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January 20, 2016

TO: **BOARD OF DIRECTORS**

THROUGH: **PHILLIP A. WASHINGTON**
CHIEF EXECUTIVE OFFICER

FROM: **RICHARD F. CLARKE**
EXECUTIVE DIRECTOR, PROGRAM MANAGEMENT

SUBJECT: **METRO GOLD LINE 210 FREEWAY BARRIER SAFETY IMPROVEMENTS.**

ISSUE

This report is an update regarding ongoing efforts to replace existing concrete barriers at the Metro Gold Line Right-of-Way (ROW) between Marengo Ave. in Pasadena and Baldwin Avenue in Arcadia. The barriers are located on either side of the highway median, separating the east and westbound lanes of the Foothill I-210 Freeway and the Gold Line ROW. This report supplements the previous Board Box of May 7, 2014. Accident data collected during Metro investigations (reference Attachment A) shows that for this section of the alignment, during a three year period (July 2009 thru the end of June 2012), there have been eighty-nine (89) recorded incidents involving the existing barriers. In five (5) of these incidents, the subject vehicle penetrated the existing barrier and entered the Metro Gold Line ROW. No operating trains were involved in these incidents. However, vehicle breaches occurred with a frequency of one event every six (6) months for the three years of data provided. Metro staff believes this incursion frequency is a reflection of the unsatisfactory performance of the existing barriers and proposes a replacement plan to improve safety to both freeway and rail travel and minimize property damage to the Gold Line.

DISCUSSION

One of the most recent incidents occurred on Thursday, April 24, 2014, at 12:55 P.M., on the east bound lanes of the 210 Freeway adjacent to and approximately 800 feet east of the Metro Gold Line Allen Station.

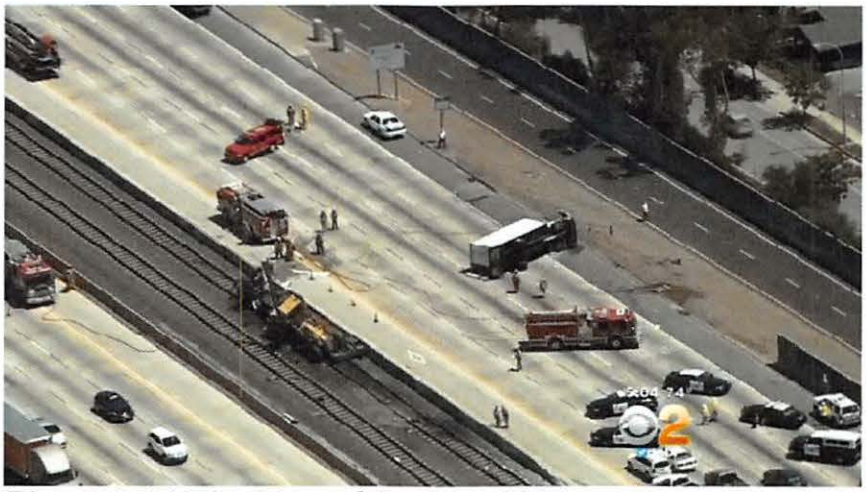


Photo 1: 210 Accident of April 24, 2014.

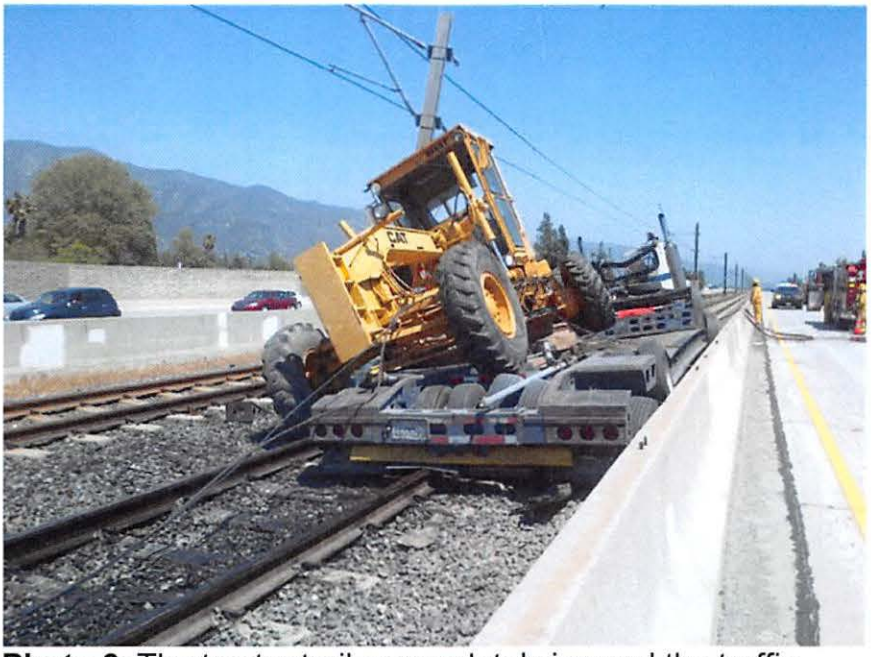


Photo 2: The tractor trailer completely jumped the traffic barrier. The cross section and height of the existing barrier appears consistent with an older Caltrans 32" high Type 50D Barrier.

The events of April 24, 2014 demonstrate that a tractor trailer can penetrate the existing traffic barrier system currently deployed and in use along the I-210 Freeway. The existing barrier as can be seen in Photo 2 is an older Caltrans Type 50D barrier. This barrier is 32" tall and is rated for a crash test level 3 (TL-3). The TL-3 barrier is only rated for a 4,400 pound vehicle, typically the size of a sedan, at a speed of 62 miles per hour (mph) or less.

In the previous Board Box (May 7, 2014), Metro staff suggested replacement with the Caltrans Type 742 barrier which is 10 inches taller and is rated at an improved crash test level of TL-5, rated for a 80,000 pound vehicle, typically the size of a tractor-trailer, at a speed of 50 mph. However, in further discussions with Caltrans it was determined that the Type 742 barrier is not the best option. When comparing with similar conditions at other freeways such as at the Long Beach I-710 freeway, it became evident that the Caltrans Type 60G barrier is the preferred option. This barrier not only provides a crash test level TL-5 but also, provides 56" barrier height, a full 2 feet (24 inches) taller that the existing barrier, providing significant additional height to deflect potential catapult incursions of both vehicle and objects.

The TL-5 rating is the highest crash test level rating listed in the state of California.

MITIGATION:

Different approaches are being considered at this time:

Risk Assessment Study: Staff will recommend hiring a consultant to prepare a risk assessment study, with the objective of developing a plan for protecting our line from accidents happening on the I-210 freeway. The objective of the plan is to assess the risks associated with each type of accidents, locations and impacts, including loss of life, property damage, and long-term service interruption. The plan will also develop mitigations and engineering approaches to be considered. In parallel with the development of the plan, Metro staff will continue coordination with Caltrans to ensure the final plan incorporates Caltrans requirements.

In the meantime, Metro Program Management department staff has developed the conceptual design for two technical approaches to begin mitigation of this issue and they are described below:

Approach 1: Installation of the 56" Type 60G barriers on select sections of the alignment, at locations along the alignment where critical equipment (signaling bungalows and train control cases) are installed in the ROW, as damages could lead to a long-term service interruption. This approach calls for approximately 0.5 miles of new barrier installation and based on a conceptual design developed by Metro staff, the estimated the Life of Project (LOP) to be approximately 11 Million dollars.

Approach 2: This approach is a "maximum" approach and calls for installation of new 56" Type 60G barriers along the entire ROW, including station locations. This approach calls for approximately 12 miles of new barrier installation and based on the conceptual design developed by Metro staff, the estimated Life of Project is approximately 145 Million dollars.

The two approaches 1 and 2 call for the installation of an Intrusion Detection System (IDS) along the ROW, which would detect an incursion and automatically stop trains in the immediate areas.

NEXT STEPS

Metro staff will be seeking approval by the Board of Directors to implement the plan described in this Board Box. Funding will be sought in two phases: Request for funding for Phase I will be submitted to the Board for approval in May 2016. Phase 1 funding will be for the hiring of the risk assessment consultant and development of the preliminary engineering of the two alternatives described, in house by Metro staff. At the completion of Phase 1, Metro will be positioned to more accurately estimate a construction cost for the project and the associated LOP. Phase 2 funding will establish the LOP necessary for project construction. We are expecting this process to start early in FY 17 and we have attached a draft schedule to show the different phases of the project.

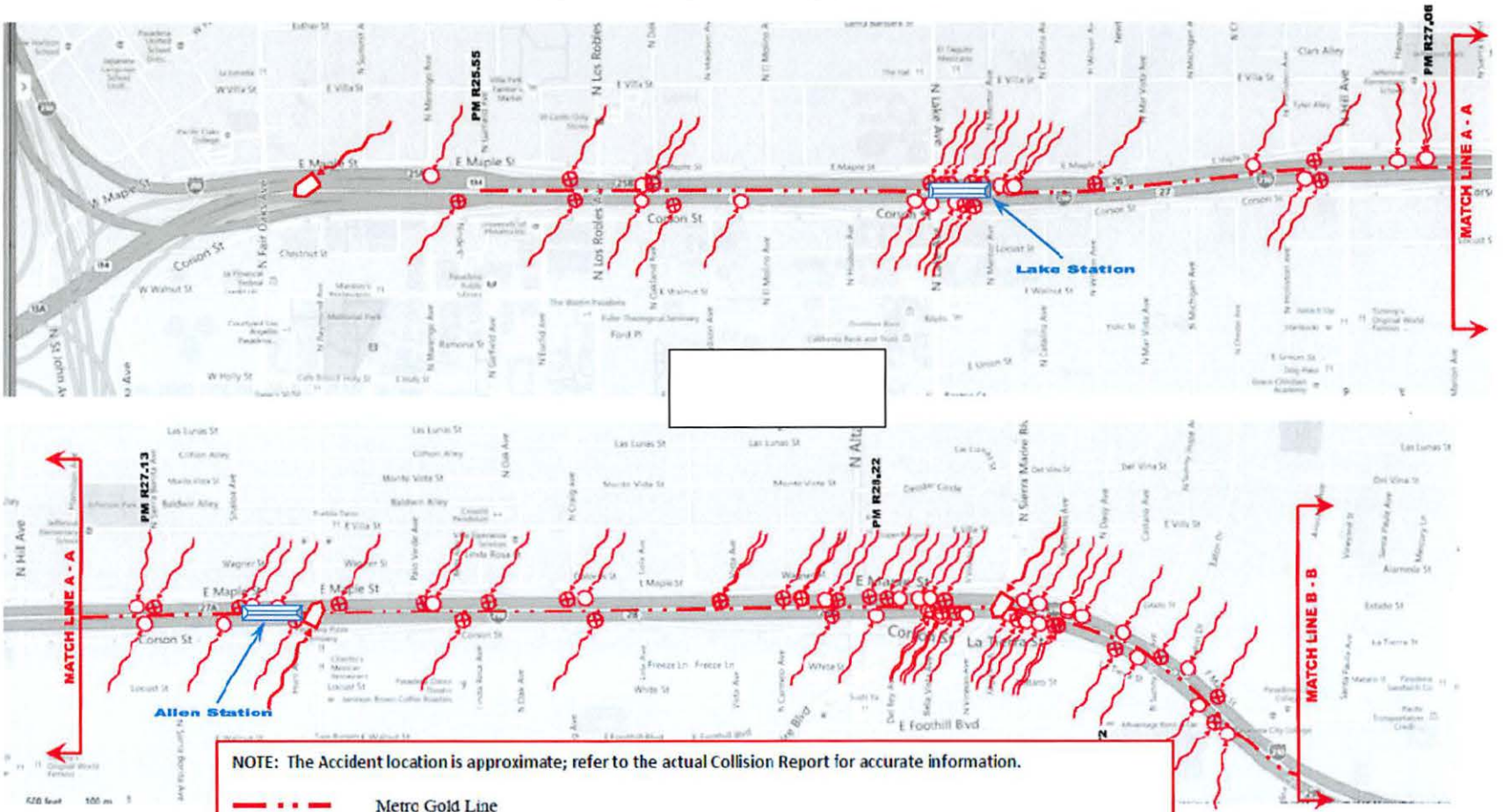
Attachments:

A. Caltrans Crash Data for the period from 7/1/2009 thru 6/30/2012.
B. Project Draft Schedule: Phase 1.

ATTACHMENT – A

Interstate 210 Crash Data Statistics for:
(July 2009 to July 2012)

ACCIDENT COLLISION DIAGRAM - ROUTE 210



NOTE: The Accident location is approximate; refer to the actual Collision Report for accurate information.

- Metro Gold Line
- Fatal accident (**Total Accidents – 2**) (Eastbound)
- Non-fatal accident (injury only) (**Total Injury – 81**) (Eastbound - 41 and Westbound – 40)
- Property Damage Only (P.D.O.) (**Total PDO – 80**) (Eastbound – 40 and Westbound – 40)
- Crashed Through Center Divider (**Total Accidents - 5**)

N W E S

ATTACHMENT – B

Project Draft Schedule – Phase 1

Attachment B:
Project Draft Schedule - Phase I

Year:	2016							2017												2018	
Month:	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2
Barrier Replacement Project Schedule																					
Risk Assessment Consultant																					
Develop RFQ																					
Procurement																					
Risk Assessment Study Draft Report																					
Review by Stakeholders (Caltrans)																					
Risk Assessment Study Final Report																					
Development of Preliminary Design (PE)																					
PE Development																					
Estimate of Project Construction Cost																					

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