FINAL INITIAL STUDY/MITIGATED NEGATIVE DECLARATION

Lilac to Rancho Double Tracking Project

Prepared for

San Bernardino County Transportation Authority

June 2018

402 W. Broadway, Suite 1450
San Diego, CA 92101

Volume I
IS/MND – Appendix A

MITIGATED NEGATIVE DECLARATION

Project Proponent: San Bernardino County Transportation Authority
1170 W. 3rd Street, 2nd Floor
San Bernardino, CA 92410-1715

Project Description: The San Bernardino County Transportation Authority (SBCTA) is proposing to construct approximately three (3) miles of a second main line track along the San Gabriel Subdivision, San Bernardino Line (SBL) railroad corridor between Control Point (CP) Lilac Milepost 52.4 to approximately CP Rancho, near MP 55.1 in the cities of Rialto and San Bernardino.

Project Location: San Bernardino Line (SBL) railroad corridor between Control Point (CP) Lilac Milepost 52.4 to approximately CP Rancho, near MP 55.1 in the cities of Rialto and San Bernardino.

Finding: Pursuant to the provisions of the California Environmental California Environmental Quality Act (CEQA), the San Bernardino County Transportation Authority has determined that the Proposed Project would not have a significant impact on the environment. Following an Initial Study and assessment of possible adverse impacts, the Proposed Project was determined not to have a significant impact on the environment because of the inclusion of mitigation measures that would reduce potential adverse impacts to below a level of significance. Therefore, the San Bernardino County Transportation Authority has prepared a Mitigated Negative Declaration in accordance with the provisions of CEQA.

Mitigation Measures: See attached sheets.

The Initial Study is available through document links provided at the following websites:

- http://gosbcta.com/plans-projects/projects-rail-lilac.html,
- http://yourrialto.com/city-hall/departments/public-works/
- https://www.ci.san-bernardino.ca.us/cityhall/publicworks/default.asp

Hardcopies are also available for viewing at the following locations:

- City of Rialto Public Library, 251 W 1st St, Rialto, CA 92376
- City of San Bernardino Paul Villaseñor Branch Library, 525 North Mt. Vernon, San Bernardino, CA 92411

Date: _____ **Signature:** _____

Carrie Schindler, PE,
Director of Transit and Rail Programs
San Bernardino County Transportation Authority

Staff: _____

Date Filed with County Clerk: _____

MITIGATION MEASURES

The implementation of these mitigation measures would eliminate identified impacts or reduce impacts to a less than significant level. The mitigation measures listed below are the same mitigation measures presented in the Initial Study.

Mitigation Measure	Description
NOI-1	Complete the Work Permit preparation, submittal and approval process with the City of Rialto to allow weekend construction activities. The approved Work Permit, issued by the City Manager, will allow anticipated weekend construction that would extend beyond the authorized timelines and days according to the City's Municipal Code (Title 9, Chapter 9.50.070). The specific timelines that will permitted according to this mitigation measures include the following: • Construction activities will be allowed beginning on Friday from 5:31 pm through to Saturday at 7:59 am • Construction activities will be allowed beginning on Saturday's from 5:01 pm through to Monday at 6:59 am Consistent with the City of Rialto's Work Permit requirements to demonstrate sufficient need and justifications, the construction activities necessary during the above defined work windows are associated with the proposed at-grade roadway crossing improvements. These roadway crossings must be modified and the prescribed improvements implemented (Project Description, Section 2.0). To avoid any potential for secondary impacts to north-south access across the railroad corridor and to also avoid undue detours, each roadway crossing and its corresponding improvements will occur over a single weekend with only one crossing being closed and improvements being constructed at a time. No concurrent roadway closure or construction will occur.
NOI-2	The necessary elements of Mitigation Measure NOI-2, will be completed prior to potential implementation of Mitigation Measure NOI-3 in attempt to avoid the potential for a full acquisition of the residential structure at 2422 W Rialto Ave. Implementation of NOI-2 will include the following three (3) steps: • Step 1 – Complete a property line/SBCTA ROW survey to delineate the corresponding parcel boundaries associated with the impacted property located at 2422 W Rialto Ave, and the SBCTA ROW boundary. This delineation will establish the ROW limits in relation the improvements located on the property located at 2422W Rialto Ave. The survey and the corresponding results will also confirm if the improvements currently in place at 2422W Rialto Ave are encroaching into SBCTA ROW. Depending on the results of the above described delineation the second step as part of this mitigation measure may require partial financial responsibility of the current owner of the property at 2422W Rialto Ave. Property owner approval may be necessary of access onto the property at 2422 W Rialto Ave is required to complete the survey. • Step 2 – Conduct the necessary vibration measurements, evaluation, modeling (if deemed necessary), and document the results. The results will provide a determination on the minimum separation distance from the proposed second main-line railroad track alignment to address the currently predicted vibration impact. If the vibration measurement results determine that the separation from tracks is not sufficient to address the predicted vibration impact then an additional evaluation of a double layer of ballast mats will be included to supplement the evaluation and determine if the combined action will address the predicted vibration impact. • Step 3 – Based on the results from Step 1 and 2, assuming the results of Step 2 present a viable mitigation for the predicted vibration impact the proceeding with Step 3 will be undertaken. Initiate the relocation of the existing residential structure, according to the minimum separation distance required. The relocation will include an evaluation the existing improvements needed on-site and determination on the preferred location within the limits of the parcel boundaries at 2422 W Rialto Ave. The on-site evaluation of the property located at 2422 W Rialto Ave will include the spatial requirements, supplemental improvements needed (foundation and relocated utility connections), City of San Bernardino development standards and building permit requirements, and any potential secondary modifications or removals of other on-site improvements that would also be required. Step 2 may also include the inclusion of a double layer of ballast mats with the second main-line track alignment. The limits of the double layer ballast mat, if deemed necessary, will be provided as part of the Step 2 documentation results. If the results from Step 2 determine that relocation of the existing residential structure at 2422 W Rialto Ave, alone or in concert with a double layer ballast mat is not a viable mitigation for the predicted vibration impact at this property then Mitigation Measure NOI-3 will be implemented.

Mitigation Measure	Description
NOI-3	This mitigation measure will only be considered for implementation after the stepped process associated with Mitigation Measure NOI-2 have been completed and determine to be a non-viable mitigation option. Mitigation Measure NOI-3 will involve the preparation of a relocation impact technical memorandum that will document the necessary steps and provisions associated with the full acquisition of the property located at 2422 W Rialto Ave. This full acquisition will also include a comprehensive evaluation of comparable replacement property resources. The replacement resources will be evaluated based on current and fair market value, including size (parcel and building square footage (primary structure) and configuration (number of bedrooms/bathrooms). Any secondary improvements currently on-site at 2422 W Rialto Ave will be considered in concert with the property appraisal conducted. The evaluation of costs associated with this option in comparison to the on-site relocation and ballast mats will also be evaluated to determine the best option and most viable solution

FINAL INITIAL STUDY

Lilac to Rancho Double Tracking Project

Prepared for

San Bernardino County Transportation Authority

JUNE 2018

402 W. Broadway, Suite 1450
San Diego, CA 92101

Contents

Tables

Figures

Acronyms and Abbreviations

ADT	Average Daily Traffic
AWSC	all-way stop control
BMP	best management practice
BNSF	Burlington Northern Santa Fe Railway
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CEQA	California Environmental Quality Act
CNDDB	California Natural Diversity Database
CO2e	carbon dioxide equivalent
CP	Control Point
EPA	U.S. Environmental Protection Agency
FRA	Federal Railway Administration
RH	Right-Hand
GHG	greenhouse gas
HCM	Highway Capacity Manual
LAS	Los Angeles Union Station
lb/day	pound(s) per day
LH	Left-Hand
LOS	level of service
MP	Milepost
mph	miles per hour
PCE	passenger car equivalent
PM2.5	particulate matter with diameter equal to or smaller than 2.5 micrometers
PM10	particulate matter with diameter equal to or smaller than 10 micrometers
Proposed Project	Lilac to Rancho Double Tracking Project
SBCTA	San Bernardino County Transportation Authority
SBL	San Bernardino Line
SCAQMD	South Coast Air Quality Management District
SCRRA	Southern California Regional Rail Authority
SWPPP	Stormwater Pollution Prevention Plan
TIA	Traffic Impact Analysis
TMP	Traffic Management Plan
TWSC	two-way stop control

UPRR	Union Pacific Railroad
VOC	volatile organic compound
vph	vehicles per hour

SECTION 1

Introduction

This section presents introductory information on the Initial Study purpose, statutory requirements and authority, permits and approvals, and agency consultation and coordination.

1.1 Purpose of the Initial Study

The California Environmental Quality Act (CEQA) was enacted in 1970 to provide decision-makers and the public with information regarding environmental effects of proposed projects; identifying means of avoiding environmental damage; and disclosing to the public the reasons behind a project's approval even if it leads to significant environmental impacts. The San Bernardino County Transportation Authority (SBCTA) has determined that the Lilac to Rancho Double Tracking Project (Proposed Project) is subject to CEQA and that no exemptions apply. Therefore, the preparation of an Initial Study is required.

This Initial Study has been prepared in accordance with CEQA, as amended January 1, 2018 (State of California Public Resources Code sections 21000 to 21189) and the Guidelines for CEQA, as amended January 1, 2017 (State of California *Code of Regulations* Title 14, Division 6, Chapter 3 sections 15000 to 15387). The Initial Study examines the direct, indirect, growth-inducing, irreversible, short-term, long-term, and cumulative environmental effects associated with the construction and operation of the Proposed Project.

Pursuant to Section 15063(a) of CEQA Guidelines, the SBCTA, acting in the capacity of Lead Agency, is required to undertake the preparation of an Initial Study to determine if the Proposed Project would have a significant effect on the environment. The purpose of this Initial Study is to: (1) identify potential environmental impacts, (2) provide the Lead Agency with information to use as the basis for deciding whether to prepare an Environmental Impact Report or Negative Declaration, (3) enable the Lead Agency to modify the Proposed Project (through mitigation of adverse impacts), (4) facilitate assessment of potential environmental impacts early in the design of the Proposed Project, and (5) provide documentation for the potential finding that the Proposed Project would not have a significant effect on the environment or can be mitigated to a level of insignificance. This Initial Study is an informational document providing an environmental basis for subsequent discretionary actions that may be required from other responsible agencies.

1.2 Statutory Requirements and Authority

The State of California CEQA Guidelines Section 15063 identify specific disclosure requirements for inclusion in an Initial Study. Pursuant to those requirements, an Initial Study shall include: (1) a description of the proposed project, including the location of the project site; (2) an identification of the environmental setting; (3) an identification of environmental effects by use of a checklist, matrix, or other method, provided that entries on a checklist or other form are briefly explained to indicate that there is some evidence to support the entries; (4) a discussion of ways to mitigate significant effects identified, if any; (5) an examination of whether the proposed project is compatible with existing zoning, plans, and other applicable land use controls; and (6) the name of the person or persons who prepared or participated in the preparation of the Initial Study.

1.3 Permits and Approvals

Public agencies may use this Initial Study as the basis for their decision to issue permits or approvals applicable to the Proposed Project. Table 1-1 provides a list of permits and approvals that may be required for the Proposed Project.

Table 1-1. List of Agency Permits and Approvals Potentially Applicable to Proposed Project

Agency	Permit or Approval
Federal	
United States Army Corps of Engineers	Section 404 Nationwide 14 permit
State	
California Regional Water Quality Control Board	National Pollutant Discharge Elimination System General Construction Stormwater permit, including Stormwater Pollution Prevention Plan
	Section 401 permit
California Department of Fish and Wildlife	Streambed Alteration Agreement
Local	
South Coast Air Quality Management District	Compliance with applicable rules and regulations
City of Rialto	Noise permit for construction activities during select weekend work
	Encroachment Permit
City of San Bernardino	Transportation Permit for hauling oversized material
	Noise permit for construction activities during select weekend work

1.4 Agency Consultation and Coordination

The agencies listed in Table 1-1 may require the SBCTA to obtain approvals for the Proposed Project. Coordination with other agencies would be required to determine the specific nature of any future permits or approvals that may be required. Agencies would be notified pursuant to CEQA of any subsequent comments would be considered accordingly.

This document is intended to provide agencies with an environmental basis under CEQA Guidelines to facilitate the approval or conditional approval of any aspect of the Proposed Project within their jurisdiction. In addition, this document allows for the dissemination of the information to the public, allow for examination of the project and provide comments prior to the approval of the project by the project proponent.

1.5 Technical Analysis and Reporting

This CEQA document is supported by the preparation of a suite of technical reports, which are included in Appendixes B through L. These reports are incorporated by reference, including their specific methodologies, approaches, regulatory requirements, affected environment, and impact analysis and determinations.

SECTION 2

Project Description

The San Bernardino County Transportation Authority (SBCTA), as the Project proponent, is proposing to construct approximately three (3) miles of a second main line track along the San Gabriel Subdivision, San Bernardino Line (SBL) railroad corridor between Control Point (CP) Lilac Milepost 52.4 to approximately CP Rancho, near MP 55.1 in the cities of Rialto and San Bernardino.

The main objective of the Proposed Project is to provide increased average train speed, reduced travel times, improved reliability, and enhanced overall capacity of the Metrolink San Bernardino Line (SBL). The Proposed Project is needed because this passenger rail corridor is critical to regional mobility and the double track improvements would enhance rail operations and allow for more efficient operation of the busiest commuter rail line in Southern California.

2.1 Project Location

The Proposed Project is located within the cities of Rialto and San Bernardino in San Bernardino County (Figure 2-1). It would be developed within the segment of the existing 100-foot wide San Gabriel Subdivision, San Bernardino Line (SBL) railroad corridor between Control Point (CP) Lilac Milepost 52.4 in Rialto to approximately CP Rancho, near MP 55.1 in San Bernardino.

The rail corridor segment in which the project would be developed passes through an area that is entirely urbanized with a mix of single story industrial, warehouse, commercial, and residential structures with a suburban visual character. In the area along the segment that extends from Lilac Avenue to the Rialto Station at Willow Avenue, the lands on the northern side of the rail corridor are developed with warehouse uses, while on the south side of the corridor, there is a manufacturing facility and a large mobile home park. In the area around Rialto Station, the land uses consist of a mix of retail and warehouse and storage activities. East of the station, between Riverside Avenue and Sycamore Avenue, storage and distribution facilities dominate. From Sycamore Avenue, east to Pepper Avenue, the area along the rail corridor is developed with a mix of single family residential neighborhoods and mobile home parks. East of Pepper Avenue, single family residential areas and mobile home parks predominate, although there is also a large manufacturing facility on the south side of the corridor at Pepper Avenue and a large rail yard on the south side of the corridor in the area west of Rancho Avenue.

The addition of a second track will affect ten at-grade railroad crossings starting at Cactus Avenue in the City of Rialto on the west end of the Proposed Project and ending at Rancho Avenue in the City of San Bernardino on the east end. Six of the at-grade crossings are within the City of Rialto, three are in the City of San Bernardino, and one (Eucalyptus Avenue) spans the limits of both cities with the west half of the crossing in the City of Rialto and the east half in the City of San Bernardino. Figure 2-2 shows the project study intersections.

2.1.1 Existing Roadways

The local roadways in the project area, along with their average daily traffic volumes, are described below from east to west.

Rancho Avenue is a two-lane north-south roadway in the study area and classified as a local street. Rancho Avenue carries 10,010 ADT near the railroad tracks.

Rialto Avenue is a two-lane east-west roadway in the study area and classified as a major arterial between Maple Avenue and Willow Avenue and a secondary arterial between Willow Avenue and Pepper Avenue. Rialto Avenue carries 11,070 ADT near the railroad tracks.

Pepper Avenue is a four-lane north-south roadway in the study area and classified as a major arterial and a designated truck route between the railroad tracks and I-210. Pepper Avenue carries 23,120 ADT near the railroad tracks.

Eucalyptus Avenue is a two-lane north-south roadway in the study area and classified as a collector street in the City of Rialto General Plan. Omnitrans Bus Route 15 runs on Eucalyptus Avenue in the study area. Eucalyptus Avenue carries 5,265 ADT near the railroad tracks.

Acacia Avenue is a two-lane north-south roadway in the study area and classified as a collector street in the City of Rialto General Plan. Acacia Avenue carries 4,175 ADT near the railroad tracks.

Sycamore Avenue is a two-lane north-south roadway in the study area and classified as a collector street in the City of Rialto General Plan. Sycamore Avenue carries 7,470 ADT near the railroad tracks. Boyd Elementary School is located on the northeast corner of Sycamore Avenue and Merrill Avenue, within a half-mile south of the railroad tracks.

Riverside Avenue is a four-lane north-south roadway in the study area. Riverside Avenue is classified as a major arterial between I-210 and Foothill Boulevard (to the north of the railroad tracks), a modified arterial II between Foothill Boulevard and the railroad tracks, and a major arterial between the railroad tracks and San Bernardino Avenue (to the south of the tracks). Riverside Avenue carries 21,220 ADT near the railroad tracks. Riverside Avenue is a designated Class III Bike Route (signed bike route, no striping) between I-210 and Valley Boulevard.

Willow Avenue is a two-lane north-south roadway in the study area and classified as a collector street in the City of Rialto General Plan. Willow Avenue carries 8,510 ADT near the railroad tracks.

Lilac Avenue is a two-lane north-south roadway in the study area and classified as a collector street in the City of Rialto General Plan. Lilac Avenue carries 4,575 ADT near the railroad tracks. Curtis Elementary School is located south of the Proposed Project area on Lilac Avenue within a half-mile of the railroad tracks.

Cactus Avenue is a four-lane north-south roadway in the study area and classified as a major arterial in the City of Rialto General Plan. Cactus Avenue carries 13,660 ADT near the railroad tracks.

2.2 Project Elements

The Proposed Project would consist of the following features and shown on Figure 2-3:

- The addition of a second track through each of the existing eight (8) at-grade crossings starting just west of Lilac Avenue in the City of Rialto and ending just east of Rialto Avenue in the City of San Bernardino.
- This second track would be located along the south side and parallel to the existing single track, and would be accommodated entirely within the existing railroad right of way.
- Improvements to each of the eight at-grade roadway crossings to accommodate the new second track would also be implemented. These project features would include minor street improvements that could also require short retaining walls (approximately 2 – 4 feet in height) to accommodate minor grade alterations of the streets as they approach the crossings. The at-grade crossings will also be evaluating and potentially modifying existing adjacent property access points (driveway modification, relocations, or closer if a secondary access point exists). Current access points into the SBCTA ROW from adjacent properties will also be evaluated and potentially removed or permanently closed. In addition, the at-grade crossings would include relocation of existing gates and railroad signal warning devices, installation of pedestrian safety gates, and the relocation of signal cabinets.
- Improvements to the eight existing at-grade crossings would also include additional or new grade crossing features consistent with quiet zone feasibility and system requirements. These

improvements would be extended to the Cactus Avenue crossing just to the west of Lilac Avenue and to the Rancho Avenue crossing, just one roadway crossing east of Rialto Avenue. The quiet zone features could include enhanced crossing safety features, such as new gates, exit gates, warning devices, and pedestrian safety gates. Final selection and implementation of the safety improvements (noted in Table 3-6) will be conducted and incorporated during final design of the Proposed Project.

- At the existing Rialto Metrolink Station, a second passenger platform would be constructed on the south side of the new second track. This new platform would be located opposite of the existing station platform and would be outfitted with shelter structures, light fixtures, and other appurtenances like those on the existing northside platform.
- The proposed Rialto Station southside platform improvements includes three design options that would provide passengers with access from the main station to this new southern platform. The design options being considered and evaluated as part of this project are:
  - Option 1 – Pedestrian Overpass
  - Option 2 – Pedestrian Underpass
  - Option 3 – At-Grade Pedestrian Crossings
- The protection in-place of the existing UPRR Colton Cut-off Overpass near Rialto Avenue and the compliance with horizontal and vertical clearances.
- The removal of the existing Right-Hand (RH) turnout west of Lilac Avenue (No. 20), or the consideration of the construction of a crossover. The removal of the existing turnout would require 'straight railing' the track to properly tie into the proposed second main line track on the north side of the existing main line track.
- The construction of a new Left-Hand (LH) turnout east of Rialto Avenue (No. 20). The exact location of the proposed east end of the Proposed Project would be evaluated to provide a 'best fit' alignment on a tangent segment between approximately MP 54.9 and MP 55.06.
- Existing culvert extensions and protection-in place as required. There are 3-24" RCP and 1-42" RCP near the west end of the Rialto station, and 48" and 36" RCP east of Pepper Avenue.
- Civil improvements including grading, drainage, and utilities. The existing SBCFCD "East Rialto Storm Drain" flood control channel on the north side and drainage ditches on the south side of the right-of-way will be evaluated to be protected in-place.

Detailed engineering drawings are included in Appendix A.

2.3 Project Construction

All work would take place within the already modified and fully improved SBCTA right of way (ROW), and along existing at-grade crossings within the cities of Rialto and San Bernardino local roadway ROW. Access across the proposed project site during construction would continue to occur along the at grade intersections (Cactus Avenue, Lilac Avenue, Willow Avenue, Riverside Avenue, Sycamore Avenue, Acacia Avenue, Eucalyptus Avenue, Pepper Avenue, Meridian Avenue, Rialto Avenue, and Rancho Avenue). Existing operation of the Metrolink SBL would continue during construction.

2.3.1 Construction Schedule

Proposed construction could begin as early as March 2020 and continue through to June 2022, which constitutes a 28-month construction timeline.

- Anticipated working days per week, and working hours per day would include the following:
  - 5-6 days per week, 8-10 hours per day
  - Select weekend work at the grade crossings, Friday evening to Monday morning, at each of the ten crossings (1 weekend per crossing)
  - Weekend work during the cut-over work to bring the double track into service

2.3.2 Traffic Control

The Proposed Project would require the delivery of materials and equipment during construction and would include implementation of a Traffic Management Plan (TMP). The Traffic Control Plans (TCP) would be approved by the City of Rialto prior to construction.

Delivery and parking of vehicles would be coordinated to minimize impacts to local traffic. Vehicles entering and exiting the Proposed Project site during construction would use the existing and identified major access roads through the corridor. The railroad ROW would also allow for construction vehicle access within the ROW.

2.3.3 Excavation/Disposal

Construction of the Proposed Project would include approximately 435,000 cubic yards of excavation (approximately 101,000 cubic yards of export/ approximately 334,000 cubic yards of import). Earthwork would occur to a maximum depth of approximately 50 feet below ground surface and be limited to the SBCTA ROW. Excavated soils during construction activities would be stock piled within the SBCTA ROW for future use (e.g., backfill) at the Proposed Project site. Stockpiles would be covered and maintained consistent with applicable regulations.

Disposal needs during construction would be limited to non-hazardous solid waste such as trash and debris. Solid waste generated during construction would be disposed of consistent with existing practices in an approved facility and again consistent with applicable regulations.

2.3.4 Construction Equipment

The estimated number and types of equipment, and operating hours are listed in Table 2-1. A maximum of 30 construction workers may be onsite on any given day. The worker commutes (total round trip commute up to 60 miles/day) would occur during the morning and the afternoon. Additionally, an average 3 truck trips delivering materials and equipment would occur throughout the day.

Table 2-1. Construction Equipment

Activity	Equipment Number and Type	Hours of Operation/Day	Number of Working Days
Equipment and Off-highway trucks	1 Forklift	8	6
	1 Excavator	8	6
	1 Backhoe	8	6
	1 Roller	8	6
	1 Crane	8	6
	1 Track Regulator	8	6
	1 Track Surfacing Equipment	8	6
	1 Scraper	8	6
	1 crane	8	6
	1 ballast truck	8	6

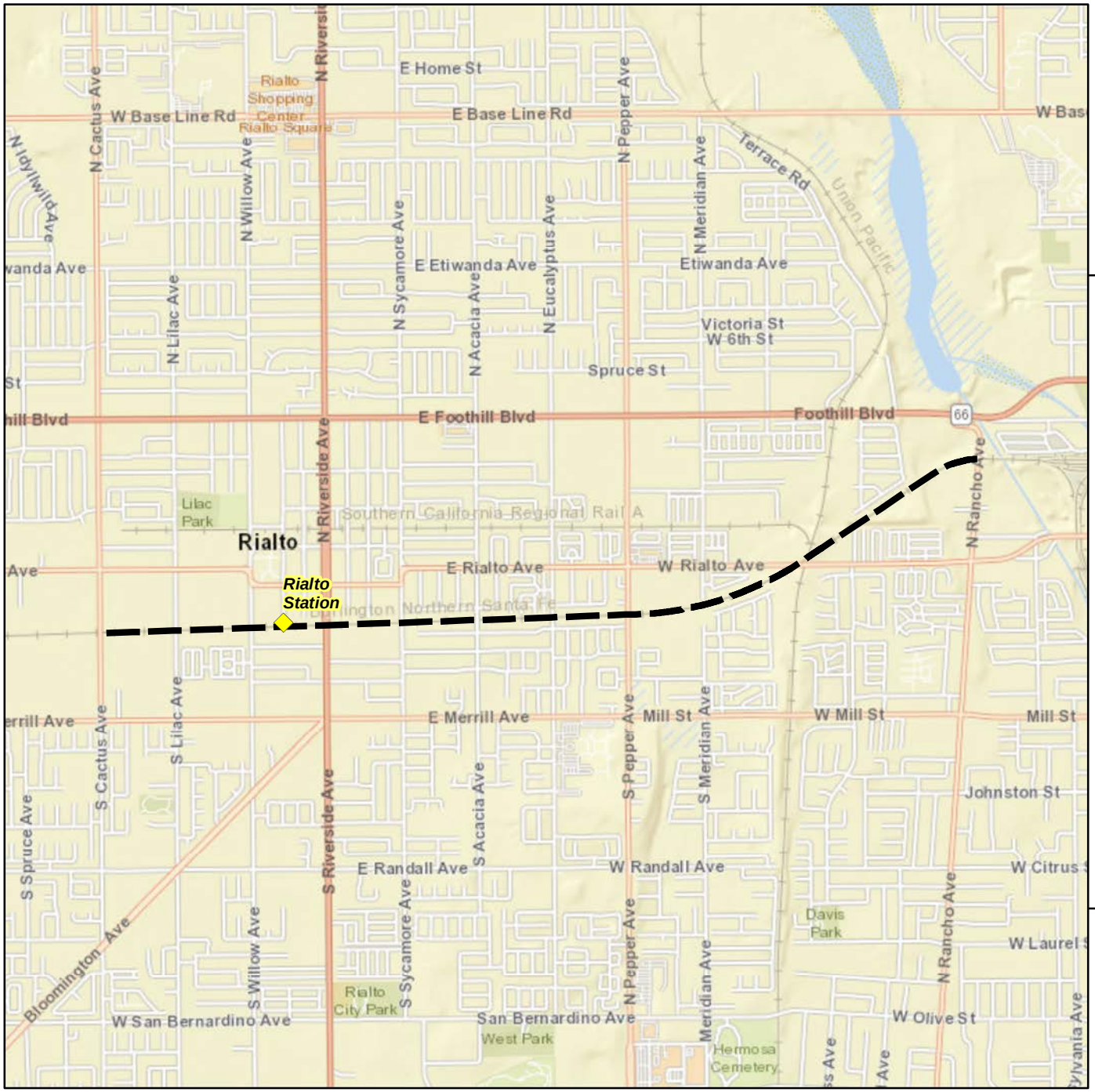
2.4 Project Operation

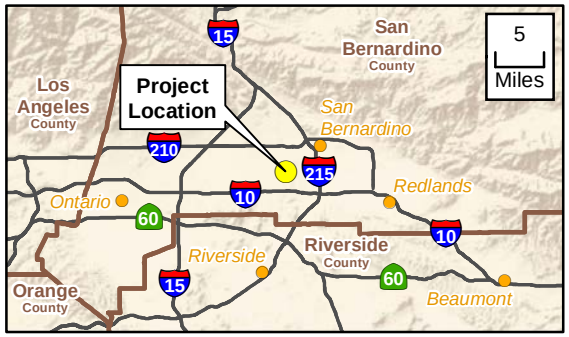
The proposed three (3) mile long second main line track within the SBCTA ROW railroad corridor (CP Lilac Milepost 52.4 to approximately CP Rancho MP 55.1) is anticipated to improve average train speed, travel times, reliability, and overall capacity of the SBL. The operation of the second main line would not increase passenger or freight train frequencies, but would allow for more efficient operation, timely service, and reduction of conflict between those service types.

2.5 No Project Alternative

Under the no project alternative, the addition of a second track or roadway crossings improvements would not be implemented. A second passenger platform at the existing Rialto Metrolink Station would not be constructed. The no project alternative would retain the existing single main-line track and existing eight at-grade roadway crossings with no changes or other improvements.

Under the no project alternative SBCTA would continue to operate the existing track without the anticipated improvements to train speeds, travel times, increased reliability, and overall capacity of the SBL. The current operations would continue under the no project alternative and would not allow for more efficient operation, timely service, and reduction of conflict between the service types using the SBL.





Legend

- Rialto Station
- Project Location

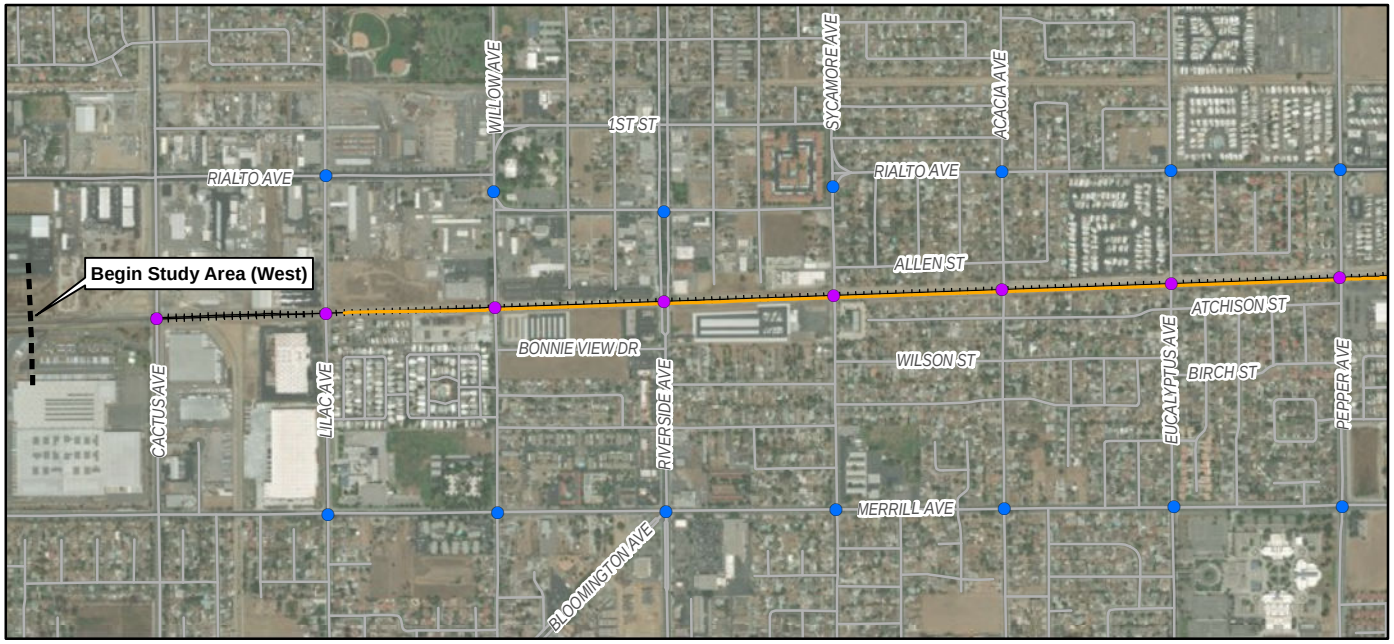
Basemap Source:
1. ESRI World Streetmap

0 0.5 1
Miles

N

Figure 2-1
Regional Project Location
SBCTA Lilac to Ranco
Double Track Project
City of Rialto, California
City of San Bernardino, California

Frame 1a

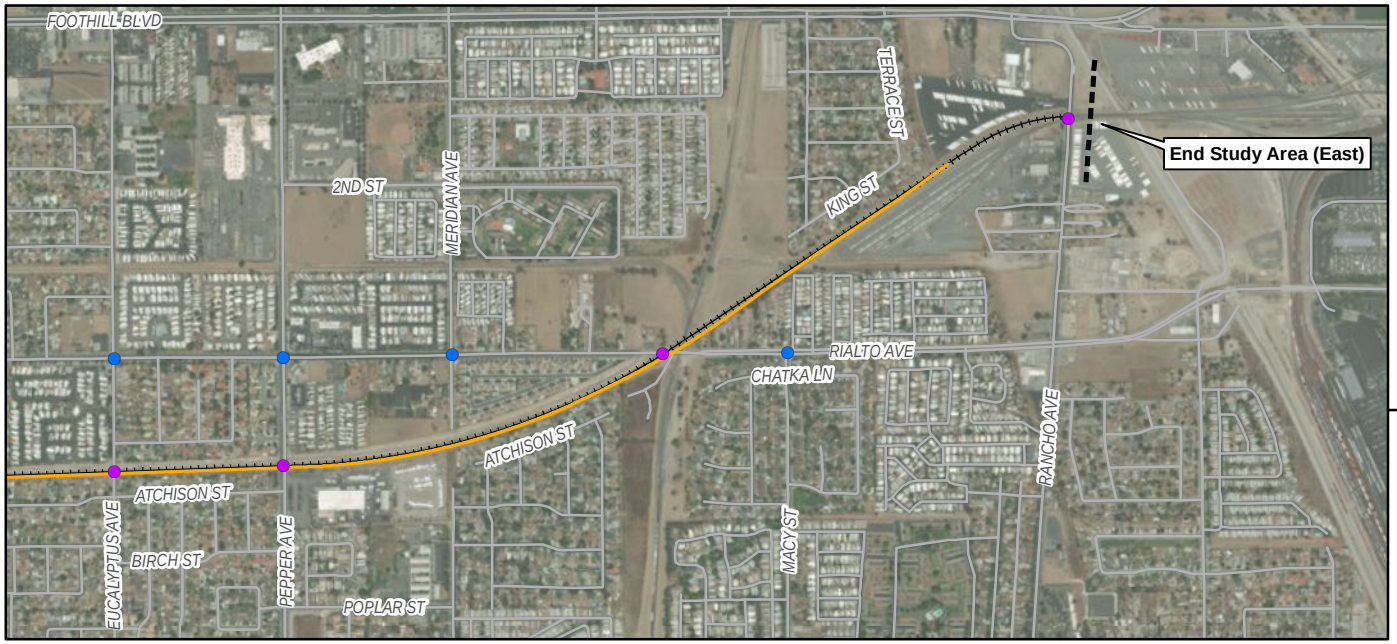


Legend

- Existing Track
- New Track
- Study Limits
- At-Grade Study Crossings
- Adjacent Study Intersections

Basemap Source:
1. ESRI World Imagery

Frame 1b



0 1,500 3,000
Feet

N

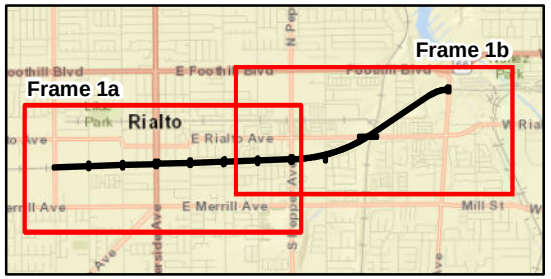
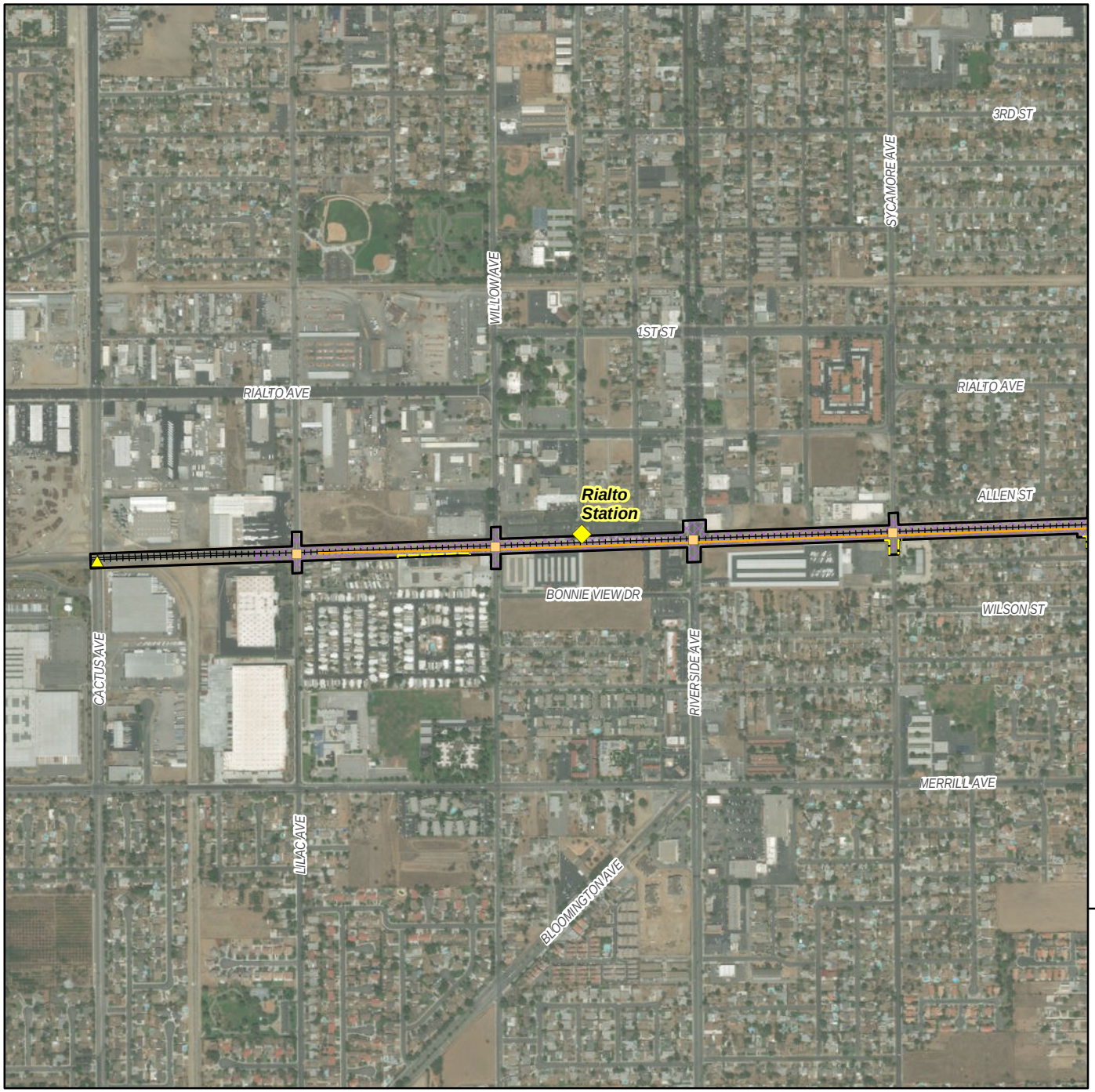


Figure 2-2
Traffic Project Study Intersections
SBCTA Lilac to Ranco
Double Track Project
City of Rialto, California
City of San Bernardino, California



Legend

- Existing Track
- New Track
- Retaining Wall or Short Perimeter Wall
- Quiet Zone Improvements Only
- Quiet Zone Improvements and Civil Improvements
- Project Work Limit
- Right-of-Way
- Rialto Station

Basemap Source:
1. ESRI World Imagery

0 1,000 2,000
Feet

N

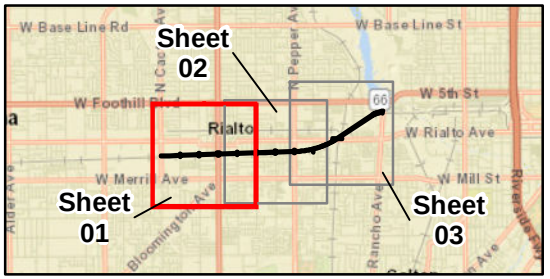


Figure 2-3 Sheet 01 of 03
Project Components
SBCTA Lilac to Ranco
Double Track Project
City of Rialto, California
City of San Bernardino, California

Legend

- Existing Track
- New Track
- Retaining Wall or Short Perimeter Wall
- Quiet Zone Improvements Only
- Quiet Zone Improvements and Civil Improvements
- Project Work Limit
- Right-of-Way
- Rialto Station

Basemap Source:
1. ESRI World Imagery

0 1,000 2,000
Feet

N

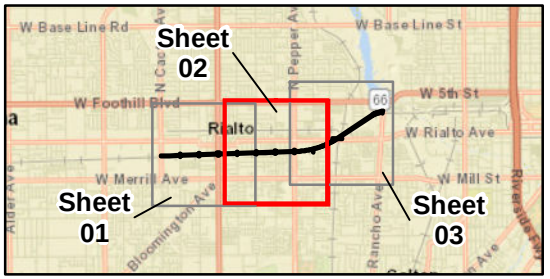


Figure 2-3 Sheet 02 of 03
Project Components
SBCTA Lilac to Ranco
Double Track Project
City of Rialto, California
City of San Bernardino, California

Legend

- Existing Track
- New Track
- Retaining Wall or Short Perimeter Wall
- Quiet Zone Improvements Only
- Quiet Zone Improvements and Civil Improvements
- Project Work Limit
- Right-of-Way
- Rialto Station

Basemap Source:
1. ESRI World Imagery

0 1,000 2,000
Feet

N

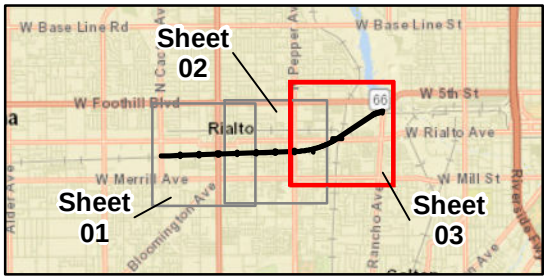


Figure 2-3 Sheet 03 of 03
Project Components
SBCTA Lilac to Ranco
Double Track Project
City of Rialto, California
City of San Bernardino, California

SECTION 3

Initial Study Checklist

This section documents the screening and evaluation process used to identify and focus on environmental impacts that could result from the Proposed Project. The Initial Study Checklist presented in this section closely follows the form prepared by the Governor's Office of Planning and Research.

3.1 Environmental Checklist Form

1. Project Title: SBCTA Lilac to Rancho Double Tracking Project
2. Lead Agency Name and Address: San Bernardino County Transportation Authority (1170 W. 3rd Street, 2nd Floor, San Bernardino, CA 92410-1715)
3. Contact Person and Phone Number: Victor Lopez; 909-884-8276
4. Project Location: San Gabriel Subdivision, San Bernardino Line (SBL) railroad corridor between Control Point (CP) Lilac Milepost 52.4 to approximately CP Rancho, near MP 55.1 in the cities of Rialto and San Bernardino.
5. Project Sponsor's Name and Address: San Bernardino County Transportation Authority (1170 W. 3rd Street, 2nd Floor, San Bernardino, CA 92410-1715)
6. General Plan Designation: Not applicable
7. Zoning: Surrounding zoning includes light industrial, single family residential, residential suburban, residential urban, and commercial
8. Description of Project: The San Bernardino County Transportation Authority (SBCTA) is proposing to construct approximately three (3) miles of a second main line track along the San Gabriel Subdivision, San Bernardino Line (SBL) railroad corridor between Control Point (CP) Lilac Milepost 52.4 to approximately CP Rancho, near MP 55.1 in the cities of Rialto and San Bernardino.
9. Surrounding Land Uses and Setting: The rail corridor segment is in an urban area with a mix of single story industrial, warehouse, commercial, and residential structures.
10. Other public agencies whose approval is required: None
11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, has consultation begun? Yes

3.1.1 Environmental Factors Potentially Affected:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Agriculture and Forestry Resources	☐ Air Quality
☐ Biological Resources	☐ Cultural Resources	☐ Geology / Soils
☐ Greenhouse Gas Emissions	☐ Hazards & Hazardous Materials	☐ Hydrology / Water Quality
☐ Land Use / Planning	☐ Mineral Resources	☒ Noise
☐ Population / Housing	☐ Public Services	☐ Recreation
☐ Transportation / Traffic	☐ Tribal Cultural Resource	☐ Utilities / Service Systems
☐ Mandatory Findings of Significance		

Determination: (To be completed by the Lead Agency)

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature

4/10/18

Date

Victor Lopez, PE
Project Manager, Transit and Rail Programs
SBCTA

3.2 Impact Categories in Initial Study Checklist

Impacts are separated into the following categories in the Initial Study Checklist:

- No Impact. This category applies when a project would not create an impact in the specific environmental issue area. A "No Impact" finding does not require an explanation when the finding is adequately supported by the cited information sources (e.g., exposure to a tsunami is clearly not a risk for projects not near the coast). A finding of "No Impact" is explained where the finding is based on project-specific factors, as well as general standards (e.g., the project would not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
- Less Than Significant Impact. This category is identified when the project would result in impacts below the threshold of significance, and would therefore be less than significant impacts.
- Less Than Significant with Mitigation Incorporated. This category is identified when the project would have a substantial adverse impact on the environment but could be reduced to a less than significant level with incorporation of mitigation measure(s).
- Potentially Significant Impact. This category is applicable if there is substantial evidence that a significant adverse effect might occur, and no feasible mitigation measures are foreseen to reduce impacts to a less than significant level. If there are one or more "Potentially Significant Impact" entries when the determination is made, an Environmental Impact Report is required.

3.3 Resource Areas

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
I. Aesthetics. Would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

The following visual impact assessment is based on the findings of the San Bernardino County Transportation Authority - Lilac to Rancho Double Tracking Project Visual Impact Assessment (CH2M, March 2018), provided as Appendix B.

a) No Impact –There are no identified scenic vistas in the area along the project corridor and the project area is not located adjacent to and is not visible from any designated state scenic highways. Therefore, the Proposed Project would have no impact on a scenic vista.

As described in Section 2.2 of this document, the Proposed Project, including all the project features is located entirely within the SBCTA and street ROW, which is comprised of highly disturbed areas, surrounded by diverse mix of land uses. To document the existing visual conditions in the project area and to establish a baseline for potential aesthetic impact analysis, a CH2M visual resource specialist visited the project corridor on June 8, 2017, to review and identify existing visually prominent features and photograph representative views along the project corridor.

The project area lies on the flat alluvial plain of the San Bernardino Valley. The rail corridor segment in which the project would be developed passes through an area that is entirely urbanized with a mix of industrial, warehouse, commercial, and residential structures with a suburban visual character. In the area along the segment that extends from Lilac Avenue to the Rialto Station at Willow Avenue, the lands on the northern side of the rail corridor are developed with warehouse uses, while on the south side of the corridor, there is a manufacturing facility and a large mobile home park. In the area around Rialto Station, the land uses consist of a mix of retail and warehouse and storage activities. East of

the station, between Riverside Avenue and Sycamore Avenue, storage and distribution facilities dominate. From Sycamore Avenue, east to Pepper Avenue, the area along the rail corridor is developed with a mix of single family residential neighborhoods and mobile home parks. East of Pepper Avenue, single family residential areas and mobile home parks predominate, although there is also a large manufacturing facility on the south side of the corridor at Pepper Avenue and a large rail yard on the south side of the corridor in the area west of Rancho Avenue.

The rail corridor is most visible in views from Sycamore Avenue where it is crossed by north/south streets. Otherwise, because most of the features located in the corridor are low, and because the corridor is lined with development that screens view, the corridor is not a major visual feature in the views from the surrounding area.

The Rialto Metrolink Station is two stories in height and has a distinctive design that makes it a community landmark. Because of the open views provided by the parking lots that surround it to the west, north, and east, it is visible from nearby portions of the surrounding area.

This analysis of the Proposed Project's visual impacts, including any scenic vistas, focused on the project features that would be most readily visible and would therefore have the greatest potential to affect the character and quality of views in the project area. The impact determination presented below is based on the existing conditions, the field review and analysis conducted and with a comprehensive evaluation of the Proposed Project, including the following features:

1. The second mainline track
2. The modifications at each of the at-grade roadway crossings
3. The additional of the new southside station platform
4. The new pedestrian crossing/connections to the southside platform (three design options)

Drawing from the analysis conducted there are no identified scenic vistas in the area along the project corridor and the project area is not located adjacent to and is not visible from any designated state scenic highways. Therefore, the Proposed Project would have no impact on a scenic vista.

b) No Impact – The proposed new second track would be added in the now-vacant area on the southern (right) side of the corridor and completely within the existing railroad ROW. In addition, the modifications at each of the at-grade roadway crossing, the addition of the new southside station platform and new pedestrian crossing/connections to the southside platform (three design options) would be in highly disturbed areas, surrounded by diverse mix of land uses.

This analysis of the Proposed Project's impacts to scenic resources focused on the project features that would impact to the area's visual quality and would potentially introduce impacts to scenic resources. However, as described above in question (a) the Proposed Project corridor does not include any identified scenic vistas, and the project area is not located adjacent to nor visible from any designated state scenic highways. The existing rail ROW itself contains no visual resources of importance and its level of visual quality is low. The Proposed Project would not remove any trees, and the site does not contain any rock outcroppings, historic buildings of significance, or other feature that have been identified as a scenic resource by the county or state. As noted, all the project features would be located entirely within the SBCTA or street ROW. Therefore, the Proposed Project would have no impact to the area's visual quality and would not substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.

c) Less Than Significant Impact – As described above, the rail corridor segment in which the Proposed Project would be developed passes through an area that is entirely urbanized with a mix of industrial, warehouse, commercial, and residential structures with a suburban visual character.

This analysis of the Proposed Project's visual effects again focused on the project features that would potentially degrade the existing visual character or quality of the site and its surroundings. Visual impacts were analyzed and the results determined by assessing changes to the visual resources and predicting viewer response to those changes.

The addition of the second track would make the corridor appear more developed in views from the road crossings, but this more developed result would have no effect on the visual quality of the view down the corridor.

A minor aesthetic change to the visual character of the project site would come from the new or replaced railroad signs, signal lights and crossing gates. These improvements would more specifically include relocation and potential replacement of existing gates and railroad signal warning devices, installation of pedestrian safety gates, and the relocation of signal cabinets. The distance of the relocation of existing gates, signal warning devices, pedestrian safety gates, and the signal cabinet ranges from 20 ft to 50 ft. These new features would be generally similar to the existing equipment and would be implemented consistent with applicable guidelines and regulations. Therefore, the levels of visual changes brought about by these Proposed Project features would range from none to moderate; however, because the corridor is within a fully urbanized area and lined with development that screens the surrounding views, the corridor is not a major visual feature in the surrounding area.

Also new station platform would be constructed on the south side of the station across from and opposite of the existing northern station platform. This new southside platform would generally mirror the design of the existing platform, including all the necessary and applicable amenities (lighting, pavement, benches, and other appurtenances).

The new station platform project feature would make the corridor appear somewhat more intensively developed than it is now, but these changes would have little effect on the visual character and quality of the view toward the rail corridor and station and thus would have little effect on the motorists and pedestrians patronizing the area. In concert with the southside station platform three different pedestrian connections/crossing options have also be evaluating. The first option would include an aerial crossing that would span the SBCTA ROW and connect the north and south platforms via an elevated structure. This structure would create a readily noticeable change by adding a tall vertical structure to the train station and would partially block the view toward the distant mountain. Although this visual change would affect the views experienced by motorists and pedestrians crossing the rail corridor on South Willow Avenue, given the moderate level of visual change and the limited duration of the views, the visual impact would be less than significant. In addition, the visual changes would be minor and would have very little effect on the visual experience of nearby residents.

The second option for providing access would be a pedestrian underpass. The underground crossing would descend in a westerly direction from the existing northside platform to a subterranean crossing that would then ascend in an easterly direction up to the new southside platform. This new connection would not be readily noticeable, and thus would have a negligible effect on the view's visual character or quality.

The third option for providing access would be improved at-grade pedestrian access at the existing roadway crossing both east and west of the station (S Riverside Ave and S Willow Ave). This improved connection would require passengers to walk from the station to either South Riverside Avenue or South Willow Avenue and cross the tracks at the controlled pedestrian crossings. This option would not require new or additional structures beyond minor improvements to the existing at-grade crossing protections and therefore would have no effect on the visual character and quality of views toward the station.

Overall, the project-related visual changes to the existing visual character and quality of the site and its surroundings would be minor and would have a negligible effect. In other areas along the Project corridor, the visual changes would be minor and would have very little effect on the visual experience of nearby residents, users of nearby industrial and commercial facilities, or those traveling through the area. Therefore, given that the location and type of modifications are similar in nature to existing facilities, the Proposed Project would have a less than significant impact on the existing visual character or quality of the site and its surroundings.

d) Less Than Significant Impact – The Proposed Project area is in a highly modified suburban landscape with many existing sources of both daytime and nighttime lighting. Existing lighting in the project area is associated with surrounding industrial and commercial land uses which have exterior building mounted and typical pole-mounted fixtures in their respective parking areas as well as along street corridors. In addition, existing signal lighting is both mounted and utilized on the swing gates at each of corridor street at-grade railroad crossings.

The analysis of the Proposed Project's effect on new sources of substantial light or glare, focused on the project features that would adversely affect day or nighttime views in the area. The addition of the second mainline track would not contribute to a new source of substantial light or glare and would not adversely affect day or nighttime views in the area.

The modifications at each of the at-grade roadway crossings would include relocation of existing gates and railroad signal warning devices, installation of pedestrian safety gates, and the relocation of signal cabinets. As described above in question (b) these improvements would be generally similar equipment and would not create new sources of substantial light or glare.

The existing lighting at the Rialto Metrolink Station consists of light fixtures mounted on top of street light -type poles along the length of the platform and throughout the landscaped areas within the surface parking areas. The proposed lighting plan for the new southside station platform and new pedestrian crossing/connections would include similar light fixtures. These fixtures would include hoods designed to focus the light and provide illumination in directed areas where it is needed. This type of shielding would prevent light from spilling outside the station area or directly into the sky. The new lighting proposed at the station and the lighting associated with relocation of existing railroad signal warning devices would have limited effect on existing lighting conditions in the nearby industrial, commercial, and residential areas. Nighttime construction lighting activities are anticipated during select weekend work at each of the eight at-grade crossings (1 weekend per crossing). Nighttime construction lighting would also be utilized during weekend work that would be required to bring the new second track into service. In concert with these nighttime construction activities, SBCTA will coordinate with the cities of Rialto and San Bernardino to implement a lighting plan that minimizes potential lighting effects on the surrounding area to the extent feasible and consistent with worker safety codes and regulations.

With implementation of the new lighting design proposed at the station along with coordination with the cities of Rialto and San Bernardino for nighttime construction activities, the Proposed Project would have a less than significant impact on a new source of substantial light or glare, adversely affecting day or nighttime views in the area.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
II. **Agriculture and Forestry Resources.** In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the *California Agricultural Land Evaluation and Site Assessment Model* (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	☐	☐	☐	☒

a) No Impact – The Proposed Project would not be in, or immediately adjacent to, any areas of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. The Proposed Project would not involve converting farmland to nonagricultural use. The Proposed Project would have no impact on any areas of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance.

b) No Impact – The Proposed Project would not be in, or immediately adjacent to, any areas zoned for agricultural use or associated with a Williamson Act contract (California Department of Conservation, Division of Land Resource Protection. San Bernardino County Williamson Act FY 2015/2016. 2017). The Proposed Project site is zoned light industrial, downtown mixed-use, residential, and commercial. The Proposed Project would have no impact on any areas zoned for agricultural use or associated with a Williamson Act contract, as the upgrade would be located within the existing SBCTA ROW.

c) No Impact – The Proposed Project would not be in, or immediately adjacent to, any areas zoned for forest, timberland, or areas zoned for Timberland Production. As referenced above the Proposed Project site is zoned light industrial, downtown mixed-use, residential, and commercial. The Proposed Project would be located within the existing SBCTA ROW and would have no impact on any areas zoned for forest, timberland, or timberland zoned Timberland Production areas.

d) No Impact – The Proposed Project would not be in, or immediately adjacent to, any forest land. The Proposed Project would have no impact on forest land, including the loss of forest land or conversion of forest land to nonforest use as the upgrade would be located within the existing SBCTA ROW.

e) No Impact – The Proposed Project would not be in, or immediately adjacent to, Farmlands. The upgrade would be located within the existing SBCTA ROW and would not involve changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland, to nonagricultural use.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
III. Air Quality. Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☒	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

The following air quality assessment is based on the findings of the Air Quality Technical Report, for the San Bernardino County Transportation Authority – Control Point Lilac to Control Point Rancho Double Tracking Project (CH2M, April 2018), provided as Appendix C.

a) Less Than Significant Impact – Air quality plans include strategies designed to reduce air pollutant emissions and comply with federal and state air quality standards. The project site is in San Bernardino County within the South Coast Air Basin under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). SCAQMD is the local agency responsible for ensuring that national and state ambient air quality standards are attained and maintained in the South Coast Air Basin.

Under the National Ambient Air Quality Standards, the project area is currently designated as nonattainment for ozone and $PM_{2.5}$. The area is in maintenance for PM_{10}, NO_2, and CO, and is in attainment or unclassified under the NAAQS for SO_2, and lead. Under the California Ambient Air Quality Standards, the project area is currently designated as nonattainment for ozone, PM_{10}, and $PM_{2.5}$. The project area is in attainment or unclassified for the state CO, SO_2, NO_2, and lead standards; is unclassified for the state hydrogen sulfide standard and the visibility-reducing particle standard; and is classified as an attainment area for sulfates and vinyl chloride (EPA, 2018; CARB, 2018). SCAQMD has developed air quality plans for ozone, PM_{10}, and $PM_{2.5}$ to set out strategy to attain the air quality standards. The latest regional air quality plan, the 2016 Air Quality Management Plan, was adopted by SCAQMD in March 2017.

The Proposed Project would be constructed in compliance with the applicable SCAQMD regulations and policies, and best management practices (BMPs) would be implemented to reduce emissions from both construction and operation. In addition, as discussed in the following section, construction emissions and operational emissions estimated for the Proposed Project would be below the SCAQMD CEQA significance thresholds. Therefore, the Proposed Project would not conflict with or obstruct implementation of the air quality plans for both construction and operations and impacts would be less than significant.

b) Less Than Significant Impact – The Proposed Project is not expected to violate any air quality standard or contribute substantially to an existing or projected air quality violation.

Construction emissions are expected to occur as a result of engine exhaust from the off-road construction equipment and vehicle trips. These emissions would primarily consist of carbon monoxide, nitrogen oxide, PM_{10}, $PM_{2.5}$, sulfur oxide, and volatile organic compounds (VOC). In addition, site preparation and disturbance would result in fugitive dust emissions. Given that construction activities would be temporary, long-term air quality impacts would not occur. Construction emissions were estimated based on project construction phasing and equipment usage using CalEEMod (CAPCOA, 2017). Appendix C (Air Quality Technical Report) includes the detailed CalEEMod outputs.

Emissions during construction would not exceed the Air Quality Significance Thresholds set by SCAQMD, as shown in Table 3-1. Therefore, emissions from project construction would have a less than significant impact on air quality.

Table 3-1. Worst-case Daily Construction Emissions

	Reactive organic gas	Nitrogen oxide	Carbon monoxide	Sulfur oxide	PM_{10}	$PM_{2.5}$
	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day
2020	6.33	62.09	44.55	0.11	4.47	2.94
2021	5.73	53.77	42.57	0.11	4.20	2.61
2022	5.39	48.31	45.36	0.12	3.69	2.33
SCAQMD Thresholds	75	100	550	150	150	55
Exceed Thresholds?	No	No	No	No	No	No

Notes: lb/day = pound(s) per day

Once operational, the project would not result in emission increases from train trips. The number of train trips may increase in future years in comparison to the existing condition due to the projected growth of the region that is unrelated to the project. The project itself would not generate new train trips in the project area, but would allow for improved efficiency of train mobility and service in the project area by providing a second track to reduce train idling time and the associated emissions. Therefore, the project could provide benefits to air quality by reducing train emissions in comparison to the no build scenario based on improved railroad operations efficiencies. The Proposed Project would have a less than significant impact to air quality.

c) Less Than Significant Impact – The Proposed Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard.

According to the SCAQMD white paper Potential Control Strategies to Address Cumulative Impacts from Air Pollution, Appendix D Cumulative Impact Analysis Requirements Pursuant to CEQA (SCAQMD, 2003), projects that do not exceed the significance thresholds are generally not considered to be cumulatively significant. Additionally, the emissions during project construction of non-attainment pollutants (PM_{10}, $PM_{2.5}$, and ozone precursors [nitrogen oxide and VOC]), would not exceed the SCAQMD Air Quality Significance Thresholds. Therefore, the cumulative impact from the Proposed Project construction would be less than significant.

d) Less Than Significant Impact – The Proposed Project would not expose sensitive receptors to substantial pollutant concentrations.

Land uses in the immediate vicinity of the project are mixed residential and scattered commercial areas. Residential land uses are in close proximity to the railroad tracks with some residential uses located immediately adjacent to the SBCTA ROW. Also, there are public school facilities in the project area, with the nearest schools being Rosie's Preschool located approximately 1,000 feet north of the track on Rialto Avenue and Curtis Elementary School approximately 1,200 feet south of the track on Lilac Avenue. Construction of the Proposed Project will generate exhaust emissions from equipment operating during project construction which would also contain toxic contaminants (TACs), such as diesel particulate matter. However, TAC emissions during construction would be temporary, would be transitory as stage construction advances along the Proposed Project corridor, and are therefore is not expected to cause long term impacts to nearby receptors. TAC emissions from project operation would be minimal. In addition, the project would not induce additional train trips along the SBCTA ROW, and would therefore not result in additional TAC emissions associated with an increase in train trips.

The project is not expected to cause a meaningful change in the vehicle traffic volumes, especially diesel traffic volume near the stations or elsewhere that would otherwise result in adverse TAC effects to the nearby sensitive receptors. In addition, as discussed above, both construction and operation of the Proposed Project would not exceed existing SCAQMD thresholds nor represent a substantial source of criteria pollutants. Therefore, the Proposed Project would have a less than significant impact on sensitive receptors.

e) Less Than Significant Impact – The Proposed Project would not create objectionable odors affecting a substantial number of people.

The use of diesel equipment during construction of the Proposed Project may generate odors that could be a potentially nuisance. However, construction emissions would be temporary, transitory, and would not cause a long-term odor nuisance. Operation of the project would not be expected to cause an odor nuisance to the surrounding areas. According to the SCAQMD *CEQA Air Quality Analysis Guidance Handbook*, odor nuisances are associated with land uses and industrial operations, including agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass-molding facilities (SCAQMD, 1993). The proposed project would not fall into any of these categories. Based on this analysis impacts from project construction and operation would be to be less than significant.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
IV. Biological Resources. Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	☐	☒	☐
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☒	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☒
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

The following biological assessment is based on the findings of the Natural Environmental Study (Minimal Impacts) (CH2M, March 2018), provided as Appendix D.

a) No Impact – The results from the research, field review and habitat assessment conducted are that no sensitive habitats or natural communities of special concern are present within the Proposed Project limits. The Proposed Project site does not provide habitat for any special status animal or plant species due to heavily disturbed soils and the fully developed railroad corridor. Therefore, no impacts would occur directly or through habitat modifications, to any species identified as a candidate, sensitive, or special-status species

b) Less Than Significant Impact – Based on the analysis conducted and described under question (a) jurisdictional resources within the Proposed Project area that would be impacted and require regulatory permitting were identified. The Proposed Project would directly impact 750 square feet (0.02 acres) of ephemeral, non-wetland Waters of the US (WoUS)/WoS based on the need to incorporate of culvert extensions (Figure 1-3 from the Natural Environmental Study [Minimal Impacts]). While the calculated impacts to WoS would be minimal and to waters that are highly degraded a Streambed Alteration Agreement under CDFW's permitting jurisdictional authority will be required. As described under question (a), the area surrounding the Proposed Project is heavily urbanized with a range of existing land used developments throughout. Based on these existing conditions, the Proposed Project corridor does not contain vegetation or riparian habitats that provide value to plants or wildlife and no additional impacts beyond the 0.02 acres of direct impact to WoS would occur. Therefore, the Proposed Project would have a less than significant impact.

c) Less Than Significant Impact – As describe above under questions (a) and (b), the Proposed Project would directly impact jurisdictional features, including an impact to 750 square feet (0.02 acres) of ephemeral, non-wetland WoUS/WoS. These impacts would be the result of culvert extensions needed to existing drainages, including the aforementioned culvert extensions along with new concert aprons and headwalls. These impacts would be negligible and would qualify for a non-notifying Nationwide 14 Section 404 permit from the US Army Corps of Engineers (USACE), as they are under the 0.10-acre threshold for reporting. Additionally, based on the identified impacts a Regional Water Quality Control Board (RWQCB) Section 401 Permit will also be required. Given the negligible impacts described and identified above (0.02 acres) along with the pending regulatory permits that will also be obtain, the Proposed Project would have a less than significant impact to aquatic resources (wetlands).

d) No Impact – Again, based on the literature research and assessment conducted and describe above in questions (a) through (c) the Proposed Project corridor is devoid of vegetation or habitats that would provide contributing value to plants, wildlife or their corresponding habitats. The Proposed Project area is limited to the fully developed and disturbed railroad right of way and is surrounded by a broad range of existing land use developments. In addition, the Proposed Project would not introduce nor include project features that would result in a new barrier to passage across the existing expanse of the SBCTA ROW. As such, no impacts to the movement of wildlife or use of any habitats are anticipated.

e) No Impact – Based on the research conducted and described above under question (a), the Proposed Project would not introduce and conflicts with any local policies or ordinances protecting biological resources. The Proposed Project corridor does not contain vegetation or habitats that provide contributing value to plants, wildlife or their corresponding habitats. The area is devoid of vegetation and is comprised of heavily disturbed, compacted soils with no sensitive habitats present. Therefore, no impact derived from conflict with any local policies or ordinances protecting biological resources will occur.

f) No Impact – As described above under questions (a) through (e), the Proposed Project will not introduce any impacts to biological resources and only minor impacts to jurisdictional resources would occur. The Proposed Project and all the intended improvements would be implemented within either existing the SBCTA ROW or the existing at-grade crossings, adjacent roadway limits. No expansion beyond those limits is proposed. Therefore, none of the Proposed Project's improvements would introduce a conflict with any conservation plans. There are no sensitive habitats or natural communities of special concern present within the Proposed Project limits. As such, no Habitat Conservation Plans or other approved local, regional, or state habitat plans occur within the proposed project limits, and no impact would occur.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
V. Cultural Resources. Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☐	☐	☒
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☒	☐

The following cultural resources impact assessment is based on the findings of the Cultural Resources Monitoring Report for San Bernardino County Transportation Authority - Lilac to Rancho Double Tracking Project (CH2M, April 2018), provided as Appendix E and the Lilac to Rancho Double Tracking Project Paleontological Resources Review (CH2M, March 2018), provided as Appendix F.

a) No Impact –A historical resource assessment was conducted in the area of potential effects (APE) for the Proposed Project which includes all proposed disturbance areas, laydown areas, and access roads. The Proposed Project APE does not contain any features or structures with qualities that would be considered historical resources as defined in Section 15064.5; therefore, no historical resources would be impacted. The current nature of the site within the Proposed Project APE is disturbed/developed from past construction and the Proposed Project would be located within previously disturbed areas and there would be no substantial adverse changes in the significance of a historical resource, as defined in Section15064.5, as a result of the proposed project.

b) No Impact –An archaeological site assessment was conducted in the APE for the Proposed Project and no archaeological sites as defined in Section 15064.5 would be impacted. The Proposed Project APE is located on developed land and proposed work would only impact previously disturbed areas and would not involve any excavation into undeveloped lands. Therefore, the Proposed Project would not cause a substantial adverse change in the significance of an archaeological site and there would be no impact, as defined in Section 15064.5, as a result of the Proposed Project.

c) Less than Significant Impact – The Proposed Project may contribute to adverse cumulative impacts on paleontological resources. The incorporation and implementation of the following standard of practice and as part of the project would assure that any potential impacts from Project-related ground disturbance would be less than significant.

No less than 60 days prior to construction, the project proponent will submit a resume for a qualified paleontological resource specialist (PRS) to the California Energy Commission for review and approval. The PRS will prepare a paleontological resource module for worker education program and be available during the course of ground disturbing construction in case there is an unanticipated paleontological discovery. Prior to working on the site for the first time, all personnel involved with earth moving activities will be provided with initial Paleontological Resources Awareness Training by the PRS. No less than 30 days before the start of construction, the project proponent will submit a Paleontological Resources Monitoring and Mitigation Plan (PRMMP) to the PRS for review. At a minimum, the PRMMP will stipulate that when paleontological resources are encountered all work in the area will halt immediately and the paleontological monitor will be notified. Construction will not resume until the PRS releases the area. The PRMMP will also outline communication protocols and reporting requirements (at a minimum, daily reports, monthly compliance reports and a final report).

d) Less than Significant Impact - The Proposed Project APE is located on developed land and all proposed work would only impact previously disturbed areas and would not involve any excavation into original ground or undeveloped lands. Therefore, the Proposed Project would not disturb any known human remains, including those interred outside of formal cemeteries. The Project APE is considered to have a low sensitivity for buried resources. If cultural resources or materials are discovered during ground-disturbing activities, as standard operating procedures, work near the discovery would cease and the area would be protected until the find can be evaluated by a qualified archaeologist. However, In the event of the discovery of human remains during construction the code compliant regulatory response will be followed. This includes direction to the construction contractor that there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains. State Health and Safety Code Section 7050.5 states that further disturbances and activities will cease in any area or nearby area suspected to overlie remains, and the County Coroner will be contacted. Pursuant to Public Resources Code (PRC) Section 5097.98, if the remains are thought to be Native American, the Coroner will notify the Native American Heritage Commission, which will then notify the Most Likely Descendant. Based on the described site conditions and the areas of disturbance being fully within previously disturbed area, less than significant impacts would occur.

	Potentially Significant Impact	**Less Than Significant With Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
VI. Geology and Soils. Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☒	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or offsite landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☒	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒

The following geological hazards assessment is based on the findings of the Geological Hazards Assessment (CH2M, March 2018), provided as Appendix G.

ai) Less Than Significant Impact - The Alquist-Priolo Earthquake Fault Zone covering the San Jacinto Fault – San Bernardino Section is delineated immediately east of the eastern termini of the Proposed Project alignment. The Rialto-Colton Fault is an inactive splay of the San Jacinto Fault Zone and is mapped trending towards the western termini of the Proposed Project alignment. The Rialto-Colton Fault is mapped as "concealed", meaning the fault is buried by alluvial soil, which is indicative of the antiquity of this splay of the San Jacinto Fault. No other inactive or potentially active faults have been mapped transecting or in the near vicinity of the Proposed Project. Structures associated with the Proposed Project will be designed to comply with American Railway Engineering and Maintenance-of-Way Association (AREMA) and California Regional Rail Authority (SCRRA or Metrolink) seismic design requirements, thereby reducing potential impacts from ground shaking resulting from a seismic event. The potential impacts associated with earthquakes would be addressed to maximum design capabilities practicable and therefore the Proposed Project would have a less than significant impact.

aii) Less Than Significant Impact - The Proposed Project area has high historic seismicity. According to the USGS (2017) U.S. Seismic Design Maps web application, and utilizing National Earthquake Hazard Reduction Program's 2009 design code, the following peak ground accelerations (parameter PGAM) have been developed for the western, central (at Rialto Station), and eastern portions of the alignment respectively: 0.73g, 0.77g, and 0.98g (g = acceleration due to gravity). Therefore, the Proposed Project would be subject to potential ground shaking due to a seismic event. Structures associated with the Proposed Project will be designed to comply with AREMA and SCRRA seismic design requirements, thereby reducing potential impacts from ground shaking resulting from a seismic event. The potential impacts associated with ground shaking would be addressed to maximum design capabilities practicable and therefore the Proposed Project would have a less than significant impact.

aiii) Less Than Significant Impact - Along the alignment, some of the alluvial soils in the subsurface are likely susceptible to liquefaction, but the depth to groundwater (greater than 100 feet bgs) precludes the occurrence of liquefaction. The Proposed Project alignment is also not located in a state, county or in a city-designated (City of Rialto, 2010; City of San Bernardino, 2005) liquefaction hazard zone. The potential for liquefaction to occur along the Proposed Project alignment is considered low and therefore the Proposed Project would have a less than significant impact associated to seismic related ground failure, including liquefaction.

aiv) Less Than Significant Impact - The Proposed Project alignment is relatively flat and there are no significant slopes. The alignment is not located in a landslide hazard zone established by the state, county, or city (San Bernardino, 2005) and risks from potential landslides or slope instability are not expected. There are no landslides mapped near or along the alignment. Potential temporary slope instability situations may arise during construction of the Proposed Project. The Proposed Project will be designed and constructed in accordance with AREMA and SCRRA requirements for slope stability, including temporary stabilization requirements (e.g., shoring) during construction, reducing the potential impact due to slope instability. The potential impacts associated with landslides would be addressed to maximum design capabilities practicable and therefore the Proposed Project would have a less than significant impact.

b) Less Than Significant Impact - The erosion hazard is generally considered low to moderate in the project area. Occasional maintenance may be required and erosion during construction would need to be controlled through standard measures and the application of BMP's. The Proposed Project will also be designed and constructed in accordance with AREMA and SCRRA requirements for erosion control, reducing the potential impacts from erosion. Therefore, the Project would have a less than significant impact on soil erosion or loss of topsoil.

c) Less Than Significant Impact - Based on the general subsurface conditions (including the depth to the groundwater table) reported along the Proposed Project alignment, the potential for liquefaction to occur is considered low. To reduce potential adverse effects associated with offsite landslide, lateral spreading, subsidence, liquefaction or collapse, the Proposed Project would be designed and constructed in conformance with AREMA and SCRRA requirements; therefore, impacts would be less than significant.

d) Less Than Significant Impact - The alluvial soils that exist along the Proposed Project alignment are predominantly granular. The expansive soil potential is considered low. However, soils with high expansion potential may be encountered locally within the native materials or artificial fills soils present along the Proposed Project alignment. The Project will be designed in accordance with AREMA and SCRRA requirements for improvements on expansive soils, reducing the potential effects from and resulting impacts due to expansive soil; therefore, impacts would be less than significant.

e) No Impact - No septic tanks or alternative wastewater disposal systems would serve the Proposed Project. Therefore, the Proposed Project would not result in impacts related to septic tanks or alternative wastewater disposal systems.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
VII. Greenhouse Gas Emissions. Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

The following greenhouse gas assessment is based on the findings included in the Air Quality Technical Report, for the San Bernardino County Transportation Authority – Control Point Lilac to Control Point Rancho Double Tracking Project (CH2M, April 2018), provided as Appendix B.

a) Less than significant impact - GHG emissions for transportation projects can be those produced during construction and those produced during operations. The purpose of the Proposed Project is to provide increased average train speed, reduced travel and idling times, and enhanced overall operations within the SBCTA ROW through infrastructure improvements similar to and consistent with the Proposed Project. The addition of the new second track and the new southside station platform would not increase the number of train trips in comparison to the No Build scenario. The project would not cause an increase of other vehicle traffic in the area. Therefore, GHG emissions from train operation and vehicle travel in the project area would not increase during project operation. Instead, because the project provides double track operation that would improve train speed and reduce idling time, GHG emissions during project operation would likely be lower in comparison to the No Build scenario.

Construction GHG emissions would include emissions produced by onsite construction equipment and offsite haul truck and worker commute trips. The GHG emissions from construction of the project were estimated in terms of CO2e using CalEEMod. Table 3-2 summarizes the GHG emissions from each year of construction, and an amortized annual GHG emission rate using a 30-year lifetime of the project. As shown in Table 3-2, the amortized GHG emissions from project construction would be minimal, at 102 metric tons per year. This slight increase of the GHG emissions due to project construction would likely be offset partially or entirely by the project benefits of GHG reduction benefits during project operation. Therefore, the direct and indirect generation of GHG emissions would be less than significant.

Table 3-2. Greenhouse Gas Construction Emissions

Emission Year	Carbon Dioxide Equivalent (metric tons per year)
2020	1108
2021	1271
2022	666
Total Construction Emissions	3,045
Amortized Annual GHG Emissions	102

Note: Amortized annual GHG emissions were estimated based on 30-year lifetime of the project (SCAQMD, 2008a).

b) Less Than Significant Impact – The Proposed Project would not conflict with any applicable plan, policy, or regulation adopted to reduce GHG emissions in California. SB 375, also known as the Sustainable Communities and Climate Protection Act, requires each State's federally-designated MPO, including the SCAG, to develop an Sustainable Community Strategy (SCS) or an Alternative Planning Strategy that meets the regional GHG emission reduction targets for passenger vehicles set by the California Air Resource Board (CARB). The targets set for the SCAG region are an 8 percent decrease in 2020 and a 13 percent decrease in 2035 relative to 2005 levels. On June 28, 2016, CARB determined that the SCAG's 2016 RTP/SCS would achieve the GHG emissions reduction targets that the CARB established for the region for 2020 and 2035 (CARB, 2016b). The project is listed in the 2016 RTP/SCS, therefore, the project does not conflict with the regional GHG emission reduction plan and strategy in the RTP/SCS.

The Proposed Project would also result in GHG emissions lower than the SCAQMD significance threshold, as discussed previously, therefore, it would not hinder or otherwise conflict with the Assembly Bill 32 or the Assembly Bill 32 Scoping Plan or plan updates for reducing GHG emissions.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
VIII. Hazards and Hazardous Materials. Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
d) Be located on a site, which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☒	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒

The following assessment is based on the findings included in the Phase 1, Initial Site Assessment (Ninyo & Moore, July 2017), provided as Appendix H.

a) Less Than Significant Impact – The Phase 1, Initial Site Assessment (June 2017) (Appendix H) included a review of historical aerial photographs and regulatory databases for topically relevant properties within the Proposed Project Limits. This review included a ¼-mile radius search along the SBCTA ROW to again evaluate whether historical and/or recorded hazardous materials practices would have a potential influence on the Proposed Project, as well as identification of any recognized environmental conditions (RECs). The analysis regarding RECs is provided below under question (d).

The analysis of the Proposed Project's potential to create a significant hazard through the transport, use and/or disposal of hazardous materials, focused on construction related activities and the corresponding transport and use of hazardous materials. While operations were also considered, the Proposed Project will not include any expansion or modification of existing operations within the existing SBCTA ROW beyond increased efficiency of the existing passenger and freight rail operations. The potential for impacts to the public or the environment through the routine transport, use, or disposal of hazardous materials based on these existing operations is not anticipated.

Construction of the Proposed Project would require the use and consumption of petroleum based and other potentially hazardous materials, which includes the transportation of said materials to the Project site.

Construction of the Proposed Project would require the use and consumption of petroleum based and other potentially hazardous materials, which includes the transportation of said materials to and from the Project site.

Construction activities associated with the addition of the second track would be conducted consistent with hazardous waste management and disposal practices and regulations. Specifically, hazardous material would be managed according to standard regulations such as Title 22 Division 4.5 Environmental Health Standards for the Management of Hazardous

Waste, Title 23 Waters, and Title 27 Environmental Protection to protect human health and the environment from upsets or accidents. Adherence to these regulatory requirements would avoid the creation of impacts related to transport, use, or disposal of hazardous materials. Therefore, construction of the Proposed Project would result in a less than significant impact.

Additionally, the modifications at each of the at-grade roadway crossing, along with the additional of the new southside station platform, including the three-pedestrian crossing/connections design options being evaluated would also be subject to the above reference regulations and corresponding procedures that involve the routine transport, use, or disposal of hazardous materials and therefore would not create a significant hazard to the public or the environment.

b) Less Than Significant Impact - Construction activities that involve the transport, use and disposal of hazardous materials would be conducted consistent with hazardous waste management and disposal regulations defined and described above in the response to (a), and any potential uncontrolled releases of hazardous substances into the environment would be contained and appropriate cleaned up procedures conducted in accordance with those standard regulations.

The application of the reference standards and regulatory compliance for the Proposed Project would not create a significant hazard to the public or environment through reasonably foreseeable upset and accident condition and impacts would be less than significant.

c) Less Than Significant Impact – The Proposed Project and all of the project features would be located entirely within the SBCTA ROW or the adjacent at-grade roadway crossing limits. The analysis of the Proposed Project's impacts that would emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school is based on those limits and their proximity to an existing or proposed school. No proposed schools were identified within those limits.

However, Rosie's Preschool (515 W Rialto Ave, Rialto, CA 92376) is located one-quarter mile north of the project site along W Lilac Avenue. As described above under questions (a) and (b) construction activities associated with the addition of the second track, modifications at the at-grade roadway crossing at Lilac Avenue, and the station improvements associated with the southside platform and pedestrian connections would all be conducted consistent with hazardous waste management and disposal practices and regulations. These activities will involve the use and transport of hazardous materials; however, those activities are not anticipated to emit hazardous emissions, handle hazardous or acutely hazardous materials, substances, or waste. Also, in the event of an accidental spill or release of potentially hazardous materials, facility and material-specific safety procedures would be followed, again consistent with standard management and regulatory practices.

Therefore, the potential for impacts related to uncontrolled releases of hazardous substances into the immediate and surrounding environment would be less than significant.

d) Less Than Significant Impact- This analysis of the Proposed Project includes an evaluation of the project to be located on a site, which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment. The Proposed Project corridor is not listed on the Department of Toxic Substances Control or Hazardous Waste and Substances Site List (Cortese List), for contamination associated with abandoned landfill sites. A review of data provided by the U.S. Environmental Protection Agency (EPA) in the Enviro-mapper (EPA, 2017) was also completed. Enviro-mapper indicated that no known hazardous materials sites exist on the Proposed Project site. Therefore, no impact would occur.

However, based on analysis conducted and described under question (a) findings from a Phase 1 Initial Site Assessment (June 2017) identified additional factors including the following RECs:

- Potential for aerially deposited lead (ADL) from automotive exhaust in unpaved shallow soil or landscaped areas along cross streets and adjacent roads to the railroad ROW.
- Potential for soil to be impacted along the railroad ROW and along former rail spurs on the site. Polycyclic aromatic hydrocarbons (PAHs), total petroleum hydrocarbons (TPHs), polychlorinated biphenyls (PCBs), organochlorine pesticides (OCPs), chlorinated herbicides, and metals are typically detected along railroad easements from operational activities, spills, and use of pesticides and herbicides.
- Potential for soil to be impacted at the site near 290 South Palm Avenue and 260 South Willow Avenue, due to the presence of closed leaking underground storage tank (LUST) cases.
- Potential for soil to be impacted exists near the site at 137 South Lilac Avenue, due to potential hazardous material releases from former property operations (equipment/instrument repair, machine shop use, metal finishing and plating, painting and depainting) and a land use covenant placed against the property for development for residential purposes.
- Potential for soil to be impacted near the northwest corner of the intersection of the railroad ROW due to the presence of an underground hazardous liquid pipeline along the BNSF railway.

Based on these RECs a soil management plan and site-specific health and safety plan detailing worker safety, vapor monitoring, soil testing, and soil removal would be prepared and incorporated as part of the project design to address potential exposure during construction activities. Therefore, impacts related to RECs would be less then significant.

e) No Impact – The Proposed Project site is not located within an area subject to an Airport Land Use Plan and is not within two miles of a public airport or public use airport. The nearest airport (Rialto Municipal airport – closed in September 2014) is approximately 2.2 miles north of the project site. Therefore, the Proposed Project would not result in airport related safety hazards to people residing or working in the Project area.

f) No Impact - The Proposed Project site is not located within the vicinity of a private airstrip. Therefore, no associated impacts would occur.

g) Less Than Significant – This analysis of the Proposed Project includes an evaluation of the Proposed Project and features associated with implementation of or physically interfering with an adopted emergency response plan or emergency evacuation plan. As noted, the Proposed Project and all of the project features is located entirely within the SBCTA ROW. The proposed new second track would be located along the south side and parallel to the existing single track, and would be accommodated entirely within the existing railroad right of way. The modifications at each of the eight existing at-grade roadway crossings include relocation of existing gates and railroad signal warning devices, installation of pedestrian safety gates, and the relocation of signal cabinet. These improvements would not interfere with an adopted emergency response plan or emergency evacuation plans.

Roads adjacent to the Project site would remain open, eliminating any potential impact related to access for emergency vehicles. Emergency access routes will be maintained to and around the Proposed Project during construction. Emergency responders will be notified prior to construction and ensuring access for emergency vehicles and all applicable local, state, and Federal traffic control measures will be followed to ensure the safety of the local as well as construction traffic.

Construction vehicles and equipment are expected to be staged or parked within Proposed Project area right-of-way, and approved temporary construction work and staging areas. Any road closures will be temporary and short-term, and these closures will be coordinated with the local jurisdictions to reduce the effects of potential temporary and short-term emergency access. In addition, implementation of a Traffic Management Plan (TMP) as part of the project will further minimize potential impacts.

Therefore, the Proposed Project would not interfere with an adopted emergency response plan or emergency evacuation plan and impacts would be less than significant

h) No Impact – This analysis of the Proposed Project's impacts associated with wildfires is focused on the project features that would expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands. Proposed Project construction and operation would not increase the risk of wildfire, as the Proposed Project features is located within the existing railroad ROW, which has been developed. The Proposed Project site is not located near wildlands that are adjacent to urbanized areas or where residences are intermixed with wildlands.

During construction and as part of standard operating procedures, contractors would and retain applicable construction Health and Safety Plans to protect human health and the environment from hazards, including potential fires. The Proposed Project would not involve the construction of residences or habitable structures. Therefore, the Proposed Project would have no impact to the exposure of people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

	Potentially Significant Impact	**Less Than Significant With Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
IX. Hydrology and Water Quality. Would the project				
a) Violate any water quality standards or waste discharge requirements?	☐	☐	☒	☐
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of preexisting nearby wells would drop to a level, which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☒
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner, which would result in substantial erosion or siltation on- or offsite?	☐	☐	☒	☐

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner, which would result in flooding on- or offsite?	☐	☐	☒	☐
e) Create or contribute runoff water, which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐
f) Otherwise substantially degrade water quality?	☐	☐	☒	☐
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures, which would impede or redirect flood flows?	☐	☐	☒	☐
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☒	☐
j) Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

The following assessment is based on the findings included in the San Bernardino County, Santa Ana Region MS4 Permit Program Template for Low Impact Development: Guidance and Standards for Transportation Projects Lilac to Rancho Double Track Project (CH2M, April 2018), provided as Appendix I.

a) Less Than Significant Impact – As described in Section 2 of this document, the Proposed Project would construct approximately three (3) miles of a second main line track along the San Gabriel Subdivision, San Bernardino Line (SBL) railroad corridor between Control Point (CP) Lilac Milepost 52.4 to approximately CP Rancho, near MP 55.1 in the cities of Rialto and San Bernardino. The Proposed Project, including all features and permanent footprint modifications would be implemented within the existing railroad right-of-way. On January 29, 2010, the Santa Ana Regional Water Quality Control Board (RWQCB) issued Permit Order No. R8-2010-0036 ("MS4 Permit") to authorize the discharge of urban runoff from MS4 facilities in San Bernardino County within the Santa Ana Region MS4 Permit area.

According to the Water Quality Management Plan (2018), the only impervious area added by the project is limited to the Rialto Station, with 0.45 acres of new impervious area comprised of the extension of the north platform and addition of a new passenger platform on the south side. No other net additional impervious area is proposed, and all road crossings would include replacement/rehabilitation of impervious surfaces within the existing sidewalk/curb/pavement limits. As such, the Transportation Project Best Management Practices (BMP) Guidance requirements apply only to the Rialto Station. The road crossings and other project areas are exempt from the Low Impact Development and Source Control BMP implementation requirements because these areas do not generate new impervious surfaces.

Limited construction-related impacts would be required at the existing at-grade roadway crossings, including roadway profile modifications, revised/relocated drainage feature inlets and median modifications. However, all of these construction-related impacts would be temporary in nature and would not introduce permanent effects. Temporary impacts to surface water quality could occur during construction in association with grading and excavation, trenching, and equipment operation. Earth moving equipment operation and maintenance activities would increase the potential for sediment and pollutant loading to stormwater runoff to onsite drainages. To reduce the potential for impacts to surface water quality associated with potential sediment loading and residual contaminate runoff, standard BMPs such as construction staging and maintenance will be contained within the Proposed Project site. Construction equipment will be maintained as part of standard construction practices and routinely inspected to prevent contaminant leaks.

As a standard operating practice and as part of the Proposed Project, a Storm Water Pollution Prevention Plan (SWPPP) that specifies Best Management Practices (BMPs) designed to prevent all construction pollutants from contacting stormwater and with the intent of keeping all products of erosion from moving offsite into receiving water would be implemented. In addition, a Spill Prevention and Cleanup Plan would be included that identifies the methods of containment, cleanup, transport, and proper disposal of hazardous chemicals or materials released during construction activities that are compatible with applicable laws and regulations will be implemented as a standard operation practice and as part of the Proposed Project. With implementation of standard BMPs, the Proposed Project would not violate any water quality standards or waste discharge requirements and would result in a less than significant impact.

b) No Impact – As described above under question (a) and Section 2 of this document, the Proposed Project involves construction of approximately three (3) miles of a second main line track within the existing railroad ROW along with improvements to eight at-grade roadway crossings, a second passenger platform at the Rialto Metrolink Station, existing culvert extension would be protected in place as required and civil improvements including grading, drainage, and utilities. The Proposed Project would not result in the use or depletion of groundwater supplies. Therefore, no impact would occur to deplete groundwater supplies or interfere substantially with groundwater recharge.

c) Less Than Significant Impact– As described above under question (a) and Section 2 of this document, the Proposed Project would occur within the existing railroad ROW property which is currently developed with stormwater drainage to accommodate project-related construction and operation. As part of the project, existing culvert may need to be extended or protected-in place as required near the west end of the Rialto station and east of Pepper Avenue. The existing SBCFCD "East Rialto Storm Drain" flood control channel on the north side and drainage ditches on the south side of the right-of-way may be extended or protected in-place.

No substantial alteration of the existing storm drain facilities is required. The Proposed Project site and surrounding areas do not contain hydraulic defined features such as streams or rivers and the associated potential for erosion or siltation on- or offsite would be limited; therefore, impacts would be less than significant.

d) Less Than Significant Impact – As described above under question (a), (c) and Section 2 of this document, the Proposed Project would not require substantial alteration of the existing drainage pattern of the site or an area and would not alter the course of a stream or river. The only impervious area added by the project is limited to the Rialto Station, with 0.45 acres of new impervious area and the rate or amount of surface runoff from the Proposed Project would not substantially increase the rate or amount of surface runoff in a manner, which would result in flooding on- or offsite from the existing conditions. Therefore, impacts would be less than significant.

e) Less Than Significant Impact – As described above under question (a), (c), (d) and Section 2 of this document, the existing project site has adequate stormwater drainage facilities to accommodate project related construction and operational activities. In addition, to reduce the potential for surface water quality impacts associated with potential sediment loading and residual contaminant runoff during construction, implementation and incorporation of standard BMPs as part of the project would minimize impacts; therefore, impacts would be less than significant.

f) Less Than Significant Impact. Refer to discussion under question (a) above, which addresses potential impacts to water quality as a result of the Proposed Project. With the implementation of standard BMPs which would minimize impacts and not substantially degrade water quality; therefore, impacts to water quality would be less than significant.

g) No Impact – As described above under question (a), the Proposed Project involves construction of approximately three (3) miles of a second main line track within the existing railroad ROW along and associated improvements to eight at-grade crossings and a second passenger platform at the Rialto Metrolink Station. The Proposed Project would not involve or require the construction of housing within a 100-year flood hazard area; therefore, no impact would occur.

h) Less Than Significant Impact – As described above under question (a), portions of the Proposed Project site (areas adjacent to the East Rialto Storm Drain between Eucalyptus Ave and W Rialto Avenue) are located within a 100-year floodplain. The Proposed Project site is designated Zone AE (special flood hazard areas subject to inundation by the 1 percent annual chance flood, for which BFEs have been determined), Zone X (areas of 0.2 percent annual chance flood; areas of 1 percent annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1 percent annual chance flood), and Zone X (areas determined to be outside the 0.2 percent annual chance floodplain), as shown in Figure 3-1.

Existing culvert extensions would be protected-in place near the west end of the Rialto station and east of Pepper Avenue and the existing SBCFCD "East Rialto Storm Drain" flood control channel on the north side and drainage ditches on the south side of the right-of-way would be protected in-place. The existing condition of the project area is designed to prevent flooding hazards onsite and the Proposed Project would not impede or redirect flood flows; therefore, impacts would be less than significant.

i) Less Than Significant Impact – As described above under question i(h), the existing railroad ROW has sufficient flood proofing to prevent flooding hazards onsite and to the adjacent property, including the Proposed Project. The Proposed Project does not propose to alter the development footprint of the site. Furthermore, there is no levee or dam located in the vicinity of the Proposed Project. The Proposed Project would not expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam; therefore, impacts would be less than significant.

j) No Impact – The Proposed Project, is located outside of the tsunami inundation zone and it is not likely that it would be inundated by a seiche, tsunami, or mudflow. Therefore, no impact would occur.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
X. Land Use and Planning. Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

a) No Impact- The Proposed Project involves construction of approximately three (3) miles of a second main line track within the existing railroad ROW long with improvements to eight at-grade roadway crossings, a second passenger platform at the Rialto Metrolink Station, existing culvert extension and protection-in place as required and civil improvements including grading, drainage, and utilities. This second track would improve average train speed, travel times, reliability, and overall capacity of the SBL.

Construction of the Proposed Project would be temporary and localized. In addition, the Proposed Project would be located on the existing railroad ROW and would not result in an expansion outside of the existing railroad ROW or change in existing land use. Therefore, the Proposed Project would not physically divide an established community.

b) No Impact- The Proposed Project is located within the existing railroad ROW. Surrounding zoning includes light industrial, single family residential, residential suburban, residential urban, and commercial. The Proposed Project would not change the existing land uses and would not conflict with existing general plan designations or zoning ordinances. No expansion outside of the project boundaries would occur; all components of the project are located within the railroad ROW. Therefore, the Proposed Project would not conflict with any applicable land use plan, policy, or regulation and would be consistent with the current general plan, land use and zoning.

c) No Impact- The Proposed Project site is not within or immediately adjacent to any area subject to a habitat conservation plan or natural community conservation plan, therefore, the Proposed Project would not conflict with any applicable habitat conservation plan or natural community conservation plan. Refer to IV. Biological Resources, f), for additional analysis.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XI. Mineral Resources. Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

a) No Impact- The Proposed Project involves construction of approximately three (3) miles of a second main line track within the existing railroad ROW. along with improvements to eight at-grade roadway crossings, a second passenger platform at the Rialto Metrolink Station, existing culvert extension and protection-in place as required and civil improvements including grading, drainage, and utilities. The Proposed Project would not require the use of mineral resources and, therefore, would not affect the availability of any known mineral resources. The Proposed Project would not result in the loss of availability of known mineral resources that would be of value to the region and the residents of the state.

b) No Impact- The Proposed Project site is not located in an area where mineral resources of regional or statewide significance are known to occur. As mineral resources have not been identified onsite, the Proposed Project would not result in the loss of availability of a locally important mineral resource recovery site delineated on the State Department of Conservation's Mineral Land Classification Map.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XII. Noise. Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☒	☐	☐
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

The following noise assessment is based on the findings of the Noise and Vibration Impact Assessment, Metrolink Lilac to Rancho Double Track Project (ATS Consulting, April 2018), provided as Appendix J.

a) Less Than Significant with Mitigation Incorporated – To determine the potential for noise and vibration related impacts a detailed noise and vibration analysis was conducted (Appendix J – Noise and Vibration Impact Assessment) in accordance with noise and vibration impact criteria defined in the Federal Transit Administration (FTA), Transit Noise and Vibration Impact Assessment (FTA, 2006). The analysis and corresponding measurements collected was undertaken to document the existing noise and vibration environment in the Proposed Project area and to determine the noise and vibration emissions of the existing Metrolink and UPRR freight train operations. Noise measurements were performed at 9 locations throughout the Proposed Project corridor to document the existing conditions at 21 receptor groupings and a single religious institution (Templo Bautisto Monte Calvario).

The measurements performed occurred over a minimum of 24-hour long period. Measurements of vibration generated by the train traffic were performed at distances from the tracks ranging from 25 to 250 ft. The results of the noise and vibration measurements were used to define the reference noise and vibration levels that were used as the basis of the future build, with Proposed Project, predictions of potential impacts. The results of the noise impact assessment indicate that the Proposed Project would not result in increases in noise exposure that would exceed the applicable FTA noise impact threshold at any of the noise sensitive receptor groupings. Therefore, no operational noise impacts would occur.

However, temporary construction related noise impacts were also assessment and based on those assessments, a temporary increase in noise levels would be expected during the construction phase of the Proposed Project. Project related construction noise effects would be associated with the operation of equipment and vehicles required for site preparation and building construction activities.

In concert with the noise analysis the local municipal codes from the City of Rialto and San Bernardino were reviewed. The City of Rialto Municipal Code and noise ordinances, Title 9, Chapter 9.50.070, covers noise due to construction. It states that it is unlawful for any person to perform construction work except between the hours given in Table 3-3.

Table 3-3. City of Rialto Municipal Code

	October 1 through April 30	May 1 through September 30
Monday-Friday	7:00 am to 5:30 pm	6:00 am to 7:00 pm
Saturday	8:00 am to 5:00 pm	8:00 am to 5:00 pm
Sunday	No permissible hours	No permissible hours
State Holidays	No permissible hours	No permissible hours

The City of San Bernardino Municipal Code and noise ordinances, Title 8, Chapter 8.54.070, also covers noise due to construction. It states that it is unlawful for any person to perform construction work except between the hours of 7:00 am and 8:00 pm (daily).

The Proposed Project would require construction activities during select weekends, including improvements at each of the eight at-grade crossings (1 weekend per crossing; total of 8 select weekends) and additional weekend work along and within the SBCTA ROW tracks to bring the second mainline track into service. These activities will be coordinated with the cities of Rialto and San Bernardino, including the necessary permit from the City of Rialto (Municipal Code, Title 9, Chapter 9.50.070) thereby allowing construction activities to occur outside of the permissible days of the week. The referenced coordination and City of Rialto and the required permit represents Mitigation Measure NOI-1. This mitigation measure would allow weekend construction activities of the Proposed Project.

NOI-1 – Complete the Work Permit preparation, submittal and approval process with the City of Rialto to allow weekend construction activities. The approved Work Permit, issued by the City Manager, will allow anticipated weekend construction that would extend beyond the authorized timelines and days according to the City's Municipal Code (Title 9, Chapter 9.50.070). The specific timelines that will permitted according to this mitigation measures include the following:

- Construction activities will be allowed beginning on Friday from 5:31 pm through to Saturday at 7:59 am
- Construction activities will be allowed beginning on Saturday's from 5:01 pm through to Monday at 6:59 am
- Consistent with the City of Rialto's Work Permit requirements to demonstrate sufficient need and justifications, the construction activities necessary during the above defined work windows is associated with the proposed at-grade roadway crossing improvements. These roadway crossing must be modified and the prescribed improvements implemented (Project Description, Section 2.0). To avoid any potential for secondary impacts to north-south access across the railroad corridor and to also avoid undue detours each roadway crossing and the corresponding improvements will occur over a single weekend with only one crossing being closed and improvements being constructed at a time. No concurrent roadway closer or construction will occur.

b) Less Than Significant With Mitigation Incorporated – Based on the measurements collected residences south of the Proposed Project would result in an increase in vibration levels relative to existing conditions in the range of 0.3 to 16.0 VdB These changes are due to the new track being closer to the existing residences than the existing track. The proposed second track is predicted to exceed the existing vibration levels by 3 VdB or more, the FTA threshold for impact, at three receptor groupings and thereby impacting 1 residence. In addition, there would also be a fourth impact related to groundborne noise, which is predicted at the referenced religious institution. However, the Proposed Project includes the installation of ballast mats, that would eliminate the predicted vibration increases at all but one of the four receivers (a single residential property). For reference, ballast mats are readily used in railroad projects and the mats are a resilient layer that is installed under the track ballast or sub-ballast, which serves to isolate the trackwork from the ground. Ballast mats are typically constructed of material ranging from natural rubber to rock wool that is one to two inches thick. The alignment limits for the ballast mat feature locations are presented in Appendix J (Table 0-1).

As referenced above, three of the four predicted vibration/groundborne noise impact locations will be eliminated because the project design features include ballast mats. The fourth predicted vibration impact would occur at a single family residential structure, which is located where the centerline of the second mainline track would be only 18 ft from the residence. This residential property, located at 2422 W Rialto Avenue, would be close enough to the Proposed Project second mainline track that there would be limited options for addressing and potentially mitigating the predicted groundborne vibration impact.

Again, the limited distance is close enough that it would be impractical for the project features (ballast mats) alone to eliminate this predicted impact. A suite of additional options (Nos. 1-3 provided below and also in Appendix X) to address this predicted impact were evaluated. For example, one measure that has been used for light-rail projects includes a floating slab track (FST). However, a FST has never been installed on tracks that are used for heavy passenger trains and also have freight train traffic. The additional mitigation measure options evaluated but eliminated include the following.

- Adjust the location of the second track so it would be farther from this residence. This option is not feasible because the existing columns and open bays through the UPRR Overpass provide only a single alignment option for the second track.
- Impose a slow order for the freight and Metrolink trains. To eliminate the vibration impact, it would be necessary to limit train speeds to below 10 mph. This is not feasible because (1) imposing a slow order on freight traffic is impractical due to operational conditions required and the length of the freight trains, and (2) a slow order in this area would severely degrade the capacity of the Metrolink operations in this corridor.
- Install two layers of ballast mats under the railroad rock ballast. Using two layers of a relatively soft ballast mat would reduce vibration levels by 5 to 8 decibels in the key frequency range. As already described ballast mats are a standard feature already included in the Proposed Project and that could provide further benefit and address the vibration impact predicted at this location. However, because of the greater axle loads on typical freight trains, this option is not proven and would need to be carefully evaluated during final design to ensure the specified ballast mat

would reduce the vibration levels to below the impact threshold and would not be prematurely damaged by the heavy axle loads of freight trains.

- Install an FST system to protect the single residence. FST's consist of a concrete slab track that is supported by resilient elements. The resilient elements typically are either natural rubber discs or coil springs. The fundamental resonance of the floating slab system would need to be in the 5 to 8 Hz range. Use of FST systems to reduce vibration levels on rail transit systems are relatively common. Use of FST systems on freight rail systems is extremely rare.

Based on the analysis conducted and the mitigation measures evaluated two viable mitigation options (NOI-2 and NOI-3) were identified that represent viable options to address the single residential groundborne vibration impact. These two options will be considered and evaluated in a progressive manner with NOI-2 identified as the preferred option based on the current level of design and impact analysis and NOI-3 being considered only if NOI-2 is determined to be a non-viable solution.

NOI-2 – The necessary elements of Mitigation Measure NOI-2, will be completed prior to potential implementation of Mitigation Measure NOI-3 in attempt to avoid the potential for a full acquisition of the residential structure at 2422 W Rialto Ave. Implementation of NOI-2 will include the following three (3) steps:

- Step 1 – Complete a property line/SBCTA ROW survey to delineate the corresponding parcel boundaries associated with the impacted property located at 2422 W Rialto Ave, and the SBCTA ROW boundary. This delineation will establish the ROW limits in relation the improvements located on the property located at 2422 W Rialto Ave. The survey and the corresponding results will also confirm if the improvements currently in place at 2422 W Rialto Ave are encroaching into SBCTA ROW. Depending on the results of the above described delineation the second step as part of this mitigation measure may require partial financial responsibility of the current owner of the property at 2422 W Rialto Ave. Property owner approval may be necessary of access onto the property at 2422 W Rialto Ave is required to complete the survey.
- Step 2 – Conduct the necessary vibration measurements, evaluation, modeling (if deemed necessary), and document the results. The results will provide a determination on the minimum separation distance from the proposed second main-line railroad track alignment to address the currently predicted vibration impact. If the vibration measurement results alone are determined to not be sufficient to address the predicted vibration impact then an additional evaluation of a double layer of ballast mats will be included to supplement the evaluation and determine if the combined action will address the predicted vibration impact.
- Step 3 – Based on the results from Step 1 and 2, assuming the results of Step 2 present a viable mitigation for the predicted vibration impact the proceeding with Step 3 will be undertaken. Initiate the relocation of the existing residential structure, according to the minimum separation distance required. The relocation will include an evaluation the existing improvements needed on-site and determination on the preferred location within the limits of the parcel boundaries at 2422 W Rialto Ave. The on-site evaluation will include the spatial requirements, supplemental improvements needed (foundation and relocated utility connections), City of San Bernardino development standards and building permit requirements, and also any potential secondary modifications or removals of other on-site improvements that would also be required. Step 2 may also include the inclusion of a double layer of ballast mats with the second main-line track alignment. The limits of the double layer ballast mat, if deemed necessary, will be provided as part of the Step 2 documentation results. If the results from Step 2 determine that relocation of the existing residential structure at 2422 W Rialto Ave, alone or in concert with a double layer ballast mat is not a viable mitigation for the predicted vibration impact at this property then Mitigation Measure NOI-3 will be implemented.

NOI-3 – This mitigation measure will only be considered for implementation after the stepped process associated with Mitigation Measure NOI-2 have been completed and determine to be a non-viable mitigation option. Mitigation Measure NOI-3 will involve the preparation of a relocation impact technical memorandum that will document the necessary steps and provisions associated with the full acquisition of the property located at 2422 W Rialto Ave. This full acquisition will also include a comprehensive evaluation of comparable replacement property resources. The replacement resources will be evaluated based on current and fair market value, including size (parcel and building square footage (primary structure) and configuration (number of bedrooms/bathrooms). Any secondary improvements currently on-site at 2422 W Rialto Ave will be considered in concert with the property appraisal conducted. The evaluation of costs associated with this option in comparison to the on-site relocation and ballast mats will also be evaluated to determine the best option and most viable solution.

In addition to the operational vibration analysis and impacts, construction of the Proposed Project was also analyzed. This assessment concluded that construction activities would be temporary, transitory, and short-term (occur within a 22-month period) and would not require pile driving or other activities commonly known to produce excessive groundborne vibration or groundborne noise. Therefore, no construction related impacts related to groundborne vibration or groundborne noise would occur.

c) No Impact –As presented and defined above under question (a) The results of the noise impact assessment indicate that the Proposed Project would not result in increases in noise exposure at any of the noise sensitive receptor groupings. Therefore, no permanent increase in ambient noise levels in the project vicinity above levels existing without the project would occur and no impacts would result.

d) Less Than Significant Impact With Mitigation Incorporated – A temporary increase in noise levels would be expected during the construction phase of the Proposed Project. Project related construction noise effects would be associated with the operation of equipment and vehicles required for site preparation, railroad track preparation and installation, and building construction activities at the City of Rialto Metrolink Station.

Heavy equipment used during construction could generate noise levels ranging from about 76 to 89 dBA when measured at 50 feet, and 70 to 83 dBA when measured at 100 feet, without implementation of noise-reduction measures. As with all construction equipment noise, these noise levels would diminish rapidly with distance from the construction site, with a decrease of approximately 6 dBA per doubling of distance from the source.

Construction activities will be carried out in compliance with all applicable local (City of Rialto and City of San Bernardino) noise regulations and permit requirements. In addition, specific residential property line noise limits will be developed during final design and included in the construction specifications for the Project, and noise monitoring will be performed during construction to verify compliance with the limits. Standard noise control measures that will be applied as needed to meet the noise limits may include the following:

- Avoiding/limiting nighttime construction in residential neighborhoods.
- Using specially equipped construction equipment with enclosed engines and/or high-performance mufflers.
- Locating stationary construction equipment as far as possible from noise-sensitive sites.
- Constructing/using temporary noise barriers, such as temporary plywood walls with sound blankets or locating stockpiles of excavated material, between noisy activities and noise-sensitive receivers.
- Re-routing construction-related truck traffic along roadways that will cause the least disturbance to residents.

Any temporary or periodic increases in ambient noise levels in the Proposed Project vicinity during construction would be short-term, intermittent, and temporary. Construction activities would occur during select weekend work at each of the eight at-grade crossings (1 weekend per crossing) and weekend work during the cut-over work to bring the double track into service. However, as referenced above and also as discussed in question (a) to reduce potential temporary or periodic increase in ambient noise levels in the Proposed Project vicinity mitigation measure NOI-1 would also be implemented. Therefore, noise-related construction impacts would be less than significant with mitigation incorporated.

e) No Impact – The Proposed Project site is not located within an area subject to an Airport Land Use Plan and is not within two miles of a public airport or public use airport. The nearest airport (Rialto Municipal airport) is approximately 2 miles north of the project site. Therefore, the Proposed Project would not result in airport related safety hazards to people residing or working in the Project area.

f) No Impact - The Proposed Project site is not located within the vicinity of a private airstrip. Therefore, no associated impacts would occur.

<u>Mitigation Measures</u>

NOI-1 – Complete the Work Permit preparation, submittal and approval process with the City of Rialto to allow weekend construction activities. The approved Work Permit, issued by the City Manager, will allow anticipated weekend construction that would extend beyond the authorized timelines and days according to the City's Municipal Code (Title 9, Chapter 9.50.070). The specific timelines that will permitted according to this mitigation measures include the following:

- Construction activities will be allowed beginning on Friday from 5:31 pm through to Saturday at 7:59 am
- Construction activities will be allowed beginning on Saturday's from 5:01 pm through to Monday at 6:59 am

Consistent with the City of Rialto's Work Permit requirements to demonstrate sufficient need and justifications, the construction activities necessary during the above defined work windows is associated with the proposed at-grade roadway crossing improvements. These roadway crossing must be modified and the prescribed improvements implemented (Project Description, Section 2.0). To avoid any potential for secondary impacts to north-south access across the railroad corridor and to also avoid undue detours each roadway crossing and the corresponding improvements will occur over a single weekend with only one crossing being closed and improvements being constructed at a time. No concurrent roadway closer or construction will occur.

NOI-2 – The necessary elements of Mitigation Measure NOI-2, will be completed prior to potential implementation of Mitigation Measure NOI-3 in attempt to avoid the potential for a full acquisition of the residential structure at 2422 W Rialto Ave. Implementation of NOI-2 will include the following three (3) steps:

- Step 1 – Complete a property line/SBCTA ROW survey to delineate the corresponding parcel boundaries associated with the impacted property located at 2422 W Rialto Ave, and the SBCTA ROW boundary. This delineation will establish the ROW limits in relation the improvements located on the property located at 2422 W Rialto Ave. The

survey and the corresponding results will also confirm if the improvements currently in place at 2422 W Rialto Ave are encroaching into SBCTA ROW. Depending on the results of the above described delineation the second step as part of this mitigation measure may require partial financial responsibility of the current owner of the property at 2422 W Rialto Ave. Property owner approval may be necessary of access onto the property at 2422 W Rialto Ave is required to complete the survey.

- Step 2 – Conduct the necessary vibration measurements, evaluation, modeling (if deemed necessary), and document the results. The results will provide a determination on the minimum separation distance from the proposed second main-line railroad track alignment to address the currently predicted vibration impact. If the vibration measurement results alone are determined to not be sufficient to address the predicted vibration impact then an additional evaluation of a double layer of ballast mats will be included to supplement the evaluation and determine if the combined action will address the predicted vibration impact.
- Step 3 – Based on the results from Step 1 and 2, assuming the results of Step 2 present a viable mitigation for the predicted vibration impact the proceeding with Step 3 will be undertaken. Initiate the relocation of the existing residential structure, according to the minimum separation distance required. The relocation will include an evaluation the existing improvements needed on-site and determination on the preferred location within the limits of the parcel boundaries at 2422 W Rialto Ave. The on-site evaluation will include the spatial requirements, supplemental improvements needed (foundation and relocated utility connections), City of San Bernardino development standards and building permit requirements, and also any potential secondary modifications or removals of other on-site improvements that would also be required. Step 2 may also include the inclusion of a double layer of ballast mats with the second main-line track alignment. The limits of the double layer ballast mat, if deemed necessary, will be provided as part of the Step 2 documentation results. If the results from Step 2 determine that relocation of the existing residential structure at 2422 W Rialto Ave, alone or in concert with a double layer ballast mat is not a viable mitigation for the predicted vibration impact at this property then Mitigation Measure NOI-3 will be implemented.

NOI-3 – This mitigation measure will only be considered for implementation after the stepped process associated with Mitigation Measure NOI-2 have been completed and determine to be a non-viable mitigation option. Mitigation Measure NOI-3 will involve the preparation of a relocation impact technical memorandum that will document the necessary steps and provisions associated with the full acquisition of the property located at 2422 W Rialto Ave. This full acquisition will also include a comprehensive evaluation of comparable replacement property resources. The replacement resources will be evaluated based on current and fair market value, including size (parcel and building square footage (primary structure) and configuration (number of bedrooms/bathrooms). Any secondary improvements currently on-site at 2422 W Rialto Ave will be considered in concert with the property appraisal conducted. The evaluation of costs associated with this option in comparison to the on-site relocation and ballast mats will also be evaluated to determine the best option and most viable solution

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XIII. Population and Housing. Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

a) No Impact- The Proposed Project involves construction of approximately three (3) miles of a second main line track within the existing railroad ROW along with improvements to eight at-grade roadway crossings, a second passenger platform at the Rialto Metrolink Station, existing culvert extension and protection-in place as required and civil improvements including grading, drainage, and utilities. This second track would improve average train speed, travel times, reliability, and overall capacity of the SBL. Construction and operation of the Proposed Project would not generate new permanent job opportunities that could attract people to the Proposed Project area. Therefore, the Proposed Project would not directly or indirectly induce substantial population growth in the area.

b) No Impact- The Proposed Project would not displace existing housing or necessitate the construction of replacement housing. No residential units exist onsite. The Proposed Project has no potential to displace any existing housing or require the relocation of people.

c) No Impact- The Proposed Project involves construction of approximately three (3) miles of a second main line track within the existing railroad ROW, along with improvements to eight at-grade roadway crossings, a second passenger platform at the Rialto Metrolink Station, existing culvert extension and protection-in place as required and civil improvements including grading, drainage, and utilities. The Proposed Project would not involve or require construction of housing. The Proposed Project would create approximately 30 short term construction employment opportunities. However, these jobs would not be of sufficient number or duration to induce substantial population growth by attracting people for permanent residence. In addition, this second track would improve average train speed, travel times, reliability, and overall capacity of the SBCTA ROW and would not increase the frequency of Metrolink trips.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XIV. Public Services.				
Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
a) Fire protection?	☐	☐	☐	☒
b) Police protection?	☐	☐	☐	☒
c) Schools?	☐	☐	☐	☒
d) Parks?	☐	☐	☐	☒
e) Other public facilities?	☐	☐	☐	☒

a-e) No Impact- The Proposed Project is within the cities of Rialto and San Bernardino and is within the San Bernardino County Fire Department. Rialto Fire Department Fire Station 201 (131 S. Willow Avenue, Rialto, CA 92336) is located approximately 0.2 miles from the Rialto Metrolink Station. Emergency response from fire agencies would not be affected by the Proposed Project. San Bernardino County Fire Station 229 (202 N Meridian Ave, San Bernardino, CA 92410) is located approximately 0.3 miles from the Proposed Project area.

The City of Rialto Police Department and San Bernardino Police Department has jurisdiction over the Proposed Project area and nearby unincorporated areas. Patrols and emergency response would not be impacted by the Proposed Project.

The nearest school is Rosie's Preschool located approximately 1,000 feet north of the track on Rialto Avenue and Curtis Elementary School approximately 1,200 feet south of the track on Lilac Avenue and would not be affected by the construction of Proposed Project or ongoing operations. Kelley Elementary School is located 0.20 miles south of the railroad tracks on South Meridan Avenue and Poplar Street. Other schools within a half-mile south of the project area include: Boyd Elementary School is located on the northeast corner of Sycamore Avenue and Merrill Avenue, Casey Elementary School is located on the northeast cored of Eucalyptus Avenue and East McKinley, and Rialto High School is located on the southwest corner of West Mill Street and South Pepper Avenue. These and other schools within the vicinity would not be affected by the construction of Proposed Project or ongoing operations.

Bud Bender Park is located on the northeast corner of Lilac Avenue and West Second Street, approximately 0.40 miles north of the railroad tracks. The Rialto Recreation and Community Services and Margaret Tod Park is located on the northeast corner of North Willow Avenue and West First Street. Sand Hills Park is located on the northwest corner of North Meridian Avenue and West Second Street, approximately 0.40 miles north of the railroad tracks. These and other parks within the vicinity would not be affected by the construction of Proposed Project or ongoing operations.

No other public facilities would be affected by the Proposed Project. The Proposed Project would not create additional public service needs in the project area and would not require alteration of existing facilities, or the need for new facilities to maintain acceptable service level during construction and project operations.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XV. Recreation.				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?	☐	☐	☐	☒

a) No Impact- The Proposed Project involves construction of approximately three (3) miles of a second main line track within the existing railroad ROW along with improvements to eight at-grade roadway crossings, a second passenger platform at the Rialto Metrolink Station, existing culvert extension and protection-in place as required and civil improvements including grading, drainage, and utilities. No recreational facilities exist within the project site. The Proposed Project would not affect the physical condition or the use of existing neighborhood and regional parks or other recreational facilities. The Proposed Project would not generate new jobs nor induce people to move to the Proposed Project area and would not result in the increased use of existing neighborhood and regional parks. The Proposed Project does not propose any new recreational facilities nor would it impact any existing recreational facilities.

b) No Impact- The Proposed Project does not include recreational facilities and would not require the construction or expansion of recreational facilities. The Proposed Project would not have an adverse physical effect on the environment related to recreational facilities.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XVI. Transportation/Traffic. Would the project:				
a) Exceed the capacity of the existing circulation system, based on an applicable measure of effectiveness (as designated in a general plan policy, ordinance, etc), taking into account all relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☒	☐
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☒	☐
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
e) Result in inadequate emergency access?	☐	☐	☒	☐
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilitates?	☐	☐	☒	☐

The following traffic impact assessment is based on the findings of the San Bernardino County Transportation Authority - Lilac to Rancho Double Tracking Project Traffic Impact Study (TIA) (CH2M, April 2018), provided as Appendix K.

a) Less Than Significant Impact – The analysis of the Proposed Project's potential to exceed the capacity of the existing circulation system includes an analysis of the trip generation during construction.

The Proposed Project trip generation during peak construction is presented in Table 3-3.

Construction of the Proposed Project would occur in four consecutive stages over approximately 28 months and would result in a temporary increase in local traffic as a result of construction-related workforce traffic and equipment and material deliveries. Construction would occur five to six days per week for eight to 10 hours per day. The peak construction period, considering materials transportation, operation of heavy equipment and the construction workforce, would occur during Stage 1 for approximately 12 months and would generate 75 daily trips and 30 peak hour trips. This assumes up to 30 workers per day, six pickup trucks, and six heavy haul vehicles. Heavy haul vehicles were converted to passenger car equivalent units (PCEs) at a ratio of 1.5 passenger cars for each truck, consistent with the 2010 Highway Capacity Manual guidelines (Transportation Research Board, 2010). It is assumed that the truck trips would occur outside of peak hours.

Table 3-3. Construction Trip Generation - Project Daily and Peak Hour Trips

		AM Peak Hour			PM Peak Hour		
Trip Type	**ADT**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Pick-up Trucks	6	0	0	0	0	0	0
Delivery/Haul Trucks	6	0	0	0	0	0	0
Delivery/Haul Trucks PCE (1.5)	9	0	0	0	0	0	0
Workers	60	30	0	30	0	0	0
Total Construction Traffic in PCE	**75**	**30**	**0**	**30**	**0**	**30**	**30**

Project construction would occur predominantly within the railroad right-of-way. Some construction activities would also occur within the public right-of-way, which could temporarily disrupt existing transportation and circulation in the Project vicinity. The potential traffic impacts from the construction-related activities are described below.

Construction workers would park in one of three potential locations: 1) within the existing Rialto Station parking lot (subject to acceptance by SBCTA if the parking lot is not at full utilization); 2) on a Temporary Construction Easement on vacant property located either directly south of the existing Rialto Station area (just south of the railroad right-of-way) or in the vacant lot in the South East quadrant of the Riverside Avenue grade crossing (this temporary construction easement would be a potential Contractor laydown/construction trailer area).

Based on the existing daily traffic volumes on the local roadways, the Proposed Project-added trips represent a short-term minimal increase in traffic (1.7 percent or less than the daily traffic). The Proposed Project construction-related trips are not anticipated to result in any changes to the roadway operations. The construction-related activities are not expected to use rail services, so there will be no impact on the regional rail network. A bus bridge will be used to maintain Saturday and Sunday Metrolink service.

Construction of the double track and related grade crossing construction will require temporary weekend road closures at the eight grade crossings (one weekend for each crossing). Lane restrictions (one lane in each direction) will also be required for two weeks at each grade crossing location. Proposed Project construction would be coordinated with all affected local agencies and include implementation of a Traffic Management Plan (TMP). The TMP would include recommendations for appropriately managing traffic during the construction period by implementing measures such as incident management, construction schedule restrictions, staging, and traffic control, and public outreach. Such measures would promote traffic movement during construction to minimize potential impacts to local traffic. The TMP would be prepared in accordance with the *California Manual of Uniform Traffic Control Devices Revision 2* (Caltrans, 2014) and all applicable requirements of the affected local agencies.

Public transit (Omnitrans) operates in the vicinity of the project area. Omnitrans Bus Route 22 runs on Riverside Avenue and Bus Route 15 runs on Eucalyptus Avenue. The TMP will implement traffic controls and other traffic safety measures to maintain proper flow during temporary construction activities. The construction contractor will obtain all necessary road permits prior to construction and would comply with all the applicable conditions of approval.

Although construction activities would generate slight increases in traffic on interstate highways and local roads, the effects will be minimal, short term, and periodic. Applicable county, state, and federal regulation, ordinances, and restrictions will be identified and complied with prior to and during construction. Therefore, construction-related traffic will not exceed the capacity of the existing circulation system, based on an applicable measure of effectiveness (as

designated in a general plan policy, ordinance, etc.), taking into account all modes of transportation. Impacts would be less than significant.

The Proposed Project and the double tracking of the corridor would allow the crossing of trains in opposing directions at the same time. While most of the crossings would still be single train events, there will be occasional eastbound and westbound overlaps with the Proposed Project. Rail activity causes delay at railroad crossings where trains pass and require auto and truck traffic to stop. The amount of delay is related to the length of the train, the speed of the train and the volume of auto and truck traffic that is blocked. The potential impact of train movements on the roadway traffic operating conditions (at the crossing) can be measured using average vehicle delay (in seconds) at each crossing. Additionally, when the vehicular traffic on the surface street must stop, there is no vehicular flow and queues begin to form on the local streets, potentially affecting upstream intersections. An estimate of those queues provides an assessment of the impact the trains will have upon local street operations.

The analysis of the Proposed Project's potential to exceed the capacity of the existing circulation system during operation includes evaluating the potential change in both vehicle delay and vehicle queuing at the ten at-grade crossings that would be affected by the Proposed Project, as well as the potential queuing impacts to 16 upstream intersections (see Figure 3-2) along the Proposed Project Corridor. The analysis includes the changes in operations at the crossings for the Existing (2017), Opening Day (2022), and Future (2040) conditions, with and without the Proposed Project. A summary of the potential changes in vehicle delay and queuing with the Proposed Project is presented in Table 3-4.

Table 3-4. Summary of Potential Project Effects - With Project Conditions

	AM Peak Hour			PM Peak Hour		
Scenario	Vehicle Delay	Queue Length	Upstream Signals	Vehicle Delay	Queue Length	Upstream Signals
Opening Year	No change	No change	No effect	< 1% increase	< 3% increase	No effect
Future Year	No change	No change	No effect	< 1% increase	< 3% increase	No effect

The result of the analysis is that the minimal resulting increases in delay and queuing would not introduce project-related impacts to access or movement in and around the Project area. The traffic analysis shows that a relatively small change in operations is expected in the PM peak period. The average vehicle delay is expected to increase less than one percent and the queue length is expected to increase less than three percent. There would be no significant impact as these increases results in no noticeable change in vehicle operations. Furthermore, there would be no impact to the upstream intersections. No change is expected in the AM peak period for either vehicle delay or the queue length.

Operation of the Proposed Project would have no effect on public transit and would provide some improvements to pedestrian and bicycle circulation through proposed improvements at the rail crossings.

Based on the analysis above, the Proposed Project would not exceed the capacity of the existing circulation system, based on an applicable measure of effectiveness (as designated in a general plan policy, ordinance, etc.), taking into account all modes of transportation. Impacts would be less than significant.

b) Less Than Significant Impact - The SBCTA implements the Congestion Management Program (CMP) which includes level of service (LOS) standards for the CMP road network, performance measures for the multimodal transportation system, methods for analyzing impacts of land use decisions on the transportation system, and guidance for travel demand management.

The LOS standard is E for all segments and intersections on the CMP roadway system, except for those locations that have a baseline of LOS F (e.g. locations that were operating at LOS F in 1992 when the CMP was initiated). Within the project vicinity, the CMP road network includes SR-210 (2 ½ miles north), Baseline Road, (1 ¾ miles north), Foothill Boulevard (¾ mile north), Alder Boulevard (2 miles west), Cedar Avenue (¾ mile west), Riverside, Pepper and Rancho Avenues (adjacent to Project), Mt. Vernon (1 mile east), I-215 (1 ¾ mile east), and I-10 (2 miles south).

Potential increases in vehicle trip generation as a result of project construction would vary based on the construction activity, location, equipment needs, and other factors. However, during the peak construction period, the Proposed Project would generate 75 daily trips and 30 peak hour trips. Traffic volumes on the CMP road network vary considerably, from approximately 112,000 to 198,000 daily trips on the major freeways to approximately 21,200 daily trips on the local roadways. The project-added trips represent a minimal increase in traffic compared to the existing roadway volumes (0.3 percent or less) and no changes to the existing LOS are anticipated. Furthermore, implementation of the TMP would include recommendations for appropriately managing traffic during the construction period using measures such as construction schedule restrictions, signage, flaggers, etc. Therefore, construction of the Project would not conflict with an applicable congestion management program, or other standards, for designated roads or highways. Impacts would be less than significant.

Operation of the Project would also result in no noticeable change in vehicle operations (as discussed above) and no new traffic would be generated by the Project. Impacts would be less than significant.

c) No impact - The Proposed Project involves the addition of a second mainline track, modifications at each of the exiting at-grade roadway crossings, new southside station platform at the Rialto Metrolink Station, and new pedestrian

crossing/connections to the southside platform. The Proposed Project would not involve a change in air traffic patterns, including either an increase in traffic levels or a change in location that would result in substantial safety risks. There would be no impact to air traffic during construction or operation of the Proposed Project.

d) Less Than Significant Impact - Construction of the Project would occur primarily within the railroad right-of-way and would not introduce any design features or incompatible uses that would increase hazards. Project construction will require temporary road and lane closures. However, the TMP will implement traffic controls and other traffic safety measures to maintain proper traffic flow during temporary construction activities. The construction contractor would obtain all necessary road permits prior to construction and would comply with all the applicable conditions of approval. Therefore, the project would not increase hazards due to design features of roadways or incompatible uses. Impacts would be less than significant.

   The Proposed Project is part of an established rail network and no change in land use is proposed. The Proposed Project would not be located next to incompatible land uses.

   The Proposed Project primarily includes design changes within the railroad right-of-way that would not affect the local road network or circulation system. The Project also includes safety enhancements and beneficial design features that would reduce potential hazards for the traveling public. The safety enhancements include allowing trains in opposing direction to operate on separate tracks; the addition of a second passenger platform to improve pedestrian access; railroad signals as well as Positive Train Control (PTC) considerations and required improvements; and civil improvements including grading, drainage, and utilities. The Project would not increase hazards on area roadways due to a design feature or incompatible use. Impacts would be less than significant.

e) Less Than Significant Impact – Construction of the Proposed Project would not result in inadequate emergency access. Emergency access routes will be maintained to and around the Proposed Project construction area(s) for the duration of Proposed Project construction. Construction vehicles and equipment are expected to be staged or parked within Proposed Project area right-of-way, and approved temporary construction work and staging areas. Implementation of the TMP will further minimize potential impacts. Any road closures will be temporary and short-term, and these closures will be coordinated with the local jurisdictions to reduce the effects of potential temporary and short-term emergency access. Emergency responders will be notified prior to construction and ensuring access for emergency vehicles and all applicable local, state, and Federal traffic control measures will be followed to ensure the safety of the local as well as construction traffic. Therefore, the impact will be less than significant.

   Once constructed, there will be no changes to existing emergency access routes. The vehicle delay and queuing analyses also found that there would be no noticeable change in vehicle operations at the at-grade crossings and no impact to the upstream intersections with the Proposed Project. Impacts to emergency access would be less than significant.

f) Less Than Significant Impact - The analysis of the Proposed Project's impacts to adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities includes an evaluation of existing public routes, transit facilities, and bicycles facilities.

   Public transit operates in the vicinity of the Proposed Project area and Project construction could temporarily disrupt transit service. The TMP would include procedures for notifying and coordinating with Omnitrans, in advance of construction activities. Bicycle facilities and sidewalks also exist near the area of construction (see Operations and Maintenance discussion below for pedestrian-related data). The TMP would establish methods for minimizing construction effects on transit service and bike and pedestrian facilities, by maintaining access to such facilities along the Proposed Project construction area or providing an alternative route if one is needed. With implementation of the TMP, construction impacts would be less than significant.

   The Proposed Project would not result in any permanent changes to transit routes, transit facilities, or bicycles facilities. The Proposed Project includes changes to existing at-grade crossings which could affect pedestrian travel. The potential effect to pedestrian safety was evaluated for the Project operations.

   Table 3-5 summarizes the pedestrian-related features and activity at the ten at-grade crossings. Pedestrian counts were collected along the at-grade crossings from 5:00 AM to 7:00 AM and from 5:00 PM to 7:00 PM to assess the pedestrian activity across the tracks. Schools and emergency services (fire and police) were also identified within a half-mile radius of the tracks to determine if the tracks are potentially along a school and/or emergency route. The nearest school is Rosie's Preschool located approximately 1,000 feet north of the track on Rialto Avenue. Boyd Elementary School is located on the northeast corner of Sycamore Avenue and Merrill Avenue, within a half-mile south of the railroad tracks. Curtis Elementary School is located south of the Proposed Project area on Lilac Avenue within a half-mile of the railroad tracks.

Table 3-5. Pedestrian Activity/Features at At-Grade Crossings - Existing Conditions

Crossing Street	Pedestrian Counts		Sidewalk?	Other Features	School Route?	Transit Route?	Emergency Route?
	AM	PM					
Cactus Avenue	0	1	Partial	4 Standard No. 9 Crossing gates; Double track; 100' median islands	No	No	No
Lilac Avenue	3	4	Partial	2 Standard No. 9 Crossing gates; 50' median islands	Yes Curtis Elementary, 451 S. Lilac Ave.	No	No
Willow Avenue	3	5	Yes	2 Standard No. 9 Crossing gates; 50' median islands	No	No	Yes
Riverside Avenue	11	23	Yes	4 Standard No. 9 Crossing gates; 100' median islands, crosswalk	No	Yes	No
Sycamore Avenue	3	10	Yes	2 Standard No. 9 Crossing gates; 50' median islands	Yes; Boyd Elementary, 310 E. Merrill Ave.	No	No
Acacia Avenue	9	11	Yes	2 Standard No. 9 Crossing gates; 50' median islands	No	No	No
Eucalyptus Avenue	3	18	Yes	2 Standard No. 9 Crossing gates; 50' median islands	No	Yes	No
Pepper Avenue	10	13	Yes	2 Standard No. 9 Crossing gates (median); 2 Standard No. 9a Crossing gates; 2 cantilever flasher; 15' median islands,	No	No	No
Rialto Avenue	6	12	No	2 Standard No. 9 Crossing gates; skewed crossing	No	No	No
Rancho Avenue	1	2	Partial	2 Standard No. 9 Crossing gates; Double track; 100' median islands	No	No	No

Source: San Bernardino County Transportation Authority - Lilac to Rancho Double Tracking Project Traffic Impact Study (TIA) (CH2M, April 2018)

Riverside Avenue has the highest pedestrian traffic, but volumes are still relatively low. The Rialto Metrolink station is located on Riverside Avenue and this street is also used as part of a transit route. An east-west crosswalk is provided north of the tracks. Eucalyptus Avenue is also used as part of a transit route and has a moderate number of pedestrians during the afternoon peak hour. The Lilac Avenue and Sycamore Avenue crossings are located within a half-mile of a school, however, the pedestrian traffic at these crossings is relatively low. Field observations suggest limited use of these crossings for access to and from the nearby schools.

The Proposed Project would not increase the number of trains using the corridor, nor the number of train crossings and there would be no increase in safety risk to pedestrians. Moreover, with the double tracking of this corridor, new safety features would be required and upgrades to the crossing protections would be incorporated at each of the at-grade crossings. The Final Quiet Zone Feasibility Study (July 2017) also recommends installing, at a minimum, the improvements listed in Table 3-6, as part of the project, which would also increase pedestrian safety, including potential and comparable crossing protection upgrades at both Cactus Avenue and Rancho Avenue. Final selection and

implementation of the Table 3-6 safety improvements will be conducted and incorporated during final design of the Proposed Project.

Table 3-6. Pedestrian-Related Safety Improvements

Crossing Street	Recommended Improvements
Cactus Avenue	Install pedestrian treatments along east crossing including pedestrian crossing gates and swing gates with hand railings, tactile warning strips, and fencing at railroad right of way including gate for Metrolink access. Upgrade all flashers to standard LED.
Lilac Avenue	Remove the existing raised median islands and install two 100' minimum raised median islands. Pedestrian treatments including pedestrian crossing gates and swing gates with hand railings, tactile warning strips, and fencing at railroad right of way including gate for Metrolink access. Upgrade all flashers to LED and install new concrete crossing panels for both tracks.
Willow Avenue	Remove the existing raised median islands and install two 100' minimum raised median islands. Pedestrian treatments including pedestrian crossing gates and swing gates with hand railings, tactile warning strips, and fencing at railroad right of way including gate for Metrolink access. Upgrade all flashers to LED and install new concrete crossing panels for both tracks.
Riverside Avenue	Remove the existing raised median islands and install two 100' minimum raised median islands. Pedestrian treatments including pedestrian crossing gates and swing gates with hand railings, tactile warning strips, and fencing at railroad right of way including gate for Metrolink access. Upgrade all flashers to LED and install new concrete crossing panels for both tracks. Relocate adjacent pedestrian roadway crossing further north away from railroad crossing.
Sycamore Avenue	Remove the existing raised median islands and install two 100' minimum raised median islands. Pedestrian treatments including pedestrian crossing gates and swing gates with hand railings, tactile warning strips, and fencing at railroad right of way including gate for Metrolink access. Upgrade all flashers to LED and install new concrete crossing panels for both tracks.
Acacia Avenue	Remove the existing raised median island and install two 100' minimum raised median islands. Pedestrian treatments including pedestrian crossing gates and swing gates with hand railings, tactile warning strips, new sidewalk and fencing at railroad right of way including gate for Metrolink access. Install curb to prohibit movements exiting the alley and entering the crossing. Upgrade all flashers to LED and install new concrete crossing panels for both tracks.
Eucalyptus Avenue	Remove the existing raised median island and install two 100' minimum raised median islands. Pedestrian treatments including pedestrian crossing gates and swing gates with hand railings, tactile warning strips, new sidewalk and fencing at railroad right of way including gate for Metrolink access. Installing exit gate to prohibit movements through crossing from adjacent alley. Upgrade all flashers to LED and install new concrete crossing panels for both tracks.
Pepper Avenue	Install two 100' minimum raised median islands. Pedestrian treatments including pedestrian crossing gates and swing gates with hand railings, tactile warning strips, new sidewalk and fencing at railroad right of way including gate for Metrolink access. Upgrade all flashers to LED and install new concrete crossing panels for both tracks.
Rialto Avenue	Install two 100' minimum raised median islands. Widen roadway to 4 lanes to match east and west approaches. Construct driveway for adjacent property away from crossing to discourage vehicles turning towards the crossing. Pedestrian treatments including pedestrian crossing gates and swing gates with hand railings, tactile warning strips, new sidewalk and fencing at railroad right of way including gate for Metrolink access. Upgrade all flashers to LED and install new concrete crossing panels for both tracks.
Rancho Avenue	Install two 100' minimum raised median islands. Pedestrian treatments including pedestrian crossing gates and swing gates with hand railings, tactile warning strips, new sidewalk and fencing at railroad right of way including gate for Metrolink access. Upgrade all flashers to LED and install new concrete crossing panels for both tracks.

Based on the above analysis, operation of the Project would not conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities. Impacts would be less than significant.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XVII. Tribal Cultural Resources				
Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☐	☐	☒
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☐	☐	☒

a) No Impact – The Proposed Project site is located on developed land, would be constructed completely within previously disturbed areas and would not involve any excavation into undeveloped lands. The activities would occur within developed areas and would be consistent with existing onsite uses. The Proposed Project is not listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.

b) No Impact – The Proposed Project site is located on developed land, would be constructed completely within previously disturbed areas and would not involve any excavation into undeveloped lands. Because the activities would occur within developed areas and would be consistent with existing onsite uses, the Proposed Project would not have the potential to adversely affect Traditional Cultural Resources. However, consistent with the provisions and requirements of Assembly Bill 52 – Tribal Consultation the Proposed Project completed the following consultation efforts.

On April 28, 2017 the Native American Heritage Commission (NAHC) was contacted to conduct a record search of the Sacred Land files. On May 5, 2017 the NAHC responded there were no Native American sacred sites in the immediate Project area. Since there could be unrecorded Native American cultural resources, the NAHC provided a list of nineteen (19) tribes culturally affiliated with the project area to contact for more information. On June 13, 2017, SBCTA sent each of the tribes a letter (in compliance with AB 52) with a request to provide information on any traditional cultural properties or values (e.g., burial sites, religious sites, or gathering sites) within the Project area and an invitation to initiate consultation regarding possible significant effects that implementation of the proposed project may have on tribal cultural resources (Appendix L). Tribes were advised if no response was received within thirty (30) days; it would be presumed consultation is declined. The following responses were received:

On June 21, 2017 Andrew Salas, Chairman of the Gabrieleno Band of Mission Indians requested consultation be initiated because the Proposed Project is within the ancestral tribal territory.

On June 29, 2017 the Director of Historic Preservation Agua Caliente Band of Cahuilla Indians responded that the project was not in the Tribe's Traditional Use Area and deferred to the other Tribes. On August 22, 2017, Justin Fornelli, Chief of Transit and Rail Programs for SBCTA, responded to Andrew Salas, Chairman of the Gabrieleno Band of Mission Indians to initiate the consultation process.
Pursuant to Public Resources Code (PRC) Section 5097.98, if the remains are thought to be Native American, the Coroner will notify the Native American Heritage Commission, which will then notify the Most Likely Descendant. Based on the described site conditions and the areas of disturbance being fully within previously disturbed area, less than significant impacts would occur.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XVIII. Utilities and Service Systems. Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
c) Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
e) Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☒	☐

a) No Impact – The Proposed Project would allow of more efficient operation, timely service, and reduction of conflict of eastbound passenger and freight trains. Construction or operation of the Proposed Project is not associated with wastewater treatment. Therefore, no impacts would occur.

b) No Impact – The Proposed Project would not require, expand or result in the construction of new water or wastewater treatment facilities. No new land development would occur. The Proposed Project is located within an existing railroad ROW. Therefore, no impact to water or wastewater treatment facilities would occur.

c) Less Than Significant Impact – As part of the Proposed Project existing culvert extensions and protection-in place may be required near the west end of the Rialto station and east of Pepper Avenue. In addition, the existing SBCFCD "East Rialto Storm Drain" flood control channel on the north side and drainage ditches on the south side of the right-of-way will be evaluated to be protected in-place and mitigated accordingly. The Proposed Project would not require substantial alteration of the existing drainage pattern of the site or an area and would not alter the course of a stream or river. The only impervious area added by the project is limited to the Rialto Station, with 0.45 acres of new impervious area and the rate or amount of surface runoff from the Proposed Project would not substantially increase the rate or amount of surface runoff in a manner, which would result in an in an increase in stormwater runoff or the need for the construction of new stormwater drainage facilities or the expansion of existing facilities. Therefore, impacts would be less than significant.

d) No Impact –Construction and operation of the Proposed Project would not require the provision of new water supplies or increased water usage. Water supplies including entitlements and resources would not be impacted by the Proposed Project. Therefore, no impact would occur.

e) No Impact – The Proposed Project is not associated with wastewater treatment. Therefore, no impact would occur to the wastewater treatment provider.

f) Less Than Significant Impact – Disposal needs during construction would be limited to nonhazardous solid waste such as trash and debris. Solid waste generated during construction would be disposed of consistent with existing practices in an approved facility consistent with applicable regulations. Based on the small quantity of waste material anticipated to be produced during construction, the Proposed Project is not expected to affect the capacity of existing landfills. The Proposed Project operations would be integrated with existing operations. The second passenger platform at the Rialto Metrolink Station is anticipated to have a negligible increase in trash disposal. Impacts to landfills would be less than significant impact.

g) Less Than Significant Impact – The Proposed Project would comply with required regulations related to solid waste disposal during construction activities. In addition, the second passenger platform at the Rialto Metrolink Station is anticipated to have a negligible increase in trash. Trash disposal would comply with required regulations related to solid waste disposal. Therefore, impacts would be less than significant.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XVIII. Mandatory Findings of Significance				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☐	☒
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☒	☐
c) Does the project have the potential to achieve short-term environmental goals to the disadvantage of long-term environmental goals"	☐	☐	☒	☐
d) Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

a) No Impact – The Proposed Project is located on the existing railroad ROW property.

The Proposed Project involves construction of approximately three (3) miles of a second main line track within the existing railroad ROW along with improvements to eight at-grade roadway crossings, a second passenger platform at the Rialto Metrolink Station, existing culvert extension and protection-in place as required and civil improvements including grading, drainage, and utilities. The operation of the second main line would not increase frequency, but would allow of more efficient operation, timely service, and reduction of conflict of eastbound passenger and freight trains.

The Project site property has been previously leveled, graded and developed with a railroad track and an existing passenger platform at the Rialto Metrolink Station. At-grade railroad crossings are in place. There would be no potential for the loss of an important example of history or prehistory or other cultural resources from the Proposed Project as the only structures which exist onsite are those associated with the existing railroad ROW and current operations. Therefore, no impact would occur.

b) Less Than Significant Impact – Potential impacts associated with the Proposed Project have been determined to be less than significant in the case of noise. A mitigation measure has been proposed to reduce the impact to a less than significant level. The Proposed Project is not anticipated to result in any significant adverse impacts after mitigation.

A review of past, present or reasonably foreseeable projects within the cities of Rialto and San Bernardino and County of San Bernardino was conducted. In addition, projects with the SBCTA was reviewed to assess potential impacts associated with noise and vibration. A cumulative impact would occur if the Proposed Project and other project (s) would cause a cumulative effect to noise and vibration (an increase in vibration that is transmitted from the tracks through the ground into adjacent houses).

Current projects in the City of Rialto include a warehouse distribution building (development of 404,000 square foot distribution building with 5,000 square feet of office space and landscaping on approximately 16.9 acres) located at the southeast corner of Valley Boulevard and Spruce Avenue, Rialto Bioenergy Facility (modification and reestablishment of an existing biosolids energy plant) located at 503 East Santa Ana Avenue, CapRock Distribution Center III Warehouse Project (development of a 525,110 square foot warehouse on 24.37 acres of land) located at the northeast Corner of Willow and Santa Ana Avenue, and development of a 1,650-square foot drive-thru commercial building at the southeast corner of Riverside Avenue and Easton Avenue. In addition, the City of Rialto current projects includes updates to the Rialto Housing Element and Pepper Avenue Specific Plans, Renaissance East Addendum to the Specific Plan. These current projects are not located within the Proposed Project area (projects are located approximately 1 mile or further) and are not associated with noise and vibration impacts.

Projects under construction within the City of San Bernardino include traffic street improvements, pump station and asphalt rehabilitation, and various pile line replacement projects. Various community development projects such as a

service station, housing complex were approved in 2018 and permits issues. However, these projects are not associated with noise and vibration impacts and are not located within the Proposed Project area.

A Quiet Zone is being considered for the Shortway Subdivision in the City of San Bernardino. The Shortway Subdivision extends from the San Bernardino Metrolink Station toward the southerly City limit near Rialto Avenue and Walnut Avenue. The project includes an upgrade the controls at the highway-rail at-grade crossings along the subdivision to qualify for a quiet zone designation. This project would not contribute to additional noise and vibration in the project area.

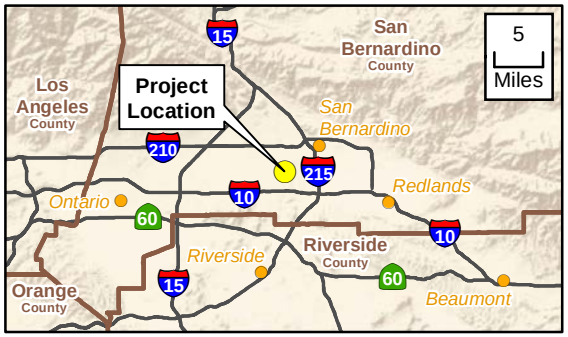
Four projects are currently under construction with SBCTA. The construction projects include interchange improvements in at the 215 / Barton Road Interchange (Grand Terrace), 210 / Pepper Avenue Interchange (Rialto), 10 / Pepper Avenue Interchange (Colton) and a grade separation at Monte Vista (Montclair). Upcoming projects include the 210 Freeway Widening (Highland), 210 / Baseline Road Interchange (Highland), I-10 Corridor Project – Contract 1 (Express Lanes) and Mt. Vernon Viaduct (San Bernardino). These projects are not located within the Proposed Project area and are not associated with increase noise and vibration in the project area.

The review of current and foreseeable projects in the Proposed Project area concluded that no additional projects were identified to contribute to noise and vibration impacts. Other projects would be required to address the potential for significant adverse impacts with standard environmental analysis, review requirements, and propose mitigation to address these impacts. As required by applicable laws, ordinances, regulations, and standards, including BMPs, the Proposed Project would not be anticipated to result in any significant adverse cumulative impacts. Therefore, impacts would be less than significant.

c) Less Than Significant Impact - The Proposed Project involves construction of approximately three (3) miles of a second main line track within the existing railroad ROW along with improvements to eight at-grade roadway crossings, a second passenger platform at the Rialto Metrolink Station, existing culvert extension and protection-in place as required and civil improvements including grading, drainage, and utilities.

The operation of the second main line would not increase frequency, but would allow of more efficient operation, timely service, and reduction of conflict of eastbound passenger and freight trains. These improvements would provide long-term benefits to serve the residential community. In this respect, the Proposed Project would not have the potential to achieve short-term environmental goals to the disadvantage of long-term environmental goals.

d) Less Than Significant Impact with Mitigation Incorporated – Potential Project impacts associated with noise would be mitigated to a less than significant level as with the implementation of NOI-1 through NOI-3. The Proposed Project would complete a work permit with the City of Rialto to allow weekend construction activities and necessary steps and provisions associated with the full acquisition of the property would be undertaken. Overall, the Proposed Project would be implemented consistent with applicable laws, ordinances, regulations, and standards, including BMPs to avoid both direct and indirect adverse effects on human beings. Therefore, impacts would be less than significant with mitigation incorporated.



Legend

- Rialto Station
- Project Location

Flood Hazard Zones

- 1% Annual Chance Flood Hazard
- 0.2% Annual Chance Flood Hazard
- Area with Reduced Flood Risk Due to Levee
- Area of Minimal Flood Hazard
- Area of Undetermined Flood Hazard

Source:
U.S. FEMA, National Flood Hazard Layer. Accessed March 2018.

Basemap Source:
1. ESRI World Streetmap

0 0.5 1
Miles

N

Figure 3-1
Regional Project Location
SBCTA Lilac to Ranco
Double Track Project
City of Rialto, California

SECTION 4

Lead Agency and Consultants

4.1 Lead Agency

San Bernardino County Transportation Authority

4.2 Consultants

Jason Reynolds – Environmental Manager (23 years of experience)

Cindy Salazar – Associate Planner/CEQA Task Lead (14 years of experience)

Hong Zhuang – Air Quality and Greenhouse Gas Specialist (18 years of experience)

Melissa Williams – Biologist (16 years of experience)

Gloriella Cardenas – Cultural Resource Specialist (18 years of experience)

Daniel Jankly, C.E.G. - Senior Engineering Geologist (18 years of experience)

Ravee Raveendra, G.E. - Senior Project Geotechnical Engineer (17 years of experience)

James Verhoff - Paleontological Resource Specialist (10 years of experience)

Lisa Valdez – Traffic Specialist (21 years of experience)

Thomas Priestley, AICP/ASLA – Visual Resources (30 years of experience)

Wilfred Hsu – Water Quality (19 years of experience)

Ninyo & Moore - Geotechnical and Environmental Sciences Consultants – Kristina Hill; Patrick Cullip, John Jay Roberts, P.G., C.E.G.

ATS Consulting - Noise and Vibration – Tony Evans and Hugh Saurenmane

Moffatt & Nichol - Stephanie Oslick and Sam Mansour

SECTION 5

References

California Air Pollution Control Officers Association (CAPCOA). 2017. *California Emission Estimator Model (CalEEMod) User's Guide Version 2016.3.1.* March.

California Air Resources Board (CARB). 2018. State Area Designations. https://www.arb.ca.gov/desig/statedesig.htm

CARB. 2016a. Ambient Air Quality Standards. Updated on May 4, 2016.

California Department of Conservation, Division of Land Resource Protection. San Bernardino County Williamson Act FY 2015/2016. 2018

California Department of Transportation (Caltrans). 2014a. California Manual on Uniform Traffic Control Devices Revision 2. (Latest Revision April 2017). Online: http://www.dot.ca.gov/trafficops/camutcd/docs/2014r2/CAMUTCD2014_rev2.pdf

City of Rialto. 2010. *Rialto General Plan*. Adopted December 2010.

City of San Bernardino. 2005. *San Bernardino General Plan*. Adopted November 1, 2005.

Flood Insurance Rate Map (FIRM). 2016. 06071C8677J, Panel 8677 of 9400 and FIRM 06071C8676J, Panel 8676 of 940

Federal Transit Administration Office of Planning and Environment, Transit Noise and Vibration Impact Assessment, Document FTA-VA-90-1003-06, May 2006.

South Coast Air Quality Management District (SCAQMD). 1993. Rule 1179 Emission Inventory Report for JEIP Participating Agencies.

SCAQMD. 2003. White Paper: *Potential Control Strategies to Address Cumulative Impacts from Air Pollution, Appendix D Cumulative Impact Analysis Requirements Pursuant to CEQA*. August.

SCAQMD. 2008a. Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans.

Transportation Research Board. 2010. Highway Capacity Manual.

U.S. Environmental Protection Agency (EPA). 2018. AirData (http://www.epa.gov/airdata/). Accessed March 2018.

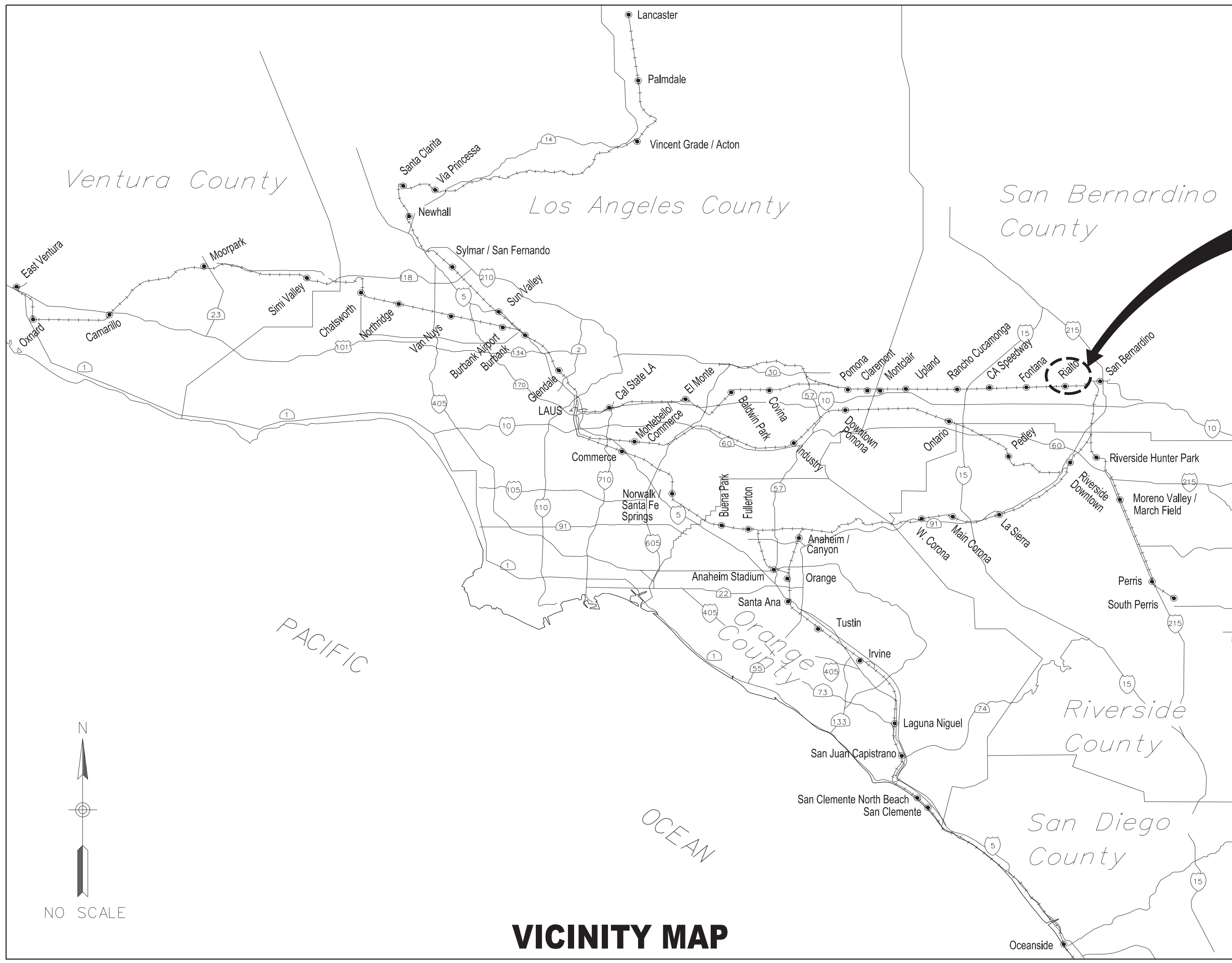
Appendix A
Engineering Drawings (30% Design)

SAN BERNARDINO COUNTY TRANSPORTATION AUTHORITY

METROLINK SAN BERNARDINO LINE (SAN GABRIEL SUBDIVISION)

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

MP 52.19 to MP 55.24

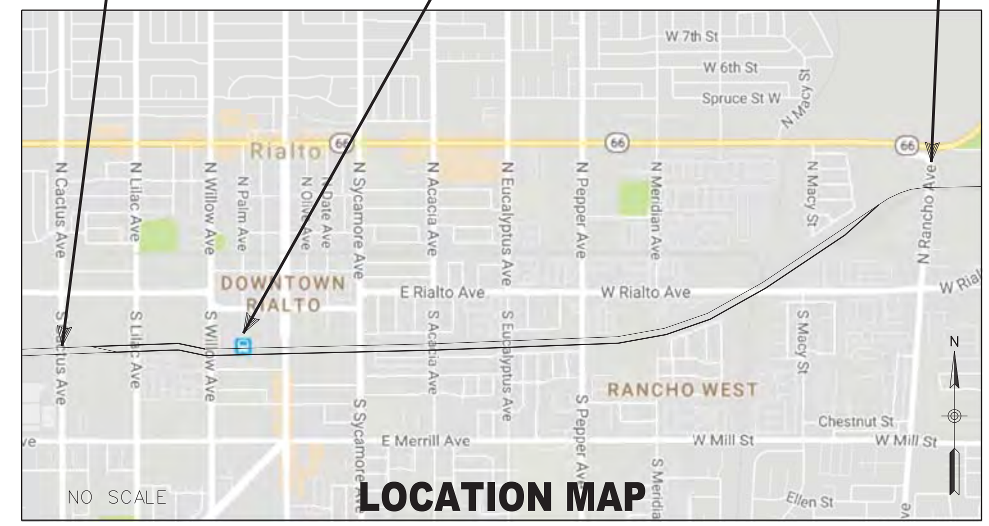


VICINITY MAP

BEGIN PROJECT
CACTUS AVE
MP 52.19

METROLINK
RIALTO STATION

END PROJECT
RANCHO AVE
MP 55.24



LOCATION MAP

JUNE 29, 2018

FINAL 30% SUBMITTAL

NOT FOR CONSTRUCTION

NOT FOR CONSTRUCTION

CONTRACT No. 16-1001411

moffatt & nichol

APPROVED BY: ____________________ DATE: 06-29-2018
VICTOR LOPEZ, P.E.
SBCTA PROGRAM MANAGER, TRANSIT & RAIL PROGRAMS

SUBMITTED BY: ____________________ DATE: 06-29-2018
SAM MANSOUR, P.E.
PROJECT MANAGER, MOFFATT & NICHOL

METROLINK

sb cta
san bernardino county transportation authority

6/28/2018 5:46:38 PM USER = jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRDT212-GI-001.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

INDEX OF DRAWINGS

SHT NO.	DWG. NO.	REV. NO.	TITLE
GENERAL			
1	GI-001	A	PROJECT TITLE SHEET
2	GI-002	A	INDEX OF DRAWINGS - SHEET 1 OF 2
3	GI-003	A	INDEX OF DRAWINGS - SHEET 2 OF 2
4	GI-004	A	PROJECT INDEX MAP - SHEET 1 OF 1
5	GI-005	A	SYMBOLS
6	GI-006	A	ABBREVIATIONS
7	GI-007	A	GENERAL NOTES
8	VJ-001	A	PROJECT SURVEY - PRIMARY CONTROL NETWORK - SHEET 1 OF 2
9	VJ-002	A	PROJECT SURVEY - PRIMARY CONTROL NETWORK - SHEET 2 OF 2
10	GC-001	A	CONSTRUCTION PHASING PLAN - SHEET 1 OF 3
11	GC-002	A	CONSTRUCTION PHASING PLAN - SHEET 2 OF 3
12	GC-003	A	CONSTRUCTION PHASING PLAN - SHEET 3 OF 3
TRACK			
13	TD-001	A	TRACK CHARTS - METROLINK SAN BERNARDINO LINE - SHEET 1 OF 4
14	TD-002	A	TRACK CHARTS - METROLINK SAN BERNARDINO LINE - SHEET 2 OF 4
15	TD-003	A	TRACK CHARTS - METROLINK SAN BERNARDINO LINE - SHEET 3 OF 4
16	TD-004	A	TRACK CHARTS - METROLINK SAN BERNARDINO LINE - SHEET 4 OF 4
17	TD-005	A	TRACK TYPICAL SECTIONS - SHEET 1 OF 7
18	TD-006	A	TRACK TYPICAL SECTIONS - SHEET 2 OF 7
19	TD-007	A	TRACK TYPICAL SECTIONS - SHEET 3 OF 7
20	TD-008	A	TRACK TYPICAL SECTIONS - SHEET 4 OF 7
21	TD-009	A	TRACK TYPICAL SECTIONS - SHEET 5 OF 7
22	TD-010	A	TRACK TYPICAL SECTIONS - SHEET 6 OF 7
23	TD-011	A	TRACK TYPICAL SECTIONS - SHEET 7 OF 7
24	TD-012	A	TRACK HORIZONTAL CURVE DATA
25	TD-013	A	TRACK GEOMETRY TABLES - SHEET 1 OF 3
26	TD-014	A	TRACK GEOMETRY TABLES - SHEET 2 OF 3
27	TD-015	A	TRACK GEOMETRY TABLES - SHEET 3 OF 3
28	TP-001	A	TRACK PLAN AND PROFILE - MT2 STA 2754+39 TO MT2 STA 2766+00 - SHEET 1 OF 13
29	TP-002	A	TRACK PLAN AND PROFILE - MT2 STA 2766+00 TO MT2 STA 2778+00 - SHEET 2 OF 13
30	TP-003	A	TRACK PLAN AND PROFILE - MT2 STA 2778+00 TO MT2 STA 2790+00 - SHEET 3 OF 13
31	TP-004	A	TRACK PLAN AND PROFILE - MT2 STA 2790+00 TO MT2 STA 2802+00 - SHEET 4 OF 13
32	TP-005	A	TRACK PLAN AND PROFILE - MT2 STA 2802+00 TO MT2 STA 2814+00 - SHEET 5 OF 13
33	TP-006	A	TRACK PLAN AND PROFILE - MT2 STA 2814+00 TO MT2 STA 2826+00 - SHEET 6 OF 13
34	TP-007	A	TRACK PLAN AND PROFILE - MT2 STA 2826+00 TO MT2 STA 2838+00 - SHEET 7 OF 13
35	TP-008	A	TRACK PLAN AND PROFILE - MT2 STA 2838+00 TO MT2 STA 2850+00 - SHEET 8 OF 13
36	TP-009	A	TRACK PLAN AND PROFILE - MT2 STA 2850+00 TO MT2 STA 2861+00 - SHEET 9 OF 13
37	TP-010	A	TRACK PLAN AND PROFILE - MT2 STA 2861+00 TO MT2 STA 2872+00 - SHEET 10 OF 13
38	TP-011	A	TRACK PLAN AND PROFILE - MT2 STA 2872+00 TO MT2 STA 2883+00 - SHEET 11 OF 13
39	TP-012	A	TRACK PLAN AND PROFILE - MT2 STA 2883+00 TO MT2 STA 2895+00 - SHEET 12 OF 13
40	TP-013	A	TRACK PLAN AND PROFILE - MT2 STA 2895+00 TO MT2 STA 2906+40.7 - SHEET 13 OF 13
41	TC-001	A	TRACK CROSS SECTIONS - STA 2763+37 TO STA 2768+00 - SHEET 1 OF 28
42	TC-002	A	TRACK CROSS SECTIONS - STA 2769+00 TO STA 2774+00 - SHEET 2 OF 28
43	TC-003	A	TRACK CROSS SECTIONS - STA 2775+00 TO STA 2780+00 - SHEET 3 OF 28
44	TC-004	A	TRACK CROSS SECTIONS - STA 2781+00 TO STA 2786+00 - SHEET 4 OF 28
45	TC-005	A	TRACK CROSS SECTIONS - STA 2787+00 TO STA 2792+00 - SHEET 5 OF 28
46	TC-006	A	TRACK CROSS SECTIONS - STA 2793+00 TO STA 2798+00 - SHEET 6 OF 28
47	TC-007	A	TRACK CROSS SECTIONS - STA 2799+00 TO STA 2804+00 - SHEET 7 OF 28
48	TC-008	A	TRACK CROSS SECTIONS - STA 2805+00 TO STA 2810+00 - SHEET 8 OF 28
49	TC-009	A	TRACK CROSS SECTIONS - STA 2811+00 TO STA 2816+00 - SHEET 9 OF 28
50	TC-010	A	TRACK CROSS SECTIONS - STA 2817+00 TO STA 2822+00 - SHEET 10 OF 28
51	TC-011	A	TRACK CROSS SECTIONS - STA 2823+00 TO STA 2827+00 - SHEET 11 OF 28
52	TC-012	A	TRACK CROSS SECTIONS - STA 2828+00 TO STA 2833+00 - SHEET 12 OF 28
53	TC-013	A	TRACK CROSS SECTIONS - STA 2834+00 TO STA 2839+00 - SHEET 13 OF 28
54	TC-014	A	TRACK CROSS SECTIONS - STA 2840+00 TO STA 2844+00 - SHEET 14 OF 28
55	TC-015	A	TRACK CROSS SECTIONS - STA 2845+00 TO STA 2849+00 - SHEET 15 OF 28
56	TC-016	A	TRACK CROSS SECTIONS - STA 2850+00 TO STA 2854+00 - SHEET 16 OF 28
57	TC-017	A	TRACK CROSS SECTIONS - STA 2855+00 TO STA 2858+00 - SHEET 17 OF 28
58	TC-018	A	TRACK CROSS SECTIONS - STA 2859+00 TO STA 2863+00 - SHEET 18 OF 28
59	TC-019	A	TRACK CROSS SECTIONS - STA 2864+00 TO STA 2869+00 - SHEET 19 OF 28
60	TC-020	A	TRACK CROSS SECTIONS - STA 2870+00 TO STA 2874+00 - SHEET 20 OF 28
61	TC-021	A	TRACK CROSS SECTIONS - STA 2875+00 TO STA 2878+00 - SHEET 21 OF 28
62	TC-022	A	TRACK CROSS SECTIONS - STA 2879+00 TO STA 2881+00 - SHEET 22 OF 28
63	TC-023	A	TRACK CROSS SECTIONS - STA 2882+00 TO STA 2884+00 - SHEET 23 OF 28

SHT NO.	DWG. NO.	REV. NO.	TITLE	
TRACK (CONTINUED)				
64	TC-024	A	TRACK CROSS SECTIONS - STA 2885+00 TO STA 2890+00 - SHEET 24 OF 28	
65	TC-025	A	TRACK CROSS SECTIONS - STA 2891+00 TO STA 2894+00 - SHEET 25 OF 28	
66	TC-026	A	TRACK CROSS SECTIONS - STA 2895+00 TO STA 2898+00 - SHEET 26 OF 28	
67	TC-027	A	TRACK CROSS SECTIONS - STA 2899+00 TO STA 2902+00 - SHEET 27 OF 28	
68	TC-028	A	TRACK CROSS SECTIONS - STA 2903+00 TO STA 2906+00 - SHEET 28 OF 28	
CIVIL DRAINAGE				
69	CD-001	A	CIVIL DRAINAGE - DRAINAGE IMPROVEMENT LOCATION MAP	SHEET 1 OF 1
70	CD-002	A	CIVIL DRAINAGE - CULVERT PLAN & ELEVATION STA 2788+02 (MP 52.80)	
71	CD-003	A	CIVIL DRAINAGE - CULVERT PLAN & ELEVATION STA 2863+97 (MP 54.19)	
72	CD-004	A	CIVIL DRAINAGE - CULVERT PLAN & ELEVATION STA 2866+96 (MP 54.24)	
73	CD-005	A	CIVIL DRAINAGE - STORM DRAIN PLAN AND PROFILE - LILAC AVE & WILLOW AVE	SHEET 1 OF 4
74	CD-006	A	CIVIL DRAINAGE - STORM DRAIN PLAN AND PROFILE - RIVERSIDE AVE, SYCAMORE & ACACIA AVE	SHEET 2 OF 4
75	CD-007	A	CIVIL DRAINAGE - STORM DRAIN PLAN AND PROFILE - EUCALYPTUS AVE & PEPPER AVE	SHEET 3 OF 4
76	CD-008	A	CIVIL DRAINAGE - STORM DRAIN PLAN AND PROFILE - MERIDIAN AVE	SHEET 4 OF 4
CIVIL CROSSINGS				
77	CJ-011	A	GRADE CROSSING EXHIBIT - CACTUS AVENUE - DOT No. 026139H M.P. SG-52.19	SHEET 1 OF 30
78	CM-011	A	GRADE CROSSING IMPROVEMENT PLAN & PROFILE - CACTUS AVENUE - DOT No. 026139H M.P. SG-52.19	SHEET 2 OF 30
79	CM-012	A	SIGNAGE AND STRIPING PLAN - CACTUS AVENUE - DOT No. 026139H M.P. SG-52.19	SHEET 3 OF 30
80	CJ-021	A	GRADE CROSSING EXHIBIT - S. LILAC AVENUE - DOT No. 026138B M.P. SG-52.44	SHEET 4 OF 30
81	CM-021	A	GRADE CROSSING IMPROVEMENT PLAN & PROFILE - S. LILAC AVENUE - DOT No. 026138B M.P. SG-52.44	SHEET 5 OF 30
82	CM-022	A	SIGNAGE AND STRIPING PLAN - S. LILAC AVENUE - DOT No. 026138B M.P. SG-52.44	SHEET 6 OF 30
83	CJ-031	A	GRADE CROSSING EXHIBIT - S. WILLOW AVENUE - DOT No. 026137U M.P. SG-52.69	SHEET 7 OF 30
84	CM-031	A	GRADE CROSSING IMPROVEMENT PLAN & PROFILE - S. WILLOW AVENUE - DOT No. 026137U M.P. SG-52.69	SHEET 8 OF 30
85	CM-032	A	SIGNAGE AND STRIPING PLAN - S. WILLOW AVENUE - DOT No. 026137U M.P. SG-52.69	SHEET 9 OF 30
86	CJ-041	A	GRADE CROSSING EXHIBIT - S. RIVERSIDE AVENUE - DOT No. 026136M M.P. SG-52.94	SHEET 10 OF 30
87	CM-041	A	GRADE CROSSING IMPROVEMENT PLAN & PROFILE - S. RIVERSIDE AVENUE - DOT No. 026136M M.P. SG-52.94	SHEET 11 OF 30
88	CM-042	A	SIGNAGE AND STRIPING PLAN - S. RIVERSIDE AVENUE - DOT No. 026136M M.P. SG-52.94	SHEET 12 OF 30
89	CJ-051	A	GRADE CROSSING EXHIBIT - S. SYCAMORE AVENUE - DOT No. 026135F M.P. SG-53.19	SHEET 13 OF 30
90	CM-051	A	GRADE CROSSING IMPROVEMENT PLAN & PROFILE - S. SYCAMORE AVENUE - DOT No. 026135F M.P. SG-53.19	SHEET 14 OF 30
91	CM-052	A	SIGNAGE AND STRIPING PLAN - S. SYCAMORE AVENUE - DOT No. 026135F M.P. SG-53.19	SHEET 15 OF 30
92	CJ-061	A	GRADE CROSSING EXHIBIT - S. ACACIA AVENUE - DOT No. 026134Y M.P. SG-53.45	SHEET 16 OF 30
93	CM-061	A	GRADE CROSSING IMPROVEMENT PLAN & PROFILE - S. ACACIA AVENUE - DOT No. 026134Y M.P. SG-53.45	SHEET 17 OF 30
94	CM-062	A	SIGNAGE AND STRIPING PLAN - S. ACACIA AVENUE - DOT No. 026134Y M.P. SG-53.45	SHEET 18 OF 30
95	CJ-071	A	GRADE CROSSING EXHIBIT - S. EUCALYPTUS AVENUE - DOT No. 026133S M.P. SG-53.70	SHEET 19 OF 30
96	CM-071	A	GRADE CROSSING IMPROVEMENT PLAN & PROFILE - S. EUCALYPTUS AVENUE - DOT No. 026133S M.P. SG-53.70	SHEET 20 OF 30
97	CM-072	A	SIGNAGE AND STRIPING PLAN - S. EUCALYPTUS AVENUE - DOT No. 026133S M.P. SG-53.70	SHEET 21 OF 30
98	CJ-081	A	GRADE CROSSING EXHIBIT - S. PEPPER AVENUE - DOT No. 023132K M.P. SG-53.95	SHEET 22 OF 30
99	CM-081	A	GRADE CROSSING IMPROVEMENT PLAN & PROFILE - S. PEPPER AVENUE - DOT No. 023132K M.P. SG-53.95	SHEET 23 OF 30
100	CM-082	A	SIGNAGE AND STRIPING PLAN - S. PEPPER AVENUE - DOT NO. 023132K M.P. SG-53.95	SHEET 24 OF 30
101	CJ-091	A	GRADE CROSSING EXHIBIT - W. RIALTO AVENUE - DOT No. 026131D M.P. SG-54.54	SHEET 25 OF 30
102	CM-091	A	GRADE CROSSING IMPROVEMENT PLAN & PROFILE - W. RIALTO AVENUE - DOT No. 026131D M.P. SG-54.54	SHEET 26 OF 30
103	CM-092	A	SIGNAGE AND STRIPING PLAN - W. RIALTO AVENUE - DOT No. 026131D M.P. SG-54.54	SHEET 27 OF 30
104	CJ-101	A	GRADE CROSSING EXHIBIT - N. RANCHO AVENUE - DOT NO. 026130W M.P. SG-55.24	SHEET 28 OF 30
105	CM-101	A	GRADE CROSSING IMPROVEMENT PLAN & PROFILE - N. RANCHO AVENUE - DOT NO. 026130W M.P. SG-55.24	SHEET 29 OF 30
106	CM-102	A	SIGNAGE AND STRIPING PLAN - N. RANCHO AVENUE - DOT NO. 026130W M.P. SG-55.24	SHEET 30 OF 30
CIVIL UTILITIES				
107	U-001	A	UTILITIES PLAN - MT2 STA 2754+39 TO MT2 STA 2766+00 - SHEET 1 OF 13	
108	U-002	A	UTILITIES PLAN - MT2 STA 2766+00 TO MT2 STA 2778+00 - SHEET 2 OF 13	
109	U-003	A	UTILITIES PLAN - MT2 STA 2778+00 TO MT2 STA 2790+00 - SHEET 3 OF 13	
110	U-004	A	UTILITIES PLAN - MT2 STA 2790+00 TO MT2 STA 2802+00 - SHEET 4 OF 13	
111	U-005	A	UTILITIES PLAN - MT2 STA 2802+00 TO MT2 STA 2814+00 - SHEET 5 OF 13	
112	U-006	A	UTILITIES PLAN - MT2 STA 2814+00 TO MT2 STA 2826+00 - SHEET 6 OF 13	
113	U-007	A	UTILITIES PLAN - MT2 STA 2826+00 TO MT2 STA 2838+00 - SHEET 7 OF 13	
114	U-008	A	UTILITIES PLAN - MT2 STA 2838+00 TO MT2 STA 2850+00 - SHEET 8 OF 13	
115	U-009	A	UTILITIES PLAN - MT2 STA 2850+00 TO MT2 STA 2861+00 - SHEET 9 OF 13	
116	U-010	A	UTILITIES PLAN - MT2 STA 2861+00 TO MT2 STA 2872+00 - SHEET 10 OF 13	
117	U-011	A	UTILITIES PLAN - MT2 STA 2872+00 TO MT2 STA 2883+00 - SHEET 11 OF 13	
118	U-012	A	UTILITIES PLAN - MT2 STA 2883+00 TO MT2 STA 2895+00 - SHEET 12 OF 13	
119	U-013	A	UTILITIES PLAN - MT2 STA 2895+00 TO MT2 STA 2906+40.7 - SHEET 13 OF 13	
UPRR OVERPASS AND RETAINING WALLS				
120	TP-100	A	UPRR COLTON CUT-OFF BRIDGE PLAN, ELEVATION AND DETAIL	
121	TP-101	A	UPRR COLTON CUT-OFF BRIDGE CLEARANCE ENVELOPE DETAIL	
122	ST-100	A	RETAINING WALL TYPES	

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sb cta san bernardino county transportation authority

METROLINK

moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

INDEX OF DRAWINGS
SHEET 1 OF 2

CONTRACT NO. 16-1001411
DRAWING NO. GI-002
REVISION A
SHEET NO. 2 OF 200
SCALE NONE

6/28/2018 5:46:40 PM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-GI-002.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

INDEX OF DRAWINGS

SHT NO.	DWG. NO.	REV. NO.	TITLE	
STATION ARCHITECTURAL				
123	A-001	A	RIALTO STATION ARCHITECTURAL SYMBOLS AND NOTES	
124	A-002	A	RIALTO STATION ARCHITECTURAL ABBREVIATIONS	
125	A-101	A	RIALTO STATION SITE PLAN PATH OF TRAVEL	
126	A-102	A	RIALTO STATION OVERALL SITE PLAN	
127	A-110	A	RIALTO STATION OVERALL PLATFORM PLAN	
128	A-111	A	RIALTO STATION PARTIAL PLATFORM AND CANOPY PLAN - SHEET 1 OF 4	
129	A-112	A	RIALTO STATION PARTIAL PLATFORM AND CANOPY PLAN - SHEET 2 OF 4	
130	A-113	A	RIALTO STATION PARTIAL PLATFORM AND CANOPY PLAN - SHEET 3 OF 4	
131	A-114	A	RIALTO STATION PARTIAL PLATFORM AND CANOPY PLAN - SHEET 4 OF 4	
132	A-201	A	RIALTO STATION PLATFORM CANOPY FLOOR PLAN AND ROOF PLAN	
133	A-301	A	RIALTO STATION PLATFORM CANOPY SECTION AND ELEVATIONS	
134	A-401	A	RIALTO STATION ENLARGED CANOPY SECTION	
STATION CIVIL				
135	C-101	A	RIALTO STATION OVERALL SITE PLAN	
136	C-102	A	RIALTO STATION CONSTRUCTION PLAN	
137	C-103	A	RIALTO STATION GRADING AND DRAINAGE PLAN	
138	C-104	A	RIALTO STATION COMPOSITE EXISTING UTILITIES	
STATION STRUCTURAL				
139	S-101	A	RIALTO STATION STRUCTURAL PLAN	
140	S-102	A	RIALTO STATION PLATFORM CANOPY FOUNDATION, ROOF FRAMING, SECTION AND UNDERPASS SECTION	
141	S-103	A	RIALTO STATION RIALTO STATION STRUCTURAL FOUNDATION PLAN AT UNDERPASS	
STATION PLUMBING				
142	P-101	A	RIALTO STATION PLUMBING SYMBOLS, ABBREVIATIONS, NOTES AND FIXTURE SCHEDULE	
143	P-102	A	RIALTO STATION PLUMBING PLAN	
STATION ELECTRICAL				
144	E-101	A	RIALTO STATION ELECTRICAL NOTES, CONDUIT LAYOUT, TYPICAL SECTION AND FIXTURE SCHEDULE	
145	E-102	A	RIALTO STATION ELECTRICAL PLAN	
TRACK SIGNALS				
146	TS-001	A	SAN GABRIEL SUBDIVISION SG 53-54 CP PASADENA JCT TO CP VERNON	SHEET 1 OF 2
147	TS-002	A	SAN GABRIEL SUBDIVISION SG 53-54 CP PASADENA JCT TO CP VERNON	SHEET 2 OF 2
148	TS-003	A	SAN GABRIEL SUBDIVISION SG 55-56 CP PASADENA JCT TO CP VERNON	SHEET 1 OF 1
149	TS-004	A	SG 52.19 CACTUS AVE: CROSSING LAYOUT	SHEET 1 OF 5
150	TS-005	A	SG 52.19 CACTUS AVE: CROSSING CONTROLLER CIRCUIT PLAN	SHEET 2 OF 5
151	TS-006	A	SG 52.19 CACTUS AVE: GATES 1P & 3P CIRCUITS	SHEET 3 OF 5
152	TS-007	A	SG 52.19 CACTUS AVE: CROSSING CONTROLLER CIRCUIT PLAN	SHEET 4 OF 5
153	TS-008	A	SG 52.19 CACTUS AVE: GATES 2P & 4P CIRCUITS	SHEET 5 OF 5
154	TS-009	A	SG 52.40 INTERMEDIATES 521, 522, 523 & 524: LIGHTING CIRCUITS	SHEET 1 OF 2
155	TS-010	A	SG 52.40 INTERMEDIATES 521, 522, 523 & 524: PTC RADIO	SHEET 2 OF 2
156	TS-011	A	SG 52.44 LILAC AVE: CROSSING LAYOUT	SHEET 1 OF 4
157	TS-012	A	SG 52.44 LILAC AVE: GCP 4000 BI-DIRECTIONAL	SHEET 2 OF 4
158	TS-013	A	SG 52.44 LILAC AVE: CABLE INTERCONNECT	SHEET 3 OF 4
159	TS-014	A	SG 52.44 LILAC AVE: CROSSING CONTROLLER CIRCUIT	SHEET 4 OF 4
160	TS-015	A	SG 52.69 WILLOW AVE: CROSSING LAYOUT	SHEET 1 OF 4
161	TS-016	A	SG 52.69 WILLOW AVE: GCP 4000 BI-DIRECTIONAL	SHEET 2 OF 4
162	TS-017	A	SG 52.69 WILLOW AVE: CABLE INTERCONNECT	SHEET 3 OF 4
163	TS-018	A	SG 52.69 WILLOW AVE: CROSSING CONTROLLER CIRCUIT	SHEET 4 OF 4
164	TS-019	A	SG 52.94 RIVERSIDE AVE: CROSSING LAYOUT	SHEET 1 OF 4
165	TS-020	A	SG 52.94 RIVERSIDE AVE: GCP 4000 BI-DIRECTIONAL	SHEET 2 OF 4
166	TS-021	A	SG 52.94 RIVERSIDE AVE: CABLE INTERCONNECT	SHEET 3 OF 4
167	TS-022	A	SG 52.94 RIVERSIDE AVE: CROSSING CONTROLLER CIRCUITS	SHEET 4 OF 4
168	TS-023	A	SG 53.19 SYCAMORE AVE: CROSSING LAYOUT	SHEET 1 OF 4
169	TS-024	A	SG 53.19 SYCAMORE AVE: GCP 4000 BI-DIRECTIONAL	SHEET 2 OF 4
170	TS-025	A	SG 53.19 SYCAMORE AVE: CABLE INTERCONNECT	SHEET 3 OF 4
171	TS-026	A	SG 53.19 SYCAMORE AVE: CROSSING CONTROLLER CIRCUIT	SHEET 4 OF 4
172	TS-027	A	SG 53.45 ACACIA AVE: CROSSING LAYOUT	SHEET 1 OF 5
173	TS-028	A	SG 53.45 ACACIA AVE: GCP 4000 BI-DIRECTIONAL	SHEET 2 OF 5
174	TS-029	A	SG 53.45 ACACIA AVE: CABLE INTERCONNECT	SHEET 3 OF 5
175	TS-030	A	SG 53.45 ACACIA AVE: EGMS CIRCUIT PLAN	SHEET 4 OF 5
176	TS-031	A	SG 53.45 ACACIA AVE: CROSSING CONTROLLER CIRCUIT	SHEET 5 OF 5
177	TS-032	A	SG 53.70 EUCALYPTUS AVE: CROSSING LAYOUT	SHEET 1 OF 4

SHT NO.	DWG. NO.	REV. NO.	TITLE	
TRACK SIGNALS (CONTINUED)				
178	TS-033	A	SG 53.70 EUCALYPTUS AVE: GCP 4000 BI-DIRECTIONAL	SHEET 2 OF 4
179	TS-034	A	SG 53.70 EUCALYPTUS AVE: CABLE INTERCONNECT	SHEET 3 OF 4
180	TS-035	A	SG 53.70 EUCALYPTUS AVE: CROSSING CONTROLLER CIRCUITS	SHEET 4 OF 4
181	TS-036	A	SG 53.95 PEPPER AVE: CROSSING LAYOUT	SHEET 1 OF 4
182	TS-037	A	SG 53.95 PEPPER AVE: GCP 4000 BI-DIRECTIONAL	SHEET 2 OF 4
183	TS-038	A	SG 53.95 PEPPER AVE: CABLE INTERCONNECT	SHEET 3 OF 4
184	TS-039	A	SG 53.95 PEPPER AVE: CROSSING CONTROLLER CIRCUIT	SHEET 4 OF 4
185	TS-040	A	SG 54.03 INTERMEDIATES 521, 522, 533 & 524: LIGHTING CIRCUITS	SHEET 1 OF 2
186	TS-041	A	SG 54.03 INTERMEDIATES 521, 522, 533 & 524: PTC RADIO	SHEET 2 OF 2
187	TS-042	A	SG 54.54 RIALTO AVE: CROSSING LAYOUT	SHEET 1 OF 4
188	TS-043	A	SG 54.54 RIALTO AVE: GCP 4000 BI-DIRECTIONAL	SHEET 2 OF 4
189	TS-044	A	SG 54.54 RIALTO AVE: CABLE INTERCONNECT	SHEET 3 OF 4
190	TS-045	A	SG 54.54 RIALTO AVE: SSCC 1 & 2 CROSSING CONTROLLER	SHEET 4 OF 4
191	TS-046	A	SG 54.99 REMOTE HOUSE: CROSSING CIRCUIT PLAN	SHEET 1 OF 1
192	TS-047	A	SG 55.00 CP RIALTO: ASPECT SHEET	SHEET 1 OF 4
193	TS-048	A	SG 55.00 CP RIALTO - RADIO: BLOCK DIAGRAM	SHEET 2 OF 4
194	TS-049	A	SG 55.00 CP RIALTO: RADIO	SHEET 3 OF 4
195	TS-050	A	SG 55.00 CP RIALTO: SWITCH 1 CIRCUITS	SHEET 4 OF 4
196	TS-051	A	SG 55.24 RANCHO AVE: CROSSING LAYOUT	SHEET 1 OF 5
197	TS-052	A	SG 55.24 RANCHO AVE: GCP 4000 BI-DIRECTIONAL	SHEET 2 OF 5
198	TS-053	A	SG 55.24 RANCHO AVE: CABLE INTERCONNECT	SHEET 3 OF 5
199	TS-054	A	SG 55.24 RANCHO AVE: EGMS CIRCUIT PLAN	SHEET 4 OF 5
200	TS-055	A	SG 55.24 RANCHO AVE: CROSSING CONTROLLER CIRCUIT	SHEET 5 OF 5

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE	DESCRIPTION	BY	APP.
1	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sbcta san bernardino county transportation authority

METROLINK

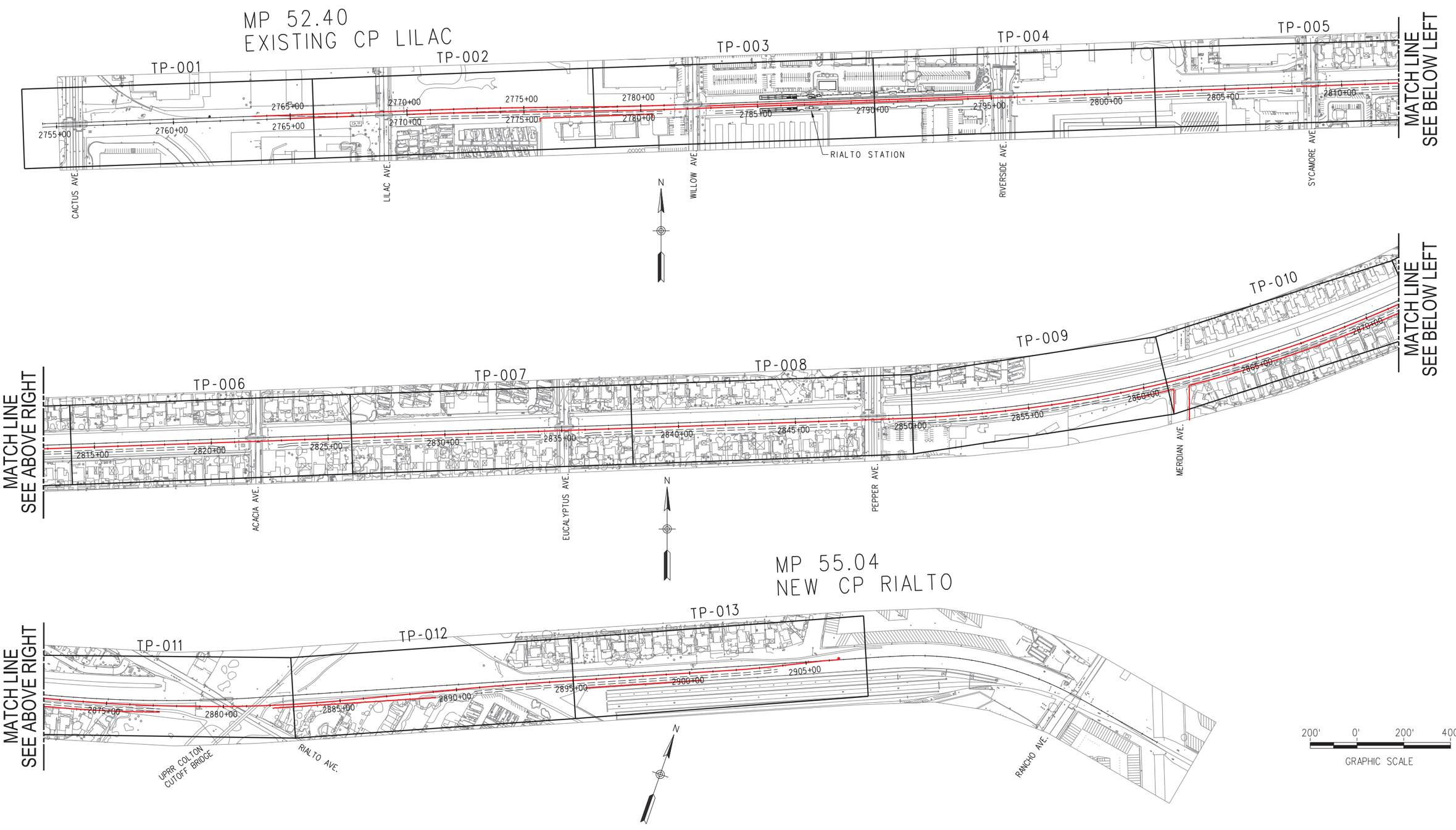
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

INDEX OF DRAWINGS
SHEET 2 OF 2

CONTRACT NO. 16-1001411
DRAWING NO. GI-003
REVISION A
SHEET NO. 3 OF 200
SCALE NONE



FINAL 30% SUBMITTAL (06-29-2018)

6/28/2018 5:46:44 PM USER = jadderson
G:\R3503\CADD\Master\Sheet\SLRD7202GI004.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
V	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

DESIGNED BY	J. AVENDANO
DRAWN BY	J. SANTA ANA
CHECKED BY	J. AVENDANO
APPROVED BY	S. MANSOUR
DATE	06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. ____ Exp. ____ CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

moffatt & nichol

SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

PROJECT INDEX MAP
SHEET 1 OF 1

CONTRACT NO.	16-1001411
DRAWING NO.	GI-004
REVISION	A
SHEET NO.	4 OF 200
SCALE	NONE

SYMBOLS

	EXISTING	PROPOSED
FIRE HYDRANT		
WATER VALVE		
IRRIGATION CONTROL VALVE		
UTILITY CLEANOUT		
VENT		
LIGHT POLE		
RAIL-ROAD SIGNAL LIGHT		
LIGHT SIGNAL		
MAILBOX		
ELECTRICAL RISER		
POWER POLE		
GROUND LIGHT		
ELECTRICAL BOX		
ELECTRICAL CONDUIT		
GUY WIRE		
STORM DRAIN PIPE		
GUARD POST		
SIGN POST		
ANTENNA		
RAIL-ROAD CROSSING SIGNAL		
STREET LIGHT		
UTILITY VALVE		
GAS VALVE		
TREE		
PALM TREE		
UTILITY MANHOLE		
UTILITY JUNCTION BOX		
UTILITY VAULT		
RAILROAD SIGNAL CABINET		
BOLLARD		
CATCH BASIN		
SURVEY CONTROL POINT		
RAILROAD CROSSING SIGNAL OVERHEAD		
RAILROAD SIGNAL HOUSE		
MILE POST		

	EXISTING	PROPOSED
POINT OF SWITCH (HAND-THROW TURNOUT)		
POINT OF SWITCH (HAND-THROW TURNOUT WITH ELECTRIC LOCK)		
POINT OF SWITCH (POWER OPERATED TURNOUT)		
RETAINING WALL		
FENCE (CHAINLINK)		
HEADWALL		
RIGHT-OF-WAY		
SLOPE		
CENTERLINE OF TRACK		
ROW SECURITY ACCESS GATE		

UTILITIES

UTILITY CABLE TV	CATV
UTILITY CABLE TV (OH)	CATV(OH)
UTILITY CABLE TV ABANDONED	CATV
UTILITY CABLE TV DEMO	CATV
UTILITY COMMUNICATION	COMM
UTILITY COMMUNICATION (OH)	COMM(OH)
UTILITY COMMUNICATION ABANDONED	COMM
UTILITY COMMUNICATION DEMO	COMM
UTILITY COMPRESSED AIR	AIR
UTILITY COMPRESSED AIR ABANDONED	AIR
UTILITY COMPRESSED AIR DEMO	AIR
UTILITY ELECTRIC	E
UTILITY ELECTRIC (OH)	E(OH)
UTILITY ELECTRIC (OH) ABANDONED	E(OH)
UTILITY ELECTRIC (OH) DEMO	E(OH)
UTILITY ELECTRIC ABANDONED	E
UTILITY ELECTRIC DEMO	E
UTILITY FIBER OPTIC	FOC
UTILITY FIBER OPTIC (OH)	FOC(OH)
UTILITY FIBER OPTIC ABANDONED	FOC
UTILITY FIBER OPTIC DEMO	FOC
UTILITY FIRE WATER	FW
UTILITY FIRE WATER ABANDONED	FW
UTILITY FIRE WATER DEMO	FW
UTILITY FUEL	FUEL
UTILITY FUEL ABANDONED	FUEL
UTILITY FUEL DEMO	FUEL
UTILITY GAS	G
UTILITY GAS ABANDONED	G
UTILITY GAS DEMO	G
UTILITY HOT WATER	HW
UTILITY HOT WATER ABANDONED	HW
UTILITY HOT WATER DEMO	HW
UTILITY INDF	INDF
UTILITY INDF ABANDONED	INDF
UTILITY INDF DEMO	INDF
UTILITY IRRIGATION	IRR
UTILITY IRRIGATION ABANDONED	IRR
UTILITY IRRIGATION DEMO	IRR
UTILITY LITE	LITE
UTILITY LITE ABANDONED	LITE
UTILITY LITE DEMO	LITE
UTILITY OIL	O
UTILITY OIL ABANDONED	O
UTILITY OIL DEMO	O
UTILITY SANITARY SEWER	SS
UTILITY SANITARY SEWER ABANDONED	SS
UTILITY SANITARY SEWER DEMO	SS
UTILITY SIGNAL	SIG
UTILITY SIGNAL ABANDONED	SIG
UTILITY SIGNAL DEMO	SIG
UTILITY STORM DRAIN	SD
UTILITY STORM DRAIN ABANDONED	SD
UTILITY STORM DRAIN DEMO	SD
UTILITY TELEPHONE (OH)	TEL(OH)
UTILITY TELEPHONE (OH) ABANDONED	TEL(OH)
UTILITY TELEPHONE (OH) DEMO	TEL(OH)
UTILITY TELEPHONE	TEL
UTILITY TELEPHONE ABANDONED	TEL
UTILITY TELEPHONE DEMO	TEL
UTILITY TRENCH DRAIN	TD
UTILITY TRENCH DRAIN ABANDONED	TD
UTILITY TRENCH DRAIN DEMO	TD
UTILITY UNDER DRAIN	UD
UTILITY UNDER DRAIN ABANDONED	UD
UTILITY UNDER DRAIN DEMO	UD
UTILITY UNKNOWN ID	UNID
UTILITY UNKNOWN ID ABANDONED	UNID
UTILITY UNKNOWN ID (OH)	UNID(OH)
UTILITY UNKNOWN ID DEMO	UNID
UTILITY WATER	W
UTILITY WATER ABANDONED	W
UTILITY WATER DEMO	W

SIGNALS

- D.C. NEUTRAL RELAY (1E 500 3E)
- RELAY CONTACT
- TWISTED WIRE
- EARTH GROUND
- TEST TERMINAL
- INCANDESCENT LAMP
- L.E.D. LAMP
- BATTERY CHOKE REACTOR
- SIMULATED TRACK (DUMMY LOAD) (XXXX')
- LIGHTNING ARRESTER
- EQUALIZING ARRESTER
- HEAVY DUTY LIGHTNING ARRESTER
- DIODE
- FUSE (X-AMPS)
- CIRCUIT BREAKER (15)
- WAGO CIRCUIT WIRE CONNECTION
- BATTERY BUSS (XX)
- MAIN CROSSING HOUSE (8X6)
- DOUBLE TRACK CANTILEVER SIGNAL
- FLASHING LIGHT SIGNAL
- CROSSING GATE (C B A)
- VITAL VEHICLE DETECTION LOOP (LOOP #)
- SEMI-BIDIRECTIONAL WARNING DEVICE (XXXHZ)
- BIDIRECTIONAL WARNING DEVICE (XXXHZ)
- UNIDIRECTIONAL WARNING DEVICE (XXXHZ)
- TUNED RAIL JOINT COUPLER (TJC XXX HZ)
- RING-10 RECTIFIER
- NARROW BAND TERMINATION SHUNT-2 (NBS-2 XXX HZ)
- CROSSING BELL
- WATTMETER

PATTERNS

- BALLAST
- SUBBALLAST
- SUBGRADE
- CONCRETE
- WALKWAY ROCK

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	APP.
1	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER, No. Exp. CIVIL, STATE OF CALIFORNIA

sb cta san bernardino county transportation authority

METROLINK

moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT
SYMBOLS

CONTRACT NO. 16-1001411
DRAWING NO. GI-005
REVISION A
SHEET NO. 5 OF 200
SCALE NONE

6/28/2018 5:46:47 PM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-GI-005.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCRRA_D_Size_PDF.pltcfg

ABBREVIATIONS

AC	ASPHALT CONCRETE
ADA	AMERICAN DISABILITIES ACT
AGG	AGGREGATE
AP	ANGLE POINT
APPROX	APPROXIMATELY
AVE	AVENUE
BB	BEGINNING OF BRIDGE
BC	BEGINNING OF CURVE
BEG	BEGIN or BEGINNING
BLVD	BOULEVARD
BIR	BOTTOM OF RAIL
CB	CATCH BASIN
CA, CAL	CALIFORNIA
CAL TRANS	CALIFORNIA DEPARTMENT OF TRANSPORTATION
CI	CAST IRON
CIDH	CAST IN DRILLED HOLES
CIP	CAST IRON PIPE, CAST IN PLACE
℄	CENTERLINE
CLR	CLEAR, CLEARANCE
CMP	CORRUGATED METAL PIPE
CMPA	CORRUGATED METAL PIPE (ARCH)
co	CLEAN OUT
COMM	COMMUNICATION
COMP	COMPROMISE JOINT
CONC	CONCRETE
CP	CONTROL POINT
CS	CURVE TO SPIRAL
CSP	CORRUGATED STEEL PIPE
CPUC, PUC	CALIFORNIA PUBLIC UTILITIES COMMISSION
Dc	DEGREE OF CURVATURE CHORD DEFINITION
DESC	DESCRIPTION
DI	DRAINAGE INLET, DUCTILE IRON
DIA,	DIAMETER
DIARGCL	DUCTILE IRON TYPE RUBBER GASKET CEMENT LINED
DOT	DEPARTMENT OF TRANSPORTATION
DR	DRIVE
DWG	DRAWING
(E) EX, EXIST E	EXISTING, EAST, EASTERLY, EASTING, EXPANSION END
Ea	SUPERELEVATION (ACTUAL)
EB	END OF BRIDGE
EC	END OF CURVE
EF	EACH FACE
EFWBW	EAST FACE OF WEST BACK WALL
EG	EXISTING GRADE
ELEC	ELECTRIC, ELECTRICAL
EL, ELEV	ELEVATION
ESMT	EASEMENT
Eu	SUPERELEVATION (UNBALANCED)
F	FIXED END
FES	FLARED END SECTION
FF	FAR FACE
FG	FINISHED GRADE
FG-	FASCIA GIRDER NUMBER
FL	FLOW LINE
FO	FIBER OPTIC
FRA	FEDERAL RAILROAD ADMINISTRATION
FS	FINISHED SURFACE
FT	FOOT, FEET
GALV	GALVANIZED
GB	GRADE BREAK
HDPE	HIGH-DENSITY POLYETHYLENE
HMA	HOT-MIX ASPHALT
HMAC	HOT-MIX ASPHALT CONCRETE
HORIZ	HORIZONTAL
HPG	HIGH PRESSURE GAS
HW	HEADWALL
HT	HAND THROW
HTTO	HAND THROW TURNOUT
IND	INDUSTRY
INV	TRACK INVERT
IP	IRON PIPE
L	LENGTH
LA	LOS ANGELES
LACDPW	LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
LADWP	LOS ANGELES DEPARTMENT OF WATER AND POWER
LH	LEFT HAND
LOL	LAYOUT LINE
LT	LEFT
Ls	LEAD TRACK LENGTH OF SPIRAL
ML	MAINLINE
MAX	MAXIMUM
MCW	MAINS COLD WATER
MED	MEDIAN
METRO	LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY
MIN	MINIMUM
MP	MILEPOST
MT	MAIN TRACK
MWD	MUNICIPAL WATER DISTRICT
N	NORTH, NORTHERLY, NORTHING
NF	NEAR FACE
NIC	NOT IN CONTRACT
NO	NUMBER, NORTHERN
NTS	NOT TO SCALE
N/A	NOT APPLICABLE
OC, O/C	ON CENTER
OD	OUTSIDE DIAMETER
OG	ORIGINAL GROUND
OP	OVERPASS
PA	POLYAMIDE
PB	PULL BOX
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE
PC/PS	PRECAST PRESTRESSED
PE	POLYETHYLENE
PED	PEDESTRIAN
PERF	PERFORATED
PH	POTHOLE
PI	POINT OF INTERSECTION
PITO	POINT OF INTERSECTION OF TURNOUT
PL	PLACE
PO	POWER OPERATED
POB	POINT OF BEGINNING
POC	POINT ON CURVE
POE	POINT OF ENDING
POT	POINT ON TANGENT
POTO	POWER OPERATED TURNOUT
PPSI	PACIFIC PIPELINE SYSTEM, LLC
PRC	POINT OF REVERSE CURVATURE
PROP	PROPOSED
PS	POINT OF SWITCH
PVC	POINT OF VERTICAL CURVE, POLYVINYL CHLORIDE
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENT
R	RADIUS
RBM	RAILBOUND MANGANESE
RCB	REINFORCED CONCRETE BOX
RCFC & WCD	RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
RCP	REINFORCED CONCRETE PIPE
REQ'D	REQUIRED
RR	RAILROAD
RSP	ROCK SLOPE PROTECTION
RT	RIGHT
RH	RIGHT HAND
R/W OR ROW	RIGHT-OF-WAY
S	SOUTH, SOUTHERLY, SLOPE
SBCTA	SAN BERNARDINO COUNTY TRANSPORTATION AUTHORITY
SC	SPIRAL TO CURVE
SCE	SOUTHERN CALIFORNIA EDISON
SCRRA	SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
SD	STORM DRAIN
SDMH	STORM DRAIN MANHOLE
SHT	SHEET
SIG	SIGNAL
SMSR	SOLID MANGANESE SPRING RAIL
SO	SOUTHERN
SPA	SPACING
SPPWC	STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION
SSMH	SANITARY SEWER MANHOLE
ST	SPIRAL TO TANGENT, STREET
STA	STATION
STD	STANDARD
STRUCT	STRUCTURE
T	TANGENT
T/C	TRACK CENTER(S)
TC	TOP OF CURB
TG	TOP OF GRATE
TO	TURNOUT
TOT	TOTAL
T/R	TOP OF RAIL
TR	TAPERED RAIL
TRK	TRACK
TS	TANGENT TO SPIRAL
TYP, (TYP)	TYPICAL
UD	UNDERDRAIN
UP	UNDERPASS
UPRR	UNION PACIFIC RAILROAD
V	SPEED
VI	SPEED OF FREIGHT
Vp	SPEED OF PASSENGER
VERT	VERTICAL
VCP	VITRIFIED CLAY PIPE
W	WEST, WESTERLY
W/	WITH
WFEBW	WEST FACE OF EAST BACK WALL
WWM	WELDED WIRE MESH
XING	CROSSING
XO, XOVER	CROSSOVER

FINAL 30% SUBMITTAL (06-29-2018)

6/28/2018 5:46:48 PM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-GI-006.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB. APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sb cta san bernardino county transportation authority

METROLINK.

moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
ABBREVIATIONS

CONTRACT NO. 16-1001411
DRAWING NO. GI-006
REVISION A
SHEET NO. 6 OF 200
SCALE NONE

GENERAL NOTES

1. THE CONTRACTOR SHALL COMPLY WITH ALL LOCAL, STATE, AND FEDERAL SAFETY CODES, REGULATIONS, AND SPECIFICATIONS FOR THIS CONTRACT.

2. ALL CONSTRUCTION ACTIVITIES SHALL BE SCHEDULED AND COORDINATED WITH THE ENGINEER AND THE VARIOUS COMPANIES, AGENCIES, AND OTHER CONTRACTORS WHO MAY BE AFFECTED BY THIS WORK.

3. HORIZONTAL AND VERTICAL CONTROL POINTS FOR THE SITE LAYOUT ARE IDENTIFIED IN THE CONTRACT DOCUMENTS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO UTILIZE THESE CONTROL POINTS TO ASSURE THAT ALL FACILITIES INCLUDED IN PROJECT ARE CONSTRUCTED AT THE CORRECT HORIZONTAL AND VERTICAL LOCATIONS.

4. SECTION 4216/4217 OF THE GOVERNMENT CODE REQUIRES A DIG ALERT IDENTIFICATION NUMBER BE ISSUED BEFORE A "PERMIT TO EXCAVATE" IS VALID. THE CONTRACTOR SHALL CALL THE UNDERGROUND SERVICE ALERT (1-800-422-4133) TWO (2) WORKING DAYS PRIOR TO CONSTRUCTION TO OBTAIN A DIG ALERT ID NUMBER.

5. CALIFORNIA SENATE BILL 1359 (APPROVED 2006) OUTLINES PROCEDURES FOR LOCATING UTILITIES BY HAND EXCAVATION. THE CONTRACTOR SHALL BECOME FAMILIAR WITH THIS LEGISLATION AND COMPLY WITH ITS DIRECTIVE. PRIOR TO EACH CONSTRUCTION ACTIVITY WITHIN RAILROAD RIGHT-OF-WAY, THE CONTRACTOR SHALL NOTIFY RAILROAD'S SIGNAL REPRESENTATIVE.

6. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS FOR CONFLICTS WITH EXISTING UTILITIES, SIGNAL CABLES/EQUIPMENT, FIBER OPTIC LINES, AND/OR OTHER ITEMS THAT MIGHT IMPAIR CONSTRUCTION ACTIVITIES. INCONSISTENCIES FOUND SHALL BE REPORTED TO THE ENGINEER.

7. REPAIRS TO THE DAMAGED MATERIALS OR FACILITIES INTENDED TO REMAIN IN PLACE SHALL BE MADE BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE UNLESS OTHERWISE STATED BY THE ENGINEER.

8. ALL EXCAVATED WASTE MATERIAL SHALL BE IMMEDIATELY REMOVED FROM THE SITE. ON SITE STORAGE OF EXCAVATED WASTE MATERIAL SHALL NOT BE PERMITTED AT ANY TIME.

9. DEFINITIONS:

   A. TRACK OUTAGE: TRACK WHICH IS OUT OF SERVICE FOR A GIVEN PERIOD OF TIME.

   B. ACTIVE TRACK: TRACK ON WHICH TRAINS ARE OPERATING AND INTERRUPTION OF SERVICE MAY OCCUR ONLY WITHIN AN APPROVED "WINDOW" AS DEFINED BELOW.

   C. FOULED TRACK: TRACK IS FOULED WHEN AN OBSTRUCTION IS PLACED WITHIN EIGHT (8) FEET FROM THE CENTERLINE OF THE TRACK OR WHEN AN OVERHEAD OBSTRUCTION IS PLACED WITHIN TWENTY TWO AND A HALF FEET (22'-6") ABOVE THE TOP OF RAIL.

   D. WINDOW: A GIVEN PERIOD OF TIME BETWEEN OPERATING TRAINS WHERE A TRACK MAY BE FOULED WITH THE STIPULATION THAT THE TRACK SHALL BE BACK IN SERVICE AT THE END OF THE GIVEN PERIOD OF TIME.

10. ON SITE CONSTRUCTION BY OTHERS (RAILROAD SIGNAL FORCES, SPRINT, UTILITIES, ETC.) MAY OCCUR DURING THE CONSTRUCTION PERIOD OF THIS CONTRACT. THE CONTRACTOR SHALL COORDINATE CONSTRUCTION ACTIVITIES WITH THE ENGINEER SO AS TO MINIMIZE INTERFERENCE WITH OTHERS.

11. PRIOR TO COMMENCING WORK, ALL EXISTING SITE CONDITIONS SHALL BE FIELD VERIFIED WITH THE ENGINEER TO ASCERTAIN THE LIMITS OF WORK ACTIVITIES. THE CONTRACTOR SHALL SUBMIT AND RECEIVE THE ENGINEER'S APPROVAL OF THE PROJECT SCHEDULE AND OPERATIONS PLAN. EACH ITEM OF WORK SHALL BE DESCRIBED AND ACCOUNTED FOR IN THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL REFER TO THE SPECIFICATIONS FOR FURTHER INFORMATION REGARDING SUBMITTAL REQUIREMENTS.

12. RAIL TRAFFIC DISRUPTIONS SHALL BE KEPT TO A MINIMUM. DISRUPTIONS IN RAIL TRAFFIC THAT MAY BE REQUIRED SHALL BE COORDINATED WITH THE ENGINEER BEFOREHAND. NO SUCH WORK SHALL BE COMMENCED WITHOUT THE ENGINEER'S APPROVAL. WORK AFFECTING THE MOVEMENT OF TRAINS WILL BE UNDER THE AUTHORITY AND OVERALL CONTROL OF THE ENGINEER OR HIS REPRESENTATIVE. AMTRAK INTERCITY, METROLINK COMMUTER AND FREIGHT TRAIN OPERATIONS MUST BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD.

13. THE CONTRACTOR SHALL NOT PLACE MATERIAL AND/OR EQUIPMENT WITHIN TWENTY (20) FEET OF AN ACTIVE TRACK AT ANY TIME WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

14. WALKWAYS SHALL BE PLACED AS REQUIRED BY CALIFORNIA PUBLIC UTILITIES COMMISSION GENERAL ORDER NO. 118 AND 26D FOR ALL NEW CONSTRUCTION, UNLESS OTHERWISE NOTED.

15. THE CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY, THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT LIMITED TO NORMAL WORKING HOURS, AND THE CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY HOLD SBCTA, SCRRA AND THE DESIGN PROFESSIONAL HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT.

16. THE LOCATIONS AND DIMENSIONS SHOWN ON THE PLANS FOR EXISTING FACILITIES ARE IN ACCORDANCE WITH AVAILABLE INFORMATION WITHOUT UNCOVERING AND MEASURING. THE ENGINEER DOES NOT GUARANTEE THE ACCURACY OF THIS INFORMATION OR THAT ALL EXISTING UNDERGROUND FACILITIES ARE SHOWN.

17. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE APPLICABLE CODES, ORDINANCES, AND STANDARD SPECIFICATIONS OF ALL AGENCIES THAT HAVE THE RESPONSIBILITY OF REVIEWING PLANS AND SPECIFICATIONS FOR CONSTRUCTION OF ALL ITEMS PER THESE PLANS AND SPECIFICATIONS IN THIS LOCALITY.

18. THE CONTRACTOR SHALL OBTAIN ALL THE NECESSARY PERMITS AND PAY PERMIT FEES AS REQUIRED FOR CONSTRUCTION OF THIS PROJECT.

19. THE CONTRACTOR SHALL CLEAN UP ALL DEBRIS AND MATERIALS RESULTING FROM HIS OPERATION AND RESTORE ALL SURFACES, STRUCTURES, DITCHES AND PROPERTY TO ITS ORIGINAL CONDITION TO THE SATISFACTION OF THE ENGINEER.

20. CONTRACTOR SHALL PROVIDE FOR THE CONTINUOUS OPERATION OF THE EXISTING FACILITY WITHOUT INTERRUPTION DURING CONSTRUCTION UNLESS SPECIFICALLY AUTHORIZED OTHERWISE BY THE RESPECTIVE AUTHORITY.

21. CONTRACTOR TO IDENTIFY DEPTH AND LOCATION OF ALL EXISTING UNDERGROUND UTILITIES. FOR LOCATION OF SIGNALS AND COMMUNICATION CONDUITS CONTACT RAILROAD SIGNAL DEPARTMENT.

22. NEW MAINLINE TRACKS SHALL BE 136RE CONTINUOUSLY WELDED RAIL (CWR) WITH PANDROL CLIPS AND CONCRETE TIES.

23. MINIMUM SUB BALLAST DEPTH THROUGHOUT THE PROJECT LIMITS SHALL BE DICTATED BY THE FINAL RECOMMENDATIONS OF THE PROJECT'S GEOTECHNICAL REPORT. FINAL DESIGN TEAM TO DICTATE THE LIMITS OF THE MINIMUM SUB BALLAST DEPTH IN THE TRACK PLAN AND PROFILE DRAWINGS.

24. BALLAST MATS WILL BE INSTALLED UNDER THE BALLAST OF THE SOUTHSIDE TRACK AT THE FOLLOWING LOCATIONS TO ADDRESS VIBRATION IMPACT:

    1) FROM STA 2807+00 TO 2812+70

    2) FROM STA 2860+50 TO 2876+00

    3) FROM STA 2880+00 TO 2895+00

FINAL 30% SUBMITTAL (06-29-2018)

6/28/2018 5:46:49 PM USER = jcalderon
Q:\LB\9503\CADD\Master\Sheets\LR01212-GI-007.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB. APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sbcta san bernardino county transportation authority

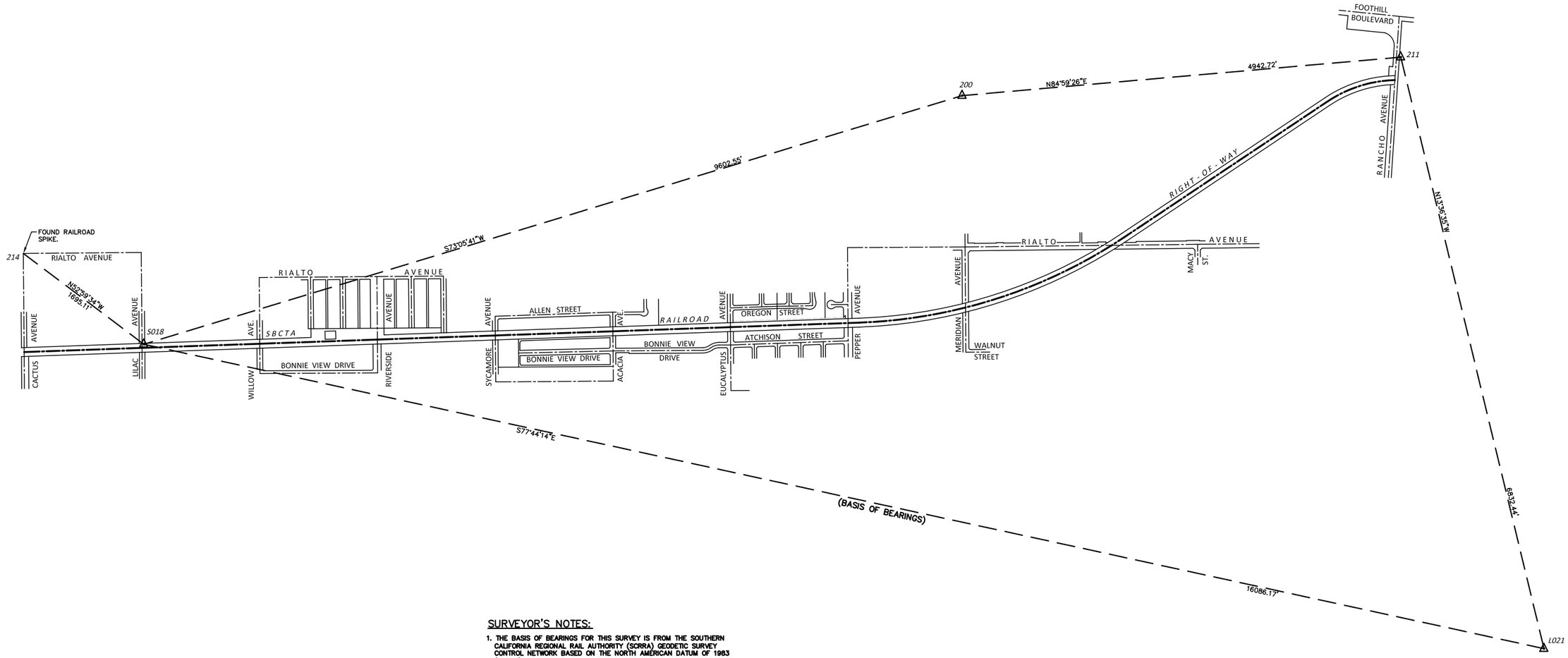
METROLINK.

moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
GENERAL NOTES

CONTRACT NO. 16-1001411
DRAWING NO. GI-007
REVISION A
SHEET NO. 7 OF 200
SCALE NONE



SURVEYOR'S NOTES:

1. THE BASIS OF BEARINGS FOR THIS SURVEY IS FROM THE SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY (SCRRA) GEODETIC SURVEY CONTROL NETWORK BASED ON THE NORTH AMERICAN DATUM OF 1983 (NAD83), CALIFORNIA COORDINATE SYSTEM ZONE 5, EPOCH 2010 (2011, MA11, PA11), AS DETERMINED LOCALLY DURING GPS OBSERVATION IN JULY 2016 BY A LINE BETWEEN SCRRA STATIONS S018 AND L021 SHOWN AS S77°44'14"E ON THIS MAP.
2. THE BEARING "TIE LINE" FROM SCRRA STATION S018 TO THE FOUND MONUMENT AT THE INTERSECTION OF RIALTO AVENUE WITH CACTUS AVENUE IS CALCULATED AS N52°59'34"W.
3. SCRRA STATIONS S018 AND L021 ADJACENT FROM THE SAN GABRIEL SUBDIVISION WERE FIXED IN THE HORIZONTAL AND VERTICAL COMPONENTS.
4. DISTANCES SHOWN HEREON ARE GRID DISTANCES. GROUND DISTANCES MAY BE OBTAINED BY DIVIDING GRID DISTANCES BY THE AVERAGE COMBINATION FACTOR OF 0.99993503.

LEGEND:

△ – PRIMARY AND SECONDARY CONTROL MONUMENTS

SBCTA – SAN BERNARDINO COUNTY TRANSPORTATION AUTHORITY

SURVEY CONTROL MONUMENTS

POINT #	NORTHING	EASTING	ELEVATION (NAVD 88)	DESCRIPTION
S018	1858148.36	6749671.72	1213.232'	FD. 2" BRASS DISK STAMPED "SAN BERNARDINO COUNTY SURVEYOR BENCH MARK RESET NO. 700-6 1973" (NGS BM PID EV3223)
L021	1854731.71	6765390.86	1062.009'	FD. 2" ALUMINUM DISK STAMPED "SCRRA CONTROL L021"
200	1860940.71	6758859.31	1196.20'	SET 1" BRASS MON. STAMPED "WES INC. CONTROL"
211	1861372.31	6763783.14	1132.98'	SET 80D NAIL
214	1859168.67	6748318.07	1231.98'	FD. RAILROAD SPIKE

NOT FOR CONSTRUCTION

REV.	DATE		BY	APP.
A	06/29/18	30% SUBMITTAL – PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	AVA	SAW

INFORMATION CONFIDENTIAL:
All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential; and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY	A. V. ABAD
DRAWN BY	A. V. ABAD
CHECKED BY	L. CARLSON
APPROVED BY	S. A. WAGNER
DATE	06-29-2018

LICENSED LAND SURVEYOR STEPHANIE A. WAGNER No. 5752 STATE OF CALIFORNIA

sbcta san bernardino county transportation authority

METROLINK

WAGNER ENGINEERING & SURVEY, INC

SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

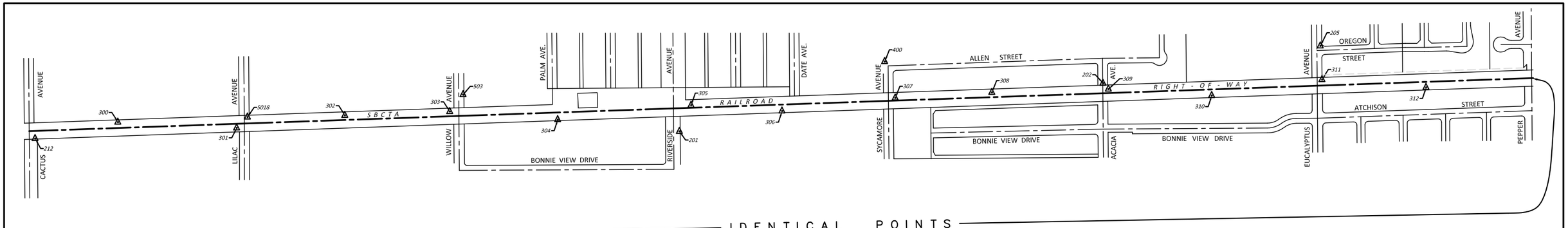
CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

SURVEY CONTROL PLAN
PRIMARY CONTROL NETWORK
SHEET 1 OF 2

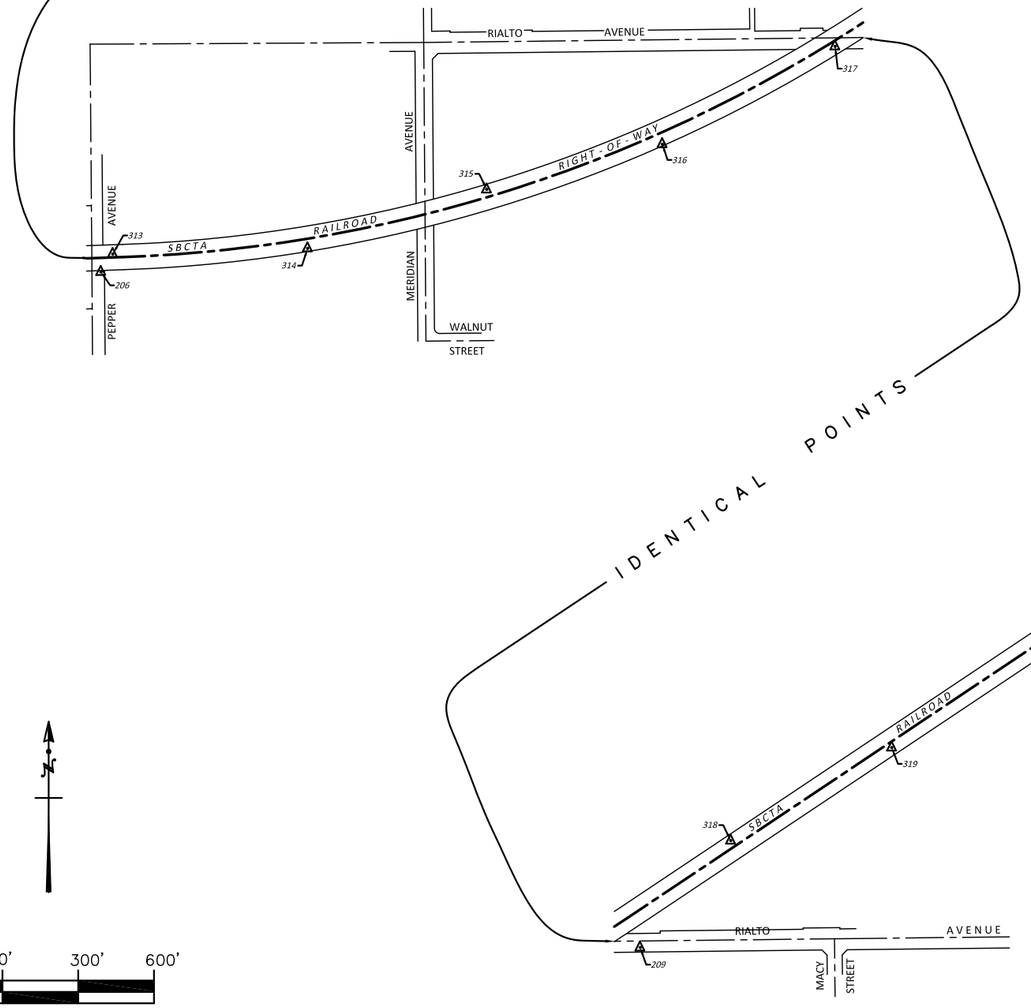
CONTRACT NO.	16-1001411
DRAWING NO.	VJ-001
REVISION	A
SHEET NO.	8 OF 200
SCALE	AS NOTED

FINAL 30% SUBMITTAL (06-29-2018)

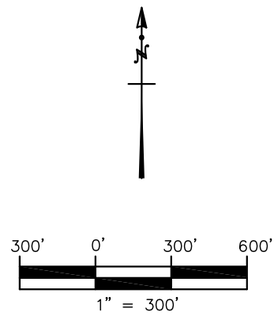
5/30/2018 9:01:40 AM hugo
W:\2300\2316-001 Lilac to Rancho Double Track\Mapping\Survey Control Plan\Lilac-Rancho-Survey Control Plan-S1.dgn
W:\Mircostation Project Workspace\Metrolink\data\PlotStampFULL.tbl
W:\Mircostation Project Workspace\Metrolink\plotcfg SCCRA_D_Size_PDF.pltcfg



IDENTICAL POINTS



IDENTICAL POINTS



SURVEY CONTROL MONUMENTS

POINT #	NORTHING	EASTING	ELEVATION (NAVD 88)	DESCRIPTION
5018	1858148.36	6749671.72	1213.232'	FD. 2" BRASS DISK STAMPED "SAN BERNARDINO COUNTY SURVEYOR BENCH MARK RESET NO. 700-8 1973"
201	1858059.78	6752330.96	1202.96'	SET MAG NAIL
202	1858356.05	6754938.61	1194.86'	SET 1" BRASS MON. STAMPED "WES INC. CONTROL"
205	1858585.17	6756276.65	1187.10'	SET MAG NAIL
206	1858333.05	6757613.61	1175.18'	SET MAG NAIL
209	1859236.05	6760732.34	1167.08'	LEAD AND TACK
210	1861054.83	6763680.37	1134.57'	SET MAG NAIL
212	1858016.36	6748364.26	1220.12'	SET 1" BRASS MON. STAMPED "WES INC. CONTROL"
300	1858116.90	6748873.84	1215.41'	SET 1" IRON PIPE WITH PLUG
301	1858081.56	6749605.00	1213.06'	SET 1" IRON PIPE WITH PLUG
302	1858158.26	6750271.12	1210.12'	SET 1" IRON PIPE WITH PLUG
303	1858181.81	6750916.97	1208.96'	SET 1" IRON PIPE WITH PLUG
304	1858132.58	6751581.56	1207.65'	SET 1" IRON PIPE WITH PLUG
305	1858220.62	6752402.62	1204.16'	SET 1" IRON PIPE WITH PLUG
306	1858185.21	6752962.47	1199.76'	SET 1" IRON PIPE WITH PLUG
307	1858265.21	6753659.34	1199.56'	SET 1" IRON PIPE WITH PLUG
308	1858299.96	6754254.62	1194.13'	SET 1" IRON PIPE WITH PLUG
309	1858319.77	6754971.79	1193.02'	SET 1" IRON PIPE WITH PLUG
310	1858280.88	6755607.92	1186.53'	SET 1" IRON PIPE WITH PLUG
311	1858378.27	6756286.90	1185.21'	SET 1" IRON PIPE WITH PLUG
312	1858330.46	6756927.33	1177.75'	SET 1" IRON PIPE WITH PLUG
313	1858403.85	6757660.44	1174.99'	SET 1" IRON PIPE WITH PLUG
314	1858426.41	6758431.80	1169.08	SET 1" IRON PIPE WITH PLUG
315	1858659.52	6759140.73	1163.78'	SET 1" IRON PIPE WITH PLUG
316	1858838.49	6759836.18	1168.21'	SET 1" IRON PIPE WITH PLUG
317	1859225.69	6760520.02	1167.98'	SET 1" IRON PIPE WITH PLUG
318	1859659.26	6761090.90	1162.85'	SET 1" IRON PIPE WITH PLUG
319	1860027.72	6761728.35	1160.37'	SET 1" IRON PIPE WITH PLUG
320	1860439.13	6762363.68	1149.88'	SET 1" IRON PIPE WITH PLUG
321	1860868.02	6762991.76	1140.33'	SET 1" IRON PIPE WITH PLUG
322	1861127.88	6763616.51	1134.86'	SET 1" IRON PIPE WITH PLUG
400	1858489.29	6753594.53	1201.87'	SET MAG NAIL
503	1858286.00	6750998.97	1210.27'	SET MAG NAIL

FINAL 30% SUBMITTAL (06-29-2018)

5/30/2018 9:00:40 AM hugog
W:\32601\2316-001 Lilac To Rancho Double Track\Mapping\Survey Control Plan\Lilac-Rancho-Survey Control Plan-S1.dgn
W:\Mircostation Project Workspace\Metrolink\data\PlotStampFULL.tbl
W:\Mircostation Project Workspace\Metrolink\plotcfg SCCRA_D_Size_PDF.pltcfg

REV.	DATE		BY	SUB.	APP.
0	06/29/18	30% SUBMITTAL – PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	AVA		SAW

NOT FOR CONSTRUCTION

INFORMATION CONFIDENTIAL:
All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential; and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY A. V. ABAD
DRAWN BY A. V. ABAD
CHECKED BY L. CARLSON
APPROVED BY S. A. WAGNER
DATE 06-29-2018

LICENSED LAND SURVEYOR STEPHANIE WAGNER No. 5752 STATE OF CALIFORNIA

sbcta san bernardino county transportation authority

METROLINK

WAGNER ENGINEERING & SURVEY, INC

SUBMITTED: _____ PROJECT MANAGER

APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

SURVEY CONTROL PLAN
PRIMARY CONTROL NETWORK
SHEET 2 OF 2

CONTRACT NO. 16-1001411
DRAWING NO. VJ-002
REVISION A
SHEET NO. 9 OF 200
SCALE AS NOTED

PHASE 0 (EXISTING)

PHASE 1

CONSTRUCTION OF THE PEDESTRIAN UNDERPASS UNDER THE EXISTING TRACK TO TAKE PLACE DURING A 52 HOUR ABSOLUTE RAIL WEEKEND WORK WINDOW STARTING ON FRIDAY AT 11:30 PM AND ENDING ON MONDAY AT 3:30AM

PHASING NOTES

1. CONSTRUCT/EXTEND DRAINAGE STRUCTURES AND CONSTRUCT PEDESTRIAN UNDERPASS AND CONSTRUCT WALLS
2. CONSTRUCT TRACKS BETWEEN CROSSINGS
3. CONSTRUCT SOUTH PLATFORM
4. CONSTRUCT TRACK AT STATION
5. INSTALL INTERTRACK FENCE AT STATION

FINAL 30% SUBMITTAL (06-29-2018)

7/6/2018 4:37:26 PM USER • jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-GC-001.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sb cta san bernardino county transportation authority

METROLINK

moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

CONSTRUCTION PHASING PLAN
SHEET 1 OF 3

CONTRACT NO. 16-1001411
DRAWING NO. GC-001
REVISION A
SHEET NO. 10 OF 200
SCALE NONE

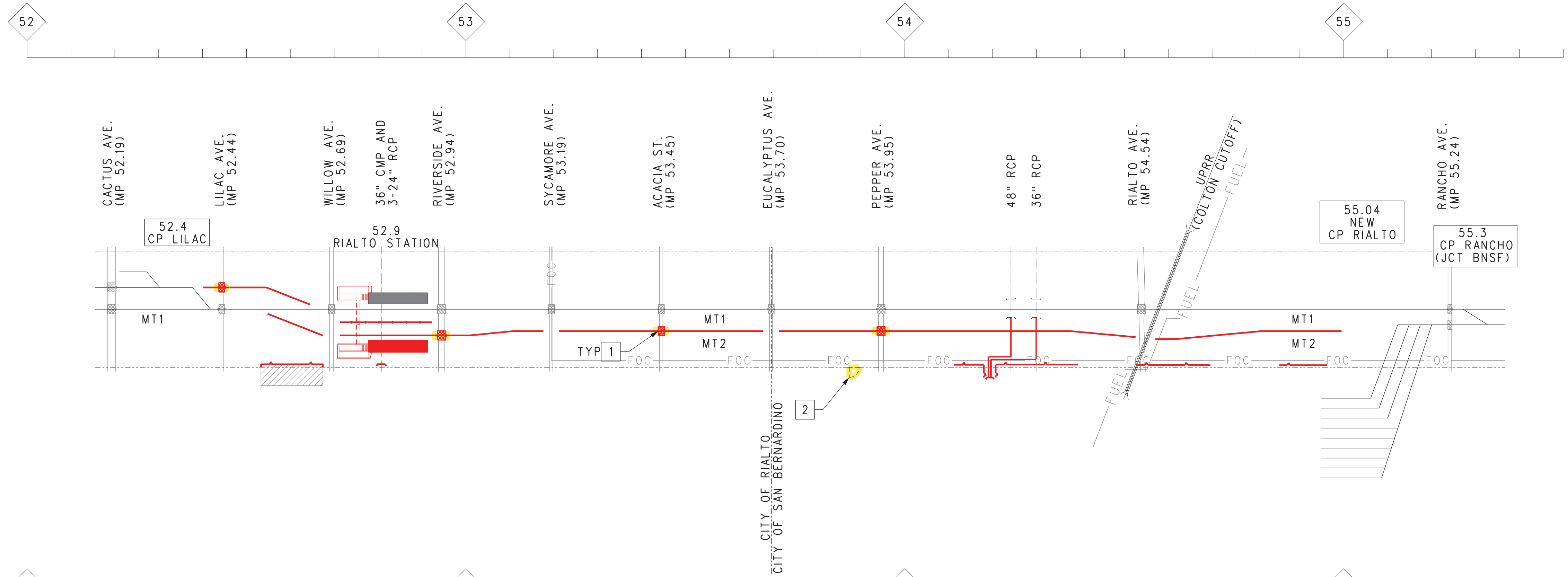
PHASE 2A

CONSTRUCTION OF GRADE CROSSINGS CAN BE PERFORMED IN PARALLEL WITH PHASE 1 WORK AND TAKE PLACE DURING A 52 HOUR ABSOLUTE RAIL WEEKEND WORK WINDOW STARTING ON FRIDAY AT 11:30PM AND ENDING ON MONDAY AT 3:30AM IN COORDINATION WITH THE CITIES

PHASING NOTES

1 CONSTRUCT ALTERNATE AT GRADE CROSSINGS

2 REMOVE UNAUTHORIZED ACCESS TO ROW



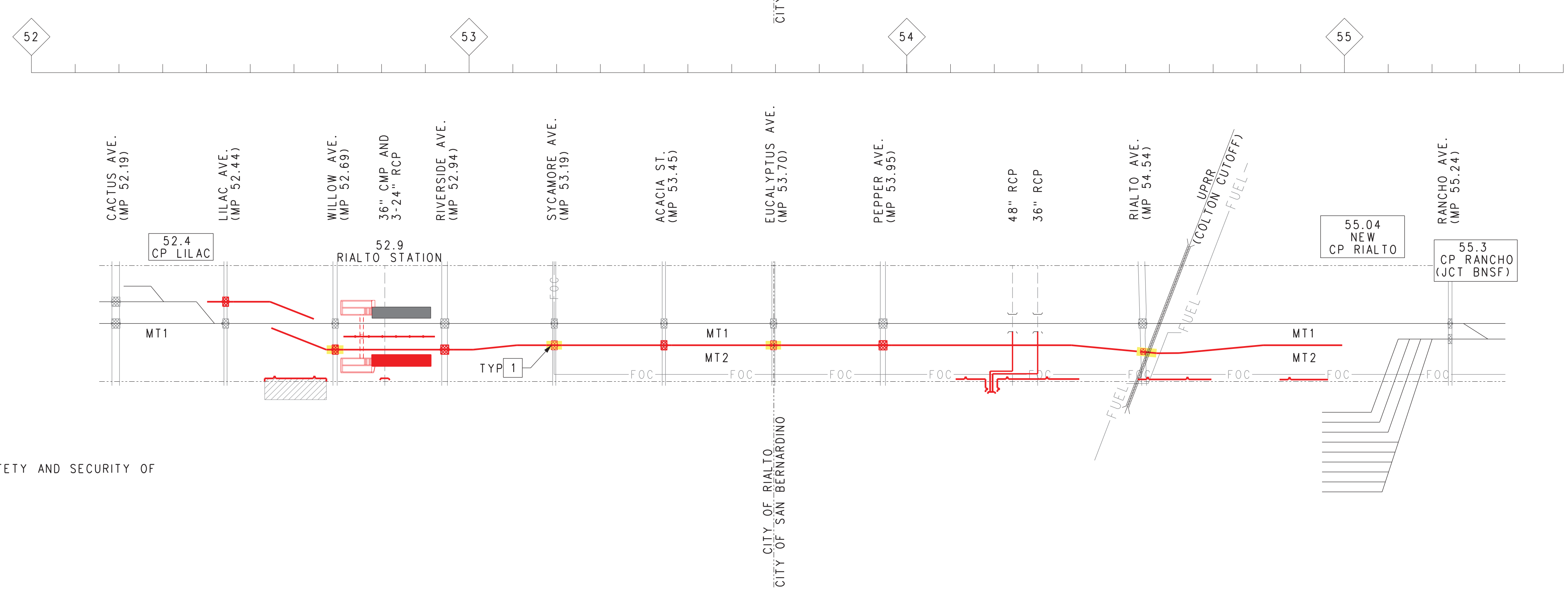
PHASE 2B

CONSTRUCTION OF GRADE CROSSINGS CAN BE PERFORMED IN PARALLEL WITH PHASE 2A WORK AND SHOULD TAKE PLACE DURING A 52 HOUR ABSOLUTE RAIL WEEKEND WORK WINDOW STARTING ON FRIDAY AT 11:30PM AND ENDING ON MONDAY AT 3:30AM IN COORDINATION WITH THE CITIES

PHASING NOTES

1 CONSTRUCT ALL THE REMAINING AT GRADE CROSSINGS

2 INSTALL FENCING AS NEEDED TO INCREASE PUBLIC SAFETY AND SECURITY OF RAILROAD OPERATIONS



FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB. APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

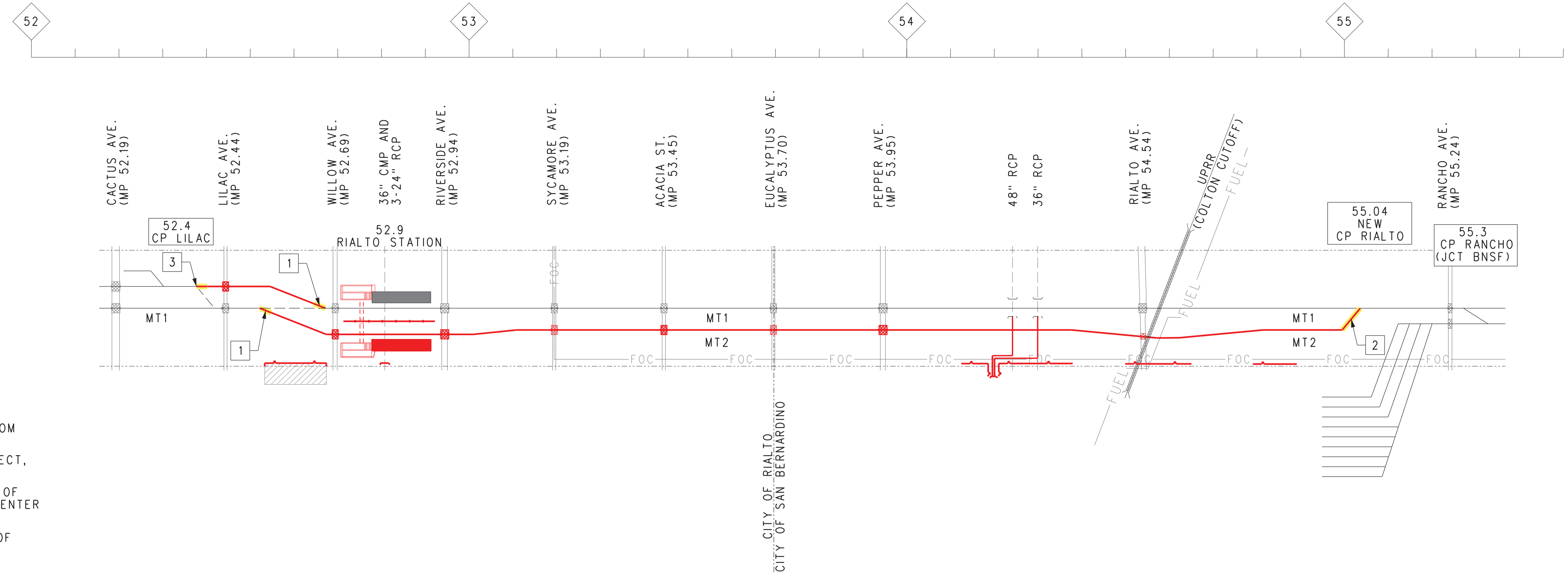
CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

CONSTRUCTION PHASING PLAN
SHEET 2 OF 3

CONTRACT NO. 16-1001411
DRAWING NO. GC-002
REVISION A
SHEET NO. 11 OF 200
SCALE NONE

PHASE 3

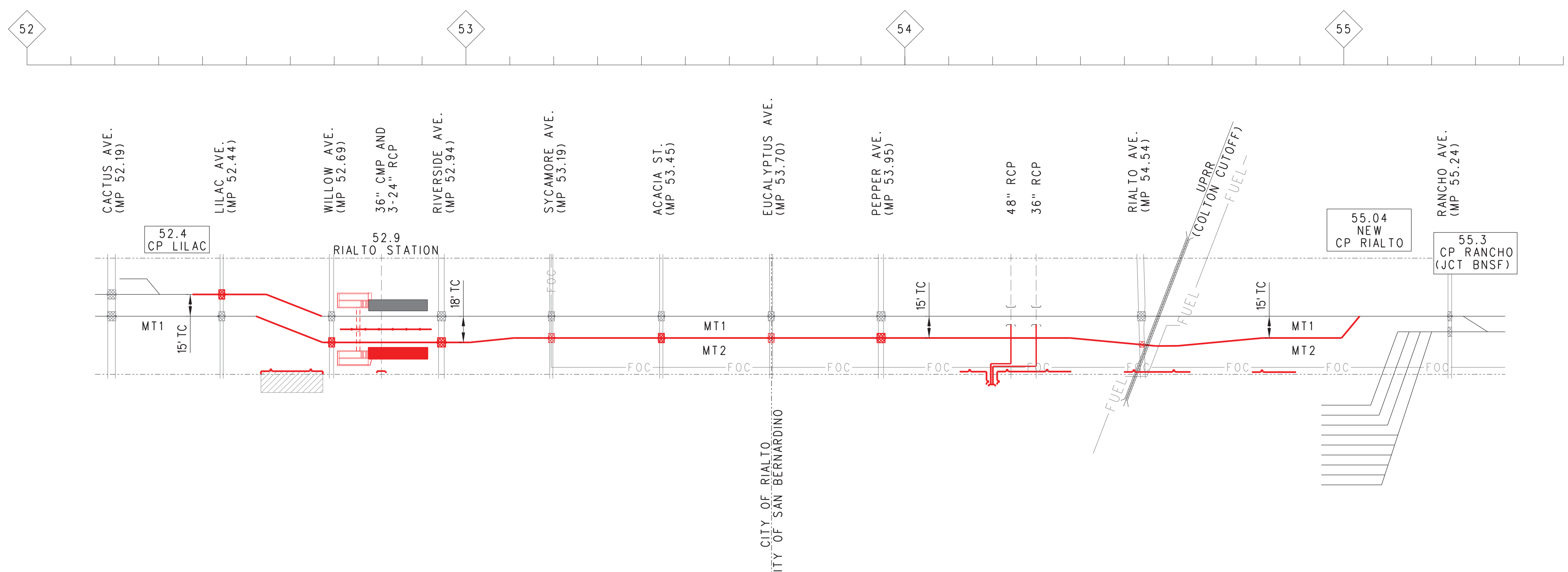
TO TAKE PLACE DURING A 52 HOUR ABSOLUTE RAIL WEEKEND WORK WINDOW STARTING ON FRIDAY AT 11:30 PM AND ENDING ON MONDAY AT 3:30AM



PHASING NOTES

1. CUT OVER MAINLINE BETWEEN LILAC TO WILLOW AND TRANSITION FROM NORTH TO CENTER OF ROW AND FROM CENTER OF ROW TO SOUTH
2. INSTALL #20 LH TURNOUT AT EAST END OF THE PROJECT, WEST OF RANCHO AVE.
3. REMOVE #20 RH TURNOUT AND CONNECT SIDING WEST OF LILAC AVENUE, TO THE TRANSITION FROM NORTH TO CENTER OF ROW
4. ADJUST CONTROL POINTS (CP) LIMITS AT BOTH ENDS OF PROJECT AS REQUIRED
5. INSTALL INTERMEDIATE SIGNALS AND NEW CP WEST OF RANCHO, AND COMPLETE AND TEST SIGNAL SYSTEM MODIFICATIONS

PHASE 4 FINAL CONDITIONS



FINAL 30% SUBMITTAL (06-29-2018)

7/6/2018 4:37:27 PM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-GC-003.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCRRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB. APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sb cta san bernardino county transportation authority

METROLINK

moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

CONSTRUCTION PHASING PLAN
SHEET 3 OF 3

CONTRACT NO. 16-1001411
DRAWING NO. GC-003
REVISION A
SHEET NO. 12 OF 200
SCALE NONE

LEGEND

STRUCTURE

- HMAC XING SURFACE
- CONCRETE PANEL XING SURFACE
- RUBBER PANEL XING SURFACE
- AT-GRADE CROSSING
- TUNNEL
- CULVERT
- OVERPASS
- BRIDGE

TRACK

- SCRRA MAINLINE CTC/PTC
- PROPOSED SCRRA MAINLINE CTC/PTC
- REMOVED TRACK
- UPRR TRACK
- BNSF TRACK
- CONNECTING SUB.
- FENCE

PTC CRITICAL FEATURES

- SIGNAL CANTILEVER
- SIGNAL BRIDGE
- BRACKET SIGNAL
- DWARF SIGNAL
- SIGNAL W/ ONE HEAD
- SIGNAL W/ TWO HEADS
- SIGNAL W/ THREE HEADS
- CLR PT (REVERSE ONLY)
- PTC LIMIT
- HAND OPERATED SWITCH
- POWER OPERATED SWITCH
- ELECTRIC LOCK SWITCH
- POWER OPERATED DERAIL
- AT-GRADE CROSSING LIMIT
- WESTBOUND SPEED INCREASE
- EASTBOUND SPEED INCREASE
- 20 MILEPOST MARKER
- QZ QUIET ZONE

OTHER TRACK FEATURES

- STANDARD 8A – CANTILEVERED FLASHING LIGHT
- STANDARD 9A – CANTILEVERED FLASHING LIGHT WITH GATE
- STANDARD 9 – FLASHING LIGHT WITH GATE
- STANDARD 9E – FLASHING LIGHT WITH GATE ON EXIT SIDE
- STANDARD 8 – DUAL FLASHING LIGHTS
- STANDARD 8 – SIGNAL FLASHING LIGHT
- MODIFIED STANDARD 9 – PEDESTRIAN GATE
- STANDARD 1R – CROSSBUCK
- STANDARD 1X – PRIVATE CROSSING SIGN
- SIGNAL HOUSE
- WAYSIDE HORN
- CTC CENTRALIZED TRAFFIC CONTROL TERRITORY
- HAND OPERATED DERAIL
- BUMPER
- A ACTIVE AUTOMATIC TRAIN STOP
- P PASSIVE AUTOMATIC TRAIN STOP
- WESTBOUND SPEED DECREASE
- EASTBOUND SPEED DECREASE
- PTC TILT DOWN TOWERS
- PTC BASE STATIONS
- PTC MICROWAVE TOWERS
- WLAN ACCESS POINT

LUBRICATOR & DETECTORS

- L RAIL LUBRICATOR
- DE DRAGGING EQUIPMENT
- HB HOT BOX
- HW HIGH WIDE LOAD
- W HIGH WATER
- S SLIDE FENCE

TRACK GEOMETRY AND MAXIMUM AUTHORIZED SPEEDS

- 9.8 MILEPOST LIMIT OF SPEED CHANGE
- 60/40, 60#/40
- L TOTAL LENGTH OF CURVE INCLUDING SPIRALS
- Ls LENGTH OF SPIRAL
- Dc DEGREE OF CURVATURE
- Ea ACTUAL SUPERELEVATION
- 60/40 PASSENGER/FREIGHT SPEED PER TIMETABLE
- 60#/40 HIGH WIND RESTRICTION FOR PASSENGER
- Vmax Vpass CALCULATED AT 3.5" UNBALANCE; Vfrt CALCULATED AT 2" UNBALANCE
- Ls L Ls LEFT CURVE; CURVE NO. Dc Ea Vmax=Vpass/Vfrt; RIGHT CURVE

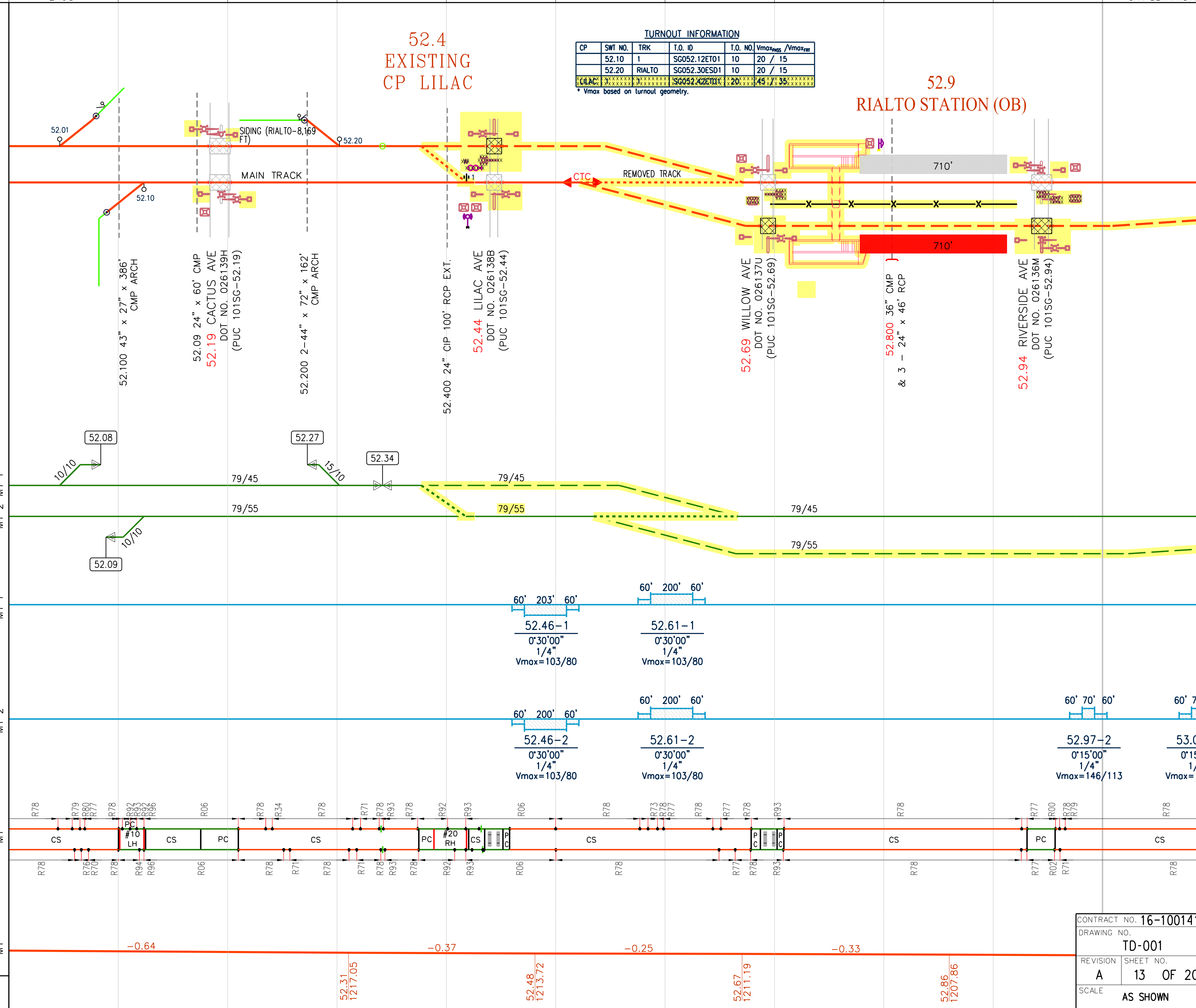
TRACK COMPOSITION

- R99 YEAR RAIL ROLLED
- INSULATED JOINT
- WELD JOINT
- BOLT JOINT
- CS WOOD TIE WITH CUT SPIKE
- NF WOOD TIES WITH FAST CLIP
- PC WOOD TIES WITH PANDROL CLIP
- CONCRETE TIE WITH FAST CLIP
- CONCRETE TIE WITH MCKAY
- CONCRETE TIE WITH PANDROL CLIP
- STEEL TIE WITH PANDROL CLIP
- 136RE, JOINTED
- 136RE, CWR
- 133RE, JOINTED
- 133RE, CWR
- 132HF, JOINTED
- 132HF, CWR
- 119RE OR LOWER, JOINTED
- 119RE OR LOWER, CWR

T/R PROFILE**

AVG. GRADE; MP ELEV.; MP ELEV.

**VERTICAL DATUM BASED ON NAVD 88



TURNOUT INFORMATION

CP	SWT NO.	TRK	T.O. ID	T.O. NO.	$Vmax_{PASS}$ / $Vmax_{FRT}$
	52.10	1	SG052.12ET01	10	20 / 15
	52.20	RIALTO	SG052.30ESD1	10	20 / 15
LILAC	1	1	SG052.42ET01	20	45 / 35

* Vmax based on turnout geometry.

METROLINK TRACK CHART

SAN GABRIEL

MP 52 TO 53

52 B

FILENAME: PTC209SGTC01

REVISED: 06/29/18

ISSUED: 04/30/15

SCALE: 1"=500'

CONTRACT NO.	16-1001411
DRAWING NO.	TD-001
REVISION	A
SHEET NO.	13 OF 200
SCALE	AS SHOWN

REVISIONS OR RECOMMENDATIONS: www.scrracm@scrra.net

LEGEND

STRUCTURE

- HMAC XING SURFACE
- CONCRETE PANEL XING SURFACE
- RUBBER PANEL XING SURFACE
- AT-GRADE CROSSING
- TUNNEL
- CULVERT
- OVERPASS
- BRIDGE

TRACK

- SCRRA MAINLINE CTC/PTC
- PROPOSED SCRRA MAINLINE CTC/PTC
- REMOVED TRACK
- UPRR TRACK
- BNSF TRACK
- CONNECTING SUB.
- FENCE

PTC CRITICAL FEATURES

- SIGNAL CANTILEVER
- SIGNAL BRIDGE
- BRACKET SIGNAL
- DWARF SIGNAL
- SIGNAL W/ ONE HEAD
- SIGNAL W/ TWO HEADS
- SIGNAL W/ THREE HEADS
- CLR PT (REVERSE ONLY)
- PTC LIMIT
- HAND OPERATED SWITCH
- POWER OPERATED SWITCH
- ELECTRIC LOCK SWITCH
- POWER OPERATED DERAIL
- AT-GRADE CROSSING LIMIT
- WESTBOUND SPEED INCREASE
- EASTBOUND SPEED INCREASE
- 20 MILEPOST MARKER
- QZ QUIET ZONE

OTHER TRACK FEATURES

- STANDARD 8A – CANTILEVERED FLASHING LIGHT
- STANDARD 9A – CANTILEVERED FLASHING LIGHT WITH GATE
- STANDARD 9 – FLASHING LIGHT WITH GATE
- STANDARD 9E – FLASHING LIGHT WITH GATE ON EXIT SIDE
- STANDARD 8 – DUAL FLASHING LIGHTS
- STANDARD 8 – SIGNAL FLASHING LIGHT
- MODIFIED STANDARD 9 – PEDESTRIAN GATE
- STANDARD 1R – CROSSBUCK
- STANDARD 1X – PRIVATE CROSSING SIGN
- SIGNAL HOUSE
- WAYSIDE HORN
- CTC CENTRALIZED TRAFFIC CONTROL TERRITORY
- HAND OPERATED DERAIL
- BUMPER
- A ACTIVE AUTOMATIC TRAIN STOP
- P PASSIVE AUTOMATIC TRAIN STOP
- WESTBOUND SPEED DECREASE
- EASTBOUND SPEED DECREASE
- PTC TILT DOWN TOWERS
- PTC BASE STATIONS
- PTC MICROWAVE TOWERS
- WLAN ACCESS POINT

LUBRICATOR & DETECTORS

- L RAIL LUBRICATOR
- DE DRAGGING EQUIPMENT
- HB HOT BOX
- HW HIGH WIDE LOAD
- W HIGH WATER
- S SLIDE FENCE

MILEPOST LIMIT OF SPEED CHANGE 9.8

TRACK GEOMETRY AND MAXIMUM AUTHORIZED SPEEDS

- L TOTAL LENGTH OF CURVE INCLUDING SPIRALS
- Ls LENGTH OF SPIRAL
- Dc DEGREE OF CURVATURE
- Ea ACTUAL SUPERELEVATION
- 60/40 PASSENGER/FREIGHT SPEED PER TIMETABLE
- 60#/40 HIGH WIND RESTRICTION FOR PASSENGER
- Vmax Vpass CALCULATED AT 3.5" UNBALANCE Vfrt CALCULATED AT 2" UNBALANCE

60/40 / 60#/40 / Ls L Ls LEFT CURVE / CURVE NO. / Dc Ea Vmax=Vpass/Vfrt / RIGHT CURVE

TRACK COMPOSITION

- R99 YEAR RAIL ROLLED
- ' INSULATED JOINT
- WELD JOINT
- BOLT JOINT
- CS WOOD TIE WITH CUT SPIKE
- NF WOOD TIES WITH FAST CLIP
- PC WOOD TIES WITH PANDROL CLIP
- CONCRETE TIE WITH FAST CLIP
- CONCRETE TIE WITH MCKAY
- CONCRETE TIE WITH PANDROL CLIP
- STEEL TIE WITH PANDROL CLIP
- 136RE, JOINTED
- 136RE, CWR
- 133RE, JOINTED
- 133RE, CWR
- 132HF, JOINTED
- 132HF, CWR
- 119RE OR LOWER, JOINTED
- 119RE OR LOWER, CWR

T/R PROFILE** AVG. GRADE MP ELEV. MP ELEV.

**VERTICAL DATUM BASED ON NAVD 88

REVISIONS OR RECOMMENDATIONS: www.scrracm@scrra.net

MILE POST 53 ◄ WEST LAUS — 53.5 — 54 EAST SAN BERNARDINO

SCHEMATIC

CTC MAIN TRACK

CITY OF RIALTO / CITY OF SAN BERNARDINO

53.19 SYCAMORE AVE DOT NO. 026135E (PUC 101SG-53.19)

53.45 ACACIA ST DOT NO. 026134Y (PUC 101SG-53.45)

53.70 EUCALYPTUS AVE DOT NO. 026133S (PUC 101SG-53.70)

53.95 PEPPER AVE DOT NO. 026132K (PUC 101SG-53.95)

FOC

531 532 RELOCATE

OPERATING SPEEDS PER TT9

MT 2 79/55

MT 1 79/55

TRACK GEOMETRY

MT 1 220'

MT 2 60' 60' 70' 60' 220'

2 53.07-2 0°15'00" 1/4" Vmax=146/113

/113

TRACK COMPOSITION

MT

R78 R57 R78 R03 R94 R78 R77 R78 R73 R78 R85 R93 R85 R77 R78 R93 R78 R77 R78 R03 R09 R78

CS PC

R78 R95 R78 R94 R78 R93 R78 R77 R78 R93 R78 R77 R78 R62 R03 R08 R09 R78

PROFILE

MT −0.43 53.33 1197.04 −0.58

CONTRACT NO.	16-1001411
DRAWING NO.	TD-002
REVISION	A
SHEET NO.	14 OF 200
SCALE	AS SHOWN

53 B

MP 53 TO 54

FILENAME: PTC209SGTC01

REVISED: 04/30/15

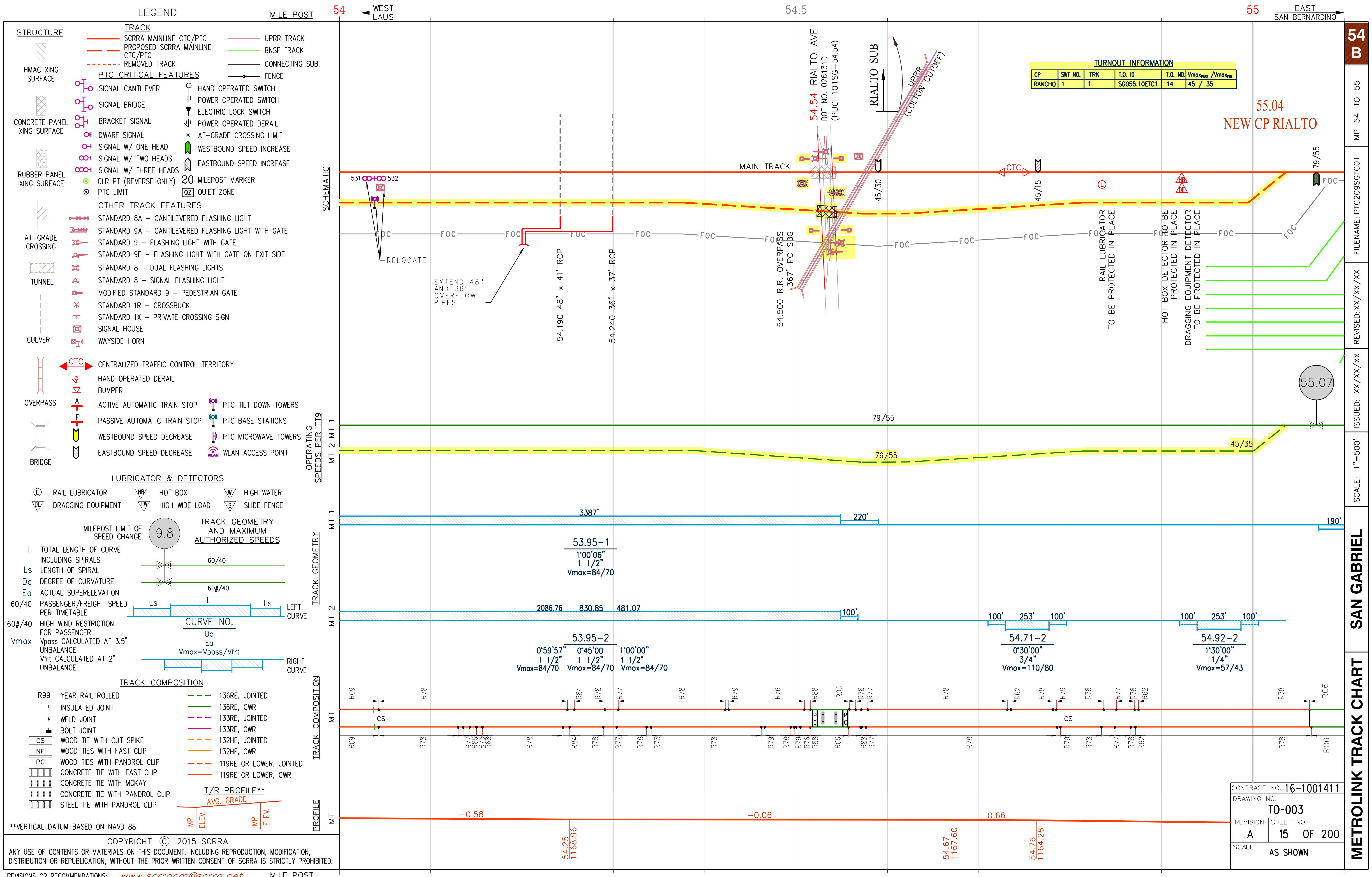
ISSUED: 04/30/15

SCALE: 1"=500'

SAN GABRIEL

METROLINK TRACK CHART

MILE POST 53 53.5 54



LEGEND
MILE POST
54
WEST LAUS
54.5
55
EAST SAN BERNARDINO
STRUCTURE
HMAC XING SURFACE
CONCRETE PANEL XING SURFACE
RUBBER PANEL XING SURFACE
AT-GRADE CROSSING
TUNNEL
CULVERT
OVERPASS
BRIDGE
TRACK
SCRRA MAINLINE CTC/PTC
PROPOSED SCRRA MAINLINE CTC/PTC
REMOVED TRACK
UPRR TRACK
BNSF TRACK
CONNECTING SUB.
FENCE
PTC CRITICAL FEATURES
SIGNAL CANTILEVER
SIGNAL BRIDGE
BRACKET SIGNAL
DWARF SIGNAL
SIGNAL W/ ONE HEAD
SIGNAL W/ TWO HEADS
SIGNAL W/ THREE HEADS
CLR PT (REVERSE ONLY)
PTC LIMIT
HAND OPERATED SWITCH
POWER OPERATED SWITCH
ELECTRIC LOCK SWITCH
POWER OPERATED DERAIL
AT-GRADE CROSSING LIMIT
WESTBOUND SPEED INCREASE
EASTBOUND SPEED INCREASE
20 MILEPOST MARKER
QZ QUIET ZONE
OTHER TRACK FEATURES
STANDARD 8A – CANTILEVERED FLASHING LIGHT
STANDARD 9A – CANTILEVERED FLASHING LIGHT WITH GATE
STANDARD 9 – FLASHING LIGHT WITH GATE
STANDARD 9E – FLASHING LIGHT WITH GATE ON EXIT SIDE
STANDARD 8 – DUAL FLASHING LIGHTS
STANDARD 8 – SIGNAL FLASHING LIGHT
MODIFIED STANDARD 9 – PEDESTRIAN GATE
STANDARD 1R – CROSSBUCK
STANDARD 1X – PRIVATE CROSSING SIGN
SIGNAL HOUSE
WAYSIDE HORN
CTC CENTRALIZED TRAFFIC CONTROL TERRITORY
HAND OPERATED DERAIL
BUMPER
ACTIVE AUTOMATIC TRAIN STOP
PASSIVE AUTOMATIC TRAIN STOP
WESTBOUND SPEED DECREASE
EASTBOUND SPEED DECREASE
PTC TILT DOWN TOWERS
PTC BASE STATIONS
PTC MICROWAVE TOWERS
WLAN ACCESS POINT
LUBRICATOR & DETECTORS
RAIL LUBRICATOR
DRAGGING EQUIPMENT
HOT BOX
HIGH WIDE LOAD
HIGH WATER
SLIDE FENCE
MILEPOST LIMIT OF SPEED CHANGE
TRACK GEOMETRY AND MAXIMUM AUTHORIZED SPEEDS
L TOTAL LENGTH OF CURVE INCLUDING SPIRALS
Ls LENGTH OF SPIRAL
Dc DEGREE OF CURVATURE
Ea ACTUAL SUPERELEVATION
60/40 PASSENGER/FREIGHT SPEED PER TIMETABLE
60#/40 HIGH WIND RESTRICTION FOR PASSENGER
Vmax Vpass CALCULATED AT 3.5" UNBALANCE Vfrt CALCULATED AT 2" UNBALANCE
CURVE NO.
Vmax=Vpass/Vfrt
LEFT CURVE
RIGHT CURVE
TRACK COMPOSITION
R99 YEAR RAIL ROLLED
INSULATED JOINT
WELD JOINT
BOLT JOINT
CS WOOD TIE WITH CUT SPIKE
NF WOOD TIES WITH FAST CLIP
PC WOOD TIES WITH PANDROL CLIP
CONCRETE TIE WITH FAST CLIP
CONCRETE TIE WITH MCKAY
CONCRETE TIE WITH PANDROL CLIP
STEEL TIE WITH PANDROL CLIP
136RE, JOINTED
136RE, CWR
133RE, JOINTED
133RE, CWR
132HF, JOINTED
132HF, CWR
119RE OR LOWER, JOINTED
119RE OR LOWER, CWR
T/R PROFILE**
AVG. GRADE
**VERTICAL DATUM BASED ON NAVD 88
SCHEMATIC
MAIN TRACK
RELOCATE
EXTEND 48" AND 36" OVERFLOW PIPES
54.190 48" x 41' RCP
54.240 36" x 37' RCP
54.500 R.R. OVERPASS 367' PC SBG
54.54 RIALTO AVE DOT NO. 026131D (PUC 101SG-54.54)
RIALTO SUB
UPRR (COLTON CUTOFF)
TURNOUT INFORMATION
CP | SWT NO. | TRK | T.O. ID | T.O. NO. | Vmax/Vmax
RANCHO | 1 | 1 | SG055.10ETC1 | 14 | 45 / 35
55.04 NEW CP RIALTO
45/30
45/15
79/55
RAIL LUBRICATOR TO BE PROTECTED IN PLACE
HOT BOX DETECTOR TO BE PROTECTED IN PLACE
DRAGGING EQUIPMENT DETECTOR TO BE PROTECTED IN PLACE
OPERATING SPEEDS PER TT9
55.07
45/35
TRACK GEOMETRY
3387'
220'
190'
53.95-1
1°00'06"
1 1/2"
Vmax=84/70
2086.76
830.85
481.07
100'
253'
53.95-2
0°59'57" 1 1/2" Vmax=84/70
0°45'00 1 1/2" Vmax=84/70
1°00'00" 1 1/2" Vmax=84/70
54.71-2
0°30'00"
3/4"
Vmax=110/80
54.92-2
1°30'00"
1/4"
Vmax=57/43
TRACK COMPOSITION
PROFILE
-0.58
-0.06
-0.66
54.25 1168.96
54.67 1167.60
54.76 1164.28
CONTRACT NO. 16-1001411
DRAWING NO. TD-003
REVISION A
SHEET NO. 15 OF 200
SCALE AS SHOWN
54 B
MP 54 TO 55
FILENAME: PTC209SGTC01
REVISED: XX/XX/XX
ISSUED: XX/XX/XX
SCALE: 1"=500'
SAN GABRIEL
METROLINK TRACK CHART
COPYRIGHT © 2015 SCRRA
ANY USE OF CONTENTS OR MATERIALS ON THIS DOCUMENT, INCLUDING REPRODUCTION, MODIFICATION, DISTRIBUTION OR REPUBLICATION, WITHOUT THE PRIOR WRITTEN CONSENT OF SCRRA IS STRICTLY PROHIBITED.
REVISIONS OR RECOMMENDATIONS: www.scrracm@scrra.net

LEGEND

STRUCTURE

HMAC XING SURFACE
CONCRETE PANEL XING SURFACE
RUBBER PANEL XING SURFACE
AT-GRADE CROSSING
TUNNEL
CULVERT
OVERPASS
BRIDGE

TRACK

- SCRRA MAINLINE CTC/PTC
- PROPOSED SCRRA MAINLINE CTC/PTC
- REMOVED TRACK
- UPRR TRACK
- BNSF TRACK
- CONNECTING SUB.
- FENCE

PTC CRITICAL FEATURES

- SIGNAL CANTILEVER
- SIGNAL BRIDGE
- BRACKET SIGNAL
- DWARF SIGNAL
- SIGNAL W/ ONE HEAD
- SIGNAL W/ TWO HEADS
- SIGNAL W/ THREE HEADS
- CLR PT (REVERSE ONLY)
- PTC LIMIT
- HAND OPERATED SWITCH
- POWER OPERATED SWITCH
- ELECTRIC LOCK SWITCH
- POWER OPERATED DERAIL
- AT-GRADE CROSSING LIMIT
- WESTBOUND SPEED INCREASE
- EASTBOUND SPEED INCREASE
- 20 MILEPOST MARKER
- QZ QUIET ZONE

OTHER TRACK FEATURES

- STANDARD 8A – CANTILEVERED FLASHING LIGHT
- STANDARD 9A – CANTILEVERED FLASHING LIGHT WITH GATE
- STANDARD 9 – FLASHING LIGHT WITH GATE
- STANDARD 9E – FLASHING LIGHT WITH GATE ON EXIT SIDE
- STANDARD 8 – DUAL FLASHING LIGHTS
- STANDARD 8 – SIGNAL FLASHING LIGHT
- MODIFIED STANDARD 9 – PEDESTRIAN GATE
- STANDARD 1R – CROSSBUCK
- STANDARD 1X – PRIVATE CROSSING SIGN
- SIGNAL HOUSE
- WAYSIDE HORN
- CTC CENTRALIZED TRAFFIC CONTROL TERRITORY
- HAND OPERATED DERAIL
- BUMPER
- A ACTIVE AUTOMATIC TRAIN STOP
- P PASSIVE AUTOMATIC TRAIN STOP
- WESTBOUND SPEED DECREASE
- EASTBOUND SPEED DECREASE
- PTC TILT DOWN TOWERS
- PTC BASE STATIONS
- PTC MICROWAVE TOWERS
- WLAN ACCESS POINT

LUBRICATOR & DETECTORS

- L RAIL LUBRICATOR
- DE DRAGGING EQUIPMENT
- HB HOT BOX
- HW HIGH WIDE LOAD
- W HIGH WATER
- S SLIDE FENCE

MILEPOST LIMIT OF SPEED CHANGE (9.8)

TRACK GEOMETRY AND MAXIMUM AUTHORIZED SPEEDS

- L TOTAL LENGTH OF CURVE INCLUDING SPIRALS
- Ls LENGTH OF SPIRAL
- Dc DEGREE OF CURVATURE
- Ea ACTUAL SUPERELEVATION
- 60/40 PASSENGER/FREIGHT SPEED PER TIMETABLE
- 60#/40 HIGH WIND RESTRICTION FOR PASSENGER
- Vmax Vpass CALCULATED AT 3.5" UNBALANCE; Vfrt CALCULATED AT 2" UNBALANCE

60/40 · 60#/40 · Ls · L · Ls · LEFT CURVE · CURVE NO. · Dc · Ea · Vmax=Vpass/Vfrt · RIGHT CURVE

TRACK COMPOSITION

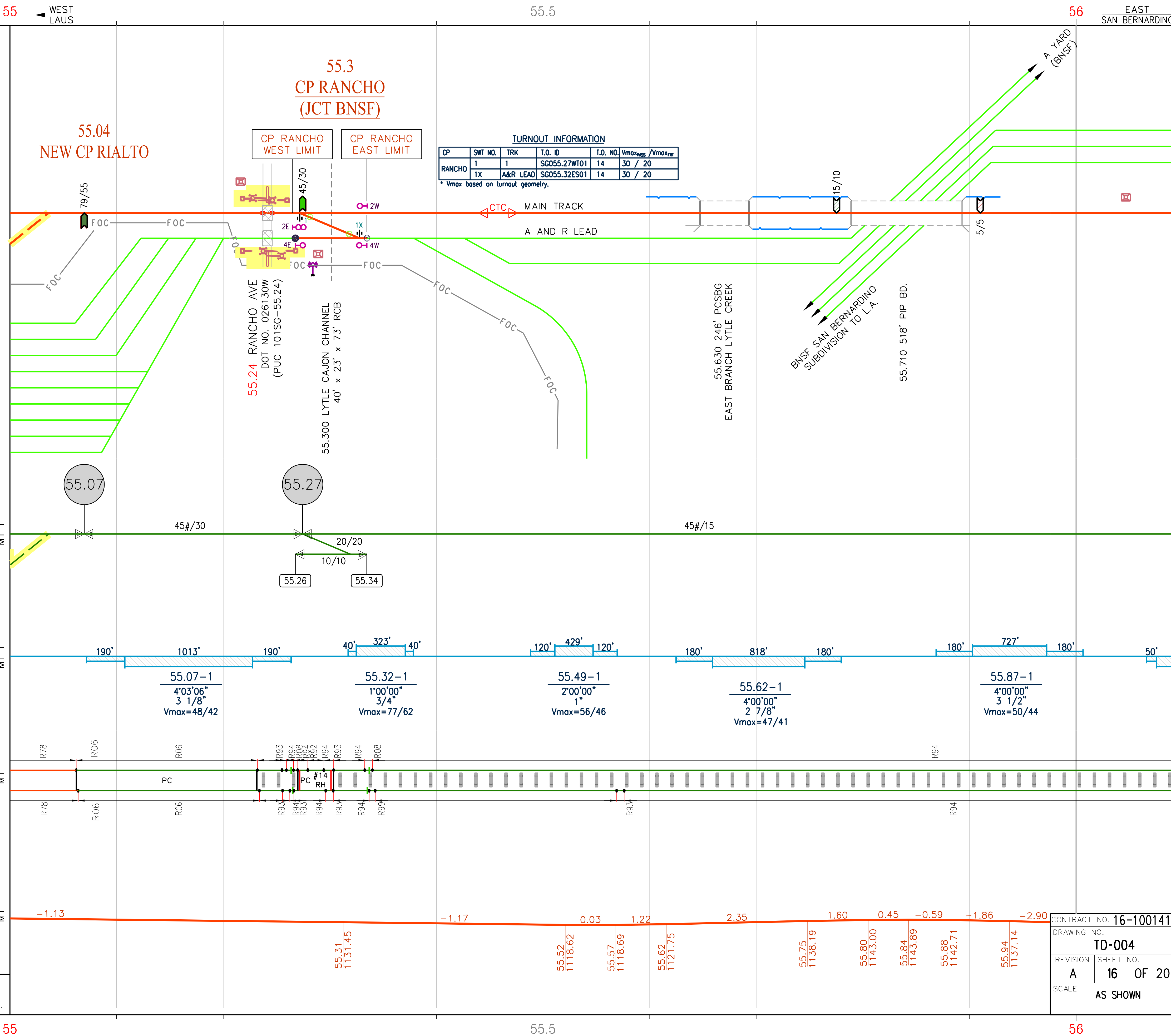
- R99 YEAR RAIL ROLLED
- INSULATED JOINT
- WELD JOINT
- BOLT JOINT
- CS WOOD TIE WITH CUT SPIKE
- NF WOOD TIES WITH FAST CLIP
- PC WOOD TIES WITH PANDROL CLIP
- CONCRETE TIE WITH FAST CLIP
- CONCRETE TIE WITH MCKAY
- CONCRETE TIE WITH PANDROL CLIP
- STEEL TIE WITH PANDROL CLIP
- 136RE, JOINTED
- 136RE, CWR
- 133RE, JOINTED
- 133RE, CWR
- 132HF, JOINTED
- 132HF, CWR
- 119RE OR LOWER, JOINTED
- 119RE OR LOWER, CWR

T/R PROFILE**

AVG. GRADE · MP · ELEV. · MP · ELEV.

**VERTICAL DATUM BASED ON NAVD 88

REVISIONS OR RECOMMENDATIONS: www.scrracm@scrra.net



TURNOUT INFORMATION

CP	SWT NO.	TRK	T.O. ID	T.O. NO.	$Vmax_{PASS}$ / $Vmax_{FRT}$
RANCHO	1	1	SG055.27WT01	14	30 / 20
	1X	A&R LEAD	SG055.32ES01	14	30 / 20

* Vmax based on turnout geometry.

55 B

MP 55 TO 56

FILENAME: PTC209SGTC01

REVISED: 04/30/15

ISSUED: 04/30/15

SCALE: 1"=500'

SAN GABRIEL

METROLINK TRACK CHART

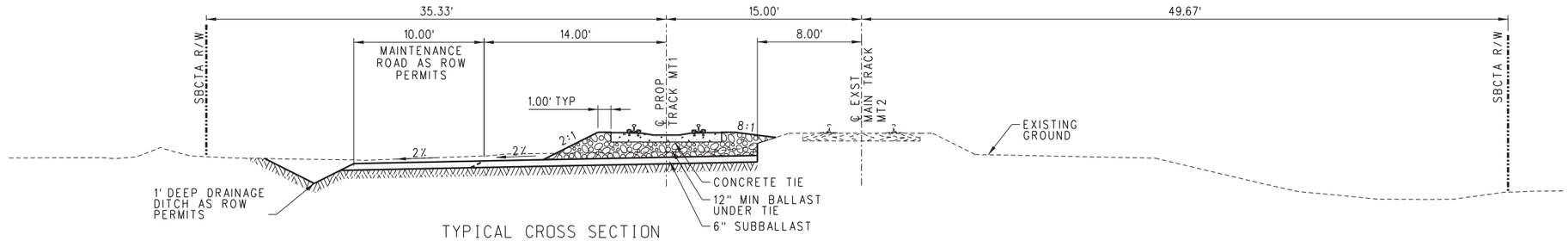
CONTRACT NO. 16-1001411

DRAWING NO. TD-004

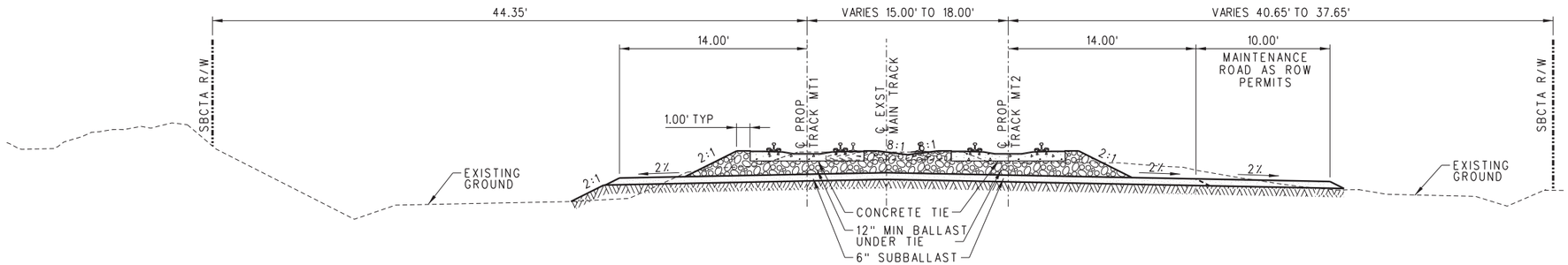
REVISION A

SHEET NO. 16 OF 200

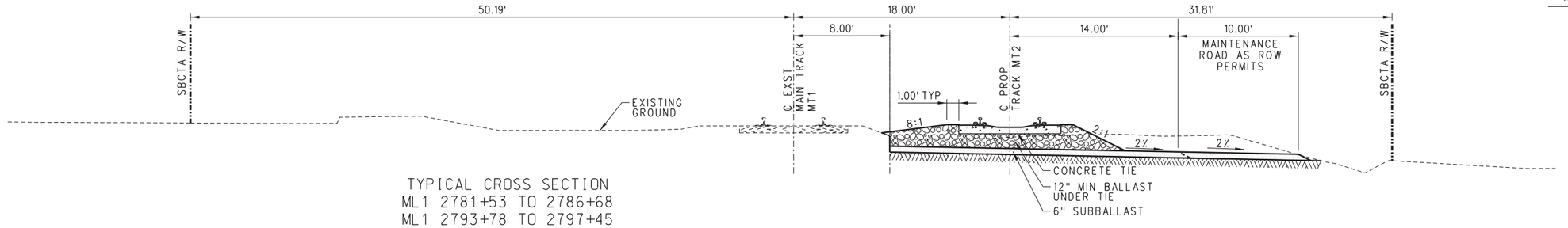
SCALE AS SHOWN



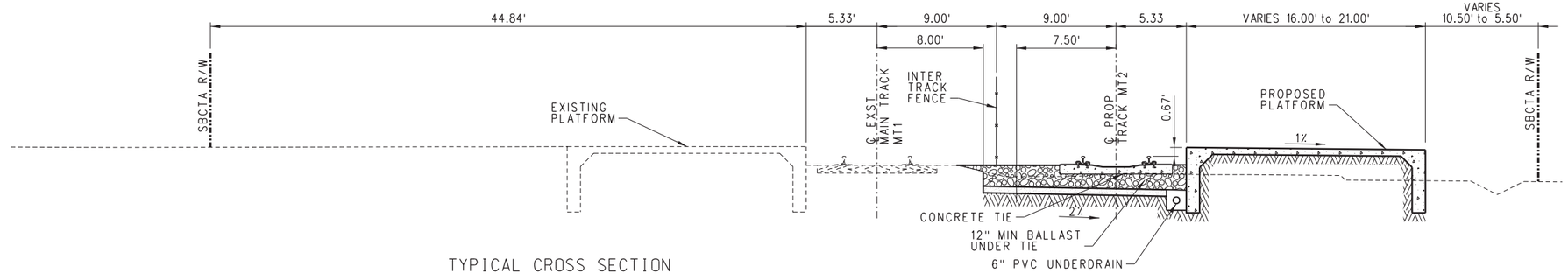
TYPICAL CROSS SECTION
ML1 2764+00 TO 2770+39
SCALE: 1"=5'



TYPICAL CROSS SECTION
ML1 2770+40 TO 2781+52
SCALE: 1"=5'



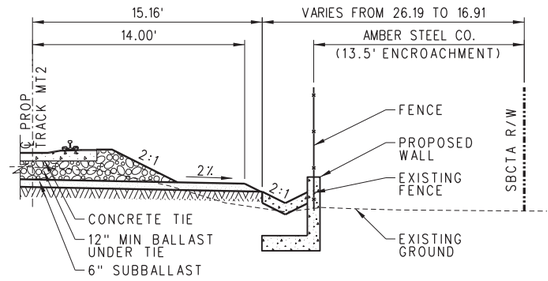
TYPICAL CROSS SECTION
ML1 2781+53 TO 2786+68
ML1 2793+78 TO 2797+45
SCALE: 1"=5'



TYPICAL CROSS SECTION
ML1 2786+68 TO 2793+78
SCALE: 1"=5'

NOTES:

1. TOP OF SUBGRADE PLANE SHALL BE 3.01' BELOW TOP OF RAIL OF MAIN TRACKS, AT CENTERLINE OF PROPOSED TRACK.
2. FOR SUPERELEVATED TRACK, DISTANCE FROM CENTERLINE OF TRACK TO END OF SUBBALLAST IS 15 FEET 2 INCHES PLUS 6 INCHES FOR EACH INCH OF SUPERELEVATION (Ea), WHERE HIGH RAIL IS ON THE OUTSIDE.
3. SEE PLAN AND PROFILE DRAWINGS FOR SUPERELEVATION OF TRACK. SUPERELEVATION SHALL BE TRANSITIONED BETWEEN 0" AND Ea LINEARLY THROUGHOUT THE LENGTH OF THE SPIRAL.
4. PROPOSED WALL DESIGN DETAILS WILL BE DEVELOPED IN THE NEXT DESIGN PHASE.
5. DRAINAGE DESIGN WILL BE FURTHER DEVELOPED IN THE NEXT DESIGN PHASE.



TYPICAL CROSS SECTION
ML1 2775+67 TO 2780+48
SCALE: 1"=5'

FINAL 30% SUBMITTAL (06-29-2018)

6/27/2018 10:43:26 AM USER = jaldaron
Q:\LB_9950\CADD Master Sheet\SLRD_22x34_TD-005.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\ploldrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB	APP.
V	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

DESIGNED BY	J. AVENDANO
DRAWN BY	J. SANTA ANA
CHECKED BY	J. AVENDANO
APPROVED BY	S. MANSOUR
DATE	06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. Exp. CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

moffatt & nichol

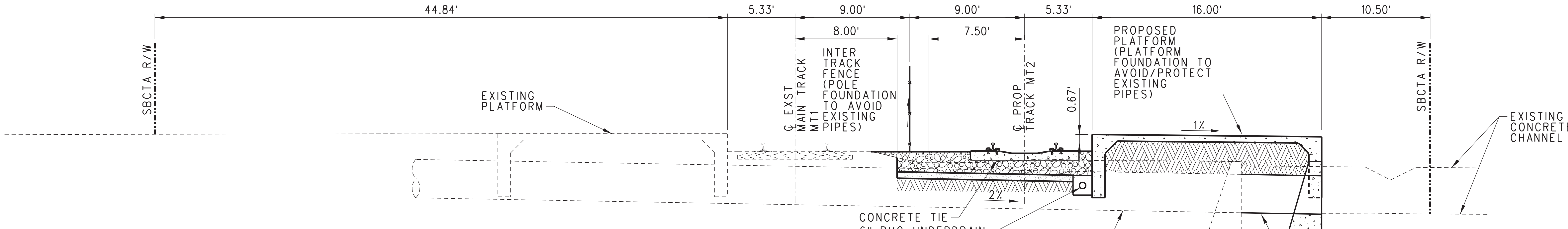
SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

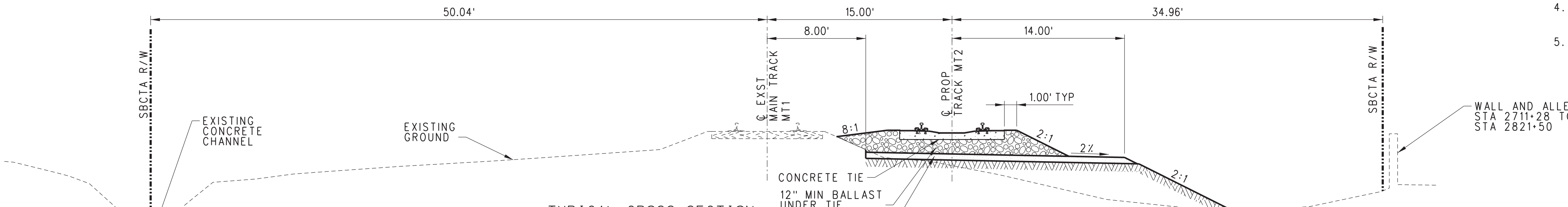
CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

TRACK TYPICAL SECTIONS
SHEET 1 OF 7

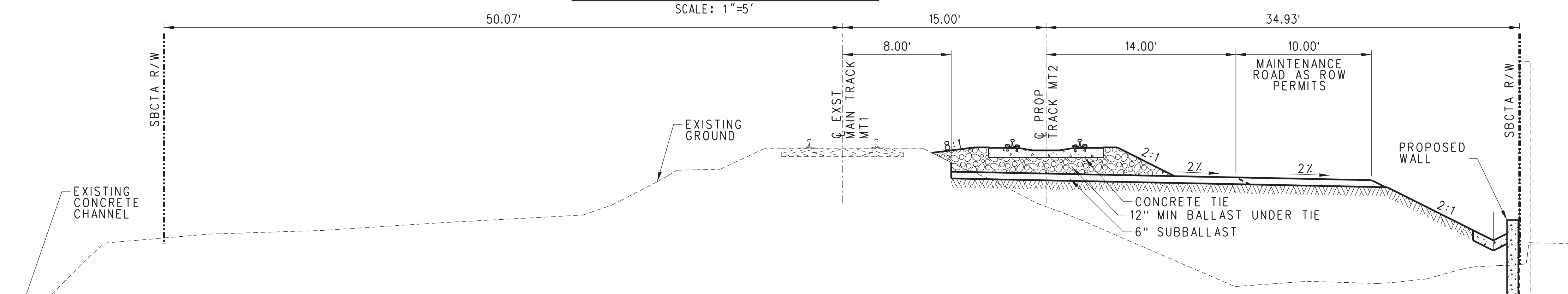
CONTRACT NO.	16-1001411
DRAWING NO.	TD-005
REVISION	A
SHEET NO.	17 OF 200
SCALE	HORIZ 1"=5'



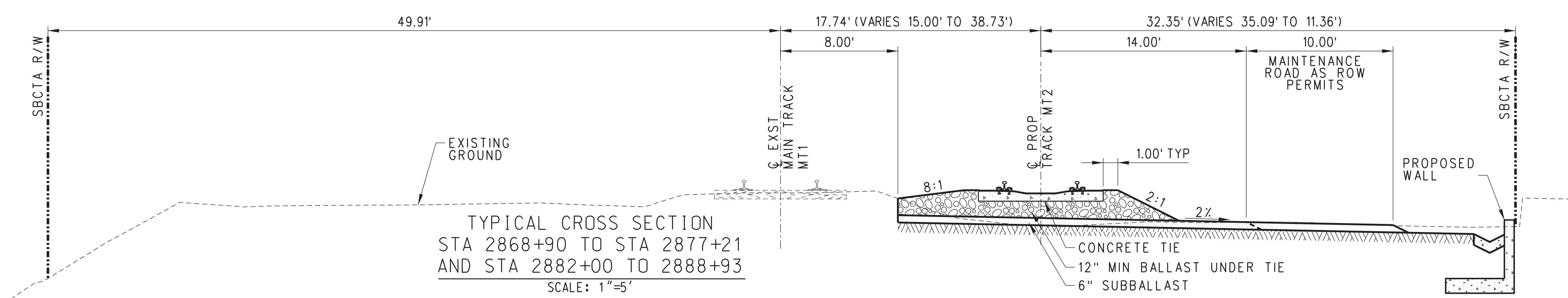
TYPICAL CROSS SECTION
ML1 2788+02 (MP 52.8)
SCALE: 1"=5'



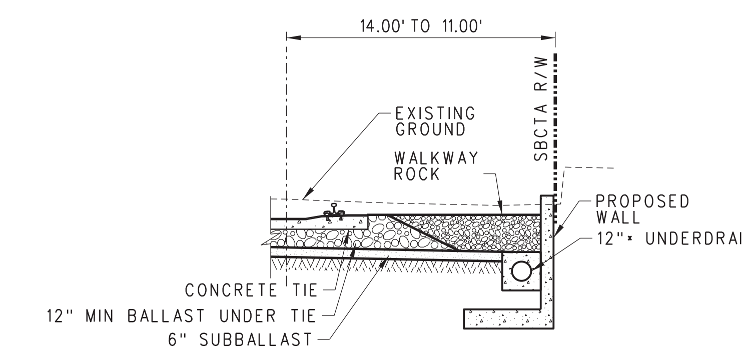
TYPICAL CROSS SECTION
STA 2804+64 TO 2861+20
STA 2797+45 TO STA 2804+64
(18' TO 15' TRACK CENTERS)
SCALE: 1"=5'



TYPICAL CROSS SECTION
STA 2861+87 TO 2868+80
SCALE: 1"=5'



TYPICAL CROSS SECTION
STA 2868+90 TO STA 2877+21
AND STA 2882+00 TO 2888+93
SCALE: 1"=5'



STA 2882+00 TO STA 2885+20

NOTES:

1. TOP OF SUBGRADE PLANE SHALL BE 3.01' MIN. BELOW TOP OF RAIL OF MAIN TRACKS, AT CENTERLINE OF PROPOSED TRACK.
2. FOR SUPERELEVATED TRACK, DISTANCE FROM CENTERLINE OF TRACK TO END OF SUBBALLAST IS 15 FEET 2 INCHES PLUS 6 INCHES FOR EACH INCH OF SUPERELEVATION (Eo), WHERE HIGH RAIL IS ON THE OUTSIDE.
3. SEE PLAN AND PROFILE DRAWINGS FOR SUPERELEVATION OF TRACK. SUPERELEVATION SHALL BE TRANSITIONED BETWEEN 0" AND Eo LINEARLY THROUGHOUT THE LENGTH OF THE SPIRAL.
4. PROPOSED WALL DESIGN DETAILS WILL BE DEVELOPED IN THE NEXT DESIGN PHASE.
5. DRAINAGE DESIGN WILL BE FURTHER DEVELOPED IN THE NEXT DESIGN PHASE.

FINAL 30% SUBMITTAL (06-29-2018)

6/27/2018 10:43:27 AM USER = jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRDT212-TD-006.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential; and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sbcta san bernardino county transportation authority

METROLINK.

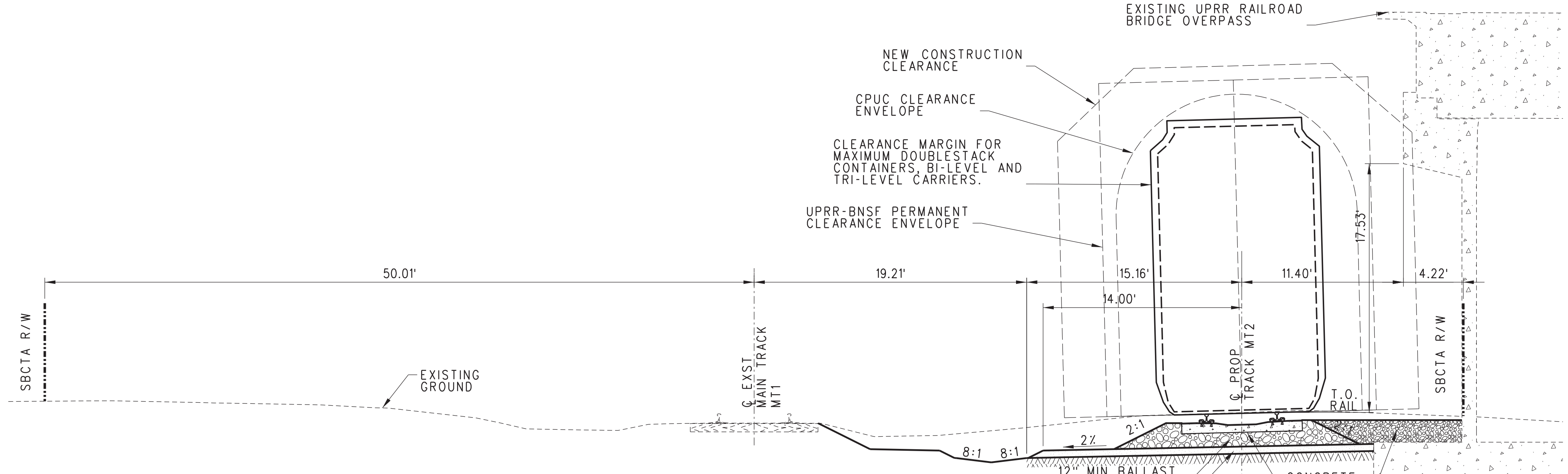
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

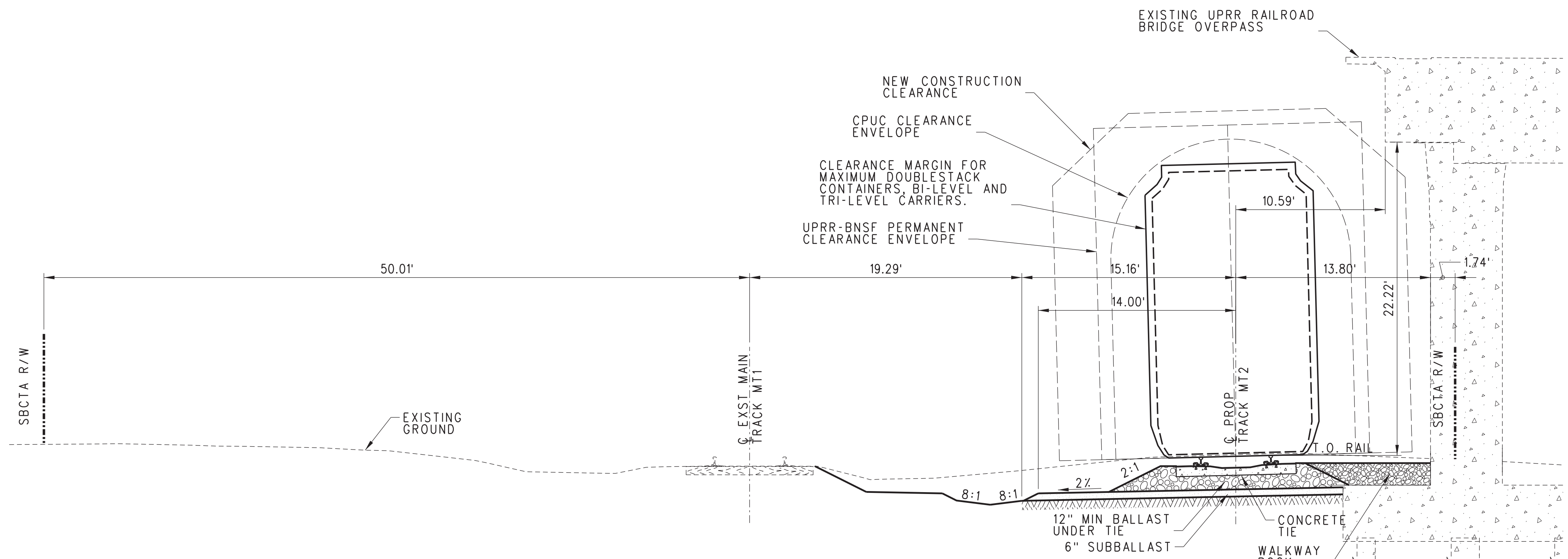
CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

TRACK TYPICAL SECTIONS
SHEET 2 OF 7

CONTRACT NO. 16-1001411
DRAWING NO. TD-006
REVISION A
SHEET NO. 18 OF 200
SCALE HORIZ 1"=5'



TYPICAL CROSS SECTION
STA 2881+00
SCALE: 1"=5'



TYPICAL CROSS SECTION
STA 2881+02
SCALE: 1"=5'

NOTES:

1. TOP OF SUBGRADE PLANE SHALL BE 3.01' MIN. BELOW TOP OF RAIL OF MAIN TRACKS, AT CENTERLINE OF PROPOSED TRACK.
2. FOR SUPERELEVATED TRACK, DISTANCE FROM CENTERLINE OF TRACK TO END OF SUBBALLAST IS 15 FEET 2 INCHES PLUS 6 INCHES FOR EACH INCH OF SUPERELEVATION (Ea), WHERE HIGH RAIL IS ON THE OUTSIDE.
3. SEE PLAN AND PROFILE DRAWINGS FOR SUPERELEVATION OF TRACK. SUPERELEVATION SHALL BE TRANSITIONED BETWEEN 0" AND Ea LINEARLY THROUGHOUT THE LENGTH OF THE SPIRAL.
4. PROPOSED WALL DESIGN DETAILS WILL BE DEVELOPED IN THE NEXT DESIGN PHASE.
5. DRAINAGE DESIGN WILL BE FURTHER DEVELOPED IN THE NEXT DESIGN PHASE.

FINAL 30% SUBMITTAL (06-29-2018)

6/27/2018 10:43:28 AM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-TD-007.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB. APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

sbcta san bernardino county transportation authority

METROLINK

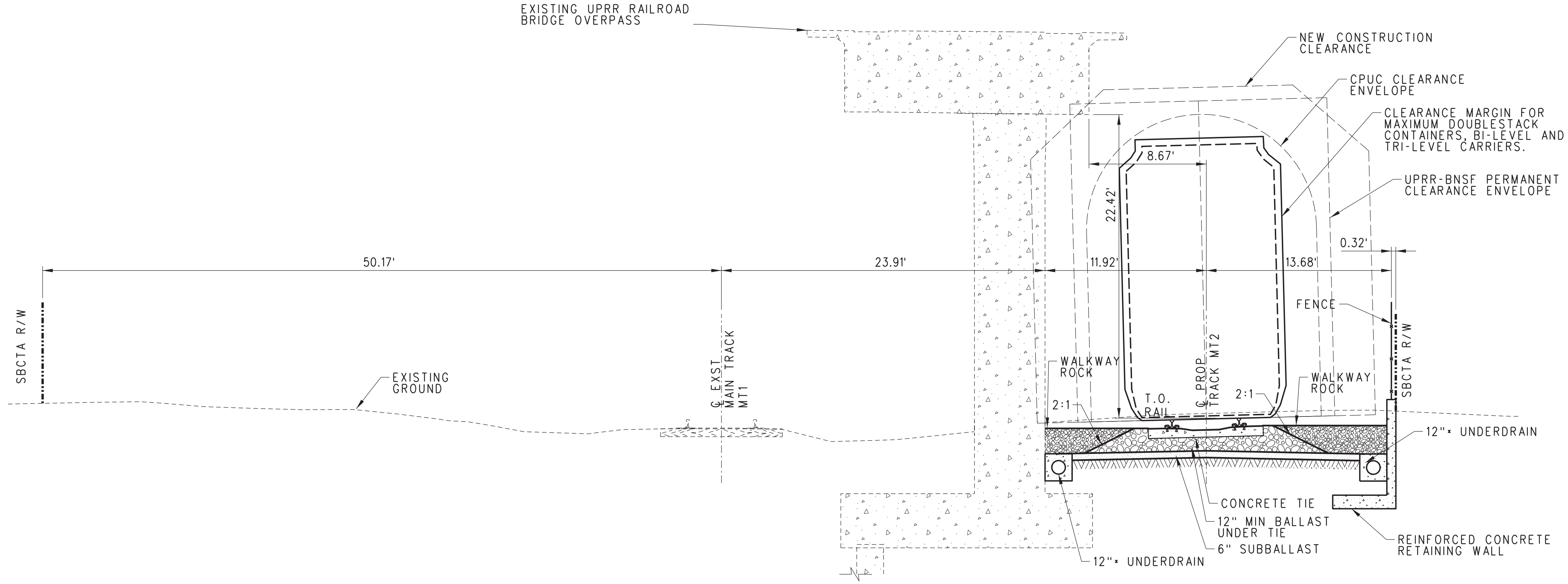
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

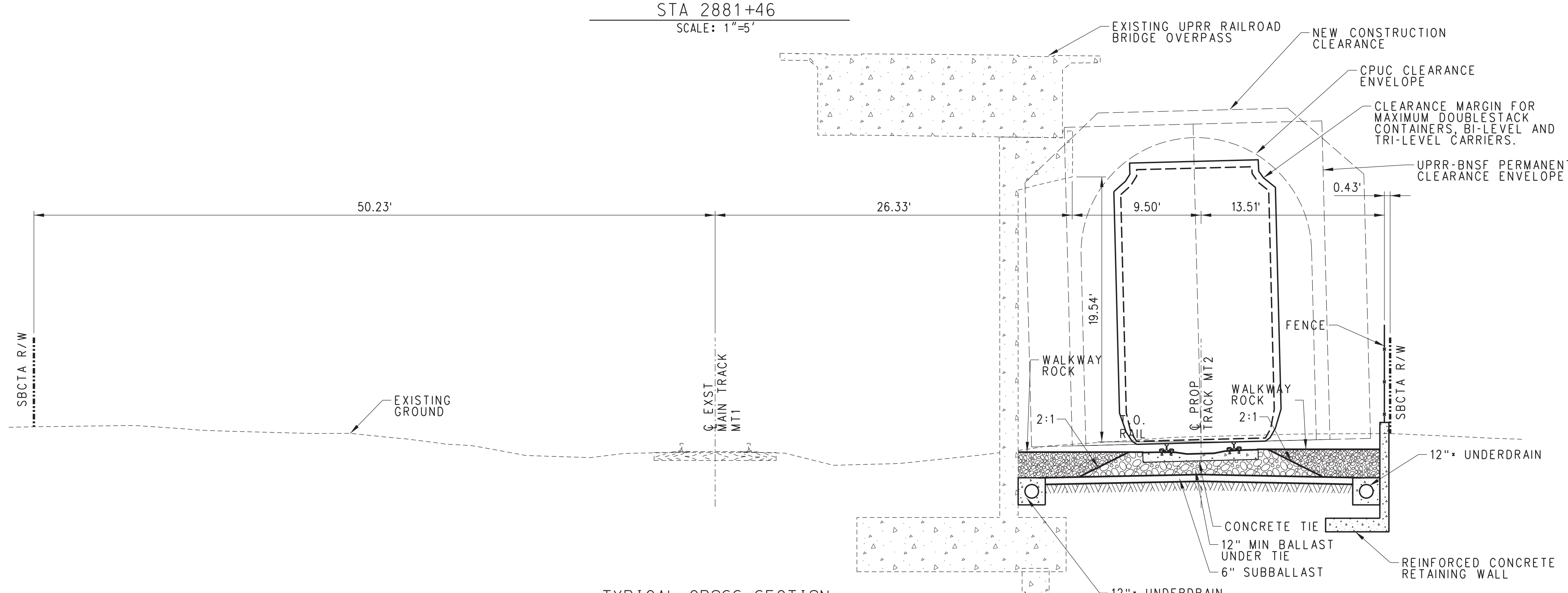
CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

TRACK TYPICAL SECTIONS SHEET 3 OF 7

CONTRACT NO. 16-1001411
DRAWING NO. TD-007
REVISION A
SHEET NO. 19 OF 200
SCALE HORIZ 1"=5'



TYPICAL CROSS SECTION
STA 2881+46
SCALE: 1"=5'



TYPICAL CROSS SECTION
STA 2881+48
SCALE: 1"=5'

NOTES:

1. TOP OF SUBGRADE PLANE SHALL BE 3.01' MIN. BELOW TOP OF RAIL OF MAIN TRACKS, AT CENTERLINE OF PROPOSED TRACK.
2. FOR SUPERELEVATED TRACK, DISTANCE FROM CENTERLINE OF TRACK TO END OF SUBBALLAST IS 15 FEET 2 INCHES PLUS 6 INCHES FOR EACH INCH OF SUPERELEVATION (Ea), WHERE HIGH RAIL IS ON THE OUTSIDE.
3. SEE PLAN AND PROFILE DRAWINGS FOR SUPERELEVATION OF TRACK. SUPERELEVATION SHALL BE TRANSITIONED BETWEEN 0" AND Ea LINEARLY THROUGHOUT THE LENGTH OF THE SPIRAL.
4. PROPOSED WALL DESIGN DETAILS WILL BE DEVELOPED IN THE NEXT DESIGN PHASE.
5. DRAINAGE DESIGN WILL BE FURTHER DEVELOPED IN THE NEXT DESIGN PHASE.

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential; and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

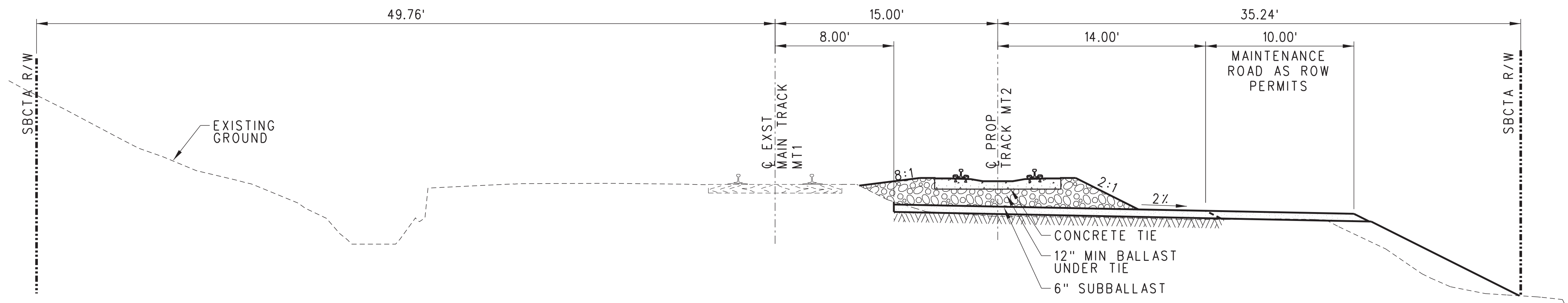
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
TRACK TYPICAL SECTIONS
SHEET 4 OF 7

CONTRACT NO. 16-1001411
DRAWING NO. TD-008
REVISION A
SHEET NO. 20 OF 200
SCALE HORIZ 1"=5'

6/27/2018 10:43:29 AM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRDT212-TD-008.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg



TYPICAL CROSS SECTION
STA 2889+00 TO 2894+20
AND STA 2894+29 TO 2901+84
(TRACK CENTER 19.17' TO 15')
SCALE: 1"=5'

NOTES:

1. TOP OF SUBGRADE PLANE SHALL BE 3.01' MIN. BELOW TOP OF RAIL OF MAIN TRACKS, AT CENTERLINE OF PROPOSED TRACK.
2. FOR SUPERELEVATED TRACK, DISTANCE FROM CENTERLINE OF TRACK TO END OF SUBBALLAST IS 15 FEET 2 INCHES PLUS 6 INCHES FOR EACH INCH OF SUPERELEVATION (Ea), WHERE HIGH RAIL IS ON THE OUTSIDE.
3. SEE PLAN AND PROFILE DRAWINGS FOR SUPERELEVATION OF TRACK. SUPERELEVATION SHALL BE TRANSITIONED BETWEEN 0" AND Ea LINEARLY THROUGHOUT THE LENGTH OF THE SPIRAL.
4. PROPOSED WALL DESIGN DETAILS WILL BE DEVELOPED IN THE NEXT DESIGN PHASE.
5. DRAINAGE DESIGN WILL BE FURTHER DEVELOPED IN THE NEXT DESIGN PHASE.

FINAL 30% SUBMITTAL (06-29-2018)

6/27/2018 10:43:30 AM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-TD-009.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCRRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB. APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sb cta san bernardino county transportation authority

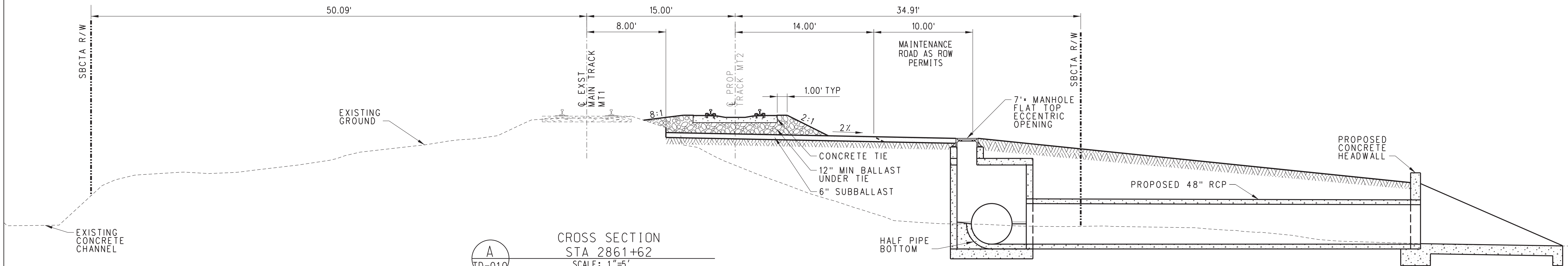
METROLINK

moffatt & nichol

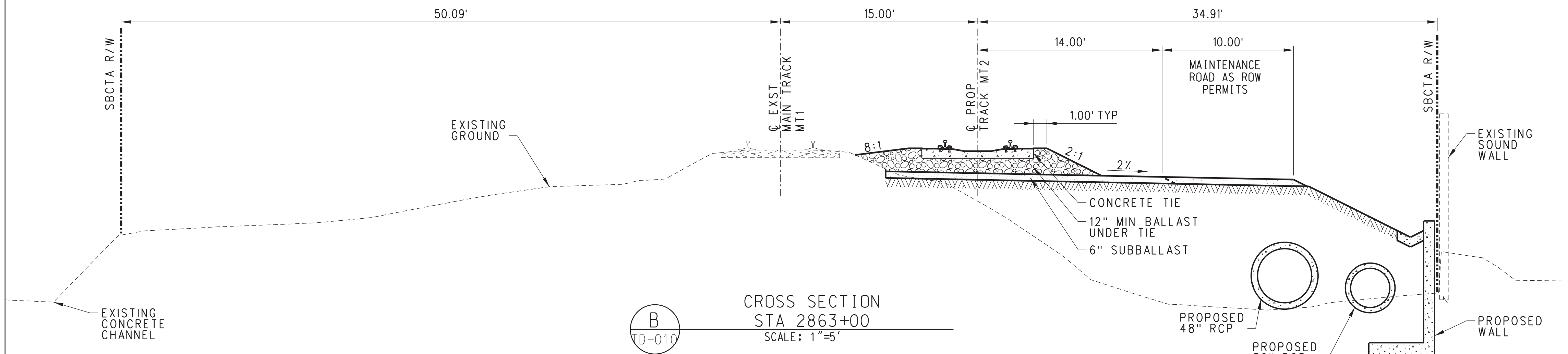
SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
TRACK TYPICAL SECTIONS
SHEET 5 OF 7

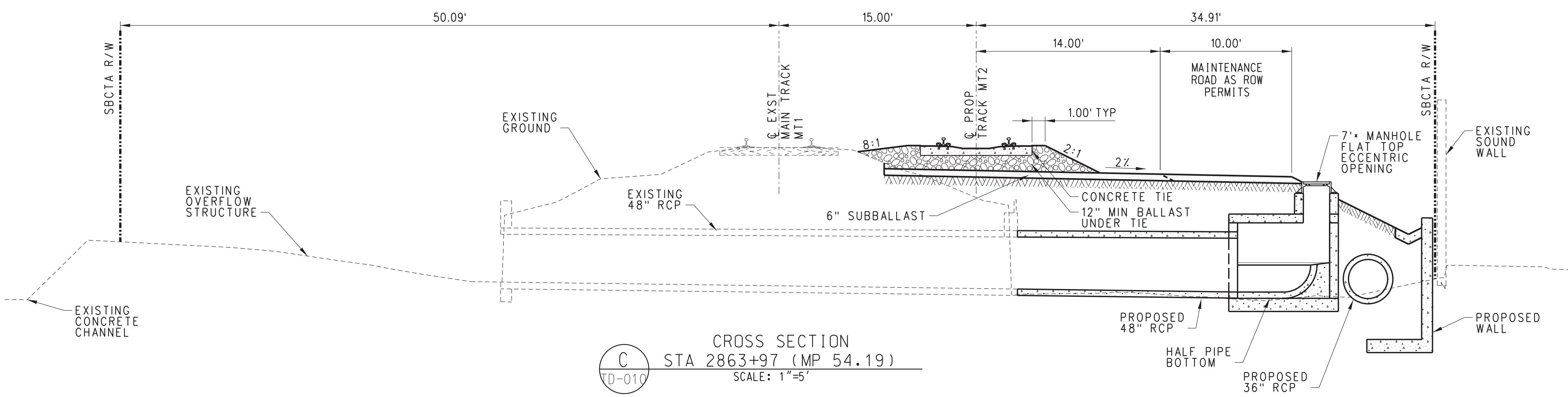
CONTRACT NO. 16-1001411
DRAWING NO. TD-009
REVISION A
SHEET NO. 21 OF 200
SCALE HORIZ 1"=5'



CROSS SECTION A TD-010
STA 2861+62
SCALE: 1"=5'



CROSS SECTION B TD-010
STA 2863+00
SCALE: 1"=5'



CROSS SECTION C TD-010
STA 2863+97 (MP 54.19)
SCALE: 1"=5'

NOTES:

1. TOP OF SUBGRADE PLANE SHALL BE 3.01' BELOW TOP OF RAIL OF MAIN TRACKS, AT CENTERLINE OF PROPOSED TRACK.
2. FOR SUPERELEVATED TRACK, DISTANCE FROM CENTERLINE OF TRACK TO END OF SUBBALLAST IS 15 FEET 2 INCHES PLUS 6 INCHES FOR EACH INCH OF SUPERELEVATION (Ea), WHERE HIGH RAIL IS ON THE OUTSIDE.
3. SEE PLAN AND PROFILE DRAWINGS FOR SUPERELEVATION OF TRACK. SUPERELEVATION SHALL BE TRANSITIONED BETWEEN 0" AND Ea LINEARLY THROUGHOUT THE LENGTH OF THE SPIRAL.
4. PROPOSED WALL DESIGN DETAILS WILL BE DEVELOED IN THE NEXT DESIGN PHASE.
5. DRAINAGE DESIGN WILL BE FURTHER DEVELOPED IN THE NEXT DESIGN PHASE.

FINAL 30% SUBMITTAL (06-29-2018)

7/9/2018 11:34:39 AM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-TD-010.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential; and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sb cta san bernardino county transportation authority

METROLINK.

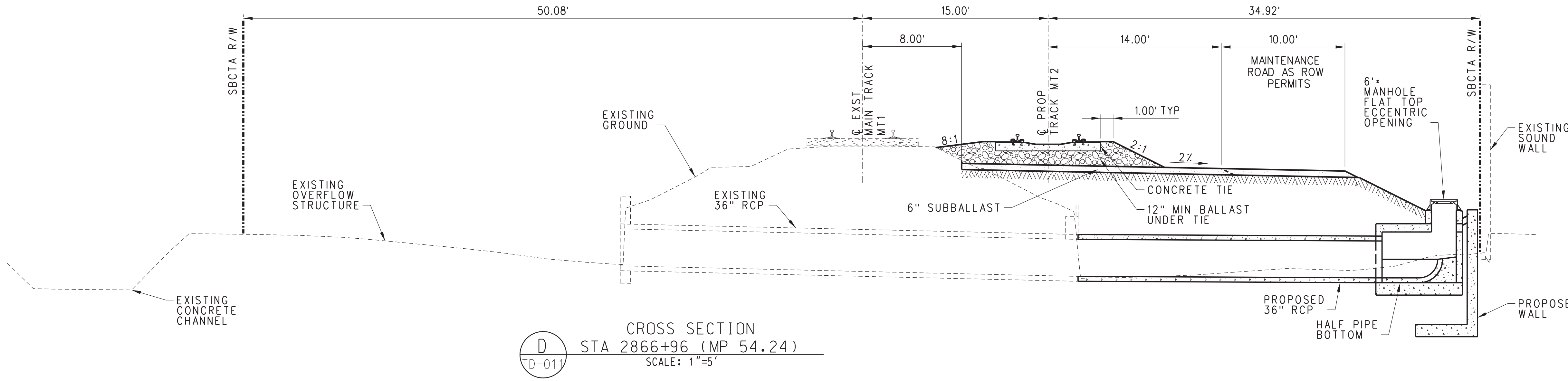
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

DRAINAGE TRACK TYPICAL SECTIONS
SHEET 6 OF 7

CONTRACT NO. 16-1001411
DRAWING NO. TD-010
REVISION A
SHEET NO. 22 OF 200
SCALE HORIZ 1"=5'



D
TD-011

CROSS SECTION
STA 2866+96 (MP 54.24)
SCALE: 1"=5'

NOTES:

1. TOP OF SUBGRADE PLANE SHALL BE 3.01' BELOW TOP OF RAIL OF MAIN TRACKS, AT CENTERLINE OF PROPOSED TRACK.
2. FOR SUPERELEVATED TRACK, DISTANCE FROM CENTERLINE OF TRACK TO END OF SUBBALLAST IS 15 FEET 2 INCHES PLUS 6 INCHES FOR EACH INCH OF SUPERELEVATION (Ea), WHERE HIGH RAIL IS ON THE OUTSIDE.
3. SEE PLAN AND PROFILE DRAWINGS FOR SUPERELEVATION OF TRACK. SUPERELEVATION SHALL BE TRANSITIONED BETWEEN 0" AND Ea LINEARLY THROUGHOUT THE LENGTH OF THE SPIRAL.
4. PROPOSED WALL DESIGN DETAILS WILL BE DEVELOPED IN THE NEXT DESIGN PHASE.
5. DRAINAGE DESIGN WILL BE FURTHER DEVELOPED IN THE NEXT DESIGN PHASE.

FINAL 30% SUBMITTAL (06-29-2018)

6/27/2018 10:43:31 AM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-TD-011.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB. APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential; and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sb cta san bernardino county transportation authority

METROLINK.

moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

DRAINAGE TRACK TYPICAL SECTIONS SHEET 7 OF 7

CONTRACT NO. 16-1001411
DRAWING NO. TD-011
REVISION A
SHEET NO. 23 OF 200
SCALE HORIZ 1"=5'

TRACK ALIGNMENT ABBREVIATIONS & SYMBOLS

HORIZONTAL

θs	CENTRAL ANGLE OF SPIRAL
Dc, DOC	DEGREE OF CURVE
E	TOTAL SUPERELEVATION
Ea	ACTUAL SUPERELEVATION
Eu	UNBALANCED/IMBALANCED SUPERELEVATION
ES	EXTERNAL DISTANCE
K	DISTANCE FROM TS TO PC ALONG TANGENT
LT	LONG TANGENT
P	OFFSET DISTANCE FORM TANGENT TO PC
PC	POINT OF CIRCULAR CURVE
PI	POINT OF INTERSECTION OF TWO TANGENTS
PT	POINT OF TANGENCY
PS	POINT OF SWITCH
Ts	TANGENT OF COMPLETE CURVE
X	TANGENT DISTANCE AT SC OR CS
Y	TANGENT OFFSET AT SC OR CS

VERTICAL

G/L	RATE OF CHANGE OF VERTICAL CURVATURE
L,LVC	LENGTH OF VERTICAL CURVE
PVC	POINT OF VERTICAL CURVE
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENT
VC	VERTICAL CURVE

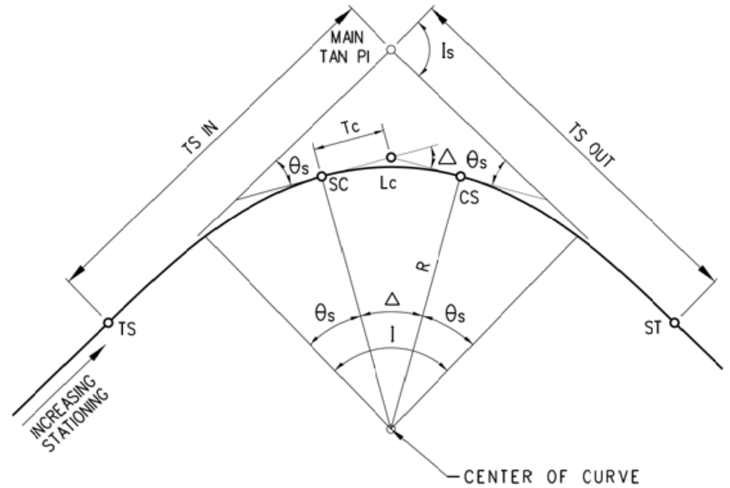


FIGURE A
CIRCULAR CURVES WITH SPIRAL TRANSITION

I - TOTAL INTERSECTION ANGLE

θs - SPIRAL ANGLE = $\frac{Ls\ Dc}{200}$

Δ - CENTRAL ANGLE OF CIRCULAR CURVE = $I - 2\theta s$

R - RADIUS OF CIRCULAR CURVE

Tc - TANGENT LENGTH OF CIRCULAR CURVE = $R\ TAN\frac{\Delta}{2}$

Lc - LENGTH OF CIRCULAR CURVE = $\frac{\Delta}{180}\pi R$

TS - TANGENT TO SPIRAL

SC - SPIRAL TO CURVE

CS - CURVE TO SPIRAL

CC - CENTER OF CURVE

ST - SPIRAL TO TANGENT

MAIN TAN PI - POINT OF INTERSECTION OF MAIN TANGENTS

(TS IN) (TS OUT) - TANGENT LENGTH OF COMPLETE CURVE = $(R+P)\ TAN\frac{I}{2} + K$

(WHEN SPIRALS OF EQUAL LENGTH ARE USED ON BOTH SIDES OF CIRCULAR CURVE, SEE FIGURE C FOR P AND K)

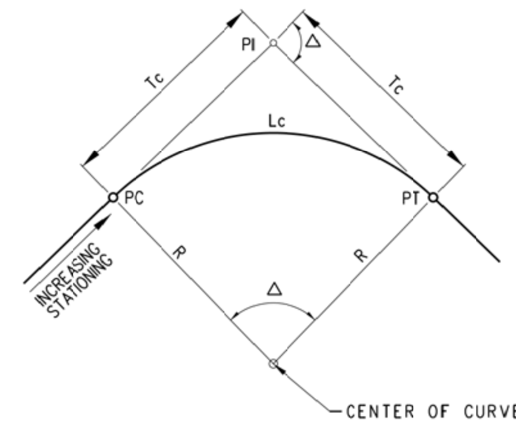


FIGURE B
SIMPLE CIRCULAR CURVE

R = RADIUS OF CIRCULAR CURVE

Δ = CENTRAL ANGLE OF CIRCULAR CURVE

$Tc = R\ TAN\frac{\Delta}{2}$

$Lc = \frac{\Delta}{180}\pi R$

$Dc = 2\ SIN^{-1}(50/R)$ = (CHORD DEFINITION)

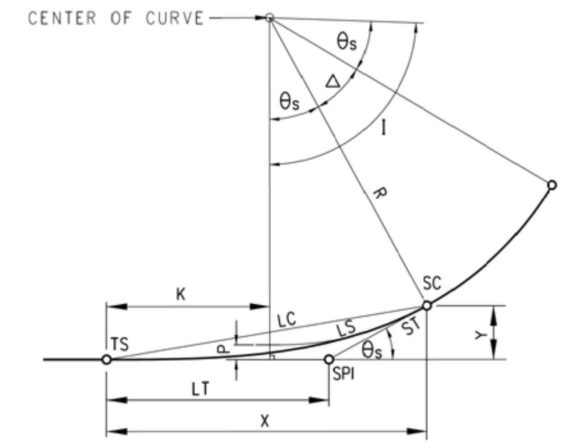


FIGURE C
SPIRAL TRANSITION CURVE

TO BE USED IN NEW CONSTRUCTION, RECONSTRUCTION, AND WHENEVER ALIGNMENT IS SURVEYED IN THE FIELD.

REFER TO ES 2002 FOR PROPER LENGTH AND USE OF SPIRALS.

COMPUTER CALCULATIONS: THE LINEAR (CLOTHOID) SPIRAL SHALL BE USED.
MANUAL CALCULATIONS: THE 10 CHORD SPIRAL MAY BE USED IF D<8' AND θ<=15'.
REFER TO ES 2002.

LC = LENGTH OF CHORD

LS = LENGTH OF SPIRAL (TS TO SC OR CS TO ST)

$\theta s = \frac{Ls\ Dc}{200}$ (Ls IN FEET)

$P = Y - R(1-COS\ \theta s)$

$K = X - R\ SIN\ \theta s$

$ST = \frac{Y}{SIN\ \theta s}$

$LT = X - \frac{Y}{TAN\ \theta s}$

$Xs = Ls(1 - \frac{\delta s^2}{100} - \frac{\delta s^4}{216})$

$Ys = Ls(\frac{\delta s}{3} - \frac{\delta s^3}{42})$

$\delta s = \frac{\theta s\ \pi}{180}$

NOTES:

1. Dc, θs, Δ, AND I ARE DEGREES. δs EXPRESSED IN RADIANS.
2. ALL OTHER DIMENSIONS ARE IN FEET.
3. CURVES AND STATIONING ARE BASED ON ARC DEFINITION. DEGREE OF CURVATURE IS CALCULATED PER CHORD DEFINITION.

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sbcta san bernardino county transportation authority

METROLINK

moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

HORIZONTAL CURVE DATA
SHEET 1 OF 1

CONTRACT NO. 16-1001411
DRAWING NO. TD-012
REVISION A
SHEET NO. 24 OF 200
SCALE NONE

PROPOSED MAIN TRACK 1 GEOMETRY TABLE

TRACK ALIGNMENT: MAIN TRACK 1 (MT01)

CURVE NO.	DESC.	STATION	NORTHING	EASTING	BEARING	DISTANCE	Rc	Dc	Lc	DELTA	I	THETA	Ls	X	Y	Ea	Eu	Vf (MPH)	Vp (MPH)
	POB	2754+40.67	1858071.34	6748191.55															
					N 87°58'06" E	1720.3													
	TS	2771+60.97	1858132.32	6749910.77															
												0°09'00"	60	60	0.05				
	SC	2772+20.97	1858134.40	6749970.73															
	PI	2773+22.59	1858137.74	6750072.30			11460	0°30'00"	203.25	1°00'58"						0.25"	1.93" (P) 0.81" (F)	45	79
52.46-1																			
	CS	2774+24.21	1858139.27	6750173.92															
												0°09'00"	60	60	0.05				
	ST	2774+84.21	1858140.07	6750233.91															
	PIscs	2773+22.59	1858138.05	6750072.30							1°18'58" Right								
					N 89°17'04" E	347.95													
	TS	2778+32.17	1858144.42	6750581.84															
												0°09'00"	60	60	0.05				
	SC	2778+92.17	1858145.22	6750641.83															
	PI	2779+92.37	1858146.73	6750742.03			11460	0°30'00"	200.41	1°00'07"						0.25"	1.93" (P) 0.81" (F)	45	79
52.61-1																			
	CS	2780+92.58	1858150.00	6750842.18															
												0°09'00"	60	60	0.05				
	ST	2781+52.58	1858152.06	6750902.15															
	PIscs	2779+92.38	1858146.42	6750742.04							1°18'07" Left								
					N 87°58'57" E	0.43													
	POE	2781+53.01	1858152.07	6750902.58															

FINAL 30% SUBMITTAL (06-29-2018)

6/28/2018 4:48:40 PM USER • jcalderon
Q:\LBY9503\CADD\Master\Sheets\LRDT212-TD-013.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sbcta san bernardino county transportation authority

METROLINK.

moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

GEOMETRY TABLES
SHEET 1 OF 3

CONTRACT NO. 16-1001411
DRAWING NO. TD-013
REVISION A
SHEET NO. 25 OF 200
SCALE NONE

PROPOSED MAIN TRACK 2 GEOMETRY TABLE

TRACK ALIGNMENT: MAIN TRACK 2 (MT02)

CURVE NO.	DESC.	STATION	NORTHING	EASTING	BEARING	DISTANCE	Rc	Dc	Lc	DELTA	I	THETA	Ls	X	Y	Ea	Eu	Vf (MPH)	Vp (MPH)
	POB	2754+38.66	1858056.52	6748190.08															
					N 87°58'57" E	1601.13													
52.46-2	TS	2770+39.79	1858112.89	6749790.21															
												0°09'00"	60	60	0.05				
	SC	2770+99.79	1858114.95	6749850.18															
	PI	2772+00.00	1858118.22	6749950.33			11460	0°30'00"	200.41	1°00'07"						0.25"	0.81" (F) 1.93" (P)	55	79
	CS	2773+00.20	1858119.73	6750050.53															
												0°09'00"	60	60	0.05				
	ST	2773+60.20	1858120.53	6750110.52															
	PIscs	2772+00.00	1858118.53	6749950.32							1°18'07" Right								
					N 89°17'04" E	471.78													
52.61-2	TS	2778+31.98	1858126.42	6750582.27															
												0°09'00"	60	60	0.05				
	SC	2778+91.98	1858127.22	6750642.26															
	PI	2779+92.19	1858128.74	6750742.46			11460	0°30'00"	200.41	1°00'07"						0.25"	0.81" (F) 1.93" (P)	55	79
	CS	2780+92.39	1858132.00	6750842.61															
												0°09'00"	60	60	0.05				
	ST	2781+52.39	1858134.06	6750902.58															
	PIscs	2779+92.19	1858128.42	6750742.47							1°18'07" Left								
					N 87°58'57" E	1592.68													
52.97-2	TS	2797+45.07	1858190.13	6752494.27															
												0°04'30"	60	60	0.03				
	SC	2798+05.07	1858192.27	6752554.23															
	PI	2798+40.18	1858193.55	6752589.32			22920	0°15'00"	70.23	0°10'32"						0.25"	0.28" (F) 0.84" (P)	55	79
	CS	2798+75.29	1858194.94	6752624.40															
												0°04'30"	60	60	0.03				
	ST	2799+35.29	1858197.37	6752684.36															
	PIscs	2798+40.18	1858193.48	6752589.32							0°19'32" Left								
					N 87°39'25" E	337.76													
53.07-2	TS	2802+73.06	1858211.17	6753021.84															
												0°04'30"	60	60	0.03				
	SC	2803+33.06	1858213.60	6753081.79															
	PI	2803+68.19	1858214.99	6753116.89			22920	0°15'00"	70.26	0°10'32"						0.25"	0.28" (F) 0.84" (P)	55	79
	CS	2804+03.32	1858216.27	6753152.00															
												0°04'30"	60	60	0.03				
	ST	2804+63.32	1858218.41	6753211.96															
	PIscs	2803+68.19	1858215.06	6753116.89							0°19'32" Right								
					N 87°58'58" E	4385.62													

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
(1)	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sbcta san bernardino county transportation authority

METROLINK.

moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

GEOMETRY TABLES
SHEET 2 OF 3

CONTRACT NO. 16-1001411
DRAWING NO. TD-014
REVISION A
SHEET NO. 26 OF 200
SCALE NONE

PROPOSED MAIN TRACK 2 GEOMETRY TABLE (CONTINUED)

TRACK ALIGNMENT: MAIN TRACK 2 (MT02)																			
CURVE NO.	DESC.	STATION	NORTHING	EASTING	BEARING	DISTANCE	Rc	Dc	Lc	DELTA	I	THETA	Ls	X	Y	Ea	Eu	Vf (MPH)	Vp (MPH)
53.95-2	TS	2848+48.94	1858372.80	6757594.86															
												1°05'56"	220	219.99	1.41				
	SC	2850+68.94	1858381.94	6757814.67															
	PI	2861+23.99	1858439.30	6758868.15			5735.19	0°59'57"	2086.76	20°50'50"						1.50"	0.62" (F) 2.87" (P)	55	79
	PCC	2871+55.70	1858867.81	6759832.26															
	PI	2875+71.54	1859036.70	6760212.25			7640	0°45'00"	830.85	6°13'51"						1.50"	0.09" (F) 1.78" (P)	55	79
	PCC	2879+86.58	1859245.85	6760571.69															
	PI	2882+27.23	1859366.88	6760779.69			5730	1°00'00"	481.07	4°48'37"						1.50"	0.62" (F) 2.87" (P)	55	79
	CS	2884+67.62	1859504.95	6760976.83															
												0°30'00"	100	100	0.29				
	ST	2885+67.62	1859562.79	6761058.40															
	PIscs	2878+87.18	1859164.90	6760500.68							11°32'28" Left								
					N 54°29'43" E	408.28													
54.71-2	TS	2889+75.90	1859799.90	6761390.77															
												0°15'00"	100	100	0.15				
	SC	2890+75.90	1859857.86	6761472.26															
	PI	2892+02.34	1859930.85	6761575.52			11459.3	0°30'00"	252.88	1°15'52"						0.75"	0.31" (F) 1.43" (P)	55	79
	CS	2893+28.78	1860001.54	6761680.36															
												0°15'00"	100	100	0.15				
	ST	2894+28.78	1860057.20	6761763.43															
	PIscs	2892+02.35	1859931.42	6761575.12							1°45'52" Right								
54.92-2					N 56°15'35" E	755.58													
	PC	2901+84.36	1860476.87	6762391.75															
	PI	2902+79.86	1860529.92	6762471.16			3820	1°30'00"	190.96	2°51'51"						0"	1.04" (F) 1.88" (P)	35	45
	PT	2903+75.32	1860586.86	6762547.83															
					N 53°23'44" E	204.69													
					N 56°15'35" E	61.04													
	POE	2906+41.05	1860742.82	6762762.91															

FINAL 30% SUBMITTAL (06-29-2018)

6/28/2018 4:48:50 PM USER • jcalderon
Q:\LBY9503\CADD\Master\Sheets\LRDT212-TD-015.dgn
R:\CADD\Microstation\V8\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8\Client\SCRRA\plotdrv\SCRRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	APP.
1	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sbcta san bernardino county transportation authority

METROLINK

moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

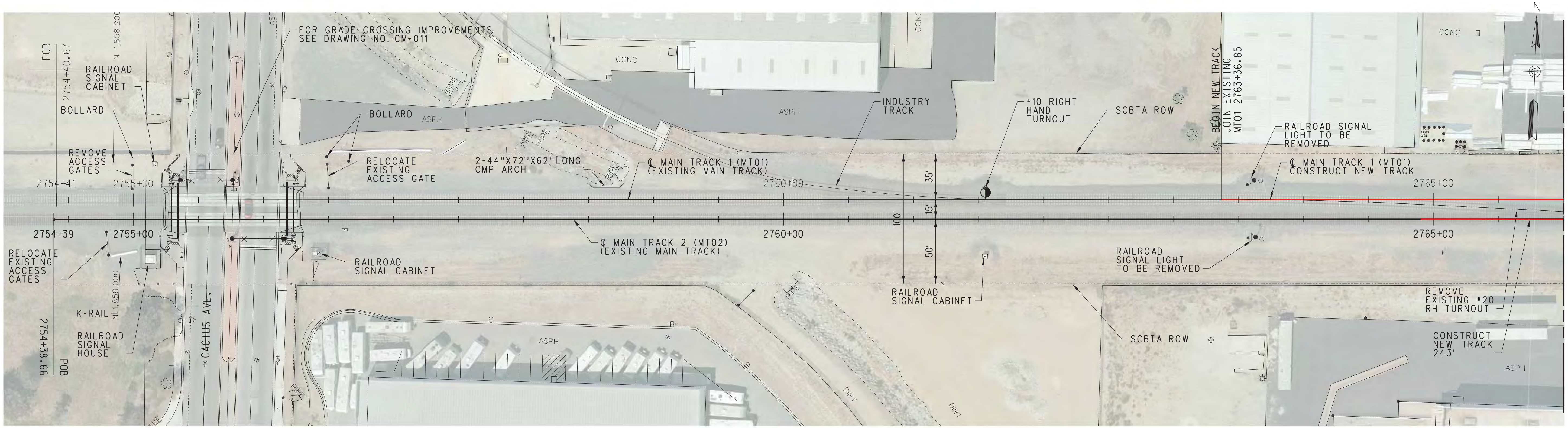
CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

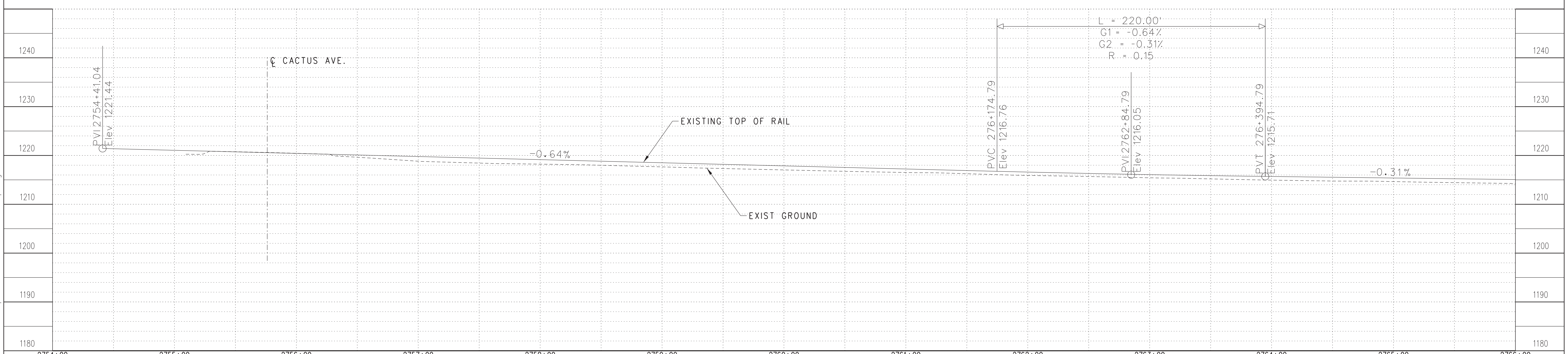
GEOMETRY TABLES
SHEET 3 OF 3

CONTRACT NO. 16-1001411
DRAWING NO. TD-015
REVISION A
SHEET NO. 27 OF 200
SCALE NONE

TO LOS ANGELES

TO SAN BERNARDINO





FINAL 30% SUBMITTAL (06-29-2018)

7/9/2018 1:34:15 PM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LR01212-TP-001.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB. APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential; and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY N. VELAZQUEZ
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

sb cta — san bernardino county transportation authority

METROLINK.

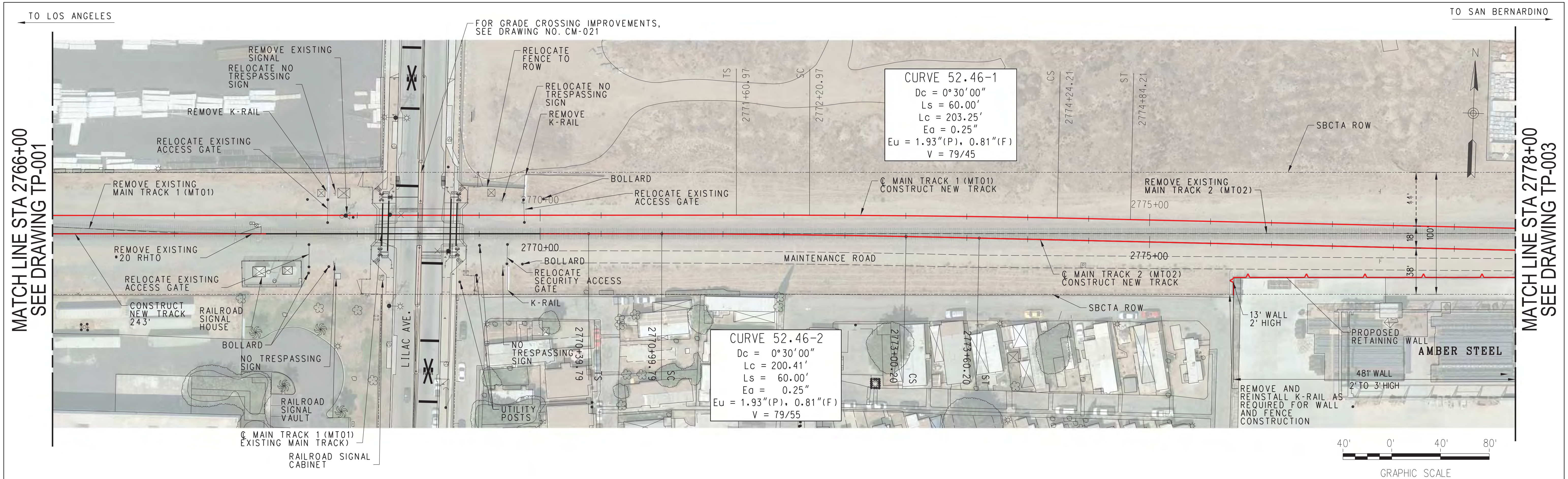
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

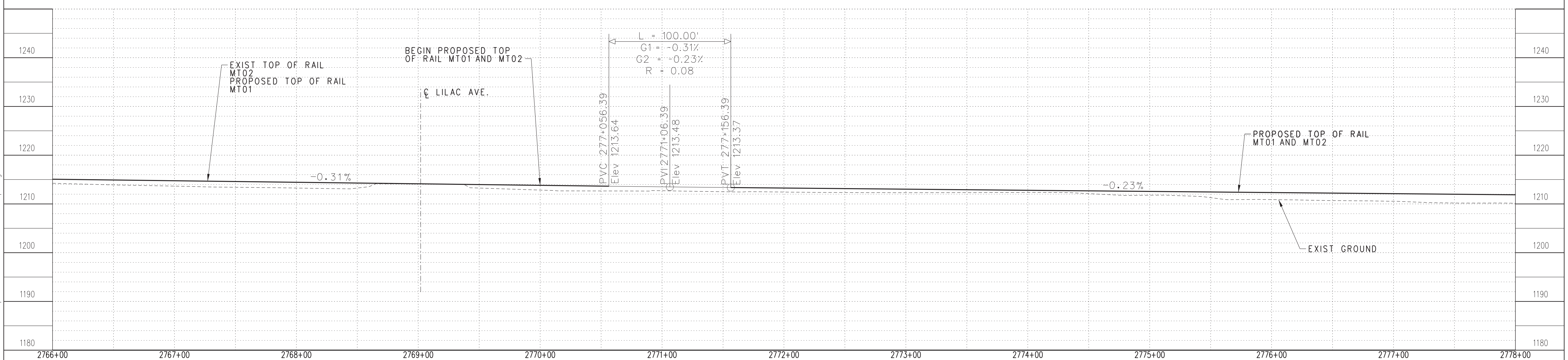
CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

TRACK PLAN AND PROFILE
MT2 STA 2754+39 (POB) TO MT2 STA 2766+00
SHEET 1 OF 13

CONTRACT NO. 16-1001411
DRAWING NO. TP-001
REVISION A
SHEET NO. 28 OF 200
SCALE HORIZ 1"=40' VERT 1"=4'


TO LOS ANGELES
TO SAN BERNARDINO
FOR GRADE CROSSING IMPROVEMENTS, SEE DRAWING NO. CM-021
MATCH LINE STA 2766+00 SEE DRAWING TP-001
MATCH LINE STA 2778+00 SEE DRAWING TP-003
REMOVE EXISTING SIGNAL
RELOCATE NO TRESPASSING SIGN
REMOVE K-RAIL
RELOCATE EXISTING ACCESS GATE
REMOVE EXISTING MAIN TRACK 1 (MT01)
REMOVE EXISTING *20 RHTO
RELOCATE EXISTING ACCESS GATE
CONSTRUCT NEW TRACK 243'
RAILROAD SIGNAL HOUSE
BOLLARD
NO TRESPASSING SIGN
RAILROAD SIGNAL VAULT
℄ MAIN TRACK 1 (MT01) EXISTING MAIN TRACK)
RAILROAD SIGNAL CABINET
LILAC AVE.
RELOCATE FENCE TO ROW
RELOCATE NO TRESPASSING SIGN
REMOVE K-RAIL
BOLLARD
RELOCATE EXISTING ACCESS GATE
2770+00
BOLLARD
RELOCATE SECURITY ACCESS GATE
K-RAIL
NO TRESPASSING SIGN
UTILITY POSTS
TS 2771+60.97
SC 2772+20.97
CS 2774+24.21
ST 2774+84.21
CURVE 52.46-1
Dc = 0°30'00"
Ls = 60.00'
Lc = 203.25'
Ea = 0.25"
Eu = 1.93"(P), 0.81"(F)
V = 79/45
℄ MAIN TRACK 1 (MT01) CONSTRUCT NEW TRACK
REMOVE EXISTING MAIN TRACK 2 (MT02)
2775+00
SBCTA ROW
MAINTENANCE ROAD
℄ MAIN TRACK 2 (MT02) CONSTRUCT NEW TRACK
2770+39.79 TS
2770+99.79 SC
CURVE 52.46-2
Dc = 0°30'00"
Lc = 200.41'
Ls = 60.00'
Ea = 0.25"
Eu = 1.93"(P), 0.81"(F)
V = 79/55
2773+00.20 CS
2773+60.20 ST
13' WALL 2' HIGH
PROPOSED RETAINING WALL
AMBER STEEL
481' WALL 2' TO 3' HIGH
REMOVE AND REINSTALL K-RAIL AS REQUIRED FOR WALL AND FENCE CONSTRUCTION
44'
100'
18'
38'
N
40' 0' 40' 80'
GRAPHIC SCALE

FINAL 30% SUBMITTAL (06-29-2018)


1240
1230
1220
1210
1200
1190
1180
EXIST TOP OF RAIL MT02
PROPOSED TOP OF RAIL MT01
BEGIN PROPOSED TOP OF RAIL MT01 AND MT02
℄ LILAC AVE.
L = 100.00'
G1 = -0.31%
G2 = -0.23%
R = 0.08
PVC 277+056.39 Elev 1213.64
PVI 2771+06.39 Elev 1213.48
PVT 277+156.39 Elev 1213.37
-0.31%
-0.23%
PROPOSED TOP OF RAIL MT01 AND MT02
EXIST GROUND
2766+00
2767+00
2768+00
2769+00
2770+00
2771+00
2772+00
2773+00
2774+00
2775+00
2776+00
2777+00
2778+00

USER = jcalderon
7/9/2018 1:34:27 PM
Q:\LB\9503\CADD\Master\Sheets\LRD1212-TP-002.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY N. VELAZQUEZ
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sb cta san bernardino county transportation authority

METROLINK.

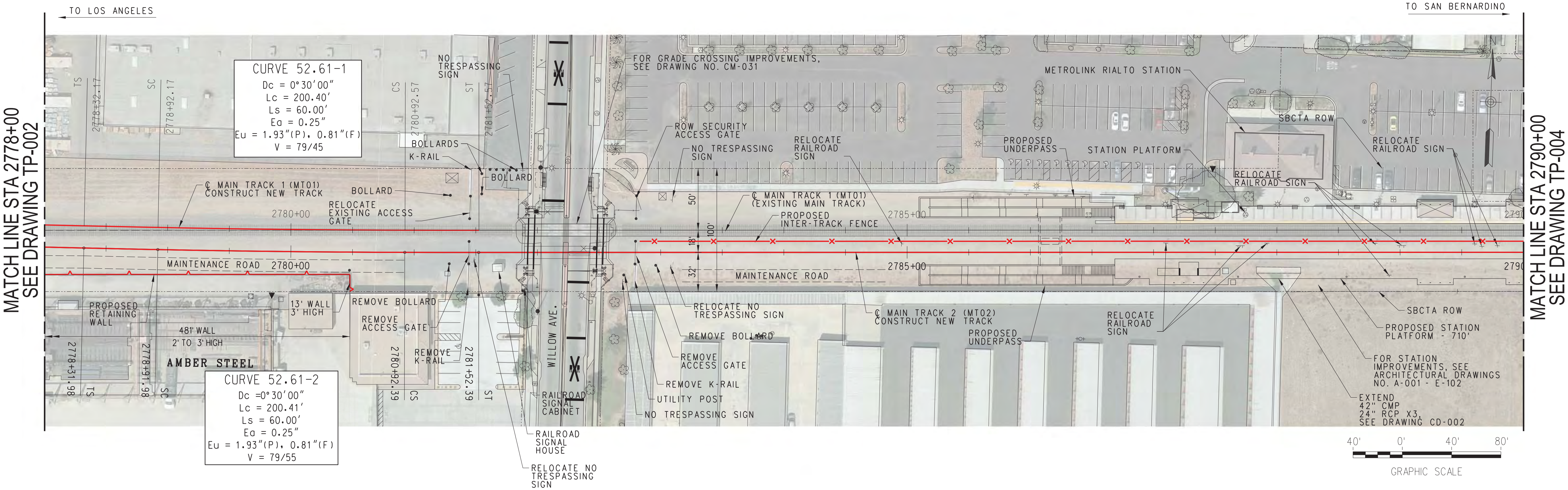
moffatt & nichol

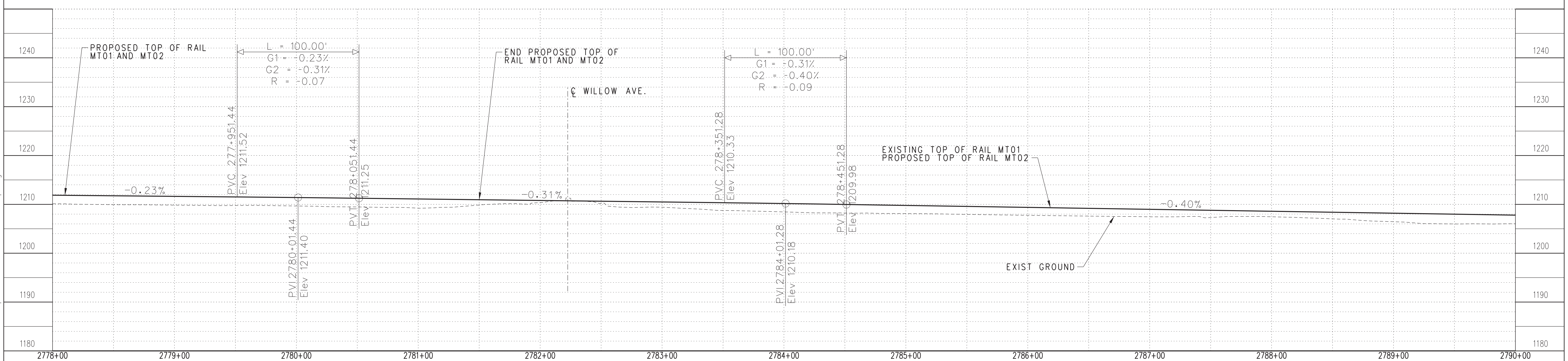
SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

TRACK PLAN AND PROFILE
MT2 STA 2766+00 TO MT2 STA 2778+00
SHEET 2 OF 13

CONTRACT NO. 16-1001411
DRAWING NO. TP-002
REVISION A
SHEET NO. 29 OF 200
SCALE HORIZ 1"=40' VERT 1"=4'





FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY N. VELAZQUEZ
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

METROLINK

moffatt & nichol

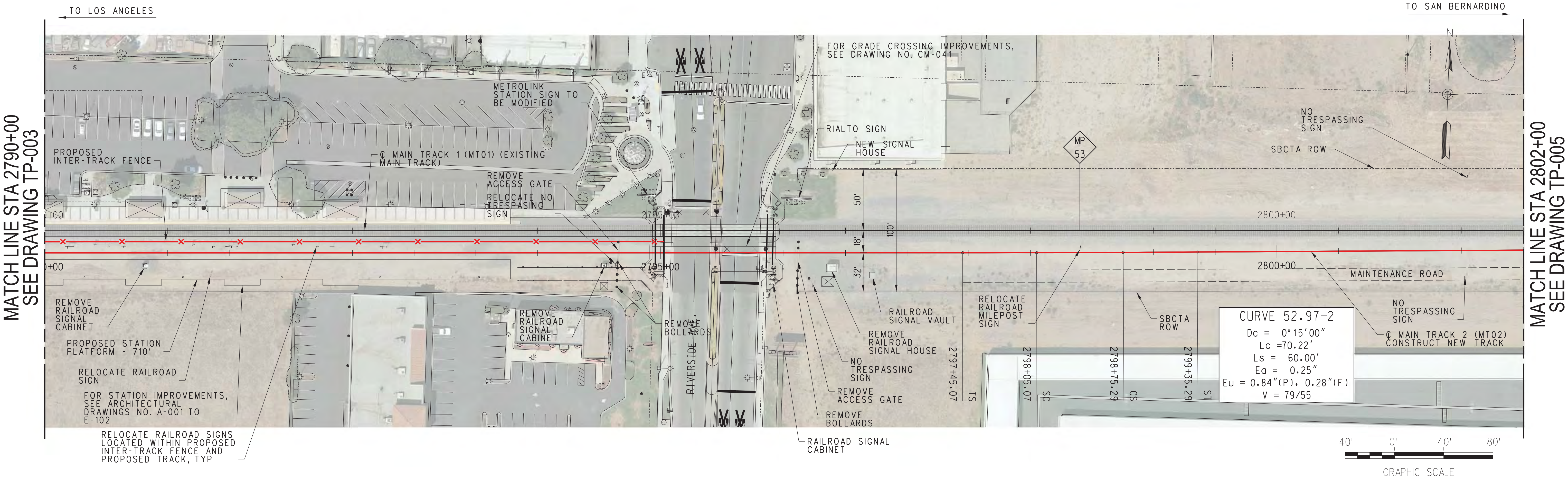
SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

TRACK PLAN AND PROFILE
MT2 STA 2778+00 TO MT2 STA 2790+00
SHEET 3 OF 13

CONTRACT NO. 16-1001411
DRAWING NO. TP-003
REVISION A
SHEET NO. 30 OF 200
SCALE HORIZ 1"=40' VERT 1"=4'

7/9/2018 1:34:41 PM USER : jcalderon



FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY N. VELAZQUEZ
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

sb cta san bernardino county transportation authority

METROLINK.

moffatt & nichol

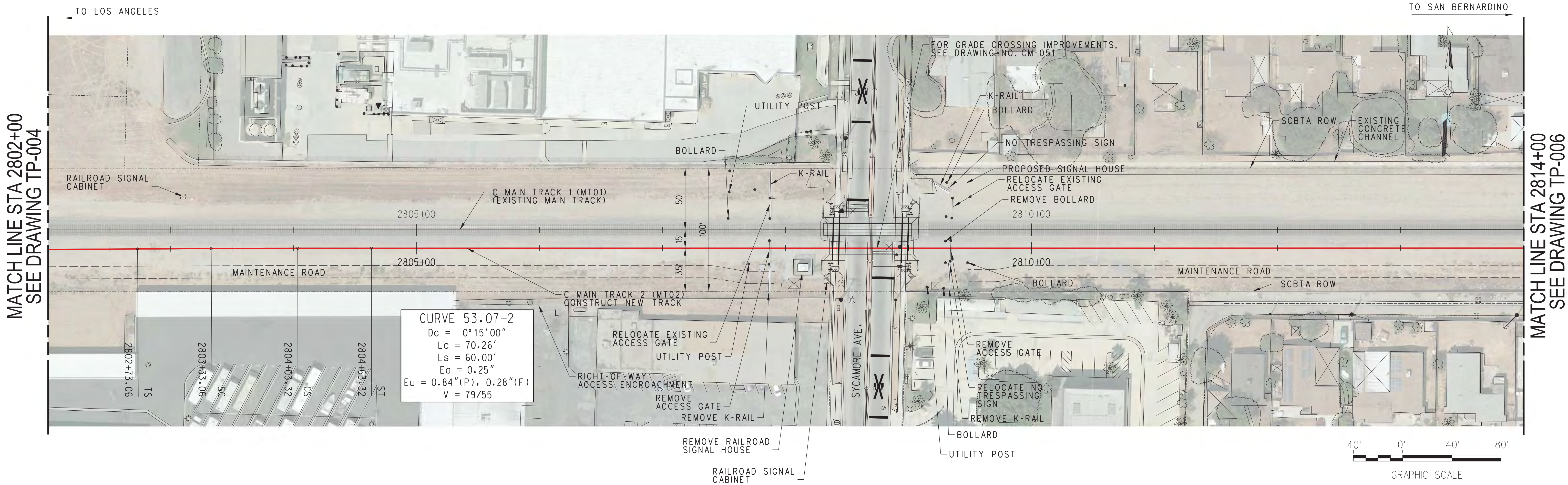
SUBMITTED: PROJECT MANAGER
APPROVED:

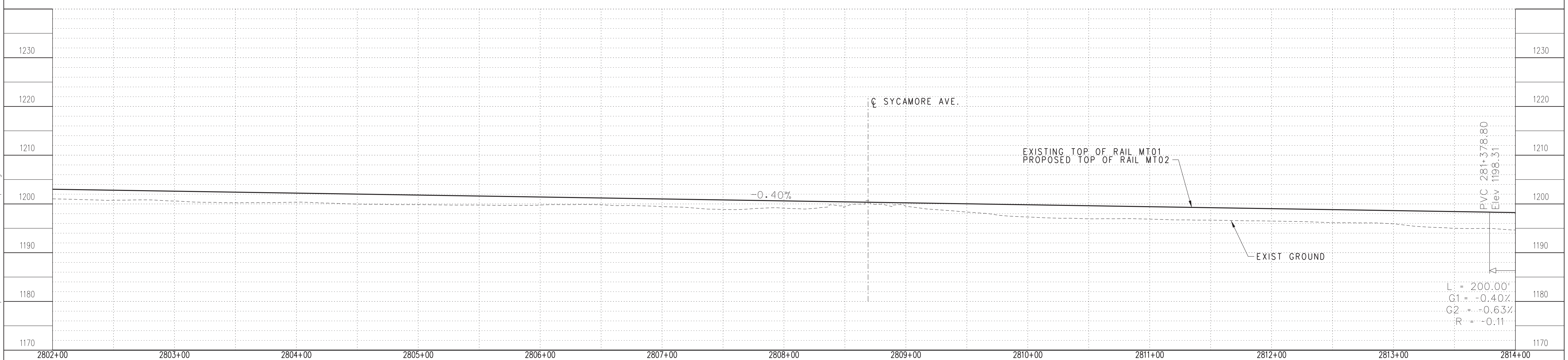
CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

TRACK PLAN AND PROFILE
MT2 STA 2790+00 TO MT2 STA 2802+00
SHEET 4 OF 13

CONTRACT NO. 16-1001411
DRAWING NO. TP-004
REVISION A
SHEET NO. 31 OF 200
SCALE HORIZ 1"=40' VERT 1"=4'

7/9/2018 1:34:54 PM USER - jcalderon
Q:\LBY9503\CADD\Master\Sheets\LRD1212-TP-004.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg





FINAL 30% SUBMITTAL (06-29-2018)

7/9/2018 1:35:07 PM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-TP-005.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY N. VELAZQUEZ
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sbcta san bernardino county transportation authority

METROLINK.

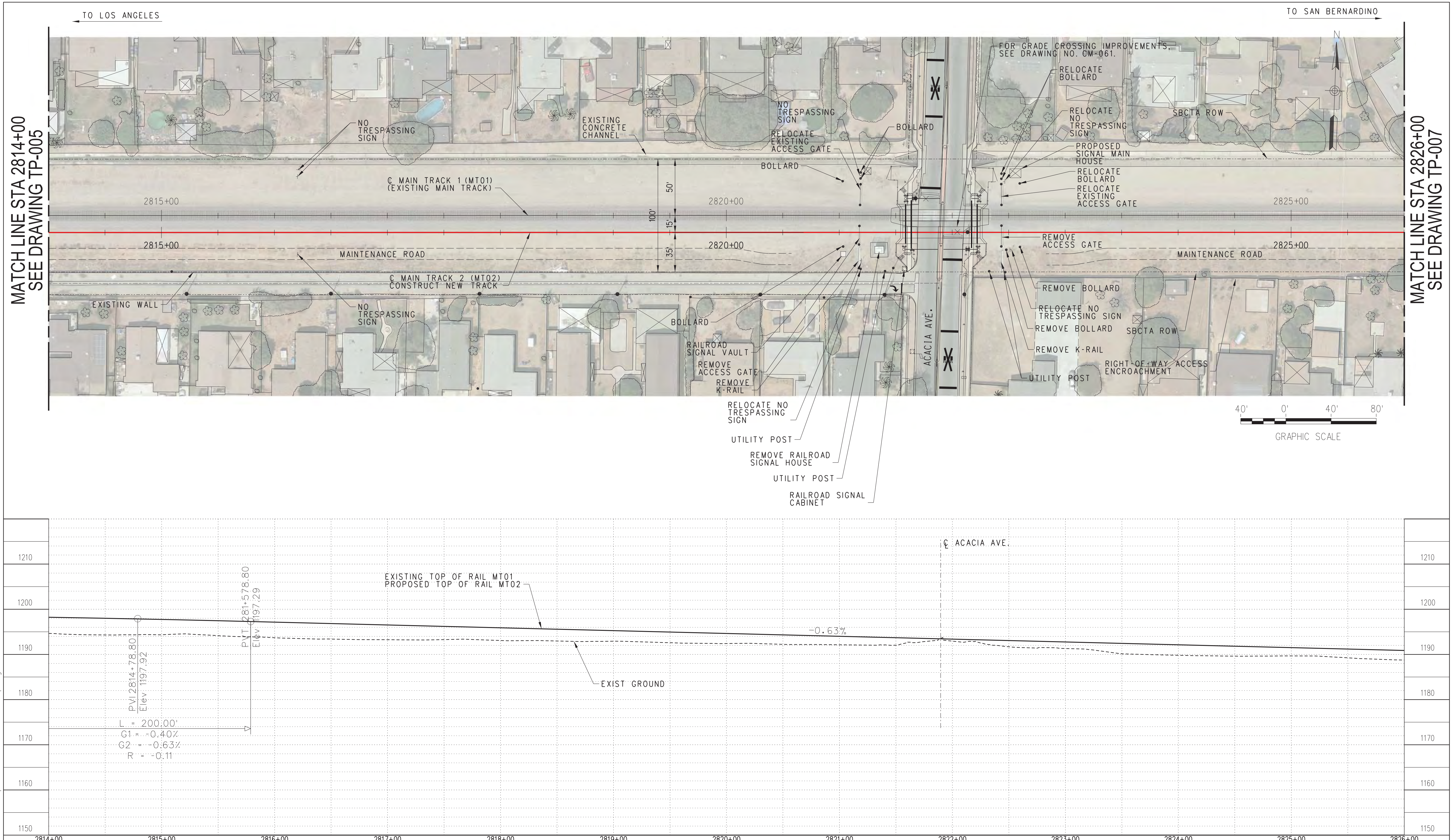
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

TRACK PLAN AND PROFILE MT2 STA 2802+00 TO MT2 STA 2814+00 SHEET 5 OF 13

CONTRACT NO. 16-1001411
DRAWING NO. TP-005
REVISION A
SHEET NO. 32 OF 200
SCALE HORIZ 1"=40' VERT 1"=4'



FINAL 30% SUBMITTAL (06-29-2018)

7/9/2018 1:35:20 PM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-TP-006.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY N. VELAZQUEZ
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sbcta san bernardino county transportation authority

METROLINK.

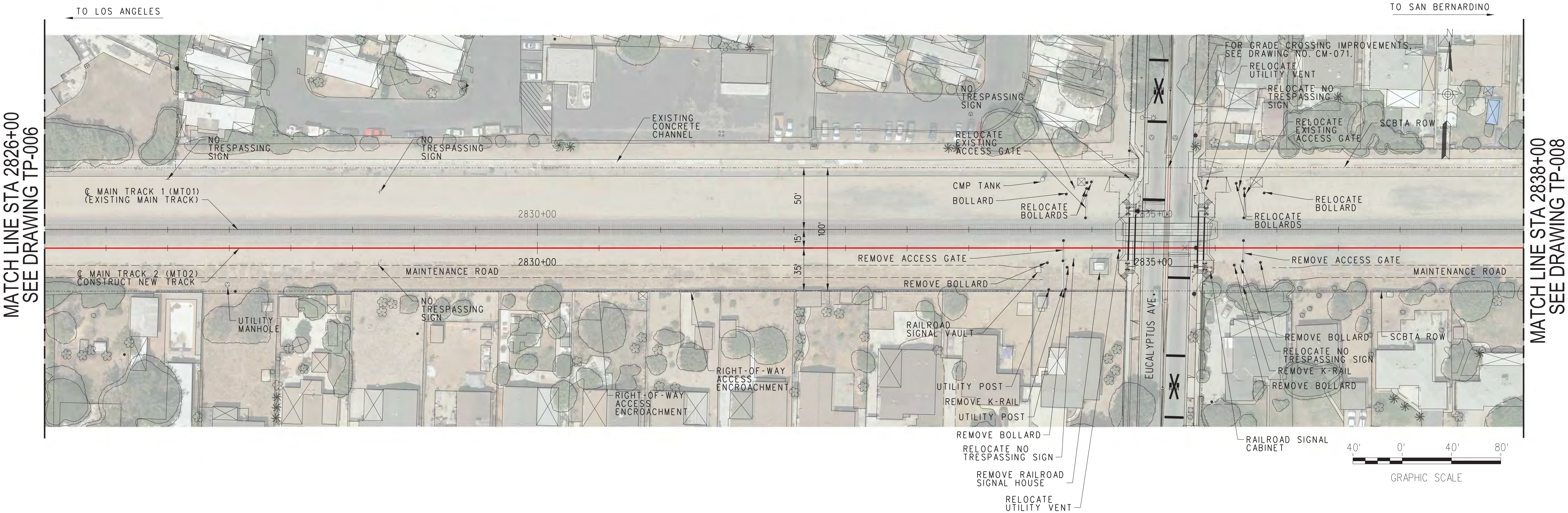
moffatt & nichol

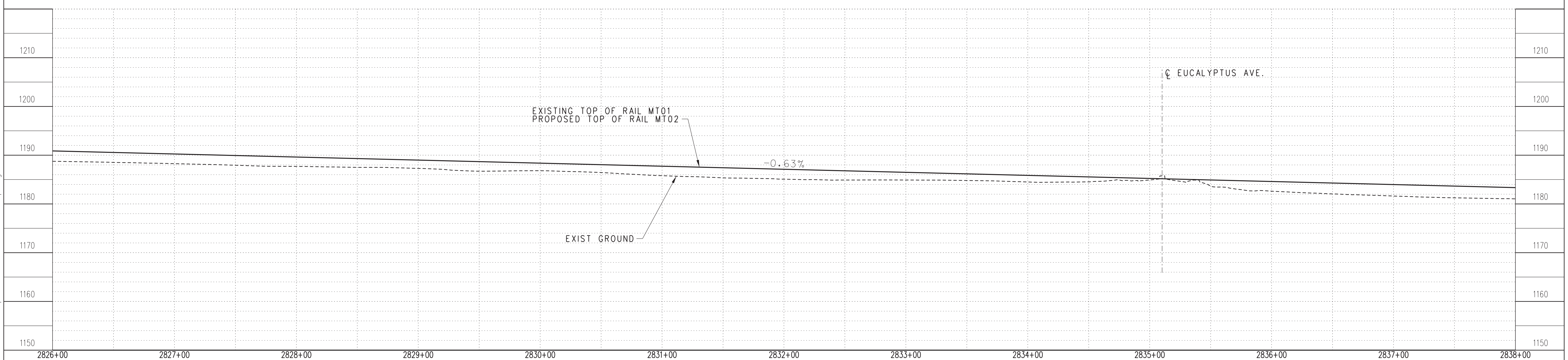
SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

TRACK PLAN AND PROFILE MT2 STA 2814+00 TO MT2 STA 2826+00 SHEET 6 OF 13

CONTRACT NO. 16-1001411
DRAWING NO. TP-006
REVISION A
SHEET NO. 33 OF 200
SCALE HORIZ 1"=40' VERT 1"=4'





FINAL 30% SUBMITTAL (06-29-2018)

7/9/2018 1:35:33 PM USER : jcalderon
Q:\LBY9503\CADD\Master\Sheets\LRD1212-TP-007.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY N. VELAZQUEZ
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sb cta san bernardino county transportation authority

METROLINK.

moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

TRACK PLAN AND PROFILE
MT2 STA 2826+00 TO MT2 STA 2838+00
SHEET 7 OF 13

CONTRACT NO. 16-1001411
DRAWING NO. TP-007
REVISION A
SHEET NO. 34 OF 200
SCALE HORIZ 1"=40' VERT 1"=4'

TO LOS ANGELES

TO SAN BERNARDINO

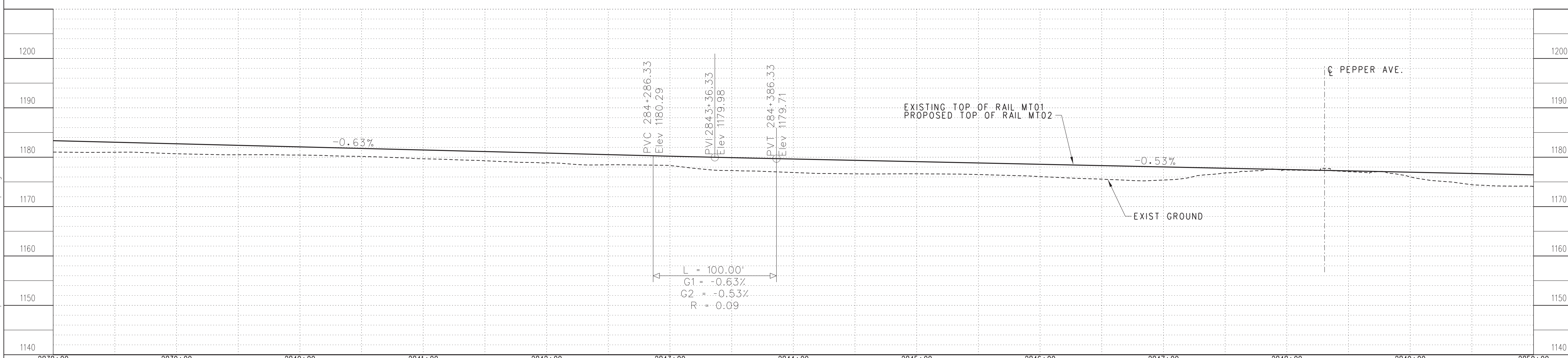
MATCH LINE STA 2838+00
SEE DRAWING TP-007

MATCH LINE STA 2850+00
SEE DRAWING TP-009

40' 0' 40' 80'
GRAPHIC SCALE

CURVE 53.95-2

Dc = 0°59'57"/0°45'00"/1°00'00"
Lc = 2086.76', 830.85', 481.07'
Ls in = 220.00'Ls out = 100.00'
Ea= 1.50"
Eu = 2.87", 178", 2.87"(P); 0.62", 0.09, 0.62(F)
V = 79/55



FINAL 30% SUBMITTAL (06-29-2018)

7/9/2018 1:35:46 PM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-TP-008.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCRRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
1	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential; and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY N. VELAZQUEZ
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sbcta san bernardino county transportation authority

METROLINK.

moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

TRACK PLAN AND PROFILE
MTS STA 2838+00 OT MT2 STA 2850+00
SHEET 8 OF 13

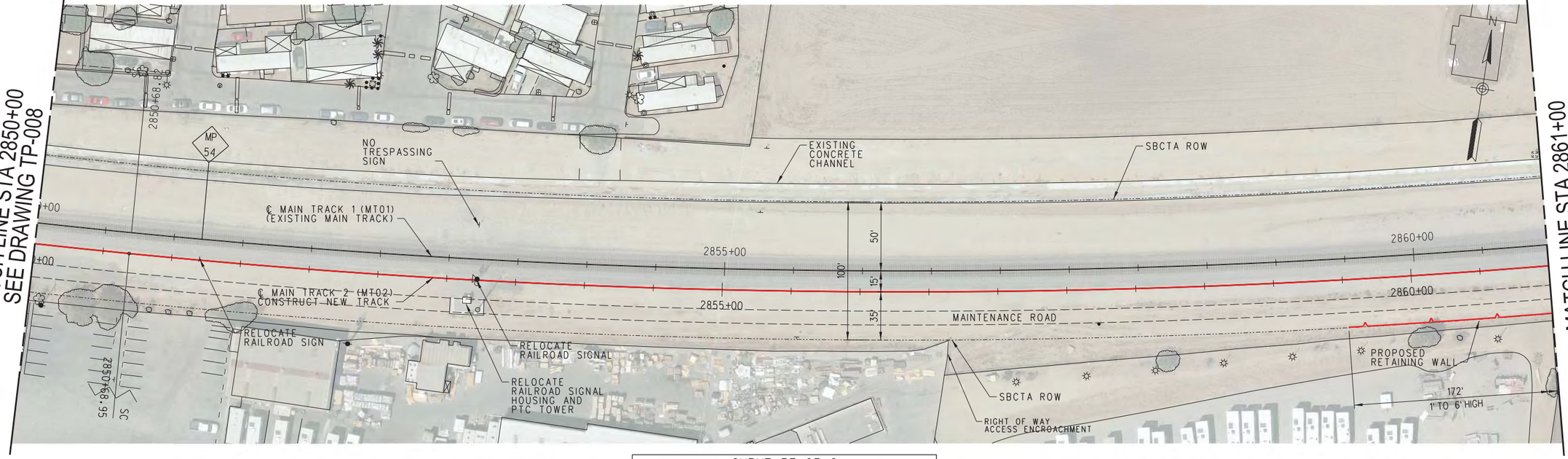
CONTRACT NO. 16-1001411
DRAWING NO. TP-008
REVISION A
SHEET NO. 35 OF 200
SCALE HORIZ 1"=40' VERT 1"=4'

TO LOS ANGELES

TO SAN BERNARDINO

MATCH LINE STA 2850+00
SEE DRAWING TP-008

MATCH LINE STA 2861+00
SEE DRAWING TP-010



CURVE 53.95-2

Dc = 0°59'57"/0°45'00"/1°00'00"
Lc = 2086.76', 830.85', 481.07'
Ls in = 220.00'Ls out = 100.00'
Eq= 1.50"
Eu = 2.87", 178", 2.87"(P); 0.62", 0.09, 0.62(F)
V = 79/55

40' 0' 40' 80'
GRAPHIC SCALE

MATCH LINE STA 2861+00
SEE DRAWING TP-010

FINAL 30% SUBMITTAL (06-29-2018)

7/9/2018 1:36:00 PM USER = jolderon
Q:\LB\9503\CADD\Master\Sheets\LRD_J22_TP-009.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	APP.
V	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

DESIGNED BY J. AVENDANO
DRAWN BY N. VELAZQUEZ
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. Exp. CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

moffatt & nichol

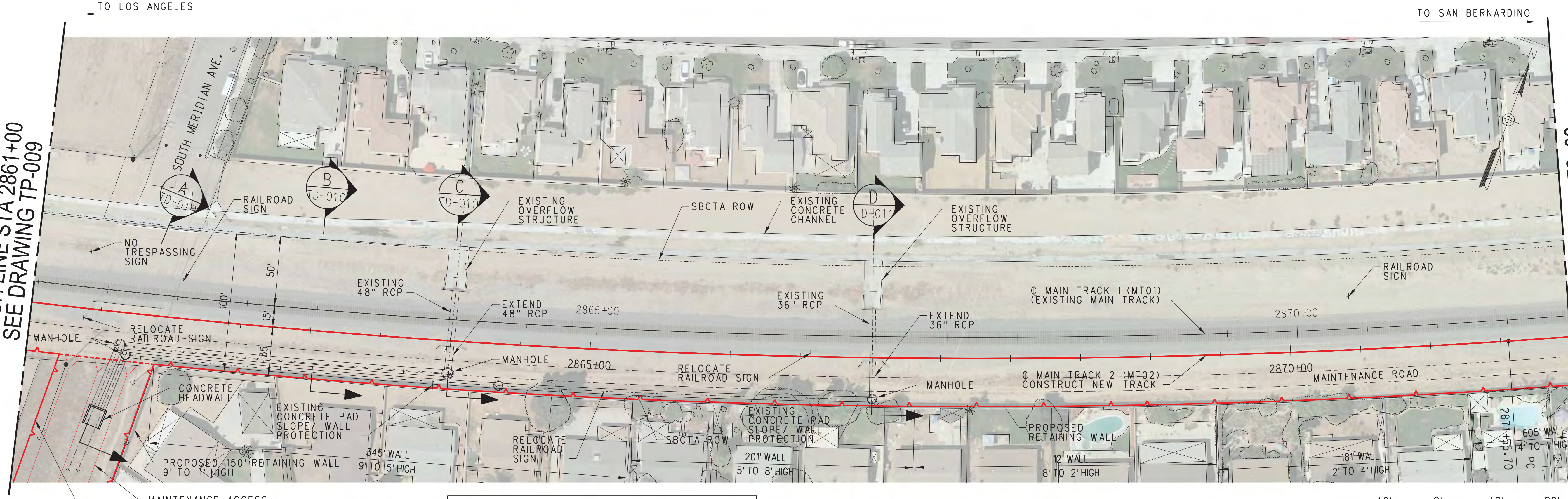
SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

TRACK PLAN AND PROFILE MT2 STA 2850+00 TO MT2 STA 2861+00 SHEET 9 OF 13

CONTRACT NO. 16-1001411
DRAWING NO. TP-009
REVISION A
SHEET NO. 36 OF 200
SCALE HORIZ 1"=40' VERT 1"=4'

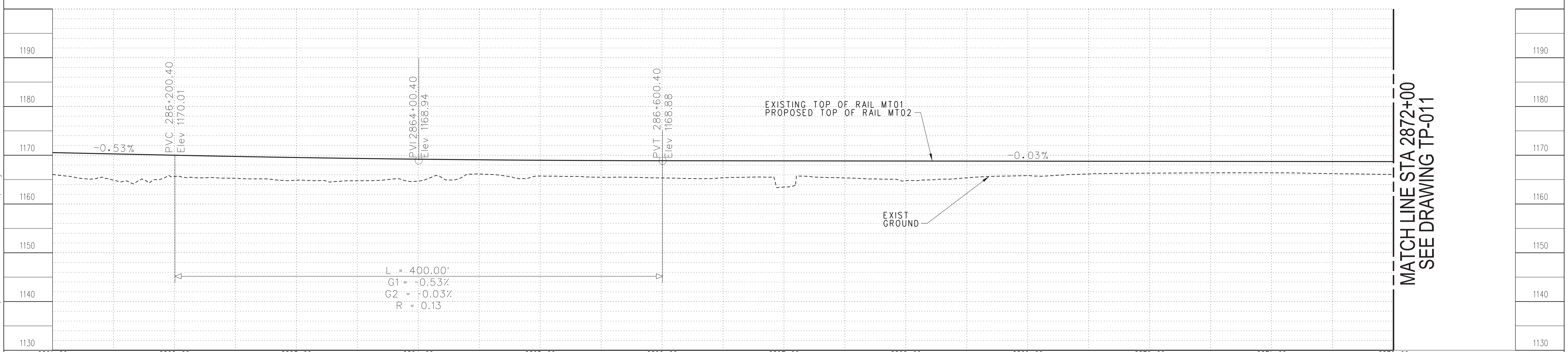


CURVE 53.95-2

Dc = 0°59'57"/0°45'00"/1°00'00"
Lc = 2086.76', 830.85', 481.07'
Ls in = 220.00'Ls out = 100.00'
Ea= 1.50"
Eu = 2.87", 178", 2.87"(P); 0.62", 0.09, 0.62(F)
V = 79/55

NOTES:

1. PROPOSED WALL DESIGN DETAILS WILL BE DEVELOPED IN THE NEXT DESIGN PHASE.
2. DRAINAGE DESIGN WILL BE FURTHER DEVELOPED IN THE NEXT DESIGN PHASE.



FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	APP.
1	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

DESIGNED BY J. AVENDANO
DRAWN BY N. VELAZQUEZ
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sb cta san bernardino county transportation authority

METROLINK

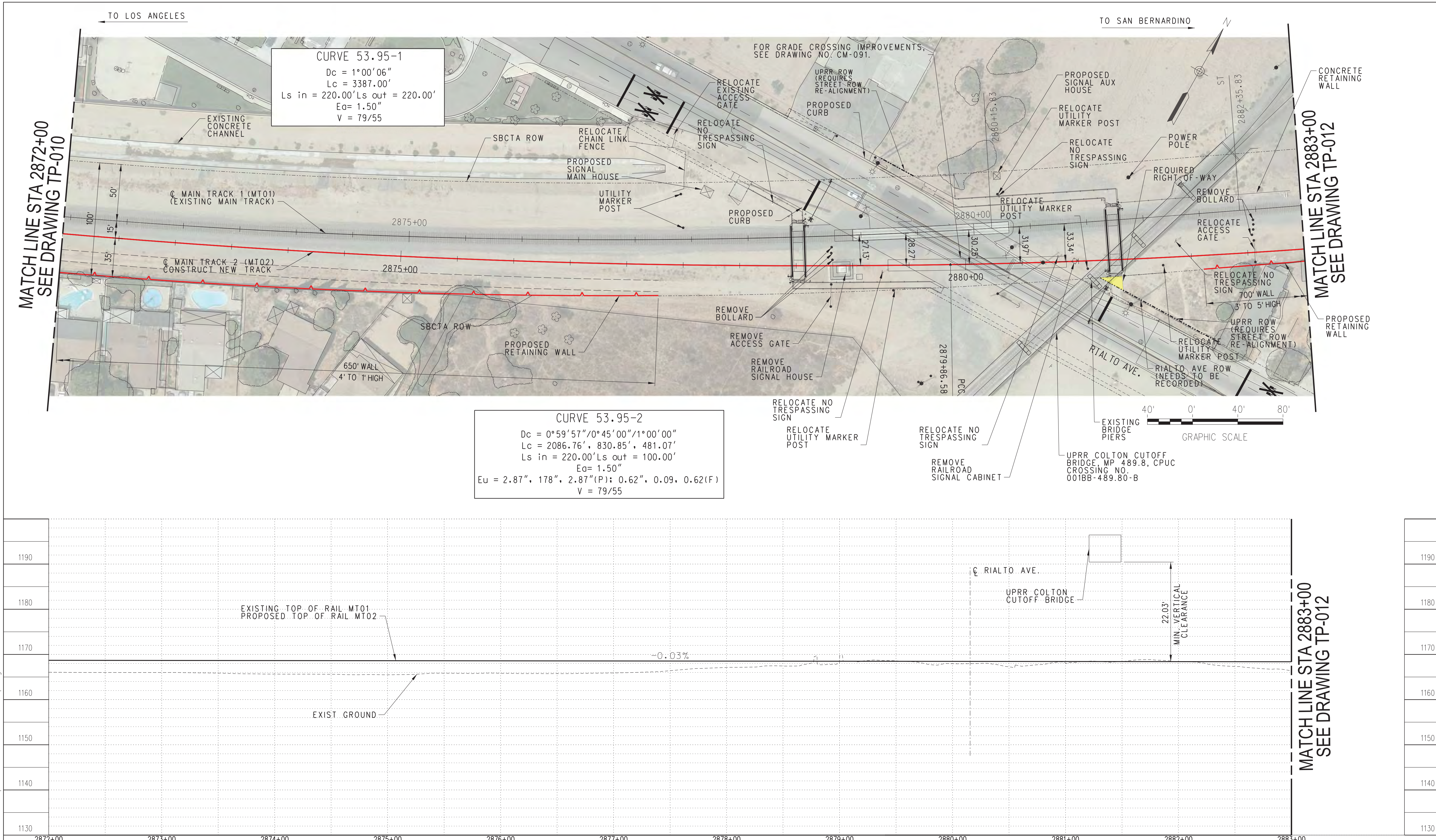
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

TRACK PLAN AND PROFILE MT2 STA 2861+00 TO MT2 STA 2872+00 SHEET 10 OF 13

CONTRACT NO. 16-1001411
DRAWING NO. TP-010
REVISION A
SHEET NO. 37 OF 200
SCALE HORIZ 1"=40' VERT 1"=4'



FINAL 30% SUBMITTAL (06-29-2018)

7/9/2018 1:37:13 PM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-TP-011.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

DESIGNED BY J. AVENDANO
DRAWN BY N. VELAZQUEZ
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

sb cta san bernardino county transportation authority

METROLINK.

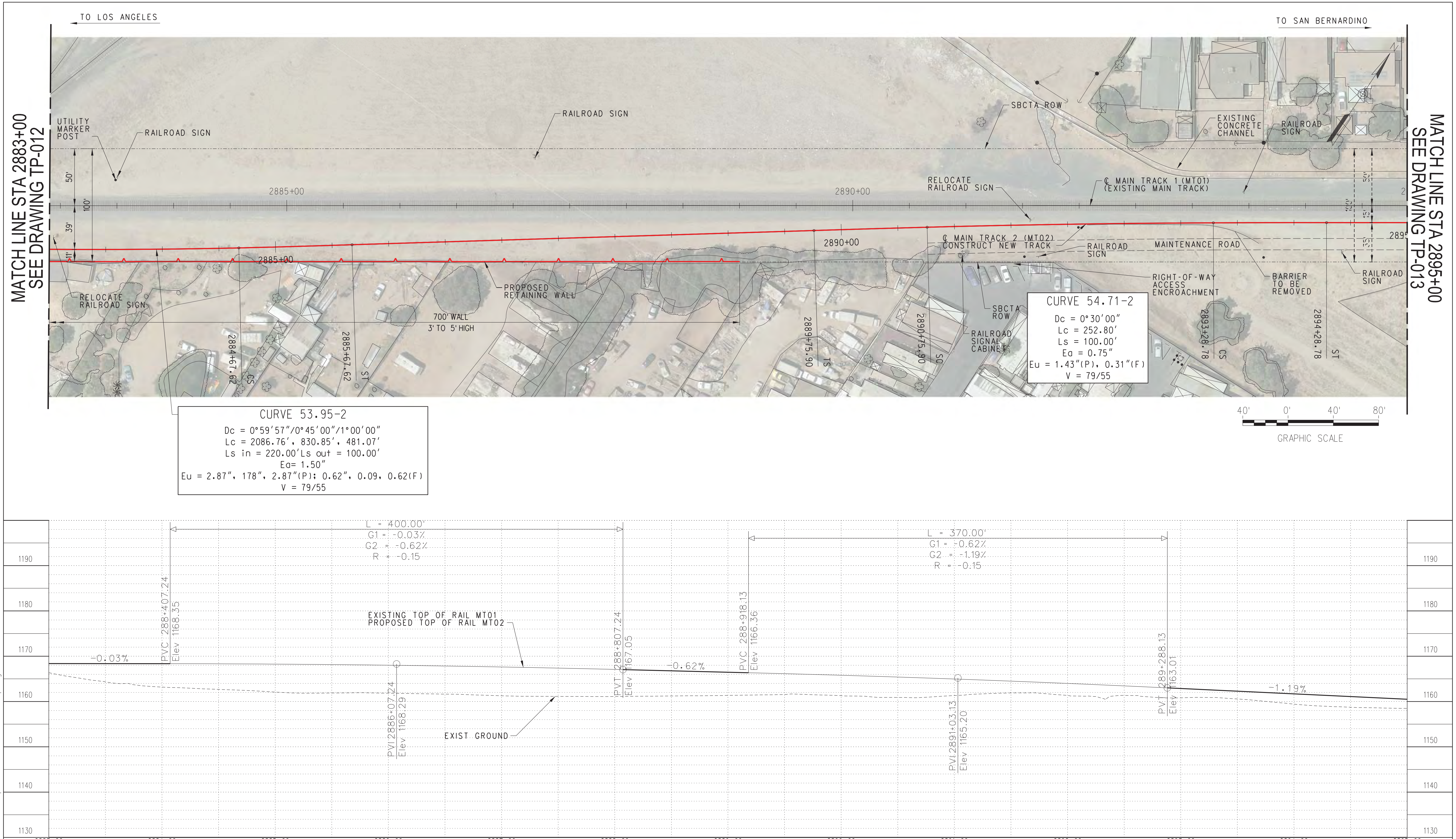
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

TRACK PLAN AND PROFILE
MT2 STA 2872+00 TO MT2 STA 2883+00
SHEET 11 OF 13

CONTRACT NO. 16-1001411
DRAWING NO. TP-011
REVISION A
SHEET NO. 38 OF 200
SCALE HORIZ 1"=40' VERT 1"=4'



FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB. APP.
	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY N. VELAZQUEZ
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

METROLINK
moffatt & nichol
sbcta san bernardino county transportation authority

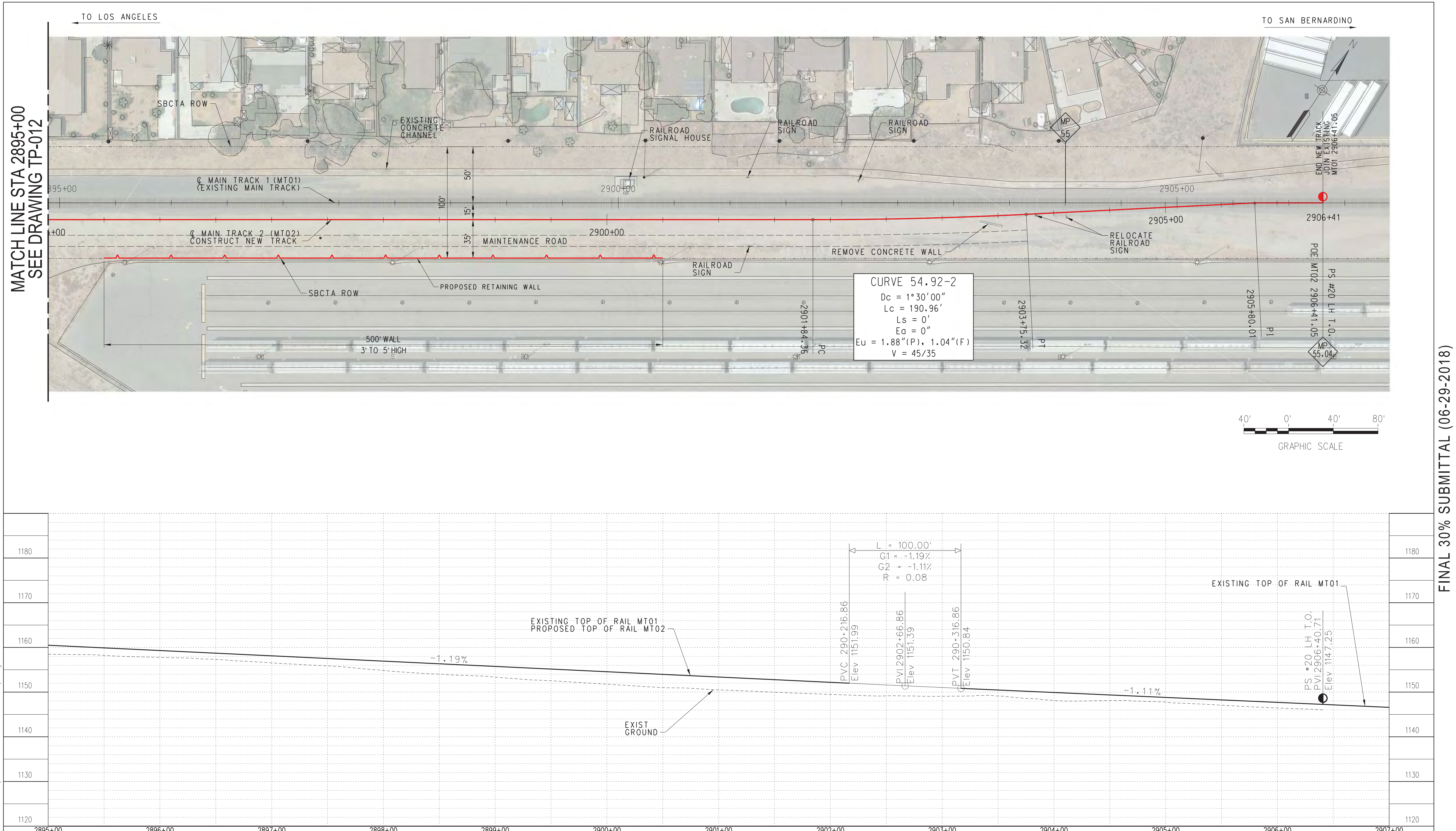
SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

TRACK PLAN AND PROFILE
MT2 STA 2883+00 TO MT2 STA 2895+00
SHEET 12 OF 13

CONTRACT NO. 16-1001411
DRAWING NO. TP-012
REVISION A
SHEET NO. 39 OF 200
SCALE HORIZ 1"=40' VERT 1"=4'

7/9/2018 1:39:27 PM USER: jcalderon
Q:\LBY9503\CADD\Master\Sheets\LRD1212-TP-012.dgn



NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
▽	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential; and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY N. VELAZQUEZ
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

sbcta — san bernardino county transportation authority

METROLINK.

moffatt & nichol

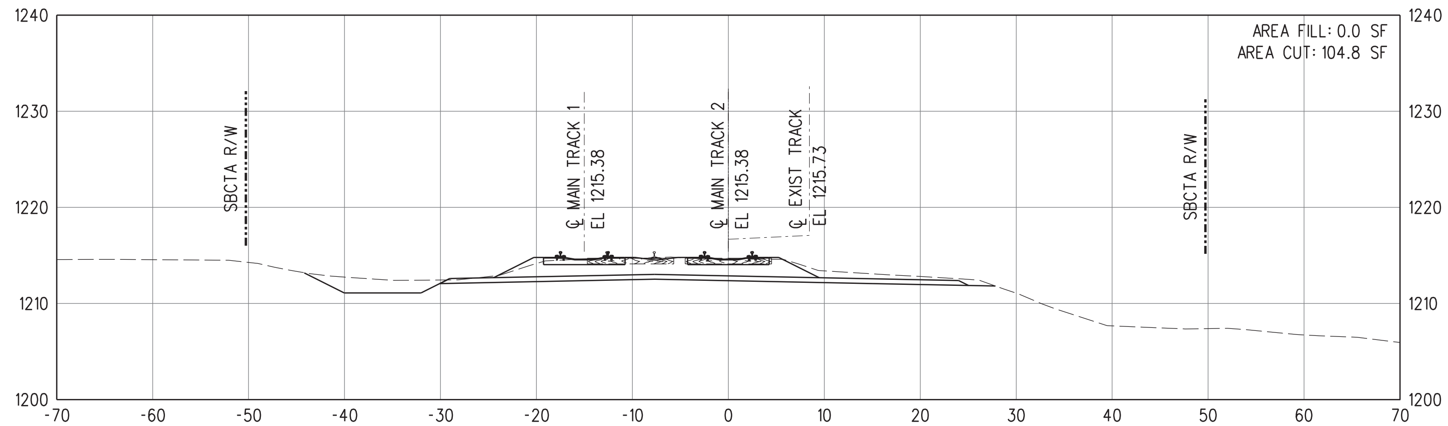
SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

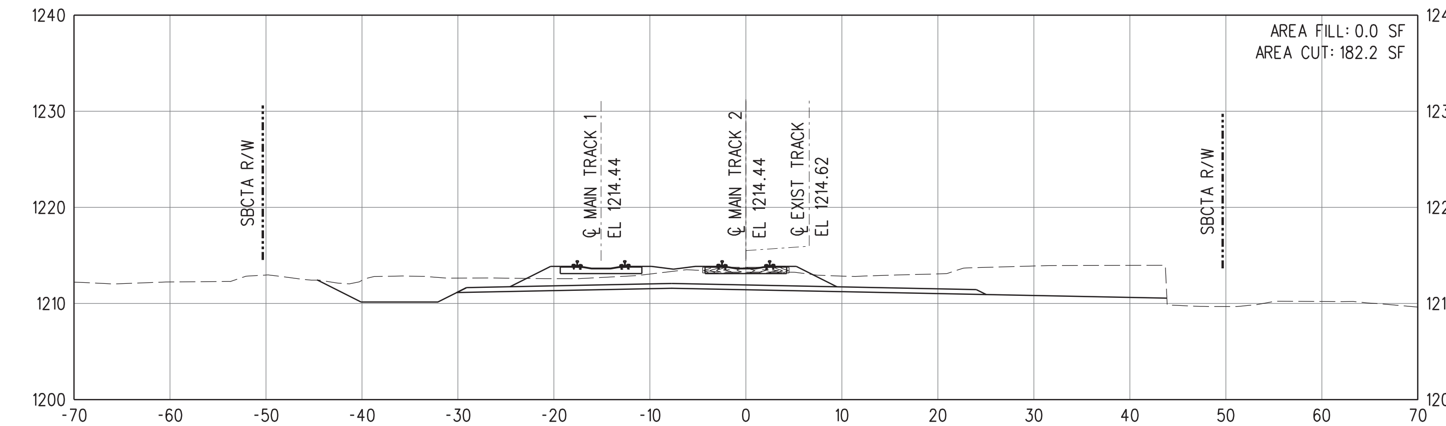
TRACK PLAN AND PROFILE
MT2 STA 2895+00 TO MT2 STA 2906+40.71
SHEET 13 OF 13

CONTRACT NO. 16-1001411
DRAWING NO. TP-013
REVISION A
SHEET NO. 40 OF 200
SCALE HORIZ 1"=40' VERT 1"=4'

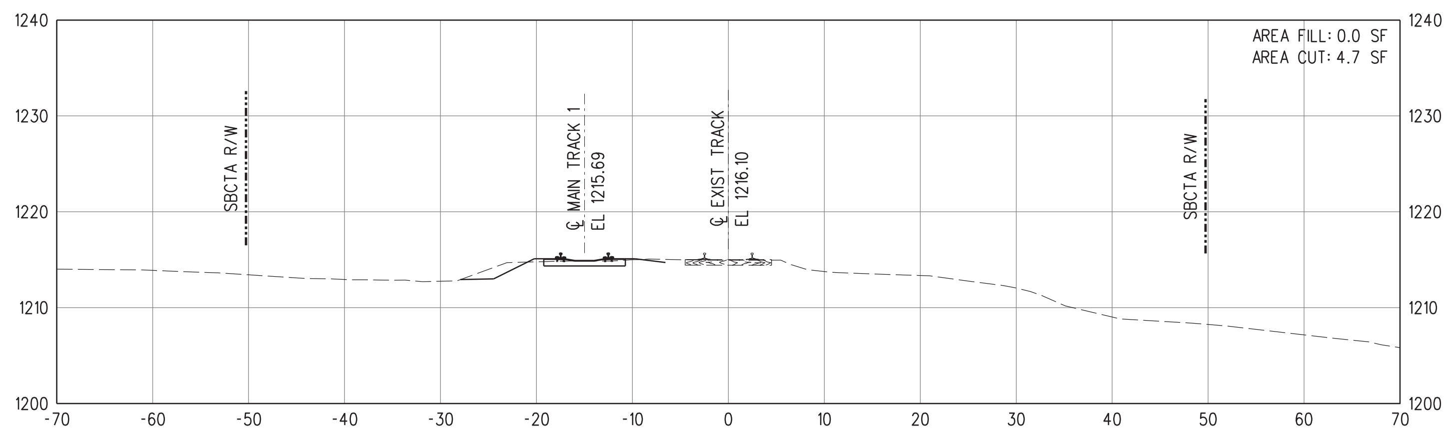
7/9/2018 1:41:28 PM USER - jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-TP-013.dgn



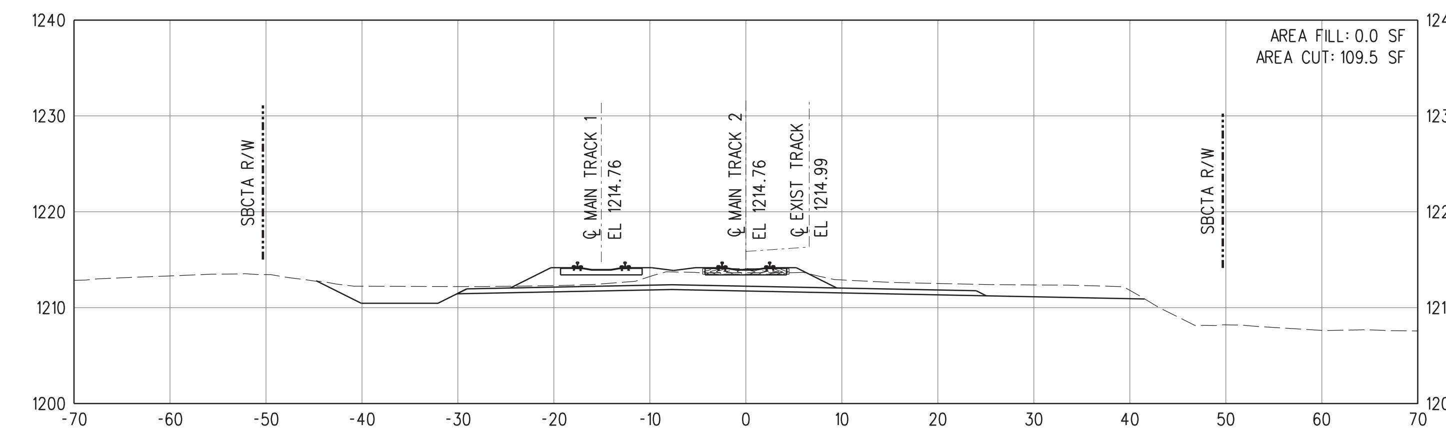
2765+00



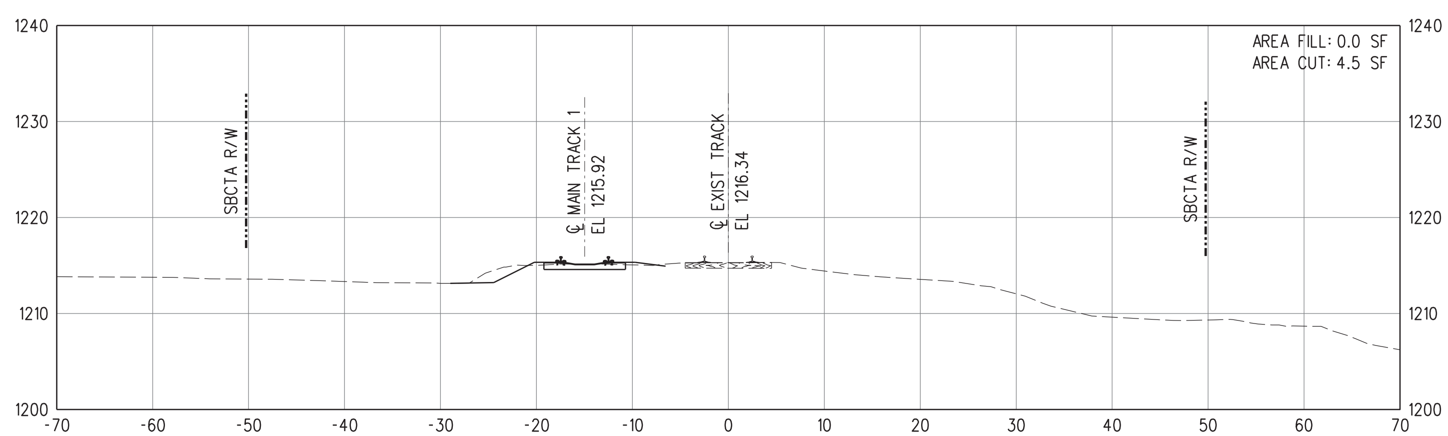
2768+00



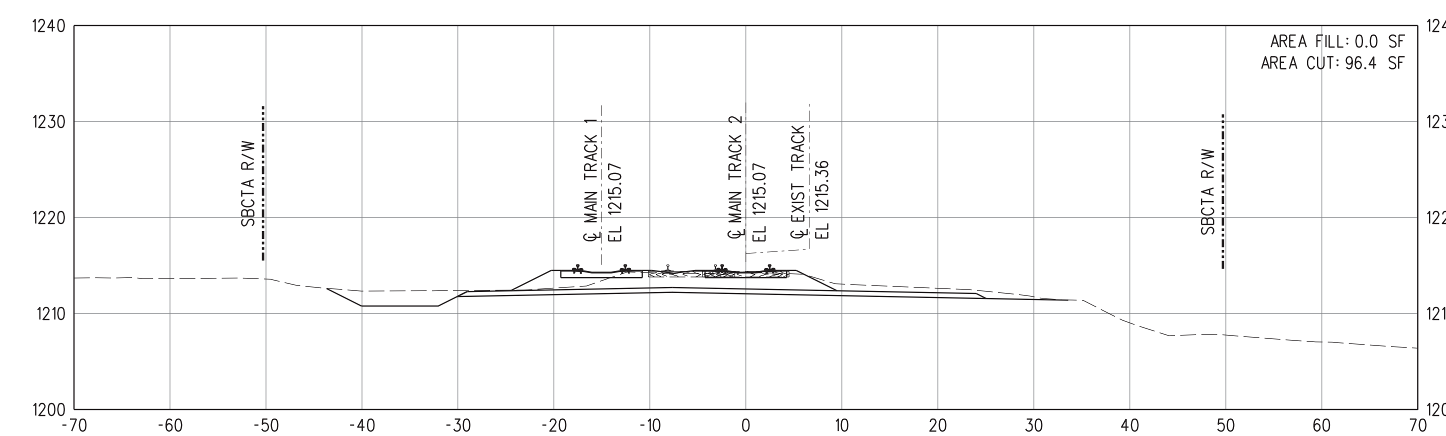
2764+00



2767+00



2763+37



2766+00

FINAL 30% SUBMITTAL (06-29-2018)

7/9/2018 2:16:17 PM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-TC-001.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
1	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sb cta san bernardino county transportation authority

METROLINK

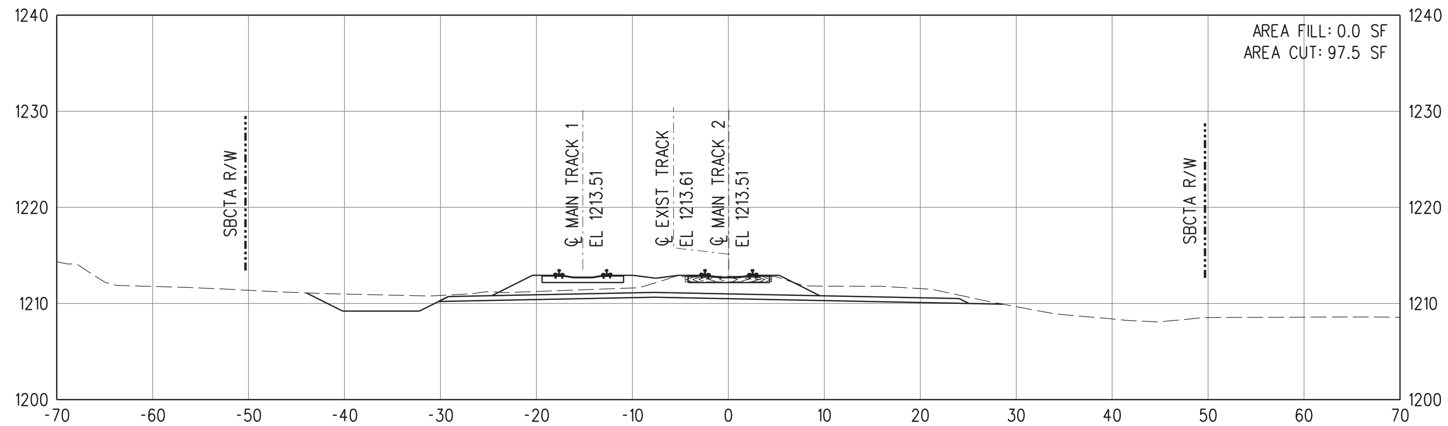
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

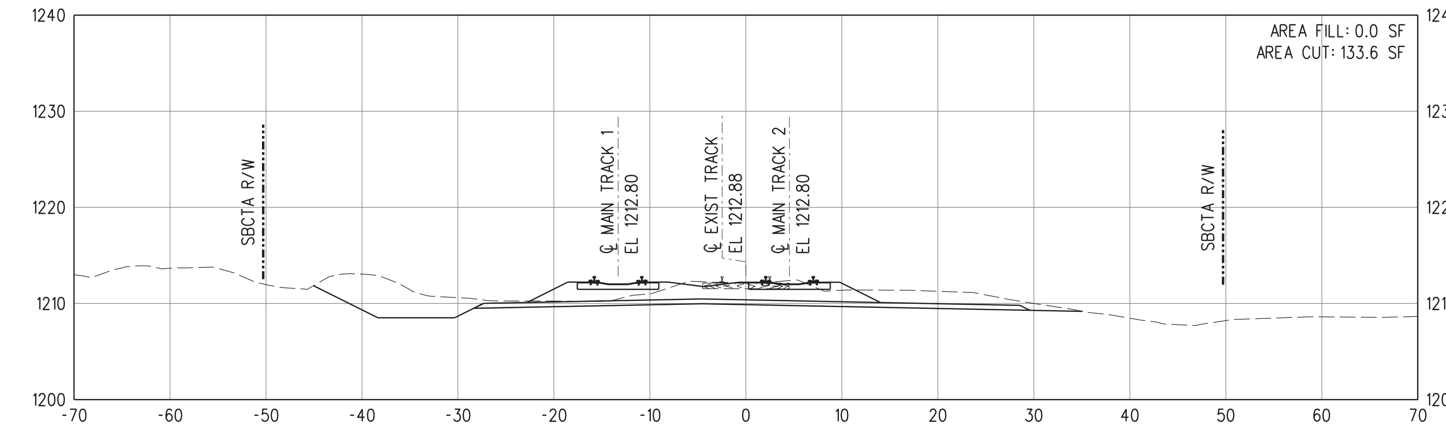
CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

TRACKWORK CROSS SECTIONS STA 2763+37 TO STA 2768+00 SHEET 1 OF 28

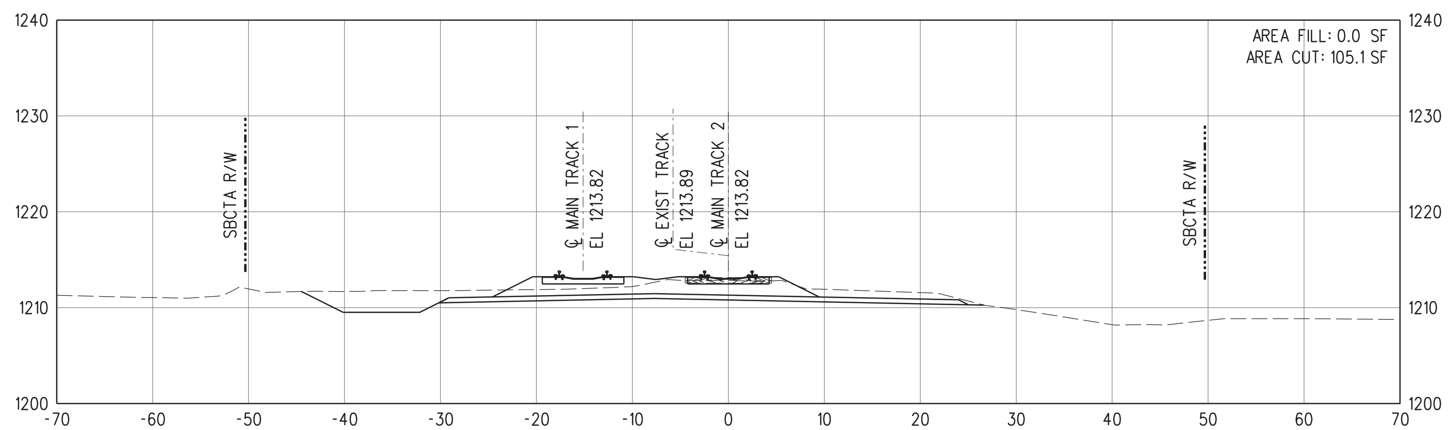
CONTRACT NO. 16-1001411
DRAWING NO. TC-001
REVISION A
SHEET NO. 41 OF 200
SCALE HORIZ 1"=10' VERT 1"=10'



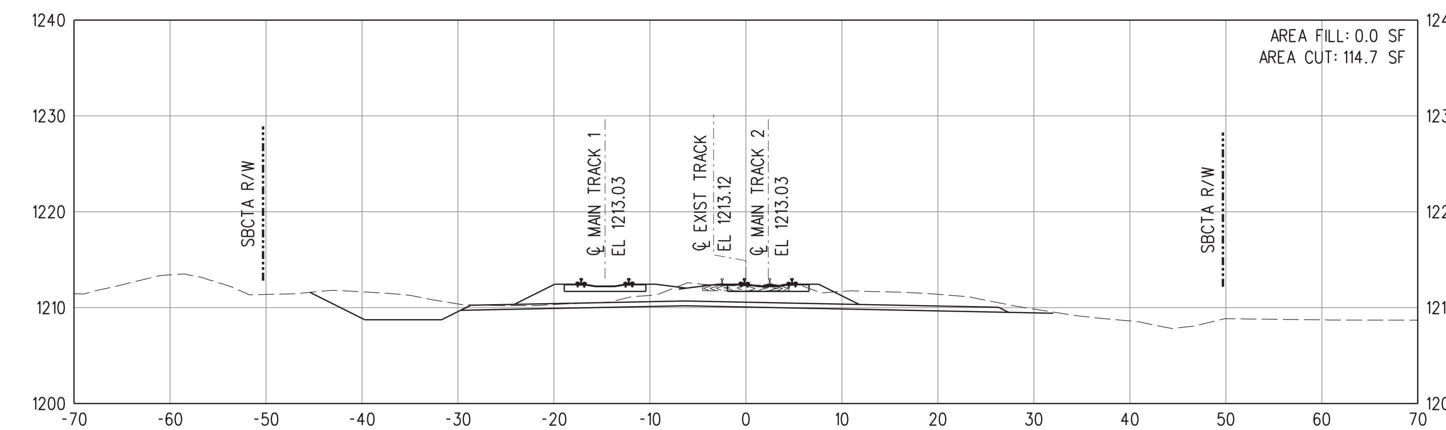
2771+00



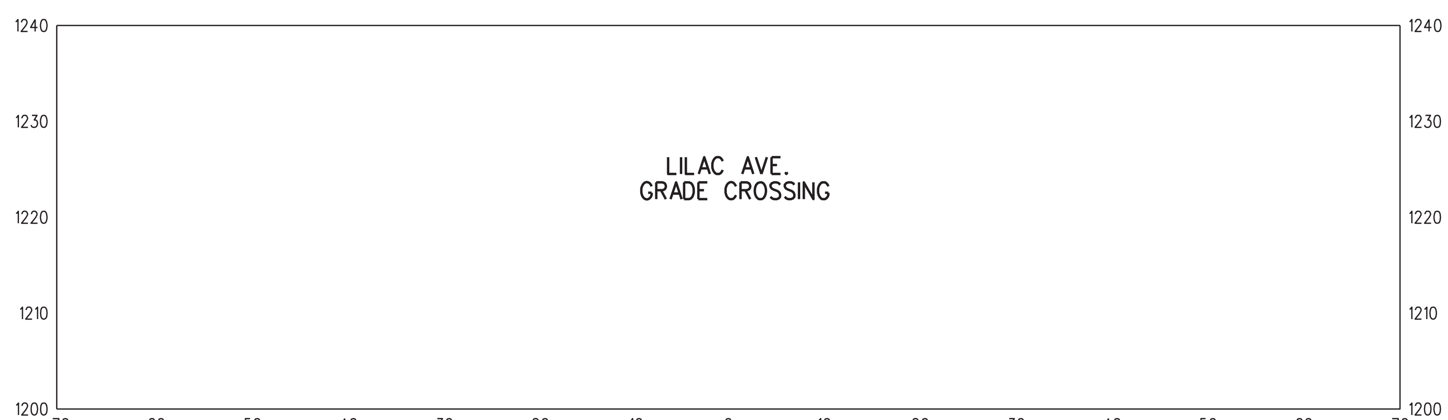
2774+00



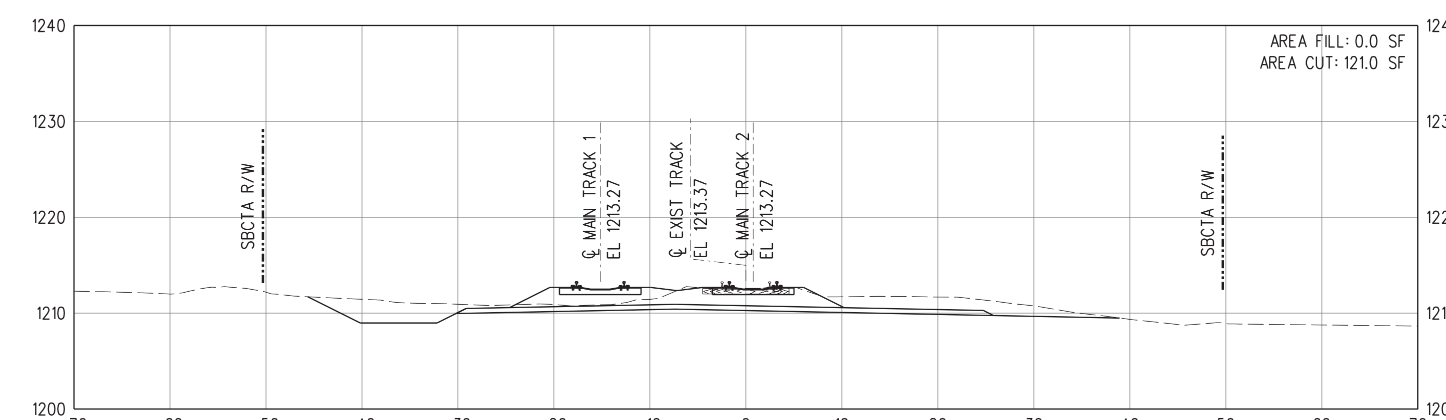
2770+00



2773+00



2769+00



2772+00

FINAL 30% SUBMITTAL (06-29-2018)

7/9/2018 2:16:18 PM USER • jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-TC-002.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB. APP.
	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER
No. ____
Exp. ____
CIVIL
STATE OF CALIFORNIA

sb cta
san bernardino county transportation authority

METROLINK.

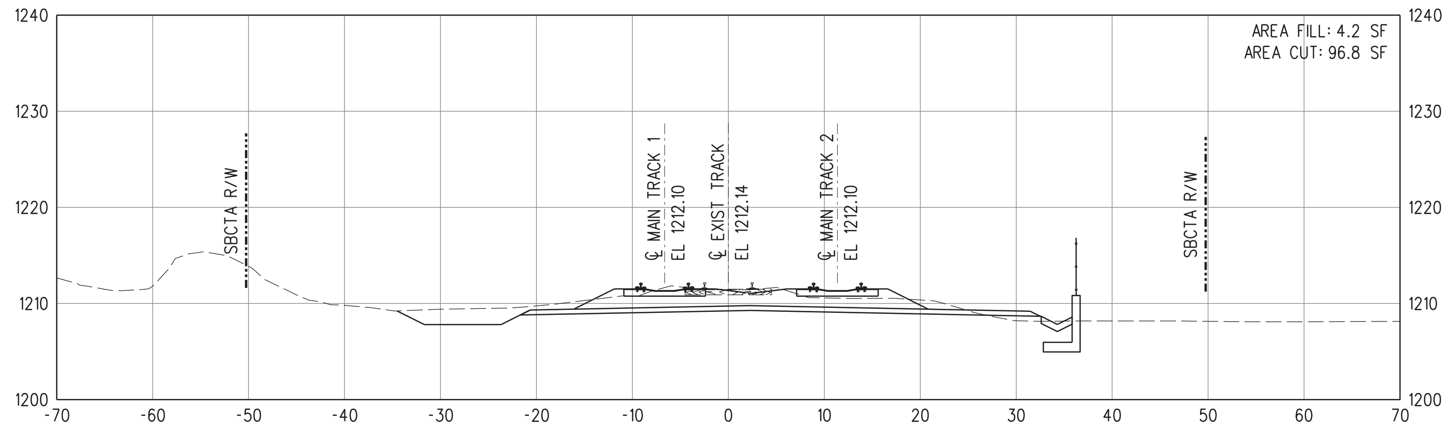
moffatt & nichol

SUBMITTED: ____ PROJECT MANAGER
APPROVED: ____

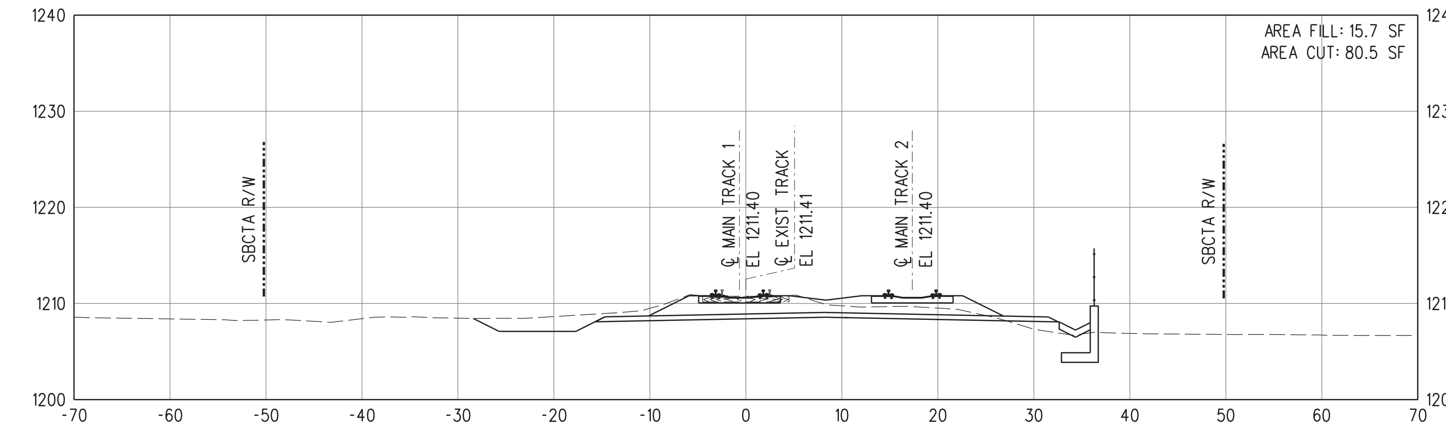
CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

TRACKWORK CROSS SECTIONS STA 2769+00 TO STA 2774+00 SHEET 2 OF 28

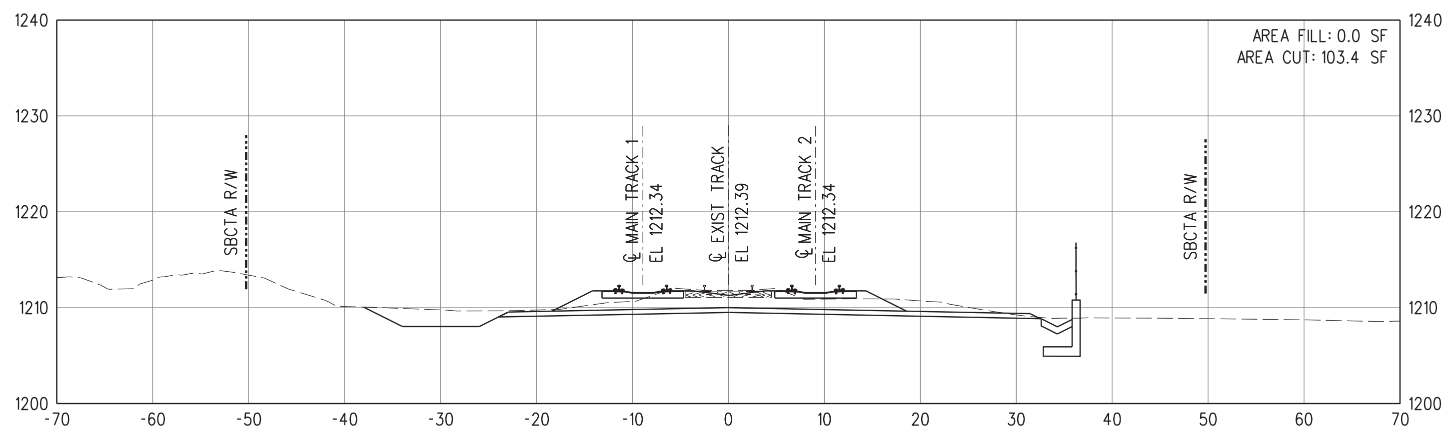
CONTRACT NO. 16-1001411
DRAWING NO. TC-002
REVISION A
SHEET NO. 42 OF 200
SCALE HORIZ 1"=10' VERT 1"=10'



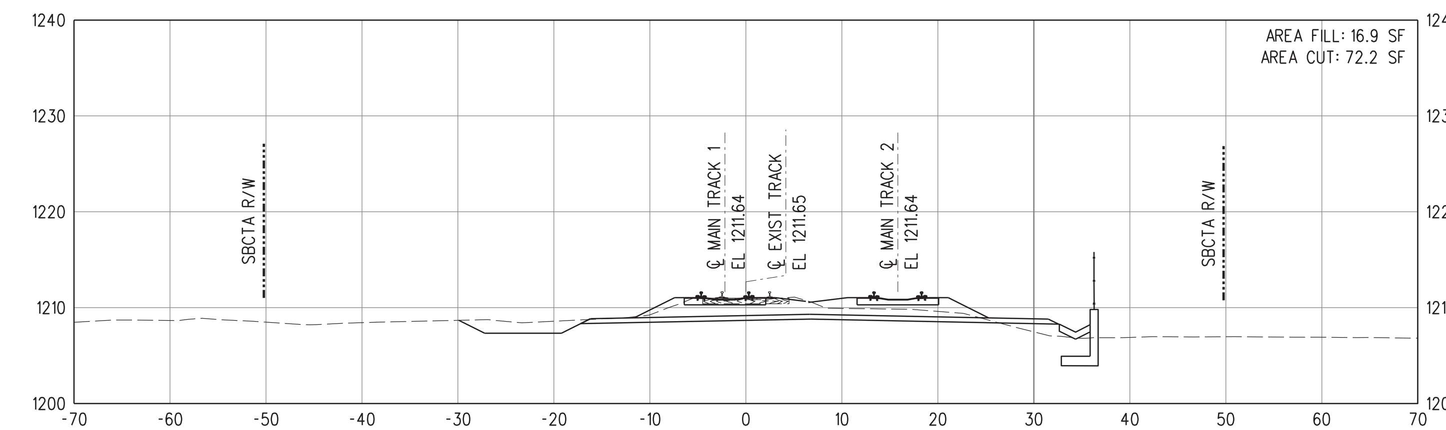
2777+00



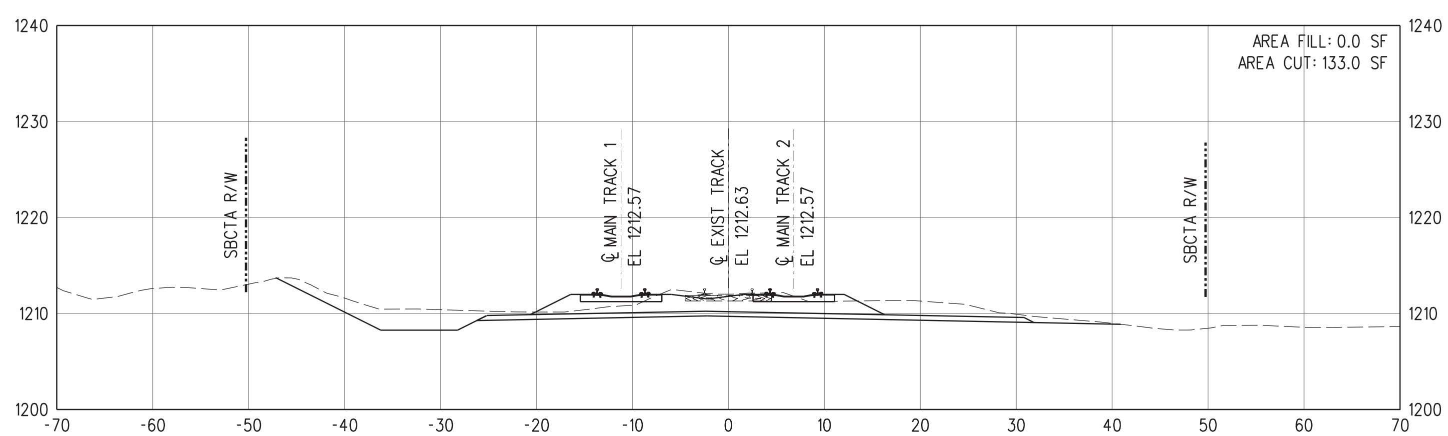
2780+00



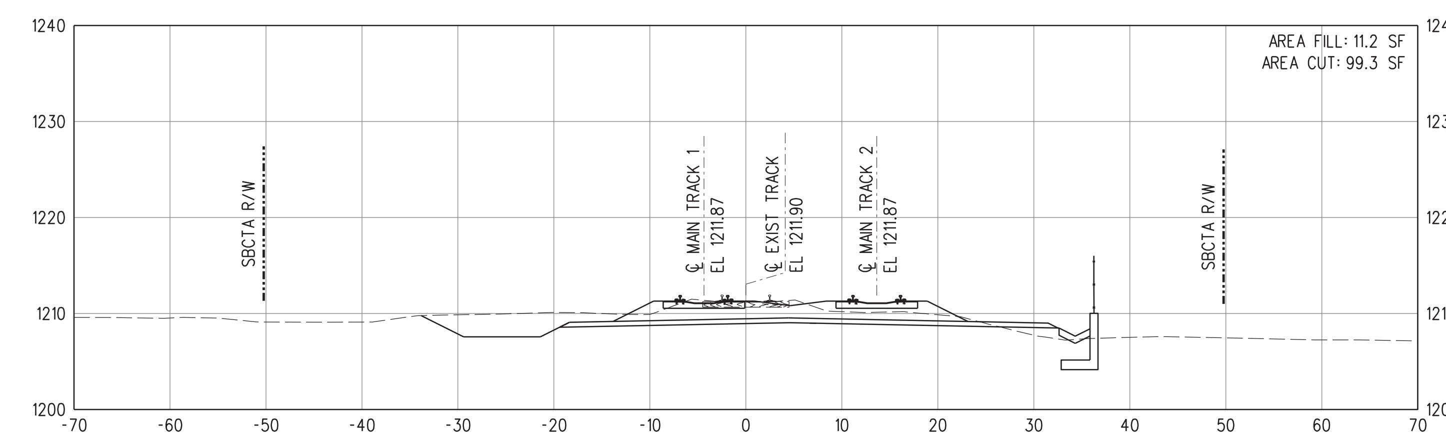
2776+00



2779+00



2775+00



2778+00

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential; and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sb cta san bernardino county transportation authority

METROLINK

moffatt & nichol

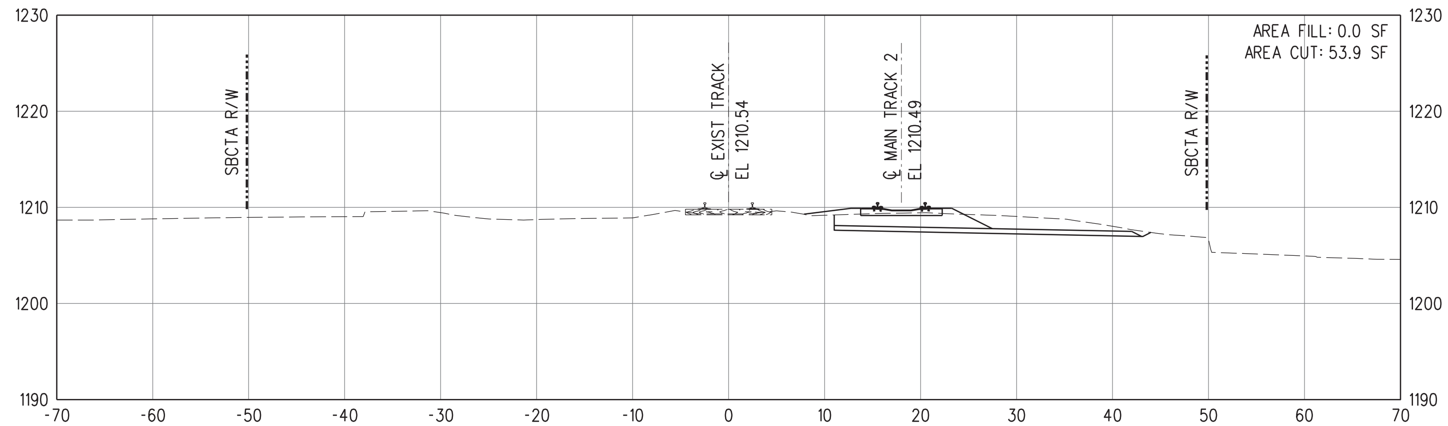
SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

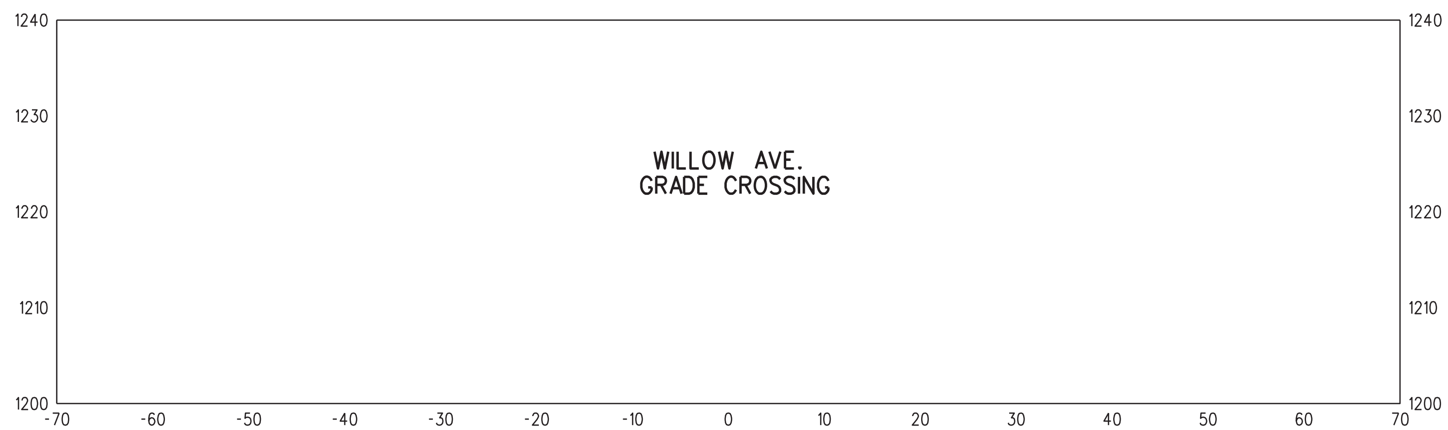
TRACKWORK CROSS SECTIONS
STA 2775+00 TO STA 2780+00
SHEET 3 OF 28

CONTRACT NO. 16-1001411
DRAWING NO. TC-003
REVISION A
SHEET NO. 43 OF 200
SCALE HORIZ 1"=10' VERT 1"=10'

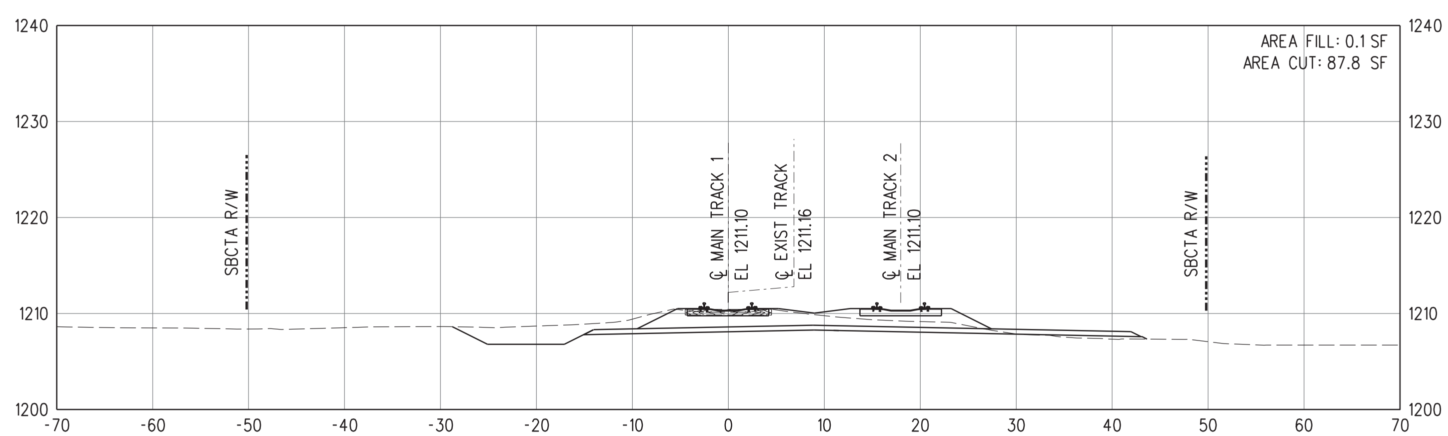
7/9/2018 2:16:19 PM USER - jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-TC-003.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg



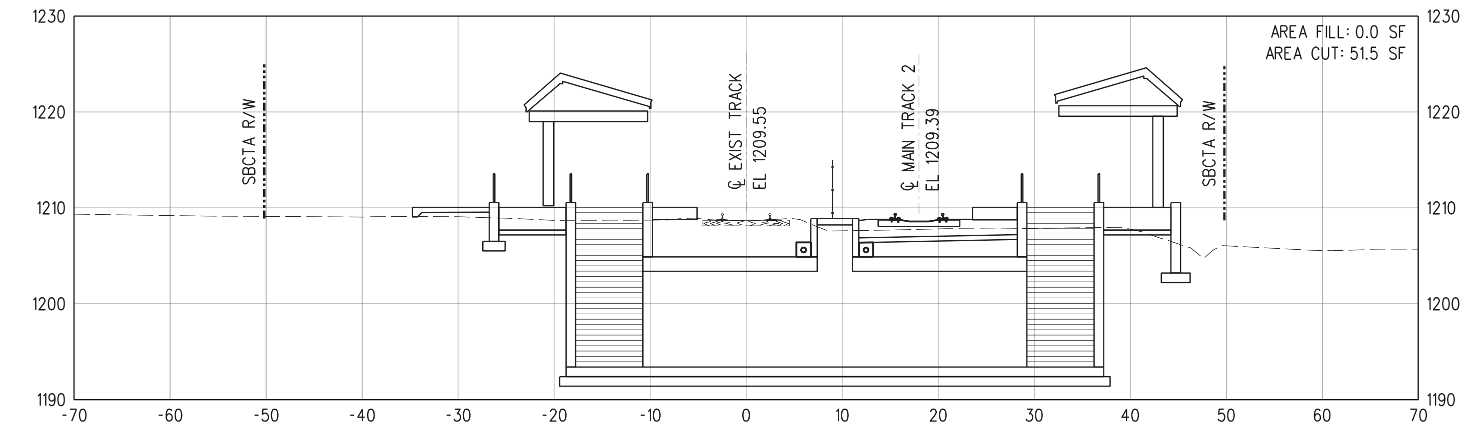
2783+00



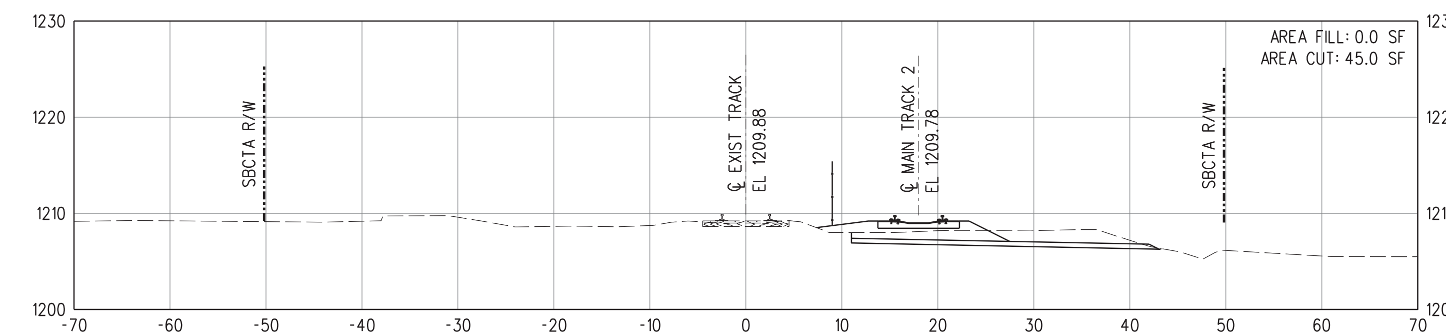
2782+00



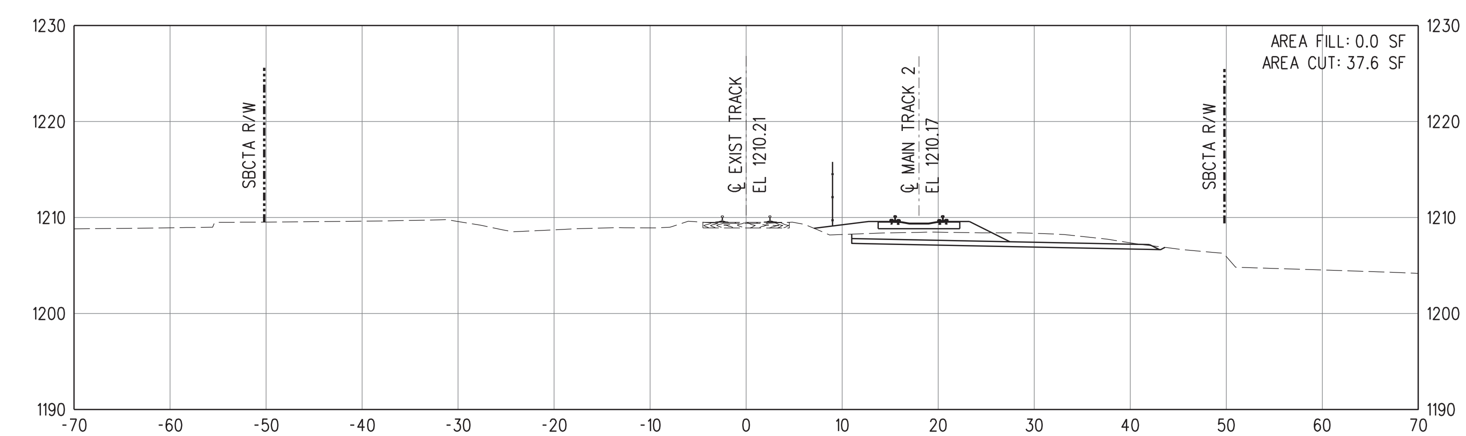
2781+00



2786+00



2785+00



2784+00

FINAL 30% SUBMITTAL (06-29-2018)

7/9/2018 2:16:20 PM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-TC-004.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

sb cta — san bernardino county transportation authority

METROLINK

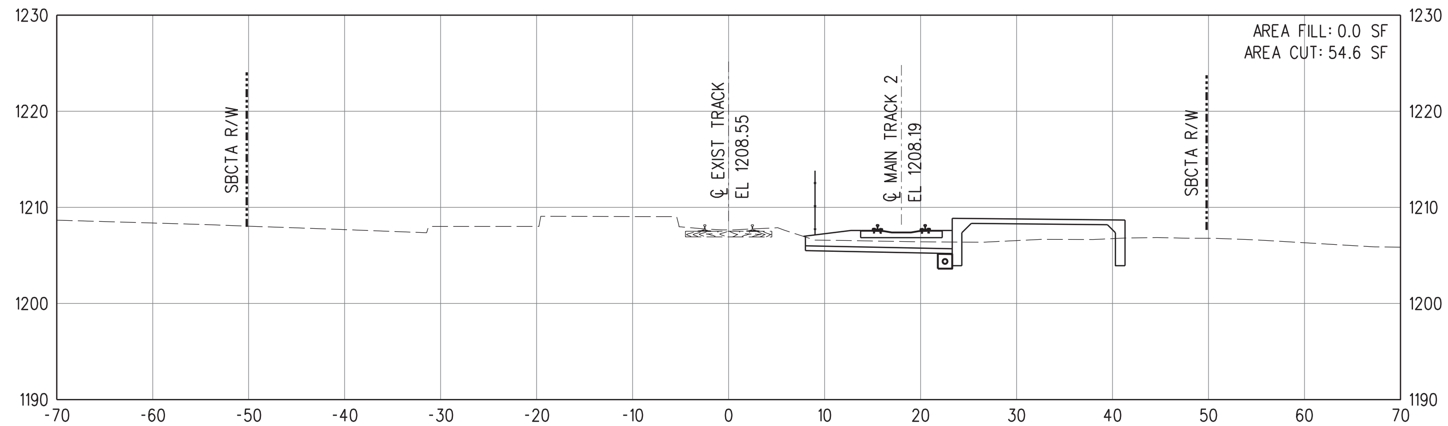
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

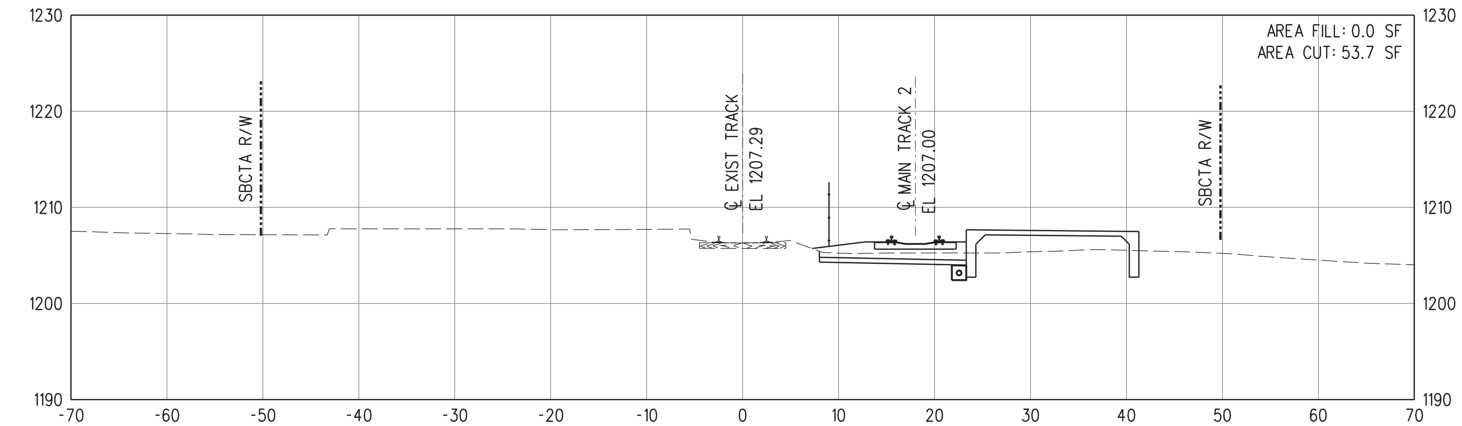
CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

TRACKWORK CROSS SECTIONS STA 2781+00 TO STA 2786+00 SHEET 4 OF 28

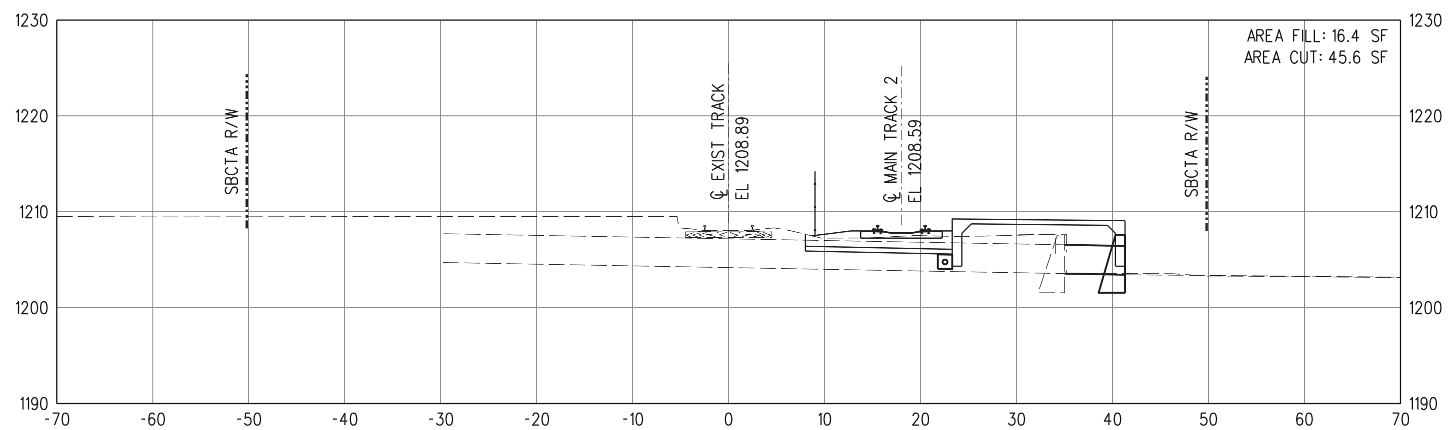
CONTRACT NO. 16-1001411
DRAWING NO. TC-004
REVISION A
SHEET NO. 44 OF 200
SCALE HORIZ 1"=10' VERT 1"=10'



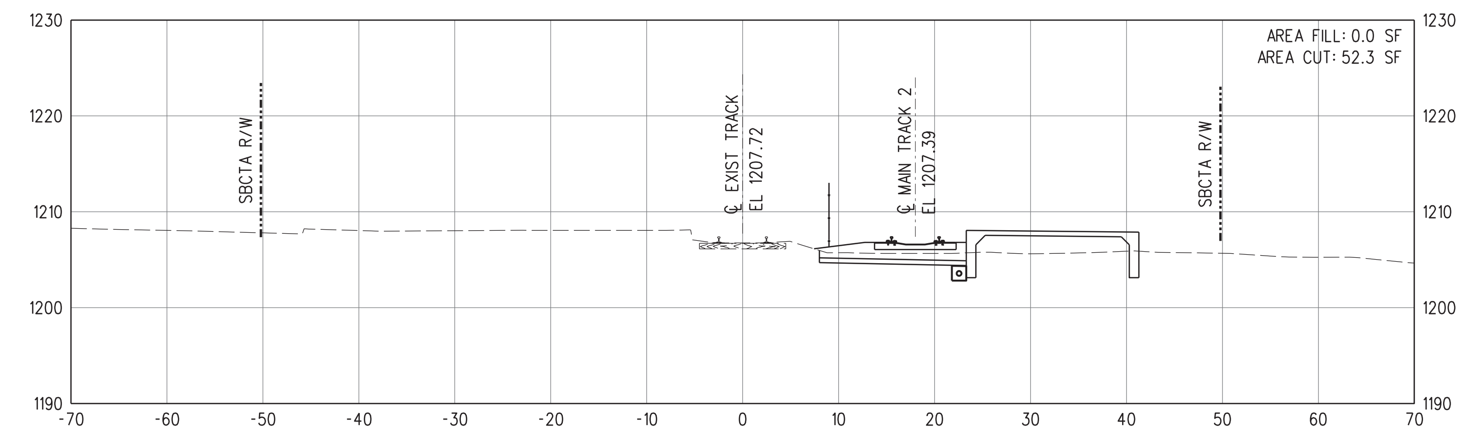
2789+00



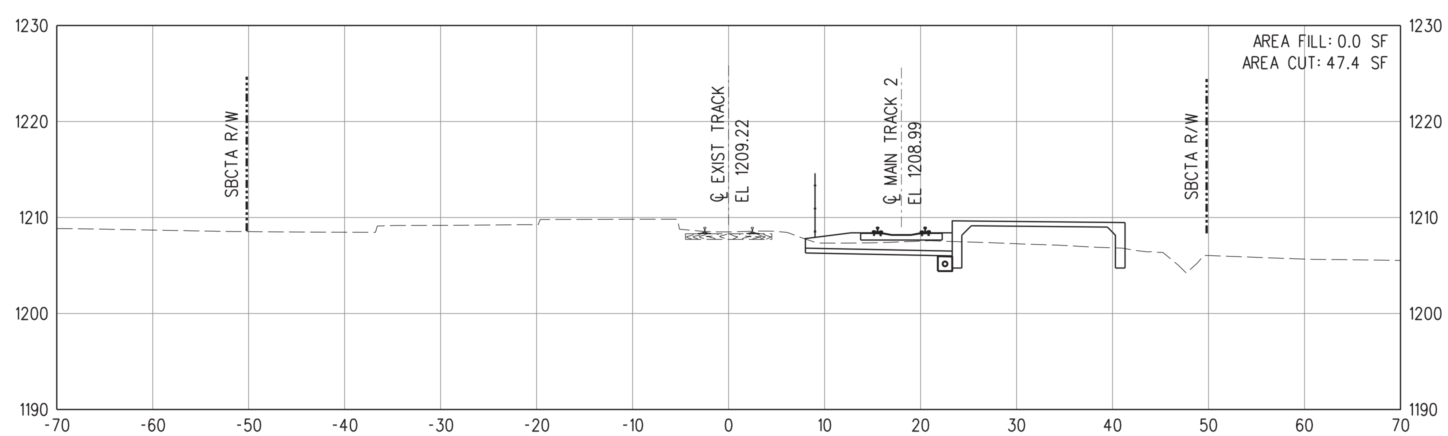
2792+00



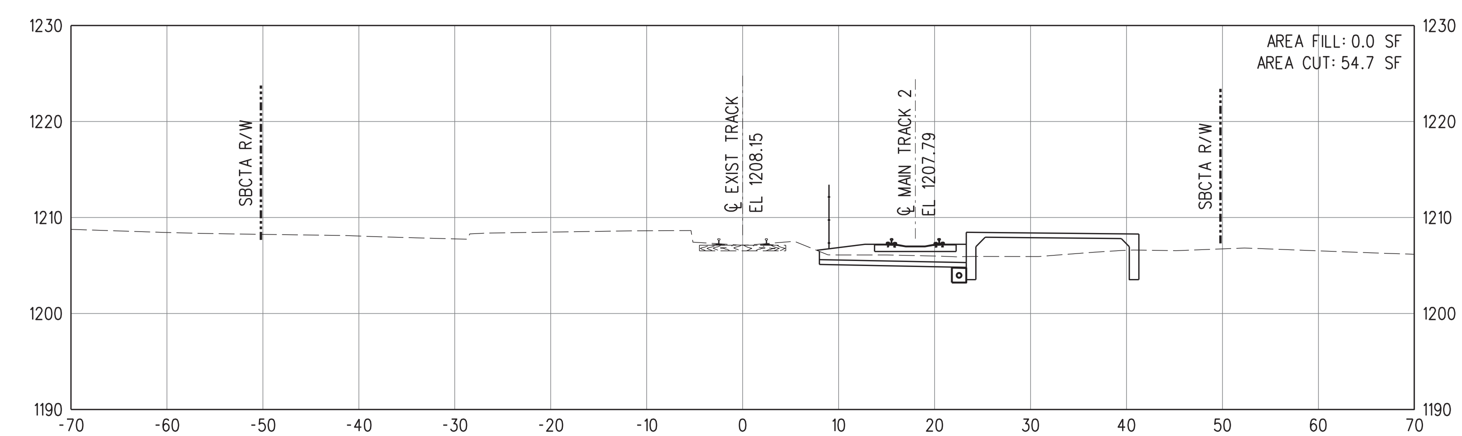
2788+00



2791+00



2787+00



2790+00

FINAL 30% SUBMITTAL (06-29-2018)

7/9/2018 2:16:21 PM USER = jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-TC-005.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB. APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential; and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

sb cta — san bernardino county transportation authority

METROLINK

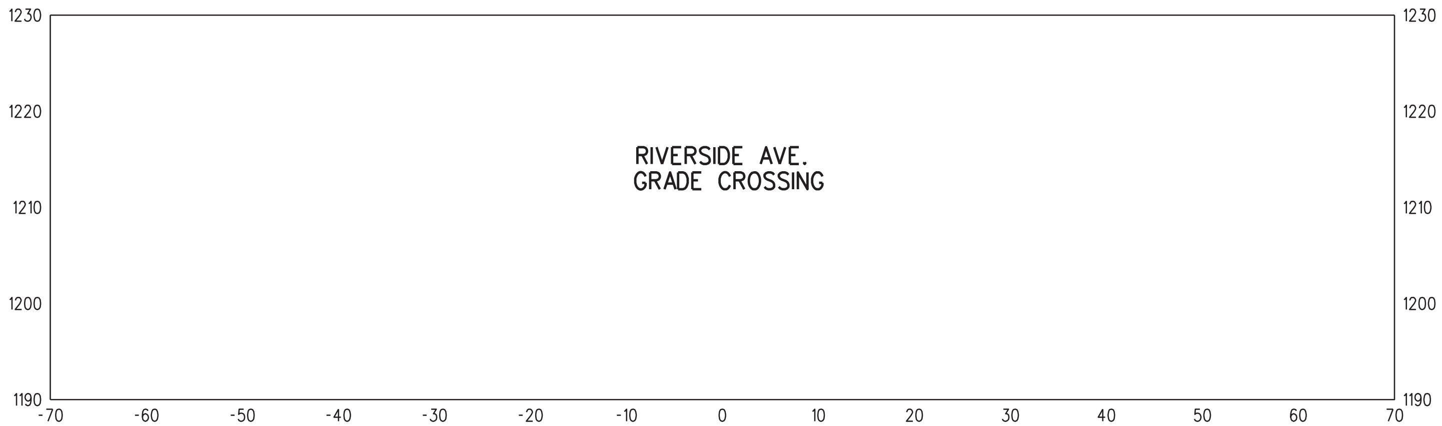
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

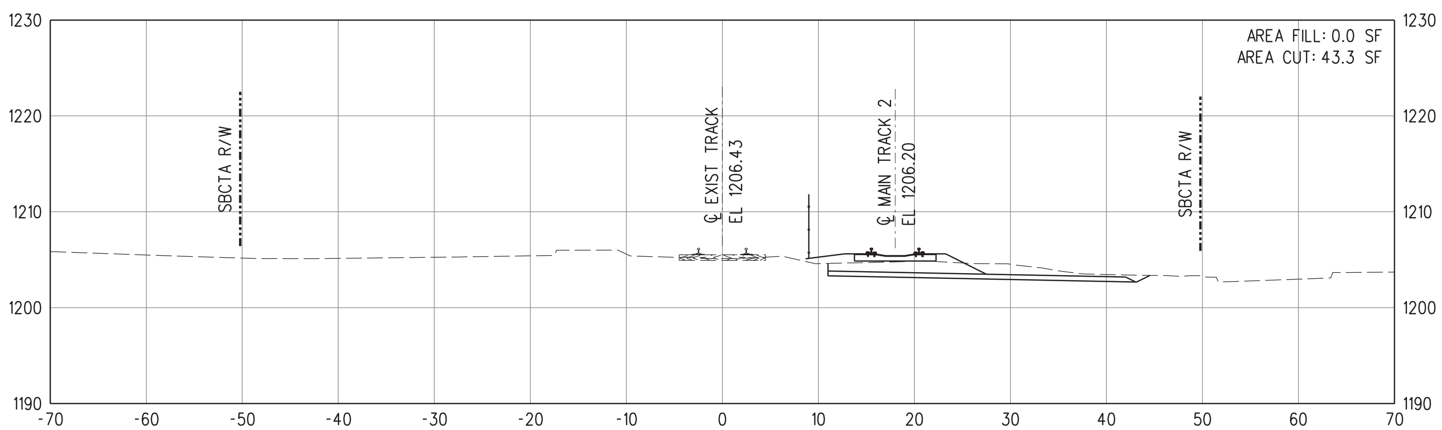
CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

TRACKWORK CROSS SECTIONS
STA 2787+00 TO STA 2792+00
SHEET 5 OF 28

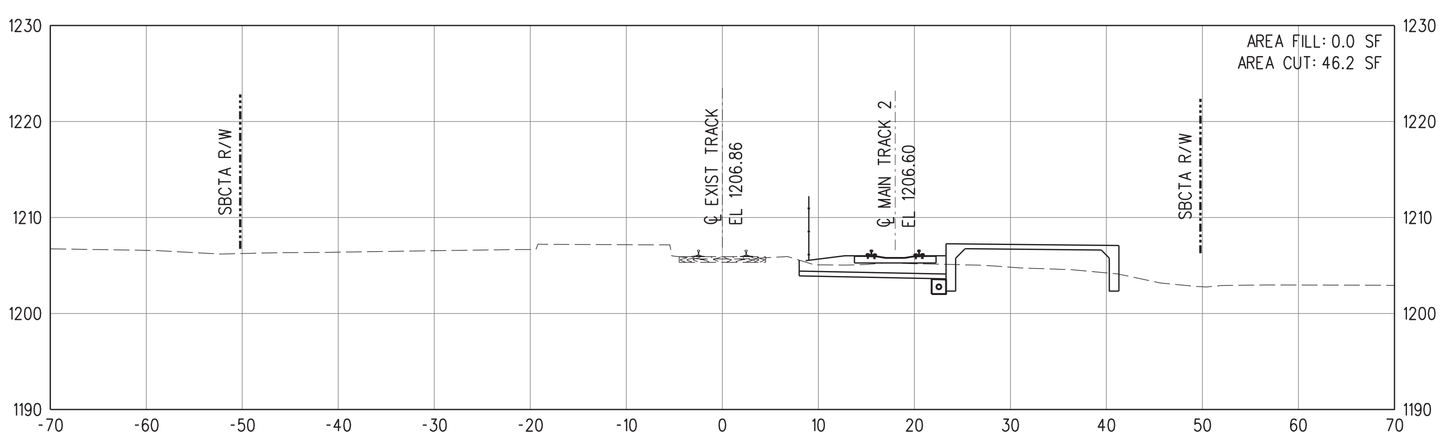
CONTRACT NO. 16-1001411
DRAWING NO. TC-005
REVISION A
SHEET NO. 45 OF 200
SCALE HORIZ 1"=10' VERT 1"=10'



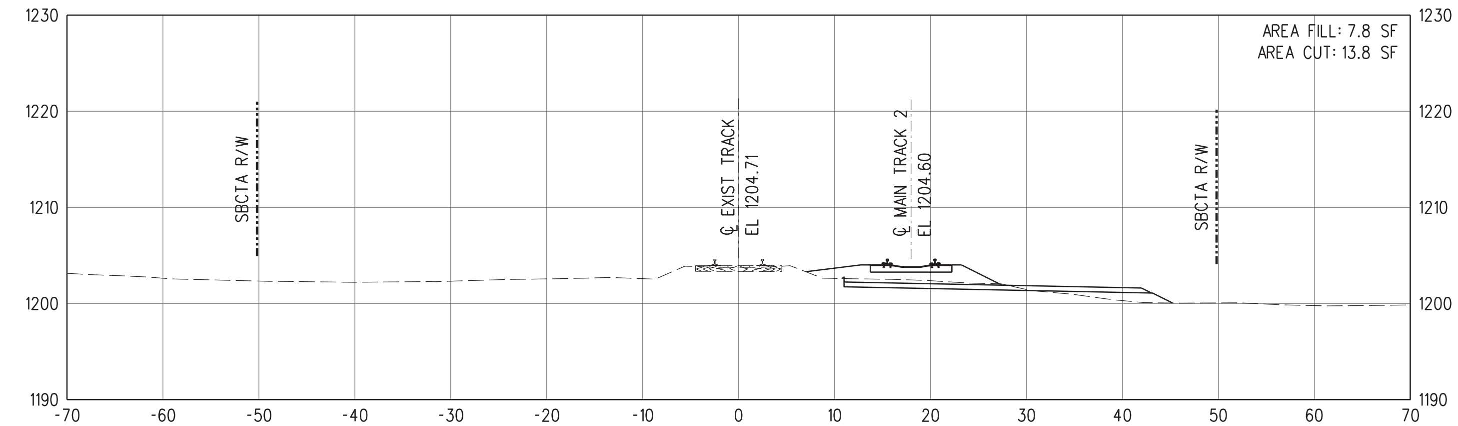
2795+00



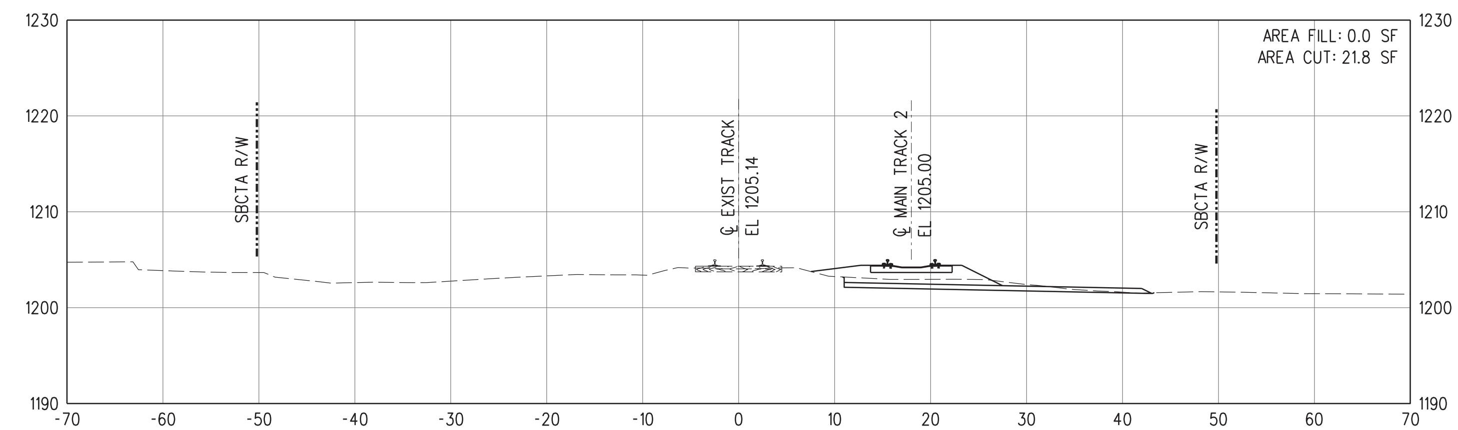
2794+00



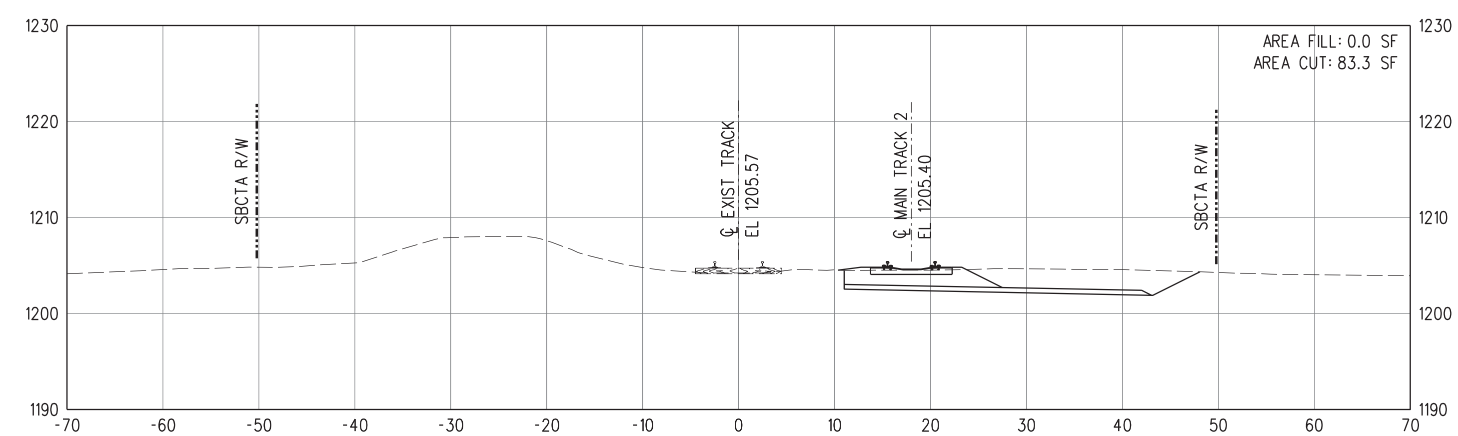
2793+00



2798+00



2797+00



2796+00

FINAL 30% SUBMITTAL (06-29-2018)

7/9/2018 2:16:21 PM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-TC-006.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

sb cta — san bernardino county transportation authority

METROLINK

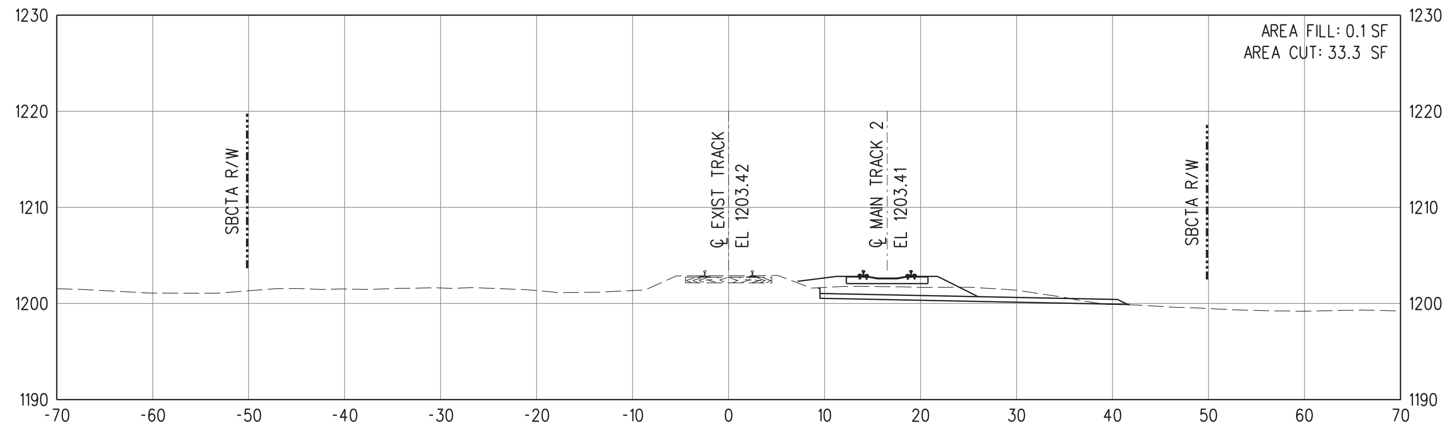
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

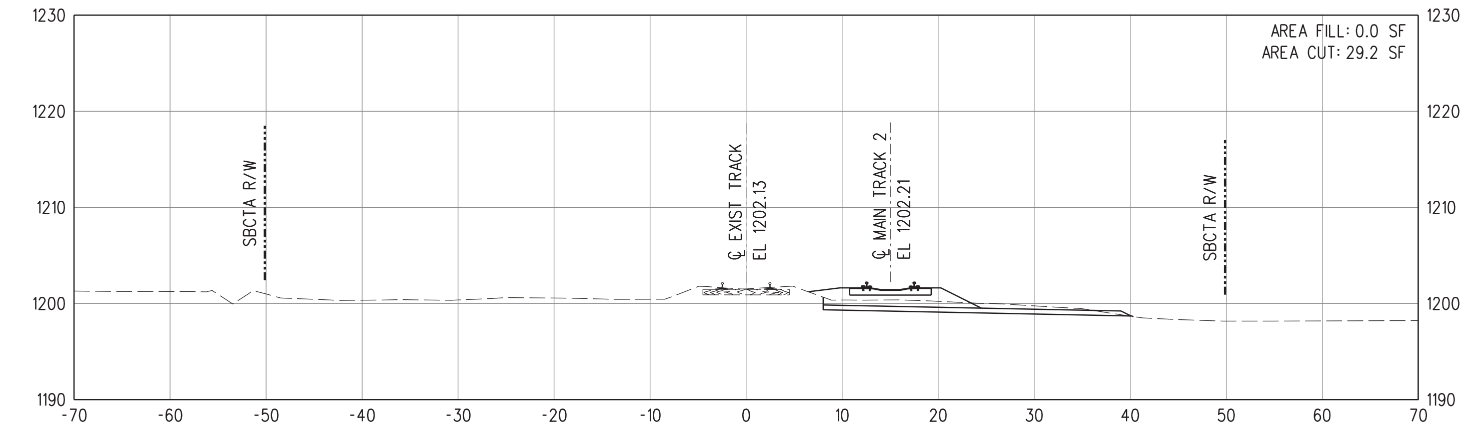
CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

TRACKWORK CROSS SECTIONS
STA 2793+00 TO STA 2798+00
SHEET 6 OF 28

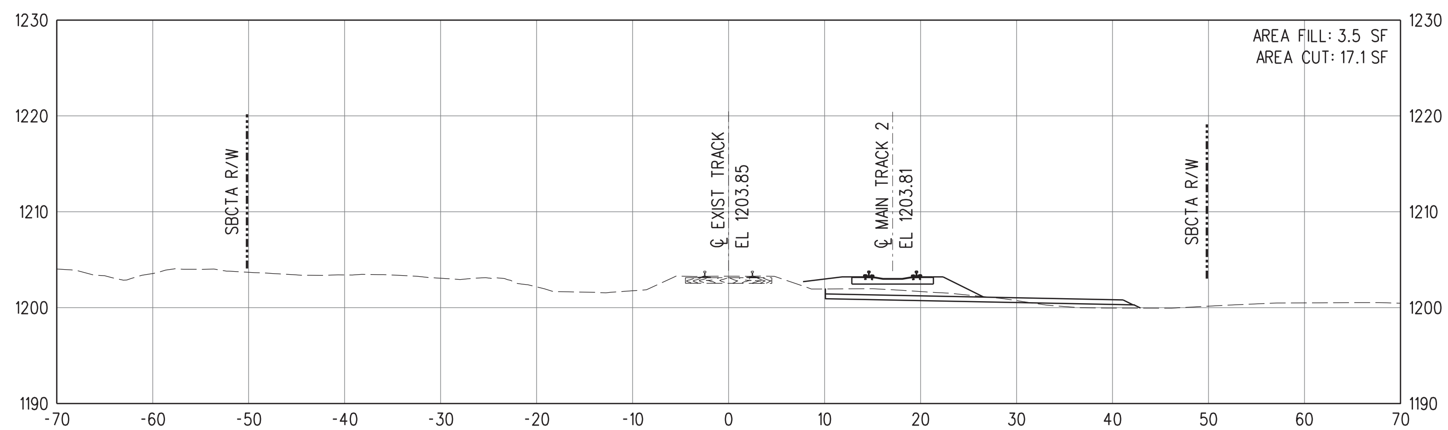
CONTRACT NO. 16-1001411
DRAWING NO. TC-006
REVISION A
SHEET NO. 46 OF 200
SCALE HORIZ 1"=10' VERT 1"=10'



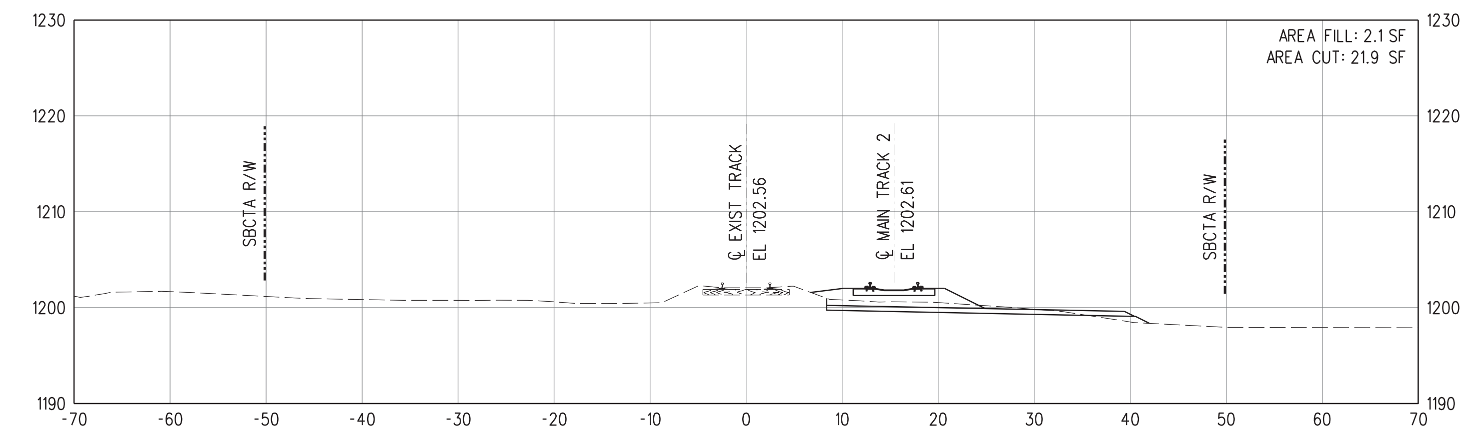
2801+00



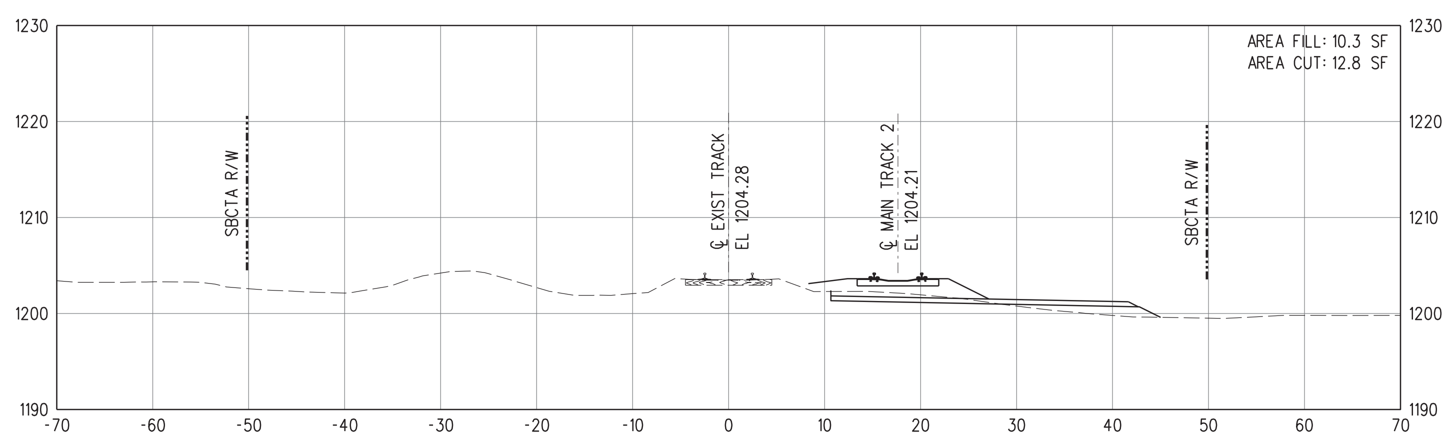
2804+00



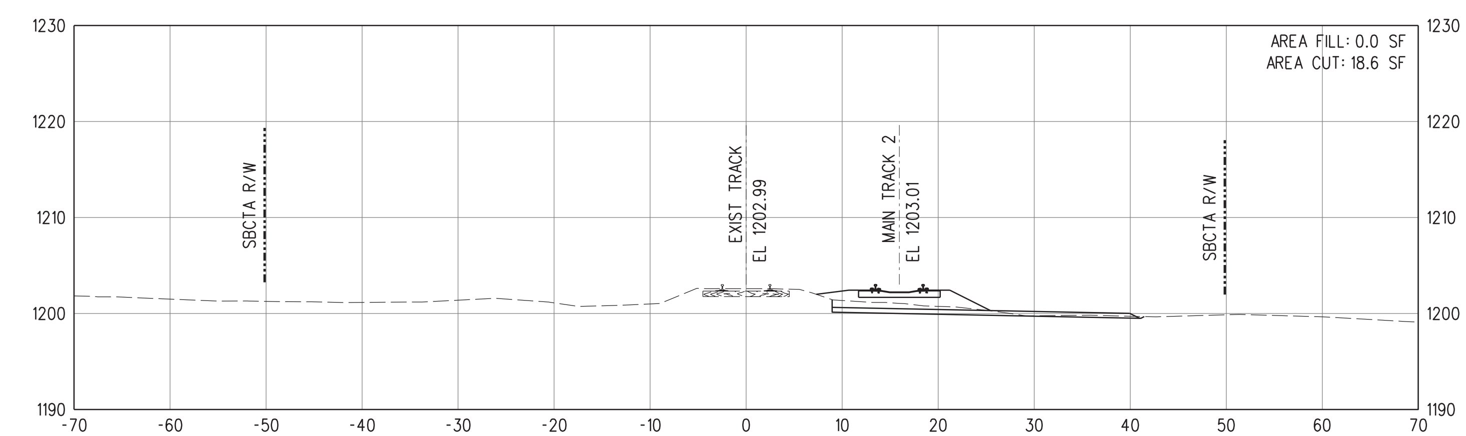
2800+00



2803+00



2799+00



2802+00

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
1	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential; and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sb cta san bernardino county transportation authority

METROLINK

moffatt & nichol

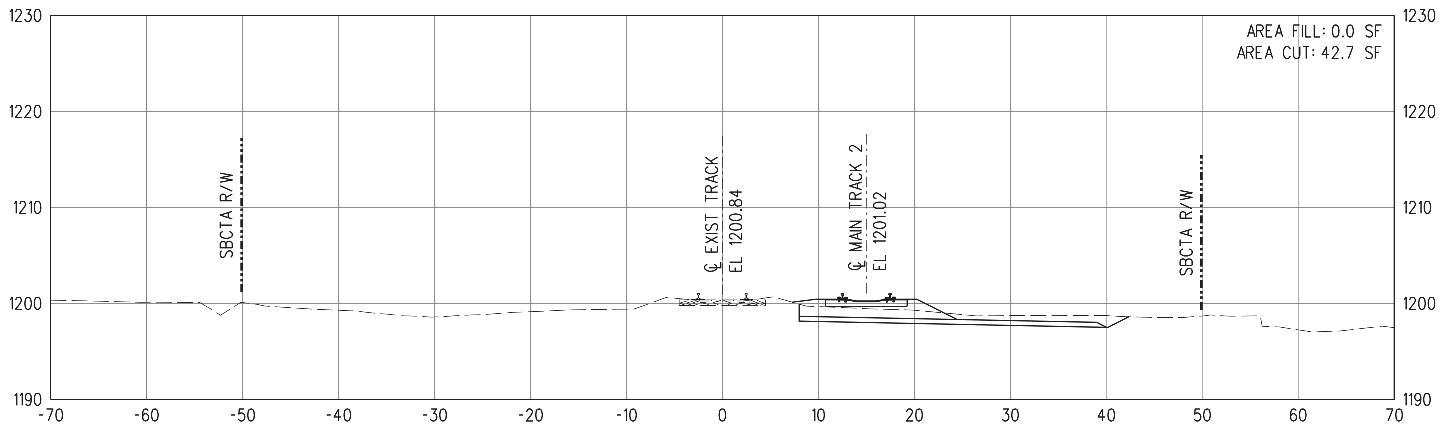
SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

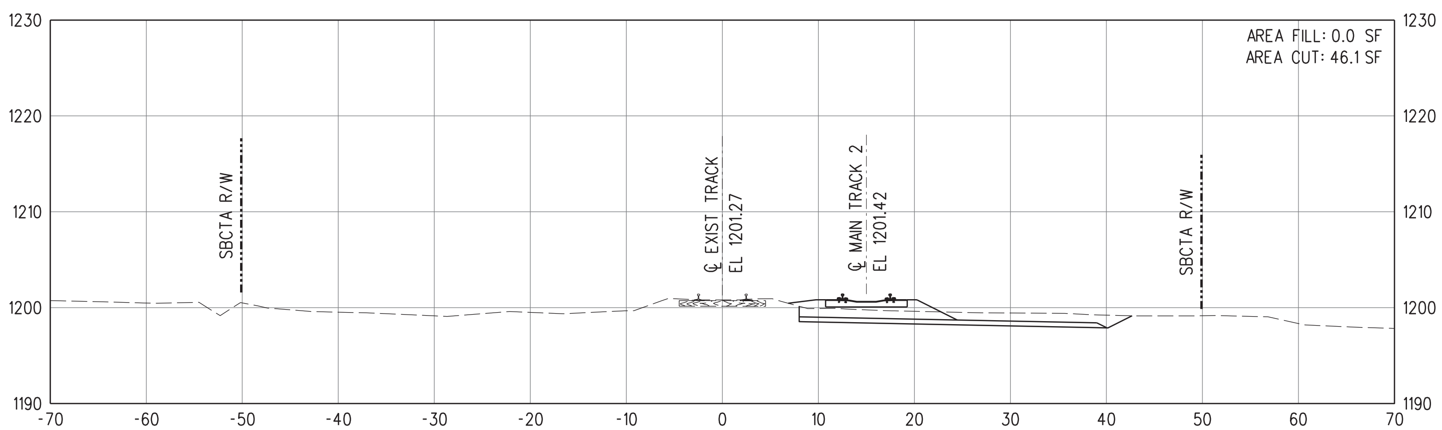
TRACKWORK CROSS SECTIONS
STA 2799+00 TO STA 2804+00
SHEET 7 OF 28

CONTRACT NO. 16-1001411
DRAWING NO. TC-007
REVISION A
SHEET NO. 47 OF 200
SCALE HORIZ 1"=10' VERT 1"=10'

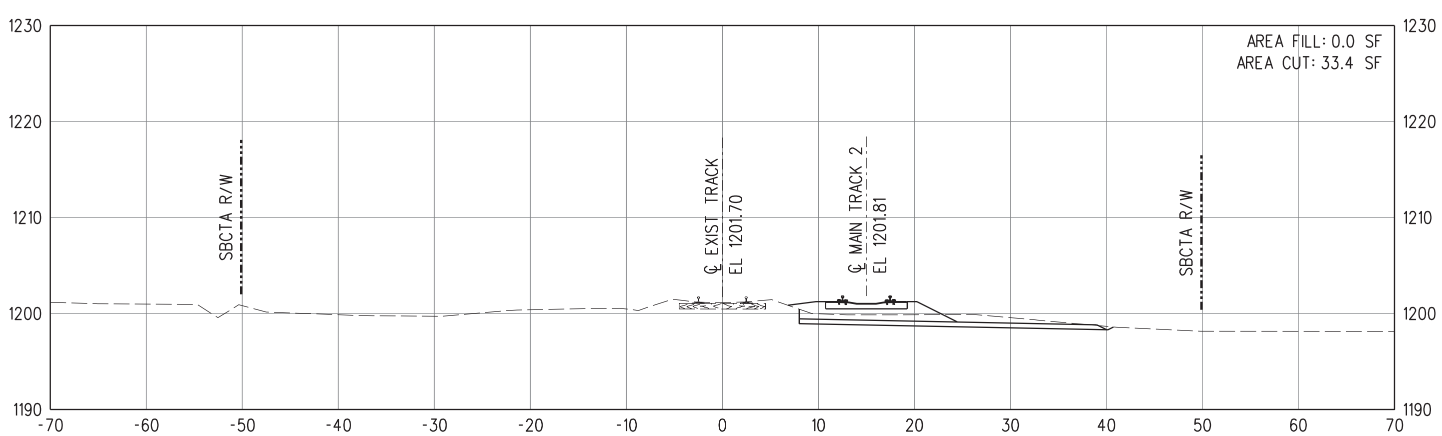
7/9/2018 2:16:22 PM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-TC-007.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg



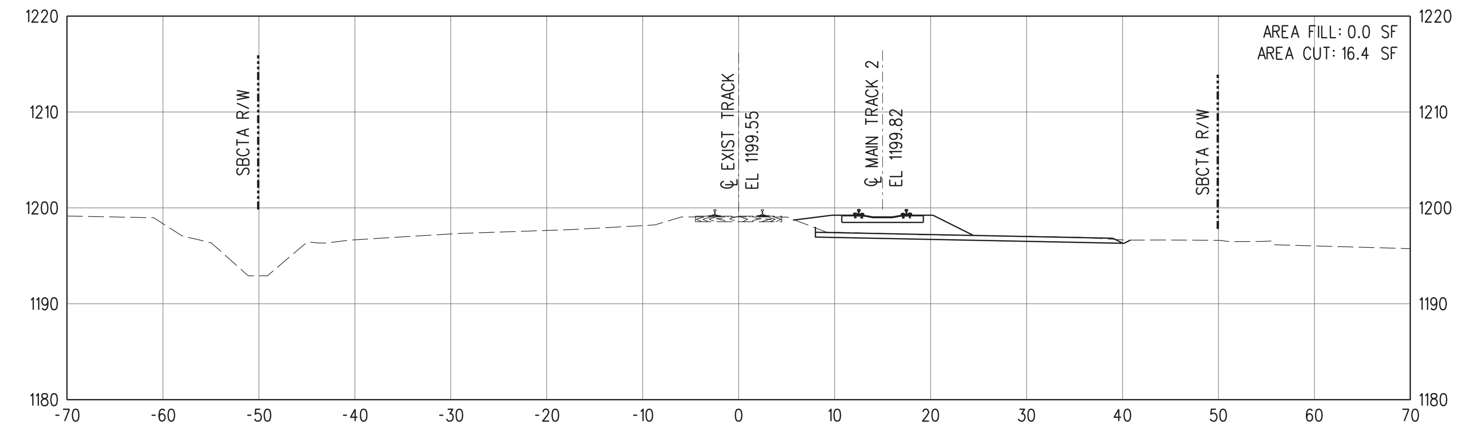
2807+00



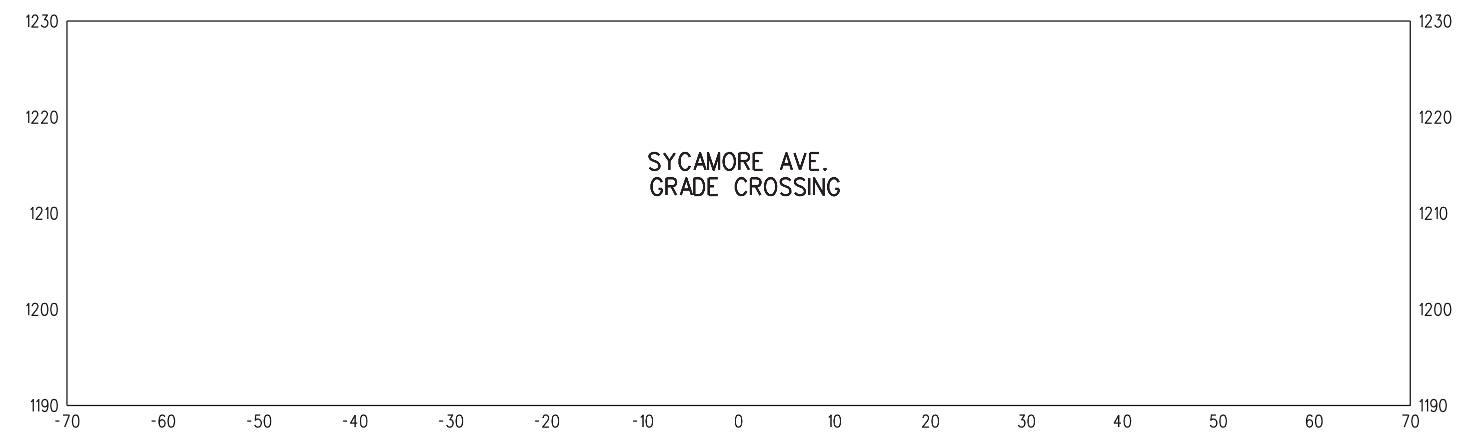
2806+00



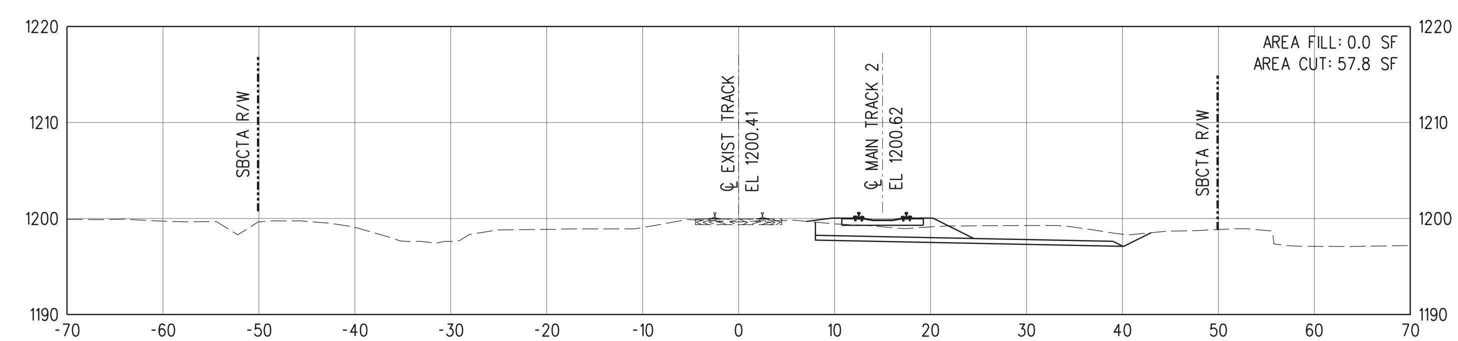
2805+00



2810+00



2809+00



2808+00

FINAL 30% SUBMITTAL (06-29-2018)

7/9/2018 2:16:23 PM USER • jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-TC-008.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
1	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sb cta san bernardino county transportation authority

METROLINK.

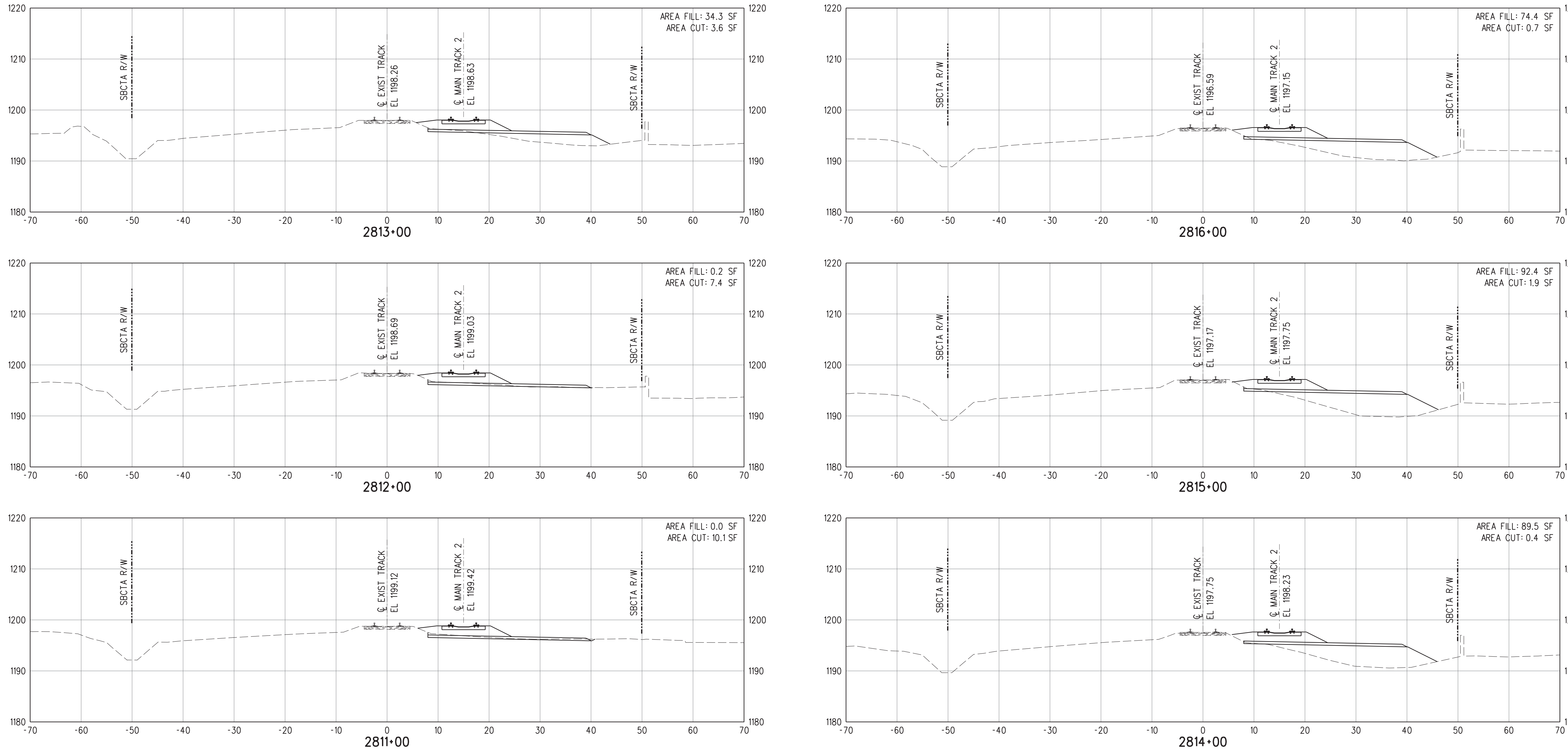
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

TRACKWORK CROSS SECTIONS
STA 2805+00 TO STA 2810+00
SHEET 8 OF 28

CONTRACT NO. 16-1001411
DRAWING NO. TC-008
REVISION A
SHEET NO. 48 OF 200
SCALE HORIZ 1"=10' VERT 1"=10'



FINAL 30% SUBMITTAL (06-29-2018)

7/9/2018 2:16:24 PM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-TC-009.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB. APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

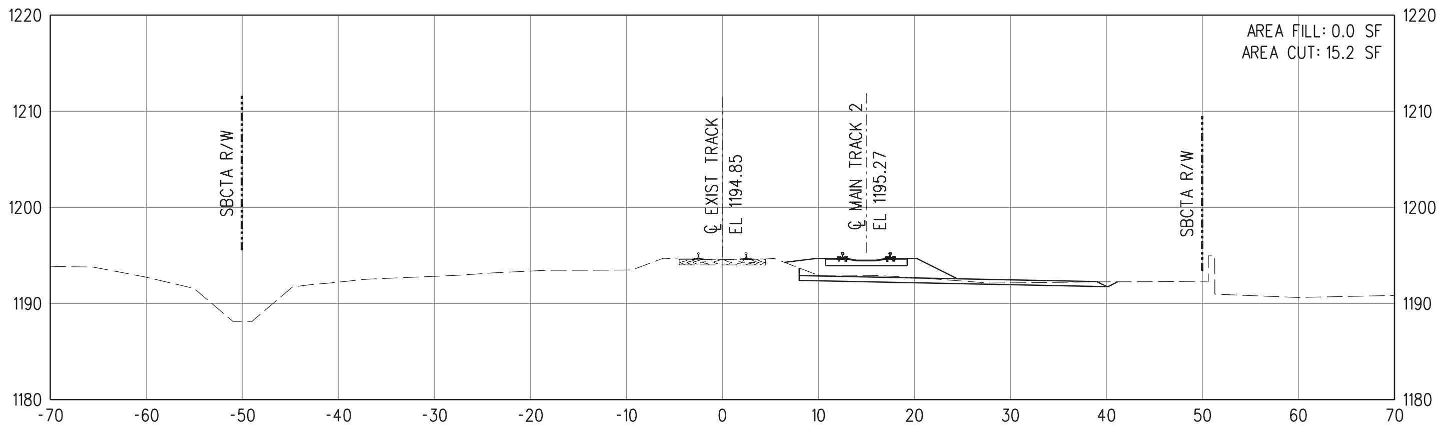
DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

METROLINK
moffatt & nichol
SUBMITTED: PROJECT MANAGER
APPROVED:

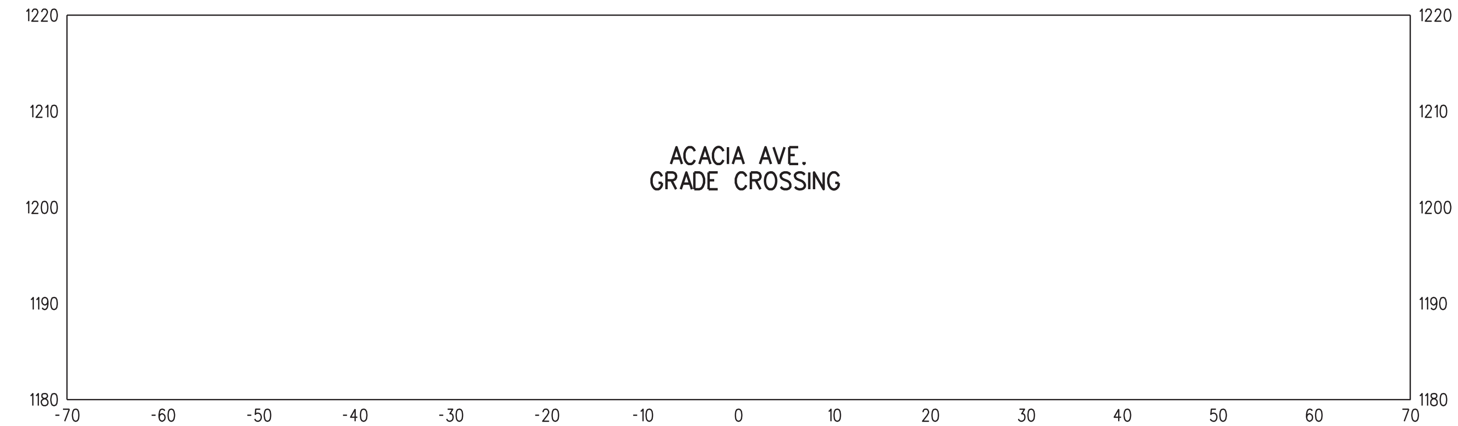
CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

TRACKWORK CROSS SECTIONS STA 2811+00 TO STA 2816+00 SHEET 9 OF 28

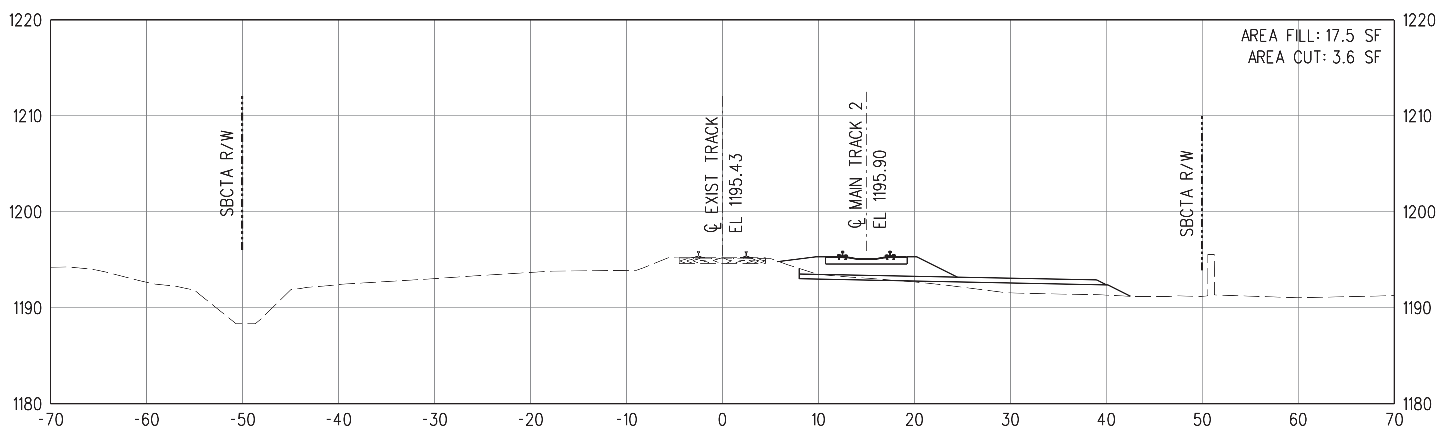
CONTRACT NO. 16-1001411
DRAWING NO. TC-009
REVISION A
SHEET NO. 49 OF 200
SCALE HORIZ 1"=10' VERT 1"=10'



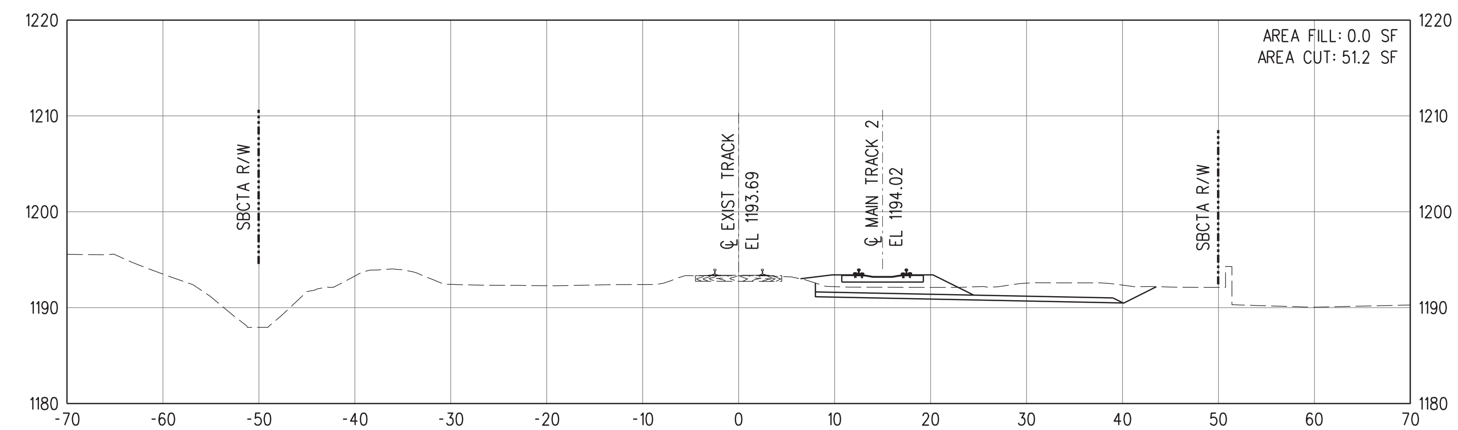
2819+00



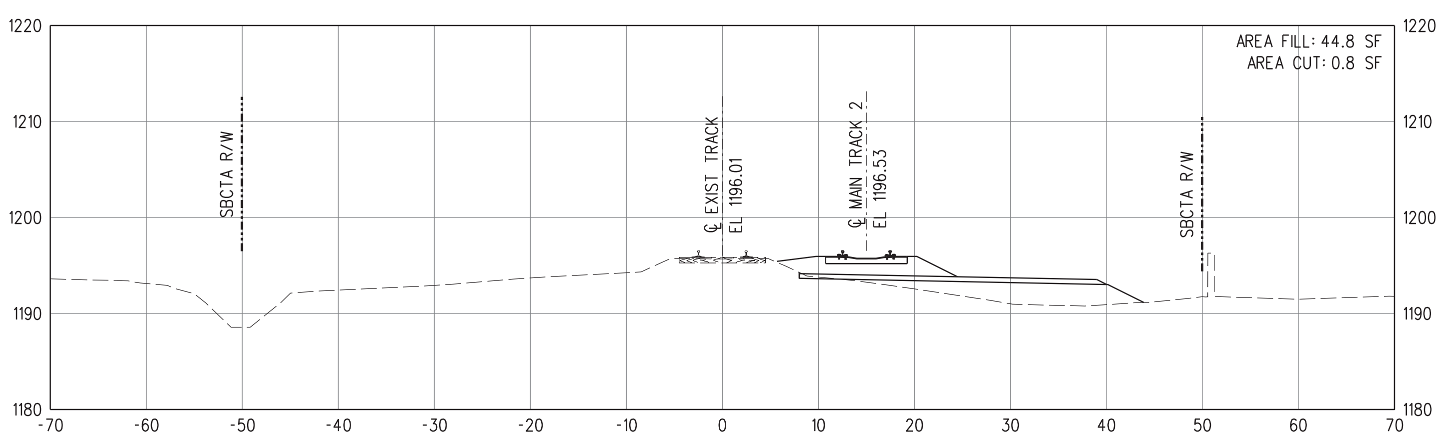
2822+00



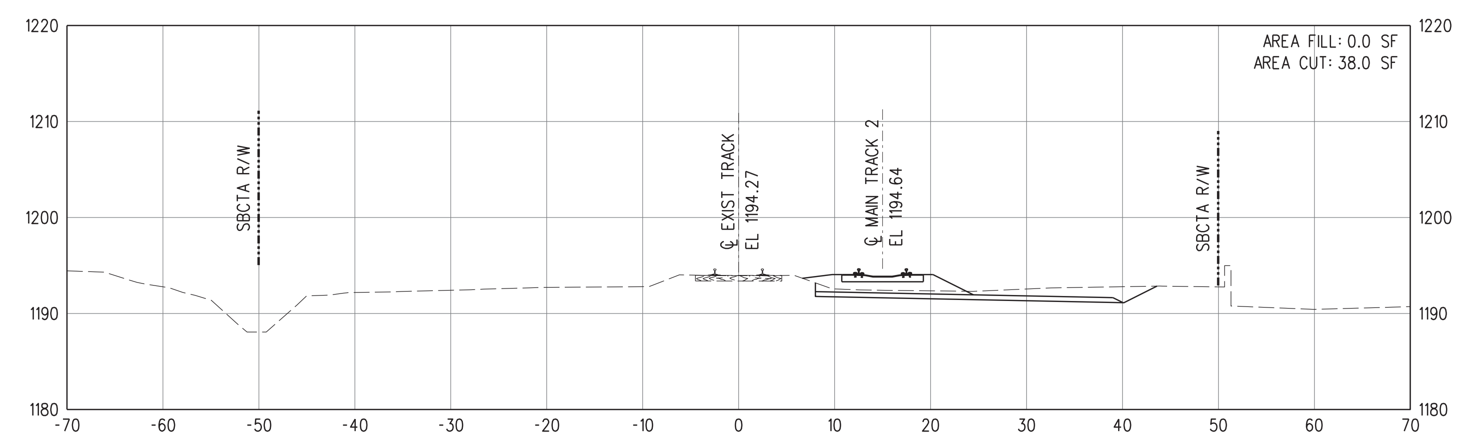
2818+00



2821+00



2817+00



2820+00

FINAL 30% SUBMITTAL (06-29-2018)

7/9/2018 2:16:24 PM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-TC-010.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential; and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

sb cta — san bernardino county transportation authority

METROLINK

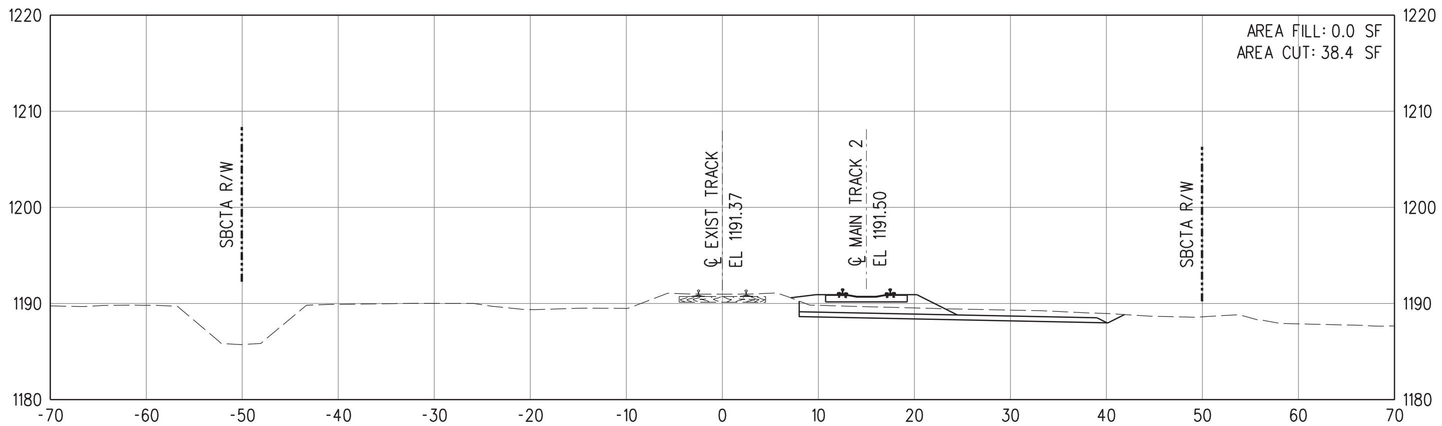
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

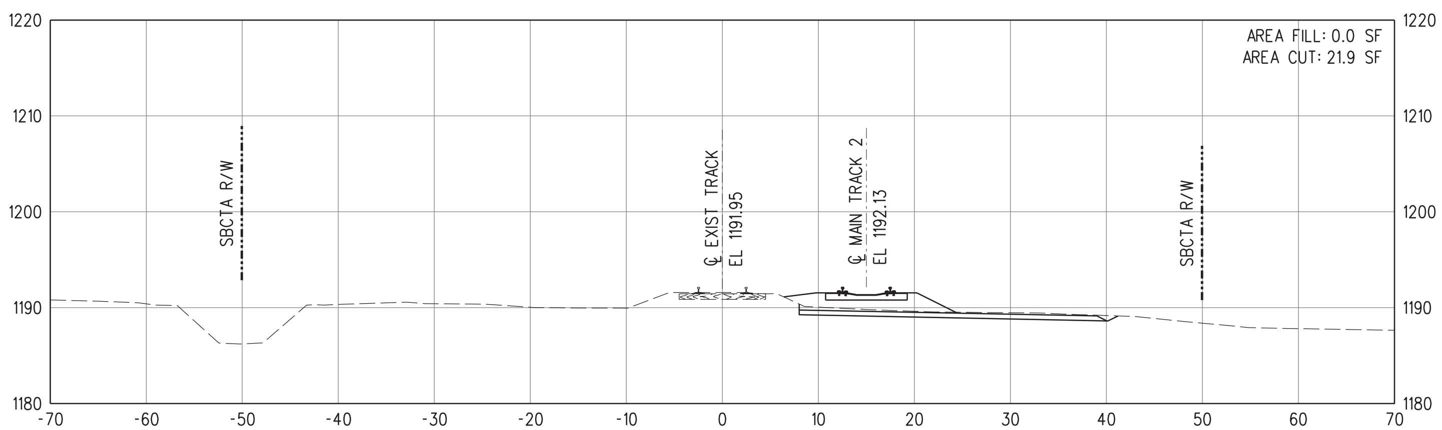
CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

TRACKWORK CROSS SECTIONS
STA 2817+00 TO STA 2822+00
SHEET 10 OF 28

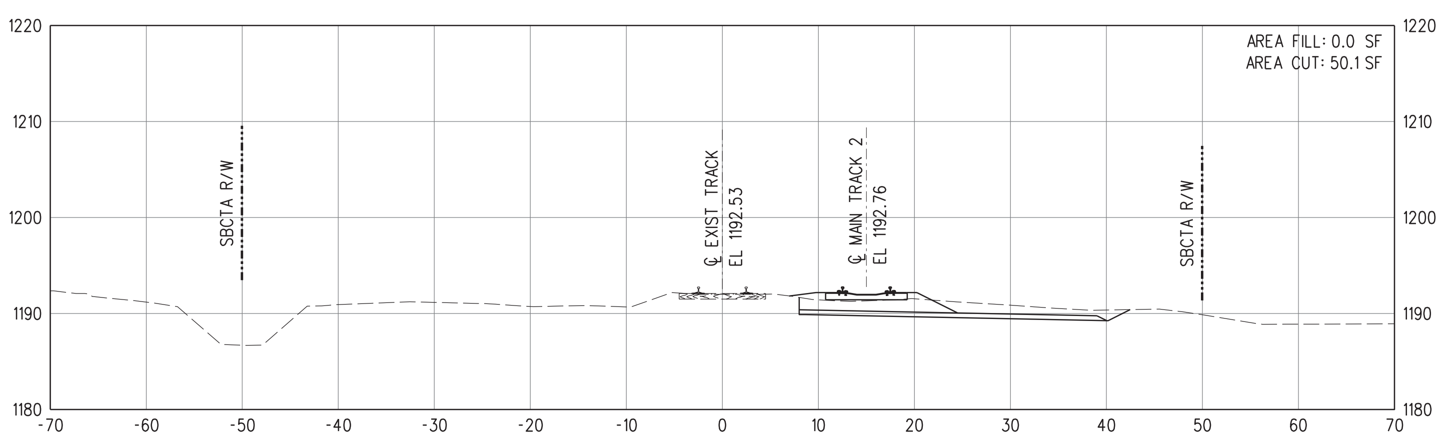
CONTRACT NO. 16-1001411
DRAWING NO. TC-010
REVISION A
SHEET NO. 50 OF 200
SCALE HORIZ 1"=10' VERT 1"=10'



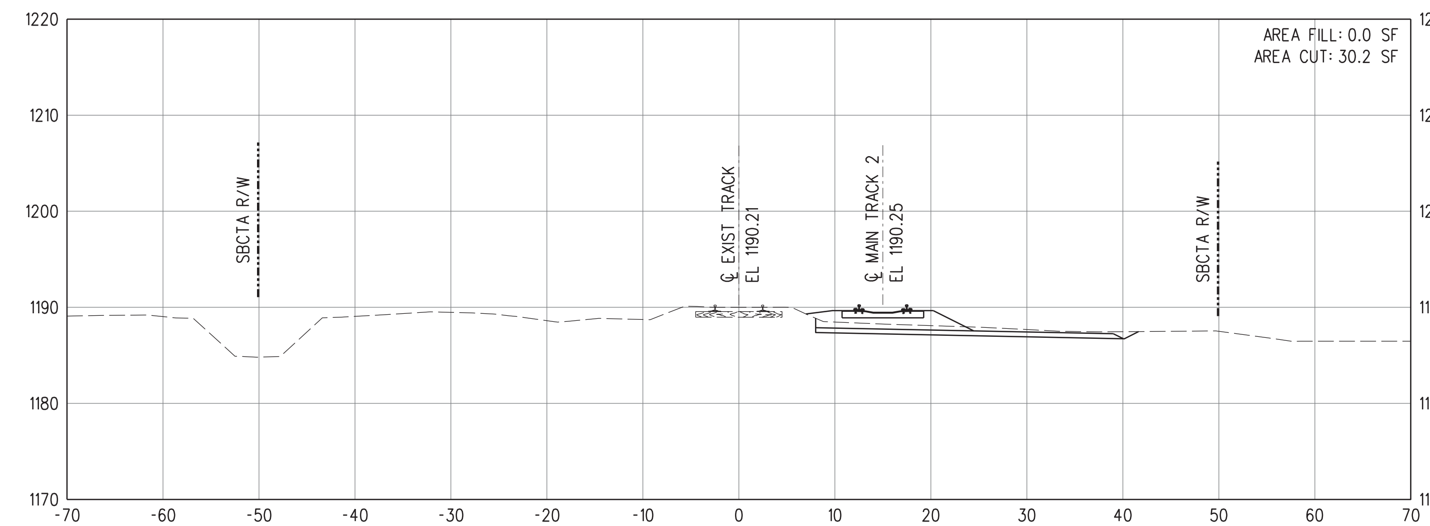
2825+00



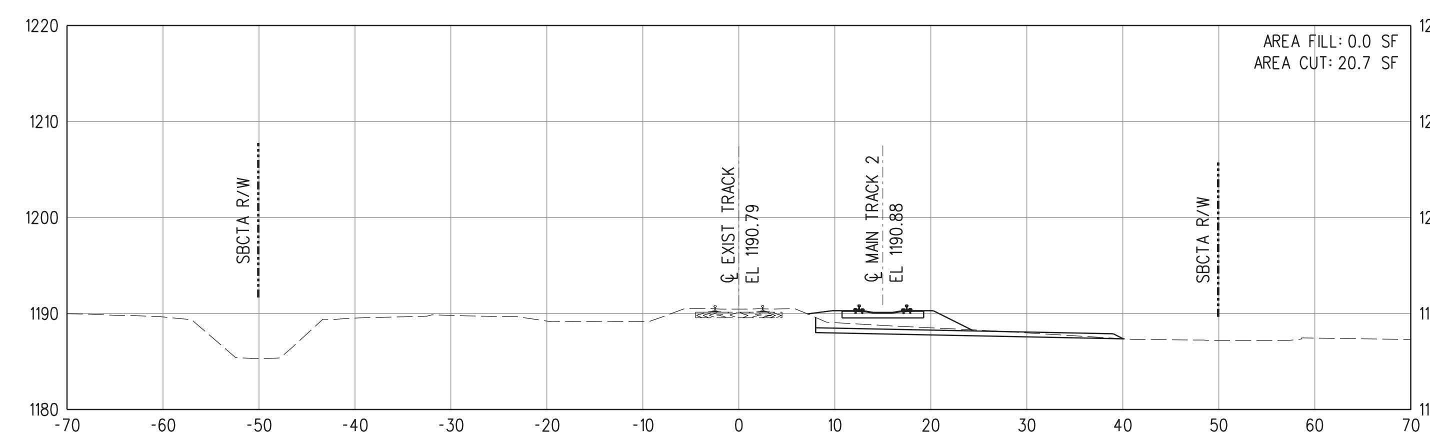
2824+00



2823+00



2827+00



2826+00

FINAL 30% SUBMITTAL (06-29-2018)

7/9/2018 2:16:25 PM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-TC-011.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB. / APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential; and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sb cta san bernardino county transportation authority

METROLINK

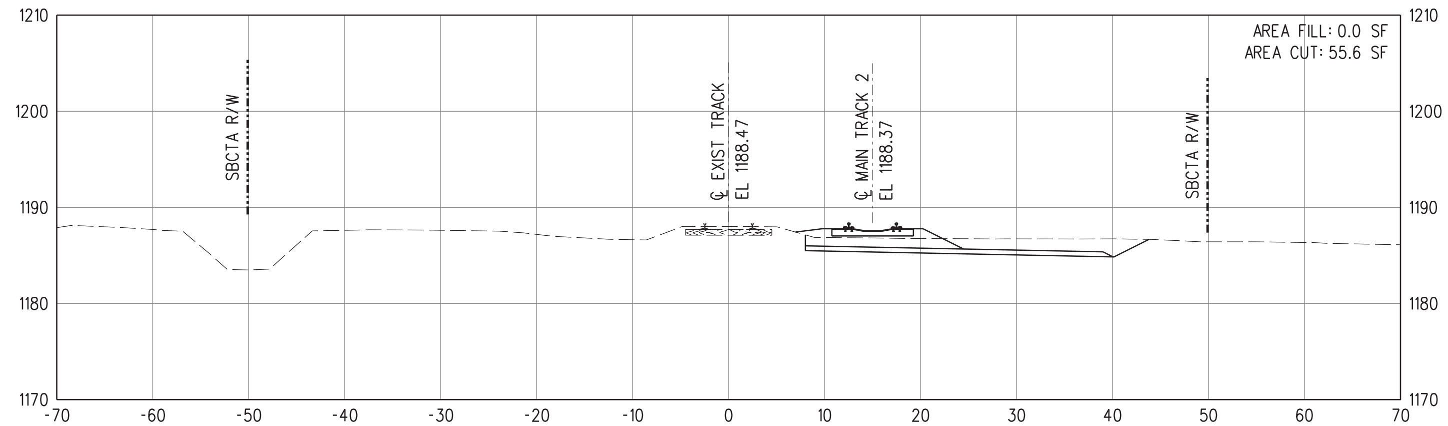
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

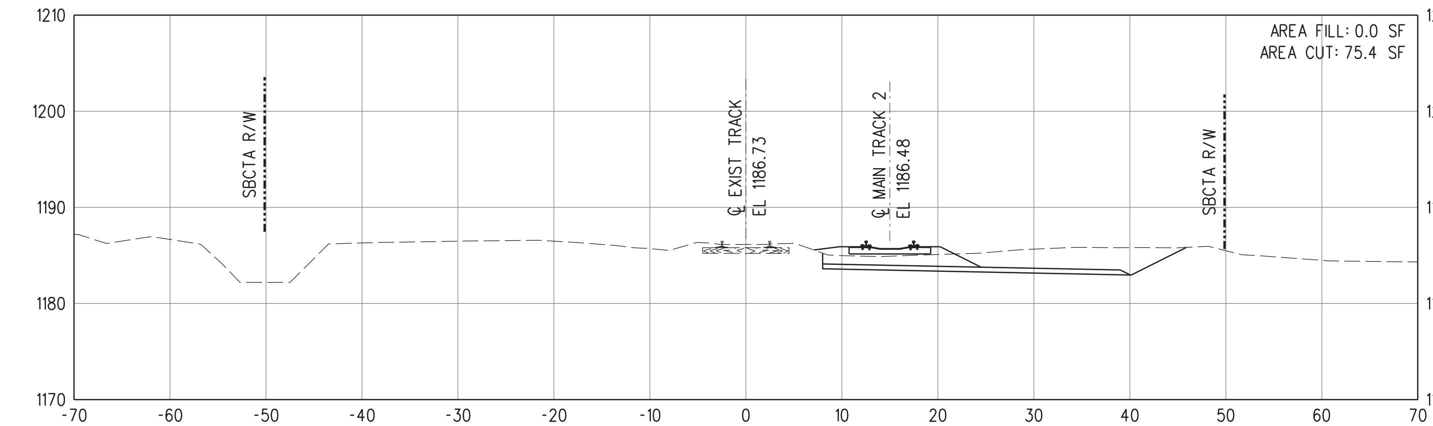
CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

TRACKWORK CROSS SECTIONS
STA 2823+00 TO STA 2827+00
SHEET 11 OF 28

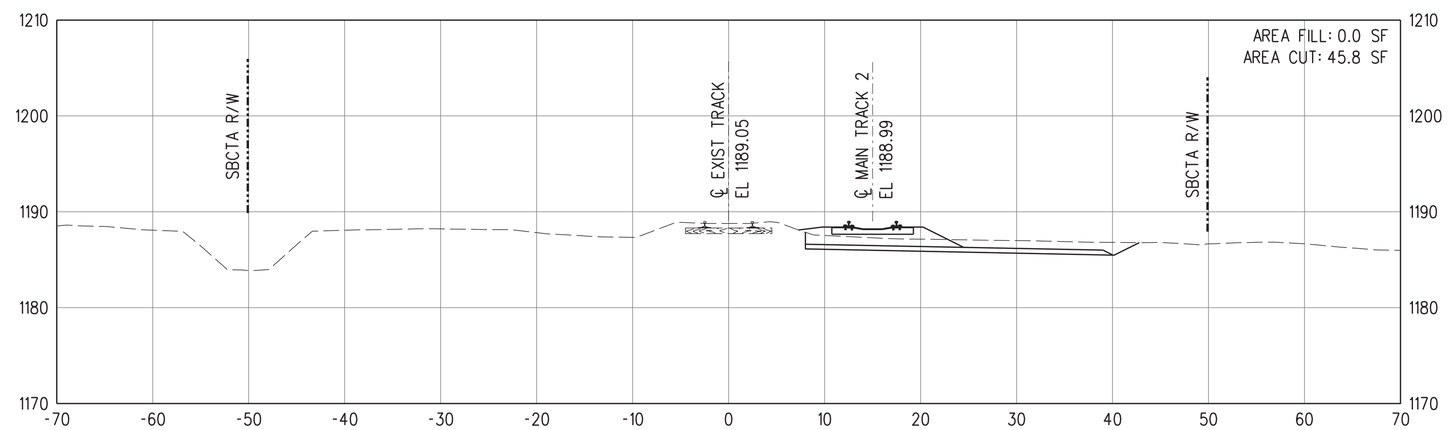
CONTRACT NO. 16-1001411
DRAWING NO. TC-011
REVISION A
SHEET NO. 51 OF 200
SCALE HORIZ 1"=10' VERT 1"=10'



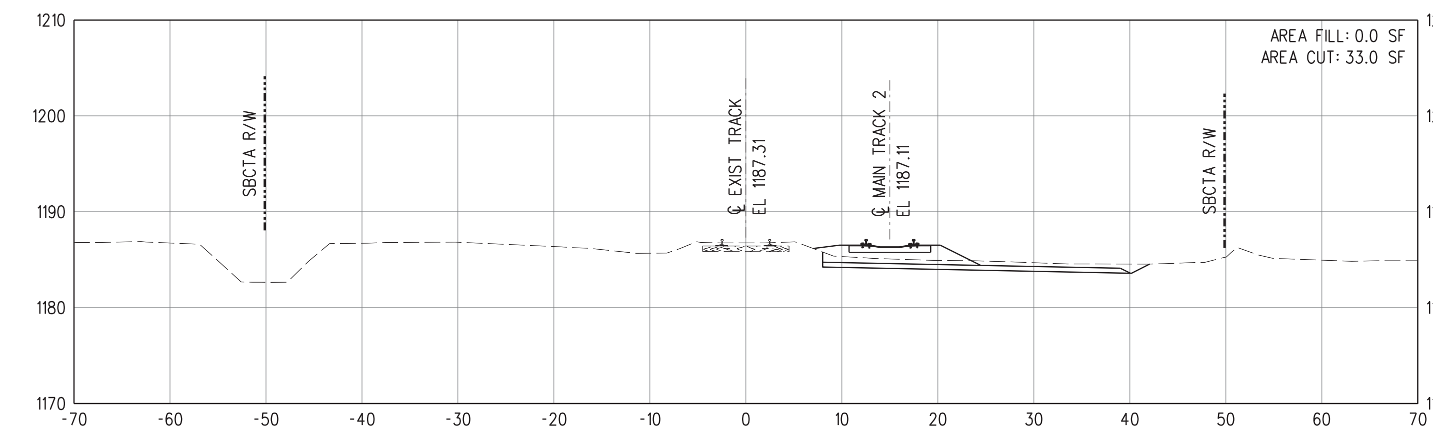
2830+00



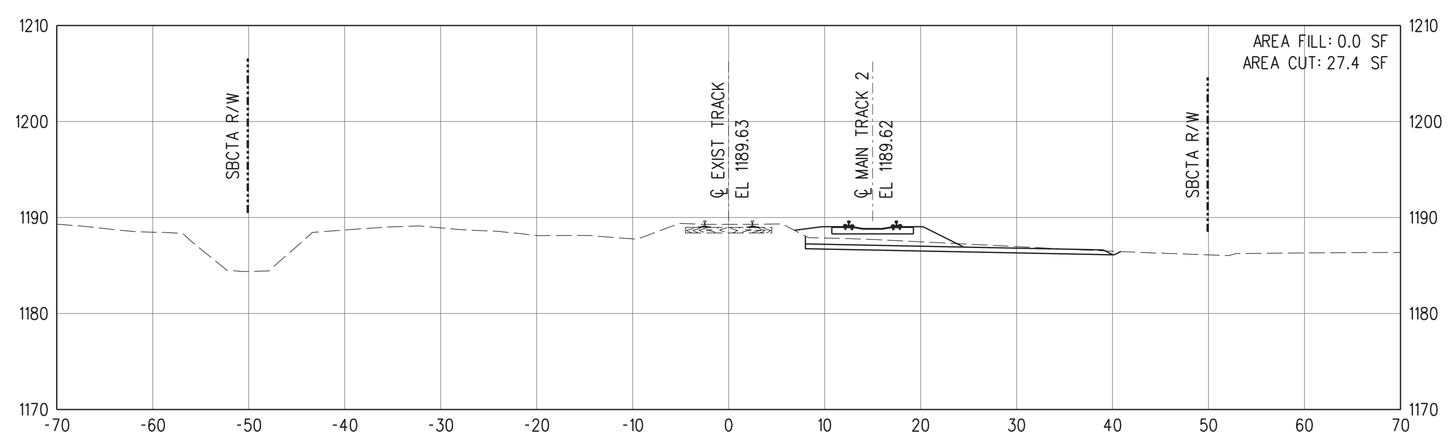
2833+00



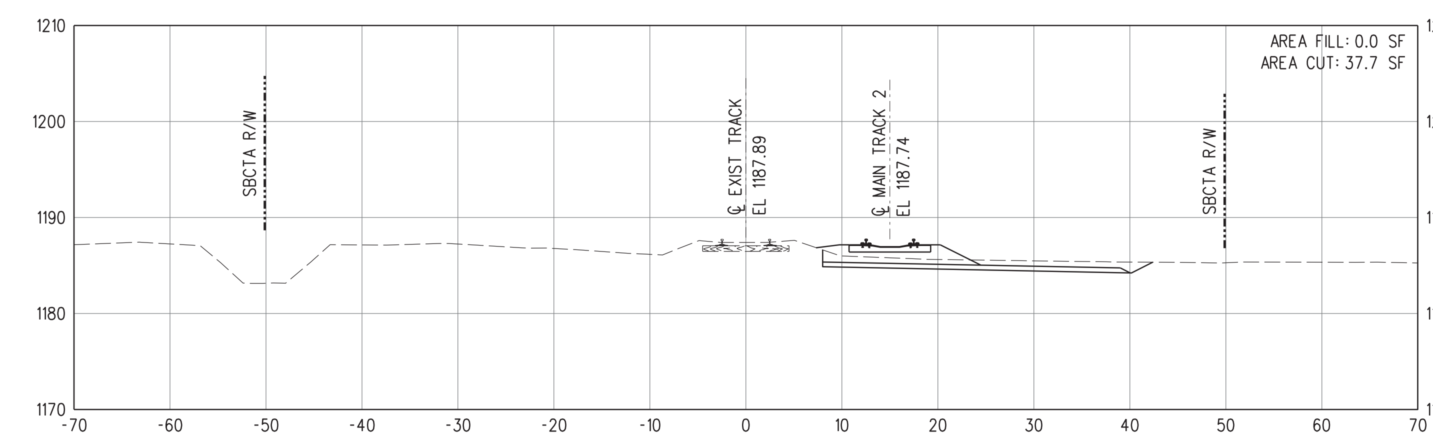
2829+00



2832+00



2828+00



2831+00

FINAL 30% SUBMITTAL (06-29-2018)

7/9/2018 2:16:26 PM USER • jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-TC-012.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB. APP.
	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential; and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sb cta san bernardino county transportation authority

METROLINK

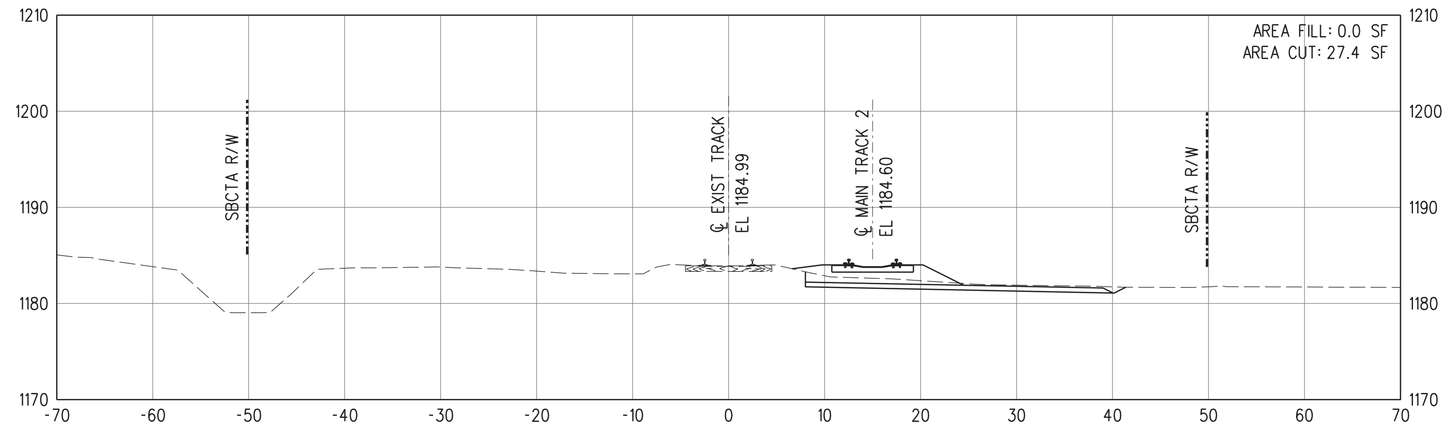
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

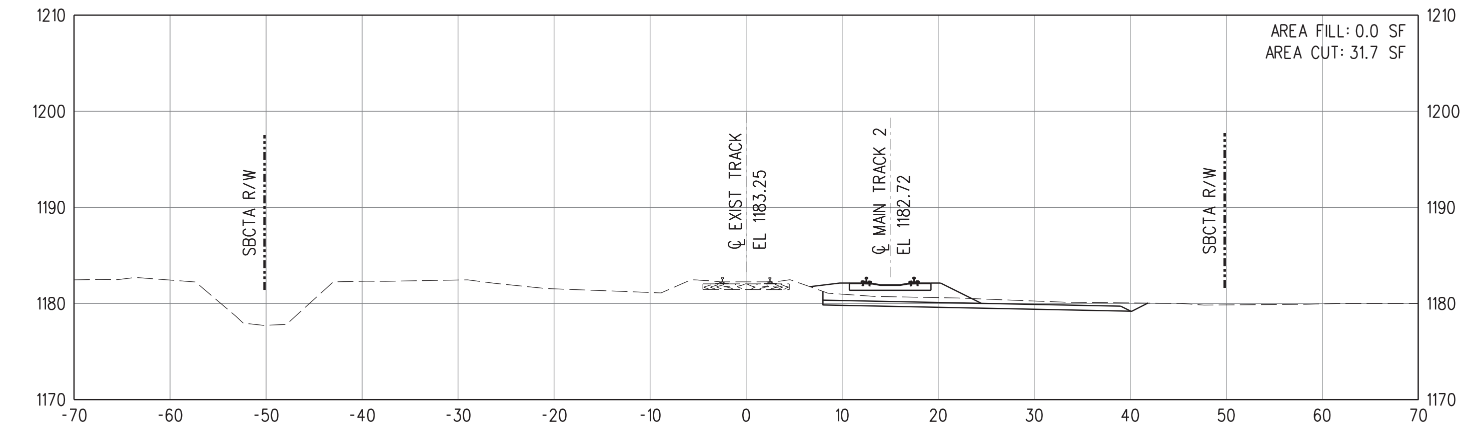
CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

TRACKWORK CROSS SECTIONS
STA 2828+00 TO STA 2833+00
SHEET 12 OF 28

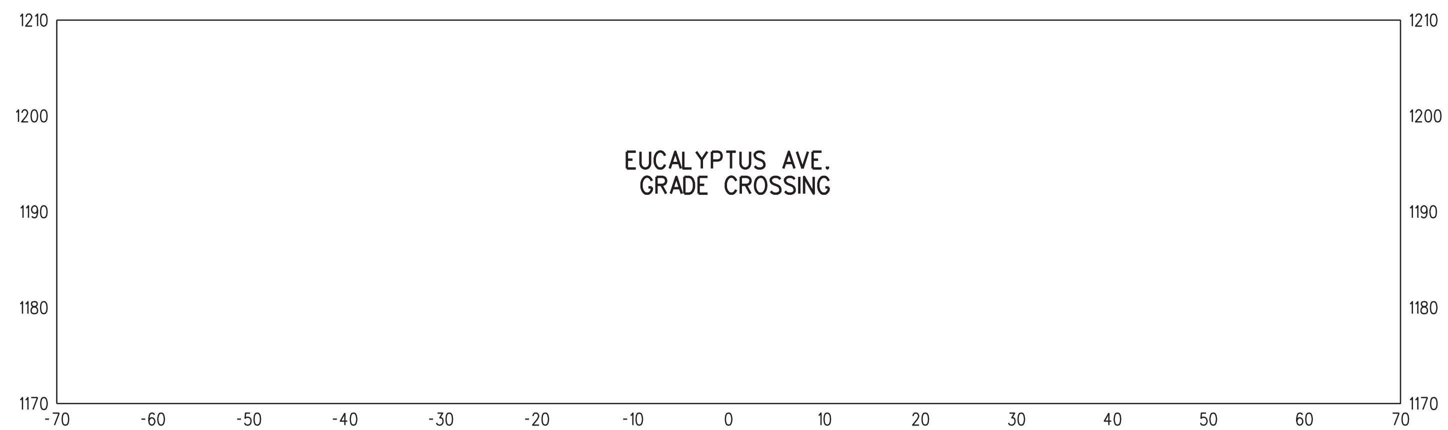
CONTRACT NO. 16-1001411
DRAWING NO. TC-012
REVISION A
SHEET NO. 52 OF 200
SCALE HORIZ 1"=10' VERT 1"=10'



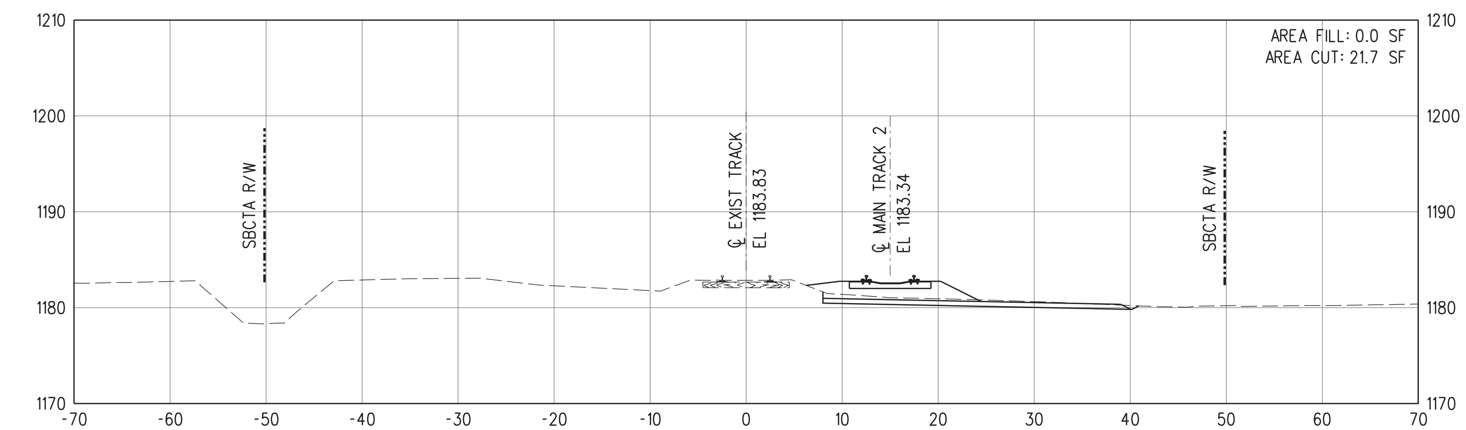
2836+00



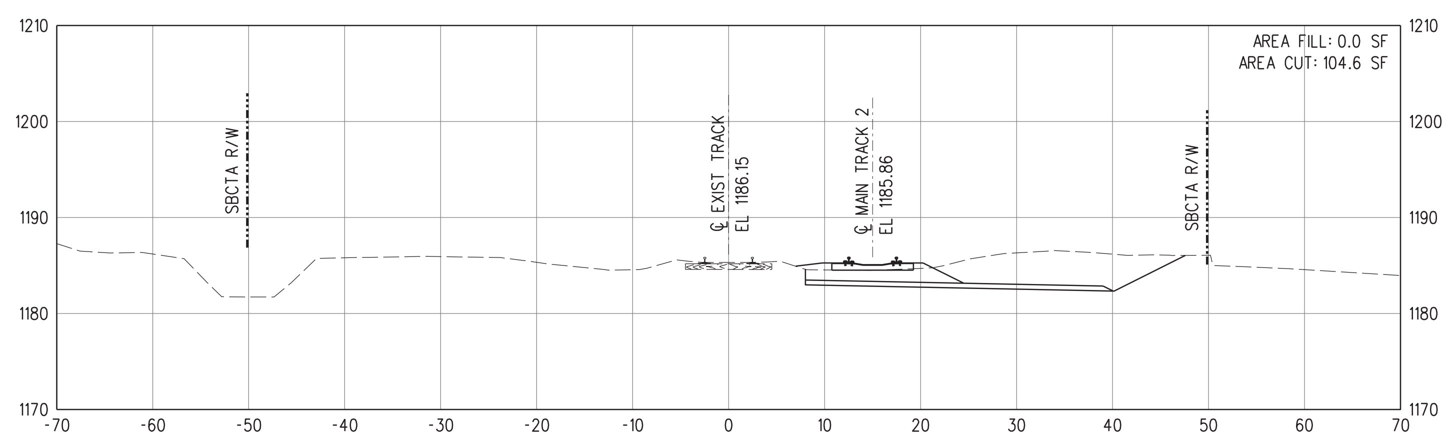
2839+00



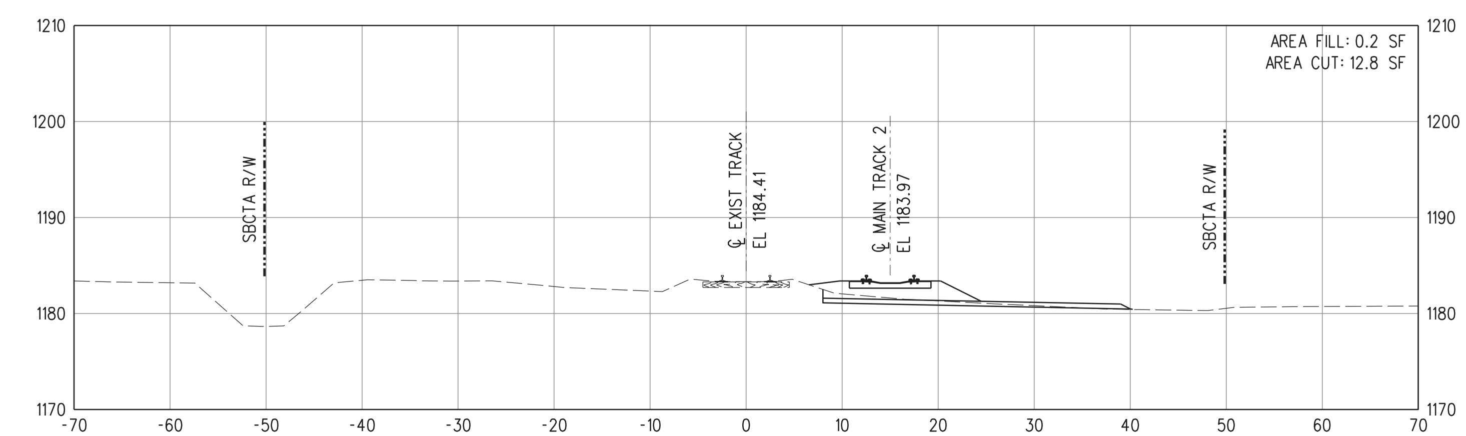
2835+00



2838+00



2834+00



2837+00

FINAL 30% SUBMITTAL (06-29-2018)

7/9/2018 2:16:27 PM USER • jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-TC-013.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB. APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential; and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

sb cta — san bernardino county transportation authority

METROLINK

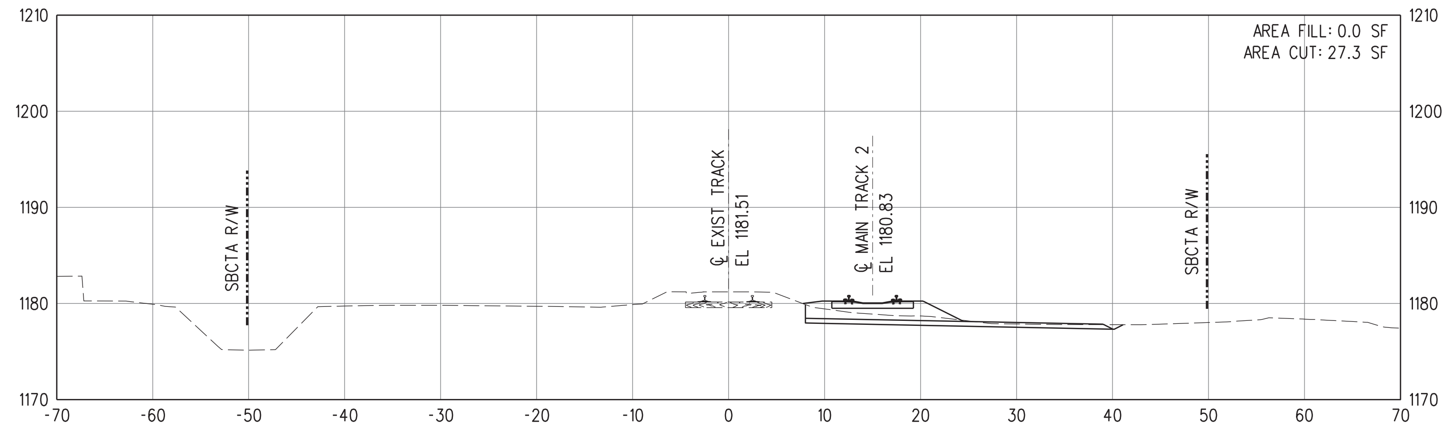
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

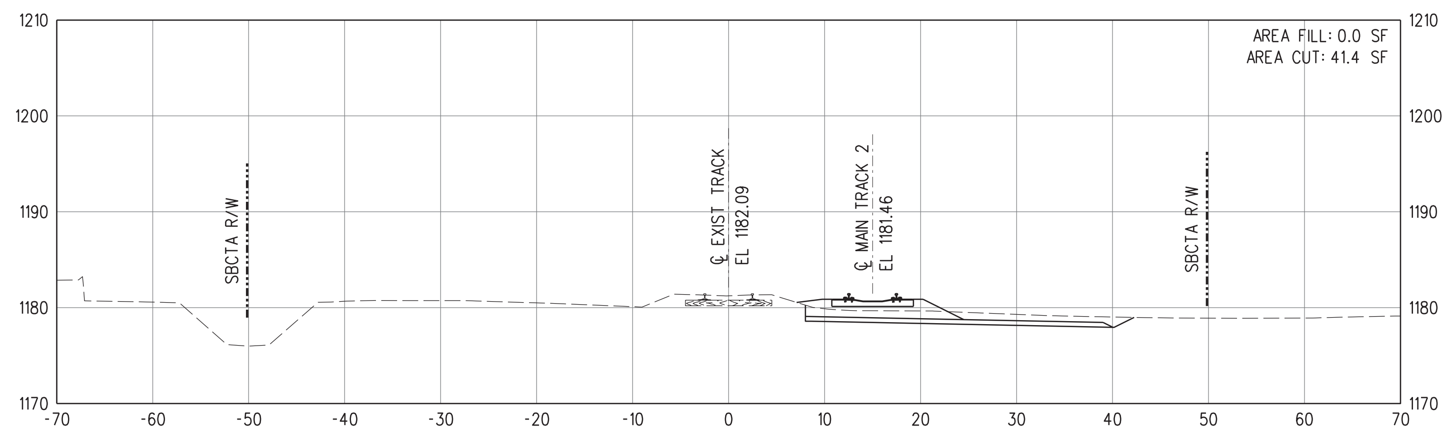
CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT

TRACKWORK CROSS SECTIONS
STA 2834+00 TO STA 2839+00
SHEET 13 OF 28

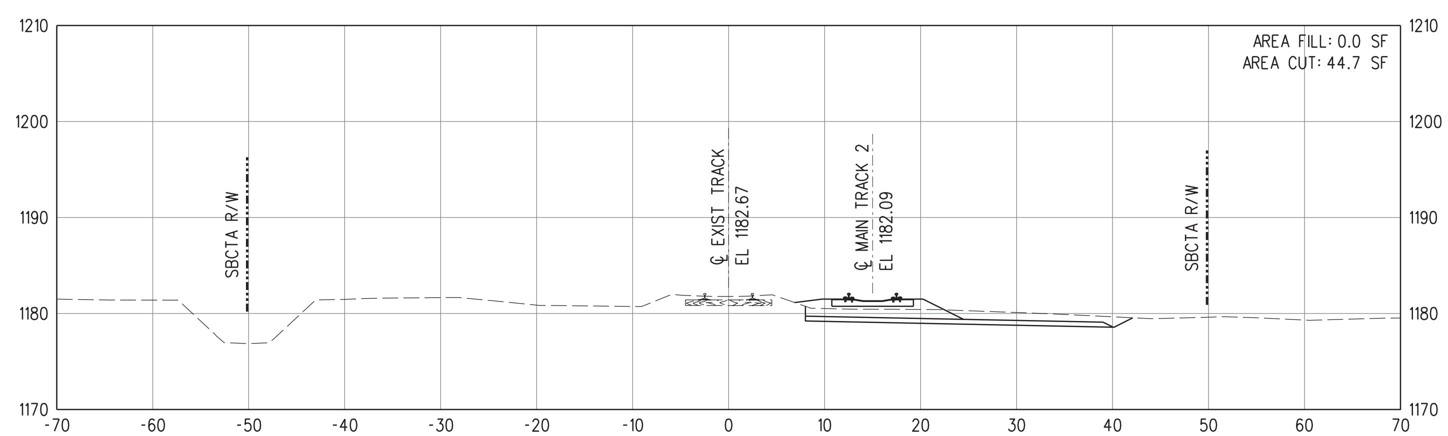
CONTRACT NO. 16-1001411
DRAWING NO. TC-013
REVISION A
SHEET NO. 53 OF 200
SCALE HORIZ 1"=10' VERT 1"=10'



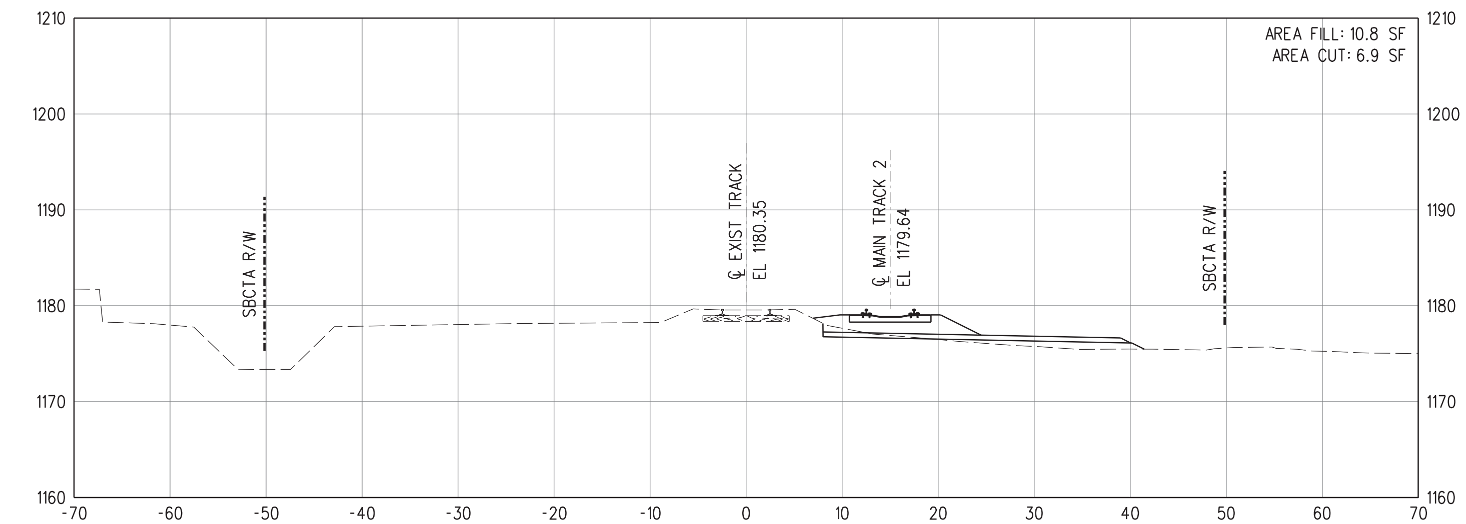
2842+00



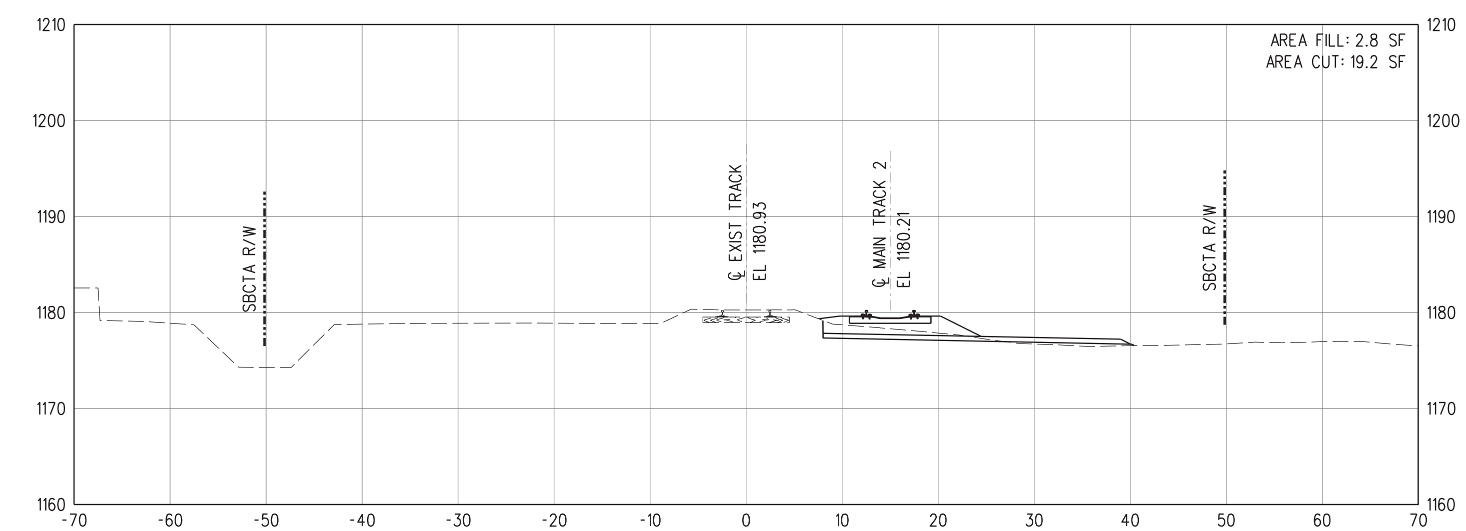
2841+00



2840+00



2844+00



2843+00

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential; and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

sb cta — san bernardino county transportation authority

METROLINK

moffatt & nichol

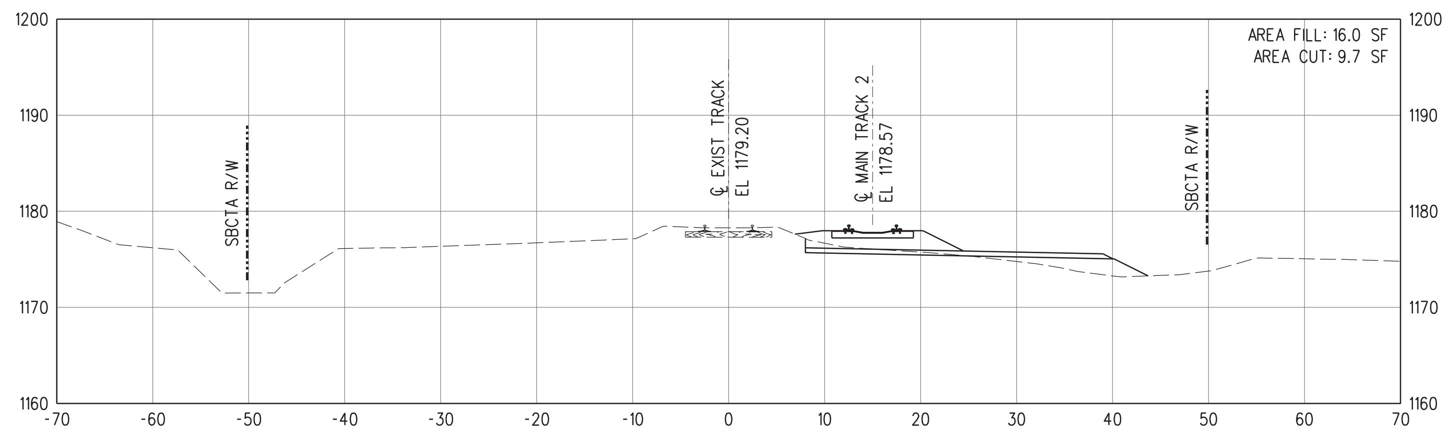
SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

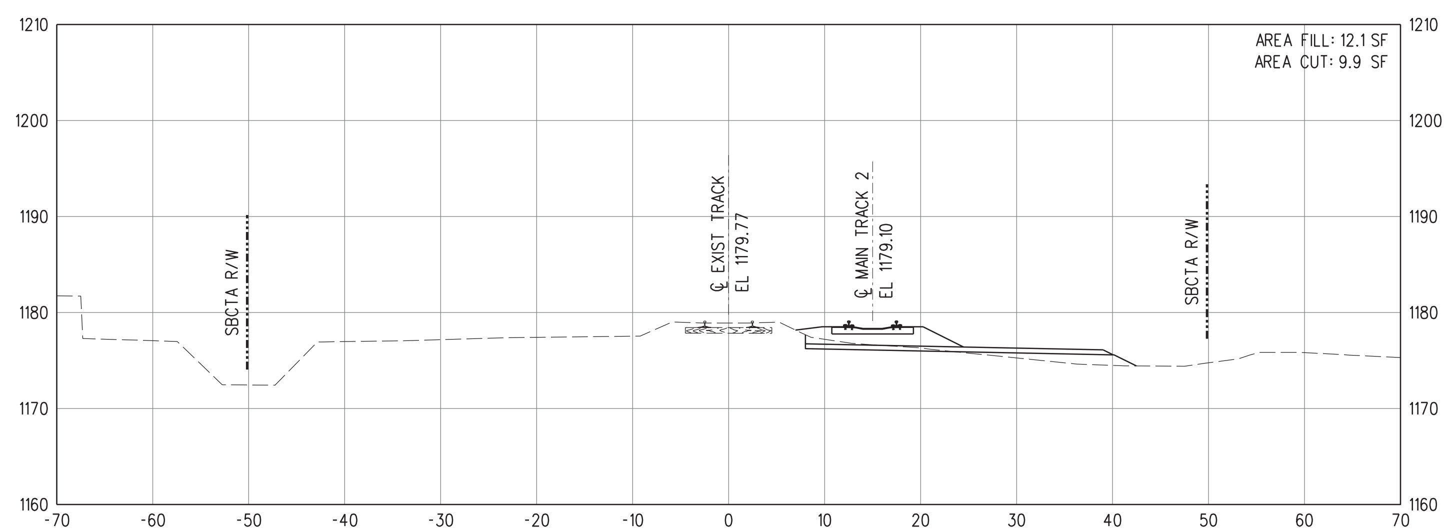
TRACKWORK CROSS SECTIONS
STA 2840+00 TO STA 2844+00
SHEET 14 OF 28

CONTRACT NO. 16-1001411
DRAWING NO. TC-014
REVISION A
SHEET NO. 54 OF 200
SCALE HORIZ 1"=10' VERT 1"=10'

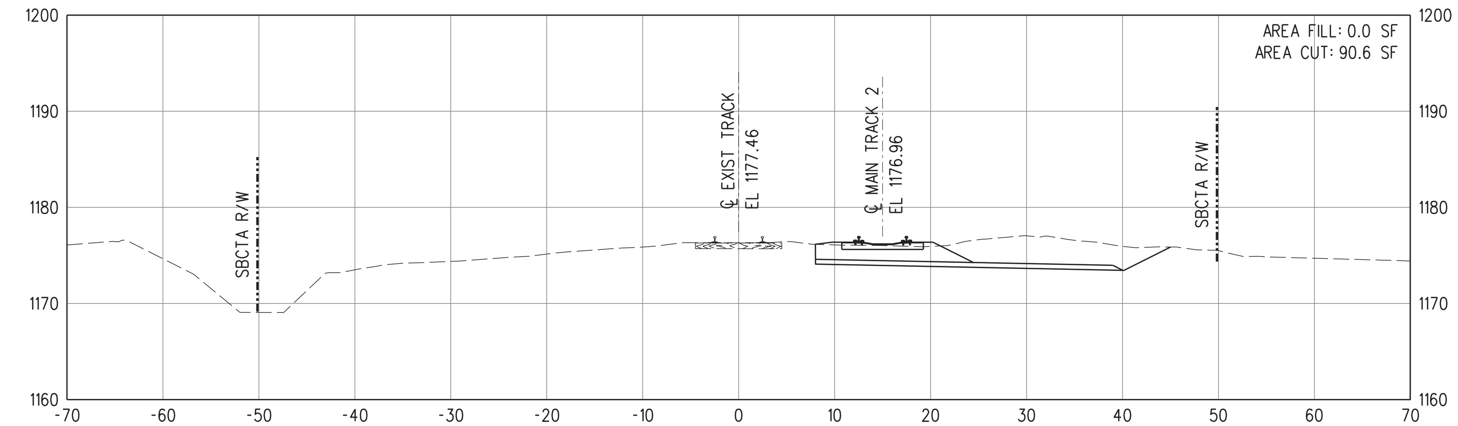
7/9/2018 2:16:27 PM USER: jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-TC-014.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg



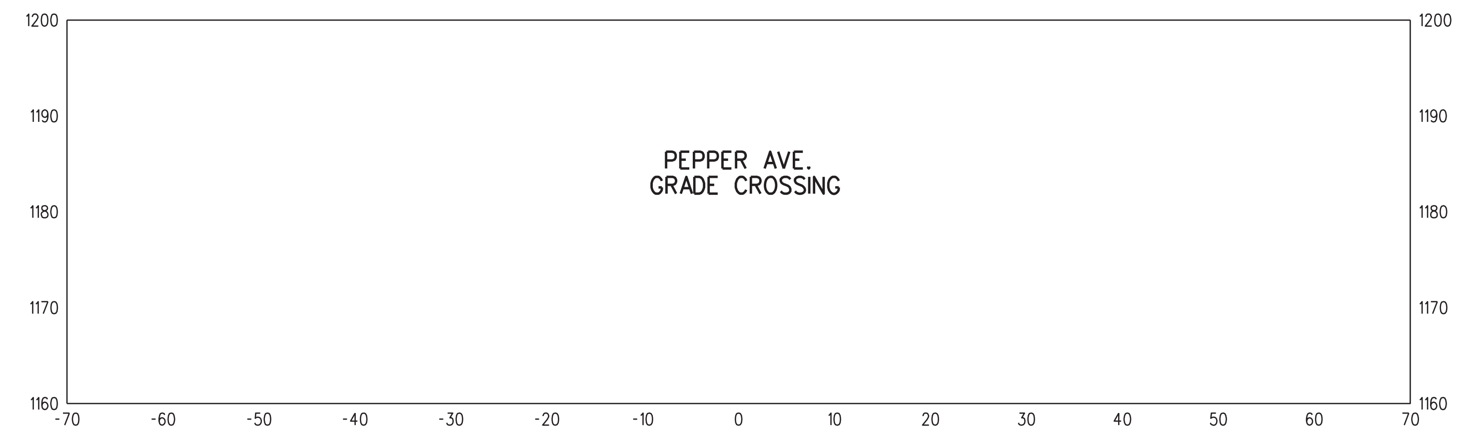
2846+00



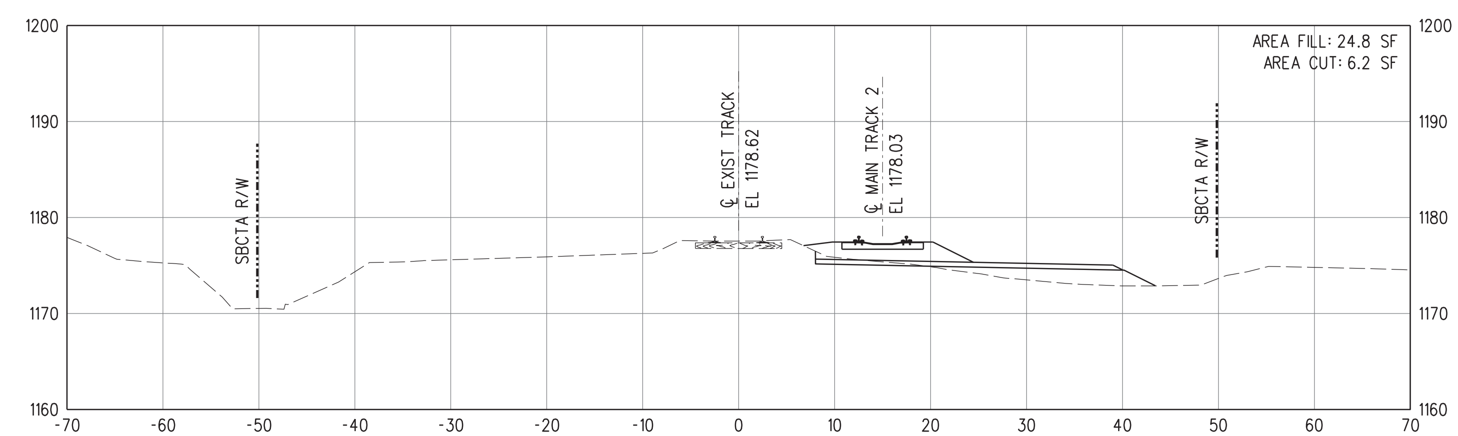
2845+00



2849+00



2848+00



2847+00

FINAL 30% SUBMITTAL (06-29-2018)

7/9/2018 2:16:28 PM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-TC-015.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
1	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

sb cta — san bernardino county transportation authority

METROLINK

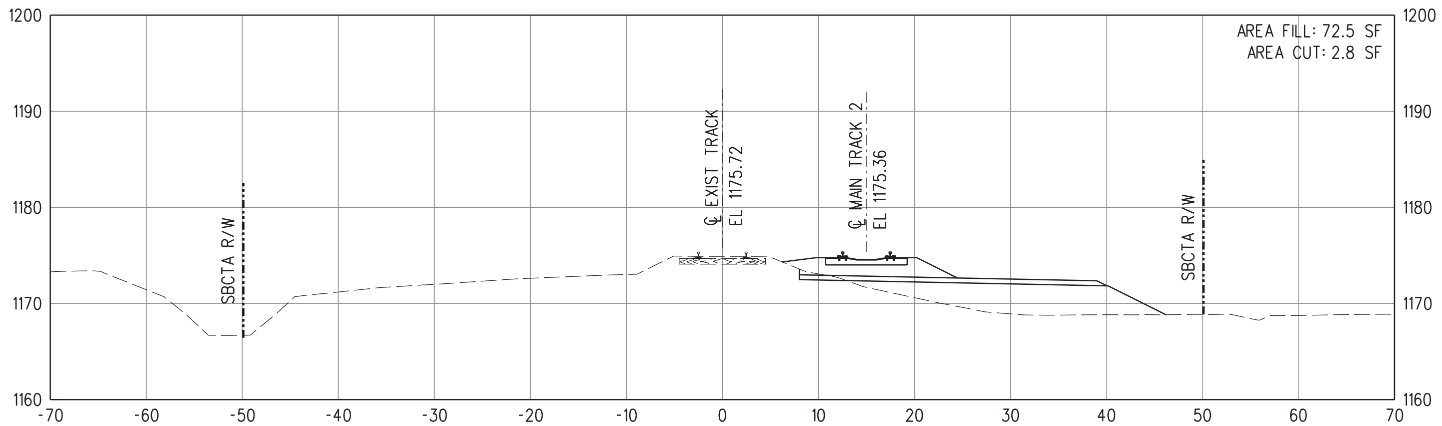
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

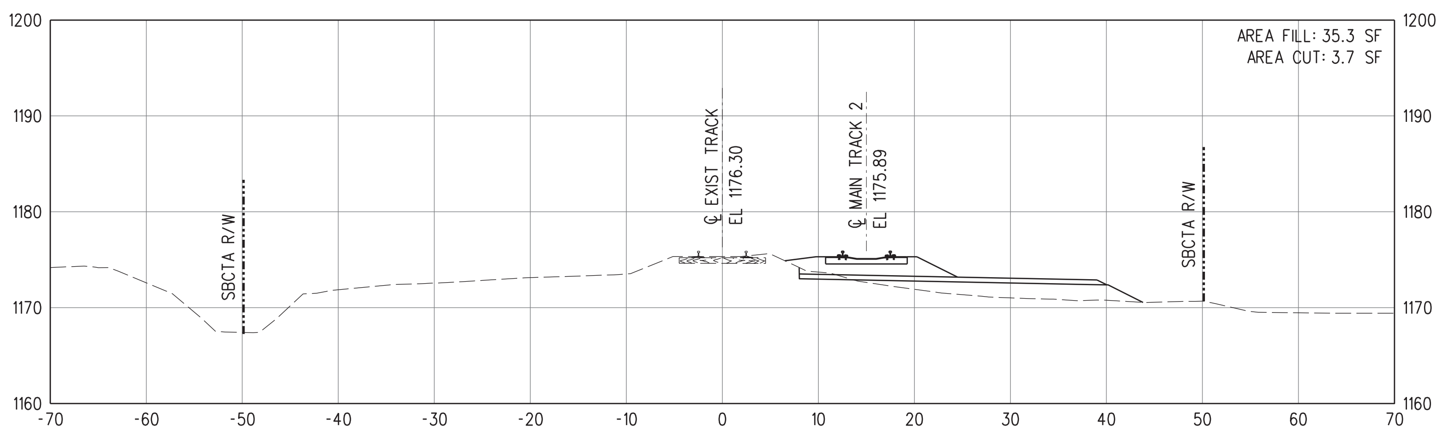
CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

TRACKWORK CROSS SECTIONS STA 2845+00 TO STA 2849+00 SHEET 15 OF 28

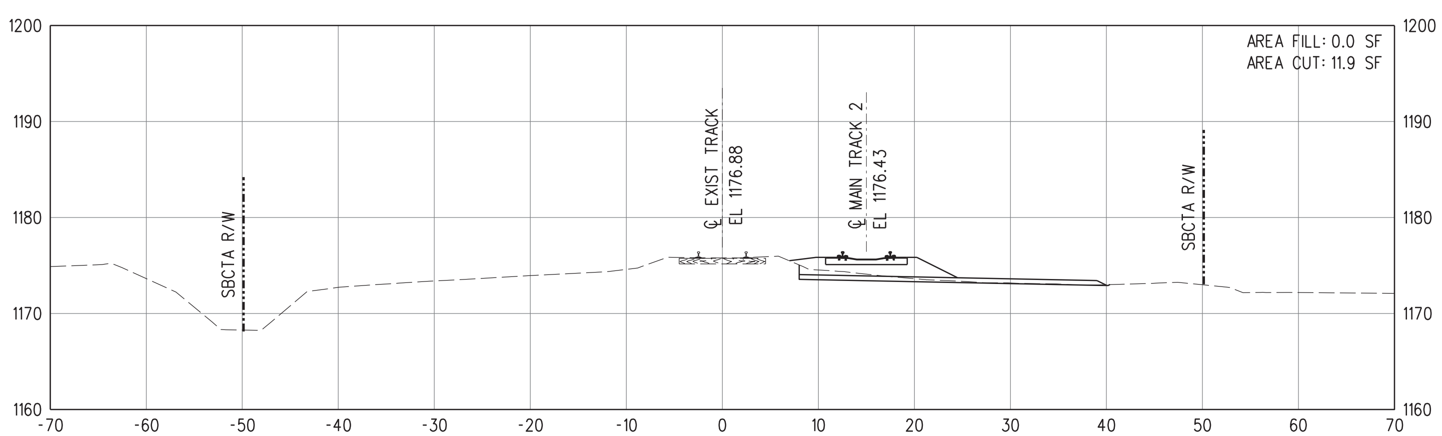
CONTRACT NO. 16-1001411
DRAWING NO. TC-015
REVISION A
SHEET NO. 55 OF 200
SCALE HORIZ 1"=10' VERT 1"=10'



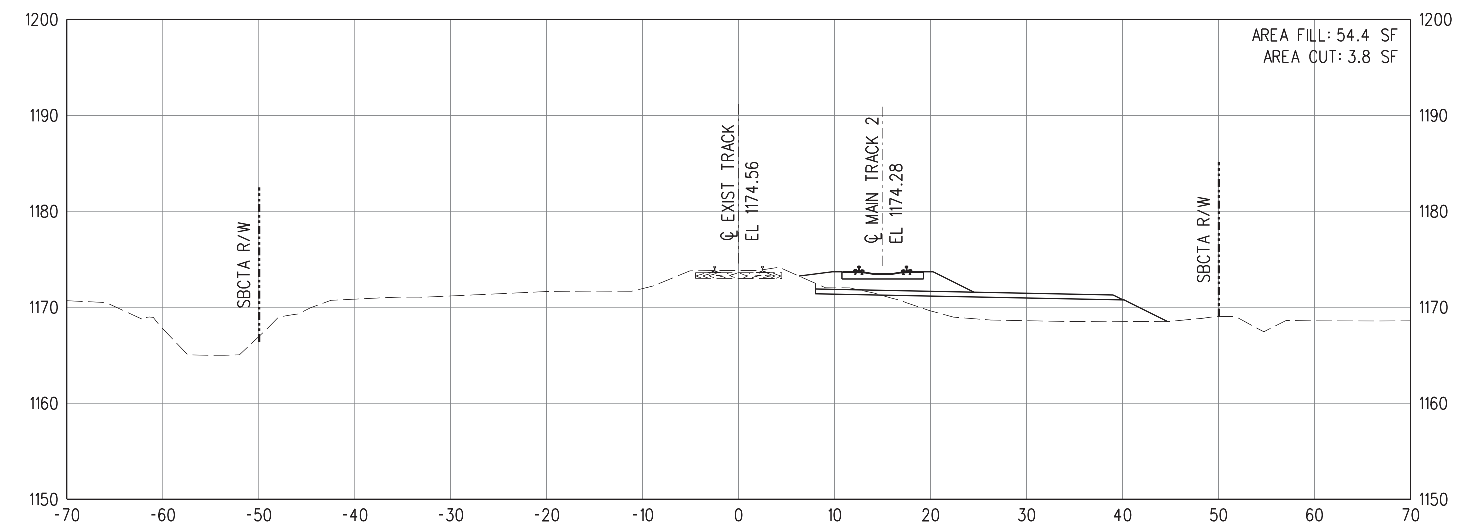
2852+00



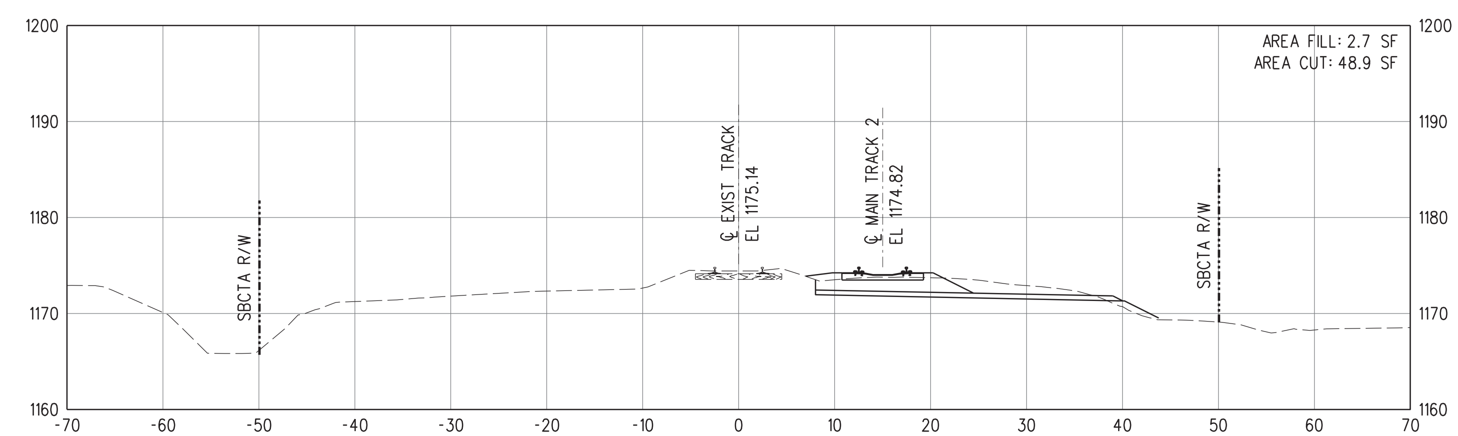
2851+00



2850+00



2854+00



2853+00

FINAL 30% SUBMITTAL (06-29-2018)

7/9/2018 2:16:29 PM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-TC-016.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential; and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

sb cta — san bernardino county transportation authority

METROLINK

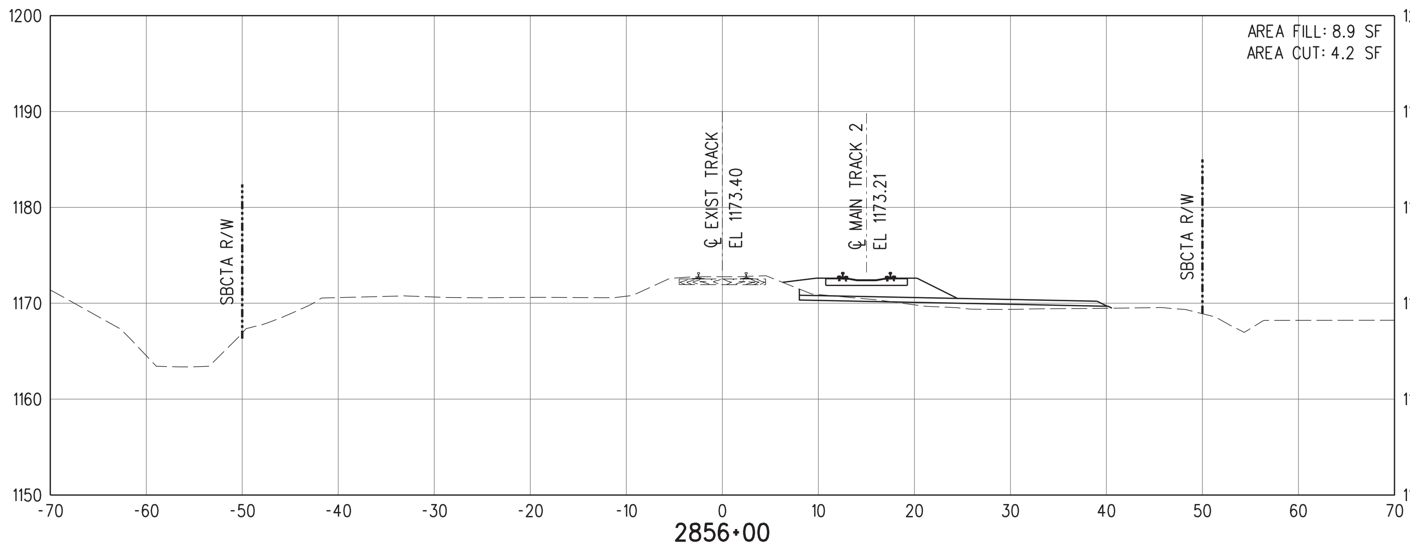
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

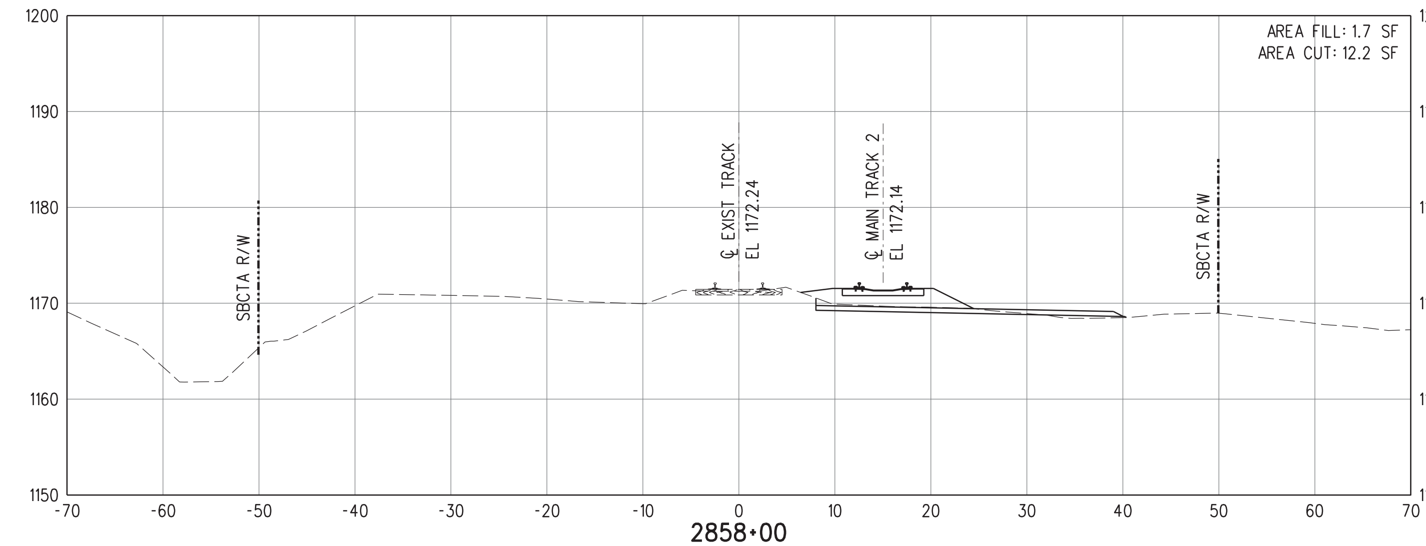
CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

TRACKWORK CROSS SECTIONS STA 2850+00 TO STA 2854+00 SHEET 16 OF 28

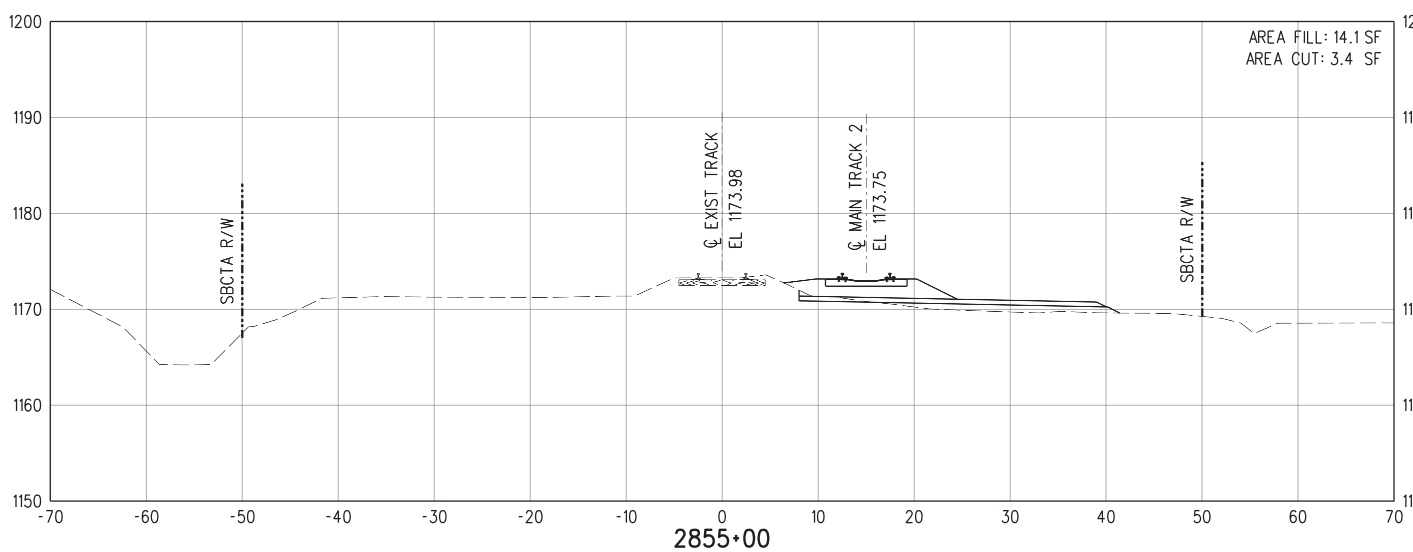
CONTRACT NO. 16-1001411
DRAWING NO. TC-016
REVISION A
SHEET NO. 56 OF 200
SCALE HORIZ 1"=10' VERT 1"=10'



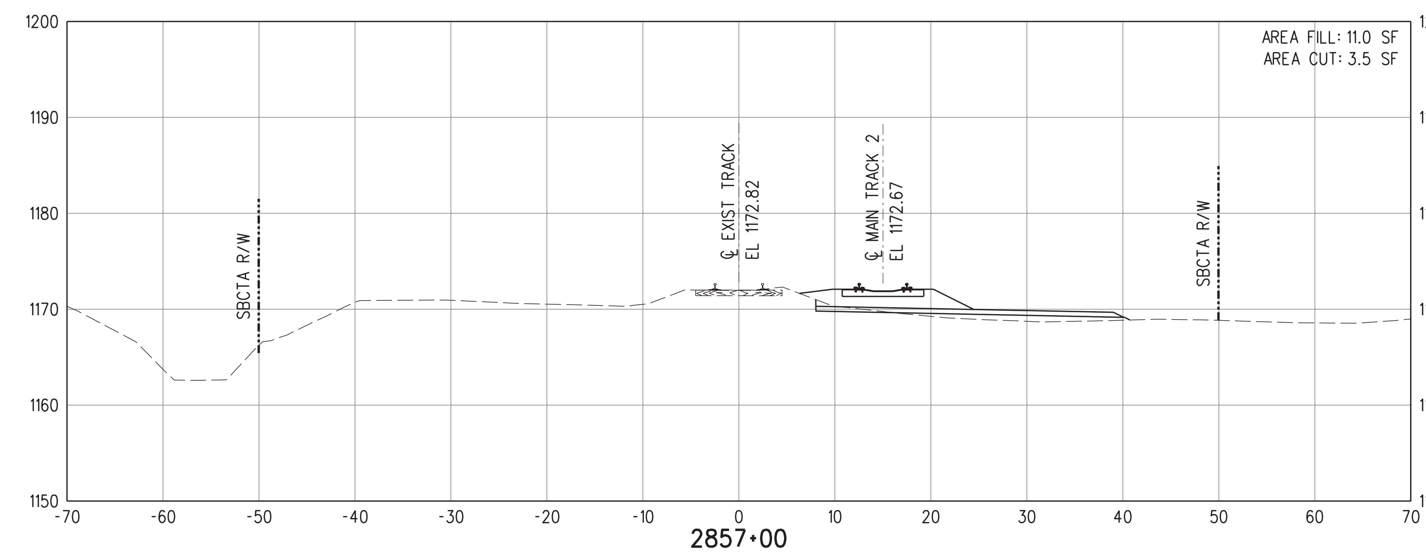
2856+00



2858+00



2855+00



2857+00

FINAL 30% SUBMITTAL (06-29-2018)

7/9/2018 2:16:30 PM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-TC-017.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential; and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sb cta san bernardino county transportation authority

METROLINK

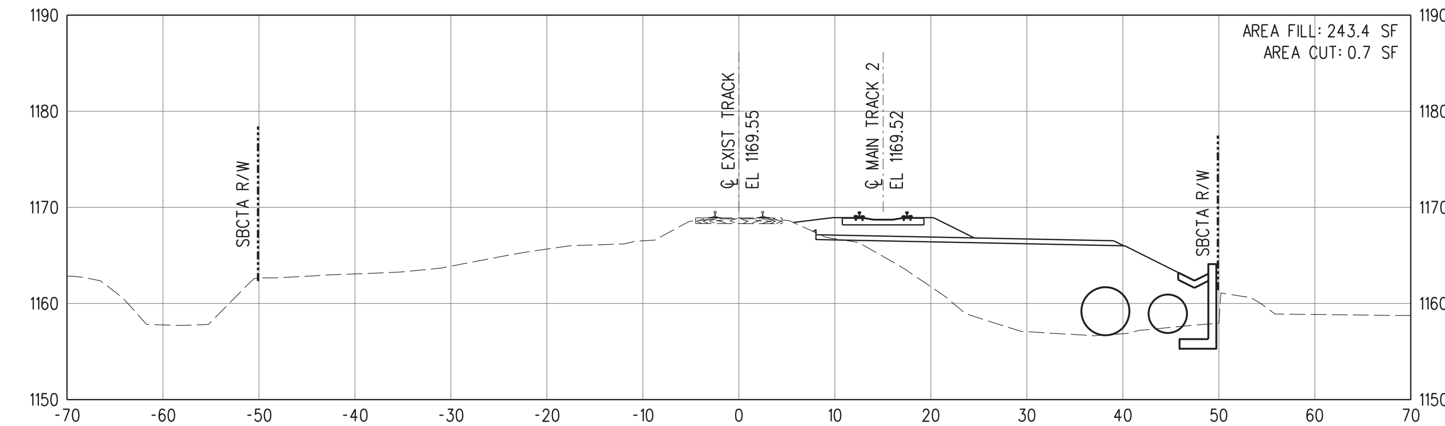
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

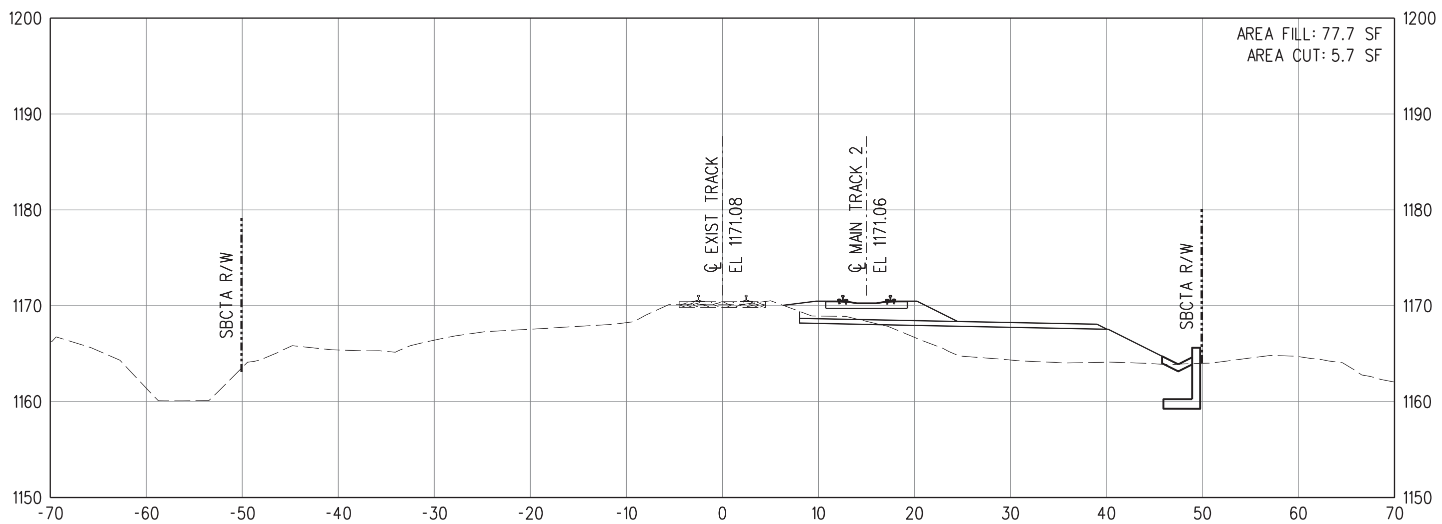
CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

TRACKWORK CROSS SECTIONS STA 2855+00 TO STA 2858+00 SHEET 17 OF 28

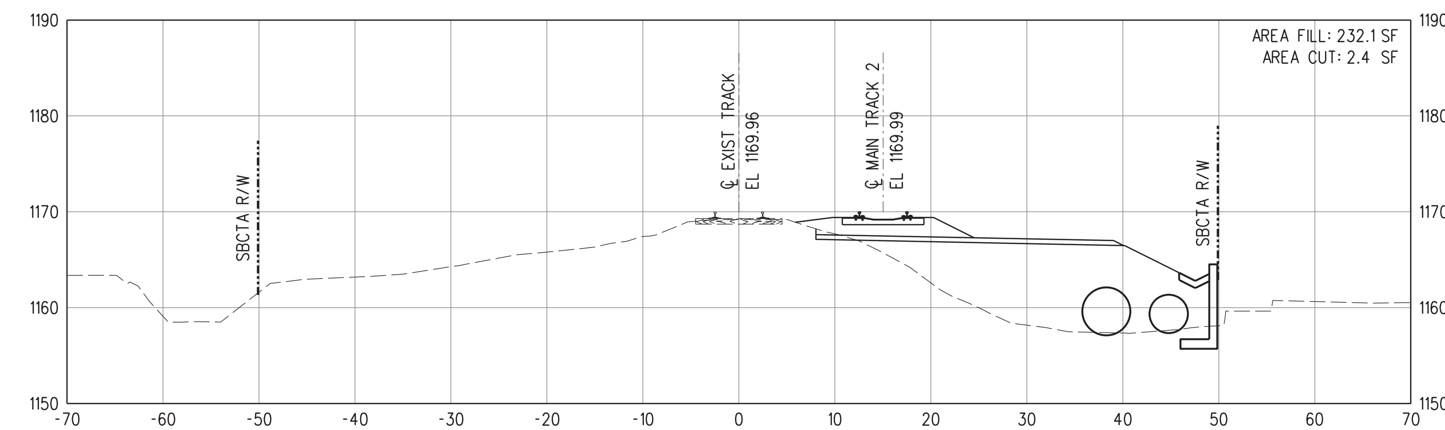
CONTRACT NO. 16-1001411
DRAWING NO. TC-017
REVISION A
SHEET NO. 57 OF 200
SCALE HORIZ 1"=10' VERT 1"=10'



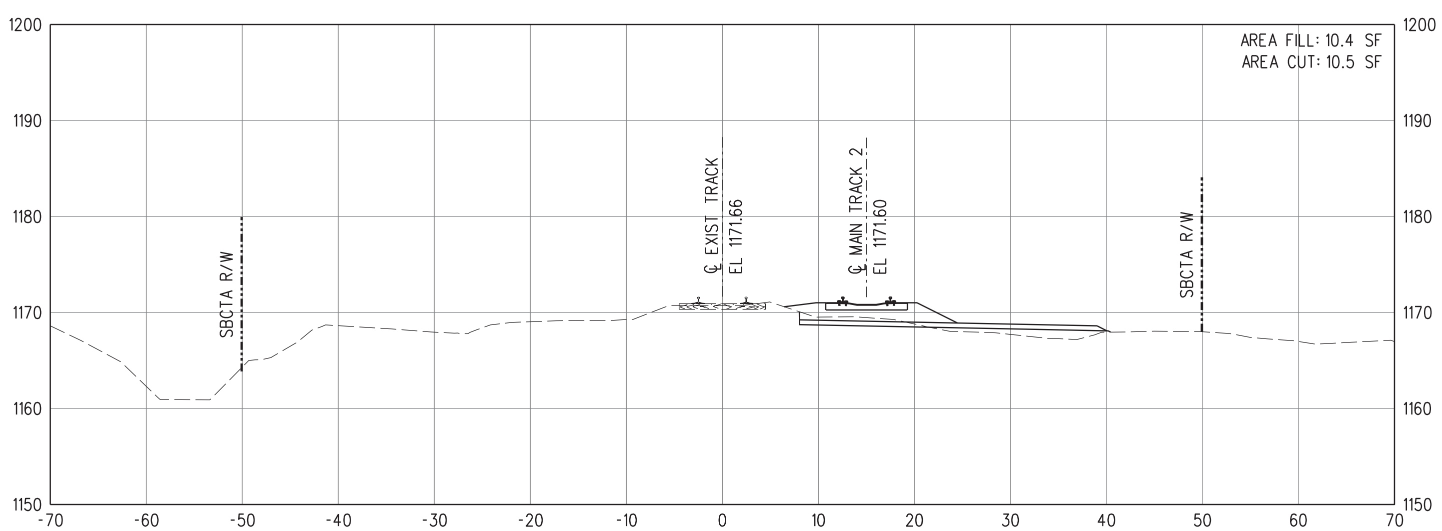
2863+00



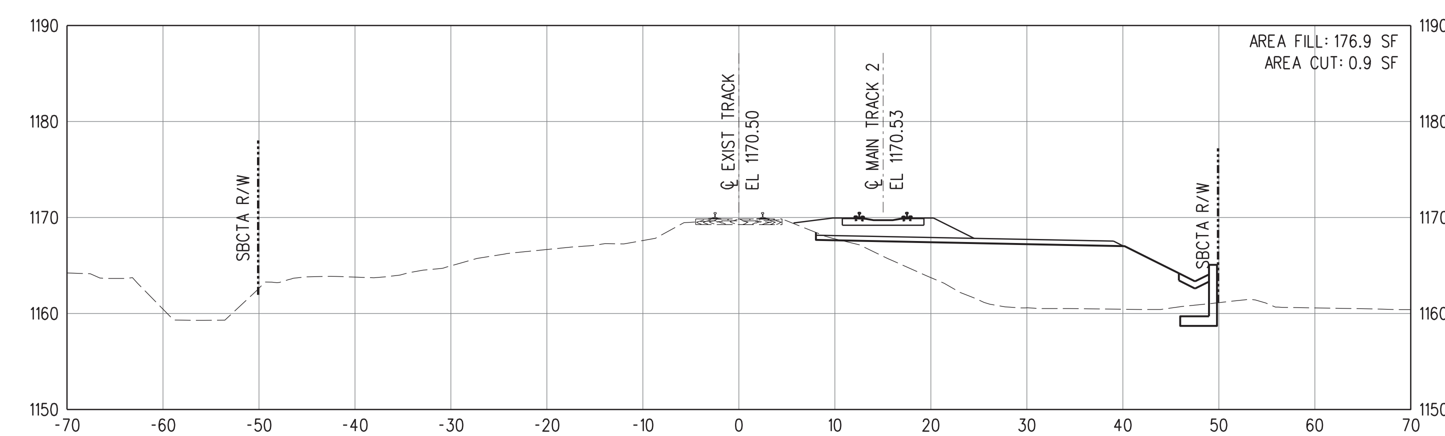
2860+00



2862+00



2859+00



2861+00

FINAL 30% SUBMITTAL (06-29-2018)

7/9/2018 2:16:30 PM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-TC-018.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential; and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sb cta san bernardino county transportation authority

METROLINK

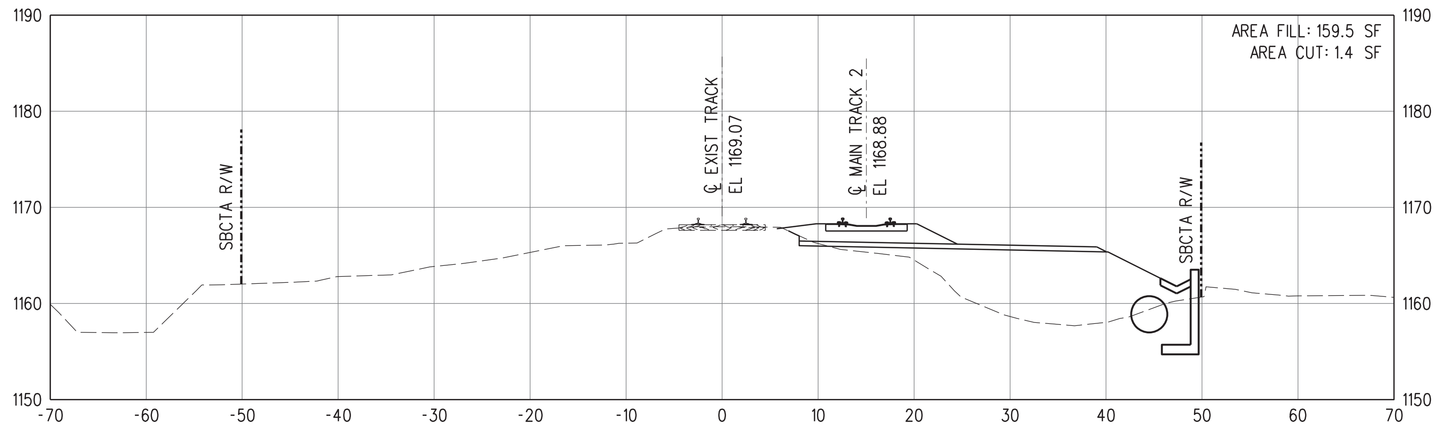
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

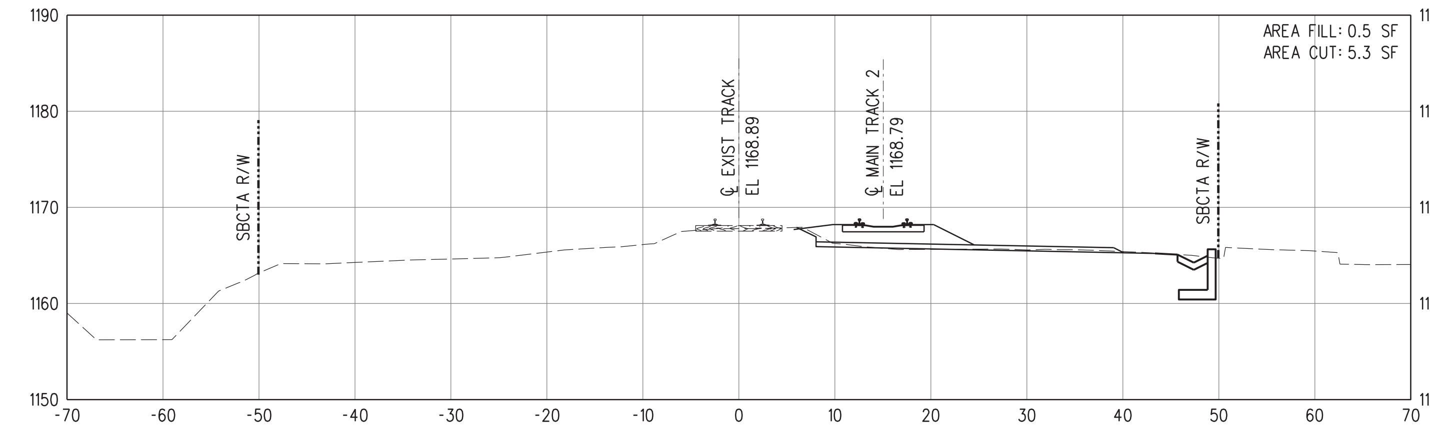
CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

TRACKWORK CROSS SECTIONS STA 2859+00 TO STA 2863+00 SHEET 18 OF 28

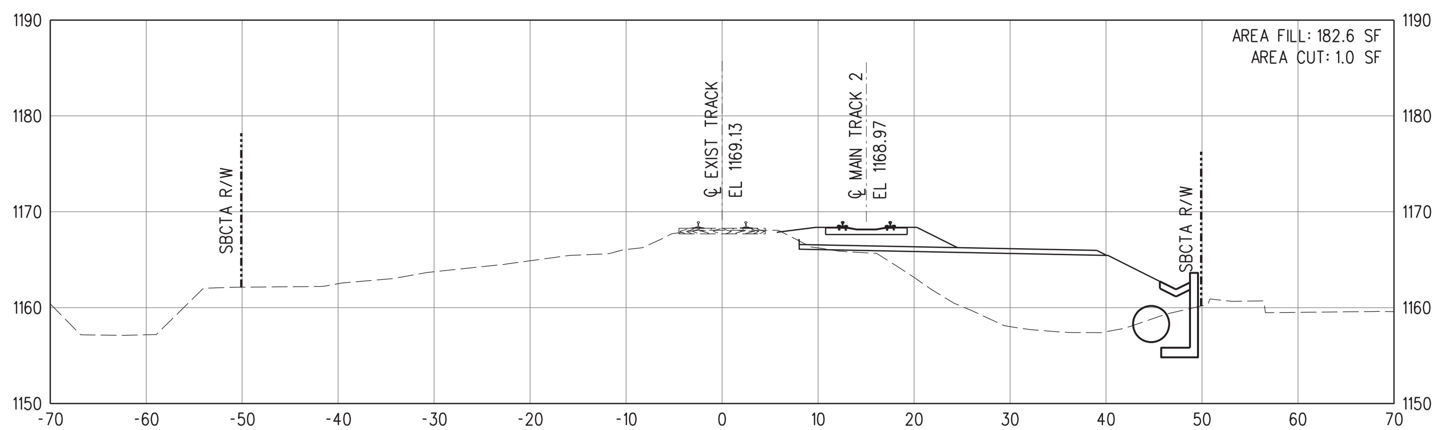
CONTRACT NO. 16-1001411
DRAWING NO. TC-018
REVISION A
SHEET NO. 58 OF 200
SCALE HORIZ 1"=10' VERT 1"=10'



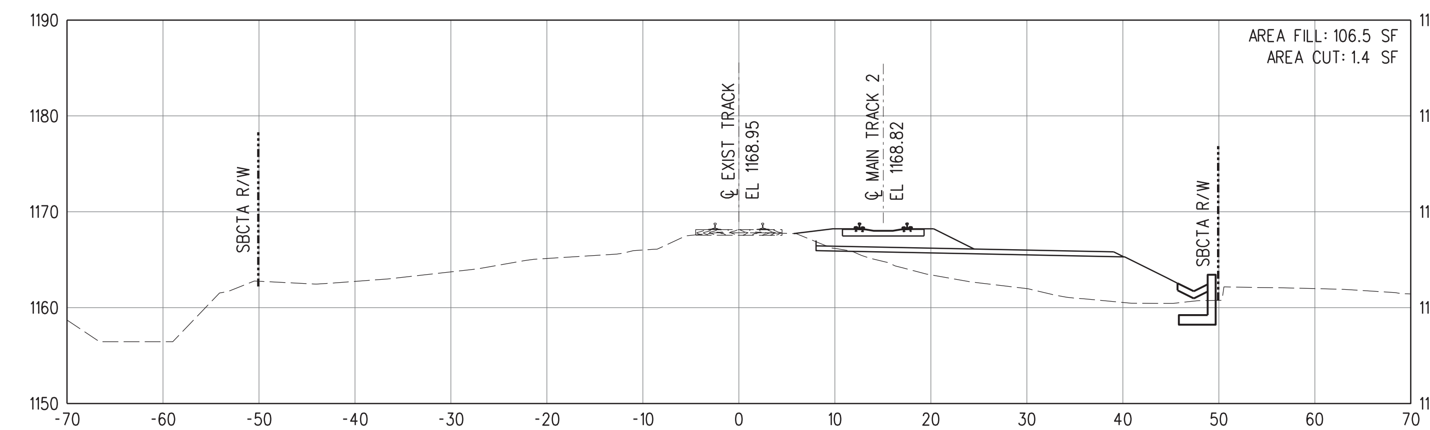
2866+00



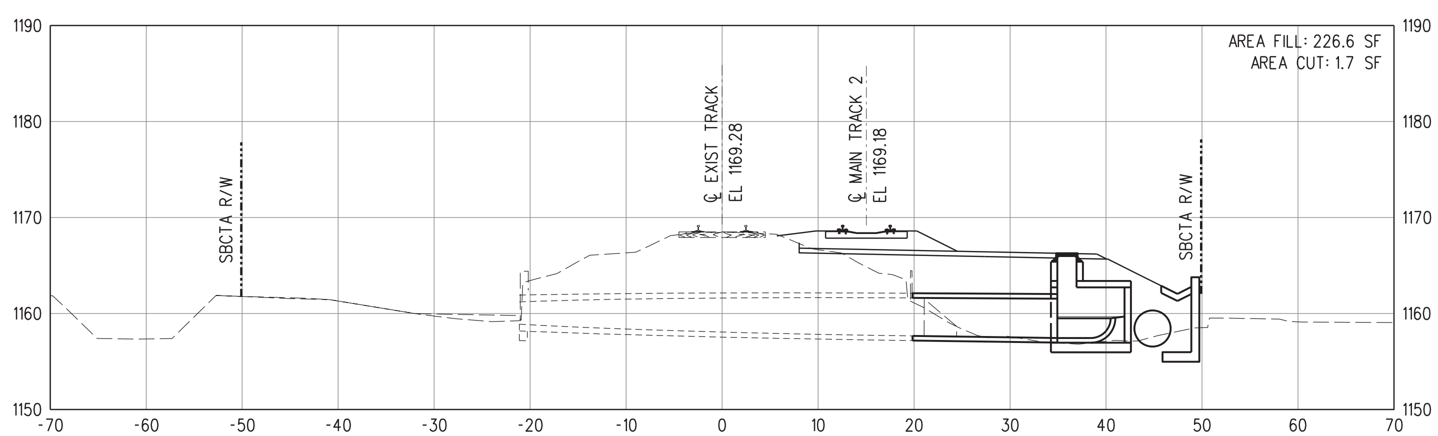
2869+00



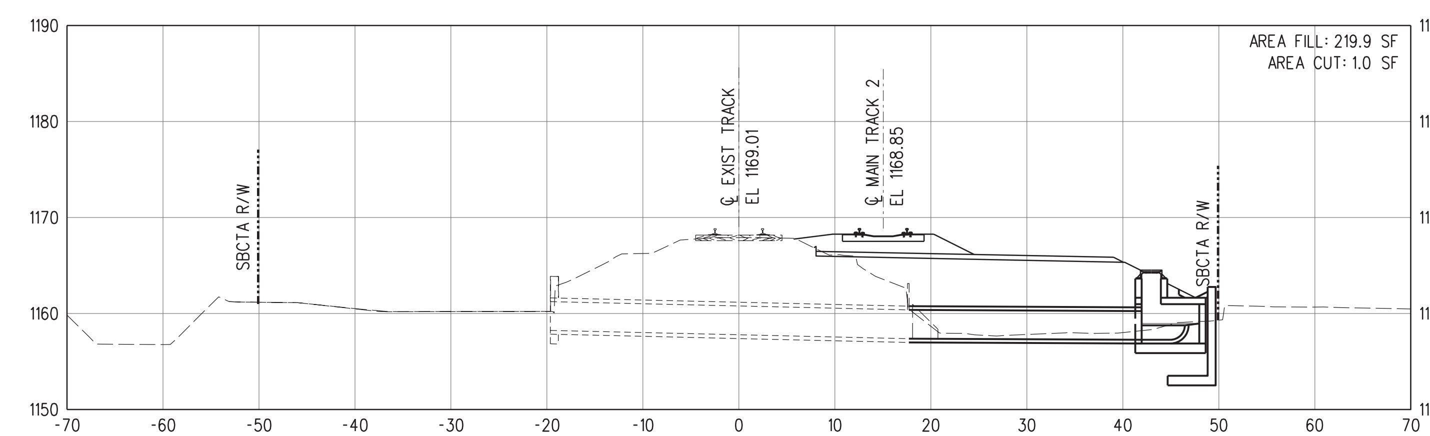
2865+00



2868+00



2864+00



2867+00

FINAL 30% SUBMITTAL (06-29-2018)

7/9/2018 2:16:31 PM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-TC-019.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER · No. · Exp. · CIVIL · STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

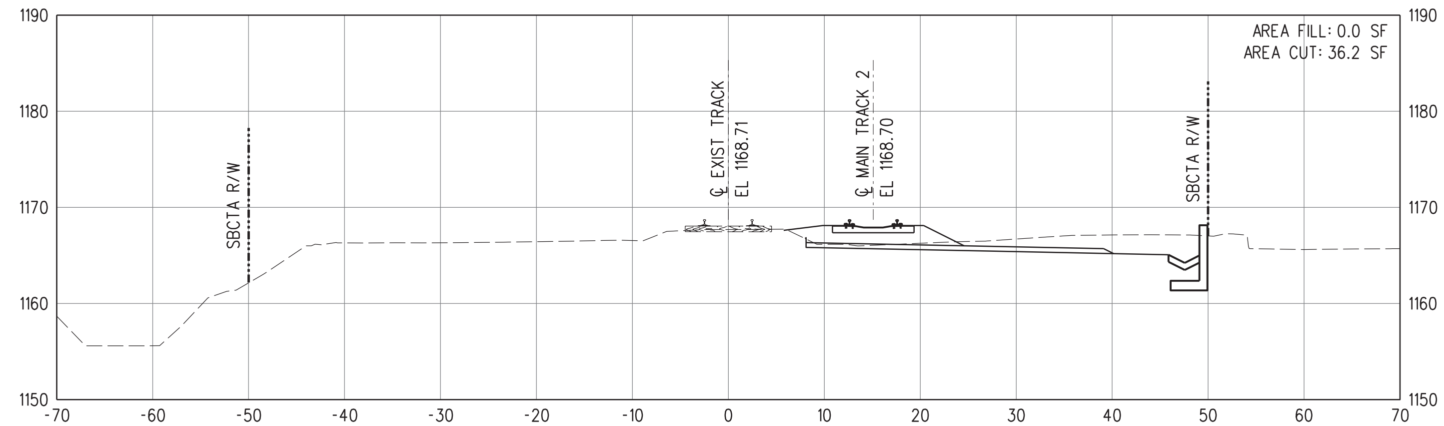
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

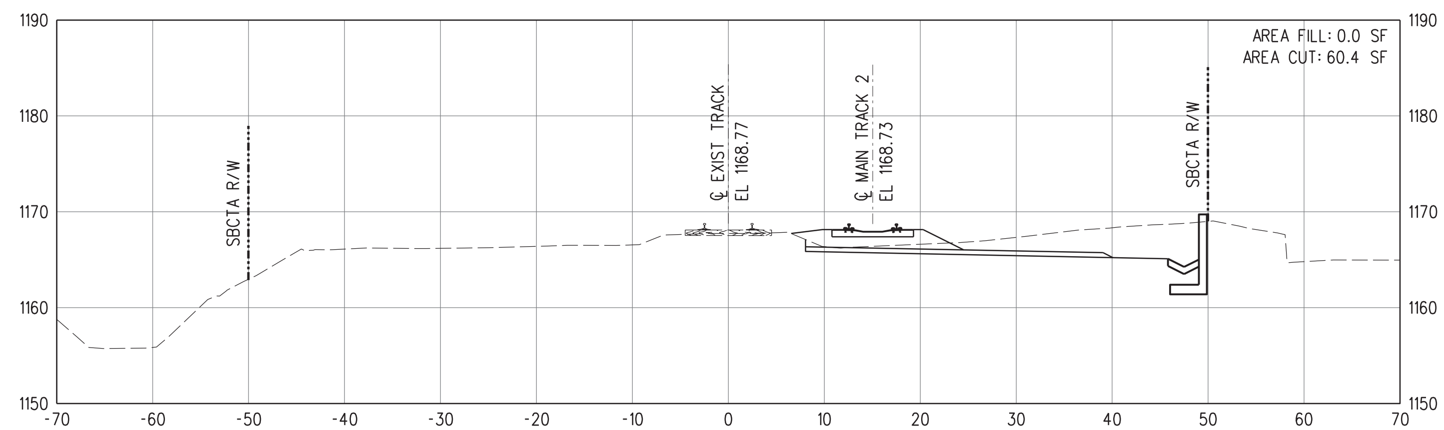
CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

TRACKWORK CROSS SECTIONS STA 2864+00 TO STA 2869+00 SHEET 19 OF 28

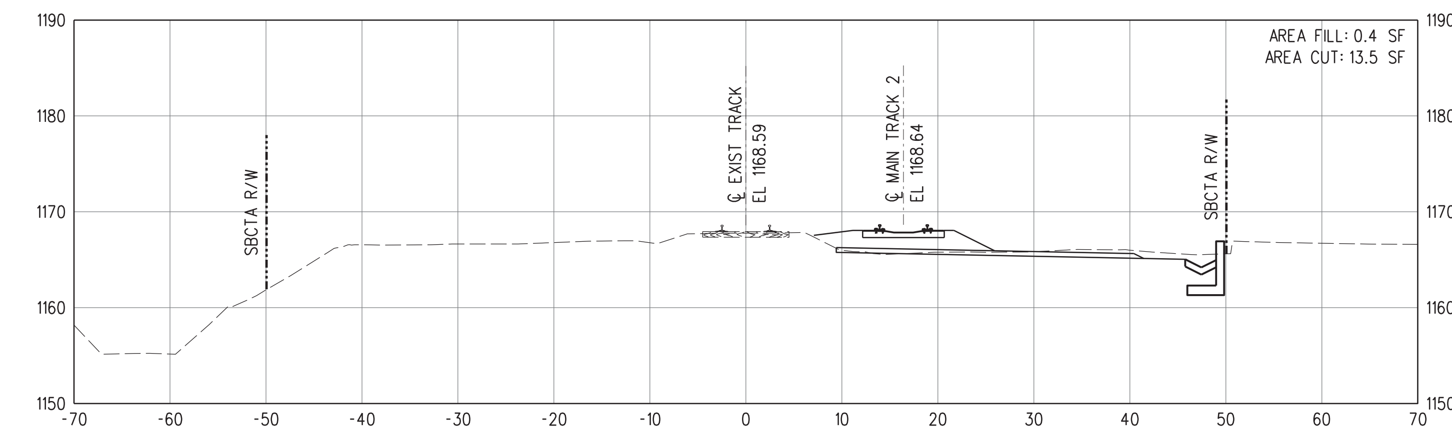
CONTRACT NO. 16-1001411
DRAWING NO. TC-019
REVISION A
SHEET NO. 59 OF 200
SCALE HORIZ 1"=10' VERT 1"=10'



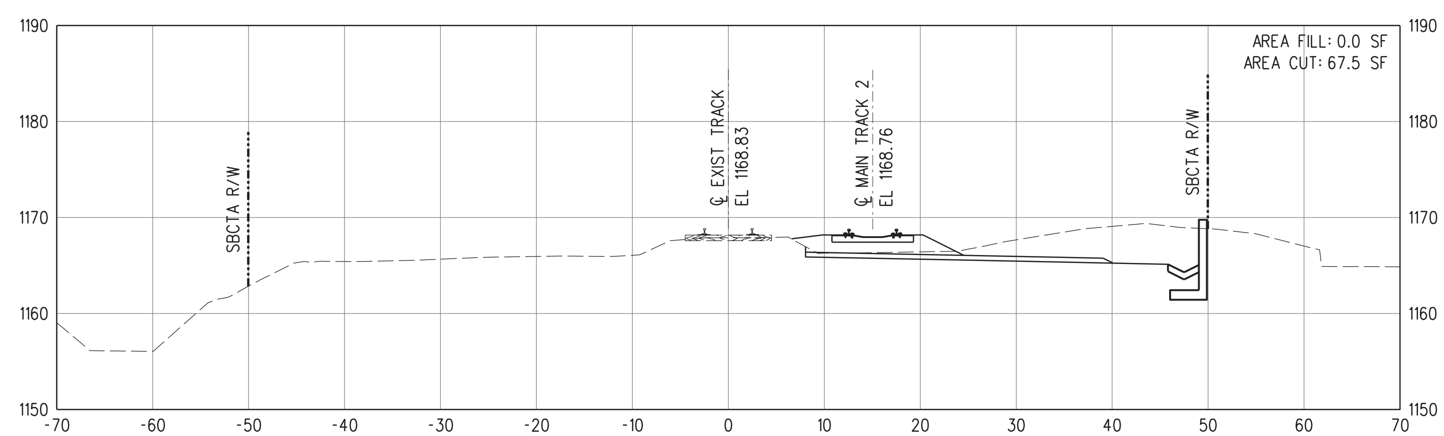
2872+00



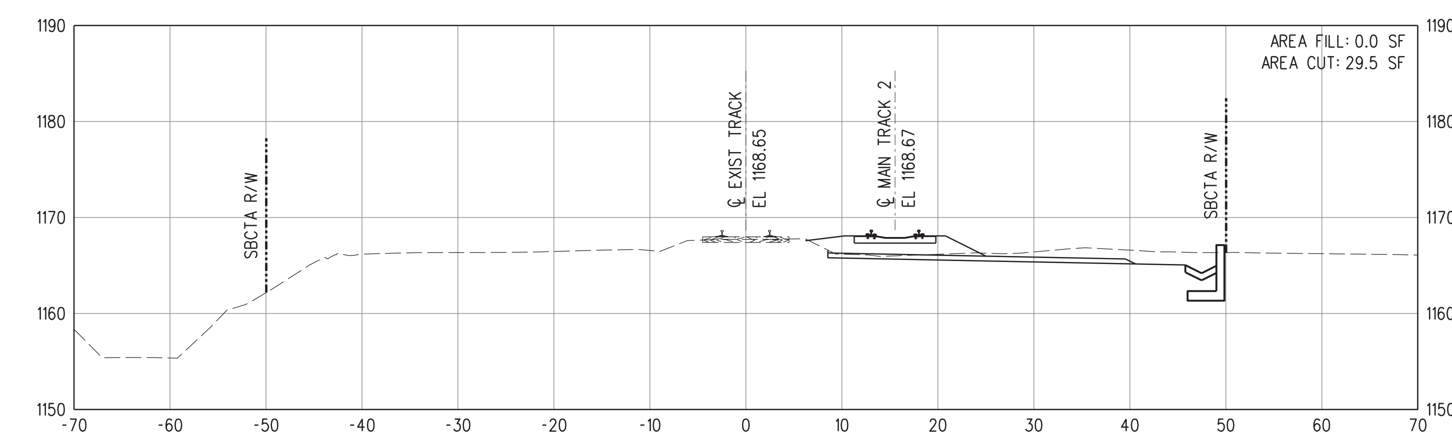
2871+00



2874+00



2870+00



2873+00

FINAL 30% SUBMITTAL (06-29-2018)

7/9/2018 2:16:32 PM USER • jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-TC-020.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB. APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sb cta san bernardino county transportation authority

METROLINK

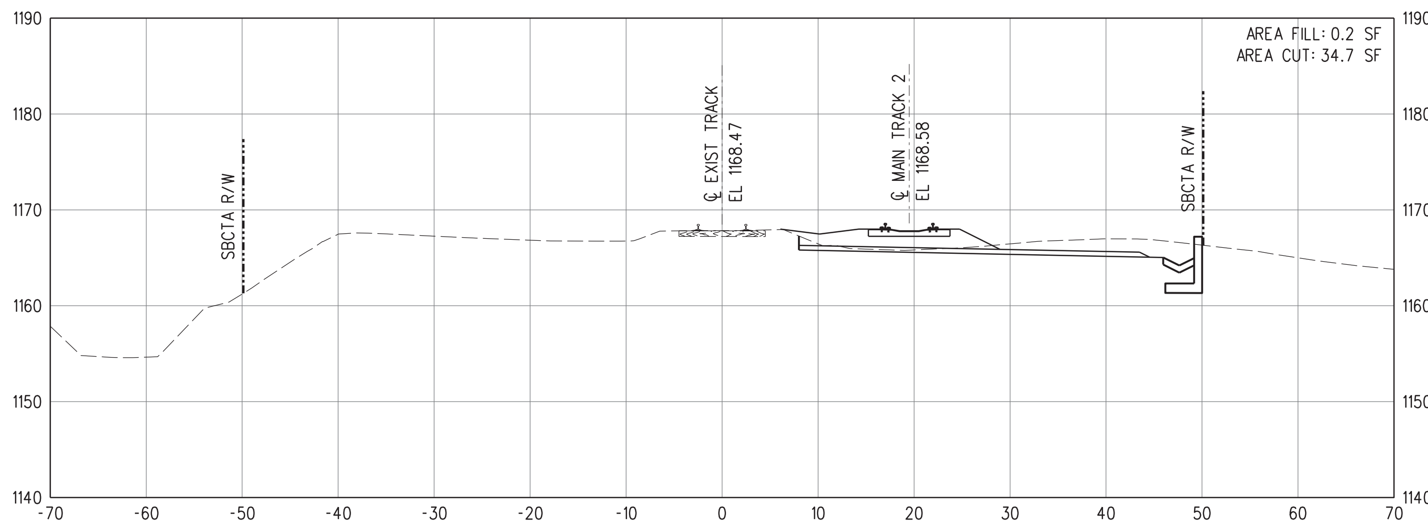
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

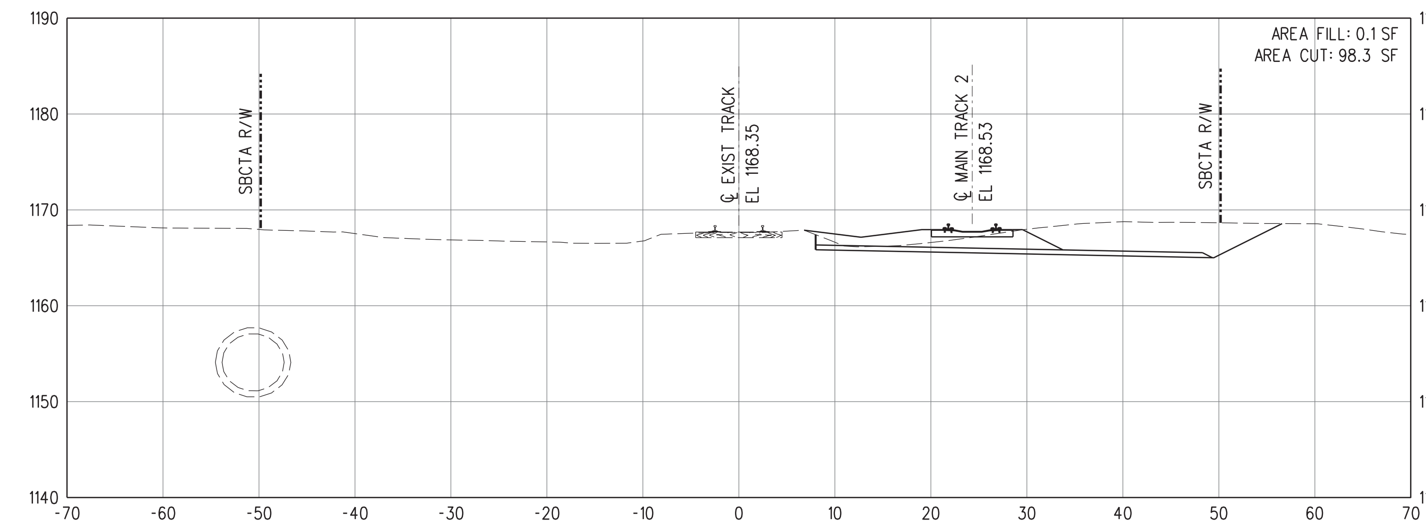
CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

TRACKWORK CROSS SECTIONS
STA 2870+00 TO STA 2874+00
SHEET 20 OF 28

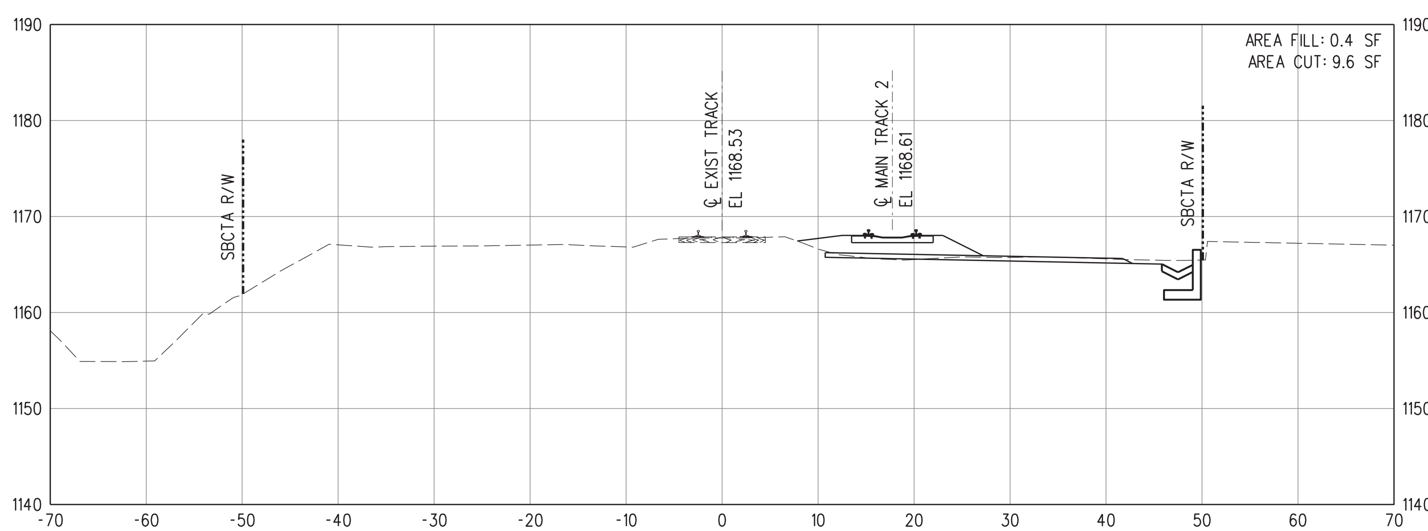
CONTRACT NO. 16-1001411
DRAWING NO. TC-020
REVISION A
SHEET NO. 60 OF 200
SCALE HORIZ 1"=10' VERT 1"=10'



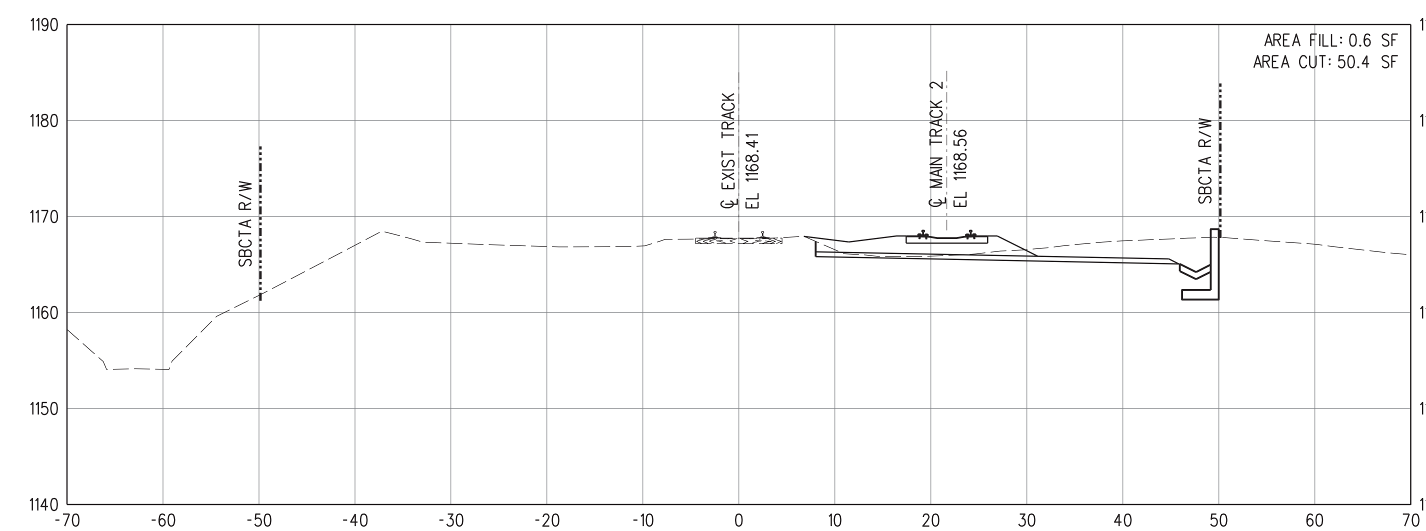
2876+00



2878+00



2875+00



2877+00

FINAL 30% SUBMITTAL (06-29-2018)

7/9/2018 2:16:32 PM USER: jcalderon
Q:\LBY9503\CADD\Master\Sheets\LRD1212-TC-021.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB. APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

sb cta — san bernardino county transportation authority

METROLINK.

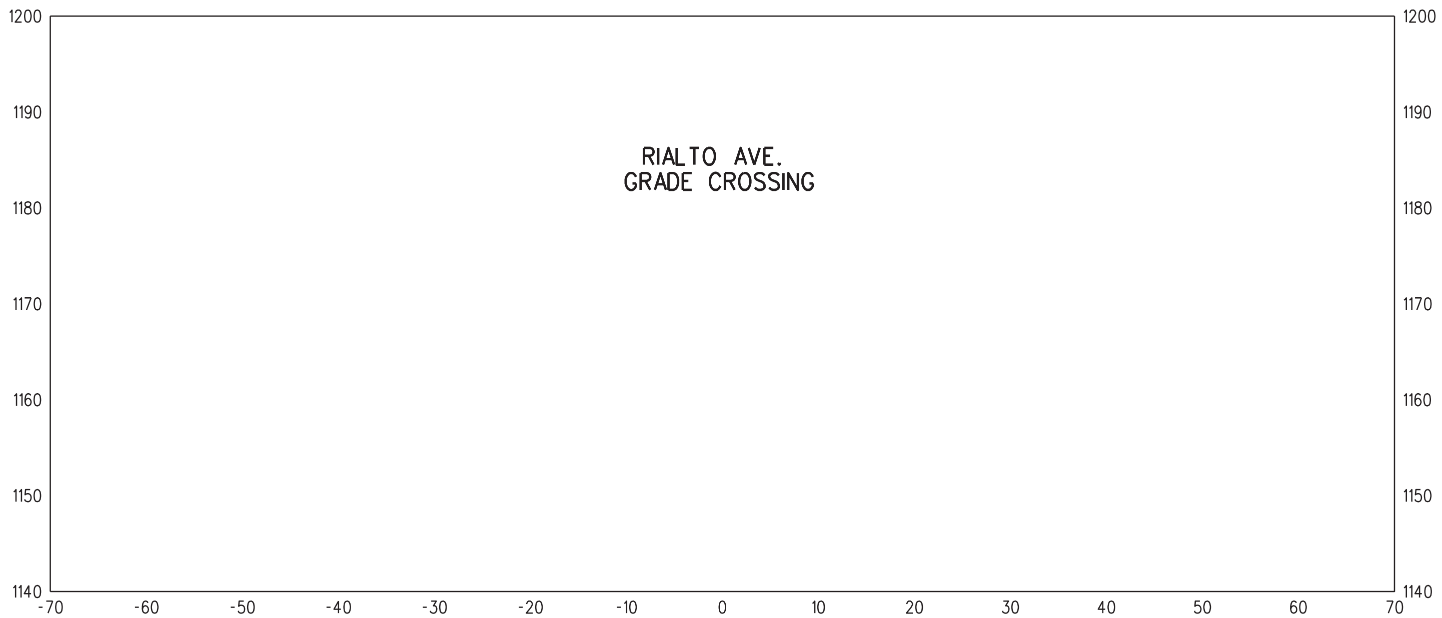
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

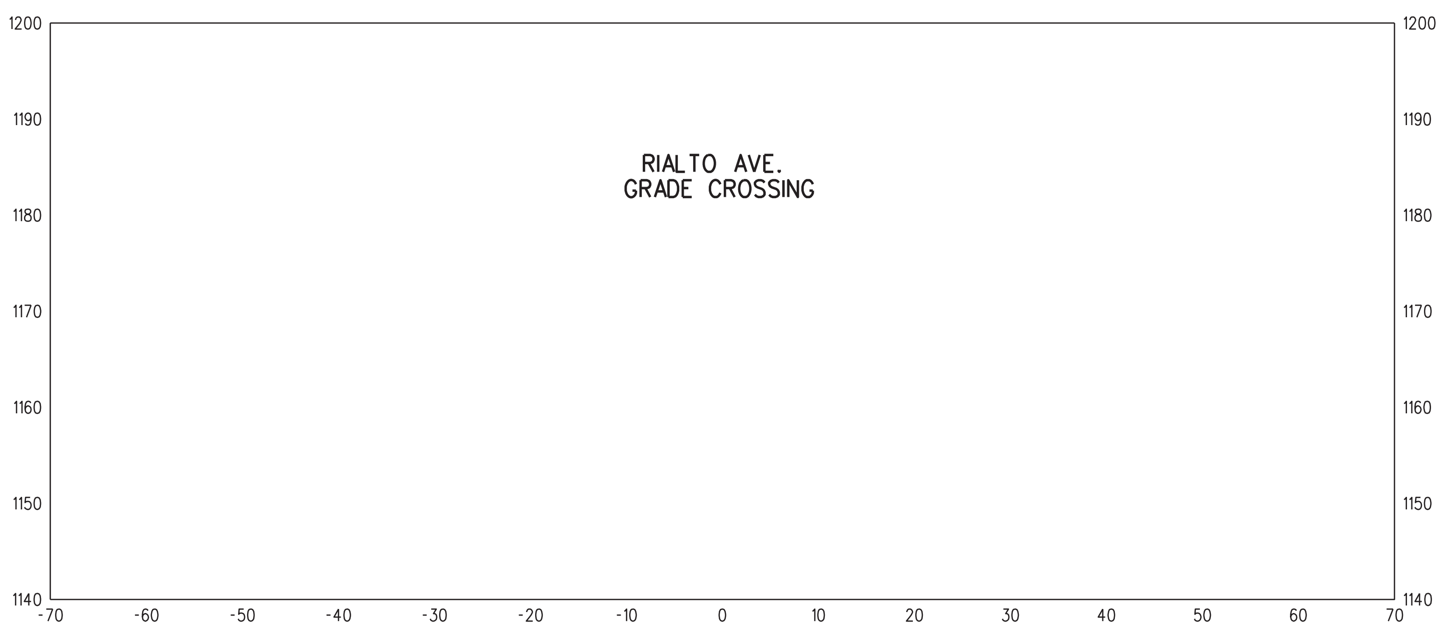
CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

TRACKWORK CROSS SECTIONS STA 2875+00 TO STA 2878+00 SHEET 21 OF 28

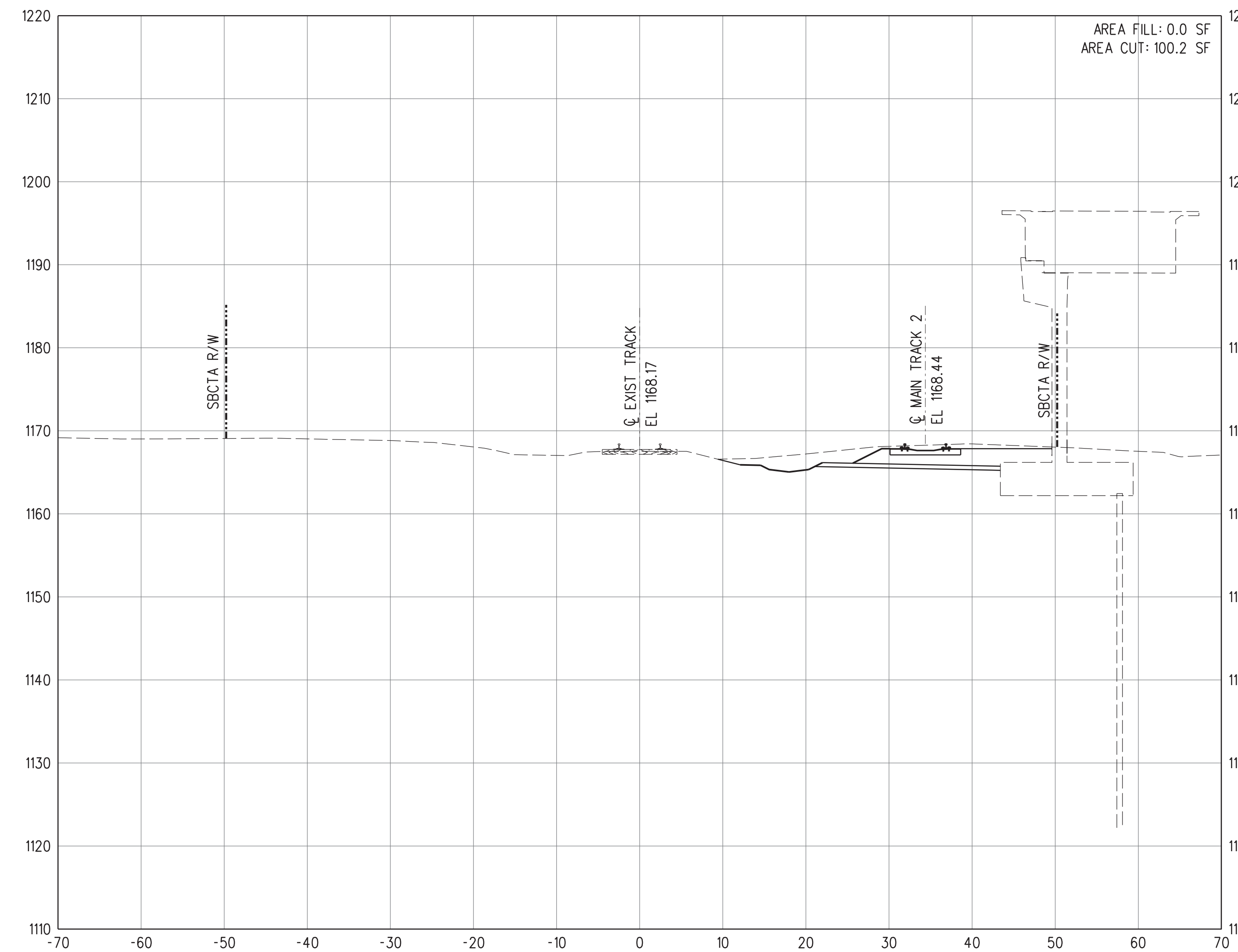
CONTRACT NO. 16-1001411
DRAWING NO. TC-021
REVISION A
SHEET NO. 61 OF 200
SCALE HORIZ 1"=10' VERT 1"=10'



2880+00



2879+00



2881+00

FINAL 30% SUBMITTAL (06-29-2018)

7/9/2018 2:16:33 PM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-TC-022.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential; and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sbcta san bernardino county transportation authority

METROLINK

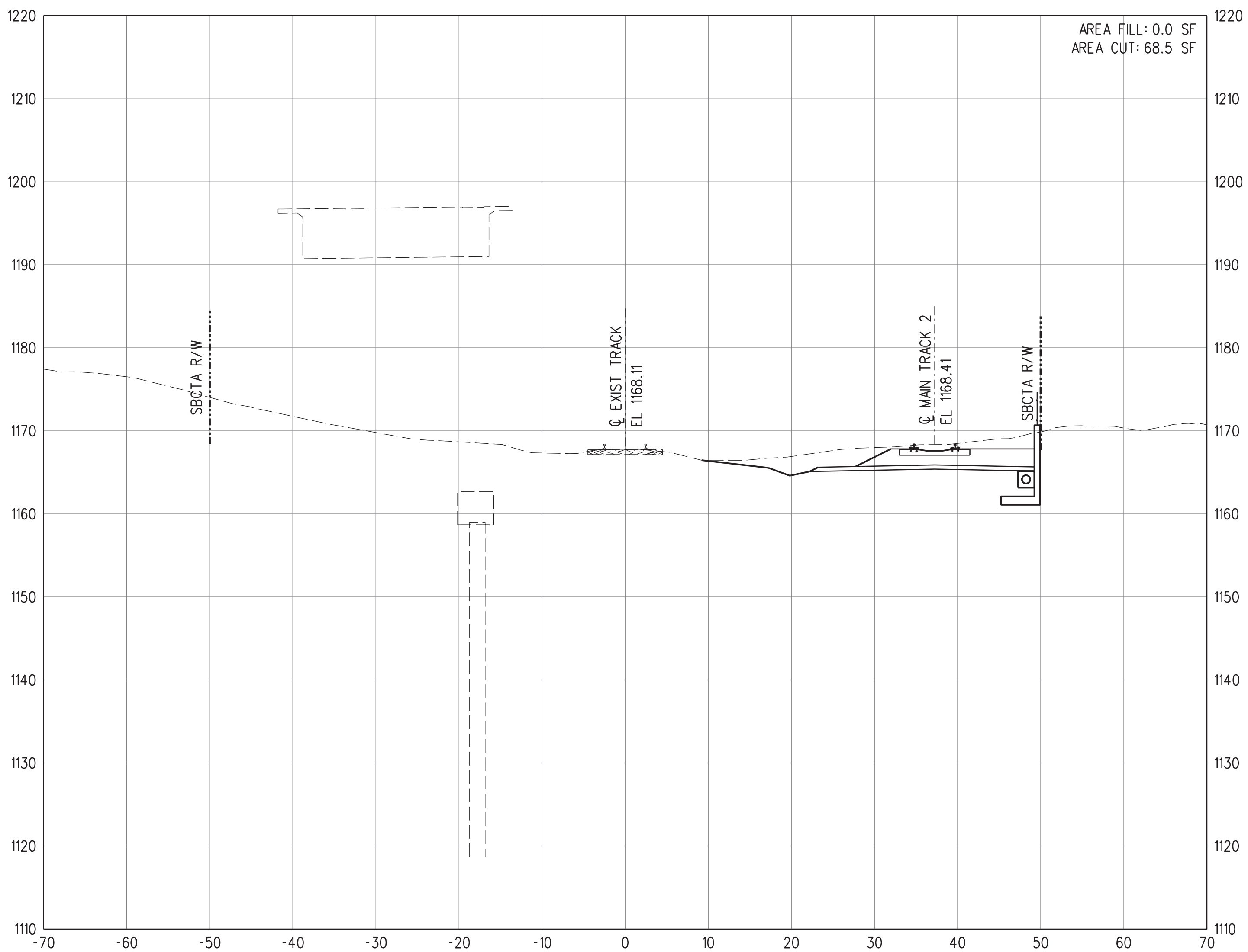
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

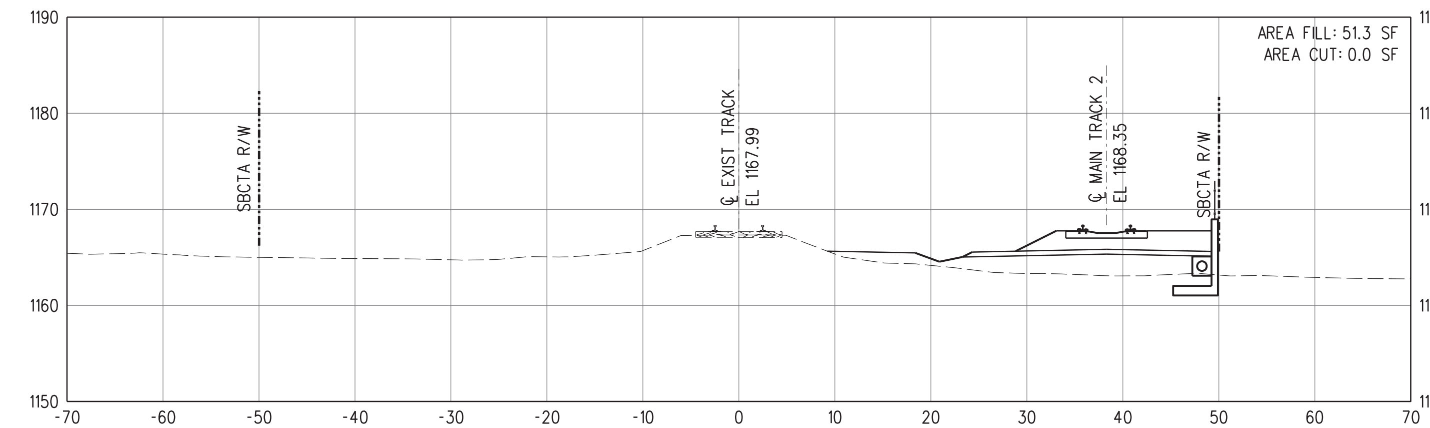
CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

TRACKWORK CROSS SECTIONS STA 2879+00 TO STA 2881+00 SHEET 22 OF 28

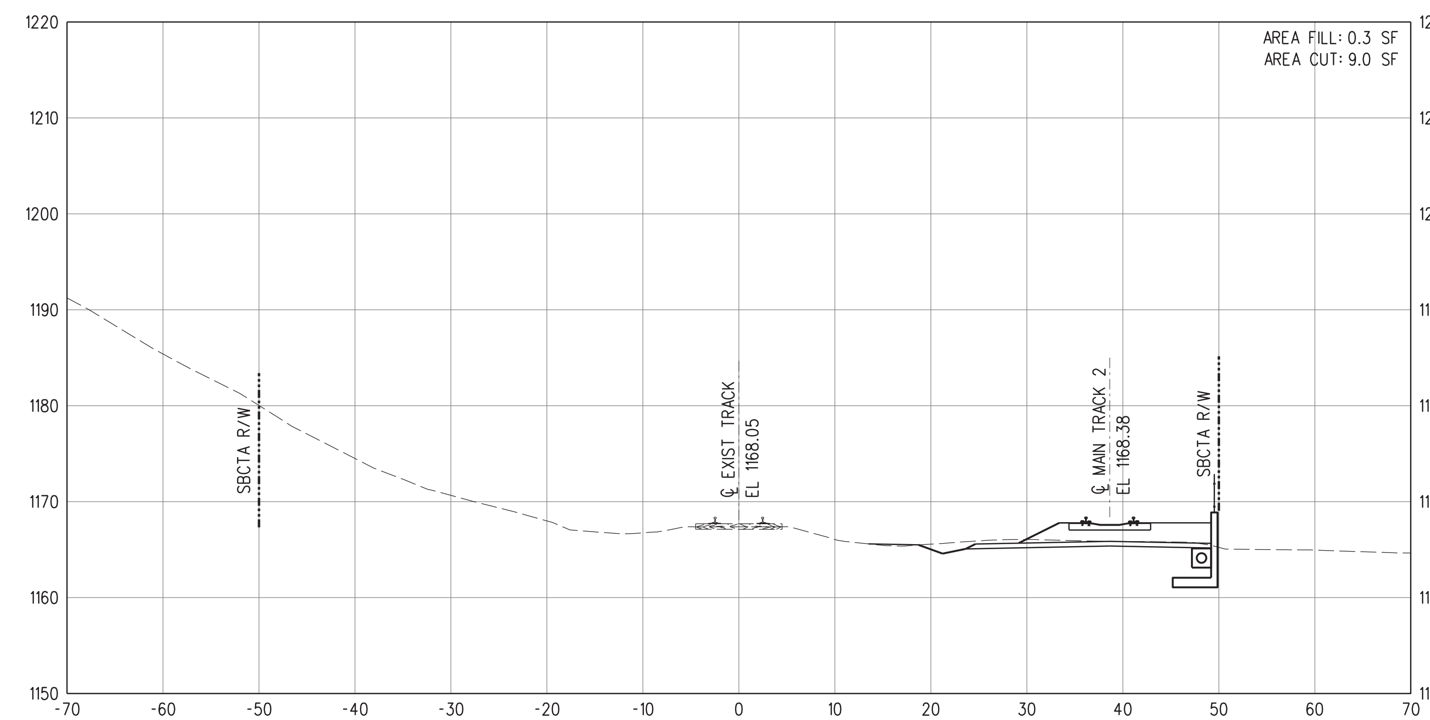
CONTRACT NO. 16-1001411
DRAWING NO. TC-022
REVISION A
SHEET NO. 62 OF 200
SCALE HORIZ 1"=10' VERT 1"=10'



2882+00



2884+00



2883+00

FINAL 30% SUBMITTAL (06-29-2018)

7/9/2018 2:16:34 PM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-TC-023.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential; and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

sbcta san bernardino county transportation authority

METROLINK

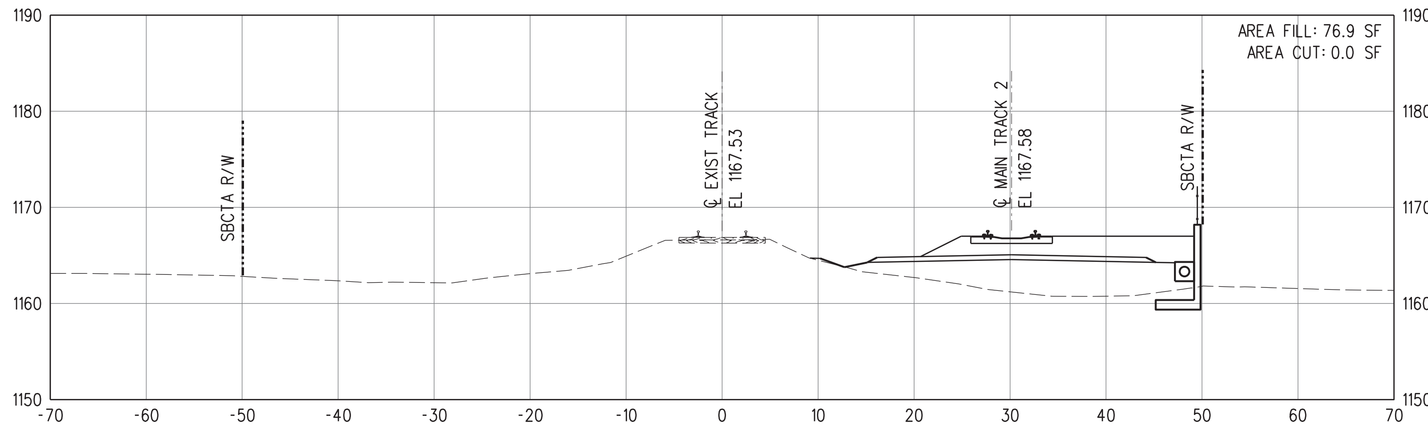
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

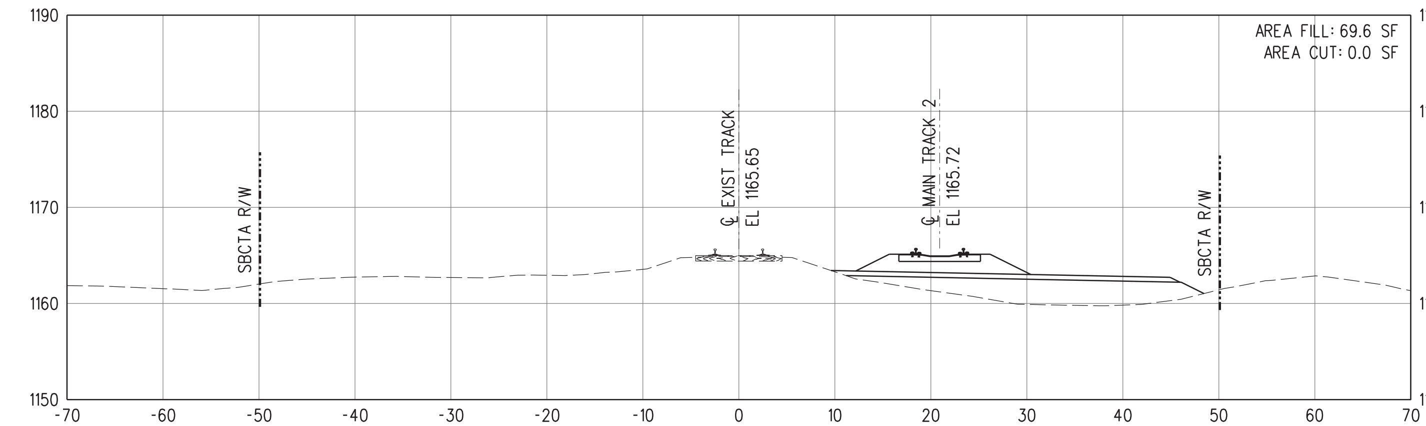
CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

TRACKWORK CROSS SECTIONS STA 2882+00 TO STA 2884+00 SHEET 23 OF 28

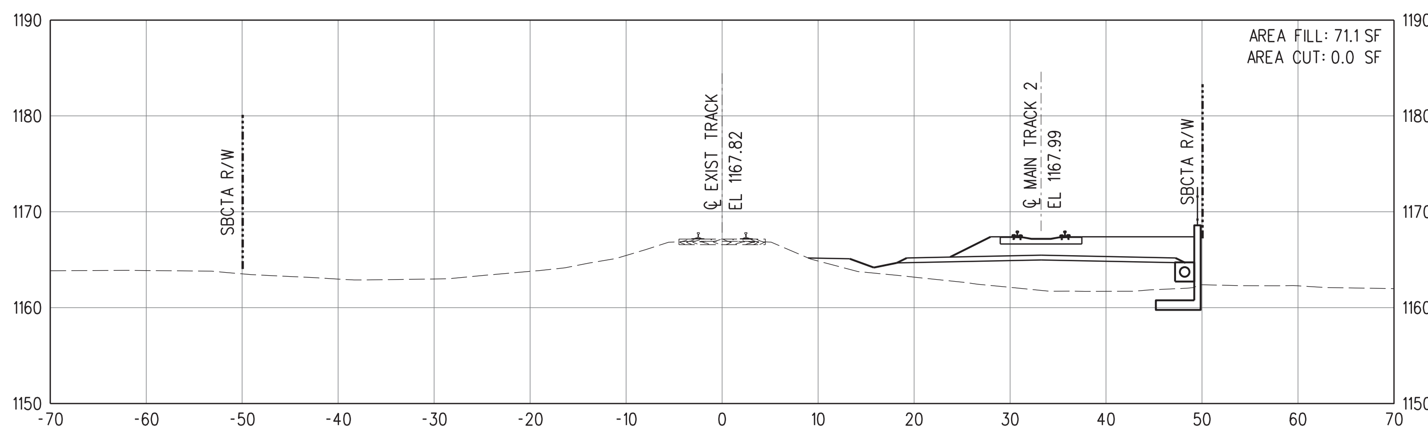
CONTRACT NO. 16-1001411
DRAWING NO. TC-023
REVISION A
SHEET NO. 63 OF 200
SCALE HORIZ 1"=10' VERT 1"=10'



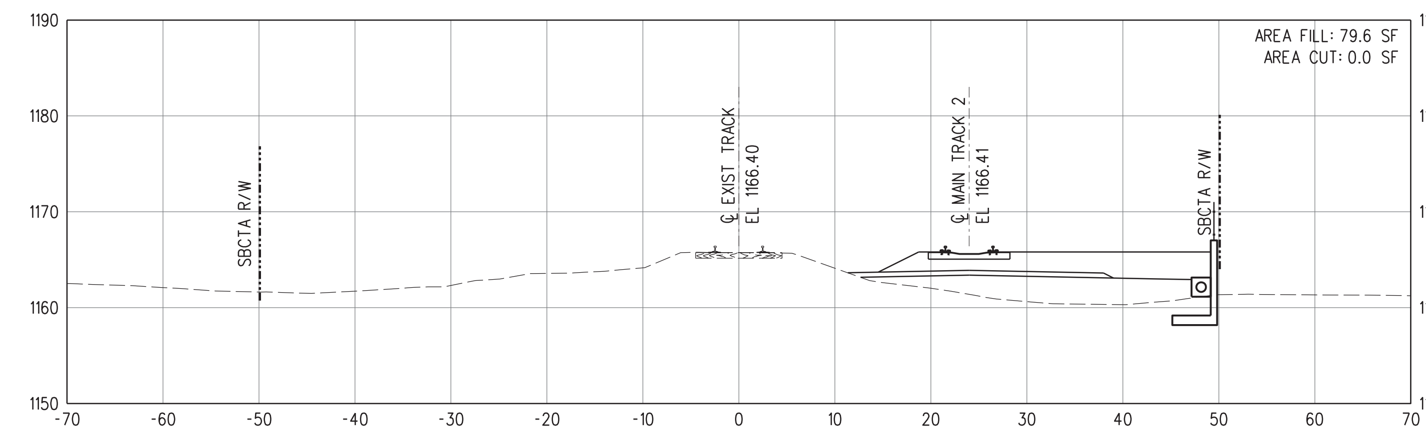
2887+00



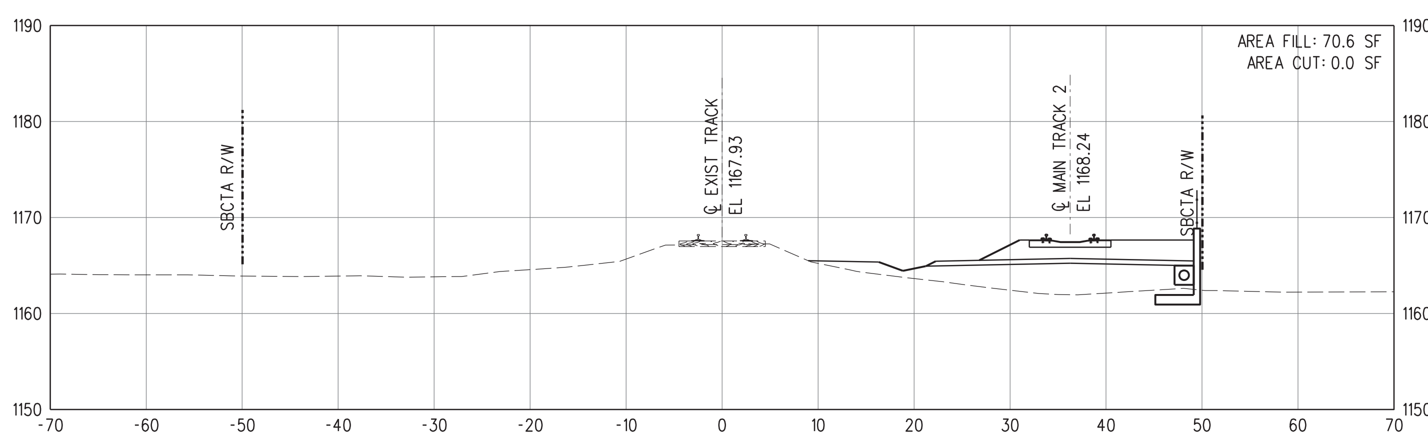
2890+00



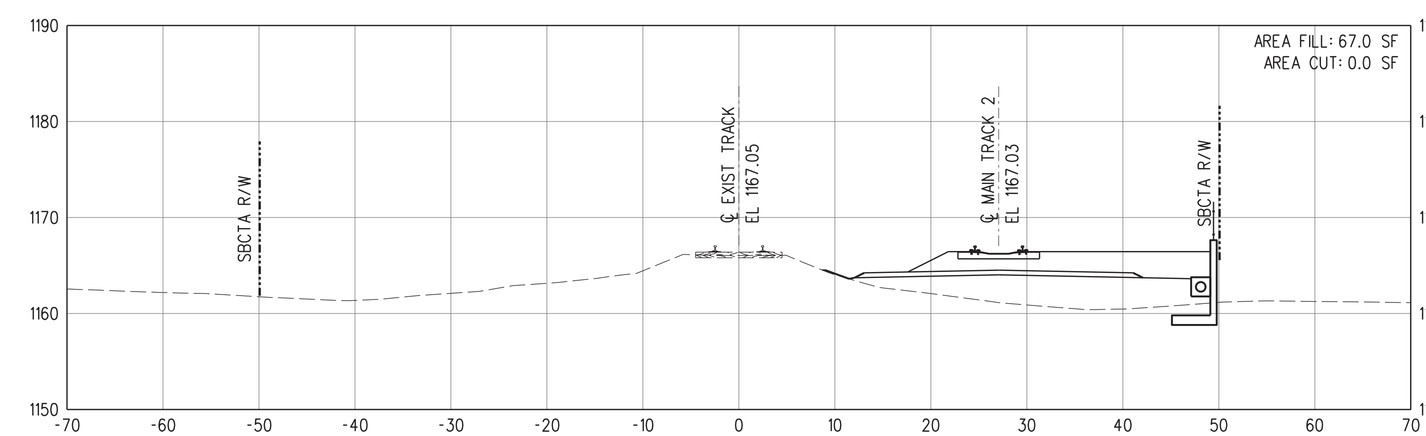
2886+00



2889+00



2885+00



2888+00

FINAL 30% SUBMITTAL (06-29-2018)

7/9/2018 2:16:35 PM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-TC-024.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB. APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

sb cta — san bernardino county transportation authority

METROLINK.

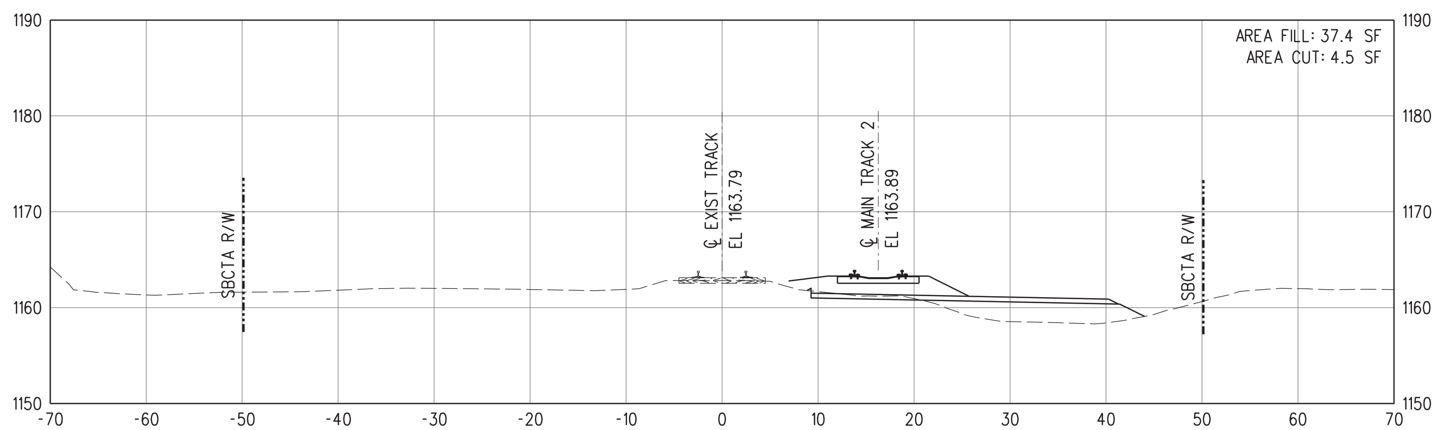
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

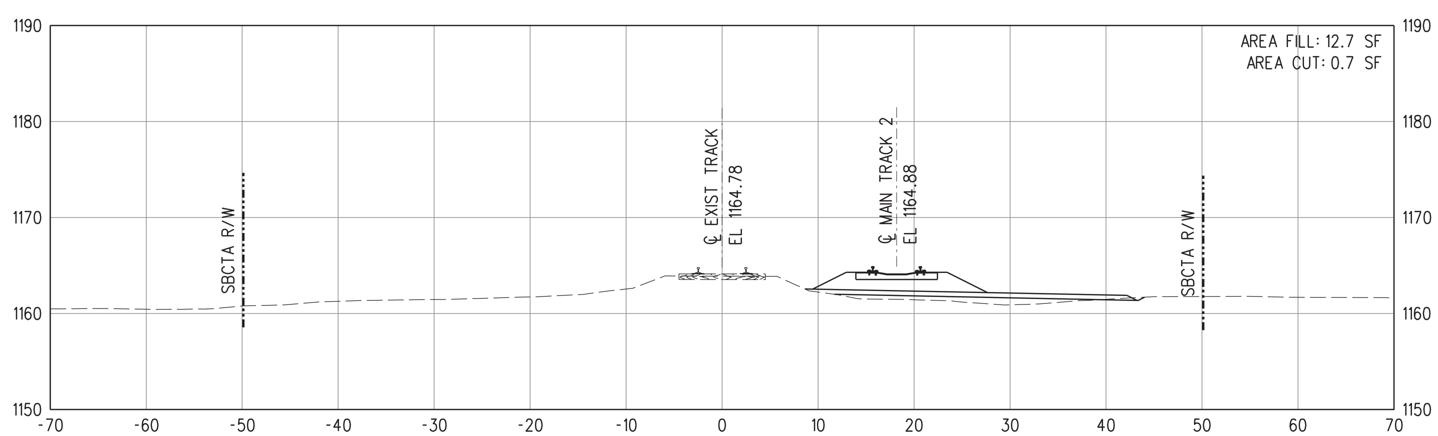
CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT

TRACKWORK CROSS SECTIONS
STA 2885+00 TO STA 2890+00
SHEET 24 OF 28

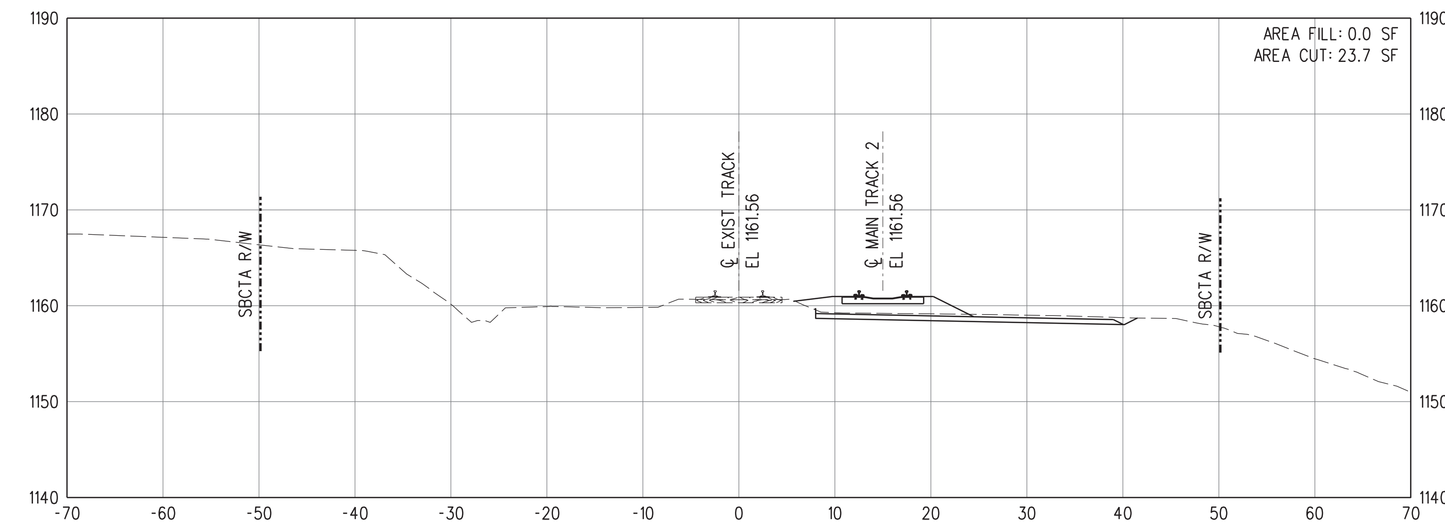
CONTRACT NO. 16-1001411
DRAWING NO. TC-024
REVISION A
SHEET NO. 64 OF 200
SCALE HORIZ 1"=10' VERT 1"=10'



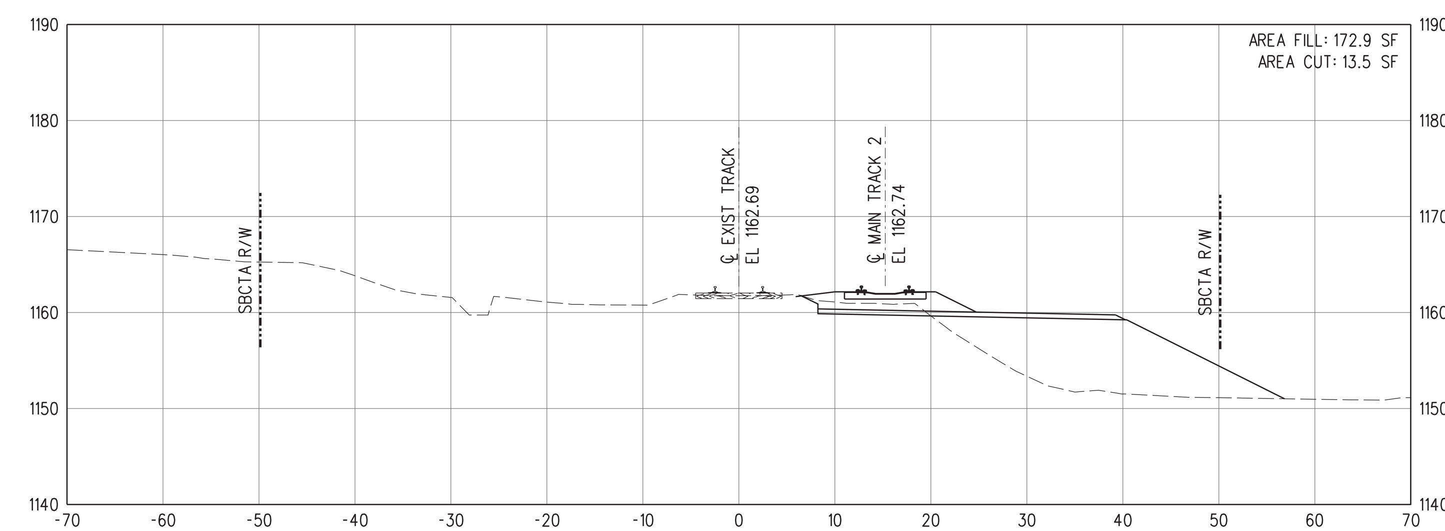
2892+00



2891+00



2894+00



2893+00

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB. APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential; and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

sb cta — san bernardino county transportation authority

METROLINK

moffatt & nichol

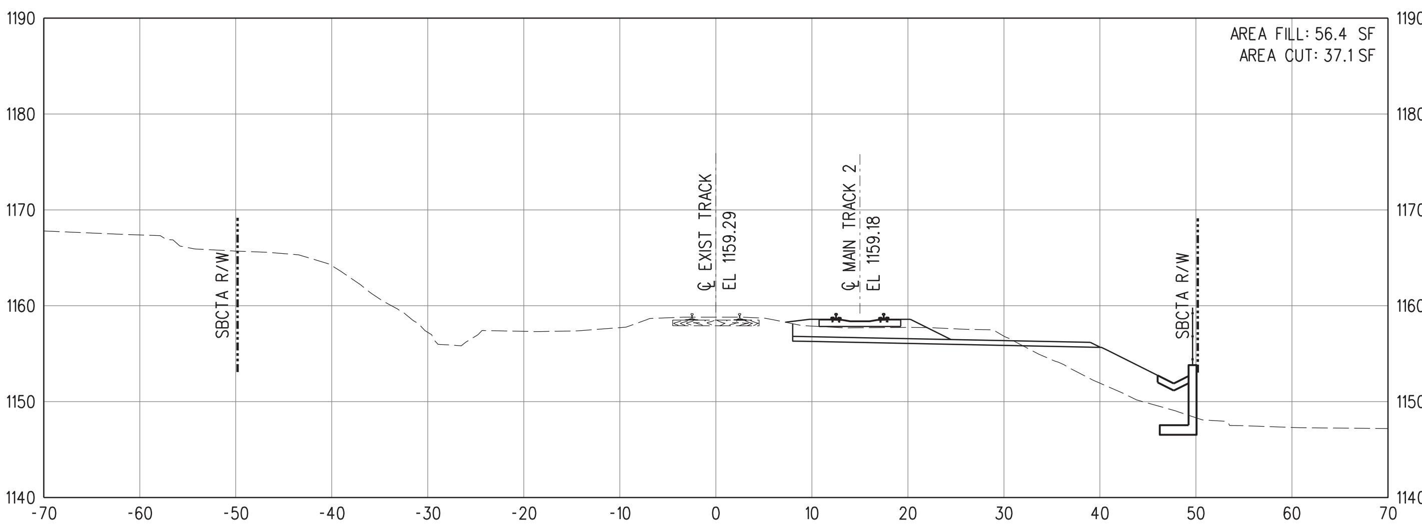
SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

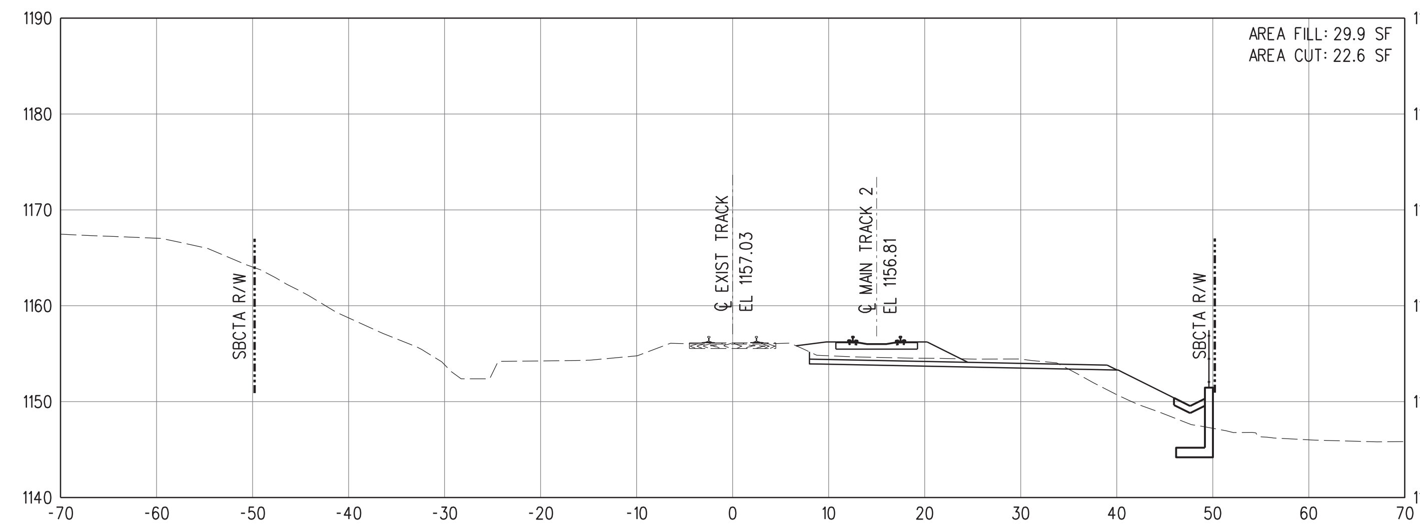
TRACKWORK CROSS SECTIONS STA 2891+00 TO STA 2894+00 SHEET 25 OF 28

CONTRACT NO. 16-1001411
DRAWING NO. TC-025
REVISION A
SHEET NO. 65 OF 200
SCALE HORIZ 1"=10' VERT 1"=10'

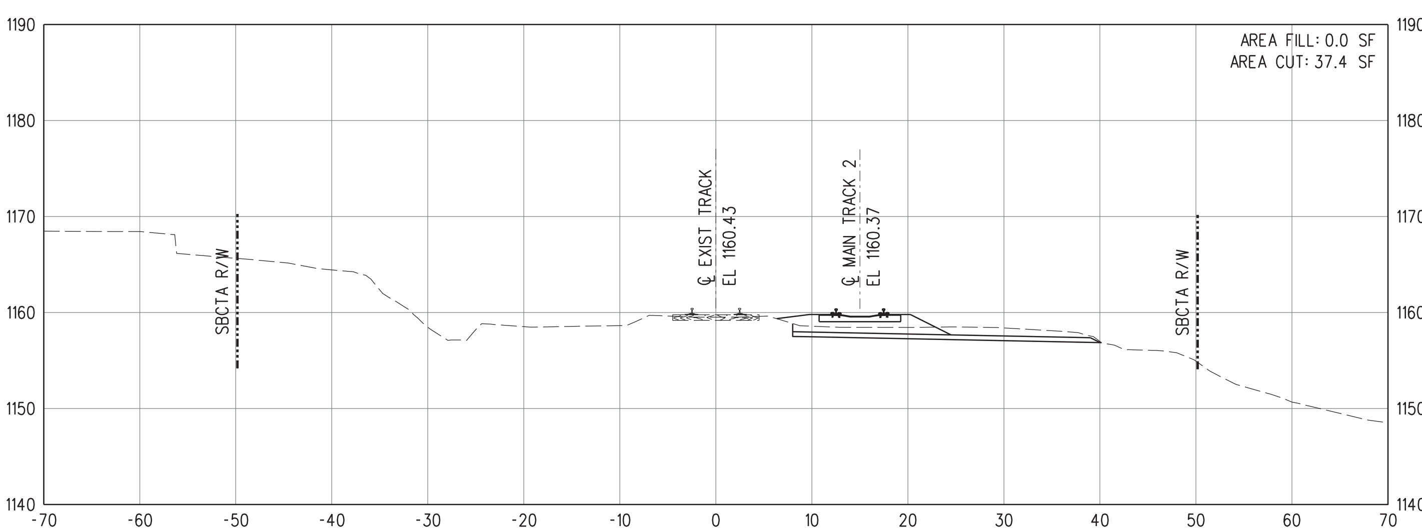
7/9/2018 2:16:35 PM USER • jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-TC-025.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg



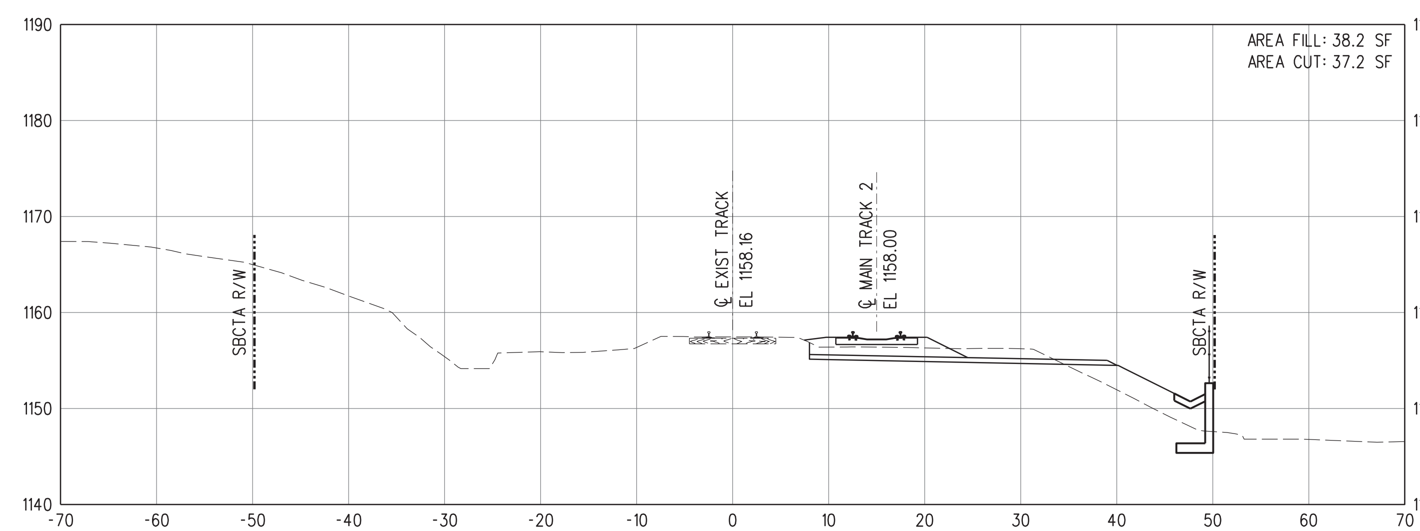
2896+00



2898+00



2895+00



2897+00

FINAL 30% SUBMITTAL (06-29-2018)

7/9/2018 2:16:36 PM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-TC-026.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB. APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential; and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

sb cta — san bernardino county transportation authority

METROLINK

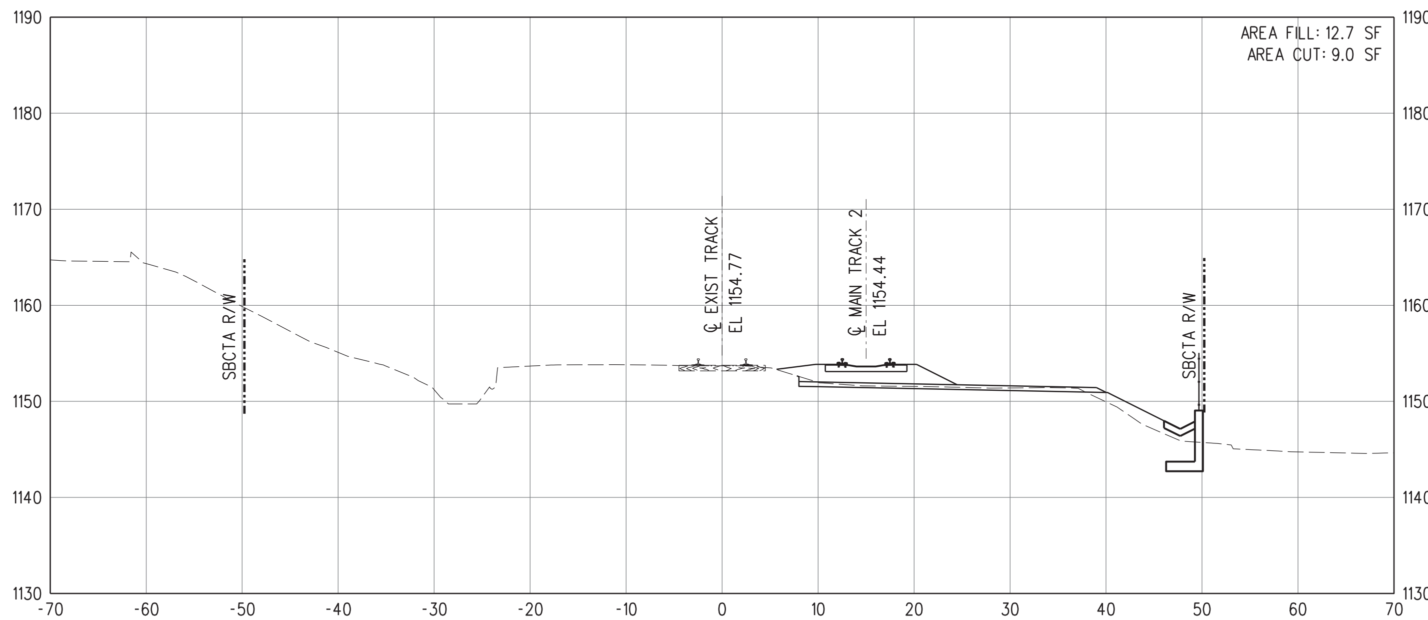
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

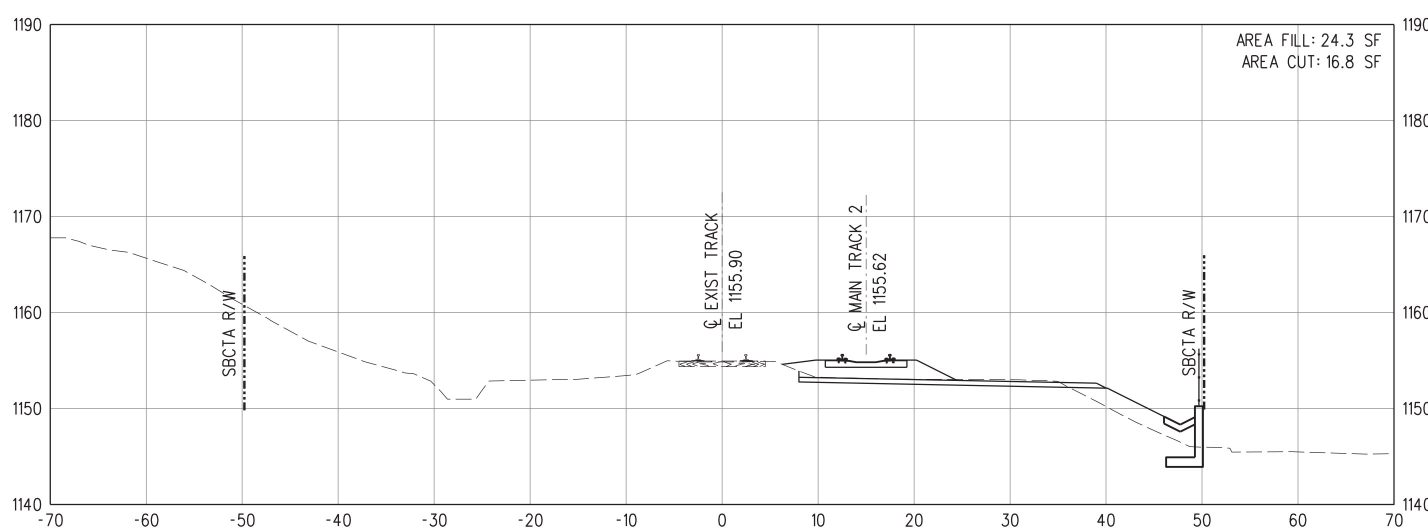
CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

TRACKWORK CROSS SECTIONS
STA 2895+00 TO STA 2898+00
SHEET 26 OF 28

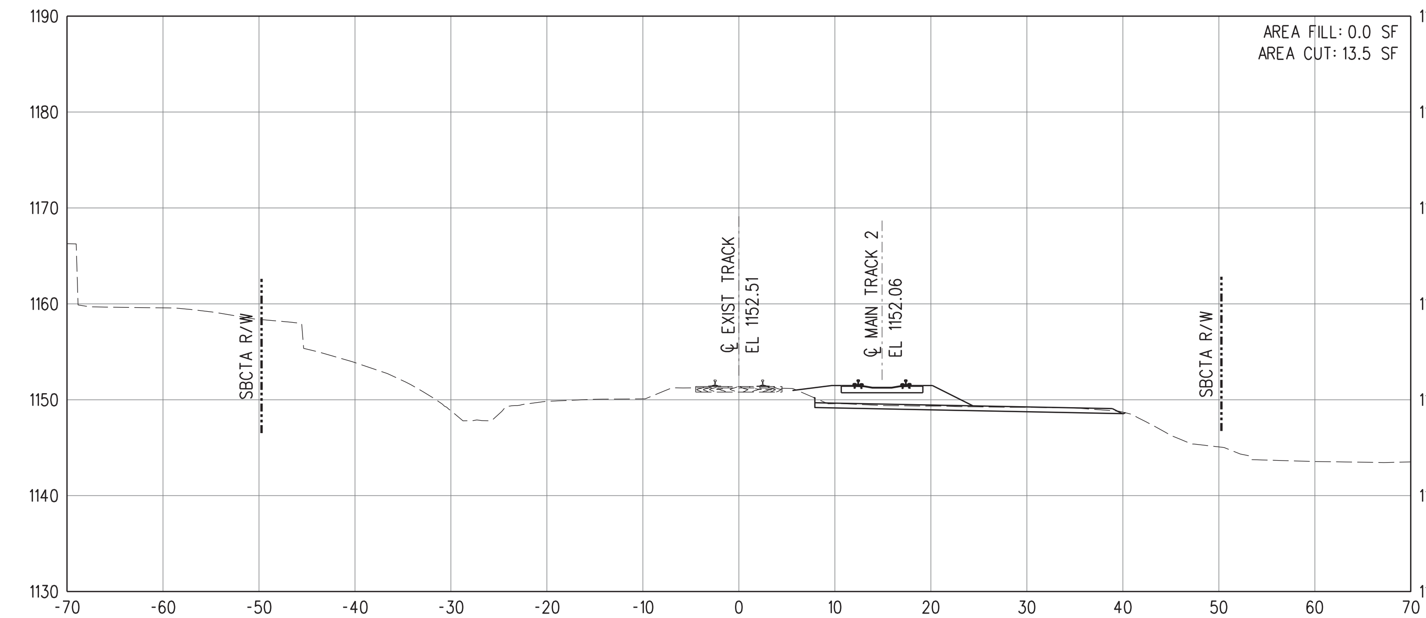
CONTRACT NO. 16-1001411
DRAWING NO. TC-026
REVISION A
SHEET NO. 66 OF 200
SCALE HORIZ 1"=10' VERT 1"=10'



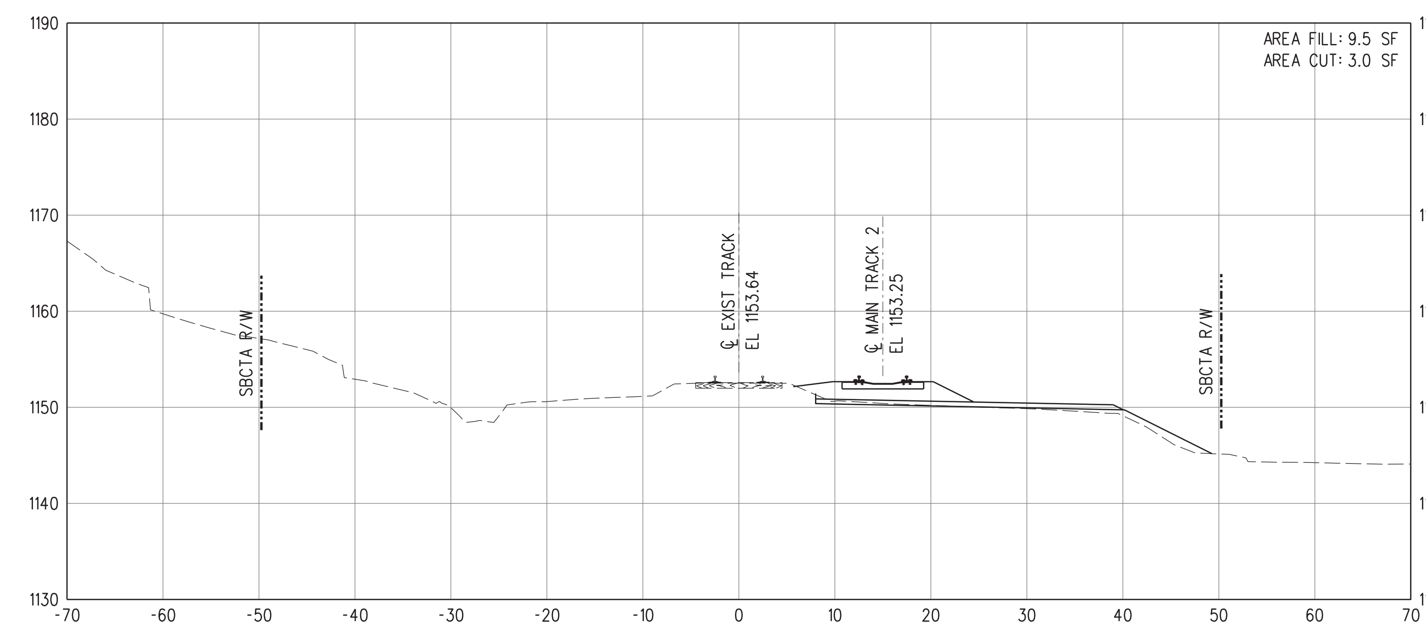
2900+00



2899+00



2902+00



2901+00

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB. APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

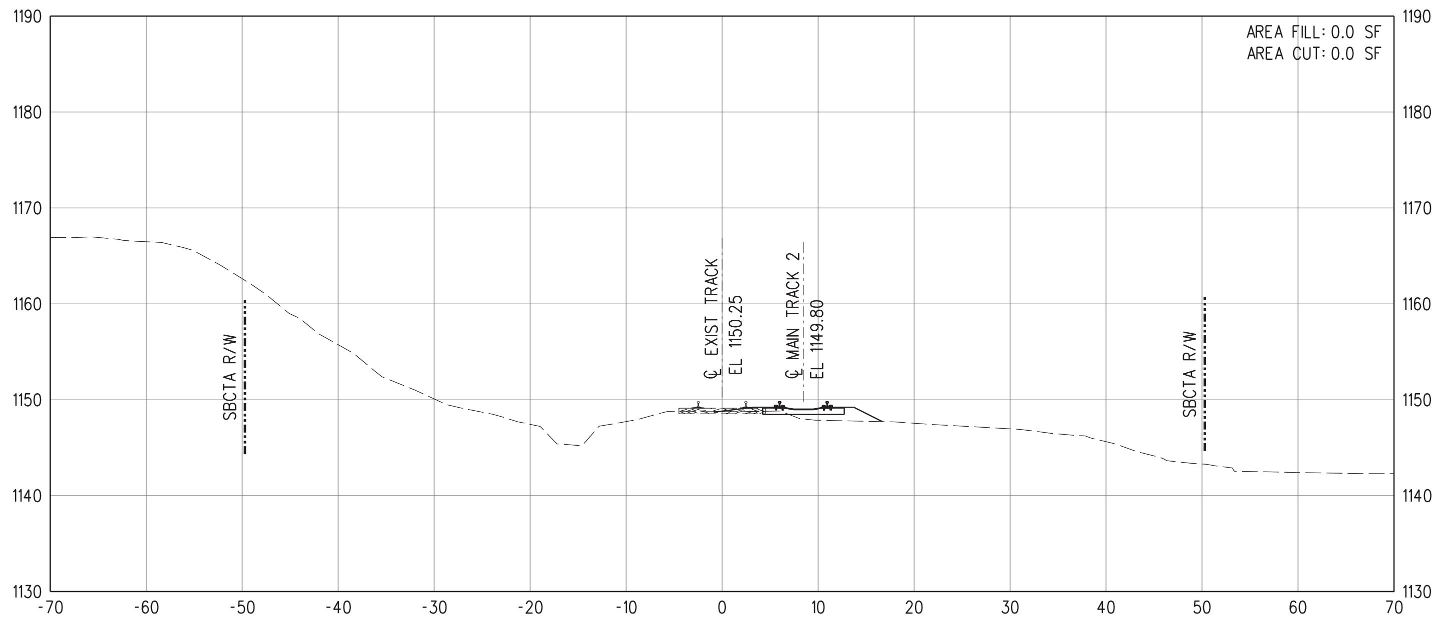
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

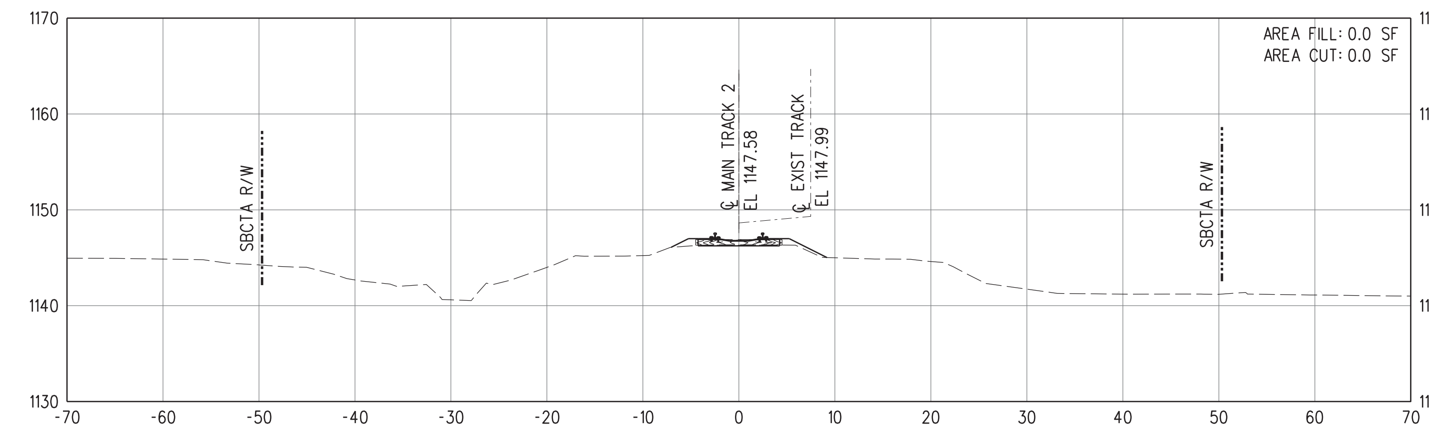
CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

TRACKWORK CROSS SECTIONS STA 2899+00 TO STA 2902+00 SHEET 27 OF 28

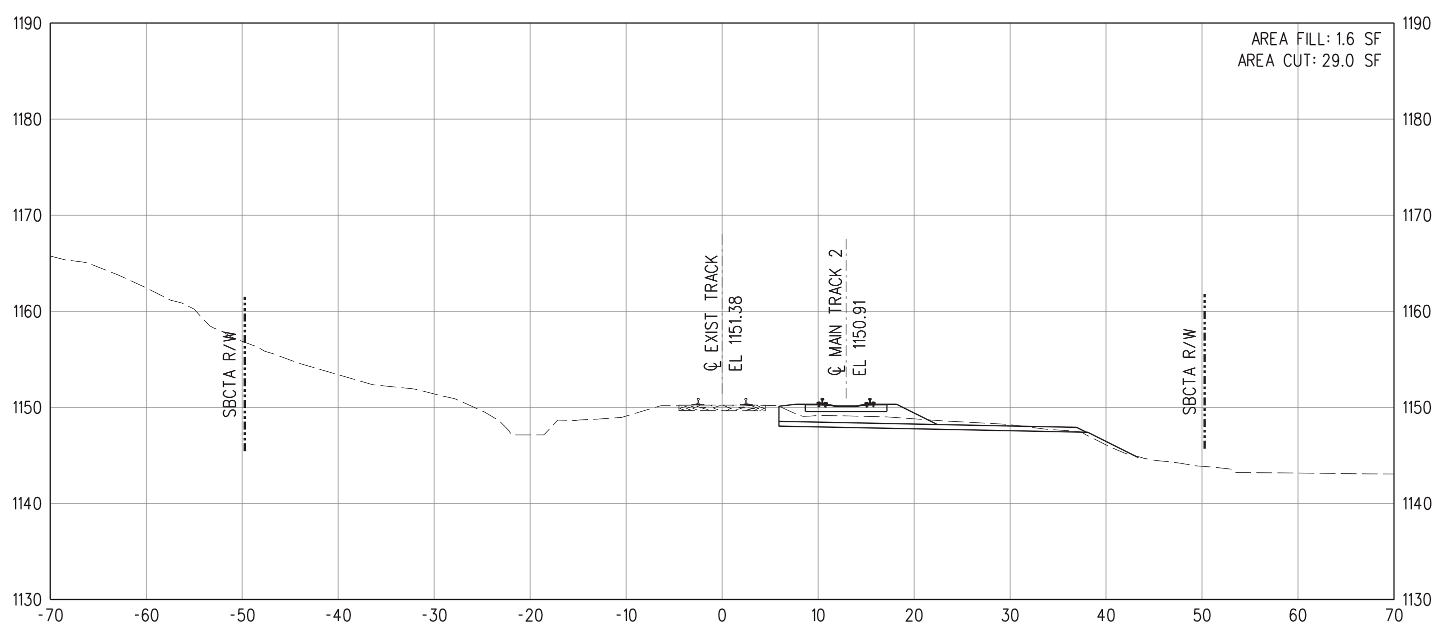
CONTRACT NO. 16-1001411
DRAWING NO. TC-027
REVISION A
SHEET NO. 67 OF 200
SCALE HORIZ 1"=10' VERT 1"=10'



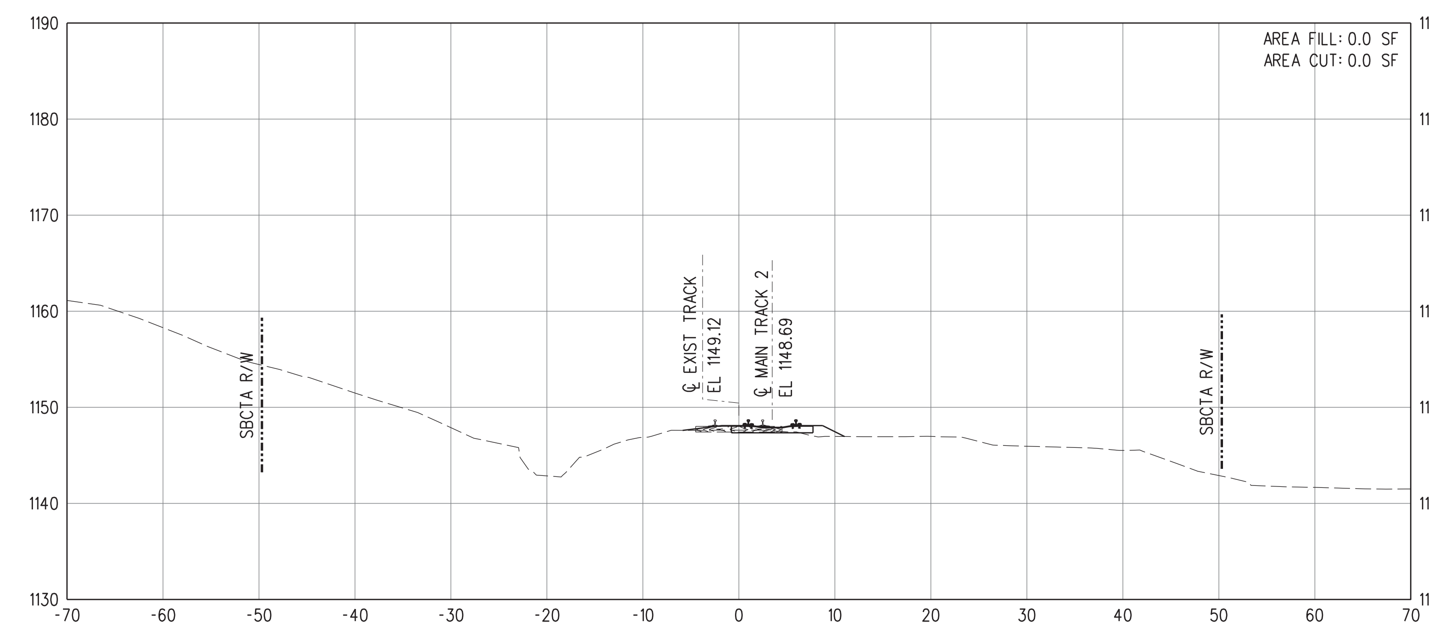
2904+00



2906+00



2903+00



2905+00

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB. / APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

sb cta — san bernardino county transportation authority

METROLINK

moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

TRACKWORK CROSS SECTIONS STA 2903+00 TO STA 2906+00 SHEET 28 OF 28

CONTRACT NO. 16-1001411
DRAWING NO. TC-028
REVISION A
SHEET NO. 68 OF 200
SCALE HORIZ 1"=10' VERT 1"=10'

FINAL 30% SUBMITTAL (06-29-2018)

7/9/2018 2:26:27 PM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-CD-001.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCRRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. PATAPOFF
DRAWN BY J. PATAPOFF
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

sb cta — san bernardino county transportation authority

METROLINK

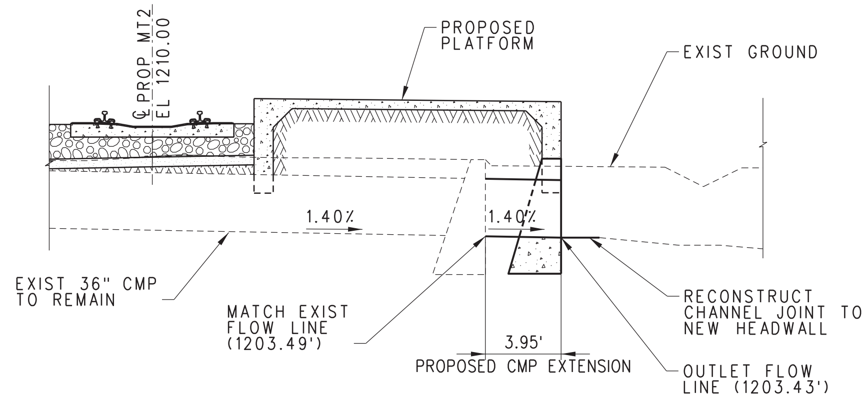
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

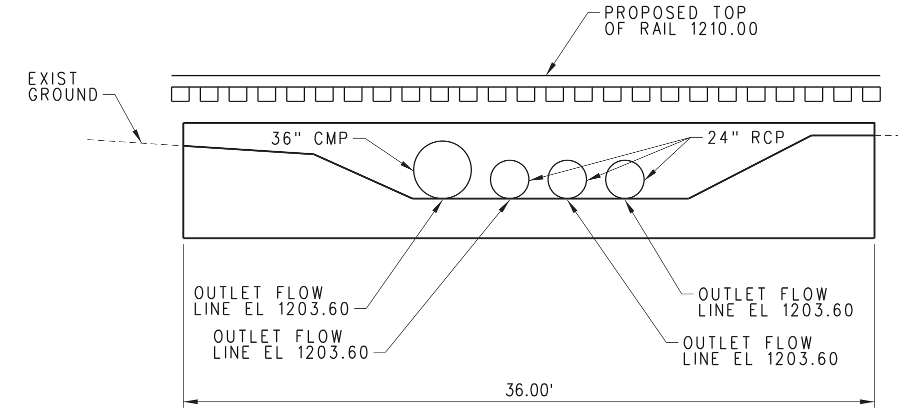
CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

DRAINAGE IMPROVEMENT LOCATION MAP
LILAC AVE TO RANCHO AVE
SHEET 1 OF 1

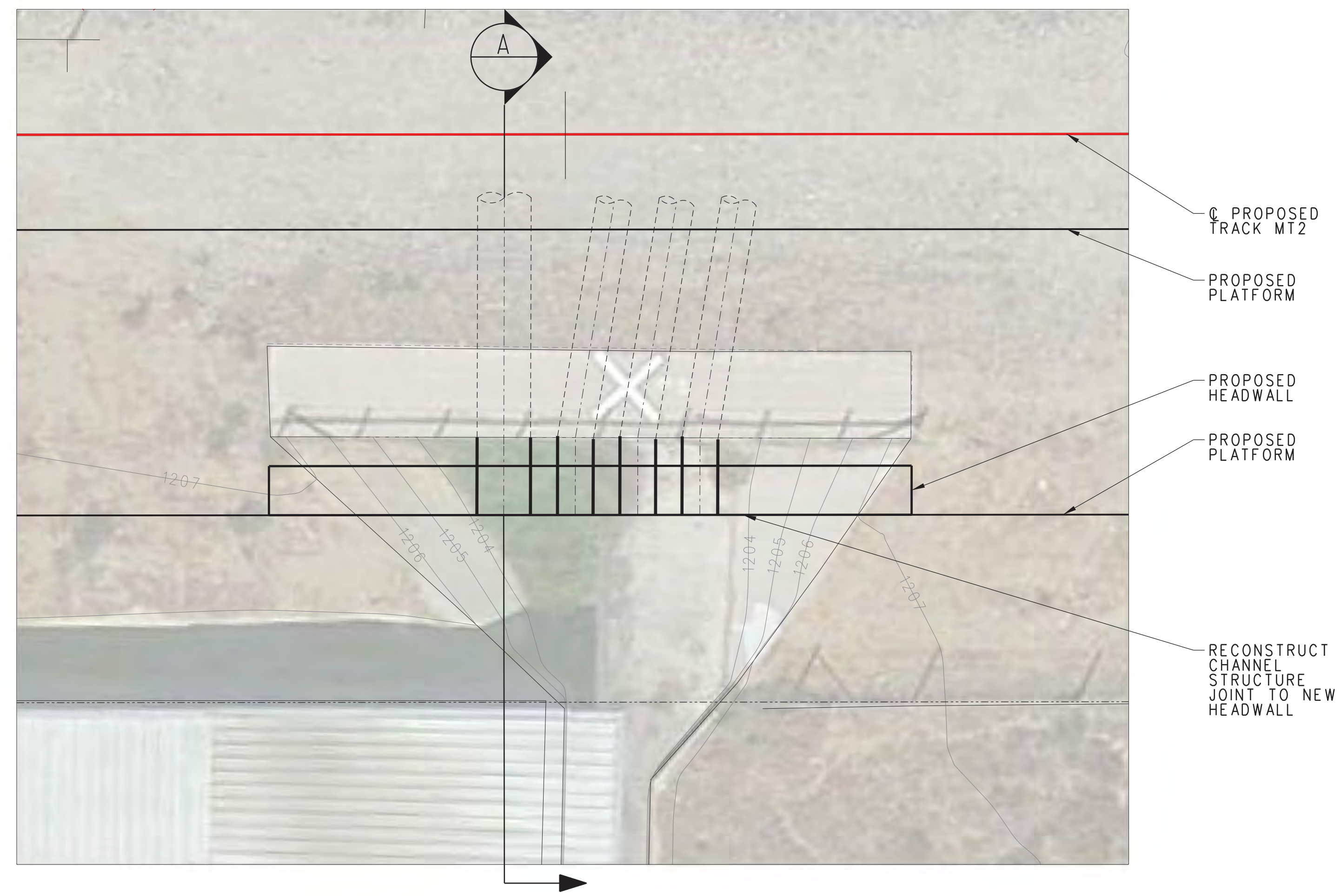
CONTRACT NO. 16-1001411
DRAWING NO. CD-001
REVISION A
SHEET NO. 69 OF 200
SCALE 1"=200'



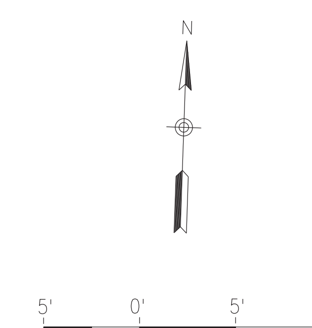
SECTION A
1"= 5'



ELEVATION
CULVERT AT STA 2788+00 (MP 52.8)



PLAN
CULVERT AT STA 2788+02 (MP 52.80)



GRAPHIC SCALE

FINAL 30% SUBMITTAL (06-29-2018)

7/9/2018 2:26:34 PM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-CD-002.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. PATAPOFF
DRAWN BY J. PATAPOFF
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sb cta san bernardino county transportation authority

METROLINK.

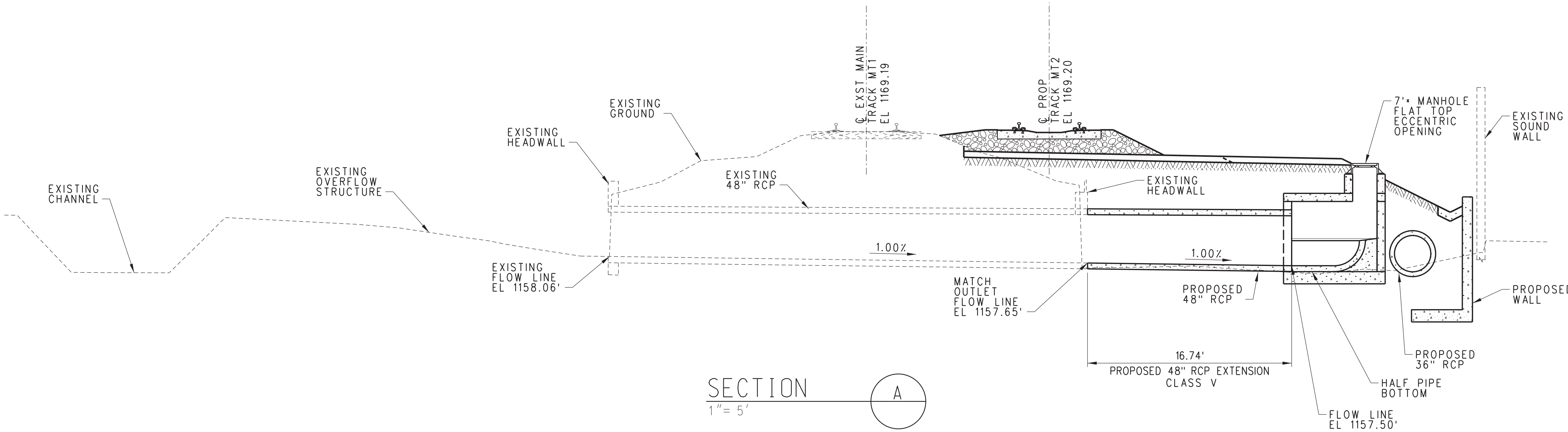
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

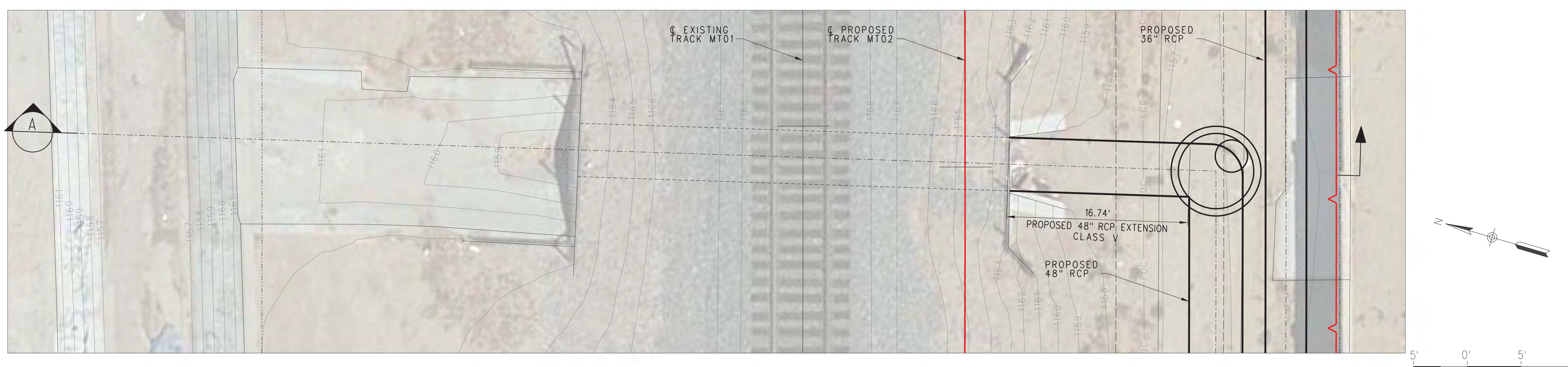
CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

CULVERT PLAN & ELEVATION STA 2788+00 (MP 52.7)

CONTRACT NO. 16-1001411
DRAWING NO. CD-002
REVISION A
SHEET NO. 70 OF 200
SCALE HORIZ 1"=5'



SECTION A
1"= 5'



PLAN
CULVERT AT STA 2863+97 (MP 54.19)

FINAL 30% SUBMITTAL (06-29-2018)

7/9/2018 2:26:41 PM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-CD-003.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

DESIGNED BY J. PATAPOFF
DRAWN BY J. PATAPOFF
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER
No.
Exp.
CIVIL
STATE OF CALIFORNIA

sb cta
san bernardino county transportation authority

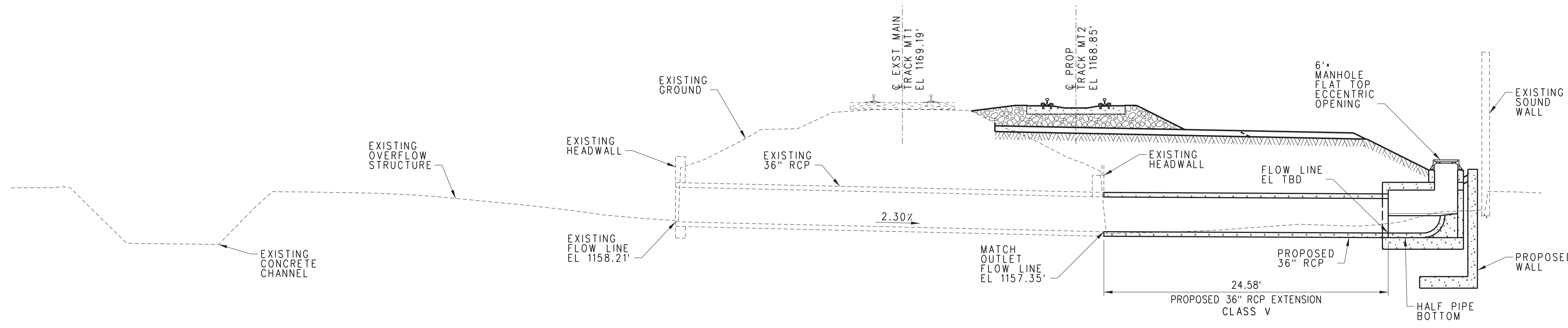
METROLINK.
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

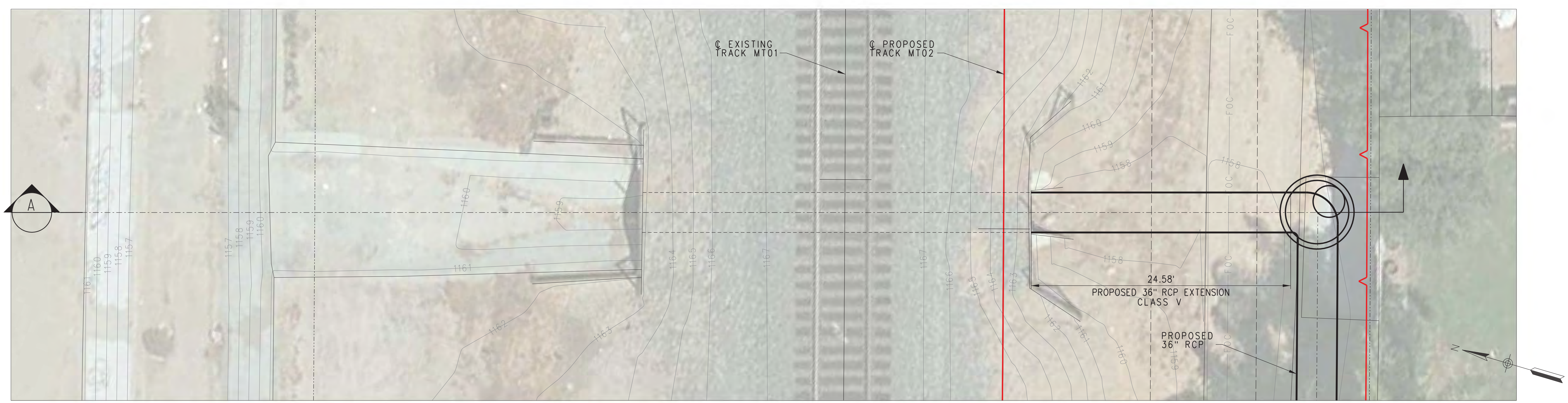
CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

CULVERT PLAN & ELEVATION STA 2863+97 (MP 54.19)

CONTRACT NO. 16-1001411
DRAWING NO. CD-003
REVISION A
SHEET NO. 71 OF 200
SCALE HORIZ 1"=5'



SECTION A
1"= 5'



PLAN
CULVERT AT STA 2866+96 (MP 54.24)

5' 0' 5' 10'
GRAPHIC SCALE

FINAL 30% SUBMITTAL (06-29-2018)

7/9/2018 2:26:53 PM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-CD-004.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential; and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. PATAPOFF
DRAWN BY J. PATAPOFF
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

sb cta san bernardino county transportation authority

METROLINK.

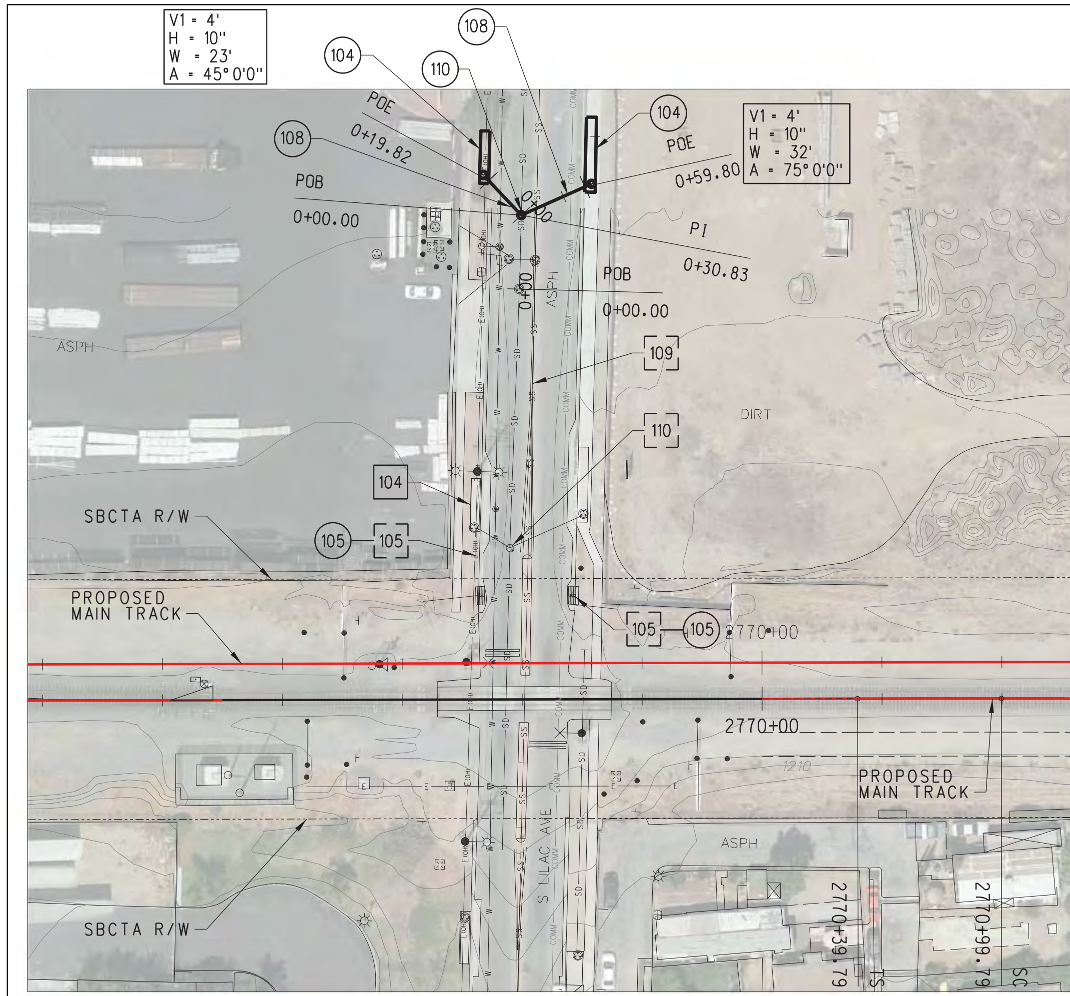
moffatt & nichol

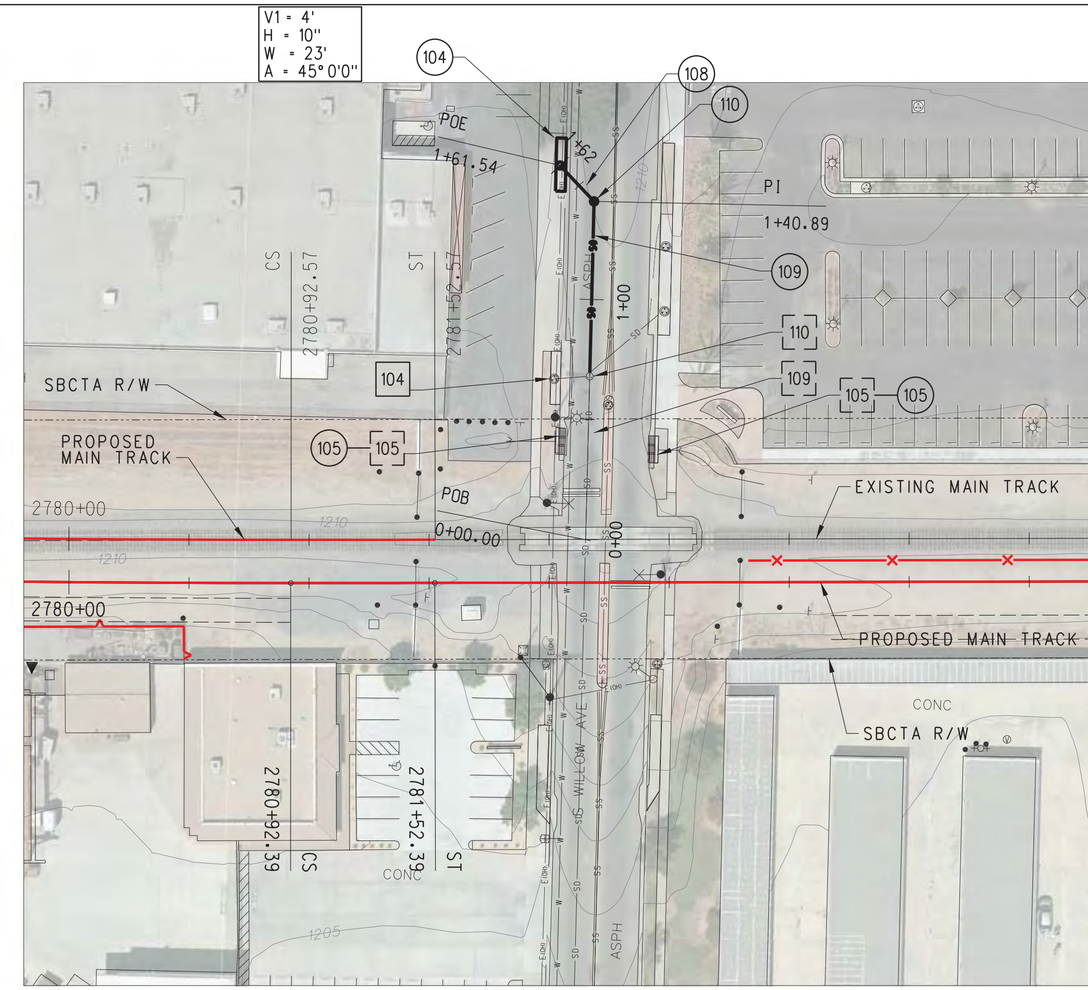
SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

CULVERT PLAN & ELEVATION
STA 2866+96 (MP 54.24)

CONTRACT NO. 16-1001411
DRAWING NO. CD-004
REVISION A
SHEET NO. 72 OF 200
SCALE HORIZ 1"=5'





CONSTRUCTION SYMBOLS

- CONSTRUCT
- EXISTING
- REMOVE
- REMODEL EXISTING
- REMOVE & RECONSTRUCT
- WORK BY OTHERS
- PROTECT IN PLACE

CONSTRUCTION NOTES

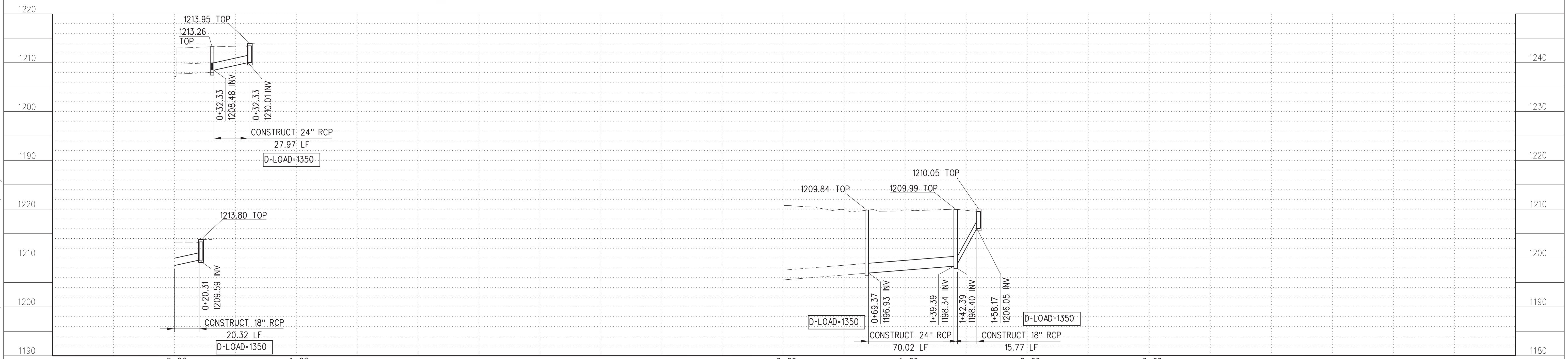
101. 36" RCP
102. 48" RCP
103. MANHOLE PER SPPWC 320-2
104. CURB OPENING CATCH BASIN SPPWC 300-3
105. CURB OPENING CATCH BASIN WITH GRATE(S) SPPWC 302-3
106. HEADWALL
107. CONCRETE COLLAR SPPWC 380-4
108. 18" RCP
109. 24" RCP
110. MANHOLE PER SPPWC 321-2

NOTES

40' 0' 40' 80'
GRAPHIC SCALE

N

FINAL 30% SUBMITTAL (06-29-2018)



7/9/2018 2:26:59 PM USER = jcalderon
Q:\LBY9503\CADD\Master\Sheets\LRD1212-CD-005.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCRRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. PATAPOFF
DRAWN BY J. PATAPOFF
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sb cta san bernardino county transportation authority

METROLINK.

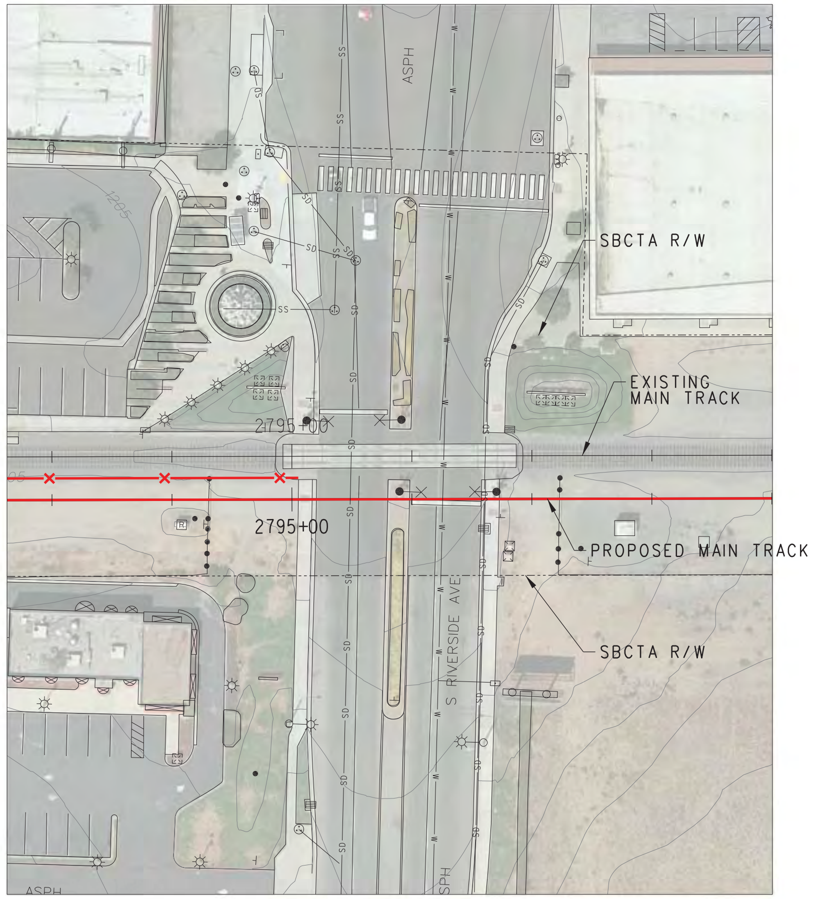
moffatt & nichol

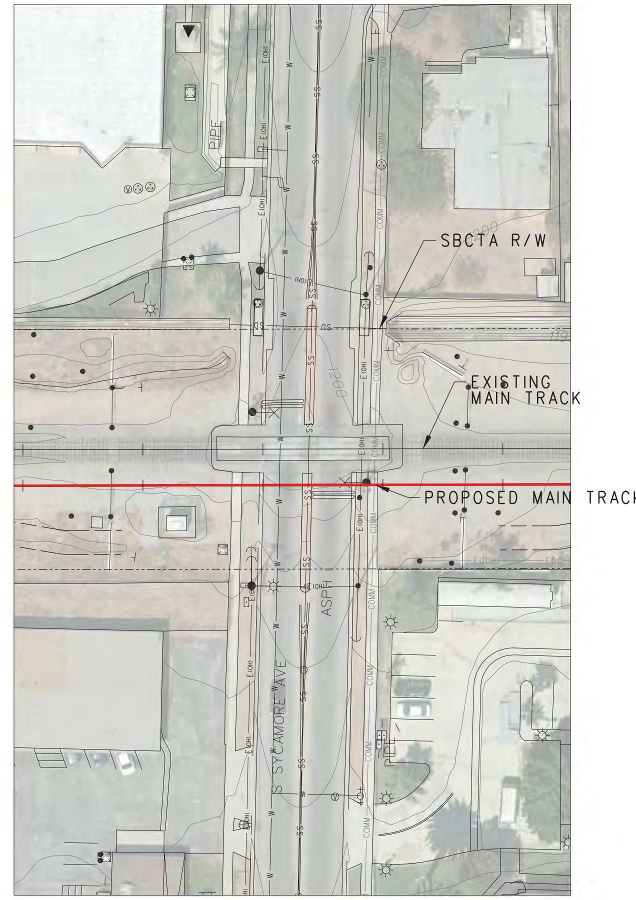
SUBMITTED: PROJECT MANAGER
APPROVED:

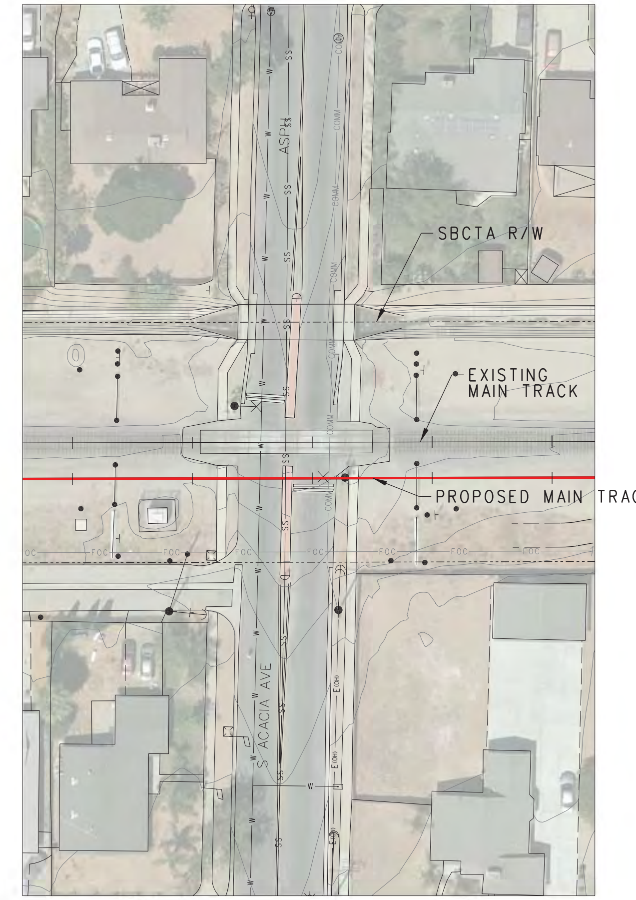
CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

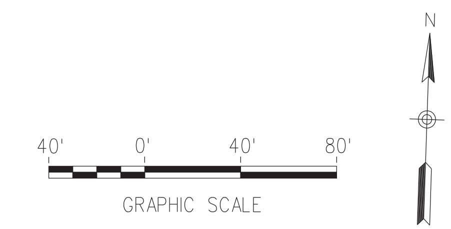
STORM DRAIN PLAN AND PROFILE LILAC AVE & WILLOW AVE SHEET 1 OF 4

CONTRACT NO. 16-1001411
DRAWING NO. CD-005
REVISION A
SHEET NO. 73 OF 200
SCALE HORIZ 1"=40' VERT 1"=4'









DRAINAGE IMPACT LIMITED TO ADJUSTING EXISTING MANHOLES, INLETS, CATCH BASINS AND THE INVERT FLOWLINE OF THE CURB OPENING AS SHOWN IN THE GRADE CROSSINGS DRAWINGS

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

DESIGNED BY J. PATAPOFF
DRAWN BY J. PATAPOFF
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

METROLINK

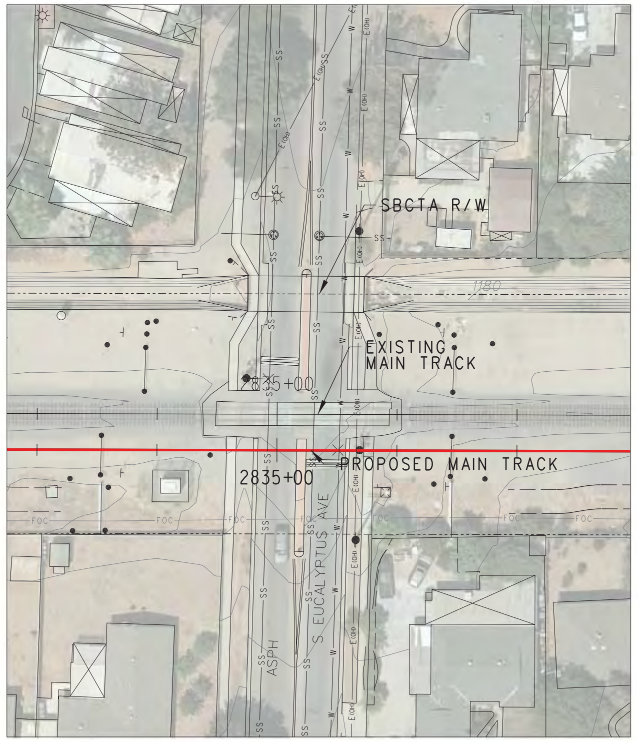
moffatt & nichol

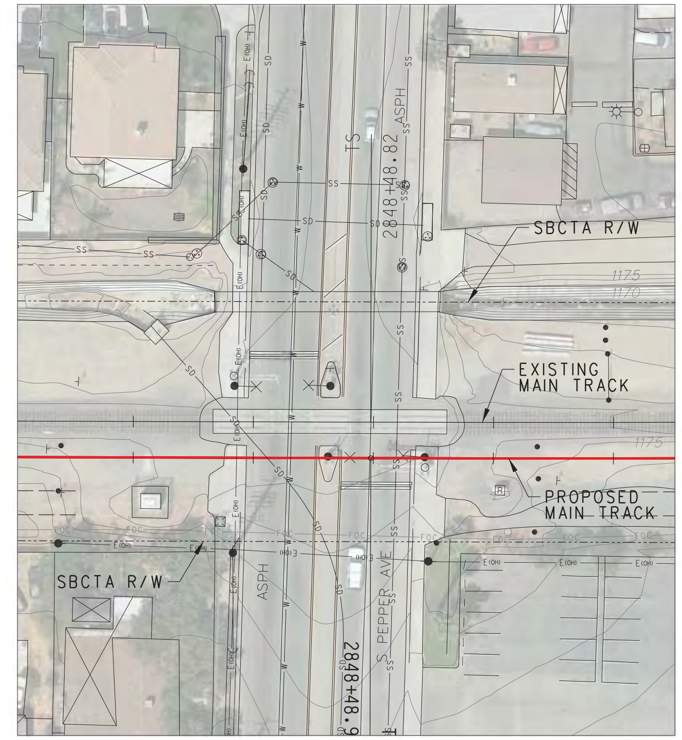
SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

STORM DRAIN PLAN AND PROFILE RIVERSIDE AVE, SYCAMORE & ACACIA AVE SHEET 2 OF 4

CONTRACT NO. 16-1001411
DRAWING NO. CD-006
REVISION A
SHEET NO. 74 OF 200
SCALE HORIZ 1"=40' VERT 1"=4'





40' 0' 40' 80'

GRAPHIC SCALE

N

FINAL 30% SUBMITTAL (06-29-2018)

DRAINAGE IMPACT LIMITED TO ADJUSTING EXISTING MANHOLES, INLETS, CATCH BASINS AND THE INVERT FLOWLINE OF THE CURB OPENING AS SHOWN IN THE GRADE CROSSINGS DRAWINGS

7/9/2018 2:27:10 PM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-CD-007.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential; and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. PATAPOFF
DRAWN BY J. PATAPOFF
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sbcta san bernardino county transportation authority

METROLINK

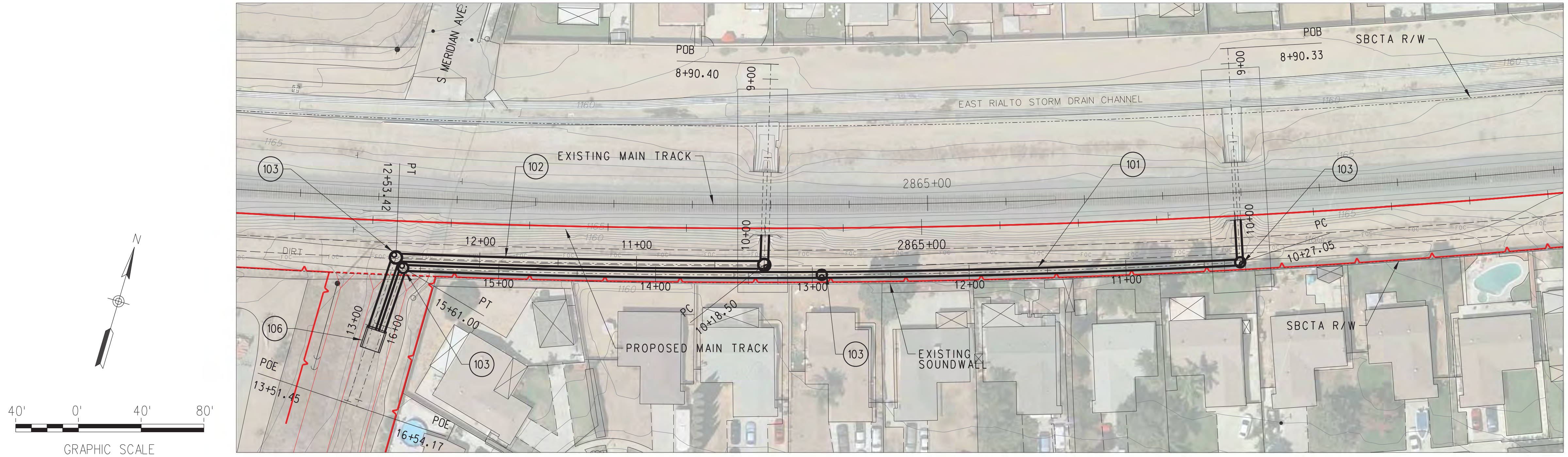
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

STORM DRAIN PLAN AND PROFILE EUCALYPTUS AVE & PEPPER AVE SHEET 3 OF 4

CONTRACT NO. 16-1001411
DRAWING NO. CD-007
REVISION A
SHEET NO. 75 OF 200
SCALE HORIZ 1"=40' VERT 1"=4'



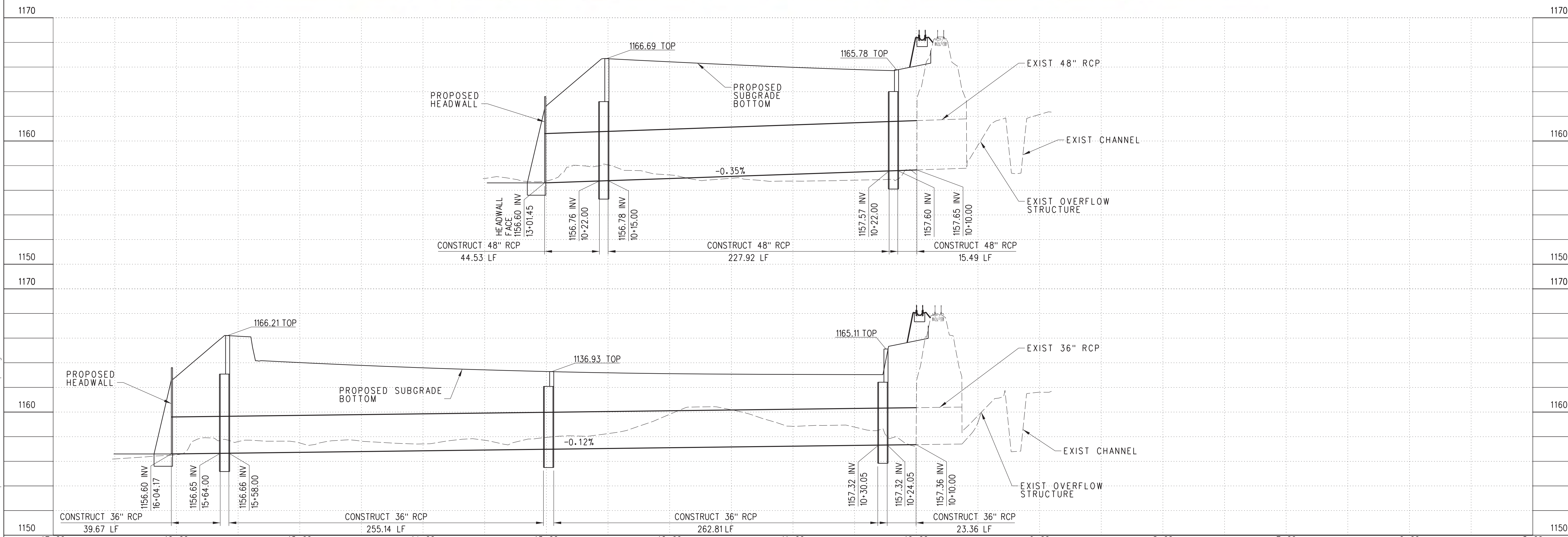
CONSTRUCTION SYMBOLS

- CONSTRUCT
- EXISTING
- REMOVE
- REMODEL EXISTING
- REMOVE & RECONSTRUCT
- WORK BY OTHERS
- PROTECT IN PLACE

CONSTRUCTION NOTES

101. 36" RCP
102. 48" RCP
103. MANHOLE PER SPPWC 320-2 (OR PRECAST 6' OR 7' DIAMETER MANHOLE)
106. HEADWALL

NOTES



FINAL 30% SUBMITTAL (06-29-2018)

7/9/2018 2:27:15 PM USER • jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-CD-008.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
1	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. PATAPOFF
DRAWN BY J. PATAPOFF
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sb cta san bernardino county transportation authority

METROLINK.

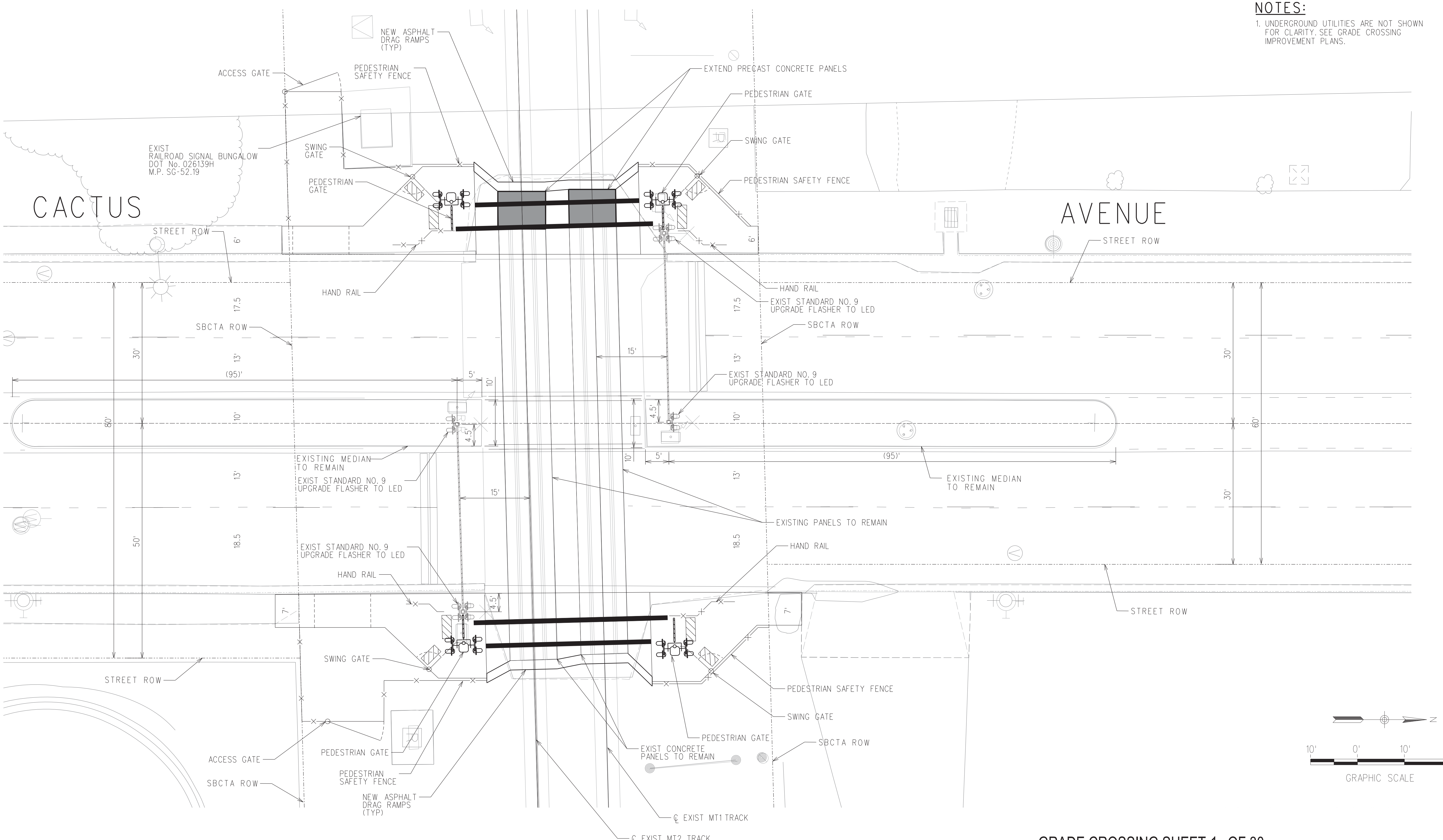
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

STORM DRAIN PLAN AND PROFILE
MERIDAN AVE
SHEET 4 OF 4

CONTRACT NO. 16-1001411
DRAWING NO. CD-008
REVISION A
SHEET NO. 76 OF 200
SCALE HORIZ 1"=40' VERT 1"=4'



NOTES:

1. UNDERGROUND UTILITIES ARE NOT SHOWN FOR CLARITY. SEE GRADE CROSSING IMPROVEMENT PLANS.

FINAL 30% SUBMITTAL (06-29-2018)

GRADE CROSSING SHEET 1 OF 30

REV.	DATE	BY / SUB.	APP.

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential; and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY: A. ABAD
DRAWN BY: S. YAZDI
CHECKED BY: J. DIAZ
APPROVED BY: I. SALVATIERRA
DATE: 06-29-2018

sbcta san bernardino county transportation authority

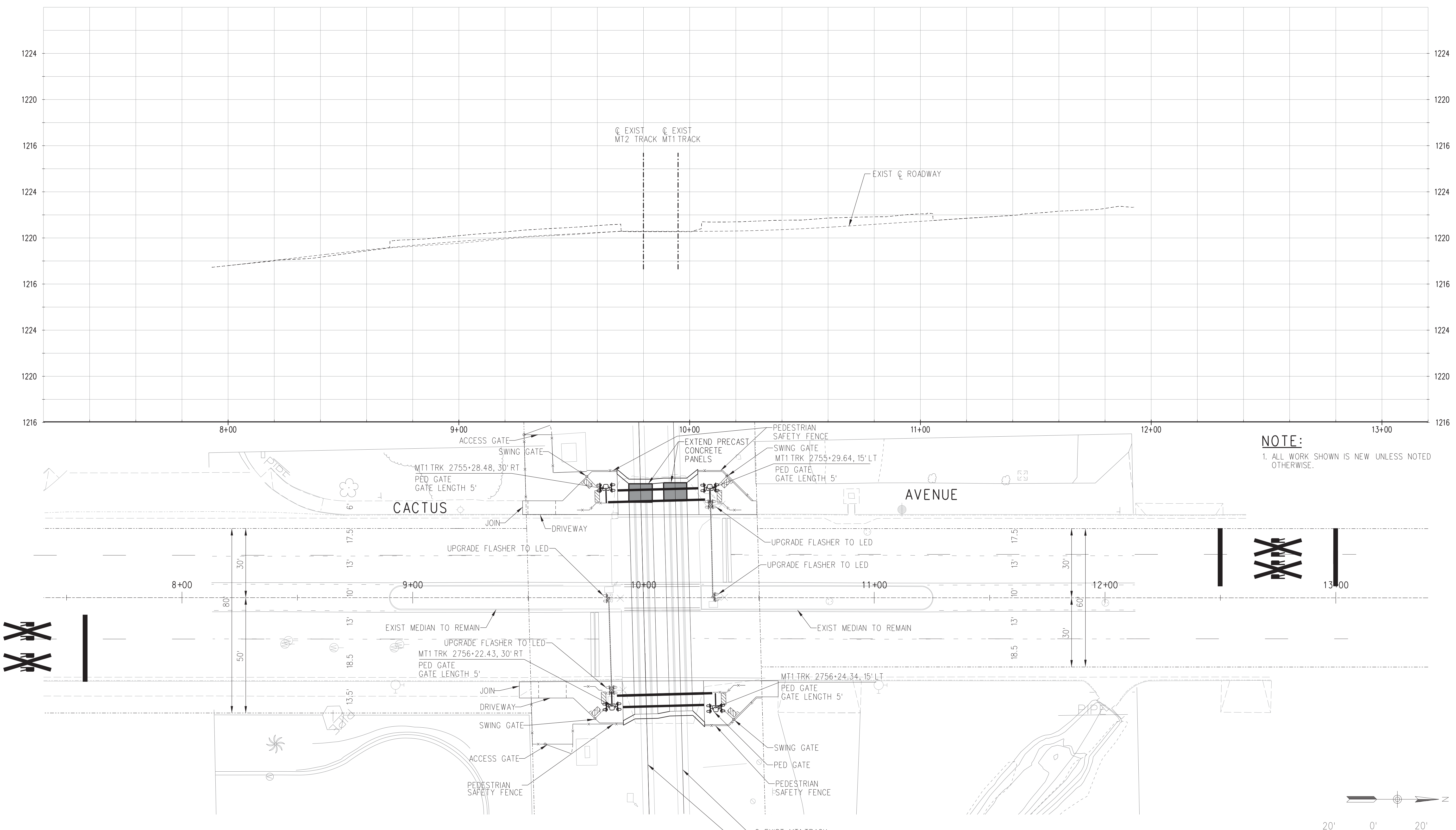
METROLINK

JMD PLANNING | ENGINEERING | MANAGEMENT
18645 East Gale Avenue, Suite 212
City of Industry, CA 91748
(626) 820-1137 Tel
www.jmdiaz.com

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
GRADE CROSSING EXHIBIT
CACTUS AVENUE
DOT No. 026139H M.P. SG-52.19

CONTRACT NO. 16-1001411
DRAWING NO. CJ-011
REVISION A
SHEET NO. 77 OF 200
SCALE HORIZ 1"=20'



NOTE:

1. ALL WORK SHOWN IS NEW UNLESS NOTED OTHERWISE.

FINAL 30% SUBMITTAL (06-29-2018)

GRADE CROSSING SHEET 2 OF 30

REV.	DATE	BY	SUB.	APP.

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY A. ABAD
DRAWN BY S. YAZDI
CHECKED BY J. DIAZ
APPROVED BY I. SALVATIERRA
DATE 06-29-2018

sb cta — san bernardino county transportation authority

METROLINK.

JMD — PLANNING | ENGINEERING | MANAGEMENT
18645 East Gale Avenue, Suite 212
City of Industry, CA 91748
(626) 820-1137 Tel
www.jmdiaz.com

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
GRADE CROSSING IMPROVEMENT PLAN & PROFILE
CACTUS AVENUE
DOT NO. 026139H M.P.SG-52.19

CONTRACT NO. 16-1001411
DRAWING NO. CM-011
REVISION A
SHEET NO. 78 OF 200
SCALE HORIZ 1"=20' VERT 1"=4'

09:38 AM on Tuesday, June 26, 2018 ISalvatierra
P:\2016\0036.0002.00 SBCTA (Moffatt) Lilac to Rancho Double Track\Cadd\Sheets\Preliminary Engineering\1603602-01-Cactus_P&P.dgn
C:\ProgramData\Bentley\MicroStation V8i (SELECTseries)\WorkSpace\System\pltcfg\PlotStampFULL.tbl
C:\ProgramData\Bentley\MicroStation V8i (SELECTseries)\WorkSpace\System\pltcfg\SCCRA_D_Size_PDF_JMD.pltcfg

GENERAL NOTES

1 THE METHOD OF PAVEMENT MARKING AND MARKER INSTALLATION SHALL CONFORM TO SECTION 84 AND 85 OF CALTRANS LATEST STANDARD SPECIFICATIONS OR AS REQUIRED BY LOCAL JURISDICTION.

2 NO MARKING TO BE DONE PRIOR TO FIELD INSPECTION AND APPROVAL OF LAYOUT BY SCRRA IN THE FIELD.

3 PAVEMENT MARKING SHALL BE THERMOPLASTIC MATERIALS AND SHALL CONFORM TO SECTION 84-2.0.2 OF THE CALTRANS STANDARD SPECIFICATION OR AS REQUIRED BY LOCAL JURISDICTION.

4 THE APPLICATIONS OF THERMOPLASTIC MATERIALS SHALL BE IN ACCORDANCE WITH CALTRANS STANDARD SPECIFICATIONS SECTION 84-2.0.2 OR AS REQUIRED BY LOCAL JURISDICTION.

5 PAVEMENT DELINEATION PATTERNS SHALL CONFORM TO THE DETAILS IN THE CALTRANS STANDARD PLAN A20-A, A20-B, A20-C, A20-D AND A24-E ARROW SYMBOLS SHALL BE WHITE UNLESS SPECIFIED IN THE PLANS AND CA MUTCD LATEST EDITION.

6 PAVEMENT ARROW IN FRONT OF A TURN LANE SHALL BE PLACED APPROXIMATELY 10 FEET FROM THE LIMIT LINE AND THE ARROW AT THE BACK OF A TURN LANE SHALL BE PLACED APPROXIMATELY 5 FEET FROM THE END WHERE THE VEHICLE ENTERS THE LANE.

7 ALL CROSSWALKS PER CA MUTCD AND LOCAL JURISDICTION REQUIREMENTS.

8 BEYOND RESURFACING LIMITS, ALL CONFLICTING MARKINGS, PAINTED SYMBOLS, AND RAISED PAVEMENT MARKERS SHALL BE REMOVED. PAINTED MARKINGS SHALL BE REMOVED BY WET SAND BLASTING OR AS REQUIRED BY LOCAL JURISDICTION.

9 ALL EXISTING SIGNS AND POSTS NOT TO BE REUSED SHALL BE REMOVED

10 RELOCATED OR NEW SIGNS AS SHOWN ON PLANS SHALL BE INSTALLED ON NEW POST, EXCEPT WHERE STREET LIGHT POLES ARE USED FOR SIGN POSTING, NEW SIGN POSTS SHALL BE UNISTRUT BREAK AWAY TYPE, 2-INCH SQUARE TUBE

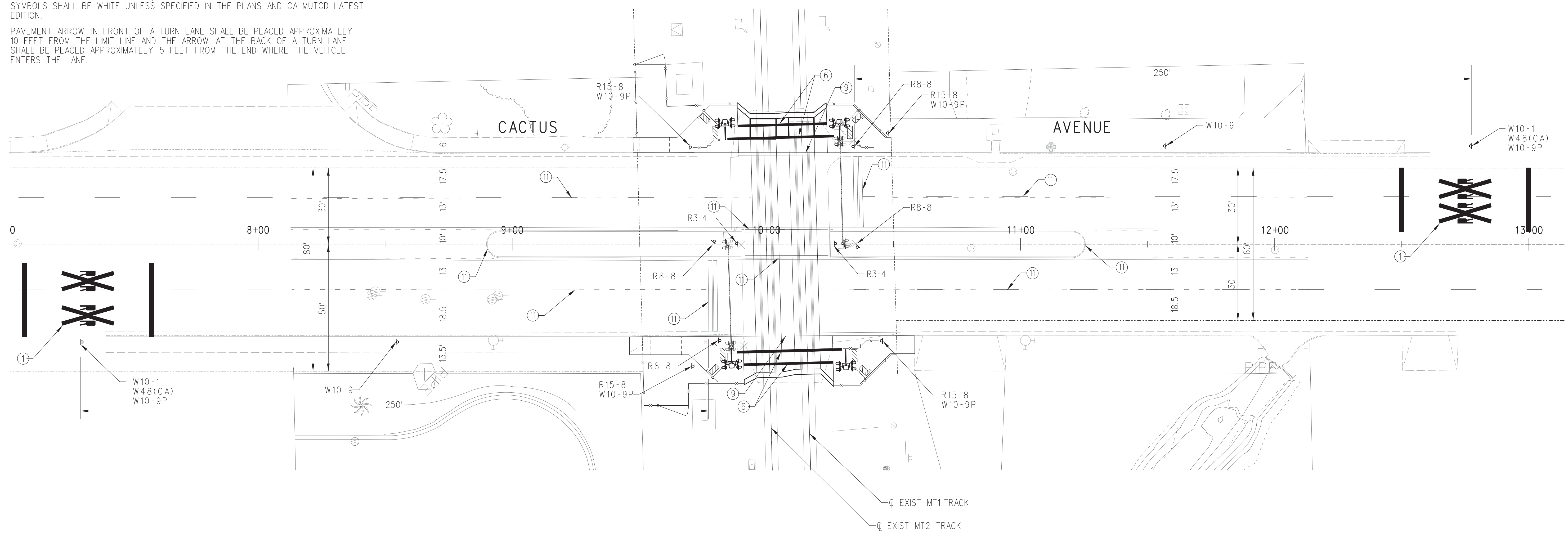
11 ALL TRAFFIC SIGNS SHALL HAVE RETRO REFLECTIVE SHEETING AND SHALL CONFORM TO LATEST CALTRANS STANDARD PLANS AND SPECIFICATIONS AND THE LATEST CALIFORNIA SIGN SPECIFICATIONS. ALL SIGNS SHALL BE INSTALLED IN ACORDANCE WITH CALTRANS STANDARD PLANS AND SPECIFICATIONS OR AS REQUIRED BY LOCAL JURISDICTION.

12 PEDESTRIAN BARRICADE AS PER SCRRA ENGINEERING STANDARD DRAWING ES4005

13 NO SIGNS SHALL BE INSTALLED PRIOR TO FIELD INSPECTION AND APROVAL OF LAYOUT BY SCRRA IN THE FIELD. THE SIGNS SHALL NOT BLOCK CLEAR VIEWS OF RAILROAD WARNING SIGNAL LIGHTS.

14 QUIET ZONE SIGNS SHALL BE INSTALLED ONLY IN DESIGNATED QUIET ZONES.

15 SIZES FOR WARNING SIGNS SHALL BE AS SHOWN IN CA MUTCD, TABLE 2C-2. THE ADVANCE PLACEMENT DISTANCE OF WARNING SIGNS SHALL BE AS SHOWN IN CA MUTCD, TABLE 2C-4. SIZES FOR GRADE CROSSING SIGNS SHALL BE AS SHOWN IN CA MUTCD, TABLE 8B-1.



MARKING NOTES

(1) RAILROAD CROSSING SYMBOL PER CALTRANS A24B.

(6) 12" WHITE CROSSWALK LINE PER CALTRANS STD PLAN A24F

(9) PAVEMENT MARKING AND RAISED PAVEMENT MARKERS PER CALTRANS STD PLAN A20B, DETAIL 27B AS SHOWN IN SCRRA STD. ES4016

(11) REPAINT EXISTING MARKINGS AS NEEDED

POSTED SPEED: 50 MPH

GRAPHIC SCALE 20' 0' 20' 40'

GRADE CROSSING SHEET 3 OF 30

FINAL 30% SUBMITTAL (06-29-2018)

DESIGNED BY	A. ABAD
DRAWN BY	S. YAZDI
CHECKED BY	J. DIAZ
APPROVED BY	I. SALVATIERRA
DATE	06-29-2018

REV. | DATE | BY | SUB. | APP.

sbcta san bernardino county transportation authority

METROLINK.

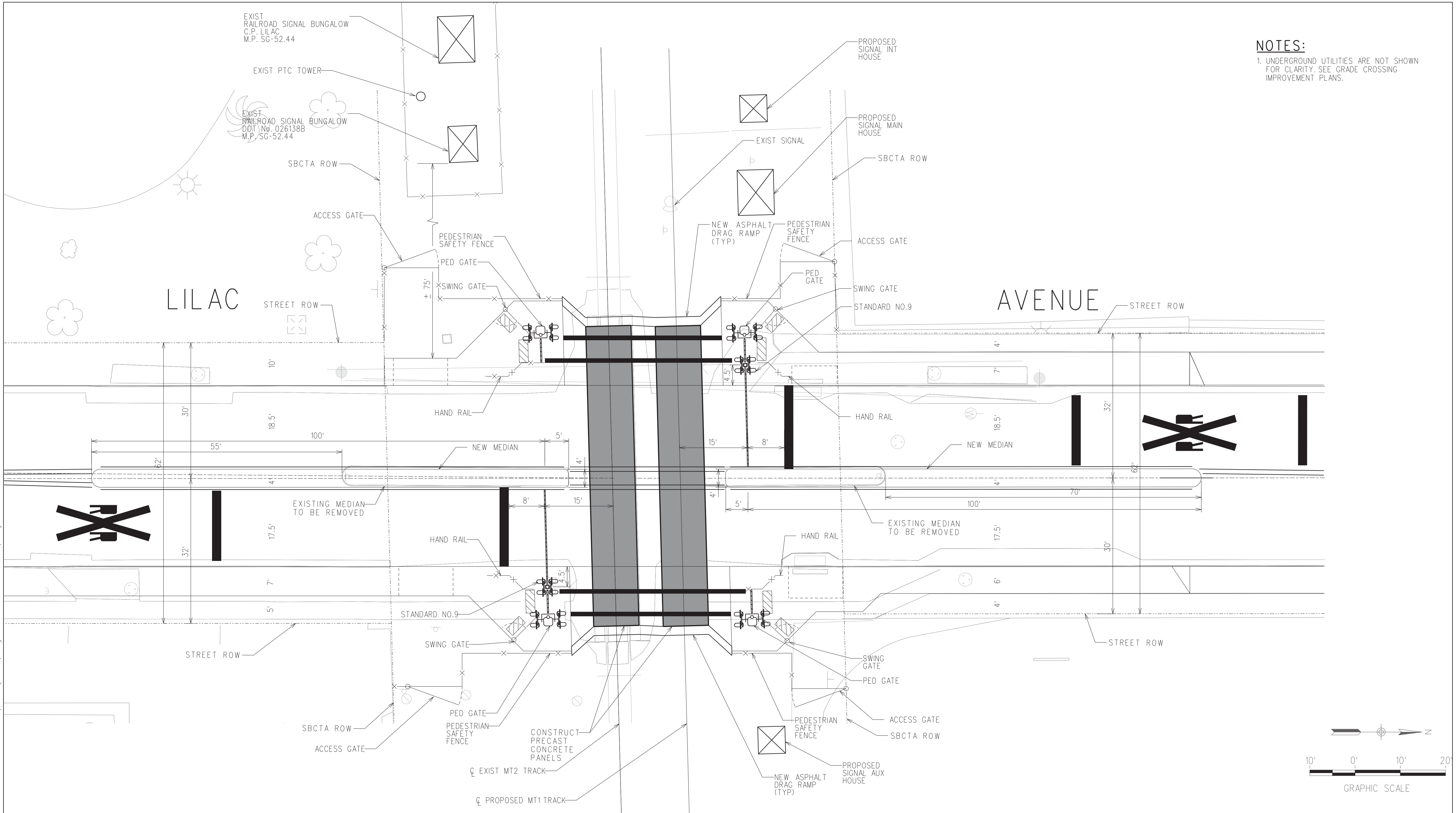
JMD PLANNING | ENGINEERING | MANAGEMENT 18645 East Gale Avenue, Suite 212 City of Industry, CA 91748 (626) 820-1137 Tel www.jmdiaz.com

SUBMITTED: PROJECT MANAGER

APPROVED:

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SIGNAGE AND STRIPING PLAN
CACTUS AVENUE
DOT No. 026139H M.P. SG-52.19

CONTRACT NO.	16-1001411
DRAWING NO.	CM-012
REVISION	A
SHEET NO.	79 OF 200
SCALE	HORIZ 1"=20' VERT 1"=4'



NOTES:

1. UNDERGROUND UTILITIES ARE NOT SHOWN FOR CLARITY. SEE GRADE CROSSING IMPROVEMENT PLANS.

FINAL 30% SUBMITTAL (06-29-2018)

GRADE CROSSING SHEET 4 OF 30

REV.	DATE		BY	SUB.	APP.

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY	A. ABAD
DRAWN BY	S. YAZDI
CHECKED BY	J. DIAZ
APPROVED BY	I. SALVATIERRA
DATE	06-29-2018

sb cta san bernardino county transportation authority

METROLINK

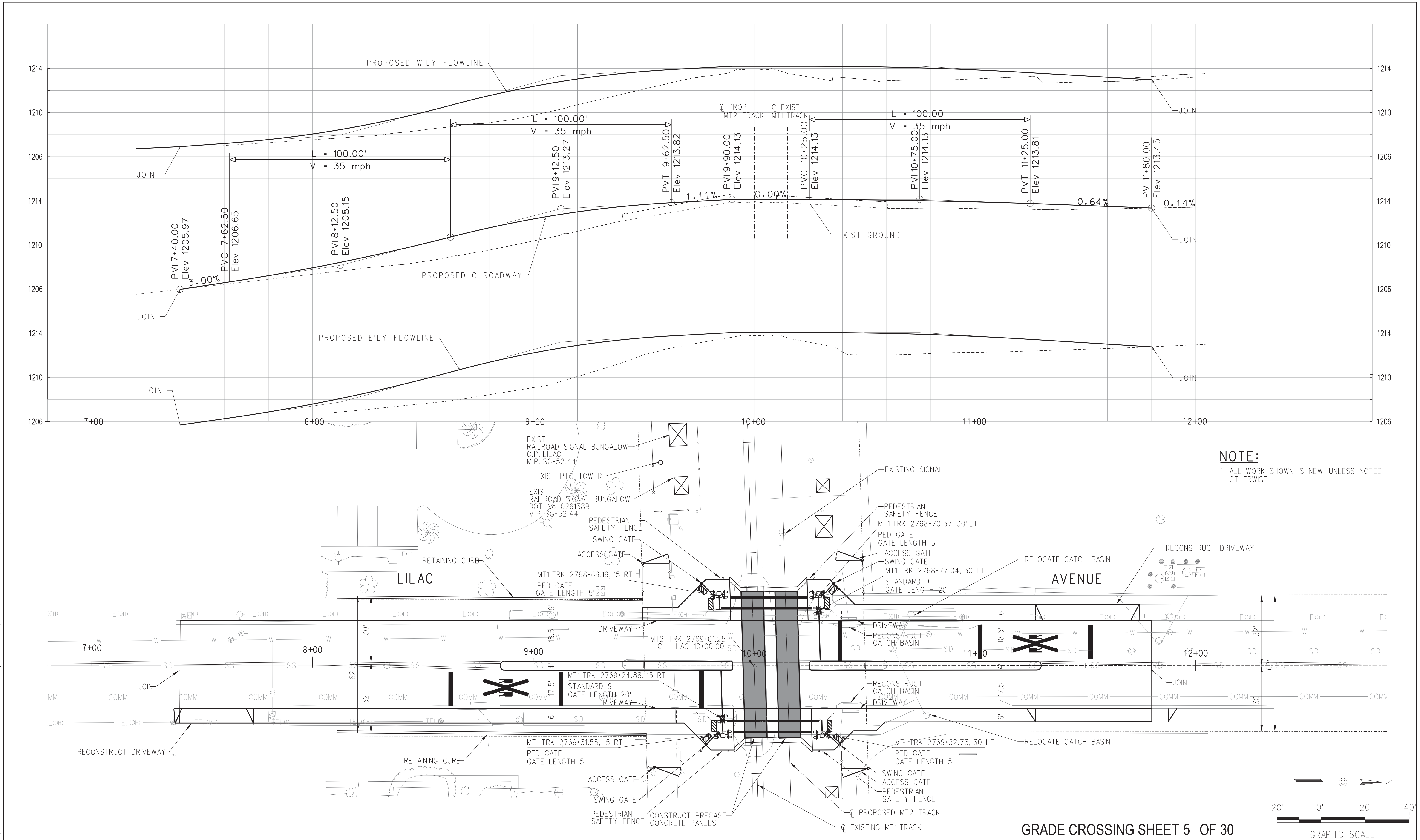
JMD PLANNING | ENGINEERING | MANAGEMENT
18645 East Gale Avenue, Suite 212
City of Industry, CA 91748
(626) 820-1137 Tel
www.jmdiaz.com

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
GRADE CROSSING EXHIBIT
S. LILAC AVENUE
DOT No. 026138B M.P. SG-52.44

CONTRACT NO.	16-1001411
DRAWING NO.	CJ-021
REVISION	A
SHEET NO.	80 OF 200
SCALE	HORIZ 1"=20'

09:28 AM on Tuesday, June 26, 2018 ISalvatierra
P:\2016\2016.0036.0002.00 SBCTA (Moffatt) Lilac to Rancho Double Track\Cadd\Sheets\CPUC Exhibits\1603602-02-Lilac.dgn
C:\ProgramData\Bentley\MicroStation V8i (SELECTseries)\WorkSpace\System\pltcfg\PlotStampFULL.tbl
C:\ProgramData\Bentley\MicroStation V8i (SELECTseries)\WorkSpace\System\pltcfg\SCCRA_D_Size_PDF_JMD.pltcfg



GRADE CROSSING SHEET 5 OF 30

FINAL 30% SUBMITTAL (06-29-2018)

REV.	DATE		BY	SUB.	APP.

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY	A. ABAD
DRAWN BY	S. YAZDI
CHECKED BY	J. DIAZ
APPROVED BY	I. SALVATIERRA
DATE	06-29-2018

sb cta san bernardino county transportation authority

METROLINK

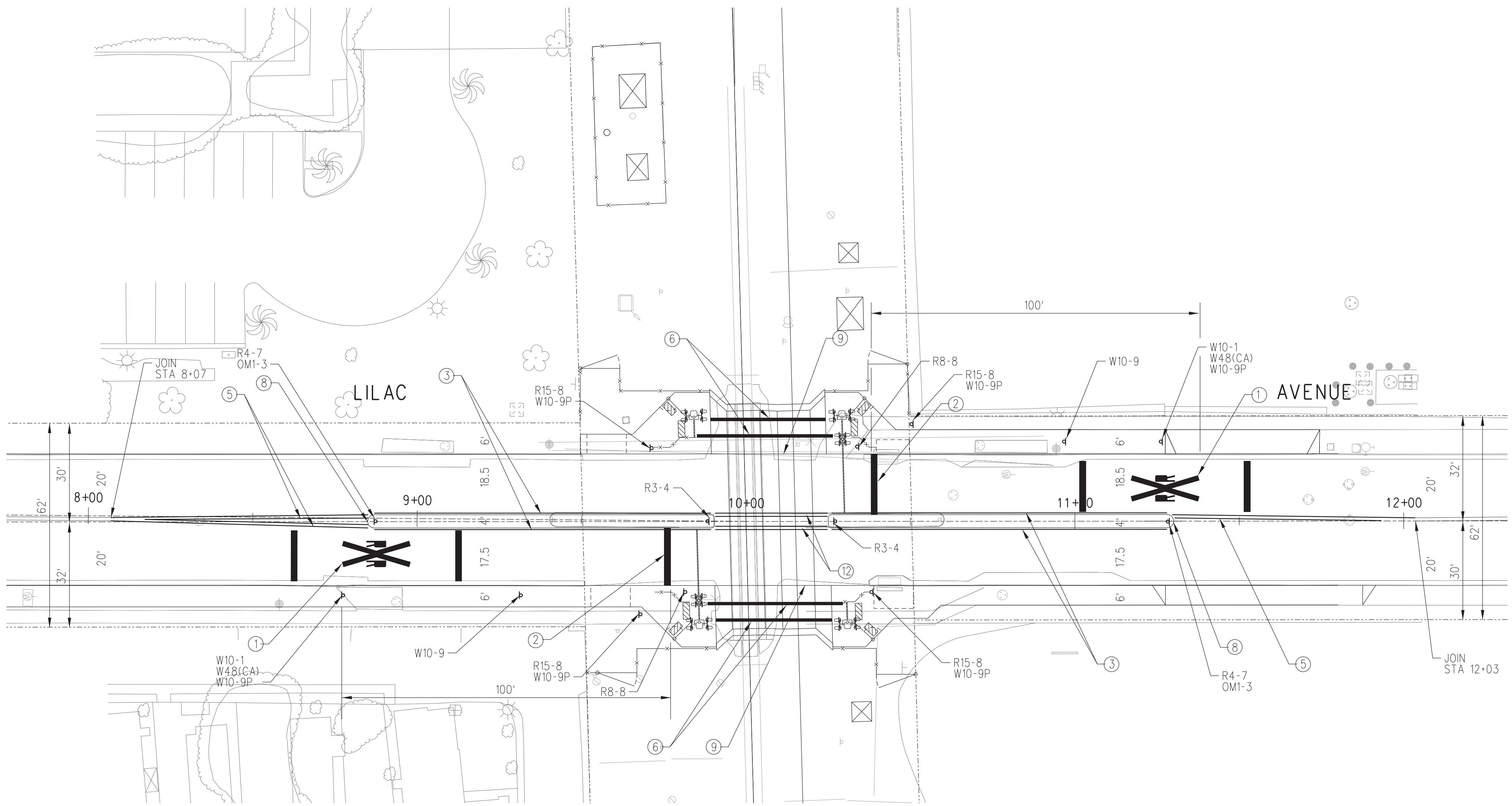
JMD PLANNING | ENGINEERING | MANAGEMENT 18645 East Gale Avenue, Suite 212 City of Industry, CA 91748 (626) 820-1137 Tel www.jmdiaz.com

SUBMITTED: PROJECT MANAGER

APPROVED:

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
GRADE CROSSING IMPROVEMENT PLAN & PROFILE
S. LILAC AVENUE
DOT NO. 026138B M.P. SG-52.44

CONTRACT NO.	16-1001411
DRAWING NO.	CM-021
REVISION	A
SHEET NO.	81 OF 200
SCALE	HORIZ 1"=20' VERT 1"=4'



MARKING NOTES

1. RAILROAD CROSSING SYMBOL PER CALTRANS A24B.
2. 24" SOLID WHITE STOP LINE PER CALTRANS STD PLAN A24B
3. 4" SOLID YELLOW MARKING AROUND MEDIAN PER CALTRANS STD PLAN A20B, DETAIL 24
5. 4" DOUBLE YELLOW PER CALTRANS STD PLAN A20B, DETAIL 29
6. 12" WHITE CROSSWALK LINE PER CALTRANS STD PLAN A24F
8. MEDIAN NOSE YELLOW WITH RAISED PAVEMENT MARKERS 2' O.C. STD PLAN A20B, TYPE "D".
9. PAVEMENT MARKING AND RAISED PAVEMENT MARKERS PER CALTRANS STD PLAN A20B, DETAIL 27B AS SHOWN IN SCRRA STD. ES4016
12. 4" DOUBLE YELLOW PER CALTRANS STD PLAN A20A, DETAIL 21 WITH RAISED PAVEMENT MARKERS TYPE H (YELLOW) SUPPLEMENT (TYP)

POSTED SPEED: 35 MPH

GRAPHIC SCALE 20' 0' 20' 40'

GRADE CROSSING SHEET 6 OF 30

FINAL 30% SUBMITTAL (06-29-2018)

REV.	DATE	BY	SUB.	APP.

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY A. ABAD
DRAWN BY S. YAZDI
CHECKED BY J. DIAZ
APPROVED BY I. SALVATIERRA
DATE 06-29-2018

sb cta — san bernardino county transportation authority

METROLINK.

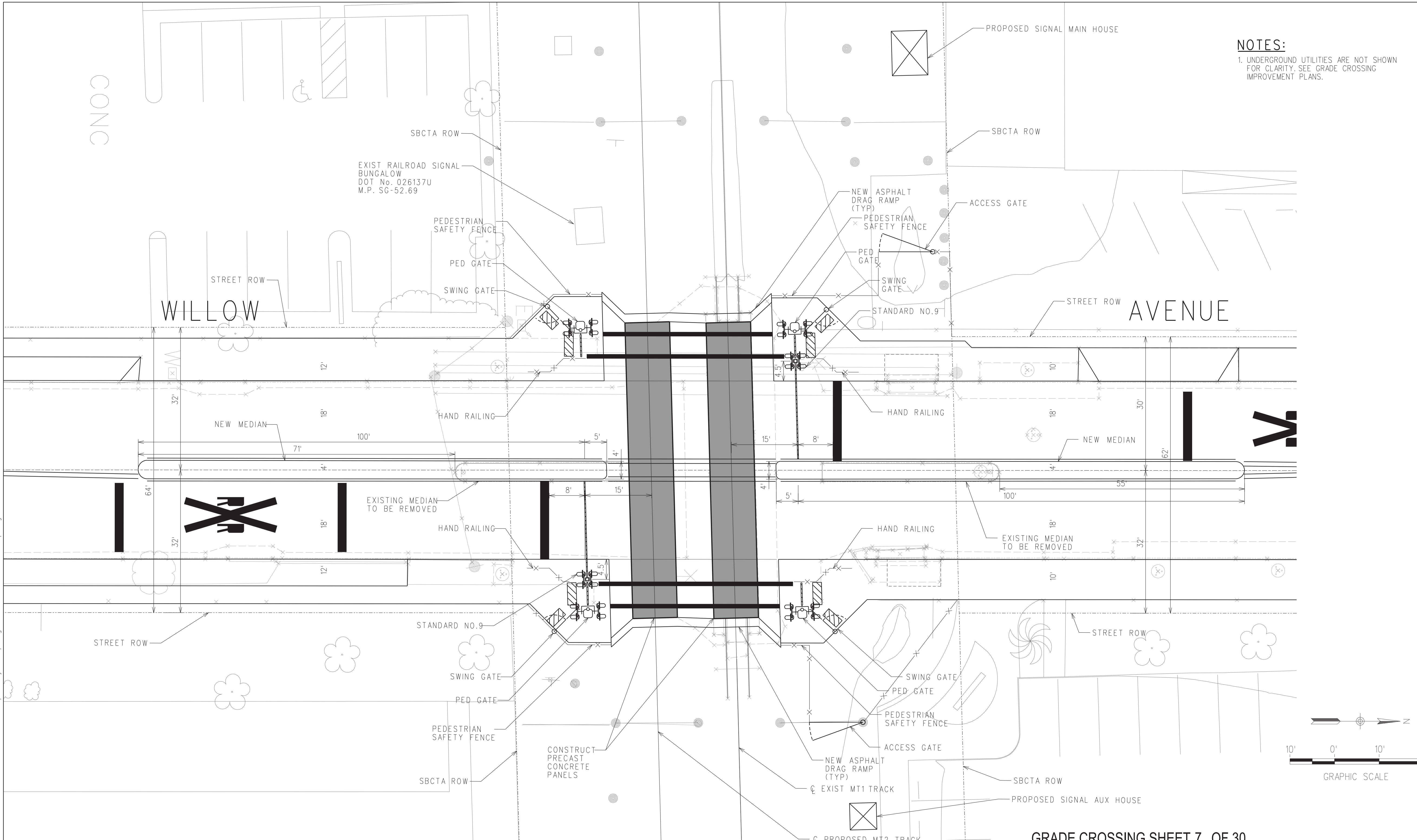
JMD PLANNING | ENGINEERING | MANAGEMENT
18645 East Gale Avenue, Suite 212
City of Industry, CA 91748
(626) 820-1137 Tel
www.jmdiaz.com

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SIGNAGE AND STRIPING PLAN
S. LILAC AVENUE
DOT No. 026138B M.P. SG-52.44

CONTRACT NO. 16-1001411
DRAWING NO. CM-022
REVISION A
SHEET NO. 82 OF 200
SCALE

09:25 AM on 29-Jun-2018 ISalvatierra
P:\2016\2016.0036.0002.00 SBCTA (Moffatt) Lilac to Rancho Double Track\Cadd\Sheets\Striping\1603602-02-Lilac_S&S.dgn
C:\ProgramData\Bentley\MicroStation V8i (SELECTseries)\WorkSpace\System\pltcfg\PlotStampFULL.tbl
C:\ProgramData\Bentley\MicroStation V8i (SELECTseries)\WorkSpace\System\pltcfg\SCCRA_D_Size_PDF_JMD.pltcfg



FINAL 30% SUBMITTAL (06-29-2018)

GRADE CROSSING SHEET 7 OF 30

REV.	DATE	BY	SUB.	APP.

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY	A. ABAD
DRAWN BY	S. YAZDI
CHECKED BY	J. DIAZ
APPROVED BY	I. SALVATIERRA
DATE	06-29-2018

sb cta — san bernardino county transportation authority

METROLINK.

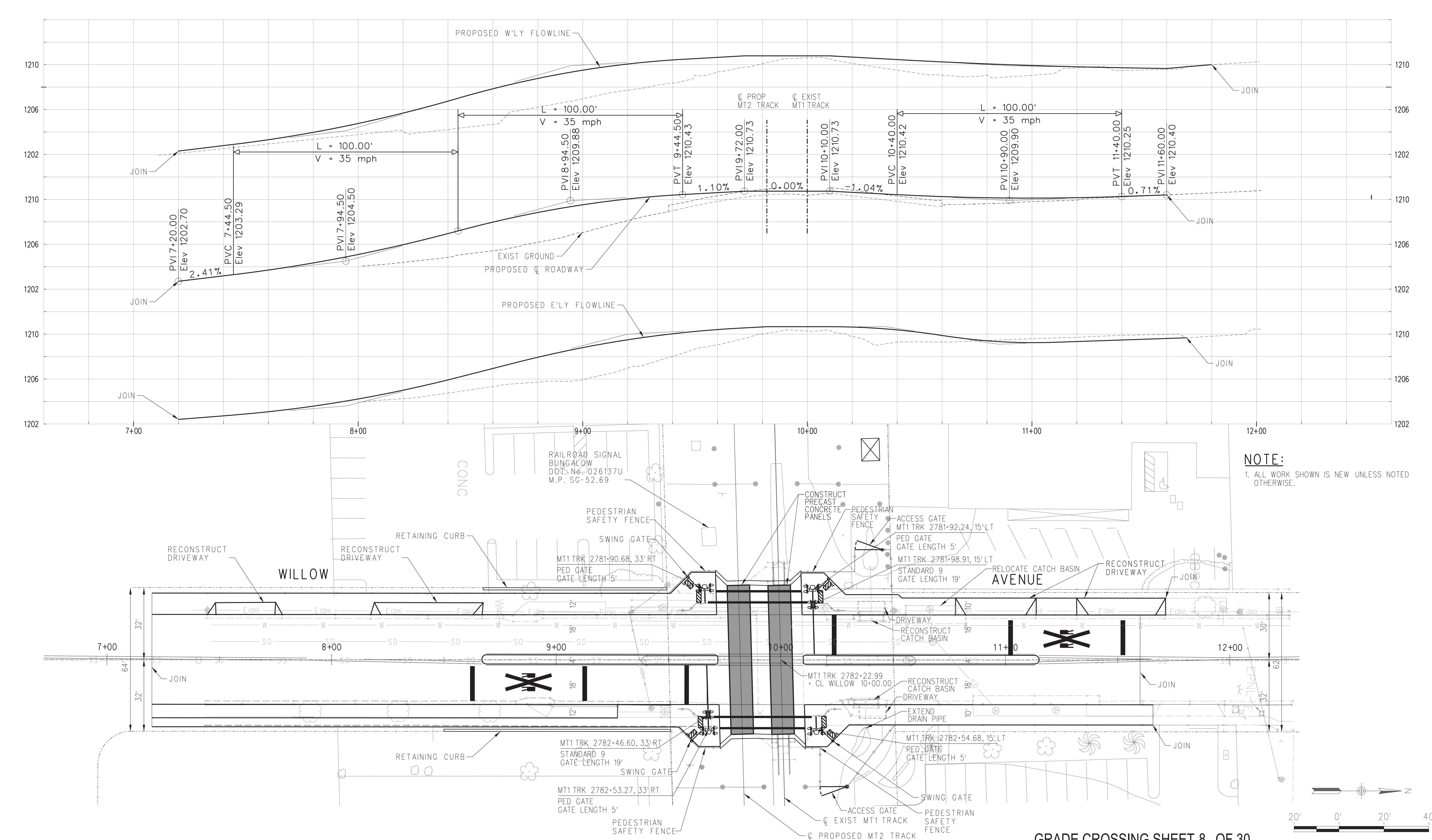
JMD PLANNING | ENGINEERING | MANAGEMENT
18645 East Gale Avenue, Suite 212
City of Industry, CA 91748
(626) 820-1137 Tel
www.jmdiaz.com

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
GRADE CROSSING EXHIBIT
S. WILLOW AVENUE
DOT No. 026137U M.P. SG-52.69

CONTRACT NO.	16-1001411
DRAWING NO.	CJ-031
REVISION	A
SHEET NO.	83 OF 200
SCALE	HORIZ 1"=20'

09:28 AM on Tuesday, June 28 2018 ISalvatierra
P:\2016\2016.0036.0002.00 SBCTA (Moffatt) Lilac to Rancho Double Track\Cadd\Sheets\CPUC Exhibits\1603602-03-Willow.dgn


PROPOSED W'LY FLOWLINE
JOIN
L = 100.00'
V = 35 mph
PVI 7+20.00 Elev 1202.70
PVC 7+44.50 Elev 1203.29
PVI 7+94.50 Elev 1204.50
PVI 8+94.50 Elev 1209.88
PVT 9+44.50 Elev 1210.43
PVI 9+72.00 Elev 1210.73
PVI 10+10.00 Elev 1210.73
PVC 10+40.00 Elev 1210.42
PVI 10+90.00 Elev 1209.90
PVT 11+40.00 Elev 1210.25
PVI 11+60.00 Elev 1210.40
℄ PROP MT2 TRACK
℄ EXIST MT1 TRACK
2.41%
1.10%
0.00%
-1.04%
0.71%
EXIST GROUND
PROPOSED ℄ ROADWAY
PROPOSED E'LY FLOWLINE
1210
1206
1202
7+00
8+00
9+00
10+00
11+00
12+00
RAILROAD SIGNAL BUNGALOW DOT No. 026137U M.P. SG-52.69
CONC
PEDESTRIAN SAFETY FENCE
SWING GATE
RETAINING CURB
RECONSTRUCT DRIVEWAY
WILLOW
AVENUE
MT1 TRK 2781+90.68, 33' RT
PED GATE GATE LENGTH 5'
CONSTRUCT PRECAST CONCRETE PANELS
ACCESS GATE MT1 TRK 2781+92.24, 15' LT
PED GATE GATE LENGTH 5'
MT1 TRK 2781+98.91, 15' LT
STANDARD 9 GATE LENGTH 19'
RELOCATE CATCH BASIN
DRIVEWAY
RECONSTRUCT CATCH BASIN
MT1 TRK 2782+22.99 = CL WILLOW 10+00.00
EXTEND DRAIN PIPE
MT1 TRK 2782+54.68, 15' LT
MT1 TRK 2782+46.60, 33' RT
STANDARD 9 GATE LENGTH 19'
MT1 TRK 2782+53.27, 33' RT
ACCESS GATE
℄ EXIST MT1 TRACK
℄ PROPOSED MT2 TRACK
NOTE:
1. ALL WORK SHOWN IS NEW UNLESS NOTED OTHERWISE.
20' 0' 20' 40'
GRAPHIC SCALE

FINAL 30% SUBMITTAL (06-29-2018)

GRADE CROSSING SHEET 8 OF 30

REV.	DATE	BY	SUB.	APP.

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY A. ABAD
DRAWN BY S. YAZDI
CHECKED BY J. DIAZ
APPROVED BY I. SALVATIERRA
DATE 06-29-2018

sb cta san bernardino county transportation authority

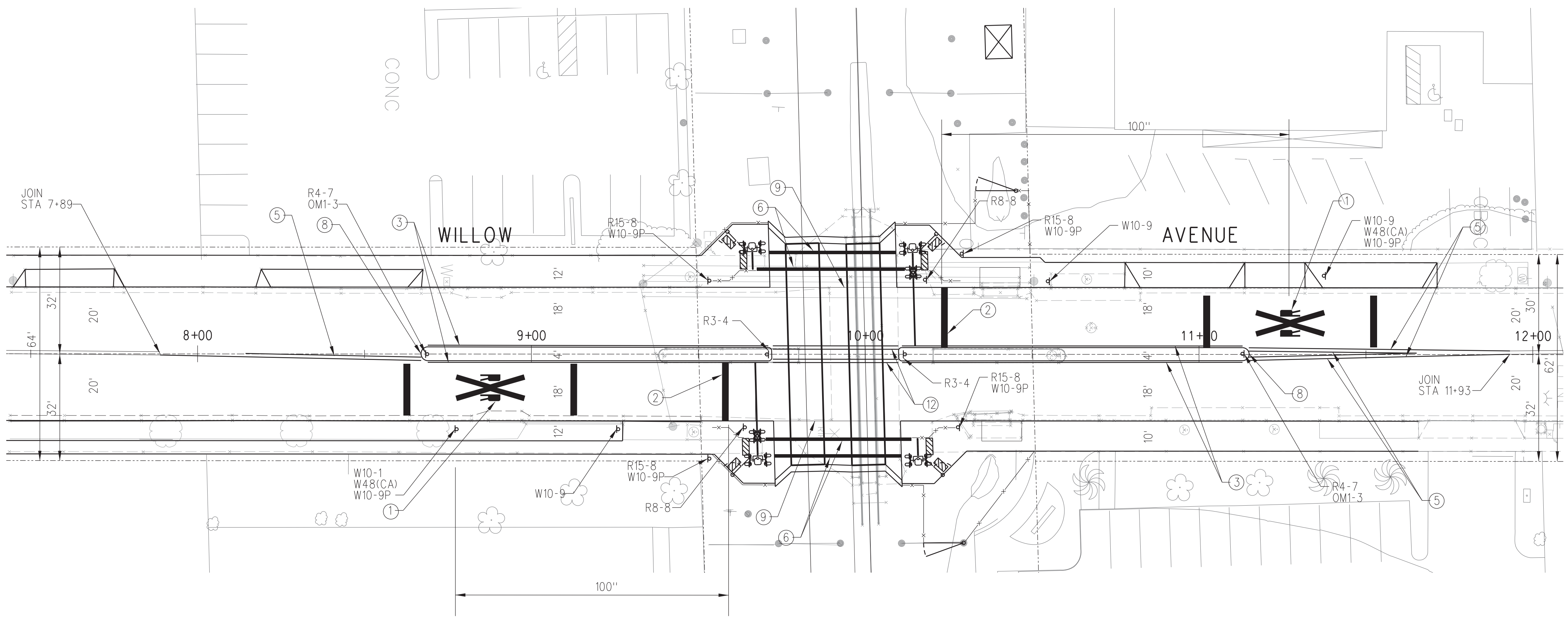
METROLINK

JMD PLANNING | ENGINEERING | MANAGEMENT
18645 East Gale Avenue, Suite 212
City of Industry, CA 91748

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT
GRADE CROSSING IMPROVEMENT PLAN & PROFILE
S. WILLOW AVENUE
DOT NO. 026137U M.P. SG-52.69

CONTRACT NO. 16-1001411
DRAWING NO. CM-031
REVISION A
SHEET NO. 84 OF 200
SCALE HORIZ 1"=20' VERT 1"=4'



FINAL 30% SUBMITTAL (06-29-2018)

MARKING NOTES

(1) RAILROAD CROSSING SYMBOL PER CALTRANS A24B.

(2) 24" SOLID WHITE STOP LINE PER CALTRANS STD PLAN A24B

(3) 4" SOLID YELLOW MARKING AROUND MEDIAN PER CALTRANS STD PLAN A20B, DETAIL 24

(5) 4" DOUBLE YELLOW PER CALTRANS STD PLAN A20B, DETAIL 29

(6) 12" WHITE CROSSWALK LINE PER CALTRANS STD PLAN A24F

(8) MEDIAN NOSE YELLOW WITH RAISED PAVEMENT MARKERS 2' O.C. STD PLAN A20B, TYPE "D".

(9) PAVEMENT MARKING AND RAISED PAVEMENT MARKERS PER CALTRANS STD PLAN A20B, DETAIL 27B AS SHOWN IN SCRRA STD. ES4016

(12) 4" DOUBLE YELLOW PER CALTRANS STD PLAN A20A, DETAIL 21 WITH RAISED PAVEMENT MARKERS TYPE H (YELLOW) SUPPLEMENT (TYP)

POSTED SPEED: 35 MPH

GRADE CROSSING SHEET 9 OF 30

GRAPHIC SCALE 20' 0' 20' 40'

REV.	DATE	BY	SUB.	APP.

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY A. ABAD
DRAWN BY S. YAZDI
CHECKED BY J. DIAZ
APPROVED BY I. SALVATIERRA
DATE 06-29-2018

sbcta san bernardino county transportation authority

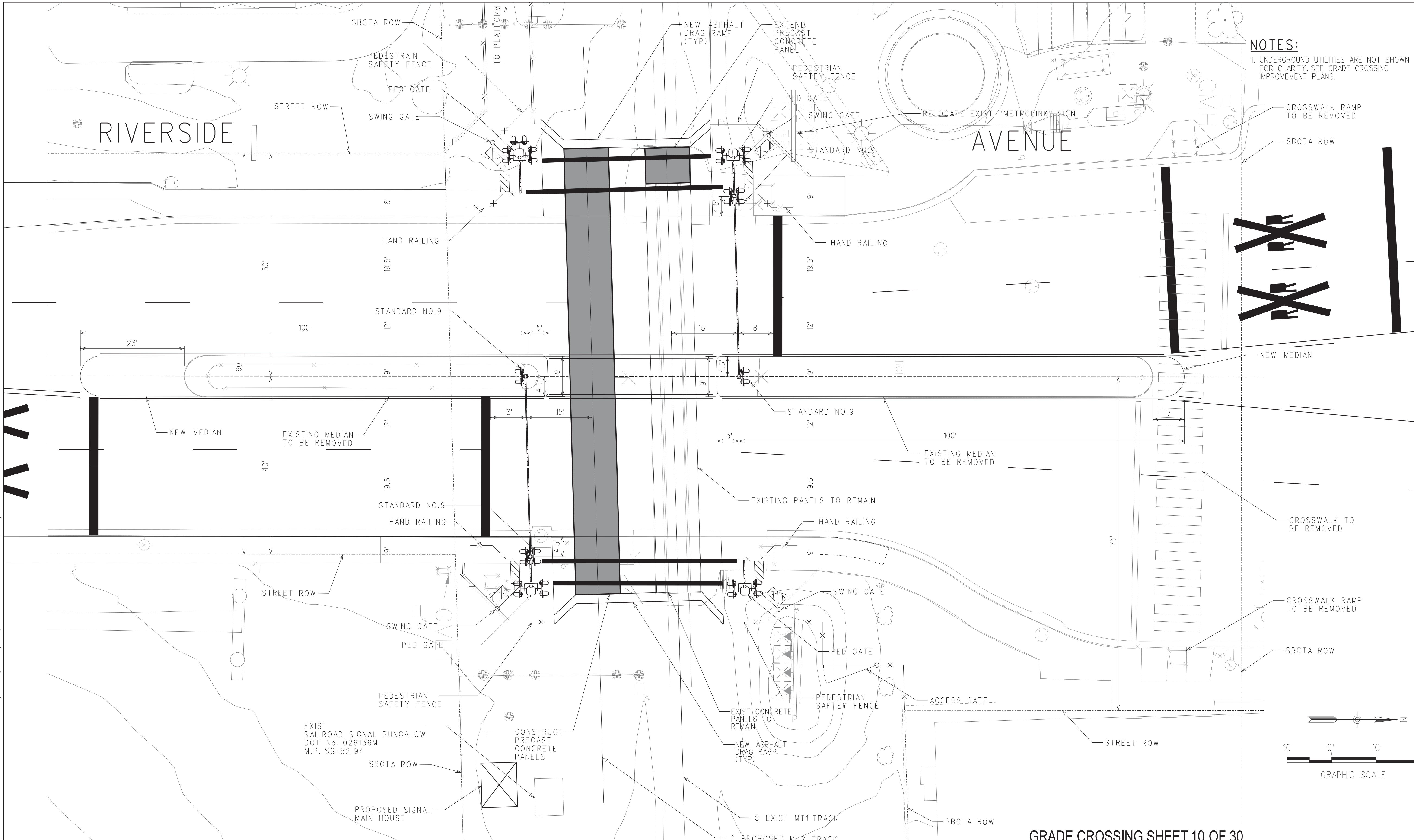
METROLINK

JMD PLANNING | ENGINEERING | MANAGEMENT
18645 East Gale Avenue, Suite 212
City of Industry, CA 91748
(626) 820-1137 Tel
www.jmdiaz.com

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SIGNAGE AND STRIPING PLAN
S. WILLOW AVENUE
DOT No. 026137U M.P. SG-52.69

CONTRACT NO. 16-1001411
DRAWING NO. CM-032
REVISION A
SHEET NO. 85 OF 200
SCALE



GRADE CROSSING SHEET 10 OF 30

REV.	DATE		BY	SUB.	APP.

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY A. ABAD
DRAWN BY S. YAZDI
CHECKED BY J. DIAZ
APPROVED BY I. SALVATIERRA
DATE 06-29-2018

sb cta — san bernardino county transportation authority

METROLINK

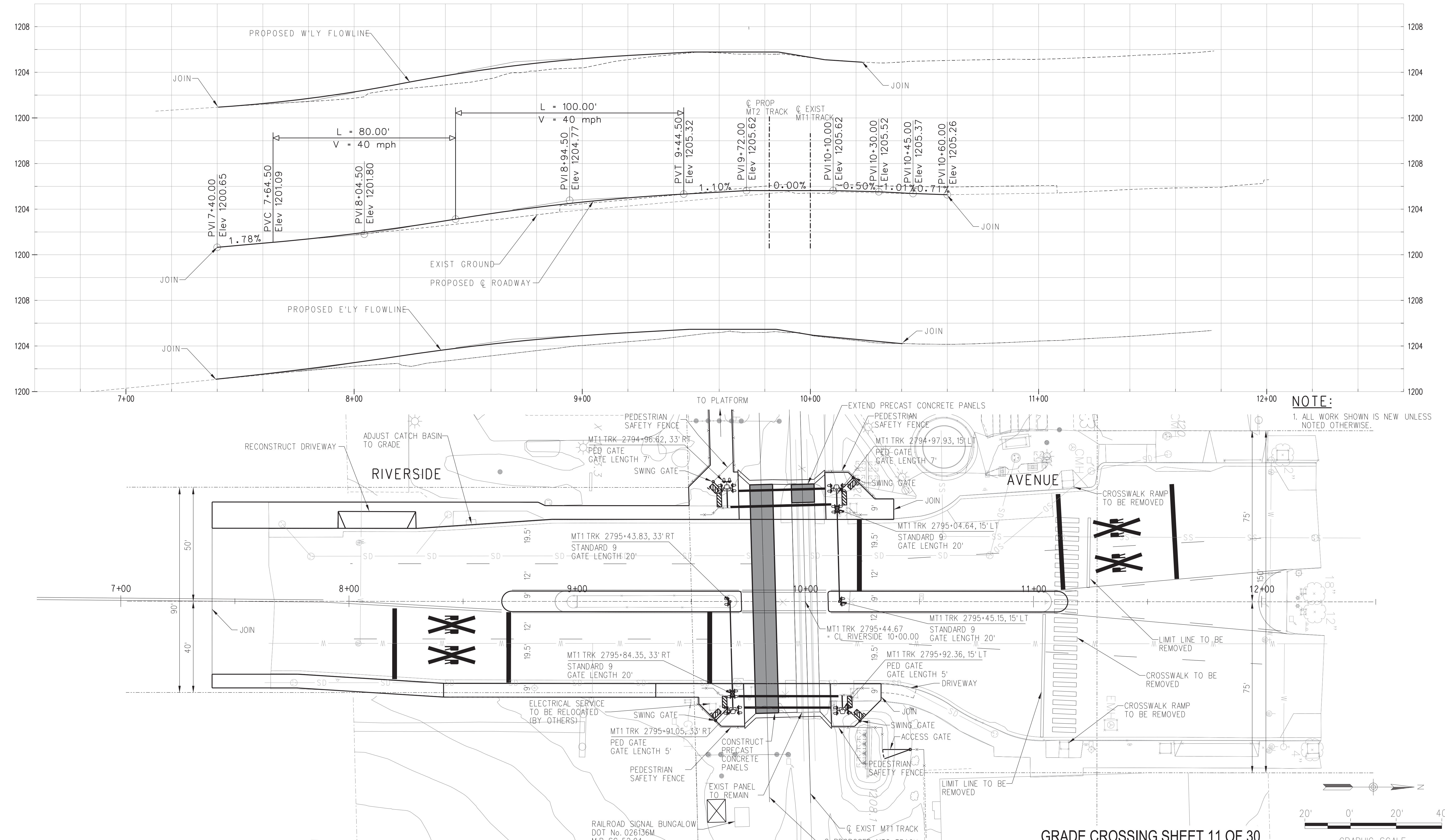
JMD PLANNING | ENGINEERING | MANAGEMENT
18645 East Gale Avenue, Suite 212
City of Industry, CA 91748
(626) 820-1137 Tel
www.jmdiaz.com

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT

GRADE CROSSING EXHIBIT
S. RIVERSIDE AVENUE
DOT No. 026136M M.P. SG-52.94

CONTRACT NO. 16-1001411
DRAWING NO. CJ-041
REVISION A
SHEET NO. 86 OF 200
SCALE HORIZ 1"=20'



GRADE CROSSING SHEET 11 OF 30

FINAL 30% SUBMITTAL (06-29-2018)

REV.	DATE	BY	SUB.	APP.

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY	A. ABAD
DRAWN BY	S. YAZDI
CHECKED BY	J. DIAZ
APPROVED BY	I. SALVATIERRA
DATE	06-29-2018

sb cta — san bernardino county transportation authority

METROLINK

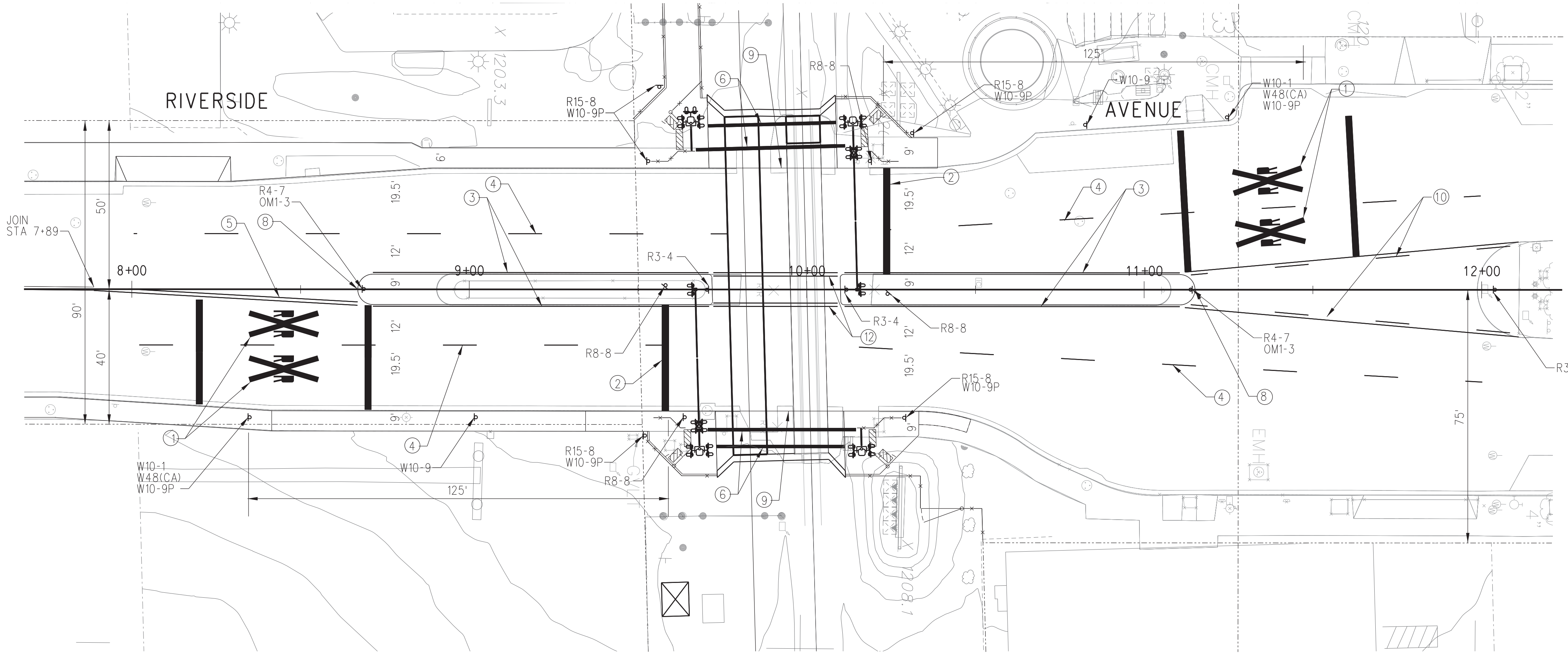
JMD — PLANNING | ENGINEERING | MANAGEMENT
18645 East Gale Avenue, Suite 212
City of Industry, CA 91748
(626) 820-1137 Tel
www.jmdiaz.com

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

GRADE CROSSING IMPROVEMENT PLAN & PROFILE
S. RIVERSIDE AVENUE
DOT No. 026136M M.P. SG-52.94

CONTRACT NO.	16-1001411
DRAWING NO.	CM-041
REVISION	A
SHEET NO.	87 OF 200
SCALE	HORIZ 1"=20' VERT 1"=4'



FINAL 30% SUBMITTAL (06-29-2018)

MARKING NOTES

1. RAILROAD CROSSING SYMBOL PER CALTRANS A24B.
2. 24" SOLID WHITE STOP LINE PER CALTRANS STD PLAN A24B
3. 4" SOLID YELLOW MARKING AROUND MEDIAN PER CALTRANS STD PLAN A20B, DETAIL 24
4. 4" WHITE LANE LINE MARKING PER CALTRANS STD PLAN A20A, DETAIL 9
5. 4" DOUBLE YELLOW PER CALTRANS STD PLAN A20B, DETAIL 29
6. 12" WHITE CROSSWALK LINE PER CALTRANS STD PLAN A24F
8. MEDIAN NOSE YELLOW WITH RAISED PAVEMENT MARKERS 2' O.C. STD PLAN A20B, TYPE "D".
9. PAVEMENT MARKING AND RAISED PAVEMENT MARKERS PER CALTRANS STD PLAN A20B, DETAIL 27B AS SHOWN IN SCRRA STD. ES4016
10. 4" DOUBLE YELLOW TWO-WAY LEFT TURN LANE PER CALTRANS STD PLAN A20B, DETAIL 32
12. 4" DOUBLE YELLOW PER CALTRANS STD PLAN A20A, DETAIL 21 WITH RAISED PAVEMENT MARKERS TYPE H (YELLOW) SUPPLEMENT (TYP)

POSTED SPEED: 40 MPH

20' 0' 20' 40'

GRAPHIC SCALE

GRADE CROSSING SHEET 12 OF 30

REV.	DATE		BY	SUB.	APP.

DESIGNED BY A. ABAD
DRAWN BY S. YAZDI
CHECKED BY J. DIAZ
APPROVED BY I. SALVATIERRA
DATE 06-29-2018

sb cta san bernardino county transportation authority

METROLINK.

JMD PLANNING | ENGINEERING | MANAGEMENT
18645 East Gale Avenue, Suite 212
City of Industry, CA 91748
(626) 820-1137 Tel
www.jmdiaz.com

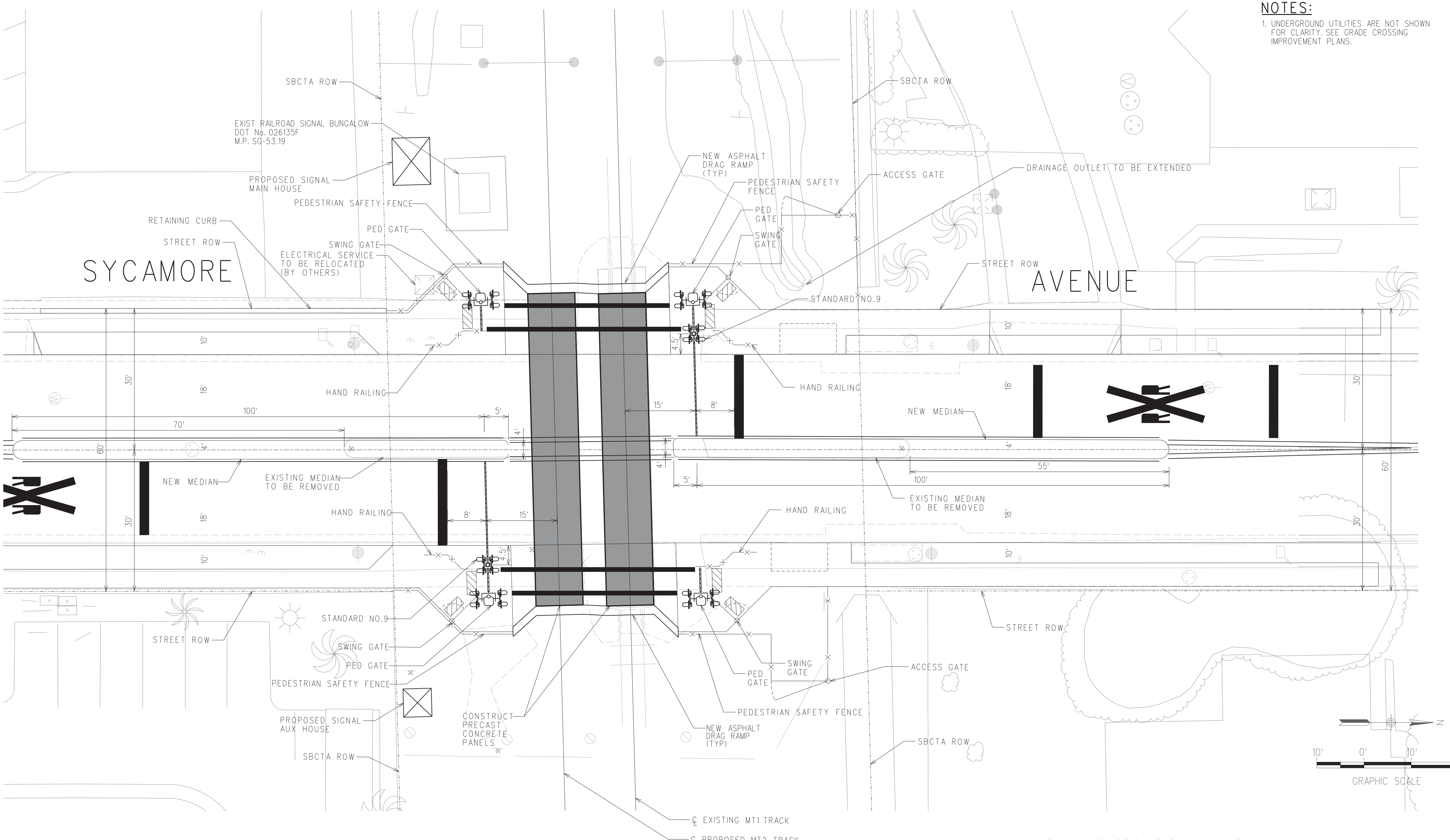
SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SIGNAGE AND STRIPING PLAN
S. RIVERSIDE AVENUE
DOT No. 026136M M.P. SG-52.94

CONTRACT NO. 16-1001411
DRAWING NO. CM-042
REVISION A
SHEET NO. 88 OF 200
SCALE

NOTES:

1. UNDERGROUND UTILITIES ARE NOT SHOWN FOR CLARITY. SEE GRADE CROSSING IMPROVEMENT PLANS.



FINAL 30% SUBMITTAL (06-29-2018)

10:51 AM on Thursday, June 28, 2018 · ISalvatierra
P:\2016\0036.0002.00 SBCTA (Moffatt) Lilac to Rancho Double Track\Cadd\Sheets\CPUC Exhibits\1603602-05-Sycamore.dgn
C:\ProgramData\Bentley\MicroStation V8i(SELECTseries)\WorkSpace\System\pltcfg\PlotStampFULL.tbl
C:\ProgramData\Bentley\MicroStation V8i(SELECTseries)\WorkSpace\System\pltcfg\SCCRA_D_Size_PDF_JMD.pltcfg

GRADE CROSSING SHEET 13 OF 30

REV.	DATE	BY	SUB.	APP.

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY A. ABAD
DRAWN BY S. YAZDI
CHECKED BY J. DIAZ
APPROVED BY I. SALVATIERRA
DATE 06-29-2018

sbcta — san bernardino county transportation authority

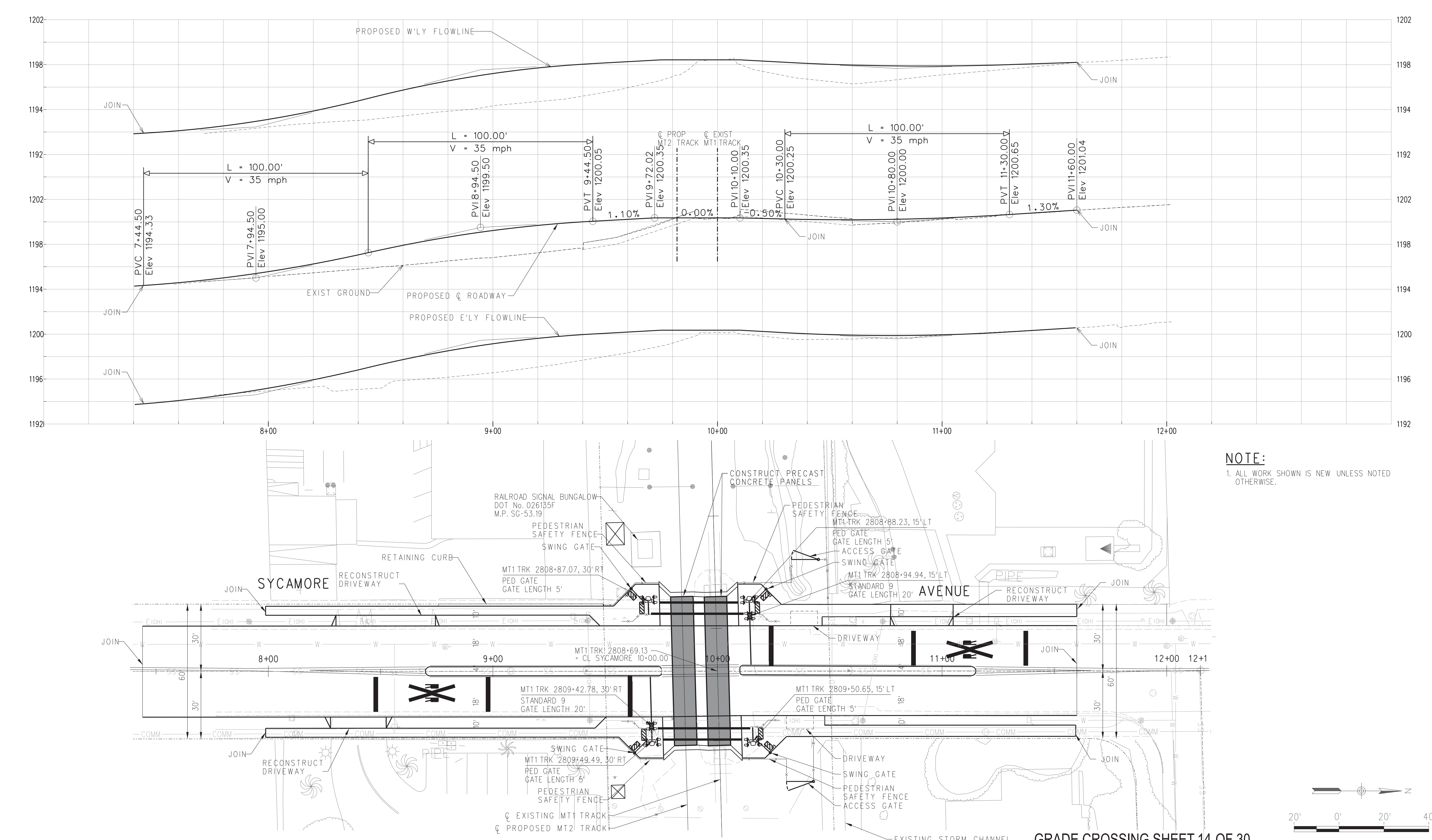
METROLINK.

JMD — PLANNING | ENGINEERING | MANAGEMENT
18645 East Gale Avenue, Suite 212
City of Industry, CA 91748
(626) 820-1137 Tel
www.jmdiaz.com

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
GRADE CROSSING EXHIBIT
S. SYCAMORE AVENUE
DOT No. 026135F M.P. SG-53.19

CONTRACT NO. 16-1001411
DRAWING NO. CJ-051
REVISION A
SHEET NO. 89 OF 200
SCALE HORIZ 1"=20'



FINAL 30% SUBMITTAL (06-29-2018)

GRADE CROSSING SHEET 14 OF 30

INFORMATION CONFIDENTIAL	DESIGNED BY	A. ABAD
All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.	DRAWN BY	S. YAZDI
	CHECKED BY	J. DIAZ
	APPROVED BY	I. SALVATIERRA
	DATE	06-29-2018

REV. | DATE | BY | SUB. | APP.

sbcta san bernardino county transportation authority

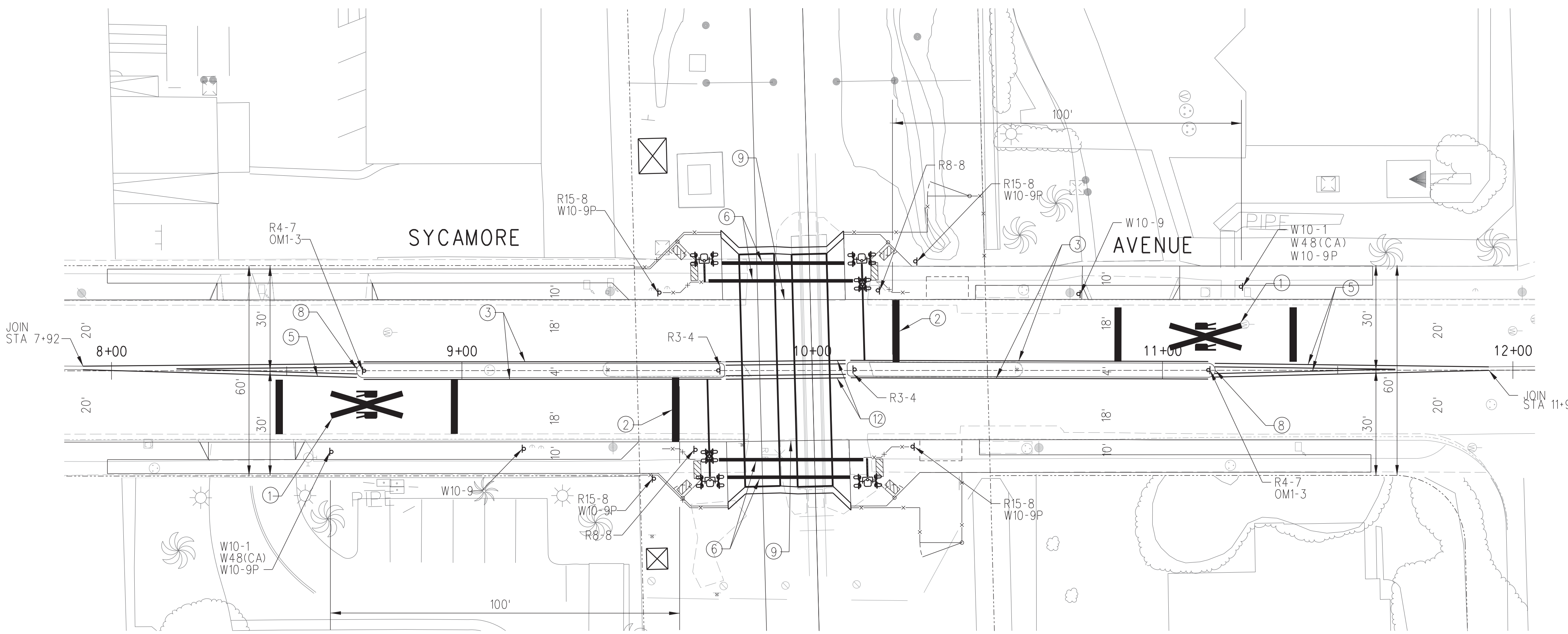
METROLINK.

JMD PLANNING | ENGINEERING | MANAGEMENT
18645 East Gale Avenue, Suite 212
City of Industry, CA 91748
(626) 820-1137 Tel
www.jmdiaz.com

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
GRADE CROSSING IMPROVEMENT PLAN & PROFILE
S. SYCAMORE AVENUE
DOT NO. 026135F M.P. SG-53.19

CONTRACT NO. 16-1001411
DRAWING NO. CM-051
REVISION A
SHEET NO. 90 OF 200
SCALE HORIZ 1"=20' VERT 1"=4'



MARKING NOTES

1. RAILROAD CROSSING SYMBOL PER CALTRANS A24B.
2. 24" SOLID WHITE STOP LINE PER CALTRANS STD PLAN A24B
3. 4" SOLID YELLOW MARKING AROUND MEDIAN PER CALTRANS STD PLAN A20B, DETAIL 24
5. 4" DOUBLE YELLOW PER CALTRANS STD PLAN A20B, DETAIL 29
6. 12" WHITE CROSSWALK LINE PER CALTRANS STD PLAN A24F
8. MEDIAN NOSE YELLOW WITH RAISED PAVEMENT MARKERS 2' O.C. STD PLAN A20B, TYPE "D".
9. PAVEMENT MARKING AND RAISED PAVEMENT MARKERS PER CALTRANS STD PLAN A20B, DETAIL 27B AS SHOWN IN SCRRA STD. ES4016
12. 4" DOUBLE YELLOW PER CALTRANS STD PLAN A20A, DETAIL 21 WITH RAISED PAVEMENT MARKERS TYPE H (YELLOW) SUPPLEMENT (TYP)

POSTED SPEED: 35 MPH

GRAPHIC SCALE: 20' 0' 20' 40'

FINAL 30% SUBMITTAL (06-29-2018)

GRADE CROSSING SHEET 15 OF 30

REV.	DATE	BY SUB.	APP.

DESIGNED BY A. ABAD
DRAWN BY S. YAZDI
CHECKED BY J. DIAZ
APPROVED BY I. SALVATIERRA
DATE 06-29-2018

sb cta san bernardino county transportation authority

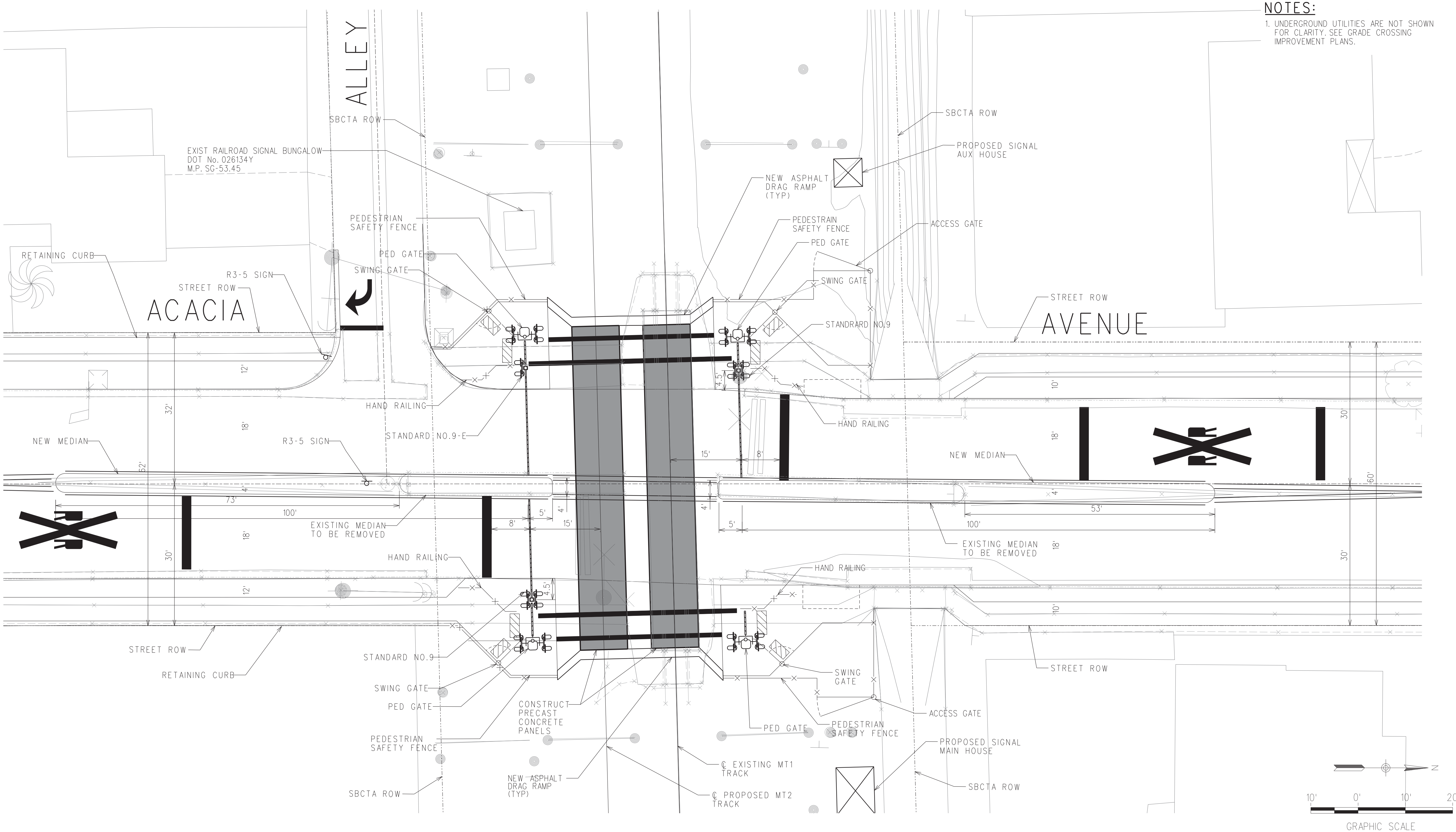
METROLINK.

JMD PLANNING | ENGINEERING | MANAGEMENT
18645 East Gale Avenue, Suite 212
City of Industry, CA 91748
(626) 820-1137 Tel
www.jmdiaz.com

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SIGNAGE AND STRIPING PLAN
S. SYCAMORE AVENUE
DOT No. 026135F M.P. SG-53.19

CONTRACT NO. 16-1001411
DRAWING NO. CM-052
REVISION A
SHEET NO. 91 OF 200
SCALE



FINAL 30% SUBMITTAL (06-29-2018)

09:33 AM on Thursday, June 28, 2018 ISalvatierra
P:\2016\2016.0036.0002.00 SBCTA (Moffatt) Lilac to Rancho Double Track\Cadd\Sheets\CPUC Exhibits\1603602-06-Acacia.dgn
C:\ProgramData\Bentley\MicroStation V8i(SELECTseries)\WorkSpace\System\pltcfg\PlotStampFULL.tbl
C:\ProgramData\Bentley\MicroStation V8i(SELECTseries)\WorkSpace\System\pltcfg\SCCRA_D_Size_PDF_JMD.pltcfg

GRADE CROSSING SHEET 16 OF 30

REV.	DATE	BY	SUB.	APP.

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential; and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY	A. ABAD
DRAWN BY	S. YAZDI
CHECKED BY	J. DIAZ
APPROVED BY	I. SALVATIERRA
DATE	06-29-2018

sbcta
san bernardino county transportation authority

METROLINK

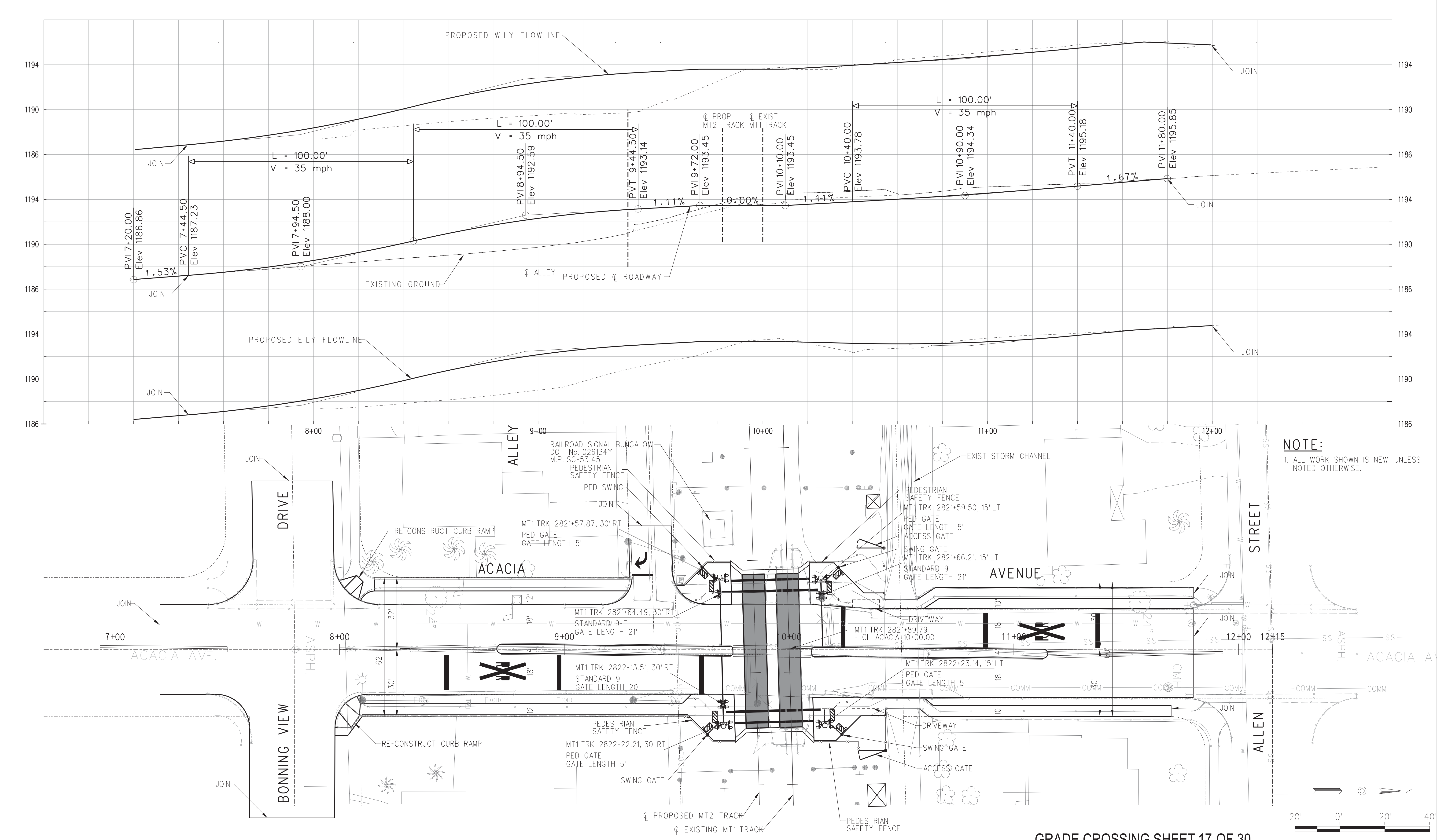
JMD
PLANNING | ENGINEERING | MANAGEMENT
18645 East Gale Avenue, Suite 212
City of Industry, CA 91748
(626) 820-1137 Tel
www.jmdiaz.com

SUBMITTED: ________ PROJECT MANAGER

APPROVED: ________

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
GRADE CROSSING EXHIBIT
S. ACACIA AVENUE
DOT No. 026134Y M.P. SG-53.45

CONTRACT NO.	16-1001411
DRAWING NO.	CJ-061
REVISION	A
SHEET NO.	92 OF 200
SCALE	HORIZ 1"=20'



FINAL 30% SUBMITTAL (06-29-2018)

GRADE CROSSING SHEET 17 OF 30

INFORMATION CONFIDENTIAL	All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.
DESIGNED BY	A. ABAD
DRAWN BY	S. YAZDI
CHECKED BY	J. DIAZ
APPROVED BY	I. SALVATIERRA
DATE	06-29-2018

REV. | DATE | BY | SUB. | APP.

sb cta san bernardino county transportation authority

METROLINK

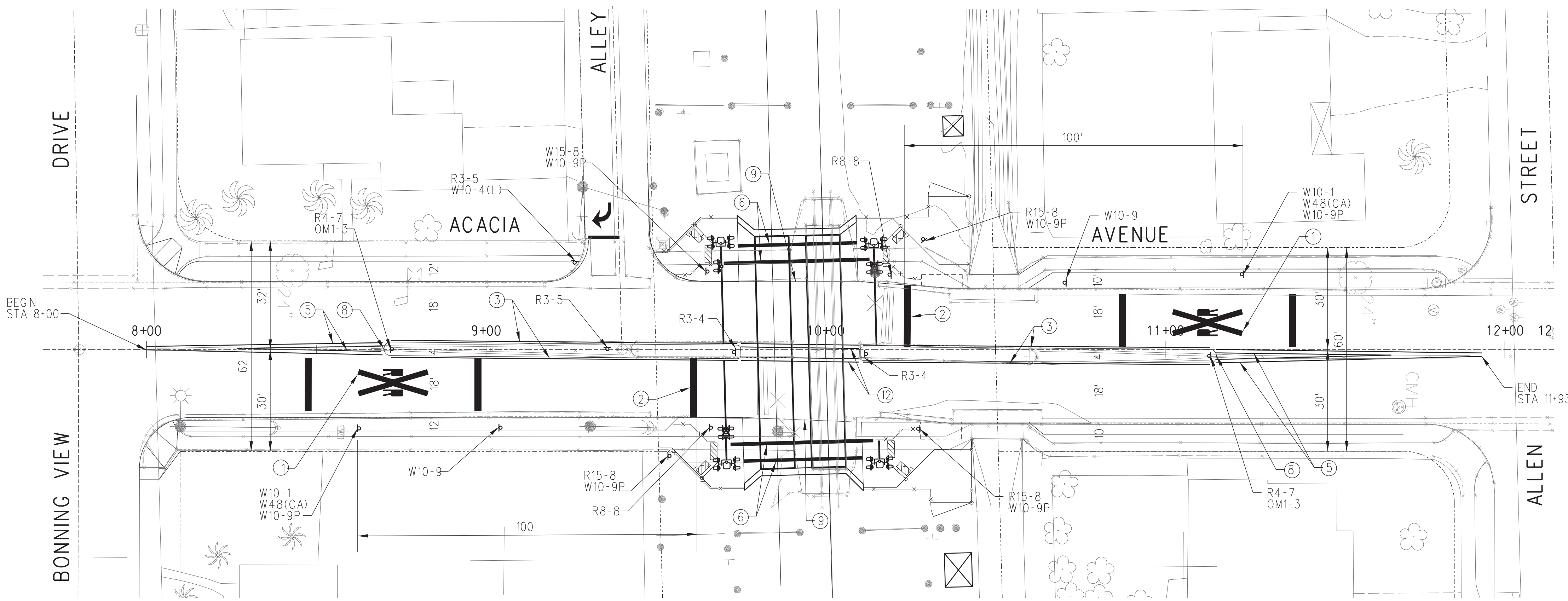
JMD PLANNING | ENGINEERING | MANAGEMENT 18645 East Gale Avenue, Suite 212 City of Industry, CA 91748 (626) 820-1137 Tel www.jmdiaz.com

SUBMITTED: PROJECT MANAGER

APPROVED:

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
GRADE CROSSING IMPROVEMENT PLAN & PROFILE
S. ACACIA AVENUE
DOT NO. 026134Y M.P. SG-53.45

CONTRACT NO.	16-1001411
DRAWING NO.	CM-061
REVISION	A
SHEET NO.	93 OF 200
SCALE	HORIZ 1"=20' VERT 1"=4'



MARKING NOTES

1. RAILROAD CROSSING SYMBOL PER CALTRANS A24B.
2. 24" SOLID WHITE STOP LINE PER CALTRANS STD PLAN A24B
3. 4" SOLID YELLOW MARKING AROUND MEDIAN PER CALTRANS STD PLAN A20B, DETAIL 24
5. 4" DOUBLE YELLOW PER CALTRANS STD PLAN A20B, DETAIL 29
6. 12" WHITE CROSSWALK LINE PER CALTRANS STD PLAN A24F
8. MEDIAN NOSE YELLOW WITH RAISED PAVEMENT MARKERS 2' O.C. STD PLAN A20B, TYPE "D".
9. PAVEMENT MARKING AND RAISED PAVEMENT MARKERS PER CALTRANS STD PLAN A20B, DETAIL 27B AS SHOWN IN SCRRA STD. ES4016
12. 4" DOUBLE YELLOW PER CALTRANS STD PLAN A20A, DETAIL 21 WITH RAISED PAVEMENT MARKERS TYPE H (YELLOW) SUPPLEMENT (TYP)

POSTED SPEED: 35 MPH

GRAPHIC SCALE 20' 0' 20' 40'

FINAL 30% SUBMITTAL (06-29-2018)

GRADE CROSSING SHEET 18 OF 30

DESIGNED BY	A. ABAD
DRAWN BY	S. YAZDI
CHECKED BY	J. DIAZ
APPROVED BY	I. SALVATIERRA
DATE	06-29-2018

REV. | DATE | BY | SUB. | APP.

sb cta — san bernardino county transportation authority

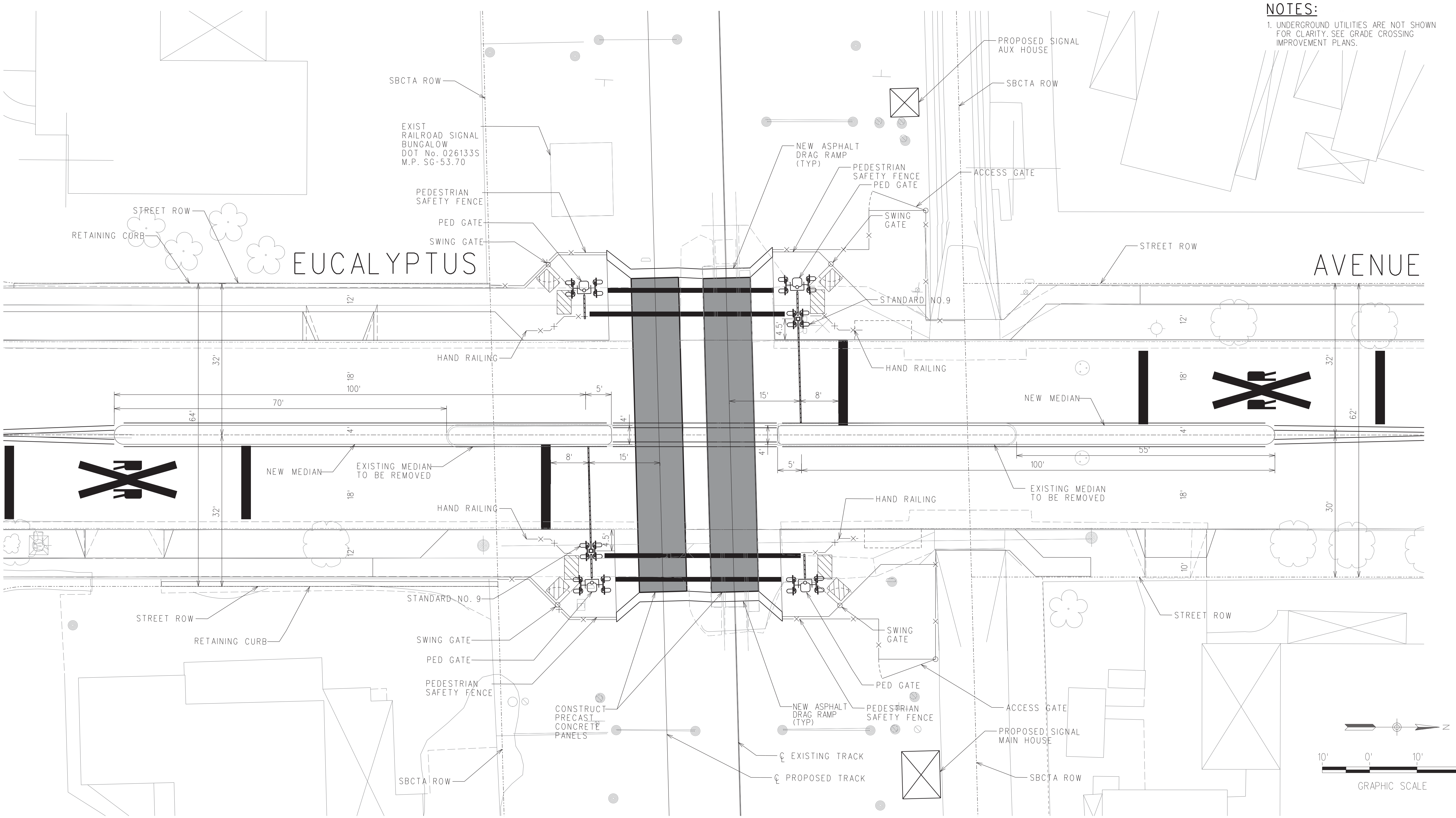
METROLINK

JMD — PLANNING | ENGINEERING | MANAGEMENT, 18645 East Gale Avenue, Suite 212, City of Industry, CA 91748, (626) 820-1137 Tel, www.jmdiaz.com

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SIGNAGE AND STRIPING PLAN
S. ACACIA AVENUE
DOT No. 026134Y M.P. SG-53.45

CONTRACT NO. 16-1001411
DRAWING NO. CM-062
REVISION A
SHEET NO. 94 OF 200
SCALE



NOTES:

1. UNDERGROUND UTILITIES ARE NOT SHOWN FOR CLARITY. SEE GRADE CROSSING IMPROVEMENT PLANS.

FINAL 30% SUBMITTAL (06-29-2018)

GRADE CROSSING SHEET 19 OF 30

REV.	DATE	BY	SUB.	APP.

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY A. ABAD
DRAWN BY S. YAZDI
CHECKED BY J. DIAZ
APPROVED BY I. SALVATIERRA
DATE 06-29-2018

sb cta — san bernardino county transportation authority

METROLINK

JMD — PLANNING | ENGINEERING | MANAGEMENT — 18645 East Gale Avenue, Suite 212, City of Industry, CA 91748, (626) 820-1137 Tel, www.jmdiaz.com

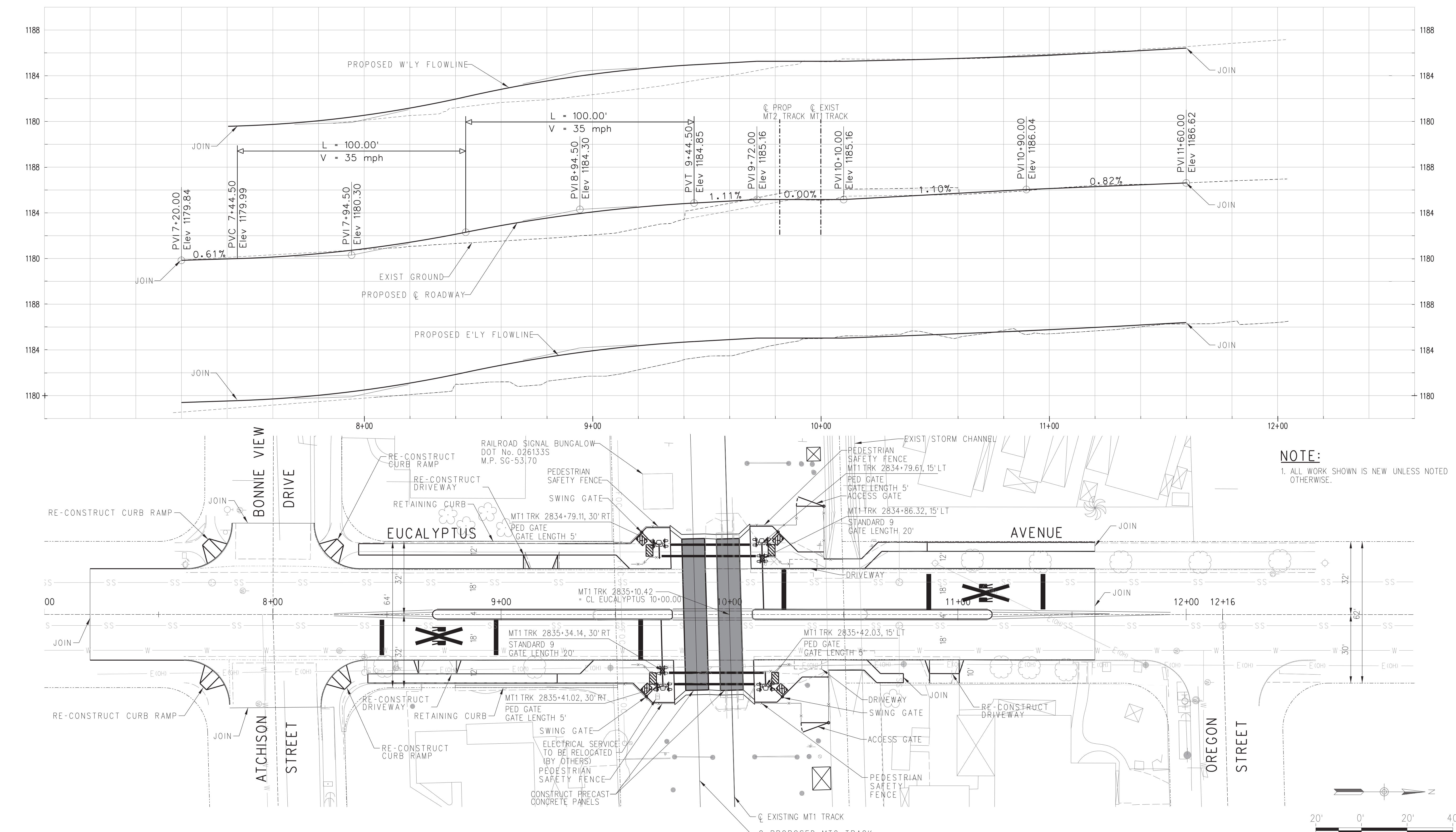
SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT

GRADE CROSSING EXHIBIT
S. EUCALYPTUS AVENUE
DOT No. 026133S M.P. SG-53.70

CONTRACT NO. 16-1001411
DRAWING NO. CJ-071
REVISION A
SHEET NO. 95 OF 200
SCALE HORIZ 1"=20'

09:33 AM on Tuesday, June 26, 2018 ISalvatierra
P:\2016\2016.0036.0002.00 SBCTA (Moffatt) Lilac to Rancho Double Track\Cadd\Sheets\CPUC Exhibits\1603602-07-Eucalyptus.dgn
C:\ProgramData\Bentley\MicroStation V8i(SELECTseries)\WorkSpace\System\pltcfg\PlotStampFULL.tbl
C:\ProgramData\Bentley\MicroStation V8i(SELECTseries)\WorkSpace\System\pltcfg\SCCRA_D_Size_PDF_JMD.pltcfg



FINAL 30% SUBMITTAL (06-29-2018)

GRADE CROSSING SHEET 20 OF 30

REV.	DATE	BY	SUB.	APP.

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY A. ABAD
DRAWN BY S. YAZDI
CHECKED BY J. DIAZ
APPROVED BY I. SALVATIERRA
DATE 06-29-2018

sb cta san bernardino county transportation authority

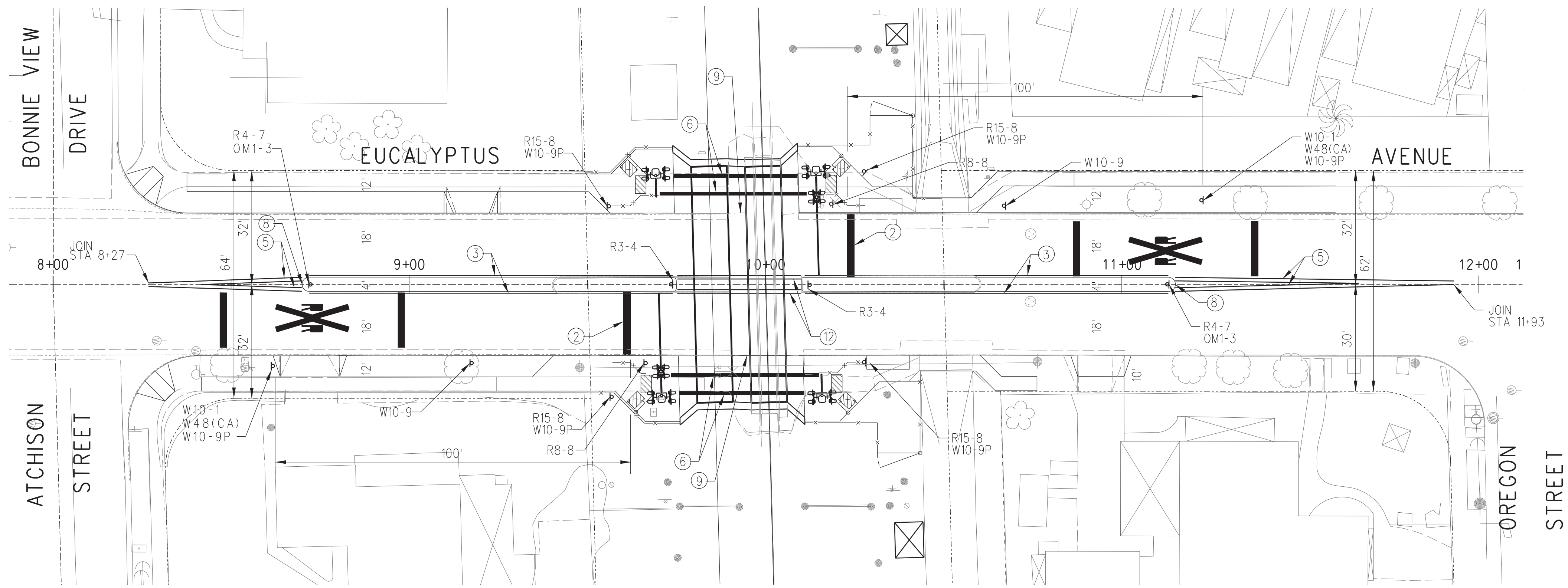
METROLINK.

JMD PLANNING | ENGINEERING | MANAGEMENT
18645 East Gale Avenue, Suite 212
City of Industry, CA 91748
(626) 820-1137 Tel
www.jmdiaz.com

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
GRADE CROSSING IMPROVEMENT PLAN & PROFILE
S. EUCALYPTUS AVENUE
DOT NO. 026133S M.P. SG-53.70

CONTRACT NO. 16-1001411
DRAWING NO. CM-071
REVISION A
SHEET NO. 96 OF 200
SCALE HORIZ 1"=20' VERT 1"=4'



MARKING NOTES

1. RAILROAD CROSSING SYMBOL PER CALTRANS A24B.
2. 24" SOLID WHITE STOP LINE PER CALTRANS STD PLAN A24B
3. 4" SOLID YELLOW MARKING AROUND MEDIAN PER CALTRANS STD PLAN A20B, DETAIL 24
5. 4" DOUBLE YELLOW PER CALTRANS STD PLAN A20B, DETAIL 29
6. 12" WHITE CROSSWALK LINE PER CALTRANS STD PLAN A24F
8. MEDIAN NOSE YELLOW WITH RAISED PAVEMENT MARKERS 2' O.C. STD PLAN A20B, TYPE "D".
9. PAVEMENT MARKING AND RAISED PAVEMENT MARKERS PER CALTRANS STD PLAN A20B, DETAIL 27B AS SHOWN IN SCRRA STD. ES4016
12. 4" DOUBLE YELLOW PER CALTRANS STD PLAN A20A, DETAIL 21 WITH RAISED PAVEMENT MARKERS TYPE H (YELLOW) SUPPLEMENT (TYP)

POSTED SPEED: 35 MPH

GRAPHIC SCALE 20' 0' 20' 40'

GRADE CROSSING SHEET 21 OF 30

FINAL 30% SUBMITTAL (06-29-2018)

REV.	DATE		BY	SUB.	APP.

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY A. ABAD
DRAWN BY S. YAZDI
CHECKED BY J. DIAZ
APPROVED BY I. SALVATIERRA
DATE 06-29-2018

sb cta san bernardino county transportation authority

METROLINK.

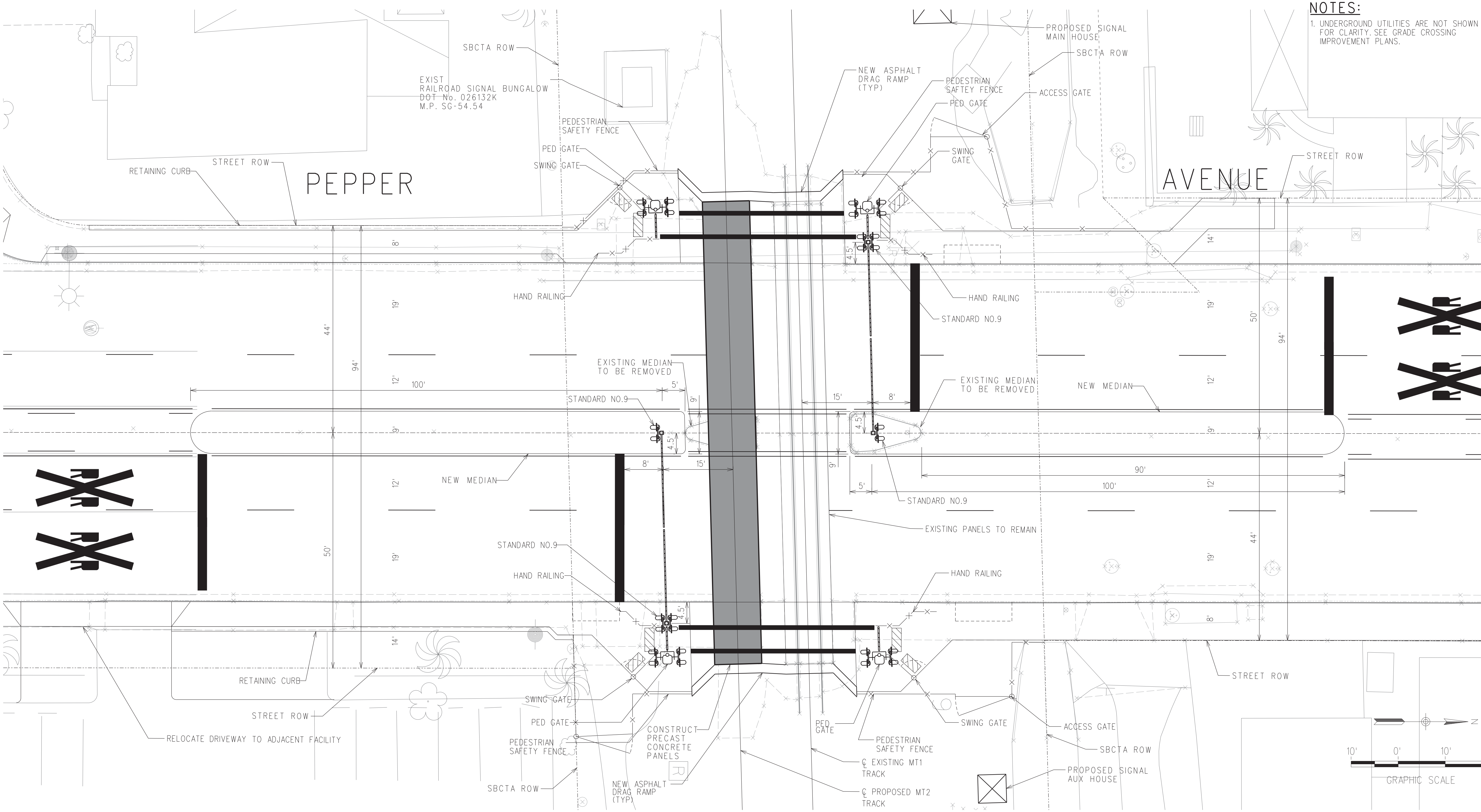
JMD PLANNING | ENGINEERING | MANAGEMENT 18645 East Gale Avenue, Suite 212 City of Industry, CA 91748 (626) 820-1137 Tel www.jmdiaz.com

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SIGNAGE AND STRIPING PLAN
S. EUCALYPTUS AVENUE
DOT No. 026133S M.P. SG-53.70

CONTRACT NO. 16-1001411
DRAWING NO. CM-072
REVISION A
SHEET NO. 97 OF 200
SCALE

09:27 AM on 6/29/2018 Salvatierra
P:\2016\0036.0002.00 SBCTA (Moffatt) Lilac to Rancho Double Track\Cadd\Sheets\Striping\1603602-07-Eucalyptus_S&S.dgn
C:\ProgramData\Bentley\MicroStation V8i(SELECTseries)\WorkSpace\System\plotcfg\PlotStampFULL.tbl
C:\ProgramData\Bentley\MicroStation V8i(SELECTseries)\WorkSpace\System\pltcfg\SCCRA_D_Size_PDF_JMD.pltcfg



NOTES:

1. UNDERGROUND UTILITIES ARE NOT SHOWN FOR CLARITY. SEE GRADE CROSSING IMPROVEMENT PLANS.

FINAL 30% SUBMITTAL (06-29-2018)

GRADE CROSSING SHEET 22 OF 30

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY	A. ABAD
DRAWN BY	S. YAZDI
CHECKED BY	J. DIAZ
APPROVED BY	I. SALVATIERRA
DATE	06-29-2018

REV. | DATE | BY | SUB. | APP.

sb cta san bernardino county transportation authority

METROLINK

JMD PLANNING | ENGINEERING | MANAGEMENT 18645 East Gale Avenue, Suite 212 City of Industry, CA 91748

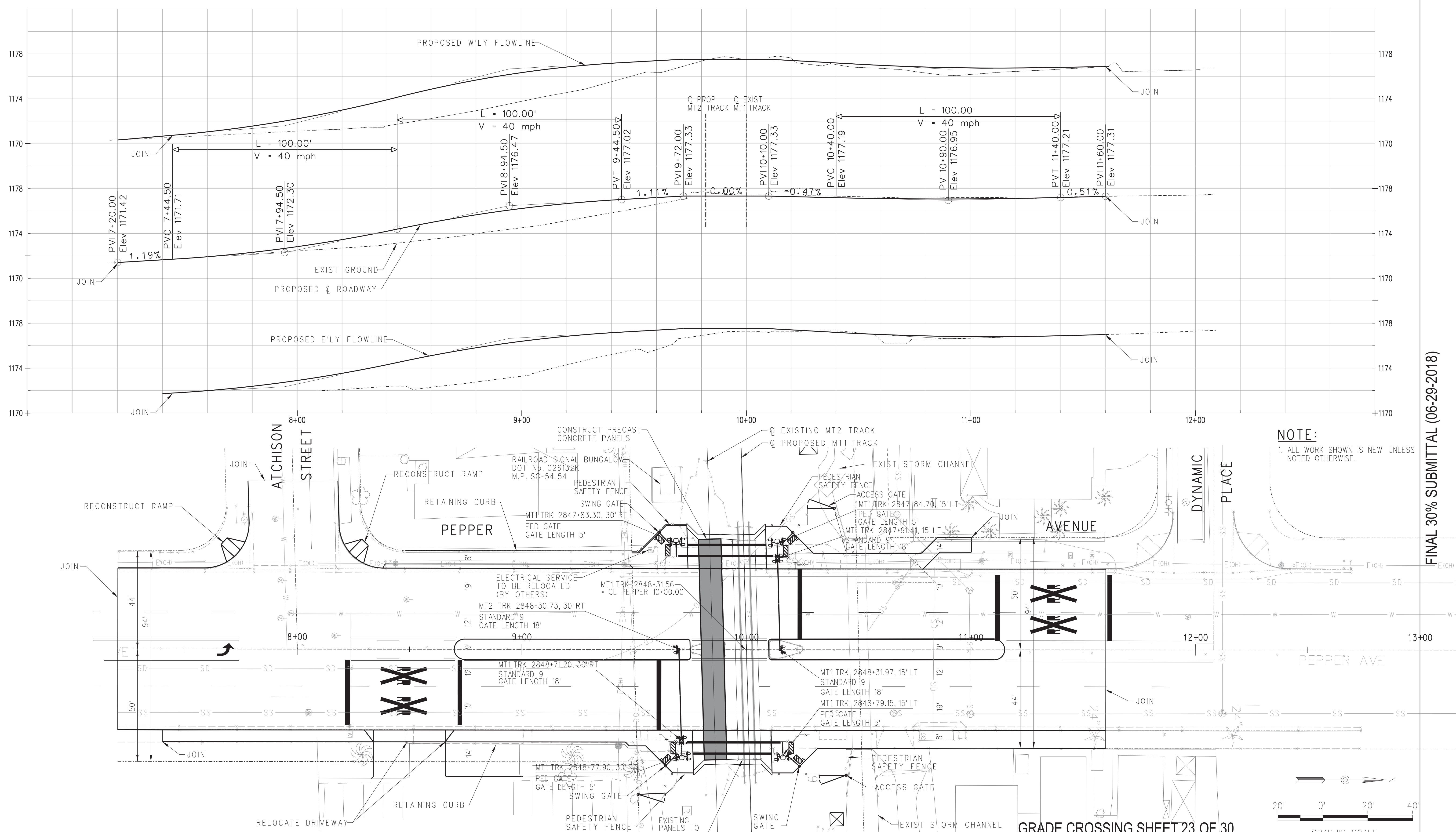
SUBMITTED: PROJECT MANAGER

APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

GRADE CROSSING EXHIBIT S. PEPPER AVENUE DOT No. 026132K M.P. SG-53.95

CONTRACT NO.	16-1001411
DRAWING NO.	CJ-081
REVISION	A
SHEET NO.	98 OF 200
SCALE	HORIZ 1"=20'



PROPOSED W'LY FLOWLINE
PROPOSED E'LY FLOWLINE
EXIST GROUND
PROPOSED ℄ ROADWAY
L = 100.00'
V = 40 mph
PVI 7+20.00 Elev 1171.42
PVC 7+44.50 Elev 1171.71
PVI 7+94.50 Elev 1172.30
PVI 8+94.50 Elev 1176.47
PVT 9+44.50 Elev 1177.02
PVI 9+72.00 Elev 1177.33
PVI 10+10.00 Elev 1177.33
PVC 10+40.00 Elev 1177.19
PVI 10+90.00 Elev 1176.95
PVT 11+40.00 Elev 1177.21
PVI 11+60.00 Elev 1177.31
1.19%
1.11%
0.00%
-0.47%
0.51%
JOIN
ATCHISON STREET
PEPPER AVENUE
DYNAMIC PLACE
PEPPER AVE
RECONSTRUCT RAMP
RETAINING CURB
RAILROAD SIGNAL BUNGALOW DOT No. 026132K M.P. SG-54.54
CONSTRUCT PRECAST CONCRETE PANELS
℄ EXISTING MT2 TRACK
℄ PROPOSED MT1 TRACK
EXIST STORM CHANNEL
PEDESTRIAN SAFETY FENCE
SWING GATE
ACCESS GATE
MT1 TRK 2847+83.30, 30' RT PED GATE GATE LENGTH 5'
MT1 TRK 2847+84.70, 15' LT PED GATE GATE LENGTH 5'
MT1 TRK 2847+91.41, 15' LT STANDARD 9 GATE LENGTH 18'
ELECTRICAL SERVICE TO BE RELOCATED (BY OTHERS)
MT1 TRK 2848+31.56 = CL PEPPER 10+00.00
MT2 TRK 2848+30.73, 30' RT STANDARD 9 GATE LENGTH 18'
MT1 TRK 2848+71.20, 30' RT STANDARD 9 GATE LENGTH 18'
MT1 TRK 2848+31.97, 15' LT STANDARD 9 GATE LENGTH 18'
MT1 TRK 2848+79.15, 15' LT PED GATE GATE LENGTH 5'
MT1 TRK 2848+77.90, 30' RT PED GATE GATE LENGTH 5'
RELOCATE DRIVEWAY
EXISTING PANELS TO REMAIN

NOTE:

1. ALL WORK SHOWN IS NEW UNLESS NOTED OTHERWISE.

GRAPHIC SCALE

GRADE CROSSING SHEET 23 OF 30

FINAL 30% SUBMITTAL (06-29-2018)

DESIGNED BY	A. ABAD
DRAWN BY	S. YAZDI
CHECKED BY	J. DIAZ
APPROVED BY	I. SALVATIERRA
DATE	06-29-2018

METROLINK

JMD PLANNING | ENGINEERING | MANAGEMENT 18645 East Gale Avenue, Suite 212 City of Industry, CA 91748

SUBMITTED: PROJECT MANAGER

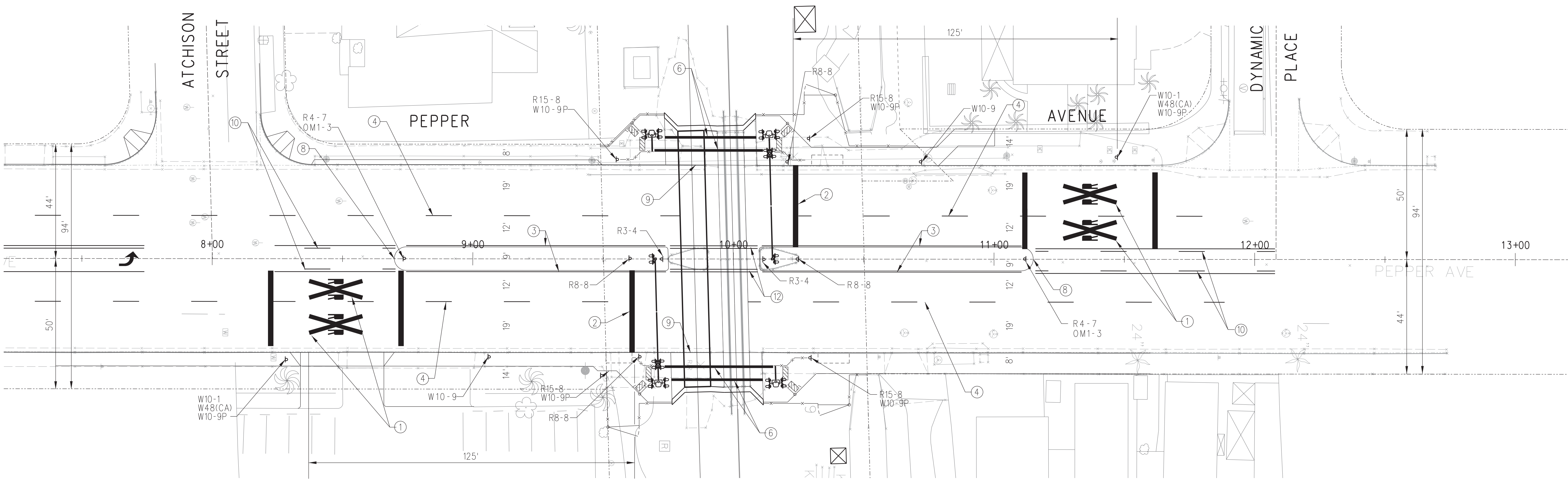
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

GRADE CROSSING IMPROVEMENT PLAN & PROFILE S. PEPPER AVENUE DOT NO. 026132K M.P. SG-53.95

CONTRACT NO. 16-1001411
DRAWING NO. CM-081
REVISION A
SHEET NO. 99 OF 200
SCALE HORIZ 1"=20' VERT 1"=4'

REV. DATE BY SUB. APP.



MARKING NOTES

1. RAILROAD CROSSING SYMBOL PER CALTRANS A24B.
2. 24" SOLID WHITE STOP LINE PER CALTRANS STD PLAN A24B
3. 4" SOLID YELLOW MARKING AROUND MEDIAN PER CALTRANS STD PLAN A20B, DETAIL 24
4. 4" WHITE LANE LINE MARKING PER CAKTRANS STD PLAN A20A, DETAIL 9
6. 12" WHITE CROSSWALK LINE PER CALTRANS STD PLAN A24F
8. MEDIAN NOSE YELLOW WITH RAISED PAVEMENT MARKERS 2' O.C. STD PLAN A20B, TYPE "D".
9. PAVEMENT MARKING AND RAISED PAVEMENT MARKERS PER CALTRANS STD PLAN A20B, DETAIL 27B AS SHOWN IN SCRRA STD. ES4016
10. 4" DOUBLE YELLOW TWO-WAY LEFT TURN LANE PER CALTRANS STD PLAN A20B, DETAIL 32
12. 4" DOUBLE YELLOW PER CALTRANS STD PLAN A20A, DETAIL 21 WITH RAISED PAVEMENT MARKERS TYPE H (YELLOW) SUPPLEMENT (TYP)

FINAL 30% SUBMITTAL (06-29-2018)

POSTED SPEED: 40 MPH

GRAPHIC SCALE: 20' 0' 20' 40'

GRADE CROSSING SHEET 24 OF 30

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential; and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.	
DESIGNED BY	A. ABAD
DRAWN BY	S. YAZDI
CHECKED BY	J. DIAZ
APPROVED BY	I. SALVATIERRA
DATE	06-29-2018

REV. | DATE | BY | SUB. | APP.

sbcta san bernardino county transportation authority

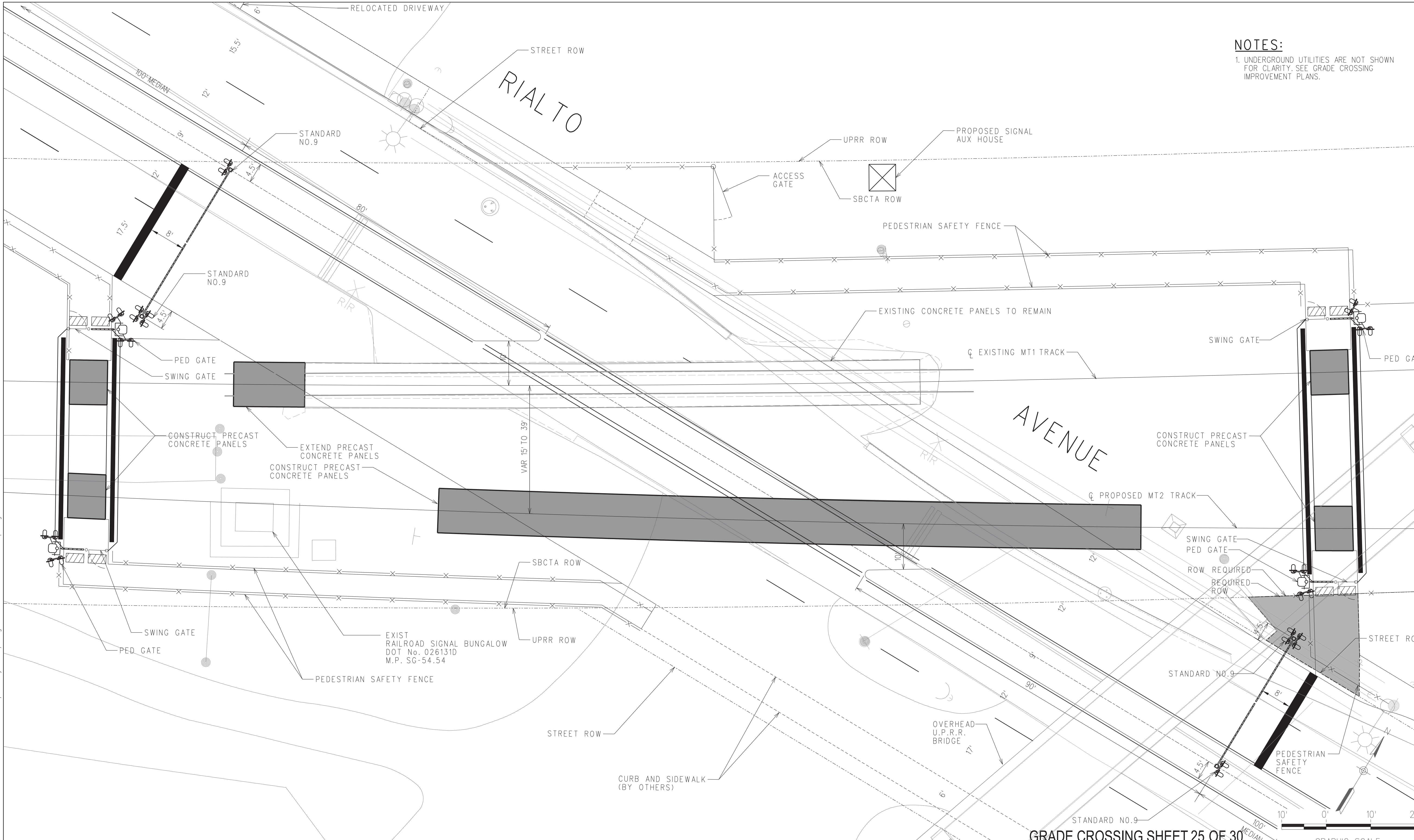
METROLINK

JMD PLANNING | ENGINEERING | MANAGEMENT
18645 East Gale Avenue, Suite 212
City of Industry, CA 91748
(626) 820-1137 Tel
www.jmdiaz.com

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SIGNAGE AND STRIPING PLAN
S. PEPPER AVENUE
DOT No. 026132K M.P. SG-53.95

CONTRACT NO.	16-1001411
DRAWING NO.	CM-082
REVISION	A
SHEET NO.	100 OF 200
SCALE	



GRADE CROSSING SHEET 25 OF 30

REV.	DATE	BY	SUB.	APP.

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY: A. ABAD
DRAWN BY: S. YAZDI
CHECKED BY: J. DIAZ
APPROVED BY: I. SALVATIERRA
DATE: 06-29-2018

sb cta — san bernardino county transportation authority

METROLINK

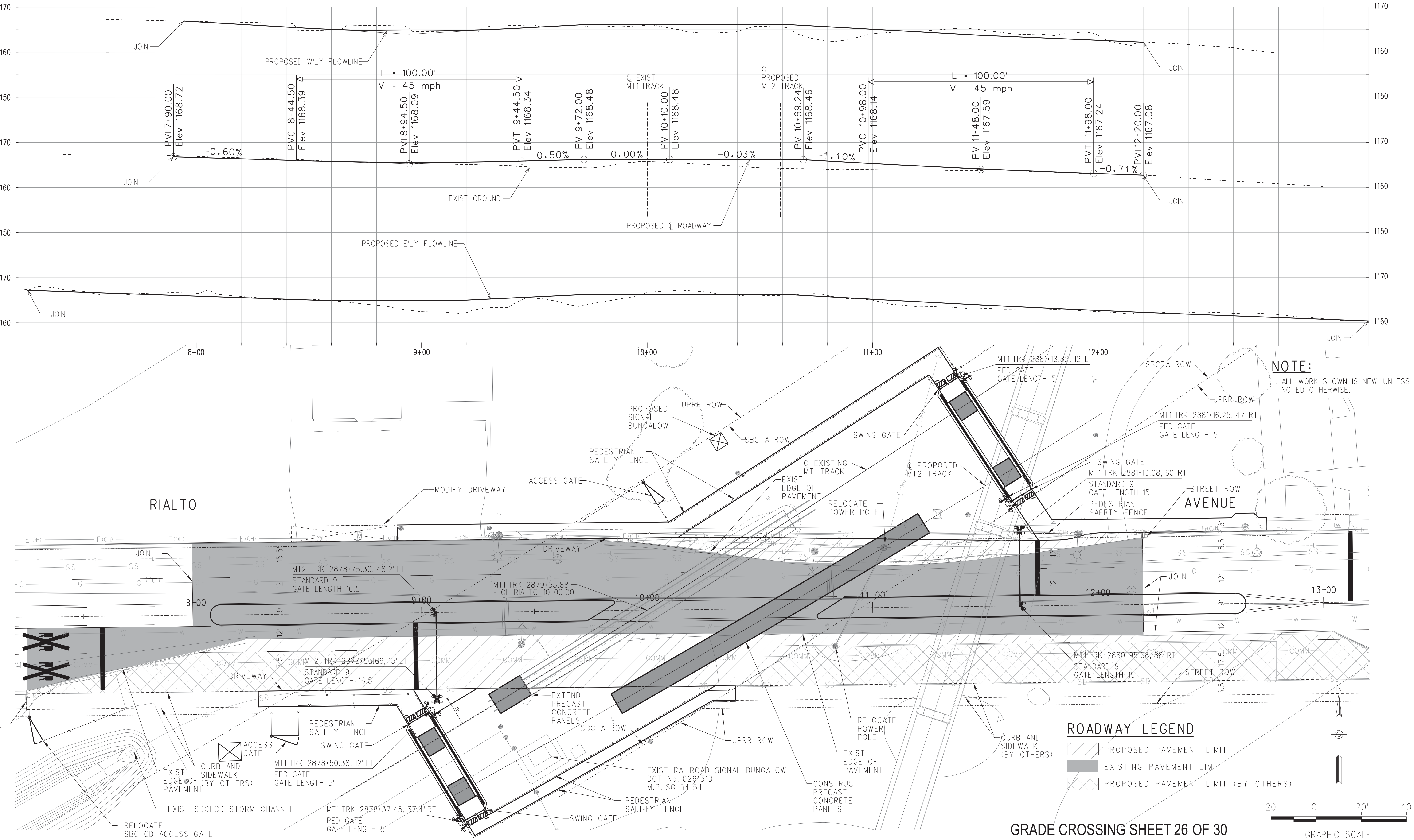
JMD — PLANNING | ENGINEERING | MANAGEMENT
18645 East Gale Avenue, Suite 212, City of Industry, CA 91748, (626) 820-1137 Tel, www.jmdiaz.com

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT
GRADE CROSSING EXHIBIT W. RIALTO AVENUE DOT No. 026131D M.P. SG-54.54

CONTRACT NO. 16-1001411
DRAWING NO. CJ-091
REVISION A
SHEET NO. 101 OF 200
SCALE HORIZ 1"=20'

09:34 AM on Thursday, June 28, 2018 (Salvatierra)
P:\2016\2016.0036.0002.00 SBCTA (Moffatt) Lilac to Rancho Double Track\Cadd\Sheets\CPUC Exhibits\1603602-09-Rialto.dgn
C:\ProgramData\Bentley\MicroStation V8i (SELECTseries)\WorkSpace\System\pltcfg\PlotStampFULL.tbl
C:\ProgramData\Bentley\MicroStation V8i (SELECTseries)\WorkSpace\System\pltcfg\SCCRA_D_Size_PDF_JMD.pltcfg



GRADE CROSSING SHEET 26 OF 30

FINAL 30% SUBMITTAL (06-29-2018)

DESIGNED BY	A. ABAD
DRAWN BY	S. YAZDI
CHECKED BY	J. DIAZ
APPROVED BY	I. SALVATIERRA
DATE	06-29-2018

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

REV. | DATE | BY | SUB. | APP.

sb cta — san bernardino county transportation authority

METROLINK

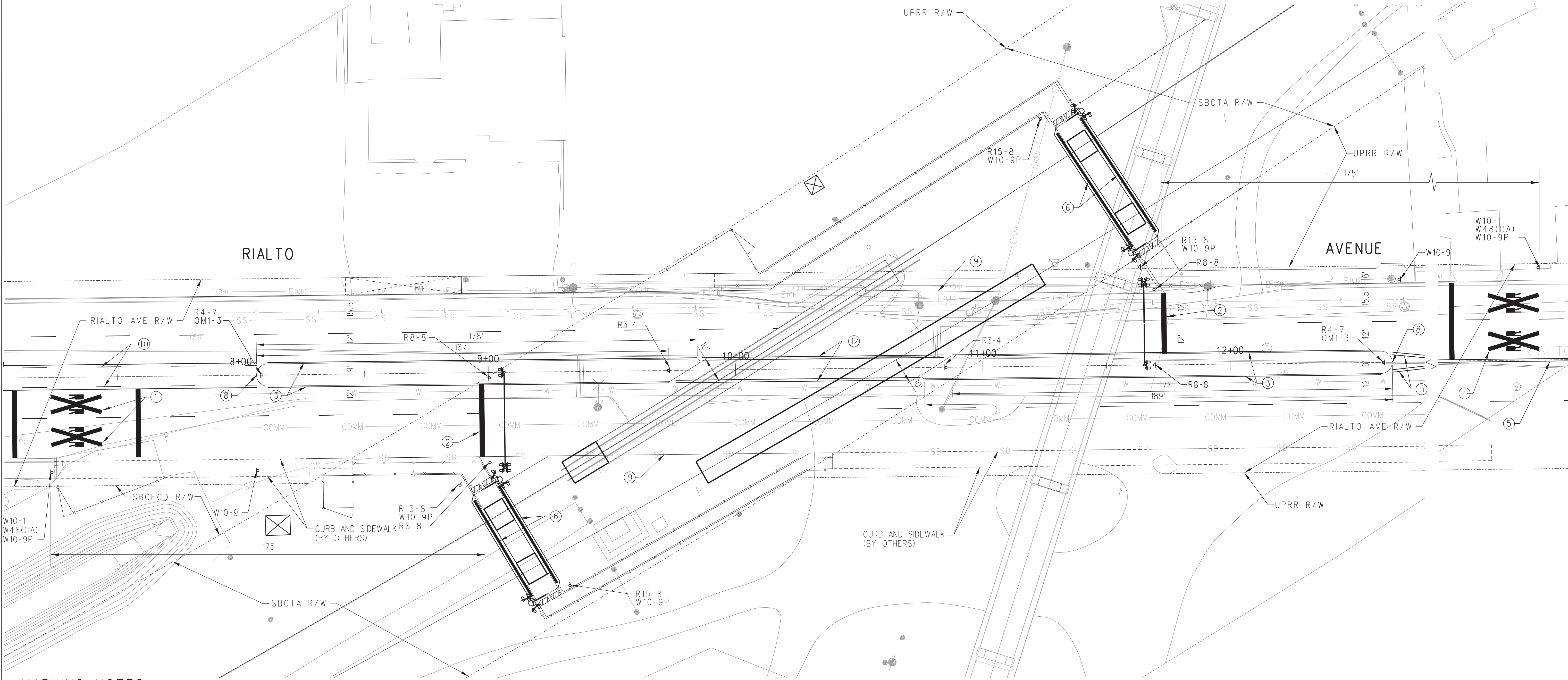
JMD — PLANNING | ENGINEERING | MANAGEMENT — 18645 East Gale Avenue, Suite 212, City of Industry, CA 91748, (626) 820-1137 Tel, www.jmdiaz.com

SUBMITTED: PROJECT MANAGER

APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT
GRADE CROSSING IMPROVEMENT PLAN & PROFILE
W. RIALTO AVENUE
DOT No. 026131D M.P. SG-54.54

CONTRACT NO.	16-1001411
DRAWING NO.	CM-091
REVISION	A
SHEET NO.	102 OF 200
SCALE	HORIZ 1"=20' VERT 1"=4'



FINAL 30% SUBMITTAL (06-29-2018)

MARKING NOTES

1. RAILROAD CROSSING SYMBOL PER CALTRANS A24B.
2. 24" SOLID WHITE STOP LINE PER CALTRANS STD PLAN A24B
3. 4" SOLID YELLOW MARKING AROUND MEDIAN PER CALTRANS STD PLAN A20B, DETAIL 24
5. 4" DOUBLE YELLOW PER CALTRANS STD PLAN A20B, DETAIL 29
6. 12" WHITE CROSSWALK LINE PER CALTRANS STD PLAN A24F
8. MEDIAN NOSE YELLOW WITH RAISED PAVEMENT MARKERS 2' O.C. STD PLAN A20B, TYPE "D".
9. PAVEMENT MARKING AND RAISED PAVEMENT MARKERS PER CALTRANS STD PLAN A20B, DETAIL 27B AS SHOWN IN SCRRA STD. ES4016
12. 4" DOUBLE YELLOW PER CALTRANS STD PLAN A20A, DETAIL 21 WITH RAISED PAVEMENT MARKERS TYPE H (YELLOW) SUPPLEMENT (TYP)

POSTED SPEED: 45 MPH

GRAPHIC SCALE: 20' 0' 20' 40'

GRADE CROSSING SHEET 27 OF 30

REV.	DATE	BY	SUB.	APP.

DESIGNED BY: A. ABAD
DRAWN BY: S. YAZDI
CHECKED BY: J. DIAZ
APPROVED BY: I. SALVATIERRA
DATE: 06-29-2018

sb cta — san bernardino county transportation authority

METROLINK®

JMD — PLANNING | ENGINEERING | MANAGEMENT
18645 East Gale Avenue, Suite 212
City of Industry, CA 91748
(626) 820-1137 Tel
www.jmdiaz.com

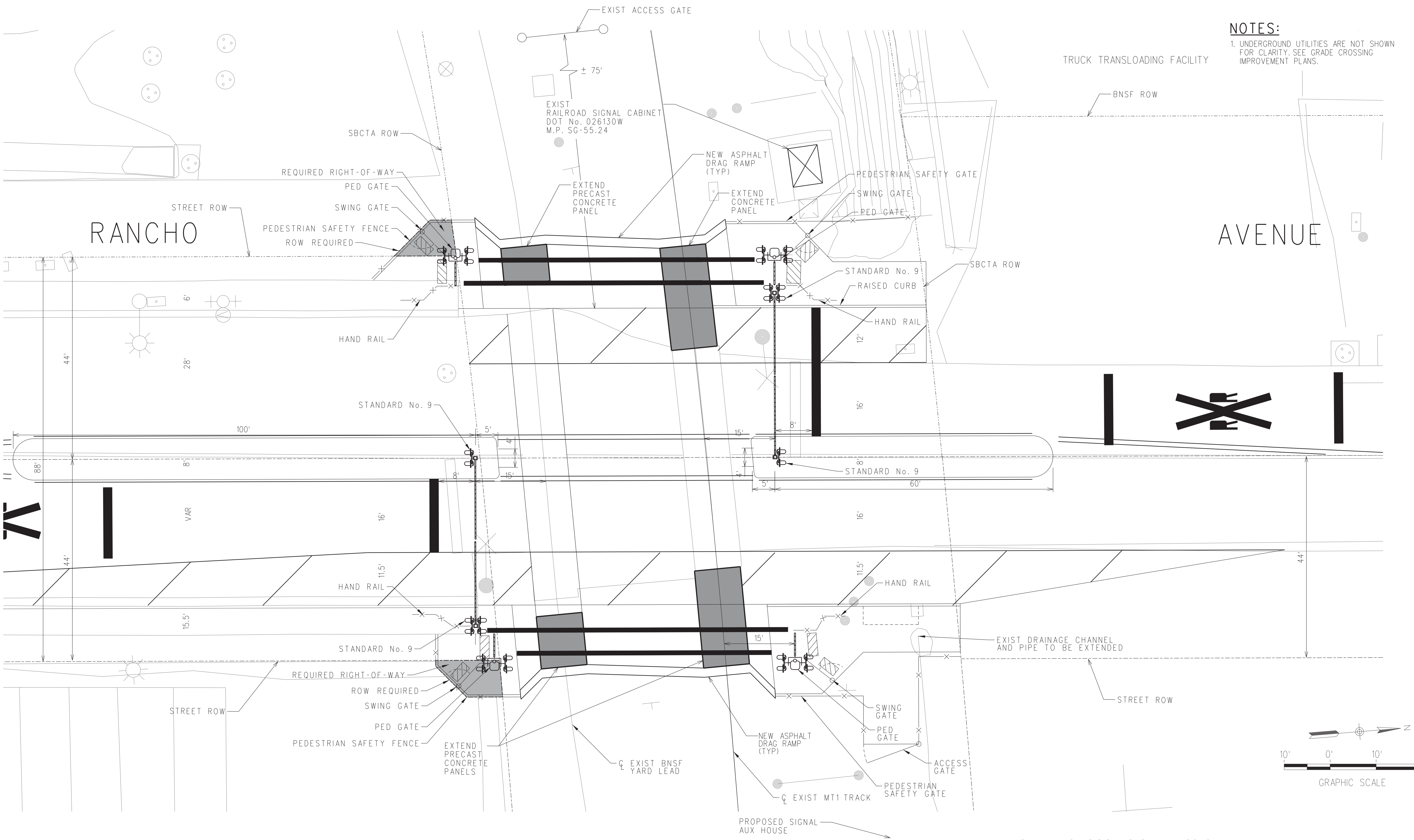
SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

SIGNAGE AND STRIPING PLAN
W. RIALTO AVENUE

DOT No. 026131D M.P. SG-54.54

CONTRACT NO. 16-1001411
DRAWING NO. CM-092
REVISION A
SHEET NO. 103 OF 200
SCALE



NOTES:

1. UNDERGROUND UTILITIES ARE NOT SHOWN FOR CLARITY. SEE GRADE CROSSING IMPROVEMENT PLANS.

FINAL 30% SUBMITTAL (06-29-2018)

GRADE CROSSING SHEET 28 OF 30

09:36 AM on Thursday, June 28, 2018 ISalvatierra
P:\2016\2016.0036.0002.00 SBCTA (Moffatt) Lilac to Rancho Double Track\Cadd\Sheets\CPUC Exhibits\1603602-10-Rancho.dgn

DESIGNED BY	A. ABAD
DRAWN BY	S. YAZDI
CHECKED BY	J. DIAZ
APPROVED BY	I. SALVATIERRA
DATE	06-29-2018

REV. | DATE | BY | SUB. | APP.

sbcta san bernardino county transportation authority

METROLINK

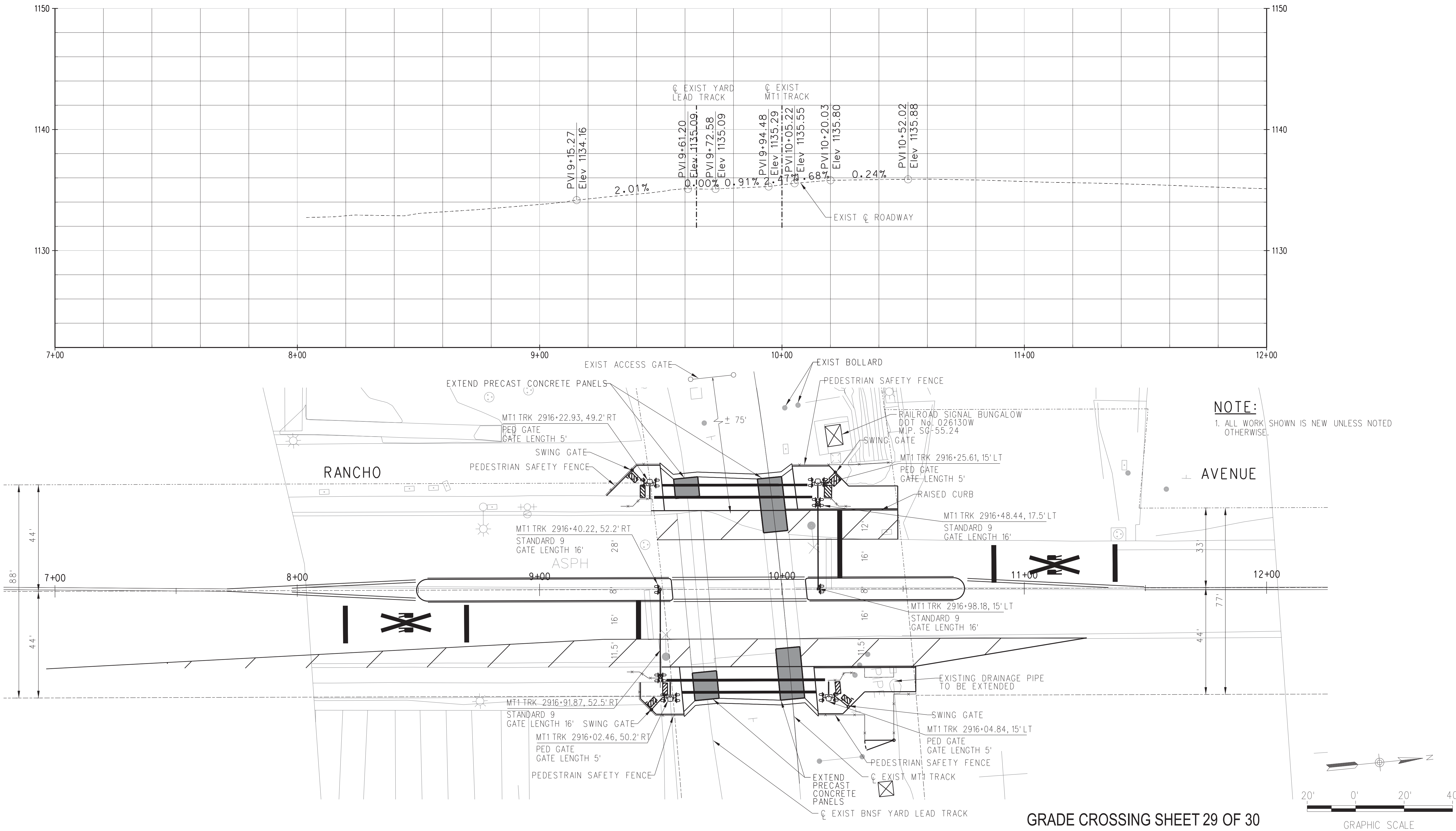
JMD PLANNING | ENGINEERING | MANAGEMENT 18645 East Gale Avenue, Suite 212 City of Industry, CA 91748 (626) 820-1137 Tel www.jmdiaz.com

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT

GRADE CROSSING EXHIBIT
N RANCHO AVENUE
DOT No. 026130W M.P. SG-55.24

CONTRACT NO.	16-1001411
DRAWING NO.	CJ-101
REVISION	A
SHEET NO.	104 OF 200
SCALE	HORIZ 1"=20'



NOTE:

1. ALL WORK SHOWN IS NEW UNLESS NOTED OTHERWISE.

GRADE CROSSING SHEET 29 OF 30

FINAL 30% SUBMITTAL (06-29-2018)

09:51 AM on Thursday, June 28, 2018 - ISalvatierra
P:\2016\2016.0036.0002.00 SBCTA (Moffatt) Lilac to Rancho Double Track\Cadd\Sheets\Preliminary Engineering\1603602-10-Rancho_P&P.dgn
C:\ProgramData\Bentley\MicroStation V8i (SELECTseries)\WorkSpace\System\pltcfg\PlotStampFULL.tbl
C:\ProgramData\Bentley\MicroStation V8i (SELECTseries)\WorkSpace\System\pltcfg\SCCRA_D_Size_PDF_JMD.pltcfg

REV.	DATE	BY	SUB.	APP.

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY A. ABAD
DRAWN BY S. YAZDI
CHECKED BY J. DIAZ
APPROVED BY I. SALVATIERRA
DATE 06-29-2018

sb cta — san bernardino county transportation authority

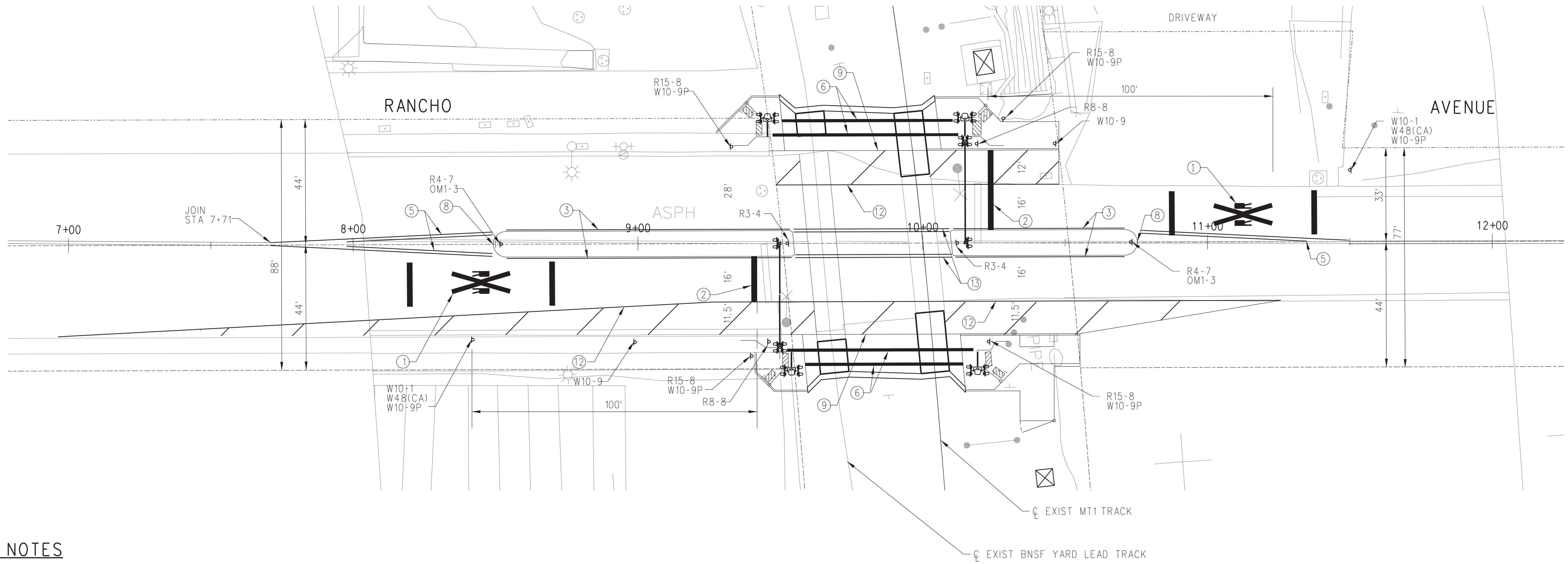
METROLINK.

JMD — PLANNING | ENGINEERING | MANAGEMENT
18645 East Gale Avenue, Suite 212
City of Industry, CA 91748
(626) 820-1137 Tel
www.jmdiaz.com

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
GRADE CROSSING IMPROVEMENT PLAN & PROFILE
N RANCHO AVENUE
DOT NO. 026130W M.P. SG-55.24

CONTRACT NO. 16-1001411
DRAWING NO. CM-101
REVISION A
SHEET NO. 105 OF 200
SCALE HORIZ 1"=20' VERT 1"=4'



MARKING NOTES

1. RAILROAD CROSSING SYMBOL PER CALTRANS A24B.
2. 24" SOLID WHITE STOP LINE PER CALTRANS STD PLAN A24B
3. 4" SOLID YELLOW MARKING AROUND MEDIAN PER CALTRANS STD PLAN A20B, DETAIL 24
5. 4" DOUBLE YELLOW PER CALTRANS STD PLAN A20B, DETAIL 29
6. 12" WHITE CROSSWALK LINE PER CALTRANS STD PLAN A24F
8. MEDIAN NOSE YELLOW WITH RAISED PAVEMENT MARKERS 2' O.C. STD PLAN A20B, TYPE "D".
9. PAVEMENT MARKING AND RAISED PAVEMENT MARKERS PER CALTRANS STD PLAN A20B, DETAIL 27B AS SHOWN IN SCRRA STD. ES4016
12. 4" SOLID WHITE EDGELINE PER CALTRANS STD PLAN A20B DETAIL 27B
13. 4" DOUBLE YELLOW PER CALTRANS STD PLAN A20A, DETAIL 21 WITH RAISED PAVEMENT MARKERS TYPE H (YELLOW) SUPPLEMENT (TYP)

POSTED SPEED: 35 MPH

GRAPHIC SCALE: 20' 0' 20' 40'

GRADE CROSSING SHEET 30 OF 30

FINAL 30% SUBMITTAL (06-29-2018)

REV.	DATE	BY	SUB.	APP.

DESIGNED BY: A. ABAD
DRAWN BY: S. YAZDI
CHECKED BY: J. DIAZ
APPROVED BY: I. SALVATIERRA
DATE: 06-29-2018

sb cta — san bernardino county transportation authority

METROLINK

JMD — PLANNING | ENGINEERING | MANAGEMENT — 18645 East Gale Avenue, Suite 212, City of Industry, CA 91748, (626) 820-1137 Tel, www.jmdiaz.com

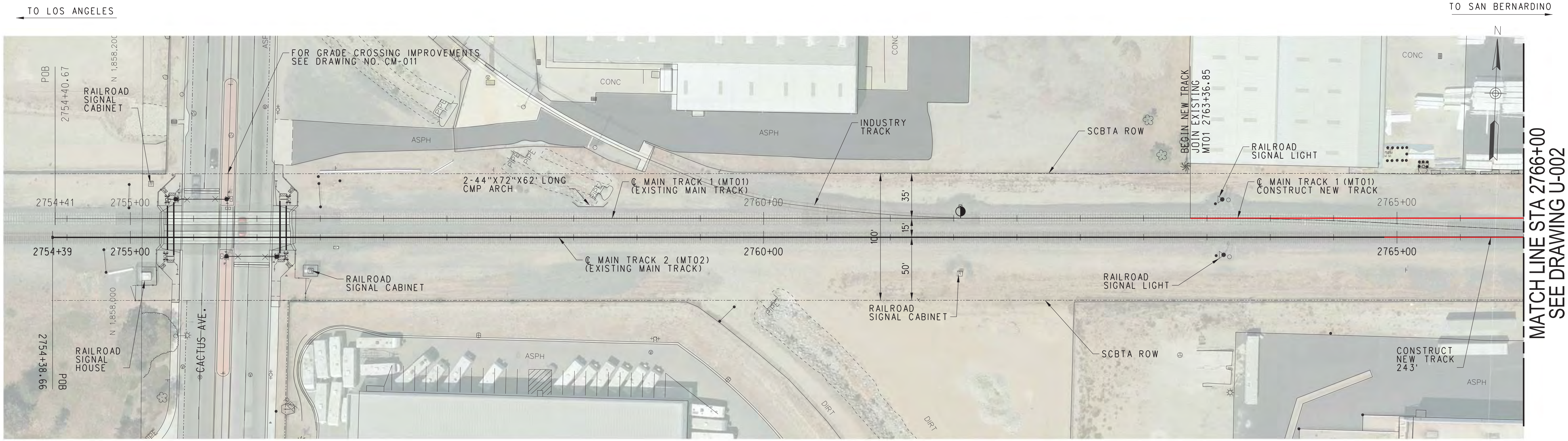
SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT

SIGNAGE AND STRIPING PLAN
N. RANCHO AVENUE
DOT No. 026130W M.P. SG-55.24

CONTRACT NO. 16-1001411
DRAWING NO. CM-102
REVISION A
SHEET NO. 106 OF 200
SCALE

P:\2016\2016.0036.0002.00 SBCTA (Moffatt) Lilac to Rancho Double Track\Cadd\Sheets\Striping\1603602-10-Rancho_S&S.dgn
C:\ProgramData\Bentley\MicroStation V8i (SELECTseries)\WorkSpace\System\plotcfg\PlotStampFULL.tbl
C:\ProgramData\Bentley\MicroStation V8i (SELECTseries)\WorkSpace\System\pltcfg\SCCRA_D_Size_PDF_JMD.pltcfg

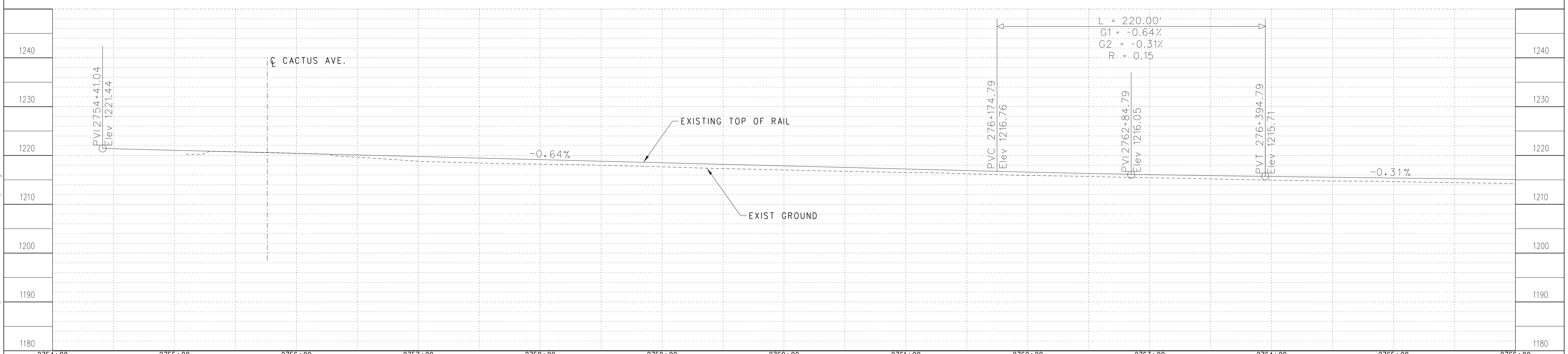


40' 0' 40' 80'

GRAPHIC SCALE

NOTES:

1. THE LOCATION(S) OF THE UTILITIES SHOWN IN THE PLANS ARE BASED ON LIMITED AVAILABLE INFORMATION AND SHOULD BE CONSIDERED APPROXIMATE ONLY.
2. EXISTING UTILITIES ARE TO REMAIN IN PLACE UNLESS OTHERWISE NOTED.



FINAL 30% SUBMITTAL (06-29-2018)

6/27/2018 11:10:27 AM USER : jcalderon
Q:\LBY9503\CADD\Master\Sheets\LRD1212-U-001.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB. APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential; and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sbcta san bernardino county transportation authority

METROLINK.

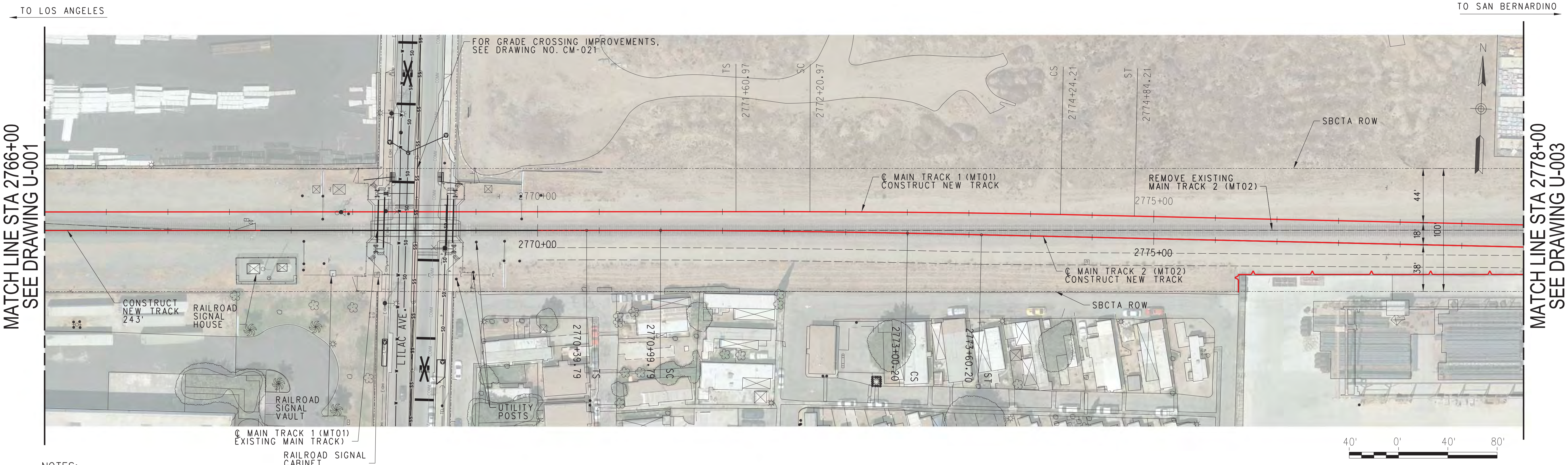
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

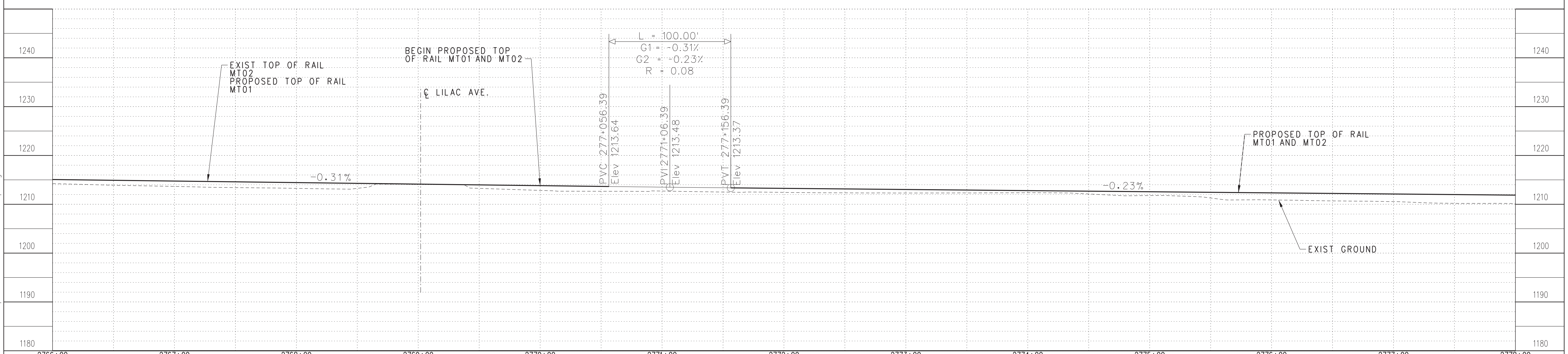
UTILITIES PLAN
MT2 STA 2754+39 (POB) TO MT2 STA 2766+00
SHEET 1 OF 13

CONTRACT NO. 16-1001411
DRAWING NO. U-001
REVISION A
SHEET NO. 107 OF 200
SCALE HORIZ 1"=40' VERT 1"=4'



NOTES:

1. THE LOCATION(S) OF THE UTILITIES SHOWN IN THE PLANS ARE BASED ON LIMITED AVAILABLE INFORMATION AND SHOULD BE CONSIDERED APPROXIMATE ONLY.
2. EXISTING UTILITIES ARE TO REMAIN IN PLACE UNLESS OTHERWISE NOTED.



FINAL 30% SUBMITTAL (06-29-2018)

6/27/2018 11:10:33 AM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-U-002.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential; and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

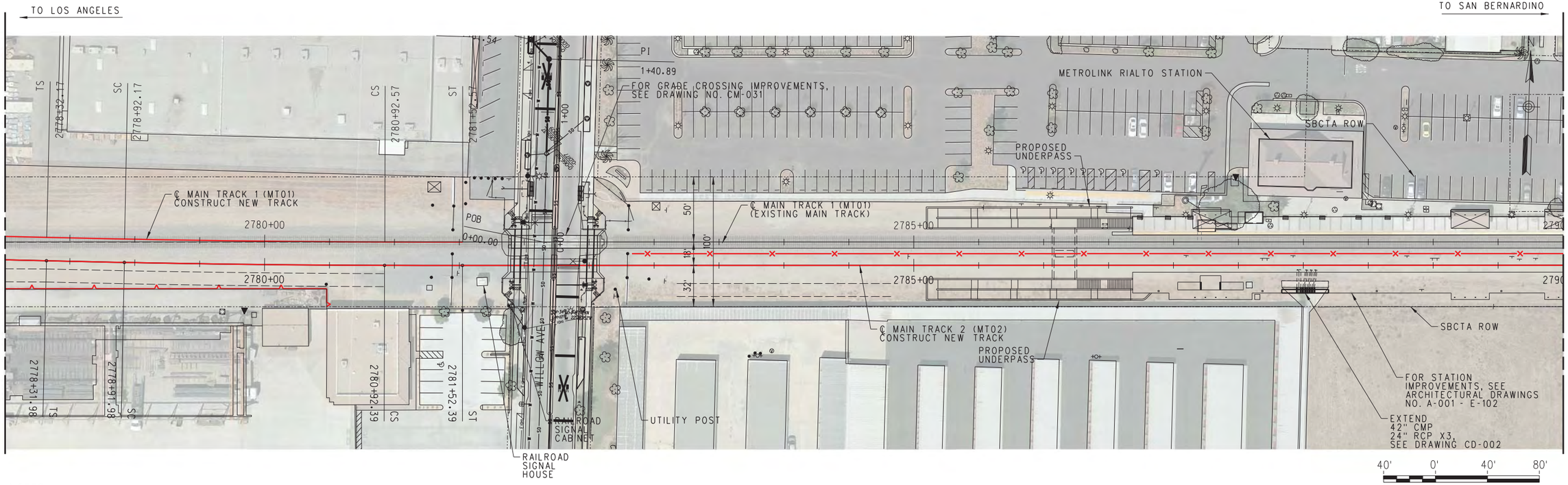
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

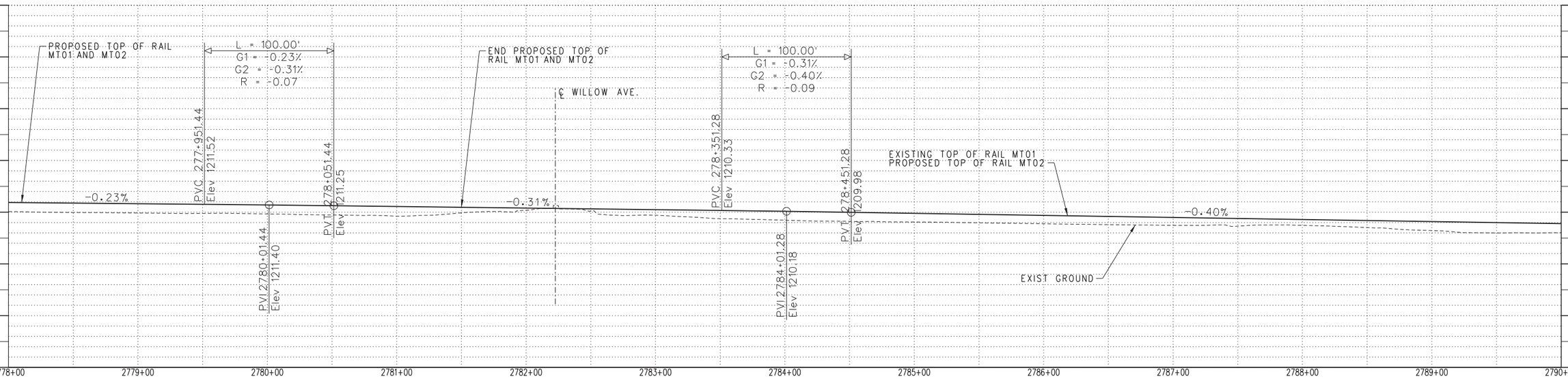
UTILITIES PLAN
MT2 STA 2766+00 TO MT2 STA 2778+00
SHEET 2 OF 13

CONTRACT NO. 16-1001411
DRAWING NO. U-002
REVISION A
SHEET NO. 108 OF 200
SCALE HORIZ 1"=40' VERT 1"=4'



NOTES:

1. THE LOCATION(S) OF THE UTILITIES SHOWN IN THE PLANS ARE BASED ON LIMITED AVAILABLE INFORMATION AND SHOULD BE CONSIDERED APPROXIMATE ONLY.
2. EXISTING UTILITIES ARE TO REMAIN IN PLACE UNLESS OTHERWISE NOTED.



NOT FOR CONSTRUCTION

REV.	DATE		BY	APP.
V	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

INFORMATION CONFIDENTIAL:
All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential; and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. Exp. CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

moffatt & nichol

SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

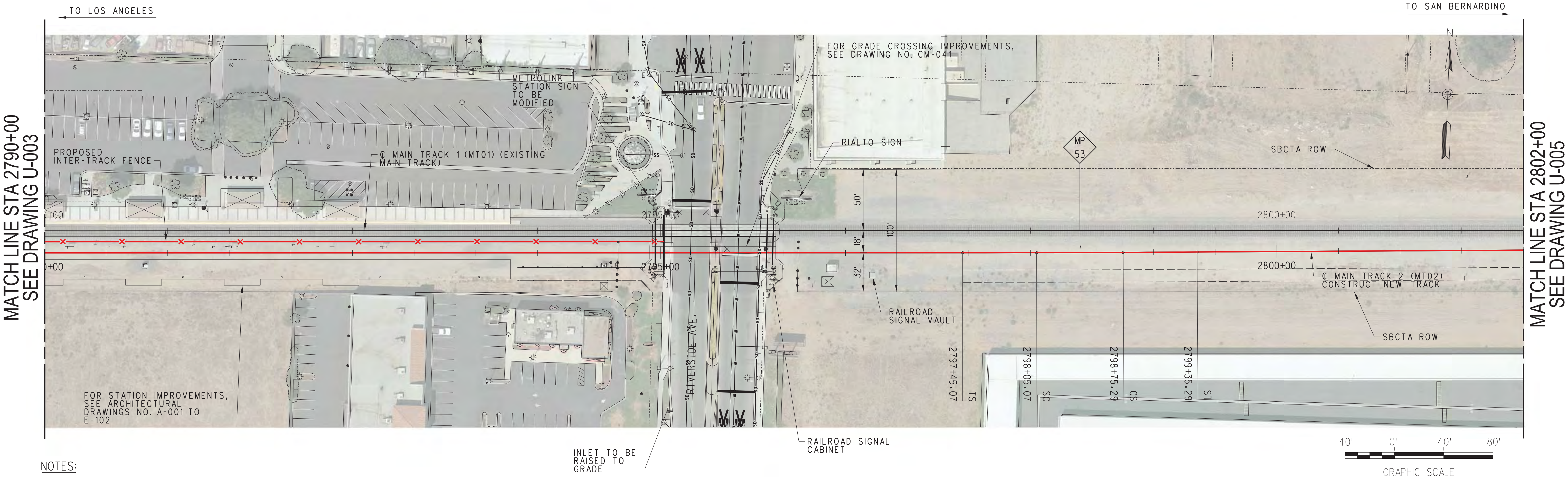
CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

UTILITIES PLAN
MT2 STA 2778+00 TO MT2 STA 2790+00
SHEET 3 OF 13

CONTRACT NO. 16-1001411
DRAWING NO. U-003
REVISION A
SHEET NO. 109 OF 200
SCALE HORIZ 1"=40'
VERT 1"=4'

FINAL 30% SUBMITTAL (06-29-2018)

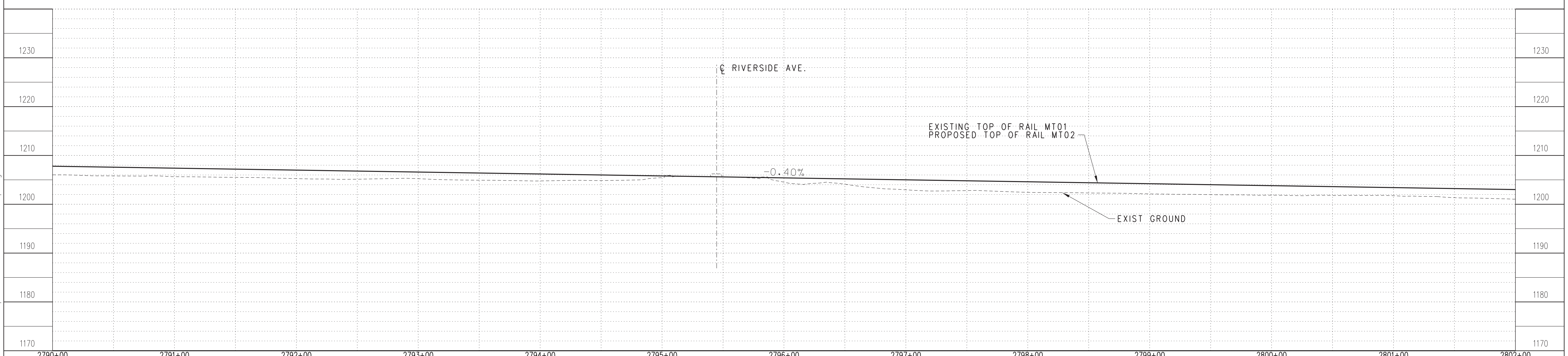
6/27/2018 11:10:39 AM USER = jolderon
Q:\LB_9950\CADD\Master\Sheets\LRD_J22_U-003.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg



NOTES:

1. THE LOCATION(S) OF THE UTILITIES SHOWN IN THE PLANS ARE BASED ON LIMITED AVAILABLE INFORMATION AND SHOULD BE CONSIDERED APPROXIMATE ONLY.
2. EXISTING UTILITIES ARE TO REMAIN IN PLACE UNLESS OTHERWISE NOTED.

FINAL 30% SUBMITTAL (06-29-2018)



6/27/2018 11:10:46 AM USER • jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-U-004.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB. APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential; and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sbcta san bernardino county transportation authority

METROLINK

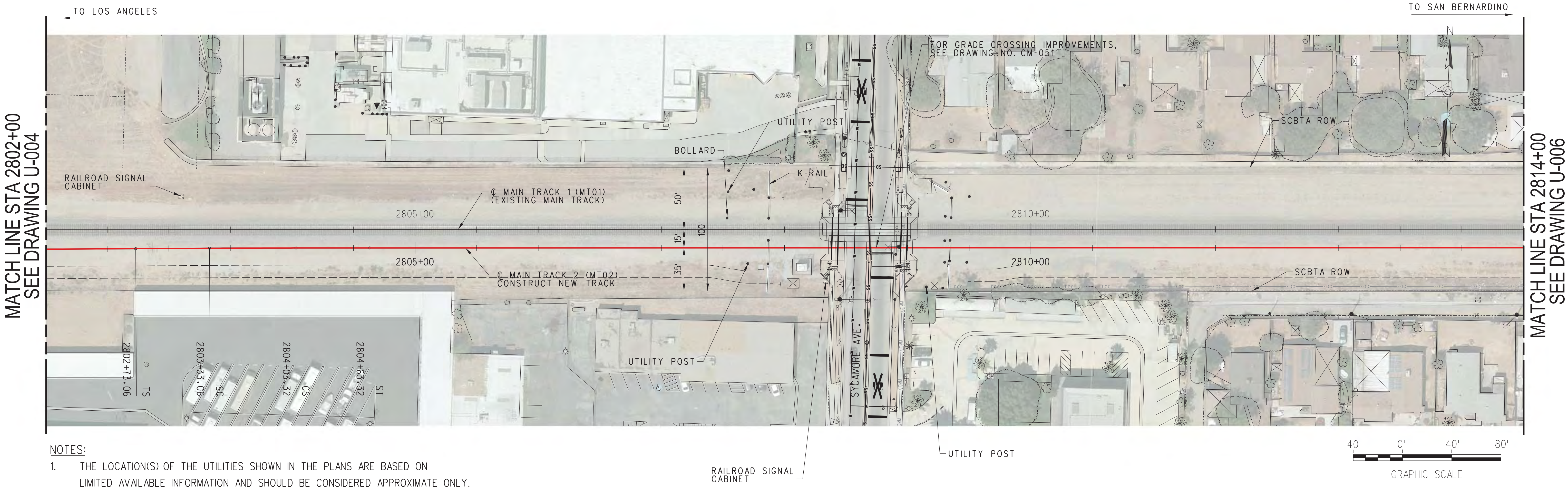
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

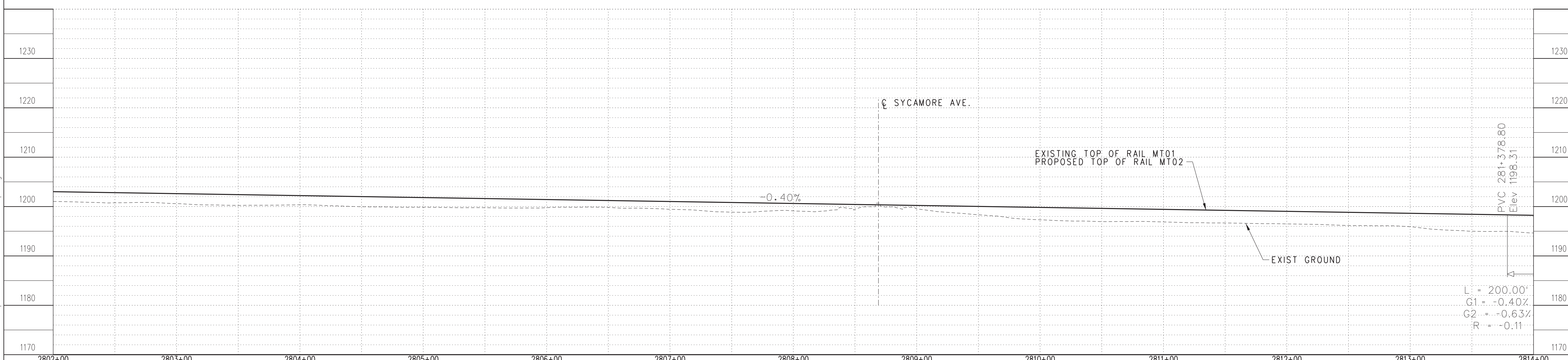
UTILITIES PLAN
MT2 STA 2790+00 TO MT2 STA 2802+00
SHEET 4 OF 13

CONTRACT NO. 16-1001411
DRAWING NO. U-004
REVISION A
SHEET NO. 110 OF 200
SCALE HORIZ 1"=40' VERT 1"=4'



NOTES:

1. THE LOCATION(S) OF THE UTILITIES SHOWN IN THE PLANS ARE BASED ON LIMITED AVAILABLE INFORMATION AND SHOULD BE CONSIDERED APPROXIMATE ONLY.
2. EXISTING UTILITIES ARE TO REMAIN IN PLACE UNLESS OTHERWISE NOTED.



FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential; and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sbcta san bernardino county transportation authority

METROLINK.

moffatt & nichol

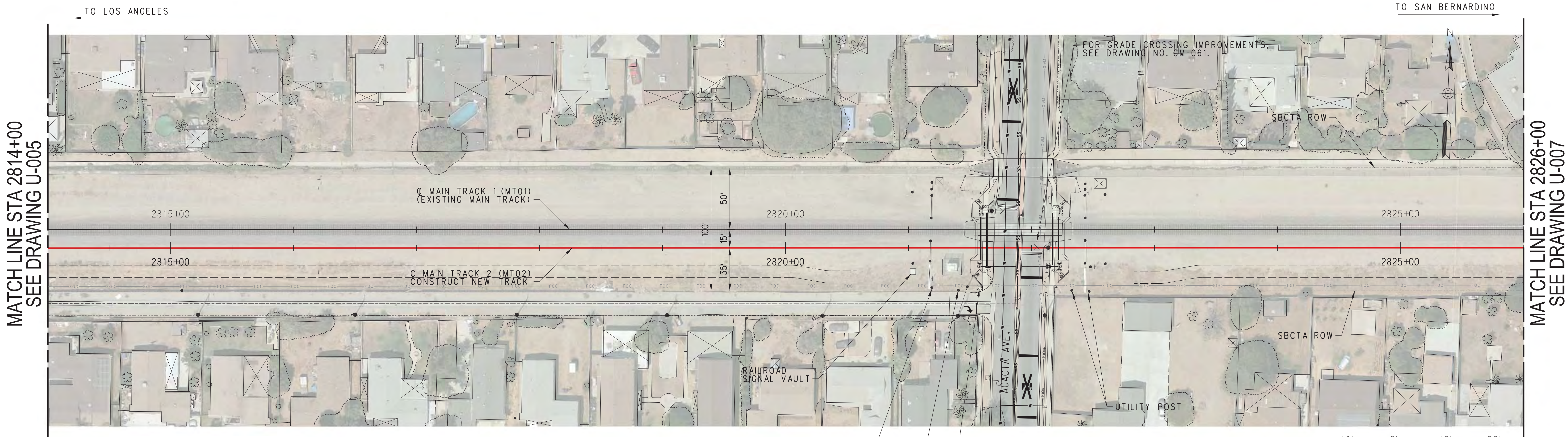
SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

UTILITIES PLAN
MT2 STA 2802+00 TO MT2 STA 2814+00
SHEET 5 OF 13

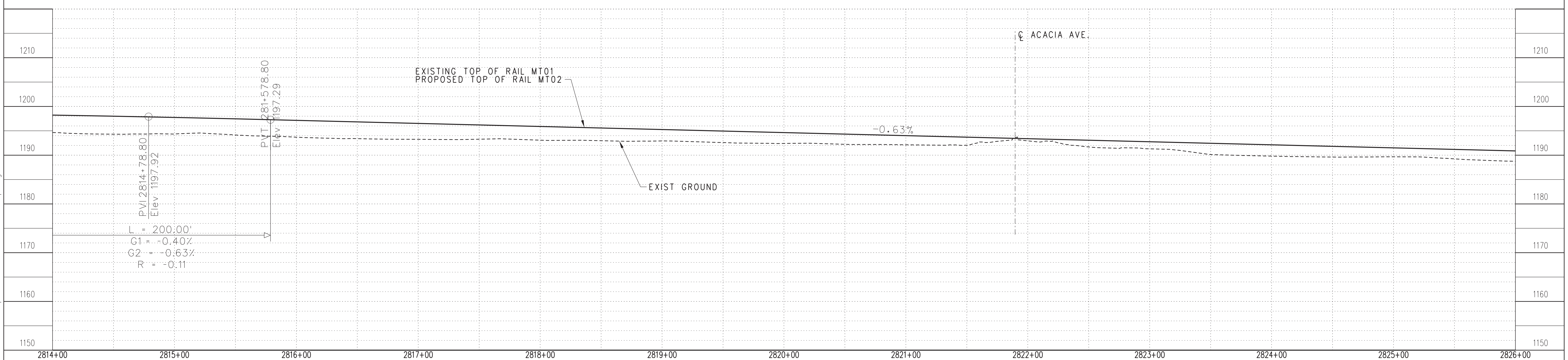
CONTRACT NO. 16-1001411
DRAWING NO. U-005
REVISION A
SHEET NO. 111 OF 200
SCALE HORIZ 1"=40' VERT 1"=4'

6/27/2018 11:10:52 AM USER = jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-U-005.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg



NOTES:

1. THE LOCATION(S) OF THE UTILITIES SHOWN IN THE PLANS ARE BASED ON LIMITED AVAILABLE INFORMATION AND SHOULD BE CONSIDERED APPROXIMATE ONLY.
2. EXISTING UTILITIES ARE TO REMAIN IN PLACE UNLESS OTHERWISE NOTED.



FINAL 30% SUBMITTAL (06-29-2018)

6/27/2018 11:10:57 AM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-U-006.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB. APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sb cta san bernardino county transportation authority

METROLINK

moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

UTILITIES PLAN
MT2 STA 2814+00 TO MT2 STA 2826+00
SHEET 6 OF 13

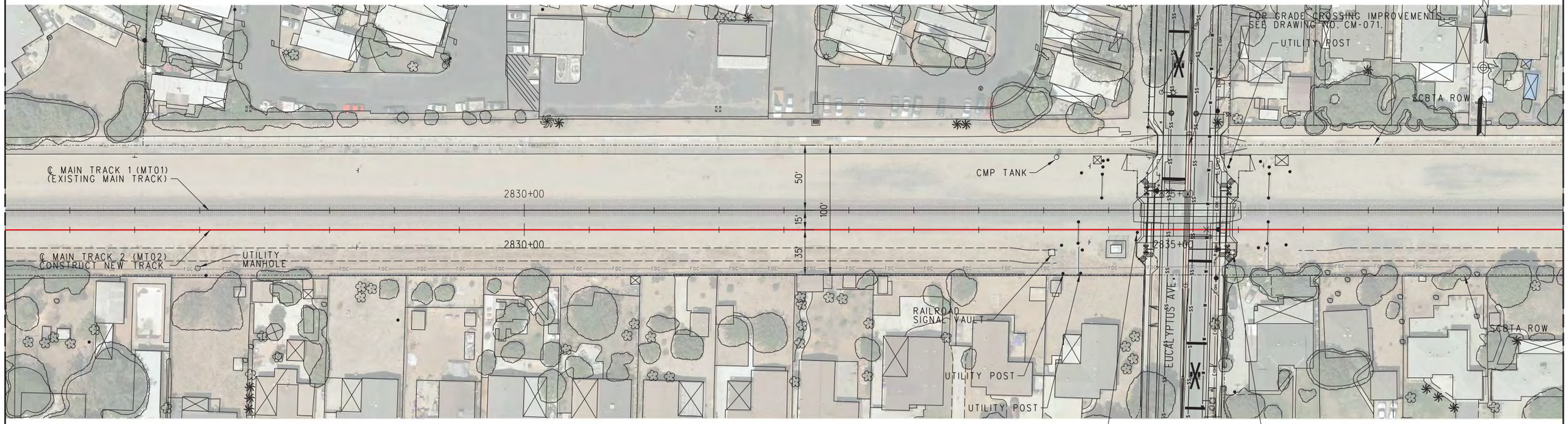
CONTRACT NO. 16-1001411
DRAWING NO. U-006
REVISION A
SHEET NO. 112 OF 200
SCALE HORIZ 1"=40' VERT 1"=4'

TO LOS ANGELES

TO SAN BERNARDINO

MATCH LINE STA 2826+00
SEE DRAWING U-006

MATCH LINE STA 2838+00
SEE DRAWING U-008



NOTES:

1. THE LOCATION(S) OF THE UTILITIES SHOWN IN THE PLANS ARE BASED ON LIMITED AVAILABLE INFORMATION AND SHOULD BE CONSIDERED APPROXIMATE ONLY.
2. EXISTING UTILITIES ARE TO REMAIN IN PLACE UNLESS OTHERWISE NOTED.

FINAL 30% SUBMITTAL (06-29-2018)

6/27/2018 11:11:04 AM USER = jaldaron
Q:\LB\950\3\CAD\Master Sheet\LM_RD_22_U_007.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\ploldrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
V	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL:
All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential; and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

moffatt & nichol

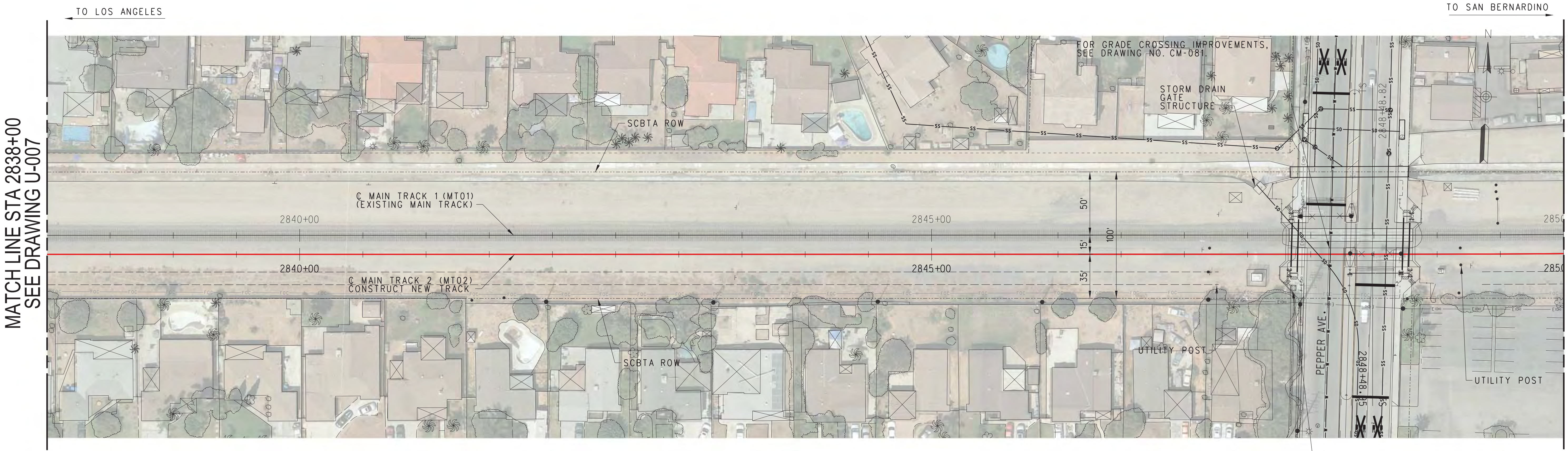
SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

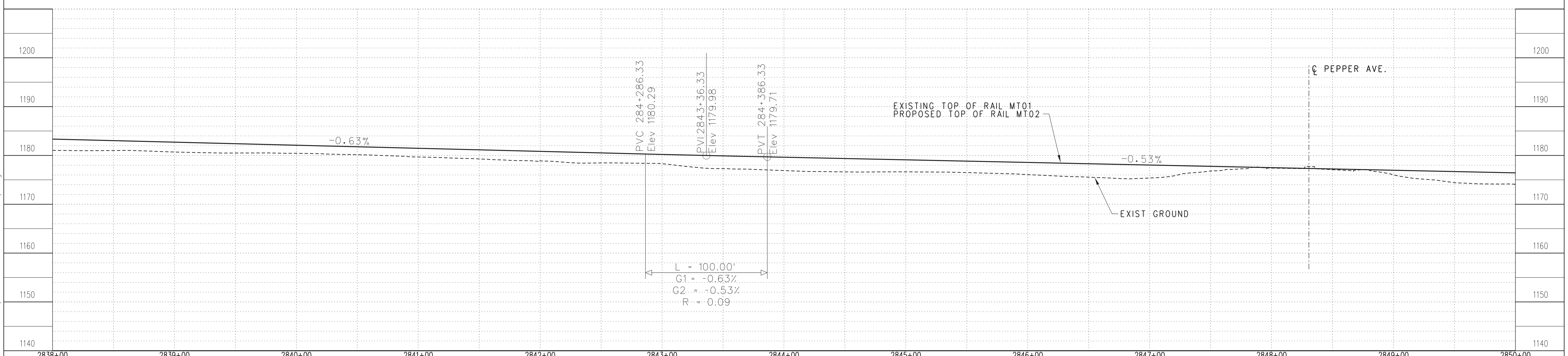
UTILITIES PLAN
MT2 STA 2826+00 TO MT2 STA 2838+00
SHEET 7 OF 13

CONTRACT NO. 16-1001411
DRAWING NO. U-007
REVISION A
SHEET NO. 113 OF 200
SCALE HORIZ 1"=40'
VERT 1"=4'



NOTES:

1. THE LOCATION(S) OF THE UTILITIES SHOWN IN THE PLANS ARE BASED ON LIMITED AVAILABLE INFORMATION AND SHOULD BE CONSIDERED APPROXIMATE ONLY.
2. EXISTING UTILITIES ARE TO REMAIN IN PLACE UNLESS OTHERWISE NOTED.



FINAL 30% SUBMITTAL (06-29-2018)

6/27/2018 11:11:10 AM USER - jcalderon

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
1	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

sbcta san bernardino county transportation authority

METROLINK.

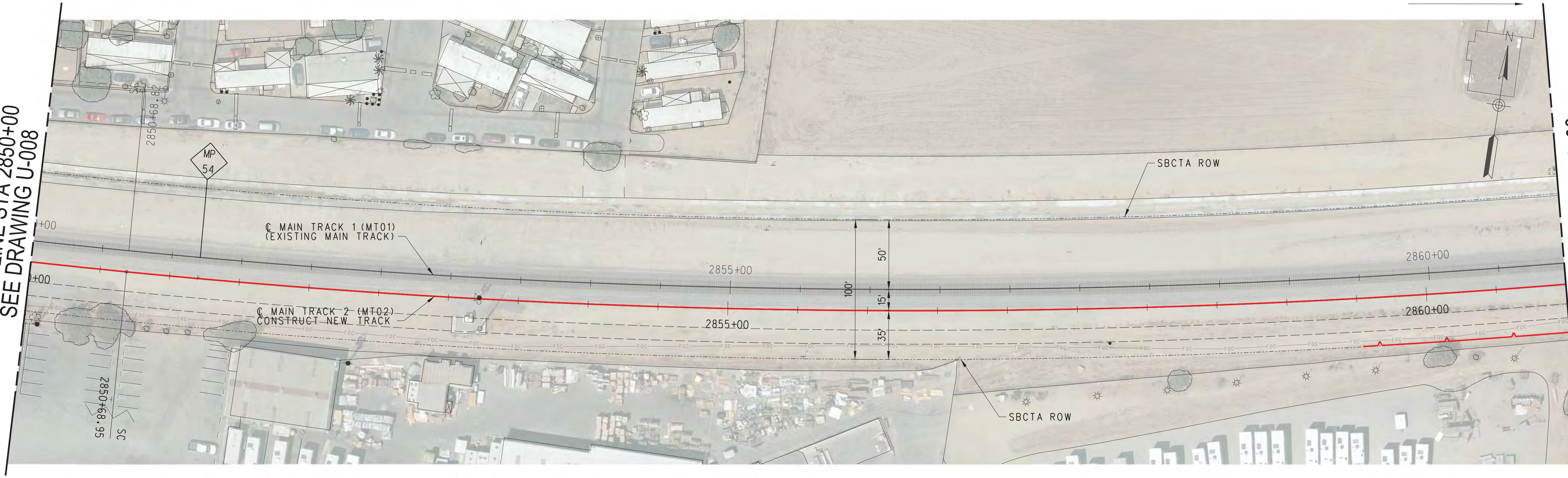
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

UTILITIES PLAN
MT2 STA 2838+00 TO MT2 STA 2850+00
SHEET 8 OF 13

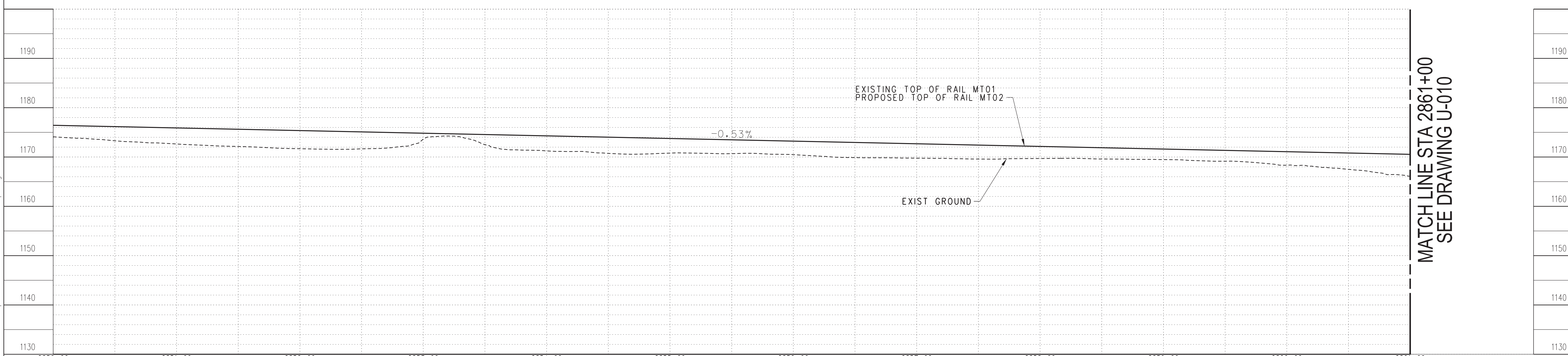
CONTRACT NO. 16-1001411
DRAWING NO. U-008
REVISION A
SHEET NO. 114 OF 200
SCALE HORIZ 1"=40' VERT 1"=4'



NOTES:

1. THE LOCATION(S) OF THE UTILITIES SHOWN IN THE PLANS ARE BASED ON LIMITED AVAILABLE INFORMATION AND SHOULD BE CONSIDERED APPROXIMATE ONLY.
2. EXISTING UTILITIES ARE TO REMAIN IN PLACE UNLESS OTHERWISE NOTED.

40' 0' 40' 80'
GRAPHIC SCALE



FINAL 30% SUBMITTAL (06-29-2018)

6/27/2018 11:11:17 AM USER - jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-U-009.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB. APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sb cta san bernardino county transportation authority

METROLINK.

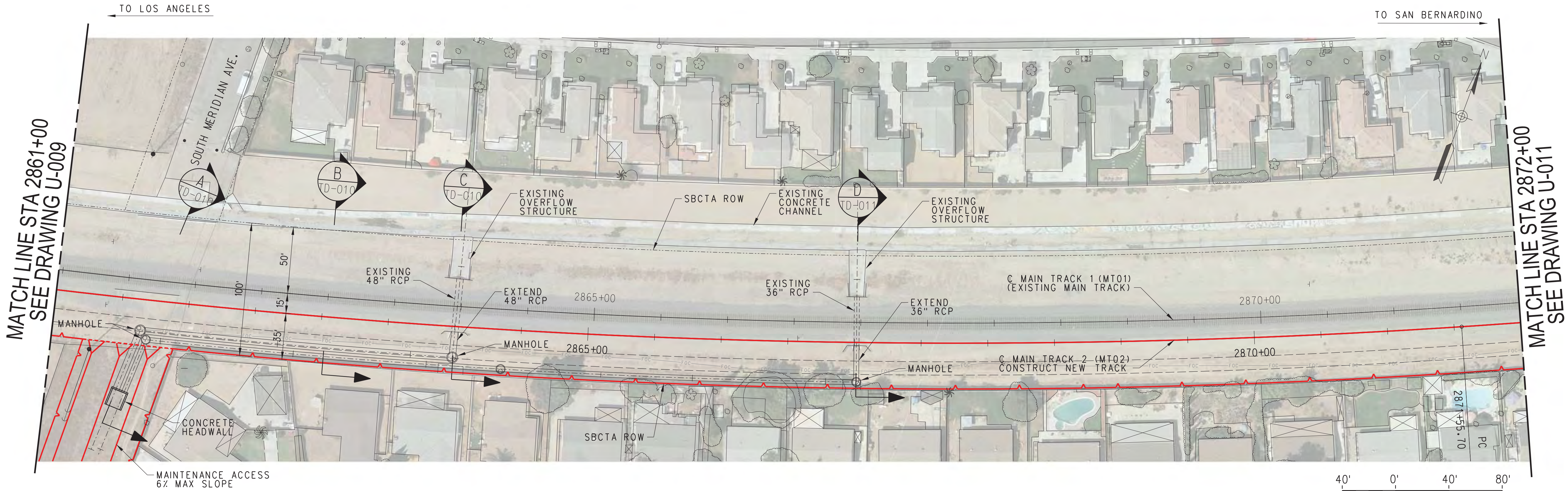
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

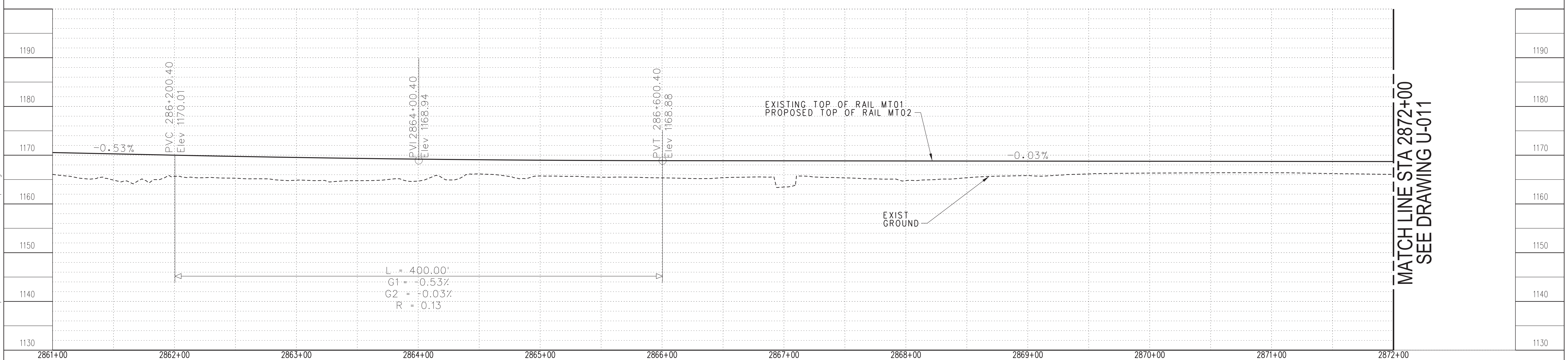
UTILITIES PLAN
MT2 STA 2850+00 TO MT2 STA 2861+00
SHEET 9 OF 13

CONTRACT NO. 16-1001411
DRAWING NO. U-009
REVISION A
SHEET NO. 115 OF 200
SCALE HORIZ 1"=40' VERT 1"=4'



NOTES:

1. THE LOCATION(S) OF THE UTILITIES SHOWN IN THE PLANS ARE BASED ON LIMITED AVAILABLE INFORMATION AND SHOULD BE CONSIDERED APPROXIMATE ONLY.
2. EXISTING UTILITIES ARE TO REMAIN IN PLACE UNLESS OTHERWISE NOTED.



FINAL 30% SUBMITTAL (06-29-2018)

6/27/2018 11:11:23 AM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-U-010.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB. APP.
1	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sb cta san bernardino county transportation authority

METROLINK.

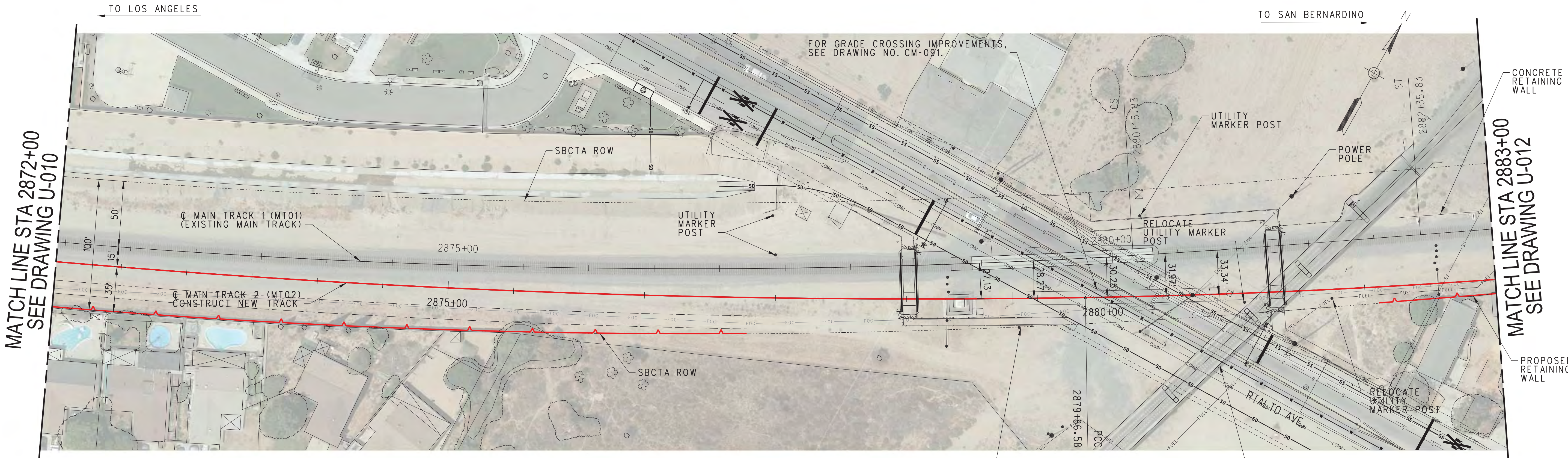
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

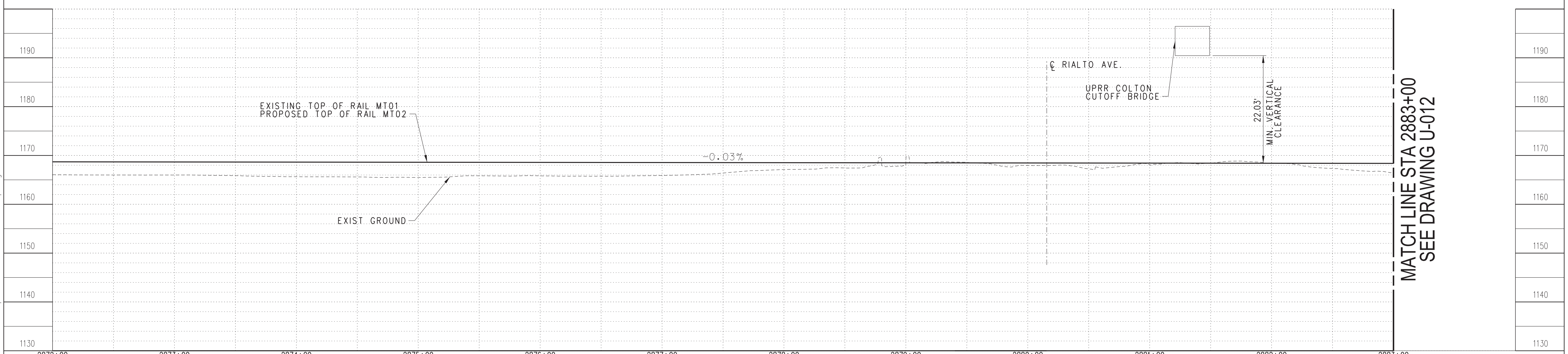
UTILITIES PLAN
MT2 STA 2861+00 TO MT2 STA 2872+00
SHEET 10 OF 13

CONTRACT NO. 16-1001411
DRAWING NO. U-010
REVISION A
SHEET NO. 116 OF 200
SCALE HORIZ 1"=40' VERT 1"=4'



NOTES:

1. THE LOCATION(S) OF THE UTILITIES SHOWN IN THE PLANS ARE BASED ON LIMITED AVAILABLE INFORMATION AND SHOULD BE CONSIDERED APPROXIMATE ONLY.
2. EXISTING UTILITIES ARE TO REMAIN IN PLACE UNLESS OTHERWISE NOTED.



FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
∇	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

DESIGNED BY J. AVENDANO
DRAWN BY N. VELAZQUEZ
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

sb cta — san bernardino county transportation authority

METROLINK.

moffatt & nichol

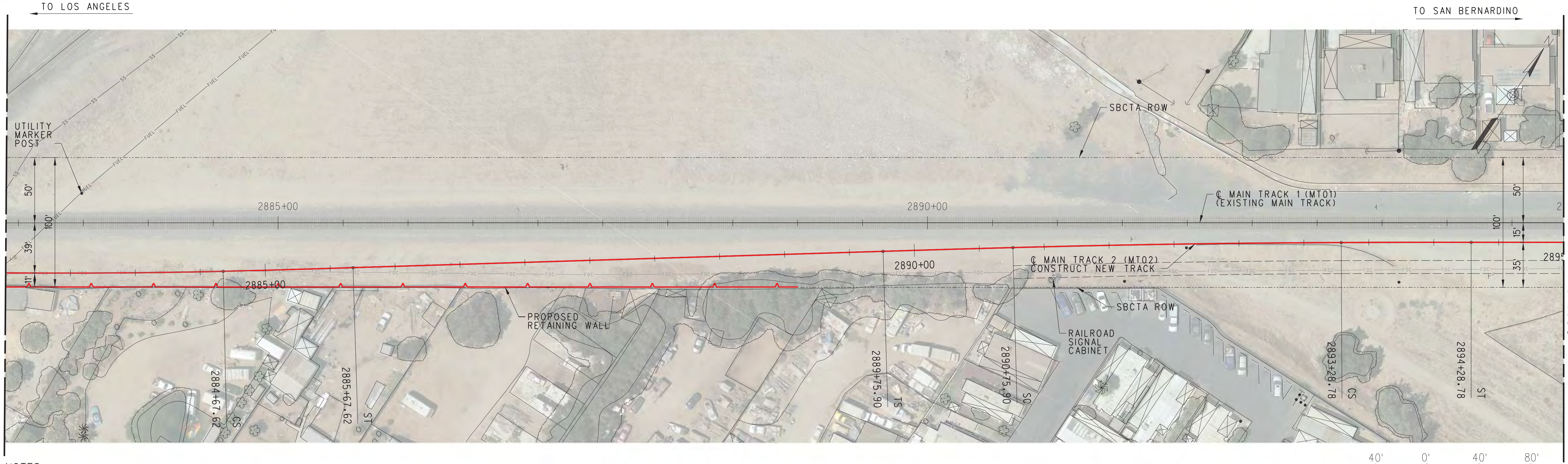
SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

UTILITIES PLAN MT2 STA 2872+00 TO MT2 STA 2883+00 SHEET 11 OF 13

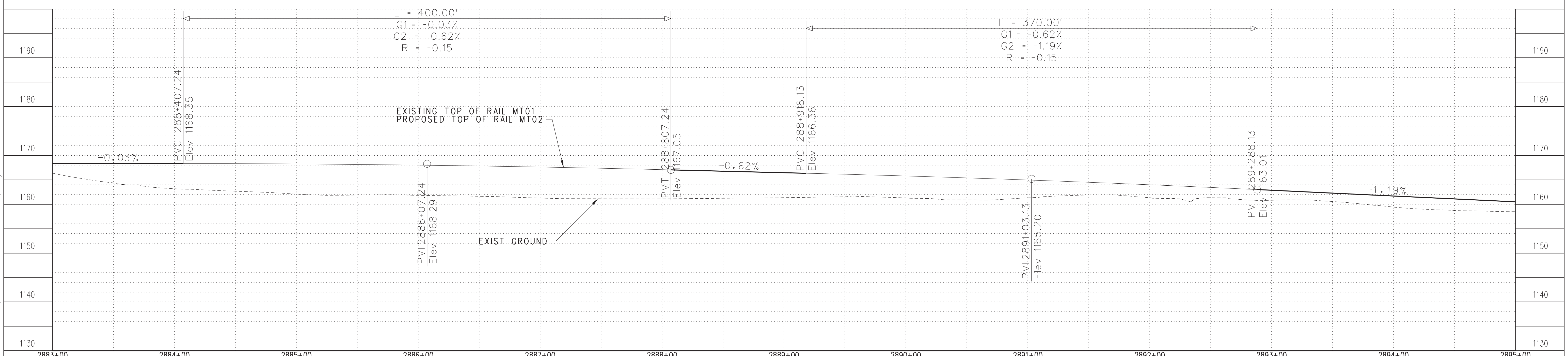
CONTRACT NO. 16-1001411
DRAWING NO. U-011
REVISION A
SHEET NO. 117 OF 200
SCALE HORIZ 1"=40' VERT 1"=4'

6/27/2018 11:11:30 AM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-U-011.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg



NOTES:

1. THE LOCATION(S) OF THE UTILITIES SHOWN IN THE PLANS ARE BASED ON LIMITED AVAILABLE INFORMATION AND SHOULD BE CONSIDERED APPROXIMATE ONLY.
2. EXISTING UTILITIES ARE TO REMAIN IN PLACE UNLESS OTHERWISE NOTED.



FINAL 30% SUBMITTAL (06-29-2018)

USER = jcalderon
6/27/2018 11:11:37 AM
Q:\LB\9503\CADD\Master\Sheets\LRD1212-U-012.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB. APP.
1	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sb cta san bernardino county transportation authority

METROLINK.

moffatt & nichol

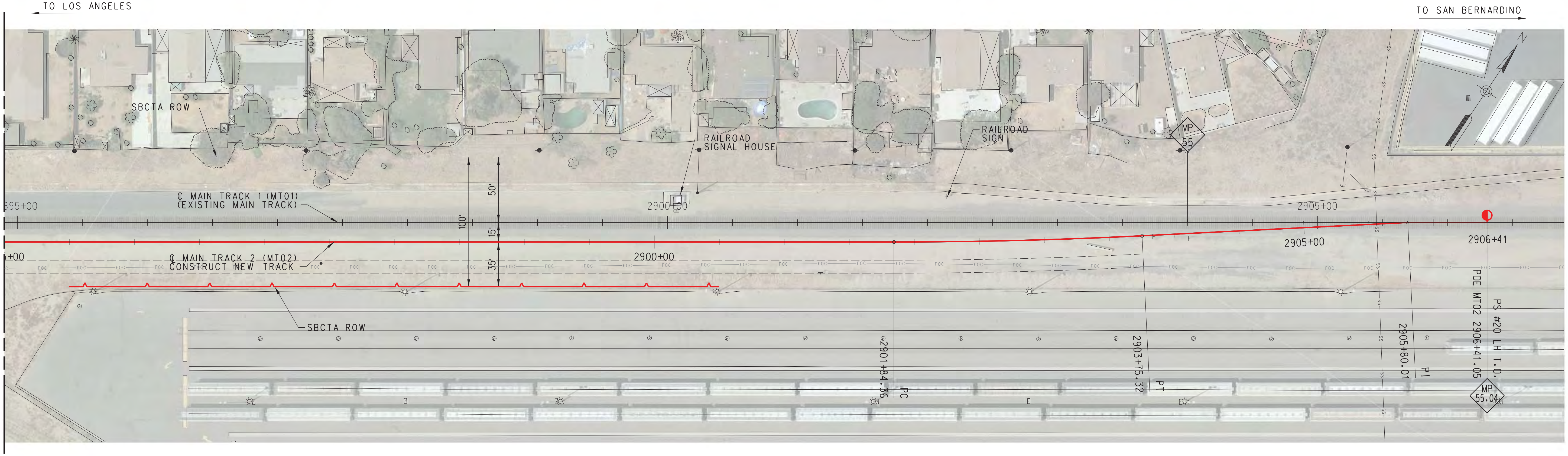
SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

UTILITIES PLAN
MT2 STA 2883+00 TO MT2 STA 2895+00
SHEET 12 OF 13

CONTRACT NO. 16-1001411
DRAWING NO. U-012
REVISION A
SHEET NO. 118 OF 200
SCALE HORIZ 1"=40' VERT 1"=4'

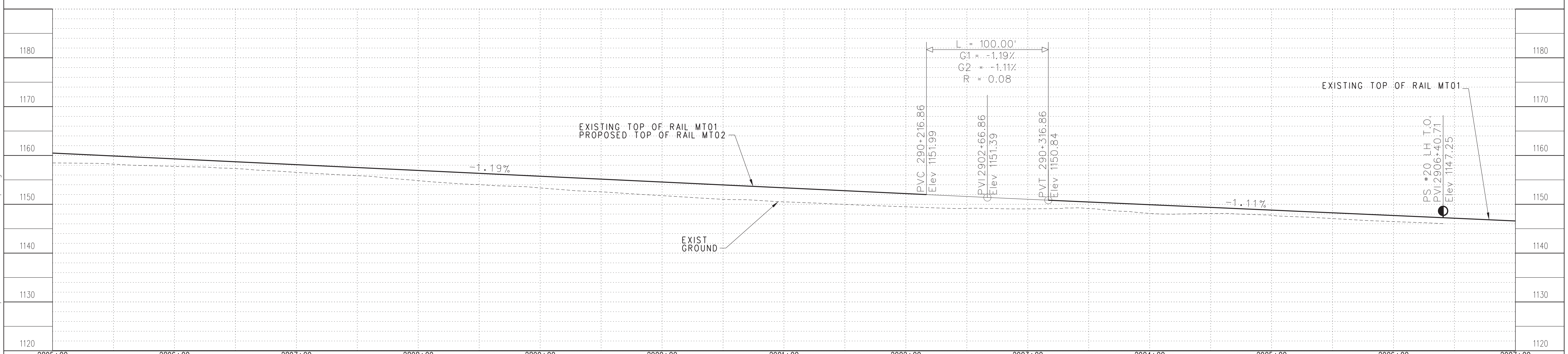
MATCH LINE STA 2895+00
SEE DRAWING U-012



NOTES:

1. THE LOCATION(S) OF THE UTILITIES SHOWN IN THE PLANS ARE BASED ON LIMITED AVAILABLE INFORMATION AND SHOULD BE CONSIDERED APPROXIMATE ONLY.
2. EXISTING UTILITIES ARE TO REMAIN IN PLACE UNLESS OTHERWISE NOTED.

40' 0' 40' 80'
GRAPHIC SCALE



FINAL 30% SUBMITTAL (06-29-2018)

6/27/2018 11:11:48 AM USER - jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-U-013.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB. APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sbcta san bernardino county transportation authority

METROLINK.

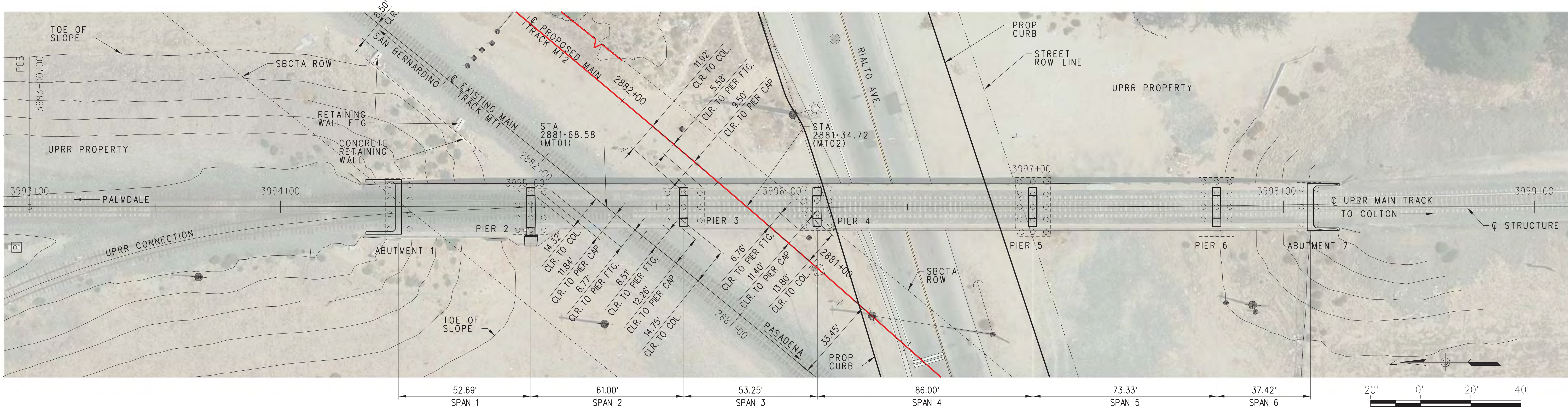
moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

UTILITIES PLAN
MT2 STA 2895+00 TO MT2 STA 2906+40.71
SHEET 13 OF 13

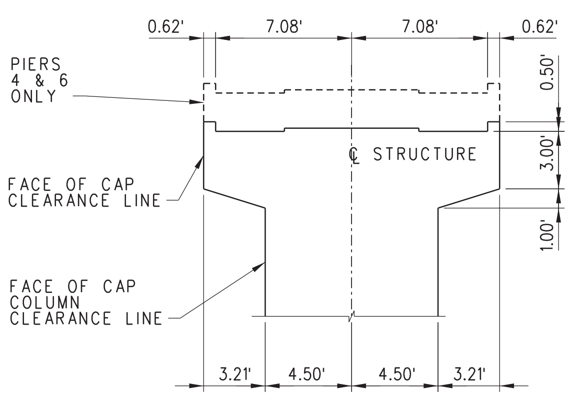
CONTRACT NO. 16-1001411
DRAWING NO. U-013
REVISION A
SHEET NO. 119 OF 200
SCALE HORIZ 1"=40' VERT 1"=4'



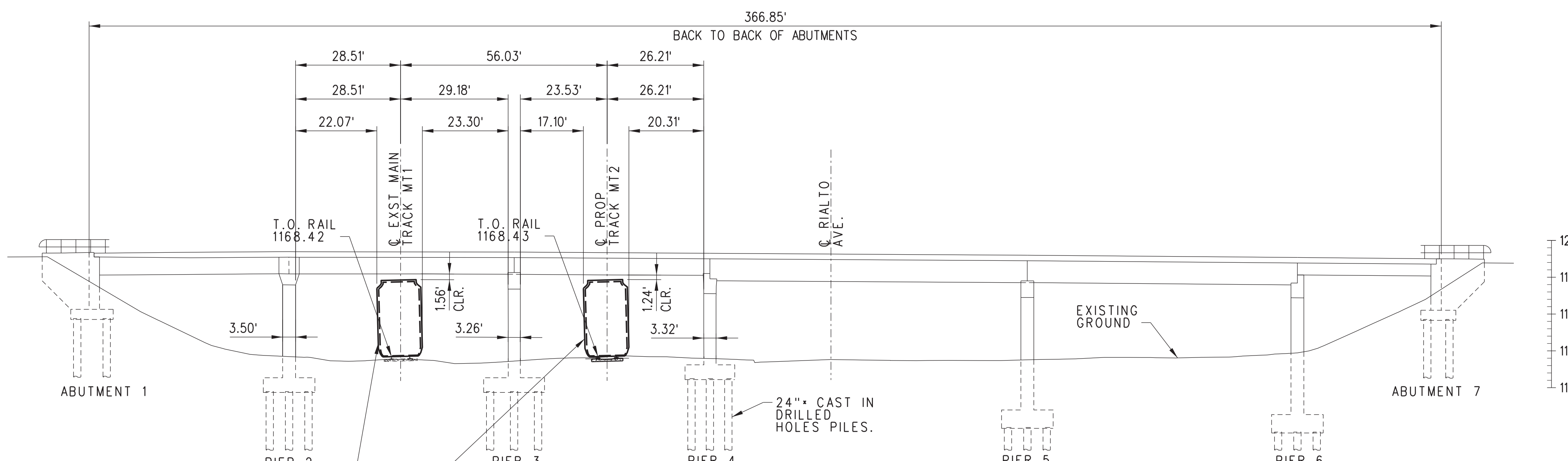
PLAN - UPRR COLTON CUT-OFF BRIDGE
SCALE: 1"=20'

HORIZONTAL CLEARANCES	PIER 2 CAP	PIER 2 COLUMN	PIER 2 FOOTING	PIER 3 CAP	PIER 3 COLUMN	PIER 3 FOOTING
EXISTING MAIN TRACK MT1	11.84'	14.32'	8.77'	12.26'	14.75'	8.51'

HORIZONTAL CLEARANCES	PIER 3 CAP	PIER 3 COLUMN	PIER 3 FOOTING	PIER 4 CAP	PIER 4 COLUMN	PIER 4 FOOTING
PROPOSED MAIN TRACK MT2	9.50'	11.92'	5.58'	11.40'	13.80'	6.76'



TYPICAL PIER ELEVATION
SCALE: 1"=5'



CLEARANCE MARGIN FOR MAXIMUM DOUBLESTACK CONTAINERS, BI-LEVEL AND TRI-LEVEL CARRIERS. THIS AREA TO BE KEPT FREE AND CLEAR OF ANY PLATFORMS, POLES, UTILITY LINES, WAYSIDE SIGNAL DEVICES, AND ALL OTHER NATURAL OR MAN-MADE STRUCTURES AND OBJECTS. SEE SHEET TP-101 FOR ENLARGED DETAIL

ELEVATION
SCALE: 1"=20'

NOTE:
THE CLEARANCES ALONG THE CENTERLINE OF THE BRIDGE ARE AFFECTED BY THE SKEW OF THE TRACK.

FINAL 30% SUBMITTAL (06-29-2018)

6/22/2018 1:53:08 PM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-TP-100.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCRRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sb cta san bernardino county transportation authority

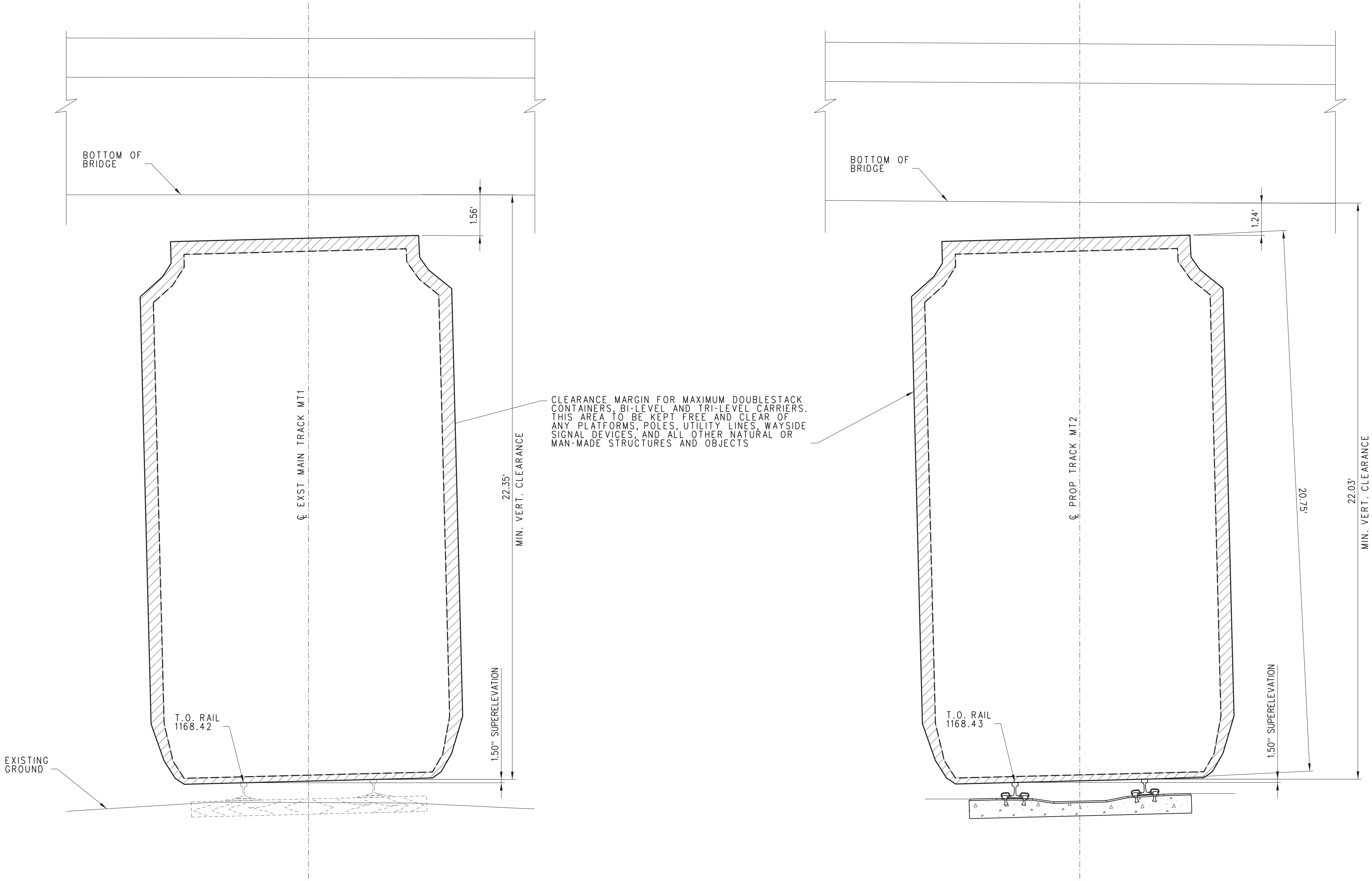
METROLINK.

moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT
UPRR COLTON CUT-OFF BRIDGE
PLAN, ELEVATION AND DETAIL

CONTRACT NO. 16-1001411
DRAWING NO. TP-100
REVISION A
SHEET NO. 120 OF 200
SCALE AS NOTED



ELEVATION
SCALE: 1/2"=1'-0"

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB. APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

sb cta san bernardino county transportation authority

METROLINK

moffatt & nichol

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

UPRR COLTON CUT-OFF BRIDGE CLEARANCE ENVELOPE DETAIL

CONTRACT NO. 16-1001411
DRAWING NO. TP-101
REVISION A
SHEET NO. 121 OF 200
SCALE AS NOTED

6/22/2018 1:53:22 PM USER : jcalderon
Q:\LB\9503\CADD\Master\Sheets\LRD1212-TP-101.dgn
R:\CADD\Microstation\V8i\Client\SCRRA\tables\pen\PlotStampFULL.tbl
R:\CADD\Microstation\V8i\Client\SCCRA\plotdrv\SCCRA_D_Size_PDF.pltcfg

NOTES

1. REFER TO CALTRANS STANDARD DRAWINGS FOR DETAILS OF WALL TYPES.
2. PROPOSED WALL DESIGN DETAILS WILL BE DEVELOPED IN THE NEXT DESIGN PHASE.

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. AVENDANO
DRAWN BY J. SANTA ANA
CHECKED BY J. AVENDANO
APPROVED BY S. MANSOUR
DATE 06-29-2018

METROLINK | moffatt & nichol | sbcta san bernardino county transportation authority

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT
RETAINING WALL TYPES

CONTRACT NO. 16-1001411
DRAWING NO. ST-100
REVISION A
SHEET NO. 122 OF 200
SCALE 1"=200'

6/22/2018 1:53:25 PM USER • jcalderon

PROJECT SUMMARY

THE WORK OF THIS PERMIT SHALL CONSIST OF IMPROVEMENTS TO AN EXISTING TRAIN STATION, INCLUDING A SECOND BOARDING PLATFORM WITH SIX CANOPIES AND AMMENITIES, PEDESTRIAN UNDERPASS AND WALKWAY TO SECOND BOARDING PLATFORM.

CODE & STANDARDS

THE WORK OF THIS PROJECT SHALL COMPLY WITH 2016 CALIFORNIA BUILDING STANDARDS CODES, WHICH ARE CONTAINED IN THE CALIFORNIA CODE OF REGULATIONS (CCR'S) TITLE 24, WHICH INCLUDES THE FOLLOWING:

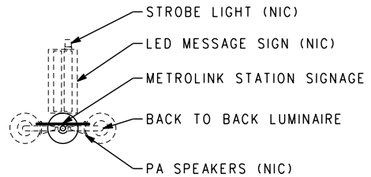
2016 CBC CALIFORNIA BUILDING CODE
2016 CPC CALIFORNIA PLUMBING CODE
2016 CMC CALIFORNIA MECHANICAL CODE
2016 CEEC CALIFORNIA ENERGY CODE
2016 CEC CALIFORNIA ELECTRICAL CODE
2016 CFC CALIFORNIA FIRE CODE
2016 CALGREEN CALIFORNIA GREEN BUILDING STANDARDS CODE

SYMBOLS

ACCESSIBLE PATH OF TRAVEL

SINGLE LUMINAIRE

BACK TO BACK LUMINAIRE



NOTE:
FOR MORE INFORMATION
SEE DETAIL 5/A-301

LIGHT STANDARD COMBINATION

TRASH RECEPTACLE

BENCH

TVM - TICKET VENDING MACHINE (NIC)
(TRIANGLE DENOTES FRONT OF EQUIP)

XX-X SIGNAGE (SEE METROLINK SIGNAGE STANDARDS)

4 FT HIGH ORNAMENTAL FENCE

6 FT HIGH ORNAMENTAL FENCE

4 FT HIGH WIREMESH FENCE

6 FT HIGH WIREMESH FENCE

6 FT HIGH CHAINLINK FENCE

FIXED BOLLARD

REMOVABLE BOLLARD

EMERGENCY PHONE (NIC)

ACCESSIBLE DRINKING FOUNTAIN

MAP INFORMATION KIOSK (NIC)

GENERAL NOTES

1. CONTRACTOR SHALL CONSTRUCT ALL WORK IN ACCORDANCE WITH APPLICABLE CODES, ORDINANCES AND STANDARD SPECIFICATIONS OF ALL AGENCIES THAT HAVE RESPONSIBILITY OF REVIEWING PLANS AND SPECIFICATIONS IN THIS LOCALITY.
2. CONTRACTOR SHALL COMPLY WITH ALL SAFETY CODES, REGULATIONS AND LAWS OF AUTHORITIES HAVING JURISDICTION.
3. CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD DESIGN PROFESSIONAL HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT.
4. WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALE.
5. STORAGE, DISPENSING OR USE OF ANY FLAMMABLE OR COMBUSTIBLE LIQUIDS, FLAMMABLE GAS AND HAZARDOUS CHEMICALS SHALL COMPLY WITH CALIFORNIA BUILDING CODE REGULATIONS AND LOCAL JURISDICTION.
6. FIRE PROTECTION FACILITIES INCLUDING ACCESS MUST BE PROVIDED PRIOR TO AND DURING CONSTRUCTION.
7. THE CONTRACTOR IS RESPONSIBLE FOR THE REPAIR/REPLACEMENT OF ANY DAMAGE TO MATERIALS OR FACILITIES INTENDED TO REMAIN IN PLACE.
8. ALL ELEVATIONS SHOWN FOR REFERENCE ONLY, SEE CIVIL PLANS FOR VERTICAL CONTROLS.
9. CONTRACTOR SHALL KEEP TRAFFIC DISRUPTION TO A MINIMUM DURING CONSTRUCTION. CONTRACTOR SHALL COORDINATE ALL LANE CLOSURES AT ROAD CROSSINGS BEFOREHAND WITH THE CITY OR/AGENCY HAVING JURISDICTION DEPARTMENT OF TRANSPORTATION AND OTHER PERTINENT AGENCIES.
10. SECTION 4216/4217 OF THE GOVERNMENT CODE REQUIRES A DIG ALERT IDENTIFICATION NUMBER TO BE ISSUED BEFORE A "PERMIT TO EXCAVATE" WILL BE VALID. TWO WORKING DAYS BEFORE BEGINNING EXCAVATION, THE CONTRACTOR IS TO CALL UNDERGROUND SERVICE ALERT AT 1-800-422-4133 TO OBTAIN A DIG ALERT ID NUMBER.
11. THE CONTRACTOR SHALL OBTAIN ALL THE NECESSARY PERMITS AS REQUIRED FOR CONSTRUCTION OF THIS PROJECT.
12. THE CONTRACTOR SHALL CLEAN UP ALL DEBRIS AND MATERIALS RESULTING FROM HIS OPERATION AND RESTORE ALL SURFACES, STRUCTURES, DITCHES AND PROPERTY TO THEIR ORIGINAL CONDITION TO THE SATISFACTION OF THE ENGINEER.
13. ALL AREAS AND ITEMS NOTED AS NIC, AND RELATED EQUIPMENT, SHALL BE PERFORMED UNDER A SEPARATE CONTRACT.
14. THE CONTRACTOR SHALL PERFORM WORK IN SUCH MANNER AND AT SUCH TIMES SO AS NOT TO ENDANGER OR INTERFERE WITH THE SAFE OPERATION OF RUNNING TRAINS. THE CONTRACTOR SHALL OBTAIN PERMISSION FOR MOVEMENT OF EQUIPMENT ACROSS TRACKS AT LOCATIONS OTHER THAN PUBLIC CROSSINGS. SUCH PERMISSION MAY NOT NECESSARILY BE GRANTED. IF IT IS GRANTED, THE CONTRACTOR SHALL COMPLY WITH ANY CONDITIONS REQUIRED SUCH AS, BUT NOT LIMITED TO, THE BRIDGING OF THE RAIL AND PROTECTION OF THE BALLAST SECTION.
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL OF ALL MATERIALS, TOOLS, EQUIPMENT AND INCIDENTALS WHETHER BROUGHT UPON THE RIGHT-OF-WAY BY THE CONTRACTOR, ONE OF HIS SUBCONTRACTORS, EMPLOYEES OR AGENTS.
16. DURING OPERATIONS ADJACENT TO LIVE TRACK, ALL WORK WITHIN 20 FEET OF THE NEAREST RAIL MUST BE STOPPED WHEN TRAINS ARE APPROACHING AND EQUIPMENT AND EMPLOYEES MOVED TO A SAFE DISTANCE 30 FEET, WHERE POSSIBLE, FROM THE TRACKS UNLESS OTHERWISE APPROVED. USE OF A FLAGMAN IS MANDATORY.
17. THE BOTTOM OF FOUNDATIONS MAY VARY FROM THAT SHOWN ON THE DRAWINGS DUE TO THE SOIL BEARING CAPACITY AT DIFFERENT SITES. VERIFY BOTTOM OF FOUNDATIONS WITH THE RESIDENT ENGINEER BEFORE BACKFILLING OR PLACING CONCRETE.

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	RQ		SM

DESIGNED BY D. UNGSON
DRAWN BY D. UNGSON
CHECKED BY R. QUIRK
APPROVED BY A. SOKOL
DATE 06-29-2018

sbcta san bernardino county transportation authority

METROLINK

STV 100 Years

SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

RIALTO STATION
ARCHITECTURAL
SYMBOLS AND NOTES

CONTRACT NO. 16-1001411
DRAWING NO. A-001
REVISION
SHEET NO. 123 OF 200
SCALE NTS

ABBREVIATIONS

A

ACC	ACCESS, ACCESSIBLE
ACOUS	ACOUSTICAL
AD	AREA DRAIN
ADA	AMERICANS WITH DISABILITIES ACT
AFG	ABOVE FINISHED GRADE
AFF	ABOVE FINISHED FLOOR
ALIGN	ALIGNMENT
ALT	ALTERNATE
ALUM	ALUMINUM
AP	ACCESS PANEL
APPROX	APPROXIMATE, APPROXIMATELY
APWA	AMERICAN PUBLIC WORKS ASSOCIATION
ARCH	ARCHITECT, ARCHITECTURAL
A/R	AS REQUIRED
ASSY	ASSEMBLY
ATR	ABOVE TOP OF RAIL
AVE	AVENUE

B

BD	BOARD
BEL	BELOW
BET	BETWEEN
BITUM	BITUMINOUS
BLDG	BUILDING
BLKG	BLOCKING
BLVD	BOULEVARD
BNSF	BURLINGTON NORTHERN SANTA FE RAILWAY
BM	BEAM
BOS	BOTTOM OF STEEL
BOT	BOTTOM

C

CCTV	CLOSED CIRCUIT TELEVISION
CB	CATCH BASIN
CBC	CALIFORNIA BUILDING CODE
CIP	CAST IN PLACE
CLF	CHAIN LINK FENCE
CEM	CEMENT
CFT	CUBIC FOOT
CJ	CONTROL JOINT, CONSTRUCTION JOINT
CL, ℄	CENTER LINE
CLG	CEILING
CLK	CHAIN LINK
CLKG	CAULKING
CLR	CLEAR, CLEARANCE
CMS	CHANGEABLE MESSAGE SIGNAGE
CMU	CONCRETE MASONRY UNIT
CND	CONDUIT
CO	CLEAN OUT
COL	COLUMN
COMM	COMMUNICATIONS
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS
CONTR	CONTRACTOR
COORD	COORDINATE
CPUC	CALIFORNIA PUBLIC UTILITIES COMMISSION
CS	COMMUNICATIONS SHELTER
CYD	CUBIC YARD

D

DEP	DEPRESSED, DEPTH
DET	DETAIL
DF	DRINKING FOUNTAIN
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DIR	DIRECTION
DISP	DISPENSER
DN	DOWN
DO	DOOR OPENING
DP	DISABLED PERSON
DR	DOOR, DRIVE
DRWY	DRIVEWAY
DS	DOWNSPOUT
DVM	DEBIT CARD VALIDATOR MACHINE
DWG(S)	DRAWING, DRAWINGS

E

E	EAST
(E)	EXISTING
EA	EACH
EB	EASTBOUND, EXPANSION BOLT
EF	EACH FACE
EFC	EXPOSED FINISH CONCRETE
EG	EDGE OF GUTTER
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
ELEV	ELEVATOR
EMER	EMERGENCY
EMP	EMERGENCY MANAGEMENT PANEL
ENCL	ENCLOSURE
ENGR	ENGINEER, ENGINEERING
EP	EDGE OF PAVEMENT
EPIS	ELECTRONIC PASSENGER INFORMATION SYSTEM
EQ	EQUAL, EQUATION
EQUIP	EQUIPMENT
ES	ENGINEERING STANDARD(S)
ESMT	EASEMENT
ET	EMERGENCY TELEPHONE
EW	EDGE OF WALK
EXCA	EXCAVATE
EXP	EXPANSION
EXPD	EXPOSED
EXT	EXTERIOR

F

(F)	FUTURE
FA	FIRE ALARM
FC	FACE OF CONCRETE
FCO	FLOOR CLEAN OUT
FD	FLOOR DRAIN
FDN	FOUNDATION
FE	FIRE EXTINGUISHER
FG	FINISHED GRADE
FH	FIRE HYDRANT
FIN	FINISH, FINISHED
FLG	FLASHING
FLOUR	FLOURESCENT
FLR	FLOOR(ING)
FN	FENCE
FOC	FACE OF CONCRETE
FOF	FACE OF FINISH
FOM	FACE OF MASONRY
FOS	FACE OF STUDS
FP	FIRE PROOF
FR	FRAME(D), (ING)
FT	FEET
FRPP	FIBERGLASS REINFORCED PLASTIC PANELS
FS	FINISH SURFACE
FT	FOOT, FEET
FTG	FOOTING
F TO F	FACE TO FACE
FUR	FURRING
FWY	FREEWAY

G

GA	GAGE, GAUGE
GALV	GALVANIZED
GEN	GENERAL
GL	GLASS, GLAZING
GLB	GLU-LAMINATED BEAM
GND	GROUND
GR	GUARDRAIL/ GRADE
GRD	GRADE, GRADING
GRTG	GRATING
GSP	GALVANIZED STEEL PIPE
GVL	GRAVEL
GYP	GYPSUM
GYP BD	GYPSUM BOARD

H

H	HIGH
HB	HOSE BIBB
HC	HOLLOW CORE, HANDICAP(PED)
HD	HEAVY DUTY
HDR	HEADER
HDWE	HARDWARE
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HR	HANDRAIL
HSS	HOLLOW STRUCTURAL SECTION
HT	HEIGHT
HWY	HIGHWAY

I

ID	IDENTIFICATION, INSIDE DIAMETER
IN	INCH(ES)
INFO	INFORMATION
INSUL	INSULATION
INT	INTERIOR
ISA	INTERNATIONAL SYMBOL OF ACCESSIBILITY

J

JT	JOINT
JB	JUNCTION BOX
JPA	JOINT POWERS AUTHORITY

K

KOP	KNOCK OUT PANEL

L

L	LENGTH
LAV	LAVATORY
LB(S)	POUND(S)
LCD	LIQUID CRYSTAL DISPLAY
LED	LIGHT EMITTING DIODE MESSAGE SIGN
LF	LINEAL FEET
LG	LONG
LGT	LIGHT
LGTH	LENGTH
LH	LEFT HAND
LKR	LOCKER
LN	LANE
LONG	LONGITUDINAL
LP	LOW POINT
LT	LEFT
LTG	LIGHTING
LVL	LEVEL

M

MAS	MASONRY
MAINT	MAINTENANCE
MAX	MAXIMUM
MECH	MECHANICAL
MED	MEDIAN, MEDIUM
MEM	MEMBRANCE
MET/MTL	METAL
MFG	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MIRR	MIRROR
MISC	MISCELLANEOUS
MJPA	MARCH JOINT POWERS AUTHORITY
MO	MASONRY OPENING
MOD	MODIFIED
MON	MONUMENT
MTD	MOUNTED
MTL	MATERIAL, MATERIALS
MTG	MOUNTING
MTTV	MULTI TRIP TICKET VALIDATOR MACHINE
MUL	MULLION

N

N	NORTH
(N)	NEW
N/A	NOT APPLICABLE
NAP	NOT A PART
NB	NORTHBOUND
NEG	NEGATIVE
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
NTS	NOT TO SCALE

O

OA	OVERALL
OC	ON CENTER
OD	OUTSIDE DIAMETER
OH	OPPOSITE HAND
OHD	OVERHEAD
OPER	OPERATOR
OPNG	OPENING
OPP	OPPOSITE

P

(P)	PROPOSED
P	POWER
PA	PLANTING AREA PUBLIC ADDRESS
PB	PULL BOX
PC	PRECAST CONCRETE, PIECE(S)
PED	PEDESTAL, PEDESTRAIN
PERF	PERFORATED
PERI	PERIMETER
PK	PARKING
PL	PLATE, PROPERTY LINE
P/L	PROPERTY LINE
PLAT(S)	PLATFORM(S)
PNL	PANEL
PRE-FIN	PRE-FINISHED
PROP	PROPOSED
PTD	PAINTED, PAPER TOWEL DISPENSER
PVMT	PAVEMENT
PVL	PERRIS VALLEY LINE
PWD	PLYWOOD

Q

QTY	QUANTITY

R

R	RADIUS
(R)	RECESSED, RELOCATED
RB	RESILIENT BASE
RC	REINFORCED CONCRETE
RD	ROAD
RDWY	ROADWAY
RE:	REFER
RECT	RECTANGULAR
REF	REFERENCE
REINF	REINFORCE, REINFORCED
REL	RELOCATE(D)
REM	REMOVE(D)
REQD	REQUIRED
RESIL	RESILIENT
REV	REVISION, REVISED
RH	RIGHT HAND
RL	RAIL(ING)
RM	ROOM
RO	ROUGH OPENING
ROW, R/W	RIGHT OF WAY
RR	RAILROAD
RT	RIGHT
RVS	REVERSE (SIDE)
RW	RETAINING WALL

S

S	SOUTH
(S)	SURFACE MOUNTED
SB	SOUTHBOUND
SCRRA	SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY
SCD	SEAT COVER DISPENSER
SCHED	SCHEDULE
SCN	SCREEN
SD	STORM DRAIN
SECT	SECTION
SERV	SERVICE
SF	SQUARE FEET
SHT	SHEET
SIG	SIGNAL LINE
SIM	SIMILAR
SL	SLOPE
SM	SHEET METAL
SMS	SHEET METAL SCREWS
S/N	SERIAL NUMBER
SND	SANITARY NAPKIN DISPENSER
SNR	SANITARY NAPKIN RECEPTACLE
SPEC(S)	SPECIFICATION(S)
SPKR	SPEAKER
SQ	SQUARE
SST	STAINLESS STEEL
SS	SANITARY SEWER
ST	STREET
STA	STATION
STD	STANDARD
STL	STEEL
STOR	STORAGE
STRL	STRUCTURAL
STRUCT	STRUCTURE
SUSP	SUSPENDED
SWK	SIDEWALK
SYMM	SYMMETRICAL
SYS	SYSTEM

T

TEL	TELEPHONE
T&B	TOP AND BOTTOM
TBD	TO BE DETERMINED
TBR	TO BE REMOVED
TD	TOP OF DECK
TDD	TELECOMMUNICATION DEVICE FOR THE DEAF
TEMP	TEMPORARY
TG	TOP OF GRADE
THK	THICK(NESS)
TK	TRACK
TOC	TOP OF CONCRETE, TOP OF CURB
TOL	TOLERANCE
TOM	TOP OF MASONRY
TOP	TOP OF PIPE
TOR	TOP OF RAIL
TOS	TOP OF SLOPE
TOW	TOP OF WALL
TP	TOP OF PLATFORM
TPD	TOILET PAPER DISPENSER
T/R	TOP OF RAIL
TVM	TICKET VENDING MACHINE
TYP	TYPICAL

U

UNF	UNFINISHED
UNO	UNLESS NOTED OTHERWISE
UTIL	UTILITY

V

VAR	VARIES
VENT	VENTILATION
VERT	VERTICAL
VS	VERSUS

W

W	WEST
W/	WITH
WB	WESTBOUND
WC	WATER CLOSET
W/O	WITHOUT
WP	WORK POINT
W/R	WATER RESISTANT
WT	WEIGHT

X

XING	CROSSING

MISCELLANEOUS

&	AND
∠	ANGLE
@	AT
ø	DIAMETER
'	FEET
"	INCHES
#	NUMBER
+/-, ±	PLUS/MINUS TOLERANCE

FINAL 30% SUBMITTAL (06-29-2018)

6/26/2018 12:08:10 PM USER = ungsond
I:\Projects\4018447_0001\90_CAD Models and Sheets\07_A_Architectural\Sheet Files\LRDT212-A-002.snt
G:\Cad\Standards\SCRRA\Standards\PenTable\PlotStamp.tbl
G:\CAD\Standards\SCRRA\Standards\Plotdrv\SCRRA_pdf_Color_Full.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
▽	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	RQ		SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY D. UNGSON
DRAWN BY D. UNGSON
CHECKED BY R. QUIRK
APPROVED BY A. SOKOL
DATE 06-29-2018

sb cta — san bernardino county transportation authority

METROLINK.

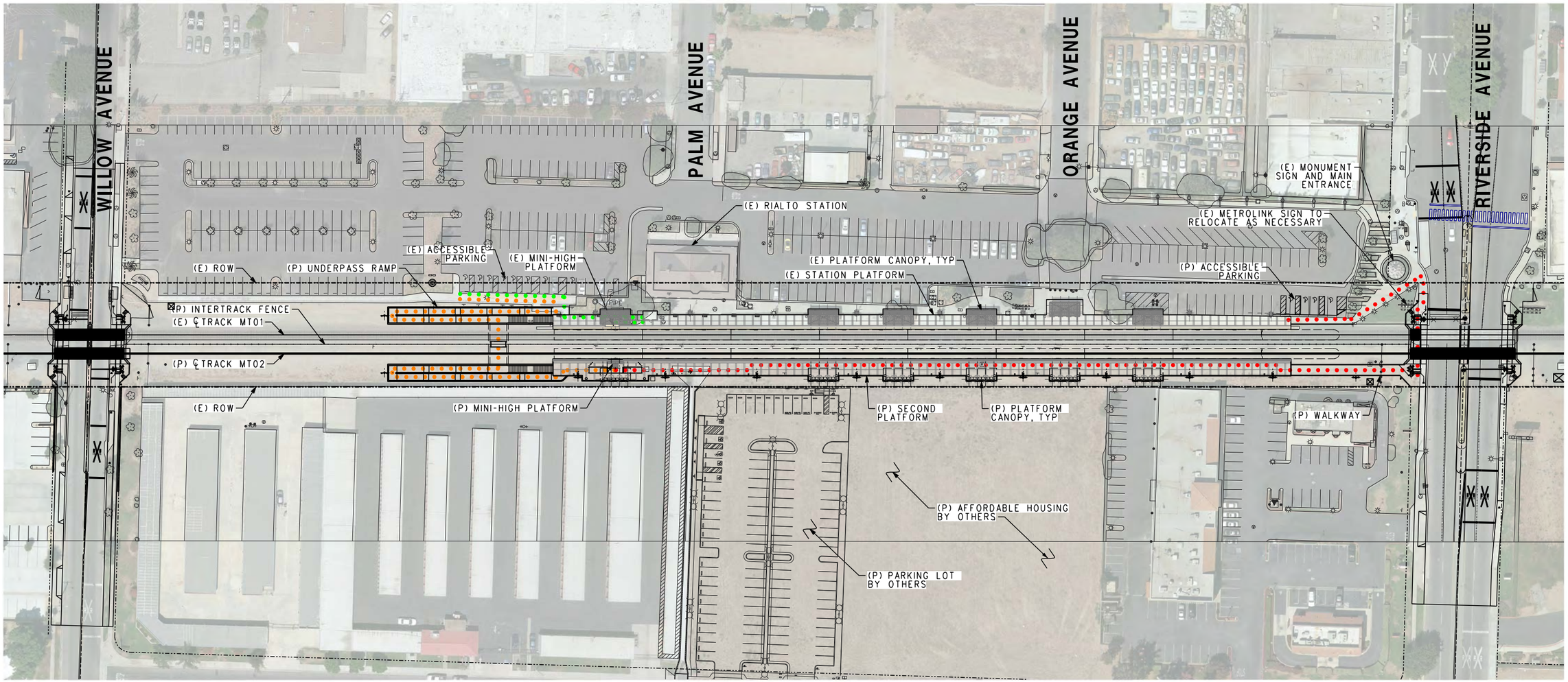
STV 100 Years

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

RIALTO STATION
ARCHITECTURAL
ABBREVIATIONS

CONTRACT NO. 16-1001411
DRAWING NO. A-002
REVISION
SHEET NO. 124 OF 200
SCALE NTS



LEGEND:

PATH OF TRAVEL

- TO EXISTING PLATFORM MINI-HIGH RAMP
- TO SECOND PLATFORM MINI-HIGH RAMP VIA UNDERPASS
- TO SECOND PLATFORM MINI-HIGH RAMP VIA RIVERSIDE AVE

FINAL 30% SUBMITTAL (06-29-2018)

6/19/2018 2:51:07 PM USER = ungsond
I:\Projects\401847\4018447_00011\90_CAD\Models and Sheets\07_A_Architectural\Sheet Files\LR01212-A-101.sht
G:\Cad\Standards\SCRRA\Standards\PenTable\PlotStamp.tbl
G:\CAD\Standards\SCRRA\Standards\Plotdrv\SCRRA_pdf_Color_Full.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	RQ		SM

DESIGNED BY	D. UNGSON
DRAWN BY	D. UNGSON
CHECKED BY	R. QUIRK
APPROVED BY	A. SOKOL
DATE	06-29-2018

sbcta san bernardino county transportation authority

METROLINK

STV 100 Years

SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

MP 52.9 - RIALTO STATION
SITE PLAN
PATH OF TRAVEL

CONTRACT NO.	16-1001411
DRAWING NO.	A-101
REVISION	
SHEET NO.	125 OF 200
SCALE	1" = 50'-0"

N

WILLOW AVENUE

PALM AVENUE

ORANGE AVENUE

RIVERSIDE AVENUE

(E) RIALTO STATION

(E) MONUMENT SIGN AND MAIN ENTRANCE

(E) METROLINK SIGN TO RELOCATE AS NECESSARY

(E) ACCESSIBLE PARKING

(E) MINI-HIGH PLATFORM

(E) ROW

(P) UNDERPASS

(E) PLATFORM CANOPY, TYP

(E) STATION PLATFORM

(P) ACCESSIBLE PARKING

(P) INTERTRACK FENCE

(E) ℄TRACK MT01

(P) ℄TRACK MT02

(E) ROW

(P) MINI-HIGH PLATFORM

(P) PLATFORM CANOPY, TYP

(P) SECOND PLATFORM

(P) WALKWAY

(P) AFFORDABLE HOUSING BY OTHERS

(P) PARKING LOT BY OTHERS

50 0 50 100

1"=50'

FINAL 30% SUBMITTAL (06-29-2018)

6/19/2018 2:51:20 PM USER = unsgondb
I:\Projects\401847\401847_00011\90_CAD\Models and Sheets\07_A_Architectural\Sheet Files\LR01212-A-102.sht
G:\Cad\Standards\SCRRA\Standards\PenTable\PlotStamp.tbl
G:\CAD\Standards\SCRRA\Standards\Plotdrv\SCRRA_pdf_Color_Full.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	RQ		SM

DESIGNED BY	D. UNGSON
DRAWN BY	D. UNGSON
CHECKED BY	R. QUIRK
APPROVED BY	A. SOKOL
DATE	06-29-2018

sbcta san bernardino county transportation authority

METROLINK

STV 100 Years

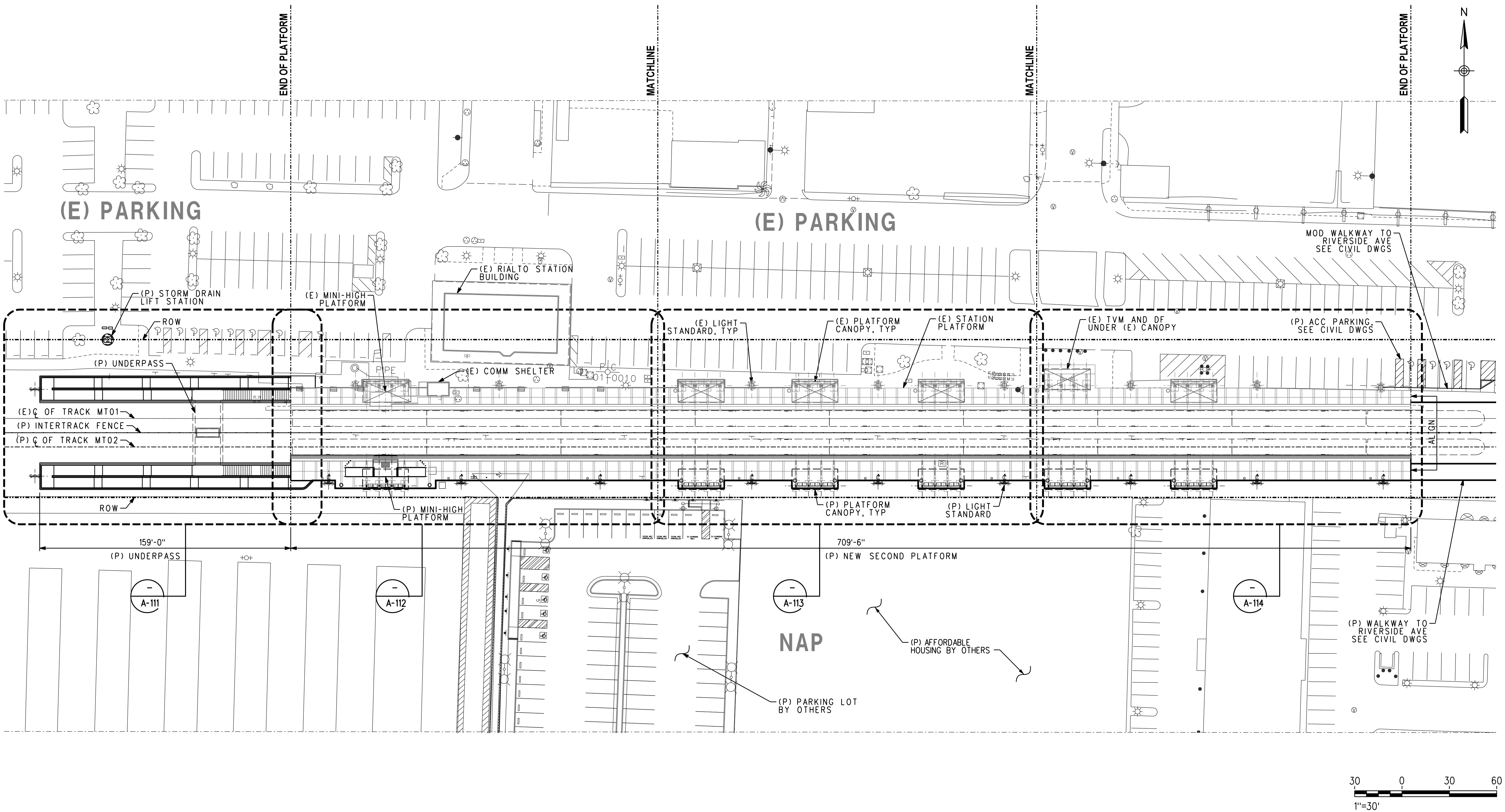
SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

MP 52.9 - RIALTO STATION OVERALL SITE PLAN

CONTRACT NO.	16-1001411
DRAWING NO.	A-102
REVISION	
SHEET NO.	126 OF 200
SCALE	1" = 50'-0"



FINAL 30% SUBMITTAL (06-29-2018)

6/19/2018 2:51:25 PM USER = ungsondb
I:\Projects\4018447_0001\90_CAD Models and Sheets\07_A_Architectural\Sheet Files\LRDT212-A-110.sht
G:\Cad\Standards\SCRRA\Standards\PenTable\PlotStamp.tbl
G:\Cad\Standards\SCRRA\Standards\Plotdrv\SCRRA_pdf_Color_Full.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
0	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	RQ		SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY D. UNGSON
DRAWN BY D. UNGSON
CHECKED BY R. QUIRK
APPROVED BY A. SOKOL
DATE 06-29-2018

sb cta san bernardino county transportation authority

METROLINK

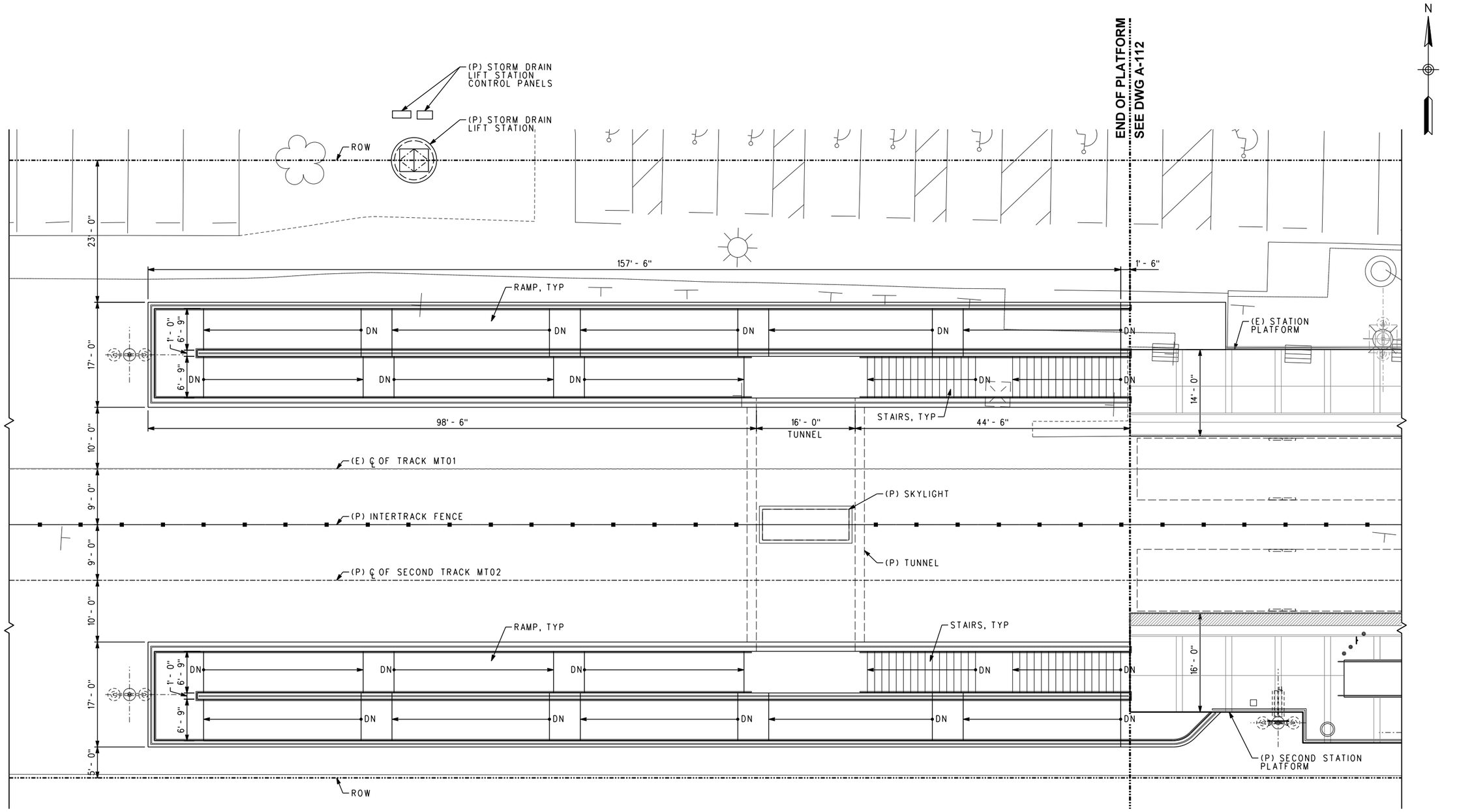
STV 100 Years

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

RIALTO STATION OVERALL PLATFORM PLAN

CONTRACT NO. 16-1001411
DRAWING NO. A-110
REVISION
SHEET NO. 127 OF 200
SCALE 1" = 30'-0"



FINAL 30% SUBMITTAL (06-29-2018)

6/19/2018 2:51:29 PM USER = ungsond
I:\Projects\401844\7.4\401844_0001\90_CAD\Models and Sheets\07_A_Architectural\Sheet Files\LRDT212-A-111.sht
G:\Cad\Standards\SCRRA\Standards\PenTable\PlotStamp.tbl
G:\CAD\Standards\SCRRA\Standards\Plotdrv\SCRRA_pdf_Color_Full.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	RQ		SM

DESIGNED BY	D. UNGSON
DRAWN BY	D. UNGSON
CHECKED BY	R. QUIRK
APPROVED BY	A. SOKOL
DATE	06-29-2018

sbcta san bernardino county transportation authority

METROLINK

STV 100 Years

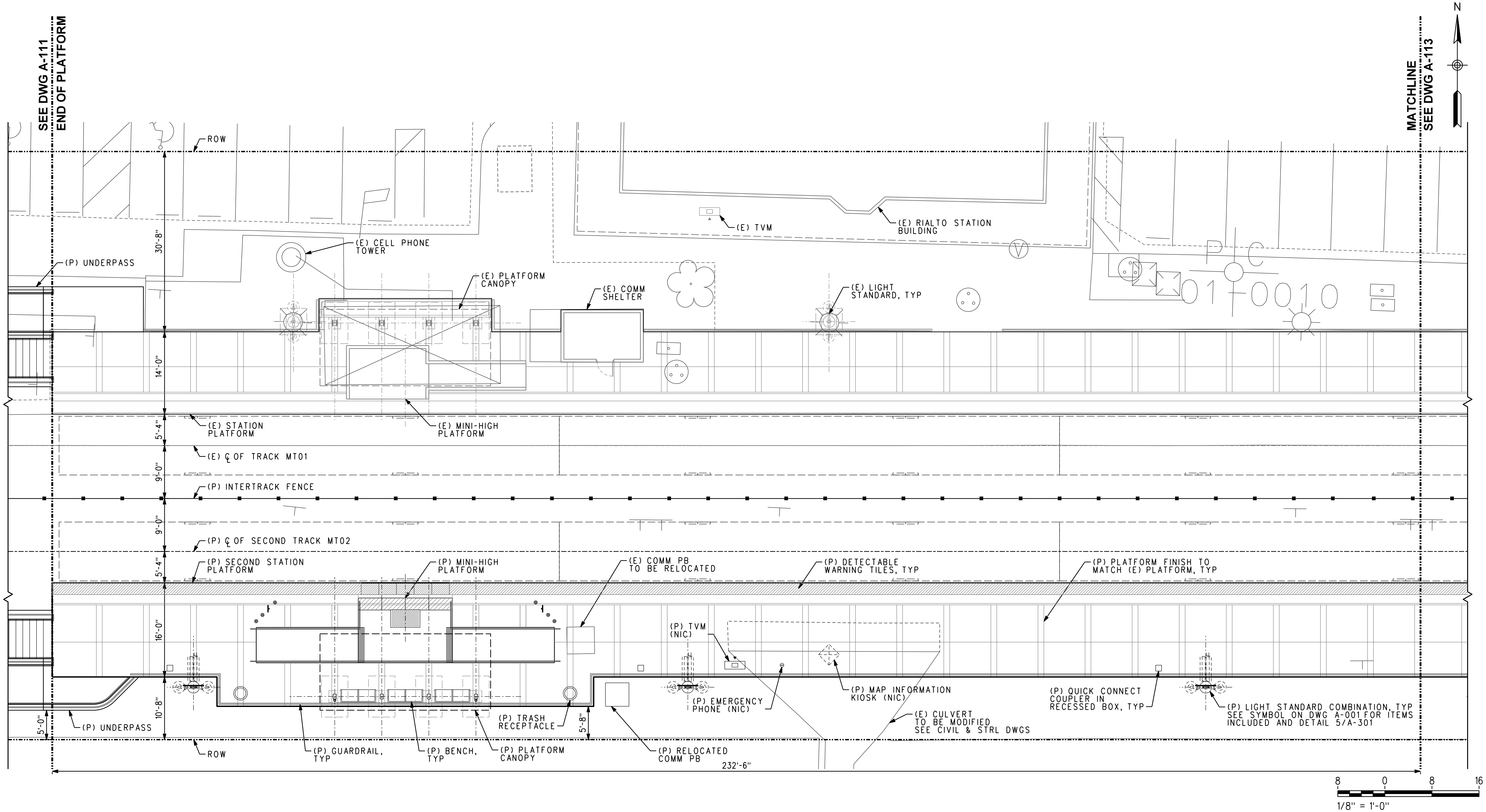
SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

RIALTO STATION
PARTIAL PLATFORM AND CANOPY PLAN
SHEET 1 OF 4

CONTRACT NO.	16-1001411
DRAWING NO.	A-111
REVISION	
SHEET NO.	128 OF 200
SCALE	1/8" = 1'-0"



FINAL 30% SUBMITTAL (06-29-2018)

6/19/2018 2:51:33 PM USER = ungsondb
I:\Projects\401844\401844?_0001\90_CAD Models and Sheets\07_A_Architectural\Sheet Files\LRDT212-A-112.sht
G:\Cad\Standards\SCRRA\Standards\PenTable\PlotStamp.tbl
G:\CAD\Standards\SCRRA\Standards\Plotdrv\SCRRA_pdf_Color_Full.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
1	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	RQ		SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY D. UNGSON
DRAWN BY D. UNGSON
CHECKED BY R. QUIRK
APPROVED BY A. SOKOL
DATE 06-29-2018

sb cta
san bernardino county transportation authority

METROLINK

STV 100 Years

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

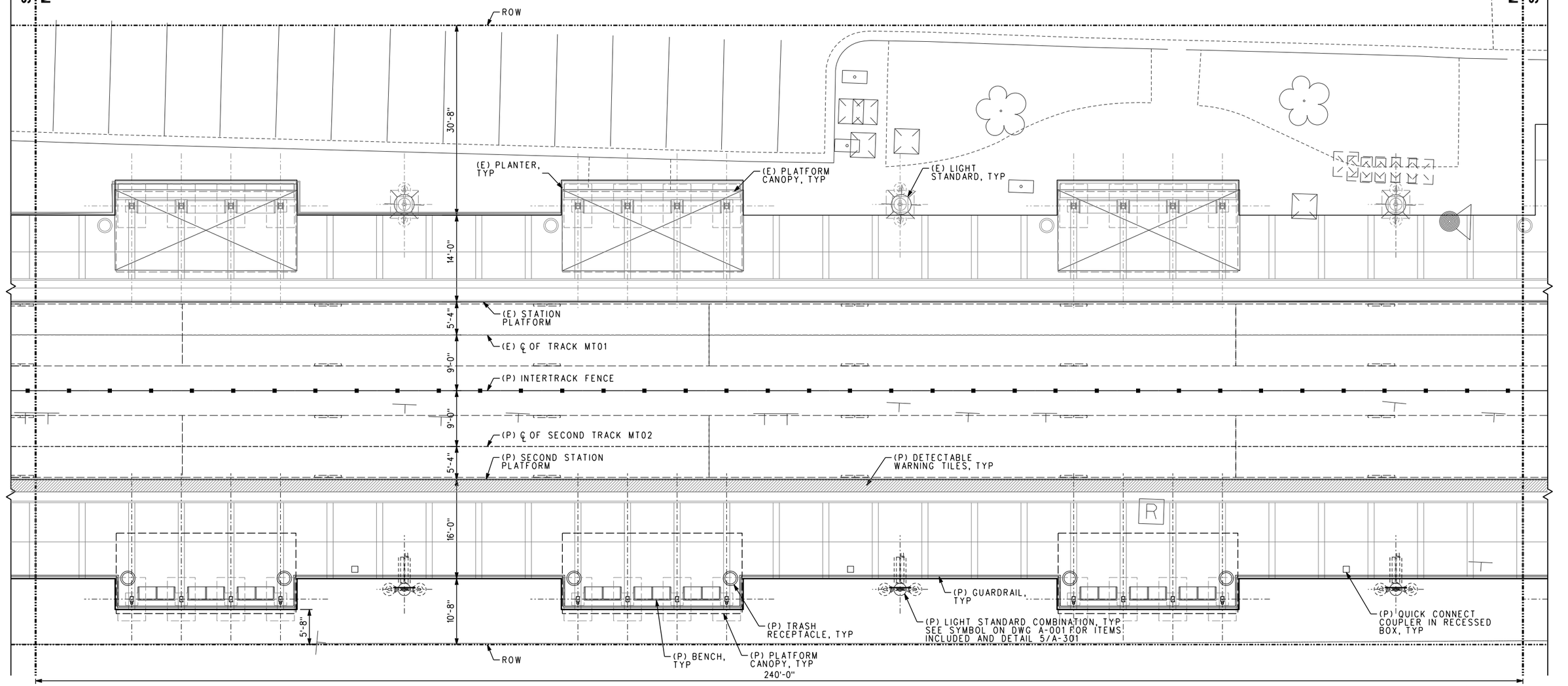
RIALTO STATION PARTIAL PLATFORM AND CANOPY PLAN SHEET 2 OF 4

CONTRACT NO. 16-1001411
DRAWING NO. A-112
REVISION
SHEET NO. 129 OF 200
SCALE 1/8" = 1'-0"

SEE DWG A-112
MATCHLINE

MATCHLINE
SEE DWG A-114

N



8 0 8 16
1/8" = 1'-0"

FINAL 30% SUBMITTAL (06-29-2018)

6/19/2018 2:51:36 PM USER = unsondb
I:\Projects\401847\401847_0001\3D Models and Sheets\07_A_Architectural\Sheet Files\LR07212-A-113.sht
G:\Cad\Standards\SCRRA\Standards\PenTable\PlotStamp.tbl
G:\CAD\Standards\SCRRA\Standards\Plotdrv\SCRRA_pdf_Color_Full.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	RQ		SM

DESIGNED BY	D. UNGSON
DRAWN BY	D. UNGSON
CHECKED BY	R. QUIRK
APPROVED BY	A. SOKOL
DATE	06-29-2018

sbcta san bernardino county transportation authority

METROLINK

STV 100 Years

SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

RIALTO STATION
PARTIAL PLATFORM AND CANOPY PLAN
SHEET 3 OF 4

CONTRACT NO.	16-1001411
DRAWING NO.	A-113
REVISION	
SHEET NO.	130 OF 200
SCALE	1/8" = 1'-0"

SEE DWG A-113
MATCHLINE

END OF PLATFORM

N

ROW

(E) PLATFORM CANOPY WITH TVM, DF

(E) PLANTER, TYP

(E) PLATFORM CANOPY, TYP

(E) LIGHT STANDARD, TYP

MOD WALKWAY TO RIVERSIDE AVE, SEE CIVIL/GRADE CROSSING DWGS

30'-8"

14'-0"

5'-4"

(E) STATION PLATFORM

(E) ℄ OF TRACK MT01

9'-0"

(P) INTERTRACK FENCE

9'-0"

(P) ℄ OF SECOND TRACK MT02

5'-4"

(P) SECOND STATION PLATFORM

(P) DETECTABLE WARNING TILES, TYP

16'-0"

10'-8"

5'-8"

(P) GUARDRAIL, TYP

(P) QUICK CONNECT COUPLER IN RECESSED BOX, TYP

(P) WALKWAY TO RIVERSIDE AVE, SEE CIVIL/GRADE CROSSING DWGS

(P) TRASH RECEPTACLE, TYP

(P) LIGHT STANDARD COMBINATION, TYP SEE SYMBOL ON DWG A-001 FOR ITEMS INCLUDED AND DETAIL 5/A-301

ROW

(P) BENCH, TYP

(P) PLATFORM CANOPY, TYP 237'-0"

8 0 8 16

1/8" = 1'-0"

FINAL 30% SUBMITTAL (06-29-2018)

6/19/2018 2:51:40 PM USER = ungsond
I:\Projects\401844\401844_0001\90_CAD Models and Sheets\07_A_Architectural\Sheet Files\LRDT212-A-114.sht
G:\CAD\Standards\SCRRA\Standards\PenTable\PlotStamp.tbl
G:\CAD\Standards\SCRRA\Standards\Plotdrv\SCRRA_pdf_Color_Full.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	RQ		SM

DESIGNED BY	D. UNGSON
DRAWN BY	D. UNGSON
CHECKED BY	R. QUIRK
APPROVED BY	A. SOKOL
DATE	06-29-2018

sbcta san bernardino county transportation authority

METROLINK

STV 100 Years

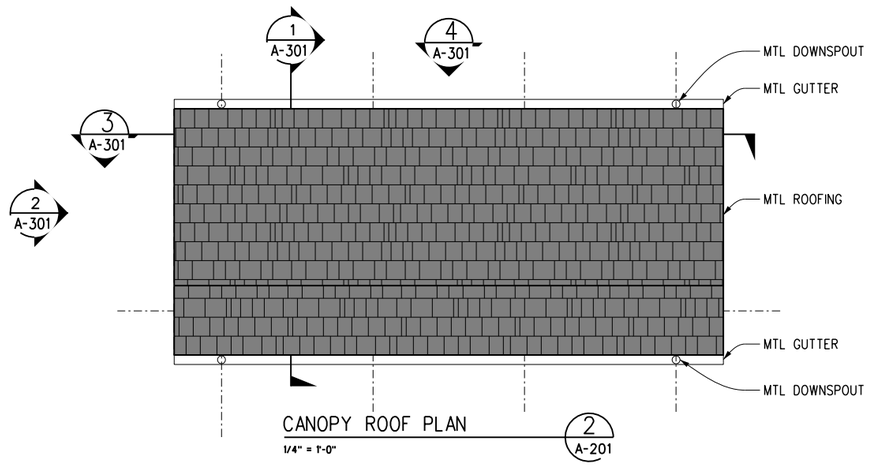
SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

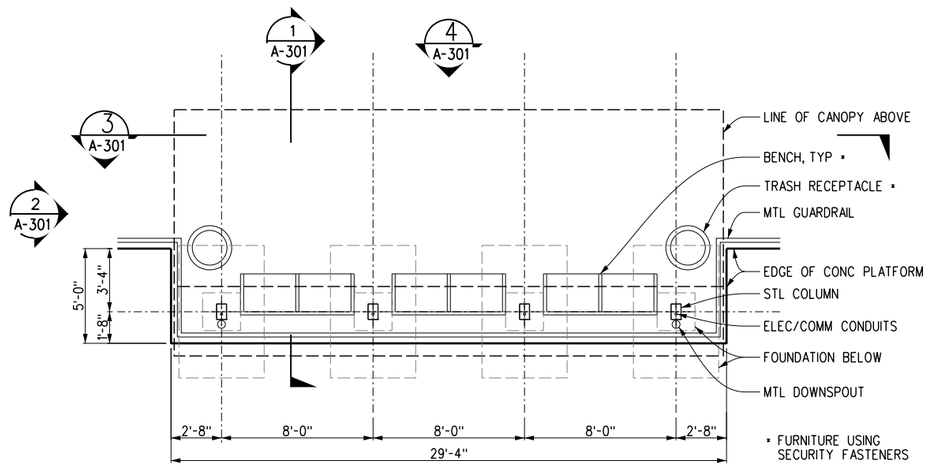
RIALTO STATION
PARTIAL PLATFORM AND CANOPY PLAN
SHEET 4 OF 4

CONTRACT NO.	16-1001411
DRAWING NO.	A-114
REVISION	
SHEET NO.	131 OF 200
SCALE	1/8" = 1'-0"



CANOPY ROOF PLAN 2 A-201

1/4" = 1'-0"



CANOPY FLOOR PLAN 1 A-201

1/4" = 1'-0"

FINAL 30% SUBMITTAL (06-29-2018)

6/19/2018 2:51:43 PM USER = ungsond
I:\Projects\401844\7_4018447_0001\90_CAD Models and Sheets\07_A_Architectural\Sheet Files\LRDT212-A-201.sht
G:\Cad\Standards\SCRRA\Standards\PenTable\PlotStamp.tbl
G:\CAD\Standards\SCRRA\Standards\Plotdrv\SCRRA_pdf_Color_Full.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	RQ		SM

DESIGNED BY D. UNGSON
DRAWN BY D. UNGSON
CHECKED BY R. QUIRK
APPROVED BY A. SOKOL
DATE 06-29-2018

sbcta san bernardino county transportation authority

METROLINK

STV 100 Years

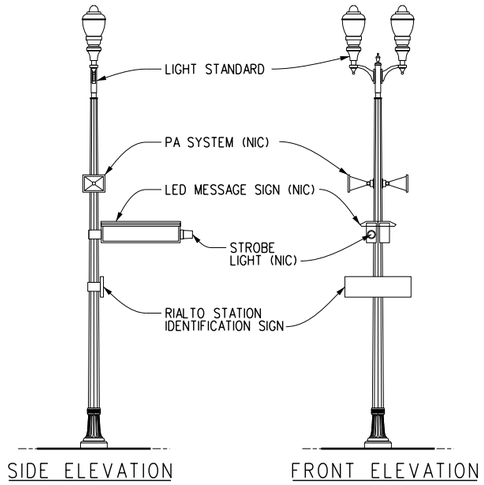
SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

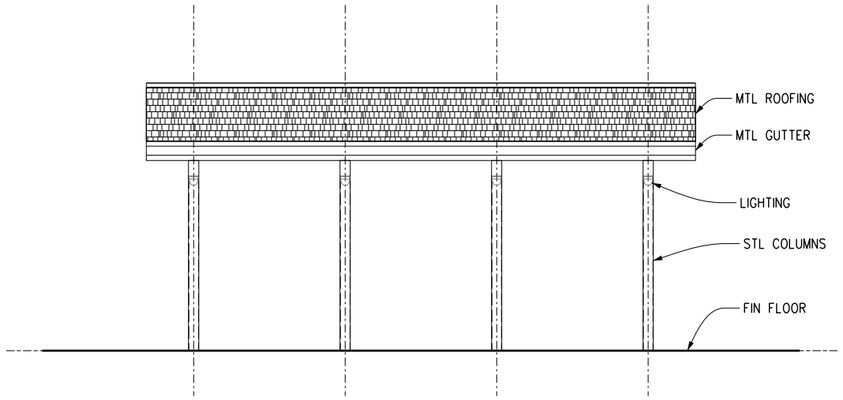
CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

RIALTO STATION
PLATFORM CANOPY FLOOR PLAN AND ROOF PLAN

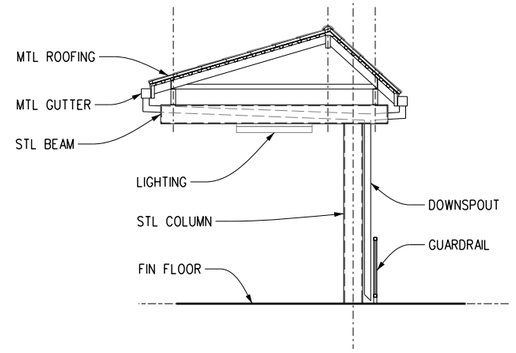
CONTRACT NO. 16-1001411
DRAWING NO. A-201
REVISION
SHEET NO. 132 OF 200
SCALE 1/4" = 1'-0"



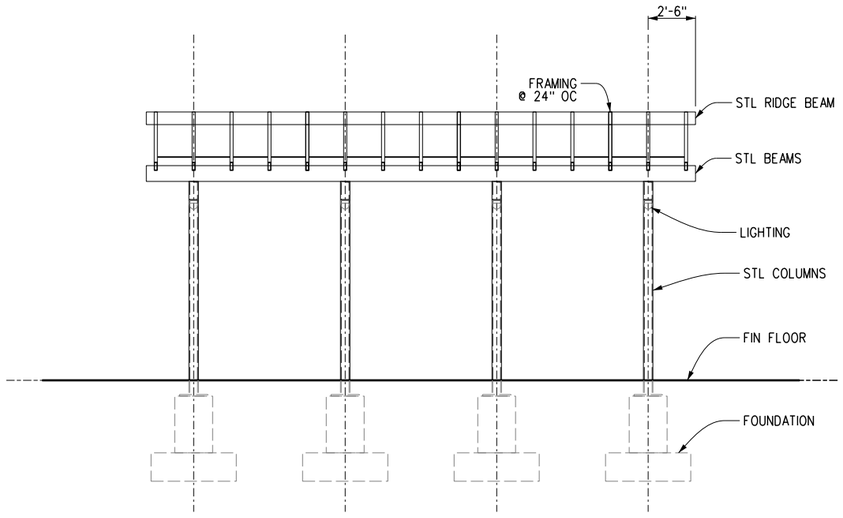
LIGHT STANDARD COMBINATION 5 A-301
1/4" = 1'-0"



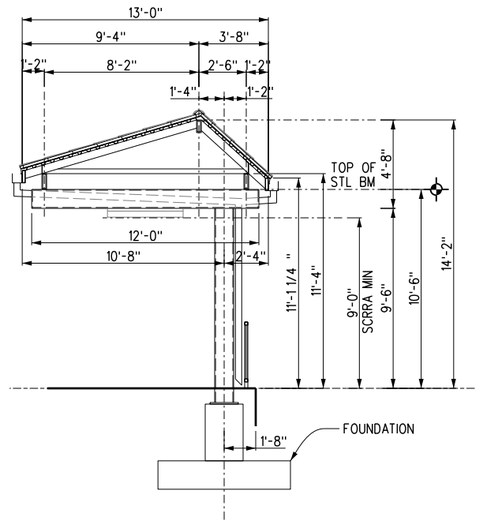
CANOPY FRONT ELEVATION 4 A-301
1/4" = 1'-0"



CANOPY SIDE ELEVATION 2 A-301
1/4" = 1'-0"



CANOPY LONGITUDINAL SECTION 3 A-301
1/4" = 1'-0"



CANOPY CROSS SECTION 1 A-301
1/4" = 1'-0"

FINAL 30% SUBMITTAL (06-29-2018)

6/19/2018 2:51:47 PM USER = ungsond
I:\Projects\401844\7_4018447_0001\90_CAD\Models and Sheets\07_A_Architectural\Sheet Files\LRDT212-A-301.sht
G:\Cad\Standards\SCRRA\Standards\PenTable\PlotStamp.tbl
G:\CAD\Standards\SCRRA\Standards\Plotdrv\SCRRA_pdf_Color_Full.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	RQ		SM

DESIGNED BY	D. UNGSON
DRAWN BY	D. UNGSON
CHECKED BY	R. QUIRK
APPROVED BY	A. SOKOL
DATE	06-29-2018

sbcta san bernardino county transportation authority

METROLINK

STV 100 Years

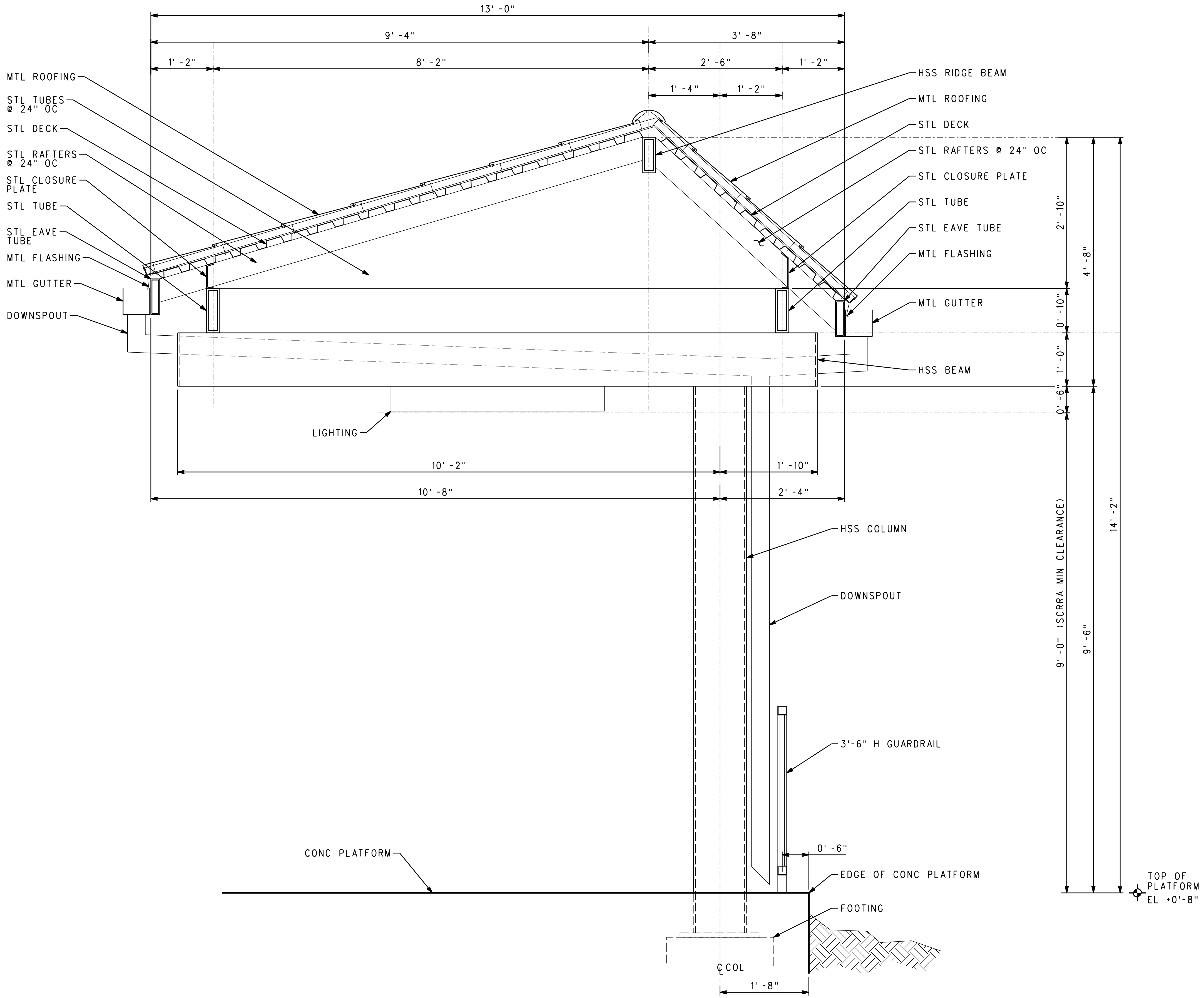
SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

RIALTO SATION
PLATFORM CANOPY
SECTIONS AND ELEVATIONS

CONTRACT NO.	16-1001411
DRAWING NO.	A-301
REVISION	
SHEET NO.	133 OF 200
SCALE	1/4" = 1'-0"



FINAL 30% SUBMITTAL (06-29-2018)

6/19/2018 2:51:50 PM USER = ungsondb
I:\Projects\4018447\0001\90_CAD Models and Sheets\07_A_Architectural\Sheet Files\LRDT212-A-401.sht
G:\Cad\Standards\SCRRA\Standards\PenTable\PlotStamp.tbl
G:\Cad\Standards\SCRRA\Standards\Plotdrv\SCRRA_pdf_Color_Full.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB. APP.
1	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	RQ	SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY D. UNGSON
DRAWN BY D. UNGSON
CHECKED BY R. QUIRK
APPROVED BY A. SOKOL
DATE 06-29-2018

sbcta san bernardino county transportation authority

METROLINK.

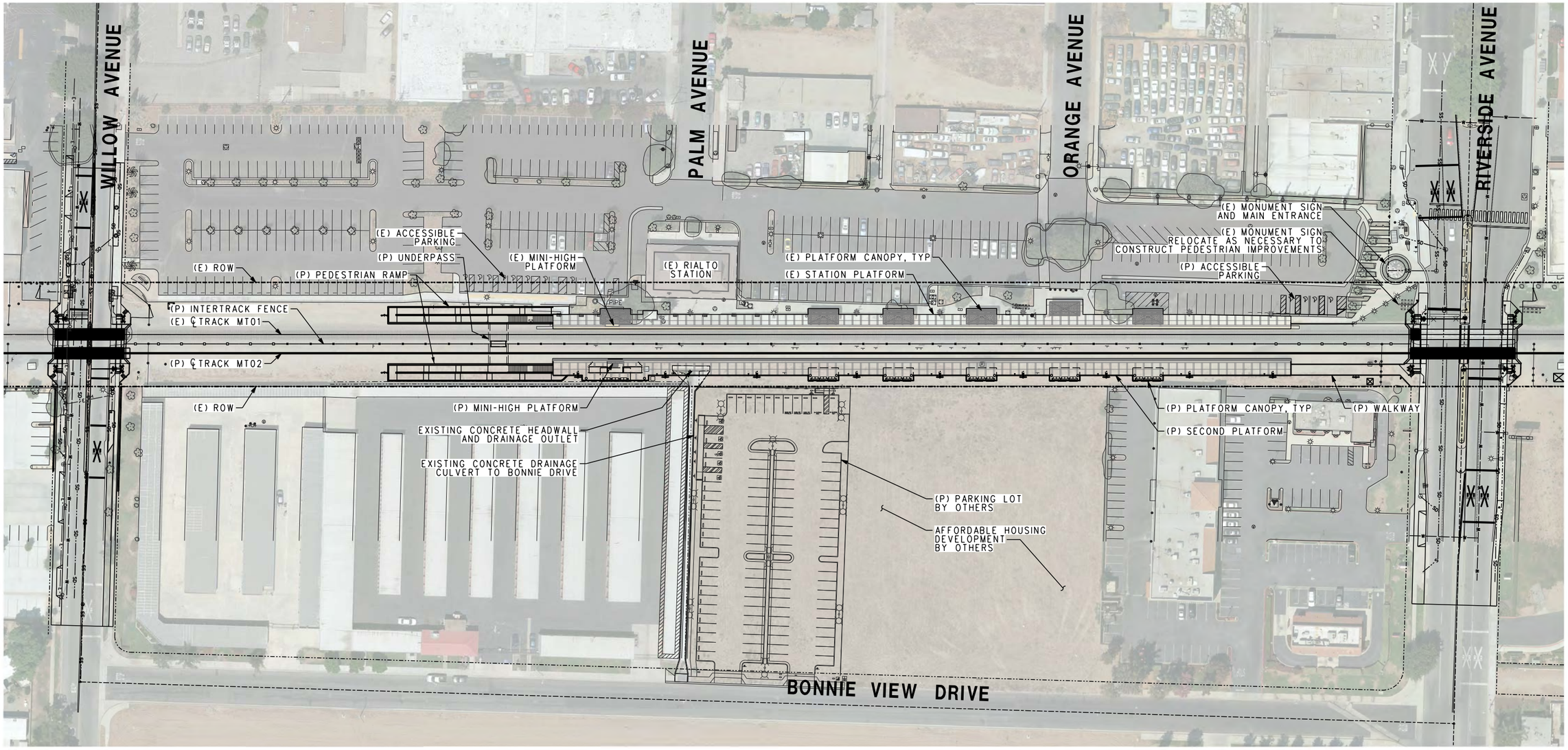
STV 100 Years

SUBMITTED: ____ PROJECT MANAGER
APPROVED: ____

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

RIALTO STATION ENLARGED CANOPY SECTION

CONTRACT NO. 16-1001411
DRAWING NO. A-401
REVISION
SHEET NO. 134 OF 200
SCALE 1" = 1'-0"



FENCE LEGEND
ARCH 4 FT H
ARCH 6 FT H

50 0 50 100
1"=50'

FINAL 30% SUBMITTAL (06-29-2018)

6/19/2018 3:27:37 PM USER = dovidsjw
I:\Projects\401844\401844_0001\90_CAD\Models and Sheets\04_C_Civil\Sheet Files\LR01212-C-101.sht
G:\Cad\Standards\SCRRA\Standards\PenTable\PlotStamp.tbl
G:\CAD\Standards\SCRRA\Standards\PlotDrv\SCRRA_pdf_Color_Full.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	RQ		SM

DESIGNED BY	J. DAVIDSON
DRAWN BY	J. DAVIDSON
CHECKED BY	M. SATISH
APPROVED BY	A. SOKOL
DATE	06-29-2018

sbcta san bernardino county transportation authority

METROLINK

STV 100 Years

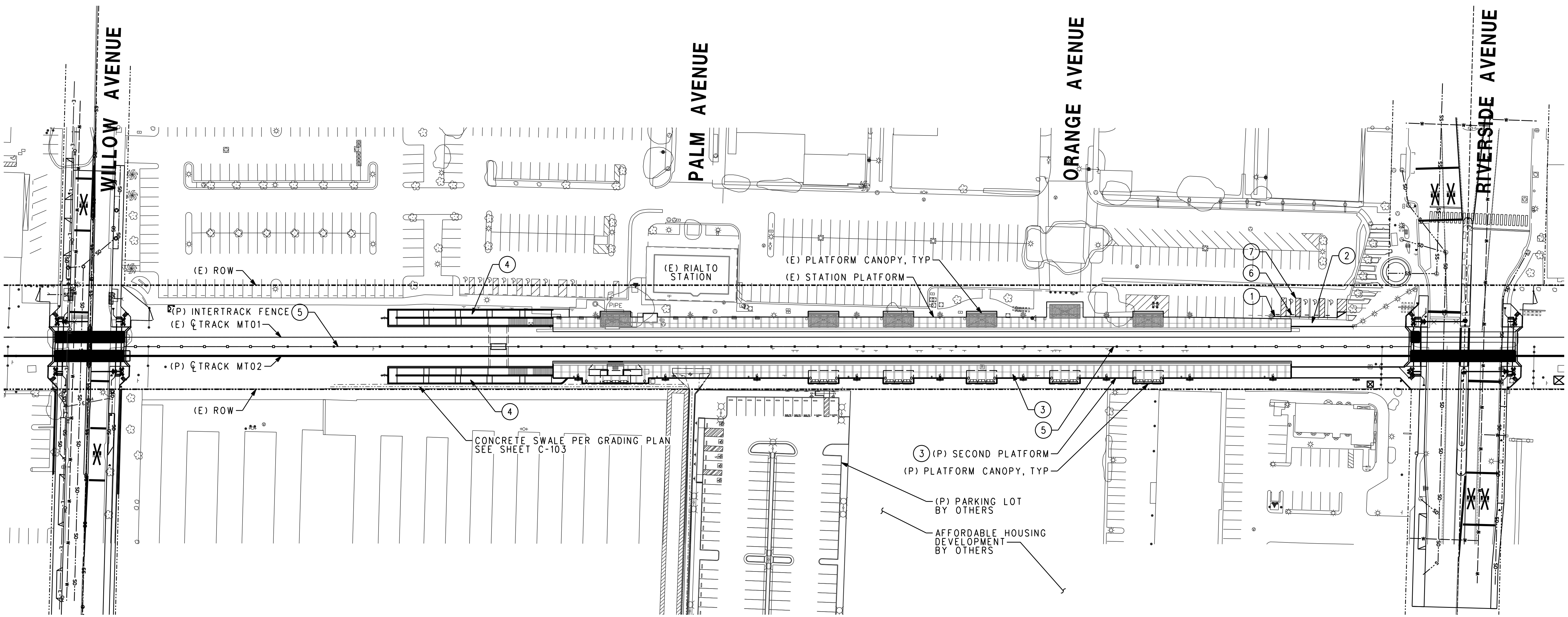
SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

MP 52.9 - RIALTO STATION OVERALL CIVIL SITE PLAN

CONTRACT NO.	16-1001411
DRAWING NO.	C-101
REVISION	
SHEET NO.	135 OF 200
SCALE	1" = 50'-0"



FINAL 30% SUBMITTAL (06-29-2018)

CONSTRUCTION NOTES:

1. CONSTRUCT 6" CURB ONLY PER CITY OF RIALTO STD. DWG. SC-202
2. CONSTRUCT SIDEWALK PER CITY OF RIALTO STD. DWG. SC-204
3. CONSTRUCT PLATFORM SLAB PER STRUCTURAL DRAWINGS
4. CONSTRUCT RAMP PER STRUCTURAL DRAWINGS
5. CONSTRUCT INTERTRACK FENCE PER SCRRA STD. DWG. 5102
6. INSTALL PARKING STALL WHEEL STOP
7. PAINT ACCESSIBLE PARKING STALL STRIPING PER CALTRANS STD. DWG. A90A

FENCE LEGEND
ARCH 4 FT H
ARCH 6 FT H

N

50 0 50 100
1"=50'

6/26/2018 11:45:08 AM USER = davidsjw
I:\Projects\4018447\4018447_0001\90_CAD Models and Sheets\04_C_Civil\Sheet Files\LRDT212-C-102.sht
G:\Cad\Standards\SCRRA\Standards\PenTable\PlotStamp.tbl
G:\CAD\Standards\SCRRA\Standards\Plotdrv\SCRRA_pdf_Color_Full.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	RQ		SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. DAVIDSON
DRAWN BY J. DAVIDSON
CHECKED BY M. SATISH
APPROVED BY A. SOKOL
DATE 06-29-2018

sbcta san bernardino county transportation authority

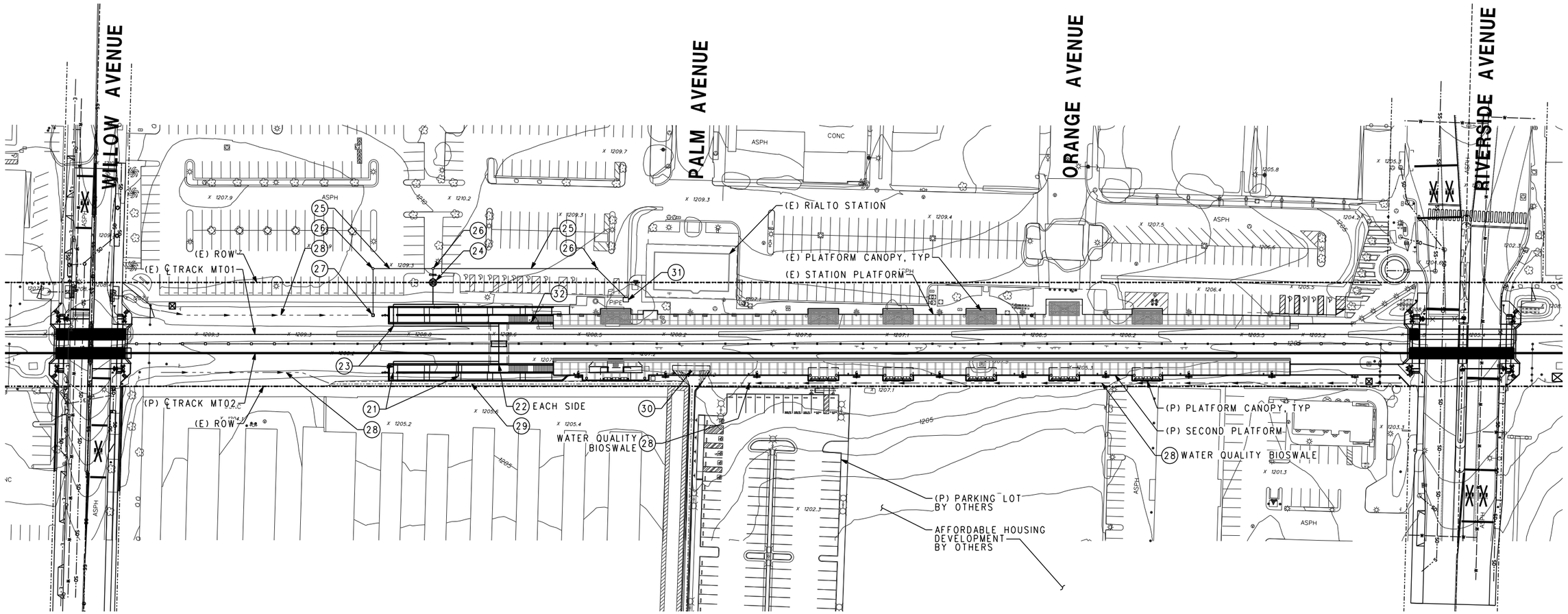
METROLINK.

STV 100 Years

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
MP 52.9 - RIALTO STATION
CONSTRUCTION PLAN

CONTRACT NO. 16-1001411
DRAWING NO. C-102
REVISION
SHEET NO. 136 OF 200
SCALE 1" = 50'-0"



CONSTRUCTION NOTES:

(21) INSTALL 6" GRATED AREA DRAIN
(22) INSTALL TRENCH DRAIN
(23) INSTALL 4" PVC STORM DRAIN LATERAL
(24) CONSTRUCT STORM DRAIN LIFT STATION
(25) INSTALL 12" HDPE STORM DRAIN
(26) CONSTRUCT 24" DIA. STORM DRAIN MANHOLE PER SPPWC STD. DWG. 321-2
(27) INSTALL 24" GRATED INLET PER CALTRANS STD. DWG. D73, TYPE G1
(28) GRADE SWALE TO DRAIN
(29) CONSTRUCT LONGITUDINAL CONCRETE SWALE

CONSTRUCTION NOTES (CONTINUED):

(30) MODIFY EXISTING CONCRETE STRUCTURE AND HEADWALL PER TRACK DRAINAGE PLANS
(31) JOIN EXISTING CATCH BASIN STRUCTURE
(32) REMOVE EXISTING TRACK DITCH DRAINAGE INLET, CMP RISER, AND INTERFERING PORTIONS OF EXISTING LATERAL

FENCE LEGEND
ARCH 4 FT H
ARCH 6 FT H

N

50 0 50 100
1"=50'

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
1	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	RQ		SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. DAVIDSON
DRAWN BY J. DAVIDSON
CHECKED BY M. SATISH
APPROVED BY A. SOKOL
DATE 06-29-2018

sbcta san bernardino county transportation authority

METROLINK

STV 100 Years

SUBMITTED: _____ PROJECT MANAGER
APPROVED: _____

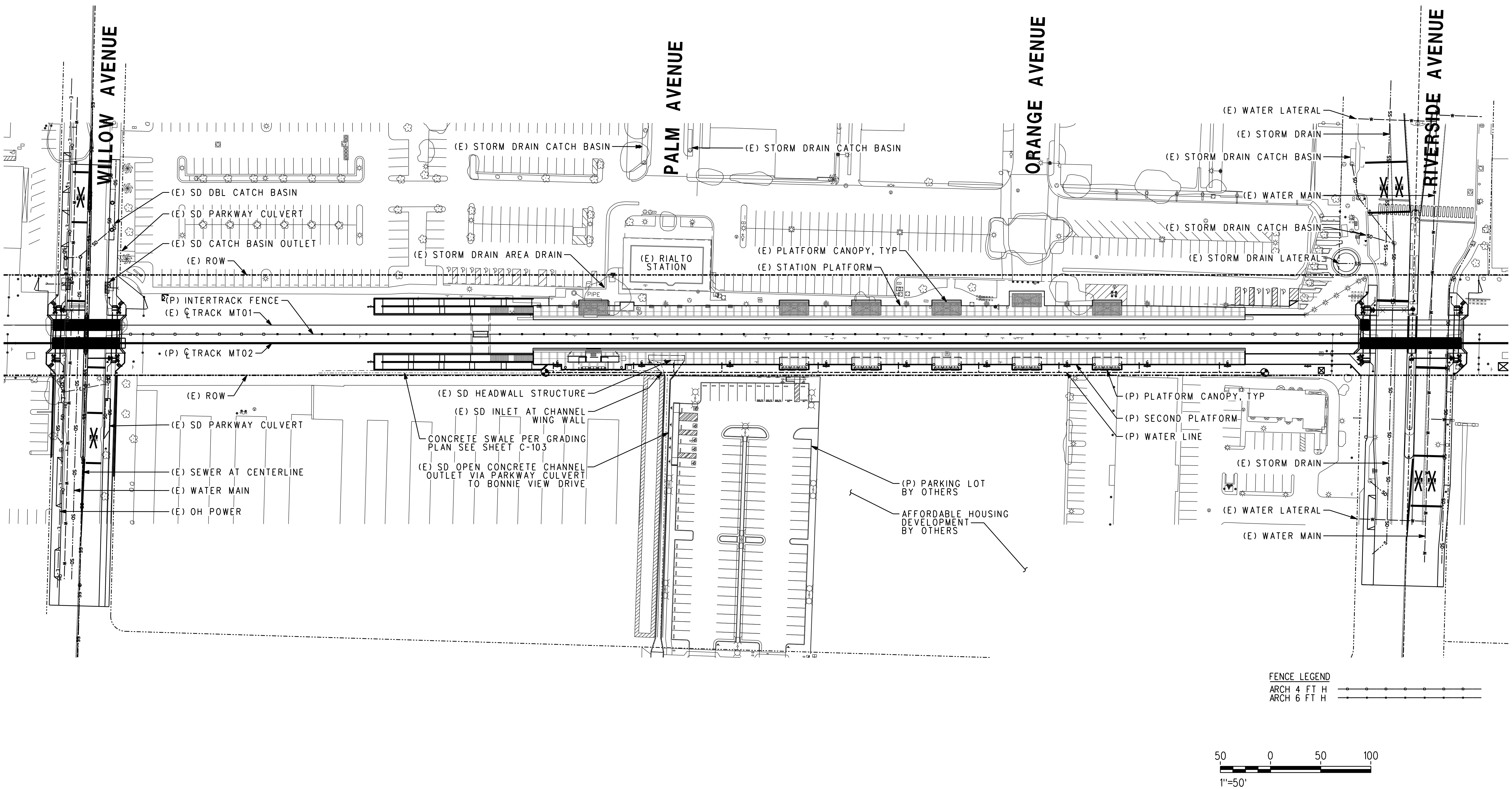
CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

MP 52.9 - RIALTO STATION GRADING AND DRAINAGE PLAN

CONTRACT NO. 16-1001411
DRAWING NO. C-103
REVISION
SHEET NO. 137 OF 200
SCALE 1" = 50'-0"

FINAL 30% SUBMITTAL (06-29-2018)

FINAL 30% SUBMITTAL (06-29-2018)



6/19/2018 3:27:49 PM USER = davidsjw
I:\Projects\4018447\0001\90_CAD Models and Sheets\04_C_Civil\Sheet Files\LRDT212-C-104.sht
G:\Cad\Standards\SCRRA\Standards\PenTable\PlotStamp.tbl
G:\CAD\Standards\SCRRA\Standards\Plotdrv\SCRRA_pdf_Color_Full.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
1	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	RQ		SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY J. DAVIDSON
DRAWN BY J. DAVIDSON
CHECKED BY M. SATISH
APPROVED BY A. SOKOL
DATE 06-29-2018

sb cta san bernardino county transportation authority

METROLINK.

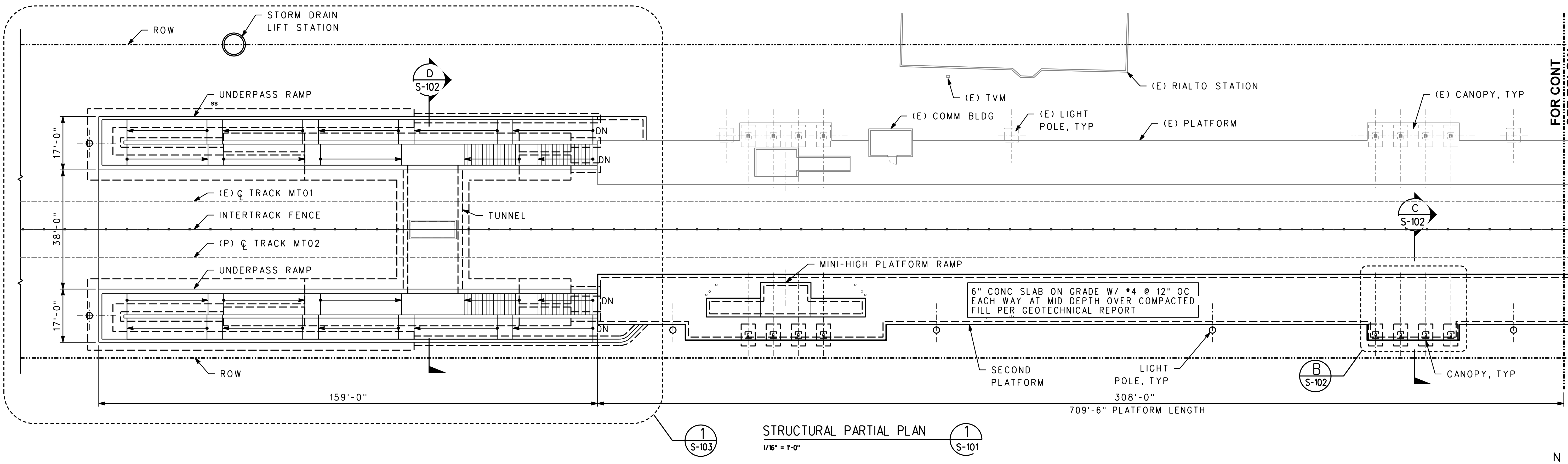
STV 100 Years

SUBMITTED: PROJECT MANAGER
APPROVED:

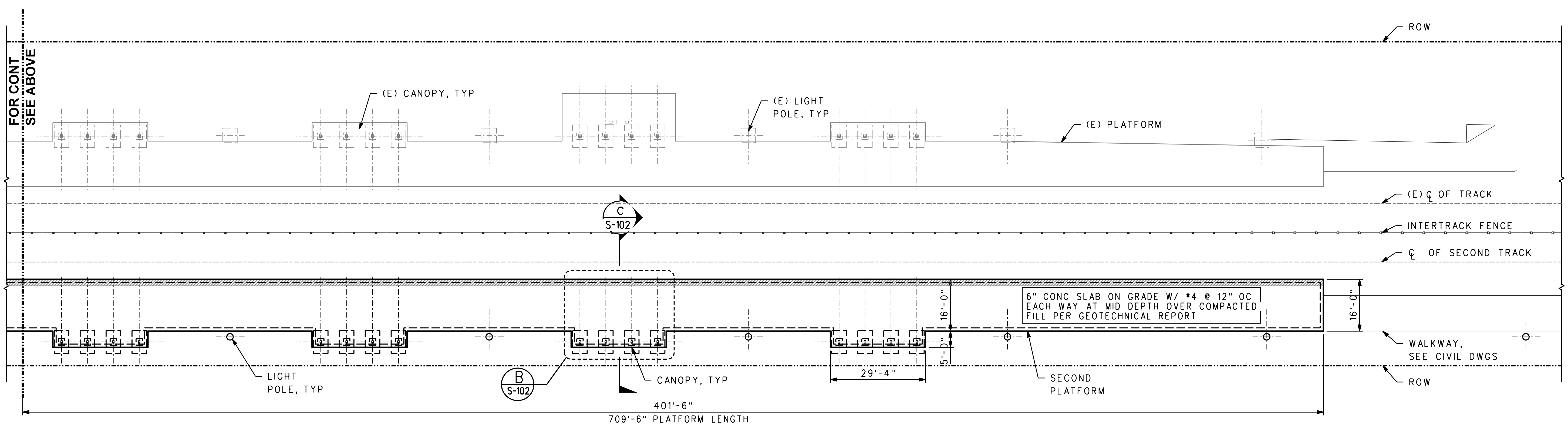
CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT

MP 52.9 - RIALTO STATION
COMPOSITE EXISTING UTILITIES

CONTRACT NO. 16-1001411
DRAWING NO. C-104
REVISION
SHEET NO. 138 OF 200
SCALE 1" = 50'-0"



STRUCTURAL PARTIAL PLAN 1 S-101
1/16" = 1'-0"



STRUCTURAL PARTIAL PLAN 2 S-101
1/16" = 1'-0"

16 0 16 32
1/16" = 1'-0"

FINAL 30% SUBMITTAL (06-29-2018)

6/19/2018 2:52:22 PM USER = ungsondb
I:\Projects\4018447_0001\90_CAD Models and Sheets\06_S_Structural\Sheet Files\LRDT212-S-101.sht
G:\Cad\Standards\SCRRA\Standards\PenTable\PlotStamp.tbl
G:\Cad\Standards\SCRRA\Standards\Plotdrv\SCRRA_pdf_Color_Full.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	RQ		SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY D. UNGSON
DRAWN BY D. UNGSON
CHECKED BY R. QUIRK
APPROVED BY A. SOKOL
DATE 06-29-2018

sbcta san bernardino county transportation authority

METROLINK.

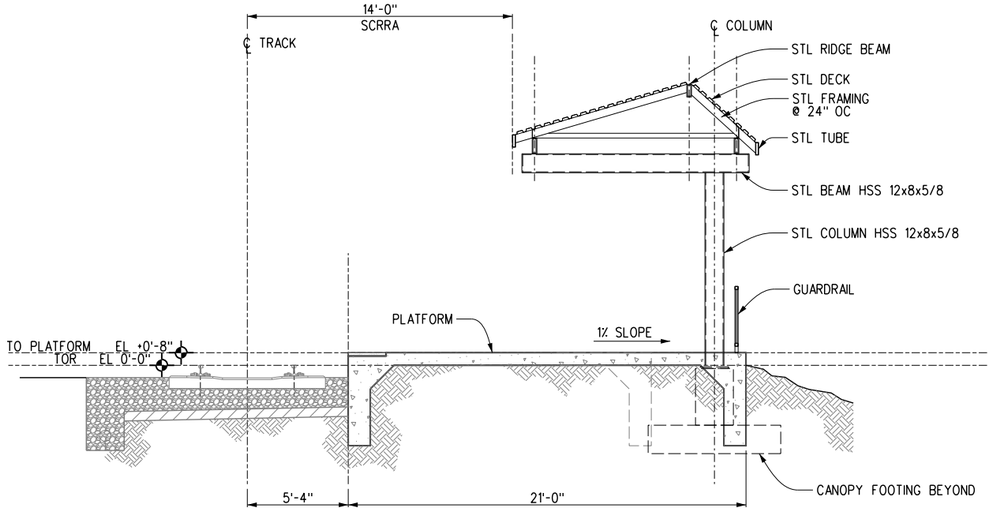
STV 100 Years

SUBMITTED: PROJECT MANAGER
APPROVED:

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

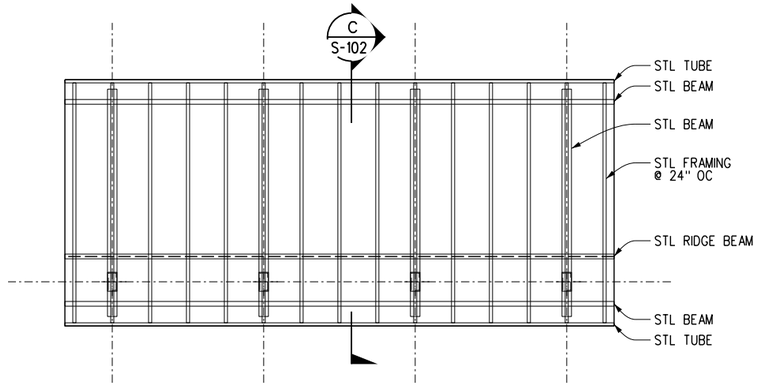
RIALTO STATION STRUCTURAL PLAN

CONTRACT NO. 16-1001411
DRAWING NO. S-101
REVISION
SHEET NO. 139 OF 200
SCALE 1/16" = 1'-0"



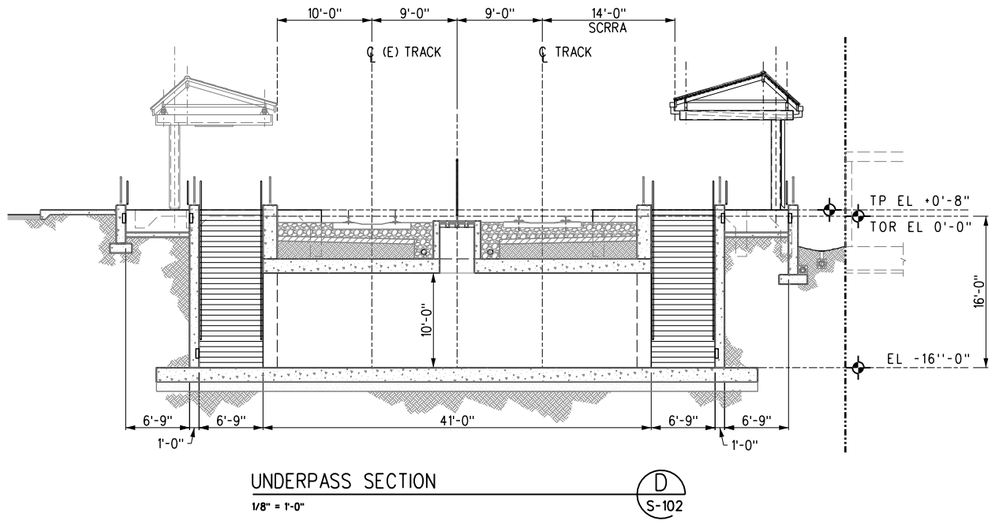
PLATFORM AND CANOPY SECTION — C S-102

1/4" = 1'-0"



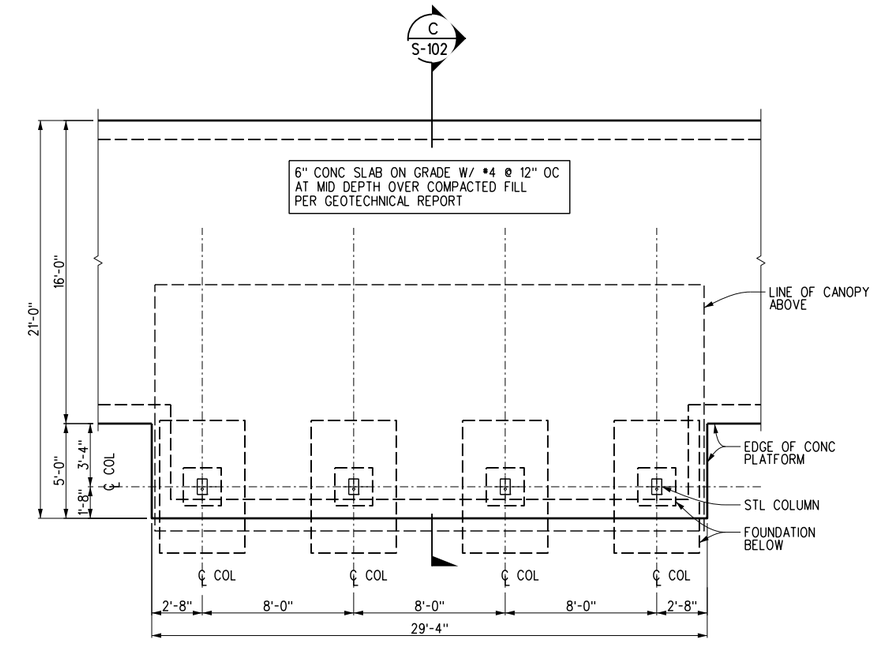
CANOPY ROOF FRAMING PLAN — A S-102

1/4" = 1'-0"



UNDERPASS SECTION — D S-102

1/8" = 1'-0"



PLATFORM CANOPY FOUNDATION PLAN — B S-102

1/4" = 1'-0"

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	RQ		SM

DESIGNED BY D. UNGSON
DRAWN BY D. UNGSON
CHECKED BY R. QUIRK
APPROVED BY A. SOKOL
DATE 06-29-2018

sbcta — san bernardino county transportation authority

METROLINK

STV 100 Years

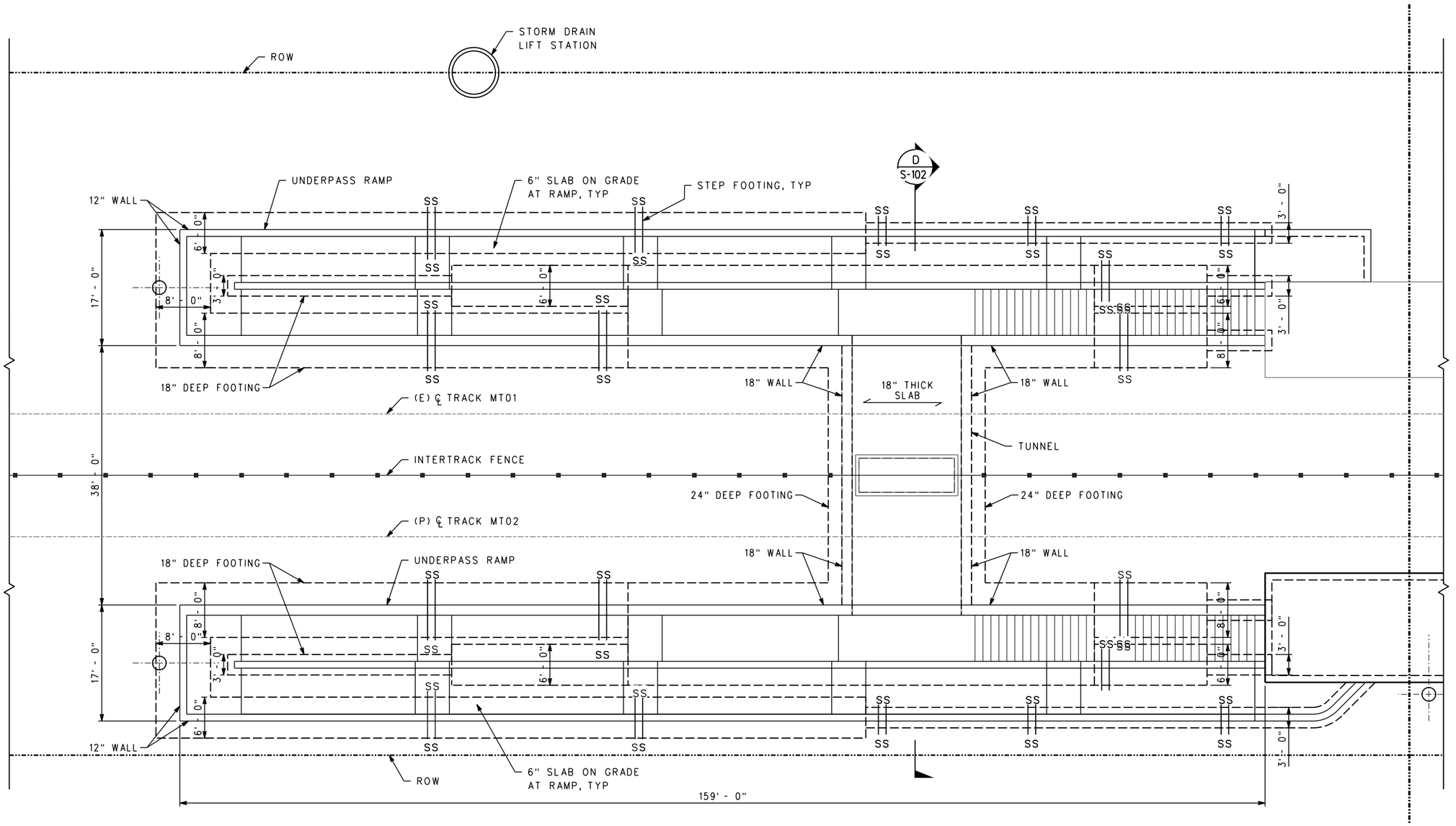
SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

RIALTO STATION
PLATFORM CANOPY FOUNDATION, ROOF FRAMING, SECTION AND UNDERPASS SECTION

CONTRACT NO. 16-1001411
DRAWING NO. S-102
REVISION
SHEET NO. 140 OF 200
SCALE 1/8" = 1'-0" 1/4" = 1'-0"



FOUNDATION PLAN — 1/16" = 1'-0" — 1 / S-103

FINAL 30% SUBMITTAL (06-29-2018)

6/19/2018 2:52:31 PM USER = ungsond
I:\Projects\401844\7_0001\90_CAD\Models and Sheets\06_S_Structural\Sheet Files\LRDT212-S-103.sht
G:\Cad\Standards\SCRRA\Standards\PenTable\PlotStamp.tbl
G:\CAD\Standards\SCRRA\Standards\Plotdrv\SCRRA_pdf_Color_Full.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	RQ		SM

DESIGNED BY	D. UNGSON
DRAWN BY	D. UNGSON
CHECKED BY	V. AGARWAL
APPROVED BY	A. SOKOL
DATE	06-29-2018

sbcta san bernardino county transportation authority

METROLINK

STV 100 Years

SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

RIALTO STATION STRUCTURAL FOUNDATION PLAN AT UNDERPASS

CONTRACT NO.	16-1001411
DRAWING NO.	S-103
REVISION	
SHEET NO.	141 OF 200
SCALE	1/16" = 1'-0"

FIXTURE SCHEDULE

TAG NO.	DESCRIPTION	CONNECTION SIZE (IN)				REMARKS
		SUPPLY		WASTE/ DRAIN	VENT	
		CW	HW			
HYD 1	GROUND HYDRANT, 3/4", ENCASED, INTEGRAL ANTI-SIPHON VACUUM BREAKER, CAST NICKEL BRONZE BOX AND HINGED COVER, STAINLESS STEEL FACE PLATE, KEY OPERATED CONTROL VALVE. MANUFACTURER: ZURN, MODEL Z1375.	3/4	-	-	-	
DF 1	ACCESSIBLE DRINKING FOUNTAIN, SQUARE CONCRETE PEDESTAL MOUNTED, TWO LEVEL MODEL, POLISHED STAINLESS STEEL BASIN W/ EMBOSSED BUBBLER PAD AND FLEXI-GUARD SAFETY BUBBLER. MANUFACTURER: HAWS, MODEL 3150.	1/2	-	1-1/2	-	

PIPE MATERIAL SCHEDULE

SERVICE	PIPE	FITTINGS	SPECIFICATION
COLD WATER	COPPER TYPE "L" HARD DRAWN	WROUGHT COPPER	SECTION 22 11 00

LEGEND DESCRIPTION

- CW — COLD WATER PIPING
- HOSE BIBB
- POINT OF CONNECTION (POC)
- ACCESSIBLE DRINKING FOUNTAIN

ABBREVIATIONS

CW	COLD WATER - POTABLE
HW	HOT WATER
IN	INCHES
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION

PLUMBING NOTES

1. ALL WORK SHALL CONFORM TO 2016 CALIFORNIA PLUMBING CODE, 2016 CALIFORNIA BUILDING CODE, 2016 TITLE-24, 2016 NFPA AND ALL APPLICABLE STATE AND LOCAL CODES AND REGULATIONS.
2. IN ALL CASES OF CONFLICT BETWEEN DRAWINGS, CODES, AND STANDARDS, THE STRICTEST SHALL GOVERN.
3. CONTRACTOR SHALL PROVIDE MATERIALS, LABOR AND EQUIPMENT SUFFICIENT TO COMPLETE ALL INDICATED WORK.
4. THE PLUMBING WORK SHALL BE COORDINATED WITH THAT OF OTHER DISCIPLINES SO THAT ALL WORK MAY PROCEED IN A TIMELY FASHION.
5. FOR EXACT PLACEMENT OF EACH PLUMBING FIXTURE, REFER TO ARCHITECTURAL DRAWINGS.
6. PROVIDE PIPE MARKERS FOR ALL PIPING AS APPLICABLE AND AS NOTED IN PLUMBING SPECIFICATIONS.
7. SEAL THE SPACING BETWEEN CARRIER PIPE AND SLEEVES FOR ALL PIPE PENETRATIONS THROUGH SLABS, WITH FLEXIBLE WATERPROOF SEALANT, TO PREVENT MIGRATION OF GROUND WATER INTO DRY AREAS.
8. ALL BACKFLOW PREVENTION DEVICES COMPLY WITH TABLE 603.2, EXCEPT FOR SPECIFIC APPLICATIONS AND PROVISIONS AS STATED IN SECTIONS 603.3 THROUGH 603.5 (2016 CPC 603.3).

FINAL 30% SUBMITTAL (06-29-2018)

6/19/2018 2:52:33 PM USER = unsworthb
I:\Projects\401844747\401844747_0001\90_CAD\Models and Sheets\11_P_Plumbing\Sheet Files\LR07212-P-101.sht
G:\Cad\Standards\SCRRA\Standards\PenTable\PlotStamp.tbl
G:\CAD\Standards\SCRRA\Standards\Plotdrv\SCRRA_pdf_Color_Full.pltcfg

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
V	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	RQ		SM

DESIGNED BY	D. UNGSON
DRAWN BY	D. UNGSON
CHECKED BY	R. QUIRK
APPROVED BY	A. SOKOL
DATE	06-29-2018

sbcta san bernardino county transportation authority

METROLINK

STV 100 Years

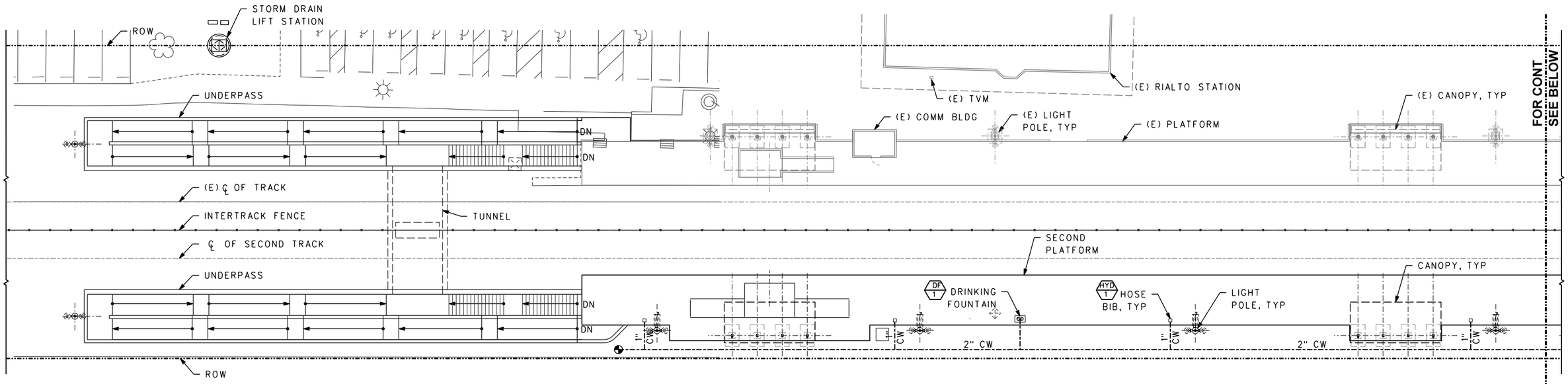
SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

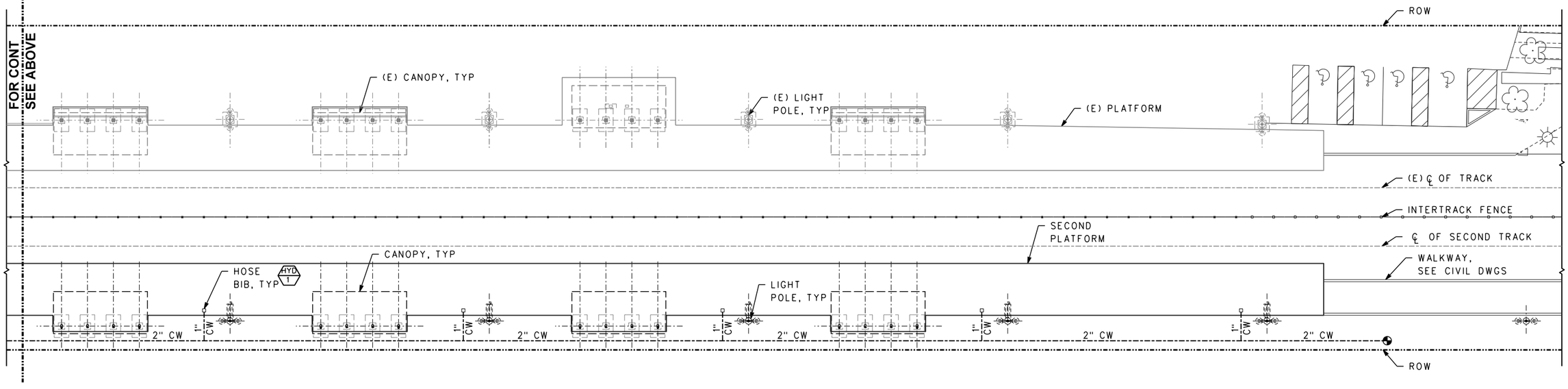
CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

RIALTO STATION
PLUMBING SYMBOLS, ABBREVIATIONS, NOTES AND FIXTURE SCHEDULE

CONTRACT NO.	16-1001411
DRAWING NO.	P-101
REVISION	
SHEET NO.	142 OF 200
SCALE	NTS



PLUMBING PARTIAL PLAN (1 / P-101)
1/16" = 1'-0"



PLUMBING PARTIAL PLAN (2 / P-101)
1/16" = 1'-0"

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
V	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	RQ		SM

DESIGNED BY	D. UNGSON
DRAWN BY	D. UNGSON
CHECKED BY	R. QUIRK
APPROVED BY	A. SOKOL
DATE	06-29-2018

sbcta san bernardino county transportation authority

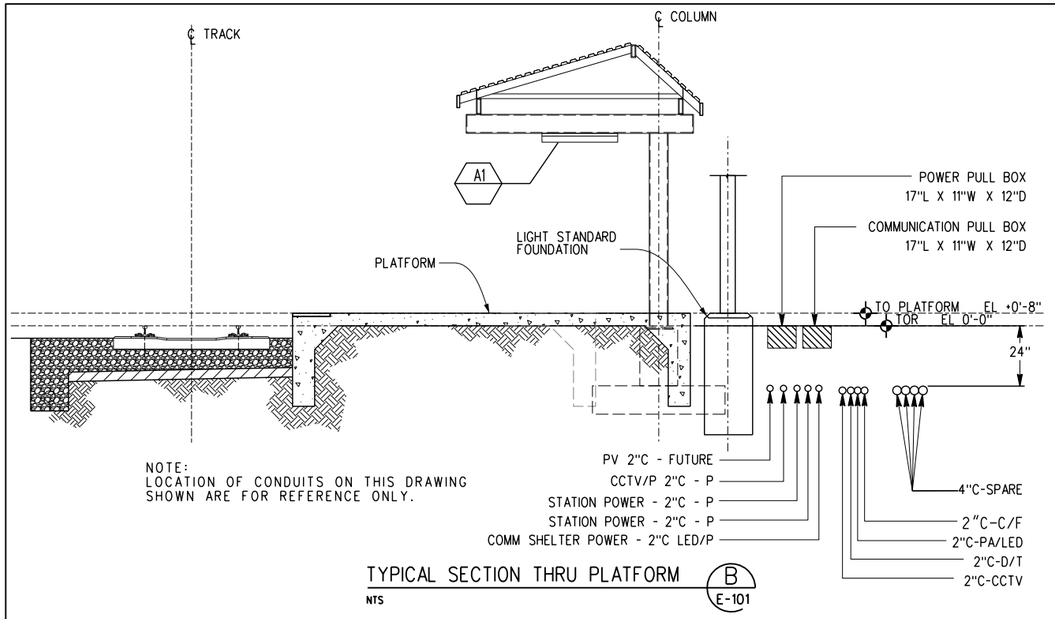
METROLINK
STV 100 Years
SUBMITTED: _____ PROJECT MANAGER
APPROVED: _____

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

RIALTO STATION
PLUMBING PLAN

CONTRACT NO.	16-1001411
DRAWING NO.	P-102
REVISION	
SHEET NO.	143 OF 200
SCALE	1/16" = 1'-0"

FINAL 30% SUBMITTAL (06-29-2018)



TYPICAL SECTION THRU PLATFORM — B / E-101

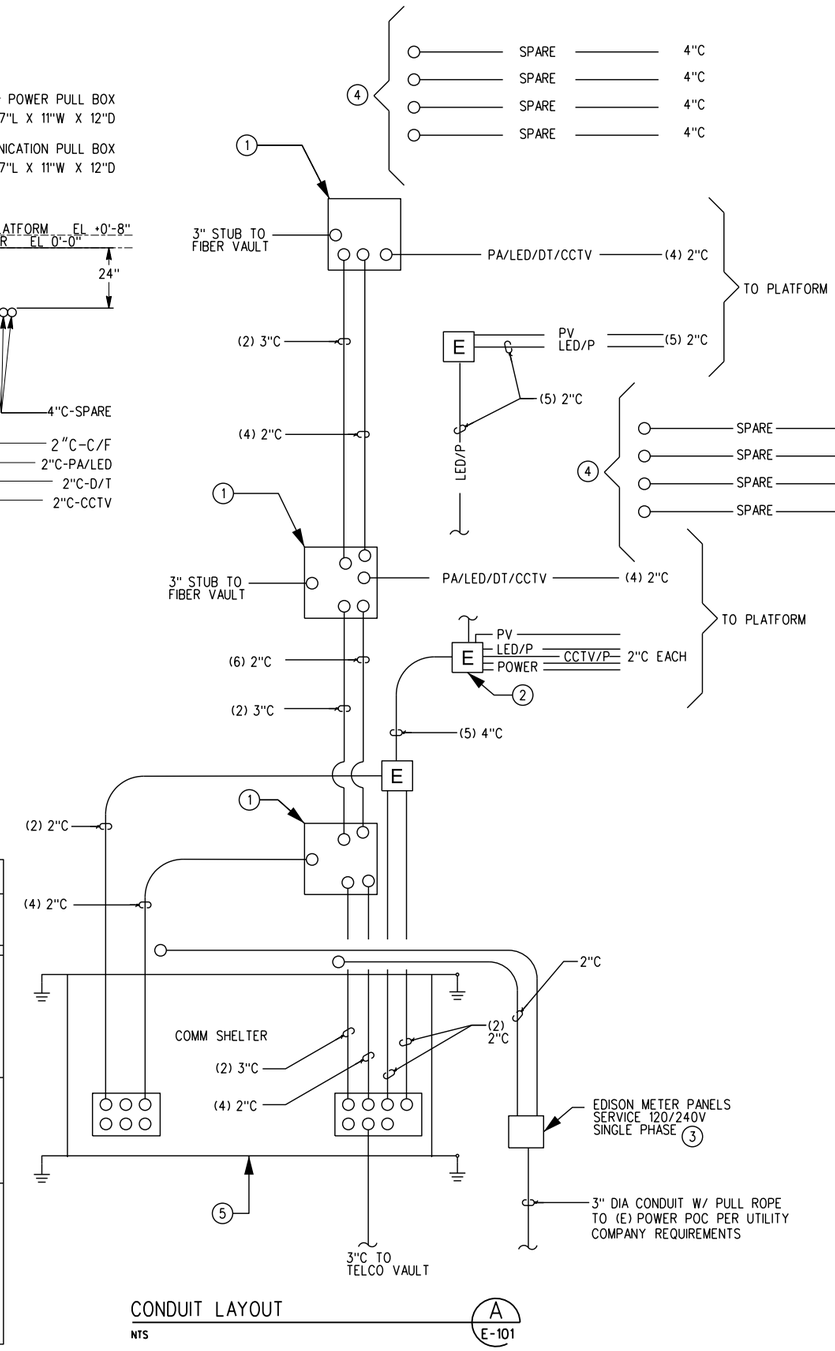
NTS

CONDUIT LAYOUT NOTES

1. 4'-0" X 4'-0" X 4'-0" DEEP PULL BOX WITH GALVANIZED COVER.
2. 11" X 17" PULL BOX.
3. SEPARATE METER SERVICE 120/240V, SINGLE PHASE.
4. SPARE CONDUIT TO RUN LENGTH OF PLATFORM INTO 4'x 4'x 4'PULLBOX.
5. FOR COMMUNICATIONS SHELTER, SEE SCRRA COMMUNICATION STANDARD DRAWINGS ES9400 THRU ES9440.
6. FOR ADDITIONAL NOTES AND LEGEND, SEE SCRRA ENGINEERING STANDARD DRAWING ES3001.

LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER AND CATALOG NUMBER	
A1	SURFACE MOUNTED 4'x 5.5" x 5.6"DEEP 1-LAMP LED FIXTURE WITH CORROSION PROTECTED 20 GA. CRS STEEL BODY AND BRUSHED FINISH SUITABLE FOR WET LOCATION. THREADED HUBS ARE WELDED INTO CHANNEL FOR SEALED WIREWAY ACCESS. LENS SHALL BE 0.125"THK PEARLESCENT POLYCARBONATE. PROVIDE ELECTRONIC BALLAST AND 1-45L40K LAMPS. (CANNOPY LIGHTS)	KENALL LIGHTING CAT. NO. ES5-48-1-45L40K-DCC-1-DV-2H-PP-TR	6"
B1	RECESSED WALL MOUNTED LIGHT FIXTURE	KIM LIGHTING CAT. NO. LLF10P35/20L4KUV/DB/PL/SF/EM/SC-MW	13.875" / 11.375"
L1	DECORATIVE SUN VALLEY LIGHTING FIXTURE AND POLE TO MATCH EXISTING. (PLATFORM LIGHTS, SEE ARCHITECTURAL 5/A-301)	SUN VALLEY LIGHTING: LAER1-80LED-LAER1-LED-YC -VPA-III-NW(4000K)-277-2-180 -RAL-6005-T-CP-PC+V POLE: SUN VALLEY LIGHTING *7-1070-17FT-PT27 FLUTED ROUND EXTRUDED ALLOY ALUMINUM POLE BASE: SUN VALLEY LIGHTING DECORATIVE BASE *700	



CONDUIT LAYOUT — A / E-101

NTS

GENERAL NOTES

1. DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK. FOLLOW DRAWINGS IN LAYING OUT WORK AND CHECK DRAWINGS OF OTHER TRADES TO VERIFY ADDITIONAL REQUIREMENTS AND COORDINATION.
2. CUT STEEL CONDUIT ENDS SQUARE, REAM SMOOTH, PAINT MALE THREADS OF FIELD THREADED CONDUIT WITH GRAPHITE BASE PIPE COMPOUNDS DRAW UP TIGHT WITH CONDUIT COUPLINGS.
3. LEAVE WIRE SUFFICIENTLY LONG TO PERMIT MAKING FINAL CONNECTIONS.
4. COVERS OF JUNCTION AND PULL BOXES SHALL BE ACCESSIBLE.
5. PROVIDE PULL BOXES AND MANHOLES AS INDICATED AND WHENEVER NECESSARY TO FACILITATE CABLE PULL AND COORDINATE EXACT LOCATIONS WITH OTHER TRADES.
6. FOR EMPTY RACEWAY RUNS, PROVIDE PULL BOXES EVERY 100 FEET AND AS INDICATED. COORDINATE EXACT LOCATIONS WITH OTHER TRADES.
7. SUPPORT PANEL, JUNCTION AND PULL BOXES WITH NO WEIGHT BEARING ON CONDUITS.
8. SUPPLEMENTARY JUNCTION AND PULL BOXES IN ADDITION TO THE INDICATED ON THE CONTRACT DRAWINGS AND AS REQUIRED BY APPLICABLE CODES, PROVIDE AND INSTALL SUPPLEMENTARY JUNCTION AND PULL BOXES AS FOLLOWS:
   1. WHEN REQUIRED TO FACILITATE INSTALLATION OF WIRING.
   2. AT EVERY THIRD 90 DEGREE TURN.
   3. AT INTERVALS NOT EXCEEDING 100 FEET FOR RACEWAY SIZES OVER 1 INCH.
9. ALL RECEPTACLES INDICATED "GFI" SHALL BE GROUND FAULT INTERRUPTER TYPE.
10. ALL CONDUITS SHALL BE PVC MINIMUM 2'-0" BELOW GRADE.
11. NOT USED.
12. PROVIDE 12" SEPARATION BETWEEN POWER AND COMMUNICATION CONDUITS.
13. PROVIDE 6' LONG PIGTAIL AT EACH TVM LOCATION TO ALLOW CONNECTION OF (3) CONDUCTORS TO EQUIPMENT.
14. ALL EMPTY CONDUITS SHALL BE PROVIDED WITH PULL WIRE.
15. ALL CONDUCTORS RUNNING FROM STATION POWET PANEL TO EACH TVM LOCATIONS SHALL HAVE XHHW INSULATION.
16. INSTALLATION OF CABLES IN D/T CONDUIT SYSTEM SHALL BE BY SCRRA.
17. REFER TO SCRRA ENGINEERING STANDARDS ES*1103 AND ES*3001 FOR ABBREVIATIONS, LEGEND AND NOTES.
18. PROVIDE NEMA 3R ENCLOSURE TO ALL PANELBOARDS/LIGHTING CONTROL PANELS INSTALLED OUTDOORS.
19. PROVIDE 4" HOUSEKEEPING PAD FOR ALL ELECTRICAL FLOOR MOUNTED EQUIPMENT. COORDINATE DIMENSIONS WITH ACTUAL SIZE SELECTED.
20. ELECTRICAL AND COMMUNICATION PULL BOXES AT LIGHT POLES SHALL BE INSTALLED AT 6'-0" ON CENTER MINIMUM FROM THE CENTER OF TREE WHERE OCCURS PER LANDSCAPE DRAWINGS. COORDINATE WITH LANDSCAPE PRIOR TO INSTALLATION. WHERE INSTALLED NEAR CONSTRUCTION AND EXPANSION JOINTS, A MINIMUM CLEAR DISTANCE OF 12" FROM THE EDGE OF PULL BOX SHALL BE MAINTAINED.
21. WHEREVER POSSIBLE, CONDUITS SHALL BE ROUTED IN LANDSCAPE OR UNDER NON-PAVED AREAS AND AS CLOSE AS POSSIBLE TO ONE ANOTHER WITHIN THE SAME TRENCH TO MINIMIZE PAVEMENT DAMAGE WHEN REPAIRS ARE REQUIRED.
22. ALL UNDERGROUND CONDUITS SHALL BE BURIED 24" MINIMUM MEASURED BETWEEN A POINT ON THE TOP SURFACE OF ANY CONDUIT/RACEWAY AND THE TOP SURFACE OF FINISHED GRADE, CONCRETE OR SIMILAR COVER UNLESS OTHERWISE NOTED. AREAS SUBJECT TO HEAVY VEHICULAR TRAFFIC SHALL HAVE A 3" MINIMUM CONCRETE ENCASEMENT. REFER TO CIVIL PAVING PLAN FOR ADDITIONAL INFORMATION.
23. ALL UNDERGROUND CONDUITS FOR CCTV SYSTEM USE SHALL BE ROUTED TO COMMUNICATION BUILDING FOR FINAL TERMINATION UNLESS OTHERWISE NOTED. COORDINATE WITH OTHER TRADES FOR EXACT ROUTING PRIOR TO ROUGH-IN.
24. LOCATION OF CONDUITS SHOWN ARE FOR REFERENCE ONLY. ACTUAL LOCATION OF CONDUITS WILL VARY DUE TO SITE SPECIFIC CONDITIONS. COORDINATE WITH LATEST SCRRA STANDARDS PRIOR TO ROUGH-IN.
25. ALL SYMBOLS SHOWN ARE NOT NECESSARILY USED ON THIS PROJECT

SYMBOLS

- E — ELECTRICAL PULLBOX PER SCRRA STANDARD
- C — COMMUNICATION PULLBOX PER SCRRA STANDARD
- A1 — LIGHTING FIXTURE DESIGNATION, SEE LIGHTING FIXTURE SCHEDULE. LETTER INDICATES FIXTURE TYPE PER FIXTURE SCHEDULE
- POINT OF CONNECTION (POC)
- RECESSED WALL MOUNTED LIGHT FIXTURE
- BACK TO BACK LUMINAIRE
- LIGHT STANDARD COMBINATION FOR MORE INFORMATION SEE ARCHITECTURAL DWGS

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	RQ		SM

DESIGNED BY	D. UNGSON
DRAWN BY	D. UNGSON
CHECKED BY	R. QUIRK
APPROVED BY	A. SOKOL
DATE	06-29-2018

sbcta — san bernardino county transportation authority

METROLINK

STV 100 Years

SUBMITTED: _____ PROJECT MANAGER

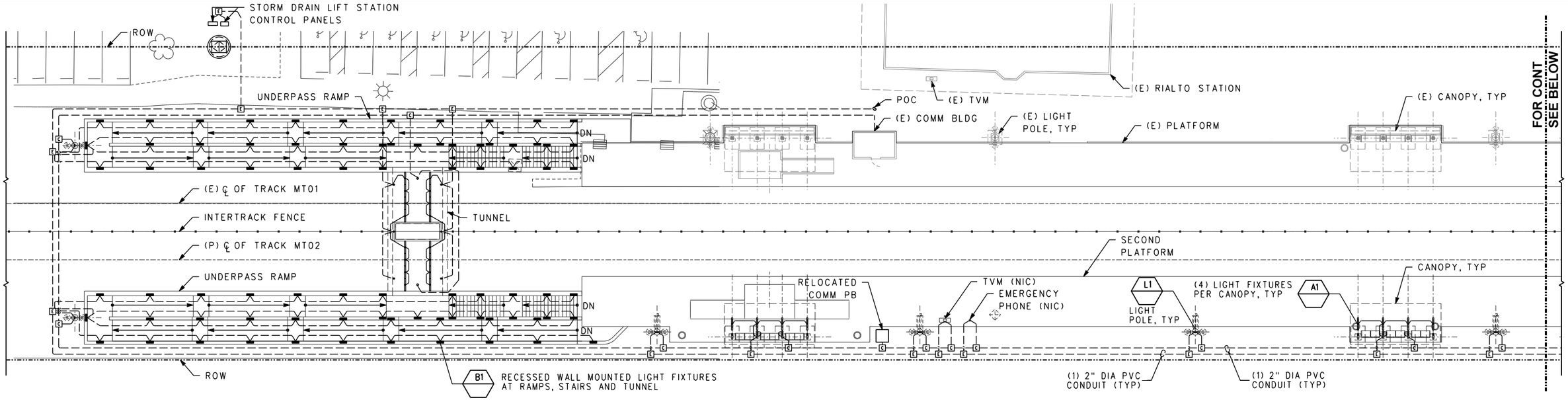
APPROVED: _____

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

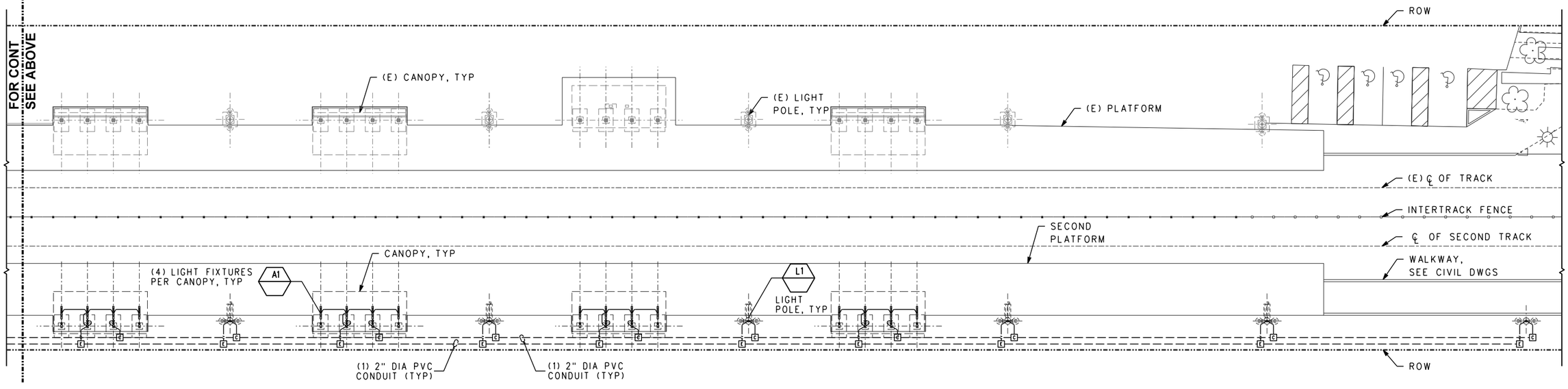
RIALTO STATION
ELECTRICAL NOTES, CONDUIT LAYOUT
TYPICAL SECTION AND FIXTURE SCHEDULE

CONTRACT NO.	16-1001411
DRAWING NO.	E-101
REVISION	
SHEET NO.	144 OF 200
SCALE	NTS

6/19/2018 2:52:42 PM USER = ungson
I:\Projects\401647\401647_0001\90_CAD\Models and Sheets\14_E_Electrical\Sheet Files\LRDT212-E-101.sht
G:\Cad\Standards\SCRRA\Standards\PenTable\PlotStamp.tbl
G:\CAD\Standards\SCRRA\Standards\Plotdrv\SCRRA_pdf_Color_Full.pltcfg



ELECTRICAL PARTIAL PLAN — 1/16" = 1'-0" — 1 / E-101



ELECTRICAL PARTIAL PLAN — 1/16" = 1'-0" — 2 / E-101

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	RQ		SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential: and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY D. UNGSON
DRAWN BY D. UNGSON
CHECKED BY R. QUIRK
APPROVED BY A. SOKOL
DATE 06-29-2018

sbcta — san bernardino county transportation authority

METROLINK

STV 100 Years

SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

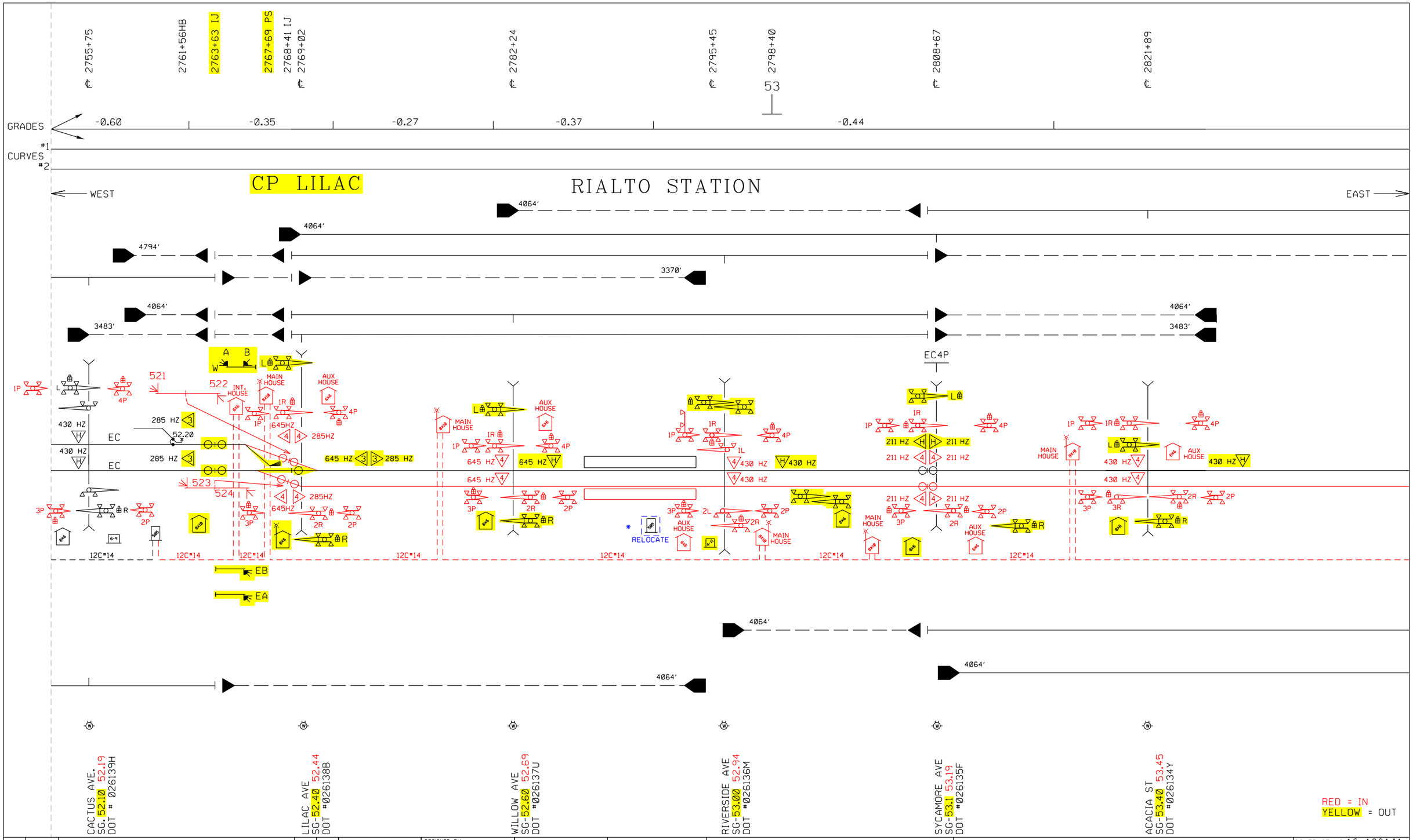
CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

RIALTO STATION ELECTRICAL PLAN

CONTRACT NO. 16-1001411
DRAWING NO. E-102
REVISION
SHEET NO. 145 OF 200
SCALE 1/16" = 1'-0"

FINAL 30% SUBMITTAL (06-29-2018)

6/19/2018 2:52:46 PM USER = ungsond
I:\Projects\4018447\4018447_0001\90_CAD Models and Sheets\14_E_Electrical\Sheet Files\LRDT212-E-102.sht
G:\Cad\Standards\SCRRA\Standards\PenTable\PlotStamp.tbl
G:\CAD\Standards\SCRRA\Standards\Plotdrv\SCRRA.pdf_Color_Full.pltcfg



FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

INFORMATION CONFIDENTIAL:
All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY: GILDARDO RAMIREZ
DRAWN BY: SINUE TORRES
CHECKED BY: GILDARDO RAMIREZ
APPROVED BY: KENNETH WALTERS
DATE: 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. Exp. CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

Xorail — A Wabtec Company

SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SAN GABRIEL SUBDIVISION
SG 53–54 CP PASADENA JCT. TO CP VERNON
SH. 1 OF 2

CONTRACT NO. 16-100141
DRAWING NO. TS-001
REVISION
SHEET NO. 146 OF 200
SCALE NONE

℄ 2835+11
℄ 2848+32
℄ 2851+20
54
2853+20 IJ
℄ 2879+09

GRADES -0.57 -0.10
#1 53.95-1 1° 00′
CURVES
#2

WEST
EAST

4064′
4064′
4352′

AUX HOUSE
MAIN HOUSE
INT. HOUSE
L
1L
1R
1P
2P
3P
4P
2L
2R
645 HZ
285 HZ
790 HZ
211 HZ
430 HZ
531
532
533
534
12C*14
12C*14, 3C*6 U.G.
4064′
4064′
4073′

EUCALYPTUS AVE.
SG-53.60 53.70
DOT #026133S

PEPPER AVE
SG-53.90 53.95
DOT #026132K

RIALTO AVE.
SG-54.40 54.54
DOT #026131D

RED = IN
YELLOW = OUT

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. Exp. CIVIL — STATE OF CALIFORNIA

sbcta san bernardino county transportation authority

METROLINK.

Xorail A Wabtec Company

SUBMITTED: _____ PROJECT MANAGER
APPROVED: _____

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT
SAN GABRIEL SUBDIVISION
SG 53-54 CP PASADENA JCT. TO CP VERNON
SH. 2 OF 2

CONTRACT NO. 16-100141
DRAWING NO. TS-002
REVISION
SHEET NO. 147 OF 200
SCALE NONE

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — EXP. — CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

Xorail — A Wabtec Company

SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

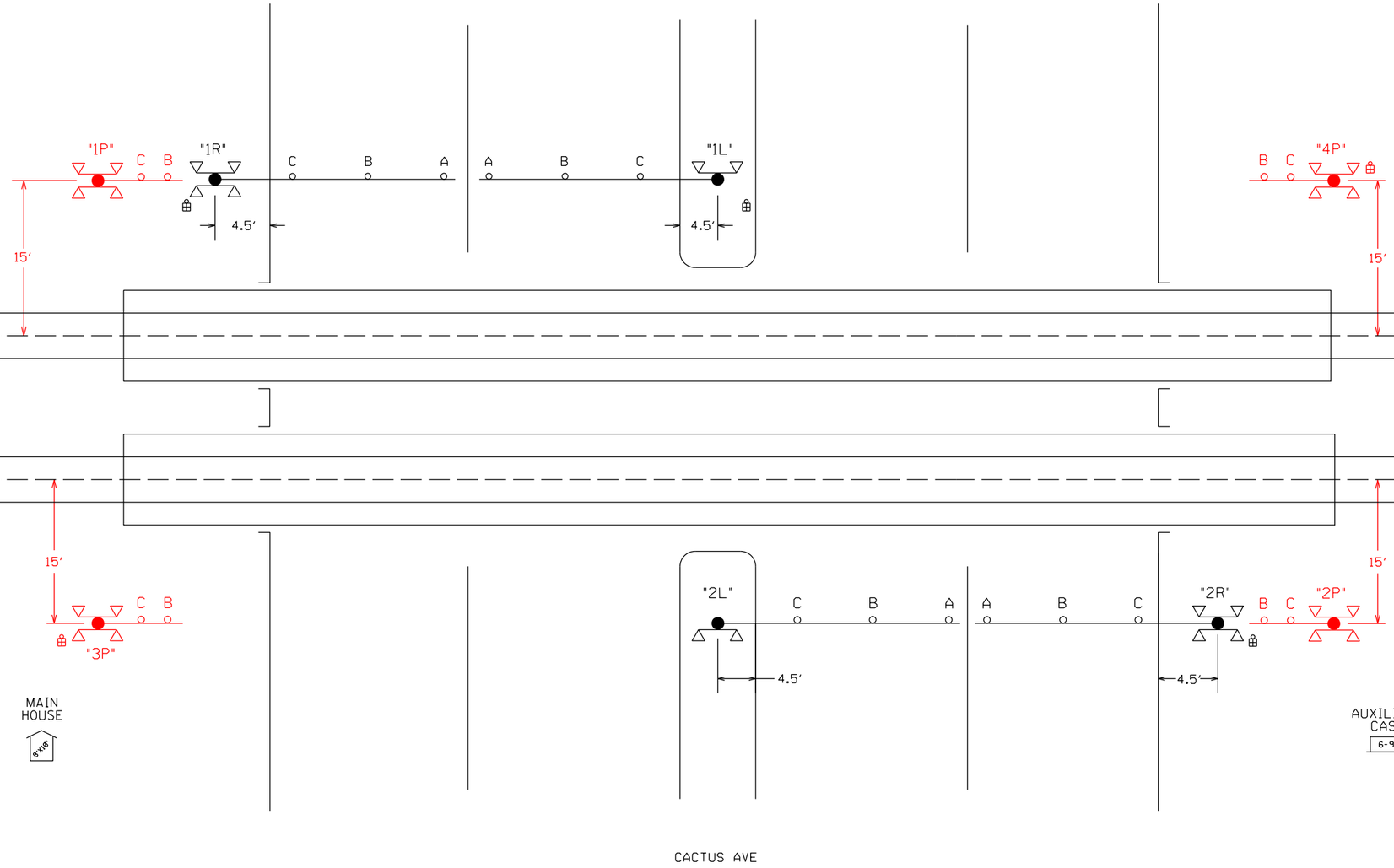
CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

SAN GABRIEL SUBDIVISION

SG 55-56 CP PASADENA JCT. TO CP VERNON

SH. 1 OF 1

CONTRACT NO. 16-100141
DRAWING NO. TS-003
REVISION
SHEET NO. 148 OF 200
SCALE NONE



RED = IN
YELLOW = OUT

LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- △ -DIODES ARE SAFETRAN MOD. 8A299-0006.
- ✳ -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- □ -DENOTES RECORDER CONNECTION.

NOT FOR CONSTRUCTION

REV.	DATE		BY	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — NO. EXP. CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

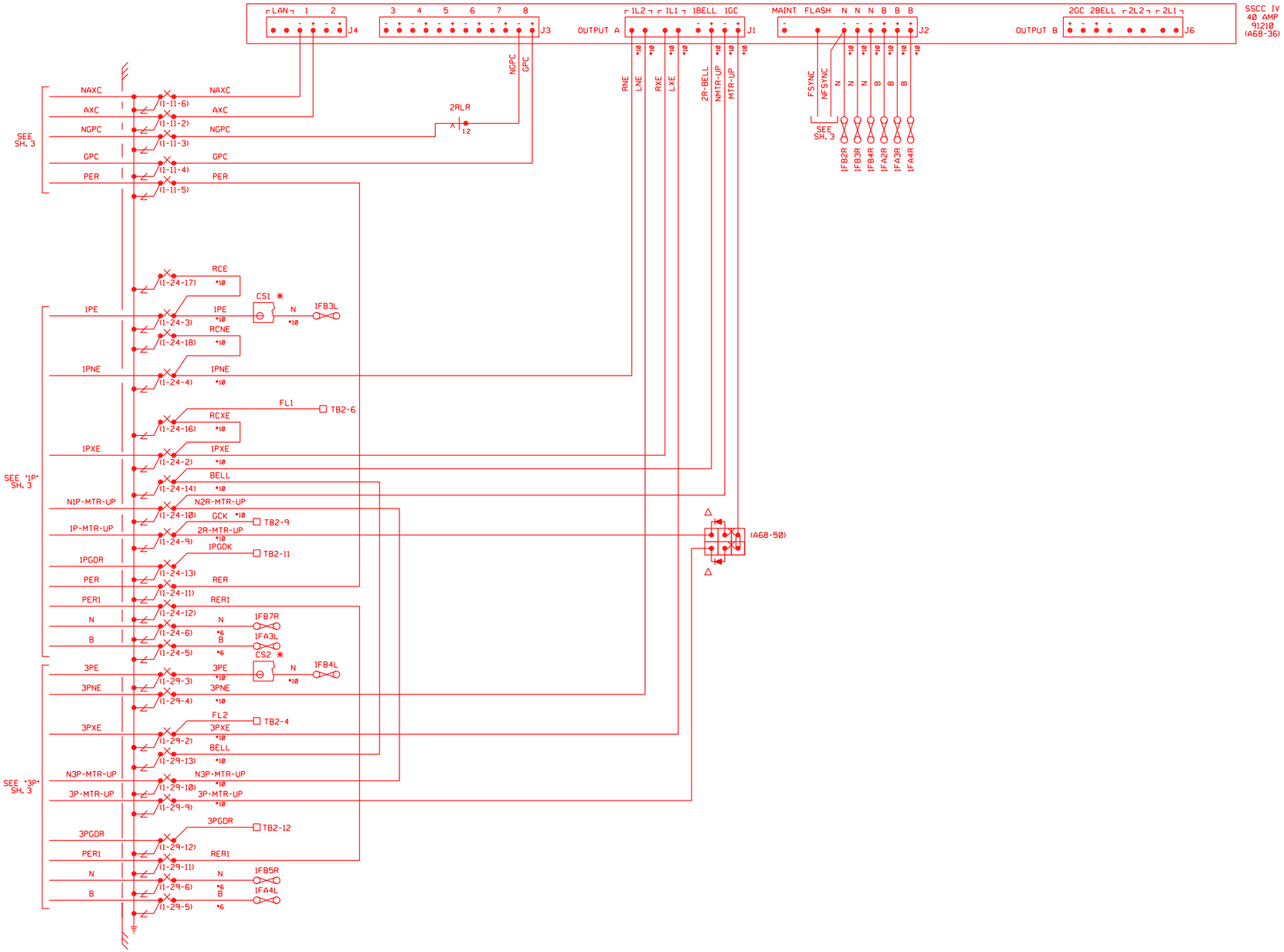
Xorail — A Wabtec Company

SUBMITTED: _____ PROJECT MANAGER
APPROVED: _____

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT
SG 52.19 CACTUS AVE
CROSSING LAYOUT
SH. 1 OF 5

CONTRACT NO. 16-100141
DRAWING NO. TS-004
REVISION
SHEET NO. 149 OF 200
SCALE NONE

FINAL 30% SUBMITTAL (06-29-2018)



FINAL 30% SUBMITTAL (06-29-2018)

RED = IN
YELLOW = OUT

LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- △ -DIODES ARE SAFETRAN MOD. 8A299-0006.
- ✳ -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- □ -DENOTES RECORDER CONNECTION.

MAIN HOUSE

NOT FOR CONSTRUCTION

REV.	DATE		BY	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — NO. — EXP. — CIVIL — STATE OF CALIFORNIA

sbcta san bernardino county transportation authority

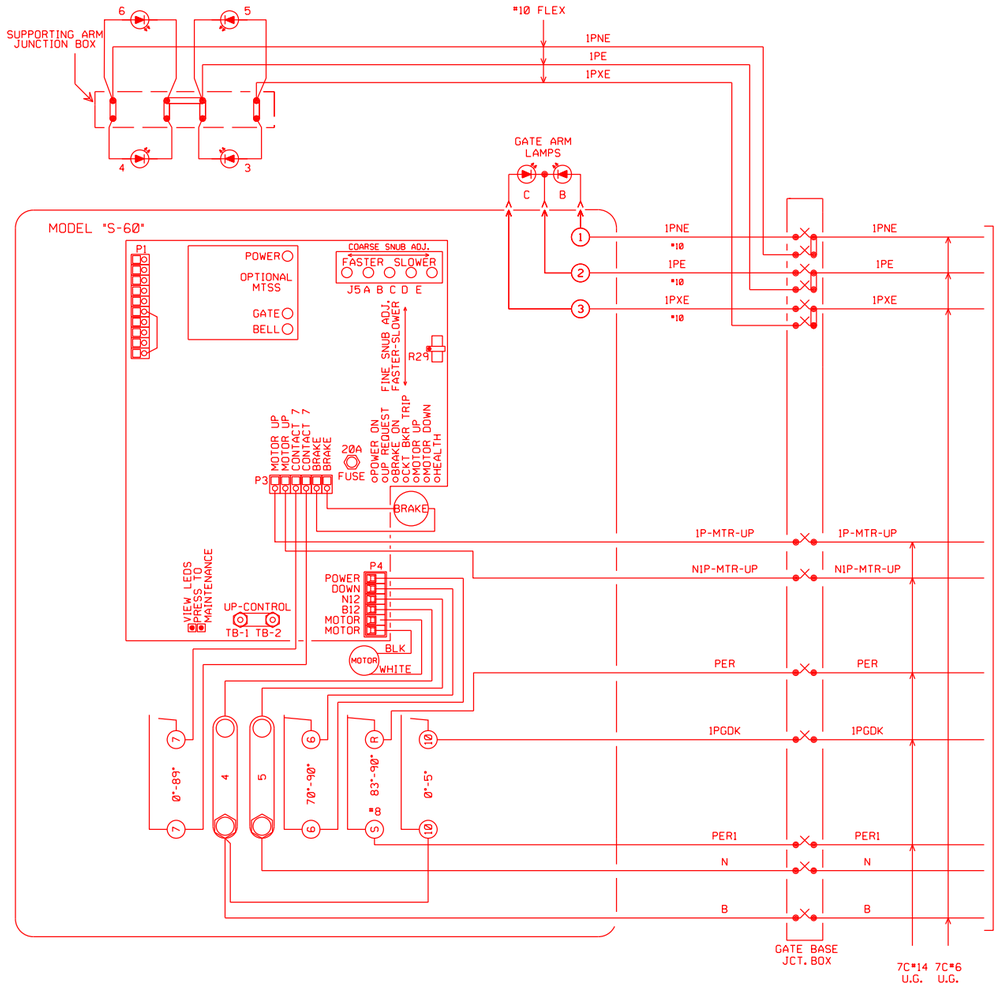
METROLINK

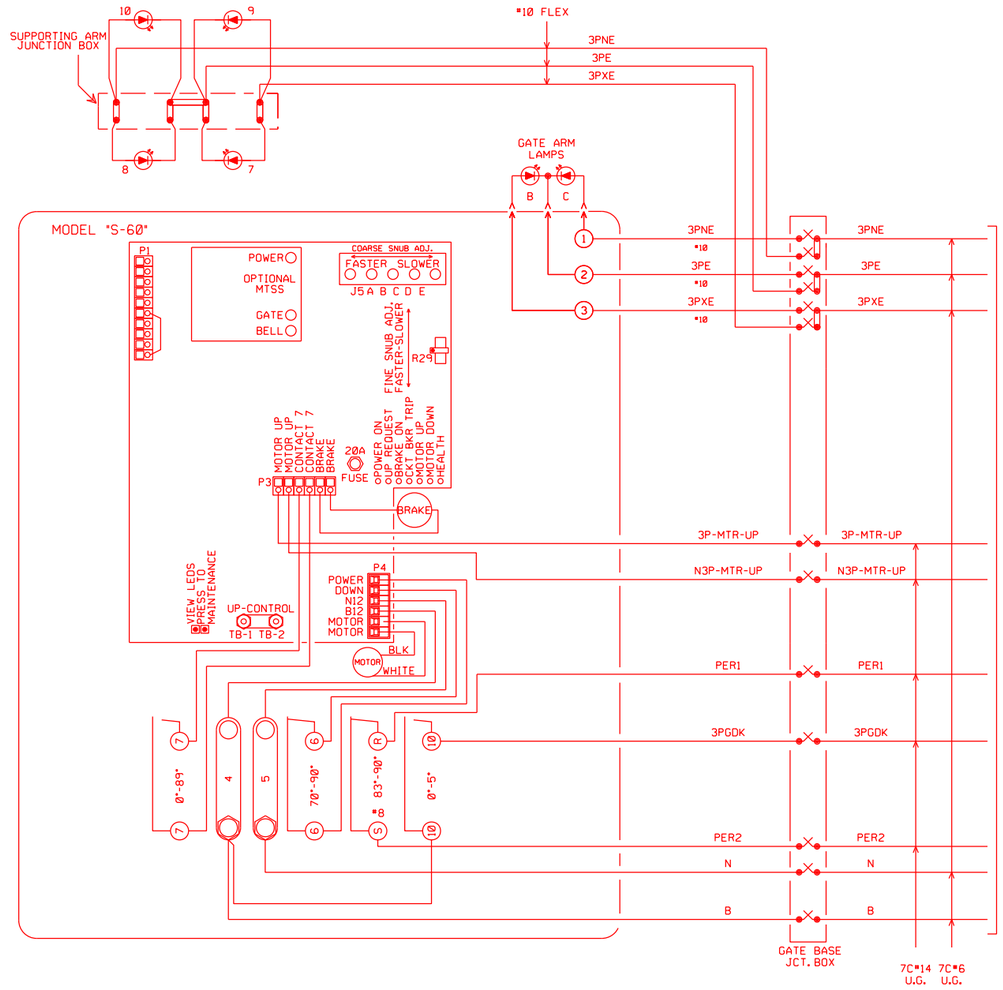
Xorail A Wabtec Company

SUBMITTED: _____ PROJECT MANAGER
APPROVED: _____

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SG 52.19 CACTUS AVE
CROSSING CONTROLLER CIRCUIT PLAN
SH. 2 OF 5

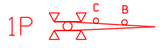
CONTRACT NO. 16-100141
DRAWING NO. TS-005
REVISION
SHEET NO. 150 OF 200
SCALE NONE





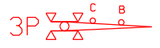
1P 7 COND #6 U.G.	
1	1PXE
2	1PE
3	1PNE
4	B
5	SP.
6	N
7	SP.

1P 7 COND #14 U.G.	
1	1P-MTR-UP
2	N1P-MTR-UP
3	PER
4	1PGDK
5	PER1
6	SP.
7	SP.

1P 

3P 7 COND #6 U.G.	
1	3PXE
2	3PE
3	3PNE
4	B
5	SP
6	N
7	SP

3P 7 COND #14 U.G.	
1	3P-MTR-UP
2	N3P-MTR-UP
3	PER1
4	3PGDK
5	PER2
6	SP.
7	SP.

3P 

RED = IN

YELLOW = OUT

LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- -DIODES ARE SAFETRAN MOD. 8A299-0006.
- -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- -DENOTES RECORDER CONNECTION.

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — EXP. — CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

Xorail — A Wabtec Company

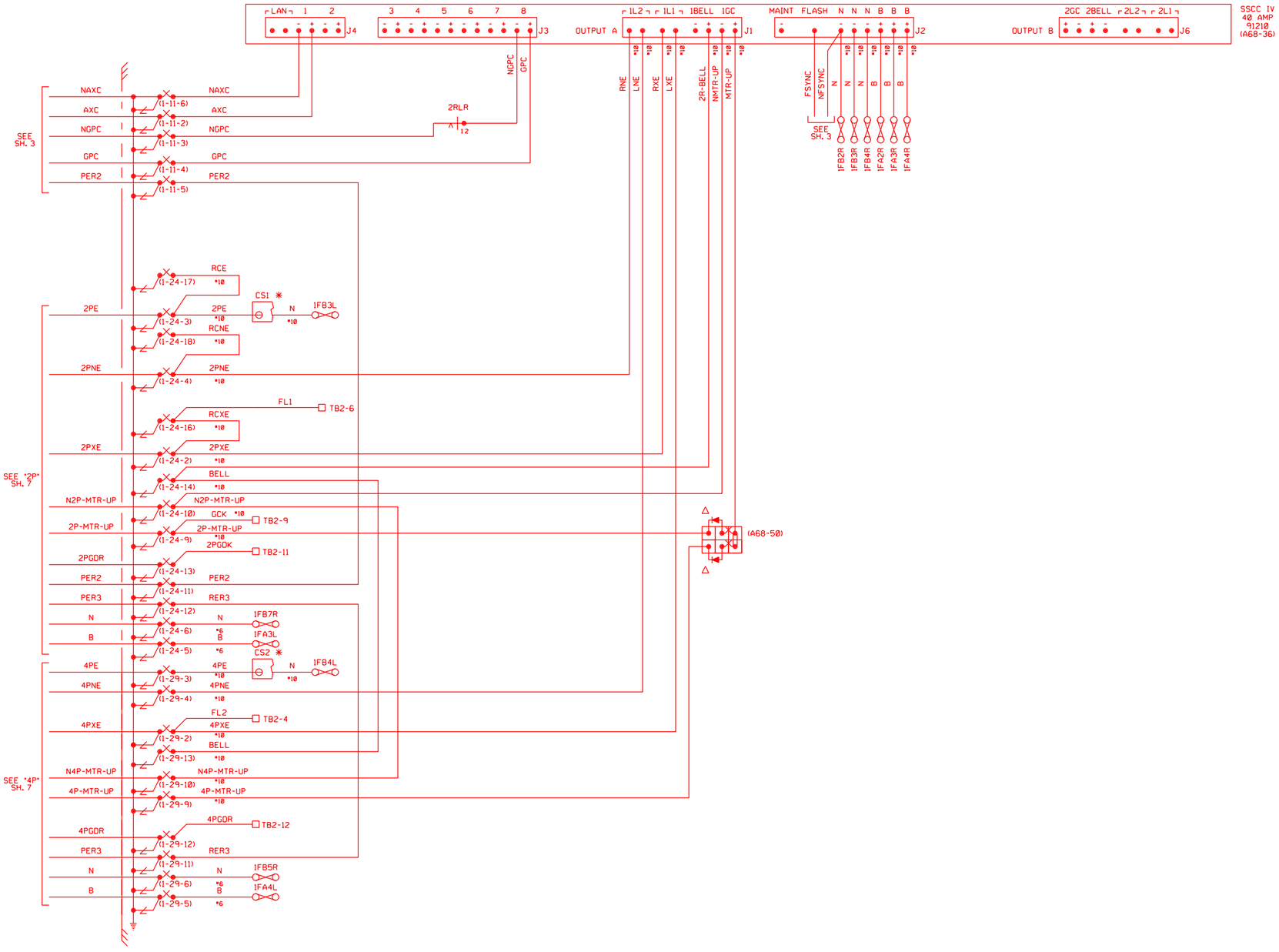
SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SG 52.19 CACTUS AVE
GATES 1P & 3P CIRCUITS
SH. 3 OF 5

CONTRACT NO. 16-100141
DRAWING NO. TS-006
REVISION
SHEET NO. 151 OF 200
SCALE NONE

FINAL 30% SUBMITTAL (06-29-2018)



RED = IN
YELLOW = OUT

LEGEND:
- ∠ -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- △ -DIODES ARE SAFETRAN MOD. 8A299-0006.
- ✳ -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- □ -DENOTES RECORDER CONNECTION.

CASE 6-9

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL:
All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — EXP. — CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

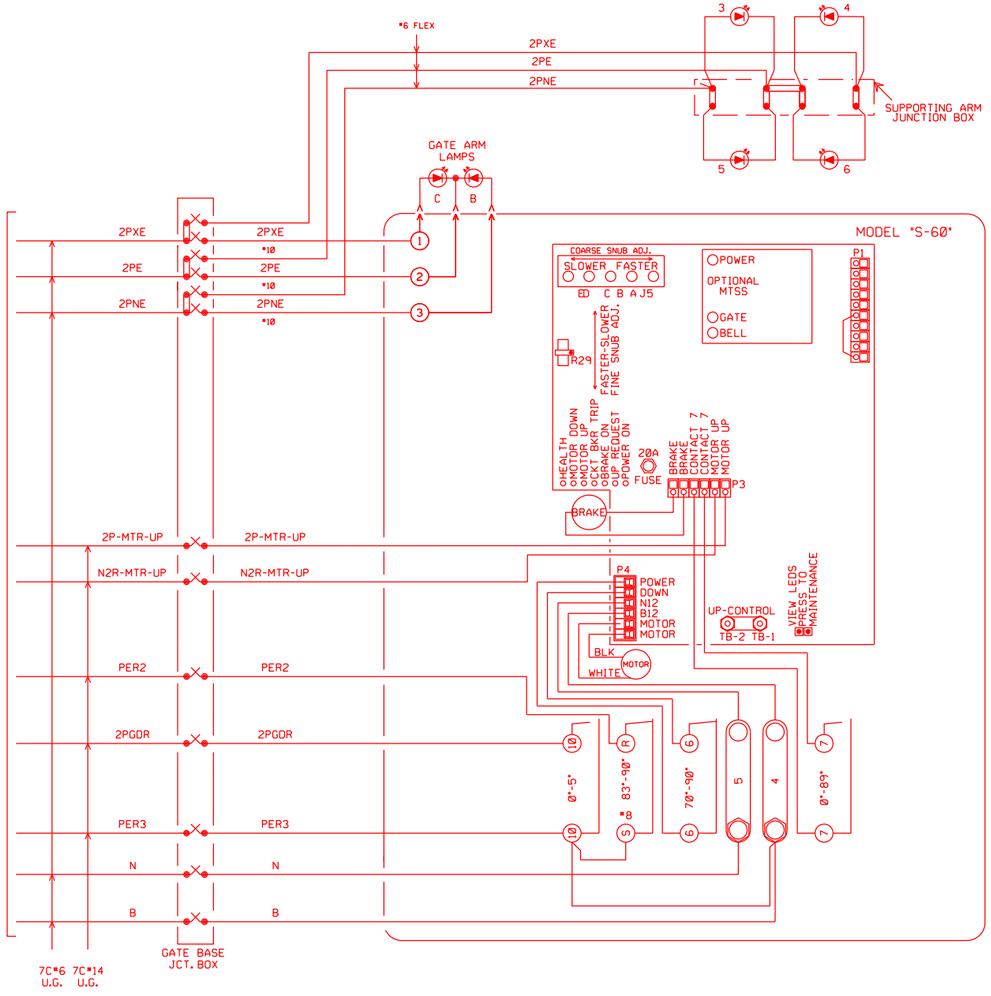
METROLINK

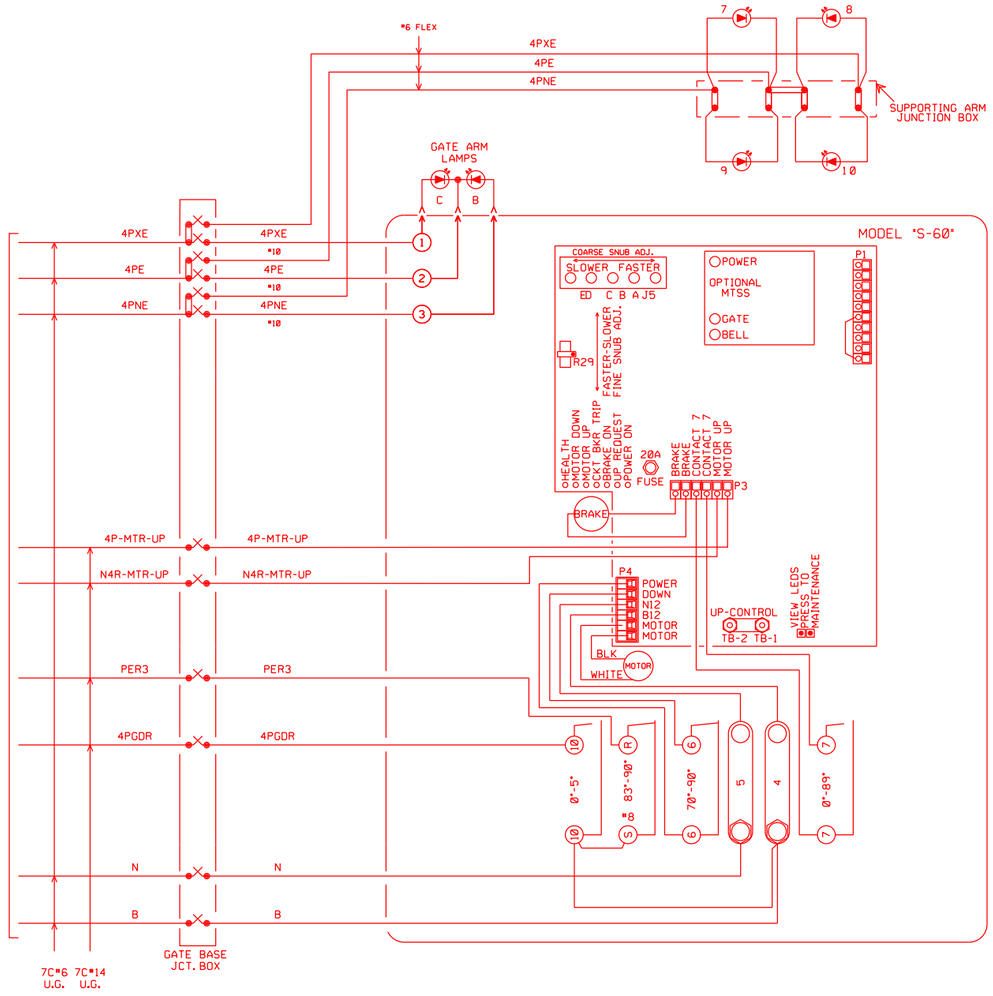
Xorail — A Wabtec Company

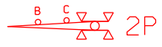
SUBMITTED: _____ PROJECT MANAGER
APPROVED: _____

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SG 52.19 CACTUS AVE
CROSSING CONTROLLER CIRCUIT PLAN
SH. 4 OF 5

CONTRACT NO. 16-100141
DRAWING NO. TS-007
REVISION
SHEET NO. 152 OF 200
SCALE NONE







2P #6 7 COND U.G.	
1	2PNE
2	2PE
3	2PXE
4	B
5	N
6	SP.
7	SP.

2P #14 7 COND U.G.	
1	2P-MTR-UP
2	N2P-MTR-UP
3	PER2
4	PER3
5	2PGDR
6	SP.
7	SP.

4P #6 7 COND U.G.	
1	4PNE
2	4PE
3	4PXE
4	B
5	N
6	SP.
7	SP.

4P #14 7 COND U.G.	
1	4P-MTR-UP
2	N4P-MTR-UP
3	PER3
4	SP.
5	4PGDR
6	SP.
7	SP.

RED = IN

YELLOW = OUT

LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- 000 -COIL PER I-324
- -TWISTED WIRE
- △ -DIODES ARE SAFETRAN MOD. 8A299-0006.
- ✳ -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- □ -DENOTES RECORDER CONNECTION.

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
0	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. ____ Exp. ____ CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

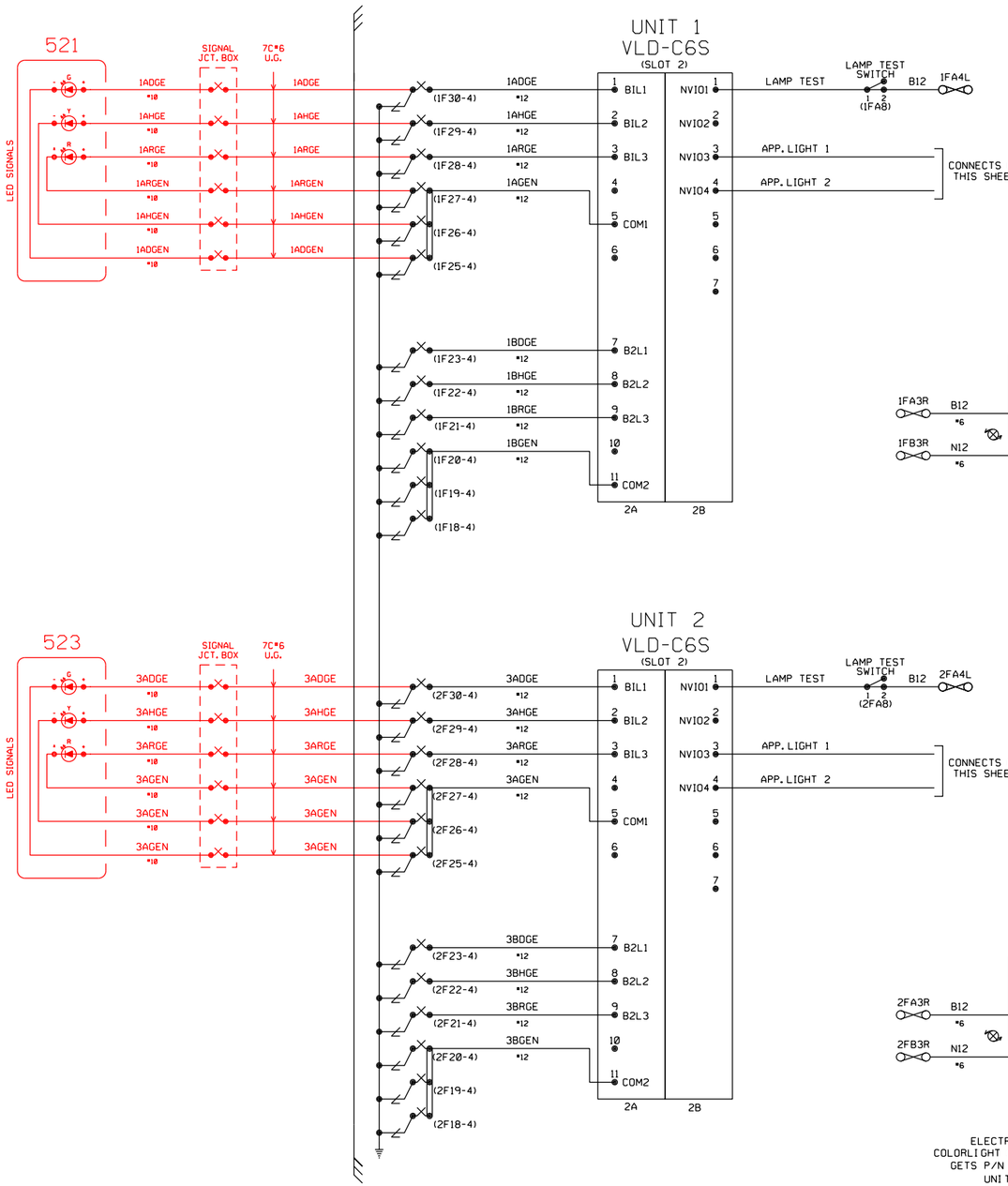
Xorail — A Wabtec Company

SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SG 52.19 CACTUS AVE
GATES 2P & 4P CIRCUITS
SH. 5 OF 5

CONTRACT NO. 16-100141
DRAWING NO. TS-008
REVISION
SHEET NO. 153 OF 200
SCALE NONE



ELECTROCODE 5
COLORLIGHT CONFIGURATION
GETS P/N 300671-004
UNITS 1-2
CHASSIS ID

1 2 3 4 5 6 7 8

● NOT PUNCHED = ON
○ PUNCHED = OFF

TRACK 1 ALTERNATING CODE 5= ALT 5
TRACK 2 ALTERNATING CODE 5= ALT 5

NOTE:

1. EC5 UNITS SHALL BE FURNISHED WITH A VPM-3 AND CSI-2 MODULE. EC5 UNITS SHALL BE POSITIVE TRAIN CONTROL (PTC) COMPATIBLE.

RED = IN
YELLOW = OUT

LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- 000 -COIL PER I-324
- -TWISTED WIRE
- △ -DIODES ARE SAFETRAN MOD. 8A299-0006.
- ✱ -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- □ -DENOTES RECORDER CONNECTION.

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

INFORMATION CONFIDENTIAL:
All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

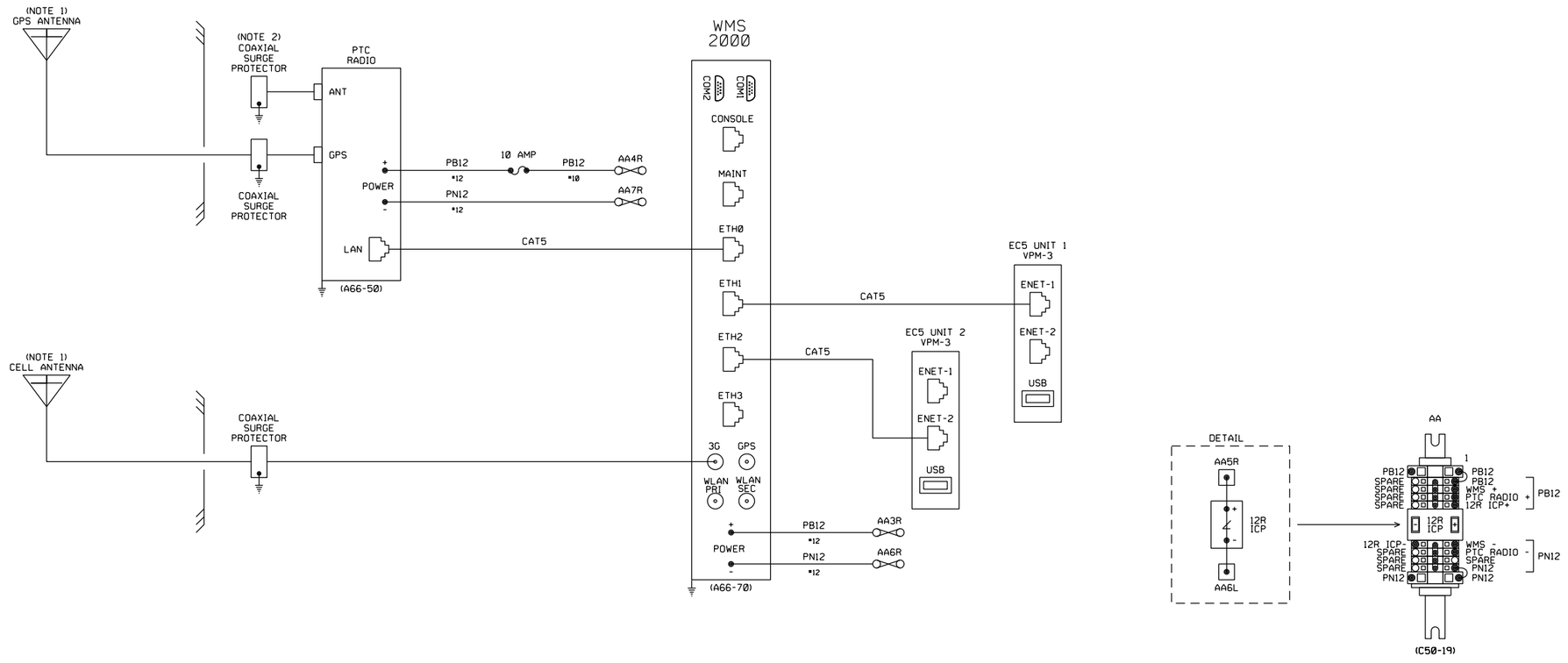
METROLINK

Xorail — A Wabtec Company

SUBMITTED: _____ PROJECT MANAGER
APPROVED: _____

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SG 52.40 INTERMEDIATES 521, 522, 523 & 524
LIGHTING CIRCUITS
SH. 1 OF 2

CONTRACT NO. 16-100141
DRAWING NO. TS-009
REVISION
SHEET NO. 154 OF 200
SCALE NONE



NOTES:

1. CONTRACTOR SHALL FURNISH COAXIAL CABLES, POLYPHASERS AND ANTENNAS. ITEMS SHALL BE INSTALLED BY OTHERS.
2. FOR FUTURE PTC ANTENNA CONNECTION.
3. POLYPHASER PRODUCT DATA:
   PTC ANTENNA POLYPHASER - TESSCO P/N IS-B50HN-C1
   GPS ANTENNA POLYPHASER - POLYPHASER P/N DCXZ+06NFNF-B
   CELL ANTENNA POLYPHASER - POLYPHASER P/N DSXL

LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- -DIODES ARE SAFETRAN MOD. 8A299-0006.
- -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- -DENOTES RECORDER CONNECTION.

NOT FOR CONSTRUCTION

REV.	DATE		BY	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — EXP. — CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

Xorail — A Wabtec Company

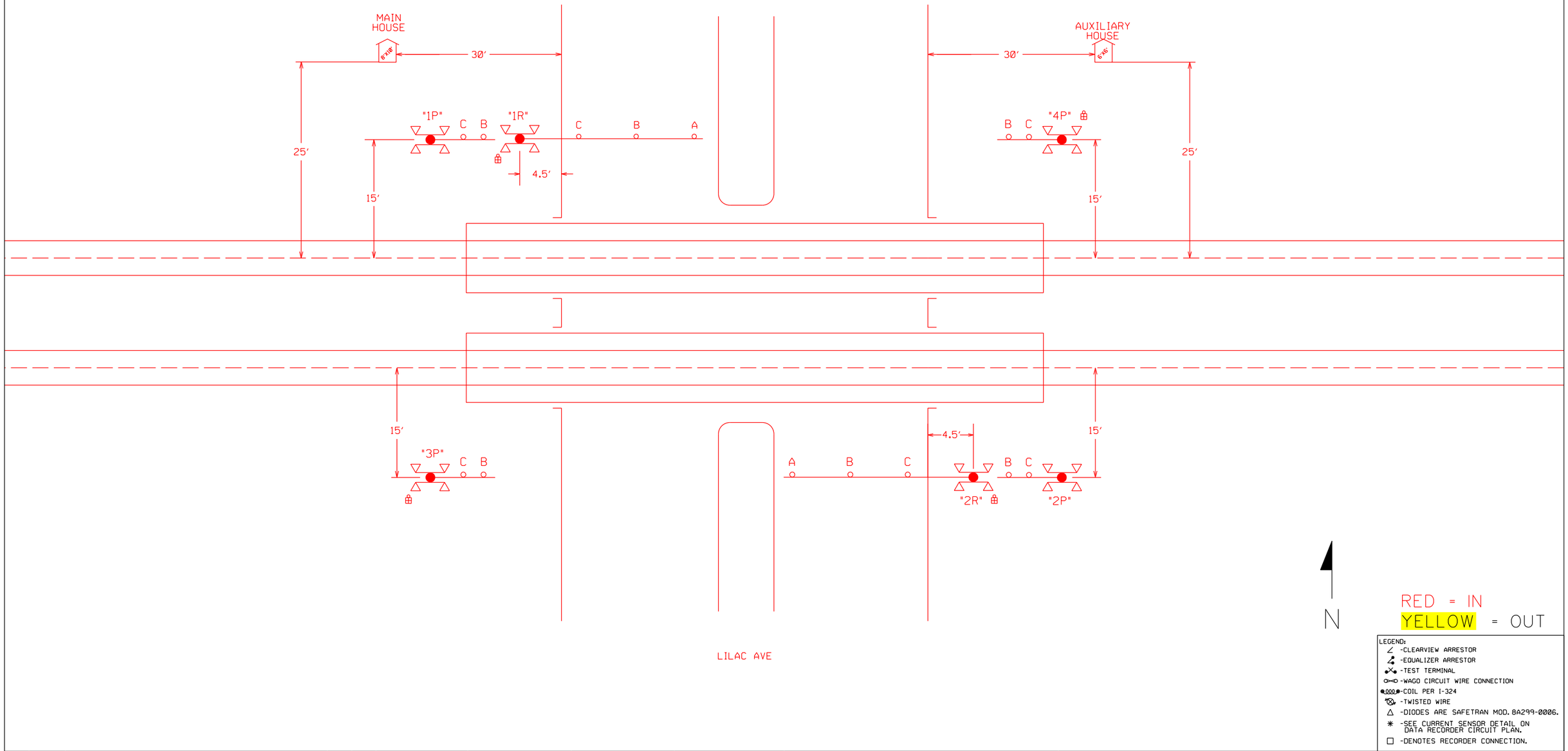
SUBMITTED: _____ PROJECT MANAGER
APPROVED: _____

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

SG 52.40 INTERMEDIATES 521, 522, 523 & 524
PTC RADIO
SH. 2 OF 2

CONTRACT NO. 16-100141
DRAWING NO. TS-010
REVISION
SHEET NO. 155 OF 200
SCALE NONE

FINAL 30% SUBMITTAL (06-29-2018)



FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER
NO. EXP. CIVIL
STATE OF CALIFORNIA

sbcta
san bernardino county transportation authority

METROLINK

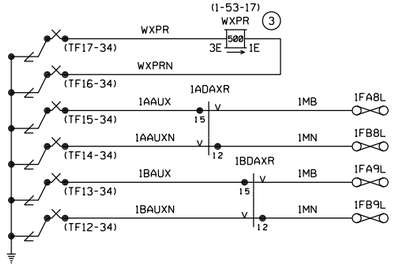
Xorail
A Wabtec Company

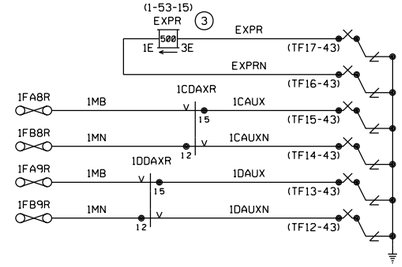
SUBMITTED: _____ PROJECT MANAGER
APPROVED: _____

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

SG 52.44 LILAC AVE
CROSSING LAYOUT
SH. 1 OF 4

CONTRACT NO. 16-100141
DRAWING NO. TS-011
REVISION
SHEET NO. 156 OF 200
SCALE NONE





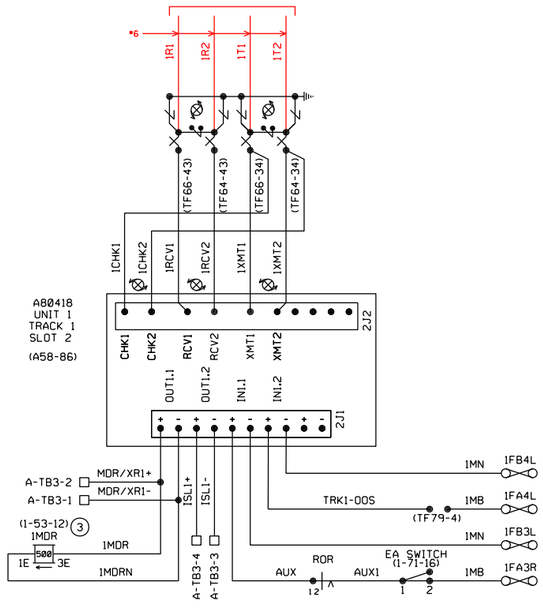
MICRO GCP 4000
MODULE REQUIREMENTS

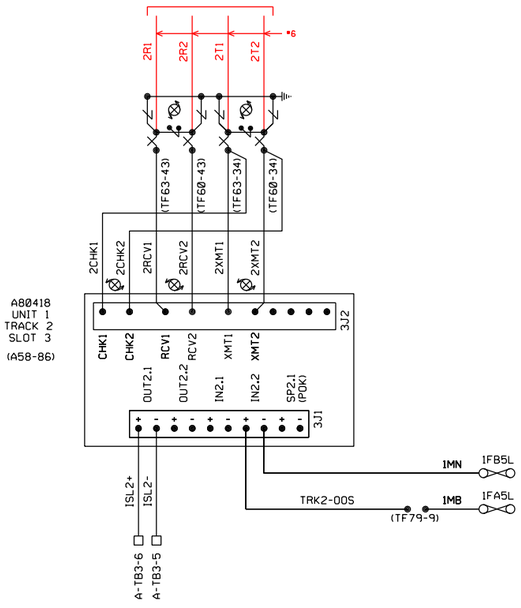
CPU II+ A80403	TRACK 1 A80418	TRACK 2 A80418	BLANK	BLANK	RIO A80413	BLANK	SSCC 1 A80405	DISPLAY A80407
CPU II+ A80403	TRACK 1 A80418	TRACK 2 A80418	BLANK	BLANK	RIO A80413	BLANK	SSCC 2 A80405	TRANSFER A80406

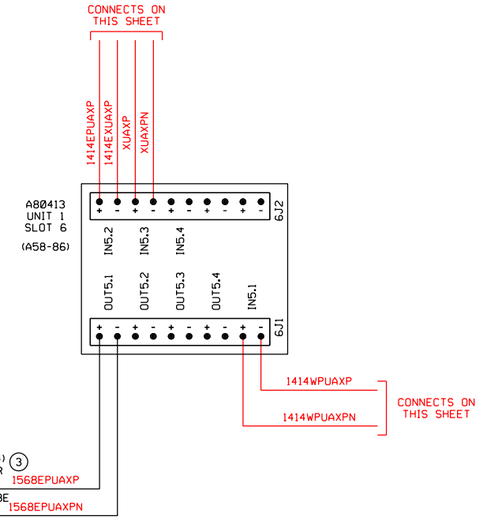
NORMAL

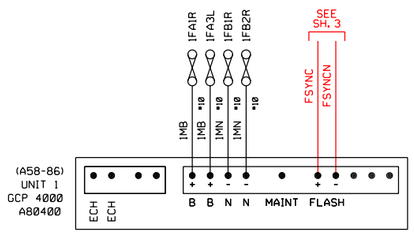
STANDBY

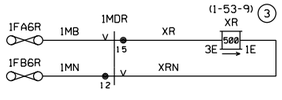
BLANK











RED = IN

YELLOW = OUT

LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- △ -DIODES ARE SAFETRAN MOD. 8A299-0006.
- ✳ -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- □ -DENOTES RECORDER CONNECTION.

MAIN HOUSE

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL:
All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

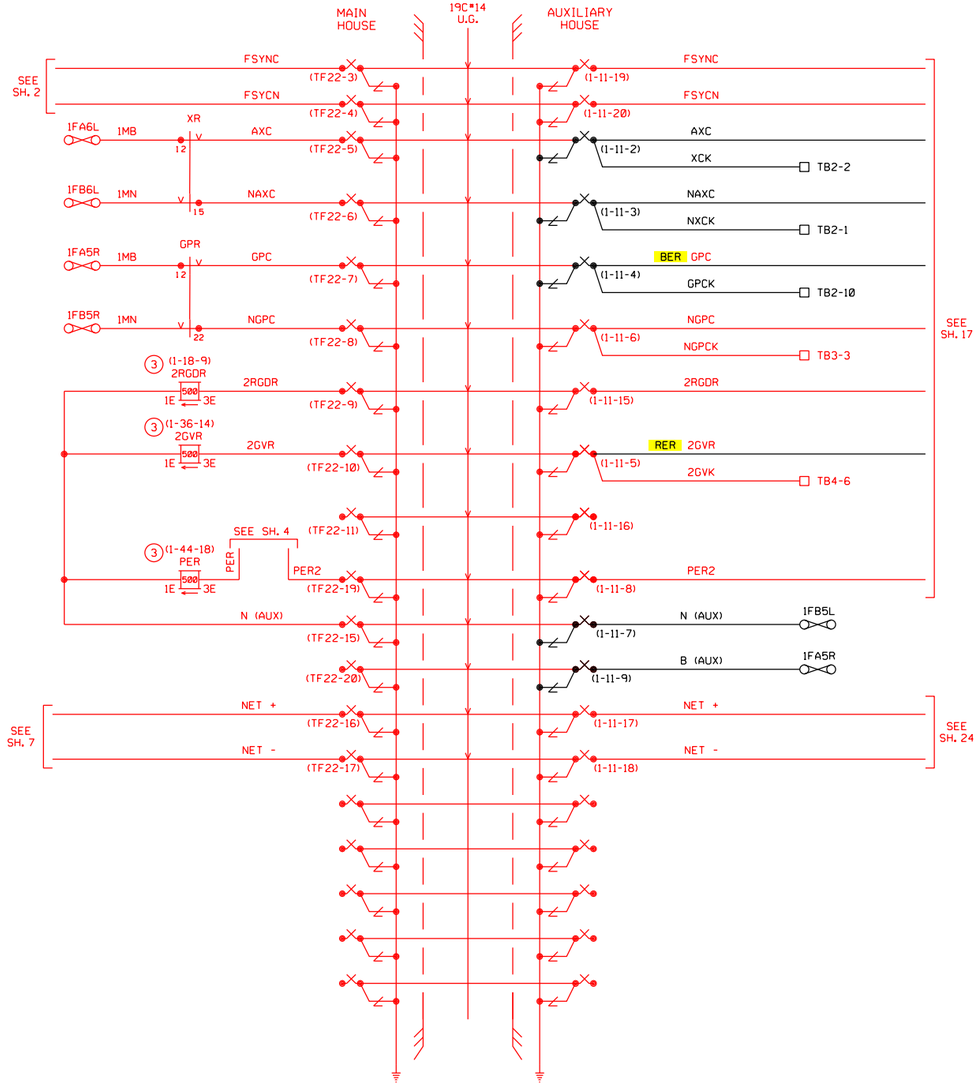
Xorail — A Wabtec Company

SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SG 52.44 LILAC AVE
GCP 4000 BI-DIRECTIONAL
SH. 2 OF 4

CONTRACT NO. 16-100141
DRAWING NO. TS-012
REVISION
SHEET NO. 157 OF 200
SCALE NONE



NOTE:

1. ALL WIRE #16 AWG, UNLESS OTHERWISE NOTED.

RED = IN

YELLOW = OUT

LEGEND:

- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- △ -DIODES ARE SAFETRAN MOD. 8A299-0006.
- ✳ -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- □ -DENOTES RECORDER CONNECTION.

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — EXP. — CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

Xorail — A Wabtec Company

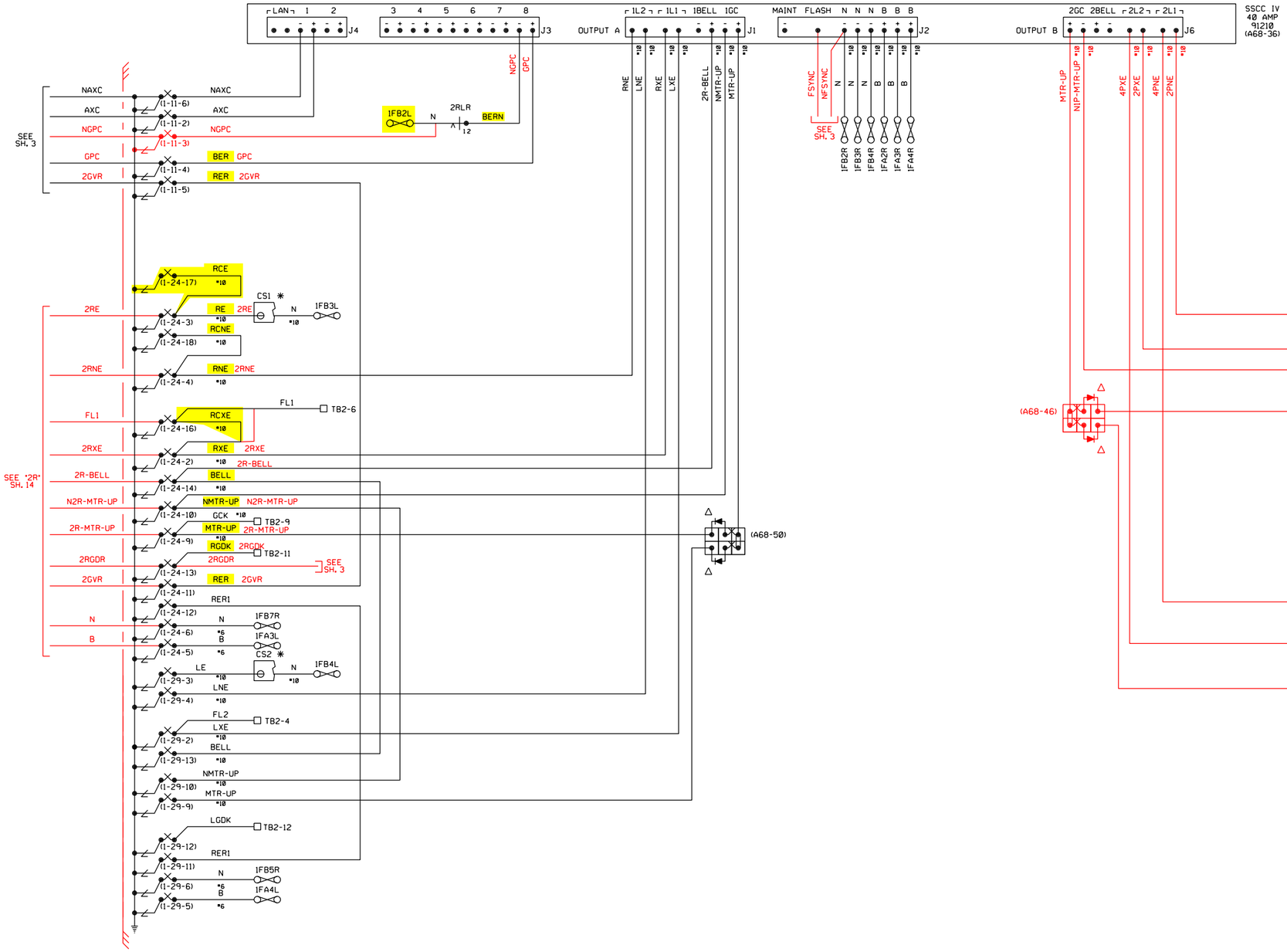
SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

SG 52.44 LILAC AVE
CABLE INTERCONNECT
SH. 3 OF 4

CONTRACT NO. 16-100141
DRAWING NO. TS-013
REVISION
SHEET NO. 158 OF 200
SCALE NONE



RED = IN

YELLOW = OUT

LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- △ -DIODES ARE SAFETRAN MOD. 8A299-0006.
- ✳ -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- □ -DENOTES RECORDER CONNECTION.

AUXILIARY HOUSE

NOT FOR CONSTRUCTION

REV.	DATE		BY	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

INFORMATION CONFIDENTIAL:
All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. Exp. CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

Xorail — A Wabtec Company

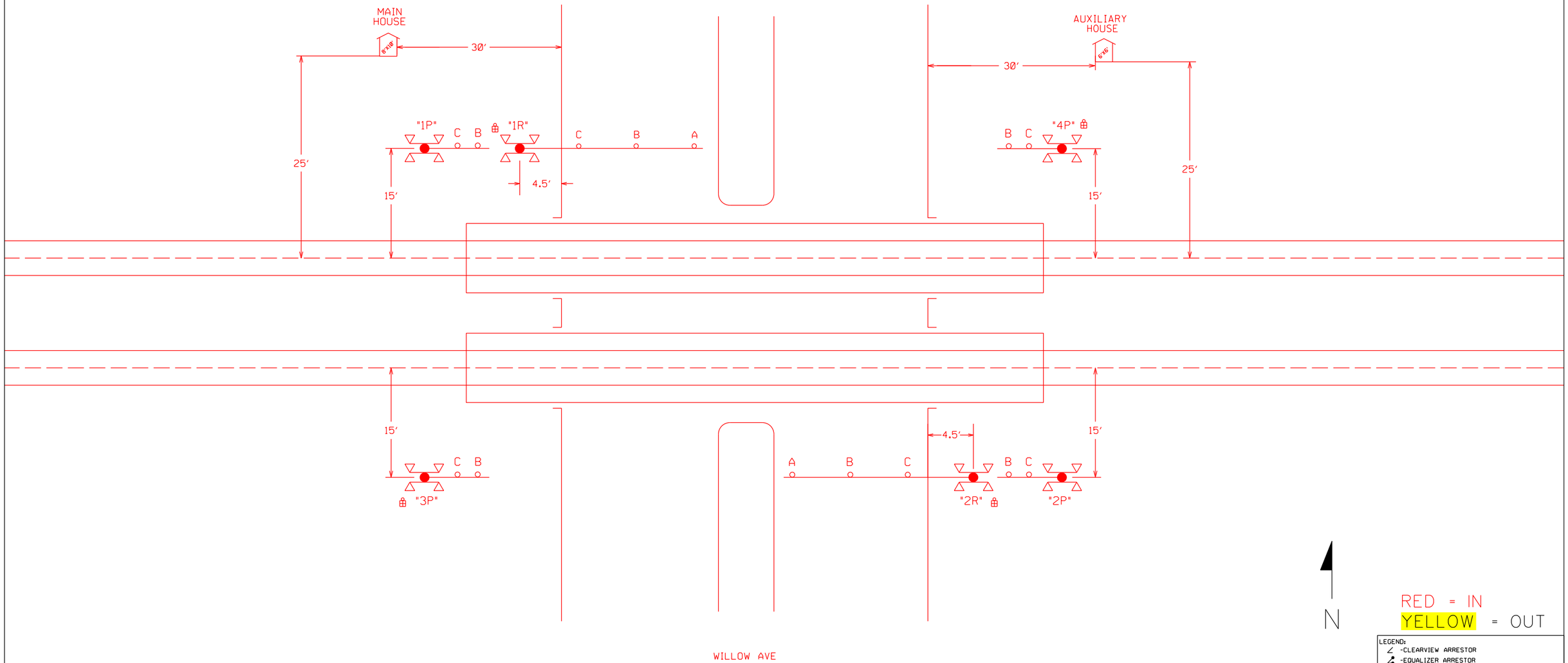
SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SG 52.44 LILAC AVE
CROSSING CONTROLLER CIRCUIT
SH. 4 OF 4

CONTRACT NO. 16-100141
DRAWING NO. TS-014
REVISION
SHEET NO. 159 OF 200
SCALE NONE

FINAL 30% SUBMITTAL (06-29-2018)



FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER
NO.
EXP.
CIVIL
STATE OF CALIFORNIA

sbcta
san bernardino county transportation authority

METROLINK

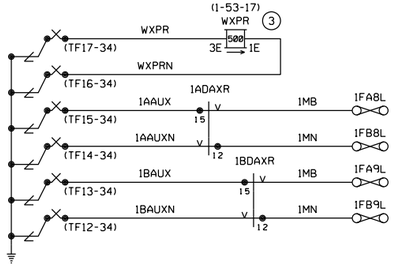
Xorail
A Wabtec Company

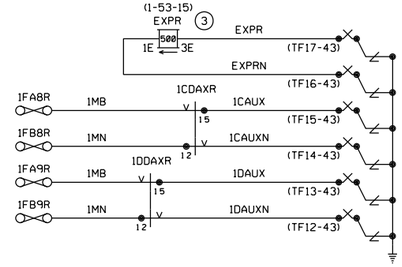
SUBMITTED: _____ PROJECT MANAGER
APPROVED: _____

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

SG 52.69 WILLOW AVE
CROSSING LAYOUT
SH. 1 OF 4

CONTRACT NO. 16-100141
DRAWING NO. TS-015
REVISION
SHEET NO. 160 OF 200
SCALE NONE





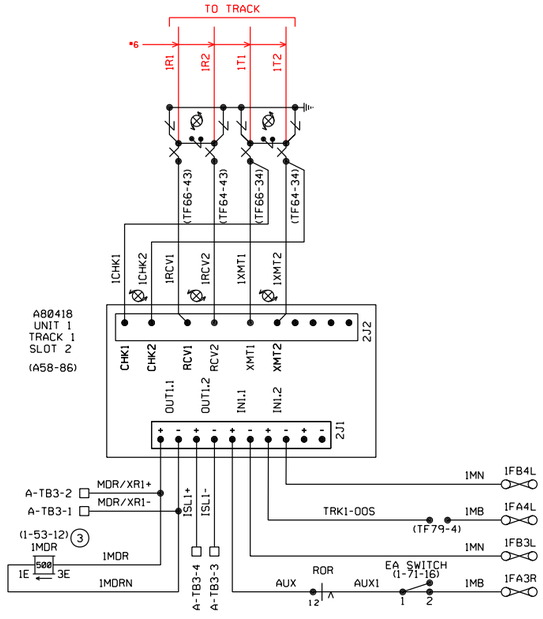
MICRO GCP 4000
MODULE REQUIREMENTS

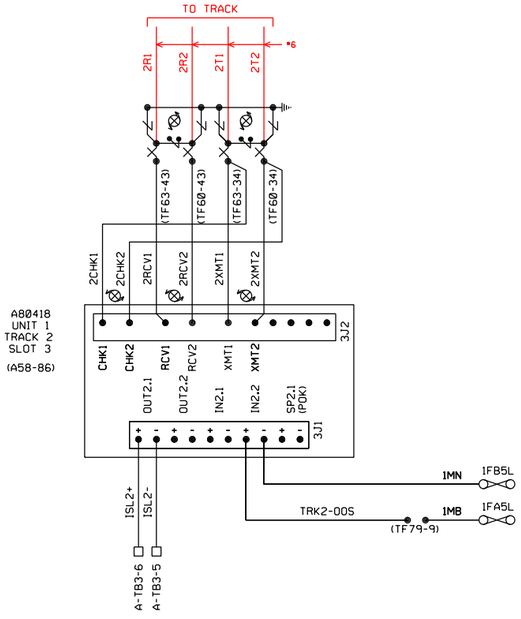
CPU II+ A80403	TRACK 1 A80418	TRACK 2 A80418	BLANK	BLANK	RIO A80413	BLANK	SSCC 1 A80405	DISPLAY A80407
CPU II+ A80403	TRACK 1 A80418	TRACK 2 A80418	BLANK	BLANK	RIO A80413	BLANK	SSCC 2 A80405	TRANSFER A80406

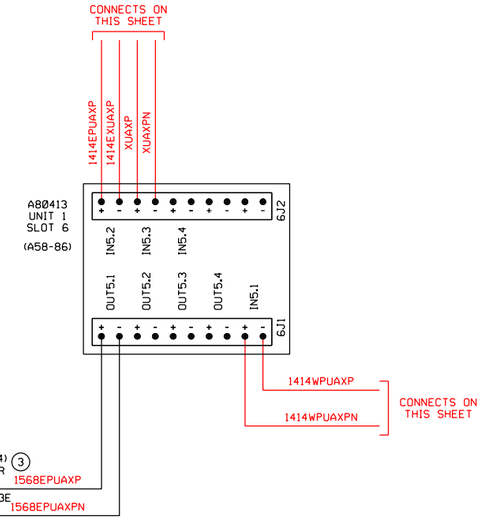
NORMAL

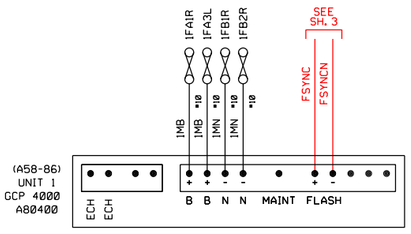
STANDBY

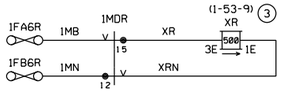
BLANK











RED = IN

YELLOW = OUT

LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- △ -DIODES ARE SAFETRAN MOD. 8A299-0006.
- ✳ -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- □ -DENOTES RECORDER CONNECTION.

MAIN HOUSE

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

INFORMATION CONFIDENTIAL:
All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — EXP. — CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

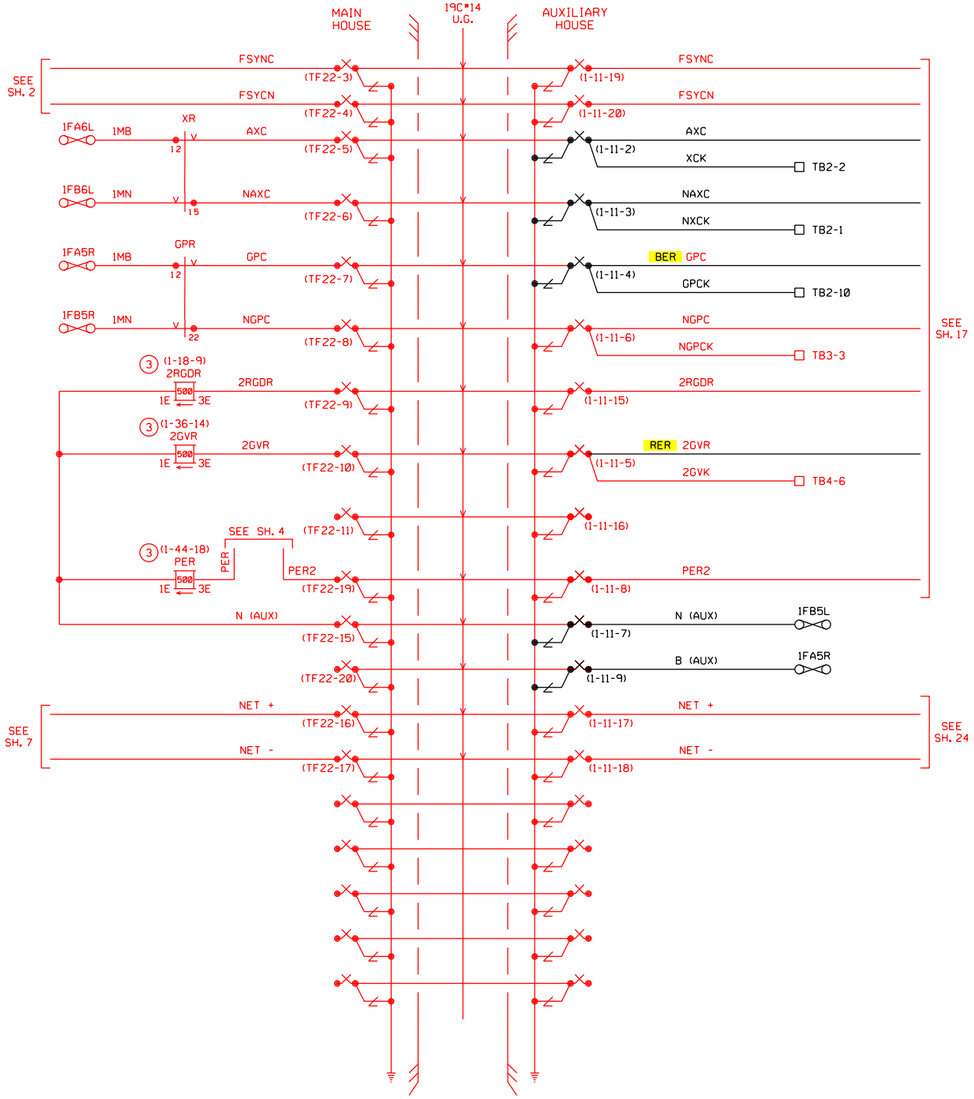
Xorail — A Wabtec Company

SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SG 52.69 WILLOW AVE
GCP 4000 BI-DIRECTIONAL
SH. 2 OF 4

CONTRACT NO. 16-100141
DRAWING NO. TS-016
REVISION
SHEET NO. 161 OF 200
SCALE NONE



NOTE:

1. ALL WIRE #16 AWG, UNLESS OTHERWISE NOTED.

RED = IN

YELLOW = OUT

LEGEND:

- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- △ -DIODES ARE SAFETRAN MOD. 8A299-0006.
- ✳ -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- □ -DENOTES RECORDER CONNECTION.

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — EXP. — CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

Xorail — A Wabtec Company

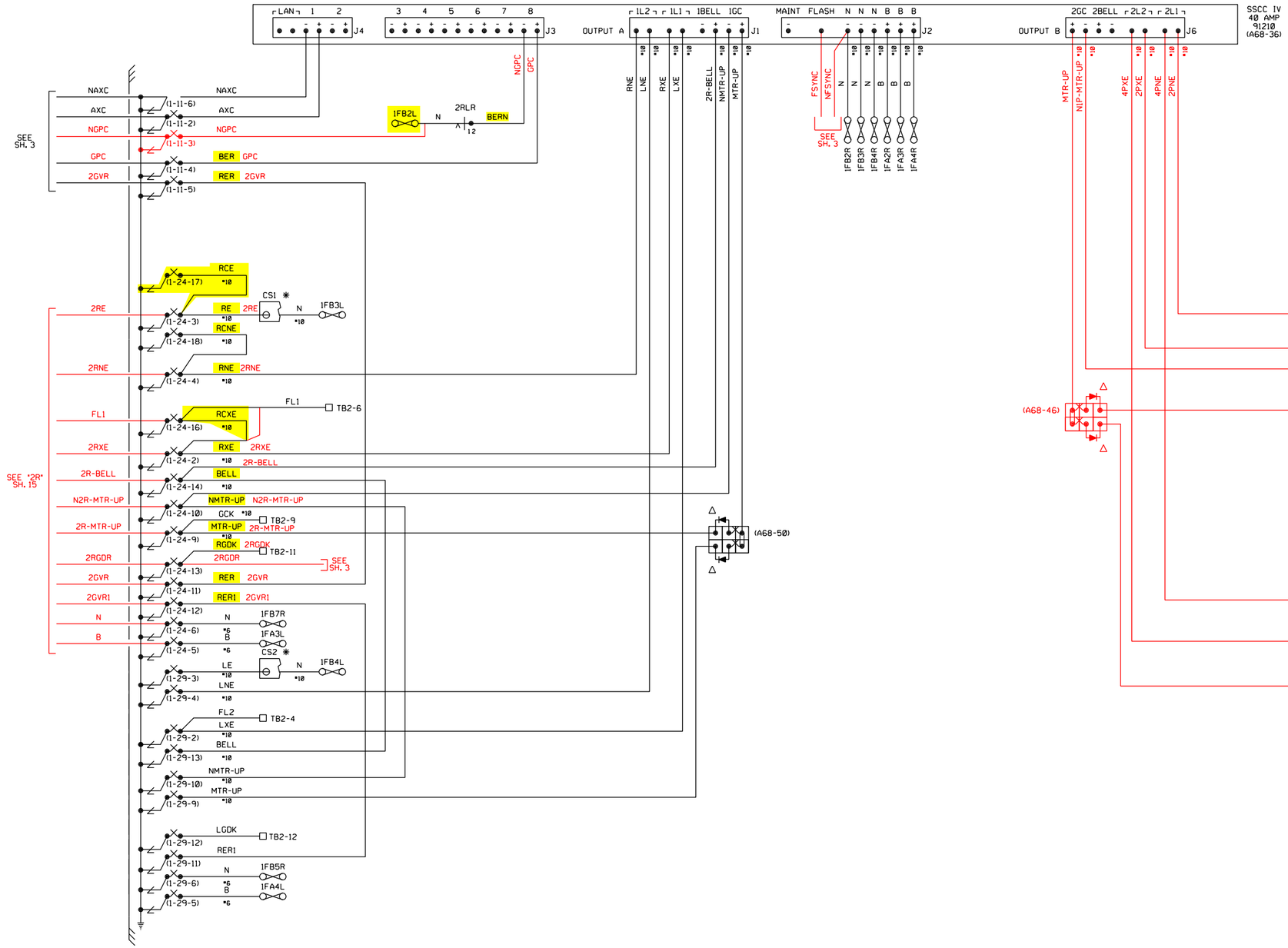
SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

SG 52.69 WILLOW AVE
CABLE INTERCONNECT
SH. 3 OF 4

CONTRACT NO. 16-100141
DRAWING NO. TS-017
REVISION
SHEET NO. 162 OF 200
SCALE NONE



RED = IN

YELLOW = OUT

AUXILIARY HOUSE

LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- △ -DIODES ARE SAFETRAN MOD. 8A299-0006.
- ✳ -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- □ -DENOTES RECORDER CONNECTION.

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
V	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK.

Xorail — A Wabtec Company

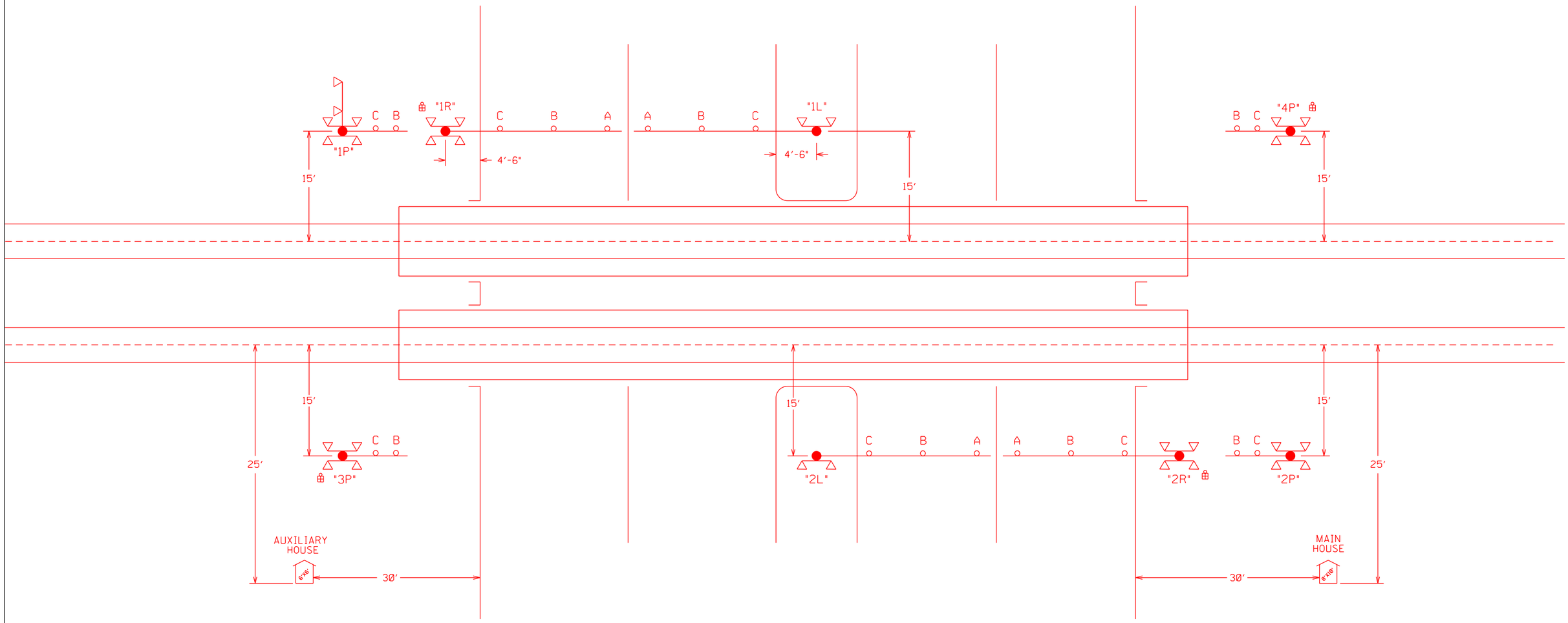
SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SG 52.69 WILLOW AVE
CROSSING CONTROLLER CIRCUIT
SH. 4 OF 4

CONTRACT NO. 16-100141
DRAWING NO. TS-018
REVISION
SHEET NO. 163 OF 200
SCALE NONE

FINAL 30% SUBMITTAL (06-29-2018)



RED = IN
YELLOW = OUT

LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- -DIODES ARE SAFETRAN MOD. 8A299-0006.
- -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- -DENOTES RECORDER CONNECTION.

NOT FOR CONSTRUCTION

REV.	DATE		BY	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. Exp. CIVIL — STATE OF CALIFORNIA

sbcta san bernardino county transportation authority

METROLINK

Xorail A Wabtec Company

SUBMITTED: _____ PROJECT MANAGER

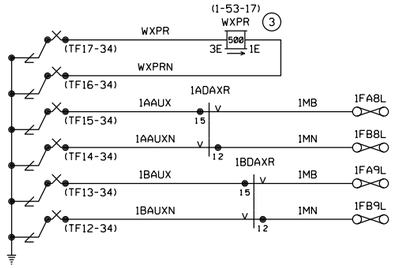
APPROVED: _____

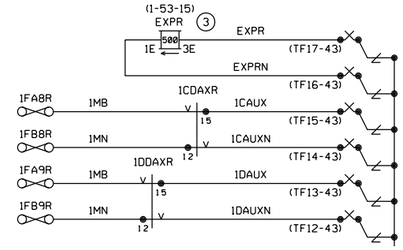
CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

SG 52.94 RIVERSIDE AVE
CROSSING LAYOUT
SH. 1 OF 4

CONTRACT NO. 16-100141
DRAWING NO. TS-019
REVISION
SHEET NO. 164 OF 200
SCALE NONE

FINAL 30% SUBMITTAL (06-29-2018)





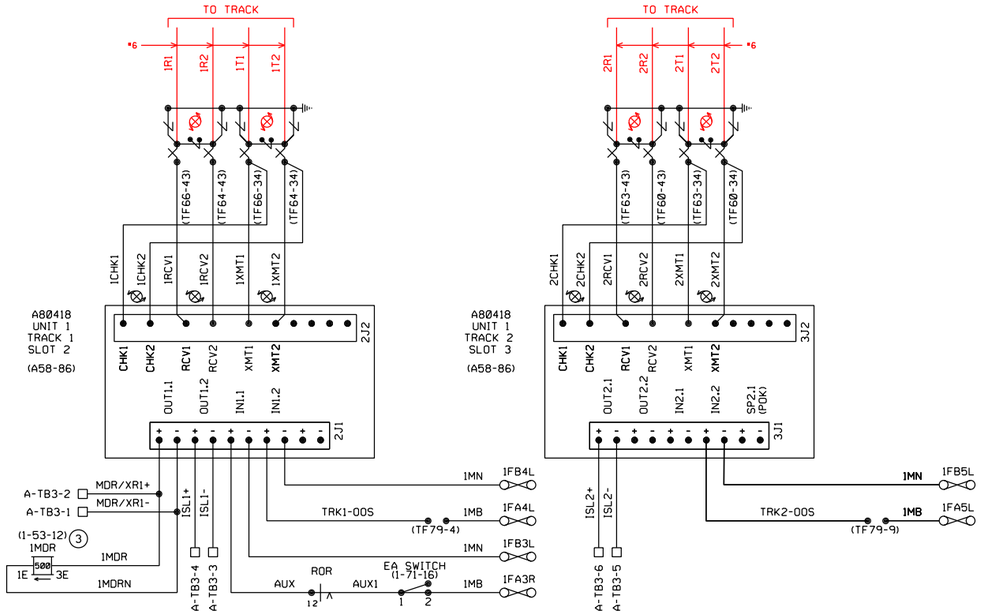
MICRO GCP 4000
MODULE REQUIREMENTS

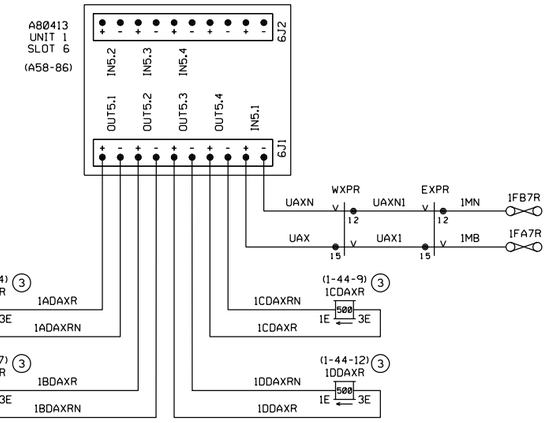
CPU II+ A80403	TRACK 1 A80418	TRACK 2 A80418	BLANK	BLANK	RIO A80413	BLANK	SSCC 1 A80405	DISPLAY A80407
CPU II+ A80403	TRACK 1 A80418	TRACK 2 A80418	BLANK	BLANK	RIO A80413	BLANK	SSCC 2 A80405	TRANSFER A80406

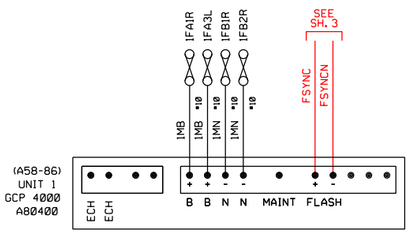
NORMAL

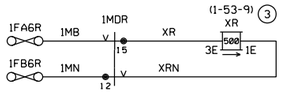
STANDBY

BLANK









RED = IN
YELLOW = OUT

LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- -DIODES ARE SAFETRAN MOD. 8A299-0006.
- * -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- -DENOTES RECORDER CONNECTION.

MAIN HOUSE

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — EXP. — CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

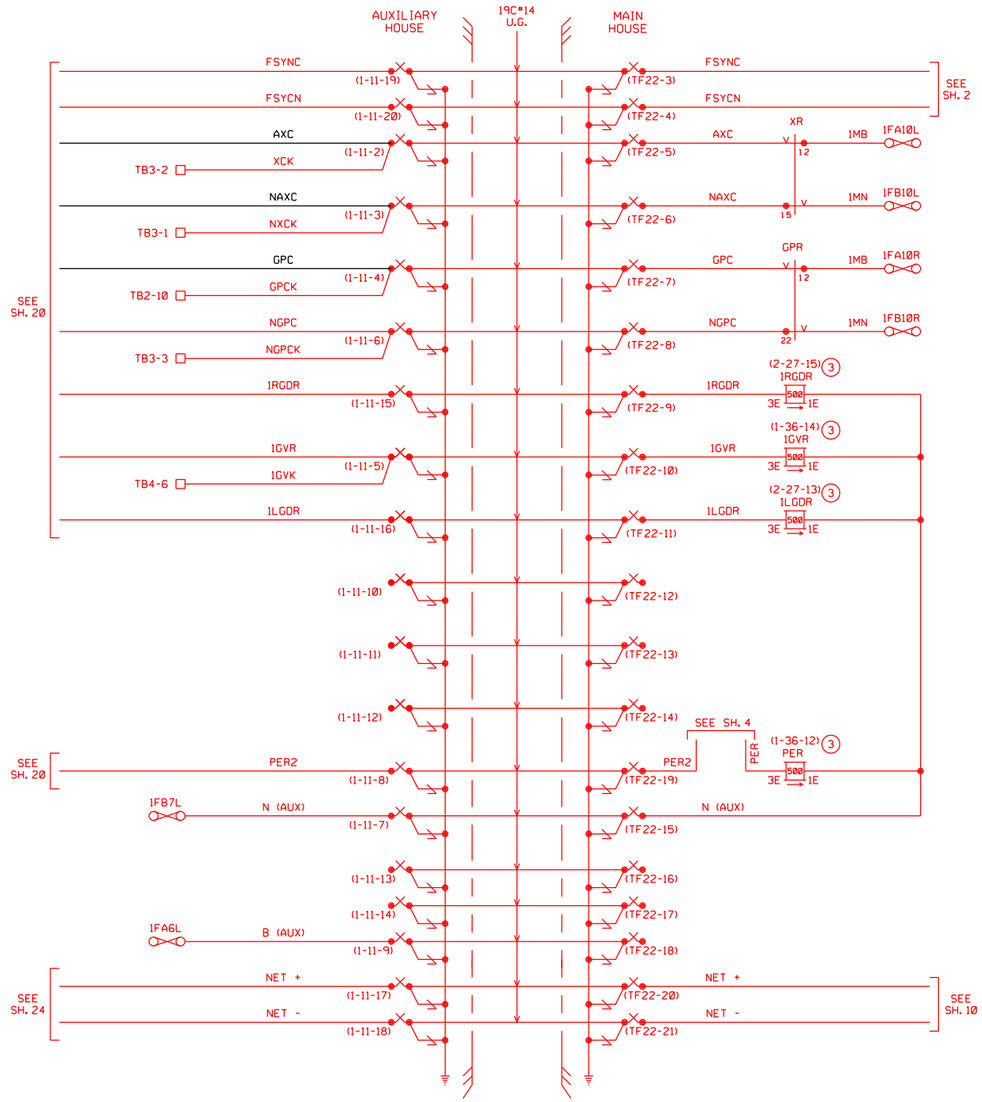
Xorail — A Wabtec Company

SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SG 52.94 RIVERSIDE AVE
GCP 4000 BI-DIRECTIONAL
SH. 2 OF 4

CONTRACT NO. 16-100141
DRAWING NO. TS-020
REVISION
SHEET NO. 165 OF 200
SCALE NONE



NOTE:

1. ALL WIRE #16 AWG, UNLESS OTHERWISE NOTED.

RED = IN

YELLOW = OUT

LEGEND:

- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- △ -DIODES ARE SAFETRAN MOD. 8A299-0006.
- ✳ -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- □ -DENOTES RECORDER CONNECTION.

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

INFORMATION CONFIDENTIAL:
All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — EXP. — CIVIL — STATE OF CALIFORNIA

sbcta san bernardino county transportation authority

METROLINK

Xorail A Wabtec Company

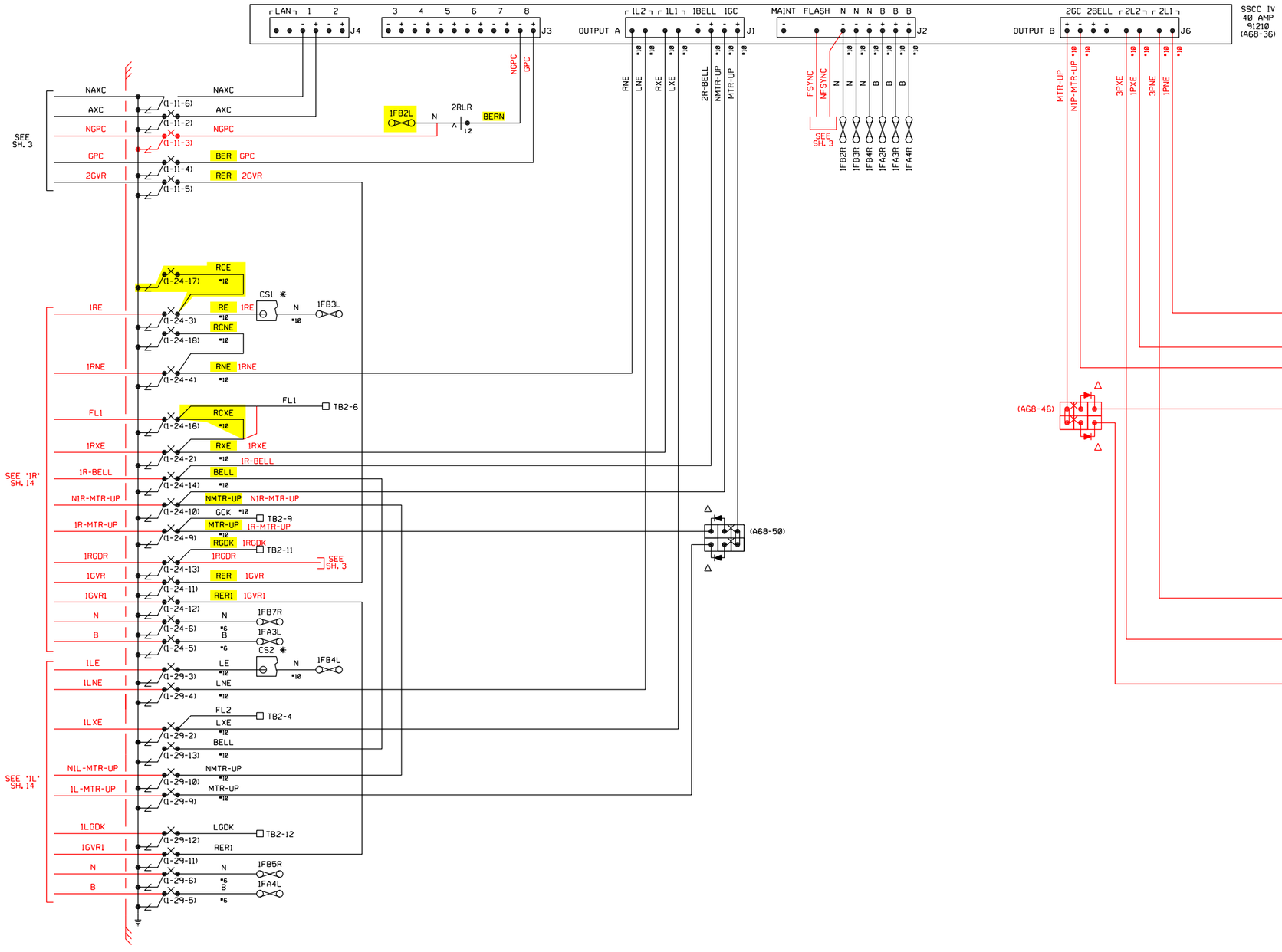
SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

SG 52.94 RIVERSIDE AVE
CABLE INTERCONNECT
SH. 3 OF 4

CONTRACT NO. 16-100141
DRAWING NO. TS-021
REVISION
SHEET NO. 166 OF 200
SCALE NONE



RED = IN

YELLOW = OUT

LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- △ -DIODES ARE SAFETRAN MOD. 8A299-0006.
- ✳ -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- □ -DENOTES RECORDER CONNECTION.

AUXILIARY HOUSE

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — EXP. — CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

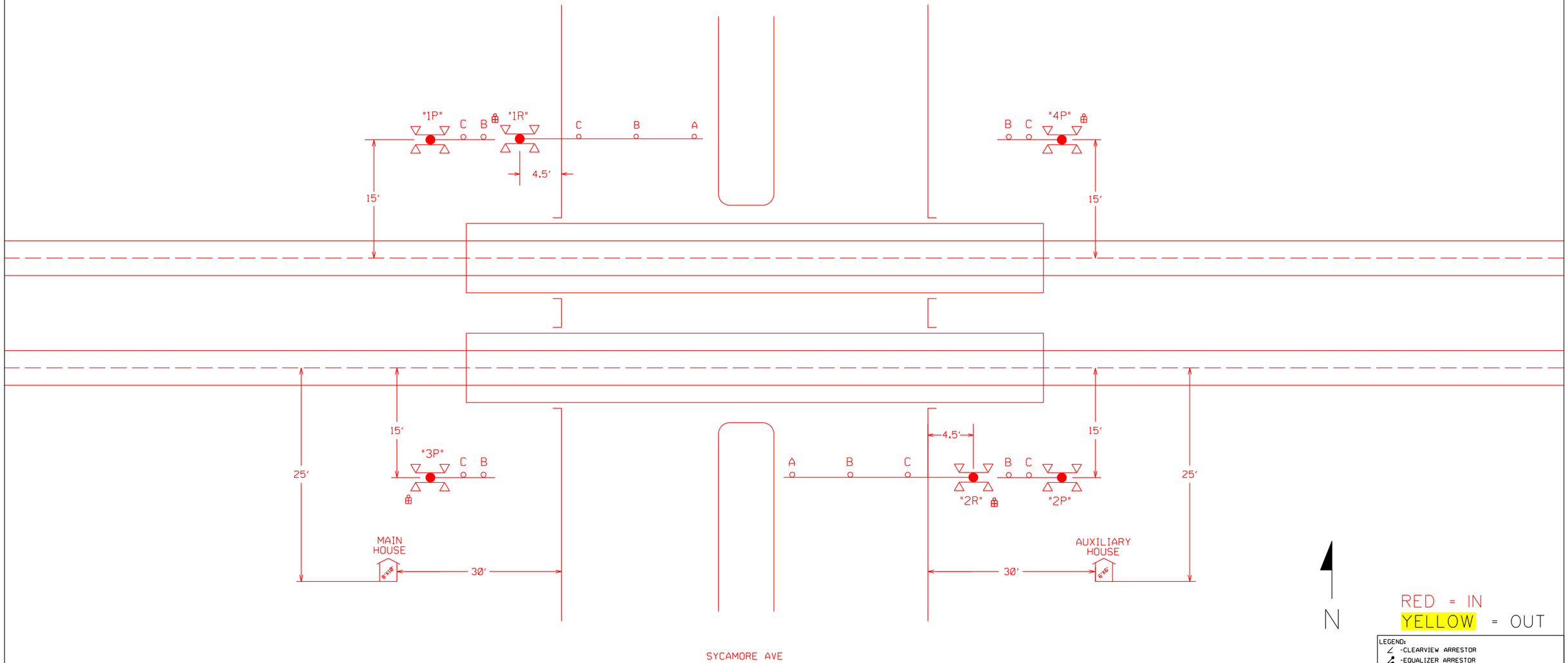
Xorail — A Wabtec Company

SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SG 52.94 RIVERSIDE AVE
CROSSING CONTROLLER CIRCUITS
SH. 4 OF 4

CONTRACT NO. 16-100141
DRAWING NO. TS-022
REVISION
SHEET NO. 167 OF 200
SCALE NONE



FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — NO. — EXP. — CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

Xorail — A Wabtec Company

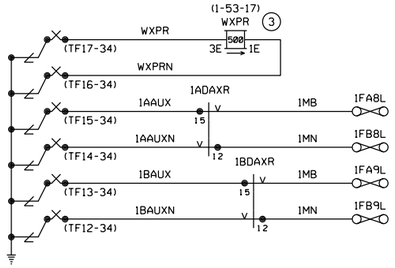
SUBMITTED: _____ PROJECT MANAGER

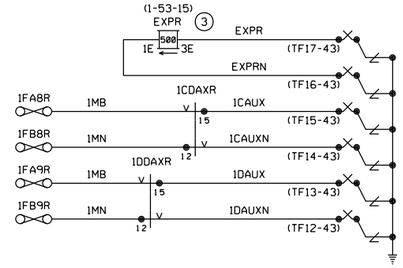
APPROVED: _____

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

SG 53.19 SYCAMORE AVE
CROSSING LAYOUT
SH. 1 OF 4

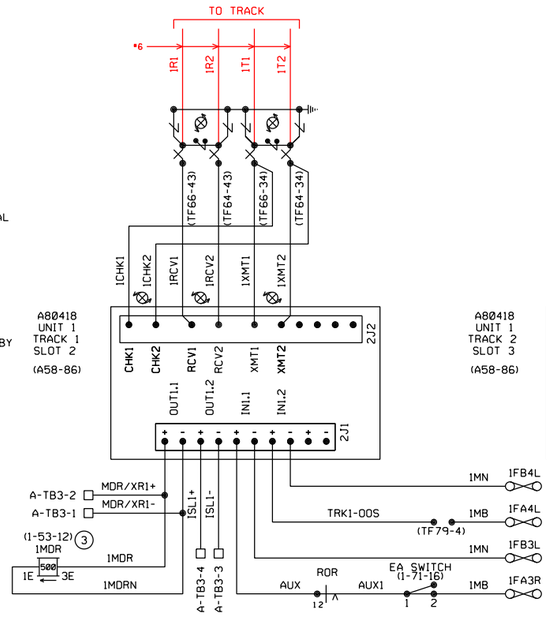
CONTRACT NO. 16-100141
DRAWING NO. TS-023
REVISION
SHEET NO. 168 OF 200
SCALE NONE

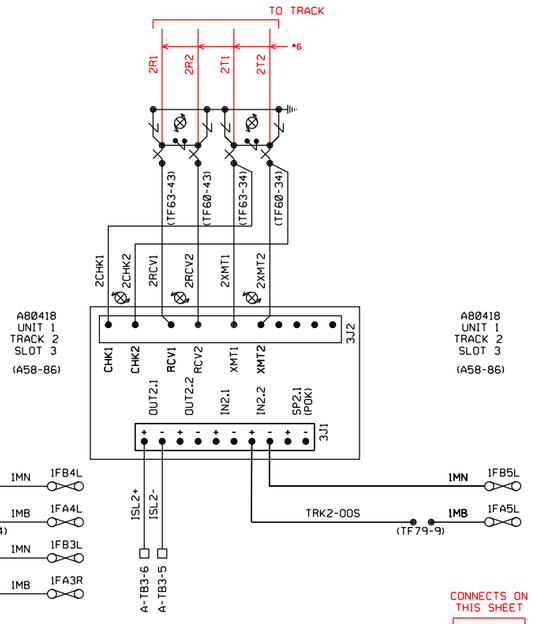


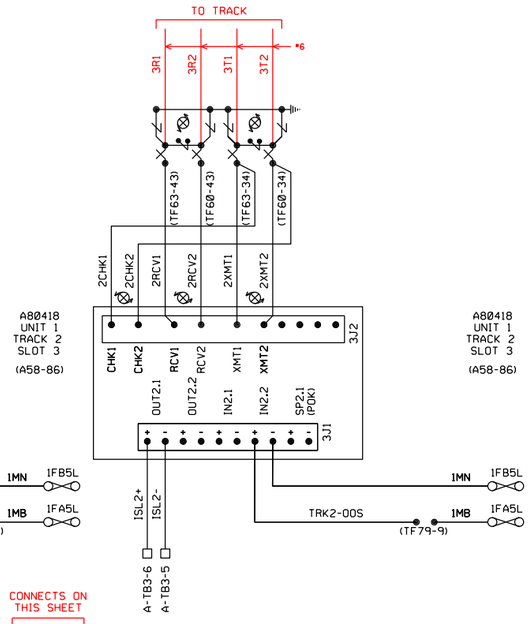


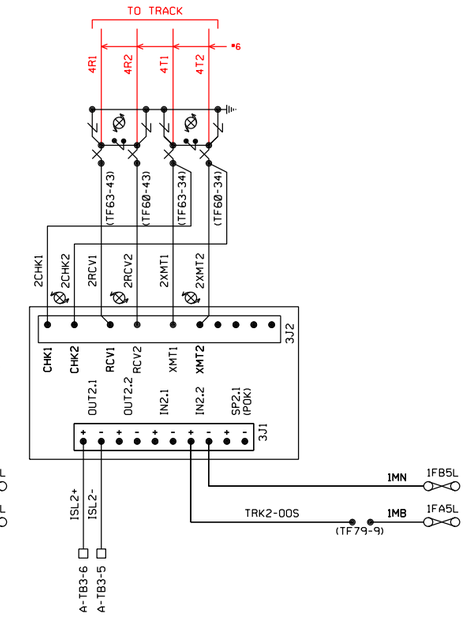
MICRO GCP 4000
MODULE REQUIREMENTS

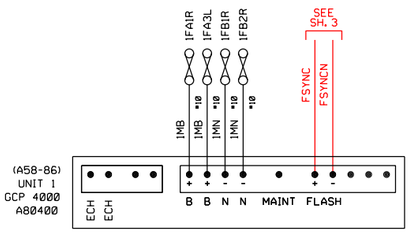
CPU II+ A80403	TRACK 1 A80418	TRACK 2 A80418	TRACK 3 A80418	TRACK 4 A80418	RIO A80413	BLANK	SSCC 1 A80405	DISPLAY A80407	NORMAL
CPU II+ A80403	TRACK 1 A80418	TRACK 2 A80418	TRACK 3 A80418	TRACK 4 A80418	RIO A80413	BLANK	SSCC 2 A80405	TRANSFER A80406	STANDBY
BLANK									

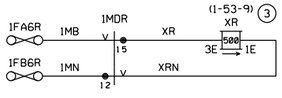


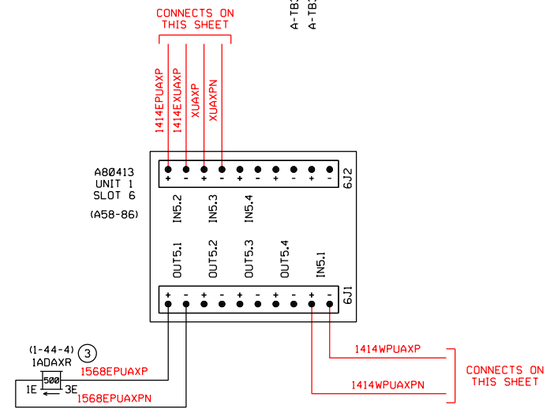












RED = IN
YELLOW = OUT

LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- 000 -COIL PER I-324
- -TWISTED WIRE
- △ -DIODES ARE SAFETRAN MOD. 8A299-0006.
- ✳ -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- □ -DENOTES RECORDER CONNECTION.

MAIN HOUSE

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
V	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

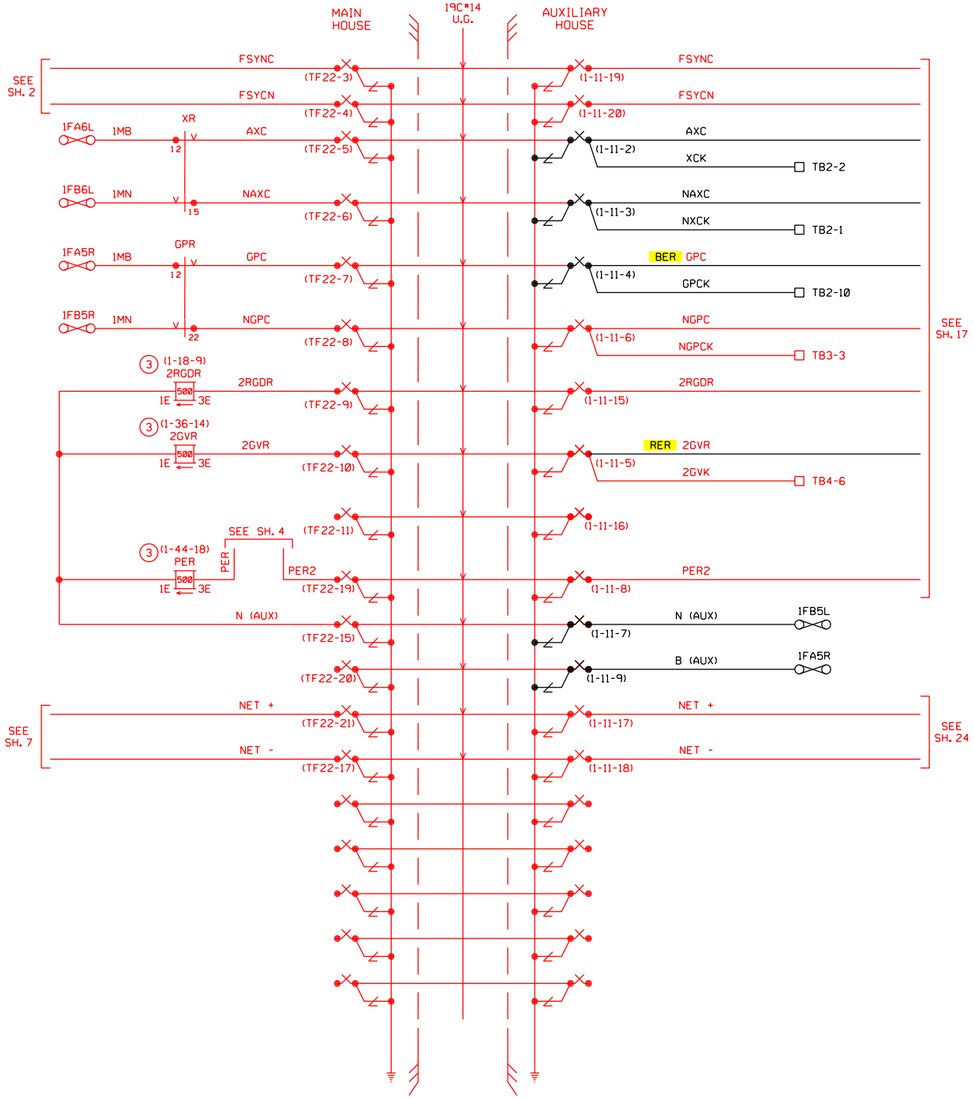
METROLINK

Xorail — A Wabtec Company

SUBMITTED: _____ PROJECT MANAGER
APPROVED: _____

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SG 53.19 SYCAMORE AVE
GCP 4000 BI-DIRECTIONAL
SH. 2 OF 4

CONTRACT NO. 16-100141
DRAWING NO. TS-024
REVISION
SHEET NO. 169 OF 200
SCALE NONE



NOTE:

1. ALL WIRE #16 AWG, UNLESS OTHERWISE NOTED.

RED = IN

YELLOW = OUT

LEGEND:

- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- △ -DIODES ARE SAFETRAN MOD. 8A299-0006.
- ✳ -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- □ -DENOTES RECORDER CONNECTION.

MAIN HOUSE

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — EXP. — CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

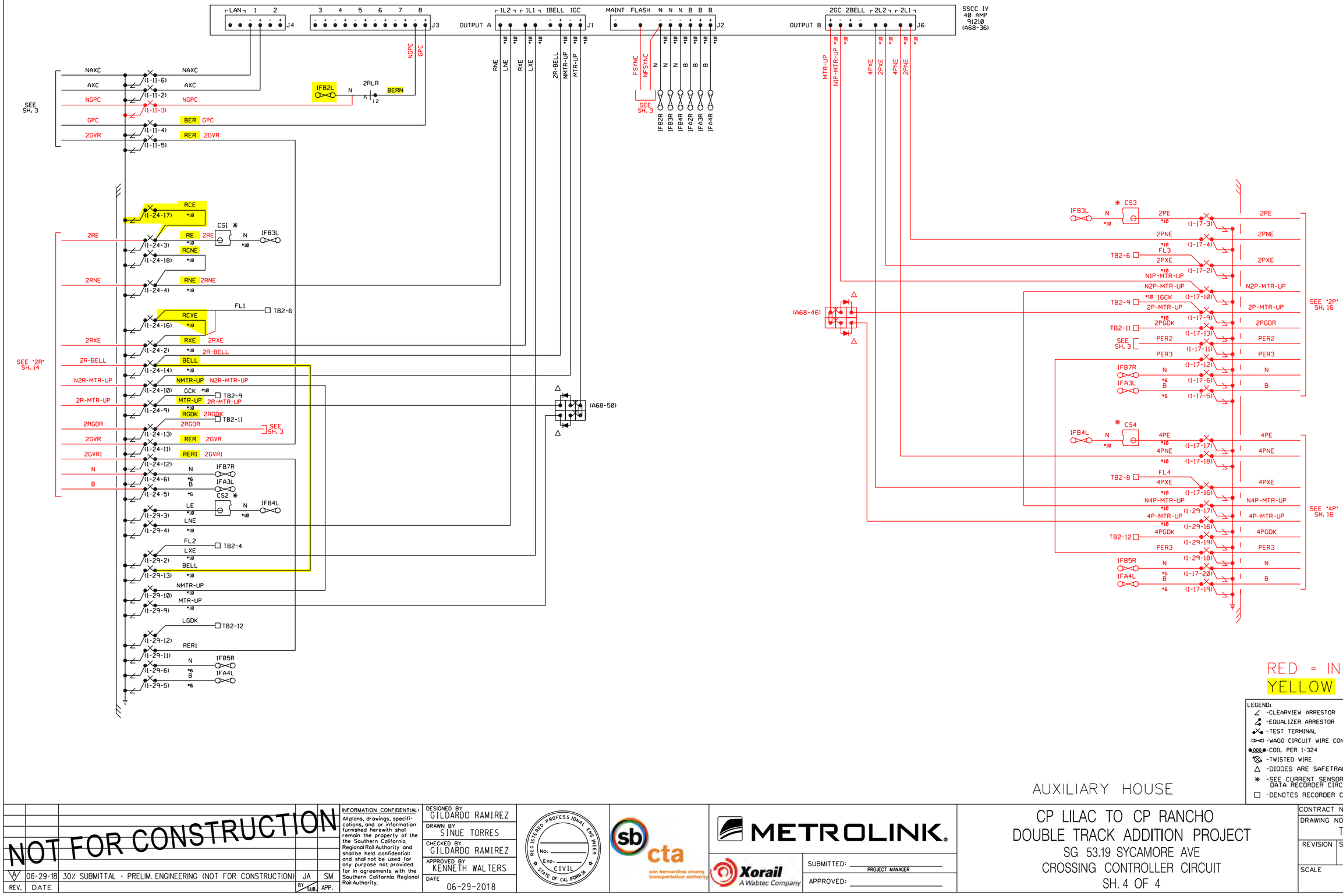
Xorail — A Wabtec Company

SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SG 53.19 SYCAMORE AVE
CABLE INTERCONNECT
SH. 3 OF 4

CONTRACT NO. 16-100141
DRAWING NO. TS-025
REVISION
SHEET NO. 170 OF 200
SCALE NONE



FINAL 30% SUBMITTAL (06-29-2018)

RED = IN
YELLOW = OUT

LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- △ -DIODES ARE SAFETRAN MOD. 8A299-0006.
- ✳ -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- □ -DENOTES RECORDER CONNECTION.

AUXILIARY HOUSE

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
0	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

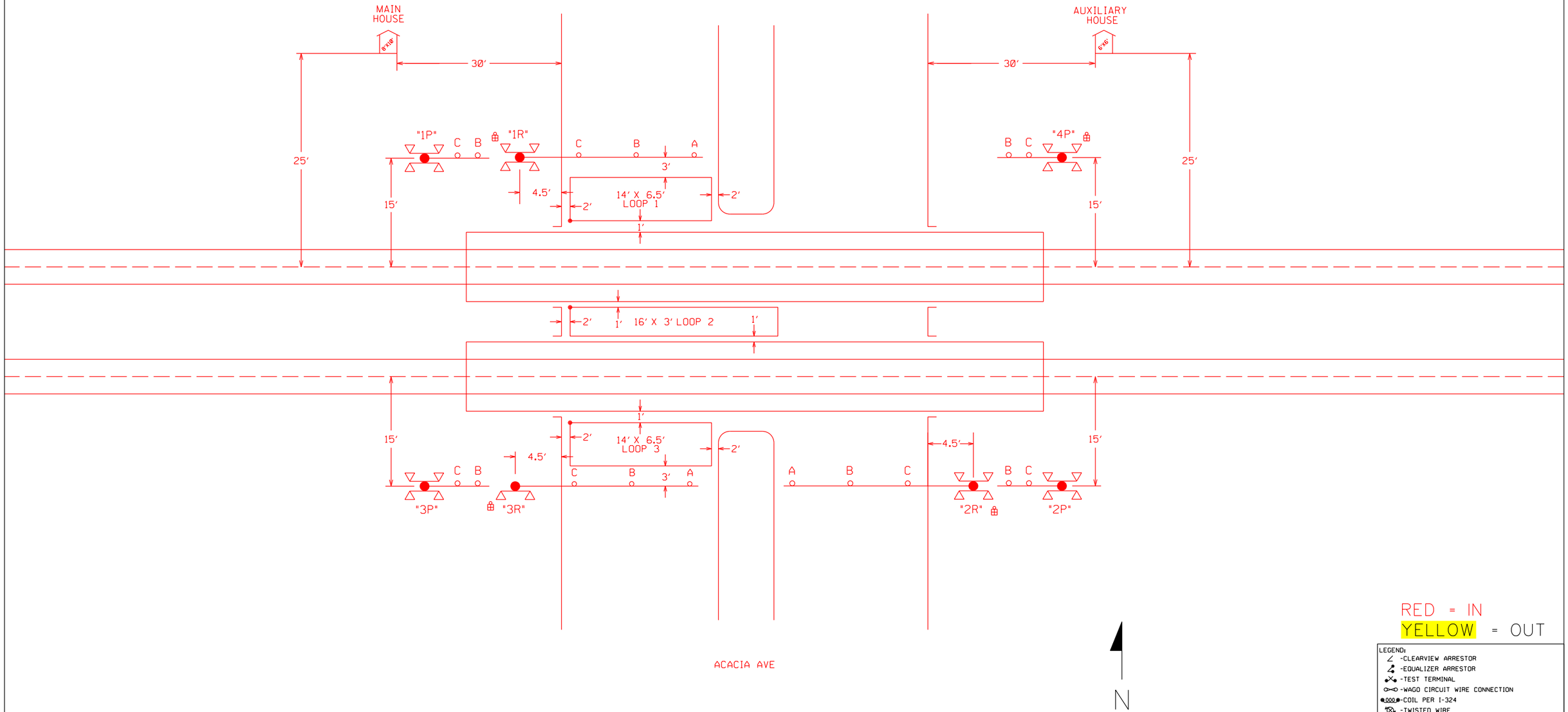
METROLINK.

Xorail — A Wabtec Company

SUBMITTED: _____ PROJECT MANAGER
APPROVED: _____

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SG 53.19 SYCAMORE AVE
CROSSING CONTROLLER CIRCUIT
SH. 4 OF 4

CONTRACT NO. 16-100141
DRAWING NO. TS-026
REVISION
SHEET NO. 171 OF 200
SCALE NONE



RED = IN

YELLOW = OUT

LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- -DIODES ARE SAFETRAN MOD. 8A299-0006.
- -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- -DENOTES RECORDER CONNECTION.

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — NO. EXP. CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

Xorail — A Wabtec Company

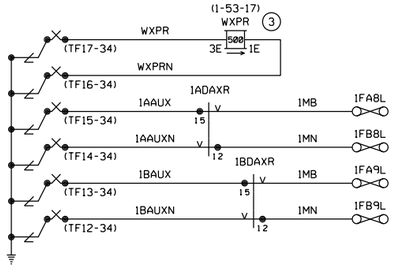
SUBMITTED: _____ PROJECT MANAGER

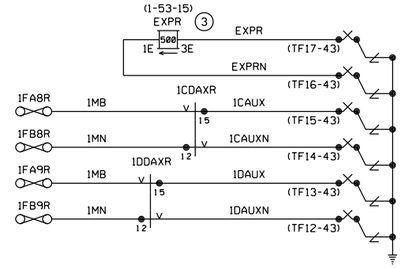
APPROVED: _____

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

SG 53.45 ACACIA AVE
CROSSING LAYOUT
SH. 1 OF 5

CONTRACT NO. 16-100141
DRAWING NO. TS-027
REVISION
SHEET NO. 172 OF 200
SCALE NONE



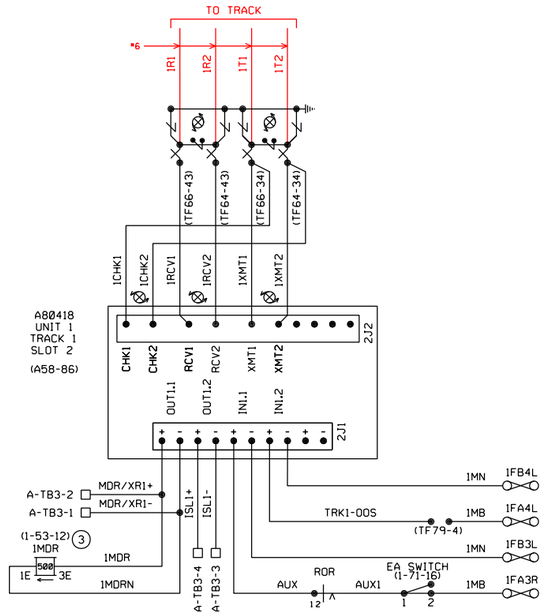


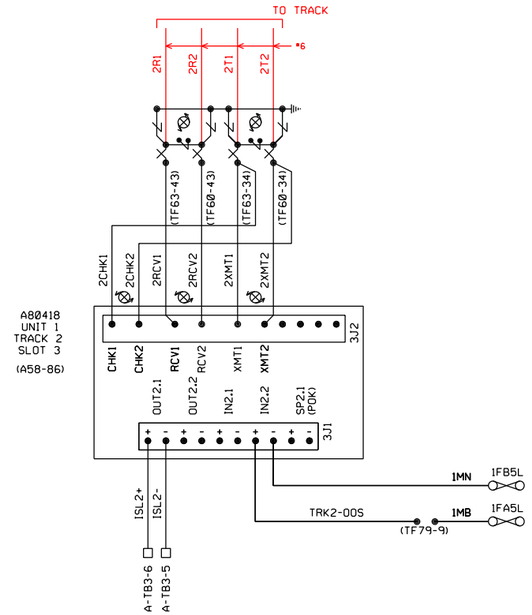
MICRO GCP 4000
MODULE REQUIREMENTS

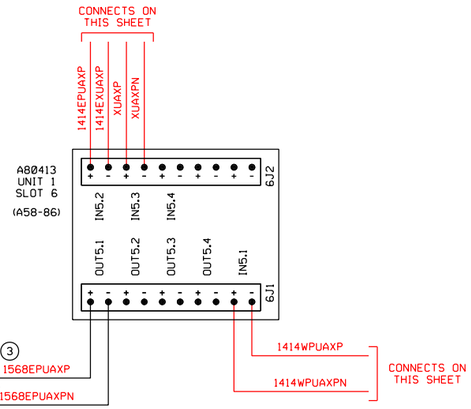
CPU II+ A80403	TRACK 1 A80418	TRACK 2 A80418	TRACK 3 A80418	TRACK 4 A80418	RIO A80413	BLANK	SSCC 1 A80405	DISPLAY A80407
CPU II+ A80403	TRACK 1 A80418	TRACK 2 A80418	TRACK 3 A80418	TRACK 4 A80418	RIO A80413	BLANK	SSCC 2 A80405	TRANSFER A80406
BLANK								

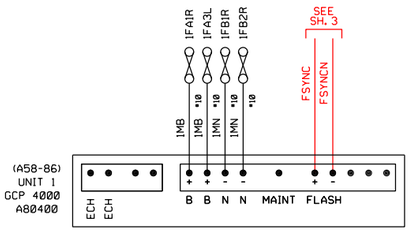
NORMAL

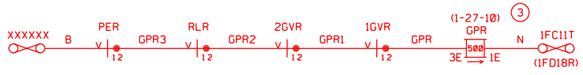
STANDBY

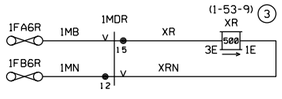












RED = IN

YELLOW = OUT

LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- -DIODES ARE SAFETRAN MOD. 8A299-0006.
- -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- -DENOTES RECORDER CONNECTION.

MAIN HOUSE

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

INFORMATION CONFIDENTIAL:
All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER
No.
Exp.
CIVIL
STATE OF CALIFORNIA

sbcta
san bernardino county transportation authority

METROLINK

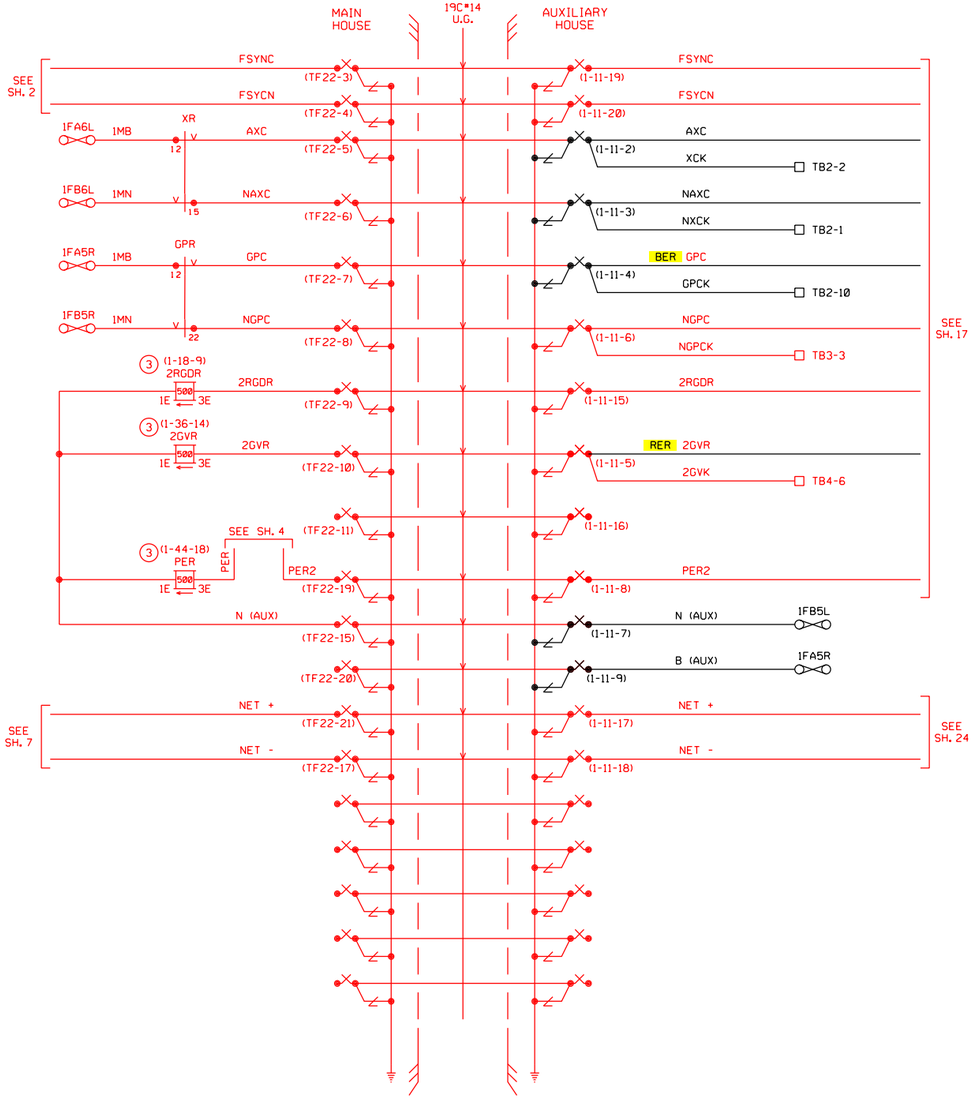
Xorail
A Wabtec Company

SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SG 53.45 ACACIA AVE
GCP 4000 BI-DIRECTIONAL
SH. 2 OF 5

CONTRACT NO. 16-100141
DRAWING NO. TS-028
REVISION
SHEET NO. 173 OF 200
SCALE NONE



NOTE:

1. ALL WIRE #16 AWG, UNLESS OTHERWISE NOTED.

RED = IN

YELLOW = OUT

LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- △ -DIODES ARE SAFETRAN MOD. 8A299-0006.
- ✳ -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- □ -DENOTES RECORDER CONNECTION.

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL:
All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — EXP. — CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

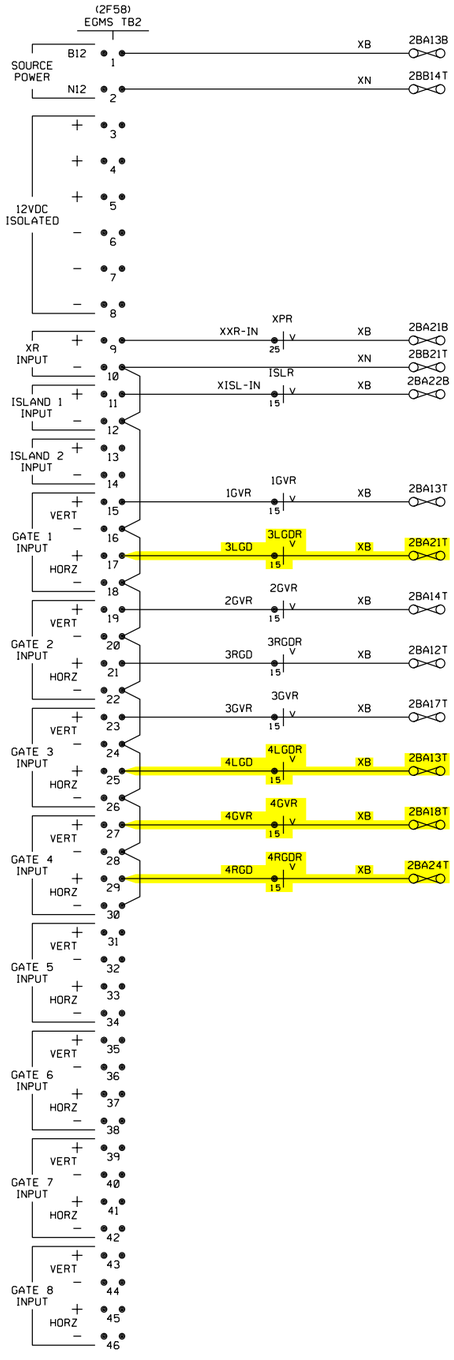
Xorail — A Wabtec Company

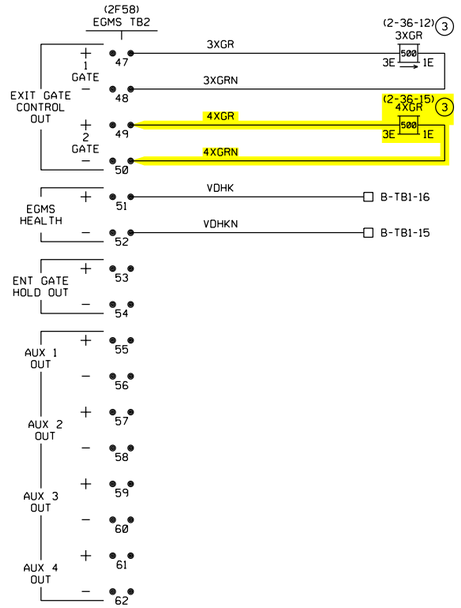
SUBMITTED: _____ PROJECT MANAGER

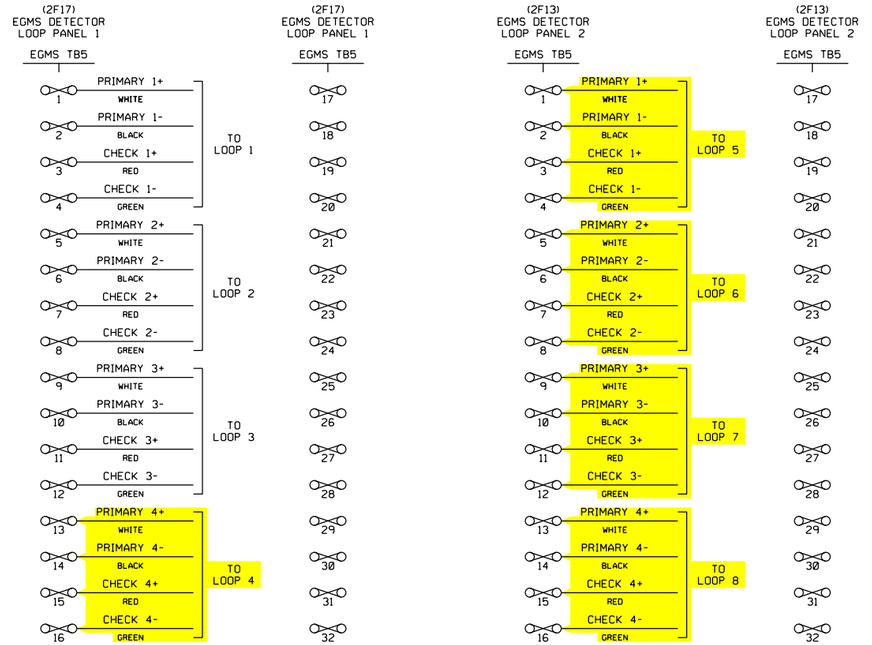
APPROVED: _____

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SG 53.45 ACACIA AVE
CABLE INTERCONNECT
SH. 3 OF 5

CONTRACT NO. 16-100141
DRAWING NO. TS-029
REVISION
SHEET NO. 174 OF 200
SCALE NONE







(2F49)

MODULE LIST

ISO PWR SUPPLY	E-1400	E-1400	E-1400	E-1400	V IN	V IN/OUT	COMM	GRAPHIC TOUCH SCREEN	
							(VACANT)	(VACANT)	CPU

NOTES:

1. THIS DRAWING DEPICTS A TYPICAL EGMS INSTALLATION INTO A PRE-ASSEMBLED CROSSING ENCLOSURE.
2. EGMS SYSTEM PART NUMBER WILL BE SPECIFIED UPON PURCHASE ORDER RELEASE.

RED = IN
YELLOW = OUT

LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- -DIODES ARE SAFETRAN MOD. 8A299-0006.
- -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- -DENOTES RECORDER CONNECTION.

MAIN HOUSE

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — NO. — EXP. — CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

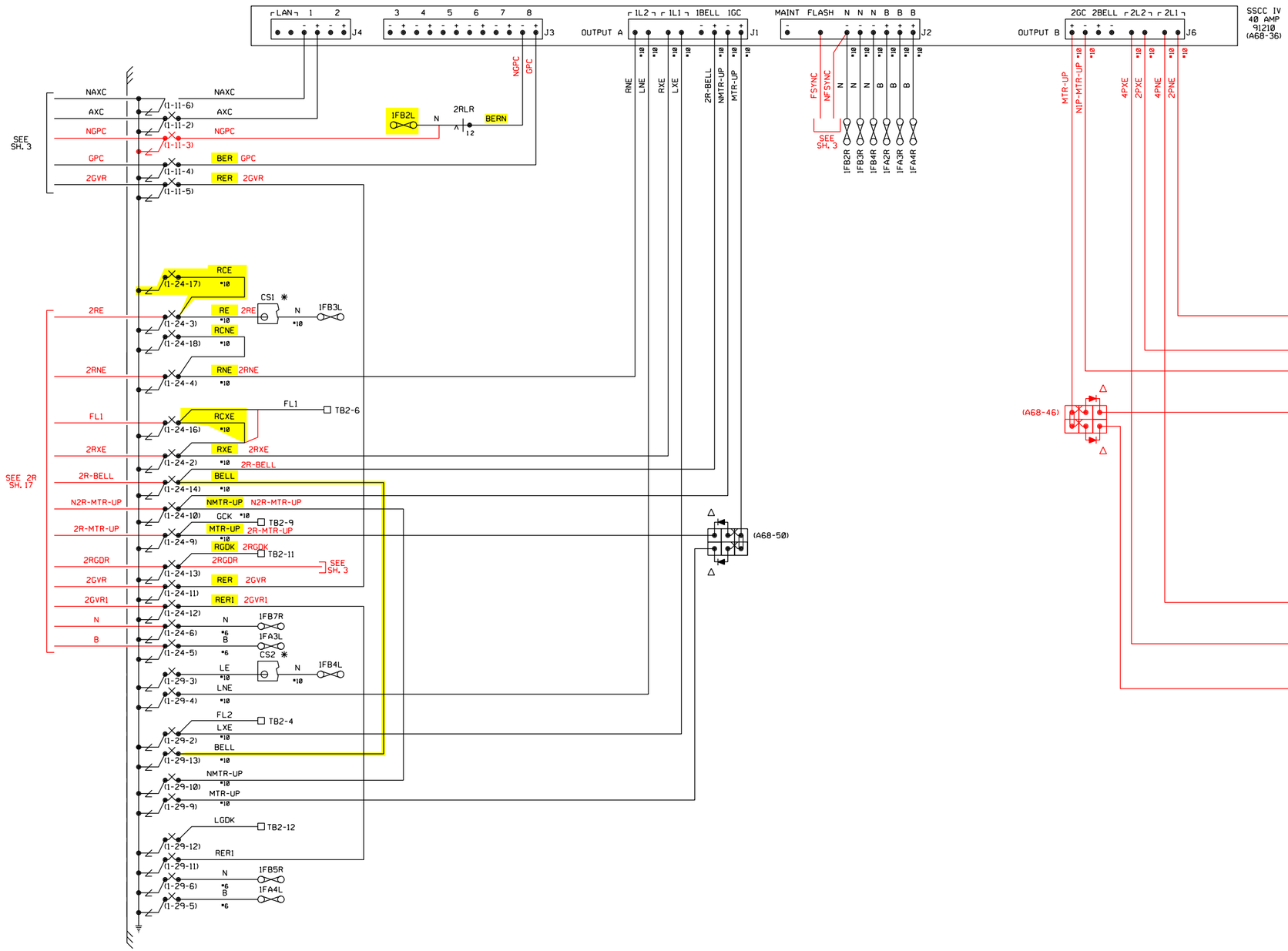
METROLINK

Xorail — A Wabtec Company

SUBMITTED: _____ PROJECT MANAGER
APPROVED: _____

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SG 53.45 ACACIA AVE
EGMS CIRCUIT PLAN
SH. 4 OF 5

CONTRACT NO. 16-100141
DRAWING NO. TS-030
REVISION
SHEET NO. 175 OF 200
SCALE NONE



RED = IN

YELLOW = OUT

AUXILIARY HOUSE

LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- -DIODES ARE SAFETRAN MOD. 8A299-0006.
- -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- -DENOTES RECORDER CONNECTION.

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK.

Xorail — A Wabtec Company

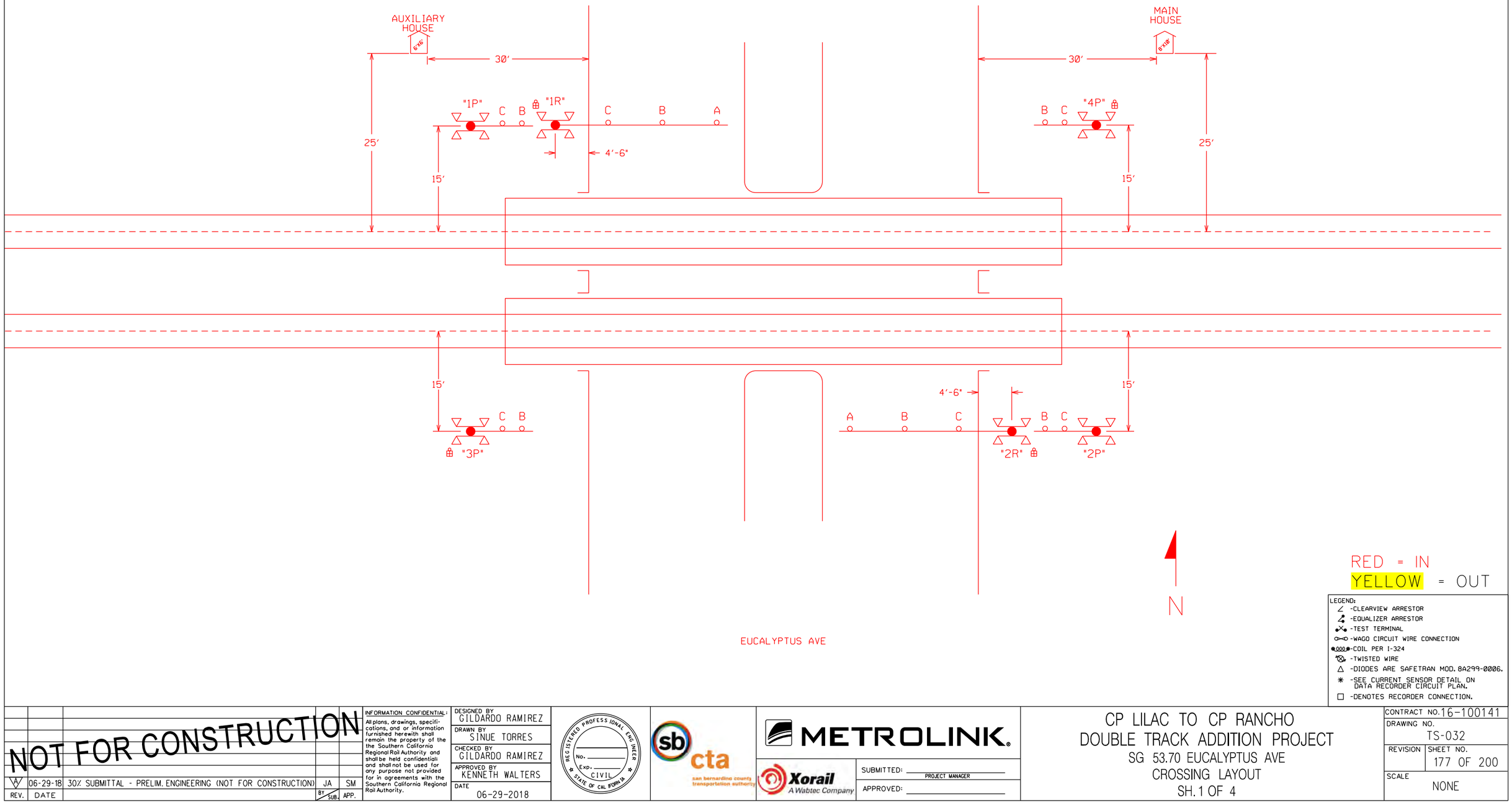
SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SG 53.45 ACACIA AVE
CROSSING CONTROLLER CIRCUIT
SH. 5 OF 5

CONTRACT NO. 16-100141
DRAWING NO. TS-031
REVISION
SHEET NO. 176 OF 200
SCALE NONE

FINAL 30% SUBMITTAL (06-29-2018)



RED = IN

YELLOW = OUT

LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- -DIODES ARE SAFETRAN MOD. 8A299-0006.
- -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- -DENOTES RECORDER CONNECTION.

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. ____ Exp. ____ CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

Xorail — A Wabtec Company

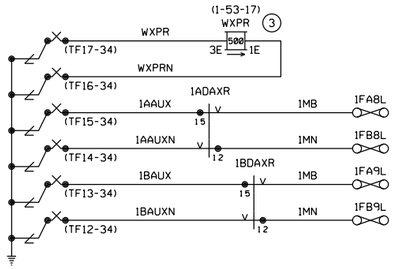
SUBMITTED: _____ PROJECT MANAGER

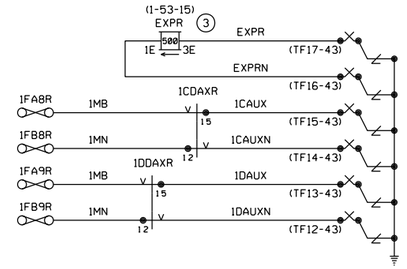
APPROVED: _____

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

SG 53.70 EUCALYPTUS AVE
CROSSING LAYOUT
SH. 1 OF 4

CONTRACT NO. 16-100141
DRAWING NO. TS-032
REVISION
SHEET NO. 177 OF 200
SCALE NONE



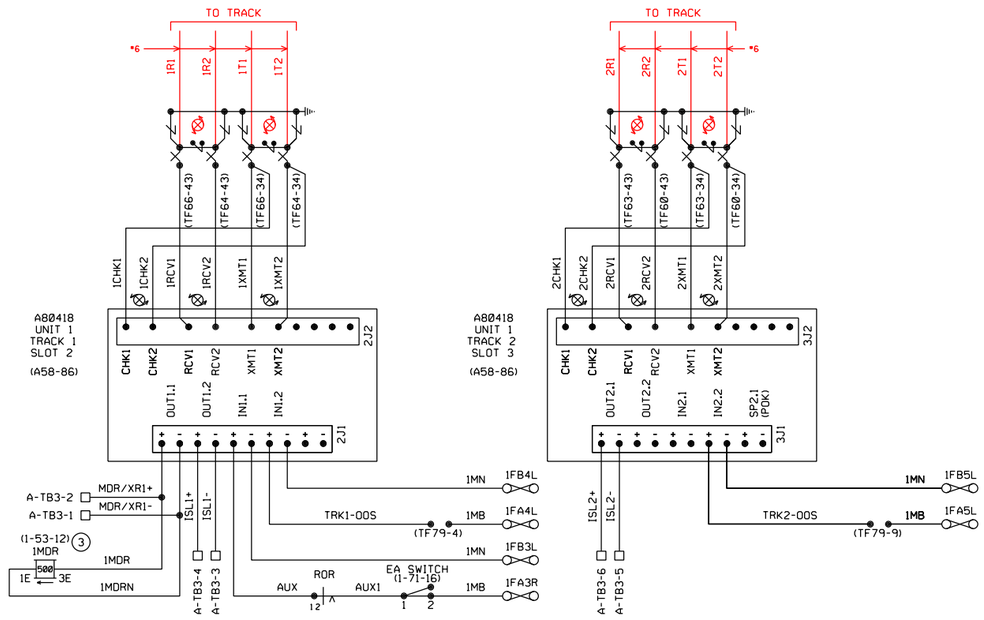


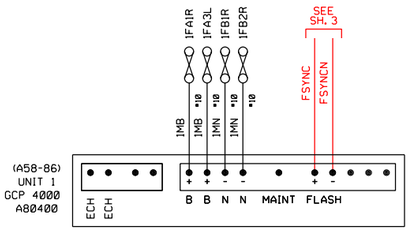
MICRO GCP 4000
MODULE REQUIREMENTS

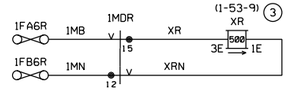
CPU II+ A80403	TRACK 1 A80418	TRACK 2 A80418	TRACK 3 A80418	TRACK 4 A80418	RIO A80413	BLANK	SSCC 1 A80405	DISPLAY A80407
CPU II+ A80403	TRACK 1 A80418	TRACK 2 A80418	TRACK 3 A80418	TRACK 4 A80418	RIO A80413	BLANK	SSCC 2 A80405	TRANSFER A80406
BLANK								

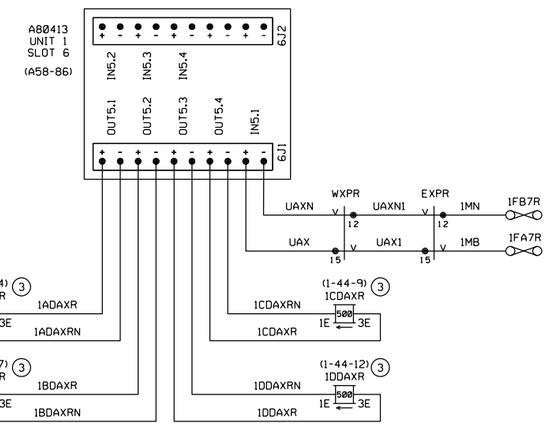
NORMAL

STANDBY









RED = IN

YELLOW = OUT

LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- △ -DIODES ARE SAFETRAN MOD. 8A299-0006.
- ✳ -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- □ -DENOTES RECORDER CONNECTION.

MAIN HOUSE

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL:
All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — EXP. — CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

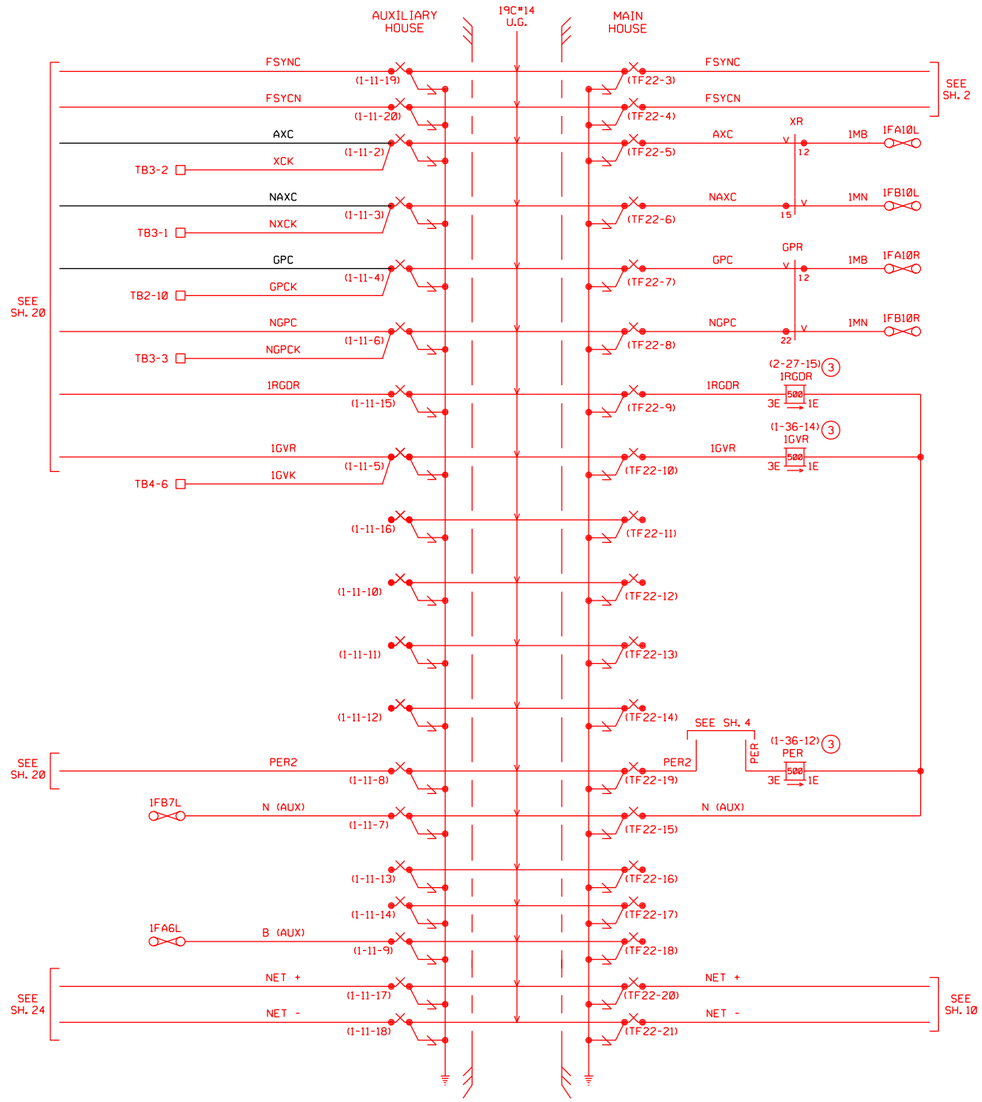
Xorail — A Wabtec Company

SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SG 53.70 EUCALYPTUS AVE
GCP 4000 BI-DIRECTIONAL
SH. 2 OF 4

CONTRACT NO. 16-100141
DRAWING NO. TS-033
REVISION
SHEET NO. 178 OF 200
SCALE NONE



NOTE:

1. ALL WIRE #16 AWG, UNLESS OTHERWISE NOTED.

RED = IN

YELLOW = OUT

LEGEND:

- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- -DIODES ARE SAFETRAN MOD. 8A299-0006.
- -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- -DENOTES RECORDER CONNECTION.

MAIN HOUSE

NOT FOR CONSTRUCTION

REV.	DATE		BY	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

INFORMATION CONFIDENTIAL:
All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. Exp. CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

Xorail — A Wabtec Company

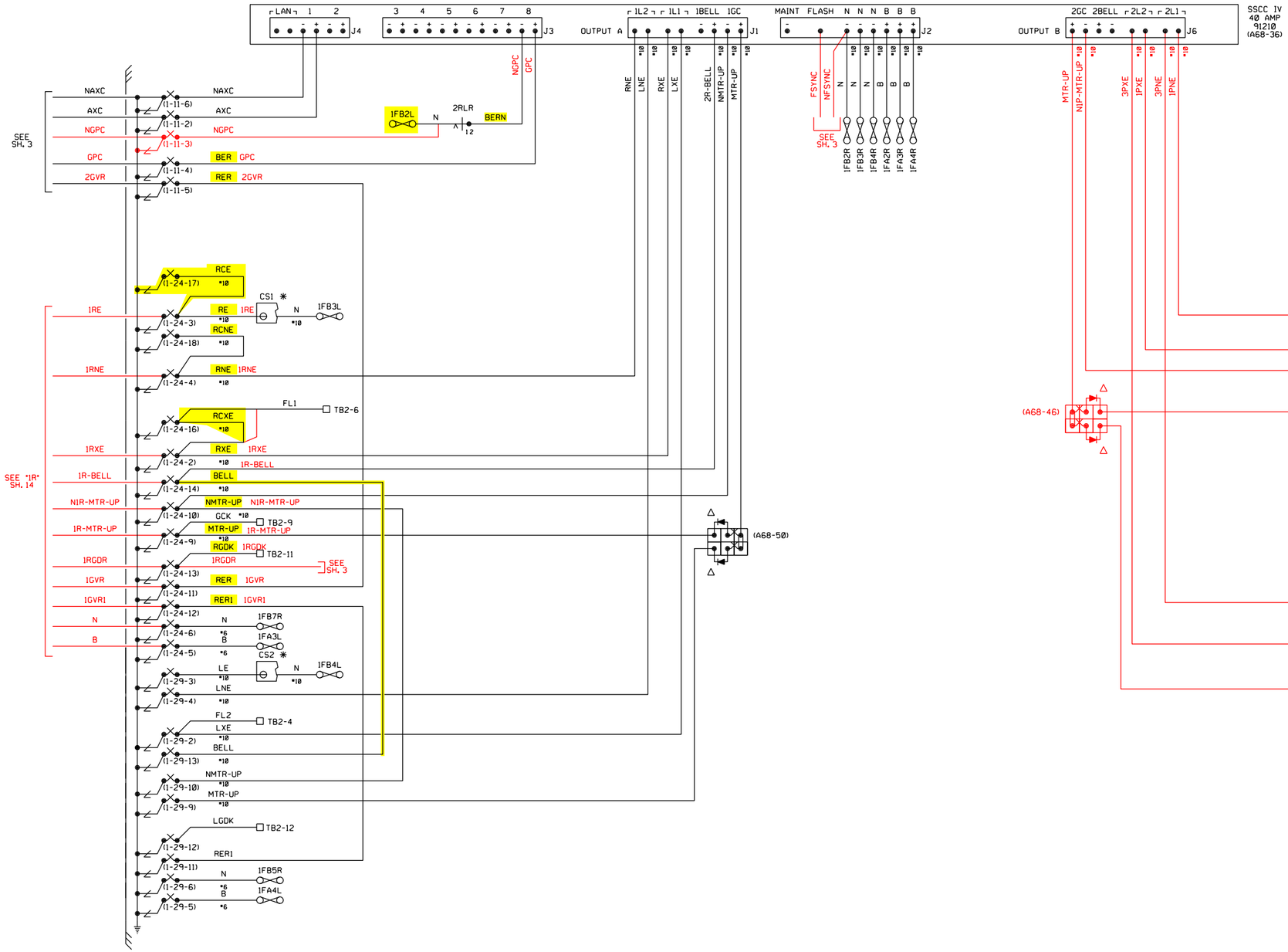
SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SG 53.70 EUCALYPTUS AVE
CABLE INTERCONNECT
SH. 3 OF 4

CONTRACT NO. 16-100141
DRAWING NO. TS-034
REVISION
SHEET NO. 179 OF 200
SCALE NONE

FINAL 30% SUBMITTAL (06-29-2018)



RED = IN

YELLOW = OUT

LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- △ -DIODES ARE SAFETRAN MOD. 8A299-0006.
- ✳ -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- □ -DENOTES RECORDER CONNECTION.

AUXILIARY HOUSE

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL:
All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — EXP. — CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

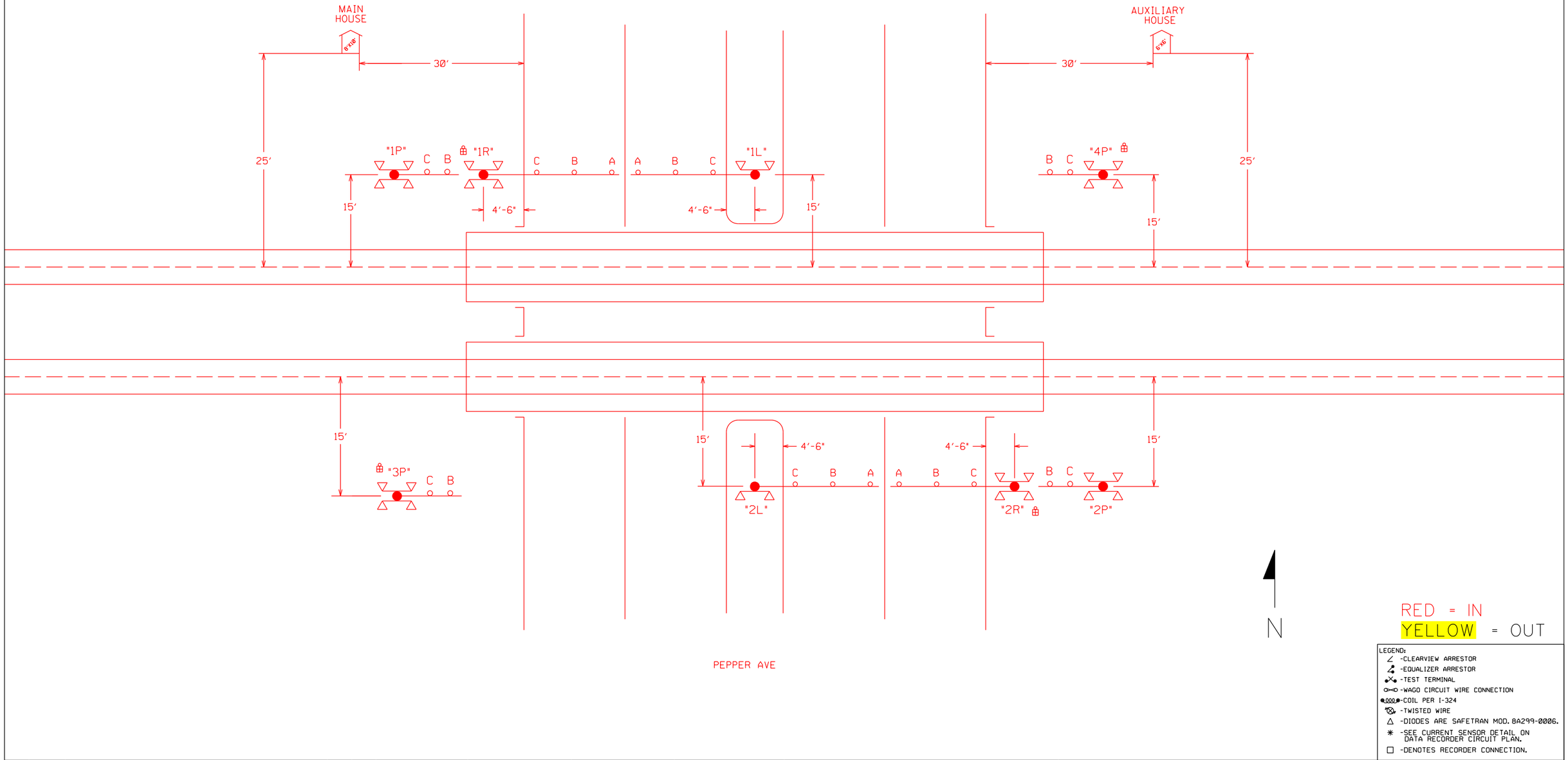
Xorail — A Wabtec Company

SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SG 53.70 EUCALYPTUS AVE
CROSSING CONTROLLER CIRCUITS
SH. 4 OF 4

CONTRACT NO. 16-100141
DRAWING NO. TS-035
REVISION
SHEET NO. 180 OF 200
SCALE NONE



RED = IN
YELLOW = OUT

LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- △ -DIODES ARE SAFETRAN MOD. 8A299-0006.
- ✳ -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- □ -DENOTES RECORDER CONNECTION.

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — NO. — EXP. — CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

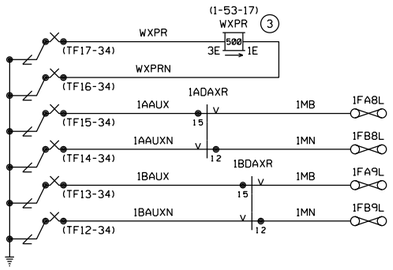
METROLINK

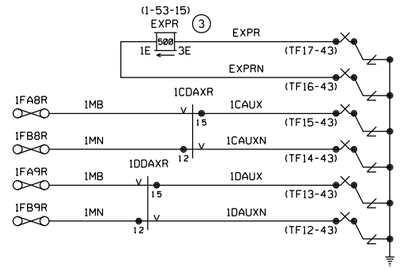
Xorail — A Wabtec Company

SUBMITTED: _____ PROJECT MANAGER
APPROVED: _____

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT
SG 53.95 PEPPER AVE CROSSING LAYOUT
SH. 1 OF 4

CONTRACT NO. 16-100141
DRAWING NO. TS-036
REVISION
SHEET NO. 181 OF 200
SCALE NONE



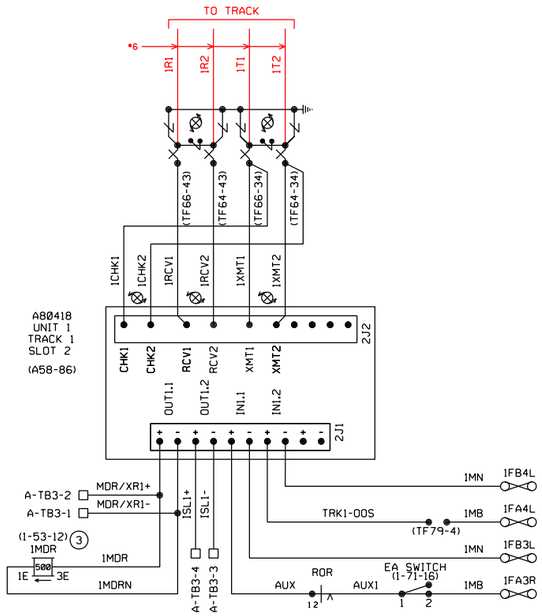


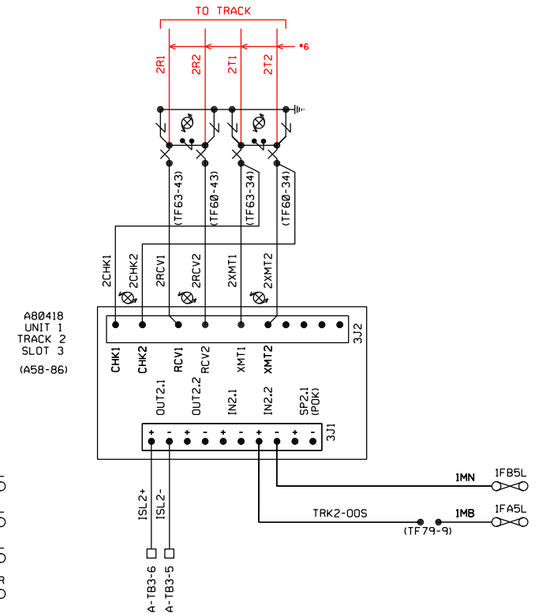
MICRO GCP 4000
MODULE REQUIREMENTS

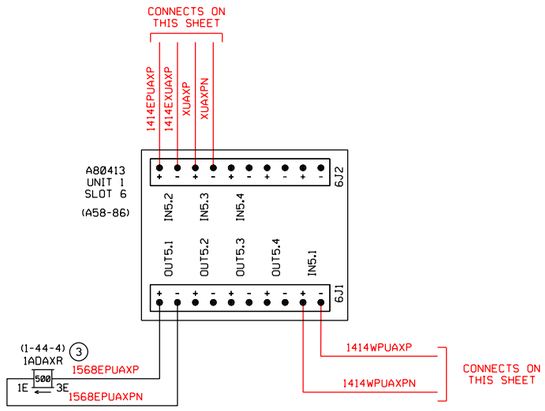
CPU II+ A80403	TRACK 1 A80418	TRACK 2 A80418	TRACK 3 A80418	TRACK 4 A80418	RIO A80413	BLANK	SSCC 1 A80405	DISPLAY A80407
CPU II+ A80403	TRACK 1 A80418	TRACK 2 A80418	TRACK 3 A80418	TRACK 4 A80418	RIO A80413	BLANK	SSCC 2 A80405	TRANSFER A80406
BLANK								

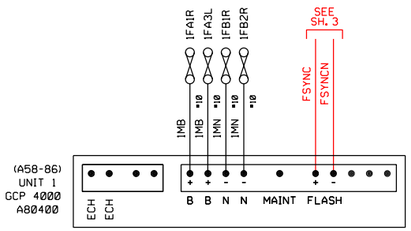
NORMAL

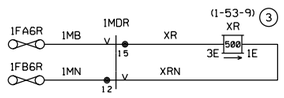
STANDBY











RED = IN

YELLOW = OUT

MAIN HOUSE

LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- 000 -COIL PER I-324
- -TWISTED WIRE
- -DIODES ARE SAFETRAN MOD. 8A299-0006.
- -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- -DENOTES RECORDER CONNECTION.

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL:
All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

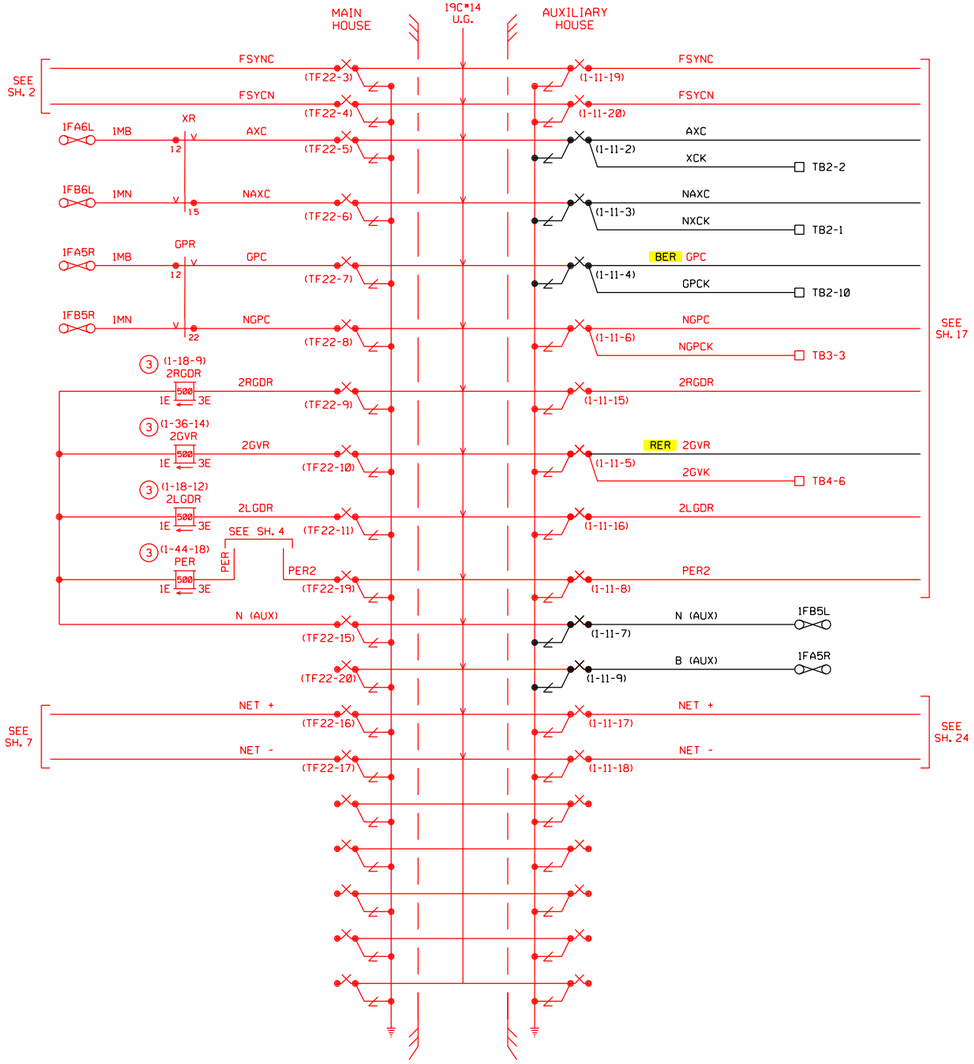
Xorail — A Wabtec Company

SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SG 53.95 PEPPER AVE
GCP 4000 BI-DIRECTIONAL
SH. 2 OF 4

CONTRACT NO. 16-100141
DRAWING NO. TS-037
REVISION
SHEET NO. 182 OF 200
SCALE NONE



RED = IN

YELLOW = OUT

NOTE:

1. ALL WIRE #16 AWG, UNLESS OTHERWISE NOTED.

LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- △ -DIODES ARE SAFETRAN MOD. 8A299-0006.
- ✳ -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- □ -DENOTES RECORDER CONNECTION.

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL:
All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — EXP. — CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

Xorail — A Wabtec Company

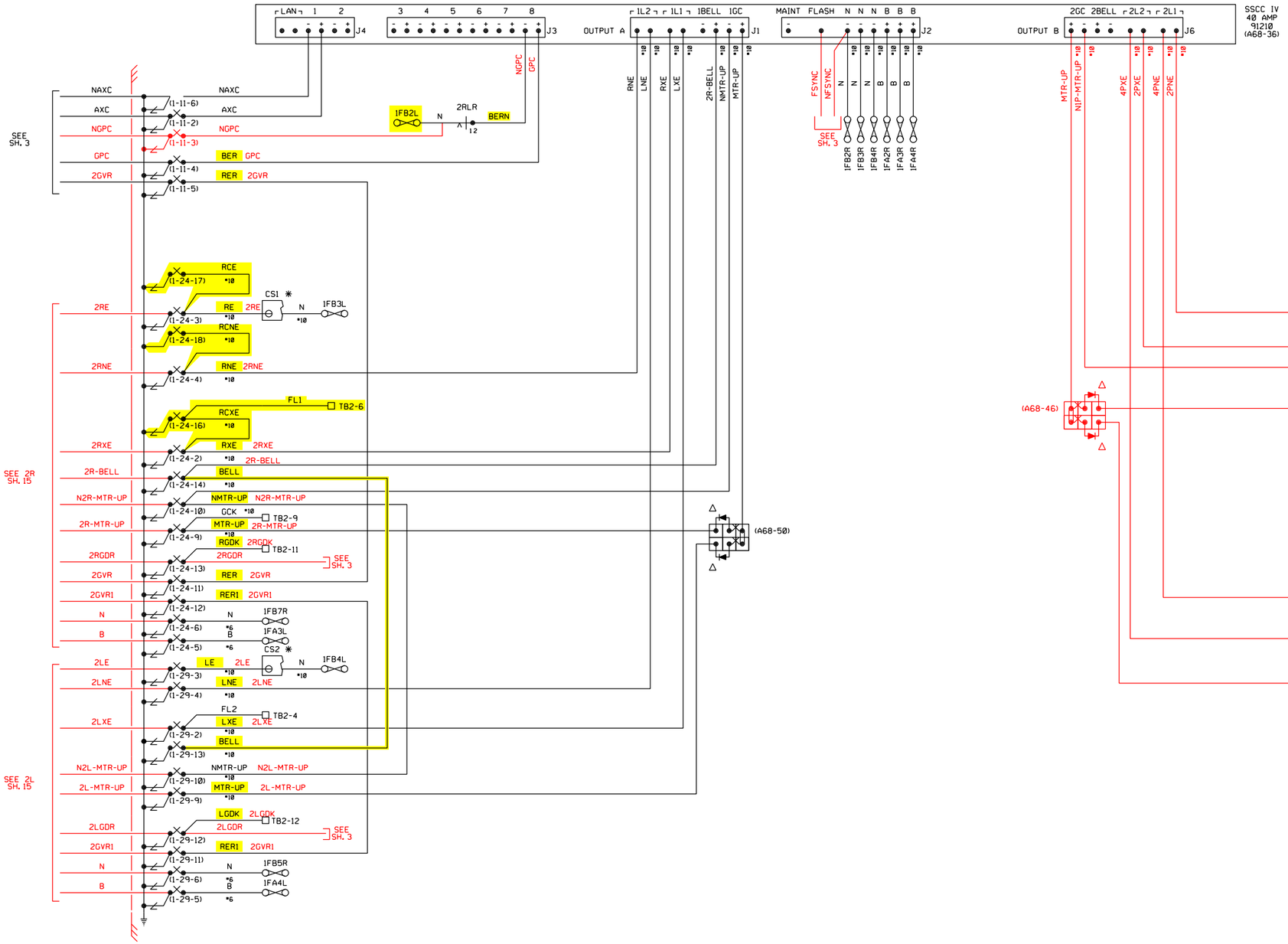
SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

SG 53.95 PEPPER AVE
CABLE INTERCONNECT
SH. 3 OF 4

CONTRACT NO. 16-100141
DRAWING NO. TS-038
REVISION
SHEET NO. 183 OF 200
SCALE NONE



RED = IN

YELLOW = OUT

AUXILIARY HOUSE

LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- △ -DIODES ARE SAFETRAN MOD. 8A299-0006.
- ✳ -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- □ -DENOTES RECORDER CONNECTION.

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
V	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL:
All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — EXP. — CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

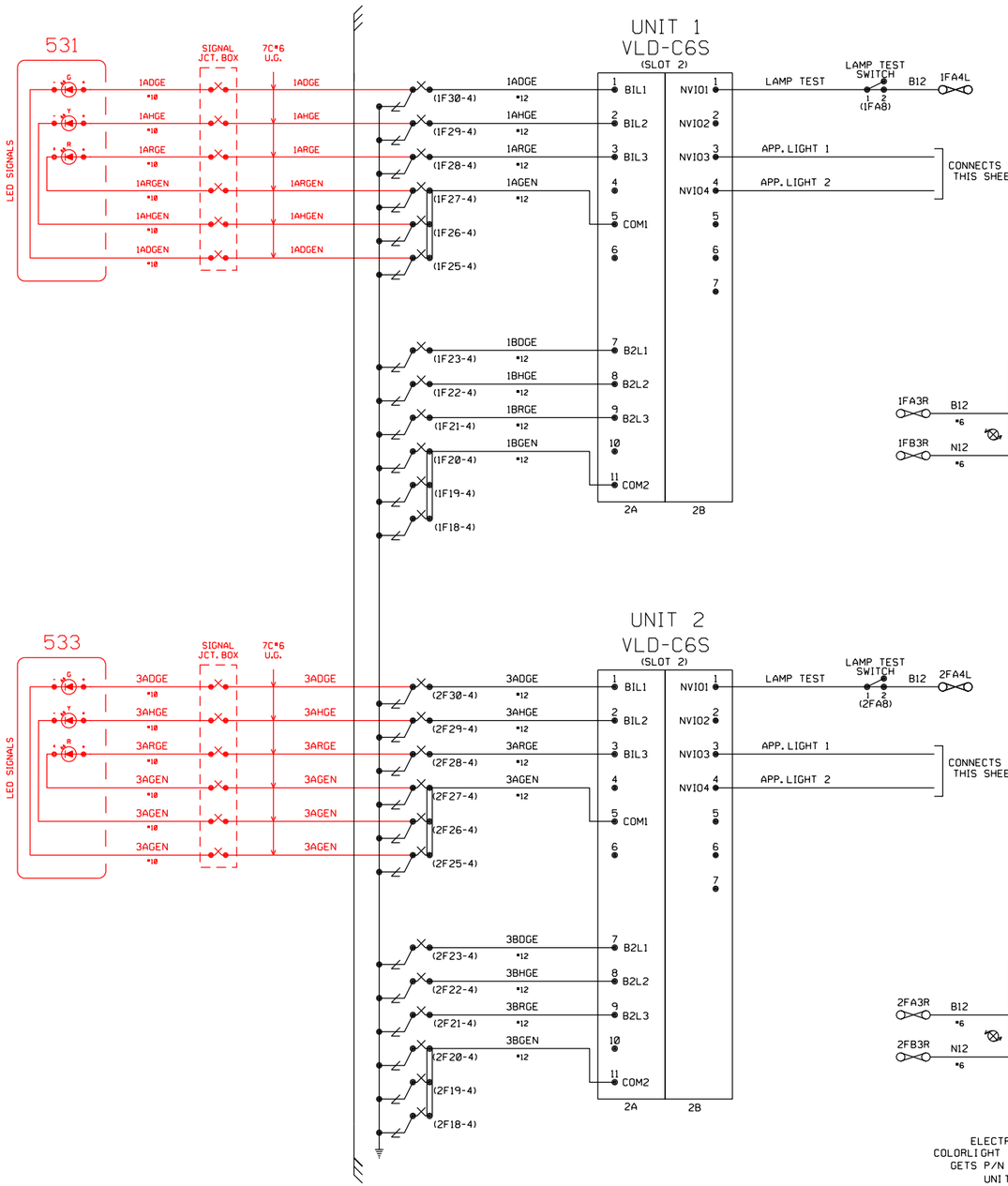
Xorail — A Wabtec Company

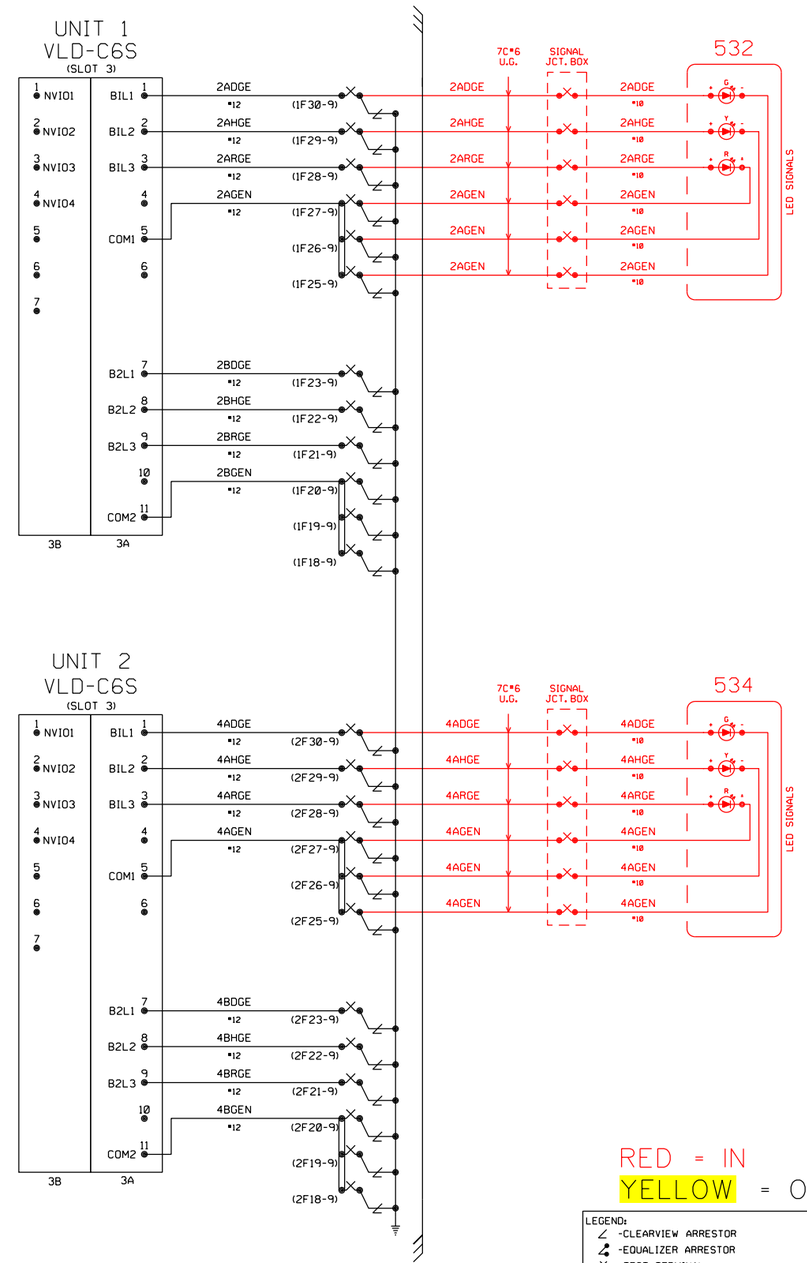
SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SG 53.95 PEPPER AVE
CROSSING CONTROLLER CIRCUIT
SH. 4 OF 4

CONTRACT NO. 16-100141
DRAWING NO. TS-039
REVISION
SHEET NO. 184 OF 200
SCALE NONE





RED = IN
YELLOW = OUT

LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- 000 -COIL PER I-324
- -TWISTED WIRE
- -DIODES ARE SAFETRAN MOD. 8A299-0006.
- * -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- -DENOTES RECORDER CONNECTION.

NOTE:

1. EC5 UNITS SHALL BE FURNISHED WITH A VPM-3 AND CSI-2 MODULE. EC5 UNITS SHALL BE POSITIVE TRAIN CONTROL (PTC) COMPATIBLE.

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL:
All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

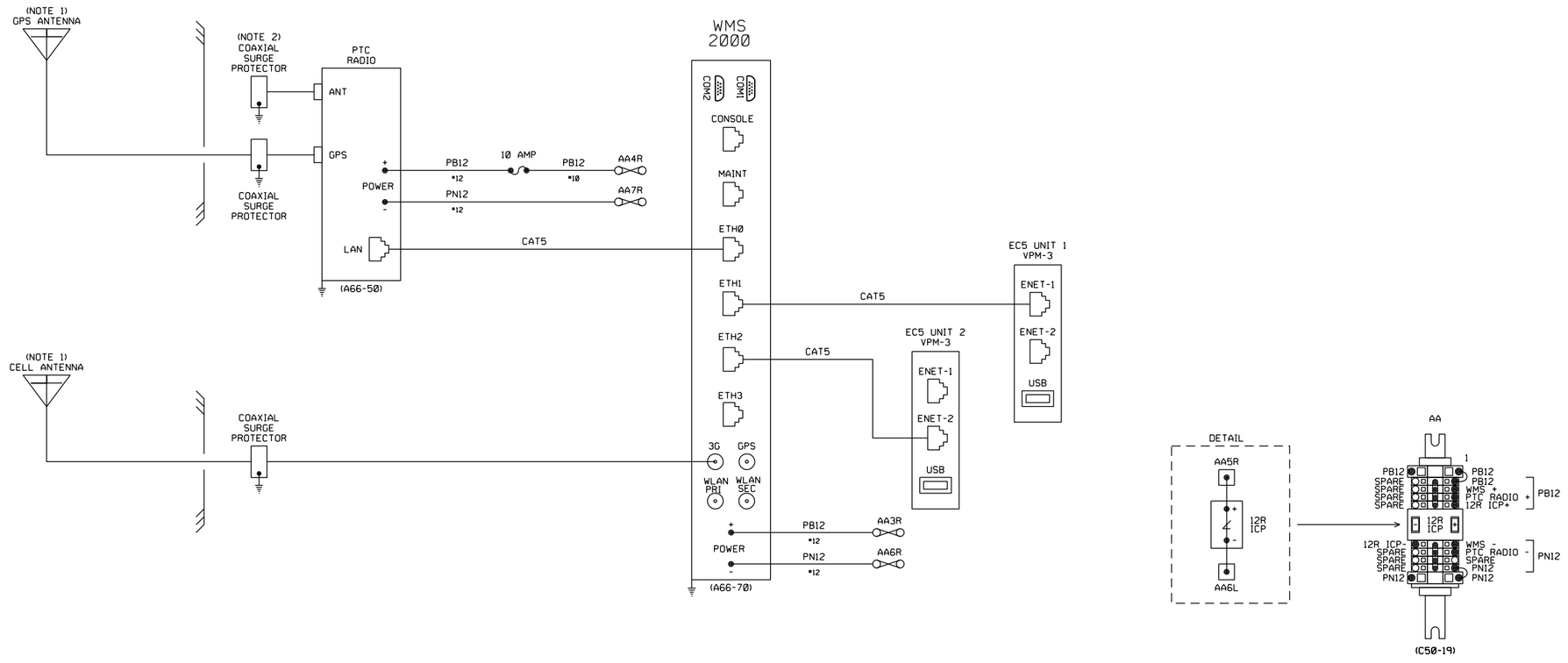
Xorail — A Wabtec Company

SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SG 54.03 INTERMEDIATES 531, 532, 533 & 534
LIGHTING CIRCUITS
SH. 1 OF 2

CONTRACT NO. 16-100141
DRAWING NO. TS-040
REVISION
SHEET NO. 185 OF 200
SCALE NONE



NOTES:

1. CONTRACTOR SHALL FURNISH COAXIAL CABLES, POLYPHASERS AND ANTENNAS. ITEMS SHALL BE INSTALLED BY OTHERS.
2. FOR FUTURE PTC ANTENNA CONNECTION.
3. POLYPHASER PRODUCT DATA:
   PTC ANTENNA POLYPHASER - TESSCO P/N IS-B50HN-C1
   GPS ANTENNA POLYPHASER - POLYPHASER P/N DCXZ+06NFNF-B
   CELL ANTENNA POLYPHASER - POLYPHASER P/N DSXL

LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- -DIODES ARE SAFETRAN MOD. 8A299-0006.
- -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- -DENOTES RECORDER CONNECTION.

NOT FOR CONSTRUCTION

REV.	DATE		BY SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER
No. _____
EXP. CIVIL
STATE OF CALIFORNIA

sbcta san bernardino county transportation authority

METROLINK.

Xorail A Wabtec Company

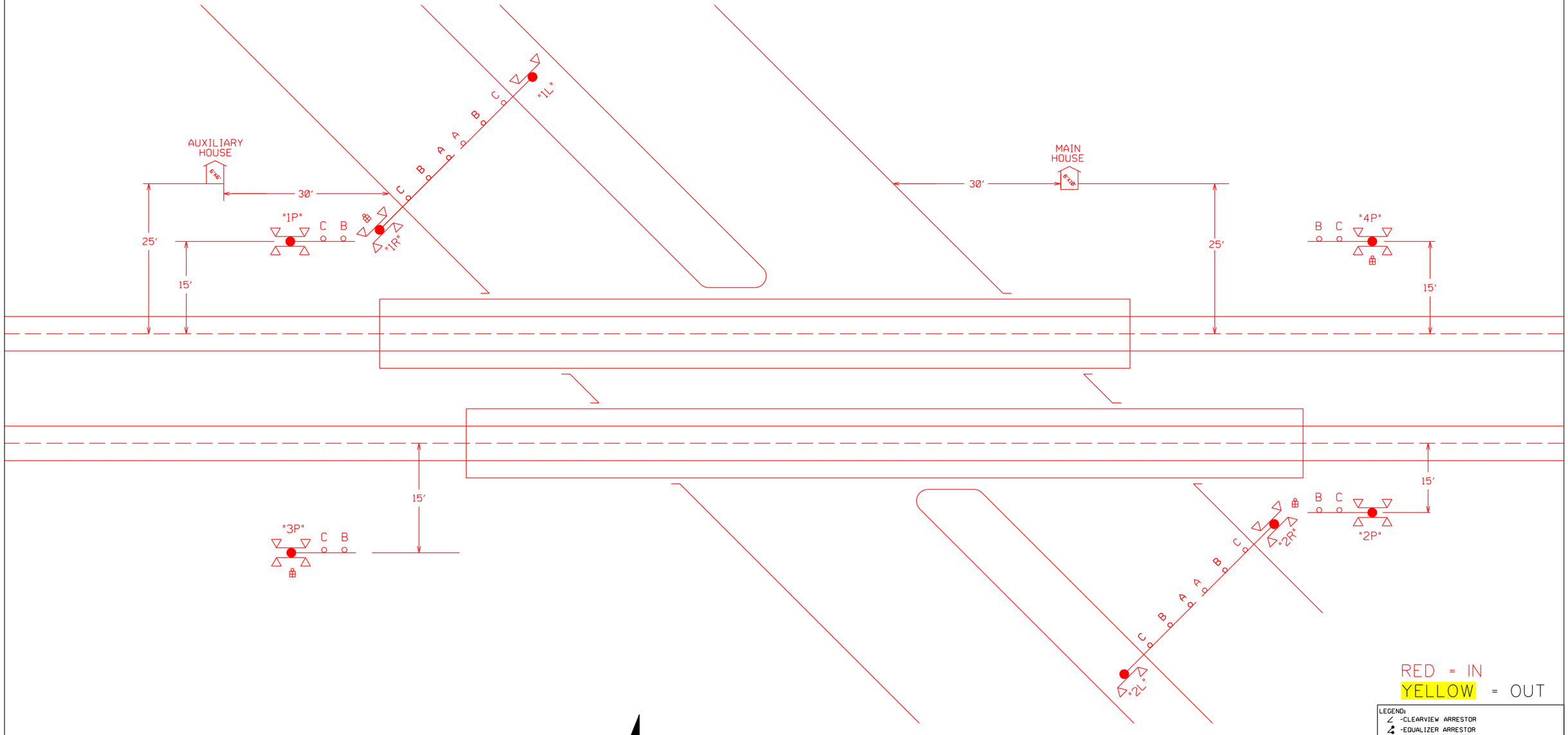
SUBMITTED: _____ PROJECT MANAGER
APPROVED: _____

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

SG 54.03 INTERMEDIATES 531, 532, 533 & 534
PTC RADIO
SH. 2 OF 2

CONTRACT NO. 16-100141
DRAWING NO. TS-041
REVISION
SHEET NO. 186 OF 200
SCALE NONE

FINAL 30% SUBMITTAL (06-29-2018)



RED = IN
YELLOW = OUT

LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- △ -DIODES ARE SAFETRAN MOD. 8A299-0006.
- ✳ -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- □ -DENOTES RECORDER CONNECTION.

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
0	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — EXP. — CIVIL — STATE OF CALIFORNIA

sbcta san bernardino county transportation authority

METROLINK

Xorail A Wabtec Company

SUBMITTED: _____ PROJECT MANAGER

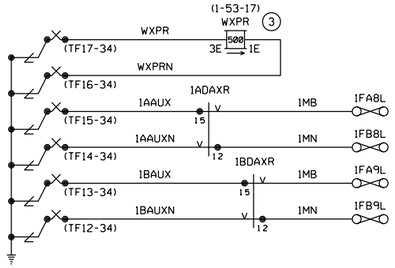
APPROVED: _____

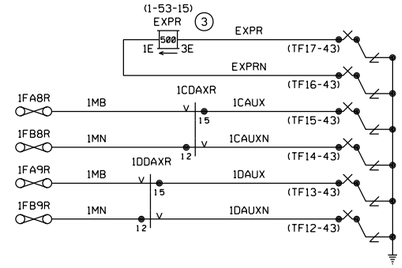
CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

SG 54.54 RIALTO AVE
CROSSING LAYOUT
SH. 1 OF 4

CONTRACT NO. 16-100141
DRAWING NO. TS-042
REVISION
SHEET NO. 187 OF 200
SCALE NONE

FINAL 30% SUBMITTAL (06-29-2018)



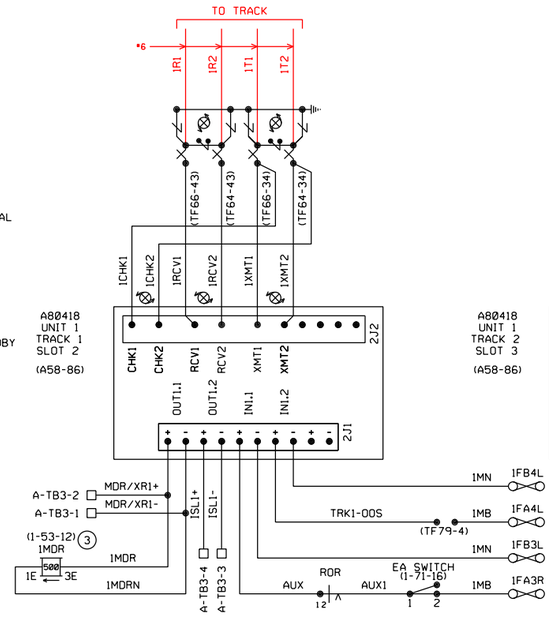


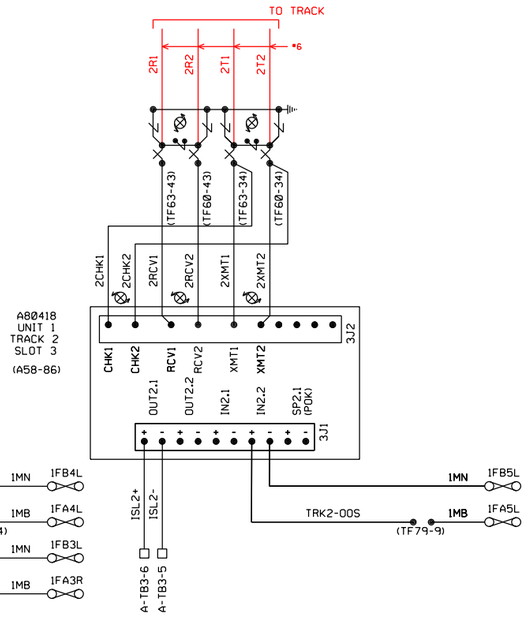
MICRO GCP 4000
MODULE REQUIREMENTS

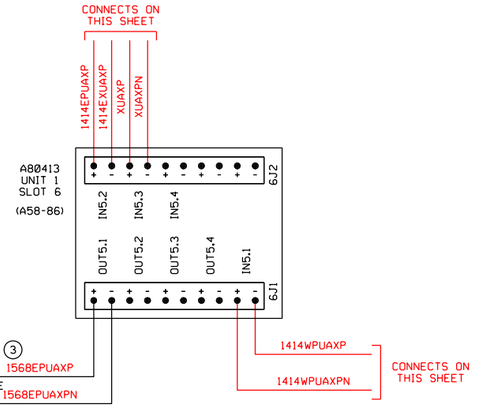
CPU II+ A80403	TRACK 1 A80418	TRACK 2 A80418	TRACK 3 A80418	TRACK 4 A80418	RIO A80413	BLANK	SSCC 1 A80405	DISPLAY A80407
CPU II+ A80403	TRACK 1 A80418	TRACK 2 A80418	TRACK 3 A80418	TRACK 4 A80418	RIO A80413	BLANK	SSCC 2 A80405	TRANSFER A80406
BLANK								

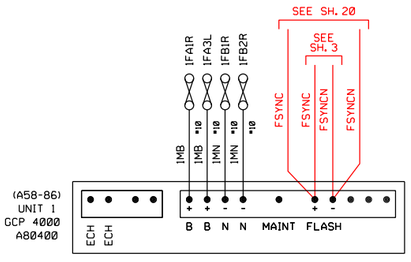
NORMAL

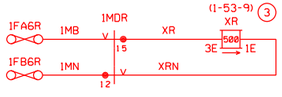
STANDBY











RED = IN

YELLOW = OUT

LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- -DIODES ARE SAFETRAN MOD. 8A299-0006.
- -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- -DENOTES RECORDER CONNECTION.

NOT FOR CONSTRUCTION

REV.	DATE		BY	APP.
0	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

Xorail — A Wabtec Company

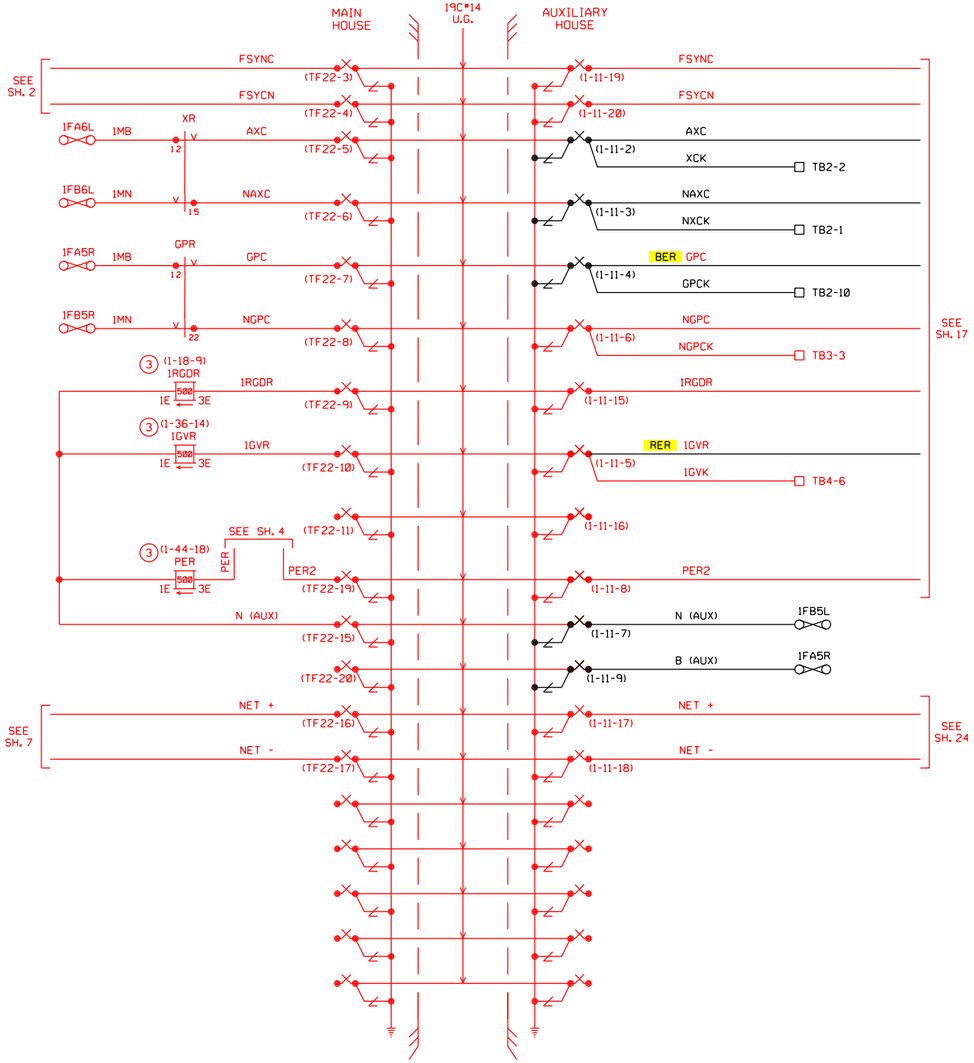
SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SG 54.54 RIALTO AVE
GCP 4000 BI-DIRECTIONAL
SH. 2 OF 4

CONTRACT NO. 16-100141
DRAWING NO. TS-043
REVISION
SHEET NO. 188 OF 200
SCALE NONE

FINAL 30% SUBMITTAL (06-29-2018)



NOTE:

1. ALL WIRE #16 AWG, UNLESS OTHERWISE NOTED.

RED = IN

YELLOW = OUT

LEGEND:

- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- △ -DIODES ARE SAFETRAN MOD. 8A299-0006.
- ✳ -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- □ -DENOTES RECORDER CONNECTION.

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL:
All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — EXP. — CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

Xorail — A Wabtec Company

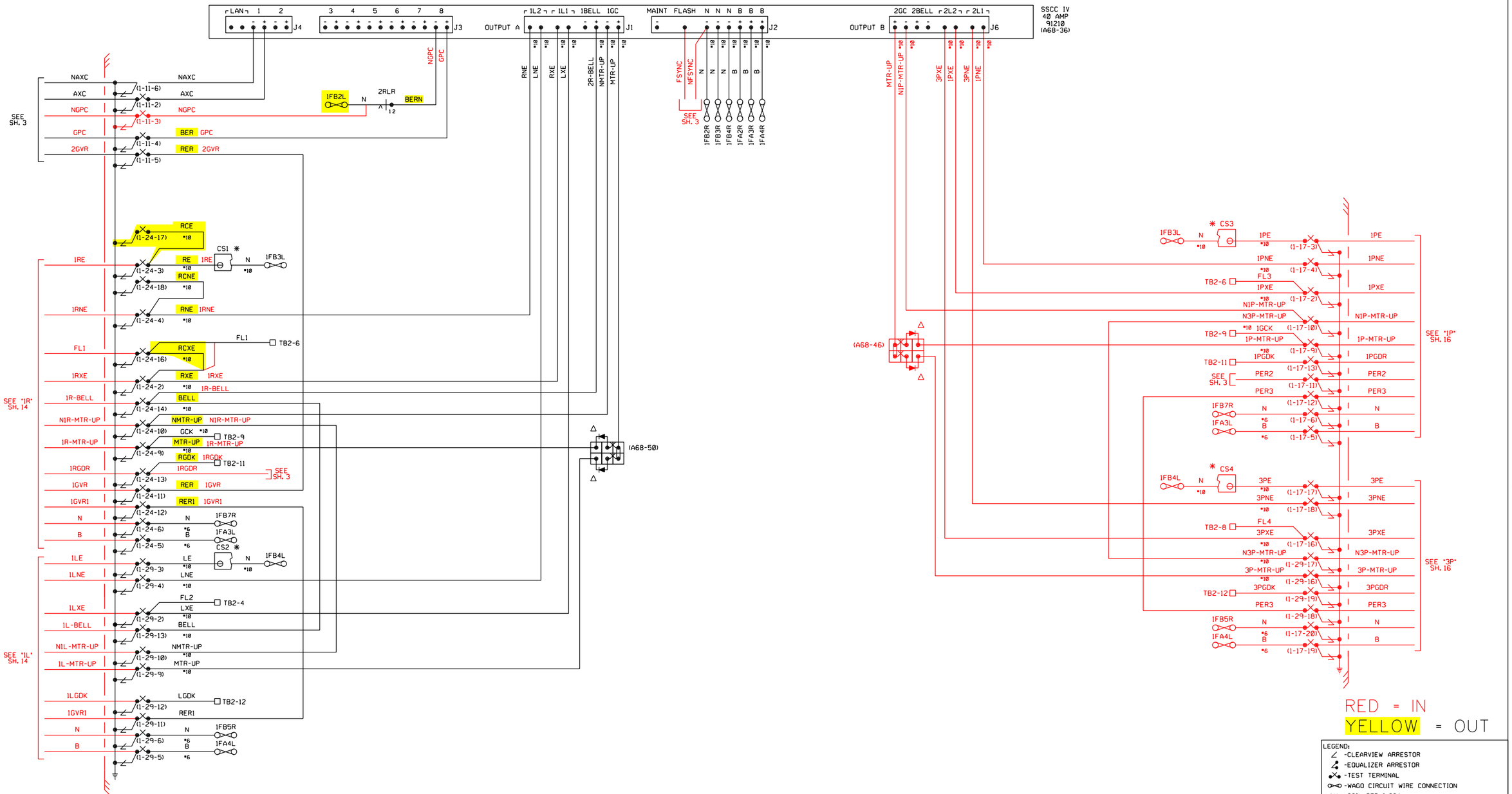
SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

SG 54.54 RIALTO AVE
CABLE INTERCONNECT
SH. 3 OF 4

CONTRACT NO. 16-100141
DRAWING NO. TS-044
REVISION
SHEET NO. 189 OF 200
SCALE NONE



RED = IN

YELLOW = OUT

LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- -DIODES ARE SAFETRAN MOD. 8A299-0006.
- -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- -DENOTES RECORDER CONNECTION.

AUXILIARY HOUSE

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — EXP. — CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

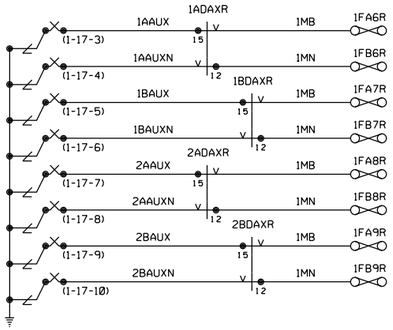
Xorail — A Wabtec Company

SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SG 54.54 RIALTO AVE
SSCC 1 & 2 CROSSING CONTROLLER
SH. 4 OF 4

CONTRACT NO. 16-100141
DRAWING NO. TS-045
REVISION
SHEET NO. 190 OF 200
SCALE NONE

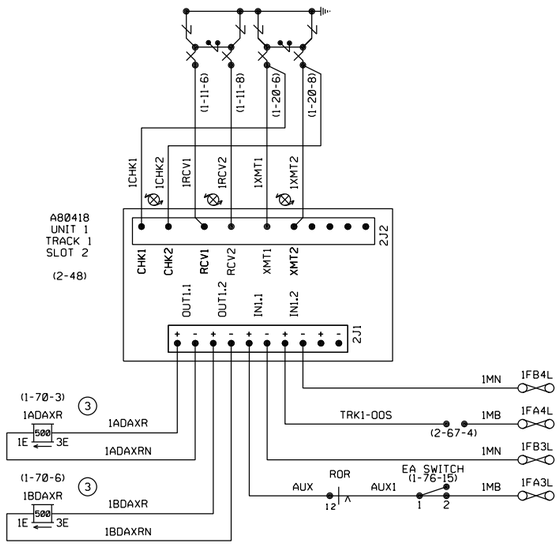


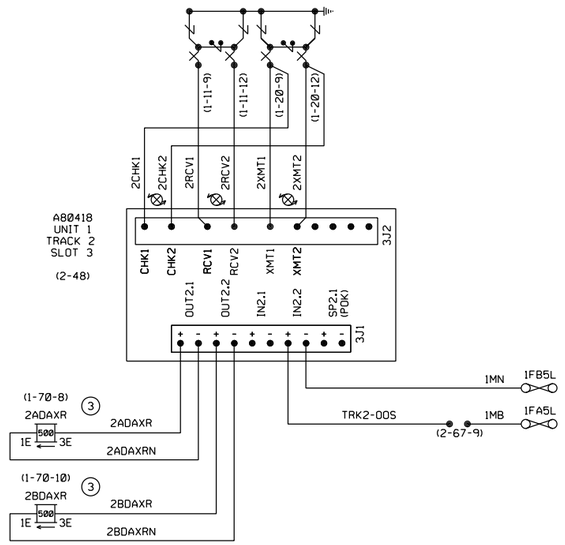
MICRO GCP 4000
MODULE REQUIREMENTS

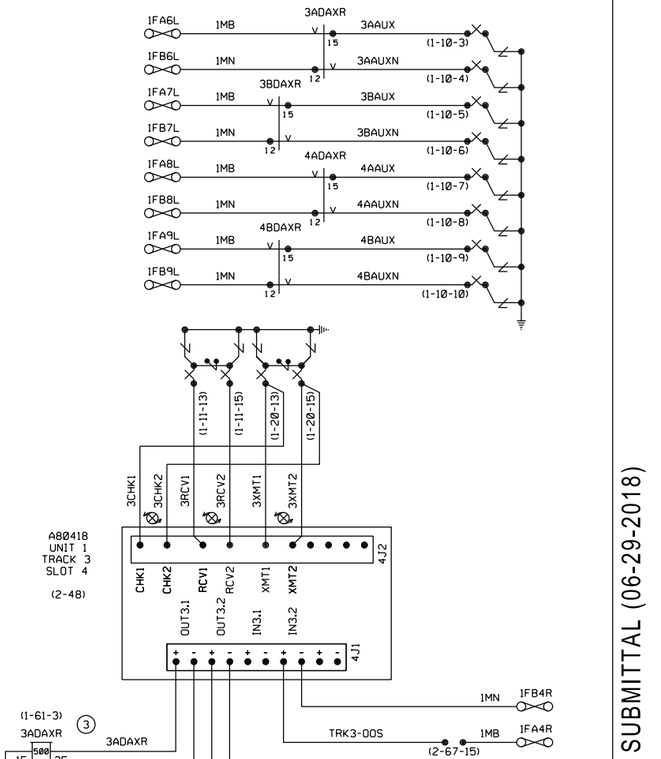
CPU II+ A80403	TRACK 1 A80418	TRACK 2 A80418	TRACK 3 A80418	TRACK 4 A80418	TRACK 5 A80418	TRACK 6 A80418	BLANK	DISPLAY A80407
CPU II+ A80403	TRACK 1 A80418	TRACK 2 A80418	TRACK 3 A80418	TRACK 4 A80418	TRACK 5 A80418	TRACK 6 A80418	BLANK	TRANSFER A80406
BLANK								

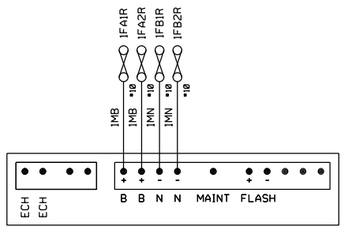
NORMAL

STANDBY

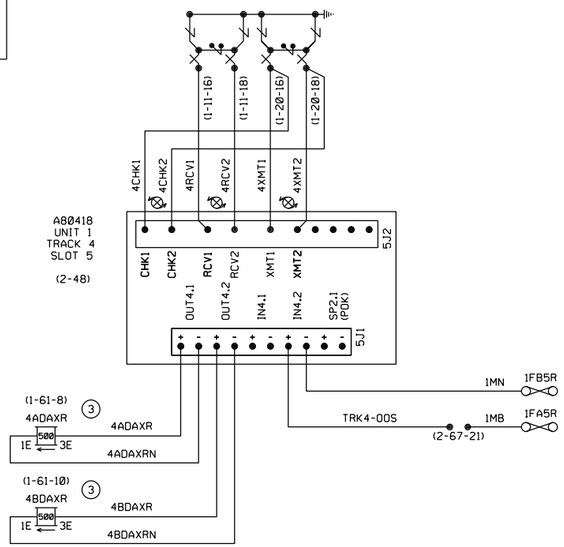


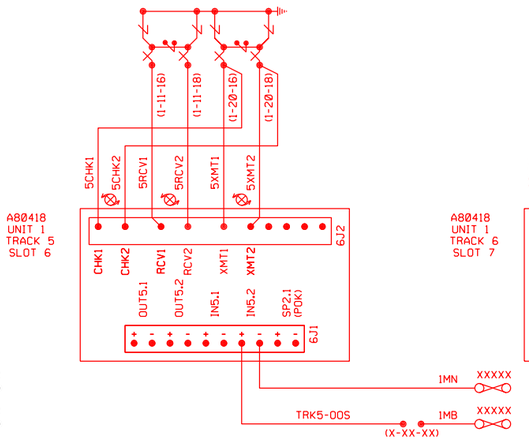


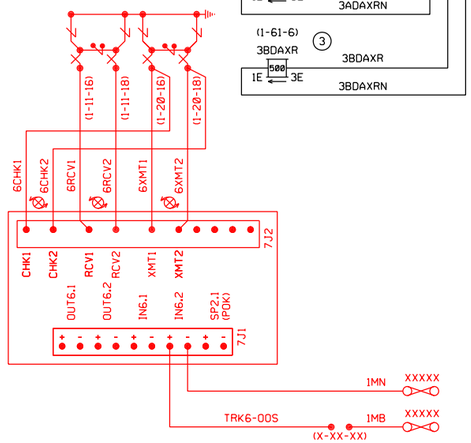




UNIT 1
GCP 4000
A80400







RED = IN
YELLOW = OUT

LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- △ -DIODES ARE SAFETRAN MOD. 8A299-0006.
- ✳ -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- □ -DENOTES RECORDER CONNECTION.

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER
No.
EXP.
CIVIL
STATE OF CALIFORNIA

sbcta
san bernardino county transportation authority

METROLINK

Xorail
A Wabtec Company

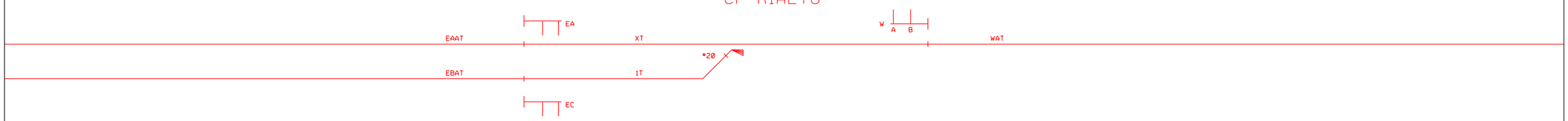
SUBMITTED: _____ PROJECT MANAGER
APPROVED: _____

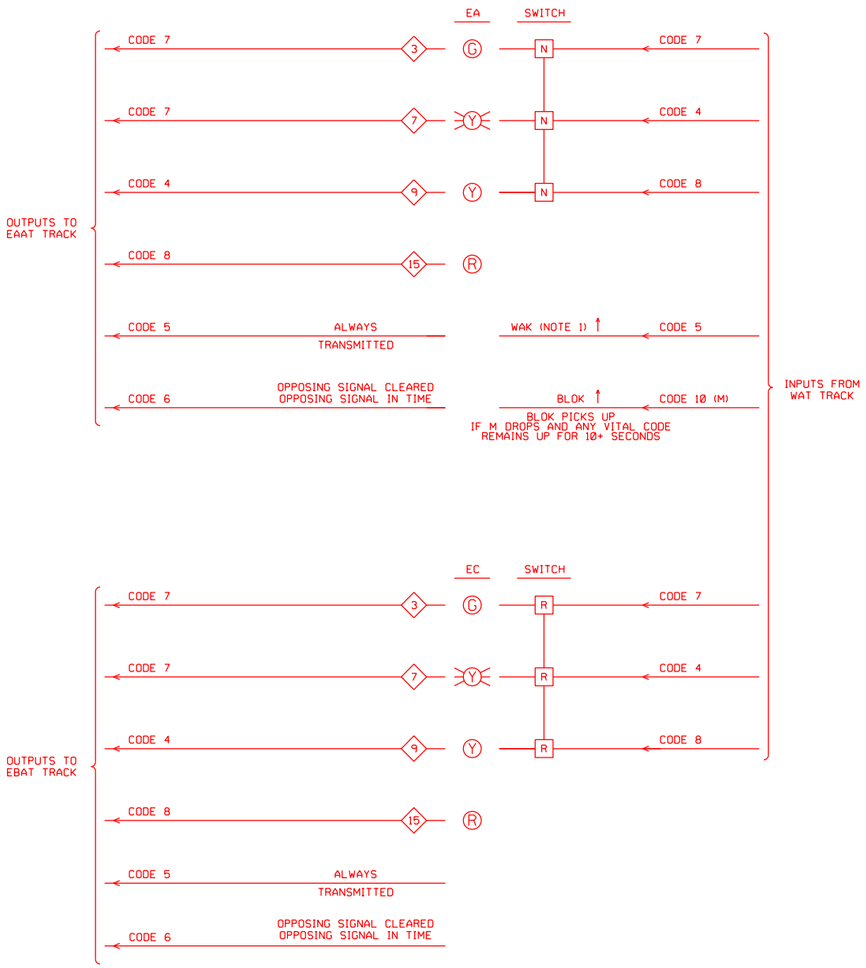
CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SG 54.99 REMOTE HOUSE
CROSSING CIRCUIT PLAN
SH. 1 OF 1

CONTRACT NO. 16-100141
DRAWING NO. TS-046
REVISION
SHEET NO. 191 OF 200
SCALE NONE

FINAL 30% SUBMITTAL (06-29-2018)

CP RIALTO





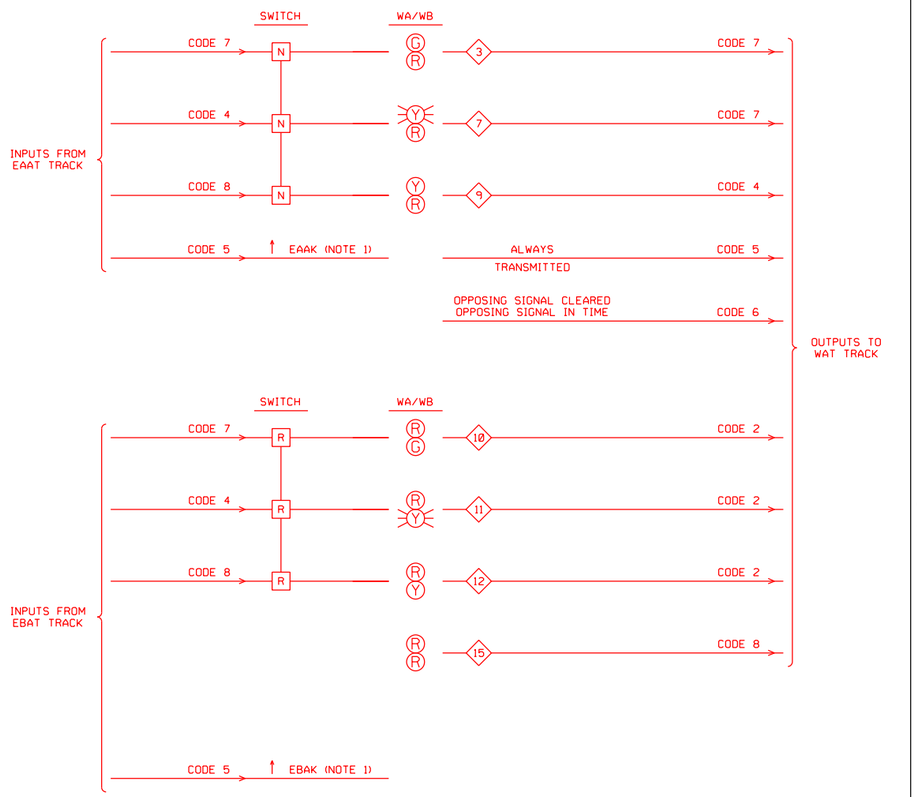
STRAIGHT ROUTE LAMP OUT DOWNGRADES EA/EB				
CODE IN	LAMP OUT	ASPECT	CODE OUT	PTC *
7	GRN	FY	7	7
7	GRN & YEL	FR	8	13
7	ALL	D	8	30
4 OR 8	YEL	FR	8	13
* NO CODE	RED	D	8	30

* OR SIGNAL AT STOP

STRAIGHT ROUTE LAMP OUT DOWNGRADES WA/WB				
CODE IN	LAMP OUT	ASPECT	CODE OUT	PTC *
7	TOP GRN	FY/R	7	7
7	TOP GRN & YEL	FR/R	8	13
7	ALL TOP	D/FR	8	13
7	BOTTOM RED	G/D	7	3
4 OR 8	TOP YEL	FR/R	8	13
4 OR 8	TOP YEL & RED	D/FR	8	13
4	BOTTOM RED	FY/D	7	7
8	BOTTOM RED	Y/D	4	9
* NO CODE	TOP RED	D/R	8	15
* NO CODE	BOTTOM RED	R/D	8	15
ANY CODE	ALL TOP & BOTTOM	D/D	8	30

* OR SIGNAL AT STOP

DIVERGING ROUTE LAMP OUT DOWNGRADES WA/WB				
CODE IN	LAMP OUT	ASPECT	CODE OUT	PTC *
7,4 OR 8	TOP RED	D/FR	8	13
7	BOTTOM GRN	R/FY	2	11
7	BOTTOM GRN & YEL	R/FR	8	13
7	ALL BOTTOM	FR/D	8	13
4 OR 8	BOTTOM YEL	R/FR	8	13
4 OR 8	BOTTOM YEL & RED	FR/D	8	13



NOTES:

1. CODE 5 = TRACK INDICATION; C5W/C5E INPUT TRUE
   CODE 1 = TRACK INDICATION; C5W/C5E INPUT FALSE

[N] - SWITCH NORMAL

[R] - SWITCH REVERSE

◇* - PTC CODE NUMBER

LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- △ -DIODES ARE SAFETRAN MOD. 8A299-0006.
- ✳ -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- □ -DENOTES RECORDER CONNECTION.

SET TIME LOCKING RELEASE AT 6 MINUTES
FOR ALL ROUTES

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — NO. — EXP. — CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

Xorail — A Wabtec Company

SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

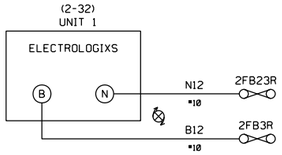
CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SG 55.00 CP RIALTO
ASPECT SHEET
SH. 1 OF 4

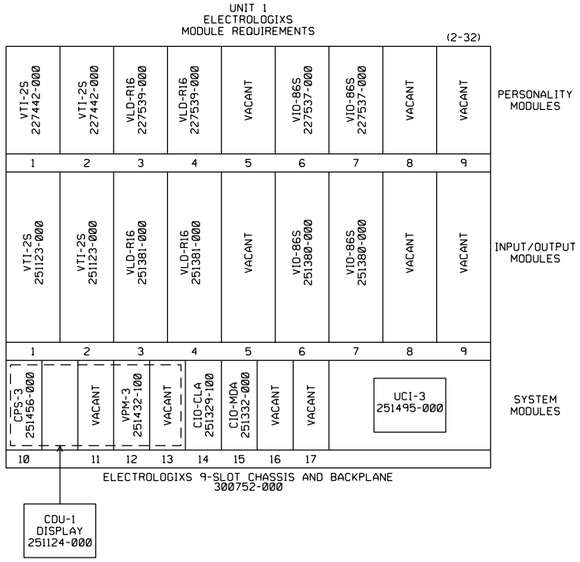
CONTRACT NO. 16-100141
DRAWING NO. TS-047
REVISION
SHEET NO. 192 OF 200
SCALE NONE

FINAL 30% SUBMITTAL (06-29-2018)

NOTES:

1. APPLICATION SOFTWARE TO BE FURNISHED BY OTHERS.
2. FOR FUTURE ATCS ANTENNA CONNECTION. CONTRACTOR SHALL FURNISH POLYPHASER AND COAXIAL CABLE WITH HOUSE. ITEMS WILL BE INSTALLED BY OTHERS.
3. CLCP SHALL BE FURNISHED BY OTHERS.





ELECTROLOGIXS SOFTWARE INFORMATION	
CHASSIS ID:	XXXX
VPM-3 EXECUTIVE	
VERSION	6.16 OR GREATER
VITAL APPLICATION	
NAME	EOSIV
EPT CRC	XXXX
EPT CHECKSUM	XXXX
NON-VITAL APPLICATION	
NAME	EOSNV
EPT CRC	XXXX
EPT CHECKSUM	XXXX
PTC SOFTWARE	
MAP FILE NAME	XXXX
MAP FILE CRC	XXXX
CONFIG FILE NAME	XXXX
CONFIG FILE CRC	XXXX

CHASSIS ID DIP SHUNTS
LOCATED ON BACKPLANE
UNDERNEATH UCI-3 MODULE
IXS
CHASSIS ID

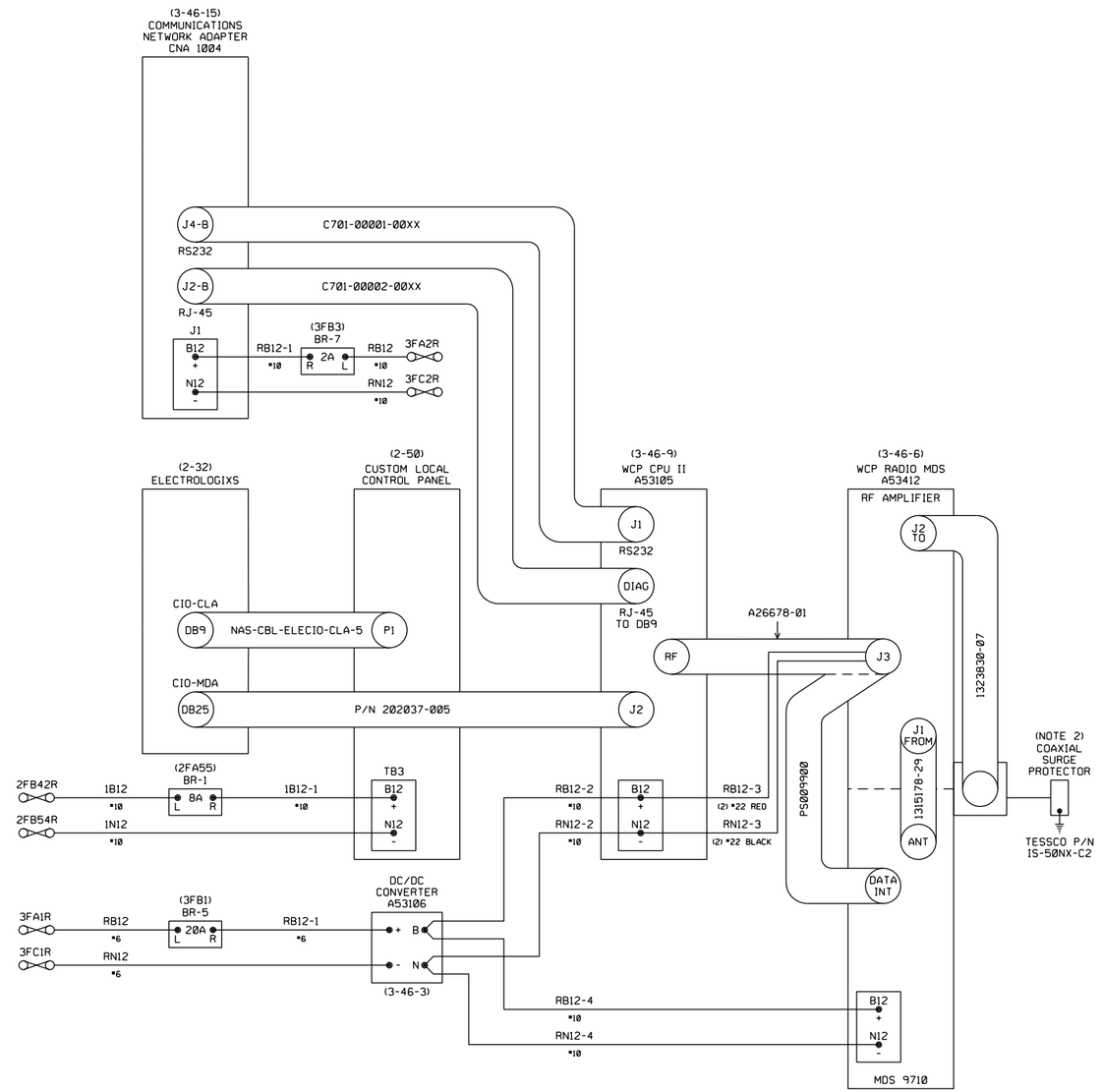
1 2 3 4 5 6 7 8

APPLICATION DIP SHUNTS
LOCATED INSIDE UCI-3 MODULE
UNDERNEATH EPROM

APPLICATION ID SHUNTS

1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8

● NOT PUNCHED ○ PUNCHED



LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- 000 -COIL PER I-324
- -TWISTED WIRE
- -DIODES ARE SAFETRAN MOD. 8A299-0006.
- -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- -DENOTES RECORDER CONNECTION.

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

sbcta san bernardino county transportation authority

METROLINK.

Xorail A Wabtec Company

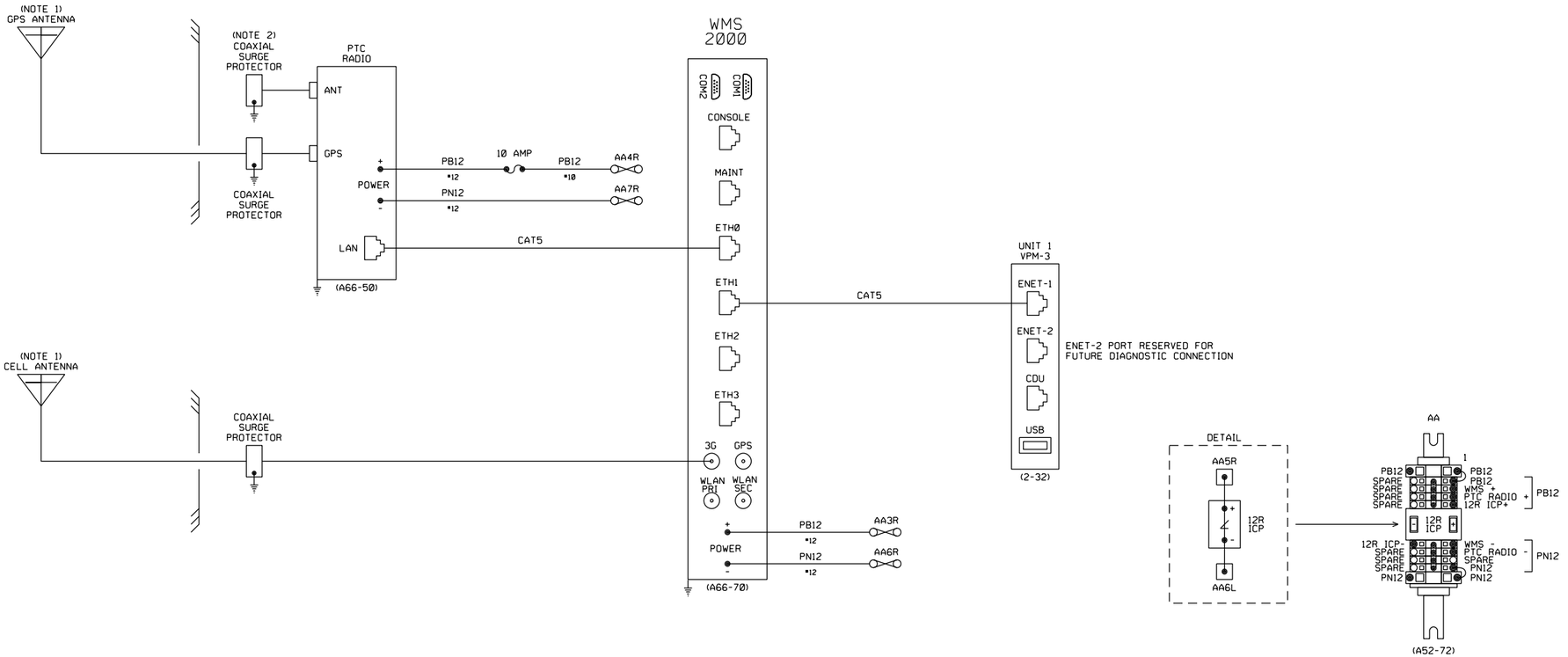
SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

SG 55.00 CP RIALTO
RADIO - BLOCK DIAGRAM
SH. 2 OF 4

CONTRACT NO. 16-100141
DRAWING NO. TS-048
REVISION
SHEET NO. 193 OF 200
SCALE NONE



NOTES:

1. CONTRACTOR SHALL FURNISH COAXIAL CABLES, POLYPHASERS AND ANTENNAS. ITEMS SHALL BE INSTALLED BY OTHERS.
2. FOR FUTURE PTC ANTENNA CONNECTION.
3. POLYPHASER PRODUCT DATA:
   PTC ANTENNA POLYPHASER - TESSCO P/N IS-B50HN-C1
   GPS ANTENNA POLYPHASER - POLYPHASER P/N DGXZ+06NFNF-B
   CELL ANTENNA POLYPHASER - POLYPHASER P/N DSXL

LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- -DIODES ARE SAFETRAN MOD. 8A299-0006.
- -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- -DENOTES RECORDER CONNECTION.

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL:
All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — EXP. — CIVIL — STATE OF CALIFORNIA

sbcta san bernardino county transportation authority

METROLINK

Xorail A Wabtec Company

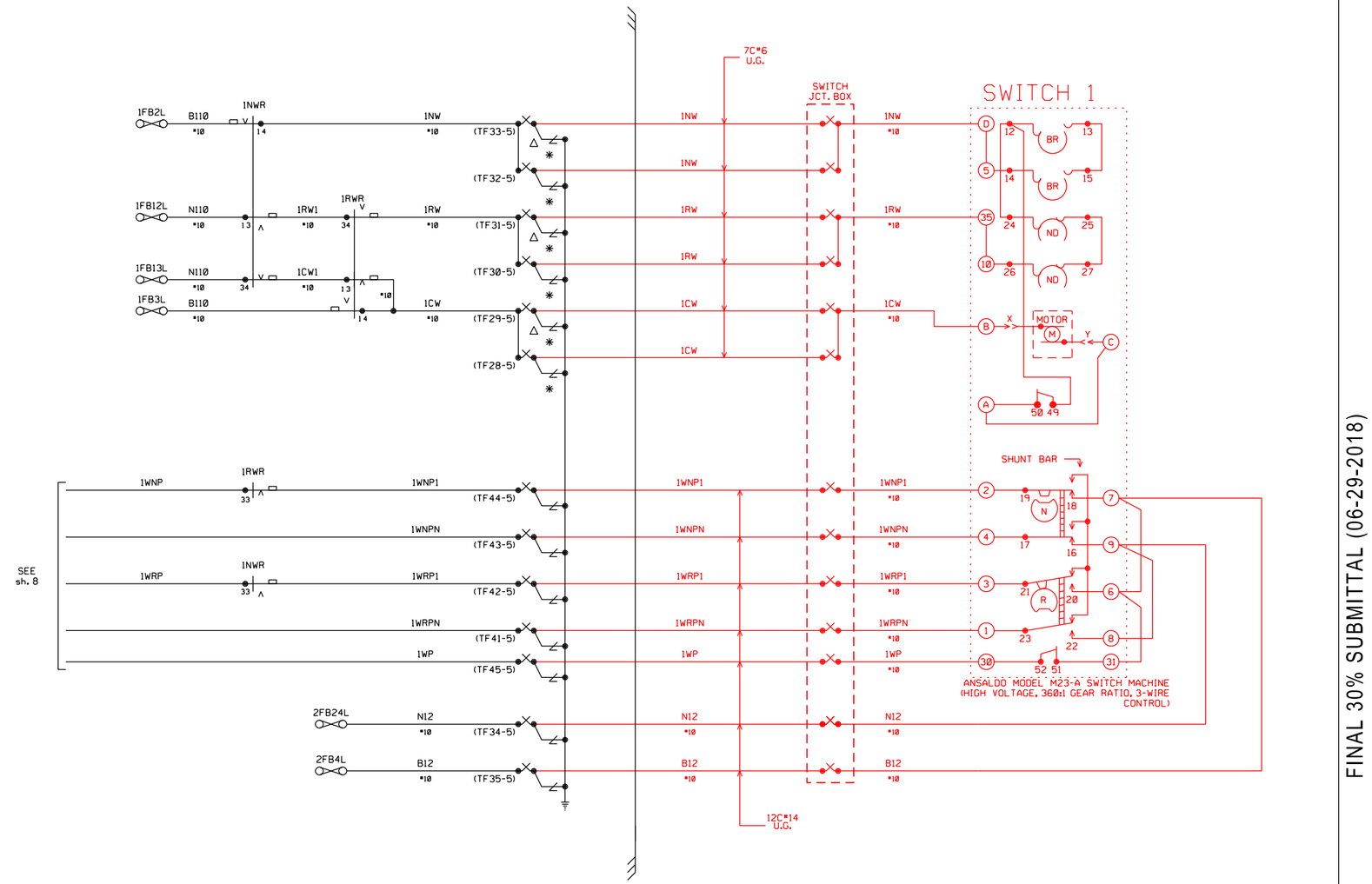
SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SG 55.00 CP RIALTO
PTC RADIO
SH. 3 OF 4

CONTRACT NO. 16-100141
DRAWING NO. TS-049
REVISION
SHEET NO. 194 OF 200
SCALE NONE

FINAL 30% SUBMITTAL (06-29-2018)



RED = IN

YELLOW = OUT

LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- △ -DIODES ARE SAFETRAN MOD. 8A299-0006.
- ✳ -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- □ -DENOTES RECORDER CONNECTION.

△ INSTALL INSULATED NUTS ON ALL B11Ø AND N11Ø TERMINATIONS.

✳ INSTALL HIGH VOLTAGE ARRESTOR US&S P/N N451522-0201.

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

INFORMATION CONFIDENTIAL: All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. Exp. CIVIL — STATE OF CALIFORNIA

sbcta san bernardino county transportation authority

METROLINK

Xorail A Wabtec Company

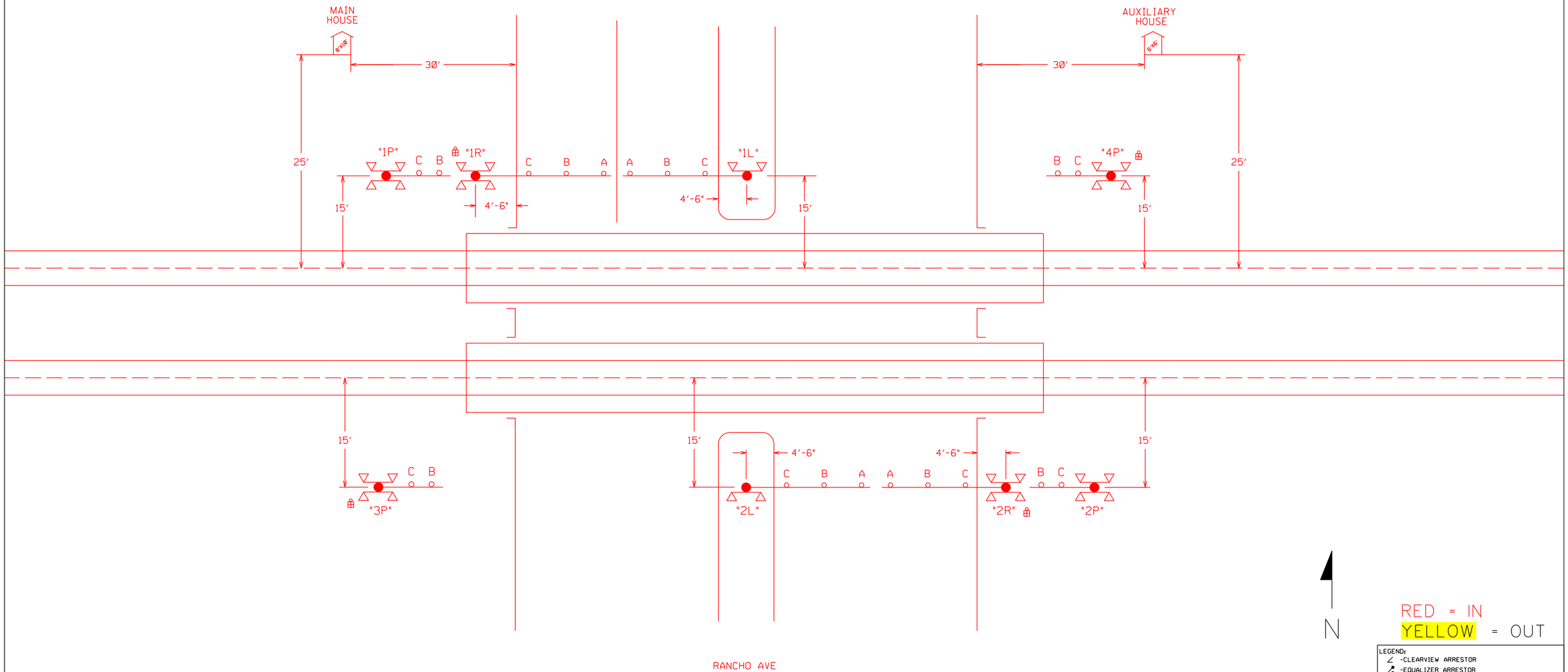
SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

SG 55.00 CP RIALTO
SWITCH 1 CIRCUITS
SH. 4 OF 4

CONTRACT NO. 16-100141
DRAWING NO. TS-050
REVISION
SHEET NO. 195 OF 200
SCALE NONE



FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — NO. EXP. CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

Xorail — A Wabtec Company

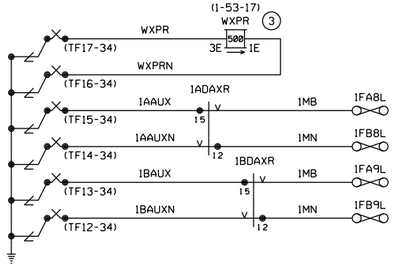
SUBMITTED: _____ PROJECT MANAGER

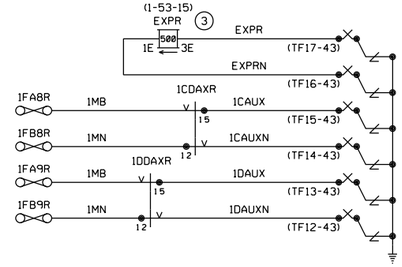
APPROVED: _____

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

SG 55.24 RANCHO AVE
CROSSING LAYOUT
SH. 1 OF 5

CONTRACT NO. 16-100141
DRAWING NO. TS-051
REVISION
SHEET NO. 196 OF 200
SCALE NONE



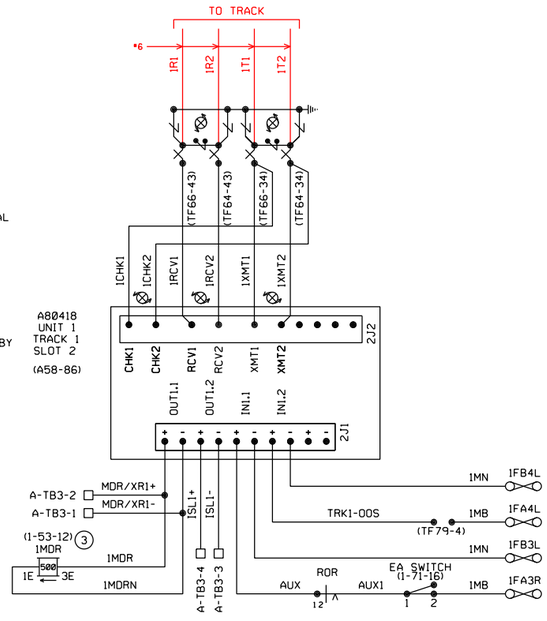


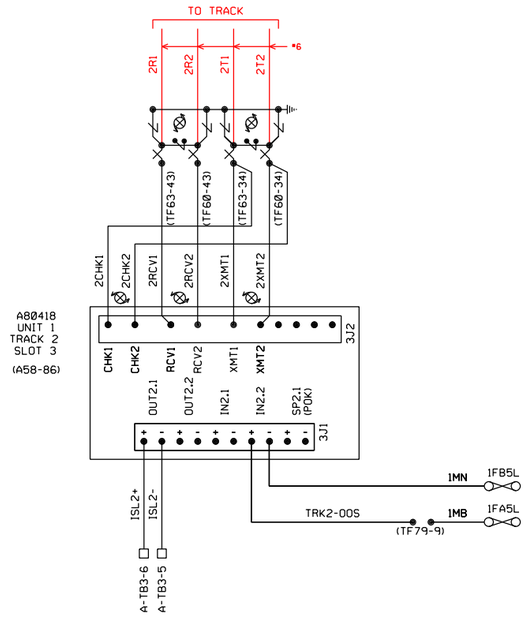
MICRO GCP 4000
MODULE REQUIREMENTS

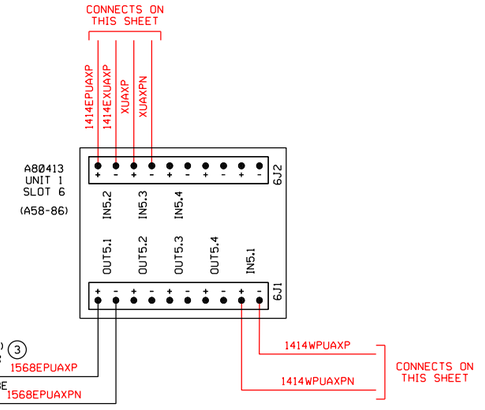
CPU II+ A80403	TRACK 1 A80418	TRACK 2 A80418	TRACK 3 A80418	TRACK 4 A80418	RIO A80413	BLANK	SSCC 1 A80405	DISPLAY A80407
CPU II+ A80403	TRACK 1 A80418	TRACK 2 A80418	TRACK 3 A80418	TRACK 4 A80418	RIO A80413	BLANK	SSCC 2 A80405	TRANSFER A80406
BLANK								

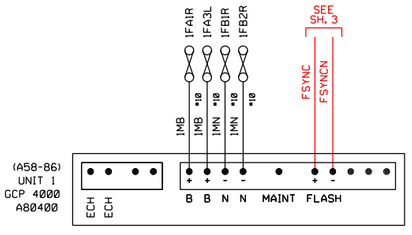
NORMAL

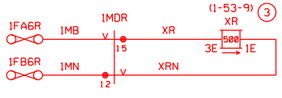
STANDBY











RED = IN

YELLOW = OUT

LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- △ -DIODES ARE SAFETRAN MOD. 8A299-0006.
- ✳ -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- □ -DENOTES RECORDER CONNECTION.

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

INFORMATION CONFIDENTIAL:
All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — EXP. — CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

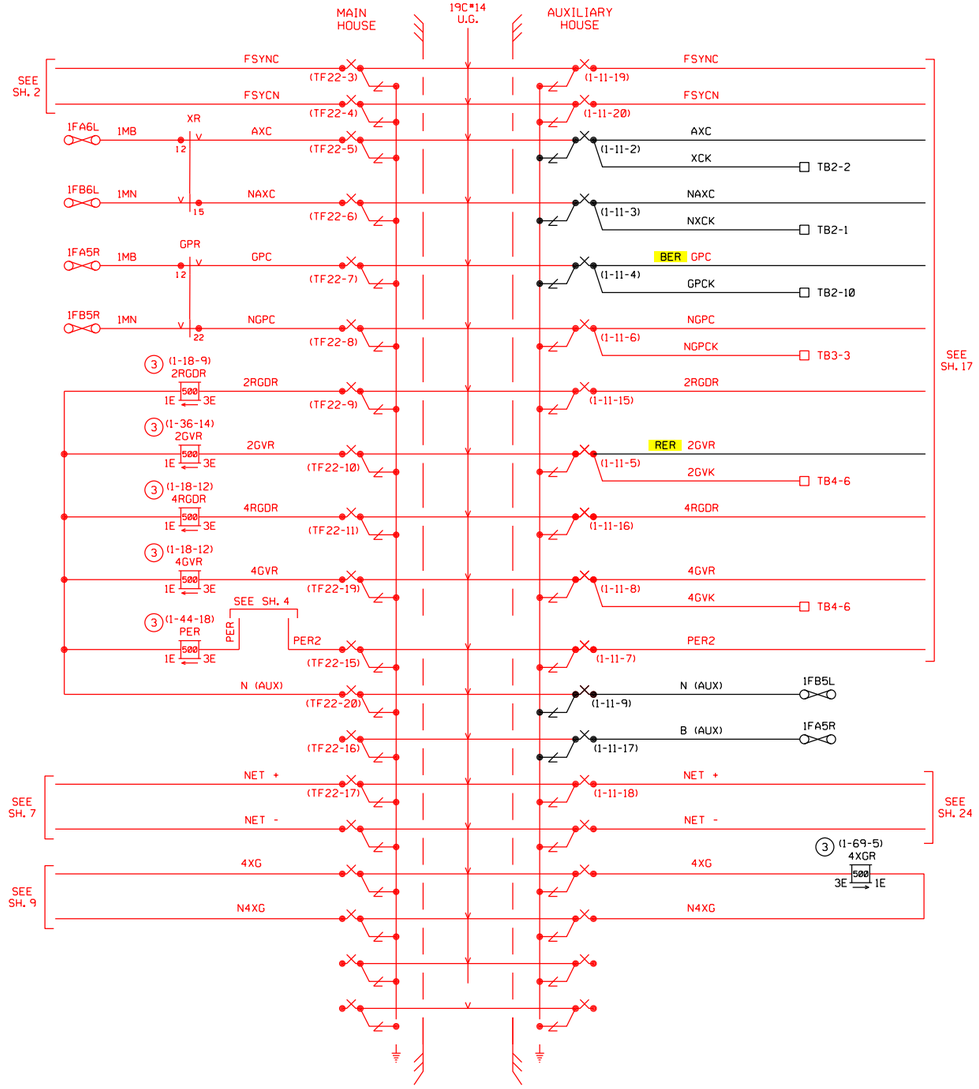
Xorail — A Wabtec Company

SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SG 55.24 RANCHO AVE
GCP 4000 BI-DIRECTIONAL
SH. 2 OF 5

CONTRACT NO. 16-100141
DRAWING NO. TS-052
REVISION
SHEET NO. 197 OF 200
SCALE NONE



NOTE:

1. ALL WIRE #16 AWG, UNLESS OTHERWISE NOTED.

RED = IN

YELLOW = OUT

LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- -DIODES ARE SAFETRAN MOD. 8A299-0006.
- -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- -DENOTES RECORDER CONNECTION.

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY SUB.	APP.
A	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA	SM

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — NO. EXP. CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK

Xorail — A Wabtec Company

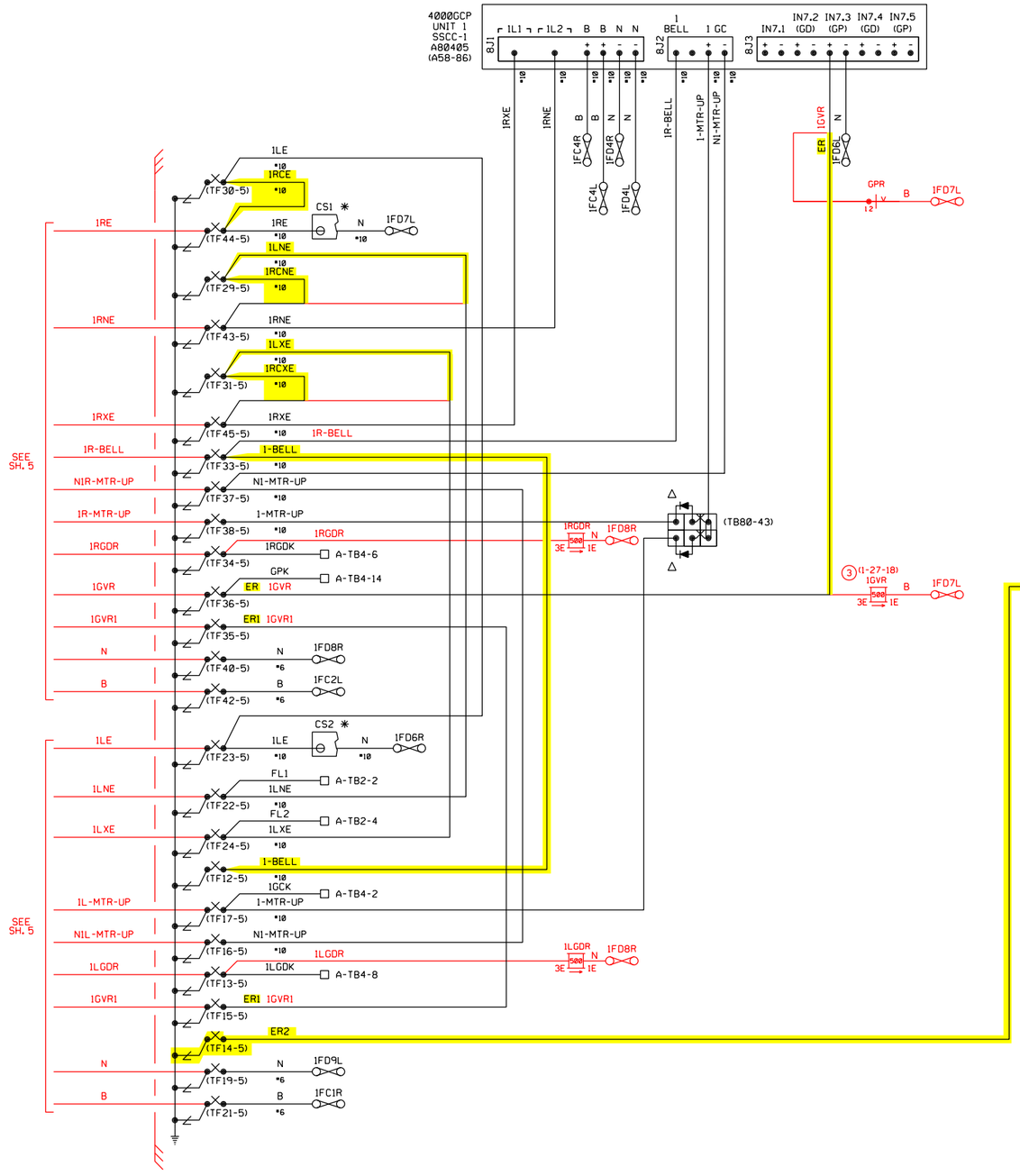
SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO DOUBLE TRACK ADDITION PROJECT

SG 55.24 RANCHO AVE
CABLE INTERCONNECT
SH. 3 OF 5

CONTRACT NO. 16-100141
DRAWING NO. TS-053
REVISION
SHEET NO. 198 OF 200
SCALE NONE



RED = IN
YELLOW = OUT

LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- △ -DIODES ARE SAFETRAN MOD. 8A299-0006.
- ✳ -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- □ -DENOTES RECORDER CONNECTION.

□ - DENOTES RECORDER CONNECTION

MAIN HOUSE

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
V	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL:
All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — EXP. — CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

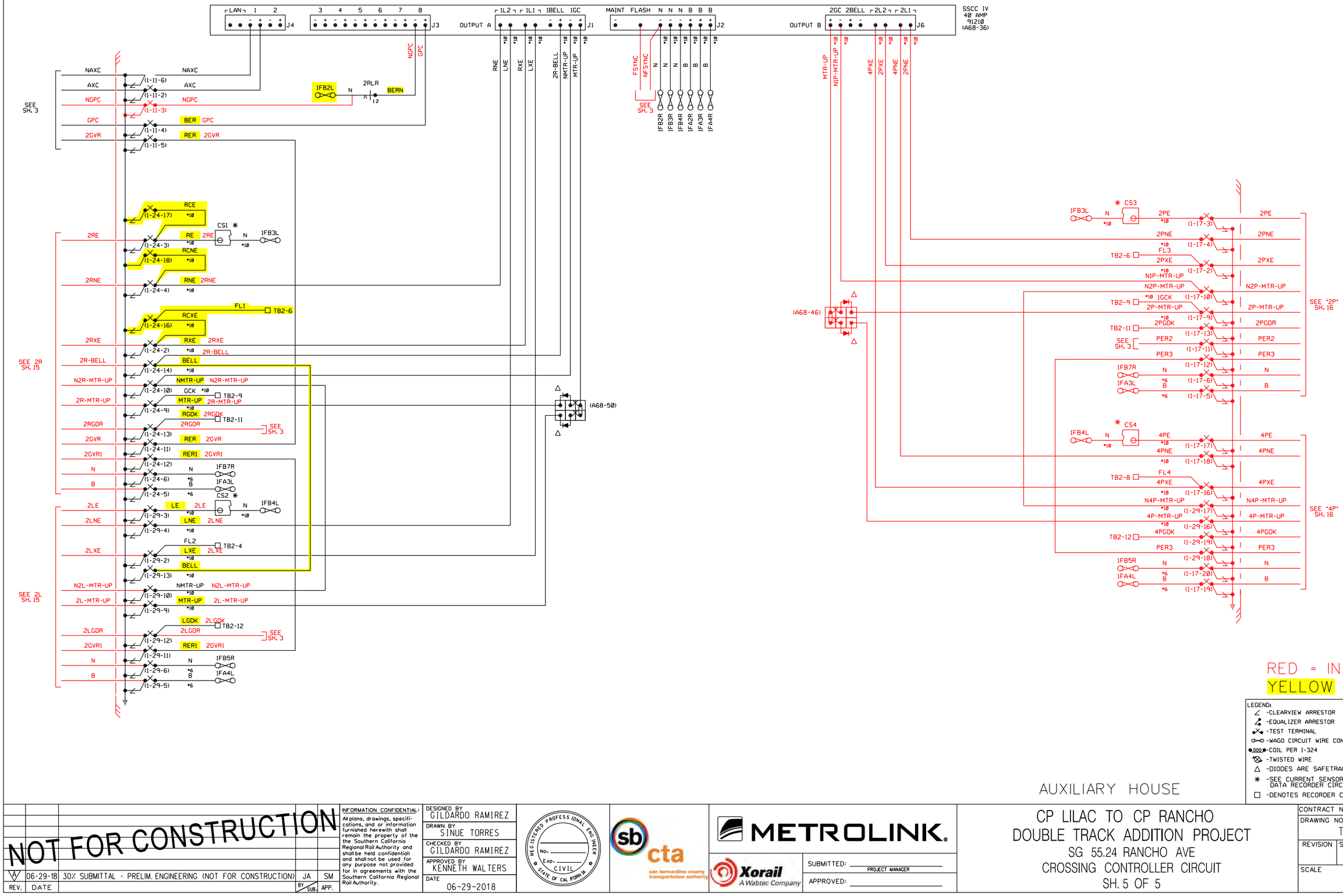
METROLINK.

Xorail — A Wabtec Company

SUBMITTED: _____ PROJECT MANAGER
APPROVED: _____

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SG 55.24 RANCHO AVE
CROSSING CONTROLLER CIRCUIT PLAN
SH. 4 OF 5

CONTRACT NO. 16-100141
DRAWING NO. TS-054
REVISION
SHEET NO. 199 OF 200
SCALE NONE



RED = IN

YELLOW = OUT

LEGEND:
- -CLEARVIEW ARRESTOR
- -EQUALIZER ARRESTOR
- -TEST TERMINAL
- -WAGO CIRCUIT WIRE CONNECTION
- -COIL PER I-324
- -TWISTED WIRE
- △ -DIODES ARE SAFETRAN MOD. 8A299-0006.
- ✳ -SEE CURRENT SENSOR DETAIL ON DATA RECORDER CIRCUIT PLAN.
- □ -DENOTES RECORDER CONNECTION.

AUXILIARY HOUSE

FINAL 30% SUBMITTAL (06-29-2018)

NOT FOR CONSTRUCTION

REV.	DATE		BY	SUB.	APP.
V	06-29-18	30% SUBMITTAL - PRELIM. ENGINEERING (NOT FOR CONSTRUCTION)	JA		SM

INFORMATION CONFIDENTIAL:
All plans, drawings, specifications, and or information furnished herewith shall remain the property of the the Southern California Regional Rail Authority and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Southern California Regional Rail Authority.

DESIGNED BY GILDARDO RAMIREZ
DRAWN BY SINUE TORRES
CHECKED BY GILDARDO RAMIREZ
APPROVED BY KENNETH WALTERS
DATE 06-29-2018

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

sbcta — san bernardino county transportation authority

METROLINK.

Xorail — A Wabtec Company

SUBMITTED: _____ PROJECT MANAGER

APPROVED: _____

CP LILAC TO CP RANCHO
DOUBLE TRACK ADDITION PROJECT
SG 55.24 RANCHO AVE
CROSSING CONTROLLER CIRCUIT
SH. 5 OF 5

CONTRACT NO. 16-100141
DRAWING NO. TS-055
REVISION
SHEET NO. 200 OF 200
SCALE NONE