



STAFF REPORT

Meeting Date: December 2, 2014

To: Honorable Mayor & City Council

From: Susan Healy Keene, AICP, Director of Community Development
David Lightner, Deputy City Manager/Director of Capital Assets

Subject: North Santa Monica Boulevard Reconstruction Project
Construction Mitigation

Attachments:

1. Construction Traffic Analysis
2. Lane Closure Alternatives
3. Three Feet for Safety Act

INTRODUCTION

This report continues the City Council's review of the Santa Monica Boulevard Reconstruction project, focusing on traffic impact analysis, project budget and duration of construction scenarios. Staff seeks City Council's direction to proceed with project design and development of a construction mitigation plan in consultation with the Traffic & Parking Commission to begin construction in spring 2016. The City Council Ad-Hoc Committee (Mayor Bosse and Councilmember Brien) held three meetings to review this analysis. This report reflects their recommendations.

DISCUSSION

In 2004, the State of California relinquished ownership of the 1.8-mile boulevard to the City of Beverly Hills with many years of deferred State maintenance. The pavement quality, drainage system and other physical elements have deteriorated to the point that the Boulevard requires full reconstruction. On June 4, 2013 the City entered into an agreement with Psomas to perform design services for the Santa Monica Boulevard Reconstruction project.

The agreement with Psomas included two phases: 1) Pre-design/public outreach and 2) Project design. A milestone in the agreement is for the City Council to approve

proceeding with project design. A decision with respect to any modifications to the existing roadway width is needed prior to proceeding with project design.

Psomas estimates that it will take approximately 14 months from the beginning of the project design to start construction, inclusive of the construction bidding process. As the first phase of construction involves replacement of the drainage system, common practice is for this type of construction to be done in the spring to avoid potential flooding. Starting construction in spring 2016 would minimize overlap with the most intensive phases of construction of the Metro La Cienega station.

In spring 2014 the City Council reviewed two primary work products completed as part of the "pre-design" phase of the Santa Monica Boulevard Reconstruction project:

1. Santa Monica Boulevard Blue Ribbon Committee recommendations
2. Pre-design cost and duration estimates provided by the Psomas team.

The pre-design cost and duration estimates included the assumption that four lanes of traffic would be maintained throughout construction to minimize traffic impacts. The City Council determined that prior to commencing project design, they needed to understand traffic impacts, project duration and cost of lane closure options and potential mitigation measures during construction. The City Council further directed staff to prepare a scope of services for the Psomas team to evaluate lane closure alternatives and traffic impacts, and prepare cost and construction duration estimates for lane closures scenarios up to full closures of the Boulevard. In accordance with City Council direction, the scope of work included analysis of the roadway segment from Doheny Drive to Wilshire Boulevard. The roadway segment from Wilshire Boulevard to the western City limits (inclusive of the Wilshire/Santa Monica Boulevard intersection) was deferred until after completion of the development projects at 9900 and 9876 Wilshire Boulevard.

Mayor Bosse appointed Councilmember Brien and herself to an Ad-Hoc Committee to review the consultant's work in detail and provide recommendations to the City Council.

Traffic Analysis

Iteris, Inc. developed a detailed travel demand forecasting model and evaluated eleven construction scenarios as described in Attachment 1. A summary of the study follows:

- Generally, 20 to 30% of the traffic shifted to streets north, 35 to 55% shifted to streets south of North Santa Monica Boulevard (NSMB), and 25 to 35% took alternate routes outside of Beverly Hills.
- The impact on congestion levels appears to be manageable if three or four lanes are maintained on NSMB, but will have significant impacts on congestion in Downtown Beverly Hills and residential streets to the north and south of the boulevard if the roadway is reduced to two lanes or closed completely to through traffic. Attachment 1 provides a map showing the impacts in red.

Lane Closure Alternatives

In addition to traffic modeling, a preliminary construction schedule and probable construction cost was developed for four lane closure alternatives. The alternatives are as follows:

Alternative 1: Four traffic lanes for the majority of construction.

Alternative 2: Three traffic lanes for the majority of construction.

Alternative 3: Two traffic lanes for the majority of construction.

Alternative 4: A range from four traffic lanes to three/two traffic lanes depending on activity.

Attachment 2 provides an overview of the alternatives and their associated duration and cost. In general, reducing the number of traffic lanes on the boulevard to provide more area for construction reduces the overall construction schedule and cost.

Although various lane closure alternatives were analyzed to establish the schedule and cost, it was determined that different construction activities will require distinctive lane closure requirements. For example, construction of storm drains across the boulevard will likely require the use of one-half of the roadway while construction of storm drains along the boulevard can be accomplished by closing one traffic lane. Similarly, construction of curb and gutter, sidewalks, and street lights can be done with minimal impact to traffic. Paving can be completed segment by segment, but can be expedited by reducing the number of available traffic lanes.

Ad-Hoc Committee

After detailed review of the traffic impact analysis and lane closure alternatives, the Santa Monica Boulevard Ad-Hoc Committee recommended the "Alternative 4" lane closure alternative. This alternative utilizes a combination of lane closure alternatives that balances minimizing traffic impacts and providing opportunities to expedite construction in order to reduce the overall schedule and cost associated with reconstruction of the boulevard. With City Council concurrence, the development of the construction mitigation plan will be based on "Alternative 4."

The Ad-Hoc Committee also reviewed the implications of the "Three Feet for Safety Act" that went into effect in September 2014 in the State of California and requires vehicles to provide 3-feet clearance for bicycles. Attachment 3 provides detail of this act in relation to the lane widths of Santa Monica Boulevard. After this review, the Ad-Hoc Committee recommended that the project be designed with the existing roadway width.

Further, the Ad-Hoc Committee recommended:

- Return to City Council with a draft construction mitigation plan developed in consultation with the Traffic & Parking Commission five months after commencement of project design.

- Consider landscaped medians in project design, return to City Council at 50% of project design (proposed modifications to bus stops, street lighting, and other changes to the existing roadway would be forwarded at this time).
- Conduct public outreach. Prior to issuing construction bid documents, return to the City Council with recommendations for extended hours and/or weekend construction to expedite the overall project.

Staff asked Bonterra (subsidiary of Psomas) to analyze the project under the California Environmental Quality Act (CEQA). Bonterra confirmed it qualified as a Class 1/Categorical Exemption. This analysis will be maintained on file.

Notices advising of the City Council's review were e-mailed to the Blue Ribbon Committee members, churches adjacent to Santa Monica Boulevard, attendees of the Blue Ribbon Committee meetings, and North Homeowner's Association.

FISCAL IMPACT

The pre-design cost estimate for the Santa Monica Boulevard Reconstruction project between Doheny Drive and Wilshire Boulevard presented to City Council on July 1, 2014 was \$28.6 million. The current estimate is \$27.2 million under lane closure "Alternative 4." This cost estimate will be updated during project design and upon contract award.

RECOMMENDATION

Staff seeks City Council direction to proceed with the final design of the Santa Monica Boulevard reconstruction project per recommendations of the Ad-Hoc Committee.



Approved By
Susan Healy Keene, AICP



FOR? Approved By
David Lightner

ATTACHMENT 1

North Santa Monica Boulevard Construction Traffic Analysis

Iteris developed a detailed travel demand forecasting model of the Beverly Hills area in order to forecast the impacts associated with different construction scenarios on North Santa Monica Boulevard (NSMB). This included the forecasting of traffic during the AM and PM peak periods, as well as Daily traffic volumes.

The following construction scenarios were evaluated:

Existing Conditions

NSMB includes four through lanes with lane widths of 11'-16' and a middle left turn lane.

Four Lanes Alternative

Four travel lanes with 10' lane widths maintained on NSMB. Left turns to are not allowed.

Two Lanes from Doheny Drive to Wilshire Boulevard Alternative

NSMB reduced to two lanes from Doheny Dr to Wilshire Boulevard. Lane widths vary from 11'-13'. Left turns are not allowed.

Two Lanes from Doheny Drive to Wilshire Boulevard – Mitigation Alternative

A traffic mitigation scenario was modeled to assess the feasibility of preventing diversion to residential streets north of NSMB. The alternative included restricted movements at six intersections north of NSMB to prevent cut-through traffic.

Two Lanes from Canon Drive to Wilshire Boulevard Alternative

NSMB reduced to two lanes only from Canon Dr to Wilshire Boulevard (the 60' segment). Lane widths vary from 11'-13'. Left turns are not allowed.

Two Lanes from Canon Drive to Wilshire Boulevard – Mitigation Alternative

A traffic mitigation alternative included traffic diverters to restrict cut-through traffic.

Full Closure Alternative

NSMB closed to through traffic from Doheny Drive to Wilshire Boulevard, the entire project length.

Closed from Doheny Drive to Beverly Boulevard Alternative

NSMB closed from Doheny Drive to Beverly Boulevard.

Closed from Beverly Boulevard to Canon Drive Alternative

NSMB closed from Beverly Boulevard to Canon Drive.

Closed from Canon Drive to Wilshire Boulevard Alternative

NSMB closed from Canon Drive to Wilshire Boulevard.

Three Lanes Alternative

NSMB reduced to three 10' lanes with two westbound lanes and one eastbound lane. Left turns are not allowed.

For each alternative, traffic volume changes on streets were forecast. Changes in volumes were plotted to visually show where the traffic had increased or decreased. Figure X shows the type of plots that were prepared illustrating in red, where the traffic volumes increased as a result of diversion from the NSMB corridor, with the width of the line representing the magnitude of the change in volume. The percentage change in traffic volumes was also identified, since the percentage change is often the most noticeable impact, particularly on residential streets. In order to assess the impact on congestion levels, volume/capacity (V/C) ratios were calculated for each scenario and compared to existing conditions via change in V/C analysis.

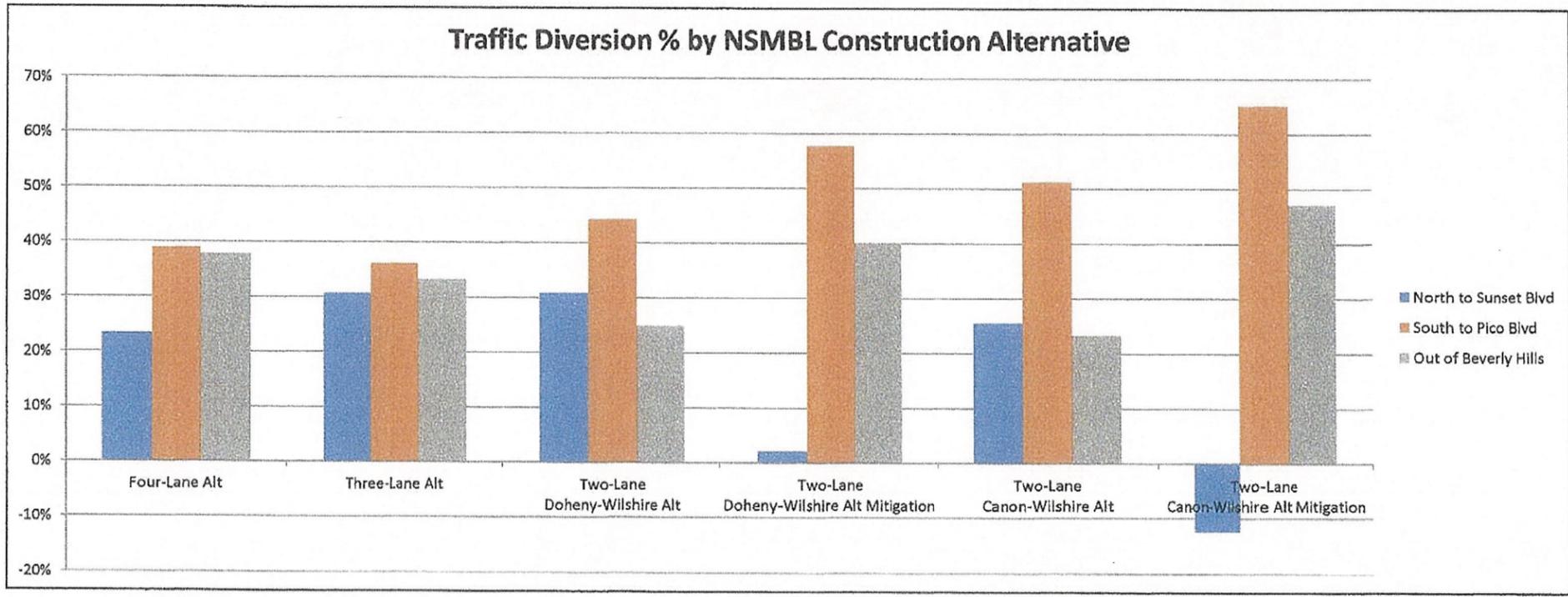
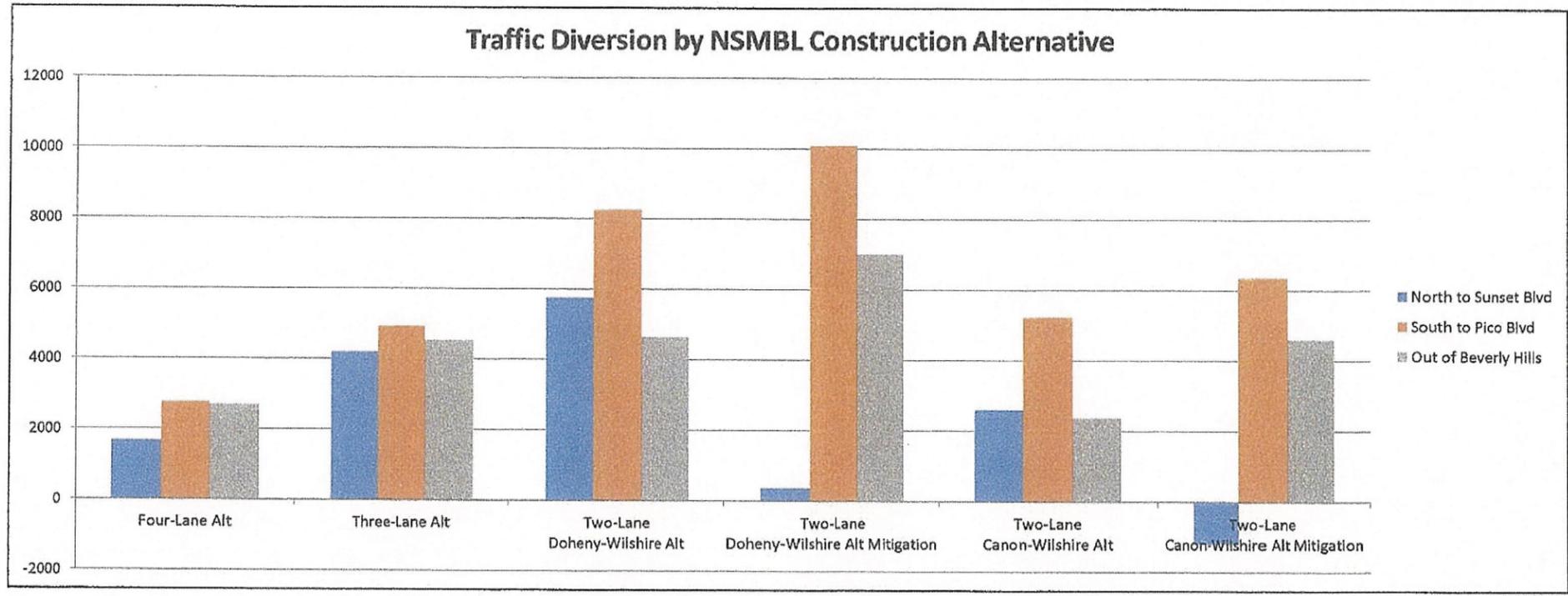
A total of 155 plots were prepared showing the impacts of the construction alternatives as listed in the table below.

- Average Daily Traffic (ADT) volume
- Change in ADT
- %change in ADT
- AM Peak volume
- Change in AM peak volume
- %change in AM peak volume
- AM V/C
- AM Change in V/C
- AM % Change in V/C
- PM Peak volume
- Change in PM peak volume
- %change in PM peak volume
- PM V/C
- PM Change in V/C
- PM % Change in V/C

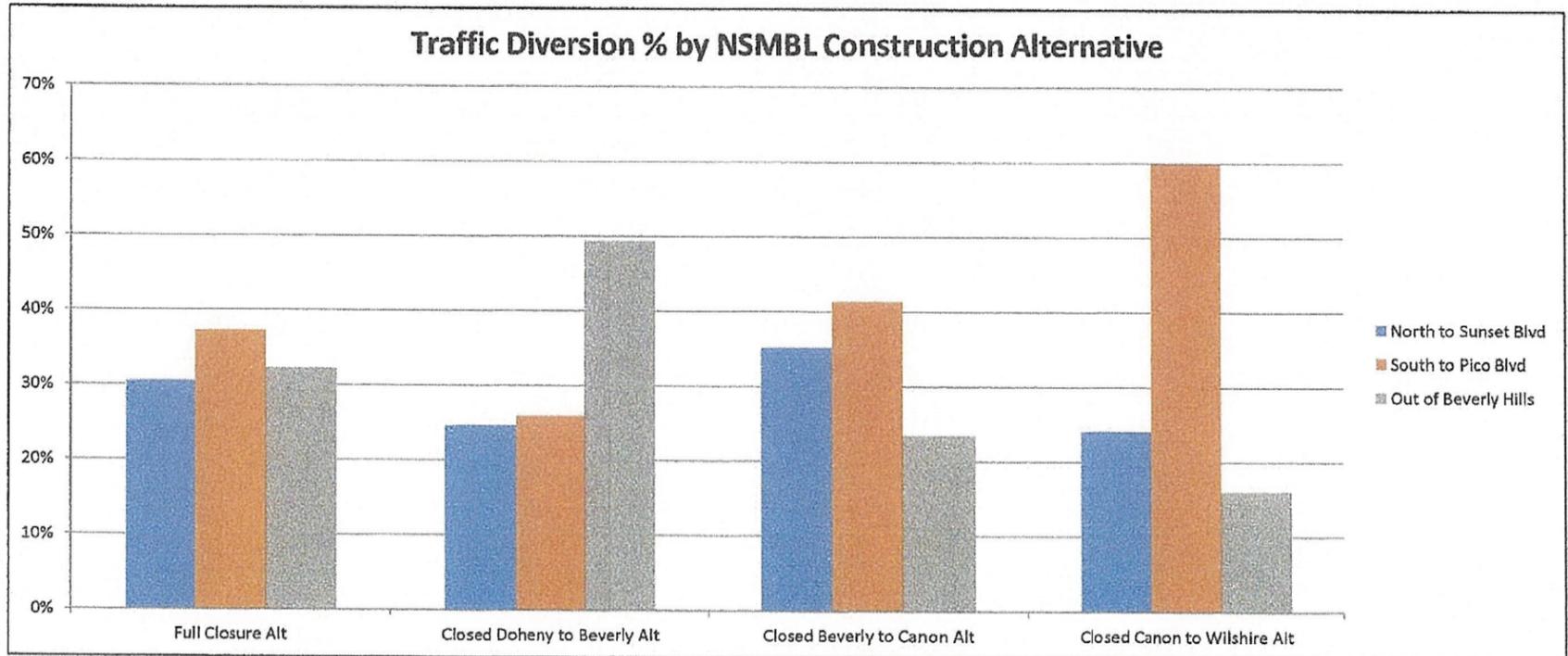
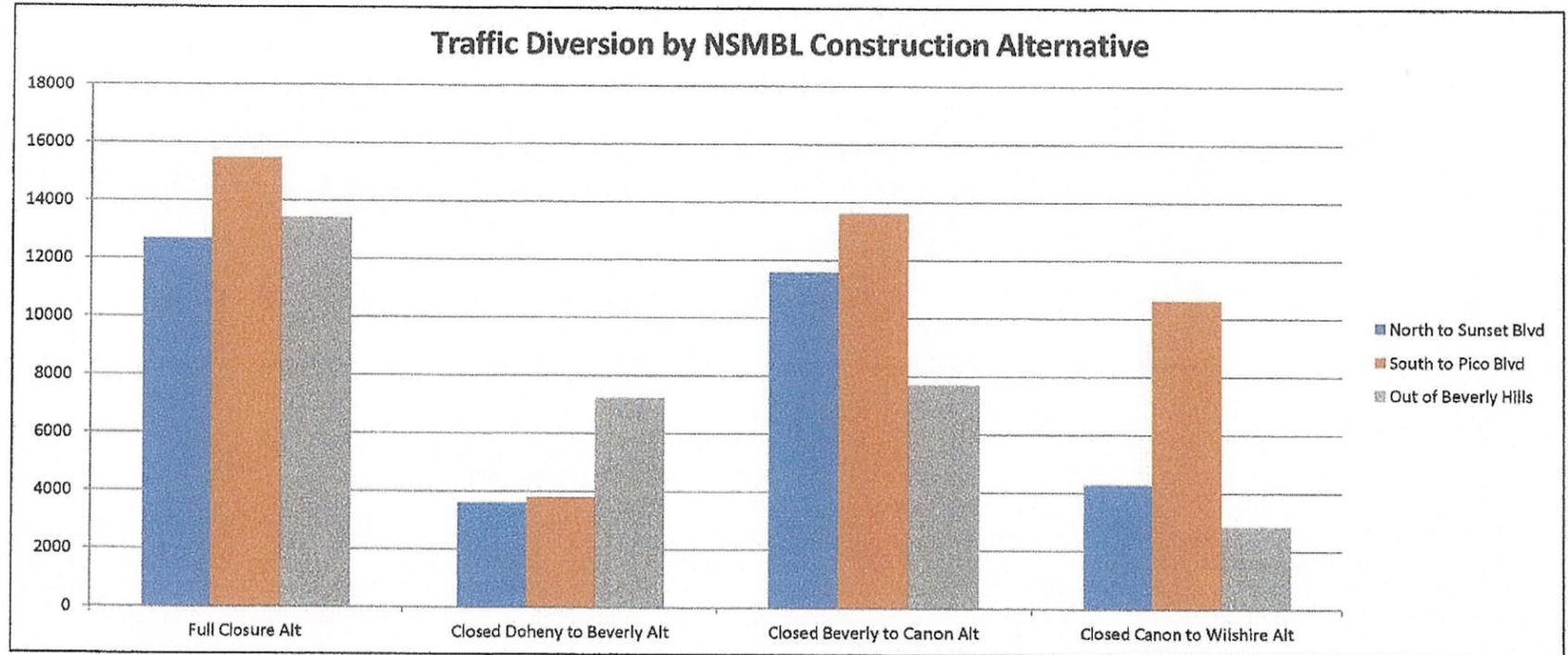
Patterns of Diversion

In order to simplify the comparison of alternatives, summaries were also prepared showing the general pattern of traffic diversion related to each alternative. This included the volume of traffic that shifted to streets to the north of Santa Monica Boulevard up to and including Sunset Boulevard, traffic that shifted to streets south of Santa Monica Boulevard down to and including Pico Boulevard, and traffic that took alternate routes outside of Beverly Hills. The pattern varied by alternative, but for the non-closure alternatives, generally 20 to 30% of the NSMB traffic shifted to streets north of NSMB, 35 to 55% shifted to streets south of NSMB, and 25 to 35% took alternate routes outside of Beverly Hills. The two mitigation scenarios modeled demonstrated that it was feasible to reduce the amount of cut-through

Traffic Diversion by NSMBL Construction Alternative												
	Daily Traffic Diversion						Daily Traffic Diversion %					
	Four-Lane Alt	Three-Lane Alt	Two-Lane Doheny-Wilshire Alt	Two-Lane Doheny-Wilshire Alt Mitigation	Two-Lane Canon-Wilshire Alt	Two-Lane Canon-Wilshire Alt Mitigation	Four-Lane Alt	Three-Lane Alt	Two-Lane Doheny-Wilshire Alt	Two-Lane Doheny-Wilshire Alt Mitigation	Two-Lane Canon-Wilshire Alt	Two-Lane Canon-Wilshire Alt Mitigation
Total	7123	13656	18647	17453	10202	9757						
North to Sunset Blvd	1662	4189	5755	366	2603	-1205	23%	31%	31%	2%	26%	-12%
South to Pico Blvd	2767	4931	8256	10082	5223	6361	39%	36%	44%	58%	51%	65%
Out of Beverly Hills	2694	4536	4637	7005	2376	4601	38%	33%	25%	40%	23%	47%



Traffic Diversion by NSMBL Construction Alternative								
	Full Closure Alt	Closed Doheny to Beverly Alt	Closed Beverly to Canon Alt	Closed Canon to Wilshire Alt	Full Closure Alt	Closed Doheny to Beverly Alt	Closed Beverly to Canon Alt	Closed Canon to Wilshire Alt
Total	41562	14639	32942	17774				
North to Sunset Blvd	12676	3611	11597	4284	30%	25%	35%	24%
South to Pico Blvd	15477	3801	13623	10643	37%	26%	41%	60%
Out of Beverly Hills	13409	7227	7722	2847	32%	49%	23%	16%



ATTACHMENT 2

North Santa Monica Boulevard reconstruction between Wilshire Blvd. and N. Doheny Dr.

<i>Scenario</i>	Alternative 1	Alternative 2	Alternative 3	Alternative 4
<i>Description</i>	- 4 traffic lanes open in all segments (except Segment C, Stage 7 which provides 2 lanes)	- 3 traffic lanes open in all segments (except Segment C, Stage 4 which provides 2 lanes)	- 2, 3 and 4 lanes open during alternating construction stages - Two construction stages per segment	- 3 or 4 traffic lanes open in all segments (except Segment C, Stage 7 which provides 2 lanes)
<i>Lane Configuration</i>	2 eastbound, 2 westbound (1 eastbound, 1 westbound in segment C, Stage 7)	1 eastbound, 2 westbound (1 eastbound, 1 westbound in segment C, Stage 4)	1 eastbound, 1 westbound -1 eastbound, 2 westbound and -2 eastbound, 2 westbound	2 eastbound, 2 westbound -1 eastbound, 2 westbound and -1 eastbound, 1 westbound in Segment C stage 7
<i>Duration (months)</i>	23	22	21	21
<i>Cost</i>	\$29,000,000	\$27,500,000	\$27,200,000	\$27,200,000
<i>Notes</i>	Requires a 2 lane segment in the 60' curb-to-curb width section for a portion of the construction duration.	Requires a 2 lane segment in the 60' curb-to-curb width section for a portion of the construction duration.	Maximum days of 2 lane traffic compared with other Alternatives.	Minimizes overall traffic impact. Requires a 2 lane segment in the 60' curb-to-curb width section for a portion of the construction duration.

Level and Duration of Traffic Impact by Construction Alternative

(Standard Working Hours and Pre-Cast Box Culvert)

<u>Alternative</u>	<u>Working Days of Construction in Each Traffic Impact Category</u>					<u>Estimated Duration</u>		<u>Contingency</u>
	<u>Negligible</u>	<u>Minor</u>	<u>Moderate</u>	<u>Major</u>	<u>Working Days</u>	<u>Months</u>	<u>Range</u>	
1	152	280	0	27	459	23	23-25	
2	152	54	200	40	446	22	22-24	
3	170	74	93	74	411	21	21-23	
4	152	98	*	138	416	21	21-23	

Negligible = Five Lanes Open

Minor= Four Lanes Open

Moderate= Three Lanes Open

Major= Two Lanes Open

*Note: Many "minor" impact days in Alternative 4 could be "negligible" when final traffic handling is determined.

traffic on residential streets north of NSMB with turn restrictions and diverters thereby making it difficult to access the parallel streets or use them for through traffic.

Impact on Congestion

The change in V/C plots illustrate the impact of the traffic changes on congestion levels on all of the links in the study area. In order to facilitate the comparison of the alternative in terms of the impact on accessibility to the Downtown Beverly Hills area, the average change in V/C ratio was estimated by considering the changes at 23 locations on Downtown access routes. The impact on congestion levels appears to be manageable if three or four lanes are maintained on NSMB, but will have more significant impacts on congestion in Downtown Beverly Hills if the roadway is reduced to one lane per direction or closed completely to through traffic.

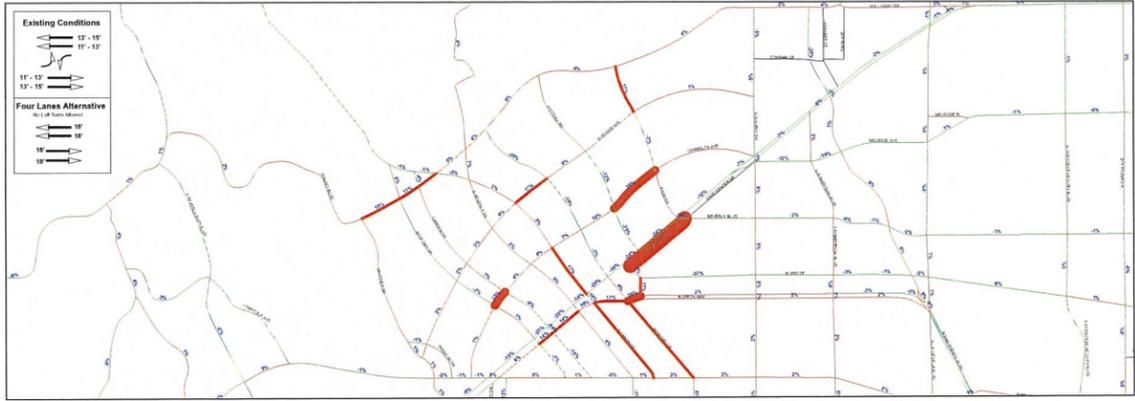
Summary

In summary, the alternatives had increasing impacts both on residential streets and congestion in the business triangle with the reduction in number of through travel lanes.

Number of Lanes Open on NSMB	Level of Residential Traffic Impact	Average % Change in Business Triangle V/Cs
Five Lanes	Negligible	Negligible
Four Lanes	Minor	1-2% Decrease
Three Lanes	Moderate	1-3 % Decrease
Two Lanes	Major	6-12% Decrease
Complete Closure	Significant	8-13% Decrease

It should be noted that the alternatives modeled so far have been largely corridor-long (end-to-end) alternatives to identify the relative magnitude of the traffic impacts associated with potential construction scenarios and the feasibility of mitigating the impacts on residential streets. In actuality, the likely construction scenario will be a combination of these alternatives, with different scenarios employed in different segments of the corridor at different time periods within the overall construction time period. As the design progresses and the construction scenario becomes more finalized, the consultant team will work with the Traffic and Parking Commission to identify the traffic mitigation measure appropriate for each stage of construction.

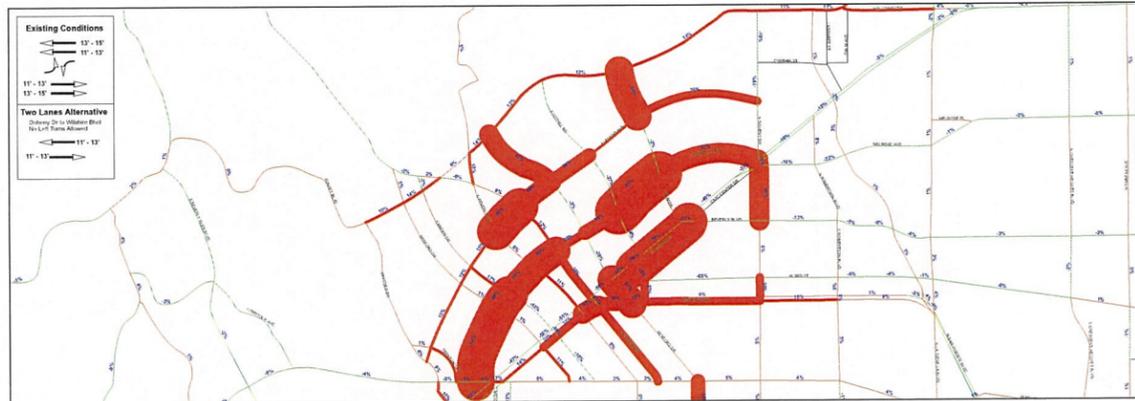
Four Lane Alternative



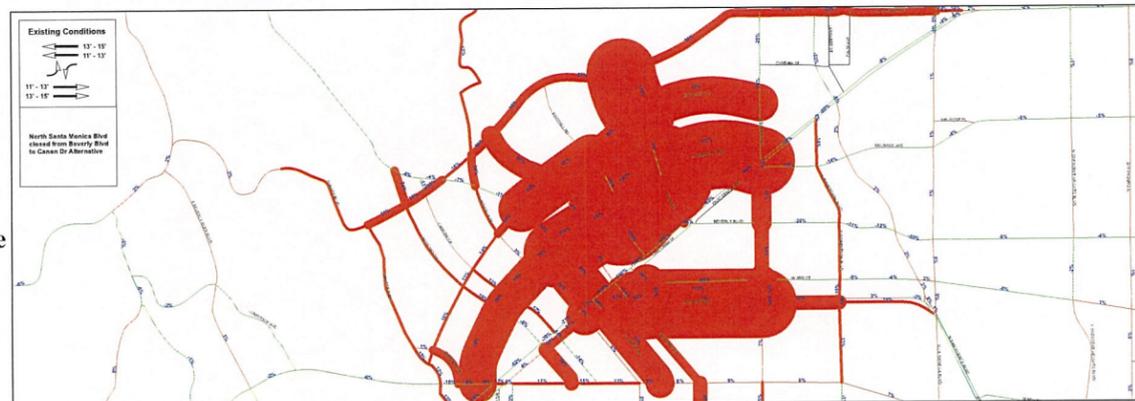
Three Lane Alternative

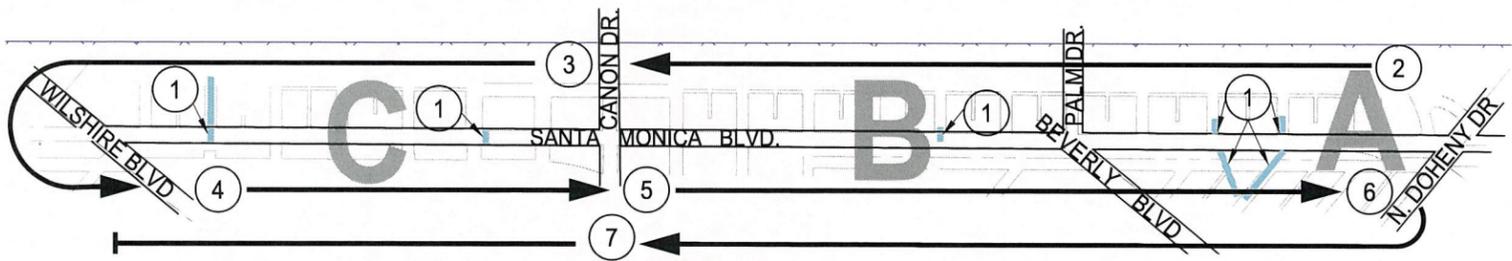


Two Lane Alternative



Close Beverly to Canon Alternative





CONSTRUCTION STAGE	CONFIGURATION <i>(all lanes 10' unless noted otherwise)</i>	CONSTRUCTION WORK	TRAFFIC * IMPACT
1		CONSTRUCTION OF MAJOR STORM DRAINS IN SEGMENT A OUTSIDE ROADWAY. CONSTRUCTION OF MINOR STORM DRAIN ACROSS NSMB IN SEGMENTS B AND C WITH TRAFFIC CONTROL MAINTAINING 4 LANES	1
2		STORM DRAIN, PAVEMENT, CURB AND GUTTER RECONSTRUCTION IN SEGMENTS A AND B	2
3		PAVEMENT, CURB AND GUTTER RECONSTRUCTION IN SEGMENT C	2
4		PAVEMENT, CURB AND GUTTER RECONSTRUCTION IN SEGMENT C	2
5		STORM DRAIN, PAVEMENT, CURB AND GUTTER RECONSTRUCTION IN SEGMENTS A AND B	2
6		PAVEMENT RECONSTRUCTION IN SEGMENTS A AND B	2
7		PAVEMENT RECONSTRUCTION IN SEGMENT C	4
8		FINAL ASPHALT WEARING COURSE AND STRIPING	2

LEGEND:

- CONSTRUCTION STAGE
- CONSTRUCTION ZONE
- PIPE CONSTRUCTION PARALLEL TO ROADWAY
- PROJECT SEGMENT

*** TRAFFIC IMPACT**

- 1: NEGLIGIBLE
- 2: MINOR
- 3: MODERATE
- 4: MAJOR

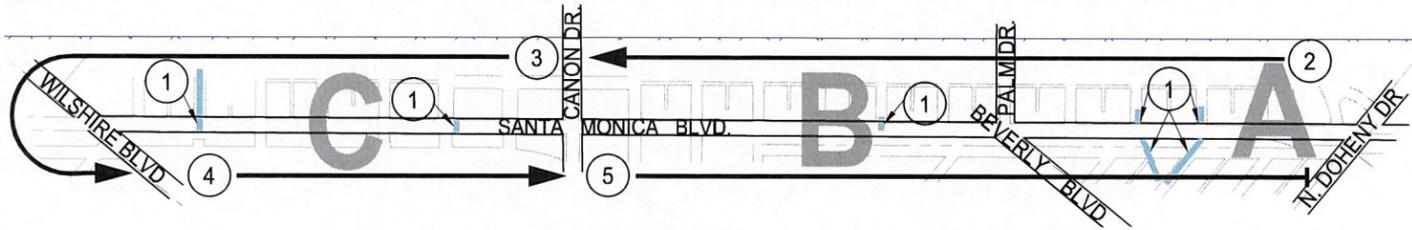
TOTAL DURATION:

- STANDARD HOURS: 92 WEEKS
- EXTENDED HOURS: 81 WEEKS
- NIGHT WORK: 77 WEEKS

ALTERNATIVE 1

NORTH SANTA MONICA BLVD. RECONSTRUCTION





CONSTRUCTION STAGE	CONFIGURATION <i>(all lanes 10' unless noted otherwise)</i>	CONSTRUCTION WORK	TRAFFIC IMPACT
①	TRANSVERSE STORM DRAIN RECONSTRUCTION	CONSTRUCTION OF MAJOR STORM DRAINS IN SEGMENT A OUTSIDE ROADWAY. CONSTRUCTION OF MINOR STORM DRAIN ACROSS NSMB IN SEGMENTS B AND C WITH TRAFFIC CONTROL MAINTAINING 4 LANES	1
②		STORM DRAIN, PAVEMENT, CURB AND GUTTER RECONSTRUCTION IN SEGMENTS A AND B	3
③		STORM DRAIN, PAVEMENT, CURB AND GUTTER RECONSTRUCTION IN SEGMENT C	4
④		PAVEMENT, CURB AND GUTTER RECONSTRUCTION IN SEGMENT C	3
⑤		STORM DRAIN, PAVEMENT, CURB AND GUTTER RECONSTRUCTION IN SEGMENTS A AND B	2
⑥	FINAL ASPHALT WEARING COURSE AND STRIPING	FINAL ASPHALT WEARING COURSE AND STRIPING ALL SEGMENTS IN VARYING TIME FRAMES	

LEGEND:

- ① CONSTRUCTION STAGE
- CONSTRUCTION ZONE
- PIPE CONSTRUCTION PARALLEL TO ROADWAY
- C PROJECT SEGMENT

*** TRAFFIC IMPACT**

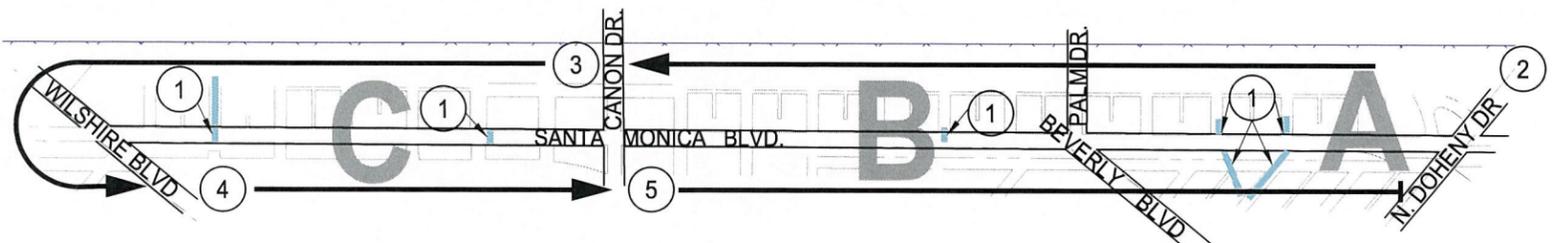
- 1: NEGLIGIBLE
- 2: MINOR
- 3: MODERATE
- 4: MAJOR

TOTAL DURATION:

STANDARD HOURS: 89 WEEKS
 EXTENDED HOURS: 79 WEEKS
 NIGHT WORK: 75 WEEKS

ALTERNATIVE 2
 NORTH SANTA MONICA BLVD.
 RECONSTRUCTION





CONSTRUCTION STAGE	CONFIGURATION <i>(all lanes 10' unless noted otherwise)</i>	CONSTRUCTION WORK	TRAFFIC IMPACT
1	TRANSVERSE STORM DRAIN RECONSTRUCTION	CONSTRUCTION OF MAJOR STORM DRAINS IN SEGMENT A OUTSIDE ROADWAY. CONSTRUCTION OF MINOR STORM DRAIN ACROSS NSMB IN SEGMENTS B AND C WITH TRAFFIC CONTROL MAINTAINING 4 LANES	1
2		STORM DRAIN, PAVEMENT, CURB AND GUTTER RECONSTRUCTION IN SEGMENTS A AND B	4
3		STORM DRAIN, PAVEMENT, CURB AND GUTTER RECONSTRUCTION IN SEGMENT C	3
4		PAVEMENT, CURB AND GUTTER RECONSTRUCTION IN SEGMENT C	4
5		STORM DRAIN, PAVEMENT, CURB AND GUTTER RECONSTRUCTION IN SEGMENTS A AND B	2
6	FINAL ASPHALT WEARING COURSE AND STRIPING	FINAL ASPHALT WEARING COURSE AND STRIPING ALL SEGMENTS IN VARYING TIME FRAMES	

LEGEND:

- CONSTRUCTION STAGE
- CONSTRUCTION ZONE
- PIPE CONSTRUCTION PARALLEL TO ROADWAY
- PROJECT SEGMENT

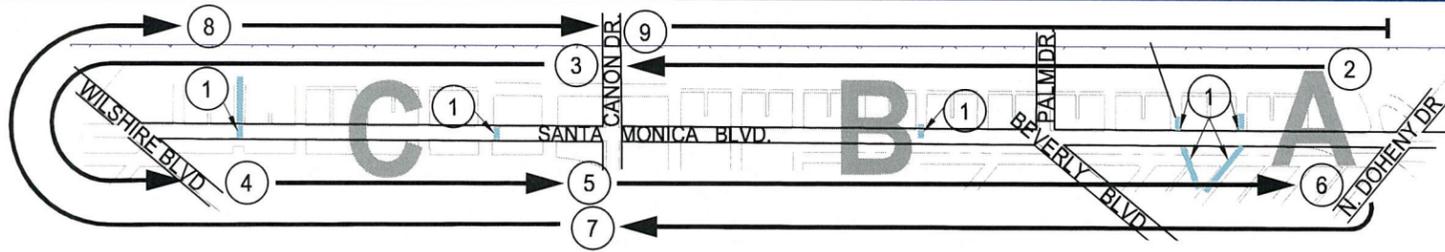
*** TRAFFIC IMPACT**

- 1 : NEGLIGIBLE
- 2 : MINOR
- 3 : MODERATE
- 4 : MAJOR

TOTAL DURATION:

- STANDARD HOURS: 79 WEEKS
- EXTENDED HOURS: 69 WEEKS
- NIGHT WORK: 67 WEEKS





CONSTRUCTION STAGE	CONFIGURATION <i>(all lanes 10' unless noted otherwise)</i>	CONSTRUCTION WORK	TRAFFIC* IMPACT
1	TRANSVERSE STORM DRAIN RECONSTRUCTION	CONSTRUCTION OF MAJOR STORM DRAINS IN SEGMENT A OUTSIDE ROADWAY. CONSTRUCTION OF MINOR STORM DRAIN ACROSS NSMB IN SEGMENTS B AND C WITH TRAFFIC CONTROL MAINTAINING 4 LANES	1
2		PERIMETER STORM DRAIN AND CURB AND GUTTER RECONSTRUCTION IN SEGMENTS A AND B	1
3		PERIMETER STORM DRAIN AND CURB AND GUTTER RECONSTRUCTION IN SEGMENT C	1
4		PERIMETER CURB AND GUTTER RECONSTRUCTION IN SEGMENT C	1
5		PERIMETER CURB AND GUTTER RECONSTRUCTION IN SEGMENTS A AND B	1
6		STORM DRAIN AND PAVEMENT RECONSTRUCTION IN SEGMENTS A AND B	3
7		PAVEMENT RECONSTRUCTION IN SEGMENT C	4
8		PAVEMENT RECONSTRUCTION IN SEGMENT C	3
9		STORM DRAIN AND PAVEMENT RECONSTRUCTION IN SEGMENTS A AND B	3
10	FINAL ASPHALT WEARING COURSE AND STRIPING	FINAL ASPHALT WEARING COURSE AND STRIPING ALL SEGMENTS IN VARYING TIME FRAMES	2

LEGEND:

- ① CONSTRUCTION STAGE
- CONSTRUCTION ZONE
- PIPE CONSTRUCTION PARALLEL TO ROADWAY
- C** PROJECT SEGMENT

*** TRAFFIC IMPACT**

- 1: NEGLIGIBLE
- 2: MINOR
- 3: MODERATE
- 4: MAJOR

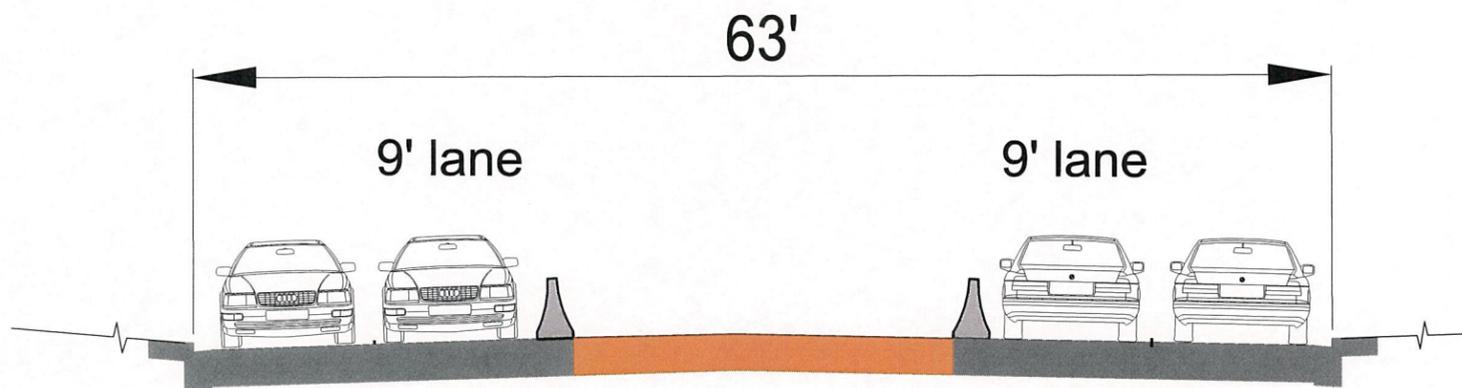
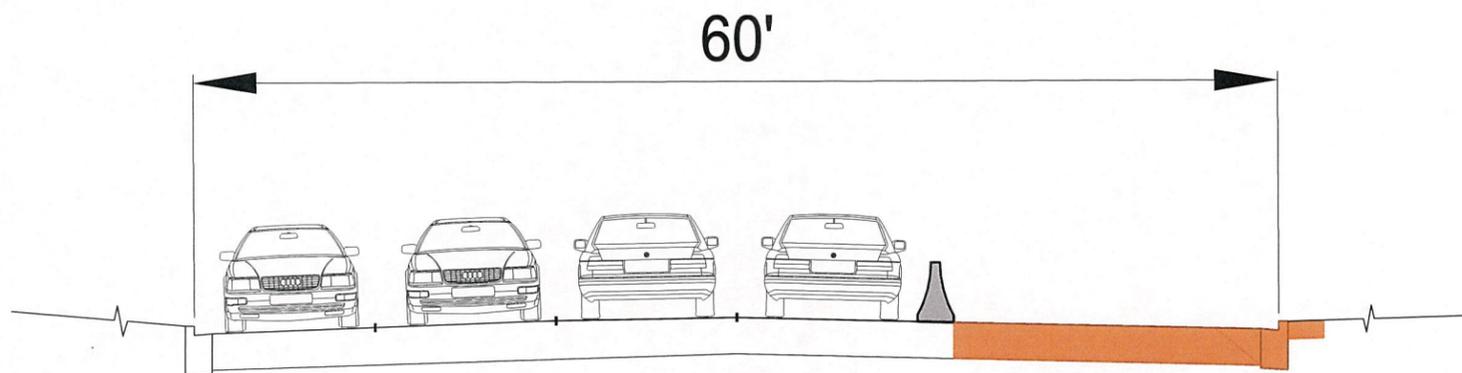
TOTAL DURATION:

- STANDARD HOURS: 90 WEEKS
- EXTENDED HOURS: 74 WEEKS
- NIGHT WORK: 70 WEEKS

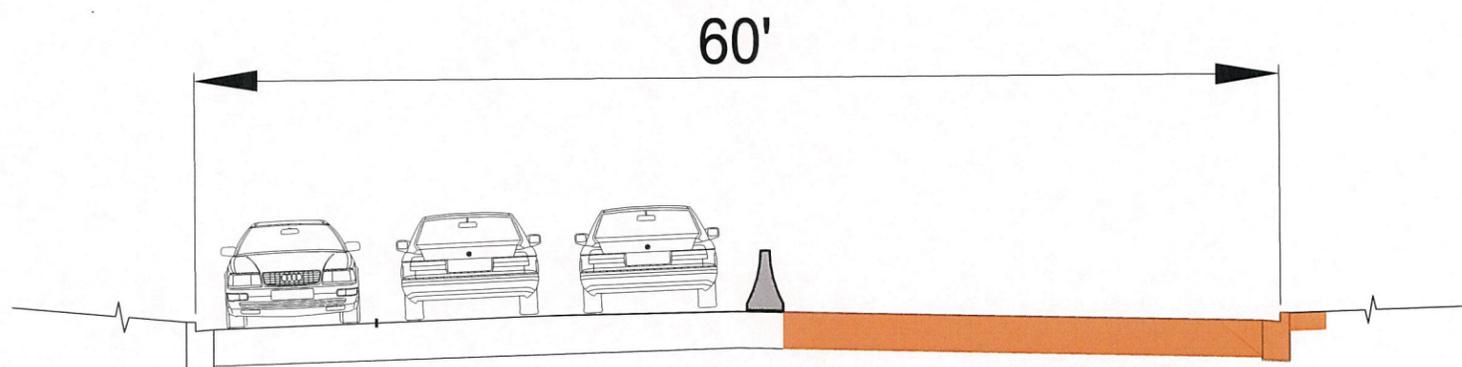
ALTERNATIVE 4

NORTH SANTA MONICA BLVD. RECONSTRUCTION

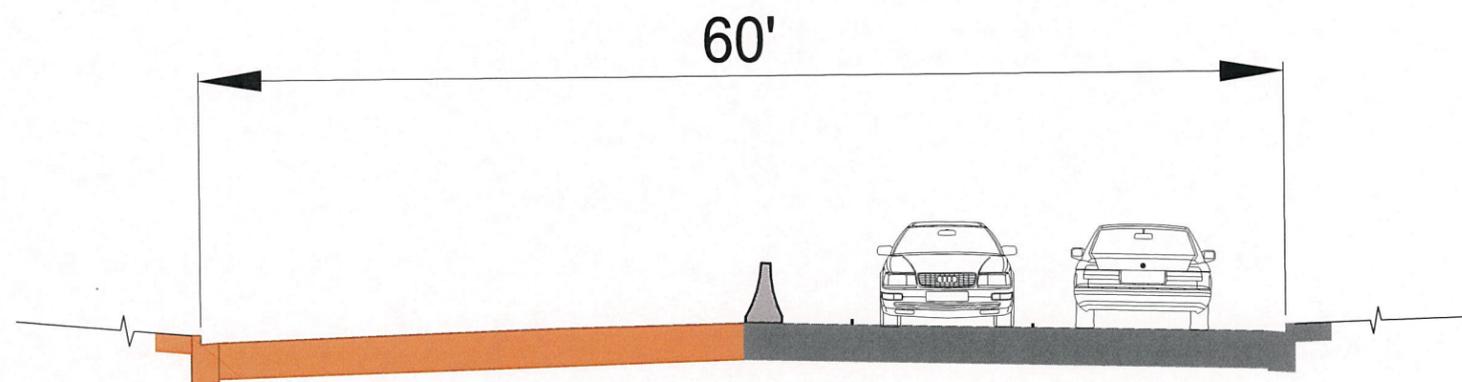
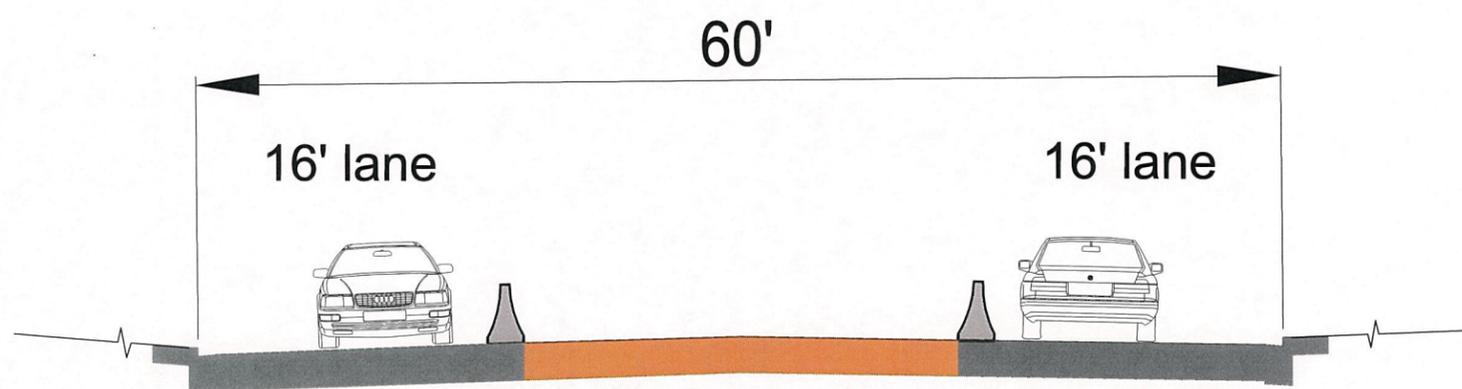




TYPICAL 4-LANE CONSTRUCTION STAGES
NOT TO SCALE



TYPICAL 3-LANE CONSTRUCTION STAGES
NOT TO SCALE



TYPICAL 2-LANE CONSTRUCTION STAGES
NOT TO SCALE

LEGEND:

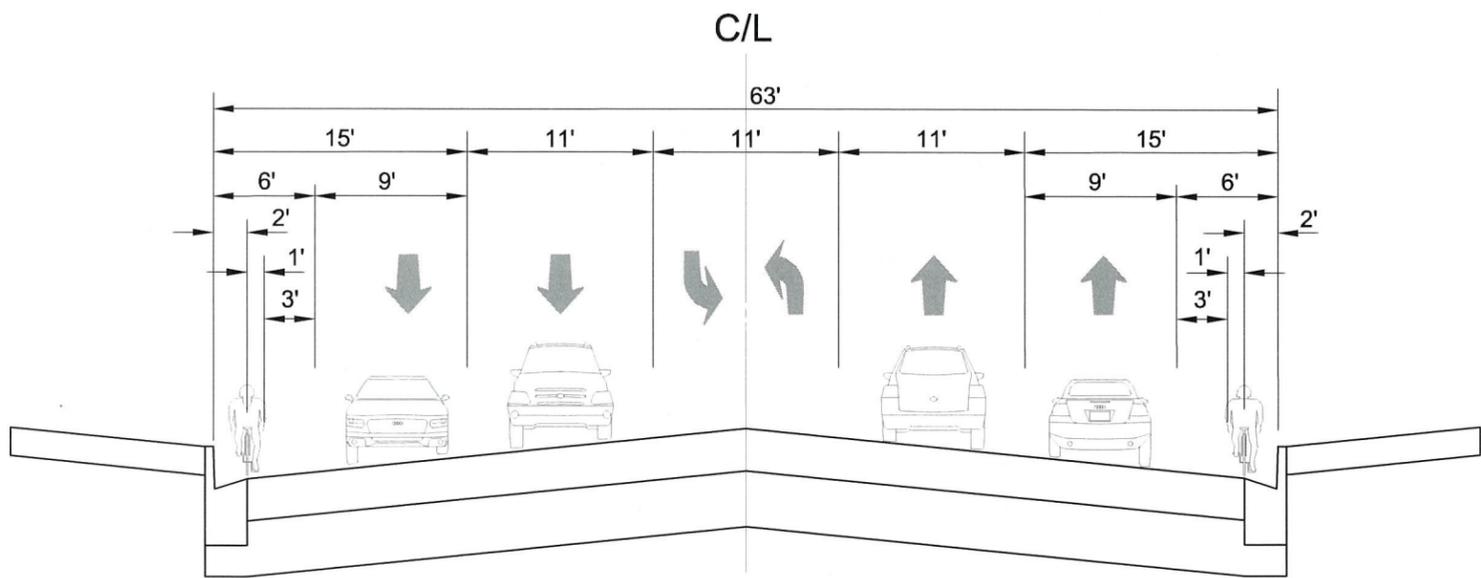


CONSTRUCTION ZONE

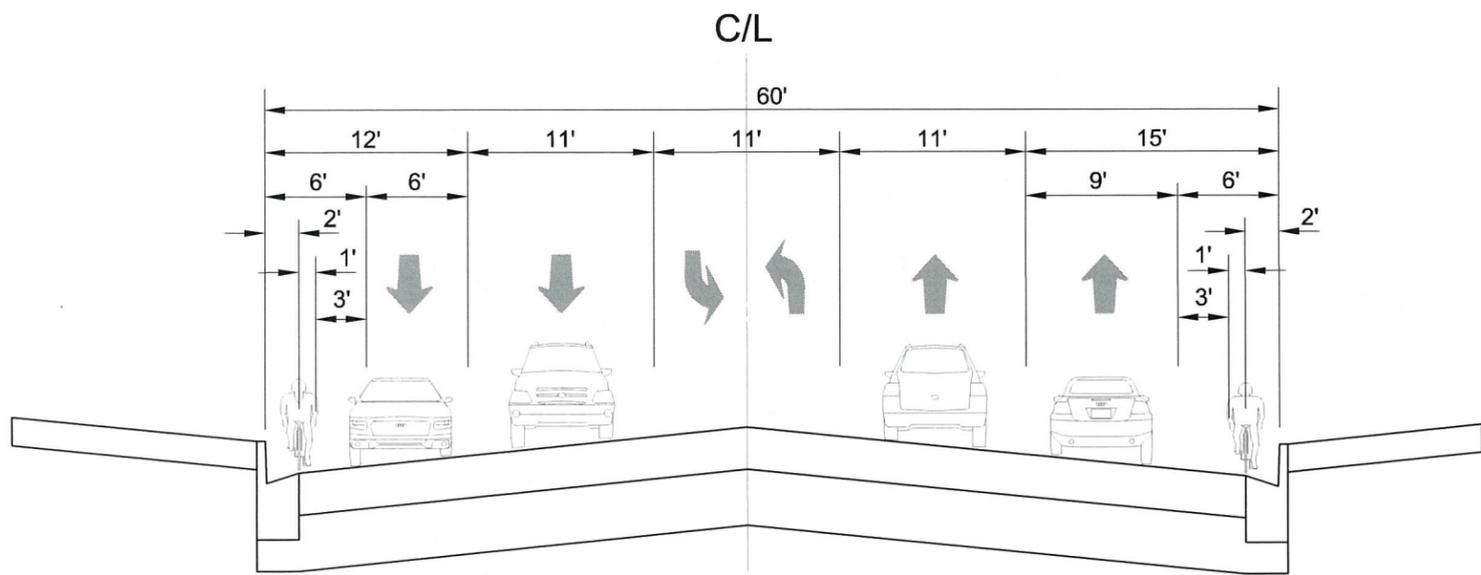
TYPICAL SECTIONS

NORTH SANTA MONICA BLVD.
RECONSTRUCTION

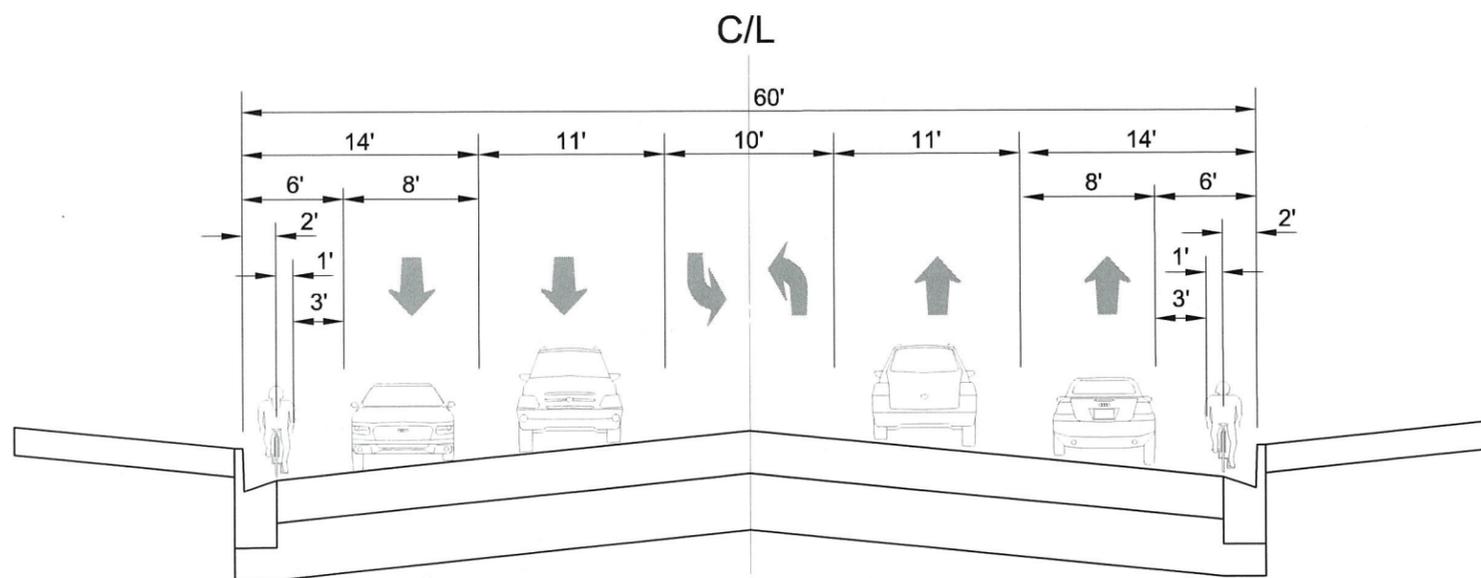




EXISTING 63' SECTION
 NOT TO SCALE
 (ROOM TO PASS BIKE SAFELY - BOTH DIRECTION)

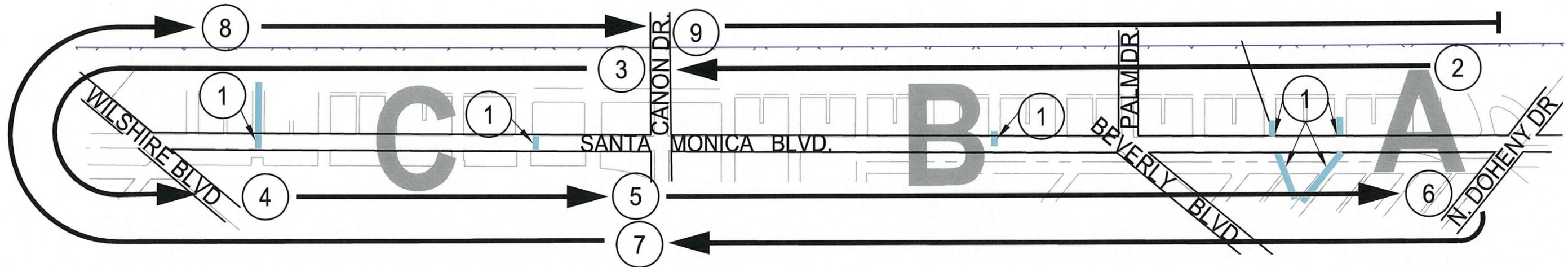


EXISTING 60' SECTION
 NOT TO SCALE
 (ROOM TO PASS BIKE SAFELY - ONE DIRECTION)



EXISTING 60' SECTION
(RE-STRIPED)
 NOT TO SCALE
 (ONLY 8' TO PASS BIKE - BOTH DIRECTION)





LEGEND:

① CONSTRUCTION STAGE

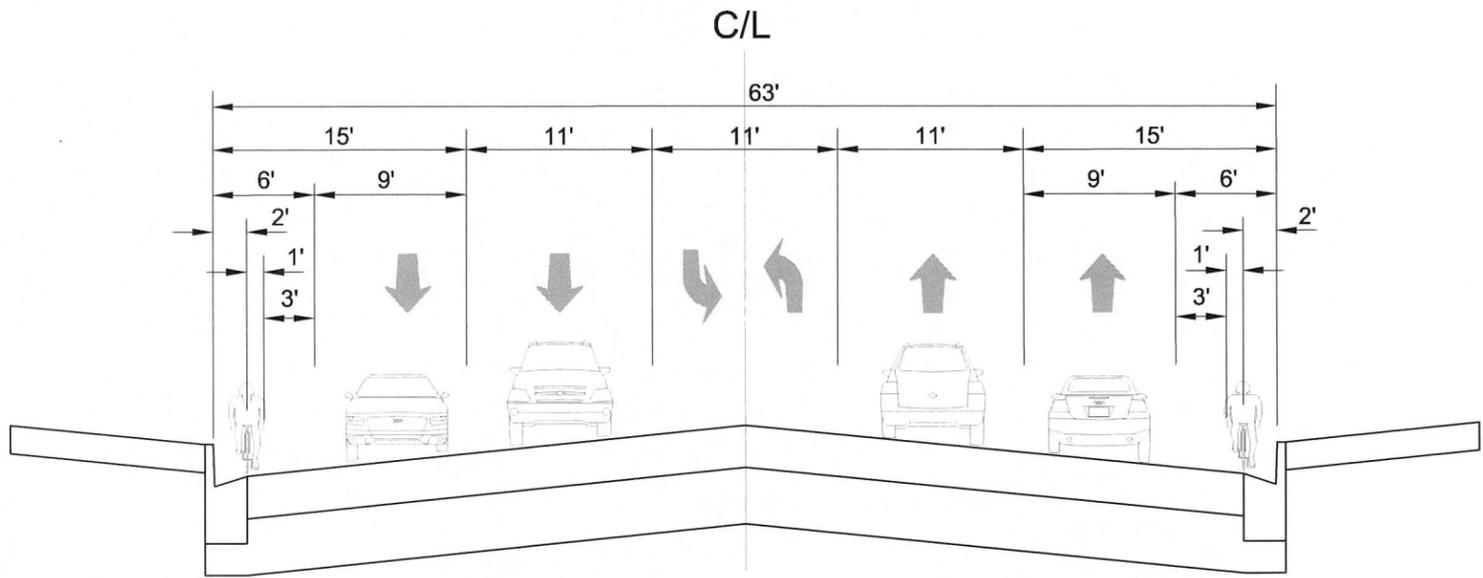
C PROJECT SEGMENT



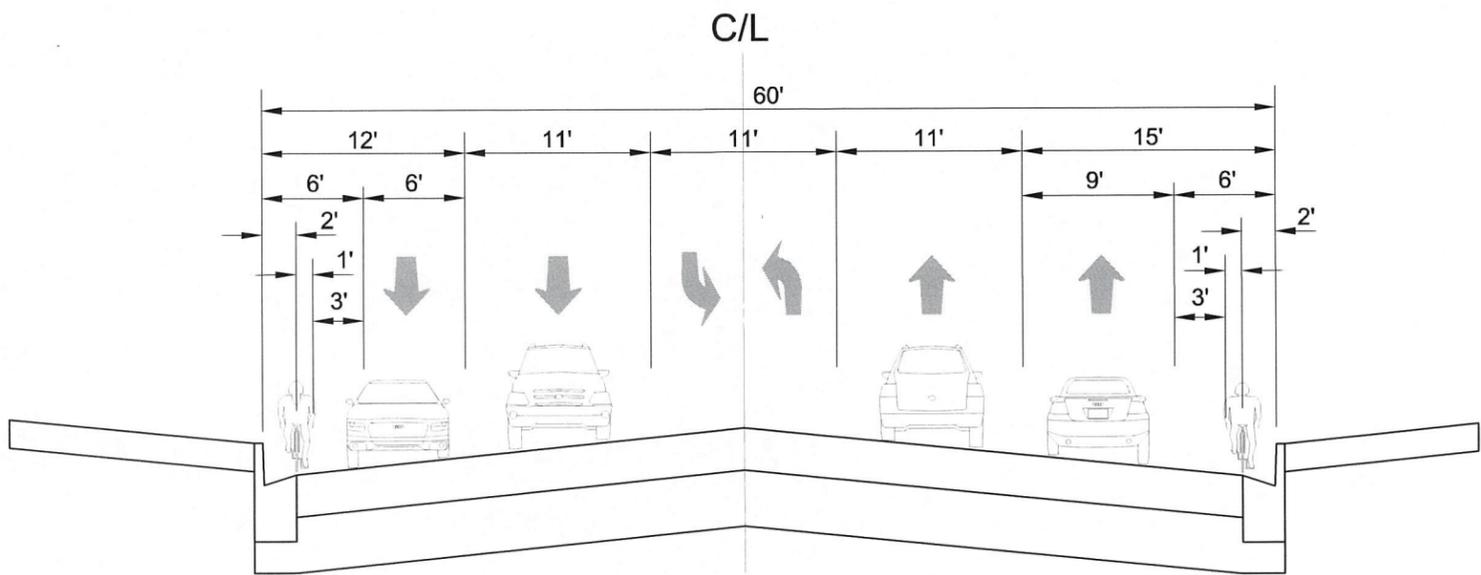
KEY MAP
N.T.S.

**NORTH SANTA MONICA BLVD.
RECONSTRUCTION**

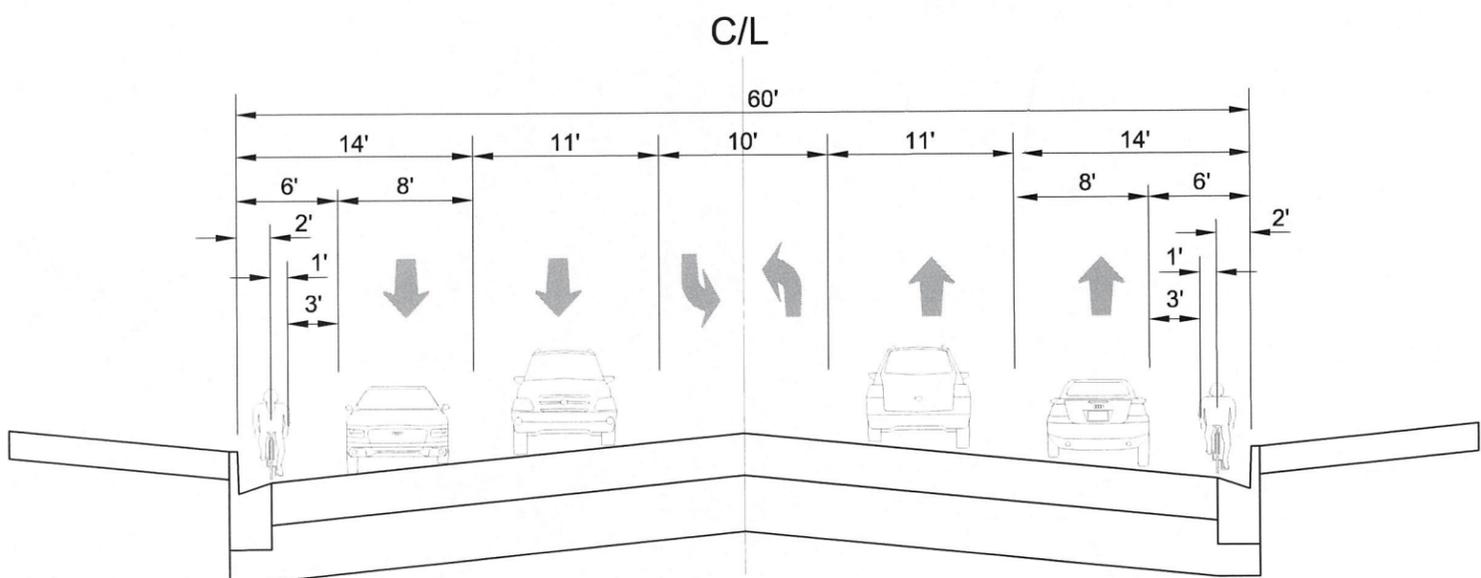




EXISTING 63' SECTION
 NOT TO SCALE
 (ROOM TO PASS BIKE SAFELY - BOTH DIRECTION)



EXISTING 60' SECTION
 NOT TO SCALE
 (ROOM TO PASS BIKE SAFELY - ONE DIRECTION)



EXISTING 60' SECTION
(RE-STRIPED)
 NOT TO SCALE
 (ONLY 8' TO PASS BIKE - BOTH DIRECTION)



ATTACHMENT 3

Three Feet for Safety Act - Maintaining Existing Street Width

Maintaining the existing 60' and 63' widths will provide adequate lane configuration for vehicles travelling on NSMB. However consideration must be made for the interface between bicycles and passing vehicles in the outside lane.

In order to provide 3' for safe passing of a bicyclist, a motorist must steer to the left to pass a bicyclist riding close to the right side of the road. On a roadway with a curb and gutter, a bicyclist is typically about 2' from the curb. Allowing 1' for the width of the bike from its centerline to end of handle bars and 3' of clearance, the passing vehicle must be a total of 6' from the curb.

This means that in the 63' wide section of Santa Monica Boulevard, where the curb lanes are 15' wide, a motorist would have 9' of the lane to use to pass a bicyclist. This would be adequate lane width for the majority of cars to safely pass a bicyclist staying within the outside lane and not interfering with traffic in the adjacent number one lane.

In the 60' foot section of Santa Monica Boulevard, the westbound curb lane is 15' wide, but the eastbound curb lane is only 12' wide, due to the 3' of right of way that has been landscaped along the parking structures on the south side of the street. This means that westbound motorists can safely pass a bicyclist staying within the outside lane, but eastbound motorists will have to veer into the number one lane to pass a bicyclist since there is only 6' of outside lane available for use in passing a bicyclist. This will have a negative effect on the capacity of the eastbound lanes as the number of bicyclists increases.

If the lanes are restriped to center the lanes in the 60' cross section, there could be 14' outside lanes in both directions (using a narrower 10' left turn lane). This would provide 8' of lane width in which to pass bicyclists with a 3' buffer. This would be adequate for many cars, but inadequate for larger cars and trucks/buses. These larger cars and trucks/buses would have to veer into the adjacent number one lane to legally pass a bicyclist with the required 3' of clearance.