Arroyo Seco Parkway

Reuse of a Historic Freeway

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REUSE OF A HISTORIC FREEWAY

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List of significant figures

1. INTRODUCTION

Purpose

The goal of our senior project is to illustrate the many benefits of converting the existing Arroyo Seco Parkway to a boulevard will provide to the residents of Northeast Los Angeles and its various communities.

Today, the ill effects of freeways can be seen across many parts of the urban fabric. Shortsighted planning and development efforts in the latter half of the 20th Century led to an urban environment that became over ran with interstate highways. These highways destroyed historic neighborhoods, created air quality problems, exacerbated the effects of urban sprawl, diminished the role of public transportation in everyday life, and destroyed the livelihood of city centers. As a new age of planning presents itself, it is becoming apparent that steps need be taken to solve these problems.

The Arroyo Seco Parkway is a historic freeway located in Northeast Los Angeles, California. Numerous small neighborhoods lie along the Parkway's curved right-of-way. As one of the first freeways in the United States, the Parkway is starting to show its age. The Parkway was built at a time when constant speed was valued above ultimate speed (Bottles, 1987). For this reason, the Parkway was designed to constantly move traffic at 45 miles per hour. Today, the speed limit along the Parkway has been raised to 55 miles per hour. The Arroyo Seco Corridor Partnership Plan proposes lowering speed limits back to 45 miles per hour to increase safety along the Parkway. At such speeds, the Parkway would have a speed limit of many major city streets.

Methodology

This project began with research about the study area. This research included existing conditions, history of the Parkway and neighborhoods, and regulatory framework. By accessing city documents from Los Angeles and South Pasadena as well as government documents from Caltrans and the Federal Highway Administration, valuable information was gathered for the purpose of writing this report. This research allowed for the selection of key opportunity areas for more in-depth research and visioning.

Site visits occurred after initial research. These site visits included photographic and personal surveys of the key opportunity areas and the Parkway itself. With this information a public outreach study was analized which gave a basic understanding of how the public felt about the existing Arroyo Seco Parkway and River. Site visits also provided information about existing condition of Chinatown, Highland Park, South Pasadena, and the Arroyo Seco River.

Simultaneously, literature review was conducted on a variety of topics that relate to freeways and urban environments. These literature reviews included topics on health, safety, urban vitality, design, and induced traffic demand. Extensive research was conducted for each of these topics. Case studies were also conducted to compare the Arroyo Seco Parkway to other freeway removal projects across the country and the world.

To further develop the proposal, in-depth studies were conducted for traffic and historic context. The traffic study used information from the Federal Highway Administration to calculate the level of service of the existing parkway and future boulevard. The historic resource study used information from the National Parks Service, Federal Highway Administration, Caltrans, and the American Society of Civil Engineers to research the variety of historic designations of the Parkway and how they affect future development.

The final part of the project used all of the gathered information to create a proposed visioning and concept chapter, which created basic proposals for land use and circulation in the key opportunity areas.

Report Organization

The project is organized into 8 topic areas:

- Project Area Overview
- Literature Review
- Case Studies
- Existing Conditions
- Traffic Study
- Historic Study
- Public Outreach
- Concept and Vision

The Project Area Overview explores the history, development. and current conditions of the Arroyo Seco Parkway.

The Literature Review explores the issues surrounding roadways and the urban environment. The literature review is comprised of research on a variety of topics, including healthy communities and induced demand that are relevant to the project.

The Case Studies examine freeway removal projects across the US and other parts of the world. The case studies selected provide examples of freeway removals that have improved the quality of life for the cities which have taken on the projects.

The Existing Conditions takes a deeper look into the history, development patterns and current conditions of the four key opportunity areas: South Pasadena, Highland Park, Chinatown, and the Arroyo Seco River.

The Traffic Study contains calculations of the Level of Service of the Arroyo Seco Parkway and the possible level of service after a freeway removal.

The Historic Study researches the various special designations awarded to the Arroyo Seco Parkway, and the significant historic designations of the surrounding neighborhoods.

The Public Outreach Chapter presents the findings of the survey that was conducted with residents living in various communities along the Arroyo Seco.

The Concept and Vision Study examines three key neighborhoods along the Parkway, which would benefit from the Parkway's removal and how to honor the historic quality of the corridor. The chapter looks into the effects of the Parkway on each neighborhood and how the Parkway's removal could create a better living environment for the neighborhoods.

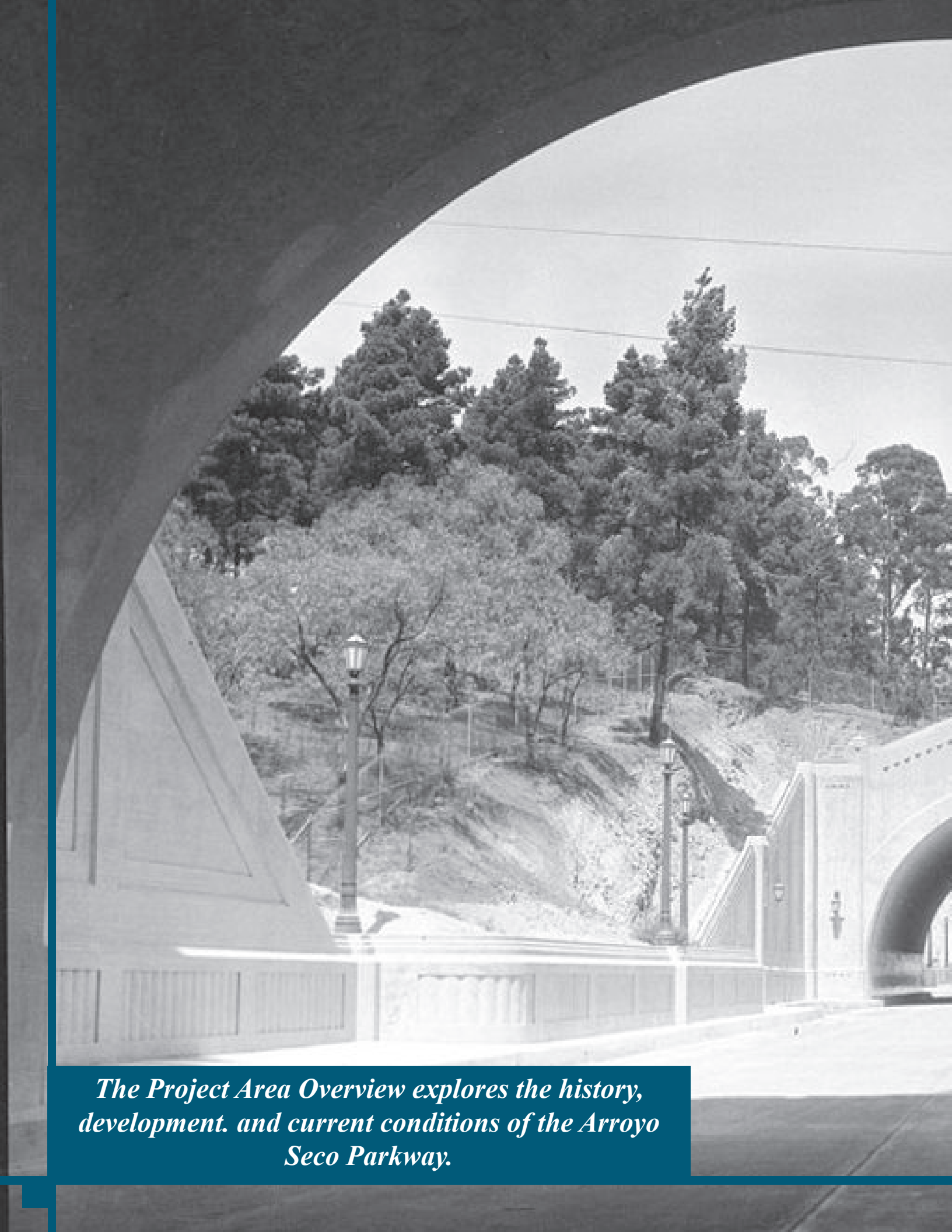
Regulatory Framework

The Arroyo Seco Parkway is a state highway and falls under the jurisdiction of the California Department of Transportation (Caltrans). Caltrans launched a study in November 2011 regarding the Historic Arroyo Seco Parkway National Scenic Byway. In October 2012, this study generated the Historic Arroyo Seco Parkway Corridor Management Plan. This initial report is required by the Federal Highway Administration for all roads part of the National Scenic Byways Program. ("Historic arroyo seco," 2012). The document guides all future proposals for the Arroyo Seco Parkway. The management plan lays out a framework to retain the historic quality of the Arroyo Seco Parkway and make it a destination. The plan proposes to create this destination by improving signage, pedestrian right-of-ways, and bicycling opportunities.

The project area surrounding the Arroyo Seco Parkway falls within the jurisdiction of South Pasadena and Los Angeles. South Pasadena's General Plan is the guiding document for future of the city. No specific plan exists for the area around the freeway. According to the General Plan Land Use Map, the area around the freeway is designated for residential uses with a small area of professional office along Mound and Fremont Avenues and strip of general commercial along Fair Oaks Avenue. The City of South Pasadena does not have specific plans for the Parkway because the Arroyo Seco Parkway falls under Caltran's jurisdiction. According to the Circulation Element of the General Plan, the City hopes to reduce its dependence on automobiles and increase pedestrian and bicycle facilities ("Circulation & accessibility ," 2001).

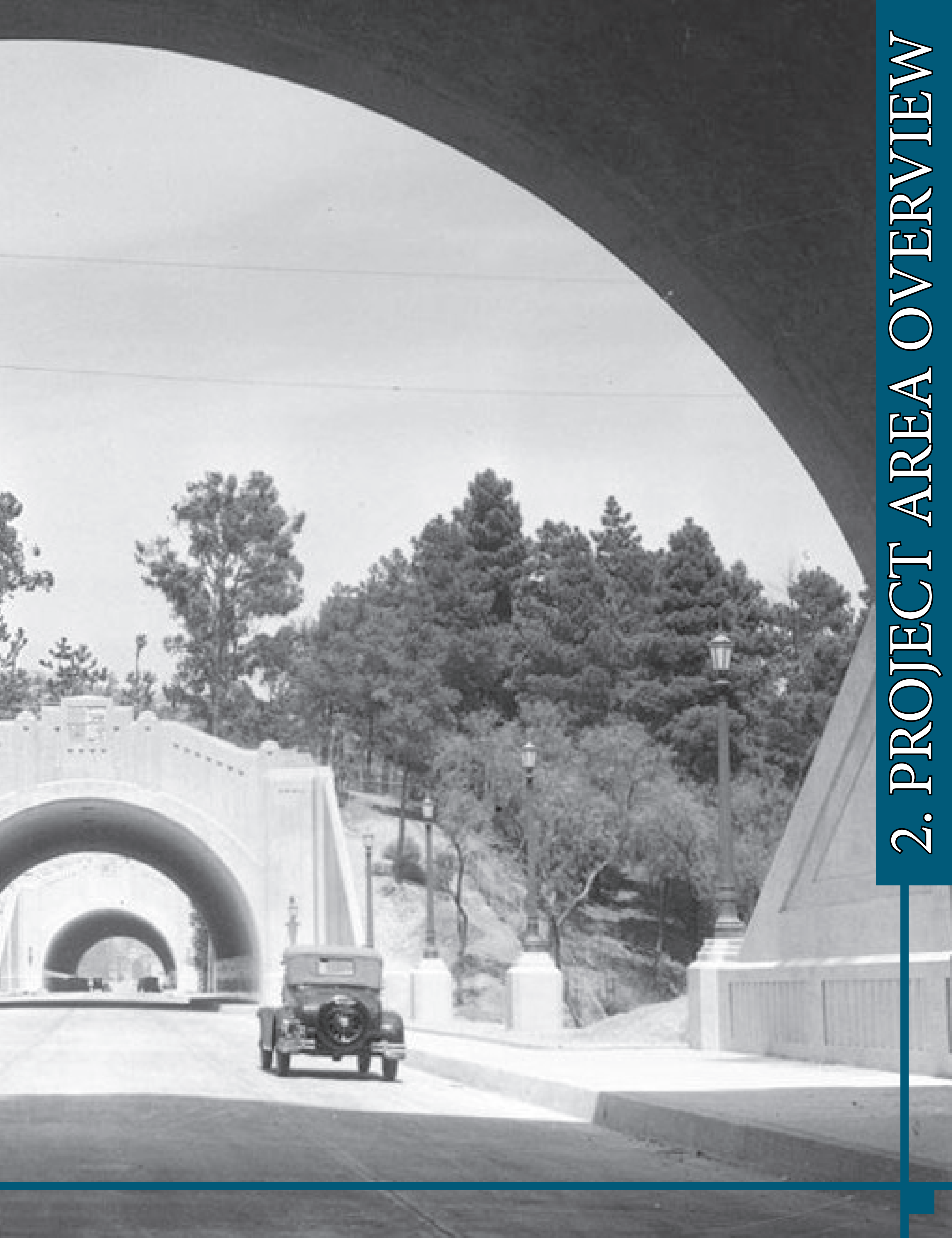
The General Plan Land Use Element of Los Angeles is comprised of 35 Community Plans. Of these 35 Community Plans, two cover this project area. The Northeast Los Angeles Community Plan is the guiding document for Land Use in Highland Park, Montecito Heights, Lincoln Heights, Cypress Park, Garvanza, and Mount Washington, all which lie along the Arroyo Seco Parkway ("Northeast los angeles," 1999). The Central City North Community Plan is the guiding document for the Chinatown Neighborhood ("Central city north," 1999). Both plans call for reduced dependency on the automobile as the main focus of transportation needs. Both plans also call for increased accessibility for pedestrians and bicyclists.

These various plans will be addressed and referenced as necessary throughout our report.



The Project Area Overview explores the history, development. and current conditions of the Arroyo Seco Parkway.

2. PROJECT AREA OVERVIEW



The Arroyo Seco Parkway is an urban highway located in Northern Los Angeles, California. The Parkway connects Downtown Los Angeles with the City of Pasadena. The Parkway begins in Pasadena at Glenarm Street and ends at the Four Level Interchange in Downtown Los Angeles. Along its eight mile route lie numerous diverse communities, including South Pasadena, Highland Park, Montecito Heights, and Los Angeles' Chinatown. The Arroyo Seco Parkway parallels the channelized Arroyo Seco River for a majority of its route (See figure 2.1).

This corridor is one of the earliest examples of the highway system, which has come to dominate the transportation system and urban landscape of the Los Angeles Metropolitan area. Los Angeles was not always an automobile dominated city. The sprawling communities were an outcome of the early interurban streetcar system. The Pacific Electric Streetcars, or as they were more popularly known, Red Cars, helped connect the numerous small communities which dotted the largely agricultural Los Angeles Basin and inland valleys. The communities which straddled the streetcar lines were small, walkable communities that provided housing outside of the city center. As the automobile was introduced to the region, these small communities were allowed to grow outward. As these communities began to grow outward, cash-strapped streetcar lines could not keep up with the pace of development. Without a viable system of public transportation servicing all neighborhoods, early Angelinos were forced into their automobiles to satisfy their daily transportation needs (Bottles, 1987).

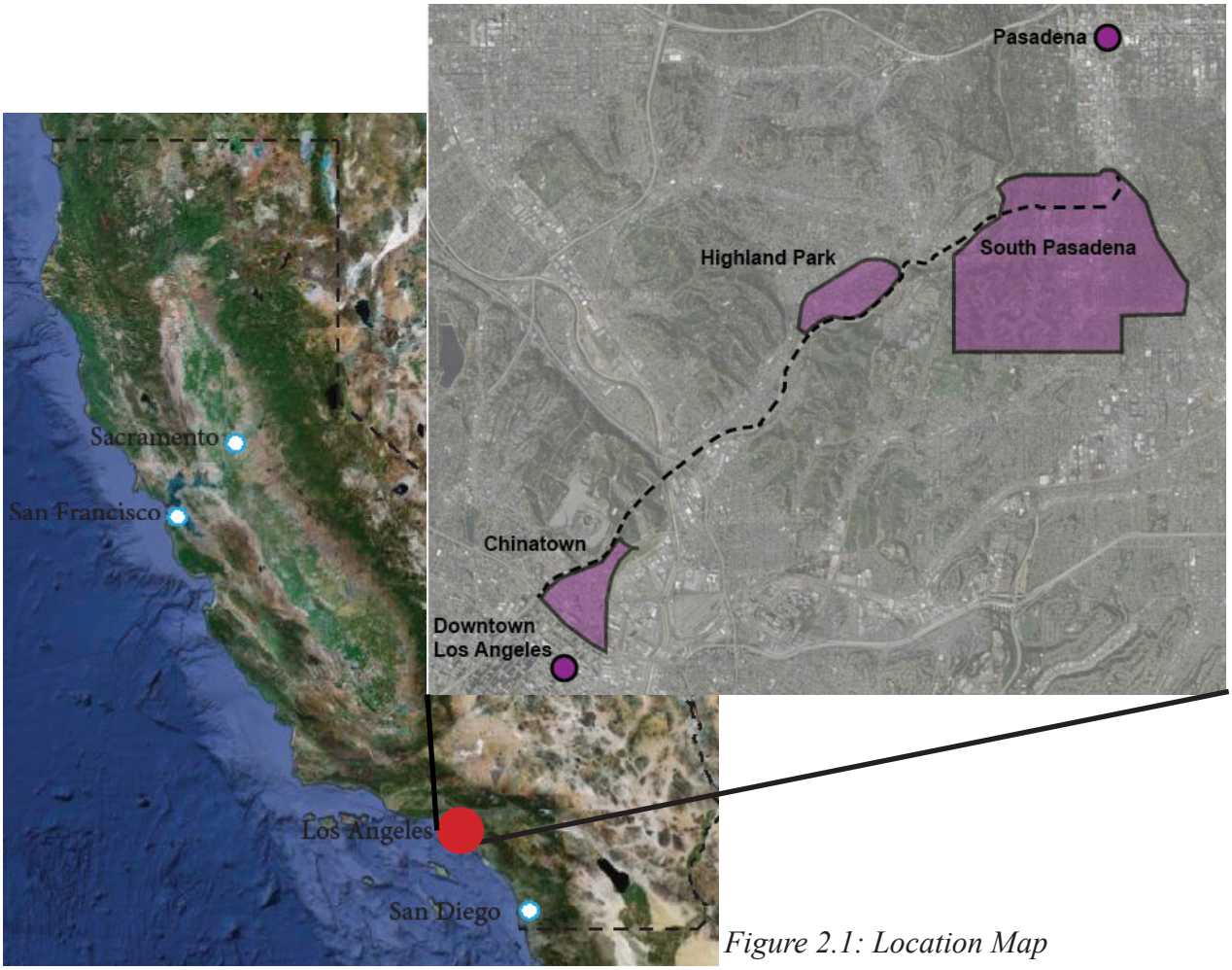


Figure 2.1: Location Map

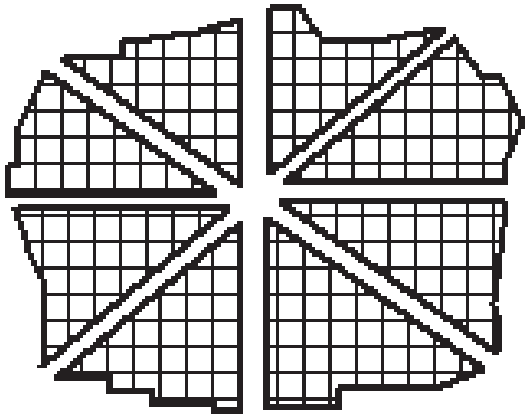


Figure 2.2: Radial street diagram

Los Angeles' affinity to the freeway began in the 1920's. During the 1920's Downtown Los Angeles was the center of economic and social activities for the residents of Southern California. At this time, the proliferation of private automobile ownership created congestion problems in the city core. Streetcars and automobiles were constantly vying for valuable street space. In addition, growing suburbs exacerbated the congestion Downtown. The need to travel in-between suburban centers was hampered by the radial nature of Los Angeles' street network (see figure 2.2). This radial pattern forced all traffic through Downtown in order to reach different suburban centers. The combination of these various problems wreaked havoc on the efficiency of movement Downtown (Bottles, 1987).

Though numerous plans were put forward and implemented to help ease traffic congestion in Los Angeles, the ultimate answer to the congestion problem came in 1938. A federally sponsored traffic survey found that the Los Angeles region would greatly benefit from a system of limited access highways that would help to connect the various communities which lie across the region (see figure 2.4). The idea for a freeway system was supported by the Automobile Association of California and the Central Business District Association of Los Angeles (Bottles, 1987).

The Arroyo Seco Parkway was one of the original parkways built as a part of the early studies into the feasibility of a limited access highway system. The Parkway broke ground on March 21, 1938 and was dedicated two years later in 1940 (Loukaitou-Sideris & Gottlieb , 2005). The Parkway was a four-lane road with two lanes of travel northbound and two lanes of travel southbound. The Parkway was considered a success proving to be a reliable way to travel quickly across the region (Bottles). Parkways were created as urban greenway with trees, shrubbery, and beautiful views of surrounding natural features (see figure 2.3). It was the beginning of a modern movement that would come to signify the ideals of the new automobile age.

Figure 2.3: Artistic rendering of early Parkway

As time passed and new construction standards were enacted, freeways became wider, faster, and more streamlined. Gone were the medians of trees and flowers, replaced with the concrete barriers and metal grates. The winding path of

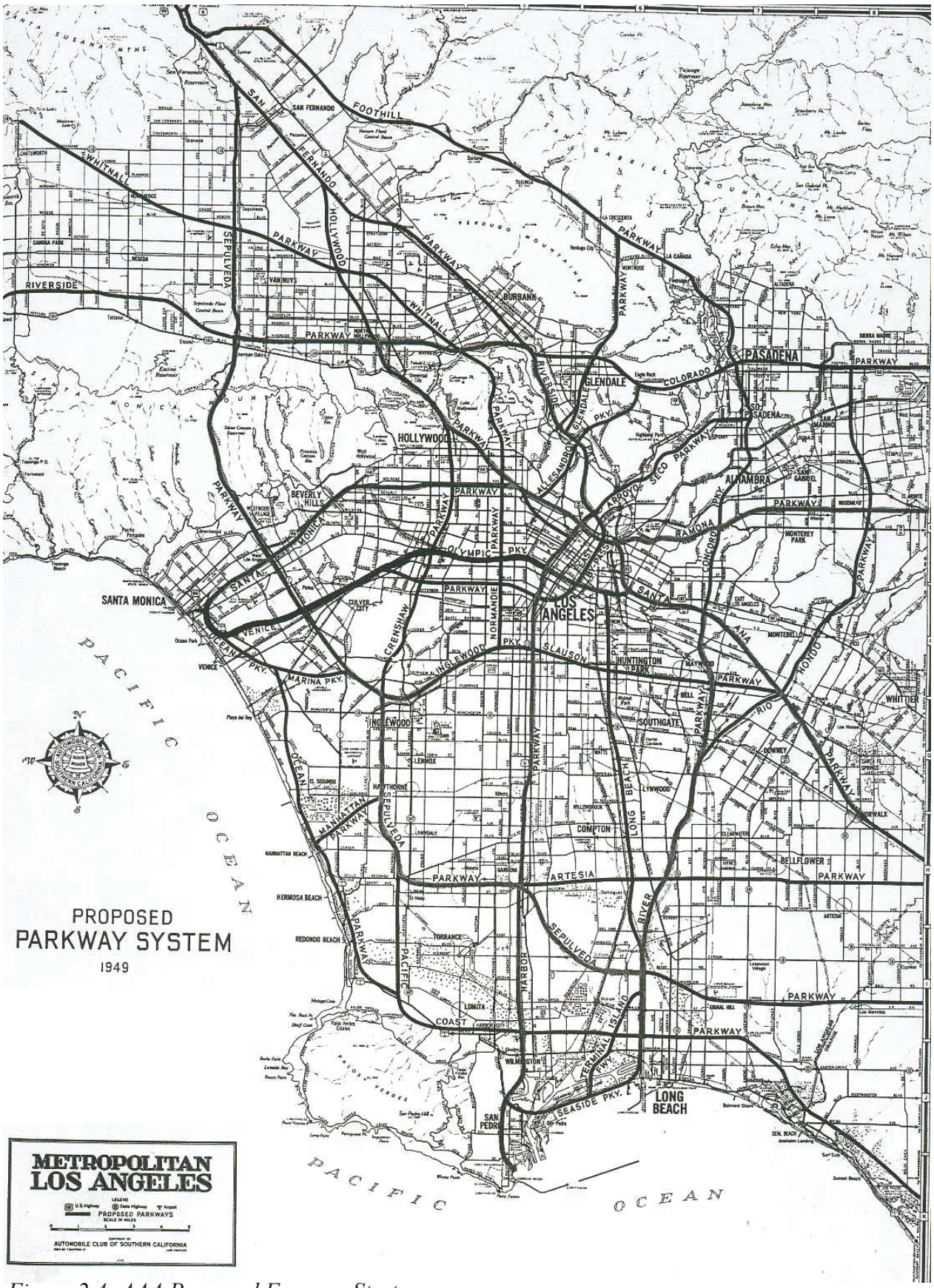


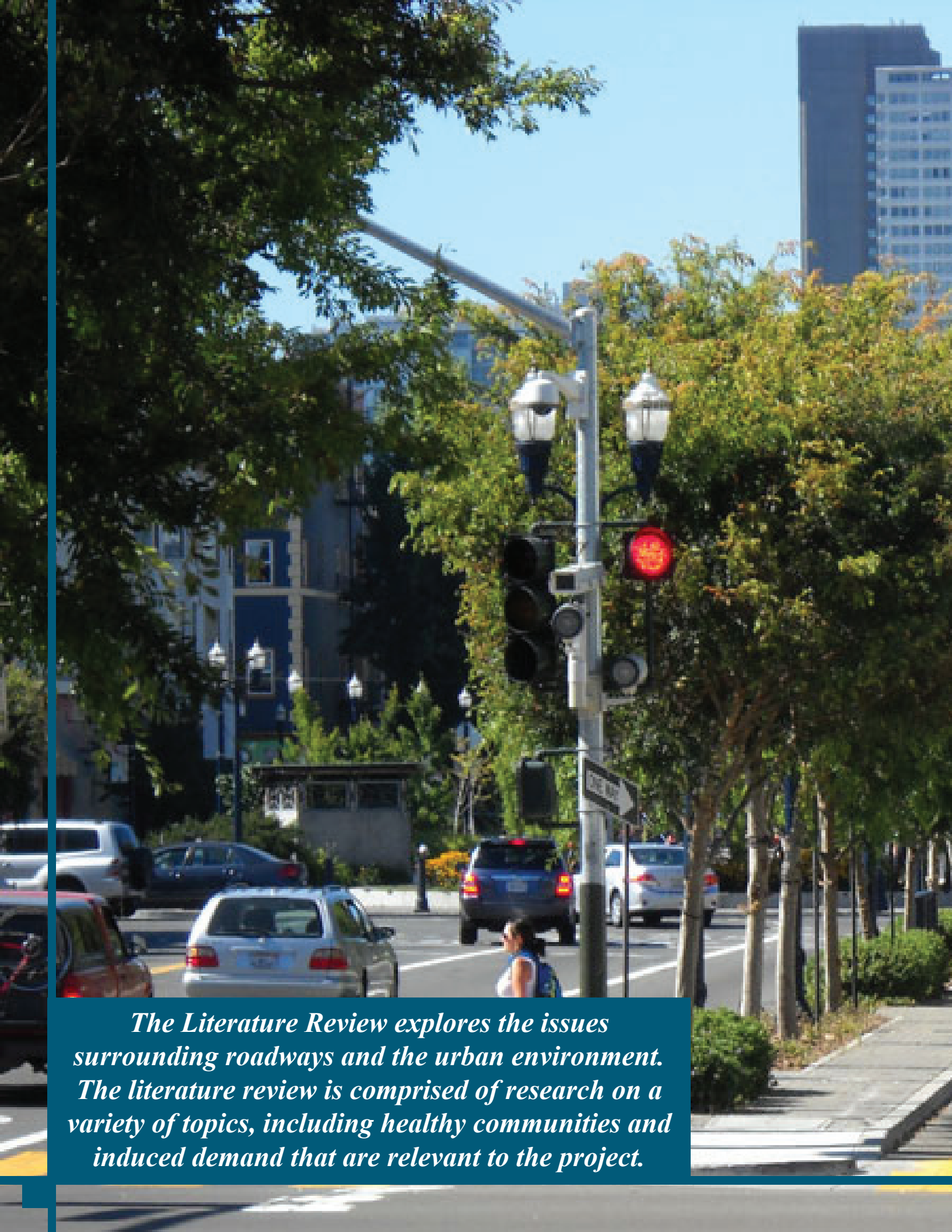
Figure 2.4: AAA Proposed Freeway Stystem

travel became more streamlined to accommodate faster national speed limits. The Arroyo Seco Parkway was left behind as the world of civil engineering moved forward. The winding path, narrow lanes, and short off-ramps hinder safety and comfort on the Parkway.

Today, the Arroyo Seco Parkway is a six-lane highway with three lanes of travel in northbound and southbound directions. While freeway standards have been rewritten since the opening of the Arroyo Seco Parkway, the Parkway itself has struggled to keep up with modern demand and usage. The Parkway is outdated and unable to change and adapt with new freeway standards. The Parkway's tight curves and short on and off-ramps create hazardous conditions for modern automobiles, which average speeds of 65 miles per hour or more. These high speeds and tight curves create dangerous conditions for motorists along the Parkway and dangerous conditions for residents in the surrounding neighborhoods where the freeway runs at-grade.

Due to numerous site constraints, upgrading the Parkway conditions has proven difficult if not impossible. The Parkway is positioned in-between various topographic features and residential development. The Parkway parallels the Arroyo Seco River for a majority of its route between South Pasadena and Elysian Park. This placement next to the river means that an expansion of the lane width or lane quantity would require approval by the Army Corps of Engineers. Where the Parkway does not front the Arroyo Seco River it fronts single-family and multi-family residences in the neighborhoods, which make up North Los Angeles. These residences in most cases front the Parkway by way of a frontage road. To expand the Parkway laterally would require the acquisition of numerous properties and would consequently displace many families.

Figure 2.5: Existing Arroyo Seco Parkway through Chinatown



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3. LITERATURE REVIEW

Freeways and Urban Vitality

Cities were historically the center of population, commerce, and culture. When automobiles were introduced into the mix of traffic vying for space on city streets, congestion became the topic of conversation. According to Brian Ladd, author of Autophobia, since the 1920's traffic experts began to cater to motorist whims and research how to create smooth and rapid flow of automobiles. Slower moving modes of transportation, such as pedestrians, carts, and horses, were moved from city streets in order to free congestion for the "swift and efficient" automobile. Although improvements in automobile circulation provided a short-term solution, the increased mobility only allowed more cars to use the streets and thus exacerbated the problem. Increased congestion in cities drove more people to seek housing on the fringes of the cities and the automobile helped make this possible. The new suburban developments were extremely auto-oriented and did not offer the amenities which traditional cities offered such as walkability and community. As well, the increased investment in the suburbs meant traditional cities faltered due to a weakened tax base and investment (Ladd, 2008).

The more a city has invested in its freeways, the worse off historic neighborhoods have been. A study by the University of British Columbia shows a correlation between meters of freeway per capita and the vitality of city centers. The study sites Vancouver, British Columbia and St. Louis, Missouri as prime examples of this correlation. In Vancouver there are roughly .25 meters of freeway per capita. Vancouver's pre-World War II era neighborhoods have seen a 300 percent increase in asset value over the past 40 years. In St. Louis there is roughly one meter of freeway per capita and over the past 40 years, property values in the city center have dropped 30 percent (Condon, 2004). The ability with which people can quickly leave an area correlates to the degradation of the areas vitality. In Los Angeles, Highland Park saw similar disinvestment as the Arroyo Seco Parkway was constructed. Wealthy residents moved to outlying districts and new investment dwindled as the historic neighborhood core was bypassed by the Parkway ("Highland park departures," 2013).

Freeways have also diminished our sense of civic value. A Berlin Planning Document from 1957 regarding highway design states this diminished sense of civic value: "This new street has no place for unreconstructed Neanderthals. Anyone who has a destination should be sitting in a car. Anyone who doesn't is on a stroll and should probably proceed immediately to the nearest park" (Ladd, 2008).

Figure 3.1: Dilapidated homes on St. Louis' Northside

The freeway diminishes our sense of civic responsibility because it is a tool that compromises the public realm. When walking on city streets

a pedestrian is immersed in the public realm and is more akin with his or her surroundings. The freeway, though a public space in essence, perpetuates the private realm. From the moment one leaves their garage to the moment one arrives at their destination, the private realm of one's automobile envelopes the traveler. It is much easier to disregard ones surrounding when driving at 60 miles per hour. A street was once a place freely traversed by pedestrian and commercial vehicle alike. The designation of street as public space was revoked when the pedestrian became a nuisance to the movement of the automobile. At such a point, pedestrians were restricted to crosswalks and were prohibited from crossing the street at any other point (Ladd, 2008).

Historic intercity freeway construction was also aided in the destruction of civic value of poor neighborhoods. Highway engineers sought the least valuable land with which to build their highways. Though this was sometimes park land or industrial districts, there were many times when the highway was used as a segregation tool. This segregation typically separated African-American neighborhoods from white neighborhoods or simply destroyed an African-American neighborhood altogether. Some of the most controversial and well known examples of this include Clairborne Avenue in New Orleans. Clairborne Avenue was once a center of social life; a street filled with shops, cafes, and a tree-lined median (see figure 3.2). The area began to see a decline in investment after World War II. It was at this point that Interstate 10 was constructed through the neighborhood, taking up the tree-lined median and displacing 500 homes (see figure 3.3). ("New orleans' claiborne," 2011)

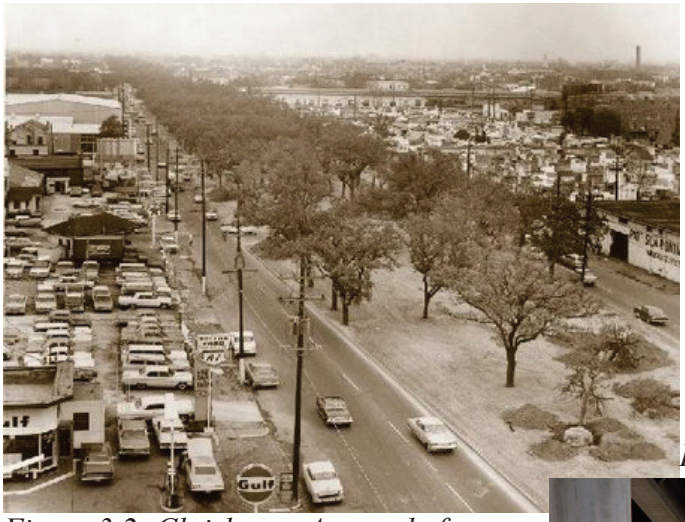


Figure 3.2: Clairborne Avenue before

Figure 3.3: Clairborne Avenue after

Planning and Healthy Communities

Freeways were originally conceived as a way to improve in the quality of life in cities. By creating roads free of congestion, early planners believed that they were making life in cities better. People could live outside of crowded city centers and settle down in the wide-open space of the suburbs. The passing of time however, has only shown the ill-effects of freeways on the urban environment. Freeways impede health and safety.

> *"If that poor woman had collapsed from heat stroke, we docs would have written the cause of death as heat stroke and not lack of trees and public transportation, poor urban form, and heat-island effects. If she had been killed by a truck going by, the cause of death would have been "motor-vehicle trauma" and not lack of sidewalks and transit, poor urban planning, and failed political leadership" (Speck, 2012)*

Obesity and Chronic Diseases

During the last century, chronic diseases, such as heart disease, cancer, stroke, and diabetes, have replaced infectious diseases as the leading health threat. According to the Center for Disease Control, "nearly 7 out of 10 persons die from a chronic illness, and almost 50% of Americans suffer from one or more chronic conditions" (Giles, Holmes-Chavez, & Collins, 2009). Largely, chronic illnesses are preventable. The underlying causes of many of these conditions are physical inactivity, poor diet, tobacco use, and excessive alcohol use.

Obesity is a growing problem in American cities. In the 1970's, only about 1 in 10 Americans was obese. In the last 30 years, this number has increased dramatically (Speck, 2012). By 2007, the rate had risen to 1 in 3, with a "second third of the population clearly overweight" (Speck, 2012). In 2010, the CDC recorded the percentage of obese adults at 35.7% (Carroll, Flegal, Kit, Ogden, 2012). Children are also gravely affected by this trend. According to a report released by the CDC in 2012, "in 2009-2010, 16.9% of U.S. children and adolescents were obese" (Carroll, Flegal, Kit, Ogden, 2012,).

Obesity is a contributing factor to many chronic illnesses. It is the leading cause of Type 2 diabetes; "data from the Centers for Disease Control and Prevention (CDC) National Health and Nutrition Examination Survey III shows that two-thirds of adult men and women in the U.S. diagnosed with Type 2 diabetes have a body mass index (BMI) of 27 or greater, which is classified as overweight and unhealthy" ("Obesity-related diseases," 2013). Obesity also leads to an increased incidence of heart disease, hypertension (high blood pressure), and metabolic syndrome.

Lack of physical activity and unhealthy eating habits are large contributing factors to obesity and high weight, in general. Because of this projects regard to the built environment, lack of physical activity is the main concern with regards to obesity and high weight. Despite the proven and well-known benefits of physical activity, "over 60% of American adults are insufficiently active to achieve these benefits and over 25% are not active at all in their leisure time" (Dannenberg, Jackson, Frumkin, & Schieber, 2003).

Research shows a strong correlation between urban form and health effects. Data suggests a link between community characteristics and physical activity. Proximity of recreation facilities; street

design; housing density; and accommodation for safe pedestrian, bicycle, and wheelchair use "play a significant role in promoting or discouraging physical activity" (Dannenberg, Jackson, Frumkin, & Schieber, 2003). A six-year study in Massachusetts found that "the lowest body mass index averages were located in Boston and its inner-ring suburbs, while the highest could be found in the 'car-dependent' outer ring surrounding Interstate 495" (Speck, 2012). There are many factors that contribute physical inactivity and obesity rates. Development patterns are not the only or main cause, but a strong relationship has been observed. Physical inactivity leads to weight gain and obesity which in turn cause many chronic illnesses. Cities should be planned to combat this growing national trend not encourage it. Barriers to physical activities can be seen all over auto-dominated landscapes. Disconnected sidewalks and bike lanes, lack of open-space and recreational opportunities, and separated land uses all discourage physical activity within a city (Frank & Engelke, 2001).

Los Angeles is no exception to the effects of physical inactivity and obesity. In the County of Los Angeles, obesity rates for adults and children have steadily increased. Adult obesity rates have increased from 13.6% in 1997 to 22.2% in 2007; children obesity rates have increased from 18.9% in 1999 to 23.0% in 2008 (Fielding, 2011). The areas adjacent to the Arroyo Seco Parkway—Northeast Los Angeles and Pasadena—fall within or near the current County average. Northeast Los Angeles, which includes Chinatown and Highland Park, has an obesity rate between 23.6 – 29.0% and Pasadena, which includes South Pasadena, has a rate between 16.7% and 23.4%. Jonathan E. Fielding, Director and Health Officer of the County of Los Angeles Department of Public Health, called for continuing efforts to "decrease obesity rates below current epidemic levels" (Fielding, 2011).

The project area, including the Parkway and the key opportunity areas, have many existing barriers to physical activity within the urban form. The Parkway itself separates many communities from open space and recreational opportunities. For example, the Highland Park neighborhood is separated from Earnest E. Debs Regional Park. Residents, who live adjacent to the Parkway, are unable to easily walk to the park. In addition, the Arroyo Seco River runs adjacent to parts of the Parkway. The Parkway prevents access. The bike trail, which runs along a portion of the river, lacks attractive amenities encouraging its use. These are just a few examples of how the Parkway can discourage physical activity. For specific information about how the Parkway affects the individual neighborhoods, see The Key Opportunity Areas Chapter.

Air Pollution and Human Health

Freeway pollution is also hazard to human health. A study conducted at UCLA found a correlation between autism rates in children and their mother's exposure to traffic-related air pollution. Studies by USC show that increased levels of asthma are reported in children who live close to busy roads and highways (Danelski, 2012). According to another study done by UCLA, USC, and the California Air Resource BoardARB, traffic pollutants can travel as much as 1.5 miles from their source in the early morning hours (Anderson, 2009). This means that even if communities are walkable and bikeable, proximity to a freeway can be hazardous to anybody's health (Morgan, 2013)

According to data from the Los Angeles Department of Transportation, there are 6,675,888 motorized vehicles registered in Los Angeles County. 5,484,646 of these motorized vehicles are automobiles ("City of los," 2009) . The Study by LADOT estimates that 68% of commuters travel alone to work. This means that roughly 3,729,559 automobiles a day are used to transport residents to and from places of employment. According to the Environmental Protection Agency (EPA), the average automobile produces 9,737.44 lbs of carbon dioxide a year ("Average annual emissions," 2008) .These statistics add up to at least 36 Billion lbs of carbon dioxide per year entering the atmosphere of Los Angeles County.

Traffic Safety

Traffic accidents are the leading cause of death for people between the 1 and 40 years of age (Frank, Kavage, & Litman); "car crashes have killed over 3.2 million Americans, considerably more than all our wars combined" (Speck, 2012). In 2004, there were 14.5 traffic fatalities per 100,000 people. In the UK, there were only 5.3 traffic related fatalities per 100,000 population (Speck, 2012).

Urban form correlates to the number of fatalities caused by motor vehicle accidents. Places shaped by the automobile are most negatively affected by car accidents. New York City, San Francisco, and Portland have the least fatalities caused by traffic accidents. In 2004, New York City only had 3.1 deaths per 100,000 people, which is far lower than the national level (Speck, 2012). Atlanta, which was developed around the automobile, had a rate of 12.7 and Tampa came in at 16.1 (Speck, 2012). There is clearly a correlation between development patterns and traffic accidents. Sprawling cities that depend heavily on freeways and fast-moving traffic to transport its residences are more affected by vehicular accidents. These sprawling urban forms, "which are designed to move vehicles as efficiently as possible, mean accidents happen at higher speeds, and are thus more severe" (Frank, Kavage, & Litman). In addition, there is negative feedback loop seen in the relationship between the decline of walking and biking and the increase in driving; "as walking and bicycling decline, driver awareness of these modes declines as well, making the conditions even more dangerous for pedestrians" (Frank, Kavage, & Litman).

According to the City of Los Angeles Transportation Profile 2009, in 2002 there were 50,317 reported collisions within the City of Los Angeles and 166 traffic collisions resulted in fatalities ("City of los," 2009).

In 2001, the Department of Urban Planning at UCLA and the Urban and Environmental Policy Institute at Occidental College, analyzed 5 years of CalTrans statistics to determine accident patterns along the Arroyo Seco Parkway. The study found a strong correlation between "accidents on the Arroyo Seco Parkway and the entry and exit points during peak travel periods—with most accidents occurring within .15 miles of an entry/exit point" ("District 7 and," 2004) . Four locations were considered particularly problematic: the Parkway intersection at Glenarm Street, the curve at Arroyo Seco Park, the segment between Avenue 60 and Avenue 52 southbound, and the Avenue 43 ramp northbound (see figure 3.4). The problems were associated with speed, length of on and off-ramps, and weaving ("District 7 and," 2004). The study concluded that speed

was the biggest problem and that the freeway should be reclassified as a parkway, in order to reduce the speed of travel.

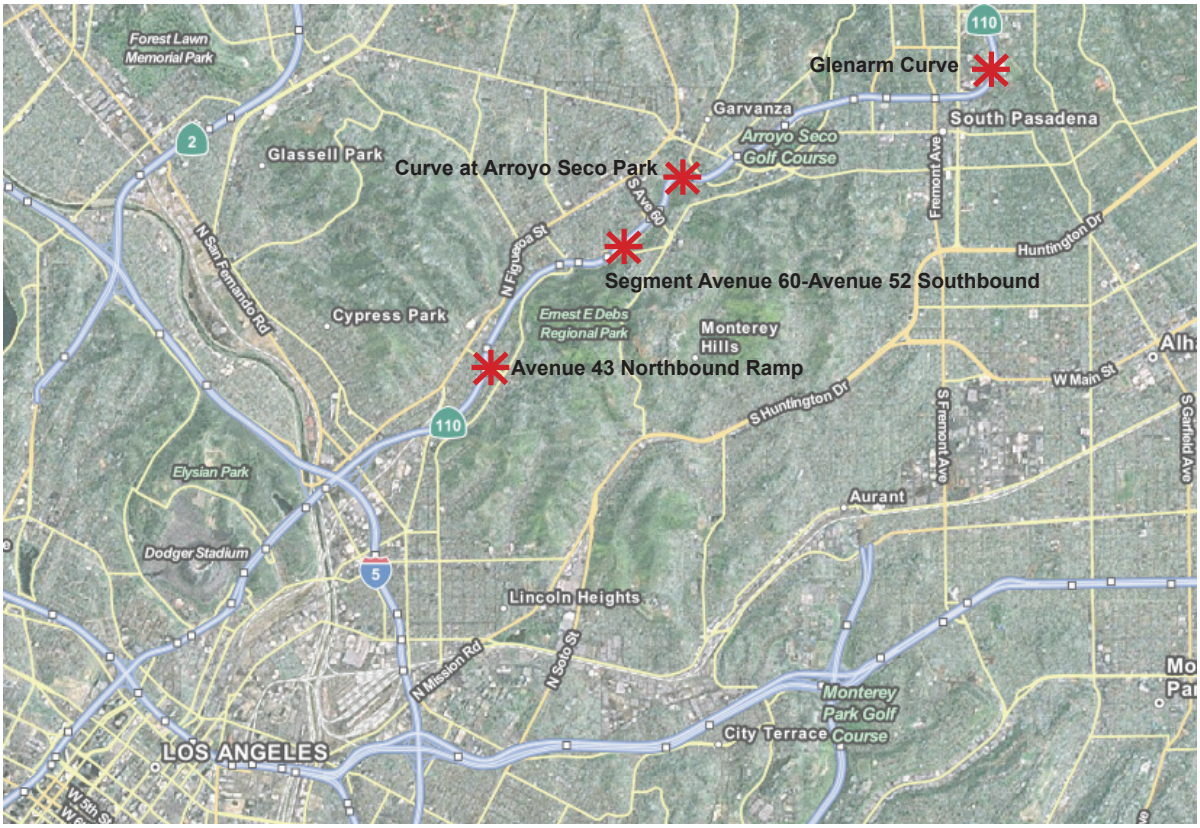


Figure 3.4: Map of dangerous sections of the Parkway

Planning a Healthy Community

Urban form and development trends can have a grave effect on the public health of a community. If planning can negatively affect health, can it also have a positive effect? What are the physical elements of a healthy community?

According to the Strategic Growth Council of California, a healthy community encompasses a variety of services and aspects. Healthy communities provide safe and sustainable transportation options, affordable, accessible and nutritious foods, affordable, high quality, socially integrated and location-efficient housing and affordable, accessible and high quality health care ("Public health and,"). For the SCG's full description of what healthy communities should provide see Appendix 1.

According to research, there are several ways planning can work to achieve the goals of a healthy community. The American Planning Association divided up planning for healthy communities into several Priority Planning Areas. These planning areas cover a myriad of issues facing communities including access to healthy food, safe routes to school, and housing choice and affordability ("Planning and community," 2013).

Figure 3.5: Stylized crosswalks improve pedestrian saftey

Transportation Alternatives is one of the Priority Planning Areas and relates directly to the scope of this project. Alternatives include public transit, bicycling, and walking. It is important that planners account for all of these modes. It is important that the pedestrian and bicyclist feel welcome within the streetscape.

Walkability is an important element of healthy communities in relation to alternative transportation modes. According to the Walkability Scoping Paper by Steve Abley, walkability is defined as "the extent to which the built environment is friendly to the presence of people living, shopping, visiting, enjoying or spending time in an area" (Abley, 2005). The Built Environment and Health Research Group at Columbia University defines neighborhood walkability as "the extent to which neighborhood design supports walking and they describe neighborhood walkability in terms of 'the D's' – density, diversity, design, destination accessibility, and distance to transit" (Rundle & Neckerman, 2012). According to studies conducted in New York City, walkability is associated with lower body mass index (BMI), greater levels of physical activity and more pedestrian activity among residents (Rundle & Neckerman, 2012). Design elements that support walkability are important. Sidewalks, crosswalks, signaled intersections, are all important aspects of walkability. Sidewalks should be wide enough to support pedestrian traffic, designed with trees for shade and lights for visibility, and benches for rest (see figure 3.5). Crosswalks should be distinctive from the rest of the road and be located at convenient locations. Signaled intersections should be located at prime walking areas to increase safety (Speck, 2012). Other elements that add to walkability are proximity to a variety of land uses such as residential, commercial, and recreation. Close proximity of these uses allows residences to easily access them without a car, which not was always possible with past planning practices (Speck, 2012). Promoting these elements of walkability will can encourage healthy choices and create a healthier community.

Figure 3.6: Sidewalks can be more than just for walking

Planning for the bicycle is also an important aspect of transportation alternatives and promoting healthy communities. Bicycling is a healthy and sustainable transportation alternative that allows for the user to travel farther and quicker than walking. According to Jeff Speck in his book, Walkable City, "cycling has got to be the most efficient, healthful, empowering, and sustainable form of transportation there is" (Speck, 2012). There are a variety of ways to welcome the bike into the streetscape. This includes bike lanes, separated paths, and shared routes. Bike lanes are the tradition painted lines on the side of the road. This is the most common way to include bicyclists. There are two kinds of separated paths. One is a bike path that does not follow a road and is meant purely for bicyclists (and sometimes pedestrians). An example of this is the bike path that runs parallel to part of the Arroyo Seco River. The other is a separated bike lane that runs along a street (see figure 3.6). These are the safest form of bike lanes. They are usually separated by a small median. The last type of bike lane is the shared route. This is when the bicyclist and car share a road with no formal separation. This is good for smaller roads with little traffic (Speck, 2012). Each of these promotes bicycling throughout a community, which is an important element of creating a healthy community.

These are just a few examples of how design and planning practices can come together to create healthier communities. With the epidemic of chronic diseases, it is important that our cities promote healthy choices. While design cannot make people choose to be healthy, it should not prevent people from doing so. Cities and communities should be planned with health in mind.

Figure 3.7: Separated bike paths

Boulevard Design

There are many names for the passageways that connect various nodes of human activity. Road, street, boulevard, avenue, way, alley; all are a different way for conveying the similar notion that one is traveling between different areas. Today the concept of travel is far different than in the past. Travel is no longer a time consuming journey. Modern technology has allowed humans to spread into areas that were before inaccessible to habitation. This redefinition of travel has led to an entirely different way our streets are designed and designated.

It is first necessary to define the terms, street and road. According to Miriam-Webster, a street is "a thoroughfare especially in a city, town, or village that is wider than an alley or lane and that usually includes sidewalks". According to Miriam-webster, a road is a "an open way for vehicles, persons, and animals; especially: one lying outside of an urban district." This differentiation is touched upon in "Urban Design: Street and Square" by Cliff Moughtin. A street is more akin to an urban environment catering to pedestrians. Roads on the other hand are more adept to travel between two places without immediate concern for the inbetween (Moughtin, 2003).

According to Leone Battista Alberti and Andrea Palladio, streets once existed as part of a town and as connectors between towns. Within a town, streets were meant to express the values of a town. Small towns would have small, winding streets to agree with town character. Large cities would have grand boulevards to show off their greatness and strength. Outside of a town, roads were meant to be part of the country itself and work with natural landscapes to give travelers a sense of the beauty of their surroundings (Moughtin, 2003).Modern modes of transportation have blurred this line between country road and urban street. In times past, roads went through towns and not around them. When a country road entered a town it narrowed and became part of the urban fabric, catering to the needs of the traveler as a pedestrian and not the traveler as passerby.

Street design is important. Street façades must be varied to create a dynamic street presence but must compliment previous design to make sure the definition of the street is left intact (Moughtin, 2003).A static façade creates a boring situation for the pedestrian with nothing new to catch their eye and lead them onward. The same is said for a building that does not conform to previous design. A complete contrast of facades creates a disfiguration of the street.

Figure 3.9: changing the facade while maintianing character is important

In addition, the street as a place for pedestrians should provide a sense of enclosure and human scale. To achieve enclosure and human scale a street must have the correct length, proportion, and design. Building to "human scale" is building in such a way that the pedestrian feels comfortable walking in a district or neighborhood. Length is important to human scale because if a street is too long the end of a street will seem too far away if not entirely missing (Moughtin, 2003).For the Arroyo Seco Parkway, vistas of hills and residential buildings along the route as well as a non-linear path will help to shorten the perceived length along the proposed boulevard. Proportion is also important. When the width of the right-of-way is not in the right proportion with the height of the buildings along the right-of-way, the pedestrian will not feel secure in her surroundings. Design guidelines from the County of Essex suggest that a height to width ratio of 1:1 is not too tight for comfort but that 1:2.5 is too much for a pedestrian to tolerate (Moughtin, 2003).

Figure 3.8: Even wide streets can provide a sense of enclosure

Figure 3.10: Building height in relation to street width can provide a sense of enclosure

Induced Demand

For the past 50 years, the United States has been focusing on roads and highways as the main recipient of transit infrastructure money. In the latest budget for the Department of Transportation, highway funding was nearly 2.5 times that of transit funding. Although the government preference to the highway system has furnished miles of highways across the urban areas of the United States, congestion is still the topic of the day. If widening lanes and adding more freeways was the key to solving the congestion problems then it would seem that places with a large amount of freeway miles, such as Los Angeles, should be free from congestion. However, this does not seem to be the case. Despite the 915 miles of highway in Los Angeles County, the Los Angeles region ranks number two in most congested commutes in the country with drivers spending an average of 61 hours per year in traffic congestion ("Traffic congestion in," 2013).A common solution is to widen existing freeways in order to decrease congestion. Although traffic engineers study capacity on new lanes of highway, generally, they do not take into account the land use implications of the new freeway capacity. This concept is called induced traffic demand. The idea of induced traffic demand has been introduced as a new way of looking at highway based transportation modeling.

Induced traffic demand describes how new capacity added to a highway will make it easier for more automobiles to use the highway and create new congestion. In the most basic of senses, induced demand can be compared to supply and demand. At some point, cost of traveling will outweigh the benefits (Fulton, 2000).This cost is measured not only in money but also in time. When a freeway becomes too congested a driver will find alternative routes to get to his or her destination or not attempt the trip at all. The idea that congestion on a freeway will "only get worse" is moot because freeways run at equilibrium. It is at the point of equilibrium that the freeway will not attract additional trips along that route.

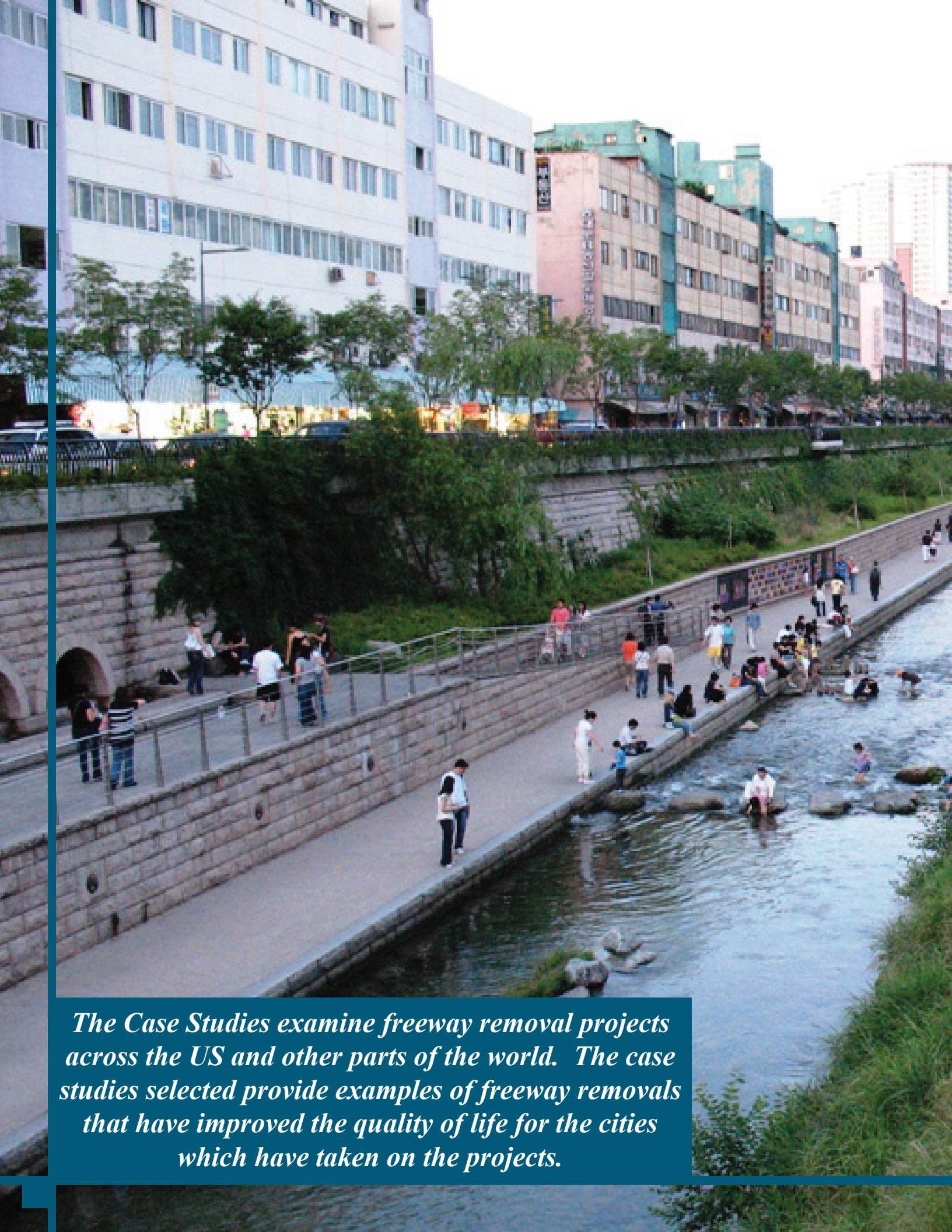
Studies have shown that, in the long-term, new capacity added to a freeway will be filled by new trips. A report by the Victoria Transport Policy Institute of Victoria, Australia, sites many studies, which have shown, the increased vehicle miles traveled as a result of new freeway infrastructure being constructed. A study done by the University Of California Transportation Center showed that in the long-term, 80% of the additional capacity will become utilized with additional peak-hour traffic. A study by Robert Noland showed similar results. The Noland study estimated that within the short-term (5 years) new capacity would be filled by 50%. The study estimated that within the long-term (5+ years) new capacity would be filled by some 80%. ("Litman," 2013) Studies have also been conducted researching the reverse phenomenon of induced demand, called traffic evaporation. When a freeway is removed so are some of the car trips that the freeway originally created. In another study done by the University Of California Transportation Center, approximately 25% of motorized traffic was reduced after a decrease in a roadway capacity (Cervero, 2001). The study also shows that after the replacement of the Central Freeway in San Francisco with Octavia Boulevard, the amount of cars present dropped 52% with the roadway utilized at capacity.

Freeway expansion is a circular process. Building new freeways allows for easier access to an urban areas fringe. This fringe land now becomes more accessible, therefore more valuable, and therefore economically viable to develop. When this land is developed as homes or stores it becomes attractive to more people who can live in the new neighborhood and still commute

within the same amount of time by the new highway. The new development causes increased populations, which then rely on the freeway for mobility. This then causes the freeway to hit capacity and there is a call for widening the freeway. At this point the entire process restarts ("Litman," 2013).

One of the clearest examples of induced traffic demand is Interstate 405 in Los Angeles between Interstate 10 and Highway 101 through the Sepulveda Pass. When first built in 1935, Interstate 405 was Sepulveda Boulevard, a four-lane highway with two northbound lanes and two southbound lanes. When this became congested with traffic by 1962, the boulevard was replaced with an eight lane freeway; four lanes northbound, four lanes southbound. Today the freeway is once again undergoing an expansion project that will add a High-Occupancy Vehicle lane in both directions ("The 405: A," 2011).

Figure 3.11: Interstate 405 at Rush Hour



The Case Studies examine freeway removal projects across the US and other parts of the world. The case studies selected provide examples of freeway removals that have improved the quality of life for the cities which have taken on the projects.

4. CASE STUDIES

Embarcadero Freeway, San Francisco, CA

Figure 4.1: The Embarcadero Freeway before 1989 earthquake

Background

The Embarcadero Freeway in San Francisco was originally planned as an uninterrupted route between the Bay Bridge and the Golden Gate Bridge. It was intended to connect the I-80 from the east to Hwy 101 to the north along the waterfront. The project was abandoned after the first phase was built due to what is known as the San Francisco "Freeway Revolts". Residences feared the freeway's impacts on surrounding neighborhoods. The result was a one-mile, double-deck, elevated highway that connected the Bay Bridge to Chinatown and North Beach along the San Francisco waterfront ("Case studies in," 2008). It was a physical and visual barrier between downtown and the waterfront. In 1985, the Board of Supervisors considered removing the freeway and replacing it with a boulevard and trolley system. In 1987, the measure officially failed due to concerns about traffic congestion.

In 1989, the Loma Prieta earthquake changed the fate of the Embarcadero Freeway. The earthquake caused a section of the freeway to collapse. Consequentially, the freeway closed. People acclimated to the freeway closure and "there was a growing realization that traffic had adapted to the new network with few problems, and support for the reconstruction [of the freeway] waned" ("Case studies," 2010). To address this, the Board of Supervisors voted to remove the freeway 6-5. In its place would be a boulevard, trolley line, and waterfront park. The project broke ground in 1991 and included a 1.6-mile long, six-lane boulevard with an old-fashioned streetcar line and was "surrounded by a 25-foot-wide pedestrian promenade, ribbons of street lights, mature palm trees, waterfront plazas, and the world's largest piece of public art" ("The life and," 2012). It cost $50 million to complete and was officially completed in 2001.

Figure 4.2: The Embarcadero Ferry Terminal

Effects

The project is considered a major success. The new boulevard carries about 26,000 cars per day. This is about half of the original freeway volume. The remaining traffic has either found other routes or switched to other modes of transportation. New neighborhoods have been established in the surrounding areas. New civic amenities and tourist attractions have been opened along the path of the former freeway. The Embarcadero Boulevard is credited to the major growth of tourism seen in San Francisco's waterfront ("Case studies in," 2008).

Similarities

The main similarity between the Embarcadero Freeway and the Arroyo Seco Parkway is the separation of neighborhoods from natural features. The Embarcadero Freeway separated downtown San Francisco from the waterfront. The freeway ended up being a visual and physical barrier between two very valuable pieces of land in San Francisco. This impeded the ease of connection for people not in an automobile to get from Downtown to the waterfront: two areas that should be connected because of their ability to attract tourists. In the Los Angeles, the Arroyo Seco Parkway runs through many, diverse neighborhoods separating people from park land, the Arroyo Seco River, and other communities. For example, the freeway separates the residents of Highland Park from Earnest E. Debs Regional Park. Downtown Highland Park is about a half mile from the Earnest E. Debs Park, yet there is no easy way to get there due the freeway running through separating people from park land, the Arroyo Seco River, and other communities. For example, the freeway separates the residents of Highland Park from Earnest E. Debs Regional Park. Downtown Highland Park is about a half mile from the Earnest E. Debs Park, yet there is no easy way to get there due the freeway running through separating the two areas. There are residents, who live adjacent to the freeway and can see the park, but are unable to easily access it because the Arroyo Seco Parkway serves as a physical barrier. The Embarcadero Boulevard exemplifies how removing a freeway that acts as a physical barrier impeding the access from one area to another can improve the area and surrounding neighborhoods.

Differences

Scale is the main difference between the two freeways. The Arroyo Seco Parkway affects a much larger area than the Embarcadero Freeway. The Embarcadero was approximately 1.6 miles and separated only two major areas. On the other hand, the Arroyo Seco Parkway is approximately 8 miles long and separates several neighborhoods and recreational areas.

Another difference between the Arroyo Seco Parkway and the Embarcadero Freeway is that the Embarcadero was elevated and collapsed. The Arroyo Seco is an at grade freeway though a seismic event would cause damage, the consequences would be easier to remedy. The collapse of the Embarcadero Freeway allowed for people to get used to what it was like without a freeway and to see how traffic congestion was not affected as greatly as most thought.

Westside Freeway, New York City, NY

Background

The Westside Highway was an elevated expressway located in the Manhattan Borough of New York City, New York. The expressway was located along the Hudson River and connected Hell's Kitchen to Battery Park.

Figure 4.3: The old Westside Freeway

The Westside Highway was originally built in the 1920s and was the first elevated highway built in the United States. Built according to early highway design specifications the route suffered from deficiencies as motor vehicles became faster and heavier. Narrow lanes and sharp turns at interchanges created less than ideal situations for cars while bird droppings and road salt caused corrosion of the structure itself. In 1973 a section of the expressway between 12th and Gansevoort collapsed under the weight of a dump truck. Reconstruction was estimated at 88 million dollars and a cash-strapped Department of Transportation simply had to shut down the Westside Highway until it could figure out the best solutions to rebuild ("New york, ny," 2007).

During this period of closure many groups formed which advocated for and against the future of the expressway. Groups which supported the expressways future gathered around the idea of "Westway" an elevated highway that would be built over the Hudson River. Westway had support from both Governor Rockefeller and Mayor Lindsay and was to be funded by federal interstate highway funding. Opponents of Westway included Congressman Hugh Carey of Brooklyn and Congressman Edward Koch of Greenwich Village. Opponents argued that the freeway would waste money, generate more traffic, and cause a slew of environmental problems ("New york, ny," 2007).

As time moved forward and government support for the project grew, public opposition for the project followed suit and grew as well. Public opinion towards freeways was very negative after the freeway revolts against Robert Moses "Cross-Manhattan Freeways" which would have torn up the various neighborhoods of Manhattan Island. The public saw Westway as simply a continuation of these unpopular ideas ("New york, ny," 2007).

Figure 4.4: The new West Street Bike Boulevard

After numerous lawsuits were held against the environmental review for the project, the department of transportation finally abandoned the project in 1985. Of the 1.7 billion in funds that had been allocated to the project, 60% went to mass transportation improvements while 40% went to the improvement of the old freeway corridor ("New york, ny," 2007).

Effects

Today West Street is a large three to four lane boulevard that connects Battery Park to Hell's Kitchen. It is a popular biking and jogging route and has large amounts of park space that front the Hudson River. Though it was argued that lack of the freeway would create more traffic, the decade of inactivity on the project produced no ill effects on traffic and today Department of Transportation official have found that the highway closure has caused no increase in congestion in the area ("New york, ny," 2007).

Similarities

The Westside Freeway was an old freeway built to standards that were not suitable for the vehicular traffic of a more modern era. This caused congested and unsafe conditions for motorists. The freeway's placement along the Hudson River also created less than ideal conditions for the residents of the nearby neighborhoods who were separated from the waterfront by aloud highway.

The Arroyo Seco Parkway has similar effects on its local. The Parkway was built in the early 20's to old design standards which are not suitable for modern automobiles. Today, the Arroyo Seco Parkway is deficient on many counts. The speed limit is set at 55 mile

Figure 4.5: The defunct freeway as part of a baseball park

per hour. On and off ramps are short and require a significant decrease in speed. During rain storms, police have to escort cars down the Parkway to ensure excessive speed does not result in accidents.

In addition, the Parkway separates local neighborhoods. Though much smaller than the Hudson River, the Arroyo Seco River for which the Parkway is named, lies immediately parallel to the roadway. The recreational usage of the stream is limited by the unpleasant conditions created by the Parkway. The Parkway also acts as a physical barrier between the neighborhoods and the many local open space amenities. Major parks including Heritage Square, Ernest E. Debs and San Pasqual lay separated from the neighborhoods that could enjoy them.

Differences

The Westside Freeway was an elevated highway whose removal came about by accidental causes combined with a lack of overall funding for immediate removal. The amount of time between the freeway closure and a potential solution to the problem was long enough to sway public opinion towards the idea that life without the freeway was not worse and in some cases better.

The Arroyo Seco Parkway is an at-grade freeway where the only major threat of destruction is earthquakes that would result in cracks in the pavement and not substantial structural failure. The Westside Freeway was also highly urban and densities surrounding the freeway led to a more potentially pedestrian friendly atmosphere. The Arroyo Seco Parkway, while running through dense areas, is highly suburban. While the recent construction of the Metro Gold Line has increased the availability of public transit in the Northeast Los Angeles Region, the area still needs investments in walkable infrastructure.

Central Artery Tunnel, Boston, MA

Background

The Central Artery/Tunnel Project, or "Big Dig", is a freeway capping project built in Boston Massachusetts by the Federal Highway Administration. The project is one of the biggest and most expensive public works projects in the United States. The Big Dig's project scope included the rerouting of the congested I-90 and I-93 that ran elevated through Downtown Boston into a single underground route. The elevated freeway sections cut through the heart of Downtown Boston and cut the waterfront and historic North End from the City's Financial District (Anderson & Lakshmanan, 2000).

Figure 4.6: The elevated Central Artery

The elevated Central Artery was opened in 1959 but due to the numerous off-ramps the freeway was chronically plagued with bad traffic. The Federal Highway Administration put forward a solution for an inner-belt project which would have cut through dense neighborhoods on the City's Westside. City residents and officials alike opposed the construction of the inner-belt project. Opposition to the inner-belt project was so vocal that federal government officials were forced to accept defeat and generate task forces to discuss different alternatives to relieve traffic. The idea of a below-grade highway garnered much public support and moved forward in the planning process in 1982. This below-grade highway would be capped, meaning enclosure that allows for development above the roadway (Anderson & Lakshmanan, 2000).

The most controversial aspect of the Big Dig was its cost overruns. The Big Dig was originally turned down by government official for federal funding because of its relatively high price of 2.5 billion dollars. The actual price of the project grew from said 2.5 Billion Dollars to an estimated 13.6 billion dollars by project's end. The result of the capped freeway was a large linear park with streets on either side (Anderson & Lakshmanan, 2000).

Effects

Though the project cost was prohibitive, there were many benefits to the city. The project's environmental impact report showed a benefit to cost ratio of 1.74 in terms of time saved by relieving congested traffic conditions. A 2003 Tufts University study showed that by replacing the elevated freeway with open space would increase neighborhood property values by one billion dollars. This increase in property values would only be part of the benefit. Economic revenue would also increase with the potential of citizens and tourists alike spending more time in the area and therefore spending more money (Anderson & Lakshmanan, 2000).

Similarities

The City of South Pasadena is bisected by the Arroyo Seco Parkway. Although the Parkway is below grade in the City of South Pasadena, it still creates a barrier to the connection of the northern neighborhoods to the Downtown Center on Mission Street. By capping the freeway with a park or by placement of residential development that would mesh with existing neighborhood characteristics, the negative effects of the freeway on the residential atmosphere would be lessened if not entirely eliminated.

Differences

The Big Dig helped to reconnect a divided neighborhood that would benefit economically from reconnection. The Historic North End and the Financial District are both economically viable sectors of the town that can hold well on their own, but connected they offer benefits to numerous businessmen and citizens. South Pasadena's divided districts are both of single-family residential districts. Reconnection of the neighborhoods would contribute more to community well-being than to the immediate economic gain.

Figure 4.7: A new park on top of the below grade freeway

Cheonggyecheon, Seoul, South Korea

Background

Cheonggeycheon was initially an intermittent natural creek of approximately 8.5 miles that ran west to east adjacent to downtown Seoul, South Korea. People built along the creek, intruding upon its natural boundaries and heavily polluting it. Pollution and sanitary issues were so severe that the government decided to cover 6km (about 4 miles) of the creek with concrete roads. The Cheonggeycheon Expressway was constructed between 1967 and 1971 as privately owned vehicles became more prevalent and traffic congestion became a major problem. In 1976, the 4 lane, 2-way, elevated expressway was completed. Traffic surveys by the Seoul Metropolitan Government "showed that there were about 1.5 million vehicles entering or leaving twenty-four points along the Cheonggeycheon Expressway each day" (Life and Death). The freeway did serve the driving and mobility needs of the residents of Seoul and surrounding areas.

Figure 4.8: The Cheonggeycheon Express before removal

However, there was a concern about how much it diminished the attractive qualities of Seoul's Central Business District. In the decade after the expressway was completed, it was estimated that Seoul's Central Business District lost 40,000 residents and 80,000 jobs ("The life and," 2012). In addition, heavy traffic combined with the moisture from the creek below the expressway threatened the structural soundness of the expressway. It was determined that large-scale maintenance and traffic reduction would be needed to ensure safety for the users of the expressway.

Taking into account the costs of ongoing maintenance and the expressway's negative economic impact on downtown Seoul, the government decided to demolish the expressway and to restore Cheonggeycheon creek beneath the expressway in July 2002 ("The life and," 2012). In 2003, the Cheonggeycheon Restoration Project began. The goals of the project were to create a human-oriented and environmentally-friendly city with a "world-class linear park consisting of a clean stream, indigeneous plants, quality sidwalks, [and] street furniture" ("The life and," 2012). Between 2003 and 2005, the roads and elevated expressway were removed and the existing creek was restored. A 3.6-mile long linear park was created that highlighted the creek and included pedestrian facilities, such as sidewalk, lights and street furniture.

Effects

The Cheonggeycheon Restoration Project was considered a big success. In the months immediately following its opening, “the park attracted approximately 90,000 visitors per day, 30% of them from outside the metropolitan area” ("Case studies in," 2008). The Seoul Development Institute found that land values of adjacent parcels had increased by an average of 30%.

Similarities

The main similarity between Cheonggeycheon and the Arroyo Seco Parkway is the river. In each of these cases the freeway negatively affects the river. In Seoul, the expressway covered the majority of the creek leaving. In Los Angeles, the Arroyo Seco River is channelized and runs alongside the Parkway for most of its duration. The Cheonggeycheon Restoration Project is an example of how restoration can work in a very developed area to a river that is in much worse condition. In areas where the Arroyo Seco runs immediately adjacent to the Parkway, a great lesson can be learned from Cheonggeycheon. The channelized river could become a great recreational asset to the surrounding neighborhoods.

Differences

The main difference between the Arroyo Seco Parkway and the Cheonggeycheon relates to location. The Cheonggeycheon is located in the very dense capital of South Korea. The density surrounding the Cheonggeycheon and its proximity to the Central Business District draws a large number of people to the area. On the other hand, the Arroyo Seco Parkway runs through numerous suburban neighborhoods. It may not be able to attract as many people to this area. However, the residential surrounding could also be a benefit to the area because the neighborhoods will be served by more recreation options and better access to surroundings areas.

Figure 4.9: The Cheonggetcheon River after restoration

Los Angeles River, Los Angeles, CA

Background

Figure 4.10 The Los Angeles River as a flood control channel

The Los Angeles River is the key river within the Los Angeles watershed. It drains 870 square miles of waterways and flows for 51 miles from its confluence in the San Fernando Valley to its outlet at the Pacific Ocean in Long Beach. The Los Angeles River is channelized for a majority of its length for flood control purposes.

Rio de Porciúncula, or the Los Angeles River as it is known today, was the historic source of water for the native peoples and early settlers of Southern California. Much like the Arroyo Seco, many tribes used the Los Angeles River for daily needs. Large settlements of native peoples were situated near the present day site of Union Station. In early Los Angeles, the water provided water needs for agricultural purposes as well as human needs ("River park projects," 2013).

The Los Angeles River's seasonal flow varied depending on the time of year. The Los Angeles River was also highly unpredictable. Depending on rainfall conditions, even the course of the river could shift. Prior to 1825 the Los Angeles River emptied into Santa Monica Bay. Post 1825, flooding conditions caused the River to change course to its present location and empty into San Pedro Bay. Major floods also occurred in 1861, 1914, and early 1930s. This created problems for early settlers who fell prey to the unpredictable nature of the river. Los Angeles County approved bonds in 1917 and 1924 to construct minor infrastructure projects including some channelization and reservoir building. After the floods of the early 1930's, the Army Corps of Engineers took the lead on the project and the river was channelized to prevent further flooding damage and deemed a flood control channel ("History of the,"). This was the fate of numerous Los Angeles area waterways that were deemed as flood control channels including the Arroyo Seco River.

Effects

According to the Los Angeles River Revitalization Plan, close to 100 percent of the original wetlands and 90 to 95 percent of in-stream riparian habitat within the Los Angeles River watershed have been lost due to the rivers channelization. Species, such as the steelhead trout, which historically spawned in the Los Angeles River, are locally extinct ("Final revitilization master," 2011). The designation of the river as a flood channel has also prevented public access due to legal restrictions of use. The restriction of use has further divided neighborhoods.

Recently, activists groups and the City of Los Angeles have tried to bring new life to the Los Angeles River. Friends of the Los Angeles River, a non-profit group, lead early campaigns which helped create two new riverfront parks in Chinatown and Atwater Village ("About folar,"). The City of Los Angeles created a River Committee to guide the process of creating a long-range plan for the river's development. The committee recently succeeded in opening a portion of the river for recreation use near the residential neighborhoods of Atwater Village and Elysian Valley.

Key Elements of the Plan

The Los Angeles River Revitalization Master Plan includes three main plans for the future of the River. The Plan seeks to revitalize the River by increasing its flood capacity while ensuring safe public access and restoring a functional ecosystem. The Plan also proposes to beautify surrounding neighborhoods by improving neighborhood connections, enhancing river identity, and installing public art. These will help meet the remaining goals to foster civic pride in the river and improve the quality of life along the river. The plan sets a 25 to 50 year time-frame with which to achieve the necessary goals ("Final revitilization master," 2011).

Lessons Learned

The Los Angeles River Revitalization Master Plan is a valuable document with which to begin work on possible revitalization of the Arroyo Seco. The Arroyo Seco, much like the Los Angeles River, was channelized for fear of flooding. It has lost a majority of its riparian habitat and native species and offers little to no opportunities for recreation along its banks ("Arroyo seco -," 2013). By building off the Los Angeles River Revitalization Master Plan, the Arroyo Seco can also become a recreation center for residents of Northeast Los Angeles.

Figure 4.11: A possible design that emulates flood control and recreation

The Existing Conditions takes a deeper look into the history, development patterns and current conditions of the four key opportunity areas: South Pasadena, Highland Park, Chinatown, and the Arroyo Seco River.

5. EXISTING CONDITIONS

City of South Pasadena

As discussed in Project Area Overview, The Arroyo Seco Parkway begins in Pasadena at Glenarm Street and ends at the Four Level Interchange in Downtown Los Angeles. Along this route lie numerous communities which help create the diverse makeup of Northeast Los Angeles. Though many communities exist along the route, three have been chosen to study the benefits that would exist from converting Arroyo Seco Parkway to a boulevard.

Figure 5.1: Single-family residential homes in South Pasadena

South Pasadena is a small community of 25,619 people, located between Downtown Los Angeles and Pasadena in the San Gabriel Valley. Its boundaries are roughly Columbia Street to the north, Garfield Avenue to the east, Kendell Avenue to the south, and the Arroyo Seco River to the west Refer to Exhibit 5.1. Major thoroughfares include Mission, Fair Oaks, Huntington, and Monterey Roads. South Pasadena is primarily a bedroom community which houses residents employed in nearby employment centers in the greater San Gabriel Valley and Los Angeles Basin. South Pasadena is known for its small town atmosphere, which is centered on its tree lined streets and walkable Downtown.

As one of the earliest incorporated communities in Southern California, South Pasadena has a long history of cultural importance. South Pasadena was the home of the Native Hahamonga people who made their home near the Arroyo Seco River. South Pasadena also served as a headquarters of the Mexican Army during the Mexican-American War. ("City of south," 2013)

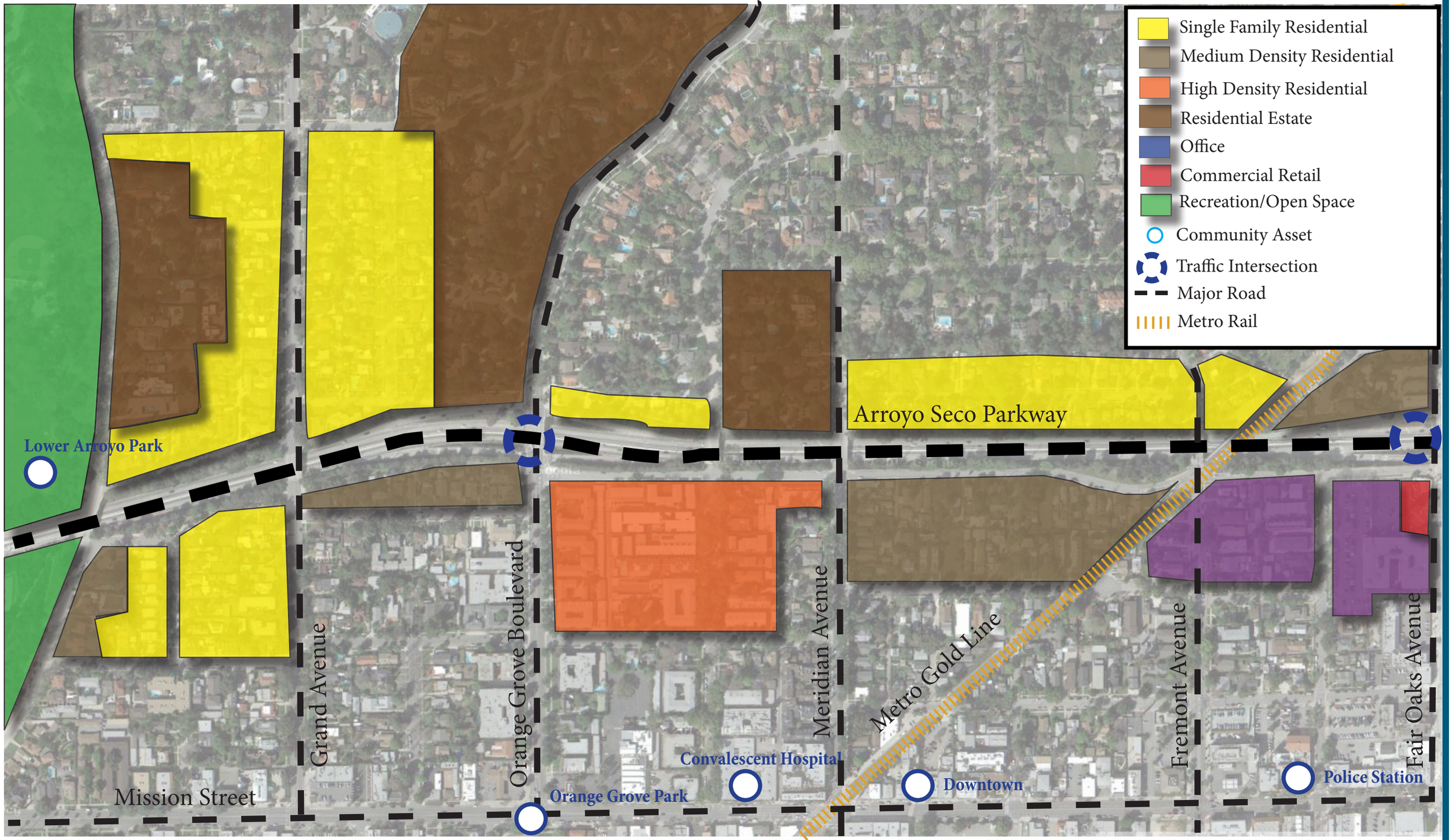
South Pasadena's small town character lies in its incorporation as one of the first suburbs of Los Angeles. With the completion of an early Pacific Electric Streetcar Line 1902 South Pasadena was connected to the big city while still enjoying the countryside that early Los Angeles offered. Though the area around South Pasadena is far less rural today, South Pasadena still values its historic roots and small town character.

The Arroyo Seco Parkway runs below grade through the center of town dividing two residential neighborhoods. This division separates the northern residential neighborhood from the downtown area.

The Arroyo Seco Parkway also has less than significant impacts on the utilization of the Arroyo Seco River. The highway runs perpendicular to the river within city limits and therefore allows for passive and active recreation along the riverfront. The Arroyo Seco River is still channelized through South Pasadena, which prohibits immediate use of the waterway itself.

Figure 5.2: The current below grade parkway creates a barrier between the residential neighborhoods.

EXHIBIT 5.1: SOUTH PASADENA EXISTING CONDITIONS



Neighborhood of Highland Park

Figure 5.3: A residential neighborhood in Highland Park

Highland Park is a historic neighborhood in Northeast Los Angeles of 60,841 people. Its boundaries are roughly the Arroyo Seco Parkway on the southeast, the city limits of Pasadena on the northeast, Oak Grove Drive on the north, and Avenue 51 on the west. Primary thoroughfares include York Boulevard and Figueroa Street ("Highland park,").

After the Mexican-American War ended in 1848, California became part of the United States and Rancho San Rafael was subdivided, creating the neighborhood of Highland Park. In 1895, Highland Park was one of the original suburbs of Los Angeles. Situated between the county's two largest population centers—Los Angeles and Pasadena—Highland Park offered a respite from the city and provided residents with a variety of convenient transportation options for their commute. Highland Park was annexed into the city of Los Angeles in 1895 marking the first true expansion of the city. In the early 20th century, Highland Park and neighboring Pasadena became havens for artists and intellectuals who led the Arts and Crafts movement ("Highland park departures," 2013).

The construction of the Arroyo Seco Parkway in 1940 marked a period of decline for the Highland Park Neighborhood. As 'white flight' began to affect the area, Highland Park began to lose residents to the Mid-Wilshire district and newer neighborhoods in Temple City and in the San Fernando Valley ("Highland park departures," 2013).

Today, Highland Park is a diverse residential neighborhood in the Los Angeles area. With its walkable streets, Craftsman and Victorian-style houses and small town feel, Highland Park is an up-and-coming neighborhood in Los Angeles. Recent increases

Figure 5.4: A wall that has been erected between the Parkway and adjacent residences

in population and investment have started to reinvigorate this once deteriorating neighborhood. Numerous parks are situated around the neighborhood area including Ernest E. Debs Regional Park and Hermon Park. The light rail Metro Gold Line travels from East Los Angeles through Union Station to Pasadena, traversing all of Highland Park (Ziegler, 2009).

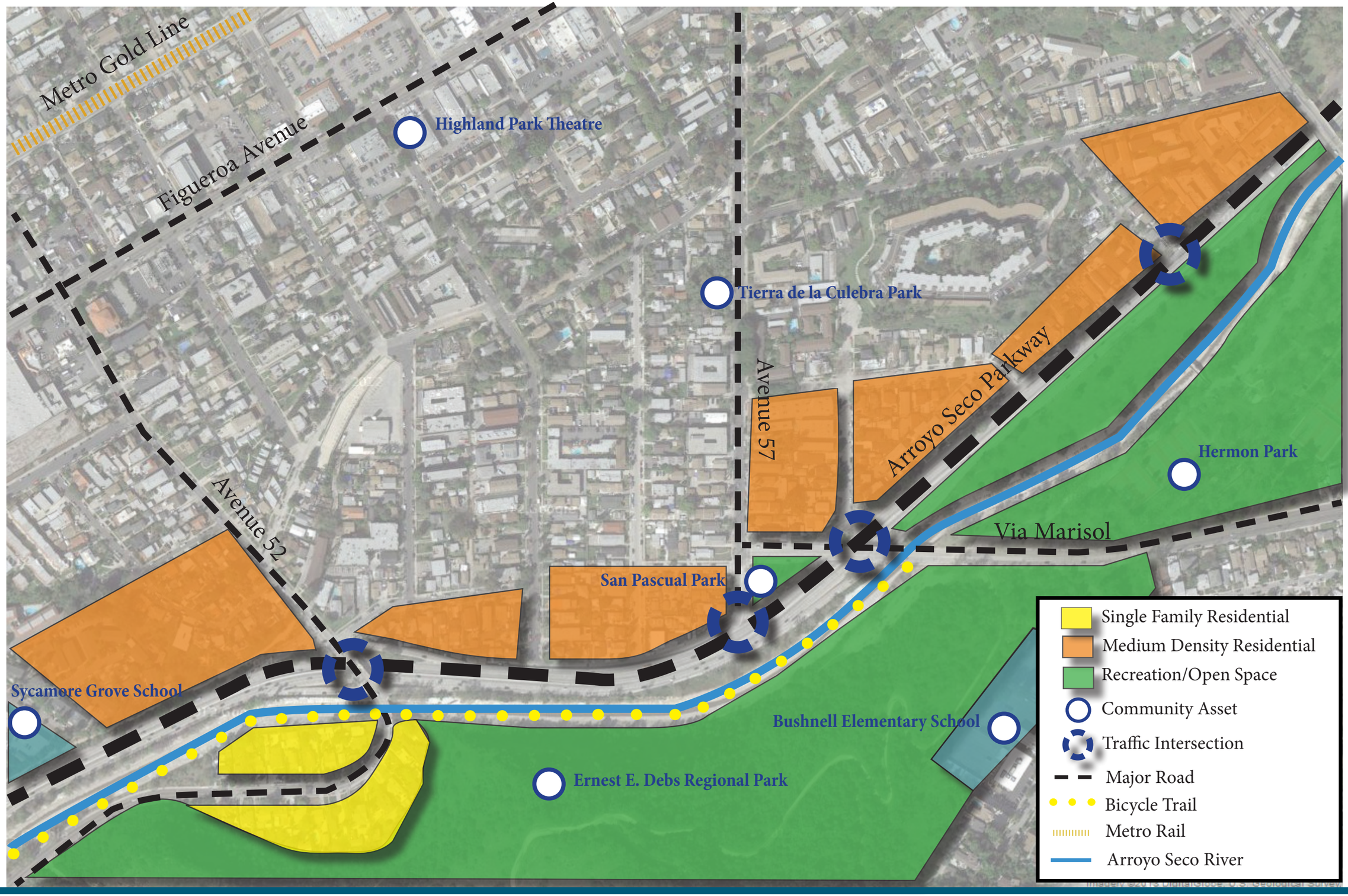
The Arroyo Seco Parkway runs at grade through Highland Park. In many areas, the at-grade Parkway is separated by chain link fence or concrete wall. Chain link fences do little to mitigate noise from the Parkway and concrete sound walls have little aesthetic value and inhibit local viewsheds (see figure 5.4).

Traffic conditions along the Parkway also create congestion within neighborhoods. Short on and off-ramps create a situation in which rush hour traffic is backed up onto neighborhood streets while waiting for a chance to merge onto the Parkway. These idling cars create more tailpipe emissions which increase particulate matter within the neighborhood. The freeway on and off-ramps exit immediately into neighborhood streets and create an unsafe environment for pedestrians.

The Arroyo Seco River is impacted by the placement of the Arroyo Seco Parkway. The Parkway runs immediately parallel to the channelized river and creates a situation in which residents have little-to-no opportunities to utilize the river for active or passive recreation. Where access does occur along the route, it tends to be small or separated entirely (see figure 5.5).

Figure 5.5: A typical entrance to the Parkway that can be seen through out Highland Park

EXHIBIT 5.2: HIGHLAND PARK EXISTING CONDITIONS



Neighborhood of Chinatown

Figure 5.6: A residential neighborhood near the Parkway in Chinatown

Chinatown, located directly north of Downtown Los Angeles is home to 28,839 people. Its borders are roughly defined by the Arroyo Seco Parkway to the west and north, Alameda Street on the east, and Cesar Chavez Boulevard to the south. Primary thoroughfares include Broadway, Hill, and Alpine Streets.

The earliest account of Chinese population within Los Angeles was 1852. Sizable populations began immigrating by 1857 and by 1870 an identifiable Chinatown had taken shape near the City's Old Pueblo. The conditions in Chinatown declined as public views of the neighborhood became negative. Drugs and crime created a negative view of the neighborhood. The final cause for Chinatown decline was the speculation of redevelopment by the city for a new union train terminal for the City. With the uncertainty about landlord decisions, the properties and district itself became more derelict. Redevelopment for the Union Station in the early 1930's caused the land of the district to be sold off (Gow, 2008).

A new Chinatown was developed just north of the Union Station site in the City's Little Italy neighborhood. This new Chinatown was a co-operation between city officials and community members to build a planned Chinatown development. A grand opening in 1938 drew thousands of people in a large festival which took over the newly christened district. New Chinatown was built with a mixture of American and Chinese Architectural styles which drove a fascinated public to the district (Gow, 2008).

Today's Chinatown is much quieter than in times past. Suburban flight has caused a majority of Los Angeles' Chinese population to migrate to the San Gabriel Valley suburbs of Monterey Park, Hacienda Heights, and Alhambra. Today's mix of retail caters more to the common tourist than the community as a whole.

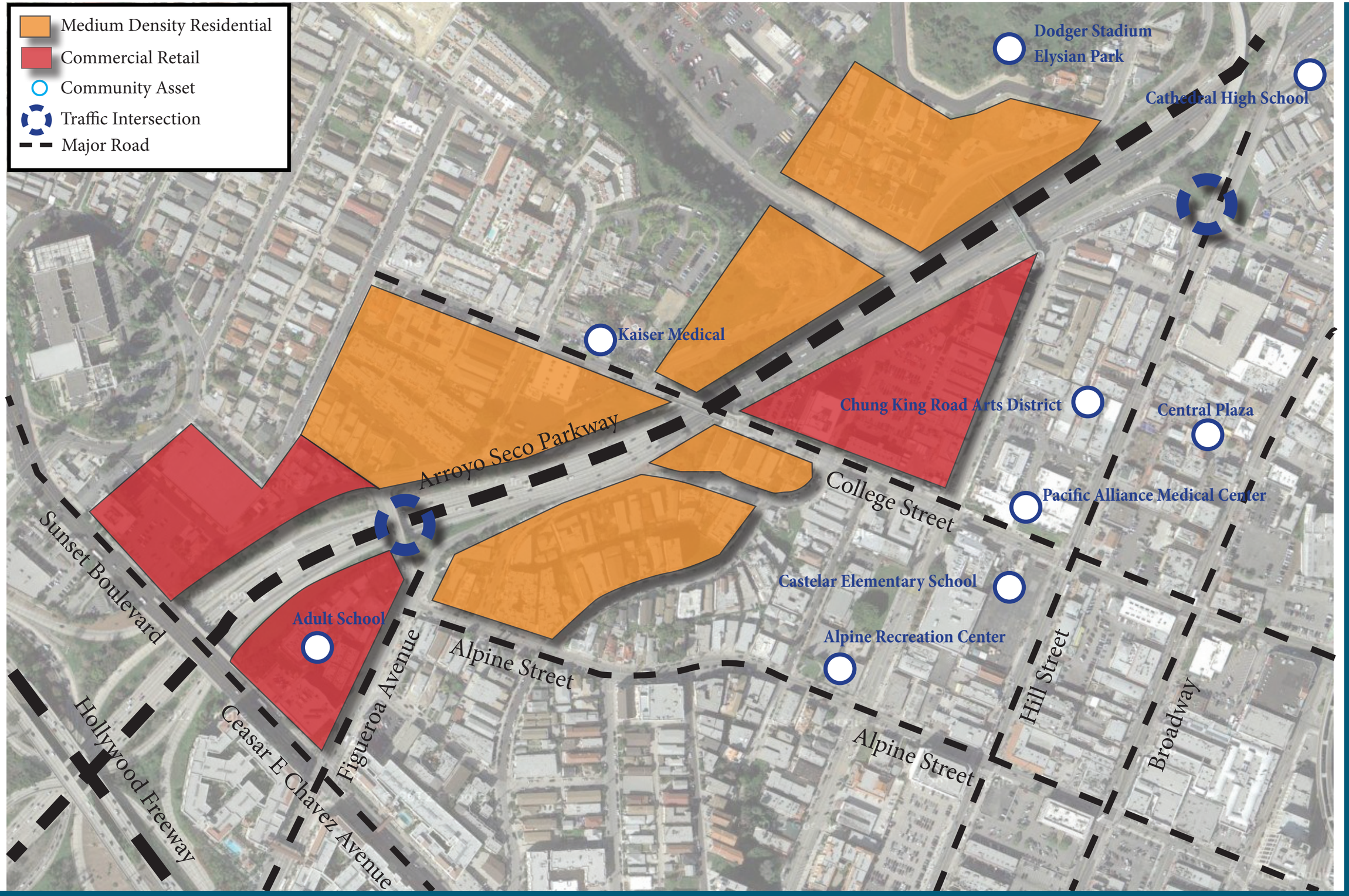
Renewed investment is bringing growth to Chinatown. The district was connected to the expanding Metro system in 2003 when the Gold Line Chinatown Station was opened. Since that time, numerous investments in the district have been undertaken. An abandon factory was repurposed as a senior living facility in the heart of the district. The Chinatown Gate, once surrounded by parking lots, is now surrounded by new multi-family apartments. A mixed-use development known as Blossom Plaza is proposed to replace an abandon restaurant and parking lot and will provide a more direct nexus from the Chinatown Central Plaza to the Chinatown Metro Station.

The Arroyo Seco Parkway separates Central Chinatown from the residential Alpine Heights. Buildings, which once lined Figueroa Boulevard or other minor streets, now face a loud and congested Arroyo Seco Parkway. Due to exclusion from the original Parkway route, the placement of any form of landscaping is rare. This has left a bare hardscape bordering the west side of the Chinatown District.

The Arroyo Seco Parkway also separates Chinatown from Elysian Park and Dodger Stadium. As a major area of green space within Los Angeles, Elysian Park is one of only two major areas of green space in Chinatown. Dodger Stadium is a cultural institution that draws many people from around Los Angeles. The Arroyo Seco Parkway inhibits seamless movement from Chinatown and the Chinatown Metro Station into Dodger Stadium. This impediment of movement not only encourages driving to games but also prohibits Chinatown from capitalizing on pedestrian utilization of the neighborhood before and after games.

Figure 5.7: The Parkway as it runs through Chinatown

EXHIBIT 5.3: CHINATOWN EXISTING CONDITIONS



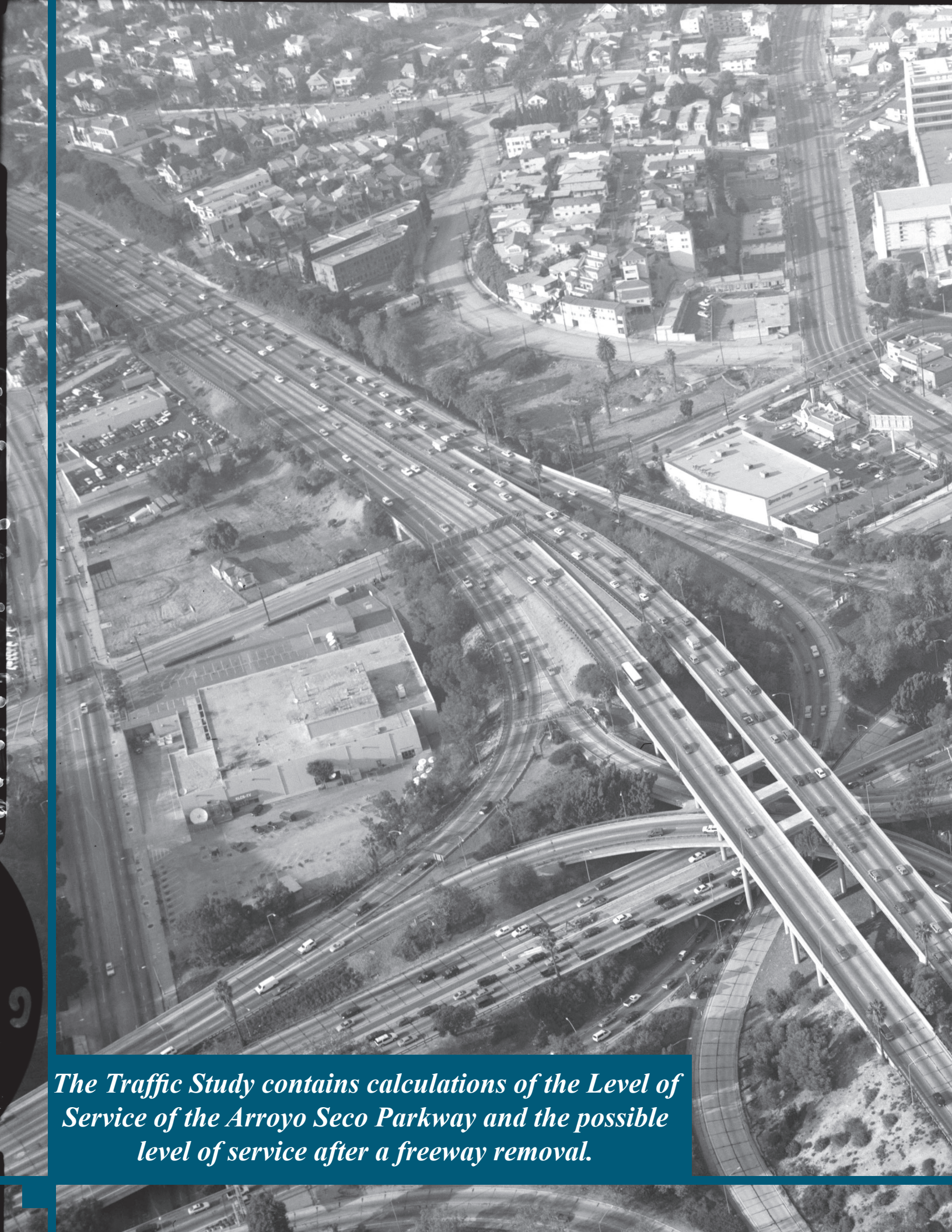
The Arroyo Seco River

The Arroyo Seco River was the native home of the Hahamonga people who originally inhabited the northeast area of Los Angeles. The river was a major source of food and medicine for the native people. The river also acted as a major transportation corridor in which native peoples would travel to reach other parts of the Los Angeles Basin. As Los Angeles began to grow in the late 1800's, the land along the Arroyo Seco River was developed for residential purposes. Communities, such as Highland Park, became quiet reprieves in between the city life found to the south in Los Angeles and to the north in Pasadena.

Though the river was named the Arroyo Seco, or Dry Gulch, the watershed experienced annual flooding from winter storms. With fears that property values would diminish due to flooding, the community rallied behind the idea to channelize the river in 1935. This project was funded by the New Deal and was welcomed as a way to get Depression Era unemployed population back to work. The channelization of the Arroyo Seco River was constructed alongside the construction of the Arroyo Seco Parkway.

Today, the effects of channelization along the Arroyo Seco River have become more apparent. Rich riparian habitats that once were home to numerous species of flora and fauna have disappeared. Water quality along the Arroyo Seco has suffered due to storm runoff from city streets. Channelization has also hurt neighborhood interaction with the river. A majority of the rivers route is restricted to public access. The placement of the Arroyo Seco Parkway alongside the river has acted as a further impediment to access from the neighborhoods which line the river.

Figure 5.8: The Arroyo Seco Bike Path which Connects Montecito Heights to Highland Park



The Traffic Study contains calculations of the Level of Service of the Arroyo Seco Parkway and the possible level of service after a freeway removal.

6. TRAFFIC STUDY

The purpose of the Traffic Study is to determine the capacity of the existing Parkway and the future boulevard. As discussed in the Literature Review Chapter, research into induced demand has shown a strong correlation between increased highway miles and increased levels of congestion as well as decreased highway miles and static if not decreased levels of congestion. As seen in the case studies presented in this report, where freeways have been removed, congestion levels have not become unmanageable, have not , and the neighborhoods are stronger both socially and economically. As discussed in the literature review, the ideas of induced demand and traffic evaporation suggest that the Arroyo Seco Parkway could see a 25% decrease in automobile traffic when capacity is limited. A traffic study is included in this report to illustrate the effects of the proposed projects on traffic levels.

The project team cited five different alternative routes to the Arroyo Seco Parkway (Red Route) (See Figure 6.1). The alternative routes include: Figueroa Street (Pink Route), Huntington Drive (Navy Route), Highway 134 and Highway 2 (Light Blue Route), and Fremont Street and Interstate 10 (Yellow Route).

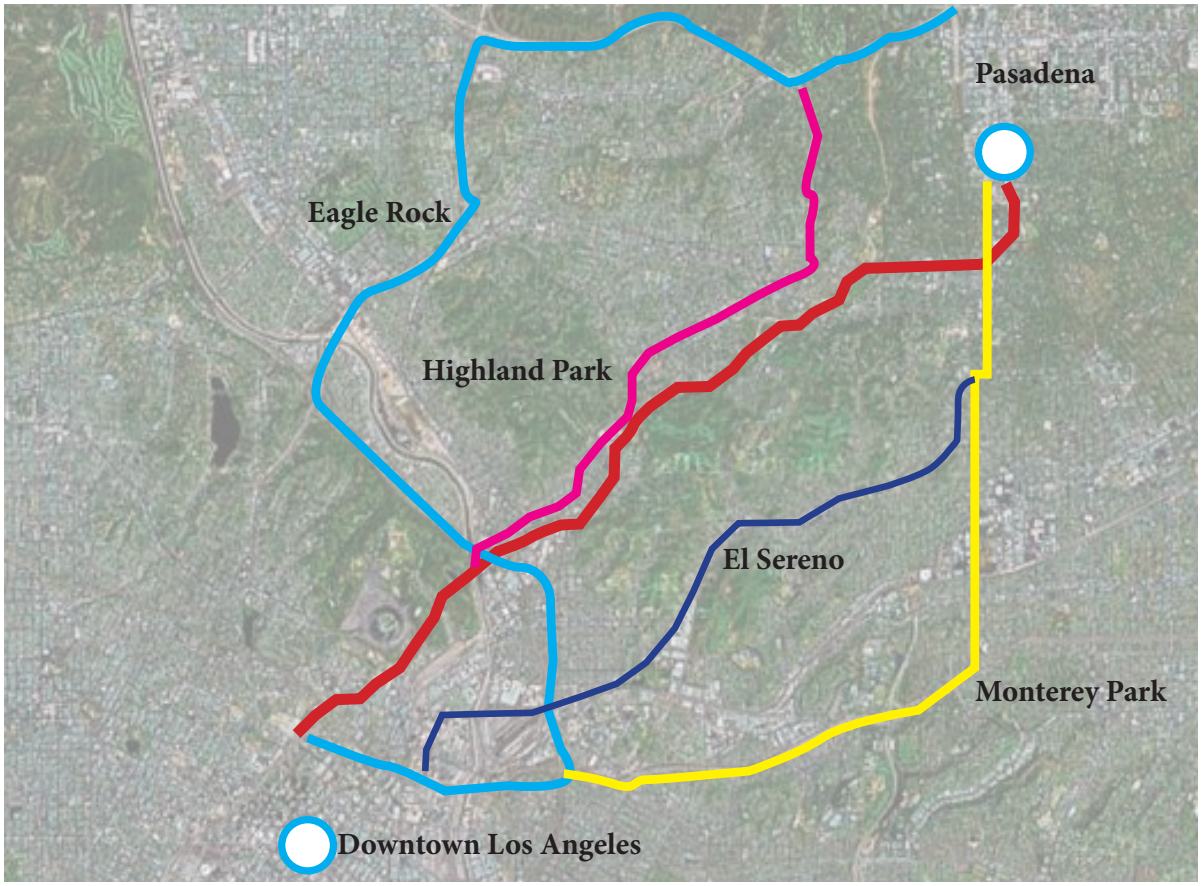


Figure 6.1: Alternative Routes to the Arroyo Seco Parkway

For the purpose of this report, the possibility of a future Interstate-710 corridor has not been included. In addition, all trips beginning in Pasadena are heading to Downtown Los Angeles; all trips beginning in Los Angeles are heading to Pasadena; and trips beginning in Highland Park are heading either direction. Refer to appendix 4 to see the calculations for the following information.

Free Flow Speed

Free flow speed is calculated by determining base free flow speed and adjustment factors for lane width, lateral clearance, median type, and access points.

Base Free Flow Speed (BFFS) is based on the coded speed limit and is not allowed to go below 40 mph or above 70 mph with the idea that free flowing traffic will travel between 45 and 65 miles per hours. According to the Federal Highway Administration 5 additional miles per hour are added to roadways that have a posted speed limit of 50 miles per hour and 7 additional miles per hour to roadways that have a posted speed limit of 40-45 miles per hour. For a road like the Arroyo Seco Parkway, BFFS would equal the speed limit plus five because the posted speed limit is 50 mph. For Arroyo Seco Boulevard, the BFFS would equal the speed limit plus seven because the posted speed limit would be 45 miles per hour.

Adjustments for lane width are made by using predetermined values: 6.6 for lane width less than or equal to 10 feet and 1.9 for lane width of 11 feet. No adjustment is needed for lane width greater than or equal to 12 feet.

Adjustments for lateral clearance use right and left shoulder widths. Because the Arroyo Seco Parkway is a divided highway Lateral Clearance Left (LCL) is calculated as well as Lateral Clearance Right (LCR). Table 6.1 show the lateral clearance adjustments for various shoulder widths.

Table 6.1: Lateral Cleareance Reduction

4-Lane Two-Way Highways and 2-Lane One-way Highways		6+Lane Two-Way Highways and 3+Lane One-Way Highways	
Total Lateral Clearance	Reduction in FFS	Total Lateral Clearance	Reduction in FFS
12	0	12	0
10	0.4	10	0.4
8	0.9	8	0.9
6	1.3	6	1.3
4	1.8	4	1.7
2	3.6	2	2.8
0	5.4	0	3.9

To adjust for median type, predetermined values are used and based on whether the road is divided or undivided. Table 6.2 shows the adjustment values based on the type of highway. Because the Arroyo Seco Parkway and Arroyo Seco Boulevard would be divided, the adjustment value would be set to 0.

Table 6.2: Median Type Adjustment

Highway Type	Reduction in FFS (mph; fM)
Undivided	1.6
Divided (including TWLTLs-Two-Way Left Turning Lanes)	0

To adjust for access points per mile, calculations are based on the number of at-grade intersections with no traffic control devices and the section length. The measurement is calculated by determining access point density which is equal to the number of intersections divided by the length of the route all added to the driveway density. Driveway density is a preset value of two for divided highways and three for undivided highways. Because the Arroyo Seco Parkway is a divided highways the driveway density would be set to two.

When these factors are taken into account and calculated the FFS for the Arroyo Seco Parkway is equaled to 54.55 mph while Arroyo Seco Boulevard is equaled to 40.6 mph.

Base Capacity

Base Capacity (BaseCap) of a multilane freeway is the number of passenger cars per hour per lane which a highway can maintain. Basecap is equaled to 20 times FFS plus 1,000 for speeds equal to or less than 60 miles per hour while a standard Basecap of 2,200 is used for speeds of greater than 60 miles per hour. Because both the Arroyo Seco Parkway and Arroyo Seco Boulevard are set at speeds of less than 60 miles per hour, the calculation would be 20 times FFS plus 1,000. When the factors have been calculated the base capacity for the Arroyo Seco Parkway is 2091 cars per hour. The base capacity for Arroyo Seco Boulevard is 1812 cars per hour.

Peak Capacity

Peak capacity (peakcap) is determined by multiplying the basecap by the peak hour factor by the number of lanes in one direction by the adjustment factor for heavy vehicles and driver populations.

The Peak Hour Factor (PHF) is used to account for variations in flow within peak hour travel. Though there is an equation which is used to determine PHF, for the purpose of this report the default of .92 will be used.

To adjust for heavy vehicles the proportion of trucks and buses in the traffic stream is multiplied by the passenger-car equivalents along the route. Passenger-car equivalent is kept constant with a default of 1.5 for all urban highways. Truck and bus use on the Arroyo Seco Parkway was banned in 1943. Bus restrictions have since been lifted, but for the purpose of this report, proportion of trucks will be estimated at 10 percent.

Adjustment factor for driver population is a constant set at one. This adjustment factor is set at one because most drivers in an urban area are commuters who are familiar with the area and do not have a learning curve.

When the factors are taken into account and the calculations are completed the peakcap is equaled to 5,483 vehicles per hour. The peakcap on Arroyo Seco Boulevard is equaled to 3,167 vehicles per hour.

The results of the traffic study are represented in Tables 6.3 and 6.4. Peak hour traffic at major intersections along the route was gathered from Caltrans. To calculate peak hour traffic in the future, an evaporation rate of 25% was used. Though future capacity percentages are more than current capacity percentages, future roadway use will see a net loss of automobiles along the roadway. This is calculated by dividing future peak hour traffic by future capacity and then subtracting that answer from existing peak hour traffic divided by existing capacity.

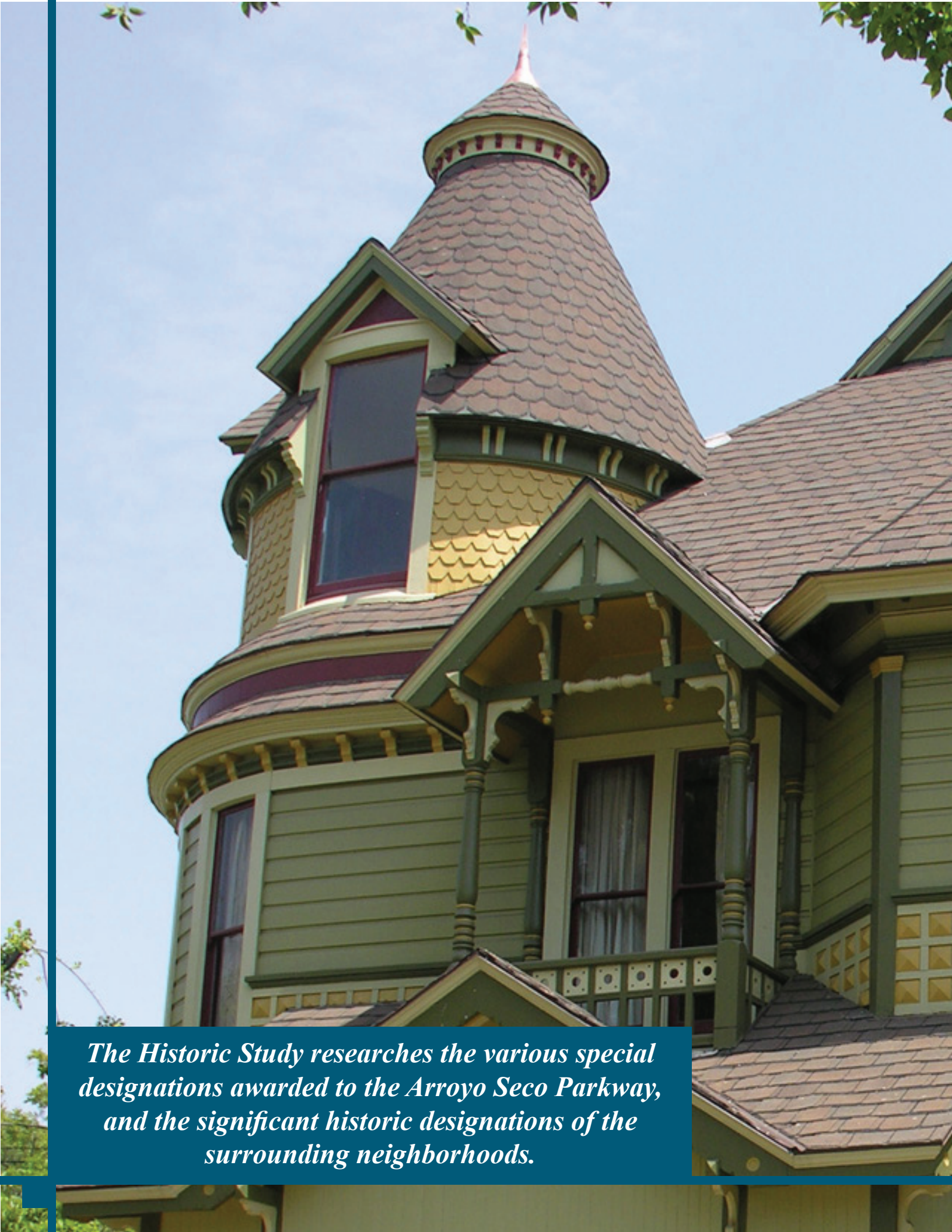
Table 6.3: Southbound Peak Hour Traffic

Major Intersection	Southbound Peak Hour Exisitng	Southbound Peak Hour Future	Existing Capacity	Future Capacity	Displaced Cars
Figueroa/ Sunset	10100	7575	184%	239%	(2,316)
Hill/Stadium	11200	8400	204%	265%	(2,316)
JCT. RTE. 5	13600	10200	248%	322%	(2,316)
Ave 52	9000	6750	164%	213%	(2,316)
York Blvd	6700	5025	122%	159%	(2,316)
Fair Oaks Ave	5400	4050	98%	128%	(2,316)
Glenarm/End Freeway	4050	3038	74%	96%	(2,316)

Table 6.4: Northbound Peak Hour Traffic

Major Intersection	Northbound Peak Hour Existing	Northbound Peak Hour Future	Percent Over Capacity Existing	Percent Over Capacity Future	Displaced Cars
Figueroa/ Sunset	11200	8400	204%	265%	(8,031)
Hill/Stadium	13200	9900	241%	313%	(10,031)
JCT. RTE. 5	9900	7425	181%	234%	(6,731)
Ave 52	8300	6225	151%	197%	(5,131)
York Blvd	6700	5025	122%	159%	(3,532)
Fair Oaks Ave	4050	3038	74%	96%	(882)
Glenarm/End Freeway					

Though the new roadway is expected to be over capacity the findings of our case studies must be taken into account. Seoul, San Francisco, and New York all had critics who predicted catastrophic traffic as a result of the freeway removal. Our case studies show however, that in each of these situations traffic levels remained the same if not improved. Induced traffic demand has also explained that freeways work at equilibrium. At some point, the cost of driving will outweigh the benefit which means that drivers will find an alternative way to access their destination. There are many alternative routes to the Arroyo Seco Parkway which can help absorb the excess traffic as well as the Gold Line Light Rail which parallels the entire route of the Arroyo Seco Parkway.



The Historic Study researches the various special designations awarded to the Arroyo Seco Parkway, and the significant historic designations of the surrounding neighborhoods.

7. HISTORIC STUDY

Arroyo Seco Parkway has a number of state and national designations that honor its history and significance. The Parkway is also an outdated freeway that contributes to environmental, health, and safety issues. The purpose of this chapter is to examine the ways to reconcile these two conflicting issues.

Figure 7.1: The sign recognizing the Historic Arroyo Seco Parkway

Current Designations of the Arroyo Seco Parkway

Arroyo Seco Parkway has four historic designations: 1) State Scenic Highway, 2) National Scenic Byway, 3) National Civil Engineering Landmark, and 4) National Register of Historic Places. Each of these designations has special meaning and dictates what can and cannot be done to the Parkway.

State Scenic Highway - California State Scenic Highway Program was established in 1963 and is meant to "preserve and protect scenic highway corridors from change which would diminish the aesthetic value of lands adjacent to highways" ("The california scenic," 2013). The Department of Transportation (Caltrans) manages the State Scenic Highway Program, provides guidance, and assists local government agencies, community organizations, and citizens with the process to officially designate scenic highways.

A highway may be designated scenic depending upon how much of the natural landscape can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes upon the traveler's enjoyment of the view. The main goal of the program is to preserve and enhance that natural beauty of California. Thus, designated state scenic highways "should traverse an area of outstanding scenic quality, containing striking views, flora, geology, or other unique natural attributes" ("Scenic highway guidelines," 2008). Caltrans evaluates nominated highways based on the scenic value and negative effects of visual intrusions. Visual intrusions are manmade or natural features that adversely affect the user's ability to view and enjoy the surrounding environment.

The Arroyo Seco Parkway was designated as a State Scenic Highway in 1993. This occurred when Assembly Bill 1247 established California Historic Parkways as part of the state scenic highway system. According to the program, "California Historic Parkways" must be built before 1945 and be historically significant, while serving more than 40,000 vehicles per day ("Historic arroyo seco," 2012).

National Scenic Byway - The National Scenic Byway Program is a part of the US Department of Transportation, Federal Highway Administration. The program began in 1991 in order to recognize, preserve, and enhance important roads throughout the United States. According to the

Federal Highway Administration, the goal of the program is “to create a distinctive collection of American roads, their stories and treasured places” (Federal Highway Administration). Roads designated in this program are generally less used and honored to preserve their uniqueness. Roads are recognized for one of six “intrinsic qualities”: archeological, cultural, historic, natural, recreational, and/or scenic. Roads that meet at least two of these qualities are designated as All-American Roads. For a full description of the Federal Highway Administration’s intrinsic qualities see Appendix 2.

The Arroyo Seco Parkway is a designated National Scenic Byway. It was designated in 2002. The Arroyo Seco Parkway was nominated under four of the “intrinsic” qualities: historic, recreational, cultural, and natural ("Historic arroyo seco," 2012).

The Parkway is considered historically significant for many reasons. It was built in 1938 and is an example of an early freeway in the Los Angeles area. It represents a significant pattern of development that characterized the area was considered a great success at the time it was built. In addition the Parkway runs through 5 historic districts: Arroyo Seco Parkway Historic District, Lower Arroyo Seco Park in Pasadena, Old Pasadena National Register District, and the Los Angeles HPOZ districts of Highland Park-Garvanza and Lincoln Heights ("Historic arroyo seco," 2012). Due the great significance of its historic quality, this is the quality used to designate the Arroyo Seco Parkway as a National Scenic Byway. While this is the only quality used for designation, residents and stakeholders still consider the other qualities as integral to the significance of the Parkway.

As part of the National Scenic Byway Program, the Historic Arroyo Seco Parkway Corridor Partnership Plan was published in 2012. This document is required by the Federal Highway Administration for all designated scenic byways. This is a management plan that details planning goals and strategies for the Parkway.

National Civil Engineering Landmark - The Historic Civil Engineering Landmark Program is part of the American Society of Civil Engineers and recognizes historically significant local, national, and international civil engineering projects, structures, and sites. The purpose of the program is to identify and designate national historic civil engineering works that have made a significant contribution to the development of the United States and other countries and to the profession of civil engineering in particular. The program is also meant to encourage all civil engineers to become more aware of the history and heritage of their own profession and to increase appreciation by the public of civil engineering contributions to the progress and development of the United States and the world (Reese, 2013).

Projects are nominated according eight criteria. The 8 criteria include historical data and context, engineers involved, innovative engineering aspects, significant technical achievements, and unique features (Reese, 2013).

The Arroyo Seco Parkway was designated a National Historic Civil Engineering Landmark in 1999. The Parkway was designated because it was the first of its kind; it was “the first divided-

lane, high-speed, limited-access road in the urban western United States" (DeLony, 1999). It was the first step toward the extensive freeway network that Los Angeles is known for.

National Register of Historic Places - The National Register of Historic Places began under the Nation Park Service as a part of the National Historic Preservation Act of 1966. The purpose of the program is "to coordinate and support public and private efforts [in order] to identify, evaluate, and protect America's historic and archeological resources" (Loether , 2011). Places include districts, sites, buildings, structures, and objects. They must be a significant part of American history, architecture, archaeology, engineering, or culture. There are three main criteria in determining whether a "place" is eligible or not: age, integrity, and significance. Generally, national historic resources are at least 50 years old. Integrity refers to what it looks like. It should remain unchanged and strongly resemble what it looked like in the past. Significance is the most important criterion. To be nationally listed as historic, a "place" must be associated with historically significant events, activities, developments, or people (Loether, 2011).

The Arroyo Seco Parkway was listed on the Register of National Historic Places in 2011. It is listed as the Arroyo Seco Parkway District. The Parkway was listed because of the significant impact it had on development through the Los Angeles area. It represents a short, transitional period of in automobile travel and highway design in the US "in which the traditional parkway concepts developed in the eastern region of the United States were melded to the emerging California automobile culture" ("Historic arroyo seco," 2012). The district extends along the Parkway from the 4-level interchange in Los Angeles to East Glenarm in Pasadena.

Historic Resources within the Opportunity Areas

In addition to the historic designations of the Parkway itself, there are many local, state, and national resources in the areas adjacent to the Parkway. These are culturally significant areas and equally important to the history and cultural of northeast Los Angeles and Pasadena area.

Figure 7.2: Chinatown's East Gate - A Los Angeles City Historic-Cultural Monument

Chinatown – The Chinatown opportunity area includes many Los Angeles City Historic-Cultural Monuments. Los Angeles' Cultural Heritage Ordinance enacted in 1962 created the Historic-Cultural Monument designation. These are buildings and sites that individually have local significance. Currently, there are over 1,000 Historic-Cultural Monuments. This designation recognizes "the building, structure, site, or plant life as important to the history of the city, state, or nation" ("Office of historic," 2013). The designation is meant to protect and restore historic quality of these monuments.

Some of the Historic-Cultural Monuments located in Chinatown include the Chinatown West gate, the Chinatown East gate, Bruno St, and El Pueblo De Los Angeles. The Chinatown West Gate was built in 1938 for New Chinatown's grand opening. The gate is composed in part of 150-year-old camphor wood imported from China (Chinatown Visitors Map). The Chinatown East Gate or Central Plaza is also an important historic resource. It opened in 1938 as a response to the demolition Los Angeles' original Chinatown on the current site of Union Station (see figure 7.2). A completely new idea when it was first built; it can be seen "today as an early blueprint for outdoor malls [and] mixed use development" (Chinatown Visitors Map). These are just a few examples of the culturally and historically important sites that lie within Los Angeles's Chinatown.

Figure 7.3: A historic craftsman style home located in Highland Park

Highland Park – The Highland Park opportunity area includes the Highland Park – Garvanza Historic Preservation Overlay Zone (HPOZ). For a map of the Map of the HPOZ's in Los Angeles see Appendix 3. Historic Preservation Overlay Zones, commonly own as Historic Districts, are meant to protect neighborhoods with "distinct architectural and cultural resources" ("Office of historic," 2013). The zones require review of any proposed exterior alterations and additions to properties within designated districts to ensure consistency with the historic and cultural quality of the area.

The zone is located just north of the Arroyo Seco Parkway (See Appendix 3). The Highland Park – Garvanza district is the largest of the city's HPOZ and includes approximately 4,000 structures and more than 50 Los Angeles City Historic-Cultural Monuments ("Office of historic," 2013). Historic–Cultural Monuments located within this district include the Highland Park Masonic Temple, the Highland Theater Building, and the Garvanza Pumping and Highland Reservoir.

This area is known for a having variety of historic architectural types popular from the 1880s through the 1940s. These styles include Queen Anne, Shingle, Craftsman, Mission Revival, and Tudor Revival. The Arts and Crafts movement was particularly powerful in shaping the Highland Park neighborhood. Because of this, there are many excellent examples of Craftsman-style residences throughout the Highland Park – Garvanza district ("Office of historic," 2013) (see figure 7.3).

Figure 7.4: The historic Longely Residence located in South Pasadena

South Pasadena – Historic Resources in South Pasadena are governed by the Historic Preservation Element of South Pasadena's General Plan. There are two components of historic preservation in South Pasadena – Historic Districts and Historic Landmarks. Historic Districts are "Structures, groups of structures, historic sites or features, design components, natural features and landscape architecture that contribute to the historic or community sense of place or are significant to an area's historic feel" (SP General Plan, v-7). There are five historic districts in South Pasadena: 1) Mission West Historic Business District, the El Centro/Indiana/Palm Residential District, 3) the Oak/laurel Residential District, 4) the Ramona Street Residential District, and 5) Oaklawn. Each district represents an important part of South Pasadena's history. Oaklawn is the newest historic district in South Pasadena and the only one located in within the study area. Oaklawn is located just north of the Arroyo Seco Parkway. It is characterized by the Craftsman Bungalow that was popular during the Arts and Craft Movement of the first half of the 20th century.

In addition to the historic districts, there are more than 50 local historic landmarks designated by South Pasadena. Many of these landmarks are located along the Arroyo Seco Parkway. These include the Adobe Flores and Cactus Garden, Oaklawn Bridge and Waiting Station, Howard Longely Residence, and the Manual Garfias Adobe Site (see figue 7.4).

Other Historic Resources – In addition to the historic resources located within the opportunity areas, there are many other historic districts and landmarks located along the Arroyo Seco Parkway. These include:

Angelino Heights is a HPOZ of Los Angeles that is located to the northwest of the 4-level interchange between the 101 and Sunset Boulevard. This district is characterized by large, Victorian style homes ("Office of historic," 2013) (see figure 7.5).

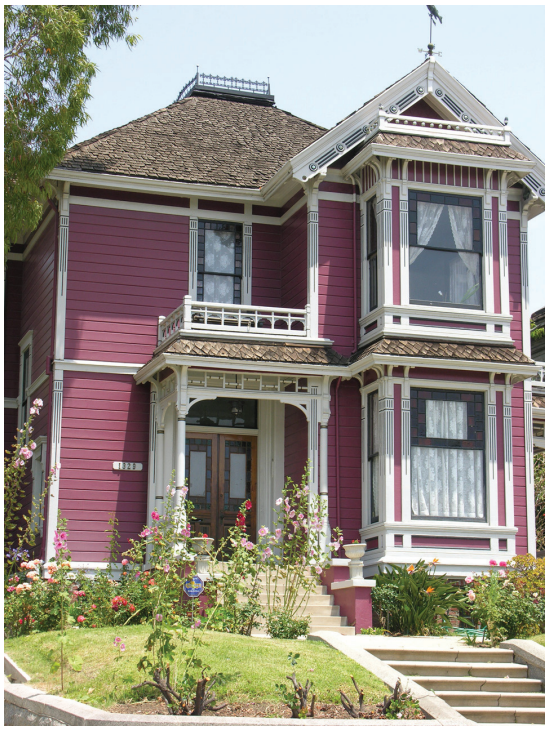


Figure 7.5: A historic Victorian style home located in Angelino Heights

Lincoln Heights is a HPOZ of Los Angeles that is located south of the Arroyo Seco Parkway and the Highland Park – Garvanza District. It is one Los Angeles's first residential suburbs and is characterized by Victorian-era, Arts and Crafts, and Period Revival styles ("Office of historic," 2013) (see figure 7.6).

Figure 7.6: The historic Church of the Epiphany in Lincoln Heights

The Old Pasadena National Register District is located at the eastern end of the Parkway. The Arroyo Seco Parkway terminates in Pasadena. It ends just before the Old Pasadena National Register District begins. This district represents the original pattern of development in this area. After 1886, Pasadena experienced a building boom that was characterized by the Spanish Colonial Revival architectural style (Loether, 2011).

Conflicting Issues

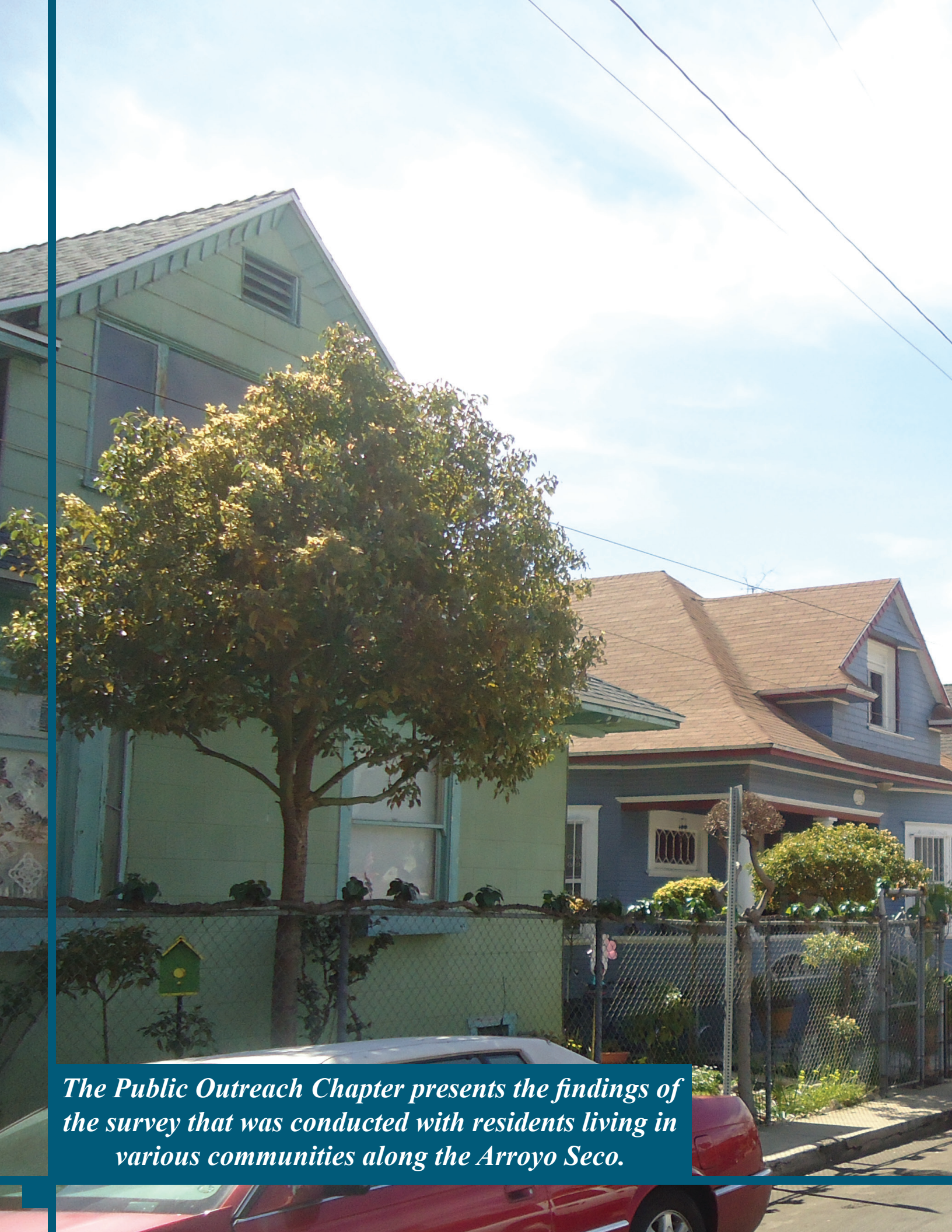
In addition to the historic and cultural benefits of the Arroyo Seco Parkway, there are a myriad of problems. These problems arise in all areas along the Parkway.

The main problem with the Arroyo Seco Parkway is the current condition. The Parkway has remained relatively unchanged since its conception in the 1940s. Its original integrity is what makes it such a unique resource and what qualifies it for multiple historic designations. It is also its original configuration and condition that make it hazardous for current drivers. The Parkway is characterized by short on and off ramps, curves, and narrow lanes. This is very different from the various freeways throughout Los Angeles. Safety has become a major concern along the Parkway. Traffic accidents most often occur along near the on and off ramps. Speed of travel was determined to be the biggest safety concern. For this reason, researchers suggest lowering the speed limit along the Parkway to 45mph. Current historic designations and proximity to residences prevents any major configuration changes that might increases safety along the Parkway.

As the Parkway runs through these beautiful natural environments and cultural places, it acts as a barrier preventing accessibility and viewsheds, alike. Currently, residences in Highland Park have little opportunity to safely access Earnest E. Debs Regional Park that lies just across the Parkway. As stated in the literature review and research sections of this report, physical barriers to physical activity are associated with many health problems. In addition, the Parkway separates residences from the Arroyo Seco River, which has significant historic and cultural value itself. The river was a major source of food and medicine for the native Hahamonga people and acted a transportation corridor for the native peoples as they traveled to other parts of the Los Angeles Basin. This separation was evident during the survey many residences expressed little to no connection with the river.

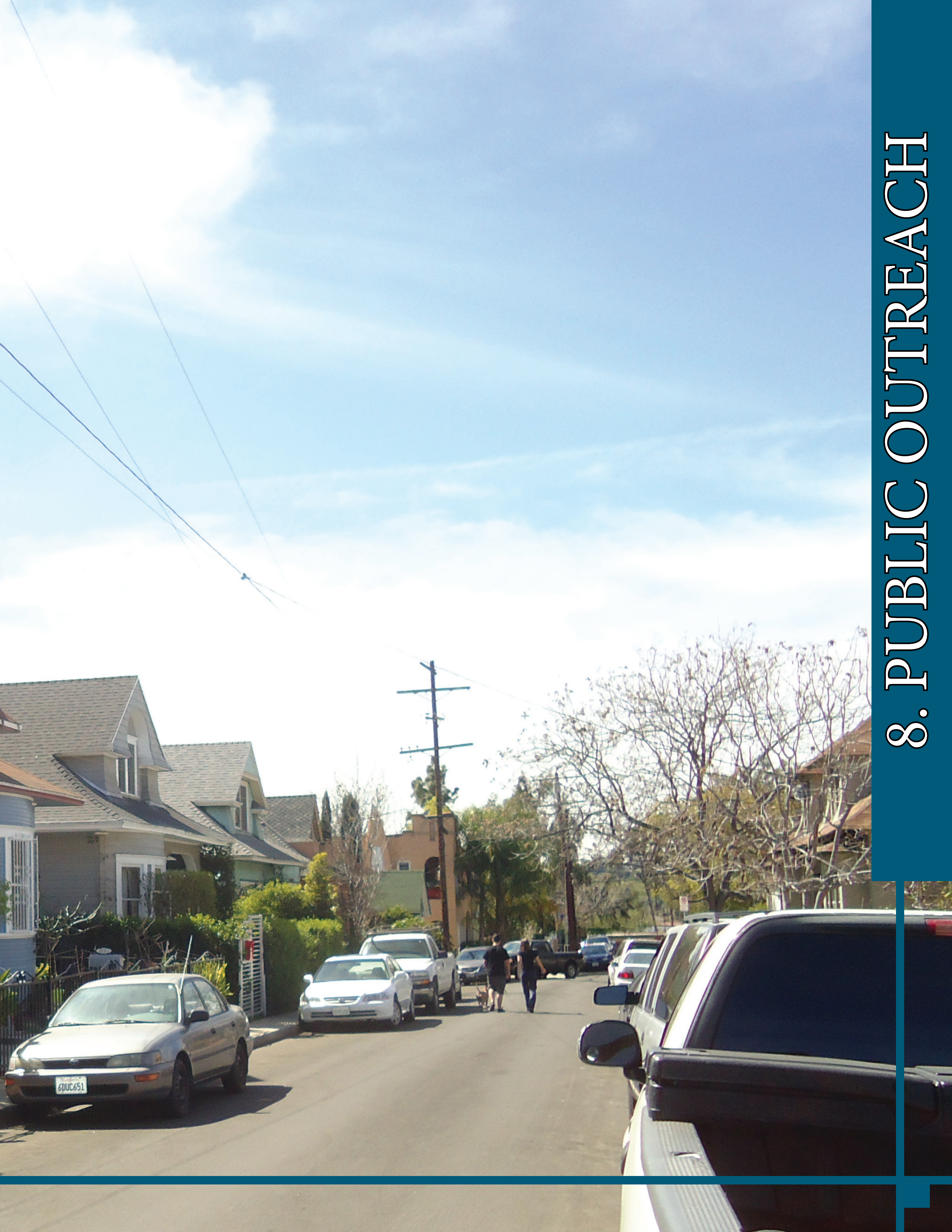
In many locations, concrete walls have been erected between the adjacent residences and the Parkway. This physical barrier has both positive and negative outcomes. While these walls increase safety and act as a noise barrier, they impede a visual access of the beautiful natural environment.

These are just a few problems associated with the Arroyo Seco Parkway. While the Parkway has a rich history, it is also a host of a myriad of problems that cannot easily be fixed. Erecting concrete barrier walls increases safety and decreases noise, but creates an eyesore and further separates the community. Lowering the speed limit can only work if drivers obey the signs.



The Public Outreach Chapter presents the findings of the survey that was conducted with residents living in various communities along the Arroyo Seco.

8. PUBLIC OUTREACH



On Friday April 5, 2013, a public survey was conducted in key neighborhoods along the Arroyo Seco Parkway Corridor. Due to time and resource constraints the extent of the public survey is limited and serves as a rough guide to assessing the opinions of people living in the project area.

The Process

The survey was solicited at random from citizens along neighborhood streets. The neighborhoods selected for random survey included South Pasadena, Highland Park, Chinatown, and Chavez Ravine. These neighborhoods were selected because of the significance of the Arroyo Seco Parkway on their urban forms. For more information on existing conditions within the neighborhoods selected please refer to Chapter 5, Existing Conditions. The survey consisted of eight questions regarding topics on existing conditions of the Arroyo Seco Parkway, the various neighborhoods, and the Arroyo Seco River. The survey questions can be found in the Appendix 5 of this document.

Results

The random survey provides general insight into how the people living and working in the project area use the Parkway and what they thought about the effect the Parkway has on their lives. The comments received assisted in development of the concept proposal.

South Pasadena

South Pasadena respondents used the Arroyo Seco Parkway as a means of transportation on a daily basis. Respondents used the Arroyo Seco Parkway to travel to Downtown and from Downtown to other parts of the city. The Arroyo Seco Parkway was not noted as having a major impact on the neighborhood. One local shop owner commented that any ill effects of the Parkway's construction have since passed and no longer have relevance. South Pasadena residents feel as though the Parkway's primary restraint is the short on and off ramps which cause traffic backup into neighborhoods.

Major alternative routes that can be utilized include Figueroa Boulevard, Mission Avenue, Hill Street, Avenue 64, Orange Grove Blvd, Soto Street, and Highway 134. The proposed Interstate 710 extension was negatively regarded by the surveyed citizens. The extension was seen as a traffic creator and not a traffic reducer. Though the tunnel option had a more favorable view, the lack of on-ramps and off-ramps directly servicing South Pasadena caused citizens to see it as more of a hassle for them then it is worth. Use of the Gold Line as an alternative mode of transportation was sparse.

The Arroyo Seco River was well liked by respondents who used the corridor for passive recreation. Lastly, respondents were indifferent to the idea of the Parkway as a historic landmark. Though respondents agreed it was significant, they were not all in agreement as to how the Parkway should be utilized in the future.

Highland Park

Highland Park respondents used the Arroyo Seco Parkway almost every day to commute Downtown or to school. Respondents to the survey were very indifferent to the effects of the Parkway. Many respondents felt as though the Parkway, while contributing to minor nuisances, was not a major inhibitor to overall well-being. The biggest problem cited was the traffic backups into neighborhoods. Current conditions on the Parkway were seen as less than satisfactory by a majority of the respondents. Parkway paving conditions, traffic volumes, and short on-and-off-ramps were all cited as concerns with regards to the Parkway.
Major alternative routes that could be utilized include Figueroa Boulevard, Broadway, Marimon, Monterey, Huntington, and Avenue 26. Respondents used the Gold Line and the automobile interchangeably to access work, school, and leisure activities. The proposed Interstate 710 extension was not as well known in Highland Park as in South Pasadena. For those respondents who did have an opinion on the issue, the tunneling option was favored. It should be noted that overall feelings towards the project were neutral.

Feelings towards the Arroyo Seco River were indifferent. Many respondents had spent only brief periods of time at the river or none at all. Feelings towards the historic quality of the Arroyo Seco Parkway were strong; however not all respondents were in agreement as to the future of the Parkway. One respondent thought closing a lane would be acceptable while another respondent would like to see more construction around the Parkway. One respondent even went as far to say that the Arroyo Seco Parkway's historic status was one of infamy and cited it as the "Freeway of Death."

Chinatown/Chavez Ravine

Chinatown and Chavez Ravine were both difficult neighborhoods to solicit surveys. Language barriers and differences in cultural/societal norms created a situation that was not apt to meaningful dialogue.

Respondents in Chinatown and Chavez Ravine did not use the Arroyo Seco Parkway often but cited its traffic problems and distracted drivers as a major area of concern.

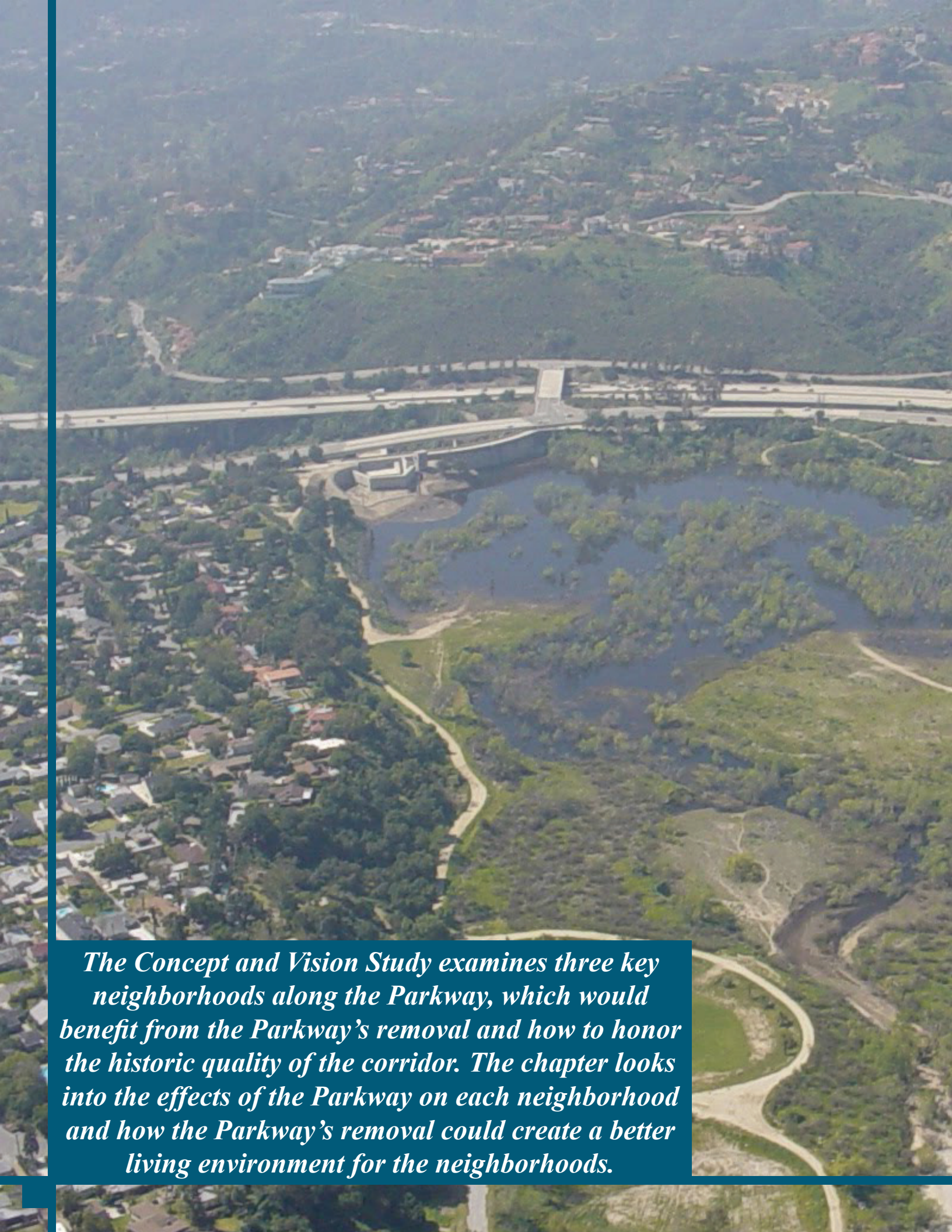
Chinatown and Chavez Ravine's close proximity to Downtown were a factor in the lack of alternative routes that were utilized by the populous.

The respondents felt as though the historic nature of the Arroyo Seco Parkway was not a valuable enough to negate its dangerous conditions.

Analysis of Results

Feelings towards the Parkway varied slightly among neighborhoods. Though South Pasadena respondents were indifferent to the Parkway, the below-grade nature of the Arroyo Seco Parkway through South Pasadena can be seen as a reason why it was not as such a concern to residents. Though Highland Park respondents were not entirely against the Parkway, it was noted that more respondents had problems with the Parkway than not.

The opinion towards the river varied between neighborhoods. South Pasadena has a linear park along its share of the Arroyo Seco River. Though the river is channelized through South Pasadena, the linear park provides passive and active recreation to the populous and is accessible to the town. In Highland Park, the river is not only channelized but also separated from the community by the Parkway. This creates a sense of disconnect between the citizens and the Arroyo Seco River. This disconnect can be seen in the survey responses to question seven where most respondents said that they did not have strong feelings about the Arroyo Seco River.



The Concept and Vision Study examines three key neighborhoods along the Parkway, which would benefit from the Parkway's removal and how to honor the historic quality of the corridor. The chapter looks into the effects of the Parkway on each neighborhood and how the Parkway's removal could create a better living environment for the neighborhoods.

9. CONCEPT AND VISION

Our proposal is to remove the existing parkway and create a boulevard in its path that traverses the landscape and connects the surrounding neighborhoods. The Boulevard will honor the histroy of the Arroyo Seco Corridor, while promoting sustainability and walkability.

Honoring the History and Moving Forward

The proposed boulevard is meant to connect residences to the beautiful surrounding areas, increase pedestrian and bicyclist activity, and create a sense of place. It is not supposed to dishonor the history and development of the area. We believe the proposed boulevard is in line with the purpose of the historic designations and better serves the needs of the communities.

The Arroyo Seco Boulevard would

- Be consistent with many of the goals of the Corridor Management Plan
- Qualify as a scenic byway
- Better connect surrounding historic resources
- Include elements of healthy communities
- Honor the history and culture through signage and design

Be consistent with many of the goals of the Corridor Management Plan – The Historic Arroyo Seco Parkway Corridor Partnership Plan was published in 2012. It is a management plan that details planning goals and strategies for the Parkway. The plan distinguishes the Arroyo Seco Parkway as a unique resource that should be honored and enhanced as a destination. Many of the goals present in this plan are in line with the goals of the boulevard proposal. Some of the goals include:

> REMOVE, where practical and feasible, the barriers (physical and implied) that separate communities, limit historic views, and deny access.
>
> RESTORE water quality, habitat and landscape features to meet community, municipal and state sustainability goals.
>
> CONNECT the communities to the Parkway, Arroyo Seco and parklands, and across the Parkway to one another.
>
> SUPPORT multi-modal transportation options and opportunities to make the Byway Corridor more livable, and manage travel demand on the Parkway.
>
> ("Historic arroyo seco," 2012)

Creating a boulevard in place of the existing Arroyo Seco better serves many of these goals. A boulevard would remove the chain-link fences and concrete walls that surround the Parkway. Removing these physical barriers could create a safety issue for adjacent residences in the Parkway were to remain. The lower speed of a boulevard and traffic calming measures would improve safety and allow for removal of these physical barriers and create a more pleasing view shed. The proposal is directly in line with the goal of restoring water quality, habitat and landscape features to meet community, municipal and state sustainability goals. The concept is to de-channelize the Arroyo Seco River and increase parkland along its corridor. The boulevard proposal includes new signaled intersections that would allow easier access to the surrounding parkland. Lastly, a boulevard can also better support multi-modal transportation options. Not only buses, but also pedestrians and bicyclists will be able to enjoy the road.

Qualify as a National Scenic Byway – National Scenic Byways are roads that exemplify one of six intrinsic qualities. The initial application for the Arroyo Seco Parkway included four intrinsic qualities: historic, recreational, cultural, and natural. Changing the Parkway to a boulevard does not negate these intrinsic qualities. The Parkway is considered to have a recreational quality because of the pedestrian, equestrian, and bicycle routes that comprise the existing trail network. These trails allow users to enjoy the surroundings for "natural and educational" purposes. The proposed boulevard will have no effect on the surrounding recreational uses. It could allow greater access, both visual and physical, to these opportunities.

The Parkway's cultural qualities come from strong cultural identities of the surrounding neighborhoods. There is a strong Chicano/Latino influence from artists of the 1920s in the Highland Park area. In addition, there is a strong, thriving culture in Chinatown. Cultural movements, such as the Arts and Crafts Movement, can be seen throughout the architecture that surrounds the Parkway. Removing the Parkway will not change the thriving culture of the surrounding neighborhoods. It will allow the driver to better appreciate the Craftsman homes that surround the current Parkway.

The Parkway's natural quality is associated with the great deal of parkland the surrounds the corridor. Parks include the Arroyo Seco River and its watershed, the Angeles National Forrest, the lower Arroyo Seco Park, Earnest E. Debs Regional Park, and Elysian Park. The boulevard proposal calls for returning the Arroyo Seco River to a more natural state and expansion of the park space surrounding it. In addition, a boulevard would allow for easier access of this natural land via walking and biking.

Converting the existing Arroyo Seco Parkway into a Boulevard would retain many of the qualities that make it such a unique place. The boulevard could still have the honorable designation a National Scenic Byway.

Better connect surrounding historic resources – Much of the historic quality of the Arroyo Seco Parkway comes from the numerous historic districts and landmarks that surround it. As mentioned, there are numerous historic resources immediately surrounding the Parkway. The new boulevard would include adequate pedestrian and bicycle infrastructure, proper signage, and signaled intersections. These improvements could allow for greater access and easier navigation of the area allowing for more people to enjoy the numerous historic resources.

Include elements of healthy communities – Changing the Arroyo Seco Parkway to a boulevard would contribute to creating a healthier region. Designing for healthy communities includes creating more bicycle and pedestrian opportunities, increasing pedestrian and bicycle safety, increasing access to recreational opportunities, and improving air and water quality. Currently, the Parkway is a safety hazard, which impedes access to recreational opportunities. Creating a boulevard would decrease traffic safety concerns because of the lower speed and safer intersections, as compared to the current short on and off ramps. Crosswalks, sidewalks, bike lanes, and signaled intersections would allow for safe and easy non-motorized access to the numerous surrounding recreational opportunities. Returning the Arroyo Seco River to a more natural state could also encourage more people to use and enjoy the natural resource.

Honor the history and culture through signage and design – The boulevard proposal does not intend to negate the unique history of this place. The goal is to honor the history while better serving the needs of the residences and creating a healthier community. Creation of a signage program that recognizes and honors the history of the Arroyo Seco would be appropriate. This could include directional signage to surrounding historic districts and landmarks, as well as to surrounding recreational opportunities (see figure 9.1).

Figure 9.1: An example of a historic district sign that could be used to recognize the history of the Arroyo Seco Corridor

Arroyo Seco Boulevard

The following pages contain goals and descriptions of key elements of conept proposals for South Pasadena, Highland Park, Chinatown, and the Arroyo Seco River.

Vision: To create a boulevard that follows the path of the current Arroyo Seco Parkway. This Boulevard will foster a sense of community and place, while coinciding with goals of sustainability and healthy communities.

Goals:

1. Encourage biking and pedestrian circulation
2. Create more park and recreational space
3. Promote connections between residential neighborhoods and existing park space
4. Reduce traffic and auto-dependence
5. Create a safer pedestrian and bicycle environment
6. Create more housing options
7. Create a destination and sense of place

Figure 9.2: Avenida Liberdade, Lisbon, Portugal

South Pasadena Concept

Goals:

1. Increase park space
2. Connect neighborhoods separated by existing Arroyo Seco Parkway
3. Increase residential areas
4. Create safe pedestrian and bicycle routes

Key Elements of Concept:

Land Uses – Through the South Pasadena opportunity area, the Parkway cuts through two residential neighborhoods. These neighborhoods include single-family homes on small and large lots as well as multi-family residential units. The concept retains all existing residential uses with the goal of connecting the two areas. (see figure 9.8).

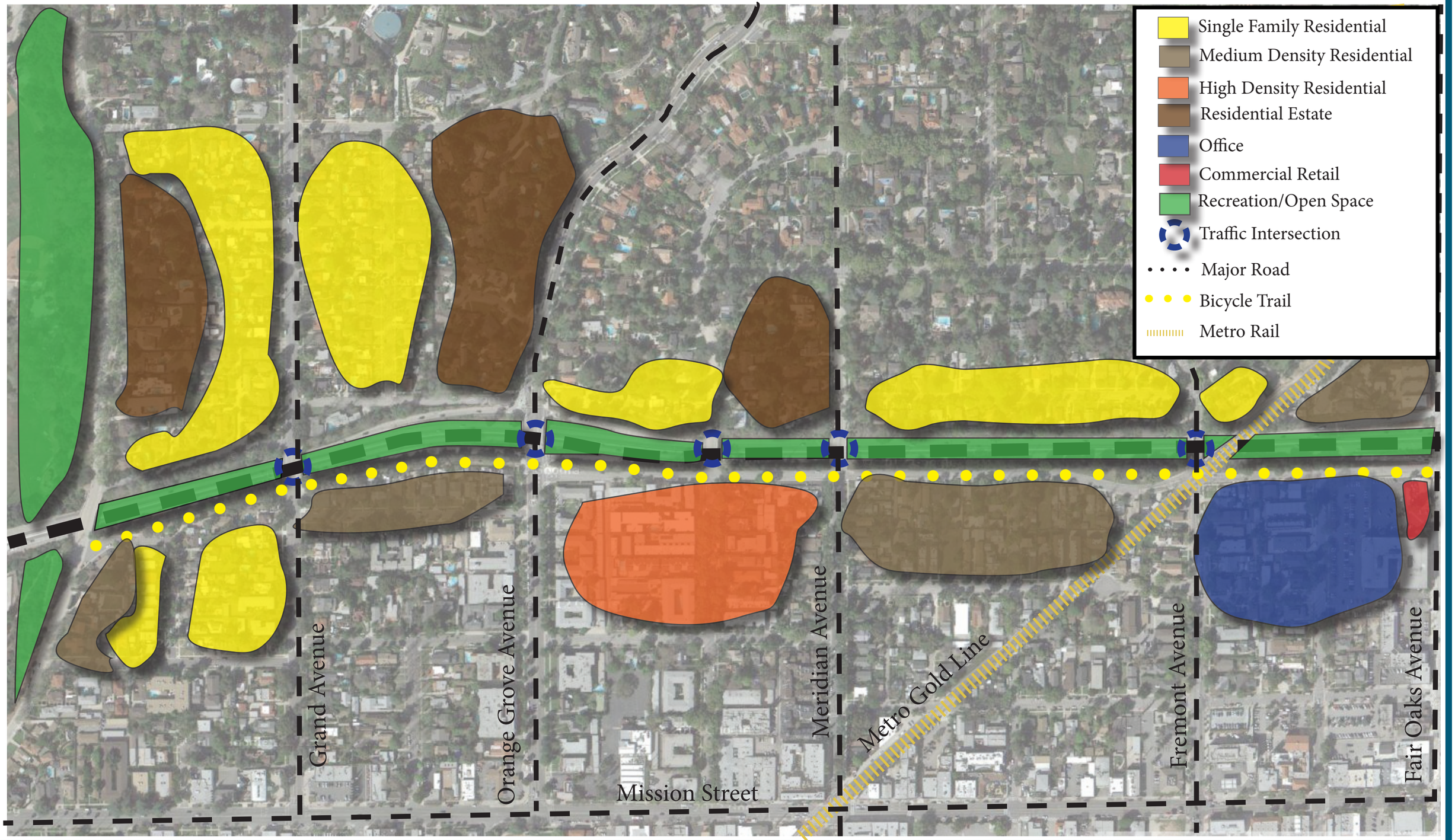
Boulevard Design – The Arroyo Seco Parkway runs below grade through South Pasadena. This allows a unique solution within the South Pasadena opportunity area. The concept calls for capping the Parkway. Capping the Parkway will leave the existing road essentially the same as it is today. The speed limit will be lowered to better fit with the rest of the boulevard and to create a safer driving experience.

The New Park – Capping the Parkway will create a long linear park in the South Pasadena opportunity area. The park will be surrounded by the many residential neighborhoods that surround the existing Arroyo Seco Parkway. The new park will connect the neighborhoods and act as a community gathering point. A bike lane is proposed through the park to allow easy and safe access cross South Pasadena (see figure 9.8).

New Intersections – New intersections will be created at existing overpasses. These new intersections will focus on easing pedestrian crossings across the road to create a seamless transition from one part of the park to another. (see figure 9.8).

Figure 9.3: Typical parkscape that may exist on the capped Arroyo Seco Parkway

EXHIBIT 9.1: SOUTH PASADENA CONCEPT MAP



Goals:

1. Create connection between Highland Park and Earnest E. Debs Regional Park
2. Promote safe pedestrian and bicycle routes
3. Enhance residential neighborhoods
4. Create connections between Highland Park and the Arroyo Seco River

Key Elements of Concept Plan:

Land Uses – The concept for Highland Park focuses on retaining all of the existing housing that surrounds the existing Arroyo Seco Parkway. Presently, the north side of the Parkway is zoned for medium density residential and the south side is zoned for open space and recreation. The goal of this concept is not to change these existing land uses, but to encourage connectivity and movement between them (see figure 9.6)

Boulevard Design – As stated, the main goal for this part of the boulevard is to create connection between the existing neighborhood and park that lay adjacent to the Parkway. In the Highland Park concept plan, Arroyo Seco Boulevard will consist of five foot sidewalks, two six foot park rows, four ten foot driving lanes (two in each direction), a ten foot vegetative median, and four two foot shoulder lanes. Main intersections will be signaled with distinctive crosswalks. (see figure 9.5)

New Intersections – The creation of a boulevard will require several new intersections throughout the Highland Park opportunity area. New intersections will be located at key areas along the Arroyo Seco Boulevard, including Avenue 59, Omaha Street, Via Marisol, Avenue 57, Avenue 55, Avenue 52 and Avenue 50 (see figure 9.6).

Arroyo Seco River – The Arroyo Seco River runs parallel to the existing Parkway throughout Highland Park, which separates the community from the waterway. Despite the proximity, the residents surveyed felt very little connection to the river itself. The creation of a boulevard should help promote a sense of connection. The boulevard will be shifted to the north slightly to include the existing frontage road along the Parkway. This will allow for more open space along the river. A bike path along the Arroyo Seco will help to further the goals of this concept to promote safe pedestrian and bike routes. (see figure 9.6).

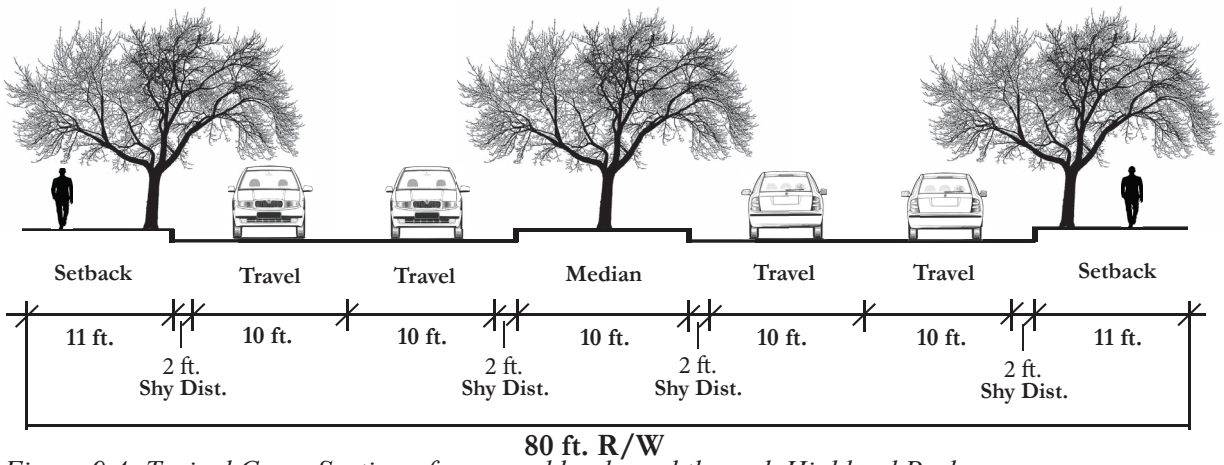


Figure 9.4: Typical Cross-Section of proposed boulevard through Highland Park

EXHIBIT 9.2: HIGHLAND PARK CONEPT MAP

Goals:

1. Encourage connectivity to Dodger's Stadium by means of alternative transportation
2. Create access to more green space
3. Create more opportunities for housing
4. Expand commercial opportunities

Key Elements of Concept:

Land Uses – The concept for Chinatown maintains most of the existing land uses around the existing Arroyo Seco Parkway. The existing Parkway is surrounded by mostly medium density residential, with a small amount of commercial. The concept for Arroyo Seco Boulevard proposes increase of the amount of commercial activities along Caesar Chavez Avenue. A park space has been proposed on the southwest portion of the project area, near the existing four level interchange. This is meant to expand recreational opportunities for the residents of Chinatown. (see figure 9.4)

Boulevard Design – The existing parkway will become a boulevard that allows for vehicular, pedestrian, and bicycle traffic. The boulevard will consist of five foot sidewalks, two five foot park rows, two five foot bike lanes, four ten foot driving lanes (two in each direction), and a ten foot vegetative median (see figure 9.2).

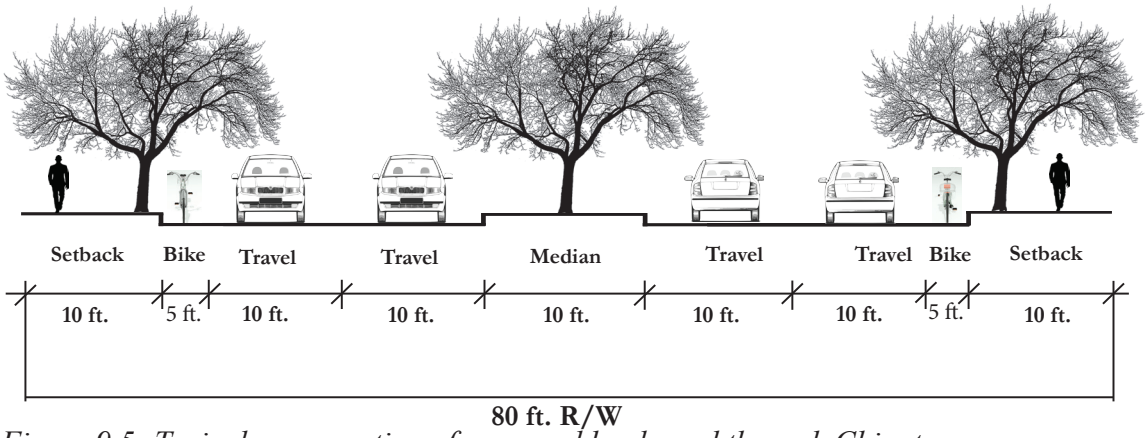


Figure 9.5: Typical cross-section of proposed boulevard through Chinatown

New Intersections – The creation of a boulevard will require several new intersections throughout the Chinatown opportunity area. New intersections will be located at key areas along the Arroyo Seco Boulevard, including Hill Street, Yale Street, and New Depot Street. (see figure 9.4). In addition to the new intersections along the boulevard, new intersections are proposed at Caesar Chavez Avenue and Highway 101 and Alpine Street and Centennial Street.

Pedestrian Enhancements – New intersections along the proposed boulevard will create a more pedestrian friendly atmosphere, which will ease pedestrian crossings from Chinatown to Chavez Ravine to access Elysian Park and Dodger Stadium.

Gateways – Arroyo Seco Boulevard is proposed to merge with Figueroa Boulevard in Chinatown. This is an opportunity to create a gateway to the Arroyo Seco Corridor.

Figure 9.6: Chinatown West Gate, Los Angeles

EXHIBIT 9.1: SOUTH PASADENA CONCEPT MAP

Arroyo Seco River Concept

Goals:

1. Increase connections between river and surrounding neighborhoods
2. Expand bike path
3. Increase park and recreations space along the river
4. Return river to more natural state
5. Create a sense of place

Key Elements of Concept:

Design – The banks of the Arroyo Seco River will provide for passive and active recreation. A natural bottom will provide the ability for the river to create riparian habitats that will foster native landscapes. The banks of the river will be a mix of hardscapes and softscapes, which will allow for recreation in the dry season and flood control in the rainy season.

Connections – By providing crossings at new intersections along Arroyo Seco Boulevard, there will be numerous access points to the river. The river will also include bike lanes which will run from Lower Arroyo Park in South Pasadena to Elysian Park just north of Chinatown.

Figure 9.7: The area along the Arroyo Seco River will be a community gathering area and source of local pride

10. CONCLUSION

This project is a culmination of six months of research and thought regarding removal and reuse of a historic freeway landmark. These studies have shown that freeways have a degrading effect on the urban environments that they transverse. Detriments to health, safety and welfare are all attributed to freeway presence so it is important to ask, at what price are freeways preserved as historic monuments. The Arroyo Seco Parkway has been shown to be substandard causing accidents and traffic congestion. The Parkway severs neighborhoods from natural environments which provide a reprieve to the concrete jungle of city life. This Parkway has multiple options. This Parkway could stay the way it is and cause future harm to a community. This Parkway could become a lower speed highway with improved aesthetic qualities that harken back to its inception. This Parkway could become a pedestrian centered boulevard that meshes the natural and built environments.

Eleanor Roosevelt once said that "The future belongs to those who believe in the beauty of their dreams". It is now up to the elected officials, planners, and citizens of the future of Los Angeles to believe in the beauty of their dreams for a better city and create an Arroyo Seco Corridor that will reflect their goals and visions of a brighter tomorrow.

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Appendix

1. According to the Strategic Growth Council of California, A Healthy Community provides for the following through all stages of life:

Meets basic needs of all

-Safe, sustainable, accessible and affordable transportation options
-Affordable, accessible and nutritious foods
-Affordable, high quality, socially integrated and location-efficient housing
-Affordable, accessible and high quality health care
-Complete and livable communities including affordable and high quality schools, parks and recreational facilities, child care, libraries, financial services and other daily needs
-Access to affordable and safe opportunities for physical activity

Quality and sustainability of environment

-Clean air, soil and water, and environments free of excessive noise
-Tobacco and smoke free
-Green and open spaces, including agricultural lands
-Minimized toxics, GHG emissions and waste
-Affordable and sustainable energy use

Adequate levels of economic, social development

-Living wage, safe and healthy job opportunities for all
-Support for healthy development of children and adolescents
-Opportunities for high quality and accessible education

Health and social equity

Social relationships that are supportive and respectful

-Robust social and civic engagement
-Socially cohesive and supportive relationships, families, homes and neighborhoods
-Safe communities, free of crime and violence

("Public health and,")

2) The Instrinsic Qualities of National Scenic Byways

To be designated a National Scenic Byway, a road must possess characteristics of regional significance within at least one of the intrinsic qualities. All-American Roads must possess characteristics of national significance in at least two of the following intrinsic qualities.

Scenic - Scenic Quality is the heightened visual experience derived from the view of natural and manmade elements of the visual environment of the scenic byway corridor. The characteristics of the landscape are strikingly distinct and offer a pleasing and most memorable visual experience. All elements of the landscape--landform, water, vegetation, and manmade development--contribute to the quality of the corridor's visual environment. Everything present is in harmony and shares in the intrinsic qualities.

Archaeological - Archaeological Quality involves those characteristics of the scenic byways corridor that are physical evidence of historic or prehistoric human life or activity that are visible and capable of being inventoried and interpreted. The scenic byway corridor's archeological interest, as identified through ruins, artifacts, structural remains, and other physical evidence have scientific significance that educate the viewer and stir an appreciation for the past.

Cultural - Cultural Quality is evidence and expressions of the customs or traditions of a distinct group of people. Cultural features including, but not limited to, crafts, music, dance, rituals, festivals, speech, food, special events, vernacular architecture, etc., are currently practiced. The cultural qualities of the corridor could highlight one or more significant communities and/or ethnic traditions.

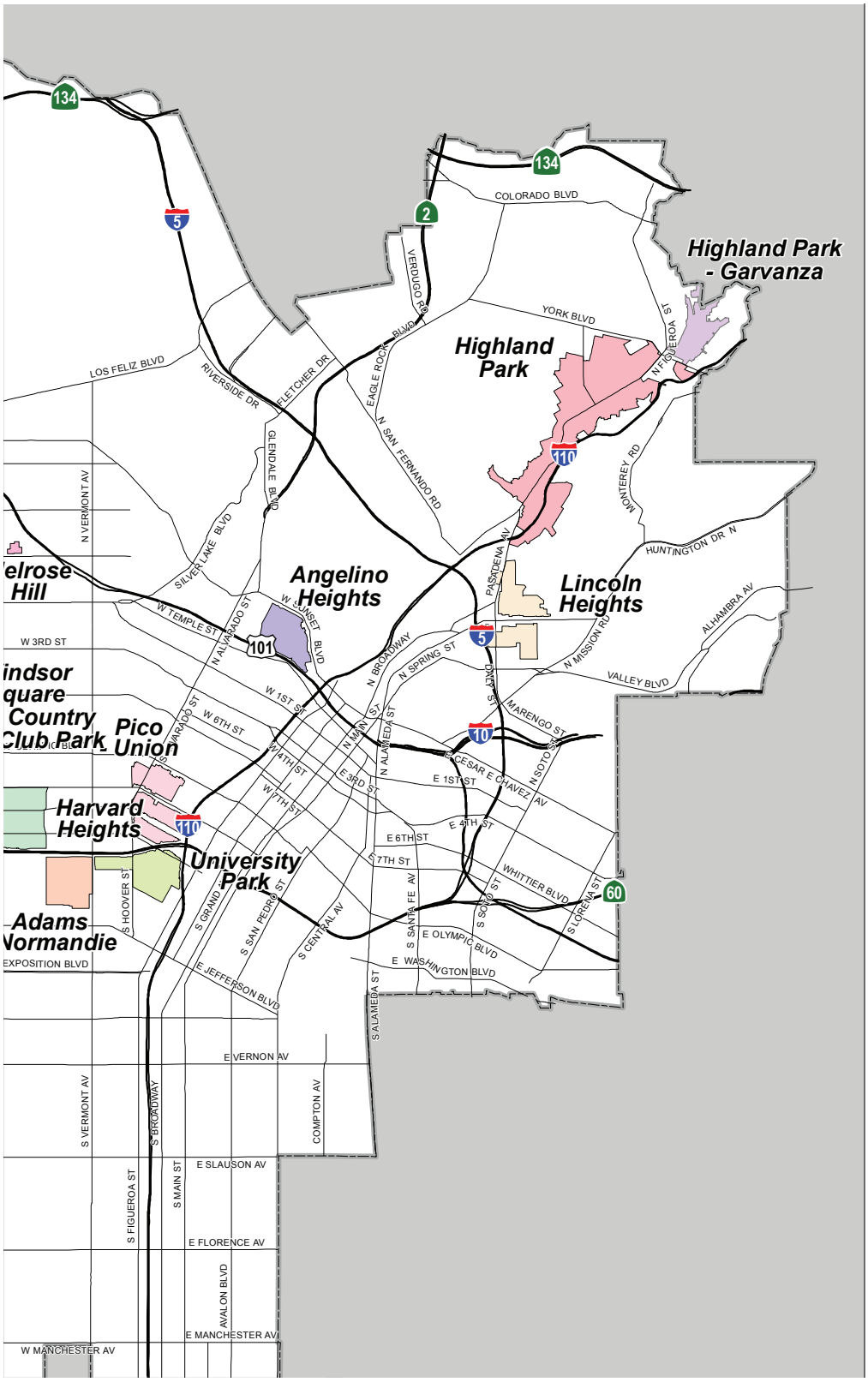
Historic - Historic Quality encompasses legacies of the past that are distinctly associated with physical elements of the landscape, whether natural or manmade, that are of such historic significance that they educate the viewer and stir an appreciation for the past. The historic elements reflect the actions of people and may include buildings, settlement patterns, and other examples of human activity. Historic features can be inventoried, mapped, and interpreted. They possess integrity of location, design, setting, material, workmanship, feeling, and association.

Natural - Natural Quality applies to those features in the visual environment that are in a relatively undisturbed state. These features predate the arrival of human populations and may include geological formations, fossils, landform, water bodies, vegetation, and wildlife. There may be evidence of human activity, but the natural features reveal minimal disturbances.

Recreational - Recreational Quality involves outdoor recreational activities directly association with and dependent upon the natural and cultural elements of the corridor's landscape. The recreational activities provide opportunities for active and passive recreational experiences. They include, but are not limited to, downhill skiing, rafting, boating, fishing, and hiking. Driving the road itself may qualify as a pleasurable recreational experience. The recreational activities may be seasonal, but the quality and importance of the recreational activities as seasonal operations must be well recognized.

(Federal Highway Administration)

3. City of Los Angeles Historic Preservation Overlay Zones



("Office of historic," 2013)

4. Traffic Study Calculations ("Highway performance monitoring," 2013)

The free flow of speed (FFS) equation is as follows:

FFS = BFFS - fLW - fLC- fM - fA

Where:

BFFS = base free flow speed
fLW = adjustment factor for lane width
fLC = adjustment factor for lateral clearance
fM = adjustment factor for median type
fA = adjustment factor for access points

Base Free Flow Speed is based on the calculations below.

BFFS = 40 mph, for posted speed limits < 40 mph
= SpeedLimit + 7, for posted speed limits 40-45 mph
= SpeedLimit + 5, for posted speed limits >= 50 mph

Adjustments for lane width are made by using predetermined values. The calculation table is below:

Lane Width	Reduction in FFS (mph; fLW)
12 ft.	0.0
11 ft.	1.9
<=10 ft.	6.6

Adjustments for lateral clearance use right and left shoulder widths. Because the Arroyo Seco Parkway is a divided highway Lateral Clearance Left (LCL) is calculated as well as Lateral Clearance Right (LCR)

TLC = LCR+ LCL

Once TLC is computed, predetermined values are used to place into the equation. The calculation table is below.

4-Lane Two-Way Highways and 2-Lane One-way Highways		6+Lane Two-Way Highways and 3+Lane One-Way Highways	
Total Lateral Clearance	Reduction in FFS	Total Lateral Clearance	Reduction in FFS
12	0	12	0
10	0.4	10	0.4
8	0.9	8	0.9
6	1.3	6	1.3
4	1.8	4	1.7
2	3.6	2	2.8
0	5.4	0	3.9

To adjust for median type, predetermined values are used and based on whether the road is divided or undivided. The calculation table is below.

Highway Type	Reduction in FFS (mph; fM)
Undivided	1.6
Divided (including TWLTLs-Two-Way Left Turning Lanes)	0

To adjust for access point per mile, calculations are based on the number of at-grade intersections with no traffic control devices and the section length. The equation is below.

fA = MIN((0.25*AccessPointDensity), 10)

Where:
AccessPointDensity = (Intersection/Length) + DrivewayDensity
DrivewayDensity = 2 for divided highways
= 3 for undivided highways

The calculations for Free Flow Speed for the Arroyo Seco Parkway are as follows:

FFS=BFFS-FLW-FLC-FM-FA
FFS=(55+5)-1.9-1.3-0.0-(Min((.25(1/1)+2),10)
FFS=60-1.9-1.3-2.25
FFS=54.55

The calculations for Free Flow Speed for Arroyo Seco Boulevard are as follows:

FFS=BFFS-FLW-FLC-FM-FA
FFS=(45+7)-6.6-1.8-0.0-(Min((.25(4/1)+2),10))
FFS= 52-6.6-1.8-3
FFS=40.6

Once FFS has been calculated, Base Capacity (BaseCap) can be computed. The basecap calculations are below.
BaseCap = 1,000 + 20FFS; for FFS <= 60
BaseCap = 2,200; for FFS > 60

The calculation for basecap for the Arroyo Seco Parkway is as follows:
BaseCap=1000+20(FFS)
BaseCap=1000+20(54.55)
BaseCap=1000+1091
BaseCap=2091

The calculation for basecap for Arroyo Seco Boulevard is as follows:
BaseCap=1000+20(FFS)
BaseCap=1000+20(40.6)
BaseCap=1000+812
BaseCap=1812

Finally, peak capacity (peakcap) is determined. Peakcap is determined by the following equation:

PeakCap = BaseCap * PHF * N * fHV * fp

Where:
PHF = Peak Hour Factor
N = Number of lanes in one direction
fHV = Adjustment factor for heavy vehicles
fp = Adjustment factor for driver population

The Peak Hour Factor (PHF) has a default value of .92 will be used.
To adjust for heavy vehicles the following equation is used. ET is kept constant with a default of 1.5 for all urban highways. For the purpose of this report,PT will be set at 10 percent.

FHV= 1/(1 + PT(ET - 1))

Where:
PT = Proportion of trucks and buses in the traffic stream
ET = Passenger-car equivalents
= 1.5 for all urban highways

The calculations for peakcap for the Arroyo Seco Parkway are as follows:
PeakCap=BaseCap * PHF * N * fHV * fp
PeakCap=2091*.92*3*(1/(1 + .10(1.5 - 1)))*1
PeakCap=2091*.92*3*.95*1
PeakCap=5483

The calculations for peakcap for Arroyo Seco Boulevard are as follows:
PeakCap=BaseCap * PHF * N * fHV * fp
PeakCap=1812*.92*2*(1/(1 + .10(1.5 - 1)))*1
PeakCap=1812*.92*3*.95*1
PeakCap=3167

5. Public Outreach Surveys

CAL POLY

City and Regional Planning Department

Arroyo Seco Parkway Study Interviewer: _____ Location: _____ Interview # _____

This is part of our *Senior Project* in Cal Poly's City and Regional Planning Department. Our study is looking for an overall understanding of your preferences for the future of the Arroyo Seco Parkway. There are no "right" or "wrong" answers to these questions. We appreciate your help and time in responding to this interview. Thank you!

1. Do you use the 110? What do you use it for?

2. How does the 110 affect your neighborhood?

3. Is the current condition of the freeway satisfactory? Do you feel safe when using it?

4. What alternative routes do you use to access points that lie along the 110?

5. How do you feel about the proposed I710 extension? Would you use it?

6. Do you use the gold line? What do you think of it?

7. How do you feel about the Arroyo Seco River?

8. Do you consider the 110 a historic landmark?