

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**

ITEM No.	CONSIDERATIONS	WEIGHT FACTOR	SUB FACTOR	ALTERNATIVE 1: DORAN OVERPASS		ALTERNATIVE 2: FAIRMONT AND SALEM/BRAZIL OVERPASS		ALTERNATIVE 3: FAIRMONT AND ZOO DRIVE CONNECTOR	
				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	

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				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