary of the near-term improvements recommended for each of the ten crossings located within the corridor, including the reopened Jefferson Street. Each of the identified improvements would contribute to improving the overall safety of each of the crossings. By constructing all the improvements at each crossing at once the maximum benefits are achieved while reducing traffic disruptions and reducing the overall cost of the improvements if constructed separately.



Table 2. Recommended Near-Term Crossing Treatments and Related Improvements for Niles-Jack London District Corridor

Street	EB Embarcadero Closure	Track Removal	WB Embarcadero One-Way	Driveway/Side Street Closure	Pavement Markings	Dynamic Envelope Marking	Signage Upgrades	Raised Medians- 100 ft (8")	Raised Curb/Guardrail	Street Lighting	4-Quadrant Gates	Signal Interconnect	Pre-signal/Queue Cutter	Pedestrian Flashing Lights/Gates	Sidewalk Realignment/Widening/Repair	Bike Path Realignment	Pedestrian "Z" Crossing	Anti-Trespass Fence	Anti-Trespass Landscaping
Market	X		X		X	X	X	X	X			X	X	X	X			X	
MLK Jr	X		X		X	X	X	X	X					X	X			X	
Jefferson	X		X		X	X	X	X	X					X	X			X	
Clay	X		X		X	X	X	X	X					X	X			X	
Washington	X		X		X	X	X	X	X					X	X			X	
Broadway	X		X		X	X	X	X	X					X	X			X	
Franklin	X		X		X	X	X	X	X					X	X			X	
Webster	X		X		X	X	X	X	X					X	X			X	
Oak				X					X		X				X			X	
5 th				X				X	X						X			X	

The total Capex costs to implement the proposed near-term improvements in Jack London Square is \$16,500,000 (See Appendix C for detailed estimate) and \$1,575,000 and \$90,000 for Oak Street and 5th Avenue respectively as summarized in Table 3.

Table 3. Safety and Anti-trespass Enhancement Costs for Oak Street and 5th Avenue, Niles- Jack London District

Cost Element	Oak Street	5 th Ave
Raised Medians		\$25,000
4-Quadrant Gates	\$1,500,000	
Sidewalk Realignment	\$10,000	\$45,000
Anti-Trespassing Fence	\$65,000	\$20,000
Estimated Total	\$1,575,000	\$90,000

3.4.2 Grade Separations

Based on the conceptual underpass design described above, and shown in Appendix B, the Capex costs for the Oak Street grade separation is \$52.8 million as summarized in Table 4 below. The crossing would likely be categorized as a lower priority grade separation due to its relatively low daily traffic counts relative to other Tier 1 crossings. Additional analysis is required to prioritize the grade separations based on the benefits derived versus the cost of the project.



Table 4. Capex Costs for Grade Separation at Oak Street

Cost Element	Oak Street
Site/Civil	\$13.0 million
Track	\$6.4 million
Structures	\$10.1 million
Roadway	\$6.1 million
Contingencies	\$10.7 million
Project Development	\$6.5 million
Right-of-way	TBD
Estimated Total (excluding R/W)	\$52.8 million

4.0 Niles – East Oakland Crossing Corridor

4.1 Description

The Niles – East Oakland Corridor is located on the UPRR Niles Subdivision between MP 9.50 and MP 10.77. The corridor includes five crossings, all of which are classified as Tier 1 crossings (see Table 5). The Niles – East Oakland Corridor and its grade crossings are shown in Figure 2. Approximately 16 freight and 16 passenger trains use the corridor each weekday⁵.

Table 5. Niles – East Oakland Corridor Crossing List

Street Name	Location	Mile Post	Average Daily Traffic (ADT) ¹	Tier 1 Crossing
29 th Avenue	City of Oakland	9.50	9,000	YES
Fruitvale Avenue	City of Oakland	9.77	24,000	YES
37 th Avenue	City of Oakland	10.05	6,600	YES
High Street	City of Oakland	10.36	42,400	YES
50 th Avenue	City of Oakland	10.77	7,500	YES

Notes:

1. Source: Alameda CTC Rail Strategy Study, Task 8 Report – Grade Crossing Improvements, 2018.

4.2 Crossing Assessment

4.2.1 29th Avenue

The Tier 1 29th Avenue crossing is a four-lane roadway. The roadway crosses the three tracks at an 86-degree skewed angle. Sidewalks extend across the tracks on both sides of the roadway. Warning devices consist of two-quadrant flashing lights with gates located on the outside lanes. The crossing panels and pavement markings are in good condition and there appears to be adequate street lighting. The Epic

⁵ Source: Alameda CTC Rail Strategy Study, Task 3 Report – Future Train Volumes, 2017

Charter School is adjacent to the railroad in the southeast quadrant of the crossing. Lazear Elementary School is located 500 feet to the west.

Potential deficiencies noted in the site visit include:

- Deteriorated asphaltic concrete (AC) pavement in the vicinity of the crossing
- Defaced railroad crossing warning signs
- Sidewalks are not delineated within railroad right-of-way
- Substandard sidewalk clearance when gate arms are down; no exit path behind gates
- Warning devices not protected from roadway



Recommended near-term safety enhancements include:

- Remove homeless encampment in the southeast quadrant of railroad right-of-way
- Replace defaced railroad crossing warning signs; install “Do not stop on tracks” (R8-8) signs in both directions
- Add dynamic envelope pavement markings near tracks
- Repair AC pavement
- Construct curb, gutter, and sidewalk through crossing
- Construct raised concrete median extending 100 feet from the crossing to the east and connecting to the existing median to the west
- Due to the proximity of multiple schools, install pedestrian warning devices
- Install partial 200-foot-long fence (100 feet on each side of the street) and maintenance access gates to each quadrant to deter trespassing
- Install new pavement markings and striping at crossing
- Consider a queue cutter intermediate signal due to the proximity of this crossing to the intersections on each side of the crossing



The existing two-quadrant gates with the raised median and restricted access are sufficient supplemental safety measures should the City decide to apply for a Quiet Zone that includes this crossing. Four-quadrant gates are not required since the combination of gates and median is an approved supplemental safety measure that prevents vehicles from driving around the gates.

Grade Separation “Initial Scan”: As a Tier 1 crossing, HDR assessed the design options for a grade separation at 29th Avenue. Based on site observations, an 80-foot-long roadway underpass

(80-foot-long railroad structure over the roadway) would likely be required at this location; however, the intersections with 12th Street to the east and the shopping center to the west would have to be lowered to create enough depth for 29th Avenue to clear the railroad.

Based on experience with similar sites, the preferred railroad superstructure would likely consist of a two-span 40-foot-long rolled steel beam deck bridge with a steel ballast pan to bring the superstructure depth down to 5 feet from top of rail. For foundations, the center pier and abutments would be supported by large diameter CIDH or CISS piles, concrete columns, and precast concrete caps. The roadway profile would need to be depressed approximately 21 feet below the surrounding ground. A pump station would be required to pump stormwater out of the roadway portion of the underpass. The roadway profile conform points are approximately 650 feet on either side of the crossing.

Access to the properties immediately adjacent to the tracks may need to be reconfigured or the property may need to be acquired. No residential properties are impacted by the project. Major utilities and roadway infrastructure would need to be relocated, including street lighting on both sides of the street, traffic signals, PG&E gas and overhead power lines, the drainage system, water line, and communication line along the street. There are fiber optic and Kinder Morgan lines crossing the street along the railroad, and they also would need to be relocated.

The 29th Avenue crossing would likely be categorized as a lower priority grade separation due to its relatively low daily traffic counts relative to other Tier 1 crossings. **Appendix B1** includes an exhibit of the conceptual grade separation, as well as profile and typical section at 29th Avenue.

4.2.2 Fruitvale Avenue



The Tier 1 Fruitvale Avenue is a four-lane street that crosses the two main tracks at 70 degrees. Recently constructed sidewalks, with tactile warning surfaces, extend across the tracks on both side of the roadway. The sidewalks allow for an exit path behind the gates. Warning devices consist of two-quadrant flashing lights with gates and cantilevered arm with flashing lights located on the outside of the road. The sidewalks in the opposing direction of travel have flashing lights (CPUC standard No. 8s). The eastbound direction is signalized in conjunction with 10th/San Leandro Street. The crossing panels and sidewalks are in good condition.

Potential deficiencies noted in the site visit include:

- Damaged channelization devices on median
- Worn pavement markings
- Railroad crossing warning (W10-1) and the westbound “2 tracks” (W48 CA) signs missing in both directions
- “No Trespassing” signs missing or defaced
- Railroad right-of-way in northwest quadrant and along Fruitvale Ave not fenced

Recommended near-term safety enhancements include:

- Replace damaged channelization devices
- Repaint pavement markings and replace missing railroad warning signs
- Install partial 200-foot-long fence (100 feet on each side of the street) and maintenance access gates to each quadrant to deter trespassing
- Install new pavement markings and striping at crossing



The existing two-quadrant gates with the raised median and restricted access are sufficient supplemental safety measures should the City

decide to apply for a Quiet Zone that includes this crossing. Four-quadrant gates are not required since the combination of gates and median is an approved supplemental safety measure that prevents vehicles from driving around the gates.

Grade Separation “Initial Scan”: As a Tier 1 crossing, HDR assessed the design options for a grade separation at Fruitvale Avenue. Based on site observations, a 110-foot-long roadway underpass (110-foot-long railroad structure over the roadway) would likely be required at this location.

Based on experience with similar sites, the preferred railroad superstructure type would likely consist of a two-span 55-foot-long rolled steel beam deck bridge with a steel ballast pan to bring the superstructure depth down to 6 feet from top of rail. For foundations, the center pier and abutments would need to be supported by large diameter CIDH or CISS piles, concrete columns, and precast concrete caps. The roadway profile will need to be depressed approximately 20 feet below the surrounding ground. A pump station would be required to pump stormwater out of the roadway portion of the underpass. The roadway profile conform points are approximately 650 feet on either side of the crossing.

Access to the properties immediately adjacent to the tracks and road may need to be reconfigured or the property may need to be acquired. This grade separation is made more complex due to its proximity to the Fruitvale BART Station. The grade separation would have effects on the intersections with 9th Street, 10th Street, San Leandro Street, and 12th Street. The 10th Street intersection would need to be closed and a 110-foot-long roadway bridge would need to be constructed over 29th Avenue. Local street circulation, access, and traffic impacts would need to be carefully evaluated. Major utilities and roadway infrastructure would need to be relocated, including street lighting, PG&E overhead power lines, gas, water, sewer, the drainage system along the roadway. The fiber optic and Kinder Morgan lines cross the street along the railroad and also would need to be relocated.

Pending additional studies, the Fruitvale Avenue crossing may be categorized as a mid- to high-priority grade separation due to its relatively high daily traffic counts relative to other Tier 1 crossings. **Appendix B1** includes an exhibit of the conceptual grade separation, as well as profile at Fruitvale Avenue.



4.2.3 37th Avenue

The Tier 1 37th Avenue is a two-lane street that crosses the two main tracks at 81 degrees. A sidewalk extends across the track on the north side of the roadway. Warning devices consist of two-quadrant flashing lights with gates located on the outside of the road. The crossing panels are in good condition. Just west of the crossing, 37th Avenue turns into 9th Street at a sharp curve 55 feet west of the tracks. There appears to be adequate street lighting.

Potential deficiencies noted in the site visit include:

- Very limited sight distances when traveling eastbound due to the sharp curve and parking near the crossing
- No center striping or median
- Worn pavement markings
- Eastbound railroad crossing warning signs missing; westbound “2 tracks” sign (W48 CA) defaced

Recommended near-term safety enhancements include:

- Construct 100-foot-long raised median on both sides of crossing
- Construct curb, gutter, and sidewalk through crossing (sidewalk construction to ensure exit path around gate)
- Install new pavement markings and striping at crossing
- Replace missing and defaced signs
- Install “No Parking” signs west of crossing
- Install advanced warning flashing light beacon on same post as circular RxR sign (W10-1) for the eastbound direction
- Repair holes in the railroad right-of-way fence near crossing
- Install partial 200-foot-long fence (100 feet on each side of the street) and maintenance access gates to each quadrant to deter trespassing
- Install “No Trespassing” signs

The existing two-quadrant gates with the addition of raised median are sufficient supplemental safety measures should the City decide to apply for a Quiet Zone that includes this crossing. Four-quadrant gates are not required since the combination of gates and median is an approved supplemental safety measure that prevents vehicles from driving around the gates.



Grade Separation “Initial Scan”: As a Tier 1 crossing, 37th Avenue is a potential candidate for a grade separation, however due to the light traffic volumes (6,700 ADT) and sight distance constraints a grade

separation is not a high priority. However, the crossing is a potential candidate to be closed in conjunction with the Fruitvale grade separation.

If the crossing is to remain open and grade separated, then based on site observations, a 70-foot-long roadway underpass (70-foot-long railroad structure over the roadway) would likely be required at this location. Based on experience with similar sites, the preferred railroad superstructure would likely consist of a two-span 35-foot-long rolled steel beam deck bridge with a steel ballast pan to bring the superstructure depth down to 5 feet from top of rail. For foundations, the center pier and abutments would need to be supported by large diameter CIDH or CISS piles, concrete columns, and precast concrete caps. The roadway profile would need to be depressed approximately 20 feet below the surrounding ground. A pump station would be required to pump stormwater out of the roadway portion of the underpass. The roadway profile conform points are approximately 650 feet on either side of the crossing.

Access to the properties immediately adjacent to the tracks may need to be reconfigured or the property may need to be acquired. Residential properties along 37th Avenue and 9th Street are impacted by the project. Major utilities and roadway infrastructure would need to be relocated, including street lighting, PG&E overhead power lines, water, the drainage system along the roadway. The fiber optic and Kinder Morgan lines cross the street along the railroad and also would need to be relocated.



4.2.4 High Street

The Tier 1 High Street crossing is a four-lane roadway located one block (450 feet) south of the 42nd Avenue underpass. Over 43,000 vehicles use this crossing daily. The roadway crosses the three tracks at an 85-degree skewed angle. Sidewalks extend across the track on both sides of the roadway. Warning devices consist of two-quadrant flashing lights with gates located on the outside lanes.

There is a substantial drainage problem on the east side of the street. Flooding in the street appears to immobilize vehicles, which cause traffic to back up through the crossing. The flooding encroaches into both sidewalks and, during these events, the only dry location on the south side is the railroad right-of-way.

Potential deficiencies noted in the site visit include:

- Multiple channelization devices damaged or missing on the east side of the tracks
- Large homeless encampment along railroad right-of-way to the north
- Deteriorated AC pavement
- Broken crossing panel; other panels create an uneven surface
- Nearest street light to the west is 80 feet away and to the east is 50 feet away; additional lighting may be required
- Substandard sidewalk clearance when gate arms are down
- Worn pavement markings
- Missing railroad warning signs

- East gate not protected from traffic; on the south side, an old gate foundation and guardrail are abandoned in place
- Traffic queues across the tracks to access I-880 and the City of Alameda during peak periods

Recommended near-term safety enhancements include:

- Clear out homeless encampment along railroad right-of-way
- Lock southeast maintenance access gate
- Fix drainage system to avoid flooding of street and sidewalk
- Repaint pavement markings and install railroad warning signs
- Install “Do Not Stop on Tracks” signs for westbound traffic
- Add dynamic envelope pavement markings near tracks
- Repair broken crossing panel and resurface all panels
- Construct concrete curb, gutter, and sidewalk; curb will provide protection to the gates and the sidewalk will allow passage around gates
- Remove abandoned foundation and guardrail
- Install partial 200-foot-long fence (100 feet on each side of the street) and maintenance access gates to each quadrant to deter trespassing
- Install “No Trespassing” signs
- Install a queue cutter intermediate signal; there is only about 300 feet of storage space between the crossing and the intersection with Coliseum Way and vehicles were observed stopped on the tracks
- Install new pavement markings and striping at crossing



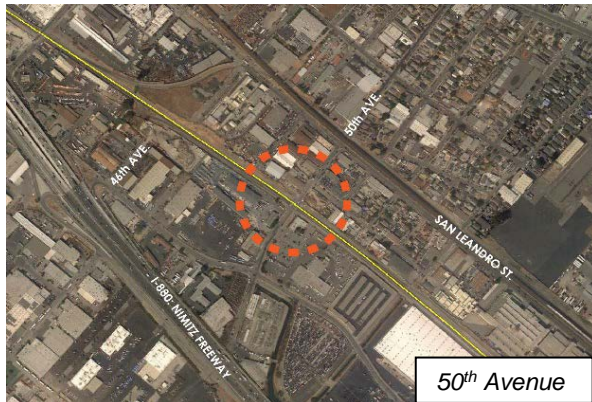
Four-quadrant warning devices would likely be required as a supplemental safety measure should the City desire to apply for Quiet Zone that includes this crossing. The roadway does not appear to be wide enough to construct a raised median and the existing channelization devices to the east are damaged. The lumberyard driveway to the west also appears to have a large number of left-turn truck movements leaving the facility. With only channelization devices, trucks would be tempted to drive over them.

Grade Separation “Initial Scan”: As a Tier 1 crossing, High Street is a potential candidate for a grade separation. Based on site observations, the High Street grade separations may need to be viewed as part of a larger freeway access improvement project. The recommended grade separation is a 90-foot-long roadway underpass (90-foot-long railroad structure over the roadway) at this location.

HDR assessed the design options for a grade separation at High Street. Based on experience with similar sites, the preferred railroad superstructure would likely consist of a two-span 45-foot-long rolled steel beam deck bridge with a steel ballast pan to bring the superstructure depth down to 6 feet from top of rail. For foundations, the center pier and abutments would need to be supported by large diameter CIDH or CISS piles, concrete columns, and precast concrete caps. The roadway profile would need to be depressed approximately 20 feet below the surrounding ground. A pump station would be required to pump stormwater out of the roadway portion of the underpass. The roadway profile conform points are approximately 500 feet to the west of the crossing 700 feet to the east of the crossing.

Access to the properties immediately adjacent to the tracks may need to be reconfigured or the property may need to be acquired. Major utilities and roadway infrastructure would need to be relocated, including street lighting, PG&E overhead power lines, water, the drainage system along the roadway. There are fiber optic and Kinder Morgan lines crossing the street along the railroad and also would need to be relocated.

The High Street crossing would likely be categorized as a higher priority grade separation due to its relatively high daily traffic counts relative to other Tier 1 crossings. **Appendix B2** includes an exhibit of the conceptual grade separation, as well as profile at High Street.



4.2.5 50th Avenue

The Tier 1 50th Avenue is a two-lane street that crosses the two main tracks at 90 degrees. There are sidewalks on the west side of the crossing and they terminate near the crossing. The east side does not have sidewalks. Warning devices consist of two-quadrant flashing lights with gates located on the outside of the road. The crossing panels are in good condition.

Potential deficiencies noted in the site visit include:

- Old signal foundations and guardrails abandoned in sidewalk
- Worn pavement markings and stop lines
- Railroad crossing warning (W10-1) and “2 tracks” (W48 CA) signs missing in both directions
- “No Trespassing” signs missing or defaced
- No fence or maintenance gates in all quadrants to restrict access to the right-of-way
- Roadway approaches to the crossing panels are humped causing vehicles to scrape the pavement as they cross the tracks

Recommended near-term safety enhancements include:

- Remove old signal foundations and guardrails
- Construct curb, gutter, and sidewalk through crossing; curb will provide the gate protection and the new sidewalk will allow an exit path behind the gates when they are down
- Pave street to smooth out the profile to eliminate scraping at the crossing
- Repaint pavement markings and stop lines
- Replace missing railroad warning signs
- Install partial 200-foot-long fence (100 feet on each side of the street) and maintenance access gates to each quadrant to deter trespassing
- Install “No Trespassing” signs in all quadrants
- Install four-quadrant warning devices
- Install new pavement markings and striping at crossing



Four-quadrant gates would likely be required as a supplemental safety measure should the City decide to apply for a Quiet Zone that includes this crossing. Constructing a median on the west side of the crossing appears to be problematic with a driveway 25 feet from the crossing unless the driveway could be closed. If the driveway could be closed, then two-quadrant gates and raised median would be acceptable supplemental safety measures.

Grade Separation “Initial Scan”: As a Tier 1 crossing, HDR assessed the design options for a grade separation at 50th Avenue. Based on low traffic volumes, a grade separation at 50th Avenue is a low priority and should be considered for closure possibly as part of the High Street grade separation. If 50th Avenue is grade separated, a 70-foot-long roadway underpass (70-foot-long railroad structure over the roadway) would likely be required at this location.



Based on experience with similar sites, the preferred railroad superstructure would likely consist of a two-span 35-foot-long rolled steel beam deck bridge with a steel ballast pan to bring the superstructure depth down to 5 feet from top of rail. For foundations, the center pier and abutments would need to be supported by large diameter CIDH or CISS piles, concrete columns, and precast concrete caps. The roadway profile would need to be depressed approximately 20 feet below the surrounding ground. A pump station would be required to pump stormwater out of the roadway portion of the underpass. The roadway profile conform points are approximately 650 feet on either side of the crossing.

Access to the properties immediately adjacent to the tracks and road may need to be reconfigured or the property may need to be acquired. Intersections with San Leandro Street and Coliseum Way would need to be adjusted since 50th Avenue would not have been able to conform back to existing elevations. This grade separation would need to be studied further to ensure it is feasible to conform by the time the street crosses the Oakland Subdivision 550 feet east of the crossing. Major utilities and roadway infrastructure would need to be relocated, including street lighting, PG&E overhead power lines, gas, water, the drainage system along the roadway. The fiber optic and Kinder Morgan lines cross the street along the railroad and also would need to be relocated.

4.3 Trespass Assessment

Likely contributors to the trespassing problem in the corridor are the schools in the vicinity of the 29th Avenue crossing and the Fruitvale BART station near the Fruitvale Avenue crossing. To deter trespassing, HDR recommends the use of 200-foot-long fencing on both sides of the roadways with access gates for railroad maintenance. The required track clearance at any location would always allow physical access to the track and right-of-way; however, fencing up to the 10-foot clear point as well as appropriate no-trespassing signs should help deter dumping and trespassing in the future.

Another factor contributing to trespassing in this corridor are the homeless encampments all along the corridor. The encampments are not typically on the railroad right-of-way, but adjacent to it. There is an especially large one located just north of High Street. The elimination of the encampments would reduce the need of the occupants to constantly access the right-of-way. At 37th Avenue, an encampment is located in the adjacent parcel of land and the occupant uses the railroad right-of-way as access.



4.4 Recommendations

4.4.1 Crossing Corridor Improvements

Table 6 provides a summary of the near-term improvements recommended for each of the five crossings located within the corridor. Each of the identified improvements would contribute to improving the overall safety of each of the crossings. By constructing all the improvements at each crossing at once the maximum benefits are achieved while reducing traffic disruptions and reducing the overall cost of the improvements if constructed separately.

Table 6. Recommended Near-Term Crossing Treatments and Related Improvements for Niles-East Oakland Corridor

Street	Closure Candidate ¹	Convert One-Way Couplet	Driveway Closure	Side Street Closure	Pavement Markings	Dynamic Envelope Marking	Signage Upgrades	Raised Medians-100 ft (8")	Raised Curb	Street Lighting	4-Quadrant Gates	Signal Interconnect	Pre-signal/Queue Cutter	Pedestrian Flashing Lights/Gates	Sidewalk Realignment/Widening/Repair	Bike Path Realignment	Pedestrian "Z" Crossing	Anti-Trespass Fence	Anti-Trespass Landscaping
29th						X	X	X	X			X	X	X	X			X	
Fruitvale					X		X											X	
37th	X						X	X						X	X			X	
High					X	X	X		X	X	X	X	X		X			X	
50th	X				X		X		X	X					X			X	

Notes:

1. Closures recommended for consideration as part of grade separating Fruitvale Avenue and High Street. Near term improvement would not be required if they are closed.

The total Capex costs to implement the proposed near-term improvements is \$4,760,000 as summarized in Table 7.

Table 7. Safety and Anti-trespass Enhancement Costs for Niles-East Oakland Corridor

Cost Element	29 th Ave	Fruitvale Ave	37 th Ave	High Street	50 th Ave
Signing and Striping	\$20,000	\$20,000	\$20,000	\$20,000	
Raised Medians	\$20,000	\$5,000	\$25,000	\$5,000	
Roadway Paving	\$50,000				\$50,000
Track Work Through Xing				\$20,000	
4-Quadrant Gates				\$1,500,000	\$1,500,000
Pre-Signal/Queue Cutter	\$500,000		\$30,000	\$500,000	
Sidewalk Realignment	\$20,000		\$20,000	\$20,000	
Sidewalk Warning Devices	\$240,000				
Anti-Trespassing Fence	\$30,000	\$100,000	\$15,000	\$15,000	\$15,000
Estimated Total	\$880,000	\$125,000	\$110,000	\$2,080,000	\$1,565,000



4.4.2 Grade Separations

Based on the conceptual underpass design described earlier, and shown in Appendix B, the Capex costs for the 29th Avenue, Fruitvale Avenue, 37th Avenue, High Street, and 50th Avenue grade separations are \$59.6 million, \$66.1 million, \$40.9 million, \$54.6 million, and \$48.8 million, respectively. These costs are summarized in Table 8 below. Additional analysis is required to prioritize the grade separations based on the benefits derived versus the cost of the project. Fruitvale Avenue and High Street provide direct access to I-880 and have significantly higher traffic counts than 29th Avenue. The 37th Avenue and 50th Avenue crossings have low traffic counts and should be analyzed for closure instead of grade separation.

Table 8. Capex Costs for Grade Separations at 29th Avenue, Fruitvale Avenue, 37th Avenue, High Street, and 50th Avenue

Cost Element	29th Ave	Fruitvale	37th Ave	High St	50th Ave
Site/Civil	\$14.6 million	\$16.5 million	\$10 million	\$13.2 million	\$14.0 million
Track	\$5.9 million	\$5.8 million	\$5.8 million	\$5.9 million	\$5.9 million
Structures	\$11.9 million	\$12.5 million	\$7.3 million	\$10.8 million	\$8.5 million
Roadway	\$7.7 million	\$9.8 million	\$3.5 million	\$6.9 million	\$4.5 million
Contingencies	\$12.1 million	\$13.4 million	\$9.4 million	\$11.1 million	\$9.9 million
Project Development	\$7.4 million	\$8.1 million	\$4.9 million	\$6.7 million	\$6.0 million
Right-of-way	TBD	TBD	TBD	TBD	TBD
Estimated Total (excluding R/W)	\$59.6 million	\$66.1 million	\$40.9 million	\$54.6 million	\$48.8 million

5.0 Niles – Coliseum District Corridor

5.1 Description

The Niles – Coliseum District Corridor is located on the Union Pacific Railroad’s (UPRR) Niles subdivision between Mile Posts (MP) 11.62 and 13.70. The corridor includes four crossings, all of which 98th Avenue and 105th Avenue are classified as Tier 1 crossings (see Table 9). The Niles – Coliseum District Corridor and its grade crossings are shown in Figure 2. Approximately 14 passenger trains use this corridor each weekday⁶.

Table 9. Niles – Coliseum District Crossing List

Street Name	Location	Mile Post	Average Daily Traffic (ADT) ¹	Tier 1 Crossing
66 th Avenue	City of Oakland	11.62	20,800	NO
85 th Avenue	City of Oakland	12.60	11,700	NO
98 th Avenue	City of Oakland	13.35	33,000	YES
105 th Avenue	City of Oakland	13.70	8,600	YES

Notes:

1. Source: Alameda CTC Rail Strategy Study, Task 8 Report – Grade Crossing Improvements, 2018.

⁶ Source: Alameda CTC Rail Strategy Study, Task 3 Report – Future Train Volumes, 2017

5.2 Crossing Assessment



5.2.1 66th Avenue

The 66th Avenue crossing is a four-lane roadway. The roadway crosses the three tracks at a 75-degree skewed angle. Sidewalks extend across the tracks on both sides of the roadway. Warning devices consist of two-quadrant flashing lights with gates located on the outside lanes. There appears to be adequate street lighting.

Potential deficiencies noted in the site visit include:

- Tracks at different elevations through crossing
- Worn stop lines with non-standard 2-foot-wide lines
- Sidewalks with substandard widths around sign posts, street lights, gate masts, and cantilevers
- Some broken channelization devices
- Westbound “No Stopping on Tracks” sign defaced; eastbound “3 Tracks” (W48CA) sign defaced
- None of the quadrants of the crossing are secure; vehicles may drive on the right-of-way (One car was witnessed driving on the right-of-way in the northwest quadrant)
- Large encampment along right-of-way to the southwest

Recommended near-term safety enhancements include:

- Surface tracks through crossing so they are at same elevation
- Repaint stop lines
- Remove homeless encampment in the southwest quadrant of railroad right-of-way
- Replace defaced “No Stopping on Tracks” and “3 Track” signs
- Widen sidewalk around obstructions
- Install partial 200-foot-long fence (100 feet on each side of the street) and maintenance access gates to each quadrant to deter trespassing
- Install “No Trespassing” signs in all quadrants
- Install new pavement markings and striping at crossing



The existing two-quadrant gates with the raised median and restricted access are sufficient supplemental safety measures should the City decide to apply for a Quiet Zone that includes this crossing. Four-quadrant gates are not required since the combination of gates and median is an approved supplemental safety measure that prevents vehicles from driving around the gates.



5.2.2 85th Avenue

The 85th Avenue is a two-lane street that crosses the three tracks at 56 degrees. There are no sidewalks through the crossing. Warning devices consist of two-quadrant flashing lights with gates on the outside of the road. The crossing panels are in good condition.

Potential deficiencies noted in the site visit include:

- No sidewalks through the crossing
- Pavement markings are worn
- Railroad crossing warning (W10-1) and the

westbound “3 tracks” (W48 CA) signs missing in both directions

- Track is much higher than road and approaches are humped at the tracks
- Intersection with driveway and Railroad Avenue only 25 feet from crossing signal gate
- Homeless encampment in the southeast quadrant of the crossing
- Right-of-way fencing between Railroad Avenue and the tracks knocked down in places and with many holes
- No fencing in all four quadrants of the crossing to restrict access to the right-of-way
- “No Trespassing” signs missing

Due to the geometry of the road and proximity of the intersection with Railroad Avenue and the driveway, this crossing is a potential candidate for closure. If the crossing is to remain open, the recommended near-term safety enhancements include:

- Construct curbs, gutters, and sidewalks on both side of the road through the crossing
- Smooth out roadway approaches to panels
- Install four-quadrant crossing signal warning devices
- Repaint pavement markings and replace missing railroad warning signs
- Clear homeless encampment
- Install partial 200-foot-long fence (100 feet on each side of the street) and maintenance access gates to each quadrant to deter trespassing
- Install “No Trespassing” signs in all quadrants
- Install new pavement markings and striping at crossing



Four-quadrant warning devices would likely be required as a supplemental safety measure should the City desire to apply for Quiet Zone that includes this crossing. Due to the proximity of the intersection with Railroad Avenue and adjacent driveway, the use of medians and channelization devices do not appear to be feasible at this location. Drivers leaving the driveway may be tempted to drive around the median if four-quadrant gates are not installed.



5.2.3 98th Avenue

The Tier 1 98th Avenue is a four-lane street that crosses the two main tracks at 88 degrees. Sidewalks extend across the track on both sides of the roadway. The road has a concrete median that extends more than 100 feet to the east, but less than 60 feet to the west. Warning devices consist of two-quadrant flashing lights with gates located in the median and at the sides of the road. There appears to be adequate street lighting.

Potential deficiencies noted in the site visit include:

- Large trip hazards in the sidewalks where the sidewalks transition from concrete to asphalt
- Concrete median to the west not long enough to qualify as a supplemental safety measure
- Loose panels in the crossing
- Approaches to the crossing are humped at the tracks causing cars to slow down to cross
- Worn stop lines
- Railroad crossing warning signs (W10-1) missing in both directions
- Homeless encampment in the northeast quadrant of the crossing
- Fencing along Railroad Avenue knocked down in places and with many holes
- No fencing to restrict access to the right-of-way in any of the quadrants
- “No Trespassing” signs missing

Recommended near-term safety enhancements include:



- Construct a new median that fills in the gap between the two existing medians on the west side of the crossing; curbs will need to be modified at Railroad Avenue to restrict movements to right turns only; left turns can be handled from nearby Walter Avenue
- Replace the sidewalk to eliminate the tripping hazards
- Fix loose panels
- Repave approaches to crossing to smooth out profile
- Repaint stop lines
- Install missing railroad crossing warning signs
- Repair holes in the fence along Railroad Avenue
- Install partial 200-foot-long fence (100 feet on each side of the street) and maintenance access gates to each quadrant to deter trespassing
- Install new pavement markings and striping at crossing
- Install “No Trespassing” signs

Extending the west raised median and restricting Railroad Avenue to right turns in and out are sufficient supplemental safety measures to allow the City to apply for a Quiet Zone that includes this crossing.

Four-quadrant gates are not required since the combination of gates and median is an approved supplemental safety measure that prevents vehicles from driving around the gates.

Grade Separation “Initial Scan”: As a Tier 1 crossing, HDR assessed the design options for a grade separation at 98th Avenue. Based on site observations, a 110-foot-long roadway underpass (110-foot-long railroad structure over the roadway) would likely be required at this location.

Based on experience with similar sites, the preferred railroad superstructure would likely consist of a two-span 55-foot-long rolled steel beam deck bridge with a steel ballast pan to bring the superstructure depth down to 6 feet from top of rail. For foundations, the center pier and abutments would need to be supported by large diameter CIDH or CISS piles, concrete columns, and precast concrete caps. The roadway profile would need to be depressed approximately 22 feet below the surrounding ground. A pump station would be required to pump stormwater out of the roadway portion of the underpass. The roadway profile conform points are approximately 650 feet on either side of the crossing.

Access to the properties immediately adjacent to the tracks may need to be reconfigured or the property may need to be acquired. Pearmain Street and Railroad Avenue would need to be closed due to their close proximity to the crossing. Major utilities would need to be relocated, including street lighting, PG&E underground power and gas, telecommunication lines, water, sewer, and the drainage system along the roadway. There are fiber optic and Kinder Morgan lines crossing the street along the railroad and also would need to be relocated.

Pending additional studies, the 98th Avenue crossing may be categorized as a mid- to high-priority grade separation due to its relatively high daily traffic counts relative to other Tier 1 crossings. **Appendix B1** includes an exhibit of the conceptual grade separation, as well as profile at 98th Avenue.

5.2.4 105th Avenue

The Tier 1 105th Avenue crossing is a two-lane roadway. The roadway crosses one main track at a 90-degree skewed angle. Sidewalks extend across the track on both sides of the roadway. Warning devices consist of two-quadrant flashing lights with gates located on the outside lanes. The Sum Bible College School is located just west of the crossing.



Potential deficiencies noted in the site visit include:

- Power poles obstruct sidewalks
- Driveway to the southeast, angled towards the tracks, causes trucks to back out the driveway onto the tracks
- Damaged guardrail in northeast quadrant
- Railroad crossing warning signs (W10-1) missing in both directions
- Track is much higher than the east side of the road and approach is abrupt
- Large fences along right-of-way obstruct sight distances along tracks
- Northeast, southeast, and southwest quadrants of the right-of-way not fully fenced to prevent vehicles from accessing the right-of-way

Recommended near-term safety enhancements include:

- Relocate southeast driveway to be farther away from tracks
- Close the east driveway closest to the tracks and construct a 100-foot-long raised median on each side of the crossing
- Due to the proximity of the Sum Bible College, install pedestrian warning devices
- Underground overhead utilities in vicinity of the crossing to remove sidewalk obstructions
- Repave approaches to the crossing to smooth out profile
- Remove damaged guardrail
- Construct curb, gutter, and sidewalk through the crossing
- Install partial 200-foot-long fence (100 feet on each side of the street) and maintenance access gates to each quadrant to deter trespassing
- Install new pavement markings and striping at crossing

The existing two-quadrant gates with the raised median and restricted access are sufficient supplemental safety measures should the City decide to apply for a Quiet Zone that includes this crossing. Four-quadrant gates are not required since the combination of gates and median is an approved supplemental safety measure that prevents vehicles from driving around the gates.

Grade Separation “Initial Scan”: As a Tier 1 crossing, HDR assessed the design options for a grade separation at 105th Avenue. Based on site observations, a 60-foot-long roadway underpass (60-foot-long railroad structure over the roadway) would likely be required at this location.



Based on experience with similar sites, the preferred railroad superstructure would likely consist of a one-span 60-foot-long rolled steel beam deck bridge with a steel ballast pan to bring the superstructure depth down to 6 feet from top of rail. For foundations, the abutments would need to be supported by large diameter CIDH or CISS piles, concrete columns, and precast concrete caps. The roadway profile would need to be depressed approximately 22 feet below the surrounding ground. A pump station would be required to pump stormwater out of the roadway portion of the underpass. The roadway profile conform points are approximately 500 feet to the west of the crossing 700 feet to the east of the crossing.

Access to the properties immediately adjacent to the tracks may need to be reconfigured or the property may need to be acquired. Major utilities and roadway infrastructure would need to be relocated, including street lighting, PG&E overhead power lines on both sides of the street, gas, water, sewer, and the drainage system along the roadway. A fiber optic line crosses the street along the railroad and also would need to be relocated.

The 105th Avenue crossing would likely be categorized as a lower priority grade separation due to its relatively low daily traffic counts relative to other Tier 1 crossings.

5.3 Trespass Assessment

There is nothing to deter accessing the railroad right-of-way at the crossings along this corridor. To deter trespassing, HDR recommends the use of fencing with access gates for railroad maintenance. The required track clearance at any location would always allow physical access to the track and right-of-way; however, fencing up to the 10-foot clear point as well as appropriate “No Trespassing” signs should help deter trespassing in the future.

Another factor contributing to trespassing in this corridor are the homeless encampments all along the corridor. There was a large one spotted south of 66th Avenue. The elimination of the encampments would reduce the need of the occupants to constantly access the right-of-way.



5.4 Recommendations

5.4.1 Crossing Corridor Improvements

Table 10 provides a summary of the near-term improvements recommended for the four crossings located within the corridor. Each of the identified improvements would contribute to improving the overall safety of each of the crossings. By constructing all the improvements at each crossing at once the maximum benefits are achieved while reducing traffic disruptions and reducing the overall cost of the improvements if constructed separately.

Table 10. Recommended Near-Term Crossing Treatments and Related Improvements for Niles- Coliseum District Corridor

Street	Closure Candidate ¹	Convert One-Way Couplet	Driveway Closure	Side Street Closure	Pavement Markings	Dynamic Envelope Marking	Signage Upgrades	Raised Medians-100 ft (8")	Raised Curb	Street Lighting	4-Quadrant Gates	Signal Interconnect	Pre-signal/Queue Cutter	Pedestrian Flashing Lights/Gates	Sidewalk Realignment/Widening/Repair	Bike Path Realignment	Pedestrian "Z" Crossing	Anti-Trespass Fence	Anti-trespass Landscaping
66 th Avenue					X		X								X			X	
85 th Avenue	X				X		X		X		X				X			X	
98 th Avenue					X		X	X							X			X	
105 th Avenue					X		X	X	X					X	X			X	

Notes:

1. Closures recommended for consideration as part of grade separating 98th Avenue. Near term improvement would not be required if they are closed.

The total Capex costs to implement the proposed near-term improvements is \$2,395,000 as summarized in Table 11.



Table 11. Safety and Anti-trespass Enhancement Costs for Niles- Coliseum District Corridor

Cost Element	66 th Avenue	85 th Avenue	98 th Avenue	105 th Avenue
Signing and Striping	\$20,000	\$20,000	\$20,000	\$20,000
Raised Median			\$15,000	\$20,000
Roadway Paving		\$45,000	\$70,000	\$55,000
Track Work Through Xing	\$20,000		\$20,000	
4-Quadrant Gates		\$1,500,000		
Sidewalk Realignment	\$30,000	\$30,000	\$20,000	\$30,000
Sidewalk Warning Devices				\$240,000
Anti-Trespassing Fence	\$15,000	\$25,000	\$15,000	\$15,000
Utility Pole Relocation				\$150,000
Estimated Total	\$85,000	\$1,620,000	\$160,000	\$530,000

5.4.2 Grade Separations

Based on the conceptual underpass design described above, and shown in Appendix B, the Capex costs for the 98th Avenue and 105th Avenue grade separations are \$56.8 million and \$39.8 million, respectively. These costs are summarized in Table 12 below. Additional analysis is required to prioritize the grade separations based on the benefits derived versus the cost of the project.

Table 12. Capex Costs for Grade Separations at 98th Avenue and 105th Avenue

Cost Element	98 th Avenue	105 th Avenue
Site/Civil	\$18.7 million	\$10.3 million
Track	\$5.8 million	\$4.7 million
Structures	\$8.8 million	\$7.2 million
Roadway	\$5.0 million	\$4.6 million
Contingencies	\$11.5 million	\$8.1 million
Project Development	\$7.0 million	\$4.9 million
Right-of-way	TBD	TBD
Estimated Total (excluding R/W)	\$56.8 million	\$39.8 million

6.0 Coast – Oakland Crossing Corridor

6.1 Description

The Coast – Oakland Corridor is located on the UPRR Coast subdivision between MP 13.47 and MP 15.53. The corridor includes two crossings, both of which are classified as a Tier 1 crossing (see Table 13). The grade crossings along the Coast – Oakland Corridor are shown in Figure 2. Approximately 16 freight and 2 passenger trains use this corridor daily⁷.

⁷ Source: Alameda CTC Rail Strategy Study, Task 3 Report – Future Train Volumes, 2017

Table 13. Coast –Oakland Crossing List

Street Name	Location	Mile Post	Average Daily Traffic (ADT) ¹	Tier 1 Crossing
Edes Avenue	City of Oakland	15.53	8,000	YES
Knight Street / Kerwin Avenue	City of Oakland	15.80	1,800	YES

Notes:

1. Source: Alameda CTC Rail Strategy Study, Task 8 Report – Grade Crossing Improvements, 2018.

6.2 Crossing Assessment



6.2.1 Edes Avenue

Edes Avenue is a two-lane roadway and is classified as a Tier 1 crossing. The roadway crosses the single main track at a 55-degree skewed angle. The track is in a curve through the crossing. Sidewalks extend across the tracks on both sides of the roadway. Warning devices consist of two-quadrant flashing lights with gates located on the outside lanes. There appears to be adequate street lighting. The Sum Bible College is adjacent to the railroad in the northeast quadrant.

Potential deficiencies noted in the site visit include:

- Broken crossing panel on the south side of the crossing, with its frame welded to adjacent panel
- No stop lines or railroad pavement markings
- Roadway approaches are humped at the crossing
- Sidewalks are uneven near the crossing
- Railroad right-of-way not fenced along Edes Avenue and Cary Avenue; there is only a railing to deter access

Recommended near-term safety enhancements include:

- Construct 100-foot-long medians along on each side of the crossing and restrict Cary Avenue to right turns in and out; Hale Avenue is only about 220 feet away and would be able to handle the traffic
- Pave the approaches to the crossing to smooth them out
- Reconstruct the sidewalk near the crossing
- Due to the proximity of the school in the northeast quadrant, install pedestrian gates in the opposing direction of travel
- Paint stop lines
- In both directions of Edes Avenue and on Cary Ave, paint railroad pavement markings, install circular railroad crossing warning signs (W10-1) on Edes Avenue, and install warning sign that shows crossing to the right of the intersection (W10-4) on Cary Avenue
- Replace broken crossing panel

- Remove the railing and install 200-foot-long fence and gates in all quadrants and along Cary Avenue
- Install “No Trespassing” signs in all quadrants

The two-quadrant gates with the addition of raised medians installed on both sides of the crossing are sufficient supplemental safety measures to allow the City to apply for a Quiet Zone that includes this crossing. Four-quadrant gates are not required since the combination of gates and median is an approved supplemental safety measure that prevents vehicles from driving around the gates.



Grade Separation “Initial Scan”: As a Tier 1 crossing, HDR assessed the design options for a grade separation at Edes Avenue. Based on site observations, an 80-foot-long roadway underpass (80-foot-long railroad structure over the roadway) at this location would likely be required at this location.

Based on experience with similar sites, the preferred railroad superstructure would likely consist of a two-span 40-foot-long rolled steel beam deck bridge with a steel ballast pan to bring the superstructure depth down to 5 feet from top of rail. For foundations, the abutments would need to be supported by large diameter CIDH or CISS piles, concrete columns, and precast concrete caps. The roadway profile would need to be depressed approximately 22 feet below the surrounding ground. A pump station would be required to pump stormwater out of the roadway portion of the underpass. The roadway profile conform points are approximately 500 feet to the west of the crossing 700 feet to the east of the crossing.

Hale and Cary Avenues will need to be cul-de-sacs. Access to the properties immediately adjacent to the tracks may need to be reconfigured or the property may need to be acquired. Major utilities and roadway infrastructure would need to be relocated, including street lighting, gas, water, sewer, and the drainage system along the roadway. A fiber optic line crosses the street along the railroad and also would need to be relocated.

The Edes Avenue crossing would likely be categorized as a lower priority grade separation due to its relatively low daily traffic counts relative to other Tier 1 crossings.



6.2.2 Knight Street / Kerwin Avenue

Knight Street / Kerwin Avenue is a two-lane street that crosses the single main track at 90 degrees. On both sides of the street, there are sidewalks through the crossing. Warning devices consist of 2-quadrant flashing lights with gates on the outside of the road. The crossing panels are in good condition. Aspire Lionel Wilson College Preparatory Academy is less than 500 feet to the east, and Sobrante Park Elementary School is in the vicinity of the crossing.

Potential deficiencies noted in the site visit include:

- Closest light to the east is over 100 feet from the gate, and closest to the west is over 50 feet (lighting through the crossing should be further studied)
- No striping, stop lines, or pavement markings
- “No Trespassing” signs are old and not legible
- The concrete-to-asphalt transition in the sidewalks is rough
- Cars parked near the crossing on the east side, reducing sight distance at the crossing
- Homeless encampments in the drainage channel right-of-way use the railroad right-of-way as access
- Damaged fence and gate in the southeast quadrant
- Banner posted on fence trying to discourage dumping instead encourages trespassing on the railroad right-of-way

Recommended near-term safety enhancements
Include:

- Paint striping, stop lines, and pavement markings on both sides of the crossing
- Replace damaged gate and fence in the southeast quadrant
- Replace “No Trespassing” signs
- Remove banner that encourages walking on the tracks
- Install street lighting closer to the east side of crossing; the additional lighting could possibly even help with the dumping problem in the area
- Reconstruct sidewalk to remove bump at areas transitioning from concrete to asphalt
- Construct a raised median 60 feet to the west and 100 feet to the east; the median will affect two residential driveways and the drainage channel driveways
- Due to proximity of schools in the area, install pedestrian gates in the opposing direction of travel
- Clear encampments in drainage channel property
- Repair damaged fence used to access property

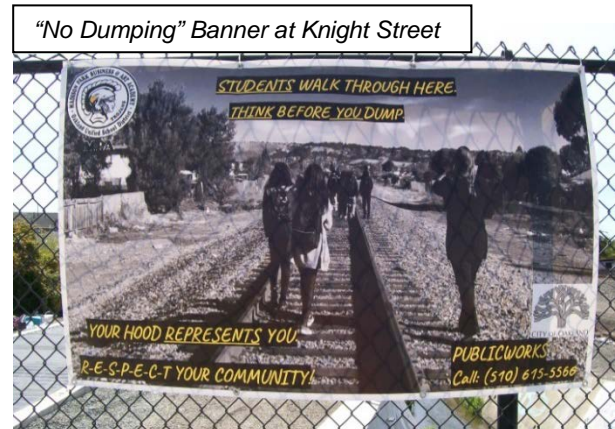


The two-quadrant gates with the addition of raised medians installed on both sides of the crossing are sufficient supplemental safety measures to allow the City to apply for a Quiet Zone that includes this crossing. Four-quadrant gates are not required since the combination of gates and median is an approved supplemental safety measure that prevents vehicles from driving around the gates.

As a Tier 1 crossing, the Knight Street crossing would likely be categorized as a lower priority grade separation due to its relatively low daily traffic counts relative to other Tier 1 crossings.

6.3 Trespass Assessment

This corridor appears to be secure against automobiles driving on the right-of-way, but there is no fencing at Edes Avenue crossing or along Cary Avenue. To deter pedestrian trespassing, HDR recommends the use of fencing with access gates for railroad maintenance. The required track clearance at any location will always allow physical access to the track and right-of-way; however, fencing up to the 10-foot clear point as well as appropriate no-trespassing signs should help deter trespassing in the future.



The “No Dumping” banner at Knight Street / Kerwin Avenue is evidence of a need for education on the dangers of walking along the tracks. Also contributing to trespassing in this corridor are the homeless encampments. The encampments visible at Knight Street are not on the railroad right-of-way, but it is likely that people use the railroad right-of-way as a means to access the encampment. The elimination of the encampments would reduce the need of the occupants to constantly access the right-of-way.

6.4 Recommendations

6.4.1 Crossing Corridor Improvements

Table 14 provides a summary of the near-term improvements recommended for each of the crossings located within the corridor. Each of the identified improvements would contribute to improving the overall safety of each of the crossings. By constructing all the improvements at each crossing at once the maximum benefits are achieved while reducing traffic disruptions and reducing the overall cost of the improvements if constructed separately.

Table 14. Recommended Near-Term Crossing Treatments and Related Improvements for Coast – Oakland Grade Crossings

Street	Closure Candidate	Convert One-Way Couplet	Driveway Closure	Side Street Closure	Pavement Markings	Roadway Paving	Signage Upgrades	Raised Medians- 100 ft (8")	Replace Broken Crossing Panels	Street Lighting	4-Quadrant Gates	Signal Interconnect	Pre-signal/Queue Cutter	Pedestrian Flashing Lights/Gates	Sidewalk Realignment/Widening/Repair	Bike Path Realignment	Pedestrian "Z" Crossing	Anti-Trespass Fence	Anti-Trespass Landscaping
Edes					X	X	X	X	X	X					X			X	
Knight/Kerwin					X		X	X										X	

The total Capex costs to implement the proposed near-term improvements is \$790,000 as summarized in Table 15.



Table 15. Safety and Anti-trespass Enhancement Costs for Coast – Oakland Grade Crossings

Cost Element	Edes Avenue	Knight Street
Signing and Striping	\$20,000	\$20,000
Raised Median – 100 ft (8")	\$25,000	\$20,000
Roadway Paving	\$55,000	
Replace Broken Crossing Panels	\$20,000	
Sidewalk Repairs	\$25,000	\$20,000
Sidewalk Warning Devices	\$240,000	\$240,000
Anti-Trespassing Fence	\$75,000	\$5,000
Street Lighting		\$25,000
Estimated Total	\$460,000	\$330,000

6.4.2 Grade Separations

Based on the conceptual underpass design described above, and shown in Appendix B, the Capex costs for the Edes Avenue grade separation is \$41.9 million. These costs are summarized in Table 16. Additional analysis is required to prioritize the grade separations based on the benefits derived verses the cost of the project.

Table 16. Capex Costs for Grade Separation at Edes Avenue

Cost Element	Edes Avenue
Site/Civil	\$12.6 million
Track	\$4.7 million
Structures	\$6.9 million
Roadway	\$4.0 million
Contingencies	\$8.5 million
Project Development	\$5.2 million
Right-of-way	TBD
Estimated Total (excluding R/W)	\$41.9 million

APPENDIX A

Roadway Grade Crossing Site Visit Forms

Roadway Grade Crossing Site Visit Form

Date: 3/13/2018

Railroad Corridor: Niles – East Oakland
City/County: Oakland/Alameda
Road/Street: 29th Ave
DOT: 749621T
Subdivision/Mile Post: Niles MP 9.50
ADT/No. Trains 8,958—16/16

Attendees:

B. Kelly - HDR	P. Casey - HDR

Purpose of Site Visit: Inspect At-Grade Xing
Safety Briefing By: P. Casey



Crossing Characteristics	Existing Condition
Track Characteristics:	Speed: 79-60 Rail Wt. <u>136</u> CWR; Joint Locations: Trk 161 Jtd rail with Comp joint near xing Crossing Surface: Concrete Panels Crossing Length: 73' <u>3</u> Tracks: MT1, MT2, Track 161 General Condition: OK
Crossing Warning Devices	Type: Flashing light warning device with crossing gates - BFG Location: FL and Gates in NE and SW quadrants are behind sidewalk. SW gate over road to avoid OHP. Signal House SW. Condition: Up to current standards.
Roadway Characteristics	Posted Speed: 25MPH Surface: AC Width: Road widens at crossing. 48'E/64'W Crossing Angle: 86d Center Medians: No, W Median ends before the xing. Curbs/Shoulders Sidewalk is not wide enough, poles impede access.
Adjacent Intersections	International Blvd – 830'E E 12 th St Signalized Intersection – 275'E Epic Charter School Driveway – 75'E ExtraSpace Storage Driveway - 55'W Commercial business Signalized Intersection - 190'W 10 St/Start of freeway overpass is on other side of intersection – 490'W
Existing Utilities	In Roadway: Street lights both sides of street, SDCBs all quadrants, FH SW, OHP S, Telcom MH S, Gas and water N S/W. Along RR: FO W, KM & FO E, Old steel lattice towers between MT1 and Yard Track (161).
Geometric Issues/Constraints	BART Aerial Structure – 315'E
Pedestrian Activity	Yes, Epic Charter School adjacent E and Lazear Elementary School 200' W. Trespassers spotted.
Bicycle Activity	

Available Right-of-Way	No. All adjacent lots are occupied.
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Grade Separation Review

Roadway Profile	Is roadway profile lower/level/ higher than track? Higher to the East slightly lower to the West.
Rail Profile	Is crossing in level, sag, or crest segment? Track is level Can the track be raised/lowered? No, Crossovers (CP East Oakland to the North) and turnouts on each side of the road.
Traffic Impact	Can roadway be closed during construction? No, I-880 Overpass was staged. Connects to Alameda. Can traffic be maintained during construction? Yes, able to maintain 1-lane each direction.

Comments

Comments	<ul style="list-style-type: none"> • Potential SSM for QZ include – Construct 100’ medians. Will eliminate left turns in/out of Epic Charter School and ExtraSpace Storage driveways. • Crossing is candidate for closure. – No, New I-880 Overpass and ramps, connects to Alameda. • Street is a Bus Route. • Bollard removed and gate unlocked. NW quadrant not fenced up to Roadway R/W • Trespasser camp setup in SE of R/W. • Direction of circular RxR sign (W10-1) not facing traffic. 3 tracks sign (W48 CA) is defaced. • Fence ends short of the roadway on the west side of the crossing. • Edge of Road is not delineated at NE gate. Unclear if there is adequate room for pedestrians to cross in front of gate and not encroach into road.
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Site Photos

RR Looking North



RR Looking South



Roadway Looking East



Roadway Looking West



Roadway Grade Crossing Site Visit Form

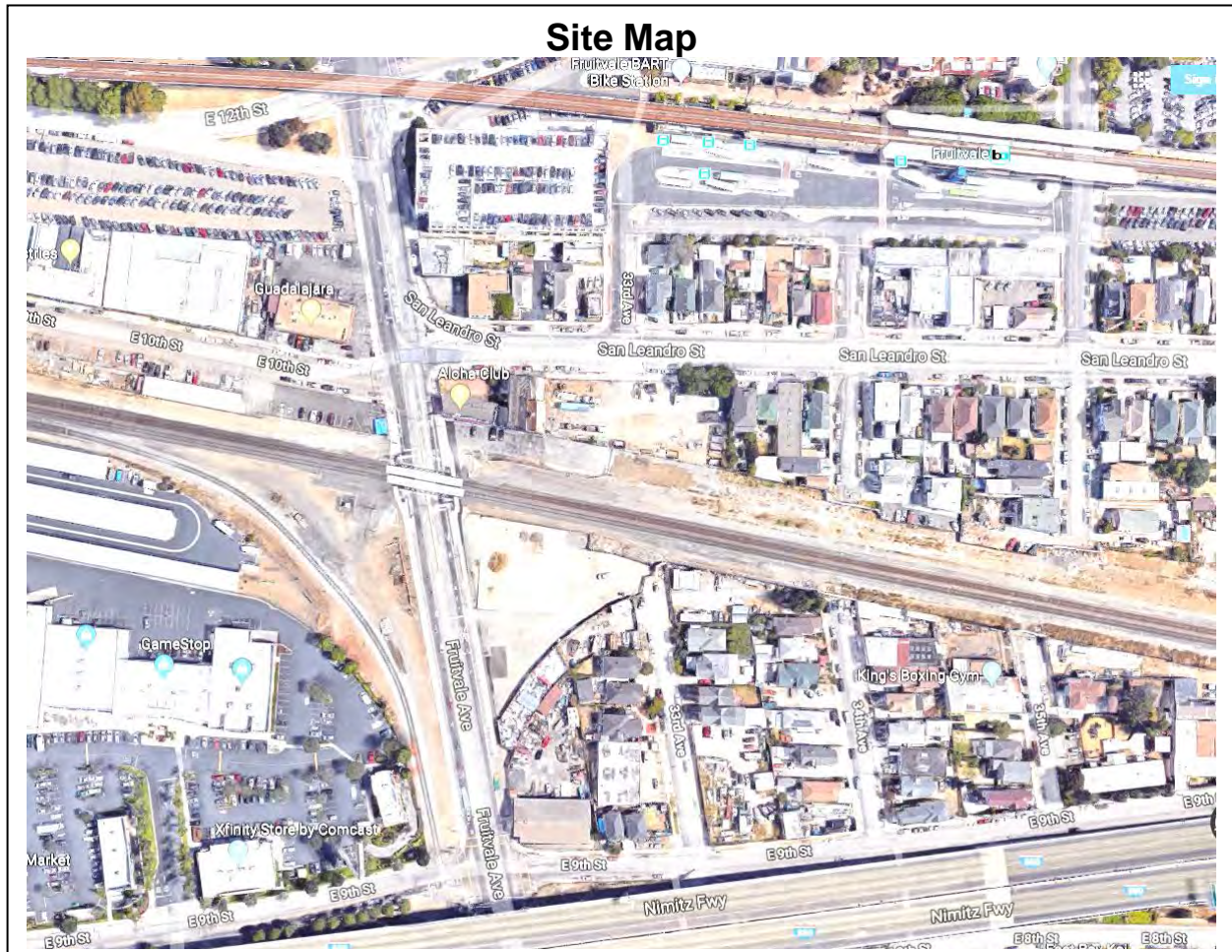
Date: 3/12/2018

Railroad Corridor: Niles – East Oakland
City/County: Oakland/Alameda
Road/Street: Fruitvale Ave
DOT: 749707C
Subdivision/Mile Post: Niles MP 9.77
ADT/No. Trains 23,734—16/16

Attendees:

B. Kelly - HDR	P. Casey - HDR

Purpose of Site Visit: Inspect At-Grade Xing
Safety Briefing By: P. Casey



Crossing Characteristics	Existing Condition
Track Characteristics:	Speed: 79-60 Rail Wt. <u>136</u> CWR; Joint Locations: Crossing Surface: Concrete Panels Crossing Length: 106' <u>2</u> Tracks: MT1, MT2 General Condition: OK
Crossing Warning Devices	Type: Flashing light warning device with crossing gates - CBF Location: SW/NE - CPUC No. 9A At EOT. SE/NW – CPUC No.8's for opposing Ped Traffic Condition: OK
Roadway Characteristics	Posted Speed: 25 MPH. Surface: AC Width: 58' Crossing Angle: 70d Center Medians: 2' with channelizers Curbs/Shoulders: New curb and sidewalk work.
Adjacent Intersections	12 th St/BART – 520'E E 10 th St/San Leandro(BART Station Entrance 1 block S) Signalized Intersection– 90'E Driveway – Signalized Intersection – 35'E Driveway - 370'W 9 th St - 500'W I-880 – 570'W
Existing Utilities	In Roadway: Water SW, Street lights both sides, sewer, OHP N, gas N Along RR: KM and FO E.
Geometric Issues/Constraints	BART Aerial Structure – 520'E
Pedestrian Activity	Heavy, near Fruitvale BART station. Trespassers along R/W.
Bicycle Activity	Yes, Bike Route.
Available Right-of-Way	Yes, vacant lot SW, Railroad R/W for Industry lead Track 161 NW quadrant.

Grade Separation Review

Roadway Profile	Is roadway profile lower/level/ higher than track? Level
Rail Profile	Is crossing in level, sag, or crest segment? Slight Crest. Can the track be raised/lowered? Would Affect Track 161 to the North.
Traffic Impact	Can roadway be closed during construction? No, connects Fruitvale station to Alameda. Can traffic be maintained during construction? Yes, able to maintain 1-lane each direction.

Comments

Comments	<ul style="list-style-type: none"> • Potential SSM for QZ include – Median with channelization devices has been constructed. • Crossing is candidate for closure. – No, Fruitvale BART access, I-880 underpass, and Connection to Alameda. • Missing circular RxR signs (W10-1 and 2 tracks sign-W48 CA). • SW Railroad pavement markings are worn. • Crossing is signalized in conjunction with San Leandro St intersection. • Dynamic Envelope striped and hatched on pavement.
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Site Photos

RR Looking North



RR Looking South



Roadway Looking East



Roadway Looking West



Roadway Grade Crossing Site Visit Form

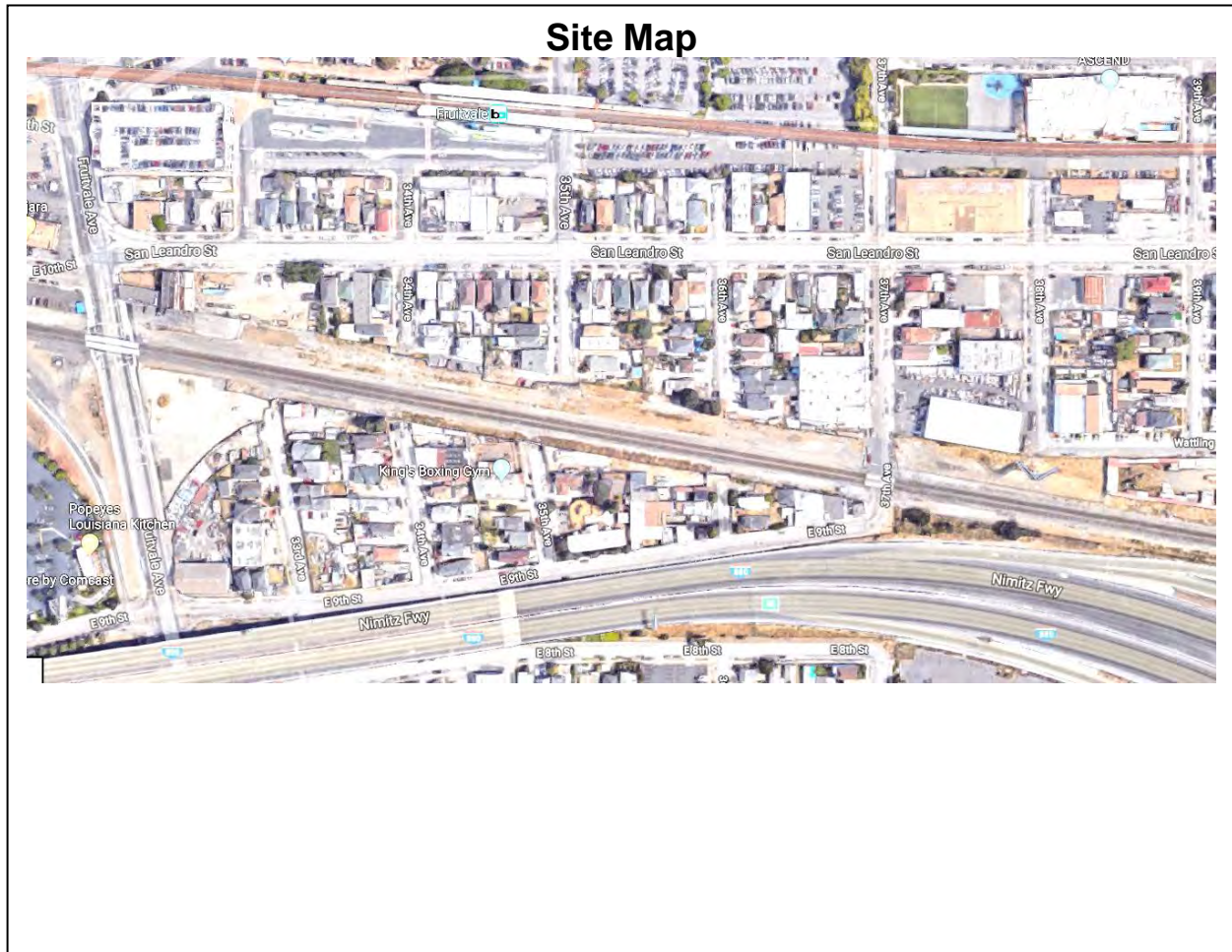
Date: 3/12/2018

Railroad Corridor: Niles – East Oakland
City/County: Oakland/Alameda
Road/Street: 37th Ave
DOT: 749709R
Subdivision/Mile Post: Niles MP 10.05
ADT/No. Trains 6,557—16/16

Attendees:

B. Kelly - HDR	P. Casey - HDR

Purpose of Site Visit: Inspect At-Grade Xing
Safety Briefing By: P. Casey



Crossing Characteristics	Existing Condition
Track Characteristics:	Speed: 79-60 Rail Wt. <u>136</u> CWR; Joint Locations: None Crossing Surface: Concrete Panels Crossing Length: 57' <u>2</u> Tracks: MT1, MT2 General Condition: Ok. MT1 Transition rail has misaligned weld.
Crossing Warning Devices	Type: Flashing light warning device with crossing gates - BFG Location: FL and Gates in NE and SW quadrants. Protected by curved barricade. Exposed rebar, appears to have been hit. Signal House and service drop NW. Condition: Up to current standards.
Roadway Characteristics	Posted Speed: Not posted. Surface: AC Width: 36' Crossing Angle: 81d Center Medians: No median or centerline striping. Curbs/Shoulders: S/W on N side of xing
Adjacent Intersections	BART Aerial Structure– 640'E San Leandro St Signalized Intersection– 410'E Driveway (Both Sides) - 90'E 9 th St - 55'W
Existing Utilities	In Roadway: EBMUD Water, FH NE, SDCB NE/SE, SD MH?, OHP N Along RR: KM E, FO E, OHP SW cut end of wires at crossing
Geometric Issues/Constraints	Sight Distance around corner with 9 th St. Sight Distance over crossing.
Pedestrian Activity	Peds spotted on street and trespassing along track including school age kid.
Bicycle Activity	None spotted.
Available Right-of-Way	80' to the East of tracks

Grade Separation Review

Roadway Profile	Is roadway profile lower/level/ higher than track? Lower
Rail Profile	Is crossing in level, sag, or crest segment? Level Can the track be raised/lowered? Very limited. Crossing is 1000'N of 42 nd St roadway underpass. 1450'S of Fruitvale Ave.
Traffic Impact	Can roadway be closed during construction? Yes. Can traffic be maintained during construction? No. Road width and sight distance would make staging difficult.

Comments

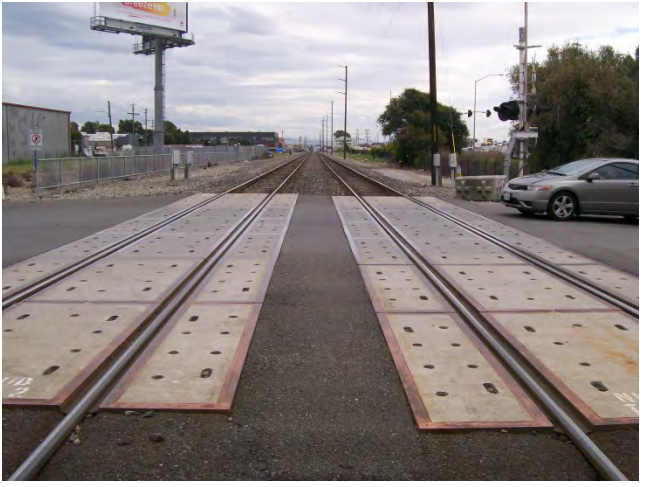
Comments	<p>Potential SSM for QZ include – Sight lines from 9th St are really limited before crossing.</p> <p>Crossing is candidate for closure. – Yes.</p> <p>Spotted illegally parked car on Southwest corner of crossing.</p> <p>New fence and no trespassing sign along southwest R/W.</p> <p>Hole in the fence to the SW. Gives access to the land between I-880 and railroad.</p> <p>Northeast 2 tracks sign (W48 CA) is defaced</p> <p>No circular RxR sign (W10-1) or 2 tracks sign (W48 CA) SW.</p>
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Site Photos

RR Looking North



RR Looking South



Roadway Looking East



Roadway Looking West



Roadway Grade Crossing Site Visit Form

Date: 3/13/2018

Railroad Corridor: Niles – East Oakland
City/County: Oakland/Alameda
Road/Street: High St
DOT: 749712Y
Subdivision/Mile Post: Niles MP 10.36
ADT/No. Trains 43,173—16/16

Attendees:

B. Kelly - HDR	P. Casey - HDR
K. Villanueva - ACTC	

Purpose of Site Visit: Inspect At-Grade Xing
Safety Briefing By: P. Casey



Crossing Characteristics	Existing Condition
Track Characteristics:	<p>Speed: 79-60</p> <p>Rail Wt. <u>136</u> CWR; Joint Locations: Oakland Sub is Jtd.</p> <p>Crossing Surface: Concrete Panels</p> <p>Crossing Length: 65'</p> <p><u>3</u> Tracks: MT1, MT2, Oakland sub connection. Turnout and derail are hand thrown.</p> <p>General Condition: 1 concrete panel is damaged and needs replacement. Some Concrete panels are not level.</p>
Crossing Warning Devices	<p>Type: Flashing light warning device with crossing gates - BFG</p> <p>Location: Sidewalk behind SW Gate. Sidewalk in front of NE Gate. Signal House NW and power drop is NE.</p> <p>Condition: Ok.</p>
Roadway Characteristics	<p>Posted Speed: 25 MPH</p> <p>Surface: AC</p> <p>Width: 42'</p> <p>Crossing Angle: 85d</p> <p>Center Medians: Channelizers</p> <p>Curbs/Shoulders: No curbs at gates to delineate roadway/protect NE gate. SW sidewalk is not paved.</p>
Adjacent Intersections	<p>BART Aerial Structure— 860'E</p> <p>San Leandro St Signalized Intersection— 685'E</p> <p>Wattling St – 300'E</p> <p>Driveway - 15'E</p> <p>Coliseum Way Signalized Intersection - 320'W</p>
Existing Utilities	<p>In Roadway: Fire Hydrant SE, Many unmarked MHs. OHP S and both sides of the street to the east. SDCB in all quadrants, High Voltage vault NW.</p> <p>Along RR: KM and FO E, OHP W</p>
Geometric Issues/Constraints	I-880 Overpass at Coliseum Way Intersection
Pedestrian Activity	Yes, street traffic and trespassing.
Bicycle Activity	Limited.
Available Right-of-Way	No.

Grade Separation Review

Roadway Profile	Is roadway profile lower/level/ higher than track? Level west and higher east.
Rail Profile	Is crossing in level, sag, or crest segment? Level Can the track be raised/lowered? Not if maintaining Oakland Subdivision.
Traffic Impact	Can roadway be closed during construction? No, High street crosses under I-880 and connects to Alameda. Can traffic be maintained during construction? Yes, able to maintain 1-lane each direction.

Comments

Comments	<ul style="list-style-type: none"> • Potential SSM for QZ include –Driveways are too close to crossing to have medians. • Crossing is candidate for closure. – No, I-880 underpass and ramps, connects to Alameda. • Large encampment to NE of crossing. • Drainage problem on east side of road. Flooding appears to have stalled a car after the crossing. This backed up the street, leading to cars stopping on the tracks. • Missing circular RxR signs (W10-1 and 2 tracks sign-W48 CA). Both directions • Railroad pavement markings are worn, both directions. • Old Gate foundation and guardrail in SW quadrant. • No trespassing signs are small and have been defaced. • Barricade gate unlocked.
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Site Photos

RR Looking North



RR Looking South



Roadway Looking East



Roadway Looking West



Encampment:



Roadway Grade Crossing Site Visit Form

Date: 3/12/2018

Railroad Corridor: Niles – East Oakland
City/County: Oakland/Alameda
Road/Street: 50th Ave
DOT: 749716B
Subdivision/Mile Post: Niles MP 10.77
ADT/No. Trains 7,374—16/16

Attendees:

B. Kelly - HDR	P. Casey - HDR

Purpose of Site Visit: Inspect At-Grade Xing
Safety Briefing By: P. Casey



Crossing Characteristics	Existing Condition
Track Characteristics:	Speed: 79-60 Rail Wt. <u>136</u> CWR (Y/N); Joint Locations: Crossing Surface: Concrete Panels Crossing Length: 57' <u>3</u> Tracks: MT1, MT2, Track 175 General Condition: OK
Crossing Warning Devices	Type: Flashing light warning device with crossing gates - BFG Location: Behind Sidewalk in SW and NE quadrants. Signal House is in SE quadrant and service drop is in SW. Condition: OK
Roadway Characteristics	Posted Speed: 25 MPH Surface: AC Width: 40' Crossing Angle: 90d Center Medians: No Curbs/Shoulders: Sidewalks only on west side of crossing.
Adjacent Intersections	BART Aerial Structure— 550'E San Leandro St Signalized Intersection— 480'E 8th St – 180'E Driveways - 215'E, 140', 37' Coliseum Way - 500'W
Existing Utilities	In Roadway: OHP N & S, Water, SDCBs N, Large SD grates SE, Gas Along RR:KM W and crosses to E 100' N of crossing. FO E, Old FO marker on W.
Geometric Issues/Constraints	Curve to the 300'W. Possible sight distance issue on other side of track because track is higher than roadway.
Pedestrian Activity	5 people midday.
Bicycle Activity	1 spotted crossing with gates down (no train crossed).
Available Right-of-Way	No, adjacent lots occupied.

Grade Separation Review

Roadway Profile	Is roadway profile lower/level/ higher than track? Lower. Possible sight distance problems
Rail Profile	Is crossing in level, sag, or crest segment? Level Can the track be raised/lowered? Not if industry track needs to stay.
Traffic Impact	Can roadway be closed during construction? Yes. Can traffic be maintained during construction? May be possible.

Comments

Comments	<ul style="list-style-type: none"> • Potential SSM for QZ include – Driveways are too close. Trucks entering property to NW would have difficulty entering with a median. • Crossing is candidate for closure. – Yes, though it would create a 1.25Mi stretch between High St and 66th Ave with no crossing. • Signs of encampment on railroad R/W. • Railroad pavement markings worn. • No circular RxR sign (W10-1) or 3 tracks signs (W48 CA). • Old gate foundations and guard rails were left in place. • Pavement near panels has been scraped repeatedly. Cars nearly going airborne over crossing.
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Site Photos

RR Looking North



RR Looking South



Roadway Looking East



Roadway Looking West



Roadway Grade Crossing Site Visit Form

Date: 3/13/2018

Railroad Corridor: Niles – Coliseum
City/County: Oakland/Alameda
Road/Street: 66th Ave
DOT: 749720R
Subdivision/Mile Post: Niles MP 11.62
ADT/No. Trains 20,762—16/16

Attendees:

B. Kelly - HDR	P. Casey - HDR

Purpose of Site Visit: Inspect At-Grade Xing
Safety Briefing By: P. Casey



Crossing Characteristics	Existing Condition
Track Characteristics:	<p>Speed: 79-60</p> <p>Rail Wt. <u>136</u> CWR; Joint Locations: Track 175 Jtd rail with compromised joint near crossing. Nearby turnout is power operated.</p> <p>Crossing Surface: Concrete Panels</p> <p>Crossing Length: 81'</p> <p><u>3</u> Tracks: MT1, MT2, Trk 175</p> <p>General Condition: Need to resurface track and panels through crossing. Track 175 is higher than MT1 and causes cars to bounce over crossing.</p>
Crossing Warning Devices	<p>Type: Flashing light warning device with crossing gates - CBF</p> <p>Location: NE/SW Gates and Cantilevers inside 5' sidewalk. Signal house SW.</p> <p>Condition: ok</p>
Roadway Characteristics	<p>Posted Speed: 30 MPH</p> <p>Surface: AC</p> <p>Width: 48'</p> <p>Crossing Angle: 75d</p> <p>Center Medians: Channelization devices both sides of crossing.</p> <p>Curbs/Shoulders: Substandard sidewalk around gates. Multiple poles block path.</p>
Adjacent Intersections	<p>BART/Oakland Sub – 610'E</p> <p>San Leandro St – 525'E</p> <p>Driveway – 90'E</p> <p>Driveway – 65'W</p> <p>Coliseum Way – 800' W</p> <p>I-880 – 1280'W</p>
Existing Utilities	<p>In Roadway: Street lights N & S, SD all quadrants, gas N, water, pacbell vaults N, PGE high voltage vault N.</p> <p>Along RR: KM W, FO E, 4 exposed conduits crossing drainage ditch on south side.</p>
Geometric Issues/Constraints	
Pedestrian Activity	Trespassing and along the street.
Bicycle Activity	Mostly trespassing along railroad R/W. Also spotted car trespassing towards industry
Available Right-of-Way	No.

Grade Separation Review

Roadway Profile	Is roadway profile lower/level/ higher than track? Level
Rail Profile	Is crossing in level, sag, or crest segment? Level Can the track be raised/lowered? No crossovers and turnouts are nearby.
Traffic Impact	Can roadway be closed during construction? No, easy detour for access to I-880. Can traffic be maintained during construction? Yes, should be able to go down to 1-lane each way.

Comments

Comments	<ul style="list-style-type: none"> • Potential SSM for QZ include –Channelization devices have been installed. • Crossing is candidate for closure. – No, Coliseum and I-880 access. • SW gate is not locked. • Can drive on railroad R/W all quadrants. • Dumping on SW side • Encampment on SW railroad R/W. • WB no stopping on tracks sign is defaced. • SW “3 tracks” W48 (CA) sign is defaced.
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Site Photos

RR Looking North



RR Looking South



Roadway Looking East



Roadway Looking West



Crossing Characteristics	Existing Condition
Track Characteristics:	<p>Speed: 79-60</p> <p>Rail Wt. <u>136</u> CWR; Joint Locations: Trk 179 jtd. Compromised joints very close to xing.</p> <p>Crossing Surface: Concrete Panels</p> <p>Crossing Length: 57'MTs – 65' Trk 179</p> <p><u>3</u> Tracks: MT1, MT2, Trk 179. Trk 179 appears to be out of service (frog has been removed from turnout on south end).</p> <p>General Condition: OK</p>
Crossing Warning Devices	<p>Type: Flashing light warning device with crossing gates - BFG</p> <p>Location: Gates on sides of road. Signal house SE with power drop NE.</p> <p>Condition: OK.</p>
Roadway Characteristics	<p>Posted Speed: 25 MPH</p> <p>Surface: AC</p> <p>Width: 36-44'</p> <p>Crossing Angle: 56d</p> <p>Center Medians: None</p> <p>Curbs/Shoulders: None. Need curb and sidewalks throughout crossing. Pedestrians must enter road and cross in front of gates. SW corner needs curb for gate (currently protected by ultrablocks and rail bollards).</p>
Adjacent Intersections	<p>BART/Oakland Sub – 680'E</p> <p>San Leandro St – 600'E</p> <p>Driveway – 190'E</p> <p>Railroad Ave/Driveway – 45'W</p> <p>Baldwin St – 570' W</p> <p>Enterprise Way – 1390'W</p>
Existing Utilities	<p>In Roadway: PG&E high voltage vault –S, OHP with street lights –S, Pacbell MH in street.</p> <p>Along RR: FO and KM – W. Possible FO E.</p>
Geometric Issues/Constraints	<p>Roadway changes direction at crossing. Intersection with Railroad Ave/Driveway is very close to the crossing.</p>
Pedestrian Activity	<p>Trespasser with encampment in SE quadrant. Pedestrian activity on street.</p>
Bicycle Activity	<p>Yes</p>

Available Right-of-Way	No.
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Grade Separation Review

Roadway Profile	Is roadway profile lower/level/ higher than track? Lower
Rail Profile	Is crossing in level, sag, or crest segment? Trk 179 is in a crest. MTs are level. Can the track be raised/lowered? No. Turnouts, crossovers and bridges to the North starting about 1000’.
Traffic Impact	Can roadway be closed during construction? Yes, Roadway could be detoured. Can traffic be maintained during construction? No.

Comments

Comments	<ul style="list-style-type: none"> • Potential SSM for QZ include – Construct median with channelization devices E of crossing. • Crossing is candidate for closure. Yes. • Fence along Railroad Ave. has multiple holes. • Barricade NW quadrant has been knocked out. Possible to drive on SE right-of-way. • No “No trespassing signs” • Encampment in SE quadrant. • Track is much higher than road and approaches to crossing are abrupt. • Striping is worn and W10-1 and W48 (CA) signs are missing in both directions. • NW driveway is close to crossing and may pose problems for adjusting approaches. Fencing appears to be encroaching on sidewalk.
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Site Photos

RR Looking North



RR Looking South



Roadway Looking East



Roadway Looking West



Roadway Grade Crossing Site Visit Form

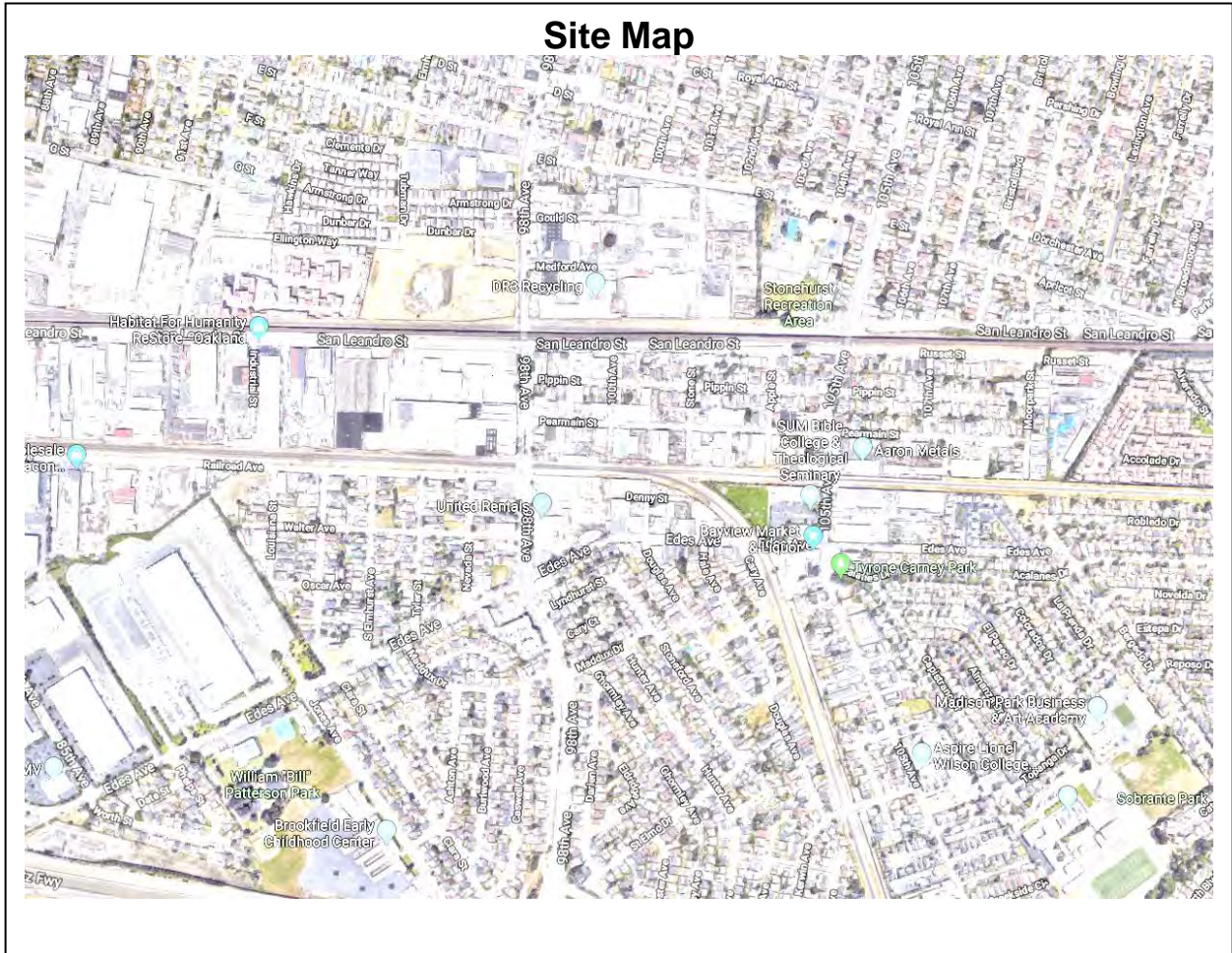
Date: 3/19/2018

Railroad Corridor: Niles – Coliseum
 City/County: Oakland/Alameda
 Road/Street: 98th Ave
 DOT: 749724T
 Subdivision/Mile Post: Niles MP 13.35
 ADT/No. Trains 32643 -- 16/16

Attendees:

B. Kelly - HDR	P. Casey - HDR

Purpose of Site Visit: Inspect At-Grade Xing
 Safety Briefing By: P. Casey



Crossing Characteristics	Existing Condition
Track Characteristics:	Speed: 79-60 Rail Wt. <u>136</u> CWR, Joint Locations: Crossing Surface: Concrete Panels Crossing Length: 98'MTs <u>2</u> Tracks: MT1, MT2. Turnout for trk 179 50' to the north out of service General Condition: Loose panels
Crossing Warning Devices	Type: Flashing light warning device with crossing gates - BFG Location: Sides of road and medians. Signal House and power drop in NW. Condition: OK
Roadway Characteristics	Posted Speed: 25 MPH Surface: AC Width: 68' Crossing Angle: 88d Center Medians: Yes. Break in median to the west for intersection with Railroad Ave. Curbs/Shoulders: Yes, sidewalk behind gates.
Adjacent Intersections	BART/Oakland Sub – 760'E San Leandro St – 670'E Pippin St – 240'E Pearmain St – 670'E Driveway – 100'E Railroad Ave/Driveway – 50'W Walter Ave – 410' W Edes Ave Signalized– 640'W
Existing Utilities	In Roadway: Street lights N and Median. PG&E gas N, AT&T vaults N &S, PG&E high voltage N & S, cable N, water, storm drain, and sewer. Along RR: KM & FO W.
Geometric Issues/Constraints	Railroad Ave intersection to the west.
Pedestrian Activity	Trespasser and 1 encampment north. Bus stop on NE quadrant, at stop line.
Bicycle Activity	

Available Right-of-Way	NW corner, if you close Railroad Ave.
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Grade Separation Review

Roadway Profile	Is roadway profile lower/level/ higher than track? Lower
Rail Profile	Is crossing in level, sag, or crest segment? MTs are level. Can the track be raised/lowered? No. Turnout for Coast Subdivision (control point North Elmhurst) 450' to south.
Traffic Impact	Can roadway be closed during construction? No. Can traffic be maintained during construction? Yes, road is wide enough to maintain traffic through crossing during construction.

Comments

Comments	<ul style="list-style-type: none"> • Potential SSM for QZ include –Extend median on west side, limiting Railroad Ave. and driveway to right turn only. • Crossing is candidate for closure. No. • Fence along Railroad Ave. has multiple holes. • Gap in fence • No Barricade NW quadrant and SW has been moved. • No “No trespassing signs” • Encampment in NE quadrant. • Track is much higher than road and approaches to crossing are abrupt. Cars have to slow down to safely use crossing. • Stop lines are worn and W10-1 and W48 (CA) signs are missing in both directions. • Asphalt pavement at the interface with the concrete sidewalk has large lip creating a tripping hazard right at the tracks
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Site Photos

RR Looking North



RR Looking South



Roadway Looking East



Roadway Looking West



Tripping hazard in sidewalk



Roadway Grade Crossing Site Visit Form

Date: 3/19/2018

Railroad Corridor: Niles – Coliseum
City/County: Oakland/Alameda
Road/Street: 105th Ave
DOT: 749725A
Subdivision/Mile Post: Niles MP 13.70
ADT/No. Trains 8709 -- 14F

Attendees:

B. Kelly - HDR	P. Casey - HDR

Purpose of Site Visit: Inspect At-Grade Xing
Safety Briefing By: P. Casey

Site Map



Crossing Characteristics	Existing Condition
Track Characteristics:	Speed: 79-60 Rail Wt. <u>136</u> CWR; Joint Locations: Crossing Surface: Concrete Panels Crossing Length: 60' <u>1</u> Track: MT1 General Condition: Ok
Crossing Warning Devices	Type: Flashing light warning device with crossing gates - BFG Location: Sides. Signal house and power drop NW Condition: OK. NE guard rail is damaged.
Roadway Characteristics	Posted Speed: 25 MPH Surface: AC Width: 30'E/40'W Crossing Angle: 90d Center Medians: No. Curbs/Shoulders: Sidewalks are substandard width around power poles and trees.
Adjacent Intersections	Phippen St – 505' E Pearmain St – 255' E Scrap metal Driveway – 25' E Driveways – 190' W Edes Ave – 380' W
Existing Utilities	In Roadway: OHP/Street Lights – N, sewer, water, storm drain, gas – S, Along RR: MCI W in line with gate.
Geometric Issues/Constraints	Scrap metal driveway is busy and angled towards crossing.
Pedestrian Activity	Yes, scrap metal place is used for CRV redemption. Trespassers. Assumed to increase with new charter school to start next year NW of crossing.
Bicycle Activity	Yes, scrap metal place is used for CRV redemption.
Available Right-of-Way	No.

Grade Separation Review

Roadway Profile	Is roadway profile lower/level/ higher than track? Roadway is much lower to the east.
Rail Profile	Is crossing in level, sag, or crest segment? Level Can the track be raised/lowered? No, Elmhurst control points to the north.
Traffic Impact	Can roadway be closed during construction? Yes, short term. Can traffic be maintained during construction? No, road is narrow to the east.

Comments

Comments	<ul style="list-style-type: none"> • Potential SSM for QZ include – Construct median with channelization devices both sides of crossing. • Crossing is candidate for closure. Needs to be studies, because it is only crossing between 98th and Davis St and adjacent to school. • Stop lines are far from gates. • Scrap metal fence SE and signal house and fence NW obstruct sight down tracks. • No “No trespassing signs” • Track is much higher than east side of road and approach to crossing is abrupt. • W10-1 signs are missing in both directions. EB - Do not stop on tracks sign is present. Scrap metal business appears to place additional caution signs at crossing. • SE driveway to scrap metal business driveway is facing tracks and street. Representative from business approached us on site visit and seemed to be receptive to improving safety on street. Mentioned they looked at moving driveway. Utility and sidewalk improvements may have deterred them. • Power poles are obstructing sidewalk.
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Site Photos

RR Looking North



RR Looking South



Roadway Looking East



Roadway Looking West



Driveway Photo taken from tracks



Roadway Grade Crossing Site Visit Form

Date: 3/27/2018

Railroad Corridor: Coast – Oakland
City/County: Oakland/Alameda
Road/Street: Edes Ave
DOT: 749867R
Subdivision/Mile Post: Coast MP 13.69
ADT/No. Trains 8033 -- 2/16 P/F

Attendees:

B. Kelly - HDR	P. Casey - HDR

Purpose of Site Visit: Inspect At-Grade Xing
Safety Briefing By: P. Casey

Site Map



Crossing Characteristics	Existing Condition
Track Characteristics:	Speed: 15-15 (50-40 Sign to South of Xing) Rail Wt. <u>136</u> CWR; Joint Locations: Crossing Surface: Concrete Panels Crossing Length: 70' <u>1</u> Track: MT General Condition: Broken gauge panel. Panels are welded and not level in south sidewalk
Crossing Warning Devices	Type: Flashing light warning device with crossing gates - BFG Location: Sides. NW House with power drop. Sidewalks behind gates. RR signal to NE Condition: OK
Roadway Characteristics	Posted Speed: 25 MPH Surface: AC Width: 38' (shoulders + lane each direction) Crossing Angle: 55d Center Medians: None Curbs/Shoulders: Shoulders, curbs, gutters, and sidewalks all present. Sidewalk AC-Concrete interface should be fixed.
Adjacent Intersections	Douglas Ave – 630'N Hale Ave – 275'N Cary Ave – 45'N School Driveway – 113'S 105 th Ave - 410'S
Existing Utilities	In Roadway: High Voltage Vault – N, Street Lights both sides, SD, Telcom, Water, PG&E – S Along RR: KM-W, FO-W, AT&T in Cary Ave.
Geometric Issues/Constraints	
Pedestrian Activity	Bus Stop nearby, Encampment to North, New school set to open in fall – NE.
Bicycle Activity	
Available Right-of-Way	No.

Grade Separation Review

Roadway Profile	Is roadway profile lower/level/ higher than track? Lower
Rail Profile	Is crossing in level, sag, or crest segment? Level Can the track be raised/lowered? Too close to Elmhurst turnout
Traffic Impact	Can roadway be closed during construction? No. Can traffic be maintained during construction? Possibly

Comments

Comments	<ul style="list-style-type: none">• No stop lines, pavement markings or circular RxR signs (W10-1).• Railroad R/W is delineated by pole railing. No “no trespassing” signs.• Road has bump at crossing.• New school being converted in SE quadrant.
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Site Photos

RR Looking North



RR Looking South



Roadway Looking East



Roadway Looking West



Roadway Grade Crossing Site Visit Form

Date: 3/27/2018

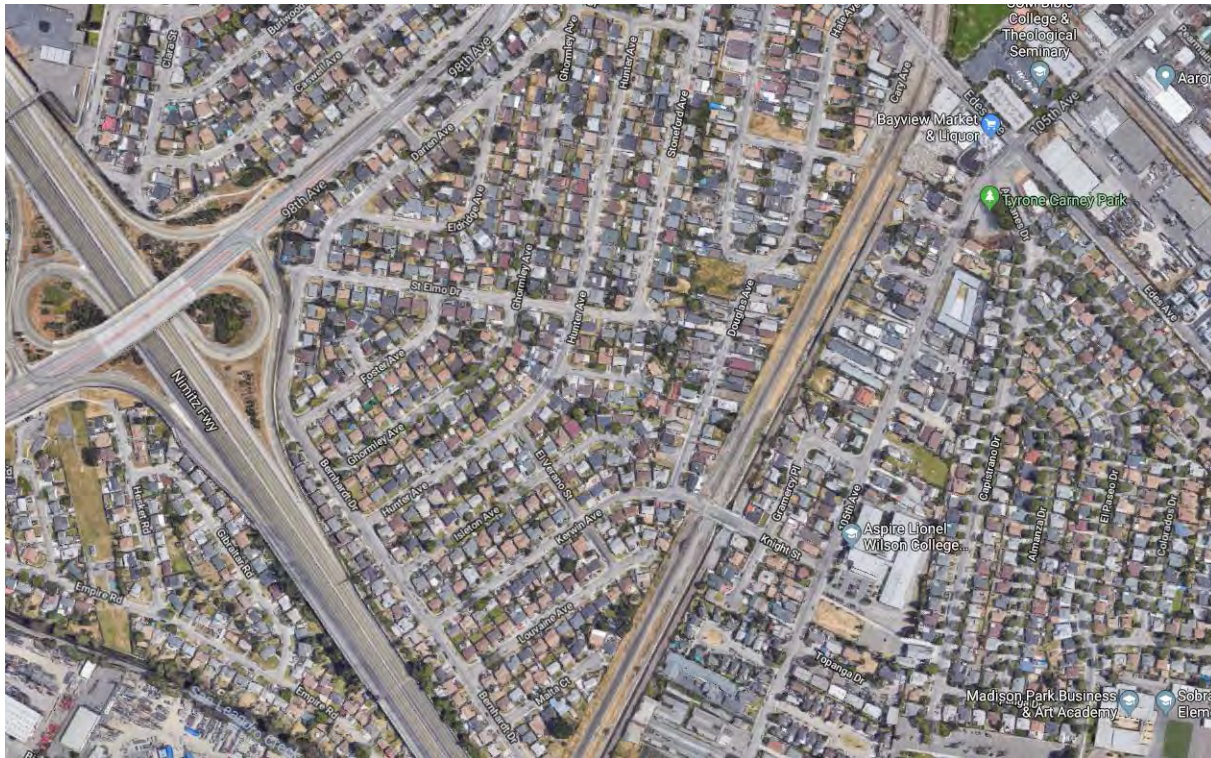
Railroad Corridor: Coast – Oakland
City/County: Oakland/Alameda
Road/Street: Knight Ave
DOT: 749868X
Subdivision/Mile Post: Coast MP 14.00
ADT/No. Trains 1842 -- 2/16 P/F

Attendees:

B. Kelly - HDR	P. Casey - HDR

Purpose of Site Visit: Inspect At-Grade Xing
Safety Briefing By: P. Casey

Site Map



Crossing Characteristics	Existing Condition
Track Characteristics:	Speed: 50-40 Rail Wt. <u>133</u> CWR; Joint Locations: Rail transitions to 113# Crossing Surface: Concrete Panels Crossing Length: 60' <u>1</u> Tracks: MT General Condition: OK
Crossing Warning Devices	Type: Flashing light warning device with crossing gates - BFG Location: Sides. NW House and power drop. Sidewalks behind gates. Condition: OK.
Roadway Characteristics	Posted Speed: 25 MPH – 15MPH Speed bumps Surface: AC Width: 38' (shoulder and lane in each direction) Crossing Angle: 90d Center Medians: none Curbs/Shoulders: Shoulders, curbs, gutters, and sidewalks.
Adjacent Intersections	105 th Ave (End of street/school)– 422'E Gramercy Pl – 204'E Creek bridge – 50'E Douglas Ave – 108'W El Verano St – 440'W Residential Driveways all along street
Existing Utilities	In Roadway: OHP – N, Street lights on both sides of street Along RR: FO-W, KM-W
Geometric Issues/Constraints	EB has vertical sight distance problems because of the elevation difference between the track and road. Cars are parked closed to the crossing making visibility worse.
Pedestrian Activity	Yes, connects neighborhood with schools.
Bicycle Activity	Yes, trespasser took bike onto R/W.
Available Right-of-Way	No, Houses and drainage channel in vicinity.

Grade Separation Review

Roadway Profile	Is roadway profile lower/level/ higher than track? Lower
Rail Profile	Is crossing in level, sag, or crest segment? Level Can the track be raised/lowered? Yes, ~1500' to Edes Ave and San Leandro Creek to south.
Traffic Impact	Can roadway be closed during construction? Would need to maintain pedestrian xing. Can traffic be maintained during construction? Would be difficult

Comments

Comments	<ul style="list-style-type: none"> • Encampments in channel R/W adjacent to RR R/W. Use RR for access through holes in the fence. • No striping or pavement markings • Rough transition from concrete sidewalk to AC pavement. • SE fence is damaged. • No trespassing signs are old. • Dumping on sidewalks and RR R/W. Surveillance camera and sign to the west of crossing. "Think before you dump" sign showing kids walking on tracks to the east.
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Site Photos

RR Looking North



RR Looking South



Roadway Looking East



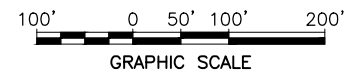
Roadway Looking West



APPENDIX B

Conceptual Crossing and Grade Separation Plans

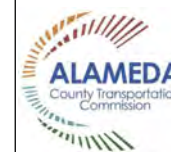
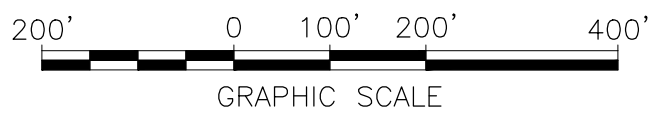
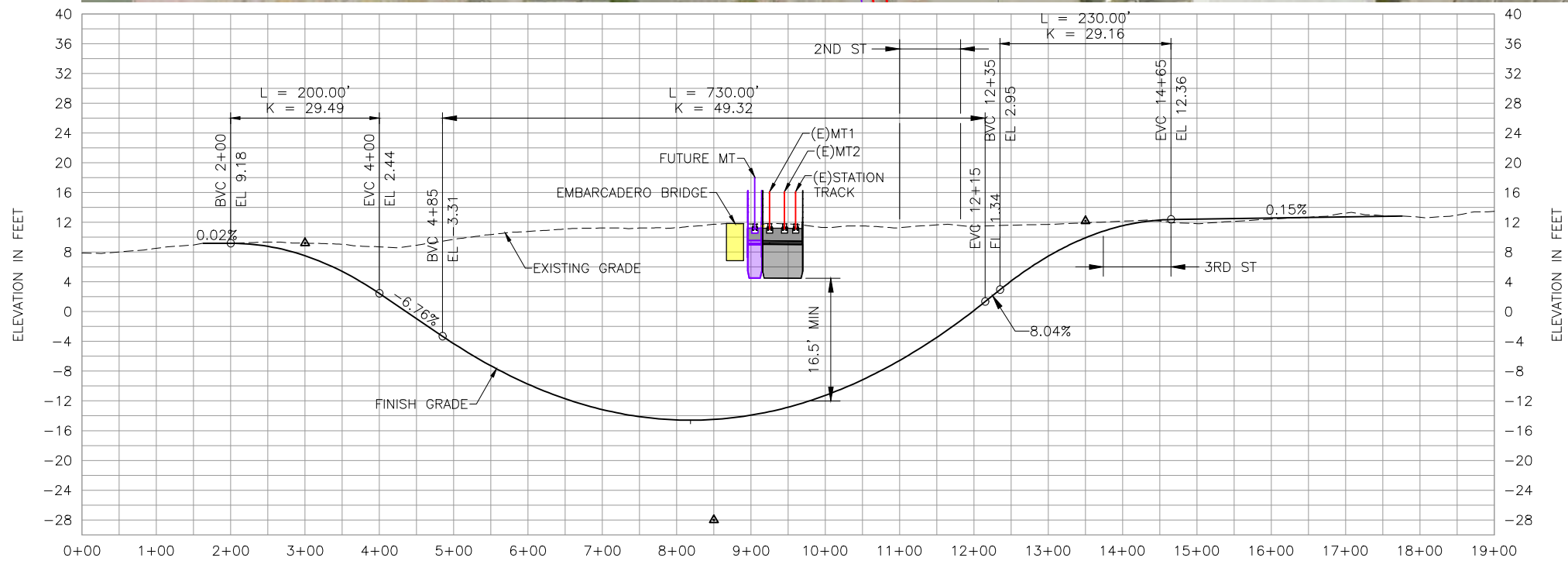
MATCH LINE -- SEE BELOW



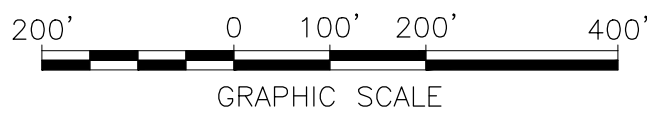
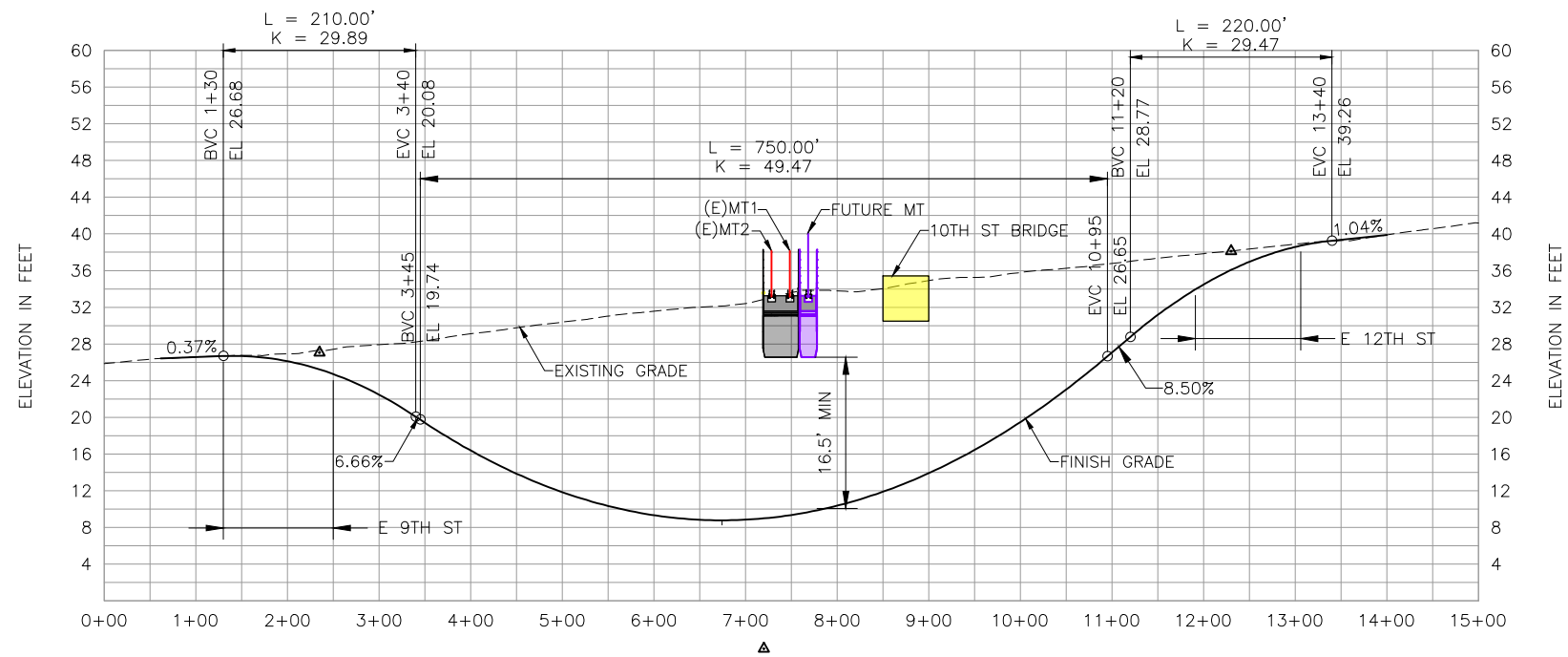
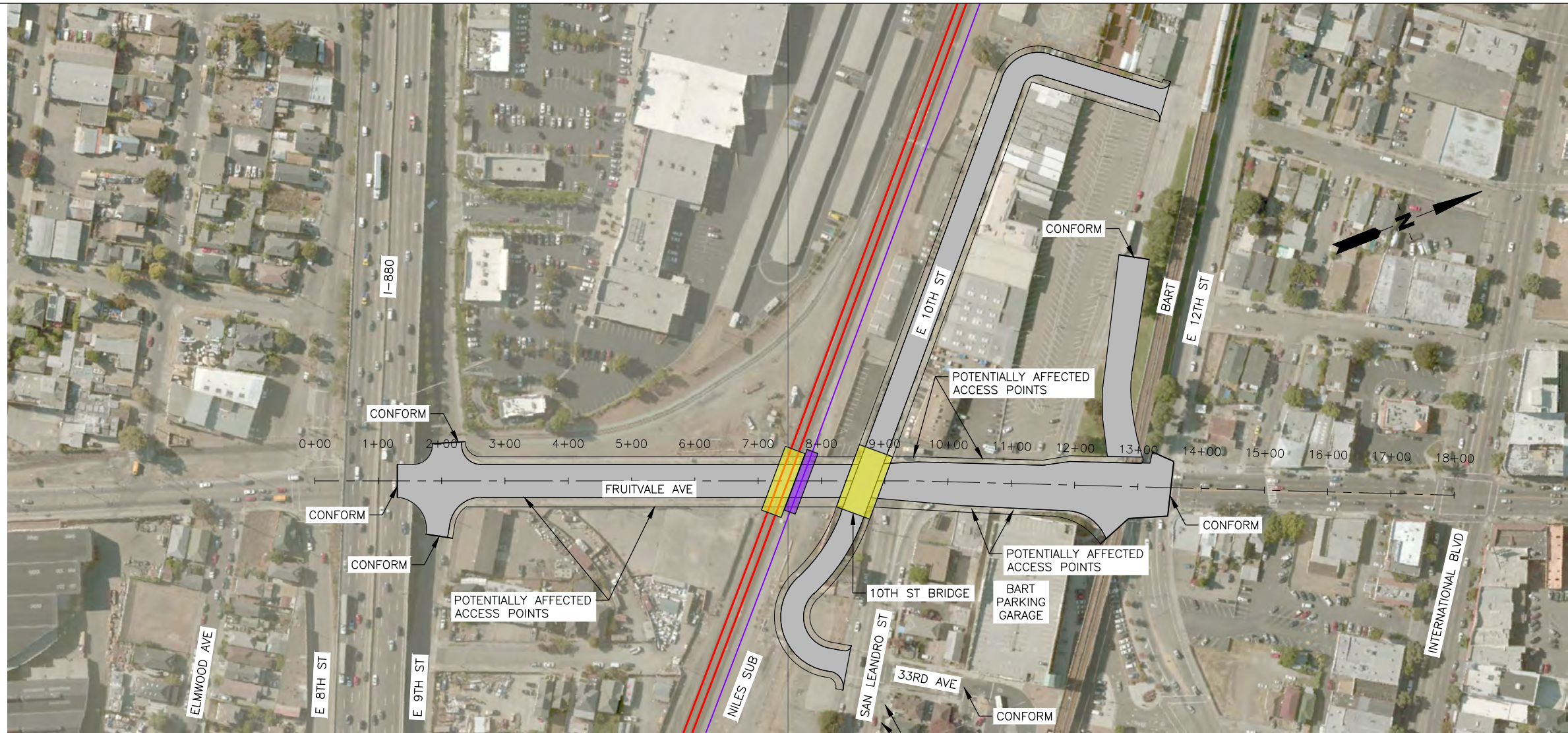
PLOT DATE: Nov 08, 2017 - 2:58pm FILE: C:\pwworking\west01\00274655\EXH-EMBARCADERO-11x17.dwg

		DRAWN BY: CJO	ALAMEDA COUNTY TRANSPORTATION COMMISSION
		CHECKED BY: WGS	
		DATE: 8/1/17	LOCATION: Oakland, California
		SHEET NUMBER	Union Pacific Railroad Niles Subdivision MP 6.0 to 6.8
			EXHIBIT A
			EMBARCADERO AT-GRADE CROSSING IMPROVEMENTS

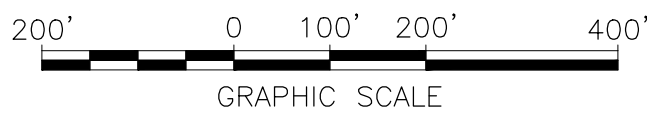
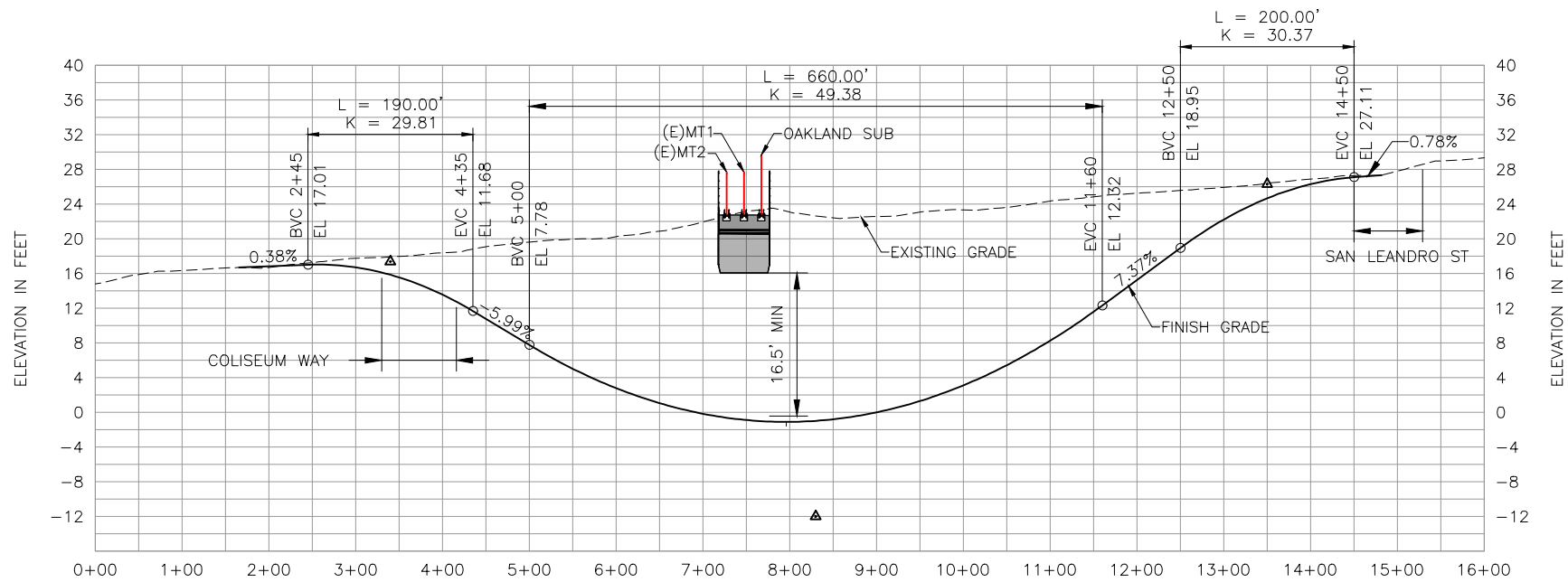
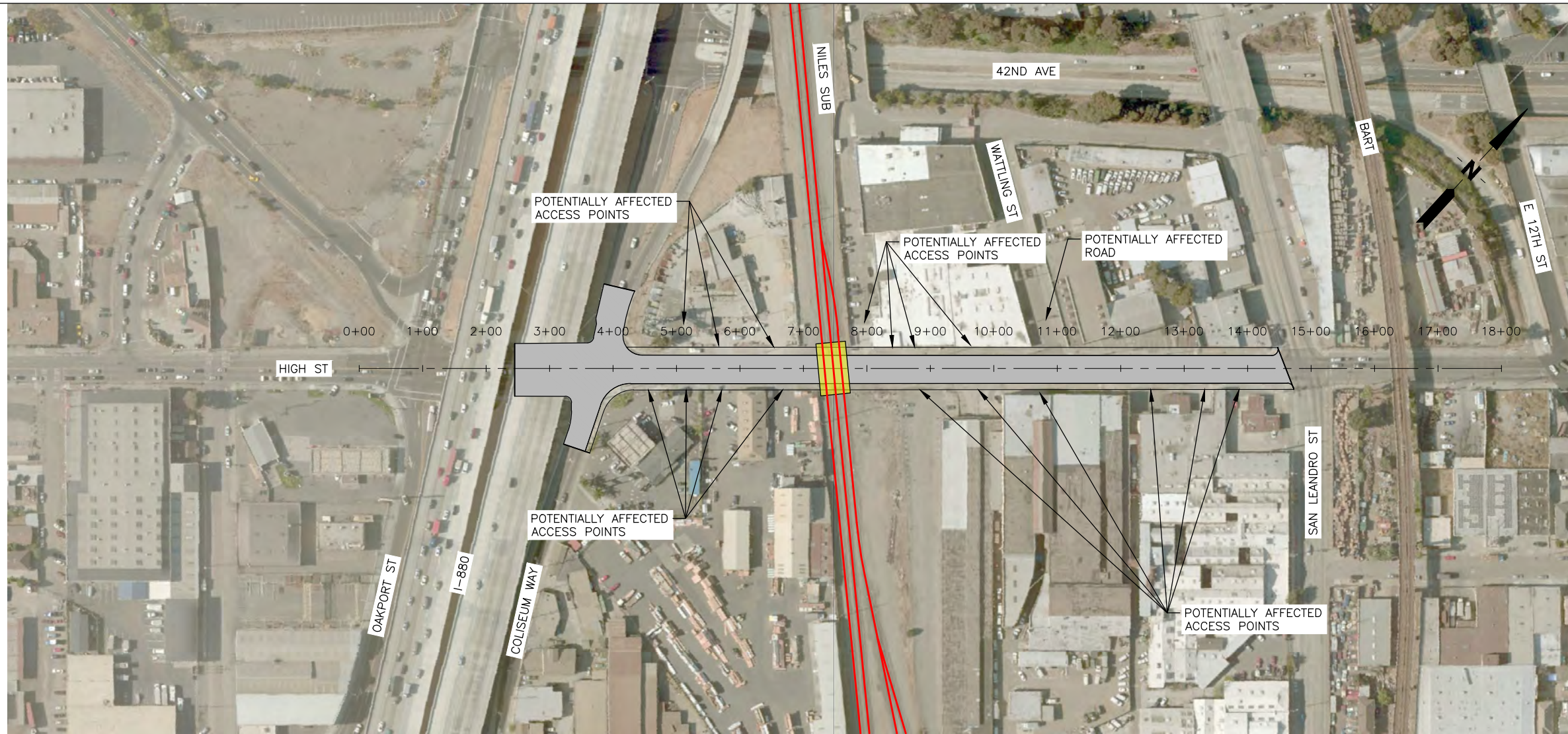
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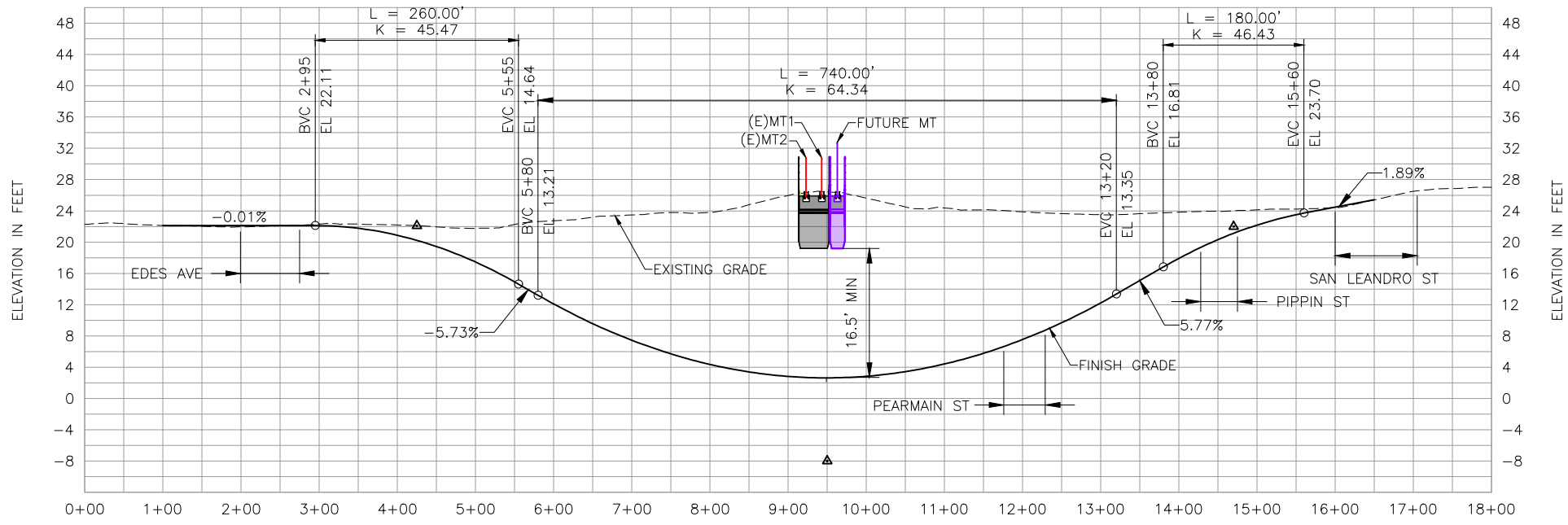
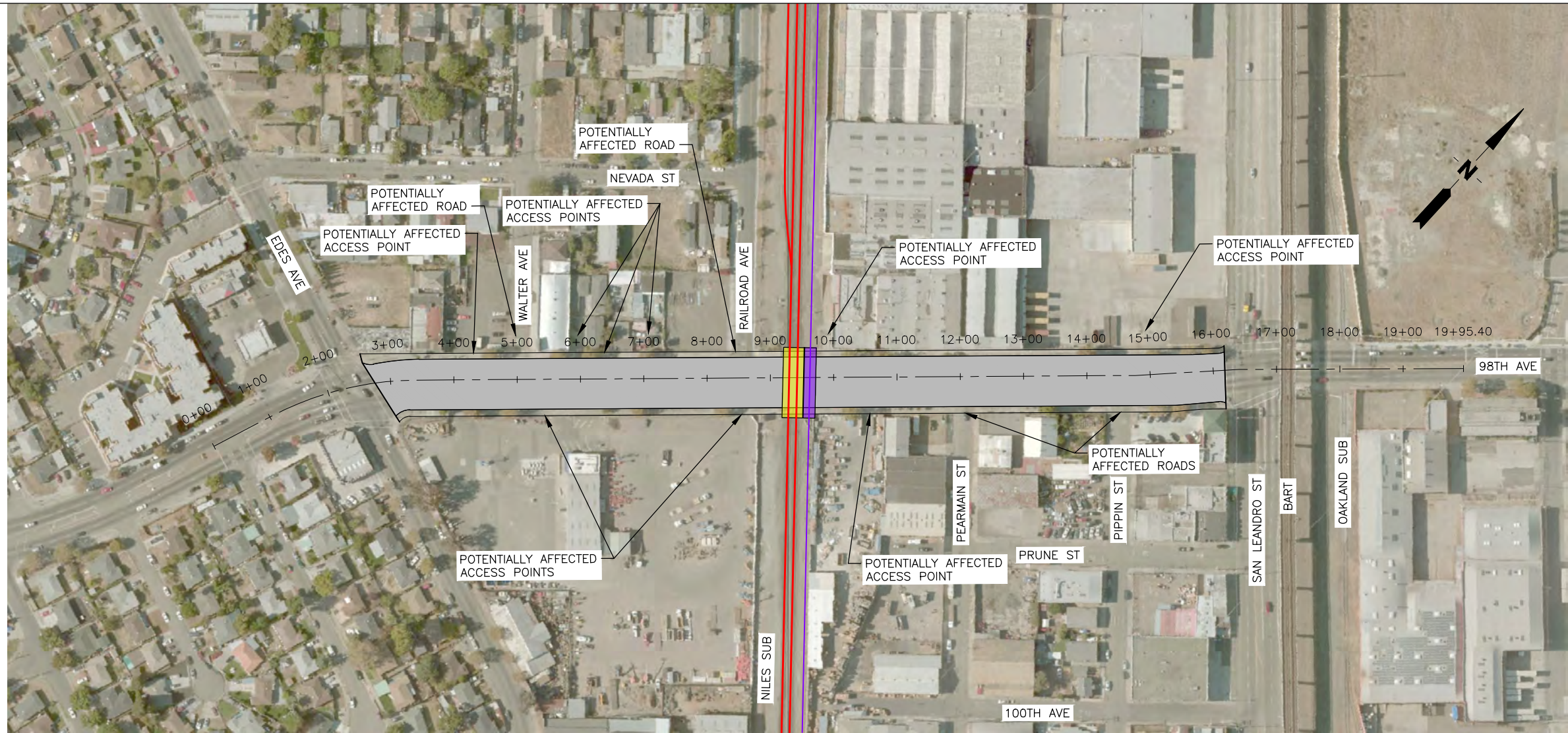
DRAWN BY:	BK	ALAMEDA COUNTY TRANSPORTATION COMMISSION
CHECKED BY:	KC	LOCATION: OAK ST
DATE:	4/16/18	NILES - JACK LONDON SQUARE, OAKLAND
SHEET NUMBER		DWG TITLE: ROADWAY UNDERPASS EXHIBIT





		DRAWN BY: BK	ALAMEDA COUNTY TRANSPORTATION COMMISSION
		CHECKED BY: KC	
		DATE: 5/4/18	
		SHEET NUMBER	
		LOCATION: FRUITVALE AVE NILES - EAST OAKLAND	
		DWG TITLE: ROADWAY UNDERPASS EXHIBIT	



		DRAWN BY: BK	ALAMEDA COUNTY TRANSPORTATION COMMISSION
		CHECKED BY: KC	
		DATE: 4/16/18	
		SHEET NUMBER	
		LOCATION: HIGH ST NILES - EAST OAKLAND	
		DWG TITLE: ROADWAY UNDERPASS EXHIBIT	



PLOT DATE: Apr 24, 2018 - 4:01pm FILE: C:\pwworking\west01\0718734\EXH-OAKLAND-98TH-GS.dwg

		DRAWN BY: BK CHECKED BY: KC DATE: 4/16/18 SHEET NUMBER	ALAMEDA COUNTY TRANSPORTATION COMMISSION LOCATION: 98TH AVE NILES - COLISEUM DISTRICT DWG TITLE: ROADWAY UNDERPASS EXHIBIT
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