Chapter 2: Project Alternatives

2.1 Proposed Project Features

The features of the proposed project are each designed to reduce the severity of median accidents, enhance the scenic quality of the corridor, and to preserve and restore historic resources. The elements would help address the stated deficiencies and provide needed improvements as identified in Chapter 1. These elements include:

- Construct Median Barrier.
- Rehabilitation and Restoration of the Landscaping.
- Replace and Upgrade Traffic Monitoring Stations (5 locations)
- Replace Irrigation System.
- Replace and Upgrade Upas Street Bridge Sign.
- Rehabilitate Robinson Avenue Retaining Wall.
- Introduce Slope Paving (Seven Locations).
- Construct Maintenance Vehicle Pullouts (Six Locations).
- Remove Paving and Landscape Abandoned Ramp (I-5/SR-163 Interchange).
- Rehabilitate Existing Maintenance Access Road.
- Plant trees within the Balboa Park viewshed.

2.2 Median Barrier Alternatives

A number of alternative barrier types and barrier locations have been analyzed in conjunction with preparation of the CMP (Figure 6). The barrier types considered include:

- Concrete Barrier (various types, heights and locations)
- Thrie Beam (Metal Face Rail)
- Steel Backed Timber Guardrail (Timber Posts and Rails)

The introduction of new features within this specific stretch of SR-163, such as a median barrier, has been met with substantial public opposition. The public sees SR-163 as a valuable resource, warranting protection, and, in addition, demands active participation in the selection and development of improvements.

The Steel Backed Timber Guardrail (SBTG) has been identified as the preferred barrier for median placement. (See Chapter 3) This barrier type is the only barrier type being carried forward for consideration. This is in response to stakeholder coordination and public input. The SBTG would provide the best opportunity for integration with the corridor's visual and historic resources.

2.3 Median Barrier Horizontal Placement Alternatives

Each of the proposed median barrier alternatives presented below would provide a redirective barrier minimizing the severity of accidents that occur in the median. However, it should be noted that depending on the horizontal location of the barrier the frequency of accidents due to barrier hits could contribute to additional traffic congestion. According to traffic volume data, this corridor has experienced a gradual increase in volumes and would experience even more volume due to future events and development in the downtown area. Therefore, it is also important that the frequency of barrier hits is minimized to reduce the potential for delays related to such incidents.

The horizontal location alternatives being considered for placement of the median barrier are:

- Barrier placement with the face of the barrier located at 0.6 meter (2 feet) from the edge of the traveled way (ETW) with original ground that would be treated with soil cement or granular herbicide to prevent vegetation growth in front of and below the face of the barrier (Figure 7 and Figure 8).

  Each of the alternatives proposed would provide a traffic safety barrier to redirect a vehicle that is on an errant path, therefore reducing the severity of accidents that occur in the median. However, the 0.6 meter (2 feet) horizontal placement alternative could negatively affect the frequency of accidents due to the limited distance from the ETW and greater potential for barrier hits. Traffic within the adjacent lane would be unable to navigate past a vehicle that had struck and was up against the barrier. The barrier hits would contribute to traffic congestion, and could result in the greater frequency of secondary accidents.

  In comparison, locating the barrier at 1.2 meters (4 feet) from the ETW would reduce the number of collisions, as well as the potential for secondary or chain reaction type accidents. With the 1.2 meters (4 feet) horizontal placements traffic would have sufficient space to navigate past a vehicle that had struck the barrier, given the lane width and the available clearance to the face of the barrier. The 1.2 meters (4 feet) placement would also avoid direct impacts to vehicles within the outside lane.

  The factors associated with more frequent barrier hits could also contribute to the frequency of needed maintenance activities (repair/replacement). Again, the 0.6 meter (2 feet) placement of the barrier would require maintenance personnel to conduct their repair activities closer to the corridor traffic, and could present additional safety concerns.

- Barrier placement with the face of the barrier at 1.2 meters (4 feet) from the edge of the traveled way with 0.6 meter (2 feet) of original ground paved and 0.6 meter (2 feet) of original ground. The original ground would be treated with soil cement or granular herbicide to prevent vegetation growth in front of and below the face of the barrier (Figure 9).

  This 1.2 meters (4 feet) alternative would provide the minimum horizontal clearance to a fixed object. This lateral clearance would aid in reducing the frequency of barrier hits in

comparison to the 0.6-meter (2 feet) offset for the alternative discussed above. The 1.2 meters (4 feet) from the edge of the traveled way placement, substantially reduces the potential for secondary or "chain reaction" type of collisions should the barrier be hit. Vehicles in the lane closer to the median would still have about 2.4 meters (7.9 feet) [based on 3.6 meter (11.8 feet) lane width] in which to navigate past a vehicle that has struck or is up against the barrier, without directly impacting the number two lane. This reduction in secondary collisions is why the 1.2 meters (4 feet) horizontal clearance is so important. In addition, with the 1.2 meters (4 feet) off-set the number of times the barrier is truck is obviously less. This in turn directly reduces the effort to maintain the barrier, and exposure of Department personnel making repairs. It maximizes a safe work zone when performing maintenance activities.

This alternative would not require the removal of any trees located in the median and would reduce landscape maintenance efforts because of the new shoulder directly in front of the barrier. The barrier would also allow maintenance forces to work behind the barrier away from traffic.

- Barrier placement with the face of the barrier at 1.2 meters (4 feet) from the edge of the traveled way. The original ground would be paved in front of and below the face of the barrier (Figure 10).

  This 1.2 meters (4 feet) alternative would provide the minimum horizontal clearance to a fixed object. This lateral clearance would aid in reducing the frequency of barrier hits in comparison to the 0.6-meter (2 feet) offset for the alternative discussed above. The 1.2 meters (4 feet) from the edge of the traveled way placement, substantially reduces the potential for secondary or "chain reaction" type of collisions should the barrier be hit. Vehicles in the number one lane would still have about 2.4 meters (7.9 feet) [based on 3.6 meter (11.8 feet) lane width] in which to navigate past a vehicle that has struck or is up against the barrier, without directly impacting the number two lane. This reduction in secondary collisions is why the 1.2 meters (4 feet) horizontal clearance is so important. In addition, with the 1.2 meters (4 feet) off-set the number of times the barrier is truck is obviously less. This in turn directly reduces the effort to maintain the barrier, and exposure of Department personnel making repairs. It has direct safety benefits as compared to the 0.6 m (2 feet) alternative for maintenance staff.

  This alternative would not require the removal of any trees located in the median and would reduce landscape maintenance efforts because of the new shoulder directly in front of the barrier. The barrier would also allow maintenance forces to work behind the barrier away from traffic.

2.4 Additional Project Elements

As previously discussed each of the proposed elements would address a needed safety improvement, restore a deteriorated corridor feature, or preserve and enhance the visual and historic resources. As such, no alternatives other than the No Project have been identified fore each of these elements.

Restore Median Landscape: The number of trees within the median has steadily declined over the past 25 years as a result of either disease (lerp psyllid), vehicle strikes, or natural attrition. Department policy and response to safety concerns has prevented any new plantings within the median. This project, in conjunction with the SBTG, proposes the reintroduction of trees within the median (Figure 11).

Traffic Monitoring Stations (Five Locations): Currently, there are two Traffic Monitoring Station (TMS) locations that do not function as required by Department standards. This project would repair the existing and install new TMS at five locations. TMS relay real-time traffic conditions to the Transportation Management Center, which monitors speeds and flow of traffic on highway facilities.

Replace Irrigation System: The irrigation system has been in a state of deterioration for years and has not had a comprehensive upgrade since the original installation. This project proposes a comprehensive upgrade to the irrigation system to current Department Standards with Remote Irrigation Control Systems and bubbler type irrigation heads to help eliminate waste, saving water and money.

Replace and Upgrade the Upas Street Signage: Replace and upgrade the Upas Street Bridge vertical clearance sign.

Rehabilitate Robinson Avenue Retaining Wall: An evaluation of crib and retaining walls that have been in place since the original construction of the freeway was conducted by Department Maintenance personnel. The only wall requiring rehabilitation work is the Robinson Avenue retaining wall. This wall would be repaired and treated to give the concrete an aged appearance to match the concrete from the original installation (Figure 12).

Introduce Slope Paving (Seven Locations): Existing slope paving throughout the corridor is minimal and bare ground exists under most of the structures. The exception is the Interstate 5 (I-5) overcrossing at SR-163, which is outside the Historic District [2.6km (1.6mi) segment of State Route 163, from roughly 90m (300ft) south of the Cabrillo Bridge, to a point just south of the Sixth Avenue on-ramp Undercrossing]. This project proposes new paving under seven structures. The new concrete would be colored and given an aged appearance to match the adjacent bridge structures (Figure 13).

Fencing: Replace existing fencing due to significant and severe deterioration and lack of proper placement. The existing fencing is not placed along the right-of-way line. In some places the fencing is outside the Department right-of-way and in other locations it is inside.

Maintenance Vehicle Pullouts (Six Locations): Currently, there are no dedicated areas for maintenance personnel to safely conduct their necessary activities. The installation of safe pullout areas for personnel and vehicles, while maintenance activities are being conducted would eliminate the existing need for complete northbound or southbound lane closures. These pullout areas would be strategically located to minimize their visual impacts (Figure 14).

Remove Paving and Landscape Abandoned Ramp (I-5/SR-163 Interchange): In this area, the project proposes pavement removal and installation of trees and ground cover (Figure 15).

No Project

The No Project Alternative would not implement the following proposed project elements. It would not address the need to:

- Reduce the severity of median accidents
- Improve maintenance personnel safety
- Upgrade non-standard features
- Enhance and restore visual and historic resources within the corridor

2.5 Alternatives Considered but Withdrawn

All of the following barrier types and horizontal locations have been withdrawn from further consideration. These were withdrawn based on the following criteria:

- Public and agency input
- Not meeting the project purpose and need
- The barrier types and locations did not comply with the Department standards
- The lack of viable integration with the visual and historic resources of the corridor

Barrier Alternatives

- Concrete Barrier: Currently, there are two types of concrete barriers being used within the project limits, Type 50 and Type 60. Type 50 concrete barrier is 0.8 meter (32 inches) in height and is located in the median at the southern project limits. Type 60 concrete barrier is 0.9 meter (36 inches) in height and is currently located in the median at the northern project limits.

- Thrie Beam Guardrail: Currently, metal beam guardrail is used within the corridor on the outside shoulders to shield bridge columns but it does not meet Department standards for use in medians. This type of barrier is 0.8 meter (32 inches) in height from the ground to the top of the rail and consists of wood posts with metal beams facing traffic.

Barrier Placement Alternatives

- The face of the barrier would be placed at 0.6meter (2 feet) from the edge of the traveled way with pavement in front of and below the face of the barrier. This alternative would require design exceptions to construct because the barrier would be located too close to the edge of the pavement.

  This 0.6 meter (2 feet) alternative would not provide a standard shoulder width, and requires both the non-standard shoulder and minimum horizontal clearance standard for guardrail and

safety shaped barriers. This reduction in lateral clearance would increase the frequency of accidents due to barrier hits and would minimize the ability of disabled vehicles to partially pull off of the traveled way. Since this is only a 2-lane facility in each direction of travel and has only minimal outside shoulder widths due to existing curbs and embankments, a disabled vehicle in the live lane could cause traffic congestion through the corridor and could impact adjacent facilities. This alternative would require the removal of all vegetation in front of and below the proposed barrier and would be replaced with new shoulder material. No trees would be impacted.

- The face of the barrier would be placed at 1.5 meters (5 feet) from the edge of the traveled way and paved with asphalt concrete in front of and below the face of the barrier. This alternative would permanently remove a large portion of the landscaped median causing substantial public controversy and would introduce new paving to the scenic and historic resources.

  This alternative would provide a standard shoulder width. This lateral clearance would aid in reducing the frequency of barrier hits while allowing disabled vehicles to partially pull off of the traveled way. This alternative would not require the removal of any trees located in the median and would reduce landscape maintenance efforts because of the new shoulder directly in front of the barrier. The barrier would also allow maintenance forces to work behind the barrier away from traffic.

- The face of the barrier would be placed at 1.5 meters (5 feet) from the edge of the traveled way with 0.6 meter (2 feet) of pavement and 0.9 meter (3 feet) of original ground treated with either soil cement or granular herbicide in front of and below the face of the barrier to prevent vegetation growth. This alternative would permanently remove a large portion of the landscaped median causing substantial public controversy.

  This alternative would provide a standard shoulder width and would not require the removal of any trees located in the median. However, it would require the removal of all vegetation in front of and below the proposed barrier. In order for the barrier to be most effective in redirecting errant vehicles, the grading in front of the barrier should be 1:10 or flatter. This alternative does not propose any shoulder improvements other than the placement of the barrier. Since the existing terrain is steeper than 1:10 at most locations, an Advisory Design Exception would be required.

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FIGURE 6
BARRIER ALTERNATIVES

FIGURE 6

Click to view …

FIGURE 7
EXISTING SHOULDERS

FIGURE 7

Click to view …

FIGURE 8
0.6 METER BARRIER PLACEMENT

FIGURE 8

Click to view …

FIGURE 9
1.2 METER BARRIER PLACEMENT
WITH 0.6 METER ORIGINAL GROUND AND 0.6 METER
PAVEMENT

FIGURE 9

Click to view …

FIGURE 10
1.2 METER BARRIER PLACEMENT
WITH PAVING ONLY

FIGURE 10

Click to view …

FIGURE 11
CORRIDOR MANAGEMENT PLAN
LANDSCAPING PLAN
3 PARTS

PART A

FIGURE 11- Part A

Click to view …

FIGURE 11
CORRIDOR MANAGEMENT PLAN
LANDSCAPING PLAN
3 PARTS

PART B

FIGURE 11 – Part B

Click to view …

FIGURE 11
CORRIDOR MANAGEMENT PLAN
LANDSCAPING PLAN
3 PARTS

PART C

FIGURE 11 – Part C

Click to view …

FIGURE 12
RETAINING WALL

FIGURE 12

Click to view …

FIGURE 13
SLOPE PAVING

FIGURE 13

Click to view …

FIGURE 14
MVPS

FIGURE 14

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FIGURE 15
ABANDONED RAMP

FIGURE 15