

EXHIBIT A:
STATION CONCEPTS

Exhibit A: Station Concepts

Source: Final SEIS/SEIR, Safety and Security Impacts Technical Report

Figure 1-11, Tecolote Road Station near Tecolote Road

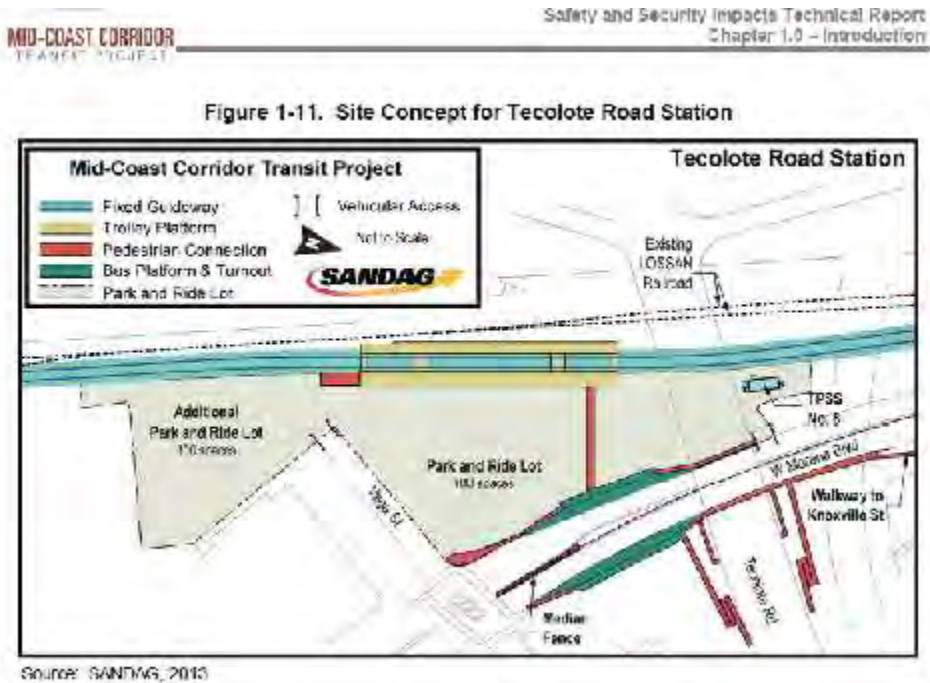


Figure 1-12, Clairemont Drive Station near Clairemont Drive

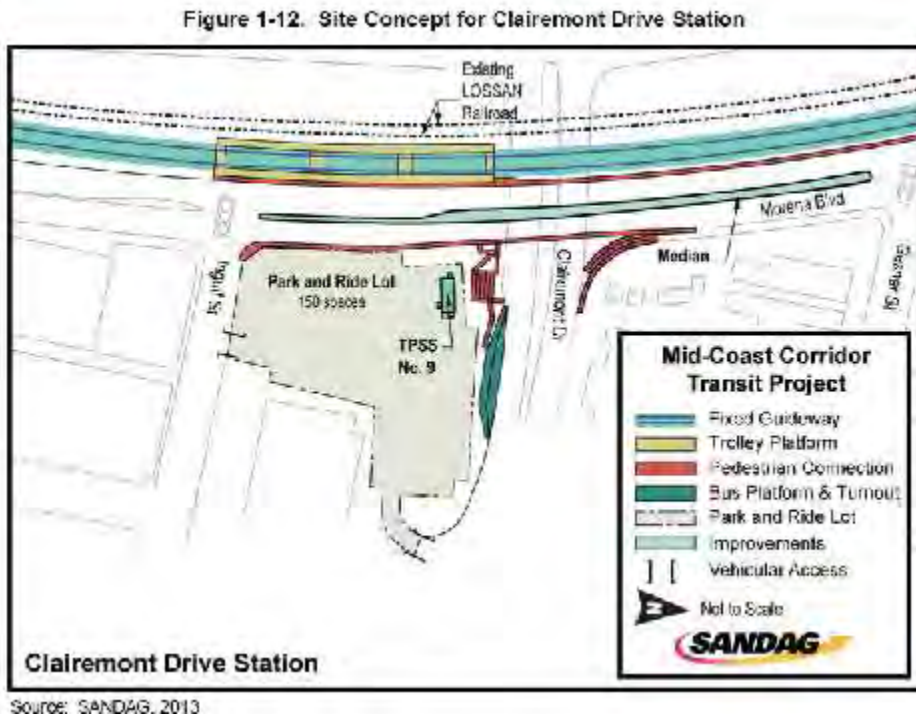
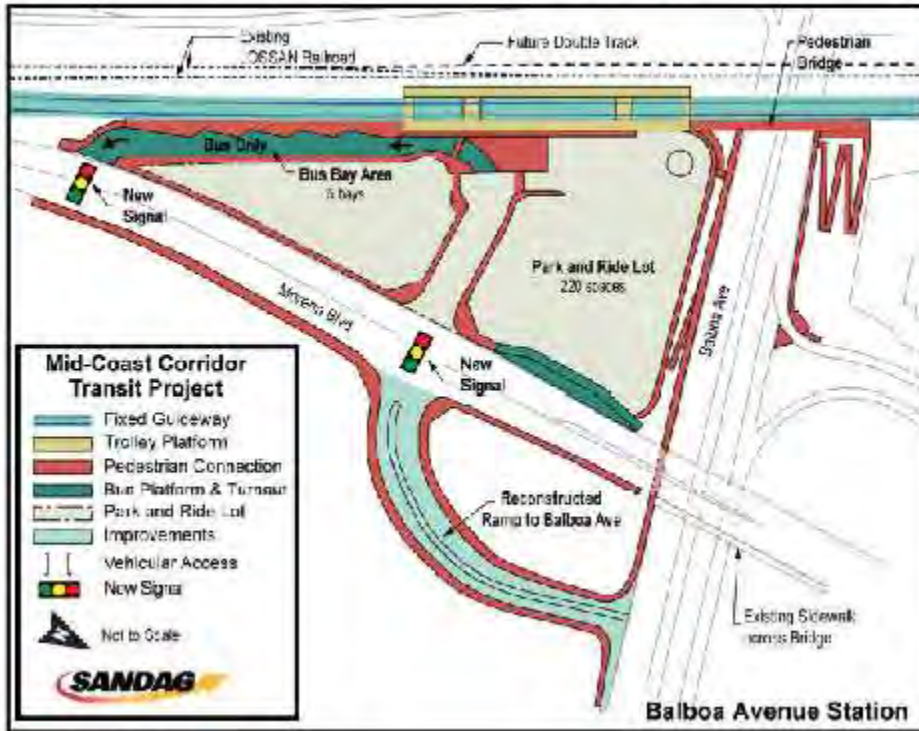


Figure 1-13, Balboa Avenue Station near Balboa Avenue

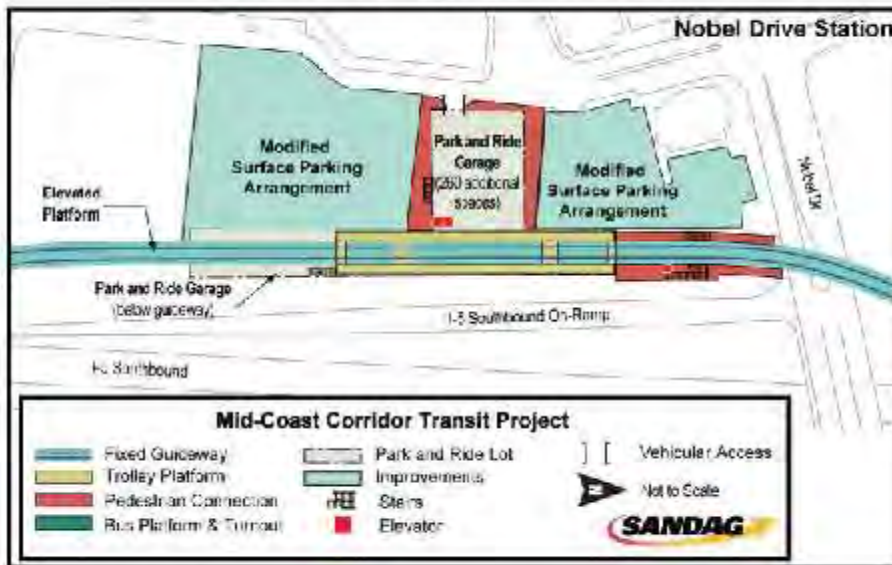
Figure 1-13. Site Concept for Balboa Avenue Station



Source: SANDAG, 2013

Figure 1-14, Nobel Drive Station near Nobel Drive

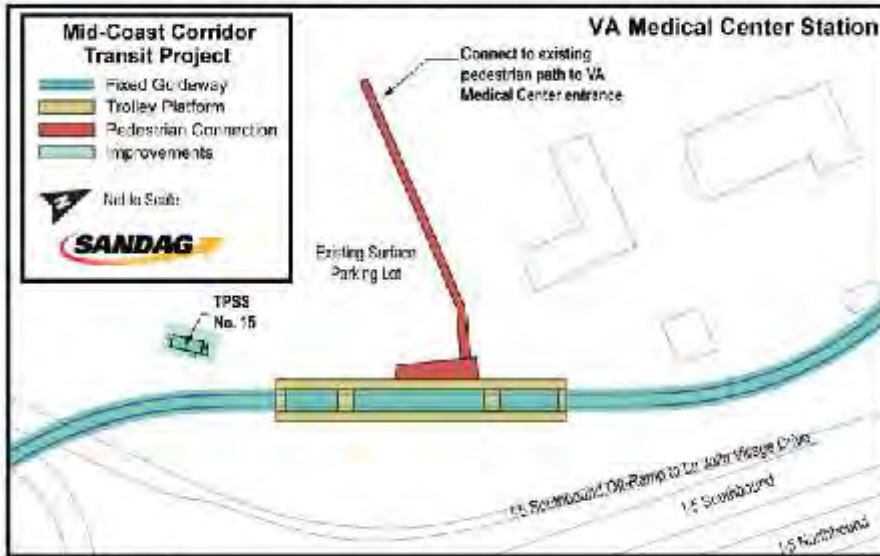
Figure 1-14. Site Concept for Nobel Drive Station



Source: SANDAG, 2013

Figure 1-15, VA Medical Center Station near I-5 ramps

Figure 1-15. Site Concept for Optional VA Medical Center Station



Source: SANDAG, 2013

Figure 1-16, UCSD West Station near 6th Lane

Figure 1-16. Site Concepts for UCSD West Station (Build Alternative and VA Medical Center Station Option)

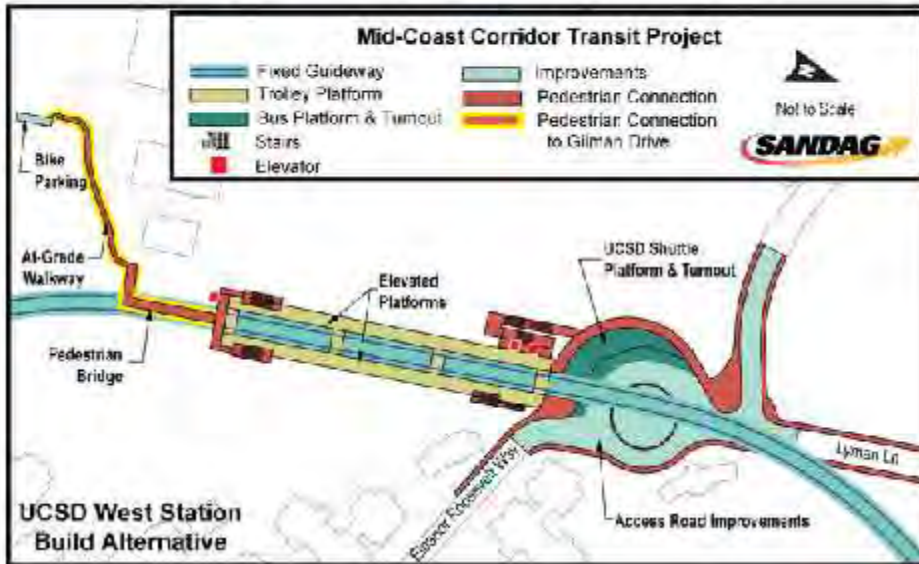
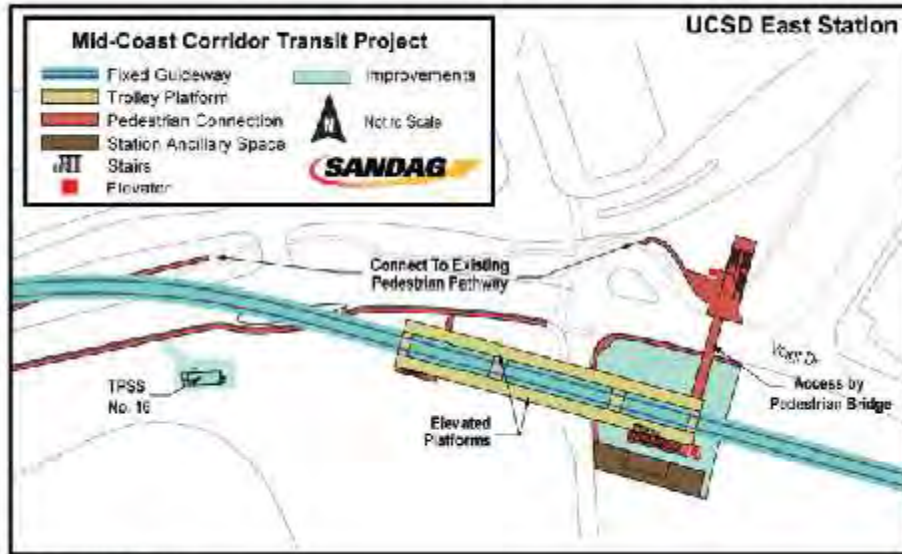


Figure 1-17, UCSD East Station near Campus Point Drive

Figure 1-17. Site Concept for UCSD East Station



Source: SANDAG, 2013

Figure 1-18, Executive Drive Station above Executive Square

Figure 1-18. Site Concepts for Executive Drive Station, with and without Genesee Avenue Design Option

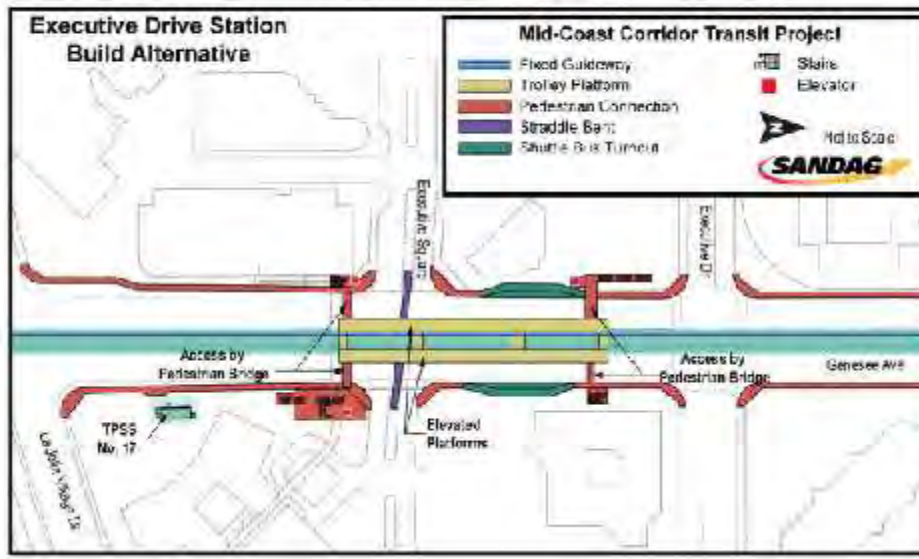


Figure 1-19, UTC Transit Center near Esplanade Court

Figure 1-19. Site Concepts for UTC Transit Center, with and without Genesee Avenue Design Option

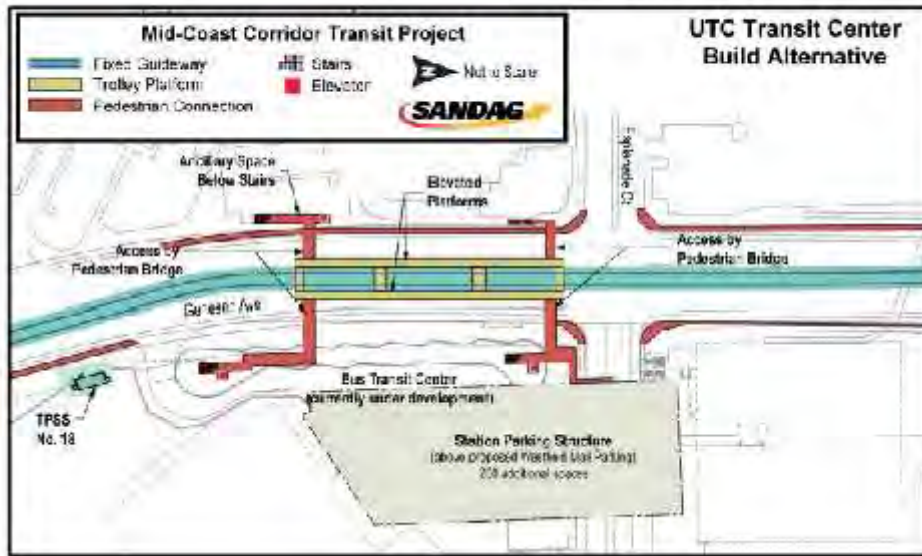


EXHIBIT B:
TYPICAL STATION
DIMENSIONING

Exhibit B: Typical station dimensioning

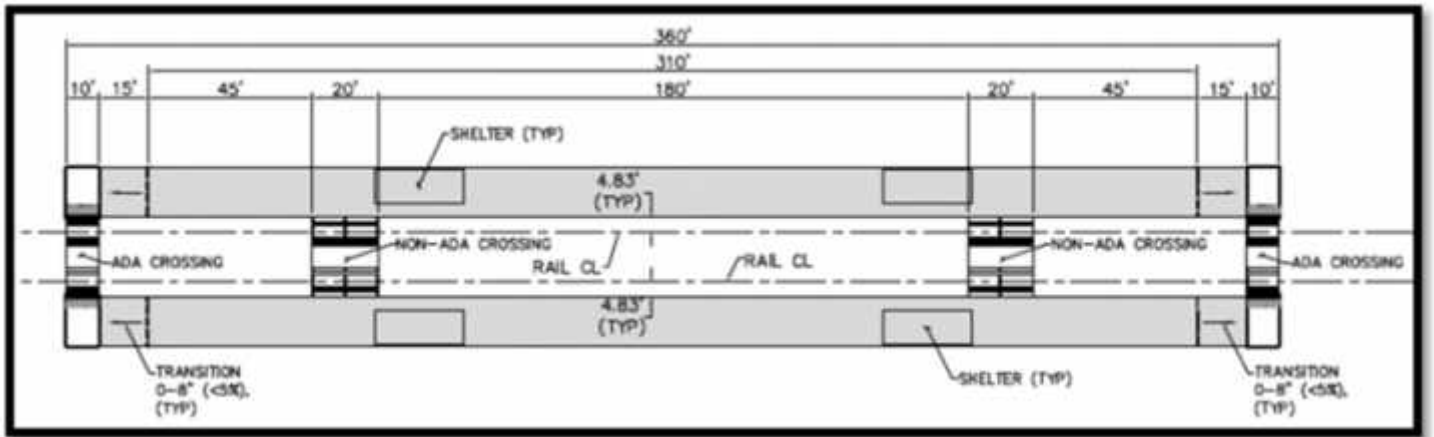


Figure 1: Typical station dimensioning

Source: Figure 2-1, LRT Design Criteria Manual, Rev0 March 14, 2014, SANDAG

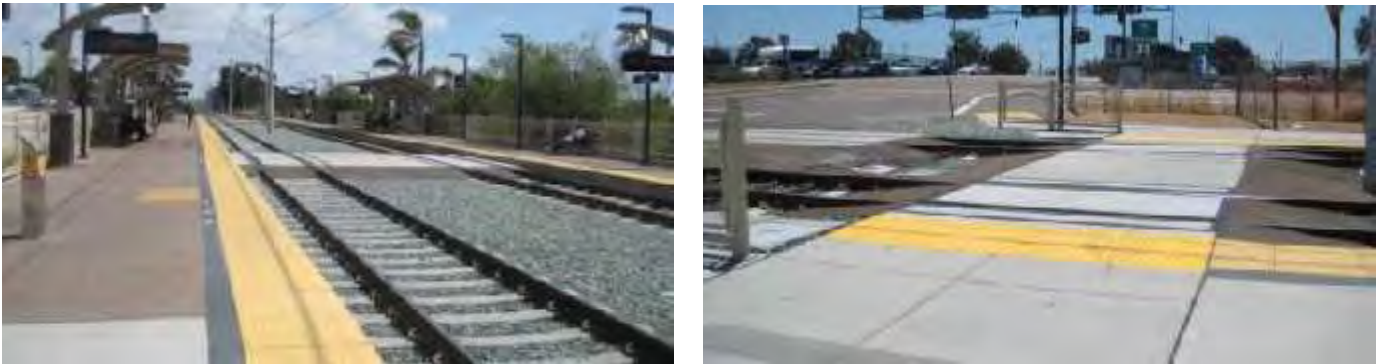


Figure 2: Photos of a ground level station with “typical station dimensioning”

Source: CPUC, 2016

**EXHIBIT C:
PHOTOS OF EXECUTIVE
SQUARE**

Exhibit C: Photos of Executive Square



Figure 1: Photo facing north along Genesee Avenue toward the traffic signals at Executive Square and the current pedestrian bridge.

Source: CPUC, January 2017



Figure 2: Photo facing west across Genesee Avenue near Executive Square, showing the current pedestrian bridge which remained at the time of the photo.

Source: CPUC, January 2017

**EXHIBIT D:
PLANS SHOWING
EXECUTIVE DRIVE STATION**

Exhibit D: Plans showing Executive Drive Station

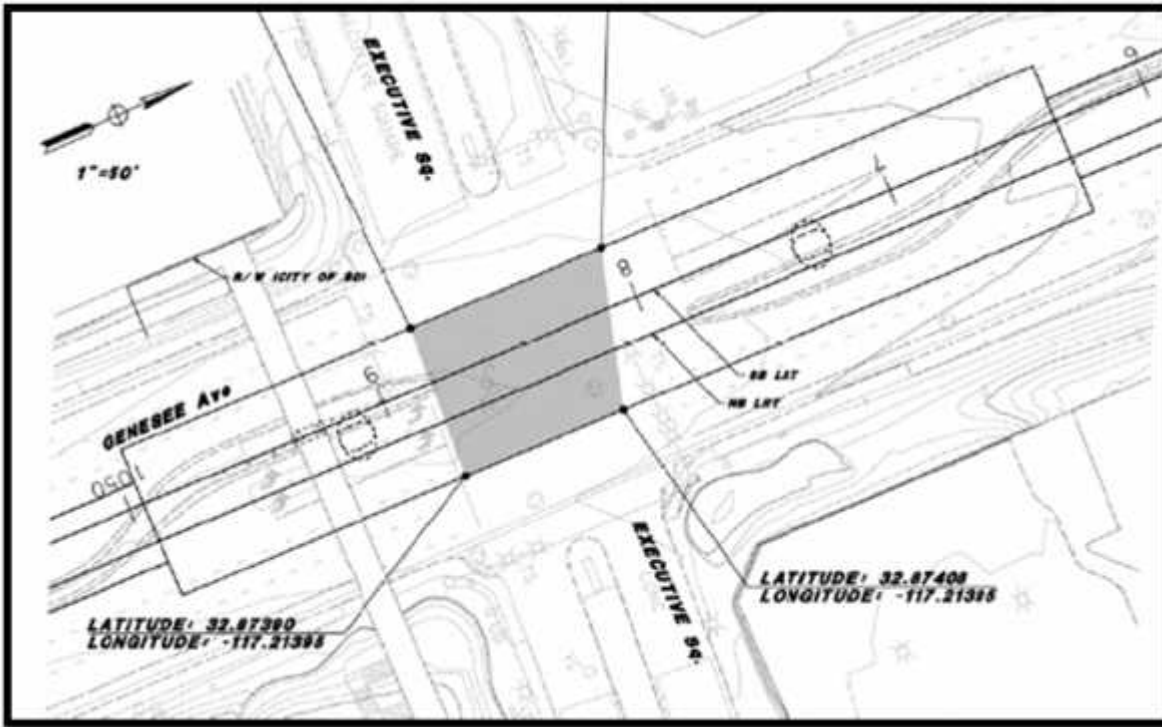


Figure 1: Location of LRT crossing above Executive Square, at Executive Drive station
Source: A.17-01-006, Exhibit B-8

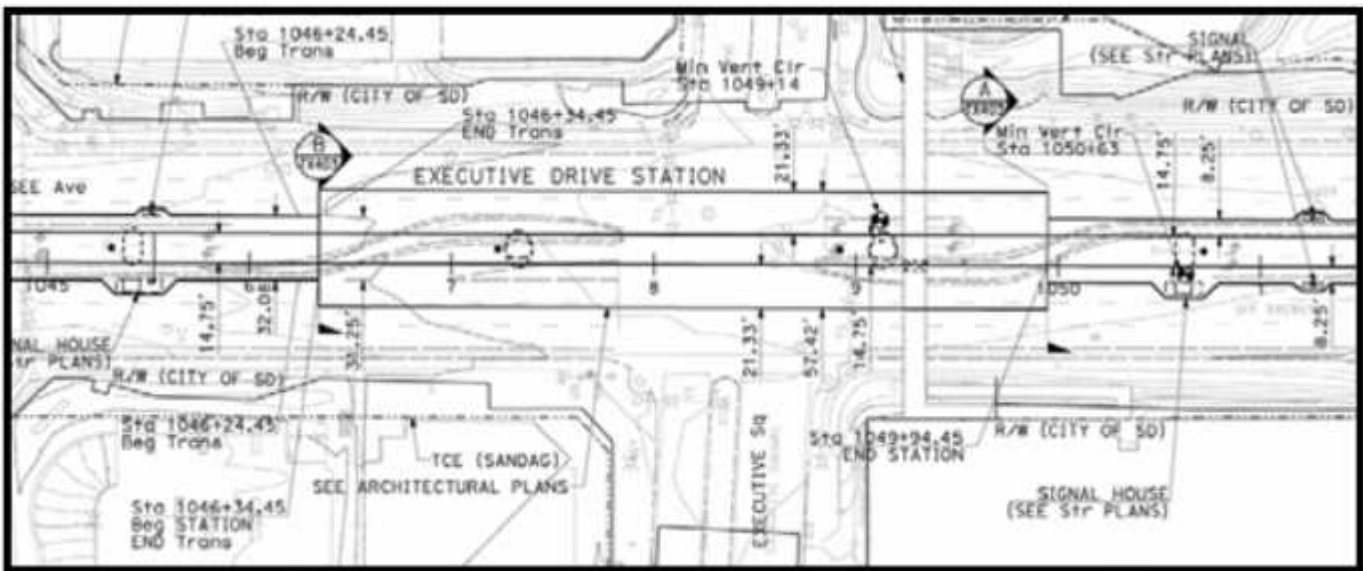


Figure 2: Plan showing LRT crossing above Executive Square, at Executive Drive station
Source: A.17-01-006, Exhibit C-11

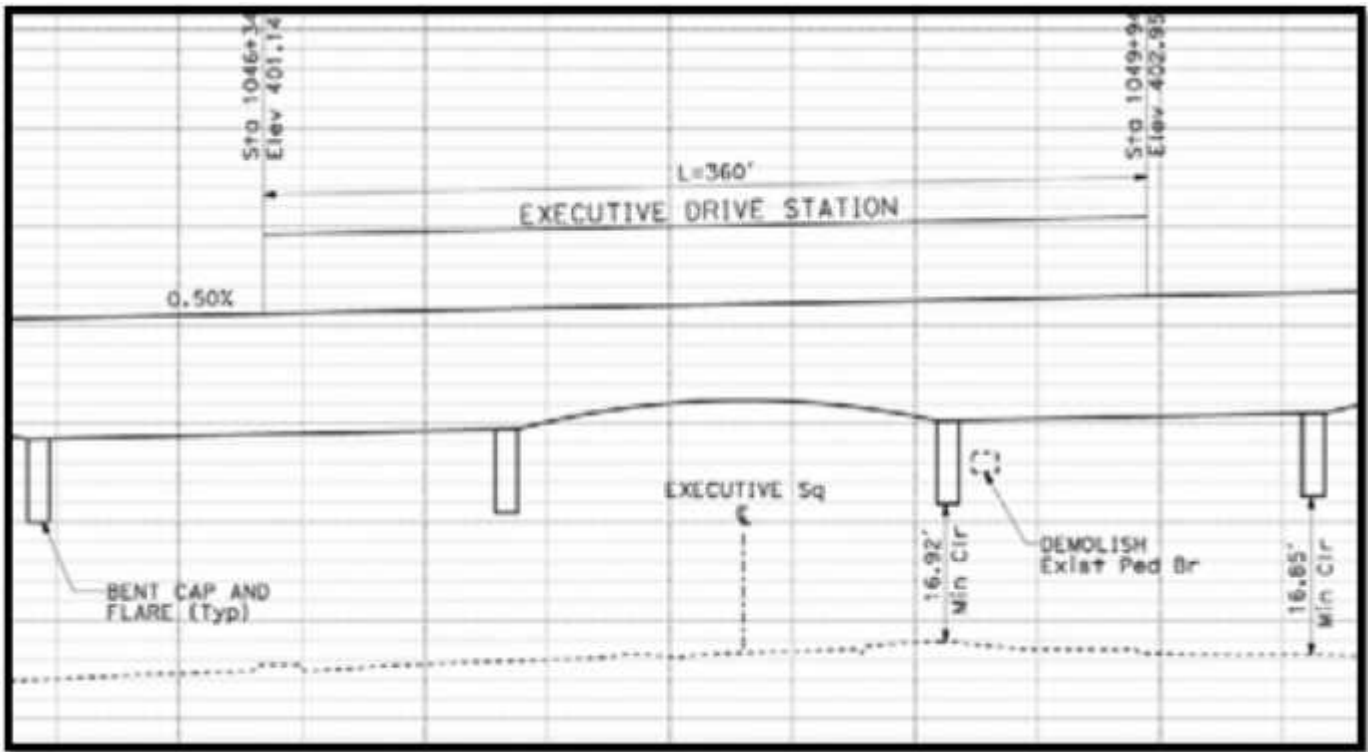


Figure 3: Profile showing LRT crossing above Executive Square, at Executive Drive station
 Source: A.17-01-006, Exhibit C-11

EXHIBIT E:
June 1, 2010 Letter

PUBLIC UTILITIES COMMISSION

320 West 4th Street, Suite 800
Los Angeles, CA 90013



June 1, 2010

Anne Steinberger
San Diego Association of Governments
401 B Street, Suite 800
San Diego, CA 92101

Subject: SCH#2010051001: Comments to Mid-Coast Corridor Transit Project

Dear Ms. Steinberger:

The California Public Utilities Commission (Commission) has regulatory and safety oversight over railroad crossings in California. The California Public Utilities Code requires Commission approval for the construction or alteration of crossings and grants the Commission with exclusive power on the design, alteration, and closure of crossings. Rail Crossing Engineering Section (RCES) staff is in receipt of the San Diego Association of Governments Notice of Preparation (NOP) for the Mid-Coast Corridor Transit Project and has reviewed the document for impacts to rail crossing safety.

The proposed project would provide for transit improvements within the Mid-Coast Corridor, defined as the area centering on Interstate 5 and extending from downtown San Diego on the south to University City on the north. The corridor is bound by the Pacific Ocean on the west and Interstate 805 and State Route 163 on the east.

The purpose of the proposed project is to implement a transit project that addresses the identified transportation needs for the Mid-Coast Corridor. The Mid-Coast Corridor Transit Project would improve public transit services between University City, Old Town, and downtown San Diego and would connect corridor residents with other Trolley lines, thereby enhancing direct public access to other regional activity centers. The project would improve travels options to employment, education, medical, and retail centers for corridor residents, commuters, and visitors.

In the development of the environmental document, SANDAG should analyze impacts to highway-rail crossings. Commission approval is required for the construction of any new crossing. SANDAG should consider grade separations for major thoroughfares and study pedestrian and vehicle traffic at the crossings. During the process, SANDAG should be in contact with staff to discuss any relevant concerns or issues.

If you have any questions, you may contact me at (213) 576-7076 or ldi@cpuc.ca.gov.

Sincerely,

A handwritten signature in cursive script that reads "Laurence Michael".

Laurence Michael, PE
Utilities Engineer
Rail Crossings Engineering Section
Consumer Protection and Safety Division

EXHIBIT F:
July 16, 2013 Letter

PUBLIC UTILITIES COMMISSION

180 PROMENADE CIRCLE, SUITE 115
SACRAMENTO, CA 95834-2939



July 16, 2013

Ms. Leslie Blanda
Mid-Coast Project Development Program Manager
San Diego Association of Governments
401 B Street, Suite 800
San Diego, CA 92101

SENT VIA EMAIL ON July 16, 2013 TO midcoast@sandag.org and all cc:s

SUBJECT: SCH# 2010051001; **Mid-Coast Corridor Transit Project** Draft SEIS/SEIR

Dear Ms. Blanda:

The California Public Utilities Commission (Commission or CPUC) has jurisdiction over the safety of highway-rail crossings (crossings) and rail transit projects in California. The Commission has received a copy of the *Draft Mid-Coast Corridor Supplemental Environmental Impact Statement / Supplemental Environmental Impact Report (Draft SEIS/SEIR)* for the proposed Mid-Coast Corridor Transit Project in City of San Diego. SANDAG is identified as the lead agency for the project and San Diego Trolley, Inc. (SDTI) will operate on the Mid-Coast Extension.

All rail fixed guideway systems are subject to the Commission's Safety Oversight Program requirements. **Safety Certification Plan approval** by the Commission is required for rail transit projects to be placed in revenue service. The Commission's Rail Transit Safety Section (RTSS) will review rail transit project matters.

The California Public Utilities Code requires Commission **approval for construction or alteration of crossings** and grants the Commission exclusive power on design, alteration, and/or closure of rail crossings in California. The Commission's Rail Crossings Engineering Section (RCES) will review rail crossing matters, including railroad and rail transit tracks, and both at-grade and grade-separated crossings.

CPUC staff understands that the proposed project will provide light rail transit service from the Santa Fe Depot in downtown San Diego to the University Town Center (UTC) transit center in University City. For the purposes of CPUC review, comments are identified in 3 segments:

1. **Santa Fe Depot to Old Town:** Rail transit service would increase along the existing transit tracks for approximately 3.5 miles. Crossings along this segment are proposed to remain at-grade.
2. **Old Town to State Route (SR)-52:** New light-rail tracks constructed along the east side of the existing North County Transit District San Diego Subdivision railroad

right-of-way for approximately 7 miles, from Interstate 8 to just north of State Route 52, where the light rail tracks will cross above the railroad tracks. The existing and proposed crossings will all be grade-separated along this segment.

3. **SR-52 to UTC:** A new alignment, mostly along an aerial structure for approximately 4 miles through the University of California San Diego campus, ending at the UTC transit center in the University City area. The tracks are proposed to cross above any roadways in this segment.

CPUC Rules and Regulations

The following link provides resources on the Commission's rules and regulations in regard to rail safety:

<http://www.cpuc.ca.gov/PUC/safety/Rail/>

The Mid-Coast Project is subject to a number of rules and regulations involving the Commission. These may include:

- California Public Utilities Code, Sections 1201 et al, which requires Commission authority to construct rail crossings,
- California Public Utilities Code, Section 2111, 2112, 99152; rail transit safety
- Commission's Rules of Practice and Procedure, which details the Formal Application process for construction or modification of a public crossing, and
- GO 88-B, Rules for Altering Public Highway-Rail Crossings.

The design criteria of the proposed project must comply with Commission General Orders (GOs), such as:

- GO 26-D, Clearance on Railroads and Street Railroads as to Side and Overhead Structures, Parallel Tracks and Crossings,
- GO 72-B, Construction and Maintenance of Crossings – Standard Types of Pavement Construction at Railroad Grade Crossings,
- GO 75-D, Warning Devices for At-Grade Railroad Crossings,
- GO 95, Rules for Overhead Electrical Construction
- GO 118, Construction, Reconstruction and Maintenance of Walkways and Control, of Vegetation Adjacent to Railroad Tracks,
- GO 128, Construction or Underground and Electrical Supply and Communication
- GO 143-B, Design , Construction and Operation of Light Rail Transit Systems, and
- GO 164-D, Regulations Governing State Safety Oversight of Rail Fixed Guideway Systems.

The project must ensure compliance with federal regulations including:

- 49 CFR Part 213, Track Safety Standards
- 49 CFR Part 234, Grade Crossing Signal System

- 49 CFR Part 236, Rules Standards and Instructions Governing the Installation, Inspection Maintenance, and Repair of Signal and Train Control Systems Devices, and Appliances.

Other requirements:

- San Diego Trolley, Inc.'s Roadway Worker's Protection (RWP) Program applies to ALL right-of-way work occurring near active SDTI mainline rail transit track.
- The RWP and 49 CFR Part 214 Railroad Workplace Safety rules apply to ALL right-of-way work occurring near active San Diego Subdivision mainline railroad track.
- SDTI will need to update their System Safety Program Plan and the System Security Plan prior to revenue service.
- A Preliminary Hazards Analysis Report and Threat & Vulnerability Analysis will be performed as required by CPUC General Order 164-D.

Crossing Authorizations

Crossing applications are required for all the at-grade and grade separated locations along the corridor.

As part of its mission to reduce hazards associated with at-grade railroad crossings, the Commission's policy is to reduce the number of such crossings. New at-grade crossings would typically not be supported by CPUC staff. And, long-term planning for the grade separation of the existing at-grade rail crossings should be considered.

The current proposal is a vast improvement on past alternatives that had been considered a few years ago as it does not propose to construct new vehicular at-grade highway-rail crossings. CPUC staff would oppose a proposal to construct the track at-grade along Genesee Avenue.

Modification of existing rail crossings is typically authorized through the CPUC's GO 88-B process. If interested parties do not reach agreement regarding proposed modifications, a Formal Application to the Commission will be required in order to obtain authorization to implement the modifications.

Prior to submission of a GO 88-B request for authorization, or submission of a Formal Application to the Commission, the SANDAG should arrange a diagnostic meeting with CPUC staff and all interested parties to discuss relevant safety issues at each crossing location.

General Safety Concerns

1. **Open-platform stations:** CPUC staff is concerned with and opposes the proposed station designs along the new alignment. Although this station design is employed elsewhere throughout the San Diego Trolley system, the design introduces some hazards that could be eliminated through alternative designs. The station design allows pedestrians to cross the tracks within the station at any point along the

platform without the benefit of warning devices. Sight distance between a pedestrian and an approaching light rail vehicle is frequently limited by another light rail vehicle already stopped at the station, curves on the approaches, pedestrian distractions and other factors. We recommend that SANDAG's Hazard Analysis Report analyze this hazard, potentially including a review of past collisions between light rail vehicles and pedestrians at SDTI stations. There will need to be further discussion of the maximum allowed operating speeds at these locations between CPUC Staff, SANDAG and SDTI.

We recommend SANDAG revise its proposed open-platform station design to address limited pedestrian visibility and the lack of designated pedestrian crossings, and incorporate mitigation measures to address the hazard of collisions between light rail vehicles and pedestrians.

2. **Public pedestrian crossings:** CPUC staff recommends that new stations provide designated crossing points for pedestrians. These designated crossing points must be equipped with appropriate levels of pedestrian safety treatments, which may include automatic flashing lights, bells, pedestrian gate arms, and swing gates. Fencing between the tracks is effective in channelizing pedestrians to these crossing locations.
3. **Bells and horns:** We recommend analysis of the proposed train horn decibel level to ensure that it can be heard by pedestrians in the expected station environments, which may have stopped light rail vehicles, many patrons, railroad train horns, and nearby motor vehicle traffic from roadways and freeways. The appropriate decibel level may need to be higher than the absolute minimum of 75 dBA required by CPUC General Order 143-B, Section 3.04. We recommend that if open platform stations are used, or if at-grade pedestrian crossings are constructed without any automatic warning devices, that each light rail vehicle should be equipped with a bell or horn of at least 85 dBA at a distance of 100 feet. This would increase the ability of the horn to be heard by pedestrians above the noise at a station.
4. **Fencing:** Vandal-resistant fencing and other channelization should be installed to ensure that pedestrians cross only at authorized points along the track. Fencing should be placed to separate the track area from adjacent roadways. Along corridors shared with railroad track there should be fencing or walls between the transit tracks and railroad tracks. This is particularly important in the vicinity of stations. See CPUC General Order 143-B, Section 9.03, INSTALLATION OF CURBS, FENCES, BARRIERS.
5. **Traffic signal preemption:** Where an intersection is adjacent to a rail crossing, preemption may need to be provided for pedestrian clearance times as part of the track clearance sequence. This may require significant additional preemption time. SANDAG should ensure that railroad preemption timing calculation worksheets have been completed and that sufficient track clearance green time is being provided.

6. **Pre-signals or queue-cutter signals:** To reduce the number of vehicles stopping on the tracks, traffic signal heads are recommended at the tracks (in addition to the nearby intersections). These traffic signals, in combination with STOP HERE ON RED signs and KEEP CLEAR markings, can provide clear direction that motorists should stop prior to the tracks.
7. **Clearances:** The project should ensure that minimum horizontal clearances are very clearly established between tracks and from track to adjacent obstructions. These clearances should be verified in the final design and during construction. Above railroad tracks, vertical clearance must be no less than 22-feet 6-inches.

Safety Concerns by Segment

1. Santa Fe Depot to Old Town

- a. Overview: About 3 miles along the existing railroad right-of-way, 5 existing stations, 8 at-grade crossings, 6 grade separated crossings
- b. The at-grade crossings along the Santa Fe Depot to Old Town segment present some long-term safety concerns due to the combination of various factors including:
 - i. Multiple transit and railroad tracks.
 - ii. High frequency of both railroad and transit service.
 - iii. Railroad passenger train service speed of up to 65 MPH.
 - iv. Light rail transit station platforms between the transit tracks and the adjacent railroad tracks.
 - v. Open-platform nearside stations next to sidewalks at adjacent crossings.
 - vi. Nearby intersections and vehicle queues that extend toward the tracks.
- c. A number of safety improvements should be considered at the crossings along this segment:
 - i. Install pedestrian channelization and pedestrian safety treatments to increase pedestrian awareness before crossing the tracks.
 - ii. Install pre-signals or queue cutters. This can reduce the number of vehicles that stop on the tracks.
 - iii. Relocate crosswalks that are placed across the leg of an intersection which approaches the track. Pedestrians in these crosswalks may obstruct motorists attempting to move away from the tracks during the Track Clearance Green interval of railroad preemption.
 - iv. Use of advance preemption to provide pedestrian clearance time and additional track clearance green time where justified by preemption timing calculations.
 - v. Install vehicular channelization such as raised medians.
- d. CPUC staff strongly supports proposed improvements to traffic signal timing near crossings, and the optimization of warning device activation times at crossings in the vicinity of stations.

2. Old Town to SR-52

- a. Overview: About 7 miles along the existing railroad right-of-way, 3 new stations, about 15 roadway structures above existing railroad right-of-way.
- b. The crossings along this line are all existing railroad grade-separations which present few safety concerns.
- c. Construction of new transit tracks at the existing railroad crossings, or other modifications to existing crossings, should be authorized through the CPUC General Order 88-B process.
- d. As discussed above, CPUC has concerns regarding the proposed open-platform stations.
- e. Prior to Mid-Coast revenue service, further discussion is required with the CPUC's Railroad Operations Safety Branch and Rail Transit Safety Section for maintenance access to the North County Transit District railroad tracks adjacent to "active" SDTI tracks.
- f. Fencing should be installed between the new tracks and any adjacent roadways. This corridor currently does not have adequate fencing separating the roadway from the railroad tracks.
- g. Walls or other substantial barriers similar to the current SDTI stations on the Old Town Transit Corridor should separate the transit station platforms from adjacent railroad tracks.
- h. Fencing between the transit tracks and the railroad tracks should extend well beyond the limits of the stations.
- i. There is ongoing and planned construction along the LOSSAN corridor. The Mid-Coast project must ensure the as-constructed improvements along the railroad, such as new track or wayside signals, are considered as part of final design. All clearances along the railroad track must comply with CPUC General Order 26-D and 118.
- j. CPUC staff requests notification upon removal of railroad spur tracks along this segment.

3. SR-52 to UTC

- a. Overview: About 4 miles along new aerial right-of-way, 5 new stations, about 17 new locations with light rail above an existing roadway, 1 crossing of light rail above railroad track.
- b. Just north of SR-52 the light rail transit tracks would cross above the railroad tracks. The Commission's Formal Application process can be used to authorize this. The horizontal and vertical clearances around the railroad track must be maintained consistent with CPUC General Order 26-D.
- c. As discussed above, CPUC has concerns regarding the proposed open-platform stations.
- d. CPUC staff recommends SANDAG consider installing active pedestrian warning devices at the Executive Drive Station and the UTC Transit Center Station where a public path is routed across the tracks. This aspect of these crossings is of concern and should be analyzed in SANDAG's Hazard Analysis Report. The expected number of pedestrians crossing the tracks at these locations requires further review to determine and compare the number of transit patron and local

through pedestrian volumes. This additional data can help determine the appropriate level of pedestrian treatments.

- e. Construction of a new track structure above a roadway must be authorized through the CPUC Formal Application process.

CPUC appreciates the opportunity to provide comments on the project described in the proposal. However, we have identified several areas that we believe pose safety hazards and request SANDAG properly address them. CPUC staff is available to meet and further discuss our concerns with SANDAG and the other relevant parties. We hope to assist in the identification of acceptable mitigation measures that will effectively address the concerns we have identified.

Please feel free to contact me at (916) 928-6858 or daren.gilbert@cpuc.ca.gov or contact our lead staff on this project: for crossing matters Kevin Schumacher at (415) 310-9807 and kevin.schumacher@cpuc.ca.gov or for transit safety matters Joey Bigornia at (619) 417-0815 or joey.bigornia@cpuc.ca.gov .

Sincerely,



Daren Gilbert, Manager
Rail Transit and Crossings Branch
Safety and Enforcement Division

cc:

State Clearinghouse
Wayne Terry, San Diego Trolley
Mathew Tucker, NCTD
Leslie Rogers, FTA

EXHIBIT G:
July 11, 2016 Letter

PUBLIC UTILITIES COMMISSION
320 WEST 4TH STREET, SUITE 500
LOS ANGELES, CA 90013



July 11, 2016

John Haggerty
Division Director of Rail
San Diego Association of Governments (SANDAG)
401 B Street, Suite 800
San Diego, CA 92101

Subject: At-Grade Pedestrian-Rail Crossings in Transit Stations on Mid-Coast Project

Dear Mr. Haggerty,

The San Diego Association of Governments proposes to construct nine new San Diego Metropolitan Transit System light rail stations along the Mid-Coast light rail transit extension between Old Town San Diego and University Towne Center. The proposed station configurations include new at-grade pedestrian-rail crossings. Authorization by the California Public Utilities Commission (Commission) is required prior to the construction of new pedestrian crossings.

The Commission has jurisdiction over the safety of highway-rail grade crossings, highway-light rail transit grade crossings, and rail transit projects in California. The Commission's Rail Crossings and Engineering Branch (RCEB) has responsibility for the Commission's rail crossing safety program. In-station pedestrian crossings pose the same danger to pedestrians of being struck by a train as other types of crossings, and it is critical that pedestrian safety is fully evaluated.

Staff from RCEB will be contacting you to schedule a meeting to discuss these important issues, including pedestrian safety measures to be implemented at the proposed in-station crossings, and procedures for Commission approval of the proposed crossings. If you have any questions, please contact Michael Robertson at michael.robertson@cpuc.ca.gov or (213) 576-7082.

Sincerely,

A handwritten signature in black ink, appearing to read "Roger Clugston".

Roger Clugston
Deputy Director, Office of Rail Safety
Safety and Enforcement Division

cc: (via e-mail)
Wayne Terry, David Bagley, MTS
Chip Finch, SANDAG
Michael Robertson, Antranig Garabetian, Matthew Bond, Kevin Schumacher, RCEB
Daren Gilbert, Stephen Artus, Noel Takahara, Joey Bigornia, RTSB
Patrick Berdge, Legal Division

EXHIBIT H:

**SANDAG's Response to
SED's Comments on the
SEIS/SEIR**



STATE OF CALIFORNIA

EDMUND G. BROWN JR., Governor

PUBLIC UTILITIES COMMISSION

180 PROMENADE CIRCLE, SUITE 110
SACRAMENTO, CA 95834-2030



July 16, 2013

Ms. Leslie Blanda
Mid-Coast Project Development Program Manager
San Diego Association of Governments
401 B Street, Suite 800
San Diego, CA 92101

SENT VIA EMAIL ON July 16, 2013 TO midcoast@sandag.org and all cc:s

SUBJECT: SCH# 2010051001; **Mid-Coast Corridor Transit Project** Draft SEIS/SEIR

Dear Ms. Blanda:

1 [The California Public Utilities Commission (Commission or CPUC) has jurisdiction over the safety of highway-rail crossings (crossings) and rail transit projects in California. The Commission has received a copy of the *Draft Mid-Coast Corridor Supplemental Environmental Impact Statement / Supplemental Environmental Impact Report (Draft SEIS/SEIR)* for the proposed Mid-Coast Corridor Transit Project in City of San Diego. SANDAG is identified as the lead agency for the project and San Diego Trolley, Inc. (SDTI) will operate on the Mid-Coast Extension.

2 [All rail fixed guideway systems are subject to the Commission's Safety Oversight Program requirements. **Safety Certification Plan approval** by the Commission is required for rail transit projects to be placed in revenue service. The Commission's Rail Transit Safety Section (RTSS) will review rail transit project matters.

3 [The California Public Utilities Code requires Commission **approval for construction or alteration of crossings** and grants the Commission exclusive power on design, alteration, and/or closure of rail crossings in California. The Commission's Rail Crossings Engineering Section (RCES) will review rail crossing matters, including railroad and rail transit tracks, and both at-grade and grade-separated crossings.

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2. **Old Town to State Route (SR)-52:** New light-rail tracks constructed along the east side of the existing North County Transit District San Diego Subdivision railroad



Leslie Blanda, SANDAG
CPUC Comments on Mid-Coast Corridor Transit Project Draft SEIS/SEIR
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right-of-way for approximately 7 miles, from Interstate 8 to just north of State Route 52, where the light rail tracks will cross above the railroad tracks. The existing and proposed crossings will all be grade-separated along this segment.

3. **SR-52 to UTC:** A new alignment, mostly along an aerial structure for approximately 4 miles through the University of California San Diego campus, ending at the UTC transit center in the University City area. The tracks are proposed to cross above any roadways in this segment.

CPUC Rules and Regulations

The following link provides resources on the Commission's rules and regulations in regard to rail safety:

<http://www.cpuc.ca.gov/PUC/safety/Rail/>

The Mid-Coast Project is subject to a number of rules and regulations involving the Commission. These may include:

- California Public Utilities Code, Sections 1201 et al, which requires Commission authority to construct rail crossings,
- California Public Utilities Code, Section 2111, 2112, 99152, rail transit safety
- Commission's Rules of Practice and Procedure, which details the Formal Application process for construction or modification of a public crossing, and
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The design criteria of the proposed project must comply with Commission General Orders (GOs), such as:

- GO 26-D, Clearance on Railroads and Street Railroads as to Side and Overhead Structures, Parallel Tracks and Crossings,
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- GO 75-D, Warning Devices for At-Grade Railroad Crossings,
- GO 95, Rules for Overhead Electrical Construction
- GO 118, Construction, Reconstruction and Maintenance of Walkways and Control, of Vegetation Adjacent to Railroad Tracks,
- GO 128, Construction or Underground and Electrical Supply and Communication
- GO 143-B, Design, Construction and Operation of Light Rail Transit Systems, and
- GO 164-D, Regulations Governing State Safety Oversight of Rail Fixed Guideway Systems.

The project must ensure compliance with federal regulations including:

- 49 CFR Part 213, Track Safety Standards
- 49 CFR Part 234, Grade Crossing Signal System



Leslie Bianda, SANDAG
CPUC Comments on Mid-Coast Corridor Transit Project Draft SEIS/SEIR
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- 49 CFR Part 236, Rules Standards and Instructions Governing the Installation, Inspection Maintenance, and Repair of Signal and Train Control Systems Devices, and Appliances.

Other requirements:

- San Diego Trolley, Inc.'s Roadway Worker's Protection (RWP) Program applies to ALL right-of-way work occurring near active SDTI mainline rail transit track.
- The RWP and 49 CFR Part 214 Railroad Workplace Safety rules apply to ALL right-of-way work occurring near active San Diego Subdivision mainline railroad track.
- SDTI will need to update their System Safety Program Plan and the System Security Plan prior to revenue service.
- A Preliminary Hazards Analysis Report and Threat & Vulnerability Analysis will be performed as required by CPUC General Order 164-D.

Crossing Authorizations

Crossing applications are required for all the at-grade and grade separated locations along the corridor.

5

As part of its mission to reduce hazards associated with at-grade railroad crossings, the Commission's policy is to reduce the number of such crossings. New at-grade crossings would typically not be supported by CPUC staff. And, long-term planning for the grade separation of the existing at-grade rail crossings should be considered.

The current proposal is a vast improvement on past alternatives that had been considered a few years ago as it does not propose to construct new vehicular at-grade highway-rail crossings. CPUC staff would oppose a proposal to construct the track at-grade along Genesee Avenue.

6

Modification of existing rail crossings is typically authorized through the CPUC's GO 88-B process. If interested parties do not reach agreement regarding proposed modifications, a Formal Application to the Commission will be required in order to obtain authorization to implement the modifications.

Prior to submission of a GO 88-B request for authorization, or submission of a Formal Application to the Commission, the SANDAG should arrange a diagnostic meeting with CPUC staff and all interested parties to discuss relevant safety issues at each crossing location.

General Safety Concerns

7

1. **Open-platform stations:** CPUC staff is concerned with and opposes the proposed station designs along the new alignment. Although this station design is employed elsewhere throughout the San Diego Trolley system, the design introduces some hazards that could be eliminated through alternative designs. The station design allows pedestrians to cross the tracks within the station at any point along the



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platform without the benefit of warning devices. Sight distance between a pedestrian and an approaching light rail vehicle is frequently limited by another light rail vehicle already stopped at the station, curves on the approaches, pedestrian distractions and other factors. We recommend that SANDAG's Hazard Analysis Report analyze this hazard, potentially including a review of past collisions between light rail vehicles and pedestrians at SDTI stations. There will need to be further discussion of the maximum allowed operating speeds at these locations between CPUC Staff, SANDAG and SDTI.

We recommend SANDAG revise its proposed open-platform station design to address limited pedestrian visibility and the lack of designated pedestrian crossings, and incorporate mitigation measures to address the hazard of collisions between light rail vehicles and pedestrians.

8

- Public pedestrian crossings:** CPUC staff recommends that new stations provide designated crossing points for pedestrians. These designated crossing points must be equipped with appropriate levels of pedestrian safety treatments, which may include automatic flashing lights, bells, pedestrian gate arms, and swing gates. Fencing between the tracks is effective in channelizing pedestrians to these crossing locations.

9

- Bells and horns:** We recommend analysis of the proposed train horn decibel level to ensure that it can be heard by pedestrians in the expected station environments, which may have stopped light rail vehicles, many patrons, railroad train horns, and nearby motor vehicle traffic from roadways and freeways. The appropriate decibel level may need to be higher than the absolute minimum of 75 dBA required by CPUC General Order 143-B, Section 3.04. We recommend that if open platform stations are used, or if at-grade pedestrian crossings are constructed without any automatic warning devices, that each light rail vehicle should be equipped with a bell or horn of at least 85 dBA at a distance of 100 feet. This would increase the ability of the horn to be heard by pedestrians above the noise at a station.

10

- Fencing:** Vandal-resistant fencing and other channelization should be installed to ensure that pedestrians cross only at authorized points along the track. Fencing should be placed to separate the track area from adjacent roadways. Along corridors shared with railroad track there should be fencing or walls between the transit tracks and railroad tracks. This is particularly important in the vicinity of stations. See CPUC General Order 143-B, Section 9.03, INSTALLATION OF CURBS, FENCES, BARRIERS.

11

- Traffic signal preemption:** Where an intersection is adjacent to a rail crossing, preemption may need to be provided for pedestrian clearance times as part of the track clearance sequence. This may require significant additional preemption time. SANDAG should ensure that railroad preemption timing calculation worksheets have been completed and that sufficient track clearance green time is being provided.



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12 [6. **Pre-signals or queue-cutter signals:** To reduce the number of vehicles stopping on the tracks, traffic signal heads are recommended at the tracks (in addition to the nearby intersections). These traffic signals, in combination with STOP HERE ON RED signs and KEEP CLEAR markings, can provide clear direction that motorists should stop prior to the tracks.

13 [7. **Clearances:** The project should ensure that minimum horizontal clearances are very clearly established between tracks and from track to adjacent obstructions. These clearances should be verified in the final design and during construction. Above railroad tracks, vertical clearance must be no less than 22-feet 6-inches.

Safety Concerns by Segment

1. Santa Fe Depot to Old Town

14 [a. Overview: About 3 miles along the existing railroad right-of-way, 5 existing stations, 8 at-grade crossings, 6 grade separated crossings
b. The at-grade crossings along the Santa Fe Depot to Old Town segment present some long-term safety concerns due to the combination of various factors including:

- i. Multiple transit and railroad tracks.
- ii. High frequency of both railroad and transit service.
- iii. Railroad passenger train service speed of up to 65 MPH.
- iv. Light rail transit station platforms between the transit tracks and the adjacent railroad tracks.
- v. Open-platform nearside stations next to sidewalks at adjacent crossings.
- vi. Nearby intersections and vehicle queues that extend toward the tracks.

c. A number of safety improvements should be considered at the crossings along this segment:

- i. Install pedestrian channelization and pedestrian safety treatments to increase pedestrian awareness before crossing the tracks.
- ii. Install pre-signals or queue cutters. This can reduce the number of vehicles that stop on the tracks.
- iii. Relocate crosswalks that are placed across the leg of an intersection which approaches the track. Pedestrians in these crosswalks may obstruct motorists attempting to move away from the tracks during the Track Clearance Green interval of railroad preemption.
- iv. Use of advance preemption to provide pedestrian clearance time and additional track clearance green time where justified by preemption timing calculations.
- v. Install vehicular channelization such as raised medians.

16 [d. CPUC staff strongly supports proposed improvements to traffic signal timing near crossings, and the optimization of warning device activation times at crossings in the vicinity of stations.



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2. Old Town to SR-52

- 17 a. Overview: About 7 miles along the existing railroad right-of-way, 3 new stations, about 15 roadway structures above existing railroad right-of-way.
- 18 b. The crossings along this line are all existing railroad grade-separations which present few safety concerns.
- 19 c. Construction of new transit tracks at the existing railroad crossings, or other modifications to existing crossings, should be authorized through the CPUC General Order 88-B process.
- 20 d. As discussed above, CPUC has concerns regarding the proposed open-platform stations.
- 21 e. Prior to Mid-Coast revenue service, further discussion is required with the CPUC's Railroad Operations Safety Branch and Rail Transit Safety Section for maintenance access to the North County Transit District railroad tracks adjacent to "active" SDTI tracks.
- 22 f. Fencing should be installed between the new tracks and any adjacent roadways. This corridor currently does not have adequate fencing separating the roadway from the railroad tracks.
- 23 g. Walls or other substantial barriers similar to the current SDTI stations on the Old Town Transit Corridor should separate the transit station platforms from adjacent railroad tracks.
- 24 h. Fencing between the transit tracks and the railroad tracks should extend well beyond the limits of the stations.
- 25 i. There is ongoing and planned construction along the LOSSAN corridor. The Mid-Coast project must ensure the as-constructed improvements along the railroad, such as new track or wayside signals, are considered as part of final design. All clearances along the railroad track must comply with CPUC General Order 26-D and 118.
- 25 j. CPUC staff requests notification upon removal of railroad spur tracks along this segment.

3. SR-52 to UTC

- 26 a. Overview: About 4 miles along new aerial right-of-way, 5 new stations, about 17 new locations with light rail above an existing roadway, 1 crossing of light rail above railroad track
- 27 b. Just north of SR-52 the light rail transit tracks would cross above the railroad tracks. The Commission's Formal Application process can be used to authorize this. The horizontal and vertical clearances around the railroad track must be maintained consistent with CPUC General Order 26-D.
- 27 c. As discussed above, CPUC has concerns regarding the proposed open-platform stations.
- 28 d. CPUC staff recommends SANDAG consider installing active pedestrian warning devices at the Executive Drive Station and the UTC Transit Center Station where a public path is routed across the tracks. This aspect of these crossings is of concern and should be analyzed in SANDAG's Hazard Analysis Report. The expected number of pedestrians crossing the tracks at these locations requires further review to determine and compare the number of transit patron and local



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29 through pedestrian volumes. This additional data can help determine the appropriate level of pedestrian treatments.
e. Construction of a new track structure above a roadway must be authorized through the CPUC Formal Application process.

30 CPUC appreciates the opportunity to provide comments on the project described in the proposal. However, we have identified several areas that we believe pose safety hazards and request SANDAG properly address them. CPUC staff is available to meet and further discuss our concerns with SANDAG and the other relevant parties. We hope to assist in the identification of acceptable mitigation measures that will effectively address the concerns we have identified.

Please feel free to contact me at (916) 928-6858 or daren.gilbert@cpuc.ca.gov or contact our lead staff on this project: for crossing matters Kevin Schumacher at (415) 310-9807 and kevin.schumacher@cpuc.ca.gov or for transit safety matters Joey Bigornia at (619) 417-0815 or joey.bigornia@cpuc.ca.gov.

Sincerely,

Daren Gilbert, Manager
Rail Transit and Crossings Branch
Safety and Enforcement Division

cc:

State Clearinghouse
Wayne Terry, San Diego Trolley
Mathew Tucker, NCTD
Leslie Rogers, FTA

Submission ID228 California Public Utilities Commission Gilbert Daren

Com ID	Response
1	The CPUC's jurisdiction has been noted. The CPUC's jurisdiction is identified in Chapter 2.0, Section 2.2.2 of the <i>Mid-Coast Corridor Transit Project Safety and Security Impacts Technical Report</i> .
2	SANDAG will develop a Safety and Security Certification Plan during design for approval by the CPUC.
3	The eight existing grade crossings from Santa Fe Depot to the San Diego River are not being reconstructed or altered at the crossing by the project and will not require a CPUC General Order 88-B application. SANDAG will submit a CPUC Form G "Report of Completed Changes at Rail Crossing" to report completion of signaling control revisions at each of the eight existing crossings from Santa Fe Depot to the San Diego River. A formal application will be submitted for new grade-separated crossings at: Friars Road, Tecolote Road, Clairemont Drive, Garnet Avenue, State Route 52 interchange ramps, La Jolla Colony Drive, I-5 south of Nobel Drive, Nobel Drive, La Jolla Village Drive and I-5 access ramps, Gilman Drive east of the VA Medical Center, Artists Lane, Lyman Avenue, two crossings of Voigt Drive, I-5 alongside Voigt Drive, Campus Point Drive, Genesee Avenue, Eastgate Mall, Executive Drive, and La Jolla Village Drive. Formal applications will be submitted for two pedestrian grade crossings: one at the Executive Drive Station and one at the UTC Transit Center.
4	<p>The project will comply with all applicable federal and state regulations, including CPUC rules and regulations.</p> <p>The San Diego Trolley, Inc. (SDTI) Roadway Worker Protection program will apply to all right-of-way work occurring near the SDTI's and San Diego subdivision's active mainline tracks. SDTI will update its System Safety Program Plan and System Security Plan prior to revenue service on the project. A Preliminary Hazards Analysis Report and Threat and Vulnerability Analysis will be performed as required by CPUC General Order 164-D, as part of the Safety and Security Certification Plan process during project design.</p>
5	No new at-grade crossings are proposed as part of the project. Refer to the response to Comment 3 regarding GO-88 at the existing grade crossings. Formal applications will be submitted for the new grade-separated crossings north of the Taylor Street grade crossing. As noted in the comment, the project does not include at-grade crossings along Genesee Avenue.



Com ID	Response
6	<p>Refer to the response to Comment 3 regarding GO-88. Coordination with the CPUC began prior to circulation of the Draft SEIS/SEIR. SANDAG will continue to coordinate with the CPUC regarding the project and the applicable rules and regulations. Diagnostic meetings with the CPUC will be arranged during project design to discuss crossing safety issues. All new crossings will be grade separated.</p>
7	<p>At-grade open ballast stations will have four patron crossings with two crossings, one at each end of the platform, which will be ADA accessible. At stations with direct fixation track, the trackway will be surfaced level with the top of rail and ADA ramps will be located on each end of the platforms. The patron crossings within stations on the Mid-Coast Corridor Transit Project are consistent with existing station design on the operating MTS system and in accordance with station design guidelines.</p> <p>All approaches to stations will have a clear line of sight.</p> <p>FTA requires a hazard analysis before the project can begin operation; the hazard analysis is not required as part of the environmental review of the project.</p> <p>SANDAG has reviewed the safety record for the existing SDTI stations (see Chapter 4.0, Section 4.13.2 of the Draft SEIS/SEIR). The accident rate on the existing Trolley system is approximately one-half of the national average for LRT systems. For 2010, the National Transit Database shows the nationwide average accident rate for LRT systems was 16.0 per million revenue service miles, compared to 8.0 per million revenue service miles for the SDTI system. SDTI has current operational practices in place at all stations that demonstrate consistent safe operations through controls established by SDTI rules and procedures that will be applied to operation of the Mid-Coast extension.</p>
8	<p>Refer to the response to Comment 7 regarding pedestrian crossings at platforms. At the Executive Drive Station and the UTC Transit Center, automatic flashing lights and audible warning devices will be provided because the general public will use the platforms to cross over Genesee Avenue. The San Diego LRT design standards do not require fencing between the tracks in stations; refer to the response to Comment 10 for additional information regarding fencing at stations.</p>
9	<p>San Diego Trolley light rail vehicles have horns with sound levels that can be heard by patrons and pedestrians above ambient station noise. Federal and state requirements are currently met on the existing system, and the same requirements will apply to stations along the project alignment. Sound screening as required will be provided at stations near I-5 (the Nobel Drive and VA Medical Center Stations) to reduce ambient noise if the levels are above a level that would reduce the effectiveness of the train horns.</p>



Com ID	Response
10	<p>The project will comply with GO 143-B, Section 9.03 (Installation of Curbs, Fences, and Barriers. Concrete curbs, Fences, or Barriers), which states that such separation shall be installed along sections of separate right-of-way of an LRT system when there is a likelihood that motor vehicles or pedestrians may leave the traveled way of any nearby street or highway and encroach onto mainline track. GO 143-B does not address fencing between LRT and railroad tracks. The project is not proposing fencing between the tracks except at the three at-grade stations adjacent to the LOSSAN commuter and freight railroad tracks (Tecolote Road, Clairemont Drive, and Balboa Avenue Stations). At these stations, a solid wall will be built between the LOSSAN tracks and the station platform and fencing will be extended beyond the stations to deter pedestrians from entering the LOSSAN railroad right of way.</p>
11	<p>SANDAG and MTS have worked with the City of San Diego to optimize traffic signal operation at the existing grade crossings to ensure vehicular and pedestrian safety is not negatively impacted. The changes have been modeled and the results reviewed with the city for concurrence. The preemption times and phasing assumed under the project are consistent with current preemption timings. The traffic signal modifications will be implemented and tested during construction and system testing. SANDAG will work with CPUC during design to ensure sufficient track clearance time is provided.</p>
12	<p>SANDAG will work with CPUC during design to ensure that clear direction and adequate signage are provided.</p>
13	<p>All horizontal and vertical clearances have been designed to comply with GO 26-D and GO 118-A. Clearances will be further verified during design and again during construction.</p>
14	<p>The combination of factors listed for existing conditions in this comment were considered during the preliminary design of the project. The project's final design and construction will be in accordance with all applicable federal and state regulations, including CPUC rules and regulations. As stated in response to Comment 7, the SDTI operation is safe, with accident rates one-half the national average. Improvements to grade crossing traffic signal pre-emption on the segment between Santa Fe Depot and the San Diego River have been optimized to further improve safety for vehicles and pedestrians, and these improvements will be implemented with the project. No other modifications to the existing conditions are proposed at this time.</p>
15	<p>Refer to the response to Comment 14.</p>
16	<p>The comment stating support of the traffic signal improvements and the optimization of warning device activation times has been noted.</p>

Com ID	Response
17	The comment regarding few safety concerns from OTTC to SR 52 has been noted.
18	The grade-separated crossings north of Old Town will follow the CPUC General Order 88-B process.
19	Refer to the responses to Comments 7 through 9.
20	Coordination with CPUC will occur prior to the start of revenue service.
21	Refer to the response to Comment 10, which states that the project will comply with GO 143-B, Section 9.03, which requires fencing of the exclusive portion of the LRT right-of-way. In accordance with GO 143-B, Section 9.03 (Installation of Curbs, Fences, and Barriers. Concrete curbs, Fences, or Barriers), fencing or other barriers will separate the tracks from the roadways in this segment.
22	Walls, fences, or other substantial barriers will be provided to separate SDTI stations from the adjacent LOSSAN railroad tracks on this segment. These barriers are shown on the Final SEIS/SEIR Plan Set, Sheets 22, 25, 26, 58, 59, 65, 71, 301, 311, and 317.
23	As stated in response to Comment 10, fencing beyond the station platforms will be provided.
24	LOSSAN projects planned along Segment 2 are being coordinated with the Mid-Coast Corridor Transit Project. In particular, significant coordination regarding clearances and lines of sight has occurred and will continue during design. Clearances will comply with applicable CPUC General Orders.
25	SANDAG will notify the CPUC upon removal of the railroad spur track.
26	The design of the project will meet or exceed the requirements of GO 26-D and will comply with the application requirements for the crossing of railroad tracks. The formal application will be developed and submitted to the CPUC during final design when design clearances have been finalized.
27	Refer to the responses to Comments 7 through 9.
28	Refer to the response to Comment 8. The design at the Executive Drive Station and the UTC Transit Center contemplates incorporating CPUC Standard No. 8 active warning devices, which would use the directional speaker warning devices used in the City of Pasadena. Flashing lights would also be used. Pedestrian counts will be developed during design, and the level of pedestrian treatment will be coordinated with CPUC.



Com ID	Response
29	The formal application will be processed during final design.
30	SANDAG has continued to coordinate with the CPUC after the close of the Draft SEIS/SEIR comment period and will continue this coordination through design and construction of the project.