



SECTION SIX

BICYCLE ELEMENT

On August 13, 1991, the Santa Clara County Board of Supervisors adopted a “Policy for Bicycle and Pedestrian Usage of the Expressways.” This policy led to the removal of bicycle prohibitions for all expressways. Over the last ten years, the presence of bicycles on the expressways has grown. Foothill Expressway is such a major bicycle travel corridor that the Expressway’s vision includes the statement that it “plays an important role as a regional bicycle facility.”

For bicyclists the expressways offer convenient and direct travel routes with few driveways and well-spaced intersections. They are ideal for bicyclists commuting to work or making other long-distance trips. However, there has been general agreement among the public, policymakers, and technical staff that only advanced-skilled bicyclists should be encouraged to use the expressways. Given the high speeds and freeway-like merging and crossing movements, the expressways are not for children or occasional recreational bicyclists.

Therefore, the Bicycle Element is based on the following two principles:

- ❖ Bicycle travel will be accommodated on all expressways.
 - ❖ The expressways should only be used by advanced-skilled bicyclists and should not be used by children or novice bicyclists.
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Bicycle Accommodation Guidelines

County Roads now has over ten years of experience with unregulated bicycle travel on all expressways, and several more years of experience with bicycles on some expressways. During this time, County Roads staff, working closely with the cities and the County Bicycle and Pedestrian Advisory Committee (BPAC), has been continuously modifying and improving striping and signage along the expressways for bicycles.

The first step in developing the Expressway Study's Bicycle Element was to document standard bicycle treatments by creating Bicycle Accommodation Guidelines (BAG). The BAG consists of detail diagrams that will be applied to the entire length of all expressways. It includes guidelines on bicycle travel area widths, striping, signage, trail connections, maintenance, and several other design treatments. The BAG is consistent with the Caltrans Highway Design Manual (HDM) and will be updated as needed when changes are made to bicycle treatments in the HDM. Listed below are the objectives and guidelines used to formulate the BAG.

Objectives

1. Provide safer accommodation for bicyclists along all expressways.
2. Be consistent along the entire length of each expressway and among the expressways for the benefit of both motorists and cyclists, to the extent possible.

Guidelines

1. Travel width – Provide adequate continuous travel width for use by bicyclists on the expressways.
2. Delineation – Delineate the bicycle travel width with shoulder stripes and other striping as needed.

3. Entrance and exit ramps – On county facility, signalize exiting or merging movements with two or more lanes. In Caltrans’ jurisdiction, work with Caltrans to improve situations where bicyclists must cross more than one conflicting vehicle lane at a time.
4. Safe passage across intersections – Provide intersection design treatments and operations that enhance safe passage for bicyclists.
5. Trail connectivity – Wherever feasible, work with trail operators to plan for and provide direct connections between trail over and undercrossings and both directions of expressways.
6. Maintenance – Maintain clear and clean shoulder areas on the expressways.

Bicycle Improvement Projects

The bicycle improvements identified here are needed to bring all expressways into full compliance with the BAG. There are four categories of improvements. They are described below, along with costs and implementation recommendations as appropriate.

Pavement Delineation

This category includes improvements related to striping, such as replacing dashes with solid stripes, providing a bike through slot between through and right-turn or auxiliary lanes, and installing a dash stripe across driveways. Due to the current resurfacing program funded by the Measure B Sales Tax, many of the expressways have recently been or will soon be re-striped in compliance with the BAG at no extra cost. It is estimated that \$0.6 million is needed for re-striping treatments at key spots that are not due to be resurfaced in the near future. A bicycle grant for \$0.5 million has been received, leaving \$0.1 million unfunded.

Figure 6-1: Bicycle Facility Improvements



Ramp Conflicts

This category deals with freeway/expressway interchanges where there are double-right on-ramps (one lane is usually an HOV bypass lane) which forces a bicyclist to cross more than one conflicting vehicle lane at a time. The ramp conflict locations, shown in Figure 6-1, are as follows:

- ❖ Almaden/State Route (SR) 85
- ❖ Capitol/US 101
- ❖ Lawrence/US 101
- ❖ Lawrence/SR 237

- ❖ Montague/San Tomas/US 101
- ❖ Oregon-Page Mill/I-280
- ❖ San Tomas/SR 17

Potential solutions for these conflicts include reducing the entrance point of the on-ramp to one lane and then widening to 2 or 3 lanes on the ramp itself; adding a stop signal light at the on-ramp; or creating a bike through slot when both lanes are exit-only lanes. Any design change, however, must receive Caltrans approval and be supported in the HDM. County staff will continue to work with Caltrans staff to study design options that can improve the situation yet still meet traffic demand requirements. No project costs are provided because the improvements are still to be determined.

There is a roadway project recommended that will eliminate one of the ramp conflicts. The Page Mill/I-280 interchange project will reconfigure the west side of the interchange into a half diamond and will cost \$5 million. Since it provides operational benefits, it is included in the Tier 1A list of projects in the Capacity/Operational Improvement Element.

There may also be opportunities to work with Caltrans to resolve some ramp conflict locations as part of other projects recommended in the Capacity/Operational Improvement Element. Specifically, the Tier 1A Almaden/SR 85 Project Study Report (PSR), Tier 1B Montague/US 101 par-clo interchange, and Tier 1A San Tomas/SR 17 operational/safety improvement study present opportunities to look at new ramp design concepts. VTA may also be able to resolve the Capitol/US 101 ramp conflict location as part of the US 101 Central Corridor Study.

The Capacity/Operational Improvement Element also includes a number of new expressway interchanges. Following the BAG principles and guidelines, the interchange ramps will be signalized or otherwise designed to avoid forcing bicyclists to cross more than one conflicting vehicle lane at a time. In addition, as the interchange projects are designed, the County will seek to make the interchange areas as bicycle and pedestrian friendly as possible consulting with bicycling experts and the County BPAC on the design.

The HOV System Element includes recommendations to construct direct connector ramps for HOV lanes. At several locations, existing HOV ramp meter bypass lanes are the source of the conflict with through bike use. Installing direct connectors would eliminate the conflict.

Shoulder Widening

Projects in this category involve widening the shoulders to provide sufficient bicycle travel width. Ten specific projects have been identified. The locations for these projects are shown on Figure 6-1 and listed on Table 6-1. Costs and implementation of these projects are divided as follows:

- ❖ The project on Almaden is already listed as a VTP 2020 Tier 1 bicycle project. The cost for this project is \$2 million with \$1.6 million in grant funds already allocated.
- ❖ Lawrence (at Pruneridge and from El Camino Real to Kifer Road) will be implemented as part of the County's 2003 pavement resurfacing project at no additional cost.
- ❖ Two projects (Foothill at Loyola Corners and Oregon at Alma Avenue) can only be accomplished as part of the overall bridge reconstruction projects that are included in the Capacity/Operational Improvements Element. Therefore, there is no cost estimate for just making the bicycle-related improvements.
- ❖ Three projects (Foothill/San Antonio Road, San Tomas/Hamilton Avenue, and Capitol/Silver Creek Road) can be done as part of roadway projects already included in the Capacity and Operational Improvements Element under Tiers 1A and 1B at no additional cost. However, these roadway projects may take 10-20 years to implement. Given the relatively low cost of these pavement-widening improvements (\$0.65 million total), it is recommended that these projects be pursued independent of the roadway projects where site conditions indicate minimal impacts or facility relocation.
- ❖ Two pavement widening areas (Foothill/Magdalena and San Tomas/Cabrillo) do not have any associated roadway improvement projects. They will cost \$0.5 million to implement.

Specific shoulder widening needs for Montague Expressway have not been identified. Montague is being widened to 8 lanes along its full length. Some sections are already widened and some sections are funded, while the remaining unfunded sections are included in the Tier 1A Capacity/Operational Improvement project list. The 8-lane widening project scope includes bringing Montague into full compliance with the BAG, including providing adequate shoulder width for bicycle travel.

Table 6-1: Bicycle Improvement Projects

Improvement Category	Location	Project Description	Cost (millions)	Potential Implementation
Pavement Delineation	All Expressways	Re-striping per Bicycle Accommodation Guide (BAG)	\$0.60 (\$0.50 funded)	Most re-striping can be done as part of near-term pavement overlay projects at no additional cost. This cost estimate reflects spot treatments needed independent of pavement overlays.
Shoulder Widening	Almaden between Ironwood and Koch	SB widening to provide adequate shoulder per BAG	\$2.00 (\$1.60 funded)	VTP 2020 Tier 1 bicycle project
	Capitol/Silver Creek	Widen WB approach for approximately 270 feet to provide a bicycle slot	\$0.20	Tier 1B Roadway Project ⁽¹⁾
	Foothill/San Antonio	Widen WB approach for approximately 300 feet to provide a bicycle slot	\$0.20	Tier 1A Roadway Project ⁽¹⁾
	Foothill/Magdalena	Widen EB approach for approximately 600 feet to provide a bicycle slot	\$0.30	
	Foothill/Loyola	Provide more shoulder width in both directions under the Loyola Bridge	N.A.	Must be completed as part of overall bridge reconstruction project (Tier 1A in Capacity/Operational Element)
	Lawrence/Pruneridge	Widen NB approach for approximately 150 feet to provide angle break before Pruneridge	N.A.	Part of County's 2003 Pavement Maintenance Project
	Lawrence/El Camino Real to Kifer	Provide more shoulder width	N.A.	Part of County's 2003 Pavement Maintenance Project
	Oregon/Alma Bridge	Provide more shoulder width in both directions under the Alma Bridge	N.A.	Must be completed as part of overall bridge reconstruction project (Tier 3 in Capacity/Operational Element)

Table 6-1: Bicycle Improvement Projects (continued)

Improvement Category	Location	Project Description	Cost (millions)	Potential Implementation
Shoulder Widening (continued)	San Tomas/Hamilton	Widen SB approach for approximately 275 feet to provide adequate shoulder per BAG	\$0.25	Tier 1A Roadway Project ⁽¹⁾
	San Tomas/Cabrillo	Widen NB approach for approximately 375 feet to provide adequate shoulder per BAG	\$0.20	
Total Funded:			\$2.10	
Total Tier 1A:			\$0.45	
Total Tier 1B:			\$0.20	
Total Bicycle Improvement Only:			\$1.00	
Total Needs			\$3.75	

Notes:

1) Roadway project costs in the Capacity/Operational Element include these bicycle improvements.

Trail Connections

One of the objectives of the BAG is to provide for connections to all creek trails that cross or run parallel to an expressway. Trail connection points are identified on Figure 6-1. County staff will work with all related public agencies involved in building the trails to facilitate connections to the expressways. All off-expressway trail improvements are funded by the trails projects. It is not anticipated that the activities involved in facilitating the trail connections will involve much cost (e.g., openings in fences); therefore, no costs for the trail connections are included in the bicycle improvement plan.

The Pedestrian Element does include on-expressway projects to support trail connections. These projects are crossing enhancements and a pedestrian overcrossing (POC). Although these projects will benefit bicyclists, they are generally considered to be pedestrian improvements and the costs are included in the Pedestrian Element.

Cost Summary

A total of \$3.75 million in bicycle improvement projects has been identified with only \$1.65 million unfunded. This is a low cost compared to other *Implementation Plan* elements for three reasons: 1) most expressway mileage is already in compliance with the BAG due to County Roads improving bicycle accommodations on the expressways for the last ten years; 2) the remaining major problem areas (Foothill/Loyola, Oregon/Alma Bridge, and Page Mill/I-280) require operational roadway improvements that include more than just bicycle-related improvements; and, 3) the freeway/expressway ramp conflict locations require Caltrans agreement on design changes before cost estimates can be developed.

Bicycle Travel Area Maintenance

One of the BAG guidelines is to maintain clear and clean shoulder areas on the expressways. In support of this guideline, the Maintenance and Operations Element of the *Implementation Plan* includes a recommendation to increase sweeping of each expressway from one time per month to twice per month plus on-call response. The estimated cost to implement this recommendation is \$0.6 million annually.

The Maintenance and Operations Element also includes increased levels of effort for pavement maintenance, landscaping maintenance, and traffic control/safety devices infrastructure replacement which will also benefit bicycle travel. As discussed in the Funding Strategy section, these increased levels of effort, including more sweeping, can only be implemented when additional operating revenue is secured.



Bike Lane Designation Process

In general, the recommended expressway approach is to delineate bike travel width, but not to designate bike facilities as formal bike lanes. Delineation refers to striping; designation refers to bike lane signs and pavement markings. This approach is based on the concept that children and inexperienced bicyclists should not be encouraged to use the expressways. Another element of designation is the incorporation of routes into various bicycle route maps. Casual recreational or family outing users could misunderstand inclusion on a bike route map to mean an easy route for novices.

However, expressways vary as to existing conditions and community preferences. To allow designation of bike lanes, the following process will be used:

1. Specific criteria for evaluating bike lane designation proposals will be developed. The criteria will consider elements such as: posted speed limit, geometric conditions, type of merge and diverge crossings, consistency along the expressway, consistency with city bike plans, and continuity with other bike facilities, including creek trails. County staff

will establish the bike lane designation criteria using a collaborative process involving city staff, the County Roads Commission, and the County BPAC.

2. Where new bike lanes are proposed, cities shall supply a council-approved request.
3. County staff shall then apply the criteria to evaluate the suitability and develop a recommendation about the proposed bike lane. The recommendation will be brought to the County Roads Commission and County BPAC, prior to submittal to the Board of Supervisors for final action.

The existing bike lanes along portions of Oregon-Page Mill and Foothill Expressways will remain in place. Extending these lanes, however, will require Board of Supervisors' approval using the bike lane designation process.