STAFF REPORT

PLANNING DIVISION

TO: PLANNING & TRANSPORTATION COMMISSION

FROM: Virginia Warheit
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DEPARTMENT: Planning and
Community Environment

AGENDA DATE: March 12, 2003

SUBJECT: Feasibility Study and Master Schematic Design Plan for El Camino Real/Caltrans Right of Way

RECOMMENDATIONS

Staff recommends that the Planning and Transportation Commission:

1. Review the attached Public Review Draft Report for the El Camino Real/Caltrans Right of Way Project, comprising a feasibility study and Master Schematic Design Plan.

2. Recommend that City Council direct staff to prepare an Environmental Assessment for Option #2 presented in the draft Final Report. Option #2 maximizes bicycle and pedestrian improvements and includes two selected locations with 4 or 5 travel lanes, and 6 travel lanes remaining in the rest of the Corridor. Following environmental review, lane reductions would be field tested, and a permanent reduction would be carried out only if the City Council determines that the lane reductions are successful.

3. Recommend that City Council direct staff to return to Planning and Transportation Commission and City Council to report on funding opportunities for possible implementation of Phase I presented in the draft Final Report.

BACKGROUND

The El Camino/Caltrans right of way project a Caltrans Demonstration Planning Grant Project sponsored jointly by the City of Palo Alto and Caltrans and is comprised of both a feasibility study and a Master Schematic Design Plan. The demonstration project uses El Camino Real as a model to explore alternative road designs for in-town highways that better address the needs of all travel modes, including people walking or riding bicycles on the street or crossing the street, transit riders, as well as local and regional vehicular traffic. The study area is the Caltrans right of way on El Camino Real, State Route #82, in Palo Alto, from the northern to southern city limits, a length of approximately 4.3 miles.

The city is undertaking this project because it provides an opportunity to address current safety, operational and aesthetic problems on El Camino Real while positioning the street to better accommodate projected future increases in traffic. Having prepared the Schematic Master Design Plan, the City will be in a position to be proactive in taking advantage of future funding opportunities as they become available for implementing the plan. The Master Plan also would provide a guide to coordinate tree planting and other landscaping improvements on El Camino Real, and other minor street improvement projects as they occur on the street.

Project History

In 1999, a citizens group began advocating to change the character of El Camino Real to a shaded, tree-lined street by planting hundreds of large canopy trees in the sidewalks and medians. In 2000, the City Council supported this effort by passing a Resolution making planting canopy trees on El Camino Real a City priority, and by allocating seed money to help establish the nonprofit organization, Trees For El Camino, to raise money for tree planting on El Camino. Since El Camino Real is under the control of Caltrans, Palo Alto in collaboration with Menlo Park and Redwood City sought Caltrans permission for the tree planting. The cities discovered that many of the medians on El Camino in all three cities did not meet the minimum width (12 feet) required for large trees, seriously impeding the objective of creating a tree-lined street.

In 2000, a new Office of Community Planning (OCP) was formed at Caltrans to assist cities in working with Caltrans to develop “context sensitive” highway design solutions that reflect and support the goals of the surrounding community. Demonstration Planning Grants were available through OCP for projects involving Caltrans highways; this offered an opportunity for the city to address not only the problem of planting large canopy trees in narrow medians but also other important city objectives identified in the Comprehensive Plan for a more pedestrian- , bicycle- , and transit-friendly environment on El Camino Real. The City applied for and was awarded a Demonstration Planning

Grant by OCP in July, 2001, and the current feasibility study and planning project began in January, 2002.

Early in the project, a community Advisory Group was formed representing the Trees for El Camino Project, neighborhoods along El Camino Real, the Palo Alto Bicycle Advisory Committee (PABAC), the PTA School Safety Committee, business interests on the street, Stanford University, Valley Transportation Authority (VTA), Caltrans, neighboring cities, and the City's Boards and Commissions. A Technical Advisory Committee made up of outside agency representatives and city staff from relevant city departments was formed to assure coordination of technical issues. The Advisory Group and the Technical Advisory Committee met separately or together throughout the project to advise the consultants and city staff.

At a study session on July 15, 2002, the basic concepts of the project and the two alternative approaches, leaving six travel lanes throughout the corridor versus a "hybrid" concept with four or five travel lanes in limited segments, were reviewed and discussed by the City Council. The Council expressed an interest seeing both alternatives further developed. There was a consensus opinion that any future plan must ensure that El Camino Real continues to convey regional traffic in a satisfactory manner and that the plan results in no diversion of traffic from El Camino Real onto other city streets.

On November 19, 2002, the Planning and Transportation Commission held a work session to review in detail the more fully developed project alternatives, the 6-Lane Throughout Option, and the Hybrid 6/4 Lane Option, as well as the results of the transportation analysis, including an evaluation of the effects of each of the alternatives on projected travel time along the corridor and on other project objectives. The Commission expressed interest in considering the Hybrid 6/4 Lane Option and supported the concept of "field testing" the reduced-lane design with a temporary installation to determine its workability before a final decision would be made about lane reductions.

DISCUSSION

Project Goals and Objectives

The City's stated goals in participating in the Caltrans Demonstration Grant program were to change the character of El Camino Real from a highway designed primarily for motor vehicles to:

- A fully multi-modal urban thoroughfare that maintains mobility and improves safety for all travel modes;
- A center of community activity rather than a barrier;

- An aesthetically attractive corridor that projects a positive image of Palo Alto.

Additional project goals and project objectives developed by the Advisory Group based on comments and discussion at the community workshops and City Council study session are:

- Improve quality of life along El Camino Real while protecting adjacent neighborhoods
- Create economic benefits for businesses and property owners along El Camino Real and for the City of Palo Alto
- Make positive change soon with full development occurring incrementally over time
- Provide Equity and Balance for All Modes
- Improve Safety for All Modes
- Design the Street to Encourage Motorized Traffic to Drive at Safe Speeds and not Exceed the Speed Limit
- Improve the Ability to Cross El Camino Real
- Create a Street and Streetscape that Complement Community Character
- Minimize Direct and Indirect Impacts on Quality of Life and the Environment
- Improve Landscape Quality and Quantity
- Improve Aesthetic Quality of Street Design
- Create Cost Effective Improvements
- Define Some Immediate Improvements

The project objectives are interdependent and no hierarchy is intended. For a more complete description of the project goals and objectives see Attachment A. Project Goals and Objectives.

Key Design Criteria

The following three design criteria were established early in the project and guided

development and evaluation of design concepts.

Reallocate limited space in the street right of way. The study tried to find a design solution that would meet all project goals within the existing street right of way, using excess space in the twelve foot wide travel lanes and in the wide outside lane and shoulder. This space could be reconfigured to provide wider sidewalks, wider medians and bicycle lanes.

Meet the needs of all interests with a stake in the outcome of the project. Physical space must be provided to do all of the following:

- Accommodate vehicular traffic during peak hour in the year 2020, and avoid traffic diversion from El Camino Real to other streets
- Provide space for large canopy trees in medians and sidewalks
- Provide a safe, comfortable environment for people walking and riding bicycles
- Provide curbside parking

Although it initially appeared that interests may be in competition for this limited space, the project showed that the various needs are more often interrelated in mutually supportive ways. For example, wider medians serve as a safe refuge for people and bicycles crossing the street, allow more continuous planting of large street trees, and provide environmental benefits by replacing paved surface with landscaping. Bicycle lanes increase safety and comfort for bicyclists, for drivers in the adjacent lane, and for people getting in and out of curbside parking spaces, as well as providing additional clearance for emergency vehicles.

Design the street to reflect the different character of the northern and southern segments of the corridor. Along the Stanford frontage, the road design reflects the rural character of the Stanford University campus and other adjacent uses such as Palo Alto High School and El Camino Park. South of Stanford Avenue, the road design responds to the more urban environment in this area.

Results of Transportation Analysis

The feasibility study included an extensive transportation analysis to identify conditions and issues affecting all travel modes on the corridor including pedestrians, bicycles,

autos, transit buses, and trucks. The studies included vehicular traffic counts, bicycle and pedestrian counts, intersection operations and Level of Service (LOS), travel speeds, stops and delays and overall travel time along the corridor and along three parallel routes, accident analysis, signal timing and operations, and a review of the City's transportation planning documents and other data sources from Valley Transportation Authority, Caltrans and the Palo Alto Police Department. For a detailed report of the transportation analysis, methodology and findings see Chapter 4.2 in the Public Review Draft Report. The key findings and conclusions of the transportation analysis are summarized below.

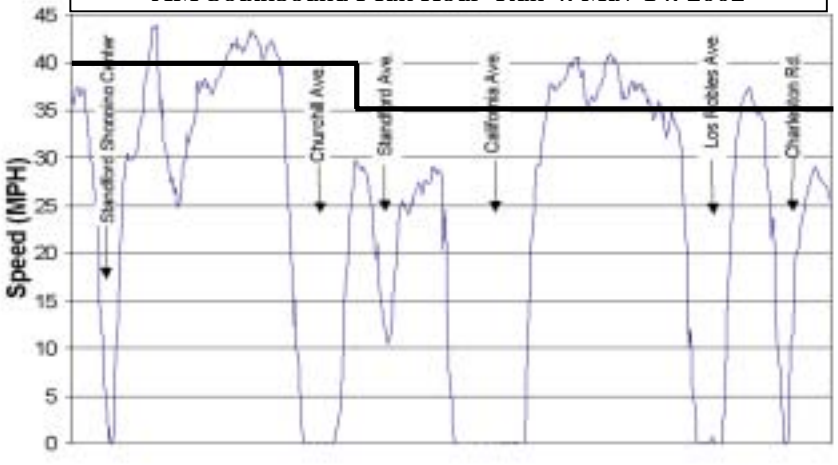
Intersection Capacity. Traffic volumes on El Camino Real are 45,000 to 55,000 Average Daily Trips (ADT). The traffic volumes on the cross streets at the four regional intersections along El Camino, Arastradero, Page Mill Road, Embarcadero, and Alma/Sandhill, range from 18,000 to 50,000 ADT, and the capacity at these intersections is barely able to handle the traffic volumes. The remainder of the cross streets each carry approximately 10,000 ADT or less.

A key observation of the traffic study is that while El Camino Real has the same number of travel lanes at all intersections, the traffic volumes on the streets that cross El Camino vary widely. Since travel lanes at intersections are needed for "storage" of cars waiting for cross traffic and turning movements, at intersections with less than half the amount of cross traffic as the four major intersections the number of lanes could be reduced and the intersections would still function smoothly. While there is no possibility of reducing the carrying capacity (number of travel lanes) at the four regional intersections, the same number of lanes is not required to handle the significantly lower volume of cross traffic at the other signalized intersections.

Traffic flow and speeding. Traffic moves in a "speed and stop" pattern, with frequent stops at traffic signals and speeding between signals, as shown in Figure 1. Speed Profile. Some trips involve stopping at every traffic signal, and some speeds exceed the speed

limit even during the peak hour in the peak direction. This indicates that improvements to signal coordination could significantly reduce corridor travel time and smooth the traffic flow, reducing driver frustration.

Figure 1. Speed Profile
AM Southbound Peak Hour Run 4. Mav 14. 2002



Accident Rates. There are locations throughout the corridor where accidents occur at a higher than average rate for this type of road. In five locations, near Alma, Churchill, Page Mill Road, Curtner and Maybell, the rate of speeding accidents and rear end collisions exceeds the corridor-wide average. These street segments coincide with higher rates of speeding, and with the longest distances between traffic signals. They also include important pedestrian crossings and school crossings. Speeding is a major cause of the accidents in these areas.

Connection between speed and accidents. The project proposes to design the road so that drivers will travel at speeds of 30 – 35 miles per hour (mph). El Camino is currently posted 35 mph south of Park Boulevard and 40 mph north of Park Boulevard. However, most of the design features of the existing road support a higher speed of 50 mph or more. The slower 30 – 35 mph speed is proposed for the following reasons:

- Road design standards are based on the design speed of the road, and design dimensions have more flexibility at lower speeds. This will help meet multiple project objectives in the limited space. For example, shorter lane transition requirements will make it easier to provide both wide medians and curbside parking spaces.

- Road capacity is greatest at 30 mph as the slower speed is offset by a shorter distance

between cars.

- The slower 30 mph speed is safer in urban conditions. The severity of accidents increases with speed. Accidents involving pedestrians or bicyclists are more likely to be fatal at speeds over 30 mph. See Attachment B. The Driver's Focus at Different Speeds

Pedestrian Accommodation

Pedestrian crossing distances on El Camino are very wide, generally about 104 feet and significantly longer at the largest intersections. Most of the signalized intersections do not meet the Palo Alto pedestrian crossing standard of 3.5 feet per second, and some do not meet the Caltrans standard of 4 feet per second. Sidewalks are not wide enough for street furnishings and comfortable pedestrian activities and are not ADA accessible in some places, as shown in Figure 2. below. Long distances between signalized crossings in some locations encourage jaywalking. Nine pedestrian accidents were reported in the period 1999-2001.

Figure 2. Inadequate Sidewalk Space on El Camino Real

Bicycle Accommodation

There are several hundred bicycle riders per day on ECR, with the greatest number using the street during the middle of the day. There are no designated lanes. In the three year period 1999-2001 there were 21 reported bicycle accidents, and accident locations are spread throughout the corridor. Signal timing does not accommodate bicycles at most

intersections, even though in the City's Bicycle System there are five bicycle crossings of El Camino.

Transit
El Camino Real is an important transit corridor, with over 5000 boardings per day in Palo Alto, and bus service to the City's two train stations. Bus Route 22 on El Camino has the highest ridership in the County. If funding is available, VTA plans to convert the 300 Express line to a Bus Rapid Transit route with three stops on El Camino Real. VTA's objectives for increasing bus service on El Camino Real, including the possible future bus rapid transit (BRT) line, are being incorporated into the project. There are also Sam Trans regular and express routes and the Stanford Margarite Shuttle along El Camino.

Truck Routes
El Camino Real through Palo Alto is a truck route, with medium to large trucks making up about 2 –3 % of the Average Daily Trips. Three intersecting streets are also truck routes.

Results of Street Trees Investigation
A thorough study of all trees on El Camino Real and their growing conditions was undertaken. A key finding is that substantially larger planting areas are needed in sidewalks to produce and maintain large healthy trees and avoid sidewalk damage. A majority of the London Plane trees planted in the sidewalks in the 1980's are less than six inches dbh (diameter at breast height). The existing planting areas, generally 3 x 4 feet, are too small to hold sufficient water to produce and sustain normal growth, despite truck watering. Where trees have grown larger than 6 inches, there is sidewalk damage. To support large canopy trees, a minimum planting space of 4 x 6 x 3 feet deep needs to be provided. While the study found soil types along El Camino Real are generally good, some areas with heavy clay, and in some cases old base rock from the road construction, will require special treatment for new trees to be successful.

See the Tree Study findings and recommendations, Chapter 4.1.4 , and a discussion of the street tree planting concept in Chapter 5.4 in the Public Review Draft Report

Description and Comparison of Two Alternative Design Options
A number of options were explored to find design solutions that would meet all project goals and objectives. Two alternative design options have been developed. Option #1, 6-Lanes Throughout, retains the existing six travel lanes throughout the length of the corridor. Option #2, Hybrid 6/4 Lanes, retains six travel lanes along a majority of the corridor, and has two locations where travel lanes are reduced to four or five lanes. This section of the report describes and compares the two alternative options.

Option #1, 6-Lanes Throughout This option retains the existing six travel lanes throughout the entire length of the corridor. Many important improvements to the street can be provided even while retaining all six travel lanes. These improvements include somewhat wider sidewalks, some crosswalk improvements, marked bicycle lanes, wider center medians at turn lanes to provide a pedestrian refuge, and more street trees. Option #1 would also include traffic signal synchronization and timing improvements, new street lighting and other street furnishings throughout the corridor.

Continuous curbside parking would continue to be provided in most locations, but in some locations adjacent to left turn lanes curbside parking would either be only on one side of the street, or it would be provided on both sides of the street in "parking pockets". At parking pockets, groups of several parking spaces are inset periodically into a 14 foot wide sidewalk, with the sidewalk being 7 feet wide adjacent to the parking spaces. In these locations the marked bicycle lanes would be 4.5 feet wide instead of the standard 5 feet, and sidewalk trees would be interrupted by the parking pockets. An example of parking pockets can be seen on Park Boulevard, south of Sheridan Avenue.

Photo simulations of Los Robles Avenue have been prepared showing existing inadequate conditions, and how the street could look with basic improvements and six travel lanes. See Attachment C.1. Los Robles/El Camino Way, Today's Shortcomings, and Attachment C.2. Los Robles/ El Camino Way, Proposed 6-Lane Cross Section - Basic Improvements.

Street cross sections showing existing conditions, six lane improvements, six lanes with parking pockets, and four lane improvements are shown in Attachments D.1, D.2, D.3, and D.4.

Option #2, Hybrid 6/4 Lane Option. This option is referred to as the Hybrid 6/4- Lane Option because it retains six travel lanes along a majority of the street, particularly around the four regional intersections (Alma, Embarcadero, Page Mill and Charleston), and provides four or five travel lanes in two carefully selected locations where less traffic capacity is required (north of California Avenue to Park Boulevard or Churchill Avenue, and north of Maybell Avenue to Los Robles or Matadero Avenue). Segments with five travel lanes have two travel lanes in one direction and retain the existing three travel lanes in the other direction, responding to different traffic volumes in the northbound and southbound directions.

In Option #2, segments that retain six travel lanes would be designed the same as in Option #1. In segments with four or five travel lanes, the extra space resulting from

fewer travel lanes is used to provide more generously proportioned medians and sidewalks, and it avoids the need for the parking pocket arrangement described in Option #1. Both sidewalk trees and curbside parking are continuous, and bicycle lanes are the standard 5 feet wide throughout. Along the Stanford frontage the planting strips and median would be wide enough to be treated as swales that could serve as stormwater retention basins.

Photo simulations of Los Robles Avenue showing how the street could look with four travel lanes and additional improvements that are possible with the reduced number of travel lanes are shown in Attachment C.3. Los Robles/El Camino Way, Proposed 4-Lane Cross Section – Additional Improvements.

How the reduced lane segments were selected. The street segments where fewer travel lanes are being considered are areas where the traffic analysis indicates current and future traffic volumes do not require six travel lanes, and where the additional space could be used to more fully achieve other multimodal and aesthetic goals of the project. Locations that could benefit from a narrower roadway are those that include key school routes, concentrations of commercial and pedestrian activity, and bicycle crossings.

Street sections where lane reduction would not be considered are those that are in the vicinity of the four regional intersections (Alma, Embarcadero Road, Page Mill Road, and Arastradero-West Charleston) where traffic volumes are near capacity.

Two reduced-lane scenarios are presented. Configuration A. is more limited, extending between Maybell and Los Robles in the south and between California Avenue and Park Boulevard in the north. Configuration B. expands each of these areas, with the southern segment extended to Matadero and the northern segment extended to Churchill.
The locations of possible reduced-lane segments are shown on the Street Concept Diagrams on pages 5.14 and 5.15 in the Public Review Draft Report. These diagrams also show the locations of contributing factors for selecting the reduced-lane locations, such as school crossings and commercial nodes.
In each direction, there are two locations along the corridor where travel lanes are reduced from three lanes to two lanes. On the Street Concept Diagrams, locations where a travel lane is added or dropped are marked by a plus or minus sign. For example, in Configuration A, a driver going south would have three travel lanes from Alma Street until just north of Park Boulevard, then two travel lanes until just after crossing California Avenue, where there would again be three travel lanes. At just north of Los Robles, the southbound direction would again drop to two travel lanes until just past Maybell Avenue, where it would return to three lanes for the remainder of the corridor.

Comparison of Benefits Provided in Option #1 and Option #2. Under the reduced lane scenarios in Option #2, four travel lanes allows generous space for all needs. Retaining the six travel lanes in these areas requires compromises. See Figure 3. Comparison of Design Elements: Existing Condition, Option #1, Option #2.

Figure 3.
Comparison of Design Elements: Existing Condition, Option #1, Option#2

	Existing Condition	6-Lane Throughout Option #1	Hybrid 6/4 Lane Option #2
Travel lane width	12 feet	11 feet	11 feet
Sidewalk width	8 feet	10 feet, except 7 feet at parking pockets	17 feet
Sidewalk width at corner bulbout	8 feet	14 feet	23 feet
Pedestrian crossing distance Crossing time	104 feet 30 seconds	92 feet 27 seconds (10% reduction)	75 feet 21.5 seconds (28% reduction)
Median width	2-14 feet	8–11 feet	9–19 feet
Pedestrian refuge at median	2–4 feet	8 feet	9 feet
Bike lane	Combined with travel lane	5 feet, except 4.5feet at parking pockets	5 feet
Curbside parking spaces	Unmarked	continuous, except at parking pockets	continuous
Sidewalk tree placement	Varies	22–33 feet, except at parking pockets	22–33 feet

The benefits of reducing the number of travel lanes in selected areas include:

- substantially shorter, and therefore safer, pedestrian and bicycle crossings
- generously wide sidewalks for pedestrians, bus stops, street furnishings, shoppers and other business activities
- larger planting areas in sidewalks and center medians providing better growing conditions for street trees, reducing pavement and increasing shading

- continuous curbside parking
- continuous sidewalk trees
- standard width bicycle lanes throughout
- speed management

The shorter pedestrian crossing distance, wider sidewalks, increased landscaping, standard bicycle lanes, continuous curbside parking, and reduced speed would be particularly beneficial in existing and planned future commercial areas with high levels of pedestrian activity, such as around California Avenue and around the El Camino Way triangle.

The photo simulations of Stanford Avenue show the benefits to a pedestrian of the shorter crossing distance on a four lane roadway, compared with a six lane roadway. See Attachments F.1, F. 2, and F.3., Stanford Avenue Pedestrian Cross Walk Improvements, Existing Conditons; 6 Lane Cross Section; and 4 Lane Cross Section.

The Project Goals and Objectives developed by the Advisory Group were used to guide development of the project alternatives. A matrix was prepared to compare how well each of the alternatives being considered addresses the project objectives, measured against projected conditions on the street in twenty years without any improvements. The Matrix: Comparison of Possible Futures for El Camino Real, is provided in Attachment F. Generally, where traffic lanes can be reduced, more of the project objectives are achieved and at a higher level.

Comparison of Travel Times for project alternatives. City Council directed at their study session in June, 2002 that improvements to El Camino Real should not result in diversion of traffic to other streets. The project aimed to not increase the travel time significantly on ECR, relative to the alternate parallel routes, to avoid creating incentives for drivers to seek other routes.

The transportation analysis included travel time studies along three parallel corridors, Alma, Cowper-Waverley and Middlefield, during the morning and evening peak hour travel times. The studies showed that currently Alma is much faster than El Camino Real, and the Middlefield and Cowper/Waverley corridors generally take about the same amount of time as El Camino. These alternate routes are between one-third and one mile away and there are few crossover points to/from El Camino. The study concluded that given the relative travel time differences, it is unlikely that drivers whose preference would otherwise be El Camino would shift to the alternate routes to avoid El Camino.

The transportation analysis also determined the expected amount of time it would take to travel the El Camino corridor during the PM peak hour in the year 2020 for various

project alternatives. Figure 4 and Figure 5 show the projected travel times for the project alternatives, compared with existing conditions and conditions in the year 2020 without improvements.

Figure 4

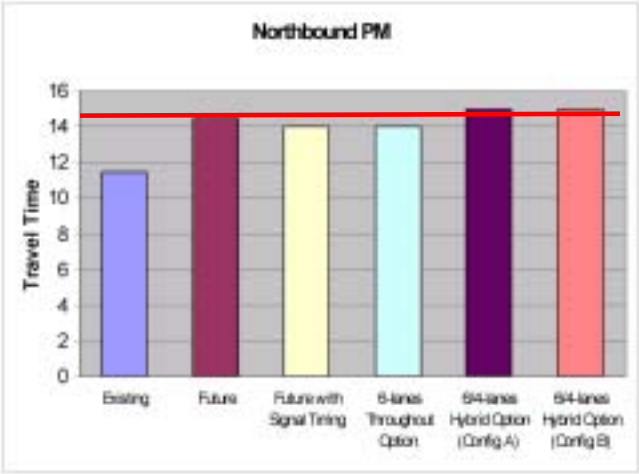
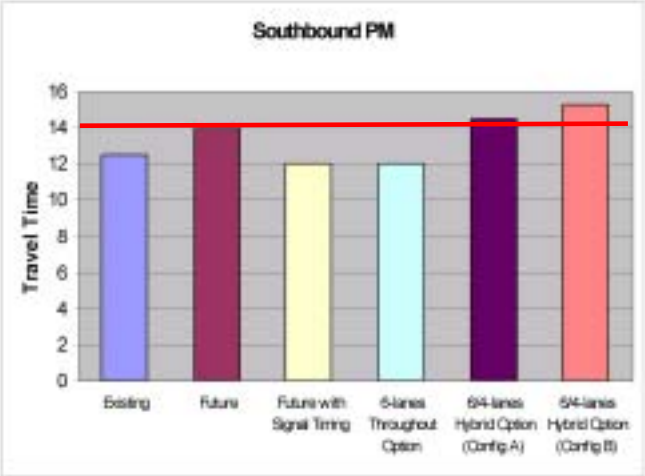


Figure 5



As seen in Figures 4 and 5, if no improvements are made to the street, the time required to travel the length of the corridor during peak hour in 2020 could be about 2 minutes longer than today due to increases in traffic. While the effects on travel time are somewhat different for northbound and southbound directions, in general the proposed 6-Lane Throughout improvements, including improved signal timing and coordination, tend to offset travel time increases due to increasing traffic, leaving travel time approximately the same as it is today.

The effect of implementing the limited Hybrid 6/4 Lane option results in a minimal increase in corridor travel time of 30 seconds, about 4%, more than if no improvements are made. Implementing the extended Hybrid 6/4 lane option results in the same minimal change in travel time, compared to no improvements, for the northbound direction. In the southbound direction, the extended Hybrid 6/4 lane improvements increases corridor travel time by 1 and ½ minutes, about 9%, compared to projected 2020 travel time with no improvements.

The conclusion of the travel time study is that the change in travel times along El Camino under the proposed alternatives would not be sufficiently different from the travel times that would otherwise prevail to create incentives for traffic to divert to parallel routes such as Alma, Middlefield or Cowper/Waverley.

While the travel time analysis indicates that there is not likely to be a shift of traffic from

the El Camino Real corridor to other parallel routes, the more limited location-specific issue of drivers possibly short-cutting into adjacent neighborhoods for a few blocks will be addressed during the design of each street segment. The greater level of detail at the project design stage will allow the possibility of cut-through behavior to be assessed and the project designed to discourage or prohibit it.

Phasing Plan

One of the goals for the project is to start making improvements soon, particularly with regard to planting street trees. Even under optimal conditions, a project of this size probably would not be accomplished at one time, and given the current funding environment it could take many years to achieve. So, a Phasing Plan has been developed that provides for the planting of median trees to begin this year, identifies a set of initial improvements that could be implemented for a relatively modest cost in Phase I, and describes a sequential process for decision-making and implementation of the remaining improvements in two subsequent Phases. The phasing process is summarized below. See Chapter 6 of the Public Review Draft Report for discussion of the proposed Implementation Phasing Plan.

Street Trees.

Through negotiations with Assemblyman Joe Simitian, in December, 2002, Caltrans Director, Jeff Morales, proposed a pilot project on El Camino Real in Palo Alto, Menlo Park, Redwood City and Los Altos that will allow planting of large trees in narrow medians, resolving the problem of planting trees in medians that are less than 12 feet wide.

Parks Division staff is now making preparations to begin planting the medians from Embarcadero Road to Churchill or Park Boulevard, and possibly additional medians south of Page Mill Road in the coming months with funding previously allocated for El Camino median beautification. First priority for median tree planting will be medians that are currently at least eight feet wide, with the possible widening of a limited amount of narrower medians. Street tree planting is being coordinated with the Master Schematic Design Plan to avoid the need to relocate trees in the future. Sidewalk trees should be evaluated on a block by block basis for possible remediation, but generally new sidewalk trees should be planted only when sidewalks are widened providing larger tree planting areas and irrigation, or as part of a development project that will provide for a wider sidewalk.

Phase 1. The initial street improvements would include restriping the street with six 11 foot wide travel lanes, a bike lane and marked parking spaces, and coordinating and retiming the traffic signals. Curbs would not be moved in this phase. If there is sufficient

funding, one or more intersections also would be improved with crosswalks, new lights and other enhancements to begin to show what the street would be like with all improvements in place. The restriping of the entire corridor is a necessary step for incremental improvements, since it provides a continuous framework into which improved street segments can be inserted over time.

Phase 2. In the second phase, the two segments where a lane reduction is to be considered would be "field tested" and a decision made whether to proceed with the lane reductions or to retain the existing six travel lanes. Also in this phase, permanent 6-Lane improvements would be constructed in "bracket segments" adjacent to the test areas.

Phase 3. In the last phase, the field test segments would be constructed, either with four or five travel lanes if the reduced lane tests were found to be successful, or with six travel lanes if the tests were not successful. All remaining six lane segments would also be constructed at this time, completing the improvements along the entire corridor.

At any point during the process a decision could be made to move forward with the Corridor-wide 6-Lane improvements.

Additional Design Elements To Be Addressed During Future Project Design

Curbside Parking. On-street parking is heavily used in some areas, particularly in the commercial areas around California Avenue, and not highly used in others. For street segments that would retain six travel lanes, a parking utilization survey should be conducted as these segments of the street enter the detailed design process. The parking study would involve discussions with property owners and business owners adjacent to the areas being studied, as well as with residents of the neighborhoods adjacent to El Camino Real.

Left turn pockets at unsignalized intersections. Unsignalized left turn pockets occur in several locations along the southern segment of the street. If some of these were eliminated, it would result in additional median areas where large canopy trees could be planted, significantly improving the continuity of median trees. Traffic studies would need to be conducted prior to closure of unsignalized left turns.

Midblock pedestrian crossing at Palo Alto High School. The distance between signalized intersections at Embarcadero Road and Churchill Avenue is 2400 feet, while the maximum distance between marked crosswalks should not exceed 600 feet. Palo Alto High School and

Stanford students and others cross midblock between these intersections to reach bus stops located there. This is a dangerous situation and consideration should be given to installing a marked crosswalk. Caltrans would require a marked crossing in this location to be signalized, which could be tied into the signal at Embarcadero. See page 5.29 in the Public Review Draft Report for Photo Simulations of possible new pedestrian crossing at Palo Alto High School.

Street furnishings and Public Art. At the project design stage, designs will be developed for improved street furnishings, including vehicular and pedestrian lighting, seating and trash containers, bollards, bicycle parking, tree grates, bus shelters, paving materials and public art.

Business Signs Program
Some business owners on El Camino Real are concerned that planting additional street trees will block visibility to business signs. A business signs program should be developed to identify attractive and appropriate signage solutions to assure all businesses adequate visibility. A special sign program could be developed for El Camino that would address the visibility issue and also use sign design as a tool for creating a more visually interesting and coherent streetscape.

Order of Magnitude Cost Estimates.
General cost estimates were developed to determine whether the costs of various street design options differed significantly, and to get an indication of the amount of funding that would need to be raised to implement some or all of the improvements. The cost estimates indicate that the costs are about the same for the 6-Lane Throughout Option as for the Hybrid 6/4 Lane Option, so cost would not be a significant factor in selecting one option over the other. Total estimated cost for the corridor improvements for either option is about $32,000,000. Adding a 30% contingency would bring that figure to about $42,000,000. The estimated cost for the initial improvements in Phase I is about $1,000,000 to $1,500,000. The estimated cost to implement the reduced-lane "field tests" is between about $500,000 and $1,000,000 for each of the two possible test areas. Additional information about the cost estimates is provided in Chapter 7 of the Public Review Draft Report.

PUBLIC PARTICIPATION

Two widely publicized community workshops conducted at Cubberley Community Center were attended by about 75 people at Community Workshop #1 on April 23, 2002 and by about 50 people at Community Workshop #2 on September 28, 2002. In addition, city staff attended various neighborhood meetings to explain the project and its status. The City Council held a project review study session on July 15, 2002, and the Planning and Transportation Commission reviewed the draft final Master Schematic Design Plan and the

Transportation Analysis at a study session on November 19, 2002. Most project materials have been made available on a special website created for the project on the City's Webpage.

RESOURCE IMPACT

The Feasibility Study and Master Schematic Design Plan is being funded by a $240,000 grant from Caltrans and $48,000 in City matching funds that were transferred by the City Council from CIP Project 10113 on December 17, 2001. There may be ongoing future resource needs associated with this project that are unknown at this time. Staff will actively seek grant funding for any recommendations that may come out of the El Camino Real study.

Possible sources of future funding to implement the improvements are very uncertain at this time due to current economic conditions. Possible sources include various regional, state and federal transportation funding programs. The multi-modal aspects of the proposed improvements and the widespread interest in finding solutions to the problems presented by in-town highways will make this a competitive project when funding is available.

The funds currently available for implementing improvements include $1.5 million previously allocated by the City Council in a CIP for beautification of medians on El Camino Real, and funds that are being raised by Trees for El Camino to pay for planting trees.

POLICY IMPLICATIONS

The Comprehensive Plan includes a number of goals, policies, and programs that are relevant to this study.

In the Transportation Element:
GOALS T-2 and T-3 include many Policies and Programs to provide alternatives to driving by improving pedestrian and bicycle facilities and access to public transit.

PROGRAM T-32. Improve pedestrian crossings with bulbouts, small curb radii, street trees near corners, bollards, and landscaping to create protected areas.

PROGRAM T-16. Evaluate the extension of a light rail line along El Camino Real from Mountain View through Palo Alto to Menlo Park.

In the Business and Economics Element:
POLICY B-25. Encourage the development of pedestrian-oriented neighborhood retail

and office centers along the El Camino corridor.

In the Land Use and Urban Design Element:
PROGRAM L-32. Improve pedestrian connections across El Camino Real.

PROGRAM L-33. Study ways to make South El Camino Real more pedestrian-friendly, including redesigning the street to provide wider sidewalks, safe pedestrian crossings at key intersections, street trees, and streetscape improvements. …redesign of the public right-of-way should be encouraged to make it more suitable for pedestrians without reducing the number of travel lanes.

PROGRAM L-34. Provide better connections across El Camino Real to bring the Ventura and Barron Park neighborhoods together and to improve linkages to local schools and parks.

POLICY L-35: Establish the South El Camino Real area as a well-designed, compact, vital, Multi-neighborhood Center with diverse uses, a mix of one-, two-, and three-story buildings, and a network of pedestrian-oriented streets and ways.

Policy L-66. Maintain an aesthetically pleasing street network that helps frame and define the community while meeting the needs of pedestrians, bicyclists, and motorists.

POLICY L-67: Balance traffic circulation needs with the goal of creating walkable neighborhoods that are designed and oriented towards pedestrians.

POLICY L-70. Enhance the appearance of streets and other public spaces by expanding and maintaining Palo Alto's street tree system.

POLICY L-71. Strengthen the identity of important community gateways, including entrances to the city at…El Camino Real and …Embarcadero Road at El Camino Real.

In Program L-33 cited above, the Comprehensive Plan presents two objectives, both to change the street in ways that make it safe and comfortable for people walking, biking and crossing the street and also to continue to accommodate vehicular traffic. The discussion following Program L-33 assumes this requires the existing number of travel lanes to be retained, stating, "…redesign of the public right-of-way should be encouraged to make it more suitable for pedestrians without reducing the number of travel lanes." The Feasibility Study included a more detailed transportation analysis than was available during the Comprehensive Plan process, and it has shown that there is a way to meet both Comprehensive Plan objectives by a "combination" approach that retains the existing six

travel lanes where required by the traffic volumes on major cross streets, and reduces the number of lanes where there is excess road capacity at the minor intersections, using the space to more fully advance the nonvehicular objectives of the Comprehensive Plan.

All of the options developed in this study provide better conditions for pedestrians and bicyclists, some substantially more than others. In the opinion of the project traffic engineers, all options would continue to satisfactorily convey regional vehicular traffic, and none would result in an increase in travel time along the corridor sufficient to cause traffic to divert to other parallel streets. The option that has the most benefits for pedestrians and bicylists, as well as urban design objectives, Option #2, Configuration B., has the most, although small, increase in travel time. Direction is needed from the City Council regarding which of the options best meets the objectives of the Comprehensive Plan. Staff recommends the option that provides the most improvement for pedestrians and bicyclists, Option #2, Configuration B.

If the City Council wishes to pursue either configuration of Option #2, which includes reducing the number of travel lanes, then staff would prepare for City Council approval a project plan and Environmental Assessment for the preferred option, and a Comprehensive Plan Amendment modifying the text to allow the lane reduction.

ENVIRONMENTAL REVIEW

The preparation of the Feasibility Study and Master Schematic Design Plan for El Camino Real is exempt from CEQA pursuant to Section No. 15262: "A project involving only feasibility or planning studies for possible future actions which the agency, board, or commission has not approved, adopted, or funded does not require the preparation of an EIR or negative declaration but does require consideration of environmental factors."

The Feasibility Study included an extensive transportation analysis to identify and evaluate possible transportation related impacts of the alternatives developed in the Master Schematic Design Plan. The primary consideration was whether the alternative designs would satisfactorily accommodate projected future traffic volumes on El Camino Real in the year 2020 without significantly affecting travel time along the corridor, and thus avoid traffic diversion to alternative routes. The conclusion of the transportation analysis is that all of the alternatives being presented in the Master Schematic Design Plan do meet this standard. The Feasibility Study also identified several other environmental issues that should be assessed, and if necessary mitigated, at the time of future project development, such as possible location-specific short-cutting into adjacent neighborhoods, possible removal of some curbside parking spaces, and possible closure of some left turn lanes.

If the City Council directs staff to pursue further evaluation of one of the design options presented in the Master Schematic Design Plan, an environmental assessment for the preferred option will be prepared and presented for City Council adoption. A programmatic environmental assessment could be prepared that would evaluate the project as described in the Master Schematic Design Plan and would identify site specific analyses to be done at the time future construction projects are designed and implemented.

TIMELINE

The Feasibility Study and Master Schematic Design Plan is expected to be reviewed by City Council in second quarter, 2003.

A Memorandum of Understanding (MOU) is being drafted by the City and Caltrans that will spell out the City's and Caltrans' mutual understanding of both the intentions of the project and the design solutions agreed upon between the two parties. While the MOU is legally non-binding, it will facilitate the process of securing future Caltans approvals for projects to implement the Schematic Master Design Plan. The MOU will be submitted to the City Council for approval in conjunction with the completion of the Master Schematic Design Plan process. See Chapter 2.3 of the Public Review Draft Report for a discussion of the coordination with Caltrans.

A possible timeline for implementing improvements described in the Master Schematic Design Plan is discussed in a previous section under Phasing Plan.

If so directed by City Council, staff will explore possible funding sources, and prepare an Environmental Assessment of the City Council preferred Option for City Council adoption.