

Chapter 2
THE SOUTH RICHMOND SHORELINE GROWTH POTENTIAL AND
THE I-580 (17) HOFFMAN CORRIDOR SECTION
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Introduction

The Highway 17 Hoffman Corridor is the main Marin-to-East Bay commute route, linking Route I-80 near Buchanan Street in Albany to Route 101 via the Richmond-San Rafael Bridge (Figure 1). Presently, the Hoffman Corridor consists mostly of a heavily congested, deteriorating four-lane city street. The State of California Department of Transportation (Caltrans) recognizes the corridor's main deficiencies as "peak period congestion, railroad-crossing delays, accidents, and lack of capacity for future development" (1980). The Hoffman Corridor is in need of improvement, and because of its present lack of capacity for expansion, Highway 17 through the Hoffman Corridor is currently being replaced by a new section of I-580 to be completed in 1995. The freeway will roughly parallel the existing highway, but will be six lanes wide and have no intersections or railroad crossings (Caltrans, 1980). This improvement will at least temporarily help relieve the congestion in the corridor by increasing its traffic capacity. How effective the improvement will be at coping with the extra traffic generated by Richmond's future development remains questionable, however.

The plans for the new Hoffman Corridor section of I-580 have considered the impending population increases of the Bay Area as a whole (Caltrans, 1980). The increase in traffic due to the larger population in the Bay Area will probably be accommodated on the freeway in 1995 if no major local traffic-generating developments occur near the corridor. However, the hundreds of acres of Richmond land on the San Francisco Bay side of the Hoffman Corridor between the Contra Costa/Alameda County line and Point Potrero (shaded area of Figure 1) are mostly vacant or under-utilized, making the area very susceptible to future development (San Francisco Bay Conservation Development Commission, 1977). Regardless of how the land in this study area is used when developed, it is sure to produce more traffic than it is at present. Because of the area's proximity to the Hoffman Corridor, the traffic generated by development there will have a direct effect on the new freeway. However, in the planning for the corridor improvement, the study area's potential for traffic generation seems to have been ignored.

Caltrans (1980) recognizes that the corridor improvement will revitalize the industrial base of the city, especially in the south shoreline area (Figure 1). The growth of industry and related job opportunities will entice people to move into the area or to commute there for work. The purpose

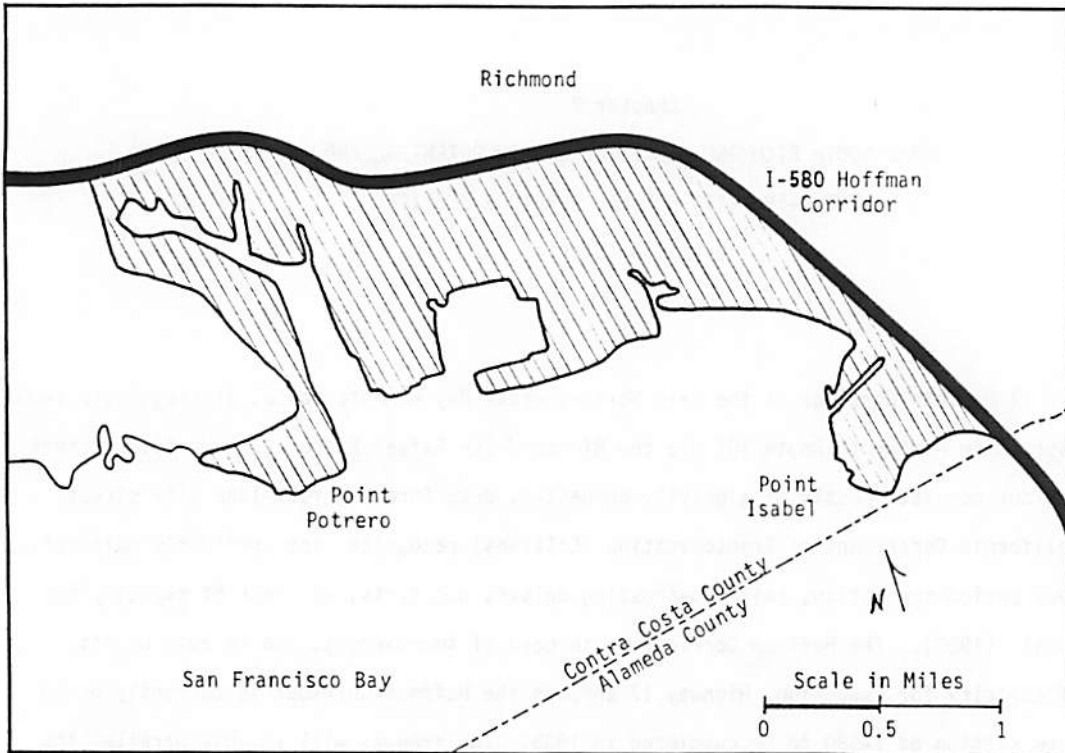


Figure 1. South Richmond Shoreline Study Area and I-580 Hoffman Corridor Section.

Source: Caltrans, 1980.

of this paper is to estimate the volume of traffic that will be produced by future development in the south Richmond shoreline area, and determine the impact that this additional traffic will have on the completed I-580 Hoffman Corridor section.

Past Studies

Since 1970, the Hoffman Corridor has been studied extensively in preparation for the corridor improvement project that is currently underway. Caltrans (1980) outlines why the improvement was needed and details the impact it will have on industry in the area. The report presents maps showing zoning, use, and traffic patterns, both present and projected. It also includes 1980 traffic volumes for the corridor but does not attempt to quantify the projected usage and capacity of the corridor after the new freeway is built.

The South Richmond Shoreline Special Area Plan Citizens' Advisory Committee (SRSSAPCAC, 1977) presents a map of most of the study area's present land use and zoning designations. Few explicit planning proposals involving the area exist at the present time. For example, the University of California owns about 100 acres (about 10 percent) of the study area (the U.C. Field Station--see

other papers in this report), but definite plans for its use have not been completed (U.C. Berkeley Campus Planning Office, 1986). The San Francisco Bay Conservation and Development Commission (BCDC, 1977) discusses the conflicts between the Richmond General Plan and the BCDC Bay Plan in regard to the development of the study area.

Caltrans (1981) contains a table showing the average number of vehicle trips that are generated for various land uses in various geographic locations. The Institute of Traffic Engineers (1968) evaluates the accuracy of traffic counts and explains their adequacy for predicting vehicle trips.

Methodology

The focus of this paper is on the magnitude and significance of the traffic that may be generated by development in the study area. Since it is unknown when or how rapidly development will occur there, it would be inappropriate to make traffic generation estimates by year. My estimates, therefore, are based on percentages of total buildout, regardless of the timeframe.

First, average traffic generation values by acre for each of the two main zoning designations in the area, light industry and high density residential (SRSSAPCAC, 1977) are obtained from Caltrans (1981) and the Institute of Traffic Engineers (1968). Next, the number of acres of each zoned area in the study area is calculated. By multiplying the traffic generation per acre by the appropriate number of acres of each zoned area and adding the two products together, an estimate of the study area's total generated traffic volume at 100 percent development is determined.

It is unlikely that the study area will be fully developed in the near future. It seems plausible, however, to expect 25, 50, even 75 percent development eventually. These three percentages of the calculated total-buildout traffic volume are added to the number of vehicles Caltrans plans for the I-580 Hoffman Corridor section to carry at its completion in 1995. These sums are then compared to the projected traffic capacity of the corridor. Based on the result of this comparison, the future utility of the new freeway is assessed, and recommendations are made.

Data

Table 1 presents the number of acres and vehicle trips per acre for each of the two main zoning designations. Light industry zones produce an average of 60 vehicle trips per acre per day, and high density residential areas produce about 70 vehicle trips per acre per day (Caltrans, 1981). Therefore, the 1,000 acres of the study area that are zoned light industry will generate approximately 60,000 vehicle trips per day and the remaining 160 acres that are zoned high density residential will generate about 11,200 vehicle trips per day. The study area has the potential to produce 71,200 vehicle trips per day at 100 percent buildout.

Table 2 presents the three more plausible amounts of generated traffic that depend on the percentage of development of the study area. At 25, 50 and 75 percent buildout the area will generate approximately 17,800, 35,600 and 53,400 vehicle trips per day respectively. Adding these traffic

Zoning Designation	Acres ¹	Trips per acre per day ²	Trips generated per day
Light Industry	1,000	60	60,000
High Density Residential	160	70	11,200
		TOTAL:	71,200

Table 1. Vehicle trip generation by zoned area at 100 percent buildout.

Source: ¹SRSSAPC, 1977; ²Caltrans, 1981.

volumes to the 50,000 vehicles per day that are expected in the corridor in 1995 yields 67,800, 85,600, and 103,000 vehicles per day, respectively.

	Trips per day at 25%	Trips per day at 50%	Trips per day at 75%
Traffic generated by study area:	17,800	35,600	53,400
Projected traffic volume ; 1995:	50,000	50,000	50,000
TOTAL:	67,800	85,600	103,400

Table 2. Expected number of vehicle trips on I-580 Hoffman Corridor Section for three different buildout scenarios.

Figure 2 compares these three totals to the corridor's projected capacity of 75,000 vehicles per day. The 50- and 75-percent buildout scenarios generate more vehicle trips than the freeway section was designed to carry. It appears, however, that traffic resulting from 25-percent buildout could be accommodated by the improved corridor.

Discussion

There are various inaccuracies in the simple method used here to determine the amount of traffic that will be produced by development in the study area. Most importantly, it is assumed that the area will develop into a busy industrial/residential area. Although there are many strong indications that this is likely to occur, there remains the possibility that it will not. It is also uncertain whether the development that does occur will bear any relation to today's zoning designations; extensive rezoning is a possibility.

Another inaccuracy is that all of the tabulated data are estimates. Caltrans (1980) failed to quantify the expected capacity of the improved corridor. Therefore, the cited capacity of 75,000 vehicles per day is my own extrapolation from the present four-lane corridor; it is the amount of

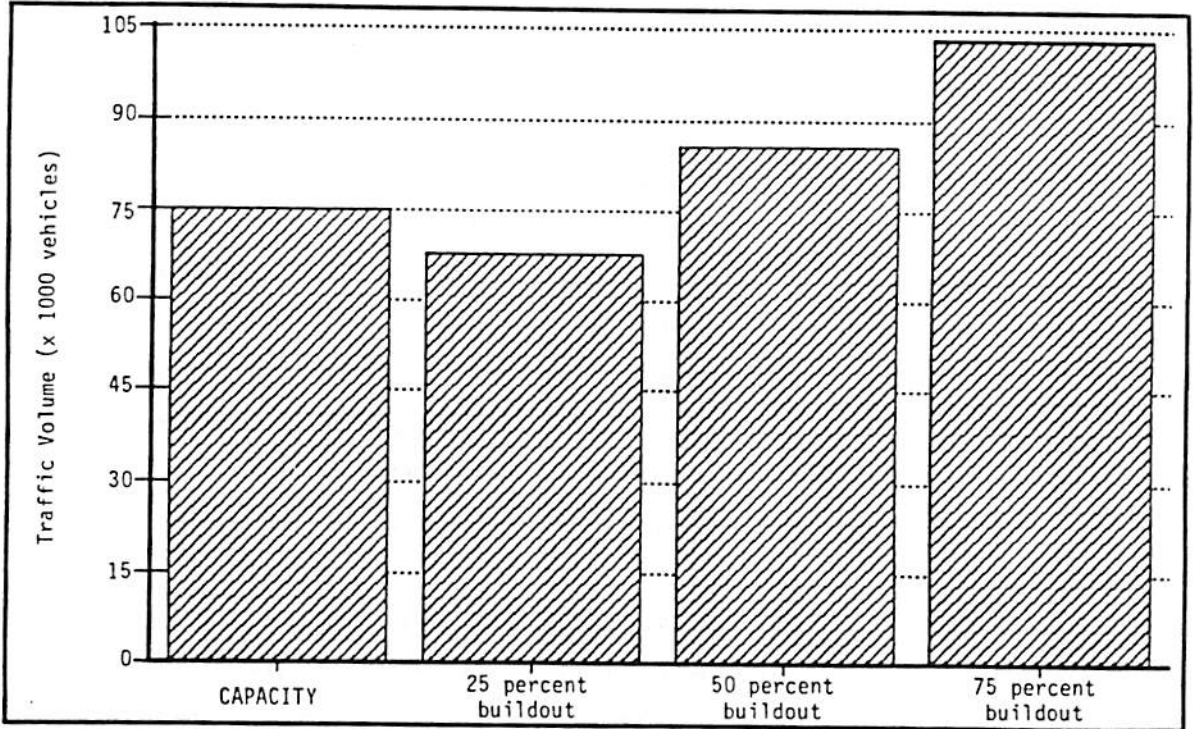


Figure 2. Comparison of planned capacity and derived traffic volumes, I-580 Hoffman Corridor Section, for three different buildout scenarios in study area.

traffic that would create approximately the same level of congestion that is experienced in the corridor today. Similarly, the 50,000 vehicles per day expected in the corridor in its year of completion is my best (although conservative) estimate of the likely average traffic level. The estimates of traffic generation per acre (Caltrans, 1981) represent averages from a number of sites zoned for light industry and high density residential.

Although the data presented here rely on assumptions and estimates, it is clear that the study area has a high potential for generating a substantial amount of traffic. For the purpose of this report, the exact volumes and timing of the traffic generation are not as important as the magnitude of the area's traffic generating potential.

Conclusion

This report has determined that a moderate amount of development in the study area could generate more traffic than the I-580 Hoffman Corridor section is designed to carry. The results here suggest that the corridor improvement will be adequate only for as long as the area remains relatively dormant.

It is impossible to determine whether extensive development will actually occur in the study area. However, since growth there was cited as one of the reasons for improving the corridor (Caltrans, 1980), the accommodation of the extra traffic generated by development in the area should have been one of Caltrans' principal planning criteria.

When the freeway through the corridor is completed it will have a set capacity. For it to remain an effective improvement over today's congested Hoffman Corridor, the study area's potential for traffic reduction must be seriously considered by Richmond. The only hope for the freeway to be a successful long-term improvement will be to control development in the study area.

Unfortunately, the City of Richmond does not see the study area's high potential for traffic reduction as a problem of immediate concern. Presently, there are no major policy alterations planned in the area (Coffman, pers. comm.). Although it could be a long time before development in the study area begins to threaten the new freeway's utility, Richmond should begin planning before congestion in the corridor is again a reality.

Although it is now too late to alter most of the aspects of the Hoffman Corridor improvement, I believe this report will still serve an important, more general purpose. A study of traffic generating potential at least as comprehensive as this one should be done during the design phase of any major transportation corridor. The designers of new freeways should show more concern for the future of their multi-million dollar projects by communicating with officials of the population centers through which the freeways will run. The city officials, on the other hand, need to assume responsibility for controlling traffic-generating developments in their areas. Regional planning would be the final step in achieving a farsighted, effective control over corridor congestion.

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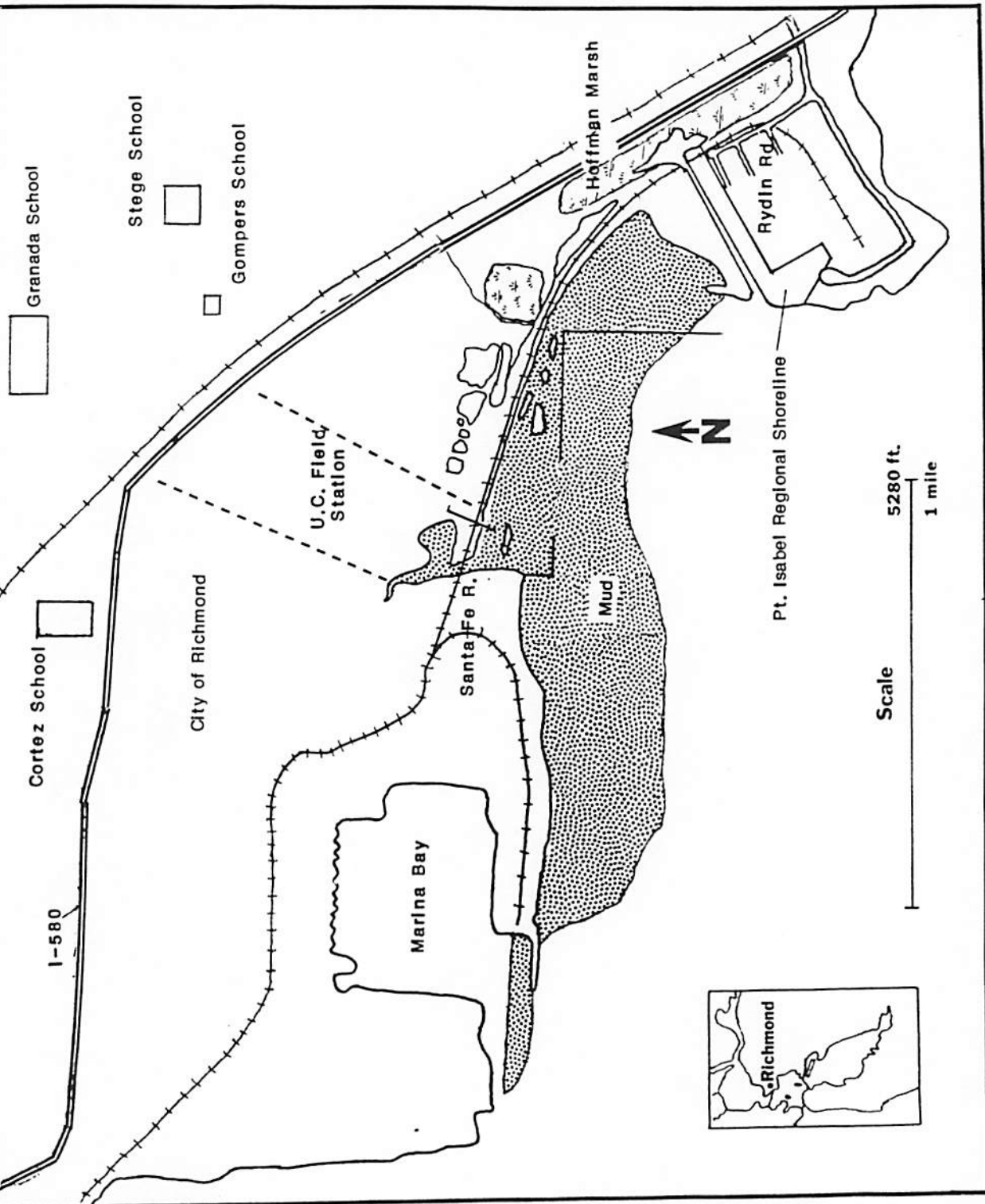


Figure 1. South Richmond Shoreline Study Area
 Base Map: U.S.G.S. Richmond 7 1/2' Quadrangle