Los Angeles County
Metropolitan Transportation
Authority
One Gateway Plaza
3rd Floor Board Room
Los Angeles, CA

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PLANNING AND PROGRAMMING COMMITTEE
JUNE 17, 2015

SUBJECT: DORAN STREET AND BROADWAY/BRAZIL SAFETY AND ACCESS PROJECT

ACTION: ADOPT LOCALLY PREFERED ALTERNATIVE

RECOMMENDATION
APPROVED AS AMENDED BY Najarian Motion:

A. receiving the **Doran Street and Broadway/Brazil Safety and Access Project Study Report Equivalent** (PSRE); and

B. adopting Locally Preferred Alternative (LPA) 2 from the PSRE to advance into the Final Environmental Document.

ISSUE

The Project Study Report for the Doran Street and Broadway/Brazil Safety and Access Project (Project) was completed in March, 2015. Three alternatives are proposed. It is the recommendation to proceed with Alternative 2 as the Locally Approved Alternative to advance into the Final Environmental Document.

DISCUSSION

The Los Angeles County Metropolitan Transportation Authority (Metro) is working towards improving safety, mobility and quality of life for the Glendale and Los Angeles communities by closing the Doran Street at-grade crossing. As with any at-grade railroad crossing, safety is of significant importance. Furthermore, a unique combination of limited access, high traffic volumes, adjacent industrial uses, and residential interests, make mobility improvements important to this Project. Doran Street has 13 incidents on record resulting in two fatalities and one injury since 1976. These safety statistics have made the Doran Street crossing the subject of safety hearings and arbitrations by the California Public Utilities Commission (CPUC). The at-grade crossing of Doran Street with the Metro owned right-of-way operated by Metrolink has been the subject of concern for several years. Additionally, this crossing has significant truck and vehicle traffic as well as 90 passenger and freight trains per day.

In May 2011, the Metro Board authorized $6.6 million for improving the safety of the intersection of

Doran Street and the Metro owned right-of-way. A portion of these funds is being used to fund the engineering and environmental work necessary for the grade separation of this intersection. Since the Board motion was passed, additional funding has been obtained that will fund the construction of the grade separation of this roadway. Since the crossing is located along the route of the proposed California High Speed Rail Project, staff has worked with the California High Speed Rail Authority (CHSRA) and the Federal Railroad Administration (FRA) to gain additional funding. This project has been ranked as number seven in the region in the Advance Investment Memorandum of Understanding with the CHSRA.

Since the Metro Board action, staff has been working towards the advancement of a solution to the challenges related to this crossing. This has included examining several grade separation alternatives that will provide the maximum safety benefit while minimizing impacts to the communities. This analysis has included existing and the proposed future uses of the railroad corridor. The first phase of the project was completed in April, 2015 and the key deliverable was the Project Study Report Equivalent highlighting three alternatives to close Doran Street and/or Broadway/Brazil crossings.

Community Outreach

A comprehensive community outreach program is underway to inform the public about the Doran Street and Broadway/Brazil Safety and Access Project. Metro has hosted two rounds of community outreach meetings and presented at 19 meetings hosted by other stakeholders.

For the two rounds of Metro hosted Community Outreach meetings, residents were notified of the public process through mailings, direct calls to businesses within the project area, Metro Daily Briefs, Metro's The Source, email blasts, a public telephone hotline, fact sheets, and a dedicated webpage on Metro's website. The project received media coverage in the Glendale News Press, Los Angeles Times, and NBC Los Angeles with a total of eight stories written about the project. Communication also went out in local newsletters and distribution lists for the City of Glendale and other local stakeholder organizations.

Community Meetings: Round 1 (February 6, 2014)

Two community workshops were held in Atwater Village on February 6, 2014, 3-5pm and 6-8pm, to accommodate participation from all stakeholders, including businesses and residents. Notification of the meeting was sent to more than 1,500 owners and tenants using the Los Angeles County Assessor's database. Three email notifications were sent out to the project stakeholder database. Individual phone calls were also placed to 69 businesses within the area. An additional eight stakeholder meetings were held prior to Feb. 6th including individual business owners, Pelanconi Estates HOA, the Atwater Village NC and staff from the Cities of Glendale and Los Angeles.

A total of 60 stakeholders attended the February 6th workshops and Metro received 63 comments. Issues raised included access for first responders, traffic and circulation for vehicles and trucks, safety, and impacts to residential and business areas.

Community Meetings: Round 2 (December 9, 2014)

Two community workshops were held in Atwater Village (3-5pm) and Glendale (6-8pm) on December 9, 2014. Notification of the meeting was sent to nearly 2,000 owners and tenants using an updated list pulled from the Los Angeles County Assessor's database. Two email notifications were sent out to individuals in the exiting project stakeholder database. Individual phone calls were also placed to 100 businesses within the area. An additional six stakeholder meetings were held prior to Dec. 9th including Council District 13, business owners, Pelanconi Estates HOA, Atwater Village Neighborhood Council, Walk Bike Glendale and the Los Angeles River Cooperating Committee. After the meeting, Metro held additional briefings with legislative representatives and business owners who were unable to attend the meeting on December 9th.

A total of 89 stakeholders participated at the workshops. Metro received 68 comments. The Stakeholders were shown several alternatives at the workshop. Input from the Stakeholders regarding additional alternatives. These alternatives were evaluated. Aspects of some of these alternatives were incorporated into the ultimate designs. Overall, the comments touched on safety, points of access to North Atwater Village, eminent domain, pedestrian and bicycle access, traffic in the residential areas of Glendale, the timeline for High-Speed Rail, property impacts, air quality, Glendale's Riverwalk Bike project, and the need for a grade separation following the recent improvements to Broadway/Brazil. Business and property owners within the project area expressed concerns about potential impacts and property takings.

There will be additional opportunities for the public to comment during the environmental phase of the project.

ALTERNATIVES FROM PROJECT STUDY REPORT (EQUIVALENT) (PSRE)

During the Alternative Analysis portion of the study, several alternatives were examined that would provide the benefit of closing the Doran Street crossing while minimizing the impacts to the communities. During the study it became apparent that the Broadway/Brazil crossing was closely related to the Doran Street crossing and alternatives considered had to address this relationship. As part of the analysis, the railroad corridor was examined to raise or lower the railroad tracks to cross under or over Doran Street and Broadway/Brazil. These alternatives are not feasible due to the constraints of the I-134 Freeway, Colorado Blvd. and Verdugo Wash.

In addition, grade separations that would lower the roadway under the railroad were eliminated due to the community impacts of several roadway and railroad detours needed to complete the construction.

The following alternatives were carried forward with the PSRE.

No Build: This alternative would keep Doran Street and Broadway/Brazil as at-grade crossings. However, this does not meet the requirements of the CPUC Order to take steps to close the Doran Street crossing.

Alternative 1: Doran Overpass: Alternative 1 proposes to raise Doran Street over San Fernando

Road, the rail tracks, and West San Fernando Road. The existing intersection of Doran Street and San Fernando Road will be replaced with a new signalized intersection at a widened and realigned Commercial Street. This will facilitate traffic movements between San Fernando Road, Doran Street and the State Route 134 ramps. Milford Street will tie to Commercial Street in a tee-intersection. West San Fernando Road will pass under the Doran Street overpass bridge and connect to Doran Street. This alternative will close the Doran Street at-grade crossing while Broadway/Brazil will remain open as an at-grade crossing. Refer to Figure 1 of Attachment A - Executive Summary for a conceptual layout of this alternative.

Alternative 2: Fairmont Connector and Salem/Sperry Overpass: Alternative 2 has two components, the first consists of a connector road that extends West San Fernando Road to the Fairmont Avenue bridge and the second is an overpass crossing over San Fernando Road, the rail tracks, and West San Fernando Road in the vicinity of Salem Street and Sperry Street. This alternative will also consider two options for providing multi-modal movements over the Verdugo Wash as planned in the City of Glendale River Walk project. Alternative 2 will close both the Doran Street and Broadway/Brazil at-grade crossings. Refer to Figure 2 of Attachment A - Executive Summary for a conceptual layout of this alternative.

Alternative 3: Fairmont Connector and Zoo Drive Connector: Alternative 3 utilizes the same connector road from West San Fernando Road to the Fairmont Avenue Bridge as Alternative 2. However, this alternative proposes to construct this road in conjunction with a road that connects Doran Street across the Los Angeles River to Zoo Drive. Similar to Alternative 2, this alternative includes an option to construct a bridge to extend the Glendale River Walk across the Verdugo Wash. Alternative 3 will close the Doran Street at-grade crossing while Broadway/Brazil will remain an at-grade crossing. Refer to Figure 3 of Attachment A - Executive Summary for a conceptual layout of this alternative.

EVALUATION OF OPTION DISCUSSED AT MAY 20 PLANNING AND PROGRAMMING COMMITTEE MEETING

Alternatives 2 and 3 contained within the Project Study Report (Equivalent) (PSRE), dated May 18, 2015, include the Fairmont Connector which will extend West San Fernando Road to connect to the Fairmont Avenue bridge over the Verdugo Wash. The Fairmont Connector is planned to be striped for one lane of traffic in each direction and have a signalized intersection at Fairmont Avenue. During public comments at the Glendale Council Meeting on May 19, 2015, a community member suggested an option of making the Fairmont Connector available for first responders only and closed to the general public. The option is intended to address the CPUC and first responder's requirement to provide access for emergency vehicles to the northern Atwater Village area in the City of Los Angeles. The option would close the Doran Street at-grade crossing, facilitating a future quiet zone. The Metro Planning and Programming Committee confirmed the desire to evaluate this community option at their meeting on May 20, 2015 prior to selecting a preferred alternative for the Project. This

section summarizes the findings from the evaluation.

CONSIDERATIONS

The following considerations were factored into the evaluation of the option:

First Responders: Discussions with the first responders, both police and fire from the cities of Glendale and Los Angeles, were conducted via email and telephone in order to receive their input, feedback, and requirements on the proposed option.

LOSSAN Expansion: The LOSSAN Corridor Agency Strategic Implementation Plan will increase daily rail traffic from 84 trains to 124 trains by 2030, a 50% increase. This will result in additional vehicular delays at remaining at-grade crossings, such as Broadway/Brazil.

Los Angeles River: The cities of Glendale and Los Angeles voted to adopt Alternative 20 of the L.A. River Revitalization as the Locally Preferred Alternative (LPA). In May of 2014, the US Army Corps of Engineers adopted Alternative 20 and it is currently being advanced through the environmental clearance process. A goal of this project is to avoid or mitigate any encroachment into the Alternative 20 footprint.

Traffic Growth: The projected traffic forecast on Fairmont Avenue and in the vicinity of the eastbound and westbound SR-134 ramps is due primarily to the expansion of the Disney Grand Central Creative Campus (CG3).

Traffic Circulation: Overall circulation within the Atwater Village area must be considered with adequate Level of Service (LOS). The ability to reroute traffic and mitigate impacts of doing so will be challenging as existing right-of-way is narrow, 50-feet in width on most streets, and points of access to this area are limited.

CONCLUSION

The community option addresses a singular issue, providing access for first responders to the northern Atwater Village area that would address the CPUC and first responders concerns. The intent of this community option is to close the current Doran Street at-grade crossing, leading to a quiet zone.

The larger issue with the closure of the Doran Street at-grade crossing is the traffic circulation within Atwater Village and the ability to move traffic and goods through the West San Fernando Road/Brazil Street and San Fernando Road/Broadway intersections. Both of these intersections will be significantly impacted.

In summary, the closure of the Doran Street at-grade crossing, while it provides emergency responder access only, results in:

1. Closure of the Doran Street at-grade crossing that will result in 80% of the parcels in Atwater Village area, north of Colorado Street, being solely reliant upon the West San Fernando Road/Brazil Street intersection as the lifeline for their business.

- Degradation of the West San Fernando Road/Brazil Street intersection from a Level of Services (LOS) D to LOS F.
- Queuing in both the southbound and eastbound directions at the West San Fernando Road/Brazil Street intersection effectively gridlocks traffic to the west and north of this intersection.
- Southbound left-turn queuing would require over 650 feet of turn pocket length where only 100 feet is available. Any queuing beyond 100 feet blocks through movements as well.

2. San Fernando Road/Broadway intersection remains a LOS F however operations are further impacted. Level of service is determined through Synchro analysis and is reflective of the signal operations. It does not, however, account for train delays. Inclusion of train delays will reduce available capacity resulting in even further degradation of the intersection operations.

- Significant increase in southbound right-turn movement from San Fernando Road to Brazil Street (from 56 vehicles per hour (vph) to 452 vph in the AM peak hour), far exceeding capacity. This will significantly reduce capacity of the through traffic as the #2 southbound lane will be blocked by the right-turn queue.
- To avoid the long queue and delay from the excessive southbound right-turn movement from San Fernando Road to Brazil Street, it could be expected that drivers will seek other routes with the most direct being Concord Avenue as a bypass to and from the SR-134 and Broadway.

3. If built in conjunction with Alternative 2 Salem/Sperry Overpass, excessive queuing would still exist and an additional lane of traffic at each intersection of the overpass would be required to address the turning movements. This will increase the right-of-way and construction costs.

4. If built in conjunction with Alternative 3 Zoo Drive Connector, the existing at-grade intersection would remain at Broadway/Brazil. While the Zoo Drive Connector redirects some traffic towards the I-5 Interchange, the remaining traffic still significantly impacts the West San Fernando Road/Brazil Street and San Fernando/Broadway intersections.

Based on the evaluation, the $15 million expenditure for an emergency access only bridge does not outweigh the resultant impacts that closing the Doran Street at-grade crossing would have on overall traffic operations, local businesses, and the potential bypass traffic in Glendale. Staff does not recommend adopting this option.

RECOMMENDATION FROM METRO STAFF

A quantitative analysis was conducted to compare the three alternatives. A constraints analysis matrix was developed as part of this analysis. The constraints matrix included design considerations like cost/fundability, right-of-way impacts, environmental considerations, traffic circulation and diversion, constructability, railroad impacts, geometrics, utility impacts, consistency with the L.A. River revitalization plan and overall programmatic outlook keeping in mind future community impact. Please see Attachment B - Constraints Matrix Analysis for additional information about the development of the matrix.

Issue	Alt 1	Alt 2	Alt 3
Permanently closes Doran crossing	✓	✓	✓
Permanently closes Broadway/Brazil crossing		✓	
No future grade separation required		✓	
Keeps traffic on arterials	✓	✓	
Both crossings open during construction		✓	✓
Consistent with L.A. River Revitalization		✓	
Consistent with funding sources	✓	✓	

Figure 1: Alternatives Comparison

Metro Staff recommend Alternative 2 because it achieves the optimal safety goal to permanently close both Doran Street and Broadway/Brazil at-grade crossings. It eliminates the cumulative effects of constructing two separate grade separations at two different times. If a grade separation is constructed at only Doran Street right now, we anticipate another grade separation soon to improve safety at the Broadway/Brazil crossing. This will be required because of increased service levels from Metrolink and Amtrak and the proposed use of this corridor for high speed trains.

The effects of constructing two grade separations at two different times in Alternatives 1 and 3 will include cumulative impact on right-of-way because of the need for additional land acquisition and business relocation. This additional right-of-way need for Alternatives 1 and 3 in the future will be the same as the current need for the Salem/Sperry Overpass. Attachment C - Cumulative Right-of-Way Impact illustrates the cumulative right-of-way impacts for the three alternatives.

The overall programmatic costs accrued from adopting each alternative is shown in figure 2 below. In addition to the overall programmatic cost savings accrued from adopting alternative 2, significant cost savings are anticipated from economies of scale if a single grade separation is constructed to replace the two at-grade crossings. Alternative 2 ensures traffic stays on the arterials in the permanent condition, and keeps both crossing open during construction. Finally, this alternative is consistent with L.A. River Revitalization Plan and the requirements of the funding sources. A summary chart highlighting how each alternative meets the project objectives is shown in attachment D - Alternatives Comparison

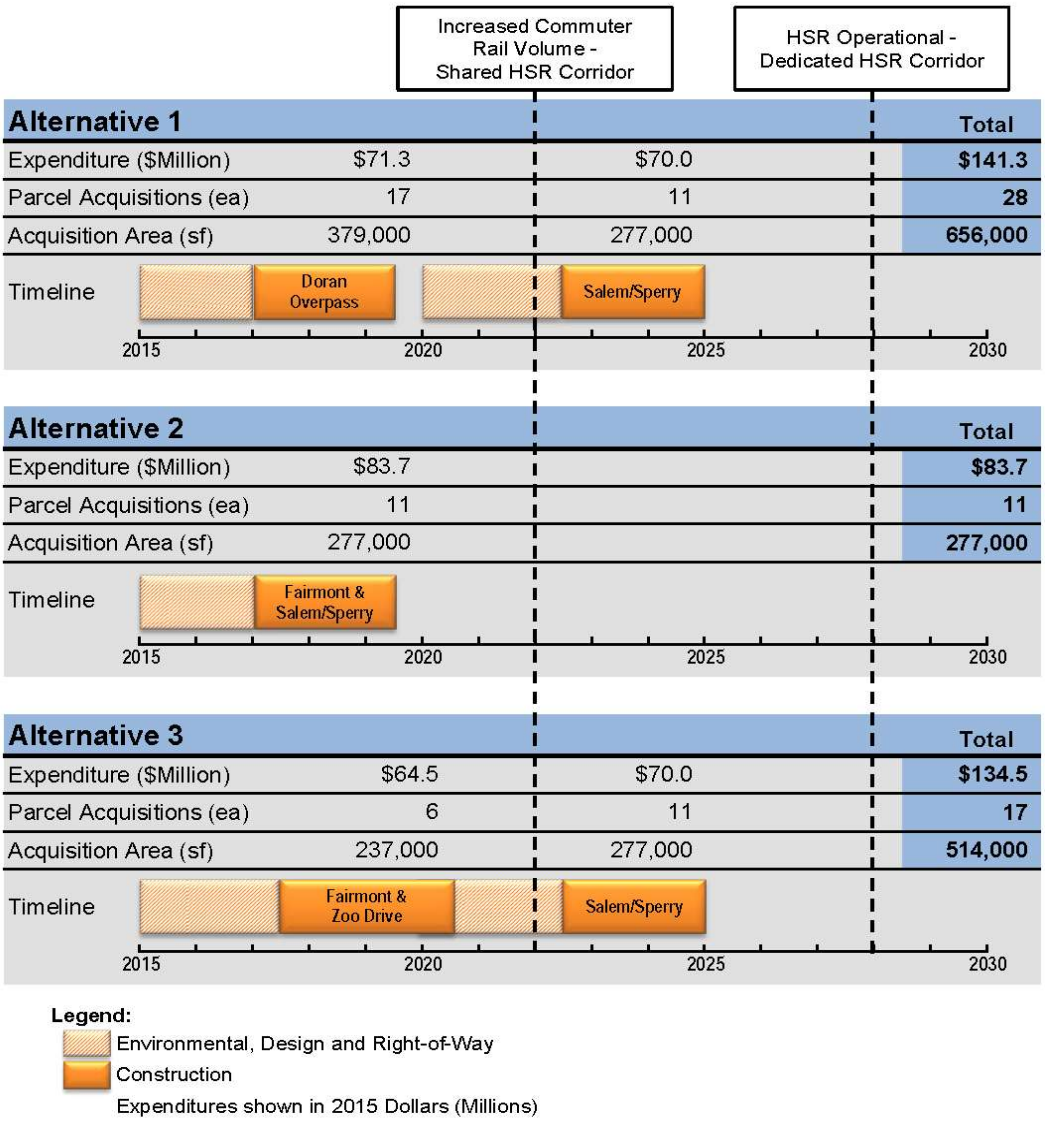

Figure 2: Project Programmatic Overview

DETERMINATION OF SAFETY IMPACT

Due to the urgent need to improve safety at this crossing, an Administrative Law Judge (ALJ) has ruled that the Doran Street at-grade crossing be closed permanently. However, there is a requirement to provide two points of access for emergency responders into the area west of the railroad corridor during an emergency. To accomplish this requirement, the ALJ required that Doran Street be converted to a one-way westbound movement until the crossing can be closed permanently.

The Broadway/Brazil at-grade crossing, located less than a half mile from the Doran Street crossing, has a similar safety record. Broadway/Brazil has 9 incidents resulting in five fatalities and three injuries. Broadway/Brazil was upgraded in December, 2014 as part of the mitigation agreement between the city of Glendale and other agencies and the CPUC. In addition, Metro staff been

involved with hearings and arbitrations initiated by the CPUC.

Irrespective of safety improvements adopted, at-grade crossings will always have the potential conflict between rail and vehicles, trucks and/or pedestrians. With a grade separation or closure, this conflict is eliminated. Over the coming years, Metrolink and Amtrak passenger service is expected to increase along this corridor. This further highlights the urgency to close these at-grade crossings. In addition to the increased service levels from Metrolink and Amtrak, the California High Speed Rail Authority (CHSRA) is also proposing this railroad corridor for their Palmdale/Los Angeles segment that is expected to be in service by 2022. In order for high speed rail to utilize this corridor, all at-grade crossings will have to be grade separated or closed.

This project has support from the Federal Railroad Administration (FRA), Caltrans, CPUC, Metrolink, Amtrak, and the CHSRA. The project comprises four phases: Alternative Analysis, Environmental Studies & Preliminary Engineering, Final Design, and Construction.

The project area includes a second at-grade crossing less than half mile south of Doran Street at Broadway/Brazil. With the two at-grade crossings being near each other, there is a higher chance for an accident occurring in the project area. Moreover, the number of incidents in Los Angeles County has continued to increase in the last five years, as shown in the Table 1 below. The ultimate safety enhancement would be to close both crossings and separate the vehicles and pedestrians from the trains.

Table 1: Los Angeles County Incident Table
(Source Federal Railroad Administration)

Year	Accidents	Fatalities	Injuries
2009	24	5	4
2010	20	6	9
2011	21	5	11
2012	20	9	19
2013	32	12	35
Totals	**117**	**37**	**78**

FINANCIAL IMPACT

$2.5 million of Measure R 3% funding for design and construction of this project is included in cost center 2415, Regional Rail FY16 Budget in Project 460091 Doran Street Grade Separation. Since this is a multi-year contract, the Executive Officer, Regional Rail will be accountable to budget the costs in future years.

Impact to Budget

Table 2: Summary of Funding Sources	
FUNDING SOURCE	AMOUNT
Local Measure R 3%	$6.6 Million
State Proposition 1A	$45.0 Million
Federal American Recovery and Reinvestment Act (ARRA)	$15.8 Million
CHSRA and other sources	$19.6 Million
TOTAL	$87.0 Million

Measure R 3% funds are designated for Metrolink commuter rail capital improvements in Los Angeles County. These funds are not eligible to be used for Metro bus/rail operating or capital budget expenses. This programming action has no impact to the Proposition A and C, TDA or Measure R administration budgets.

The three alternatives studied have the following estimated project costs see table 3 below and the attached Project Study Report for additional information.

Table 3: Summary of Project Costs for Alternatives	
ALTERNATIVE	TOTAL PROJECT CO
1 Doran Overpass	$71.31 Million
2 Fairmont Connector and Salem / Sperry Overpass	$83.73 Million
3 Fairmont Connector and Zoo Drive Connector	$64.49 Million

ALTERNATIVES CONSIDERED

The Board could choose not to select a locally preferred alternative. This alternative is not recommended due to the safety concerns at this crossing. The two at-grade crossings will still have the possibility of vehicle-train collisions. After several hearings and arbitrations with the CPUC, and the attempts by that agency to close the crossing, it was determined that there is a significant need to move to a grade separation.

NEXT STEPS

Upon selection of a locally preferred alternative by the Board, we will commence the environmental studies and preliminary engineering.

Upon approval of the request to program additional funds, Metro CEO will negotiate a design fee with Contractor HNTB Inc. and approve Modification 2 for signal engineering.

ATTACHMENTS

Attachment A - Project Study Report - Executive Summary
Attachment B - Constraints Analysis Matrix

Attachment C - Cumulative Right-of-Way Impact
Attachment D - Alternatives Comparison

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I. EXECUTIVE SUMMARY

The Los Angeles County Metropolitan Transportation Authority (Metro) is looking to enhance the safety, mobility and quality of life for the Glendale and Los Angeles community by closing the Doran Street at-grade crossing with the Metro-owned railroad corridor. To accomplish this goal, the project intends to construct a grade separation. To fully understand the needs of the community, it was important to study the project area to observe the traffic patterns, identify land uses, and determine local business operations. It is unavoidable that the construction of grade separation in a fully developed area will have impacts on right-of-way and the community. It is the objective of Metro to explore alternatives that will minimize these impacts while improving safety and mobility of the project area.

The project area includes a second at-grade crossing a half mile south of Doran Street at Broadway/Brazil. With the two at-grade crossings being in close proximity, there is an increased chance for an incident to occur in the project area. Moreover, the number of incidents County-wide has continued to increase in the last five years, as shown in Table 1below. The ultimate safety enhancement would be to close both crossings and separate the vehicles and pedestrians from the trains. It is also important to note that emergency responders will require ingress and egress across the railroad tracks in a similar manner as they do today. This means that a new access point for each crossing closed will be required. The Los Angeles-San Diego-San Luis Obispo (LOSSAN) Rail Corridor Agency has a planned service expansion and the California High Speed Rail Authority is also proposing this railroad corridor for their Palmdale/Los Angeles segment. This will increase future rail traffic by 50%, and ultimately, the high speed rail to utilize a dedicated corridor which will require all at-grade crossings to be either grade separated or closed.

With the potential for two grade separations in close proximity, the impacts to right-of-way and the community would be doubled. Therefore, Metro expanded the alternative analysis to evaluate opportunities to close both crossings with a single grade separation while still providing the necessary points of ingress and egress for emergency responders and local businesses.

Table 1: Los Angeles County Incident Table

Year	Accidents	Fatalities	Injuries
2009	24	5	4
2010	20	6	9
2011	21	5	11
2012	20	9	19
2013	32	12	35
Totals	**117**	**37**	**78**

Source: Federal Railroad Administration

This Project Study Report (Equivalent) evaluates feasible alternatives for the construction of a grade separation in order to close the at-grade crossings at Doran Street and Broadway/Brazil Street. The preferred alternative(s) will move forward into the environmental clearance phase.

Alternatives

No Build: This alternative would keep Doran Street and Broadway/Brazil as at-grade crossings. However, this does not meet the requirements of the CPUC Order that will take steps to close the Doran Street crossing. One such requirement is to modify this crossing to a one-way westbound direction only. Therefore, for this PSRE, the No Build Alternative will consist of the one-way westbound Doran Street crossing and Broadway/Brazil functioning as it does today.

Alternative 1: Doran Overpass: Alternative 1 proposes to raise Doran Street over San Fernando Road, the rail tracks, and West San Fernando Road. The existing intersection of Doran Street and San Fernando Road will be replaced with a new signalized intersection at a widened and realigned Commercial Street. This will facilitate traffic movements between San Fernando Road, Doran Street and the State Route 134 ramps. Milford Street will tie to Commercial Street in a tee-intersection. West San Fernando Road will pass under the Doran Street overpass bridge and connect to Doran Street. This alternative will close the Doran Street at-grade crossing while Broadway/Brazil will remain an at-grade crossing. Refer to Figure 1 for a conceptual layout of this alternative.

Alternative 2: Fairmont Connector and Salem/Sperry Overpass: Alternative 2 has two components, the first consists of a connector road that extends West San Fernando Road to the Fairmont Avenue bridge and the second is an overpass crossing over San Fernando Road, the rail tracks, and West San Fernando Road in the vicinity of Salem Street and Sperry Street. This alternative will also consider options for potentially providing a pedestrian and bicyclist crossings of the Verdugo Wash, as planned in the City of Glendale River Walk project, and over San Fernando Road and the railroad tracks in the vicinity of Doran Street. Alternative 2 will close both the Doran Street and Broadway/Brazil at-grade crossings. Refer to Figure 2 for a conceptual layout of this alternative.

Alternative 3: Fairmont Connector and Zoo Drive Connector: Alternative 3 utilizes the same connector road from West San Fernando Road to the Fairmont Avenue bridge as Alternative 2. However, this alternative proposes to construct this road in conjunction with a road that connects Doran Street across the Los Angeles River to Zoo Drive. This alternative will also consider options for potentially providing a pedestrian and bicyclist crossings of the Verdugo Wash, as planned in the City of Glendale River Walk project, and over San Fernando Road and the railroad tracks in the vicinity of Doran Street. Alternative 3 will close the Doran Street at-grade crossing while Broadway/Brazil will remain an at-grade crossing. Refer to Figure 3 for a conceptual layout of this alternative.

Figure 1: Alternative 1 Doran Overpass

Figure 2: Alternative 2 Fairmont Connector and Salem/Sperry Overpass

Figure 3: Alternative 3 Fairmont Connector and Zoo Drive Connector

Alternatives Withdrawn from Consideration: The team evaluated additional alternatives that were ultimately withdrawn from consideration due to their feasibility and significance of their impacts. These included raising or lowering the rail tracks, a roadway underpass, and an overpass at California/Cutter.

Summary of Alternatives

The following table summarizes each of the three feasible alternatives selected along with the estimated project costs.

Table 2: Executive Summary Table

Alternative	Summary	Construction Costs*	Right-of-Way Costs*	Total Project Costs**
1 Doran Overpass	• Closes the Doran Street at-grade crossing • Will require a future grade separation at Broadway/Brazil • Proposed traffic routes most closely resemble existing traffic routes • Impacts sixteen (17) commercial/ industrial parcels – 379,000 sq ft	$26.99M	$37.03M	$71.31M
2 Fairmont Connector and Salem / Sperry Overpass	• Closes both Doran Street and Broadway/Brazil at-grade crossings • Will not require a future grade separation • Most consistent with proposed L.A. River Revitalization • Impacts eleven (11) commercial/ industrial parcels – 277,000 sq ft	$29.73M	$45.97M	$83.73M
3 Fairmont Connector and Zoo Dr Connector	• Closes the Doran Street at-grade crossing • Will require a future grade separation at Broadway/Brazil • Significant increase in construction and staging cost • No temporary impacts to rail operations • Will require environmental impact statement due to L.A. River impacts • Impacts six (6) industrial parcels – 237,000 sq ft	$30.85M	$25.31M	$64.49M

* Construction and right-of-way costs include a 20% contingency

** Total cost includes design, environmental and construction management. See Appendix I for complete breakdown.

Constraint Analysis Matrix

In order to provide a quantitative comparison of the three proposed alternatives, a Constraint Analysis Matrix has been prepared. Ten main design considerations were identified during the alternative analysis process and selected for the comparison within the matrix due to their potential impact on the feasibility of an alternative. Each main design consideration consists of subcategories to further define and rank the considerations. Each consideration is also weighted depending on the level of significance as shown in Table 3. Following is a brief description of the ten main design considerations:

1. **Cost/Fundability:** Compares the estimated alternative costs to the initial budgeted estimate of $40 million per grade crossing to be closed while also being consistent with the main funding sources.
2. **Right-of-Way:** Compares the three alternatives to each other in regards to the total square footage of acquisition, impact to land uses that are difficult to relocate and the number of businesses that will be relocated.
3. **Environmental Considerations:** Evaluates each alternative based upon the level of impact to the Los Angeles River, Verdugo Wash, parcels with potential for hazardous materials, and parcels of historical sensitivity.
4. **Traffic Circulation and Diversion:** Evaluates each alternative based upon maintaining traffic on primary streets and on how significant of a diversion from the existing traffic patterns the proposed routes will cause.
5. **Constructability:** Evaluates each alternative based upon the complexity of construction, the need for extensive staging requirements, and the ability to maintain traffic operations and access during construction.
6. **Railroad Impacts:** Evaluates each alternative based upon impacts to railroad operations for both during and post construction.
7. **Geometrics:** Evaluates each alternative on meeting design requirements of the applicable jurisdictions, meeting the latest Americans with Disabilities Act requirements, and providing accommodations for pedestrians and cyclists.
8. **Utility Impacts:** Compares the three alternatives to each other in regards to the number of utilities requiring relocation as well as the estimated costs for those relocations.
9. **L.A. River Revitalization Plan Consistency:** Evaluates each alternative based upon the size of the area of encroachment into the L.A. River Revitalization Plan footprint and the alternative's ability to mitigate that encroachment.
10. **Programmatic Outlook and Future Community Impacts:** Evaluates each alternative based upon a programmatic view of the corridor taking into consideration future projects, including increased rail service, expected within the project area and rating the alternative on the overall impacts to the community.

The complete matrix along with a detailed explanation of each consideration, subcategories and the findings is provided in Appendix J. The weight factors shown below are the maximum scores possible for each consideration. A higher score within a consideration means that an alternative closely meets the goals of that consideration. Therefore, the alternative with the highest overall score has best met the ten main design considerations.

Table 3: Constraint Analysis Matrix Summary

Item No.	Consideration	Weight Factor	Alternative 1 Score	Alternative 2 Score	Alternative 3 Score
1	Cost/Fundability	15	10	13	5
2	Right-of-Way	15	9	12	11
3	Environmental Considerations	15	13	10.5	6.5
4	Traffic Circulation and Diversion	10	9	8	6
5	Constructability	5	3	5	1
6	Railroad Impacts	5	2	4	3
7	Geometrics and Safety	10	8	7	5
8	Utility Impacts	5	2	4	3
9	L.A. River Revitalization Plan Consistency	10	5	10	2
10	Programmatic Outlook and Community Impacts	10	5	10	5
	TOTAL	**100**	**66**	**83.5**	**47.5**

Cumulative and Programmatic Impact

When developing a project it is important to understand how that project fits into overall plans for the corridor as well as the cumulative impacts. This approach will ensure that projects will fit together seamlessly, avoiding duplicative expenditures (ie. throwaway costs), and results in an overall program that minimizes overall impacts to the community and reduces costs while providing the most benefit. The Doran Street and Broadway/Brazil Safety and Access Project is just one of many projects through this corridor, and must account for the Los Angeles River Revitalization, Glendale Narrows Riverwalk, Los Angeles-San Diego-San Luis Obispo (LOSSAN) Rail Corridor Agency service expansion and California High Speed Rail (HSR).

While the alternatives have addressed the L.A. River Revitalization and Glendale Narrows Riverwalk projects, of primary concern in a cumulative and programmatic viewpoint is the planned increase in rail service through this corridor from both the LOSSAN service expansion and HSR.

LOSSAN Corridor Agency developed a Strategic Implementation Plan in April 2012 which reflects a planned service expansion in this corridor (Burbank-Bob Hope Airport to Los Angeles Union Station). This expansion will increase the train trips from 84 (current volume) to 124 trains per day by 2030, inclusive of Amtrak (12 to 16 trains per day), Metrolink (61 to 90 trains per day) and freight (11 to 18 trains per day). This is a 50% increase in trains being implemented over the next 15 years. With this expansion, at-grade crossings along the corridor will see increased vehicular delays.

HSR is accelerating their program to have an operational segment from Palmdale to Burbank-Bob Hope Airport station, just north of our project corridor, by 2022. With that segment in operation, commuter rail volume will increase in the project corridor by 2022 through the use of a shared corridor with HSR in order to connect from the terminus station in Burbank to Union Station in downtown Los Angeles. By 2028, it is anticipated that HSR will be operating in a dedicated corridor which would require all crossings to be grade separated.

The challenge is two-fold. First, with the increase in rail volume by 2022 from the LOSSAN service expansion and the HSR terminus in Burbank, at-grade crossings within the corridor will see increased delay and potential for incidents. The Broadway/Brazil crossing already experiences considerable delays, a condition that will be significantly worsened with the increased rail volumes. Second, by 2028 all at-grade crossings will need to be grade separated to accommodate a dedicated HSR corridor.

Alternative 2 is the only alternative that addresses the impacts of the LOSSAN service expansion and HSR in both the 2022 and 2028 conditions. Alternatives 1 and 3 only close the Doran Street at-grade crossing. As a result, a future grade separation would be required in the vicinity of Broadway/Brazil, similar to the Salem/Sperry Overpass shown in Alternative 2, creating cumulative impacts as discussed below.

Construction: It is expected that construction would commence in 2017 for any of the alternatives being evaluated in this report. Construction duration for Alternatives 1 and 2 are 2.5 years; Alternative 3 would be 3 years in length.

As Alternatives 1 and 3 would require a future grade separation similar to the Salem/Sperry Overpass, a second construction period of 2.5 years is expected and could commence as early as 2022. Over an 8 year period between 2017 and 2025, the community would be subjected to the following cumulative period of construction:

Alternative 1 + Future Grade Separation = 5 years of construction

Alternative 2 + (not applicable) = 2.5 years of construction

Alternative 3 + Future Grade Separation = 5.5 years of construction

Right-of-Way: As Alternatives 1 and 3 require the construction of a future grade separation, resulting in a cumulative impact on right-of-way through the need for additional acquisition and business relocation. This additional right-of-way need is the same as the Alternative 2 need for the Salem/Sperry Overpass. Figure 4 reflects the cumulative right-of-way impacts for the three alternatives. Table 4 quantifies the increase in both acquisition and affected parcels.

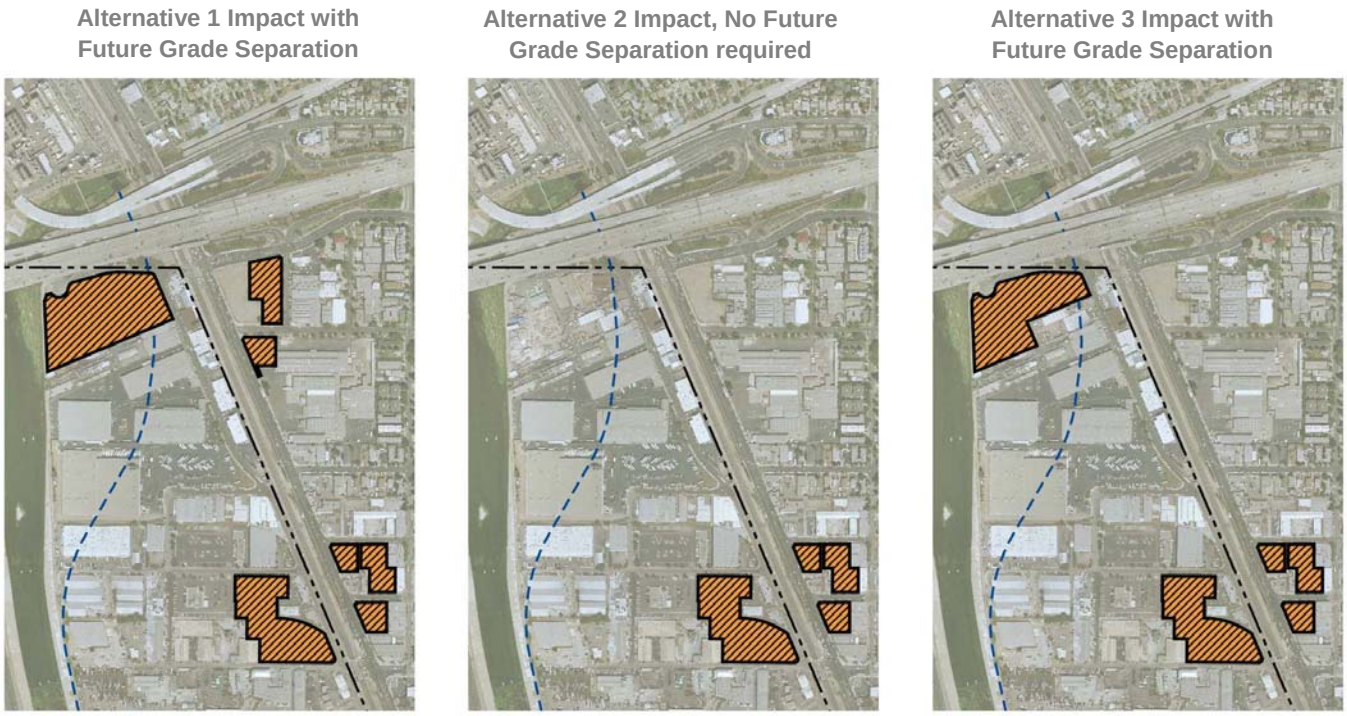


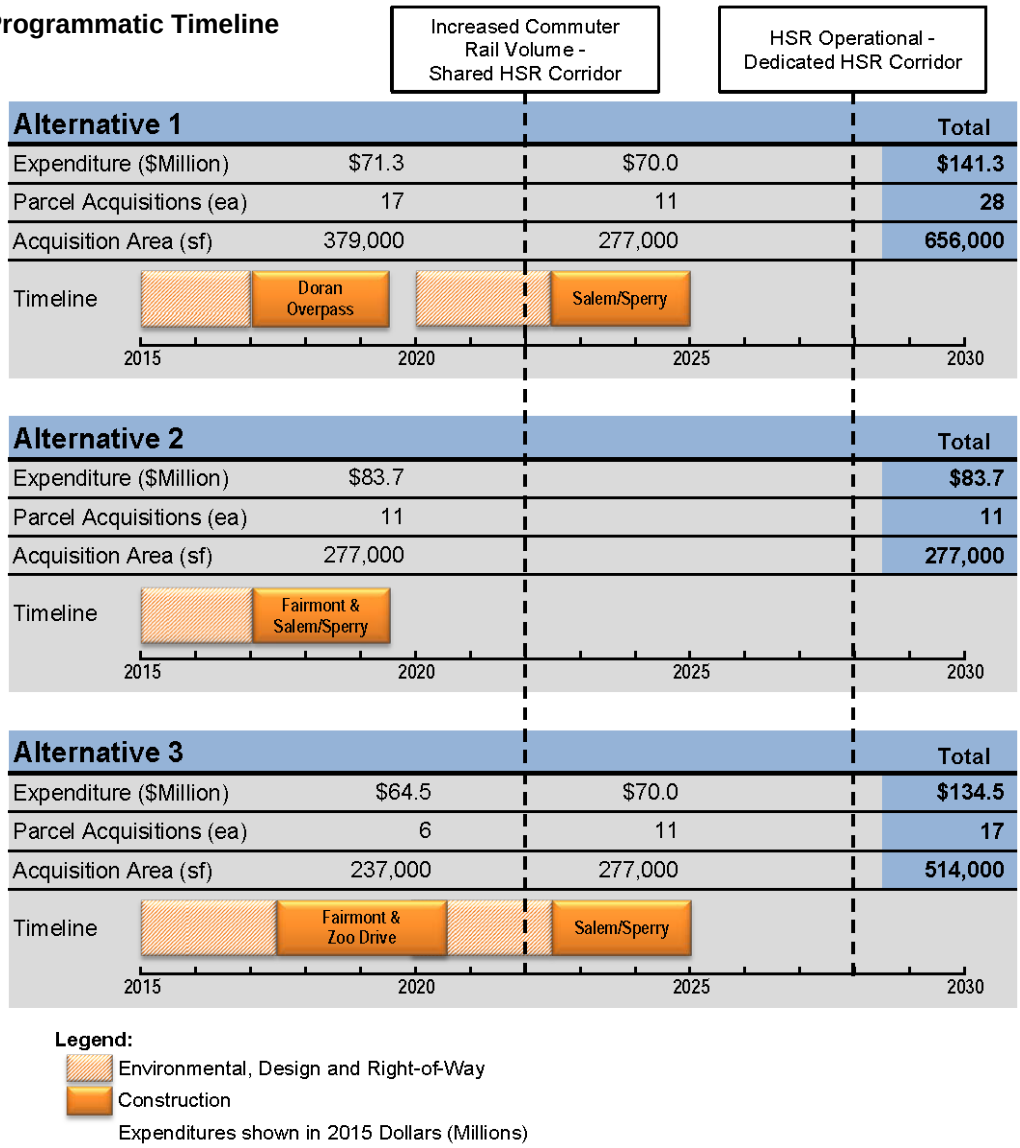
Figure 4: Programmatic Right-of-Way Impacts

Environmental: The increase in commuter rail traffic in 2022 will result in additional delays at the Broadway/Brazil crossing, a crossing that is already experiencing noticeable delays in its current configuration. The increase in idling cars is detrimental to air quality.

As Alternatives 1 and 3 require the construction of a second grade separation, the temporary impacts are compounded with a second round of heavy construction. As noted above, the community could experience over 5 years of construction over an 8 year period. Common environmental challenges, though temporary, during construction include noise, air quality, dust control, traffic delays and detours.

Fiscal Implications: Programming of grade separations in fully developed corridors require substantial funds due to construction and right-of-way costs. Regardless of funding sources, the ability to close two at-grade crossings with a single grade separation is the fiscally prudent approach. Alternatives 1 or 3 will result in an additional $70 million in program costs due to the need for the future grade separation. These impacts are reflected in Table 4 below.

Table 4: Programmatic Timeline



Recommendation

Construction of a grade separation in a fully developed area inherently impacts the community, right-of-way, and traffic during construction. This Project Study Report (Equivalent) details the thorough analysis of three feasible alternatives, evaluating their impacts, with the intent to select a preferred alternative. The preferred alternative should best meet the goals and objectives that were set forth by Metro, and conferred with the Cities. These goals and objectives are incorporated into the Constraint Analysis Matrix design considerations.

Alternative 2 clearly provides the best overall solution to the corridor for the following reasons:

- Ranked highest by a considerable margin in a direct comparison to Alternatives 1 and 3 in the Constraints Analysis
- Provides the largest safety enhancement with the closure of two at-grade crossings
- Results in two points of uninterrupted access for residents, businesses and first responders across the rail corridor
- Addresses the future needs for the corridor including the LOSSAN service expansion and the High Speed Rail
- Eliminates the need for a future grade separation and thus avoids additional construction impacts to the community that would result in over 5 years of construction in an 8 year period
- Provides significant programmatic benefit as the most fiscally prudent solution while eliminating the need for additional right-of-way acquisition and relocation of businesses

Based on all these factors, Alternative 2 best supports the Project goals and objectives, and provides the largest long-term benefit to the cities and community. It is recommended that Alternative 2 be advanced into the environmental clearance phase of the project development.

ATTACHMENT B

DORAN STREET AND BROADWAY/BRAZIL SAFETY AND ACCESS PROJECT

CONSTRAINT ANALYSIS CONSIDERATIONS

The Constraint Analysis Matrix is a list of design considerations that was used to conduct a quantitative comparison of the three proposed alternatives. Within the matrix, there are 10 main design considerations with subcategories to further define and rank the considerations. The following descriptions are a means of defining how each alternative was ranked against each other within each subcategory. The matrix includes a column for comments which is to be used for clarifying, or justifying, the score being provided for each alternative.

1. COST/FUNDABILITY

a. Cost effectiveness – Max points: 10
The scoring is based upon the relationship of the initial cost estimate in comparison to the established budget of $40 million per grade crossing to be closed.

b. Fundability within existing sources – Max points: 5
The main funding sources for the project include ARRA, through the FRA, and CHSRA, therefore it must be demonstrated that the alternatives directly support their goals to maintain funding eligibility.

2. RIGHT-OF-WAY

a. Area (SF) needing acquisition – Max points: 6
The alternatives are scored in direct comparison to each other based upon the total square footage of acquisition. Provide the same score to multiple alternatives if the estimated areas are in close proximity to each other.

b. Land uses that are difficult to relocate – Max points: 5
A full score is achieved if an alternative does not acquire, or impact, a parcel that would require the relocation of a business type that is known to be challenging to relocate, such as businesses that have the potential to cause contamination or difficulty in finding compatible land use designations. Score is reduced based upon the number of impacts to such parcels or businesses.

c. Number of businesses requiring relocation – Max points: 4
The alternatives are scored in direct comparison to each other. Provide the same score to multiple alternatives if the number of relocations is in close proximity to each other.

3. ENVIRONMENTAL CONSIDERATIONS

a. L.A. River – Max points: 5
Points are earned for the following items:

- 1.5 points for consistency with the L.A. River Ecosystem Restoration Integrated Feasibility Report
- 0.5 point for avoiding the need for Individual or Nationwide Permits from the U.S. Army Corps of Engineers under Section 404 of the federal Clean Water Act

- 0.5 point for avoiding the need for Water Quality Certification from the Regional Water Quality Control Board under Section 401 federal Clean Water Act
- 0.5 point for avoiding the need for an Agreement for Alteration of Lake or Stream pursuant to Section 1600 of the State Fish and Game Code
- 1.0 point for avoiding impacts to plant and wildlife species listed under the federal or state Endangered Species Act
- 0.5 point for avoiding impacts to native resident or migratory fish or wildlife species
- 0.5 point for avoiding the need to mitigate impacts to native resident or migratory fish or wildlife species

b. Verdugo Wash – Max points: 4

Points are earned for the following items:

- 0.5 point for consistency with the L.A. River Ecosystem Restoration Integrated Feasibility Report
- 0.5 point for avoiding the need for Individual or Nationwide Permits from the U.S. Army Corps of Engineers under Section 404 of the federal Clean Water Act
- 0.5 point for avoiding the need for Water Quality Certification from the Regional Water Quality Control Board under Section 401 federal Clean Water Act
- 0.5 point for avoiding the need for an Agreement for Alteration of Lake or Stream pursuant to Section 1600 of the State Fish and Game Code
- 1.0 point for avoiding impacts to plant and wildlife species listed under the federal or state Endangered Species Act
- 0.5 point for avoiding impacts to native resident or migratory fish or wildlife species
- 0.5 point for avoiding the need to mitigate impacts to native resident or migratory fish or wildlife species

c. Hazardous Material – Max points: 3

Points are earned for the following items:

Sensitive Receptors

- 0.5 point for having no schools located within one-quarter mile of project alternative
- 0.5 point for having no other sensitive receptors (i.e., hospitals, day care centers, convalescence facilities, or residential properties) within one-quarter mile

Indicators of Potential Sources of Soil and Groundwater Contamination

- 0.5 point for having no sites with known or potential contamination issues, hazardous wastes sites, landfills, or sites with registered and/or leaking Underground Storage Tanks

- 0.5 point for having no parcels adjacent to proposed project alignment with the potential for soil or groundwater contamination
- 0.5 point for not having one to three parcels in or adjacent to proposed project alignment with the potential for soil or groundwater contamination
- 0.5 point for not having four or more parcels in or adjacent to proposed project alignment with the potential for soil or groundwater contamination

d. Historical Sensitivity – Max points: 3

Within the project area, San Fernando Road has been identified as part of the "Historic U.S. Highway 99", while the parcel on West San Fernando Road at Sperry Street containing art deco buildings is potentially eligible for historical sensitivity. This parcel is referred to as the "art deco" parcel.

Points are earned for the following items:

- 1.0 point for avoiding historic resources that are listed or are potentially eligible for listing on the California Register of Historical Resources (CRHR) or the National Register of Historic Places (NRHP)
- 0.5 point for not affecting the setting of any historic resources that are listed or are potentially eligible for listing on the CRHR or the NRHP
- 0.5 point for providing an opportunity to enhance the setting for buildings potentially eligible for listing in the CRHR or the NRHP
- 1.0 point for avoiding or minimizing effects on the alignment of segments of San Fernando Road designated as "Historic U.S. Highway 99"

4. TRAFFIC CIRCULATION AND DIVERSION

a. Maintain traffic on arterial streets – Max points: 4

The arterial streets within the project area are defined as Fairmont Avenue west of the SR-134 ramps; Doran Street between San Fernando Road and the SR-134 ramps; San Fernando Road; and Broadway. A full score is achieved if an alternative in the final condition keeps the traffic on these arterial streets. The score is reduced as an alternative utilizes lower classified streets as a main route for the traffic.

b. Minimal diversion from current routes – Max points: 6

Upon completion of an alternative, a full score is achieved if the route has minimal diversion from the existing traffic routes using the at-grade crossings to travel between San Fernando Road and West San Fernando Road. The score is reduced if diversions will not be intuitive or meet expectations of the driver and the extent and effectiveness of signage required.

5. CONSTRUCTABILITY

a. Complexity and staging requirements – Max points: 3

A full score is achieved if an alternative does not increase the complexity of construction or requires extensive staging that can impact the construction costs and schedule. This can include staging to maintain traffic on arterial streets for bridge construction and utility

relocations; seasonal construction requirements within waterways; and such items as isolation casings needed for the extra deep bridge foundations for the future L.A. River Revitalization Alternative 20. The score is reduced as the complexities and staging requirements cause an increase in construction costs and schedule.

b. **Impact to traffic operations or at-grade crossing closure – Max points: 2**
A full score is achieved if an alternative can be constructed with minimal interruption of traffic operations. The score is reduced depending on the number and duration of required detours/closures.

6. RAILROAD IMPACTS

a. **Impact to railroad operations during construction – Max points: 2**
A full score is achieved if an alternative has no impacts to railroad operations. The score is reduced with the need for any interference of operations such as during construction.

b. **Impact to current and future railroad/CHSRA operations – Max points: 3**
A full score is achieved if an alternative not only has no permanent impact on the existing Metrolink tracks once constructed but also provides for a sealed corridor for high speed rail. The score is reduced as an alternative's final condition does not fully support Metrolink or high speed rail.

7. GEOMETRICS

a. **Meets jurisdictional geometric standards – Max points: 5**
A full score is achieved if an alternative meets the design requirements of the applicable jurisdiction including but not limited to the cities of Glendale and Los Angeles, Caltrans, AASHTO, Metrolink, CHSRA. In regards to design speed, the city of Glendale requires a 30 MPH design speed to be posted at 25 MPH, while the city of Los Angeles requires a 35 MPH design speed to be posted at 25 MPH. The score will be reduced as the number of exceptions to design standards needed increases.

b. **Meets ADA requirements – Max points: 2**
A full score is achieved if both the horizontal layout and the vertical profile meet all of the latest Americans with Disabilities Act (ADA) requirements. The score is reduced if an alternative does not, or partially meets the horizontal and/or the vertical design requirements.

c. **Active transportation elements (bikes/peds) – Max points: 3**
A full score is achieved when an alternative includes accommodations for pedestrians and cyclists and also keeps their proposed routes similar to their existing routes. As every alternative being considered includes accommodations for active transportation, the score is reduced as their routes deviate further from their existing routes.

8. UTILITY IMPACTS

a. **Quantity of utilities requiring relocation – Max points: 2**
A full score is achieved if an alternative does not require major relocation of utilities, based upon length and type or size of facility requiring relocation. This would typically include large diameter (greater than 24 inches) transmission facilities or high voltage power lines (66kV or higher). Minimal impacts to utilities is expected and does not

impact scoring, and can include such items as a minor relocation of a utility for a limited distance to avoid a bridge bent, a retaining wall or other proposed improvement. The score is reduced if major relocations are required.

b. Costs associated with relocations – Max points: 3
A full score is achieved if the alternative has the lowest costs for utility relocations of the three build alternatives being considered, with the next lowest losing a point, and so forth.

9. L.A. RIVER REVITALIZATION PLAN CONSISTENCY

For this comparison, the Verdugo Wash has been excluded from consideration as it is at the outer limit of Alternative 20 footprint.

a. Encroachment into Alternative 20 footprint – Max points: 6
A full score is achieved if the alternative does not encroach into the footprint of the Army Corps approved Alternative 20 of the Los Angeles River Revitalization Plan. The score is reduced as the amount of an alternative's encroachment into Alternative 20 increases.

b. Ability to mitigate encroachment – Max points: 4
A full score is achieved if an alternative is able to mitigate encroachment into the footprint of Alternative 20 or if an alternative got a full score in the above subcategory. The score is reduced as an alternative is able to mitigate encroachments but still have (negative) impacts on the Alternative 20 improvements.

10. PROGRAMMATIC OUTLOOK AND FUTURE COMMUNITY IMPACTS

a. Programmatic outlook – Max points: 6
The scoring is based upon a programmatic view of the corridor that includes the consideration of future projects expected or required within the project area. This includes the LOSSAN rail service expansion and accommodating the high speed rail. A full score is achieved by being a good custodian of public funds by providing cost effective solutions to close both at-grade crossings.

b. Future community impacts – Max points: 4
A full score is achieved if an alternative does not require the construction of a future grade separation to close the Brazil/Broadway grade separation that would create another round of impacts to the surrounding community. Such impacts include another major construction project, right-of-way acquisitions, business relocations and traffic detours.

DORAN STREET AND BROADWAY/BRAZIL SAFETY AND ACCESS PROJECT

ALTERNATIVE CONSTRAINT ANALYSIS MATRIX

				ALTERNATIVE 1: DORAN OVERPASS		ALTERNATIVE 2: FAIRMONT AND SALEM/BRAZIL OVERPASS		ALTERNATIVE 3: FAIRMONT AND ZOO DRIVE CONNECTOR	
ITEM No.	CONSIDERATIONS	WEIGHT FACTOR	SUB FACTOR	SCORE	RANK	SCORE	RANK	SCORE	RANK
1	**Cost/Fundability**	**15**		**10**	**2**	**13**	**1**	**5**	**3**
	Cost effectiveness		10	6		8		3	
	Fundability within existing sources		5	4		5		2	
2	**Right-of-Way**	**15**		**9**	**3**	**12**	**1**	**11**	**2**
	Area (SF) of acquisition		6	5		5		6	
	Land uses that are challenging to relocate		5	2		5		2	
	Number of businesses to be relocated		4	2		2		3	
3	**Environmental Considerations**	**15**		**13**	**1**	**10.5**	**2**	**6.5**	**3**
	L.A. River		5	5		5		1	
	Verdugo Wash		4	4		1		1	
	Hazardous Materials		3	1.5		2.5		1.5	
	Historical Sensitivity		3	2.5		2		3	
4	**Traffic Circulation and Diversion**	**10**		**9**	**1**	**8**	**2**	**6**	**3**
	Maintain traffic on arterials streets		4	3		4		2	
	Minimal diversion from current routes		6	6		4		4	
5	**Constructability**	**5**		**3**	**2**	**5**	**1**	**1**	**3**
	Complexity and staging requirements		3	2		3		0	
	Impact to traffic operations or at-grade crossing closure		2	1		2		1	
6	**Railroad Impacts**	**5**		**2**	**3**	**4**	**1**	**3**	**2**
	Impact to railroad operations during construction		2	1		1		2	
	Permanent impact to current and future railroad/CHSRA operations		3	1		3		1	
7	**Geometrics**	**10**		**8**	**1**	**7**	**2**	**5**	**3**
	Meets jurisdictional geometric standards		5	3		3		2	
	Meets ADA requirements		2	2		2		2	
	Active transportation elements (bikes/peds)		3	3		2		1	

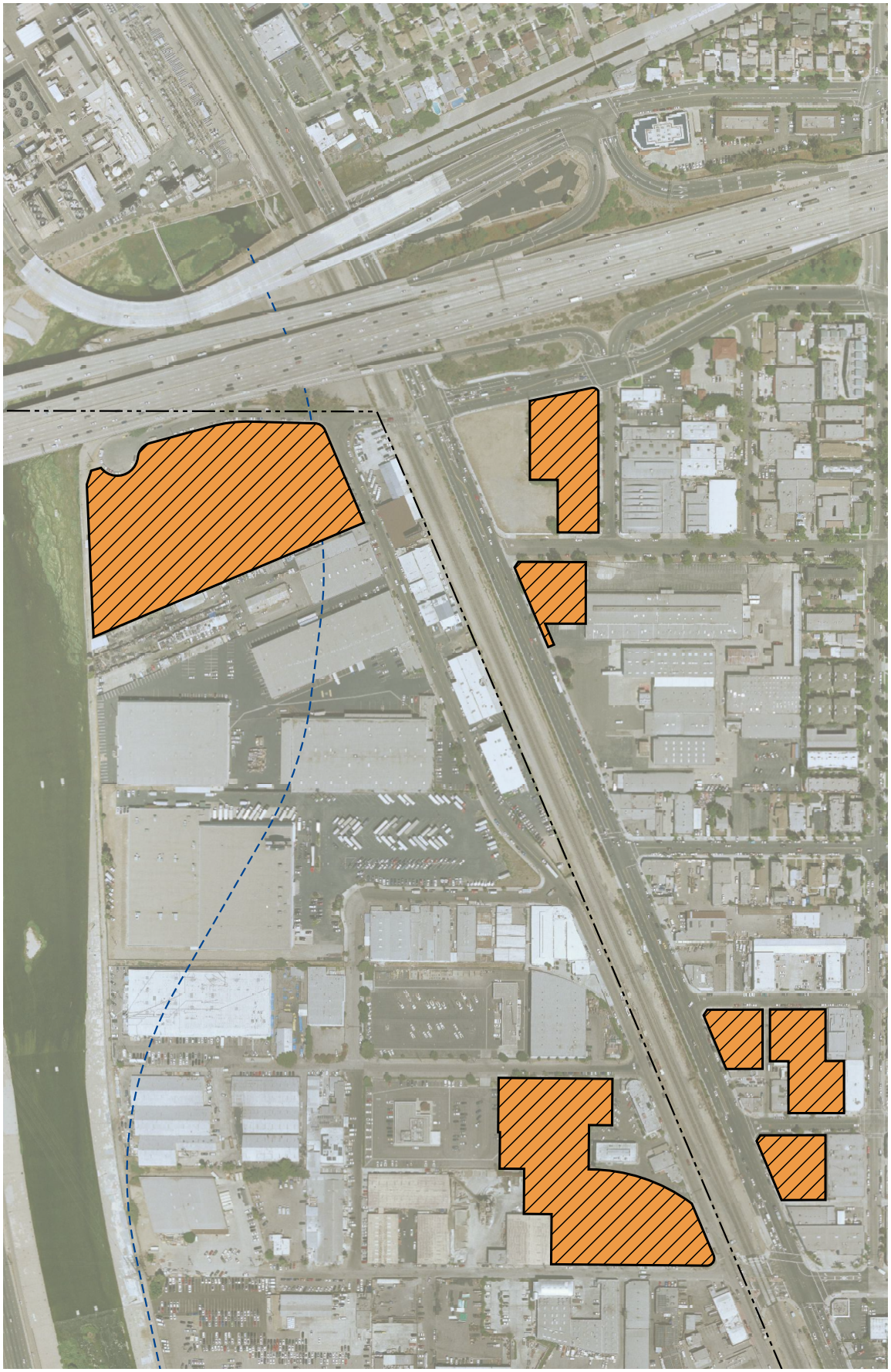
DORAN STREET AND BROADWAY/BRAZIL SAFETY AND ACCESS PROJECT

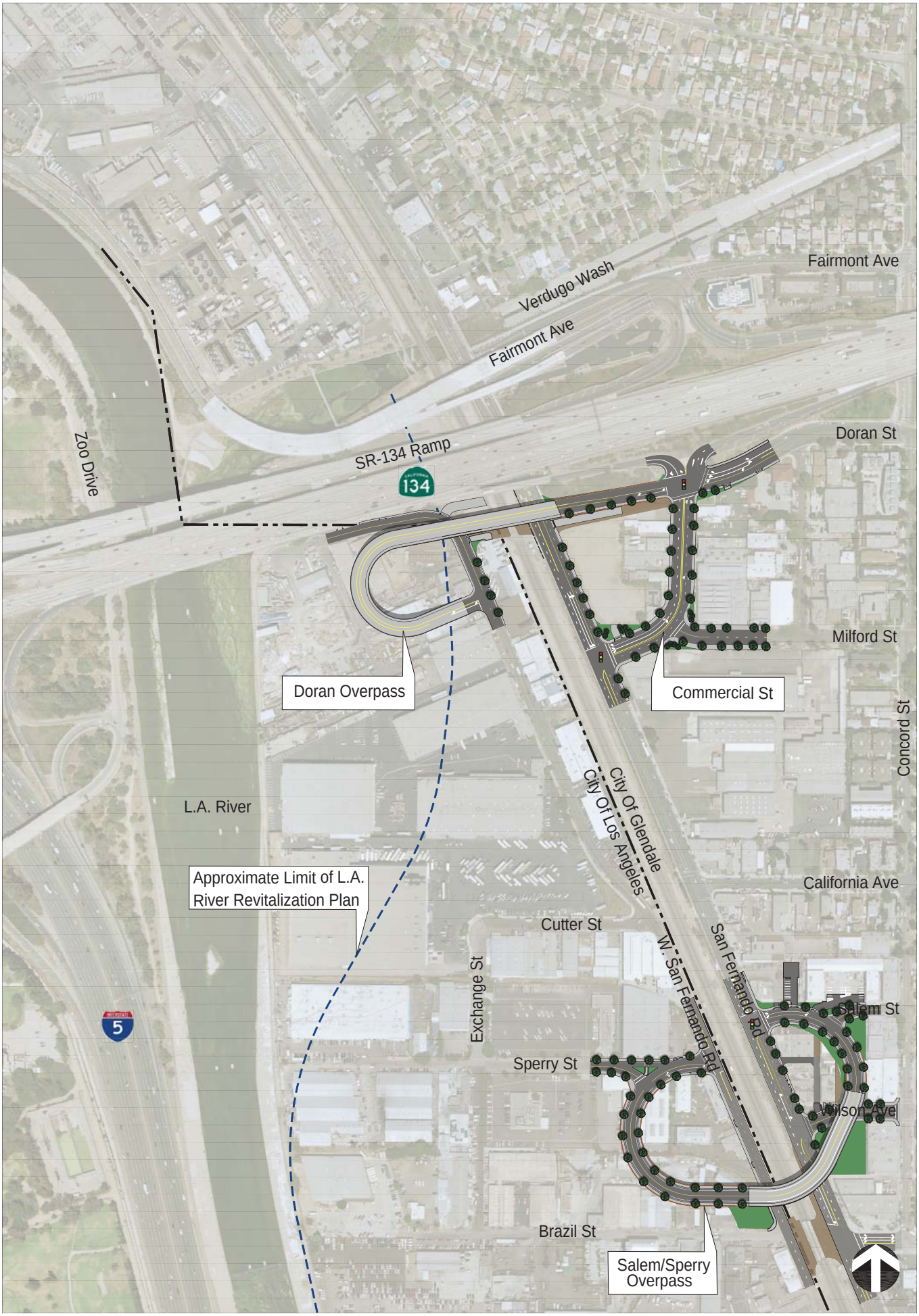
ALTERNATIVE CONSTRAINT ANALYSIS MATRIX

				ALTERNATIVE 1: DORAN OVERPASS		**ALTERNATIVE 2: FAIRMONT AND SALEM/BRAZIL OVERPASS**		**ALTERNATIVE 3: FAIRMONT AND ZOO DRIVE CONNECTOR**	
ITEM No.	CONSIDERATIONS	WEIGHT FACTOR	SUB FACTOR	SCORE	RANK	SCORE	RANK	SCORE	RANK
8	**Utility Impacts**	**5**		**2**	**3**	**4**	**1**	**3**	**2**
	Quantity of utilities to be relocated		2	0		1		2	
	Costs associated with relocations		3	2		3		1	
9	**L.A. River Revitalization Plan Consistency**	**10**		**5**	**2**	**10**	**1**	**2**	**3**
	Encroachment into future Alt 20 footprint		6	3		6		1	
	Ability to mitigate encroachment		4	2		4		1	
10	**Programmatic Outlook and Community Impacts**	**10**		**5**	**2**	**10**	**1**	**5**	**2**
	Good custodian of public funds		6	3		6		3	
	Future community impacts		4	2		4		2	
	Totals:	**100**	**100**	**66**	**2**	**83.5**	**1**	**47.5**	**3**
	Total #1 Rankings:			**3**	**2**	**6**	**1**	**0**	**3**

ATTACHMENT C - CUMULATIVE RIGHT-OF-WAY

ALTERNATIVE 1 IMPACT WITH FUTURE GRADE SEPARATION





Doran Street and Broadway/Brazil Safety and Access Project

Alternative 1 Impact with Future Grade Separation

Metro

HNTB

ALTERNATIVE 2 IMPACT, NO FUTURE GRADE SEPARATION REQUIRED

Doran Street and Broadway/Brazil Safety and Access Project

Alternative 2 Impact, No Future Grade Separation

Metro

HNTB

ALTERNATIVE 3 IMPACT WITH FUTURE GRADE SEPARATION

Doran Street and Broadway/Brazil Safety and Access Project

Alternative 3 Impact with Future Grade Separation

Metro

HNTB

ATTACHMENT D

Alternative Comparison

Goal	Alt 1	Alt 2	Alt 3
Permanently closes Doran crossing	G	G	G
Permanently closes Broadway/Brazil crossing	R	G	R
No future grade separation required	R	G	R
Minimizes diversion of traffic	G	Y	R
Both crossings open during construction	R	G	G
Consistent with L.A. River Revitalization	Y	G	R
Consistent with funding sources	G	G	R

G Meets Goal

Y Partially Meets Goal

R Does Not Meet Goal

Metro