TRANSPORTATION DIVISION

Memorandum

Date: September 29, 2003

To: Charleston-Arastradero Corridor Plan File

From: Lily Kang
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Subject: Previous Lane Reduction Projects in the U.S.—A Reference for the Charleston-Arastradero Corridor Plan

Abstract

This memo is intended to give participants in the Charleston-Arastradero Corridor Plan an overview of past lane reduction projects that have been performed elsewhere in the country. Data is presented on three major considerations with respect to implementation of lane reduction: average daily traffic volume, accident rate, and public response to these projects. For a majority of the cases presented, traffic volume has not changed significantly and traffic flow has been maintained. Safety data, when available, also shows a decrease in the number of accidents on these streets. The public perception has been generally positive after the implementation of such successful projects. However, this data is not intended to draw any conclusions regarding the success or failure of lane reduction projects in general. Further and more rigorous study is needed in order to evaluate the effects of this road reconstruction technique.

Introduction

This memo contains information on past lane reduction projects that have been implemented in the United States. The available data has been categorized into type of project, adjacent land use, road geographics, effects on traffic flow and safety, and public perception of the project.

The purpose of this memo is to serve as reference to those seeking past examples of lane reduction projects. It is not intended to serve as a means of evaluating the effects of lane reduction along the Charleston-Arastradero Corridor.

The Charleston-Arastradero Road Corridor is classified as a residential arterial according to the 1998-2010 Comprehensive Plan of Palo Alto. The surrounding areas are primarily residential, with several schools, parks and community centers located within or adjacent to the corridor. In response to a 2000 traffic safety and management study and neighborhood concerns about safety and quality of life along the corridor, the Planning

and Transportation staff has been mandated to formulate and implement a Traffic Management and Safety Plan along the corridor in accordance with the following objectives:

1) maintain existing travel time on the corridor to minimize diversion to other residential streets
2) reduce accidents on the corridor
3) improve conditions for pedestrian and bicycle travel
4) improve the quality of life on the corridor
5) enhance visual amenity of the corridor.

Data Collection

The data presented in this memo was collected through various internet sources, including city agency websites, pedestrian and cycling groups websites, and transportation research group websites. Follow-up calls to city agencies contributed to this compilation of data.

The data should by no means be regarded as an exhaustive collection of lane reduction measures in the United States.

Data

Please see accompanying Excel file.

Results

Many of the lane reduction projects in the data table have resulted in little to no significant loss in traffic volume or effect on traffic flow. In some cases, the ADTs of the reduced roads have increased, while for others, the ADT has remained constant or has decreased.

Safety is a major factor leading to lane reduction. The majority of cases report a decrease in accidents after the reduction has been implemented, although the magnitude of this decrease is unknown for the majority of these cases.

In general, public participation has been positive after the implementation of lane reduction projects. The response has usually involved observed increased pedestrian and bicycle safety and decrease in dangerous vehicular maneuvers. However, there is a lack of data on negative responses to lane reduction projects.

Issues in Data

It should be noted this data should not be used to assess or predict the effects of lane reduction on the Charleston-Arastradero Road Corridor. Several factors should be considered when examining this data in relation to the Charleston-Arastradero Project.

- Land-use patterns: The specificity of each roadway in relation to land use patterns that surround it govern the effects that lane reduction has on that particular road. For instance, the number of schools located among the corridor and magnitude of commercial activity are two major factors and determine road usage.
- Varied objectives of lane reduction projects: Different causes and objectives motivate the lane reduction projects noted in the data section.
- Lack of rigorous data: Due to shortages in resources and the relative scope of lane reduction projects, the follow-up analysis for many of these projects are generally weak and inconsistent for the purposes of comparison. In many cases, personnel and technical data associated with the road change were not available for consultation. Some of the data available has been based on anecdotal evidence while other data has been based on technical data.
- Technical margin of error: The technical data collected for different projects may not be consistent with the technical data collected by the Palo Alto Transportation Division. Accuracy of traffic-measuring equipment, length and times of data collection, variation in motorist and pedestrian behavior may all contribute to inconsistencies in data applied across different lane reduction projects.
- Potential bias in follow-up analysis: The data collected for this memo contains little evidence of lane reduction "failures." It should be noted that there may be a bias towards reporting only successful projects or projecting such initiatives as successes.

In general, it is difficult to assess the success of lane reduction projects. Due to the inconsistency of data available on previous projects and the specific circumstances that concern each roadway, making generalizations about lane reduction projects can be problematic.

Case Studies in Mountain View

Several examples of lane reductions are locally accessible and may be useful for further study. Mountain View has implemented reduced several four-lane roads to either two or three lanes. Cuesta Drive, an arterial street located in a residential area, was reduced to two-lanes with a two-way left-turn lane between the Miramonte Avenue and Springer Road. It also bears similarity to sections of the Charleston-Arastradero Road in that primarily single-family homes are located directly on the street, and pedestrians and bicyclists frequently travel the road. It has not experienced a significant change in traffic volume or flow. At the time of the change, the speed limit was increased from an arbitrary 25 mph to 30 mph after implementation of a speed survey. The 85th percentile

speed is currently between 36 and 37 mph and no effect on travel safety along the road has been recorded. However, the City of Mountain View has observed that at times, the two-way left-turn lane has been used as a passing lane.

Phyllis Avenue and Dana Street are two residential streets that occupy less traffic than Cuesta or Charleston-Arastradero, but are notable in their proximity to schools. Dana Street, which includes an overpass over Highway 85, currently has two lanes and a landscaped median with continuous bike lanes. Multi-family housing is primarily located alongside Dana, and single-family housing is located alongside Phyllis.

For these cases, change was prompted by residents of the neighborhoods who sought to reduce the incidence of speeding and dangerous traffic maneuvers in their areas. It should be noted that safety was not a primary concern for these roadway changes. The suitability of these streets for lane reduction were assessed by measuring hourly traffic counts. In order to prevent congestion, Mountain View generally considers lane reduction as an option for roadways that measure less than 1000 vehicles per lane per hour, a theoretical limit for lane capacities.

Both streets have experiences no significant change in traffic volume and flow.

References

Burden, Dan and Peter Lagerwey. “Road Diets: Fixing the Big Roads.” Walkable Communities, Inc. March 1999. http://www.walkable.org/download/rdiets.pdf.

Knapp, Kevin et al. “Urban Four-Lane Undivided to Three-Lane Roadway Conversion Guidelines.” April 2001. http://www.ctre.iastate.edu/pubs/midcon2003/KnappConversion.pdf.